

Peltier Ponds
Lino Lakes, Minnesota

for
Lennar

**STORMWATER MANAGEMENT PLAN
NARRATIVE AND SUMMARY**

April 4th, 2025
Revised: November 3rd, 2025
Revised: February 9th, 2026
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INTRODUCTION

Lennar proposes to final plat and develop the Peltier Ponds project in Lino Lakes, Minnesota, which will include single family lots and townhome units with associated streets and utilities. Stormwater ponds are proposed for stormwater management as soils are not conducive to infiltration.

REGULATIONS

The proposed development is in the City of Lino Lakes, Minnesota and Anoka County. The Rice Creek Watershed District is the local government unit (LGU) that regulates stormwater management for this development. Regulations pertaining to the proposed development include:

Rate Control

- Utilize NOAA Atlas 14 precipitation frequency data for stormwater modeling.
- No net increase in the peak runoff rate using existing condition pervious Curve Numbers as defined by the Rice Creek Watershed District (Table C3) for the 2-year, 10-year, and 100-year 24-hr critical storm events using MSE Type 3 rainfall distribution.

TABLE C3. CURVE NUMBERS FOR EXISTING CONDITION PERVIOUS AREAS.

Hydrologic Soil Group	Runoff Curve Number *
A	39
B	61
C	74
D	80

* Curve numbers from NRCS Technical Release #55 (TR-55).

- Peltier Lake specific requirement - Maximize site drainage to 60" trunk storm sewer while providing rate control at 0.10 cfs/acre for Peltier Lake.
- Peltier Lake specific requirement – No discharge to Peltier Lake is allowed when the lake is within 1-foot of its peak elevation (Gate Closed condition). Ponds must be designed to hold the 10-day snowmelt without overtopping (with no discharge) and comply with freeboard requirements.

Volume Control

- Since infiltration is not feasible (Table C2 – Low Permeability Soils - HSG D, refer to Geotechnical Report), any BMP may be used.
- Project specific requirement – No net increase in volume discharged to Wetland 4 (northern discharge point) for the critical storm events.

Water Quality

- Water Quality Volume equal to 1.1 inches over new impervious area.
- TP removal factors shall be based on Table C1 below. Stormwater ponds must also provide dead storage for the runoff from a 2.5" rainfall event (NURP).

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BMP	BMP Design Variation	TP Removal Factor *
Infiltration **	Infiltration Feature	1.00
Water Reuse **	Irrigation	1.00
Biofiltration	Underdrain	0.65
Filtration	Sand or Rock Filter	0.50
Stormwater Wetlands	Shallow Wetland	0.40
	Pond/Wetland	0.55
Stormwater Ponds ***	Wet Pond	0.50
	Multiple Pond	0.60

- Provide Existing and Proposed TP/TSS loading calculations for proposed BMPs.

Wetland Management

- Permitted Bounce and Inundation period per Table C4.

Wetland Susceptibility Class	Permitted Storm Bounce for 2-Year and 10-Year Event *	Inundation Period for 2-Year Event *	Inundation Period for 10-Year Event *
Highly susceptible	Existing	Existing	Existing
Moderately susceptible	Existing plus 0.5 ft	Existing plus 1 day	Existing plus 7 days
Slightly susceptible	Existing plus 1.0 ft	Existing plus 2 days	Existing plus 14 days
Least susceptible	No limit	Existing plus 7 days	Existing plus 21 days

Floodplain Management

- Quantify floodplain fill (regulatory floodplain elevation = 907.0) and provide mitigation per Rule E if fill is greater than 100 cu. yd.

EXISTING CONDITIONS

The Peltier Ponds site is 125.02 acres and is located west of 20th Ave N (CSAH No. 54), across from the Watermark development and adjacent to Peltier Lake in Lino Lakes, Minnesota. Its current land cover is primarily flat agricultural land with some wooded/marshy areas on the southern and western portions of the site.

The existing soils are predominantly Lean Clay/Sandy Lean Clay (CL) soils overlaid with 4"-7" of topsoil. The soils can be categorized **HSG Type D**. Please refer to the Geotechnical Exploration Report in the appendix for more information.

There are 19 wetlands onsite, which mostly consist of seasonally flooded farmed areas with some wet meadow and shallow marsh. Approximately 5.95 acres (1X, 1.1X) drains directly west to Peltier Lake via overland flow and/or culvert. Approximately 24.31 acres (2X, 2.1X) and 18.75 acres (20X – offsite run-on) drain west to Peltier Lake via existing ephemeral tributaries. Approximately 35.11 acres (3X) and 2.82 (30X – offsite run-on) drain overland to wetland 14 (onsite) prior to ultimately overflowing to the south. Approximately 59.65 acres (4X, 4.1X, 4.2X) drain overland through a series of wetlands, ultimately reaching wetland 4 (onsite). Wetland 4 ultimately discharges to the north via storm sewer or existing perforated draintile.

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A portion of the site in the southeastern corner is located within FEMA floodplain Zone A. Refer to Figure 1 for an aerial photo of the existing conditions, the appendix for the existing drainage map, and the existing conditions HydroCAD output for more information.

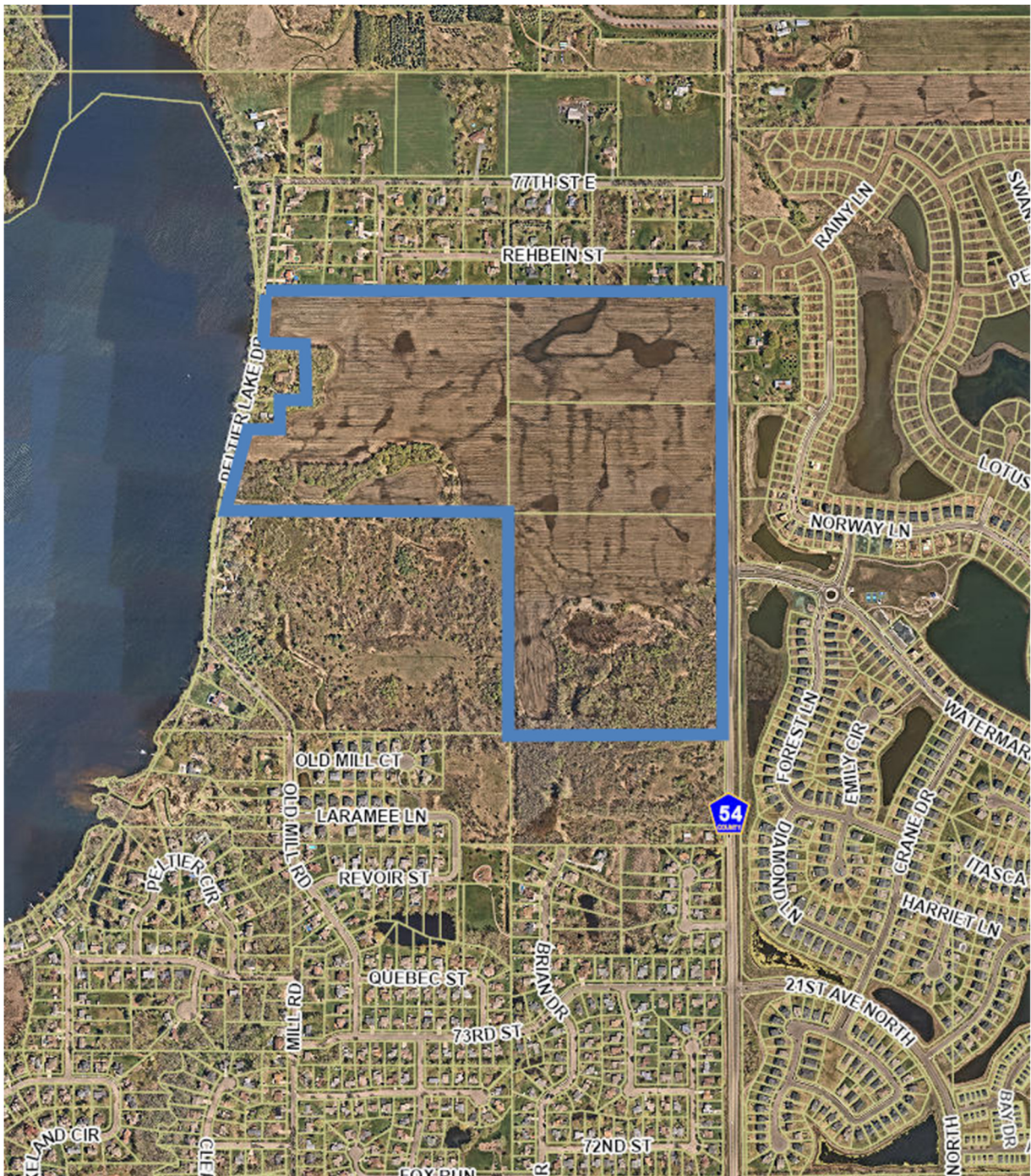


Figure 1 – Existing Conditions (Anoka County – 2024 Aerial Imagery)

PROPOSED CONDITIONS

The proposed development will consist of grading and constructing streets and utilities for 146 new single-family lots and 136 townhome units. A series of NURP stormwater ponds will be constructed throughout the site to provide rate control and water quality. Volume control will be provided by Pond 1 which will be used for irrigating the City Park. A skimming outlet control structure (OCS) will be installed for all ponds to provide rate control; weir walls with small orifices will be implemented as needed. Additionally, a sluice gate will be installed to prevent site drainage to Peltier Lake when it is within 1-foot of its peak elevation, therefore ponds draining directly to Peltier Lake will have capacity to retain the 10-day snowmelt volume. The majority of the site/impervious area will be routed to stormwater basins.

Per discussions with City staff, stormwater management for single family developed lot area was designed as average of 45% impervious and is represented as CN 98 (Paved parking, Unconnected roofs) for impervious area and CN 80 (>75% Grass cover, Good, HSG D) for green space. Multi-family row townhome impervious area was directedly measured based off Lennar townhome design.

As directed by City Staff in order to preserve trees in the proposed City park, proposed drainage areas 1.1S and 2S (4.34 acres, 0.79 acres of impervious) are not feasible to route to the proposed ponds and will drain overland, ultimately reaching Peltier Lake. As directed by City Staff, area 1.2S (0.91 acres, 0.41 acres of impervious) was routed to a depression with an existing culvert outlet draining to Peltier Lake which provides mild rate attenuation. These impervious areas meet the Rule C6(f) exception to be considered effectively treated for water quality.

Proposed drainage area 2.1S (5.03 acres, 0.32 acres of impervious), which is composed of proposed City Park land and existing wetlands, will largely remain undisturbed throughout the course of the Peltier Ponds project. Rate control meeting the 0.1 cfs/acre for drainage area 2.1S is infeasible in the interim condition of this project; there is potential for future rate control with the development of the Olson parcel to the south. Rate control for drainage area 2.1S is challenging as Wetland 19 has 1.74 acre-feet of available live storage prior to overtopping Street G in the ultimate condition (Street G extended on Olson Parcel). In comparison, drainage area 2.1S and offsite drainage 20S have runoff volumes of 2.918 acre-feet and 10.876 acre-feet, respectively, for the 10-day snowmelt event. Rate control alternatives with the restrictor plates for the Peltier Pond OCS culvert crossing and Olson Parcel storage/ponding can provide additional rate control, however this cannot be achieved prior to the Olson Parcel development without significant wetland alterations, wetland 19 ponding onto the Olson property, and/or overtopping of Street G.

Proposed drainage area 7S (2.75 acres, 0.46 acres of impervious – based the 20,000 SF of future impervious area estimated by City Staff), which is primarily composed of future park green space and existing tree cover, will be graded to capture drainage via storm sewer routed to Pond 1.

Rate Control

This report models the existing conditions and proposed conditions with ATLAS 14 precipitation data. A curve number (CN) of 80 was used to model the on-site pervious areas per Table C3. The CN used for the existing and proposed model are:

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- 80 – Onsite pervious areas (Woods/grass comb., Row crops, Farmstead), HSG D
- 80 – >75% Grass cover, Good, HSG D
- 84 – 1 acre lots, 20% imp, HSG D
- 90 – Fallow, crop residue, Good, HSG D
- 98 – Impervious areas (Paved parking, Unconnected roofs)
- 98 – Water Surface (NWL Areas)

There are 3 main discharge directions for the existing and proposed conditions: West – Peltier Lake (Subcat. 1s & 2s), South (Subcat. 3s), North (Subcat. 4s).

The Rice Creek Watershed District will require that flow draining to Peltier Lake be limited to 0.10 cfs per acre of contributing area. The following tables summarize the existing and proposed peak discharge rates computed by HydroCAD for the 2-year, 10-year, and 100-year 24-hr critical storm events.

Table 1 - 2-Yr Event Rate Control Summary (CFS)

Discharge Route	Existing Peak Rate	Proposed Peak Rate
Peltier Lake (1R)*	24.29	13.93
South (3R)	9.71	3.60
North (4R)	3.37	1.52
*Includes offsite peak pass-through flow		9.07

Table 2 - 10-Yr Event Rate Control Summary (CFS)

Discharge Route	Existing Peak Rate	Proposed Peak Rate
Peltier Lake (1R)*	51.03	26.82
South (3R)	20.08	10.86
North (4R)	7.33	3.88
*Includes offsite peak pass-through flow		18.54

Table 3 - 100-Yr Event Rate Control Summary (CFS)

Discharge Route	Existing Peak Rate	Proposed Peak Rate
Peltier Lake (1R)*	116.82	57.01
South (3R)	44.23	28.38
North (4R)	12.88	9.64
*Includes offsite peak pass-through flow		41.35

Table 4 - 0.1 CFS/AC Rate Control

Discharge Route	Prop Area (AC)	Prop Peak Rate (CFS)
Peltier Lake (1R)*	74.41 ac x 0.10 = 7.44	57.01
Trunk Sewer (STRM)	64.61 ac x 0.10 = 6.46	4.04
*Includes offsite peak pass-through flow		41.35

As shown in the tables above, the rate control requirements are generally satisfied. The proposed design limits the rates of the 2, 10, 100-yr 24hr events to less than existing; the exception is the 0.1 cfs/ac requirement to Peltier Lake. This is due to direct runoff from subcatchments 1.1S and 2S

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which cannot be routed to basins for rate control due to elevation challenges, 1.2S which is routed to a small depression with an existing culvert outlet which provides minimal rate attenuation and subcatchments 2.1S (future park and existing wetland) and 20S (offsite drainage). The proposed design routes the remaining maximized Peltier Lake drainage area to the 60" trunk storm sewer line while meeting the 0.1 cfs/ac requirement as seen in Table 4.

Refer to the appendix for the "Gate Closed" condition analysis. Additionally proposed ponding live storage was compared to the 10-day Snowmelt volumes below.

Table 5 - 10-day Snowmelt Volume and Pond Storage

Drainage Area	Basin	Required 10-day Snowmelt Volume (AF)	Provided Live Storage (AF)
1S & 7S	1P	19.589	23.377
1.1S	-		
1.2S	-		
2S	-		
2.1S	-		
2.2S	2P-A	4.936	4.498
2.3S	2P-B	1.143	2.122
2P Total		6.079	6.621
2.4S	-		
2.5S	3P	7.599	12.442
2.6S	4P	3.666	2.099
3P&4P		11.265	14.541
3S	-		
4S	-		
4.1S	6P	2.494	2.719
4.2S	5P	9.101	6.606
4.3S	-		

As seen in the table above, ponds draining to Peltier Lake (1P, 2P, and 3P & 4P) meet the live storage required for the gate closed condition. Note, Pond 2P is composed of two cells (2P-A & 2P-B) and Ponds 3P & 4P are in series with Pond 3P providing sufficient live storage for both ponds.

Volume Control

Infiltration for volume control is not practical since the onsite soils area generally HSG D; as such, stormwater ponds were chosen for water quality and rate control which is consistent with Rule C6(d)(2). Water reuse will be implemented for Pond 1 to irrigate the City Park. No water quality benefit or volume reduction was calculated toward the Water Quality Volume for this irrigation, refer to the appendix for more details.

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The Rice Creek Watershed District will require that there is no net increase in the volume discharged to wetland 4, which ultimately drains to the north, for the critical storm events. Refer to the table below for a summary of the volume discharged to the North (4R).

Table 6 - Volume Discharged to North (4R) (AF)

Storm Event	Existing Volume	Proposed Volume
2-Yr	4.147	3.636
10-Yr	9.720	7.091
100-Yr	24.570	15.009

As shown in the table above, the volume of water directed to the north (4R) has been satisfied for the critical storm events.

Water Quality

The proposed stormwater ponds must also be sized to provide a permanent wet pool with dead storage at least equal to the runoff volume from a 2.5" rainfall over the area tributary to the pond (NURP). Refer to the table below for a summary of the dead storage required and provided.

Table 7 - Pond Summary

Drainage Area	Basin	NURP Required (CF)	Volume Control Provided (CF)
1S & 7S	1P	182,996	672,500
1.1S	-	7,754	
1.2S	-	5,009	
2S	-	7,362	
2.1S	-	17,816	
2.2S	2P-A	46,479	99,968
2.3S	2P-B	10,324	
2P Total		56,802	99,968
2.4S	-	3,572	
2.5S	3P	73,704	134,150
2.6S	4P	36,982	13,975
3P&4P Total		110,686	148,125
3S	-	82,067	
4S	-	21,475	
4.1S	6P	25,395	422,075
4.2S	5P	88,906	
4.3S	-	14,375	
Totals:		624,215	1,342,668

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Note that the wet cells generally meet the NURP requirements for treatment with the exception of Pond 4P. Ponds 3P and 4P are in series with the downstream Pond 3P providing adequate NURP volume for both subcatchments 2.5S and 2.6S.

A P8 model was used to analyze the existing and proposed TSS and TP loading rates. Refer to the Table below for loading rates. Refer to the appendix for more details on the P8 analysis.

Table 8 - Annual Pollutant Loading (Lbs/yr)

Pollutant	Existing Condition	Proposed Condition
TSS	1,186.1	1,122.1
TP	15.8	28.1

Table 9 - Proposed Percent Annual Pollutant Removal

Pollutant	Percent Removal
TSS	94.5%
TP	59.7%

Wetland Management

Wetland Bounce and Inundation is dictated by Table C4 of the RCWD rules. Refer to the tables below for a summary of the wetland bounce and inundation.

Table 10 - Wetland Bounce [FT]

Wetland ID	Wetland Susceptibility Class	Existing Bounce		Proposed Bounce		Net Bounce		Allowable Bounce
		2-YR	10-YR	2-YR	10-YR	2-YR	10-YR	
WL 4	Slightly	2.13	2.92	1.72	2.20	-0.41	-0.72	Ex + 1.0
WL 5	Slightly	0.93	1.12	0.43	0.55	-0.50	-0.57	Ex + 1.0
WL 10*	Slightly	1.12	1.24	0.90	1.51	-0.22	0.27	Ex + 1.0
WL 14	Moderately	0.33	0.52	0.57	0.77	0.24	0.25	Ex + 0.5

*Wetland 10 lowered from NWL ±907.0 to 901.0

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Table 11 - Wetland Inundation Period [Days]

Wetland ID	Wetland Susceptibility Class	Existing Inundation		Proposed Inundation		Net Inundation		Allowable Inundation	
		2-YR	10-YR	2-YR	10-YR	2-YR	10-YR	2-YR	10-YR
WL 4	Slightly	7.68	7.99	9.68	13.10	+2.00**	+5.11	Ex + 2	Ex + 14
WL 5	Slightly	1.13	1.26	1.19	1.23	+0.06	-0.03	Ex + 2	Ex + 14
WL 10*	Slightly	1.08	1.09	3.08	15.09	+2.00^	+14.00^	Ex + 2	Ex + 14
WL 14	Moderately	1.35	1.38	1.82	1.89	+0.47	+0.51	Ex + 1	Ex + 7

*Wetland 10 lowered from NWL ±907.0 to 901.0

**Wetland 4 draws down to within 0.07' of the outlet at the Exist + 2 days (9.68 days)

^Wetland 10 draws down to within 0.10' and 0.02' of the outlet at the allowable inundations for the 2-YR and 10-YR respectively

As seen in the tables above, the wetland bounce and inundation requirements are generally met by the proposed stormwater and wetland management. Wetland 4 and Wetland 10 drawdown to negligible inundation depths at the allowable inundation time.

Floodplain Management

Floodplain fill below the regulator floodplain elevation of 907 and corresponding mitigation was determined in the table below.

Table 12 - Floodplain Fill Analysis (CU. YD.)

Floodplain Fill below 907 Elevation	Mitigation Cut above Pond HWL	Net Floodplain Volume
392.12	12,729.97	12,337.85

As seen in the table above, the floodplain fill below the 907 regulatory elevation is greater than 100 cu. yd. and therefore requires mitigation which has been achieved with additional cut above the pond HWL. Refer to Appendix G for more information.

CONCLUSION

As demonstrated in this report, to the extent feasible, the proposed Peltier Ponds development meets the intent of the stormwater management rules as governed by the City of Lino Lakes, Rice Creek Watershed District, and the Minnesota Pollution Control Agency.

APPENDIX

APPENDIX A – EXISTING DRAINAGE MAP

APPENDIX B – PROPOSED DRAINAGE MAP

APPENDIX C – EXISTING HYDROCAD REPORT

APPENDIX D – PROPOSED HYDROCAD REPORT

APPENDIX E – GEOTECHNICAL EVALUATION REPORT

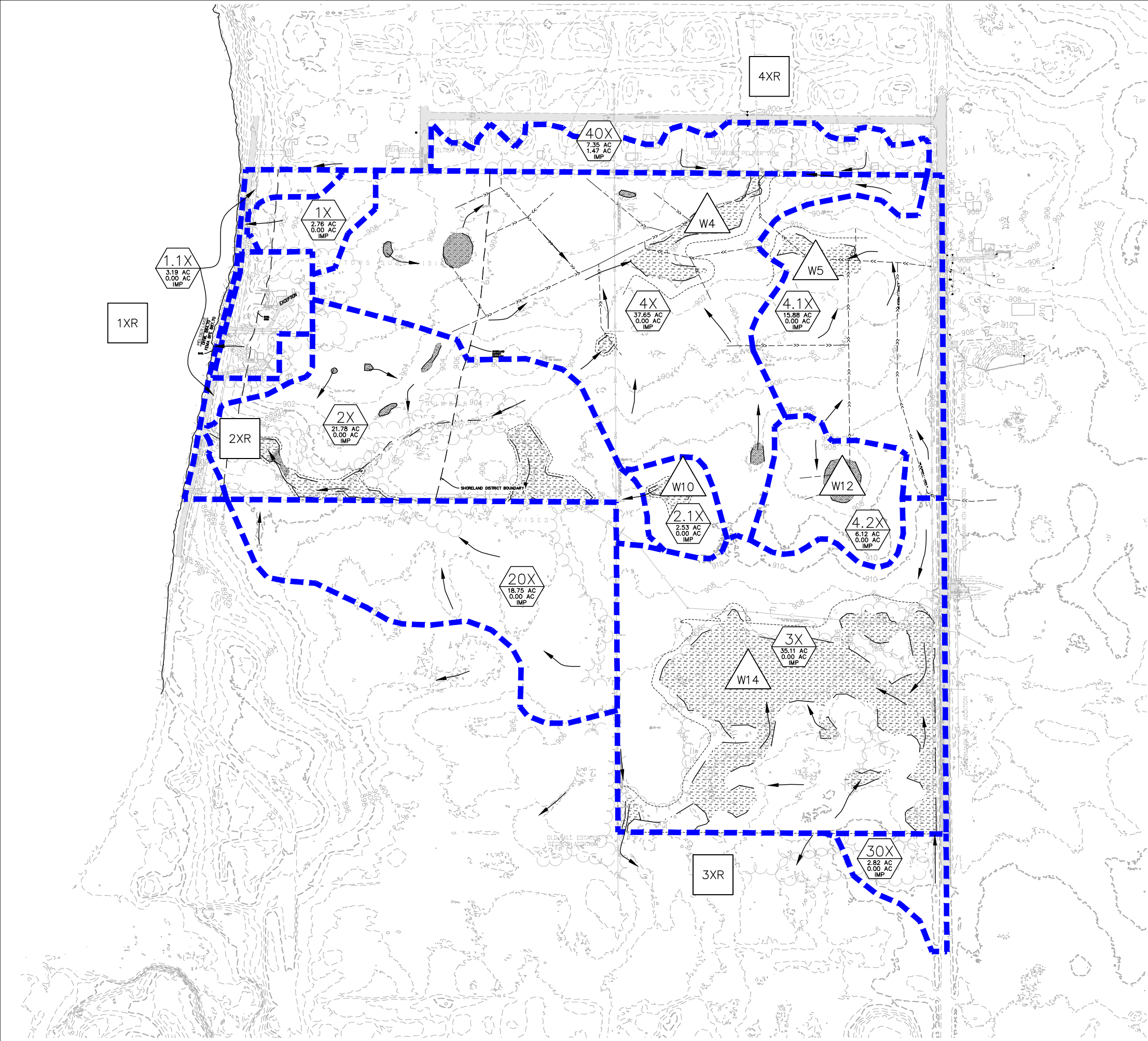
APPENDIX F – P8 TABULATION AND ANALYSIS

APPENDIX G – FLOODPLAIN ANALYSIS (ELEV 907)

APPENDIX H – RCWD REUSE DESIGN WORKSHEET

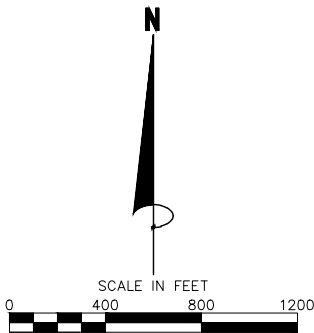
APPENDIX A – EXISTING DRAINAGE MAP

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LEGEND

- 1P POND AREA
- 1S DRAINAGE AREA
- 1R REACH
- FLOW DIRECTION
- ToC PATH
- DRAINAGE BOUNDARY



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I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the State of Minnesota. **PREPARED BY**
Date: XX/XX/XX Reg. No. 43358

PELTIER PONDS
LINO LAKES, MINNESOTA
EXISTING DRAINAGE
FOR
LENNAR

16355 36TH AVE N #100, PLYMOUTH, MN 55446

DRAWN BY
CTY

DATE
04/04/2025

REVISIONS

05/09/2025 CITY COMMENTS
05/21/2025 CITY RESUBMITTAL
07/18/2025 CITY RESUBMITTAL
11/03/2025 CITY RESUBMITTAL
02/09/2026 CITY RESUBMITTAL

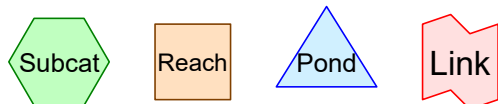
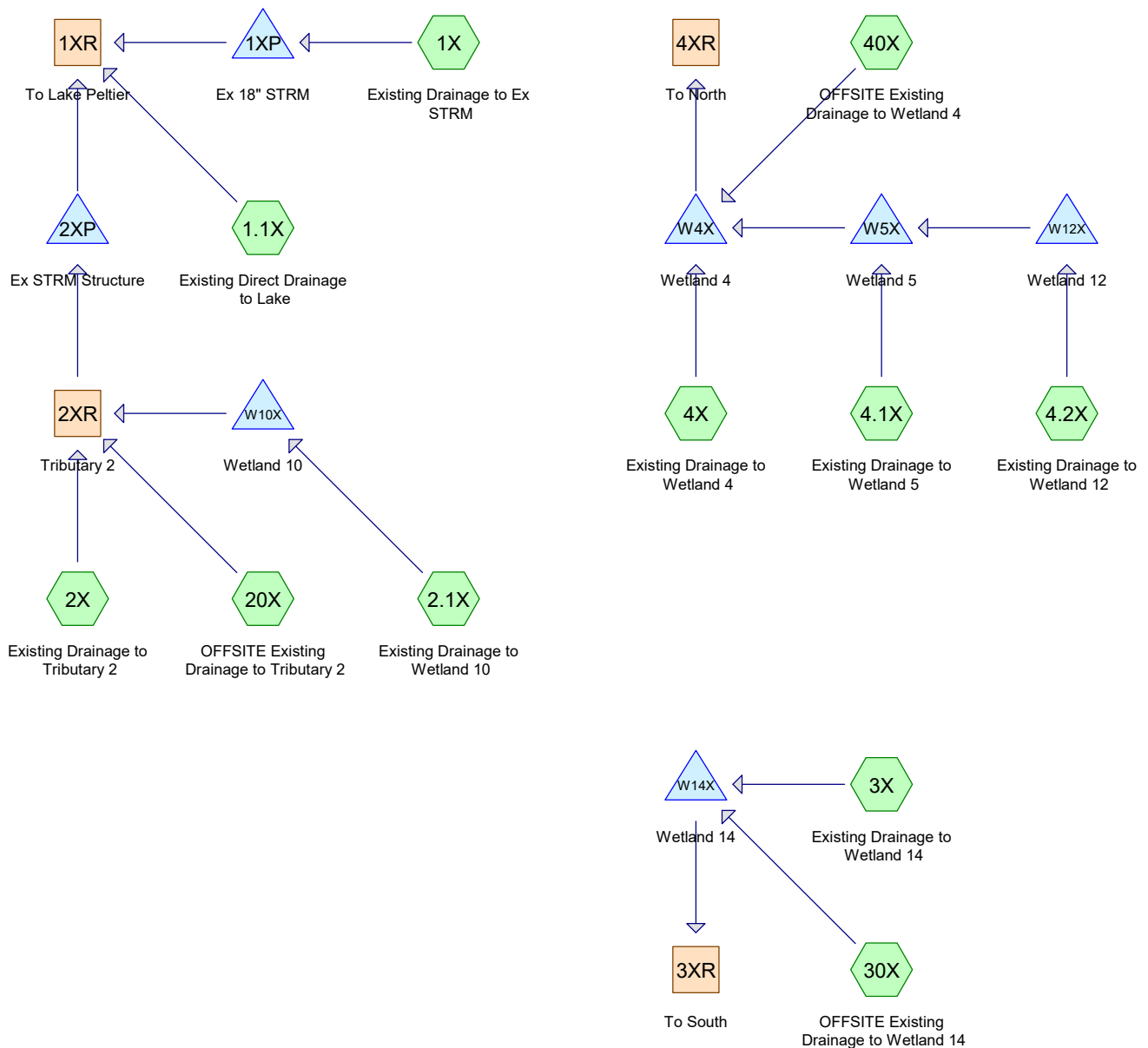
CAD FILE
24205DRN

PROJECT NO.
24205

APPENDIX B – PROPOSED DRAINAGE MAP

APPENDIX C – EXISTING HYDROCAD REPORT

EXISTING



Routing Diagram for 2026-02-09 Peltier Ponds - Prelim
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2026-02-09 Peltier Ponds - Prelim

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
7.350	84	1 acre lots, 20% imp, HSG D (40X)
97.270	80	Row crops, straight row, Good, HSG D (1.1X, 1X, 2.1X, 2X, 3X, 4.1X, 4.2X, 4X)
49.320	80	Woods/grass comb., Fair, HSG D (1.1X, 1X, 2X, 3X, 4X, 20X, 30X)
153.940	80	TOTAL AREA

Summary for Subcatchment 1.1X: Existing Direct Drainage to Lake

Runoff = 3.62 cfs @ 12.34 hrs, Volume= 0.293 af, Depth= 1.10"

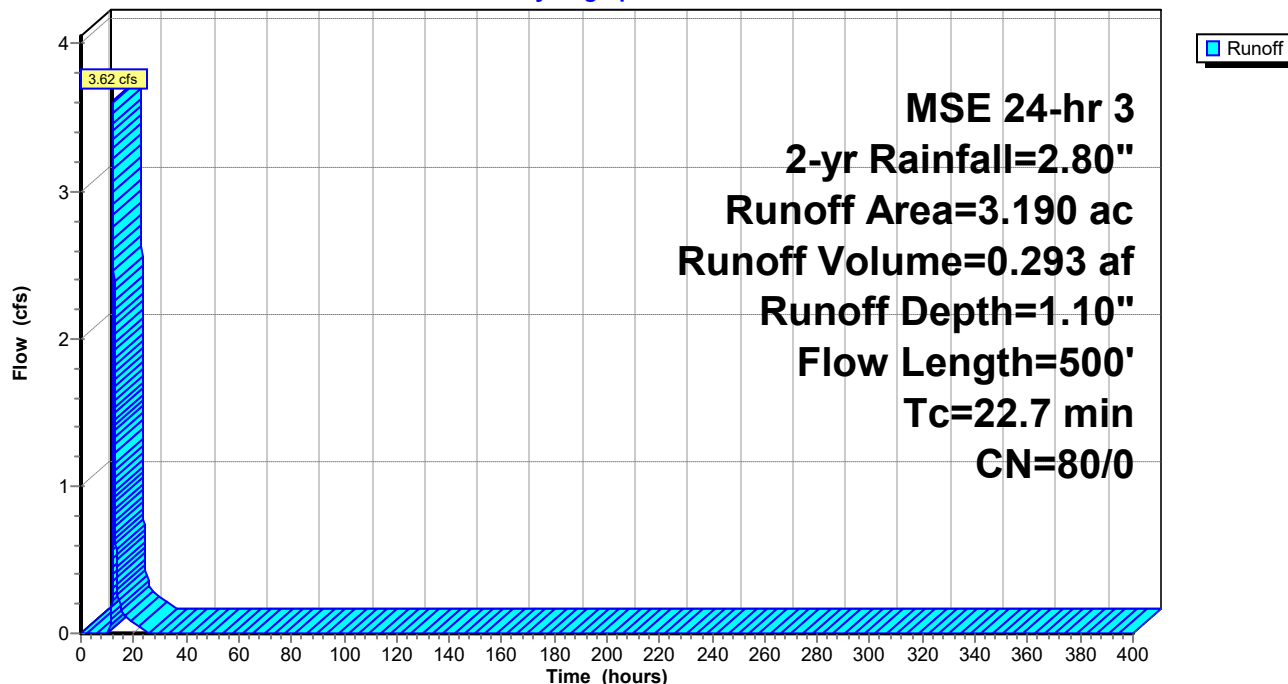
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
* 2.940	80	Row crops, straight row, Good, HSG D
* 0.250	80	Woods/grass comb., Fair, HSG D
3.190	80	Weighted Average
3.190	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.2	200	0.0200	0.17		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
2.5	300	0.0500	2.01		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
22.7	500	Total			

Subcatchment 1.1X: Existing Direct Drainage to Lake

Hydrograph



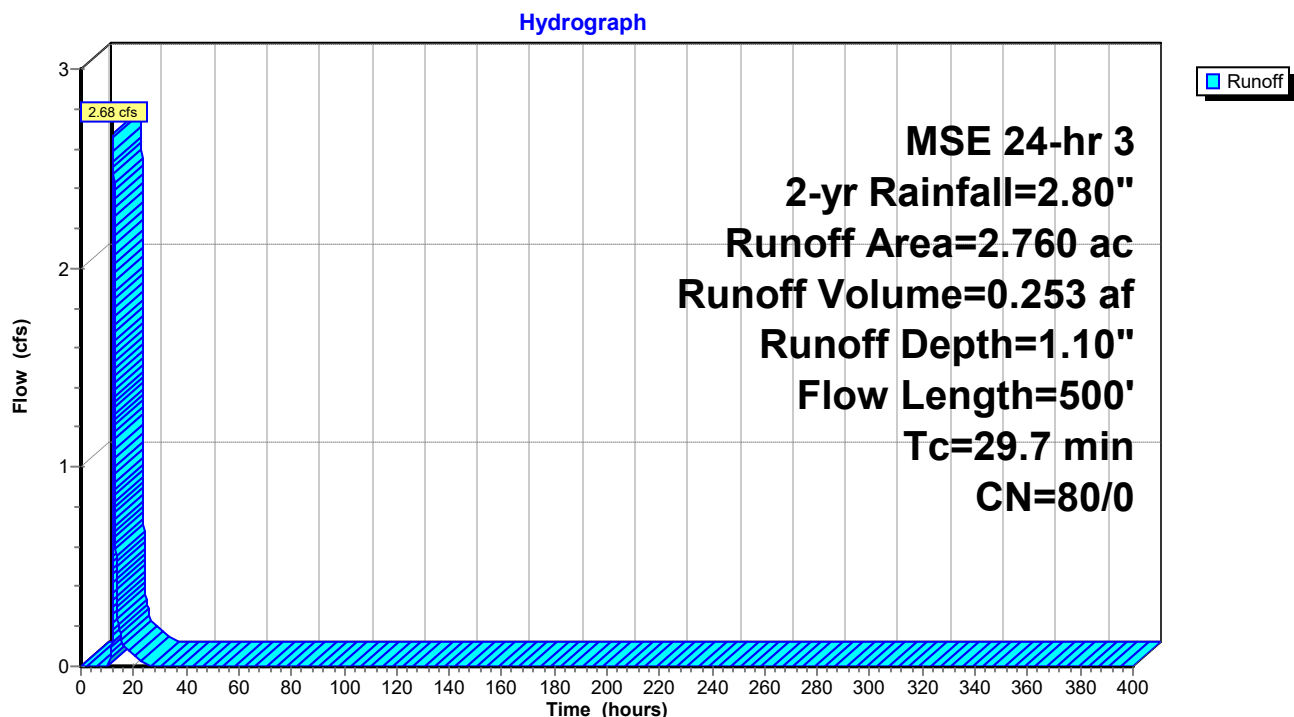
Summary for Subcatchment 1X: Existing Drainage to Ex STRM

Runoff = 2.68 cfs @ 12.44 hrs, Volume= 0.253 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
* 2.510	80	Row crops, straight row, Good, HSG D
* 0.250	80	Woods/grass comb., Fair, HSG D
2.760	80	Weighted Average
2.760	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
3.1	300	0.0330	1.63		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
29.7	500	Total			

Subcatchment 1X: Existing Drainage to Ex STRM

Summary for Subcatchment 2.1X: Existing Drainage to Wetland 10

Runoff = 3.53 cfs @ 12.25 hrs, Volume= 0.232 af, Depth= 1.10"

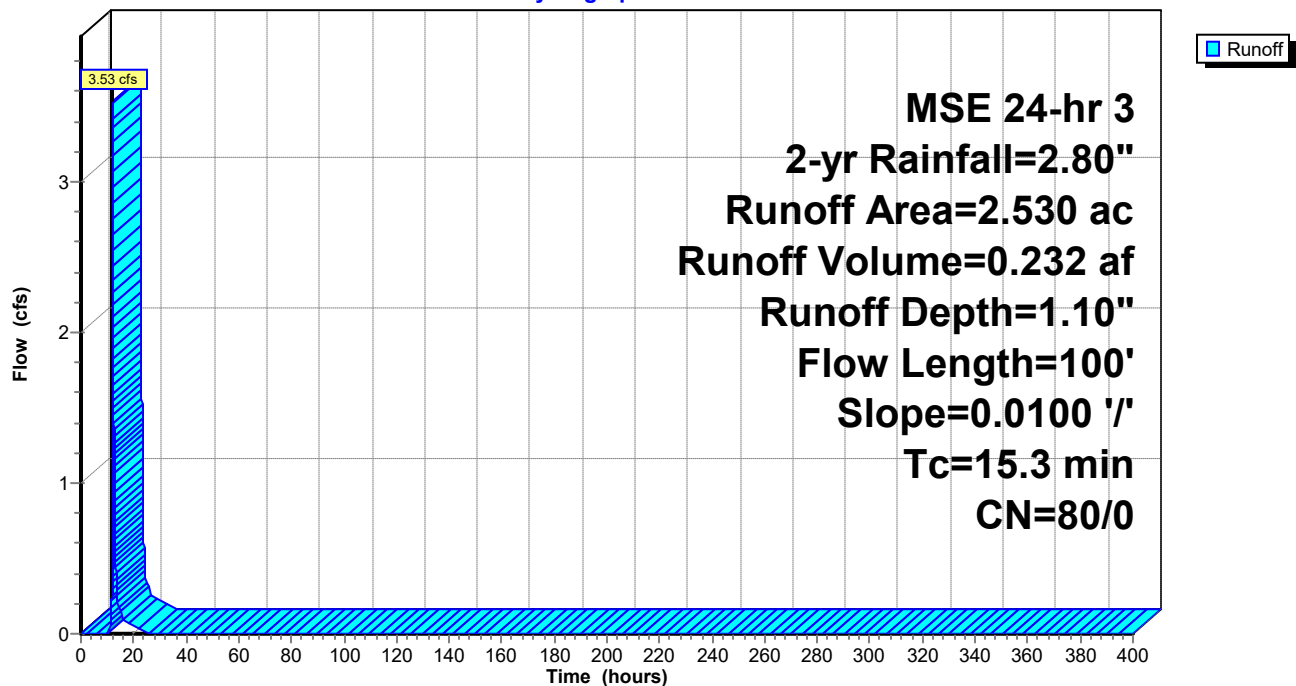
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
* 2.530	80	Row crops, straight row, Good, HSG D
* 0.000	80	Woods/grass comb., Fair, HSG D
2.530	80	Weighted Average
2.530	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	100	0.0100	0.11		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"

Subcatchment 2.1X: Existing Drainage to Wetland 10

Hydrograph



2026-02-09 Peltier Ponds - Prelim

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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 2X: Existing Drainage to Tributary 2

Runoff = 15.29 cfs @ 12.71 hrs, Volume= 2.000 af, Depth= 1.10"

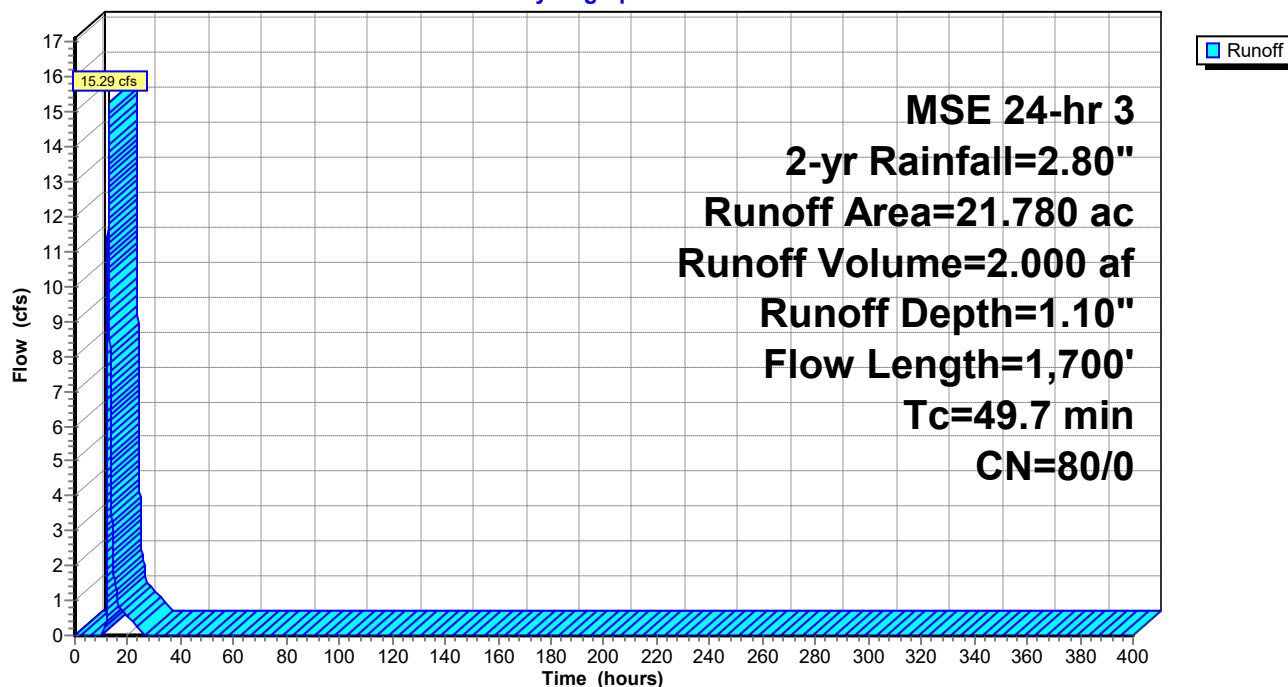
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
* 16.030	80	Row crops, straight row, Good, HSG D
* 5.750	80	Woods/grass comb., Fair, HSG D
21.780	80	Weighted Average
21.780	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
12.0	500	0.0060	0.70		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
11.1	1,000	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
49.7	1,700	Total			

Subcatchment 2X: Existing Drainage to Tributary 2

Hydrograph



2026-02-09 Peltier Ponds - Prelim

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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 3X: Existing Drainage to Wetland 14

Runoff = 10.83 cfs @ 14.15 hrs, Volume= 3.225 af, Depth= 1.10"

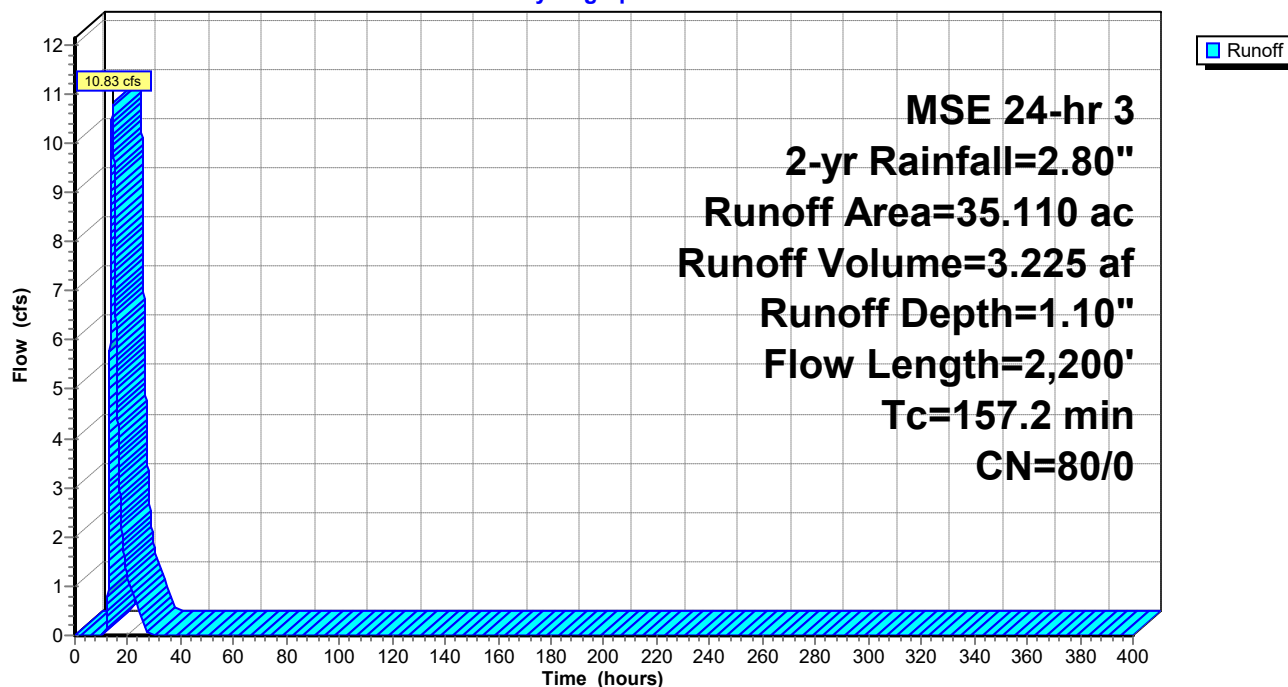
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
* 14.110	80	Row crops, straight row, Good, HSG D
* 21.000	80	Woods/grass comb., Fair, HSG D
35.110	80	Weighted Average
35.110	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
3.9	300	0.0200	1.27		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
126.7	1,700	0.0020	0.22		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
157.2	2,200	Total			

Subcatchment 3X: Existing Drainage to Wetland 14

Hydrograph



Summary for Subcatchment 4.1X: Existing Drainage to Wetland 5

Runoff = 13.33 cfs @ 12.53 hrs, Volume= 1.458 af, Depth= 1.10"

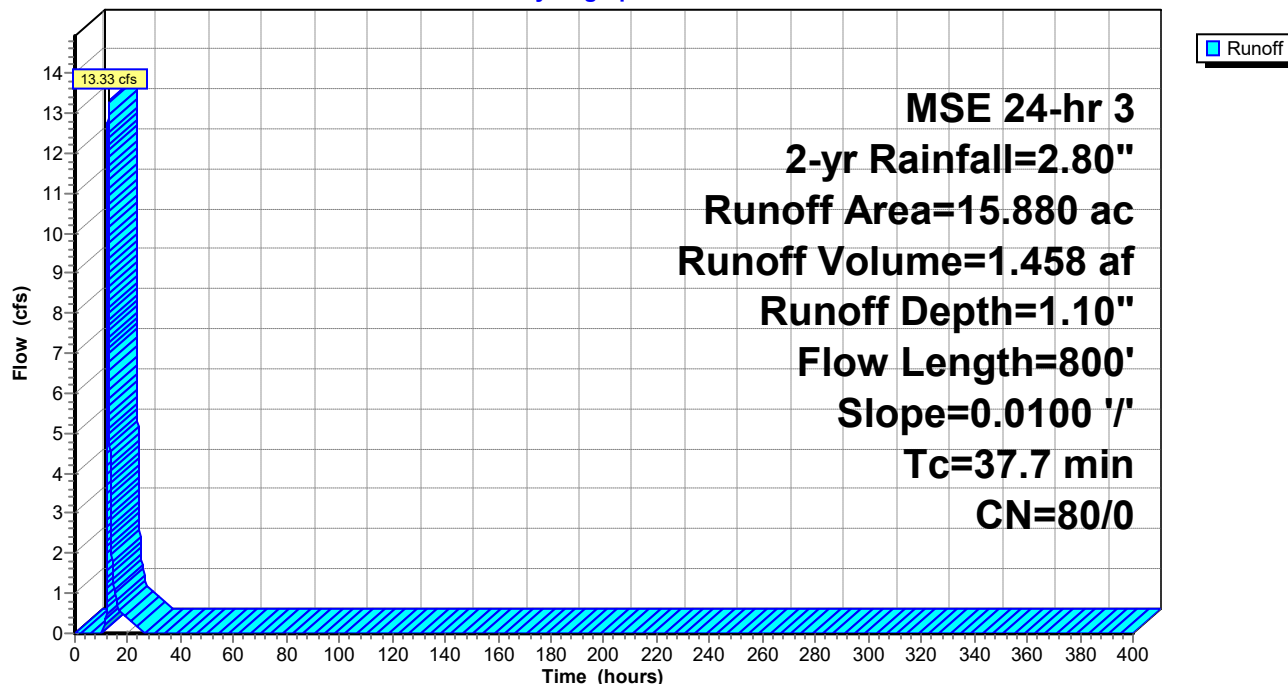
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
* 15.880	80	Row crops, straight row, Good, HSG D
* 0.000	80	Woods/grass comb., Fair, HSG D
15.880	80	Weighted Average
15.880	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
11.1	600	0.0100	0.90		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
37.7	800	Total			

Subcatchment 4.1X: Existing Drainage to Wetland 5

Hydrograph



Summary for Subcatchment 4.2X: Existing Drainage to Wetland 12

Runoff = 4.81 cfs @ 12.61 hrs, Volume= 0.562 af, Depth= 1.10"

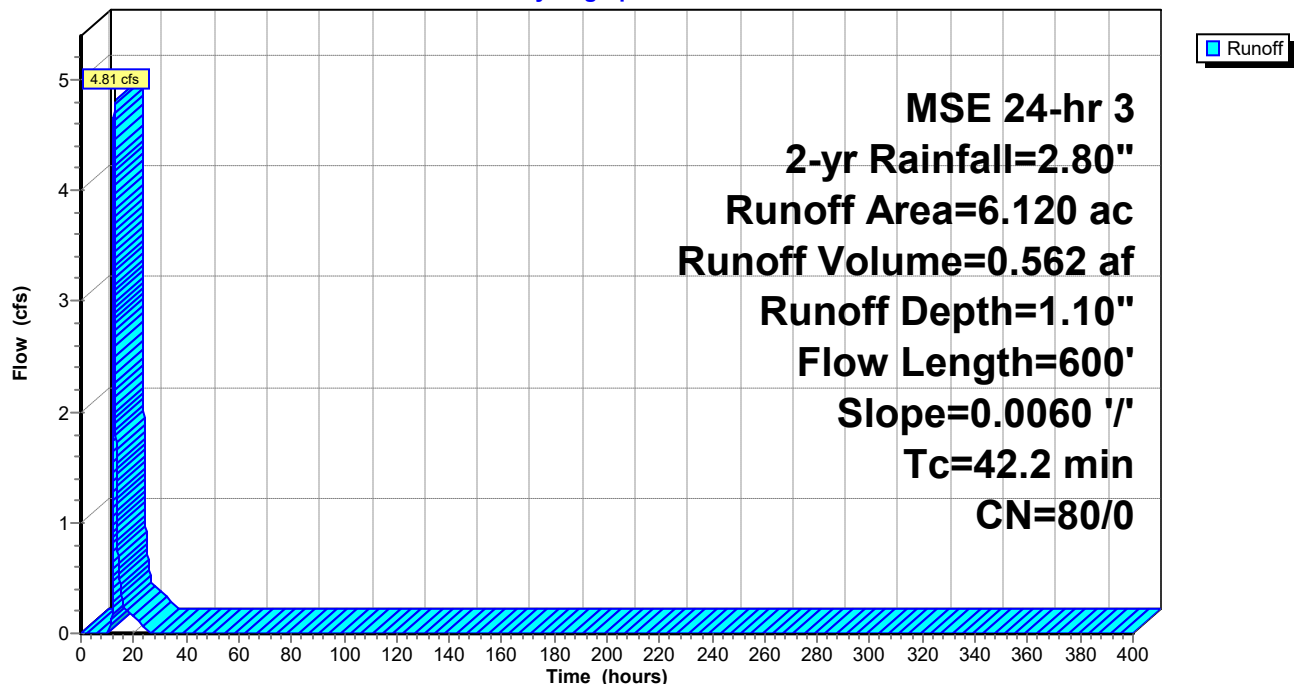
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
* 6.120	80	Row crops, straight row, Good, HSG D
* 0.000	80	Woods/grass comb., Fair, HSG D
6.120	80	Weighted Average
6.120	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.6	200	0.0060	0.10		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
9.6	400	0.0060	0.70		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
42.2	600	Total			

Subcatchment 4.2X: Existing Drainage to Wetland 12

Hydrograph



Summary for Subcatchment 4X: Existing Drainage to Wetland 4

Runoff = 20.00 cfs @ 13.10 hrs, Volume= 3.458 af, Depth= 1.10"

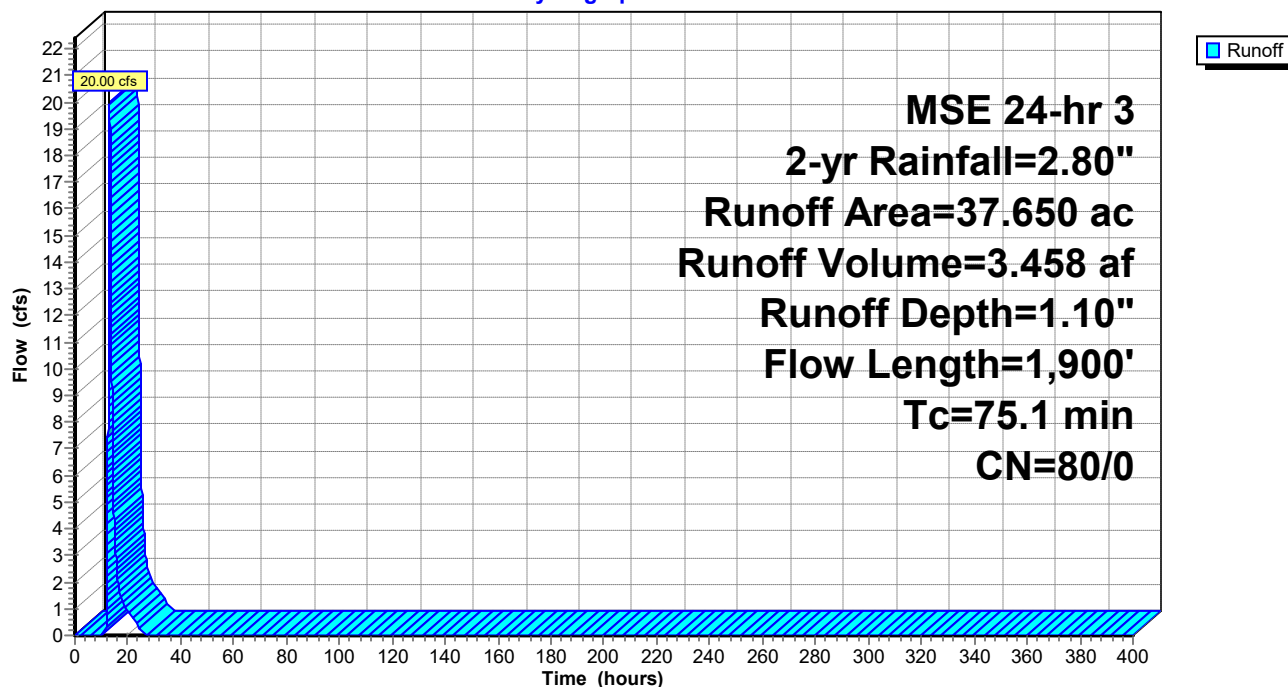
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
* 37.150	80	Row crops, straight row, Good, HSG D
* 0.500	80	Woods/grass comb., Fair, HSG D
37.650	80	Weighted Average
37.650	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
19.5	1,000	0.0090	0.85		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
29.0	700	0.0020	0.40		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
75.1	1,900	Total			

Subcatchment 4X: Existing Drainage to Wetland 4

Hydrograph



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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 20X: OFFSITE Existing Drainage to Tributary 2

Runoff = 9.07 cfs @ 13.18 hrs, Volume= 1.722 af, Depth= 1.10"

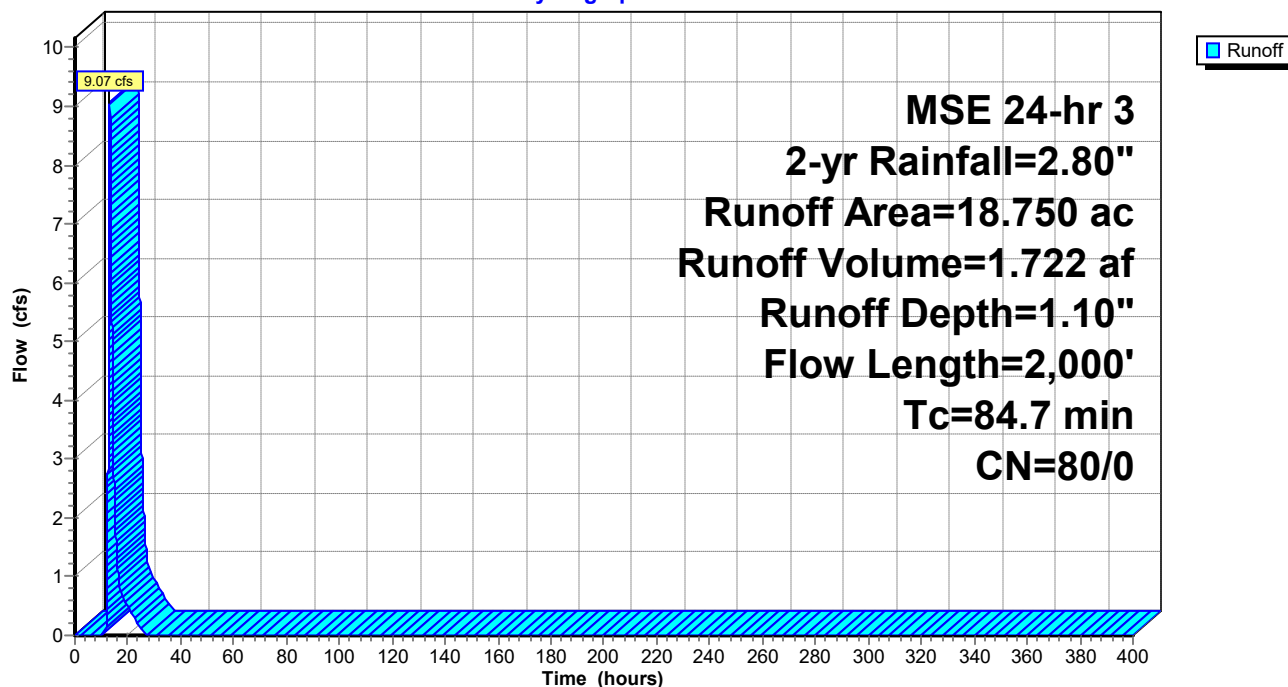
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
* 0.000	80	Row crops, straight row, Good, HSG D
* 18.750	80	Woods/grass comb., Fair, HSG D
18.750	80	Weighted Average
18.750	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.0	200	0.0100	0.10		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"
43.0	1,000	0.0060	0.39		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.7	800	0.0175	1.98		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
84.7	2,000	Total			

Subcatchment 20X: OFFSITE Existing Drainage to Tributary 2

Hydrograph



Summary for Subcatchment 30X: OFFSITE Existing Drainage to Wetland 14

Runoff = 2.66 cfs @ 12.45 hrs, Volume= 0.259 af, Depth= 1.10"

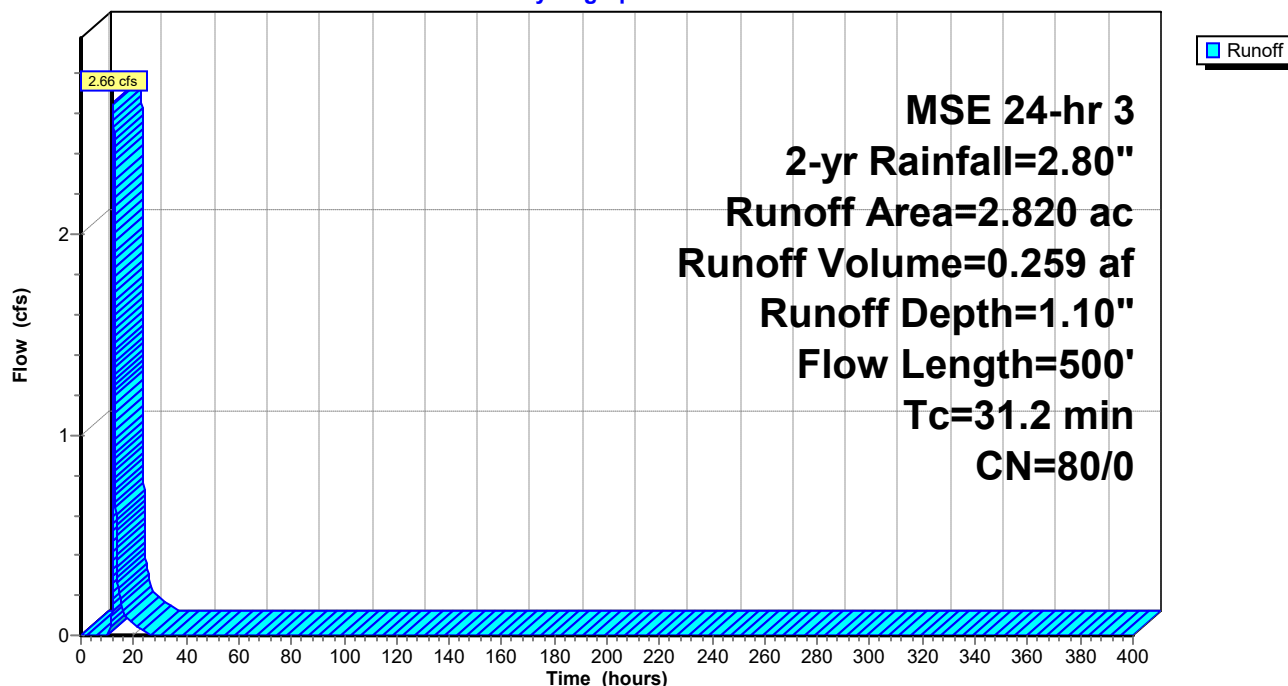
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
* 0.000	80	Row crops, straight row, Good, HSG D
* 2.820	80	Woods/grass comb., Fair, HSG D
2.820	80	Weighted Average
2.820	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.1	200	0.0100	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
7.1	300	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
31.2	500	Total			

Subcatchment 30X: OFFSITE Existing Drainage to Wetland 14

Hydrograph



Summary for Subcatchment 40X: OFFSITE Existing Drainage to Wetland 4

Runoff = 6.00 cfs @ 12.82 hrs, Volume= 0.884 af, Depth= 1.44"

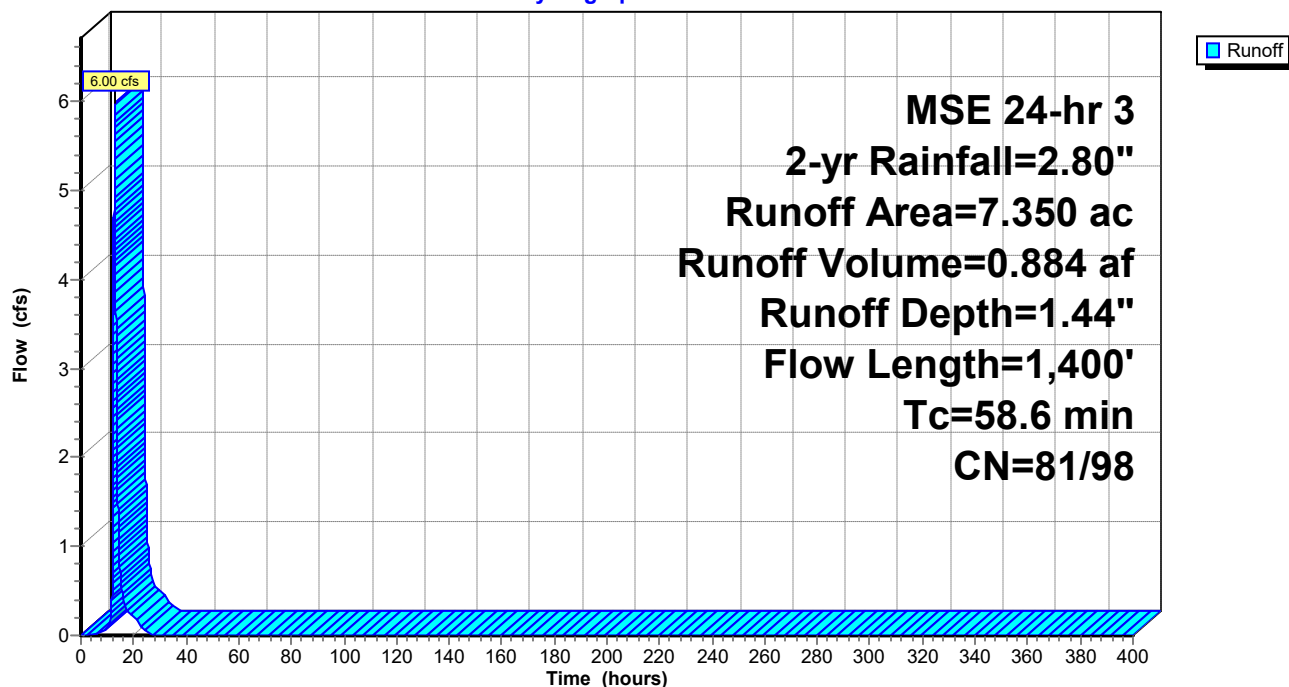
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
0.000	89	Row crops, straight row, Good, HSG D
0.000	82	Woods/grass comb., Fair, HSG D
7.350	84	1 acre lots, 20% imp, HSG D
7.350	84	Weighted Average
5.880	81	80.00% Pervious Area
1.470	98	20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	200	0.0200	0.18		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
40.4	1,200	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
58.6	1,400	Total			

Subcatchment 40X: OFFSITE Existing Drainage to Wetland 4

Hydrograph



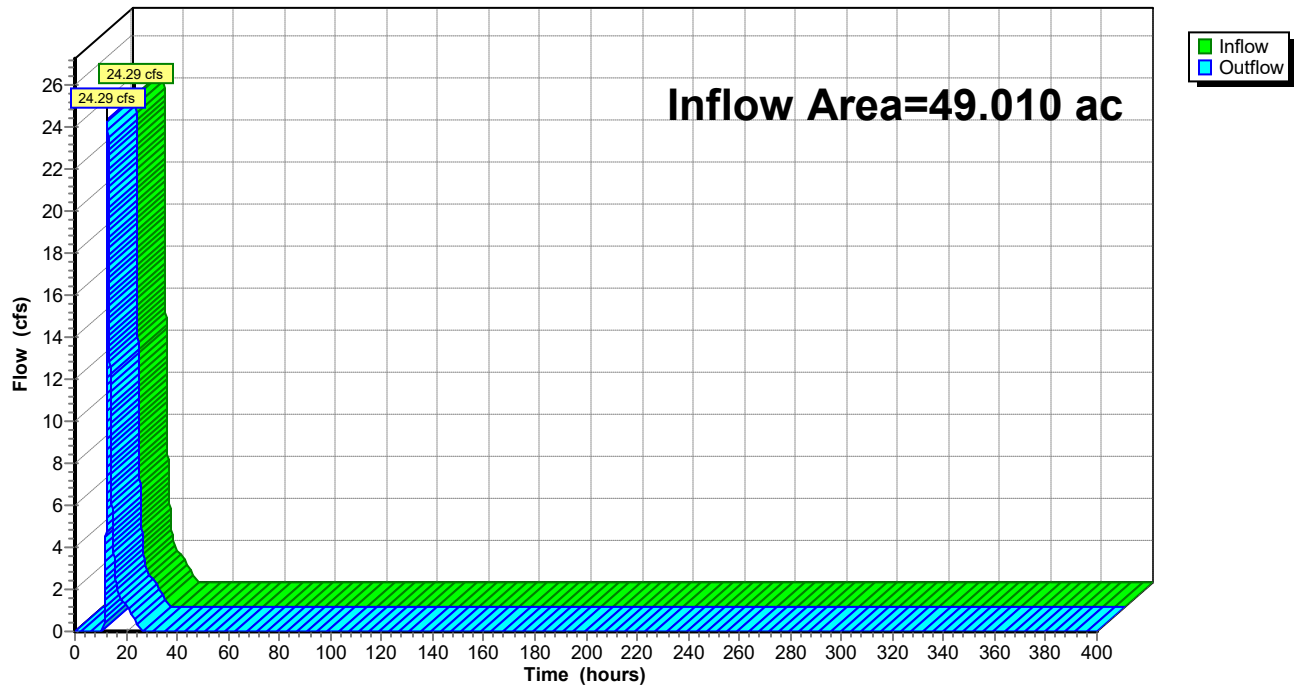
Summary for Reach 1XR: To Lake Peltier

Inflow Area = 49.010 ac, 0.00% Impervious, Inflow Depth = 1.05" for 2-yr event
 Inflow = 24.29 cfs @ 12.78 hrs, Volume= 4.299 af
 Outflow = 24.29 cfs @ 12.78 hrs, Volume= 4.299 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 1XR: To Lake Peltier

Hydrograph



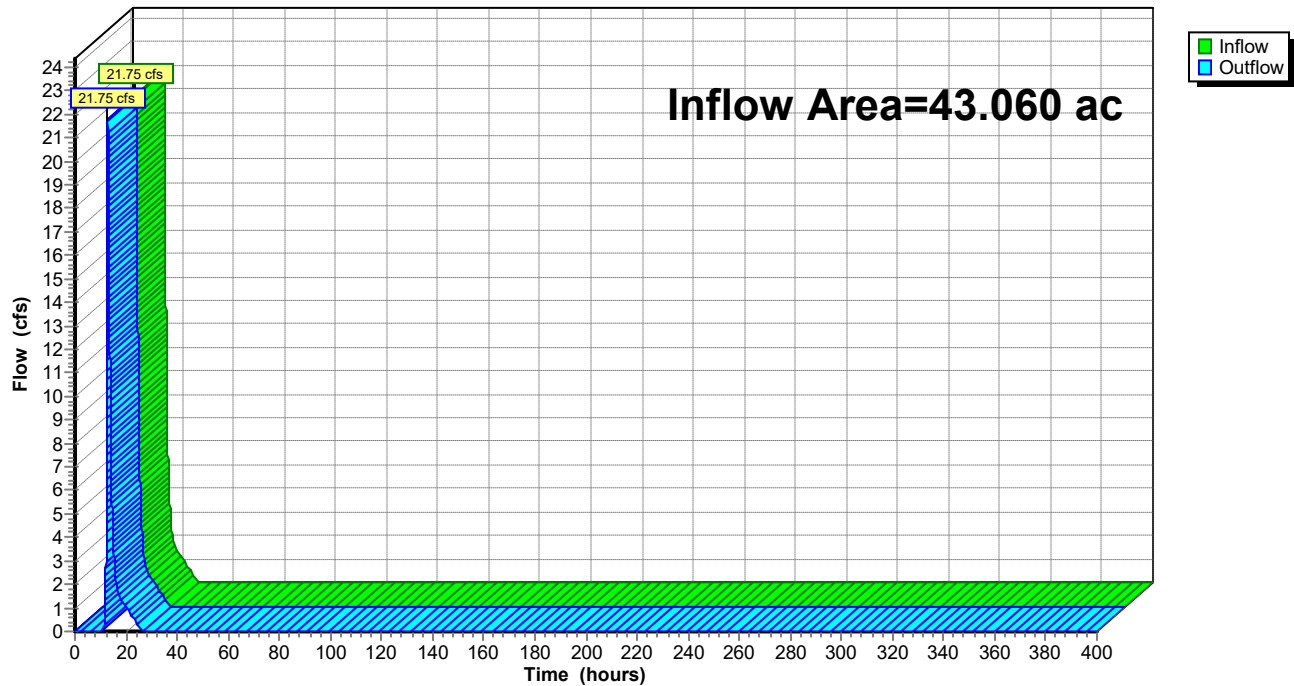
Summary for Reach 2XR: Tributary 2

Inflow Area = 43.060 ac, 0.00% Impervious, Inflow Depth = 1.05" for 2-yr event
 Inflow = 21.75 cfs @ 12.81 hrs, Volume= 3.752 af
 Outflow = 21.75 cfs @ 12.81 hrs, Volume= 3.752 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 2XR: Tributary 2

Hydrograph



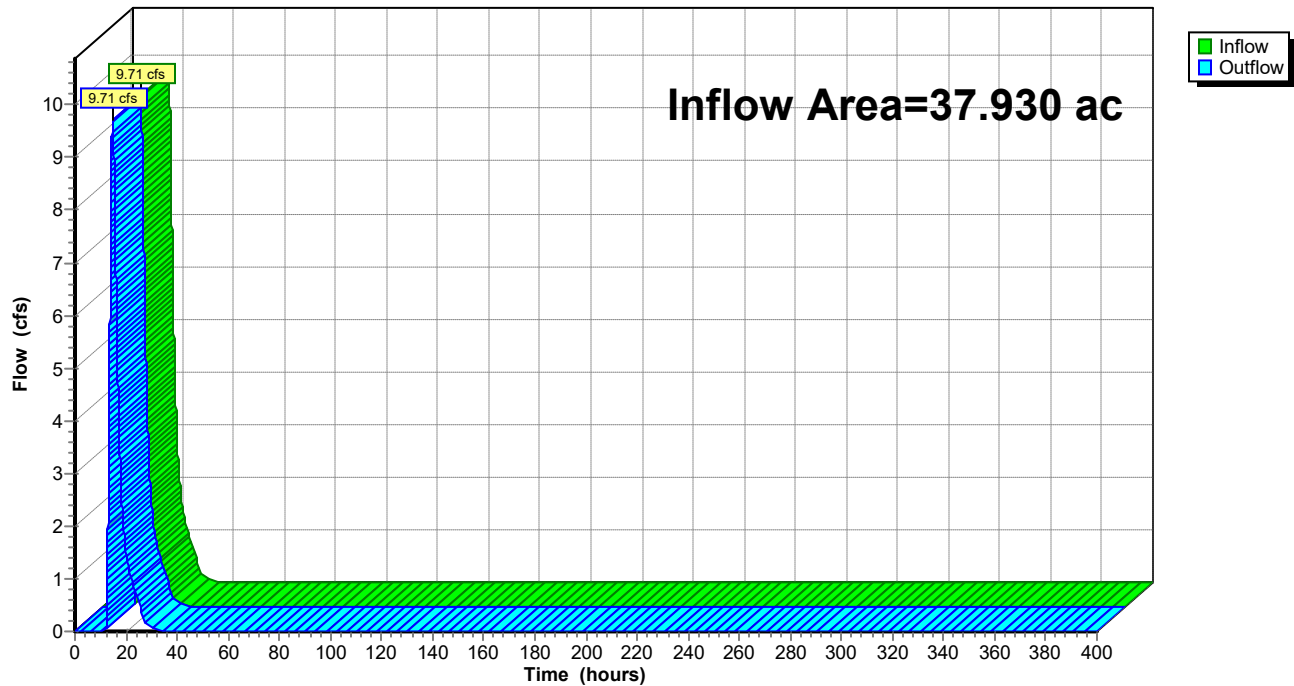
Summary for Reach 3XR: To South

Inflow Area = 37.930 ac, 0.00% Impervious, Inflow Depth = 1.10" for 2-yr event
 Inflow = 9.71 cfs @ 14.78 hrs, Volume= 3.483 af
 Outflow = 9.71 cfs @ 14.78 hrs, Volume= 3.483 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 3XR: To South

Hydrograph



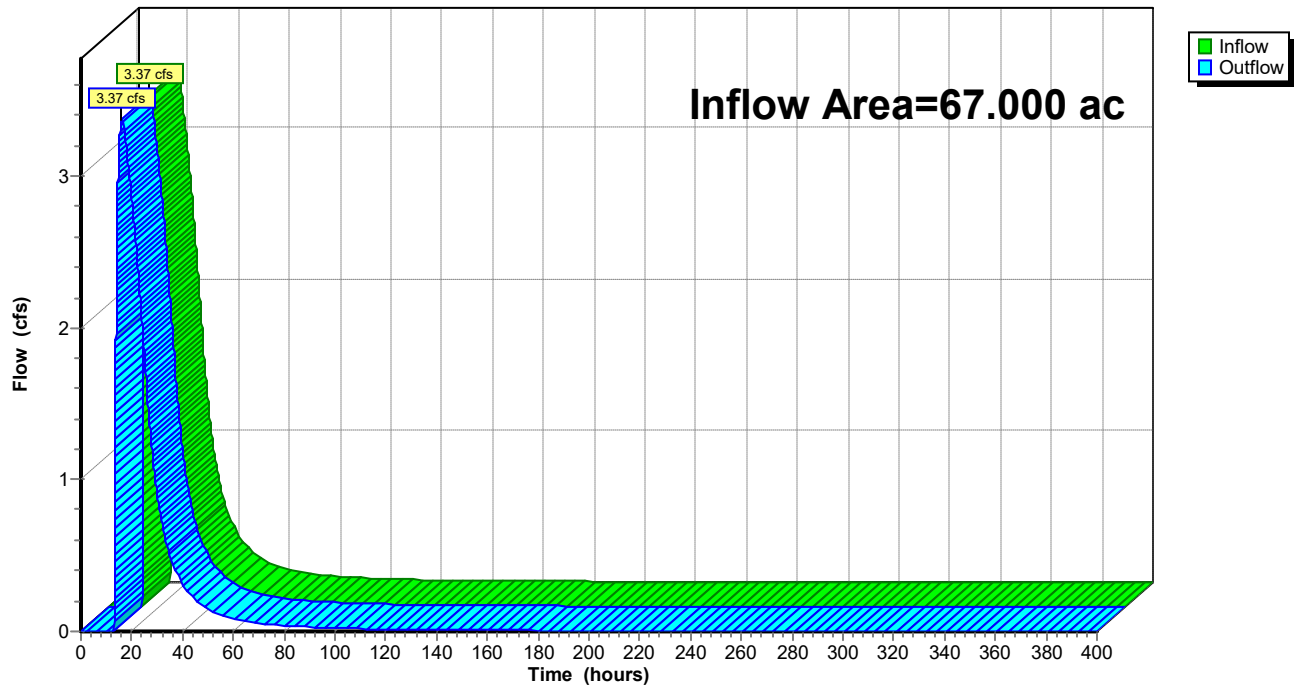
Summary for Reach 4XR: To North

Inflow Area = 67.000 ac, 2.19% Impervious, Inflow Depth > 0.74" for 2-yr event
 Inflow = 3.37 cfs @ 16.07 hrs, Volume= 4.147 af
 Outflow = 3.37 cfs @ 16.07 hrs, Volume= 4.147 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 4XR: To North

Hydrograph



Summary for Pond 1XP: Ex 18" STRM

Inflow Area = 2.760 ac, 0.00% Impervious, Inflow Depth = 1.10" for 2-yr event
 Inflow = 2.68 cfs @ 12.44 hrs, Volume= 0.253 af
 Outflow = 2.68 cfs @ 12.44 hrs, Volume= 0.253 af, Atten= 0%, Lag= 0.2 min
 Primary = 2.68 cfs @ 12.44 hrs, Volume= 0.253 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 893.72' @ 12.44 hrs Surf.Area= 71 sf Storage= 35 cf

Plug-Flow detention time= 0.4 min calculated for 0.253 af (100% of inflow)
 Center-of-Mass det. time= 0.4 min (841.8 - 841.4)

Volume	Invert	Avail.Storage	Storage Description
#1	892.96'	1,547 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

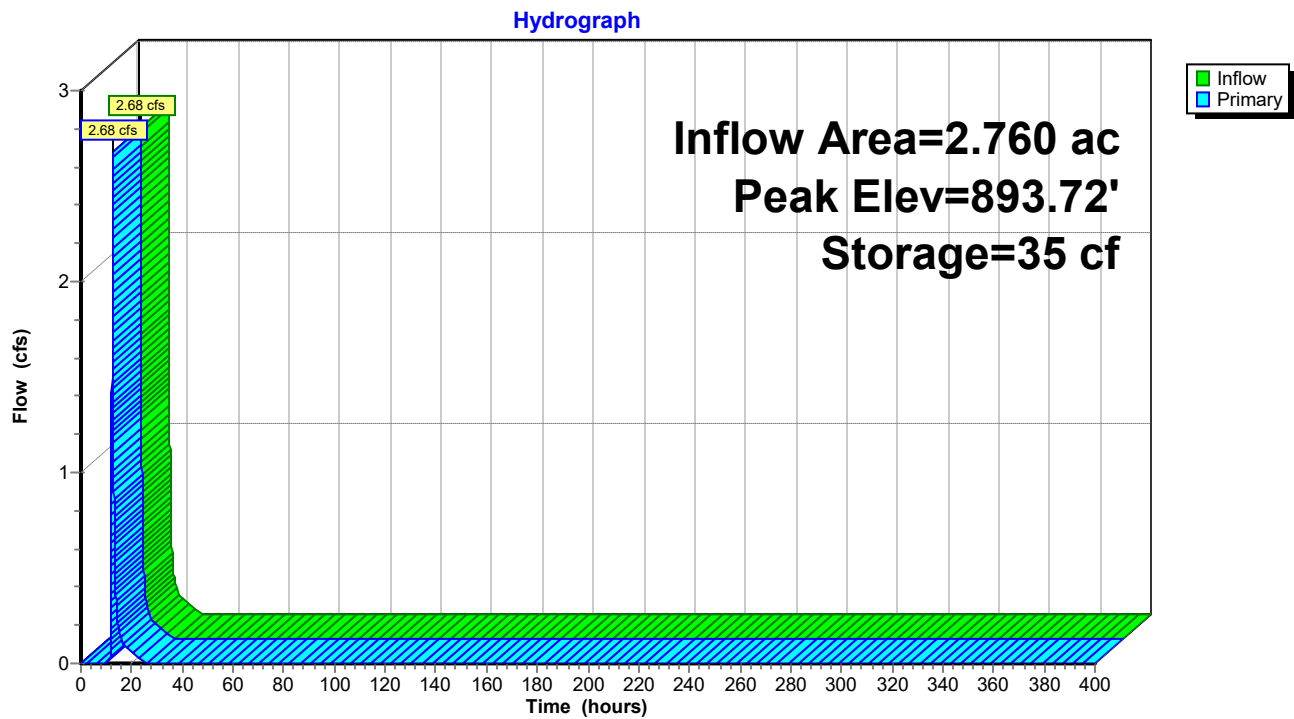
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
892.96	20	0	0
894.00	90	57	57
896.00	1,400	1,490	1,547

Device	Routing	Invert	Outlet Devices
#1	Primary	892.96'	18.0" Round Culvert L= 43.6' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 892.96' / 888.72' S= 0.0972 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Primary	894.10'	50.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.68 cfs @ 12.44 hrs HW=893.72' TW=0.00' (Dynamic Tailwater)

1=Culvert (Inlet Controls 2.68 cfs @ 2.97 fps)
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1XP: Ex 18" STRM



2026-02-09 Peltier Ponds - Prelim*MSE 24-hr 3 2-yr Rainfall=2.80"*

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Stage-Area-Storage for Pond 1XP: Ex 18" STRM

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
892.96	20	0	895.56	1,112	995
893.01	23	1	895.61	1,145	1,051
893.06	27	2	895.66	1,177	1,109
893.11	30	4	895.71	1,210	1,169
893.16	33	5	895.76	1,243	1,230
893.21	37	7	895.81	1,276	1,293
893.26	40	9	895.86	1,308	1,358
893.31	44	11	895.91	1,341	1,424
893.36	47	13	895.96	1,374	1,492
893.41	50	16			
893.46	54	18			
893.51	57	21			
893.56	60	24			
893.61	64	27			
893.66	67	30			
893.71	70	34			
893.76	74	38			
893.81	77	41			
893.86	81	45			
893.91	84	49			
893.96	87	54			
894.01	97	58			
894.06	129	64			
894.11	162	71			
894.16	195	80			
894.21	228	91			
894.26	260	103			
894.31	293	117			
894.36	326	132			
894.41	359	149			
894.46	391	168			
894.51	424	188			
894.56	457	210			
894.61	490	234			
894.66	522	259			
894.71	555	286			
894.76	588	315			
894.81	621	345			
894.86	653	377			
894.91	686	410			
894.96	719	445			
895.01	752	482			
895.06	784	521			
895.11	817	561			
895.16	850	602			
895.21	883	646			
895.26	915	691			
895.31	948	737			
895.36	981	785			
895.41	1,014	835			
895.46	1,046	887			
895.51	1,079	940			

2026-02-09 Peltier Ponds - Prelim

MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Pond 2XP: Ex STRM Structure

Inflow Area = 43.060 ac, 0.00% Impervious, Inflow Depth = 1.05" for 2-yr event
 Inflow = 21.75 cfs @ 12.81 hrs, Volume= 3.752 af
 Outflow = 21.74 cfs @ 12.83 hrs, Volume= 3.752 af, Atten= 0%, Lag= 1.2 min
 Primary = 21.74 cfs @ 12.83 hrs, Volume= 3.752 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 888.66' @ 12.83 hrs Surf.Area= 3,404 sf Storage= 2,681 cf

Plug-Flow detention time= 2.4 min calculated for 3.752 af (100% of inflow)
 Center-of-Mass det. time= 2.4 min (880.7 - 878.3)

Volume	Invert	Avail.Storage	Storage Description
#1	886.82'	46,909 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
886.82	10	0	0
888.00	1,700	1,009	1,009
890.00	6,900	8,600	9,609
892.00	30,400	37,300	46,909

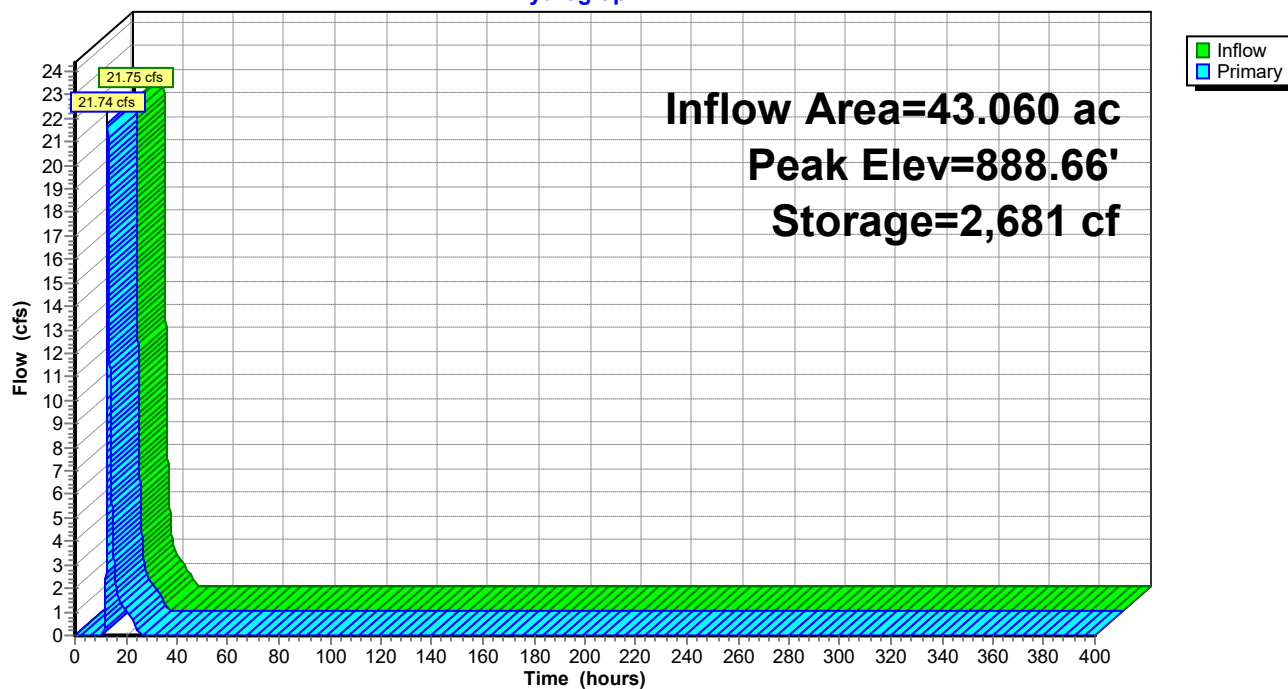
Device	Routing	Invert	Outlet Devices
#1	Primary	886.36'	21.0" Round Ex 21" CMP L= 37.5' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 886.36' / 885.72' S= 0.0171 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 2.41 sf
#2	Device 1	886.82'	21.0" Vert. EX STRUCTURE OPENNING C= 0.600
#3	Primary	888.40'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=21.73 cfs @ 12.83 hrs HW=888.66' TW=0.00' (Dynamic Tailwater)

1=Ex 21" CMP (Passes 11.35 cfs of 11.57 cfs potential flow)
 2=EX STRUCTURE OPENNING (Orifice Controls 11.35 cfs @ 4.72 fps)
 3=Broad-Crested Rectangular Weir (Weir Controls 10.39 cfs @ 1.36 fps)

Pond 2XP: Ex STRM Structure

Hydrograph



Stage-Area-Storage for Pond 2XP: Ex STRM Structure

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
886.82	10	0
886.92	153	8
887.02	296	31
887.12	440	67
887.22	583	119
887.32	726	184
887.42	869	264
887.52	1,013	358
887.62	1,156	466
887.72	1,299	589
887.82	1,442	726
887.92	1,585	877
888.02	1,752	1,043
888.12	2,012	1,232
888.22	2,272	1,446
888.32	2,532	1,686
888.42	2,792	1,952
888.52	3,052	2,244
888.62	3,312	2,563
888.72	3,572	2,907
888.82	3,832	3,277
888.92	4,092	3,673
889.02	4,352	4,095
889.12	4,612	4,544
889.22	4,872	5,018
889.32	5,132	5,518
889.42	5,392	6,044
889.52	5,652	6,596
889.62	5,912	7,175
889.72	6,172	7,779
889.82	6,432	8,409
889.92	6,692	9,065
890.02	7,135	9,749
890.12	8,310	10,521
890.22	9,485	11,411
890.32	10,660	12,419
890.42	11,835	13,543
890.52	13,010	14,786
890.62	14,185	16,145
890.72	15,360	17,623
890.82	16,535	19,217
890.92	17,710	20,930
891.02	18,885	22,759
891.12	20,060	24,707
891.22	21,235	26,771
891.32	22,410	28,954
891.42	23,585	31,253
891.52	24,760	33,671
891.62	25,935	36,205
891.72	27,110	38,858
891.82	28,285	41,627
891.92	29,460	44,515

2026-02-09 Peltier Ponds - Prelim

MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Pond W10X: Wetland 10

Inflow Area = 2.530 ac, 0.00% Impervious, Inflow Depth = 1.10" for 2-yr event
 Inflow = 3.53 cfs @ 12.25 hrs, Volume= 0.232 af
 Outflow = 0.06 cfs @ 19.42 hrs, Volume= 0.030 af, Atten= 98%, Lag= 430.6 min
 Primary = 0.06 cfs @ 19.42 hrs, Volume= 0.030 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 908.12' @ 19.42 hrs Surf.Area= 16,150 sf Storage= 9,098 cf

Plug-Flow detention time= 563.3 min calculated for 0.030 af (13% of inflow)
 Center-of-Mass det. time= 453.5 min (1,281.6 - 828.1)

Volume	Invert	Avail.Storage	Storage Description
#1	907.00'	112,600 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

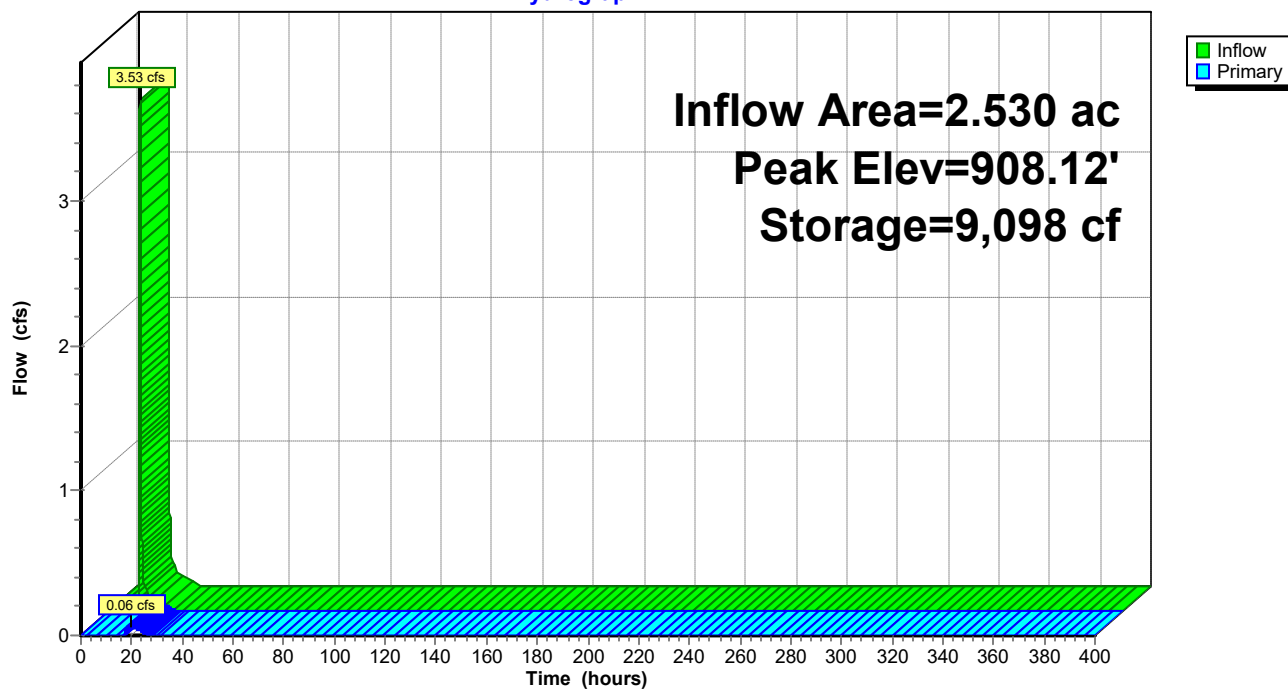
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
907.00	2,300	0	0
907.50	7,900	2,550	2,550
908.00	11,700	4,900	7,450
909.00	49,300	30,500	37,950
910.00	100,000	74,650	112,600

Device	Routing	Invert	Outlet Devices
#1	Primary	908.10'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.06 cfs @ 19.42 hrs HW=908.12' TW=0.00' (Dynamic Tailwater)
 ↑1=**Broad-Crested Rectangular Weir** (Weir Controls 0.06 cfs @ 0.34 fps)

Pond W10X: Wetland 10

Hydrograph



2026-02-09 Peltier Ponds - Prelim*MSE 24-hr 3 2-yr Rainfall=2.80"*

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Stage-Area-Storage for Pond W10X: Wetland 10

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
907.00	2,300	0	909.60	79,720	76,656
907.05	2,860	129	909.65	82,255	80,705
907.10	3,420	286	909.70	84,790	84,882
907.15	3,980	471	909.75	87,325	89,184
907.20	4,540	684	909.80	89,860	93,614
907.25	5,100	925	909.85	92,395	98,170
907.30	5,660	1,194	909.90	94,930	102,853
907.35	6,220	1,491	909.95	97,465	107,663
907.40	6,780	1,816	910.00	100,000	112,600
907.45	7,340	2,169			
907.50	7,900	2,550			
907.55	8,280	2,954			
907.60	8,660	3,378			
907.65	9,040	3,820			
907.70	9,420	4,282			
907.75	9,800	4,763			
907.80	10,180	5,262			
907.85	10,560	5,781			
907.90	10,940	6,318			
907.95	11,320	6,875			
908.00	11,700	7,450			
908.05	13,580	8,082			
908.10	15,460	8,808			
908.15	17,340	9,628			
908.20	19,220	10,542			
908.25	21,100	11,550			
908.30	22,980	12,652			
908.35	24,860	13,848			
908.40	26,740	15,138			
908.45	28,620	16,522			
908.50	30,500	18,000			
908.55	32,380	19,572			
908.60	34,260	21,238			
908.65	36,140	22,998			
908.70	38,020	24,852			
908.75	39,900	26,800			
908.80	41,780	28,842			
908.85	43,660	30,978			
908.90	45,540	33,208			
908.95	47,420	35,532			
909.00	49,300	37,950			
909.05	51,835	40,478			
909.10	54,370	43,134			
909.15	56,905	45,915			
909.20	59,440	48,824			
909.25	61,975	51,859			
909.30	64,510	55,021			
909.35	67,045	58,310			
909.40	69,580	61,726			
909.45	72,115	65,268			
909.50	74,650	68,938			
909.55	77,185	72,733			

Summary for Pond W12X: Wetland 12

Inflow Area = 6.120 ac, 0.00% Impervious, Inflow Depth = 1.10" for 2-yr event
 Inflow = 4.81 cfs @ 12.61 hrs, Volume= 0.562 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 907.04' @ 26.36 hrs Surf.Area= 34,604 sf Storage= 24,483 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	905.50'	84,245 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
905.50	890	0	0
906.00	9,030	2,480	2,480
907.00	32,400	20,715	23,195
908.00	89,700	61,050	84,245

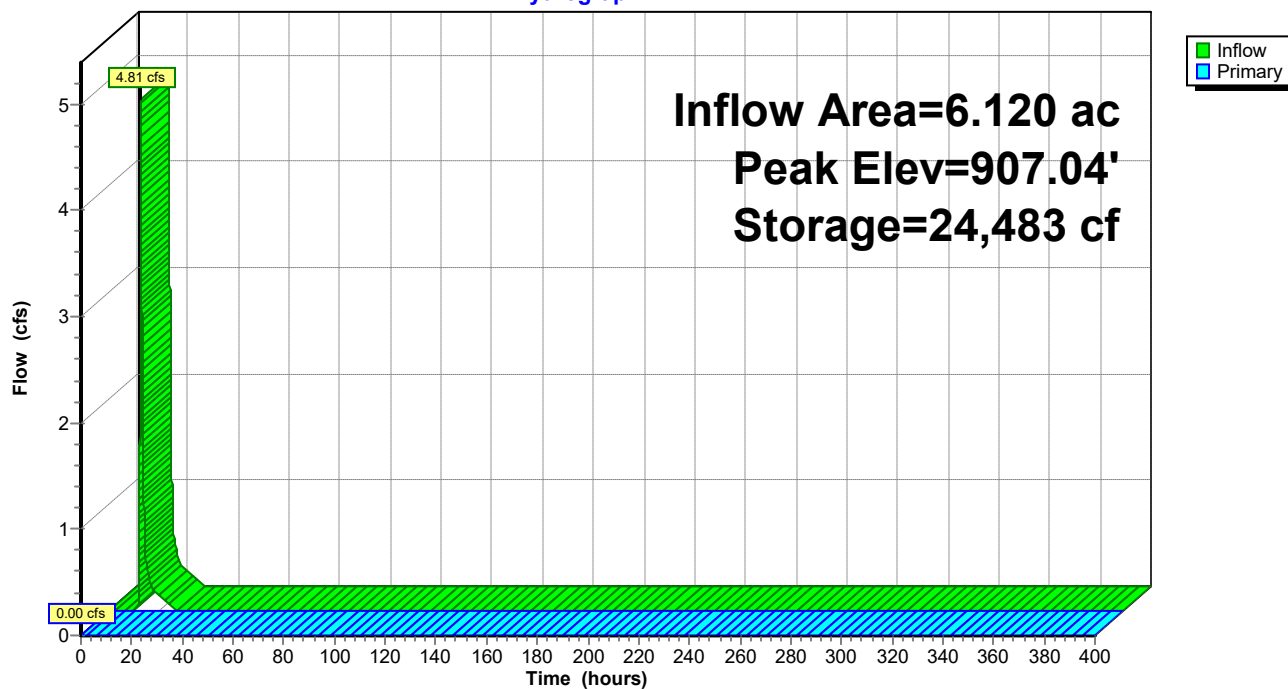
Device	Routing	Invert	Outlet Devices
#1	Primary	907.50'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=905.50' TW=900.50' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond W12X: Wetland 12

Hydrograph



2026-02-09 Peltier Ponds - Prelim*MSE 24-hr 3 2-yr Rainfall=2.80"*

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Stage-Area-Storage for Pond W12X: Wetland 12

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
905.50	890	0
905.55	1,704	65
905.60	2,518	170
905.65	3,332	317
905.70	4,146	504
905.75	4,960	731
905.80	5,774	1,000
905.85	6,588	1,309
905.90	7,402	1,658
905.95	8,216	2,049
906.00	9,030	2,480
906.05	10,198	2,961
906.10	11,367	3,500
906.15	12,535	4,097
906.20	13,704	4,753
906.25	14,873	5,468
906.30	16,041	6,241
906.35	17,210	7,072
906.40	18,378	7,962
906.45	19,547	8,910
906.50	20,715	9,916
906.55	21,883	10,981
906.60	23,052	12,105
906.65	24,220	13,286
906.70	25,389	14,527
906.75	26,558	15,825
906.80	27,726	17,182
906.85	28,895	18,598
906.90	30,063	20,072
906.95	31,232	21,604
907.00	32,400	23,195
907.05	35,265	24,887
907.10	38,130	26,722
907.15	40,995	28,700
907.20	43,860	30,821
907.25	46,725	33,086
907.30	49,590	35,493
907.35	52,455	38,045
907.40	55,320	40,739
907.45	58,185	43,577
907.50	61,050	46,558
907.55	63,915	49,682
907.60	66,780	52,949
907.65	69,645	56,360
907.70	72,510	59,914
907.75	75,375	63,611
907.80	78,240	67,451
907.85	81,105	71,435
907.90	83,970	75,561
907.95	86,835	79,832
908.00	89,700	84,245

Summary for Pond W14X: Wetland 14

Inflow Area = 37.930 ac, 0.00% Impervious, Inflow Depth = 1.10" for 2-yr event
 Inflow = 11.06 cfs @ 14.15 hrs, Volume= 3.484 af
 Outflow = 9.71 cfs @ 14.78 hrs, Volume= 3.483 af, Atten= 12%, Lag= 37.7 min
 Primary = 9.71 cfs @ 14.78 hrs, Volume= 3.483 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 904.33' @ 14.78 hrs Surf.Area= 99,820 sf Storage= 24,880 cf

Plug-Flow detention time= 51.9 min calculated for 3.483 af (100% of inflow)
 Center-of-Mass det. time= 52.0 min (1,003.1 - 951.1)

Volume	Invert	Avail.Storage	Storage Description
#1	904.00'	594,000 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

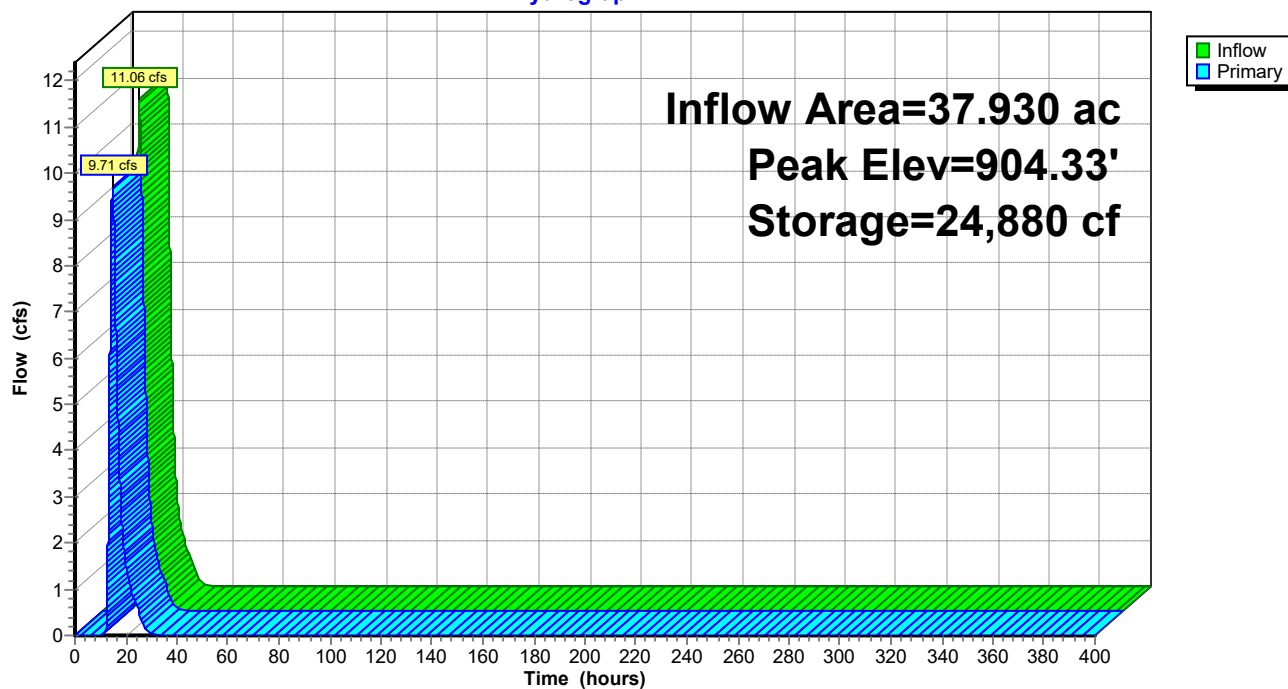
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
904.00	50,000	0	0
905.00	200,000	125,000	125,000
906.00	738,000	469,000	594,000

Device	Routing	Invert	Outlet Devices
#1	Primary	904.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=9.71 cfs @ 14.78 hrs HW=904.33' TW=0.00' (Dynamic Tailwater)
 ↑1=**Broad-Crested Rectangular Weir** (Weir Controls 9.71 cfs @ 1.46 fps)

Pond W14X: Wetland 14

Hydrograph



2026-02-09 Peltier Ponds - Prelim*MSE 24-hr 3 2-yr Rainfall=2.80"*

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Stage-Area-Storage for Pond W14X: Wetland 14

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
904.00	50,000	0	905.04	221,520	133,430
904.02	53,000	1,030	905.06	232,280	137,968
904.04	56,000	2,120	905.08	243,040	142,722
904.06	59,000	3,270	905.10	253,800	147,690
904.08	62,000	4,480	905.12	264,560	152,874
904.10	65,000	5,750	905.14	275,320	158,272
904.12	68,000	7,080	905.16	286,080	163,886
904.14	71,000	8,470	905.18	296,840	169,716
904.16	74,000	9,920	905.20	307,600	175,760
904.18	77,000	11,430	905.22	318,360	182,020
904.20	80,000	13,000	905.24	329,120	188,494
904.22	83,000	14,630	905.26	339,880	195,184
904.24	86,000	16,320	905.28	350,640	202,090
904.26	89,000	18,070	905.30	361,400	209,210
904.28	92,000	19,880	905.32	372,160	216,546
904.30	95,000	21,750	905.34	382,920	224,096
904.32	98,000	23,680	905.36	393,680	231,862
904.34	101,000	25,670	905.38	404,440	239,844
904.36	104,000	27,720	905.40	415,200	248,040
904.38	107,000	29,830	905.42	425,960	256,452
904.40	110,000	32,000	905.44	436,720	265,078
904.42	113,000	34,230	905.46	447,480	273,920
904.44	116,000	36,520	905.48	458,240	282,978
904.46	119,000	38,870	905.50	469,000	292,250
904.48	122,000	41,280	905.52	479,760	301,738
904.50	125,000	43,750	905.54	490,520	311,440
904.52	128,000	46,280	905.56	501,280	321,358
904.54	131,000	48,870	905.58	512,040	331,492
904.56	134,000	51,520	905.60	522,800	341,840
904.58	137,000	54,230	905.62	533,560	352,404
904.60	140,000	57,000	905.64	544,320	363,182
904.62	143,000	59,830	905.66	555,080	374,176
904.64	146,000	62,720	905.68	565,840	385,386
904.66	149,000	65,670	905.70	576,600	396,810
904.68	152,000	68,680	905.72	587,360	408,450
904.70	155,000	71,750	905.74	598,120	420,304
904.72	158,000	74,880	905.76	608,880	432,374
904.74	161,000	78,070	905.78	619,640	444,660
904.76	164,000	81,320	905.80	630,400	457,160
904.78	167,000	84,630	905.82	641,160	469,876
904.80	170,000	88,000	905.84	651,920	482,806
904.82	173,000	91,430	905.86	662,680	495,952
904.84	176,000	94,920	905.88	673,440	509,314
904.86	179,000	98,470	905.90	684,200	522,890
904.88	182,000	102,080	905.92	694,960	536,682
904.90	185,000	105,750	905.94	705,720	550,688
904.92	188,000	109,480	905.96	716,480	564,910
904.94	191,000	113,270	905.98	727,240	579,348
904.96	194,000	117,120	906.00	738,000	594,000
904.98	197,000	121,030			
905.00	200,000	125,000			
905.02	210,760	129,108			

Summary for Pond W4X: Wetland 4

Inflow Area = 67.000 ac, 2.19% Impervious, Inflow Depth = 0.94" for 2-yr event
 Inflow = 28.05 cfs @ 13.09 hrs, Volume= 5.236 af
 Outflow = 3.37 cfs @ 16.07 hrs, Volume= 4.147 af, Atten= 88%, Lag= 178.6 min
 Primary = 3.37 cfs @ 16.07 hrs, Volume= 4.147 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 900.33' @ 16.07 hrs Surf.Area= 145,199 sf Storage= 151,332 cf

Plug-Flow detention time= 985.9 min calculated for 4.147 af (79% of inflow)
 Center-of-Mass det. time= 910.1 min (1,801.7 - 891.5)

Volume	Invert	Avail.Storage	Storage Description
#1	898.00'	1,964,800 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
898.00	10,000	0	0
899.50	80,000	67,500	67,500
900.00	94,800	43,700	111,200
901.00	245,500	170,150	281,350
902.00	393,800	319,650	601,000
904.00	970,000	1,363,800	1,964,800

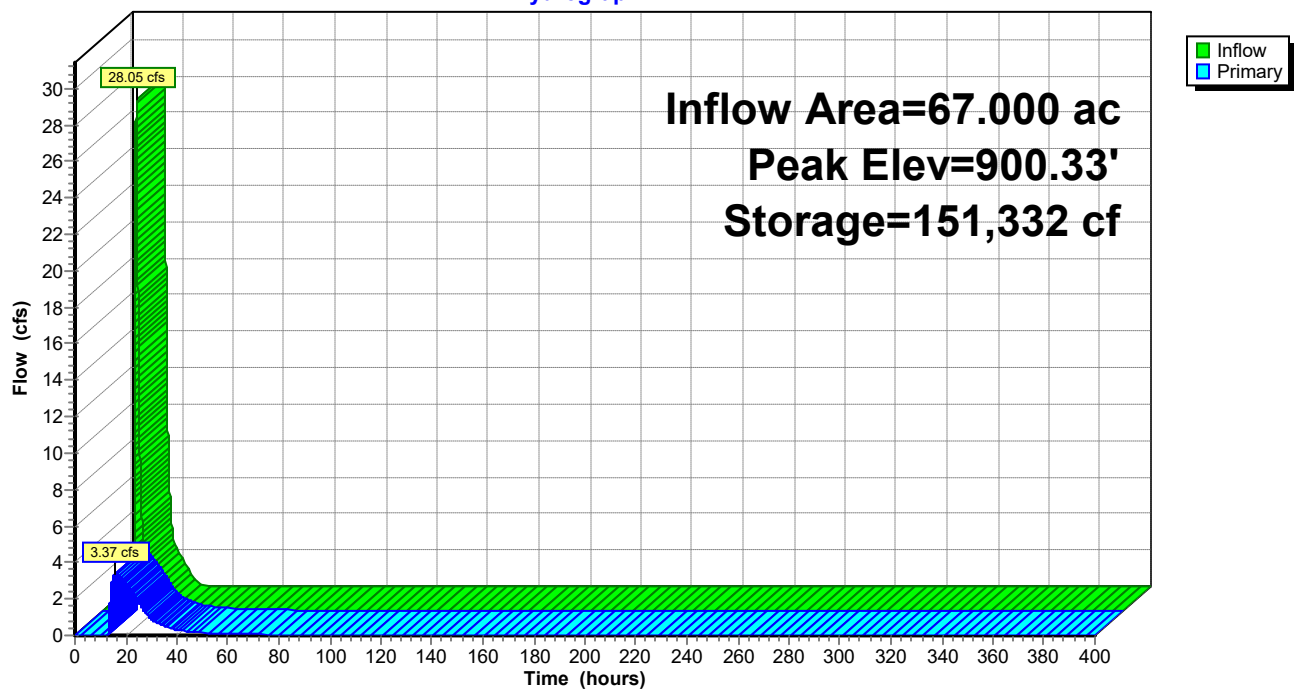
Device	Routing	Invert	Outlet Devices
#1	Primary	899.20'	18.0" Round Culvert L= 15.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 899.20' / 899.18' S= 0.0013 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.77 sf
#2	Primary	902.70'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.37 cfs @ 16.07 hrs HW=900.33' TW=0.00' (Dynamic Tailwater)

1=Culvert (Barrel Controls 3.37 cfs @ 3.26 fps)
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond W4X: Wetland 4

Hydrograph



2026-02-09 Peltier Ponds - Prelim*MSE 24-hr 3 2-yr Rainfall=2.80"*

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Stage-Area-Storage for Pond W4X: Wetland 4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
898.00	10,000	0	903.20	739,520	1,280,992
898.10	14,667	1,233	903.30	768,330	1,356,384
898.20	19,333	2,933	903.40	797,140	1,434,658
898.30	24,000	5,100	903.50	825,950	1,515,813
898.40	28,667	7,733	903.60	854,760	1,599,848
898.50	33,333	10,833	903.70	883,570	1,686,765
898.60	38,000	14,400	903.80	912,380	1,776,562
898.70	42,667	18,433	903.90	941,190	1,869,240
898.80	47,333	22,933	904.00	970,000	1,964,800
898.90	52,000	27,900			
899.00	56,667	33,333			
899.10	61,333	39,233			
899.20	66,000	45,600			
899.30	70,667	52,433			
899.40	75,333	59,733			
899.50	80,000	67,500			
899.60	82,960	75,648			
899.70	85,920	84,092			
899.80	88,880	92,832			
899.90	91,840	101,868			
900.00	94,800	111,200			
900.10	109,870	121,434			
900.20	124,940	133,174			
900.30	140,010	146,421			
900.40	155,080	161,176			
900.50	170,150	177,438			
900.60	185,220	195,206			
900.70	200,290	214,482			
900.80	215,360	235,264			
900.90	230,430	257,553			
901.00	245,500	281,350			
901.10	260,330	306,642			
901.20	275,160	333,416			
901.30	289,990	361,673			
901.40	304,820	391,414			
901.50	319,650	422,638			
901.60	334,480	455,344			
901.70	349,310	489,534			
901.80	364,140	525,206			
901.90	378,970	562,361			
902.00	393,800	601,000			
902.10	422,610	641,821			
902.20	451,420	685,522			
902.30	480,230	732,104			
902.40	509,040	781,568			
902.50	537,850	833,913			
902.60	566,660	889,138			
902.70	595,470	947,245			
902.80	624,280	1,008,232			
902.90	653,090	1,072,100			
903.00	681,900	1,138,850			
903.10	710,710	1,208,481			

Summary for Pond W5X: Wetland 5

Inflow Area = 22.000 ac, 0.00% Impervious, Inflow Depth = 0.80" for 2-yr event
 Inflow = 13.33 cfs @ 12.53 hrs, Volume= 1.458 af
 Outflow = 3.78 cfs @ 13.38 hrs, Volume= 0.894 af, Atten= 72%, Lag= 50.8 min
 Primary = 3.78 cfs @ 13.38 hrs, Volume= 0.894 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 901.43' @ 13.38 hrs Surf.Area= 71,919 sf Storage= 33,158 cf

Plug-Flow detention time= 210.1 min calculated for 0.894 af (61% of inflow)
 Center-of-Mass det. time= 120.7 min (969.6 - 848.9)

Volume	Invert	Avail.Storage	Storage Description
#1	900.50'	524,637 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

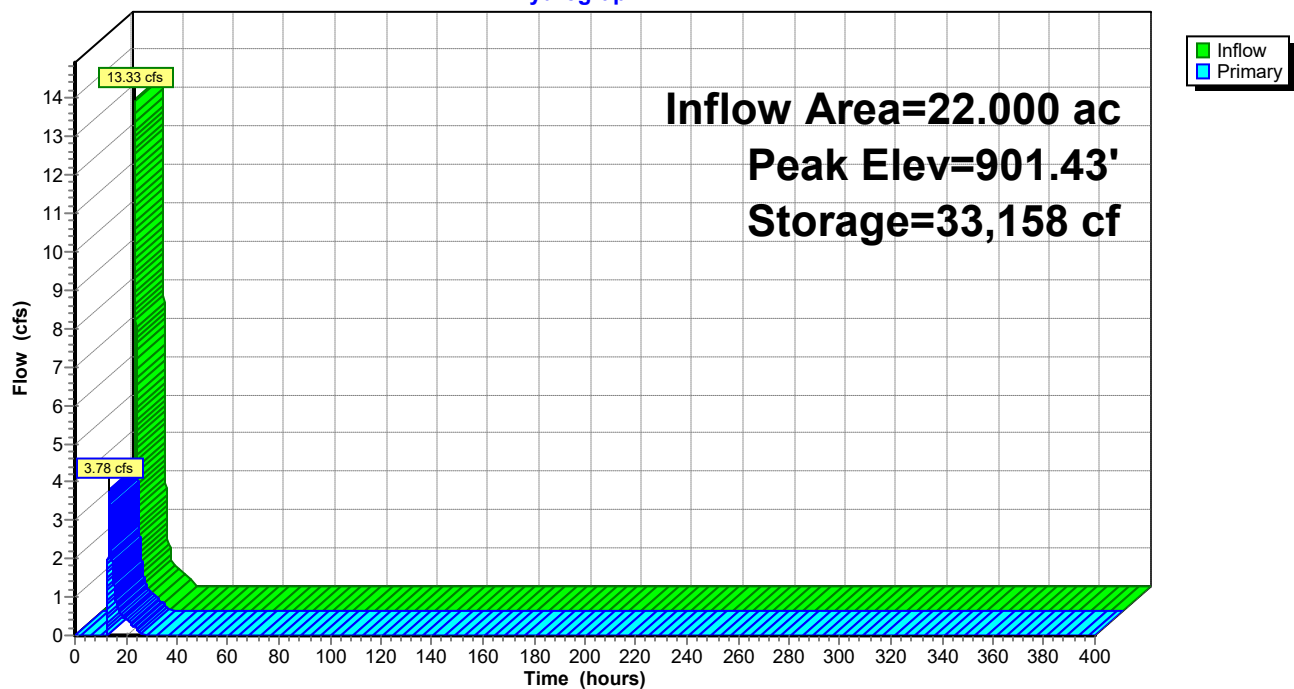
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.50	10	0	0
900.80	30,900	4,636	4,636
901.00	31,600	6,250	10,887
902.00	125,300	78,450	89,337
904.00	310,000	435,300	524,637

Device	Routing	Invert	Outlet Devices
#1	Primary	901.30'	30.0' long x 30.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.78 cfs @ 13.38 hrs HW=901.43' TW=899.73' (Dynamic Tailwater)
 ↑1=Broad-Crested Rectangular Weir (Weir Controls 3.78 cfs @ 0.97 fps)

Pond W5X: Wetland 5

Hydrograph



2026-02-09 Peltier Ponds - Prelim*MSE 24-hr 3 2-yr Rainfall=2.80"*

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Stage-Area-Storage for Pond W5X: Wetland 5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
900.50	10	0	903.10	226,885	283,038
900.55	5,158	129	903.15	231,502	294,498
900.60	10,307	516	903.20	236,120	306,189
900.65	15,455	1,160	903.25	240,738	318,110
900.70	20,603	2,061	903.30	245,355	330,262
900.75	25,752	3,220	903.35	249,973	342,645
900.80	30,900	4,636	903.40	254,590	355,259
900.85	31,075	6,186	903.45	259,208	368,104
900.90	31,250	7,744	903.50	263,825	381,180
900.95	31,425	9,311	903.55	268,442	394,487
901.00	31,600	10,887	903.60	273,060	408,025
901.05	36,285	12,584	903.65	277,677	421,793
901.10	40,970	14,515	903.70	282,295	435,792
901.15	45,655	16,681	903.75	286,913	450,022
901.20	50,340	19,081	903.80	291,530	464,483
901.25	55,025	21,715	903.85	296,148	479,175
901.30	59,710	24,583	903.90	300,765	494,098
901.35	64,395	27,686	903.95	305,383	509,252
901.40	69,080	31,022	904.00	310,000	524,637
901.45	73,765	34,594			
901.50	78,450	38,399			
901.55	83,135	42,439			
901.60	87,820	46,713			
901.65	92,505	51,221			
901.70	97,190	55,963			
901.75	101,875	60,940			
901.80	106,560	66,150			
901.85	111,245	71,596			
901.90	115,930	77,275			
901.95	120,615	83,189			
902.00	125,300	89,337			
902.05	129,917	95,717			
902.10	134,535	102,328			
902.15	139,152	109,170			
902.20	143,770	116,244			
902.25	148,388	123,547			
902.30	153,005	131,082			
902.35	157,623	138,848			
902.40	162,240	146,844			
902.45	166,858	155,072			
902.50	171,475	163,530			
902.55	176,092	172,219			
902.60	180,710	181,140			
902.65	185,327	190,290			
902.70	189,945	199,672			
902.75	194,563	209,285			
902.80	199,180	219,128			
902.85	203,798	229,203			
902.90	208,415	239,508			
902.95	213,033	250,044			
903.00	217,650	260,812			
903.05	222,267	271,809			

2026-02-09 Peltier Ponds - Prelim

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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 1.1X: Existing Direct Drainage to Lake

Runoff = 7.32 cfs @ 12.33 hrs, Volume= 0.580 af, Depth= 2.18"

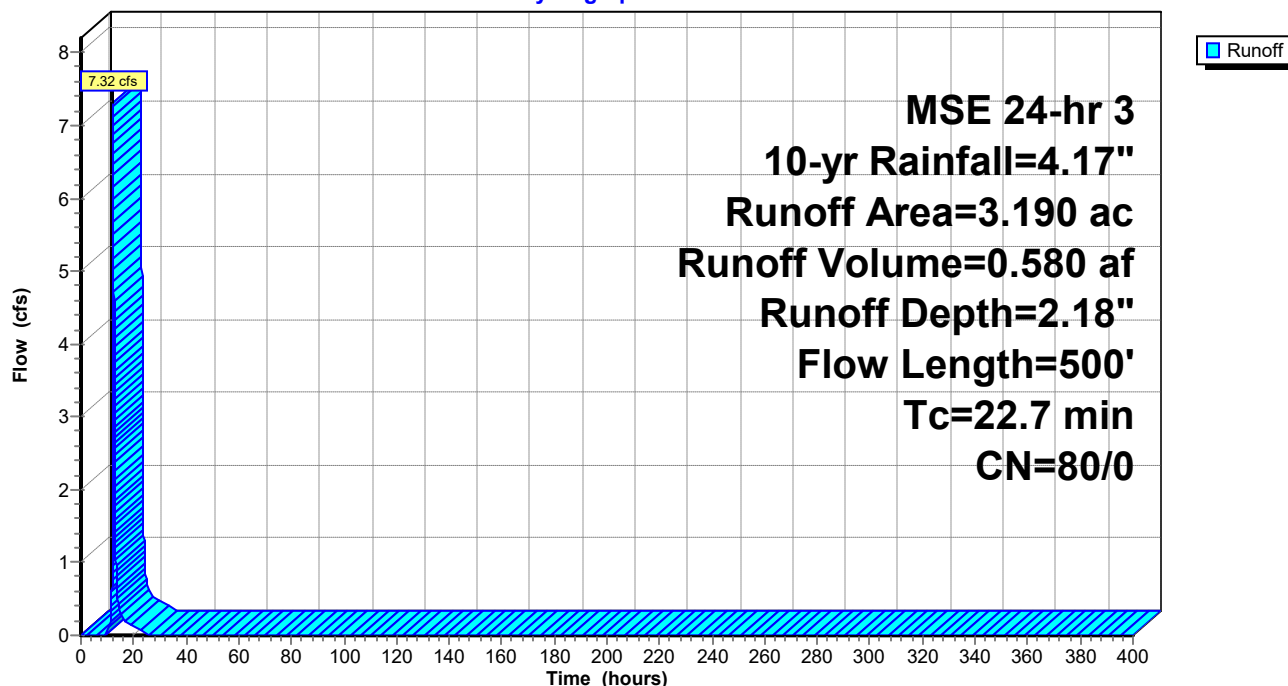
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
* 2.940	80	Row crops, straight row, Good, HSG D
* 0.250	80	Woods/grass comb., Fair, HSG D
3.190	80	Weighted Average
3.190	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.2	200	0.0200	0.17		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
2.5	300	0.0500	2.01		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
22.7	500	Total			

Subcatchment 1.1X: Existing Direct Drainage to Lake

Hydrograph



Summary for Subcatchment 1X: Existing Drainage to Ex STRM

Runoff = 5.42 cfs @ 12.44 hrs, Volume= 0.502 af, Depth= 2.18"

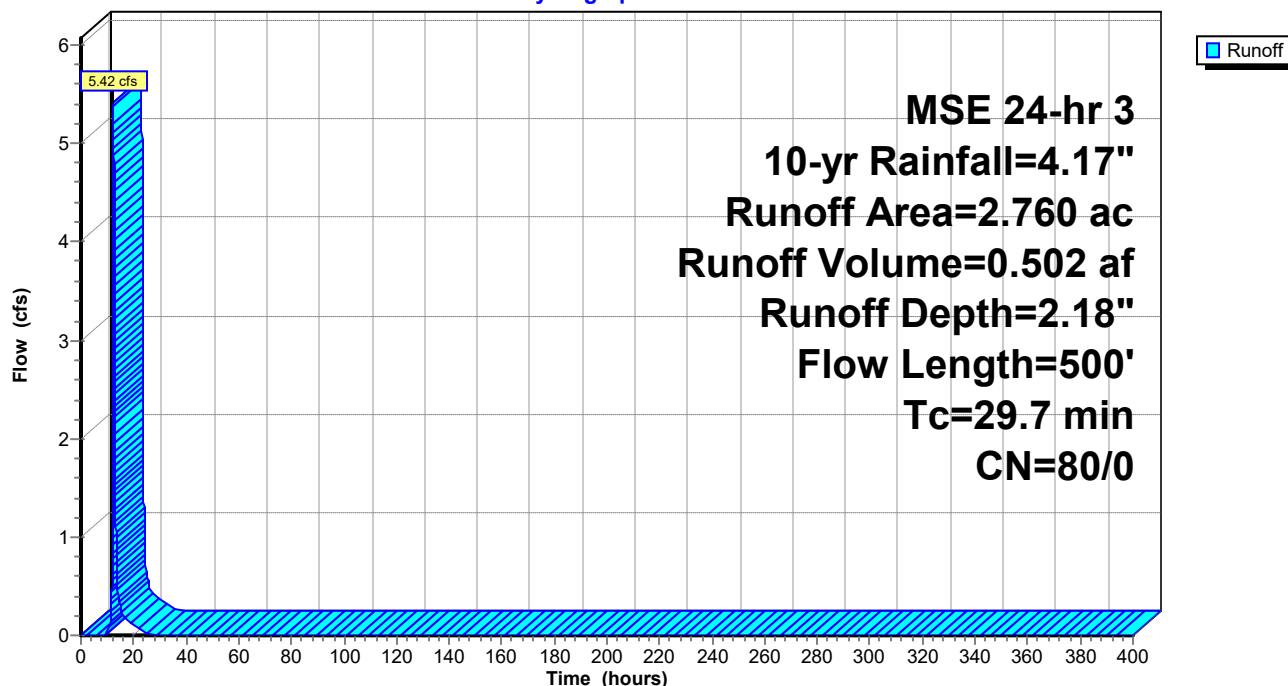
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
* 2.510	80	Row crops, straight row, Good, HSG D
* 0.250	80	Woods/grass comb., Fair, HSG D
2.760	80	Weighted Average
2.760	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
3.1	300	0.0330	1.63		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
29.7	500	Total			

Subcatchment 1X: Existing Drainage to Ex STRM

Hydrograph



Summary for Subcatchment 2.1X: Existing Drainage to Wetland 10

Runoff = 7.11 cfs @ 12.24 hrs, Volume= 0.460 af, Depth= 2.18"

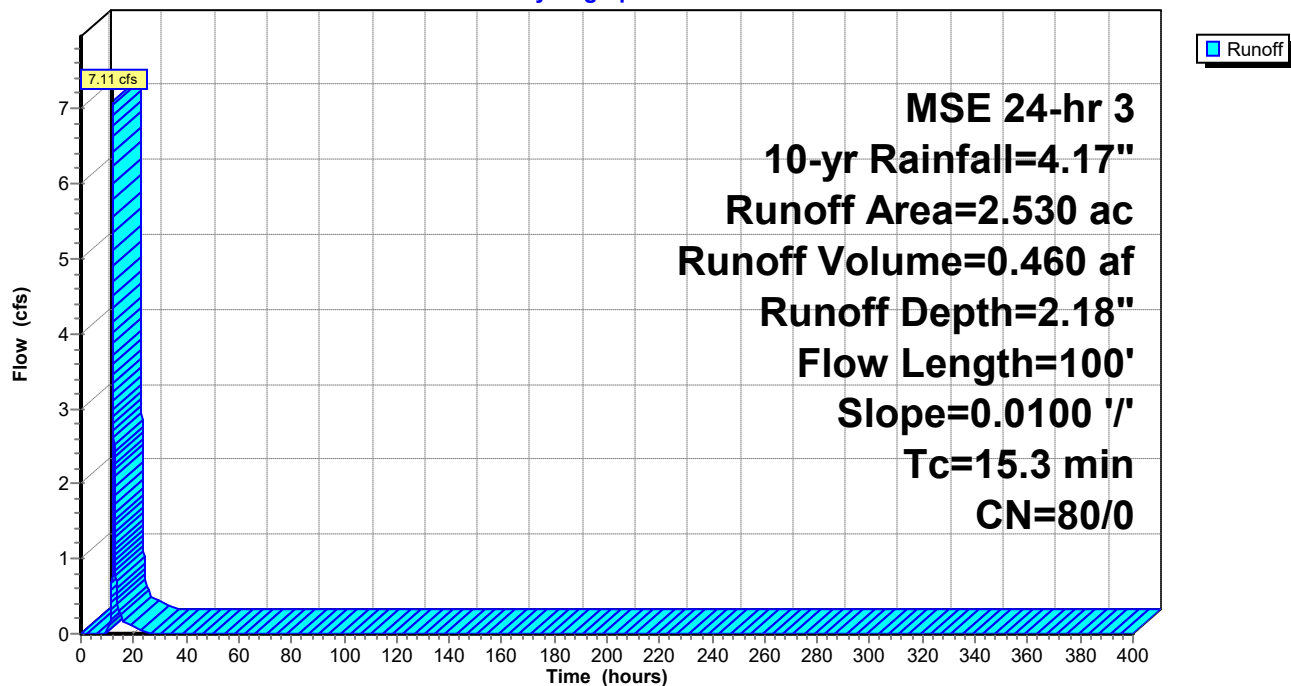
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
* 2.530	80	Row crops, straight row, Good, HSG D
* 0.000	80	Woods/grass comb., Fair, HSG D
2.530	80	Weighted Average
2.530	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	100	0.0100	0.11		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"

Subcatchment 2.1X: Existing Drainage to Wetland 10

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 2X: Existing Drainage to Tributary 2

Runoff = 31.11 cfs @ 12.70 hrs, Volume= 3.962 af, Depth= 2.18"

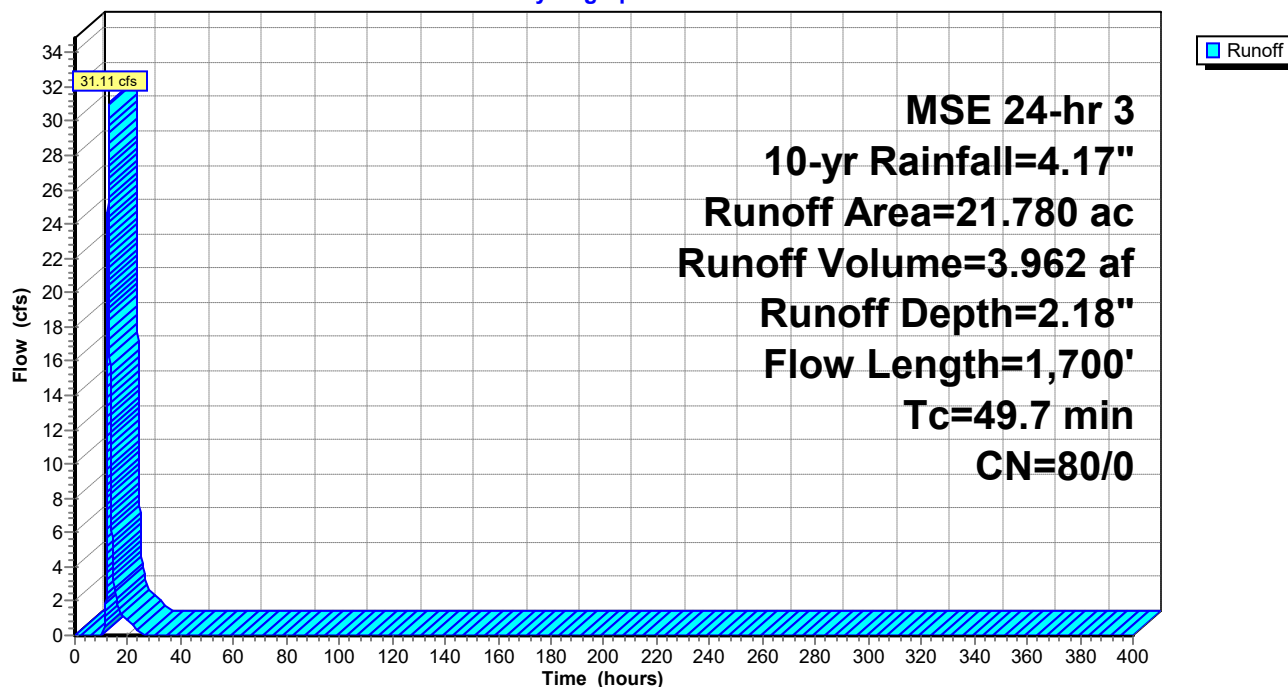
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
* 16.030	80	Row crops, straight row, Good, HSG D
* 5.750	80	Woods/grass comb., Fair, HSG D
21.780	80	Weighted Average
21.780	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
12.0	500	0.0060	0.70		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
11.1	1,000	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
49.7	1,700	Total			

Subcatchment 2X: Existing Drainage to Tributary 2

Hydrograph



2026-02-09 Peltier Ponds - Prelim

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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 3X: Existing Drainage to Wetland 14

Runoff = 22.15 cfs @ 14.15 hrs, Volume= 6.387 af, Depth= 2.18"

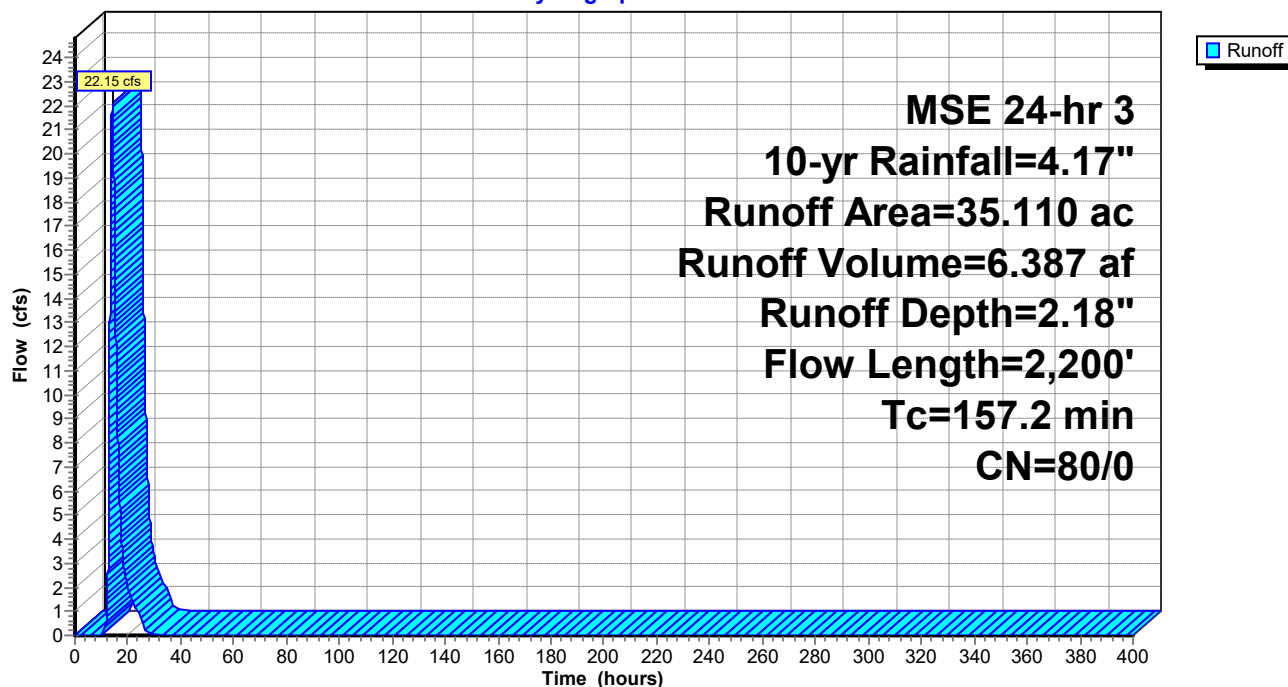
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
* 14.110	80	Row crops, straight row, Good, HSG D
* 21.000	80	Woods/grass comb., Fair, HSG D
35.110	80	Weighted Average
35.110	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
3.9	300	0.0200	1.27		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
126.7	1,700	0.0020	0.22		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
157.2	2,200	Total			

Subcatchment 3X: Existing Drainage to Wetland 14

Hydrograph



Summary for Subcatchment 4.1X: Existing Drainage to Wetland 5

Runoff = 27.14 cfs @ 12.53 hrs, Volume= 2.889 af, Depth= 2.18"

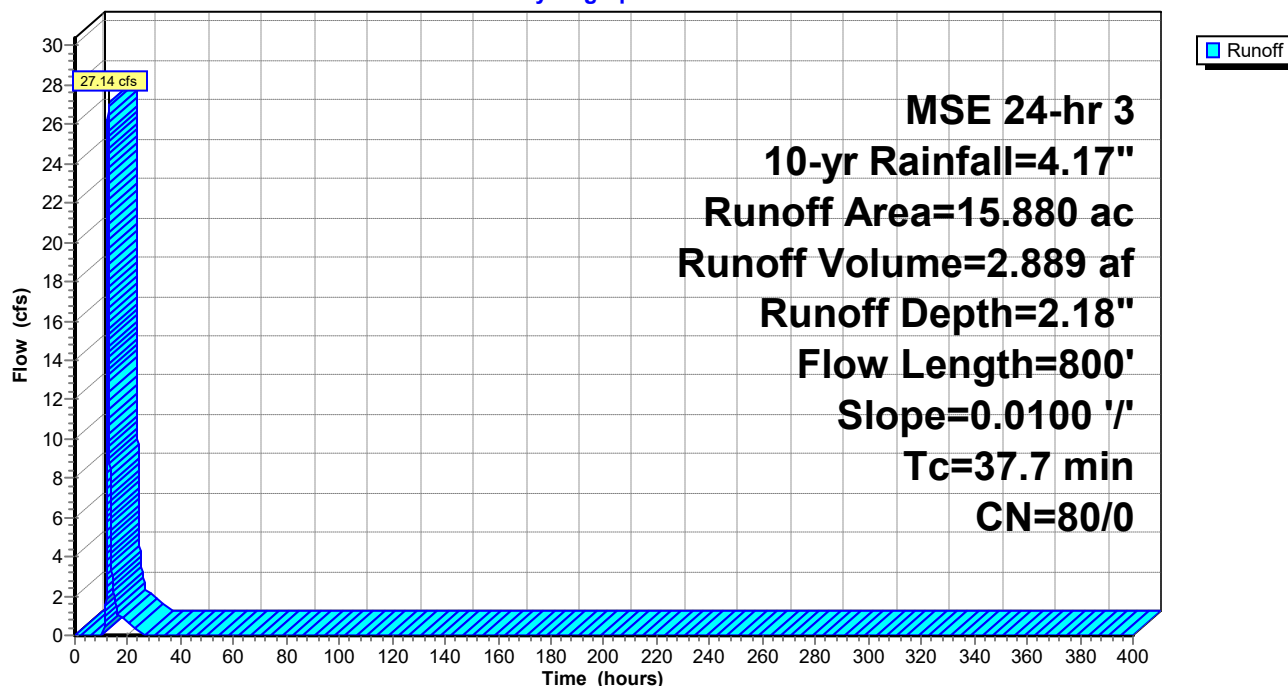
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
* 15.880	80	Row crops, straight row, Good, HSG D
* 0.000	80	Woods/grass comb., Fair, HSG D
15.880	80	Weighted Average
15.880	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
11.1	600	0.0100	0.90		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
37.7	800	Total			

Subcatchment 4.1X: Existing Drainage to Wetland 5

Hydrograph



Summary for Subcatchment 4.2X: Existing Drainage to Wetland 12

Runoff = 9.77 cfs @ 12.61 hrs, Volume= 1.113 af, Depth= 2.18"

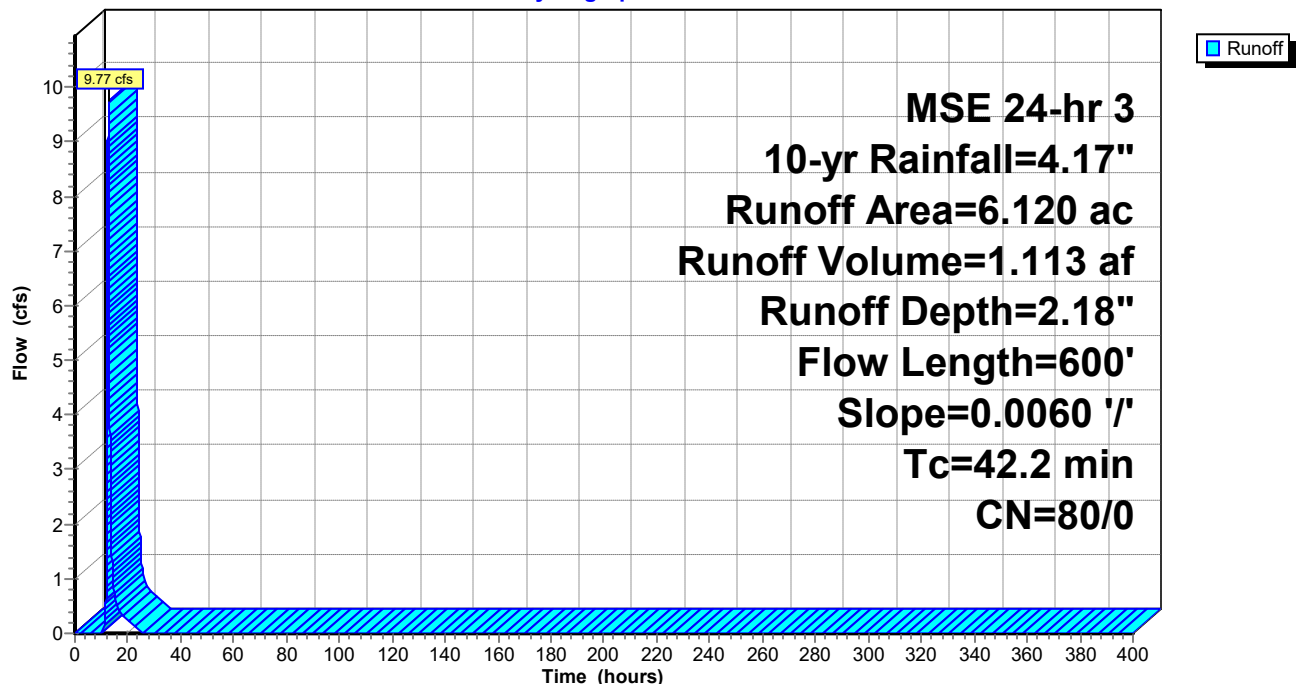
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
* 6.120	80	Row crops, straight row, Good, HSG D
* 0.000	80	Woods/grass comb., Fair, HSG D
6.120	80	Weighted Average
6.120	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.6	200	0.0060	0.10		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
9.6	400	0.0060	0.70		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
42.2	600	Total			

Subcatchment 4.2X: Existing Drainage to Wetland 12

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 4X: Existing Drainage to Wetland 4

Runoff = 40.67 cfs @ 13.02 hrs, Volume= 6.849 af, Depth= 2.18"

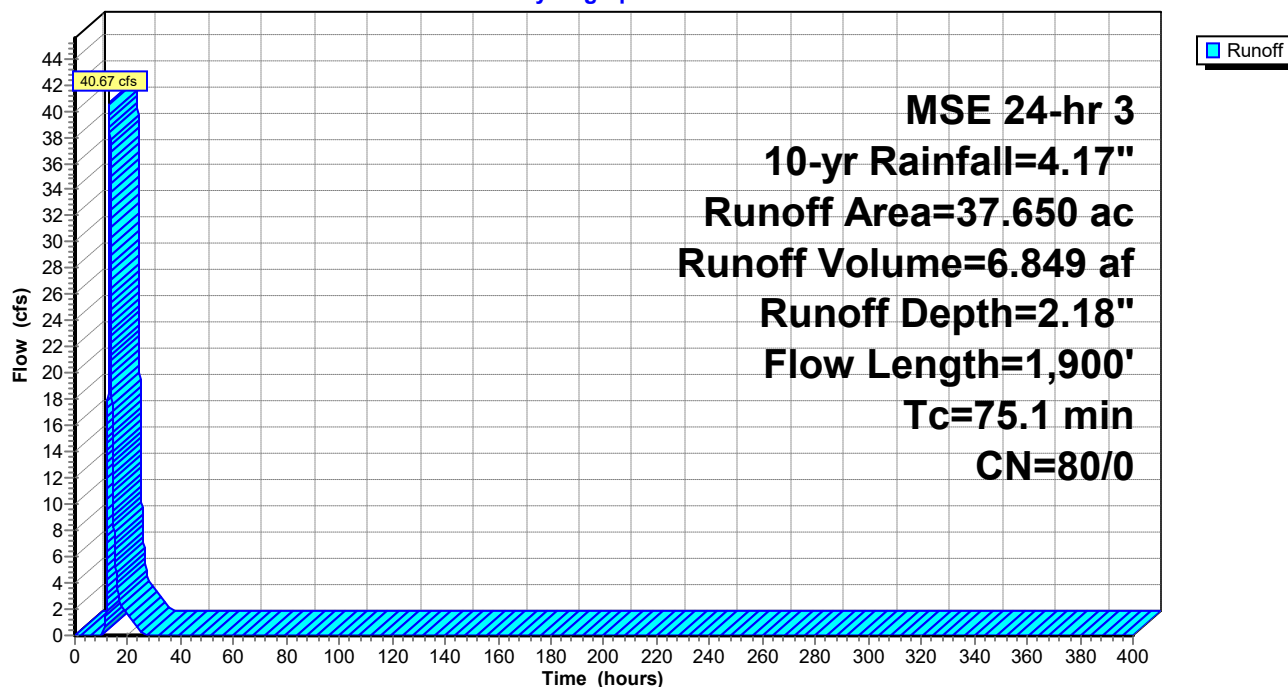
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
* 37.150	80	Row crops, straight row, Good, HSG D
* 0.500	80	Woods/grass comb., Fair, HSG D
37.650	80	Weighted Average
37.650	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
19.5	1,000	0.0090	0.85		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
29.0	700	0.0020	0.40		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
75.1	1,900	Total			

Subcatchment 4X: Existing Drainage to Wetland 4

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 20X: OFFSITE Existing Drainage to Tributary 2

Runoff = 18.54 cfs @ 13.17 hrs, Volume= 3.411 af, Depth= 2.18"

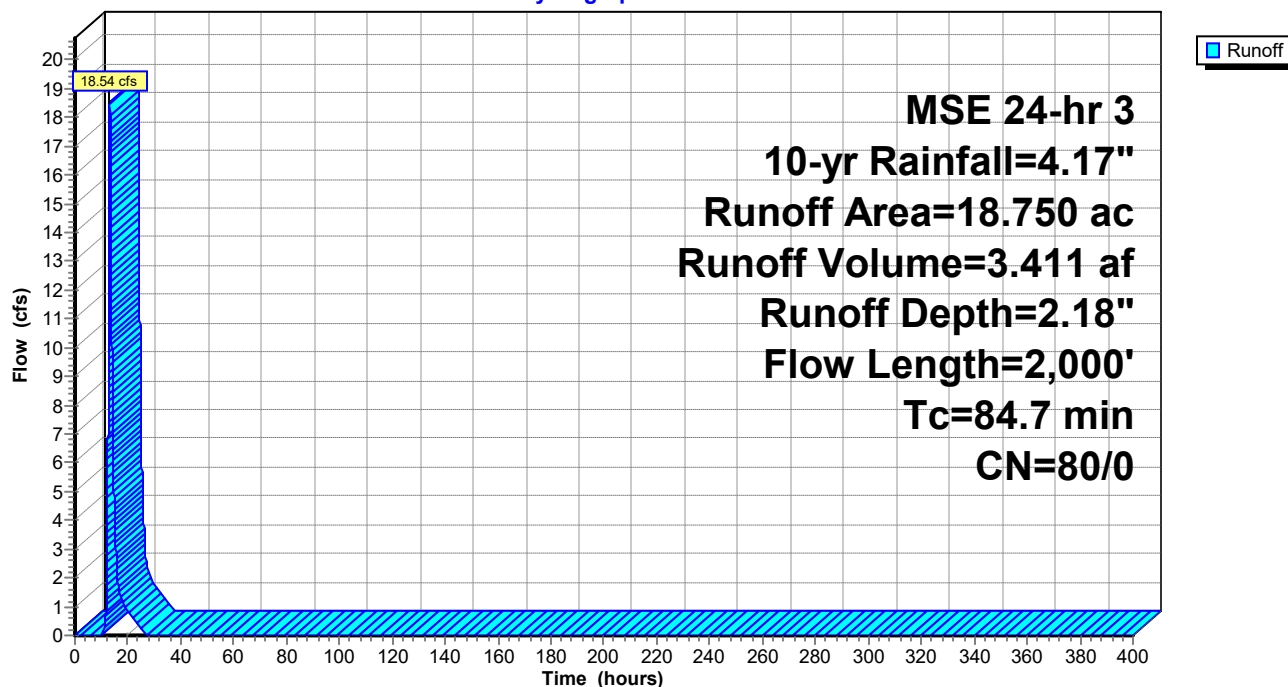
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
* 0.000	80	Row crops, straight row, Good, HSG D
* 18.750	80	Woods/grass comb., Fair, HSG D
18.750	80	Weighted Average
18.750	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.0	200	0.0100	0.10		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"
43.0	1,000	0.0060	0.39		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.7	800	0.0175	1.98		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
84.7	2,000	Total			

Subcatchment 20X: OFFSITE Existing Drainage to Tributary 2

Hydrograph



Summary for Subcatchment 30X: OFFSITE Existing Drainage to Wetland 14

Runoff = 5.40 cfs @ 12.45 hrs, Volume= 0.513 af, Depth= 2.18"

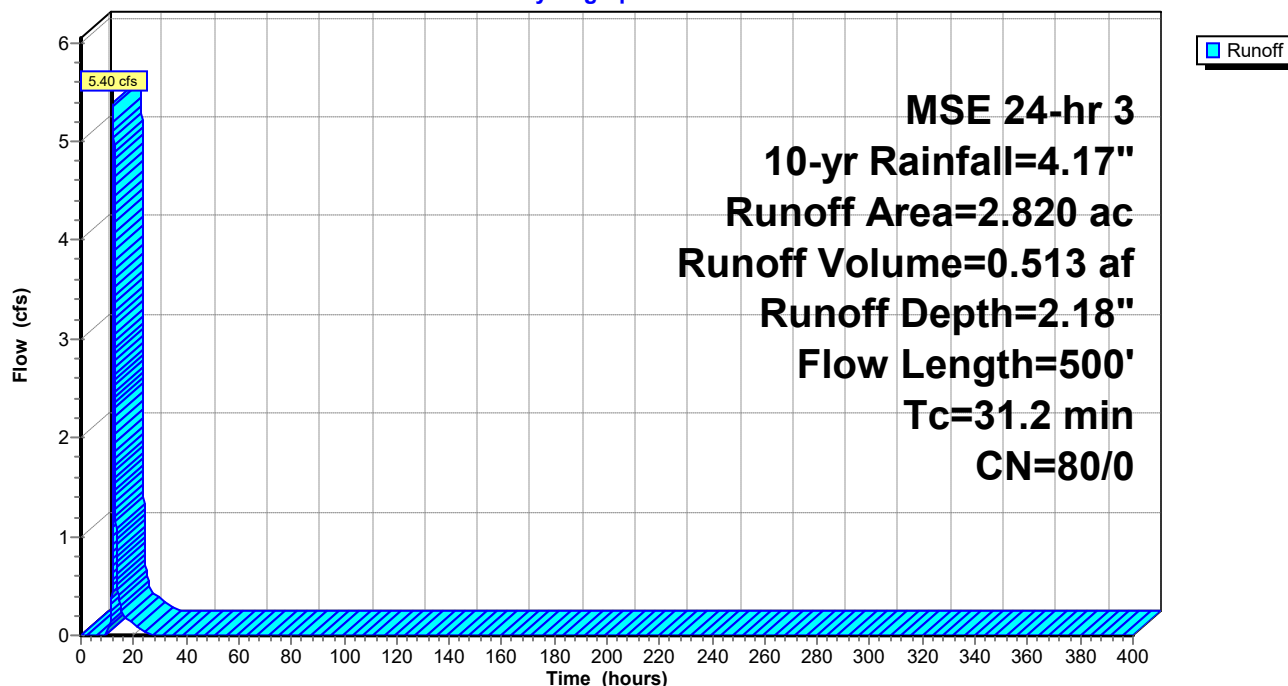
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
* 0.000	80	Row crops, straight row, Good, HSG D
* 2.820	80	Woods/grass comb., Fair, HSG D
2.820	80	Weighted Average
2.820	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.1	200	0.0100	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
7.1	300	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
31.2	500	Total			

Subcatchment 30X: OFFSITE Existing Drainage to Wetland 14

Hydrograph



Summary for Subcatchment 40X: OFFSITE Existing Drainage to Wetland 4

Runoff = 10.96 cfs @ 12.82 hrs, Volume= 1.592 af, Depth= 2.60"

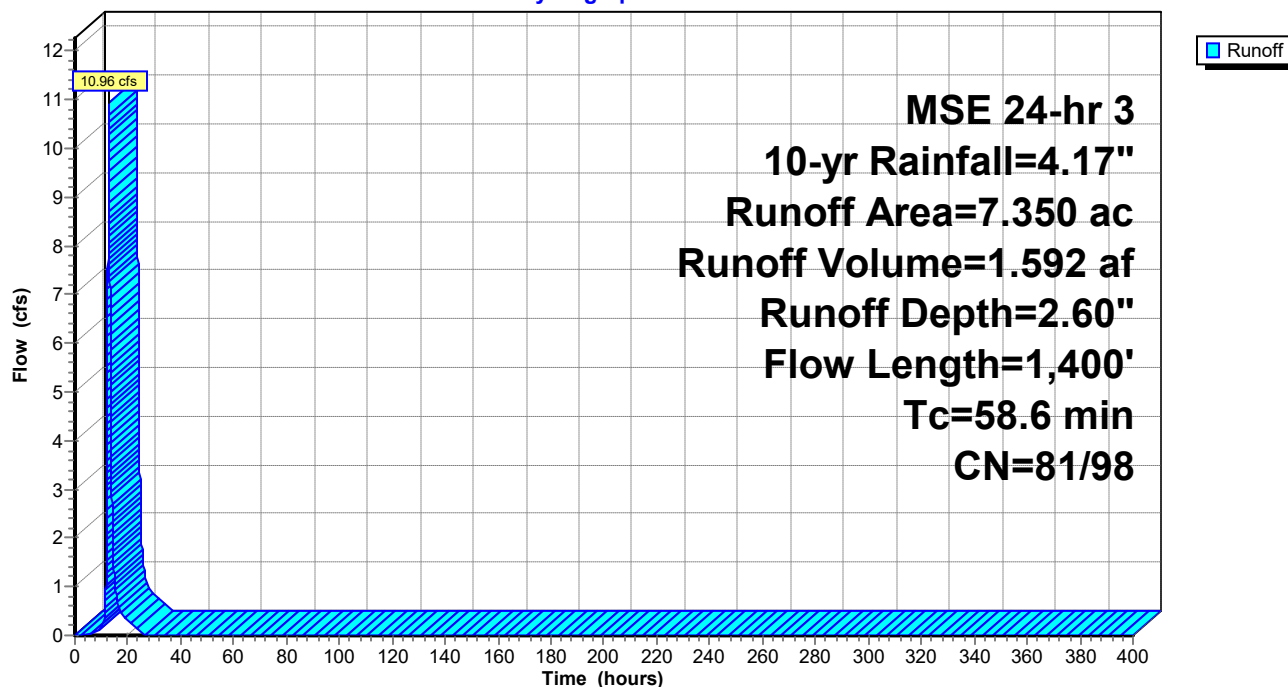
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
0.000	89	Row crops, straight row, Good, HSG D
0.000	82	Woods/grass comb., Fair, HSG D
7.350	84	1 acre lots, 20% imp, HSG D
7.350	84	Weighted Average
5.880	81	80.00% Pervious Area
1.470	98	20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	200	0.0200	0.18		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
40.4	1,200	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
58.6	1,400	Total			

Subcatchment 40X: OFFSITE Existing Drainage to Wetland 4

Hydrograph



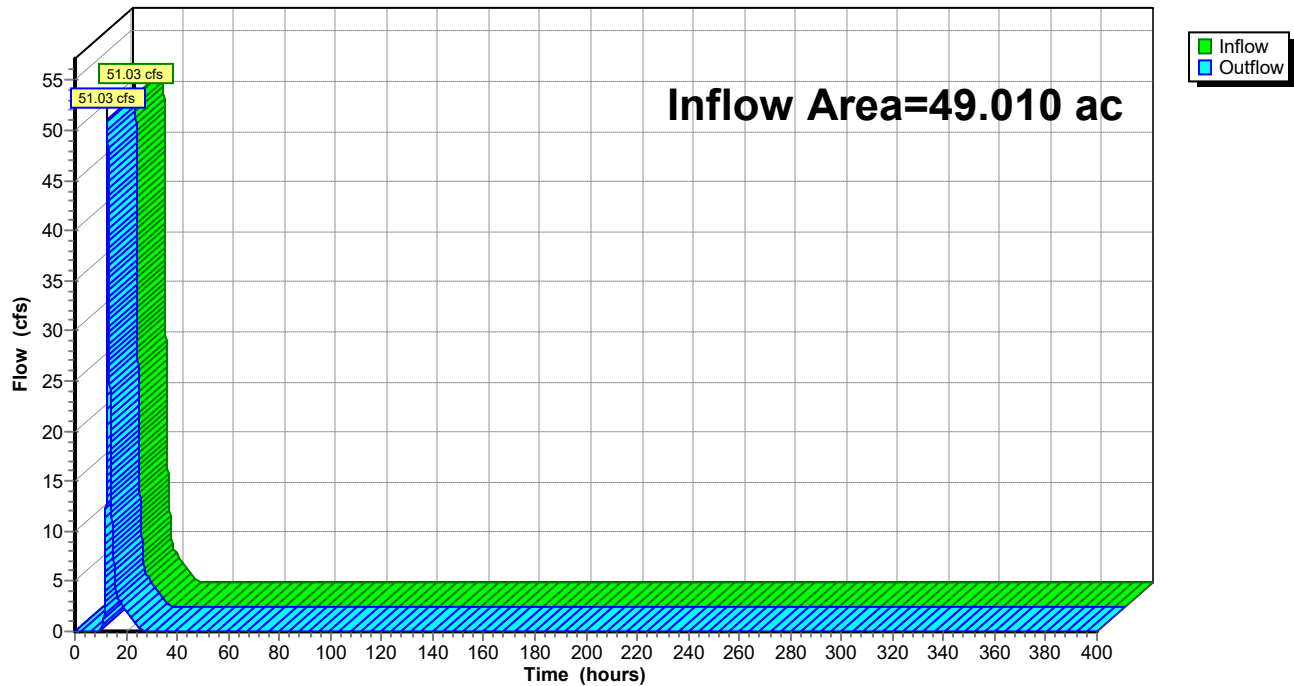
Summary for Reach 1XR: To Lake Peltier

Inflow Area = 49.010 ac, 0.00% Impervious, Inflow Depth = 2.13" for 10-yr event
 Inflow = 51.03 cfs @ 12.76 hrs, Volume= 8.713 af
 Outflow = 51.03 cfs @ 12.76 hrs, Volume= 8.713 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 1XR: To Lake Peltier

Hydrograph



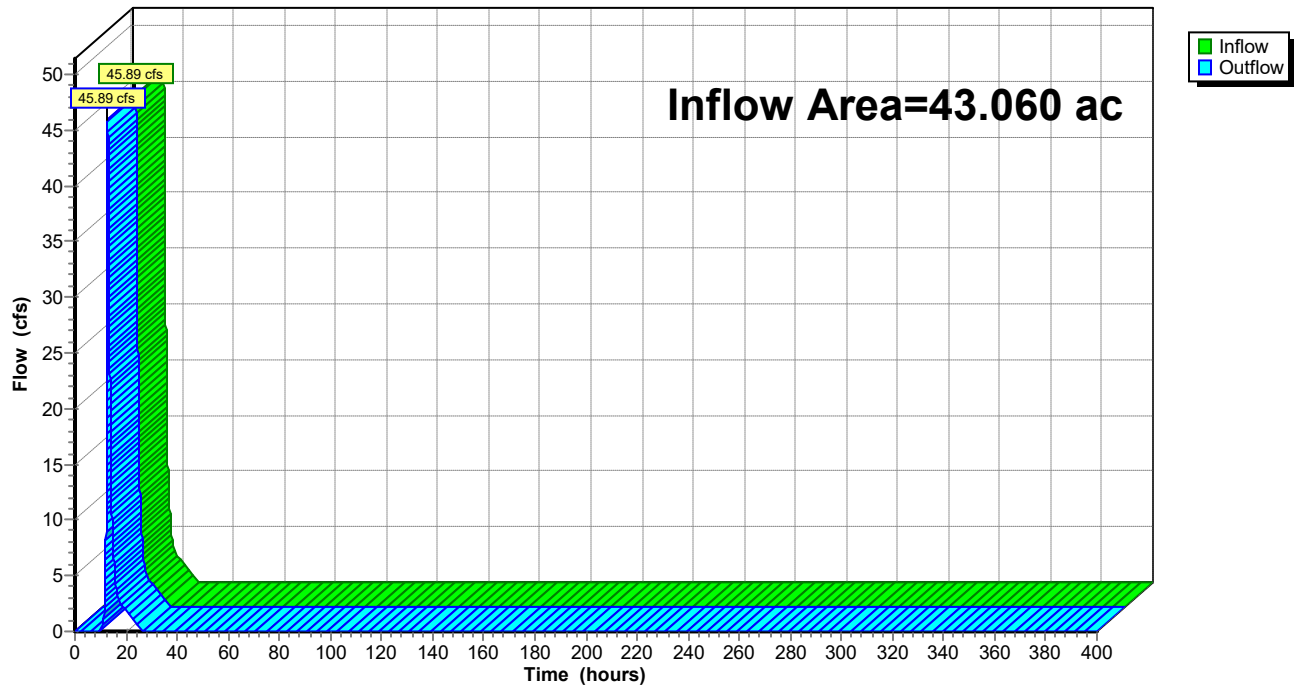
Summary for Reach 2XR: Tributary 2

Inflow Area = 43.060 ac, 0.00% Impervious, Inflow Depth = 2.13" for 10-yr event
 Inflow = 45.89 cfs @ 12.80 hrs, Volume= 7.631 af
 Outflow = 45.89 cfs @ 12.80 hrs, Volume= 7.631 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 2XR: Tributary 2

Hydrograph



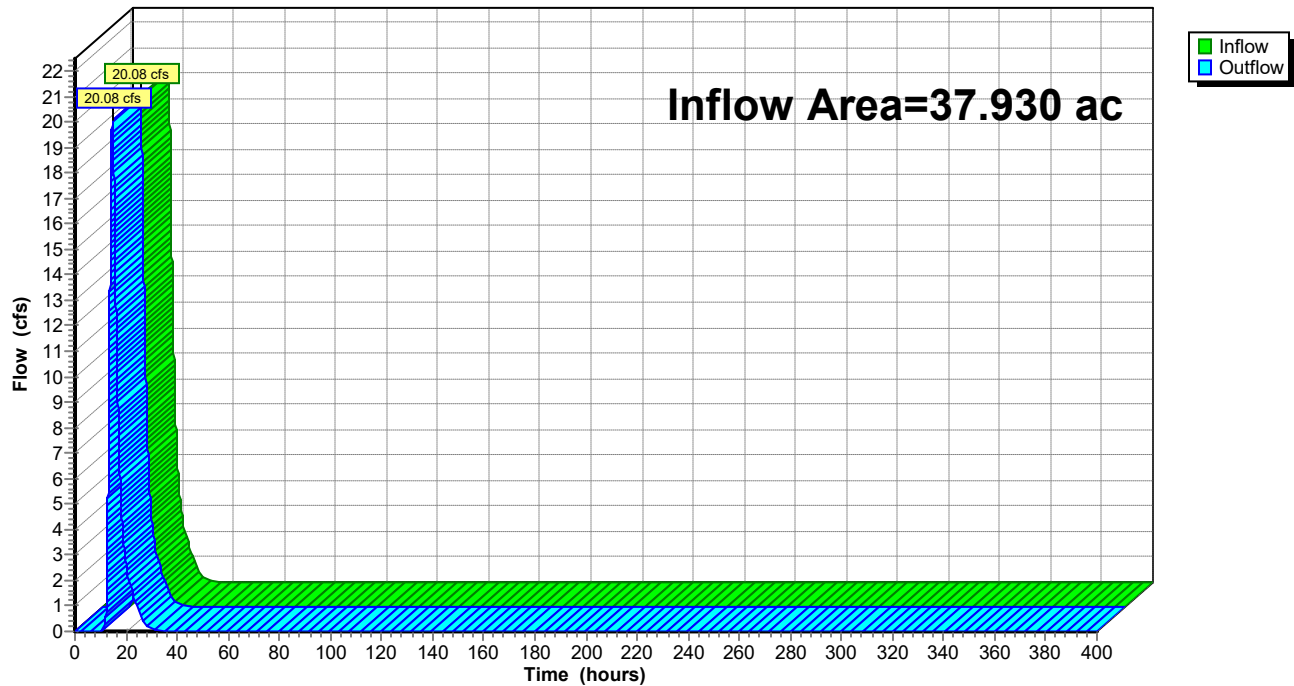
Summary for Reach 3XR: To South

Inflow Area = 37.930 ac, 0.00% Impervious, Inflow Depth = 2.18" for 10-yr event
 Inflow = 20.08 cfs @ 14.67 hrs, Volume= 6.900 af
 Outflow = 20.08 cfs @ 14.67 hrs, Volume= 6.900 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 3XR: To South

Hydrograph



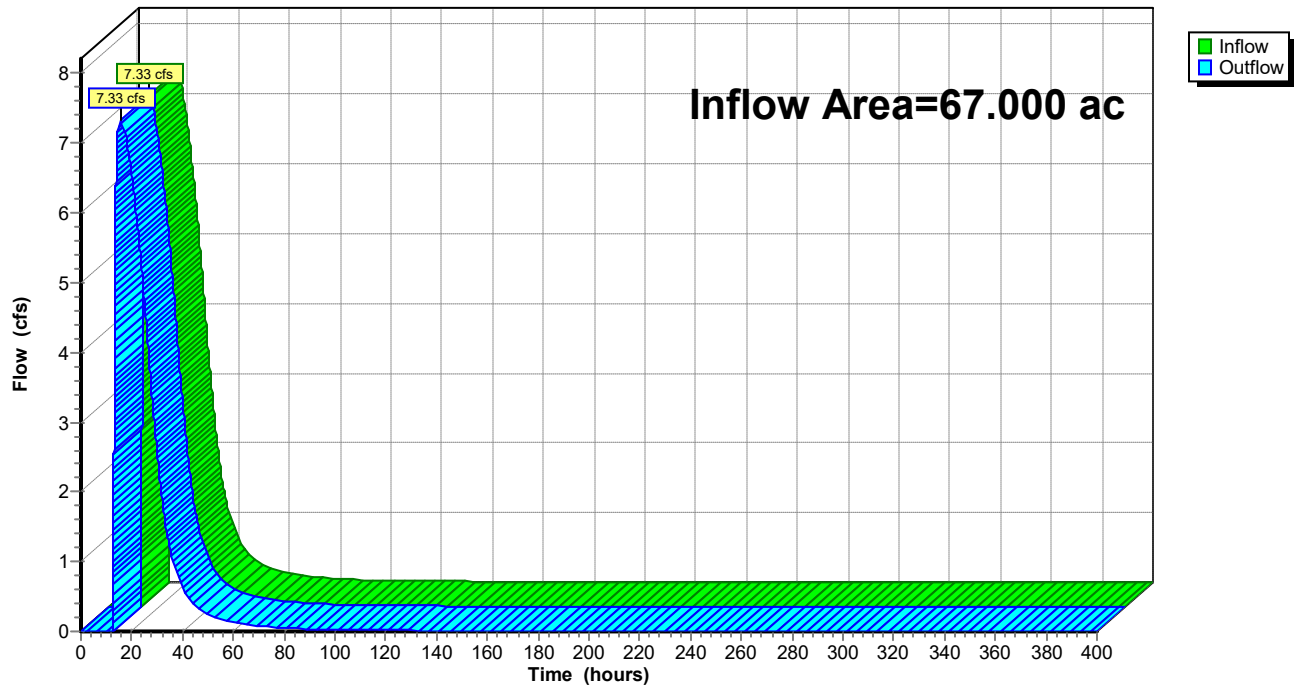
Summary for Reach 4XR: To North

Inflow Area = 67.000 ac, 2.19% Impervious, Inflow Depth > 1.74" for 10-yr event
 Inflow = 7.33 cfs @ 15.67 hrs, Volume= 9.720 af
 Outflow = 7.33 cfs @ 15.67 hrs, Volume= 9.720 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 4XR: To North

Hydrograph



Summary for Pond 1XP: Ex 18" STRM

Inflow Area = 2.760 ac, 0.00% Impervious, Inflow Depth = 2.18" for 10-yr event
 Inflow = 5.42 cfs @ 12.44 hrs, Volume= 0.502 af
 Outflow = 5.42 cfs @ 12.44 hrs, Volume= 0.502 af, Atten= 0%, Lag= 0.1 min
 Primary = 5.42 cfs @ 12.44 hrs, Volume= 0.502 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 894.11' @ 12.44 hrs Surf.Area= 162 sf Storage= 71 cf

Plug-Flow detention time= 0.6 min calculated for 0.502 af (100% of inflow)
 Center-of-Mass det. time= 0.3 min (827.5 - 827.2)

Volume	Invert	Avail.Storage	Storage Description
#1	892.96'	1,547 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
892.96	20	0	0
894.00	90	57	57
896.00	1,400	1,490	1,547

Device	Routing	Invert	Outlet Devices
#1	Primary	892.96'	18.0" Round Culvert L= 43.6' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 892.96' / 888.72' S= 0.0972 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Primary	894.10'	50.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

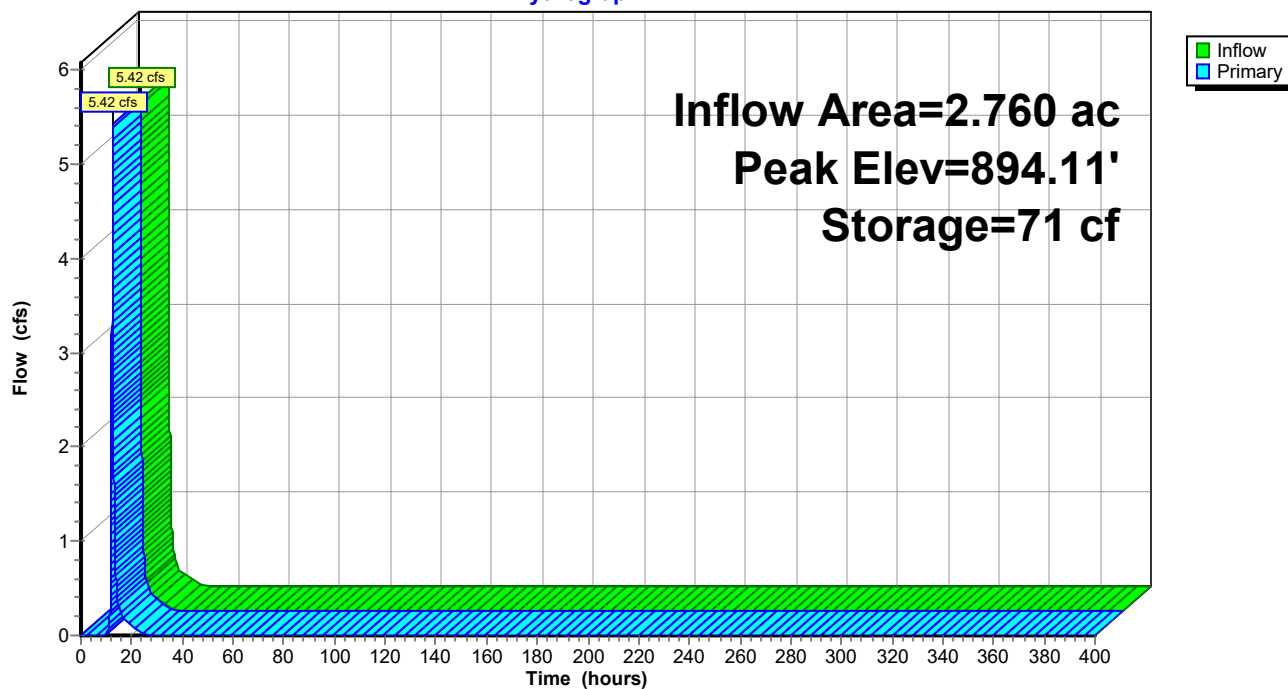
Primary OutFlow Max=5.42 cfs @ 12.44 hrs HW=894.11' TW=0.00' (Dynamic Tailwater)

1=Culvert (Inlet Controls 5.30 cfs @ 3.65 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 0.12 cfs @ 0.26 fps)

Pond 1XP: Ex 18" STRM

Hydrograph



2026-02-09 Peltier Ponds - Prelim*MSE 24-hr 3 10-yr Rainfall=4.17"*

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Stage-Area-Storage for Pond 1XP: Ex 18" STRM

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
892.96	20	0	895.56	1,112	995
893.01	23	1	895.61	1,145	1,051
893.06	27	2	895.66	1,177	1,109
893.11	30	4	895.71	1,210	1,169
893.16	33	5	895.76	1,243	1,230
893.21	37	7	895.81	1,276	1,293
893.26	40	9	895.86	1,308	1,358
893.31	44	11	895.91	1,341	1,424
893.36	47	13	895.96	1,374	1,492
893.41	50	16			
893.46	54	18			
893.51	57	21			
893.56	60	24			
893.61	64	27			
893.66	67	30			
893.71	70	34			
893.76	74	38			
893.81	77	41			
893.86	81	45			
893.91	84	49			
893.96	87	54			
894.01	97	58			
894.06	129	64			
894.11	162	71			
894.16	195	80			
894.21	228	91			
894.26	260	103			
894.31	293	117			
894.36	326	132			
894.41	359	149			
894.46	391	168			
894.51	424	188			
894.56	457	210			
894.61	490	234			
894.66	522	259			
894.71	555	286			
894.76	588	315			
894.81	621	345			
894.86	653	377			
894.91	686	410			
894.96	719	445			
895.01	752	482			
895.06	784	521			
895.11	817	561			
895.16	850	602			
895.21	883	646			
895.26	915	691			
895.31	948	737			
895.36	981	785			
895.41	1,014	835			
895.46	1,046	887			
895.51	1,079	940			

Summary for Pond 2XP: Ex STRM Structure

Inflow Area = 43.060 ac, 0.00% Impervious, Inflow Depth = 2.13" for 10-yr event
 Inflow = 45.89 cfs @ 12.80 hrs, Volume= 7.631 af
 Outflow = 45.87 cfs @ 12.81 hrs, Volume= 7.631 af, Atten= 0%, Lag= 0.5 min
 Primary = 45.87 cfs @ 12.81 hrs, Volume= 7.631 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 888.95' @ 12.81 hrs Surf.Area= 4,181 sf Storage= 3,815 cf

Plug-Flow detention time= 2.0 min calculated for 7.631 af (100% of inflow)
 Center-of-Mass det. time= 2.0 min (865.2 - 863.2)

Volume	Invert	Avail.Storage	Storage Description
#1	886.82'	46,909 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
886.82	10	0	0
888.00	1,700	1,009	1,009
890.00	6,900	8,600	9,609
892.00	30,400	37,300	46,909

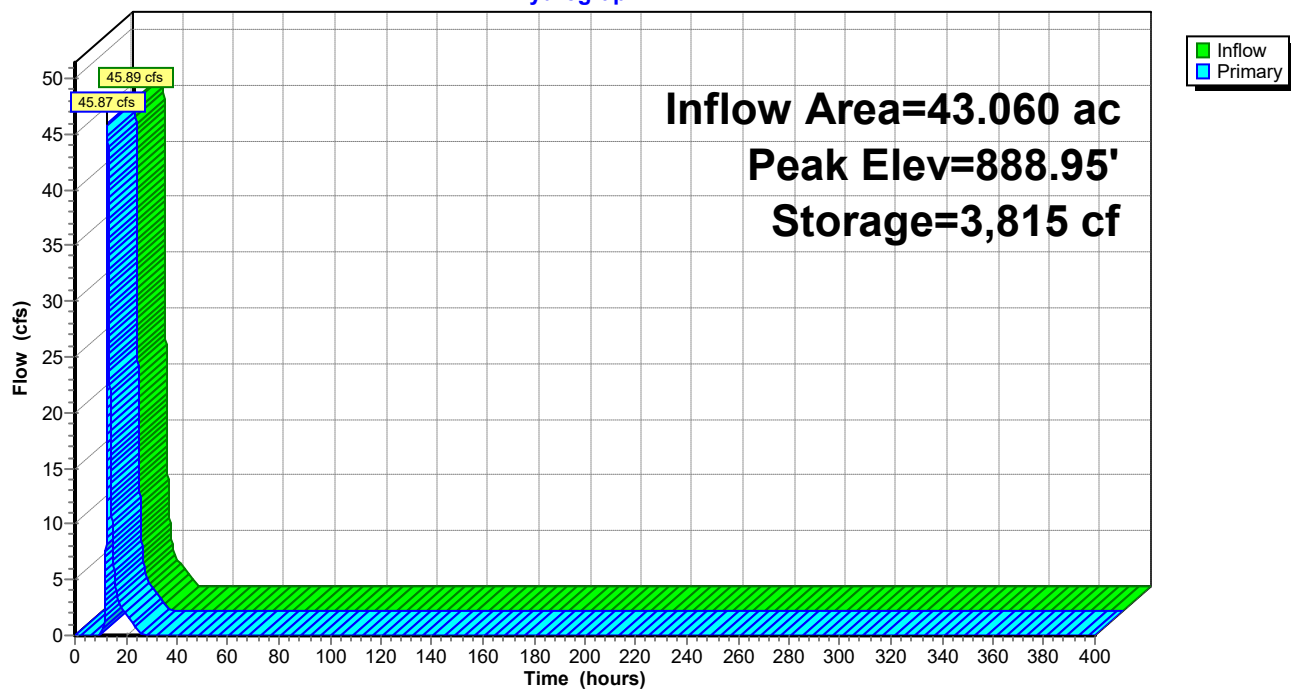
Device	Routing	Invert	Outlet Devices
#1	Primary	886.36'	21.0" Round Ex 21" CMP L= 37.5' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 886.36' / 885.72' S= 0.0171 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 2.41 sf
#2	Device 1	886.82'	21.0" Vert. EX STRUCTURE OPENNING C= 0.600
#3	Primary	888.40'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=45.87 cfs @ 12.81 hrs HW=888.95' TW=0.00' (Dynamic Tailwater)

1=Ex 21" CMP (Barrel Controls 12.45 cfs @ 5.18 fps)
 2=EX STRUCTURE OPENNING (Passes 12.45 cfs of 13.00 cfs potential flow)
 3=Broad-Crested Rectangular Weir (Weir Controls 33.42 cfs @ 2.01 fps)

Pond 2XP: Ex STRM Structure

Hydrograph



Stage-Area-Storage for Pond 2XP: Ex STRM Structure

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
886.82	10	0
886.92	153	8
887.02	296	31
887.12	440	67
887.22	583	119
887.32	726	184
887.42	869	264
887.52	1,013	358
887.62	1,156	466
887.72	1,299	589
887.82	1,442	726
887.92	1,585	877
888.02	1,752	1,043
888.12	2,012	1,232
888.22	2,272	1,446
888.32	2,532	1,686
888.42	2,792	1,952
888.52	3,052	2,244
888.62	3,312	2,563
888.72	3,572	2,907
888.82	3,832	3,277
888.92	4,092	3,673
889.02	4,352	4,095
889.12	4,612	4,544
889.22	4,872	5,018
889.32	5,132	5,518
889.42	5,392	6,044
889.52	5,652	6,596
889.62	5,912	7,175
889.72	6,172	7,779
889.82	6,432	8,409
889.92	6,692	9,065
890.02	7,135	9,749
890.12	8,310	10,521
890.22	9,485	11,411
890.32	10,660	12,419
890.42	11,835	13,543
890.52	13,010	14,786
890.62	14,185	16,145
890.72	15,360	17,623
890.82	16,535	19,217
890.92	17,710	20,930
891.02	18,885	22,759
891.12	20,060	24,707
891.22	21,235	26,771
891.32	22,410	28,954
891.42	23,585	31,253
891.52	24,760	33,671
891.62	25,935	36,205
891.72	27,110	38,858
891.82	28,285	41,627
891.92	29,460	44,515

Summary for Pond W10X: Wetland 10

Inflow Area = 2.530 ac, 0.00% Impervious, Inflow Depth = 2.18" for 10-yr event
 Inflow = 7.11 cfs @ 12.24 hrs, Volume= 0.460 af
 Outflow = 1.25 cfs @ 12.78 hrs, Volume= 0.258 af, Atten= 82%, Lag= 32.6 min
 Primary = 1.25 cfs @ 12.78 hrs, Volume= 0.258 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 908.24' @ 12.78 hrs Surf.Area= 20,565 sf Storage= 11,254 cf

Plug-Flow detention time= 201.8 min calculated for 0.258 af (56% of inflow)
 Center-of-Mass det. time= 118.0 min (931.8 - 813.8)

Volume	Invert	Avail.Storage	Storage Description
#1	907.00'	112,600 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

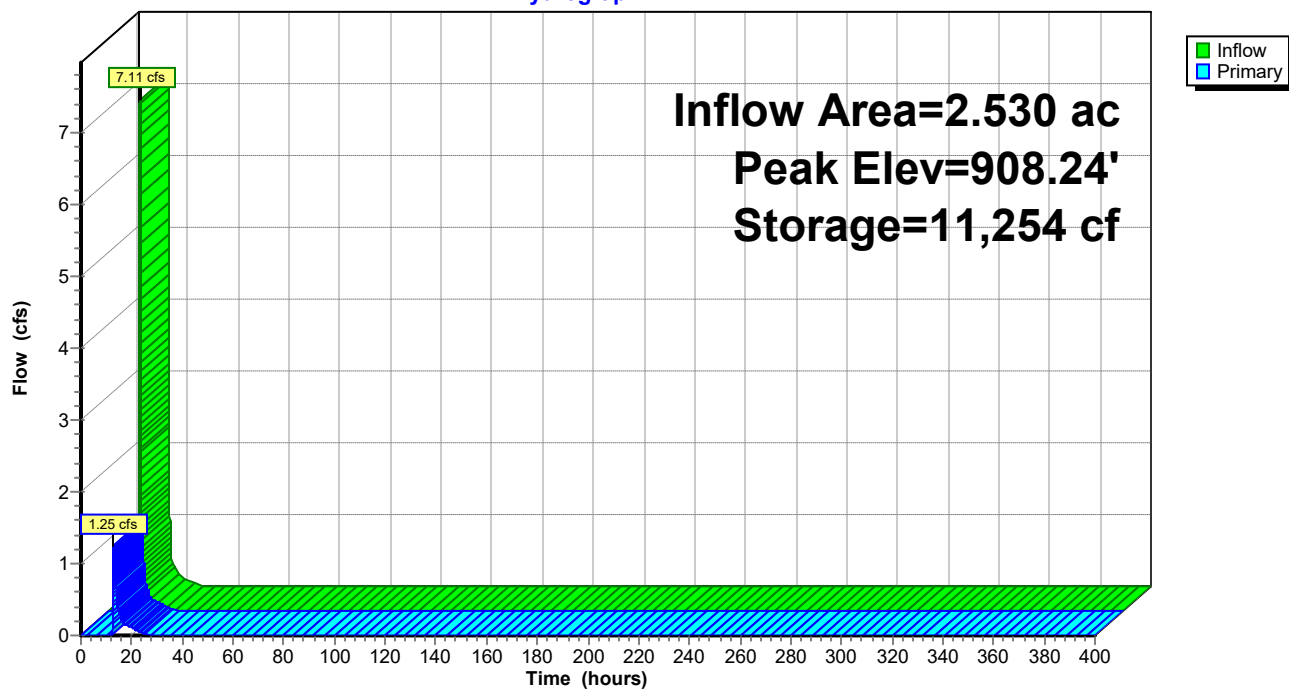
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
907.00	2,300	0	0
907.50	7,900	2,550	2,550
908.00	11,700	4,900	7,450
909.00	49,300	30,500	37,950
910.00	100,000	74,650	112,600

Device	Routing	Invert	Outlet Devices
#1	Primary	908.10'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.25 cfs @ 12.78 hrs HW=908.24' TW=0.00' (Dynamic Tailwater)
 ↑1=**Broad-Crested Rectangular Weir** (Weir Controls 1.25 cfs @ 0.92 fps)

Pond W10X: Wetland 10

Hydrograph



2026-02-09 Peltier Ponds - Prelim*MSE 24-hr 3 10-yr Rainfall=4.17"*

Prepared by James R. Hill, Inc.

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Stage-Area-Storage for Pond W10X: Wetland 10

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
907.00	2,300	0	909.60	79,720	76,656
907.05	2,860	129	909.65	82,255	80,705
907.10	3,420	286	909.70	84,790	84,882
907.15	3,980	471	909.75	87,325	89,184
907.20	4,540	684	909.80	89,860	93,614
907.25	5,100	925	909.85	92,395	98,170
907.30	5,660	1,194	909.90	94,930	102,853
907.35	6,220	1,491	909.95	97,465	107,663
907.40	6,780	1,816	910.00	100,000	112,600
907.45	7,340	2,169			
907.50	7,900	2,550			
907.55	8,280	2,954			
907.60	8,660	3,378			
907.65	9,040	3,820			
907.70	9,420	4,282			
907.75	9,800	4,763			
907.80	10,180	5,262			
907.85	10,560	5,781			
907.90	10,940	6,318			
907.95	11,320	6,875			
908.00	11,700	7,450			
908.05	13,580	8,082			
908.10	15,460	8,808			
908.15	17,340	9,628			
908.20	19,220	10,542			
908.25	21,100	11,550			
908.30	22,980	12,652			
908.35	24,860	13,848			
908.40	26,740	15,138			
908.45	28,620	16,522			
908.50	30,500	18,000			
908.55	32,380	19,572			
908.60	34,260	21,238			
908.65	36,140	22,998			
908.70	38,020	24,852			
908.75	39,900	26,800			
908.80	41,780	28,842			
908.85	43,660	30,978			
908.90	45,540	33,208			
908.95	47,420	35,532			
909.00	49,300	37,950			
909.05	51,835	40,478			
909.10	54,370	43,134			
909.15	56,905	45,915			
909.20	59,440	48,824			
909.25	61,975	51,859			
909.30	64,510	55,021			
909.35	67,045	58,310			
909.40	69,580	61,726			
909.45	72,115	65,268			
909.50	74,650	68,938			
909.55	77,185	72,733			

Summary for Pond W12X: Wetland 12

Inflow Area = 6.120 ac, 0.00% Impervious, Inflow Depth = 2.18" for 10-yr event
 Inflow = 9.77 cfs @ 12.61 hrs, Volume= 1.113 af
 Outflow = 0.10 cfs @ 23.58 hrs, Volume= 0.044 af, Atten= 99%, Lag= 658.1 min
 Primary = 0.10 cfs @ 23.58 hrs, Volume= 0.044 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 907.52' @ 23.58 hrs Surf.Area= 61,968 sf Storage= 47,543 cf

Plug-Flow detention time= 886.8 min calculated for 0.044 af (4% of inflow)
 Center-of-Mass det. time= 743.2 min (1,581.9 - 838.7)

Volume	Invert	Avail.Storage	Storage Description
#1	905.50'	84,245 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
905.50	890	0	0
906.00	9,030	2,480	2,480
907.00	32,400	20,715	23,195
908.00	89,700	61,050	84,245

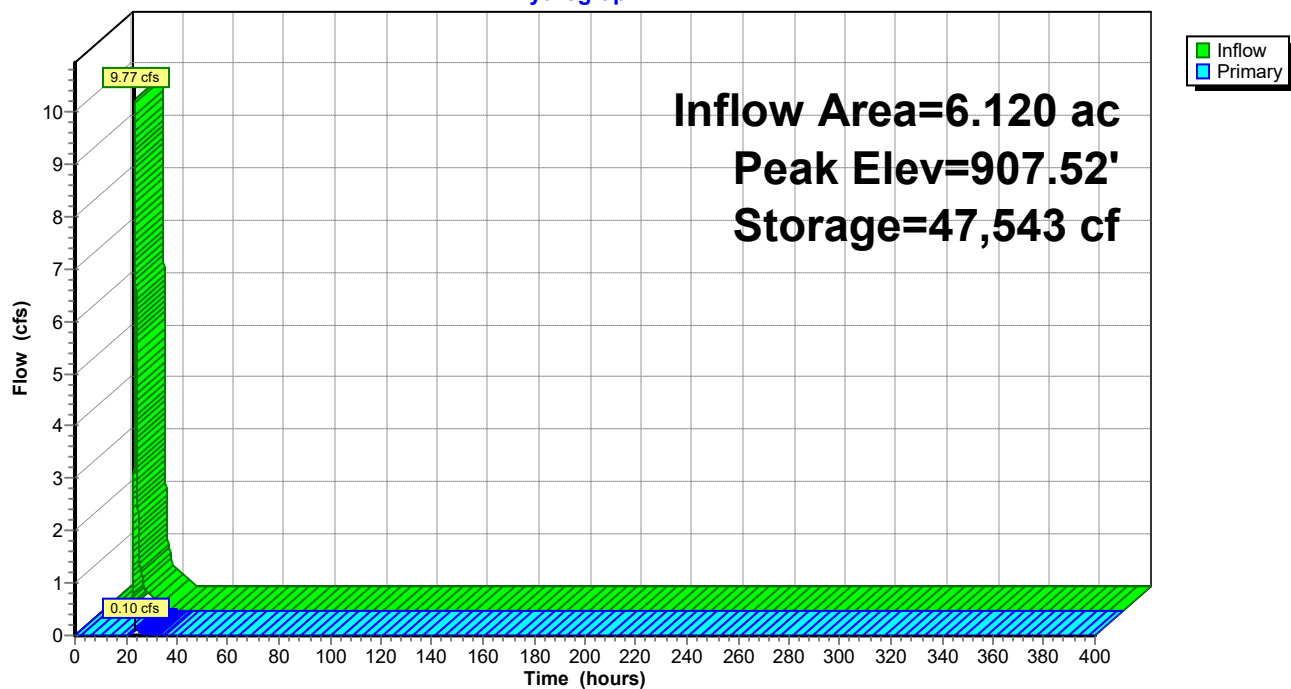
Device	Routing	Invert	Outlet Devices
#1	Primary	907.50'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.10 cfs @ 23.58 hrs HW=907.52' TW=901.33' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 0.10 cfs @ 0.32 fps)

Pond W12X: Wetland 12

Hydrograph



2026-02-09 Peltier Ponds - Prelim*MSE 24-hr 3 10-yr Rainfall=4.17"*

Prepared by James R. Hill, Inc.

Printed 2/9/2026

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Stage-Area-Storage for Pond W12X: Wetland 12

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
905.50	890	0
905.55	1,704	65
905.60	2,518	170
905.65	3,332	317
905.70	4,146	504
905.75	4,960	731
905.80	5,774	1,000
905.85	6,588	1,309
905.90	7,402	1,658
905.95	8,216	2,049
906.00	9,030	2,480
906.05	10,198	2,961
906.10	11,367	3,500
906.15	12,535	4,097
906.20	13,704	4,753
906.25	14,873	5,468
906.30	16,041	6,241
906.35	17,210	7,072
906.40	18,378	7,962
906.45	19,547	8,910
906.50	20,715	9,916
906.55	21,883	10,981
906.60	23,052	12,105
906.65	24,220	13,286
906.70	25,389	14,527
906.75	26,558	15,825
906.80	27,726	17,182
906.85	28,895	18,598
906.90	30,063	20,072
906.95	31,232	21,604
907.00	32,400	23,195
907.05	35,265	24,887
907.10	38,130	26,722
907.15	40,995	28,700
907.20	43,860	30,821
907.25	46,725	33,086
907.30	49,590	35,493
907.35	52,455	38,045
907.40	55,320	40,739
907.45	58,185	43,577
907.50	61,050	46,558
907.55	63,915	49,682
907.60	66,780	52,949
907.65	69,645	56,360
907.70	72,510	59,914
907.75	75,375	63,611
907.80	78,240	67,451
907.85	81,105	71,435
907.90	83,970	75,561
907.95	86,835	79,832
908.00	89,700	84,245

Summary for Pond W14X: Wetland 14

Inflow Area = 37.930 ac, 0.00% Impervious, Inflow Depth = 2.18" for 10-yr event
 Inflow = 22.57 cfs @ 14.15 hrs, Volume= 6.900 af
 Outflow = 20.08 cfs @ 14.67 hrs, Volume= 6.900 af, Atten= 11%, Lag= 31.5 min
 Primary = 20.08 cfs @ 14.67 hrs, Volume= 6.900 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 904.52' @ 14.67 hrs Surf.Area= 128,594 sf Storage= 46,788 cf

Plug-Flow detention time= 45.5 min calculated for 6.900 af (100% of inflow)
 Center-of-Mass det. time= 45.6 min (982.5 - 936.9)

Volume	Invert	Avail.Storage	Storage Description
#1	904.00'	594,000 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

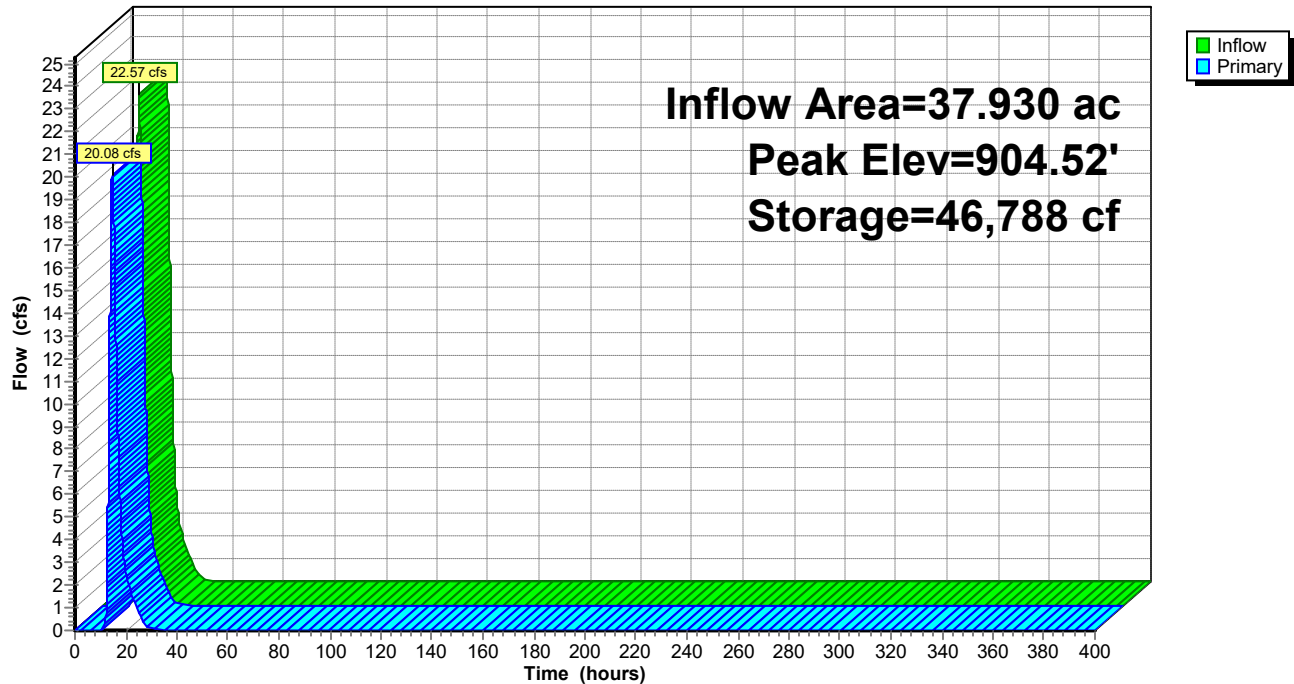
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
904.00	50,000	0	0
905.00	200,000	125,000	125,000
906.00	738,000	469,000	594,000

Device	Routing	Invert	Outlet Devices
#1	Primary	904.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=20.08 cfs @ 14.67 hrs HW=904.52' TW=0.00' (Dynamic Tailwater)
 ↑1=**Broad-Crested Rectangular Weir** (Weir Controls 20.08 cfs @ 1.92 fps)

Pond W14X: Wetland 14

Hydrograph



Stage-Area-Storage for Pond W14X: Wetland 14

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
904.00	50,000	0	905.04	221,520	133,430
904.02	53,000	1,030	905.06	232,280	137,968
904.04	56,000	2,120	905.08	243,040	142,722
904.06	59,000	3,270	905.10	253,800	147,690
904.08	62,000	4,480	905.12	264,560	152,874
904.10	65,000	5,750	905.14	275,320	158,272
904.12	68,000	7,080	905.16	286,080	163,886
904.14	71,000	8,470	905.18	296,840	169,716
904.16	74,000	9,920	905.20	307,600	175,760
904.18	77,000	11,430	905.22	318,360	182,020
904.20	80,000	13,000	905.24	329,120	188,494
904.22	83,000	14,630	905.26	339,880	195,184
904.24	86,000	16,320	905.28	350,640	202,090
904.26	89,000	18,070	905.30	361,400	209,210
904.28	92,000	19,880	905.32	372,160	216,546
904.30	95,000	21,750	905.34	382,920	224,096
904.32	98,000	23,680	905.36	393,680	231,862
904.34	101,000	25,670	905.38	404,440	239,844
904.36	104,000	27,720	905.40	415,200	248,040
904.38	107,000	29,830	905.42	425,960	256,452
904.40	110,000	32,000	905.44	436,720	265,078
904.42	113,000	34,230	905.46	447,480	273,920
904.44	116,000	36,520	905.48	458,240	282,978
904.46	119,000	38,870	905.50	469,000	292,250
904.48	122,000	41,280	905.52	479,760	301,738
904.50	125,000	43,750	905.54	490,520	311,440
904.52	128,000	46,280	905.56	501,280	321,358
904.54	131,000	48,870	905.58	512,040	331,492
904.56	134,000	51,520	905.60	522,800	341,840
904.58	137,000	54,230	905.62	533,560	352,404
904.60	140,000	57,000	905.64	544,320	363,182
904.62	143,000	59,830	905.66	555,080	374,176
904.64	146,000	62,720	905.68	565,840	385,386
904.66	149,000	65,670	905.70	576,600	396,810
904.68	152,000	68,680	905.72	587,360	408,450
904.70	155,000	71,750	905.74	598,120	420,304
904.72	158,000	74,880	905.76	608,880	432,374
904.74	161,000	78,070	905.78	619,640	444,660
904.76	164,000	81,320	905.80	630,400	457,160
904.78	167,000	84,630	905.82	641,160	469,876
904.80	170,000	88,000	905.84	651,920	482,806
904.82	173,000	91,430	905.86	662,680	495,952
904.84	176,000	94,920	905.88	673,440	509,314
904.86	179,000	98,470	905.90	684,200	522,890
904.88	182,000	102,080	905.92	694,960	536,682
904.90	185,000	105,750	905.94	705,720	550,688
904.92	188,000	109,480	905.96	716,480	564,910
904.94	191,000	113,270	905.98	727,240	579,348
904.96	194,000	117,120	906.00	738,000	594,000
904.98	197,000	121,030			
905.00	200,000	125,000			
905.02	210,760	129,108			

Summary for Pond W4X: Wetland 4

Inflow Area = 67.000 ac, 2.19% Impervious, Inflow Depth = 1.94" for 10-yr event
 Inflow = 65.42 cfs @ 12.94 hrs, Volume= 10.810 af
 Outflow = 7.33 cfs @ 15.67 hrs, Volume= 9.720 af, Atten= 89%, Lag= 163.6 min
 Primary = 7.33 cfs @ 15.67 hrs, Volume= 9.720 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 901.12' @ 15.67 hrs Surf.Area= 263,267 sf Storage= 311,826 cf

Plug-Flow detention time= 755.5 min calculated for 9.720 af (90% of inflow)
 Center-of-Mass det. time= 708.6 min (1,583.2 - 874.5)

Volume	Invert	Avail.Storage	Storage Description
#1	898.00'	1,964,800 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
898.00	10,000	0	0
899.50	80,000	67,500	67,500
900.00	94,800	43,700	111,200
901.00	245,500	170,150	281,350
902.00	393,800	319,650	601,000
904.00	970,000	1,363,800	1,964,800

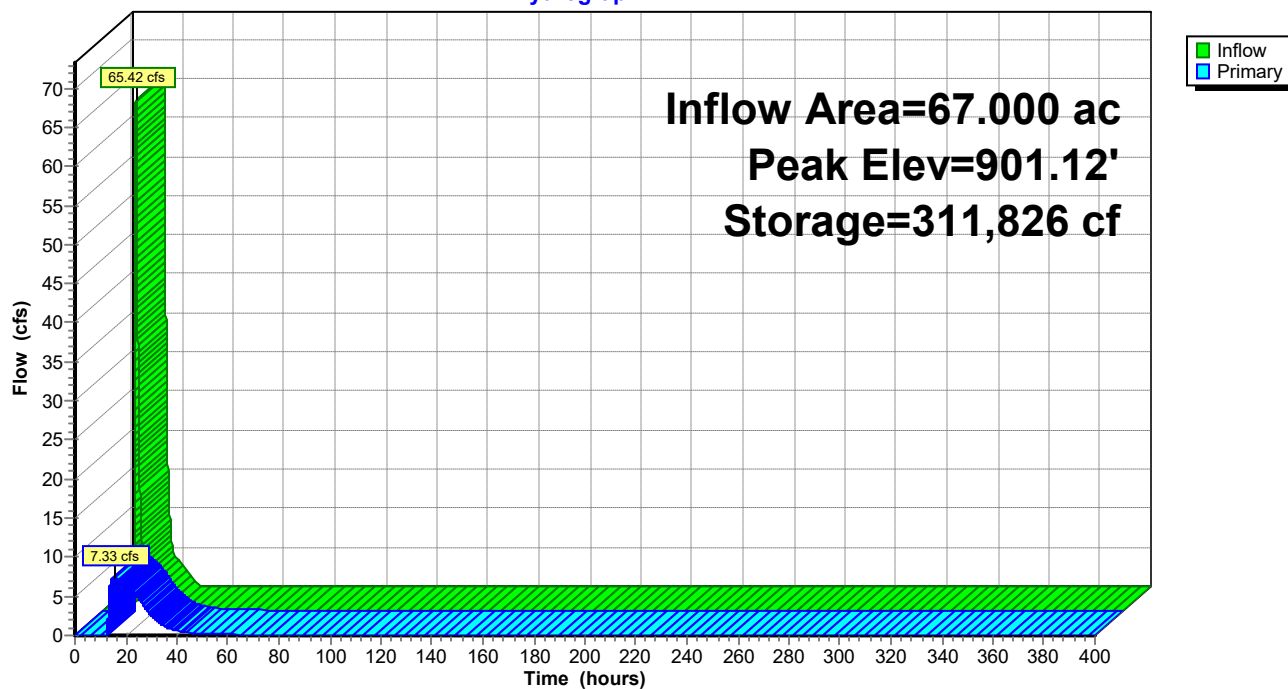
Device	Routing	Invert	Outlet Devices
#1	Primary	899.20'	18.0" Round Culvert L= 15.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 899.20' / 899.18' S= 0.0013 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.77 sf
#2	Primary	902.70'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=7.33 cfs @ 15.67 hrs HW=901.12' TW=0.00' (Dynamic Tailwater)

1=Culvert (Barrel Controls 7.33 cfs @ 4.21 fps)
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond W4X: Wetland 4

Hydrograph



2026-02-09 Peltier Ponds - Prelim*MSE 24-hr 3 10-yr Rainfall=4.17"*

Prepared by James R. Hill, Inc.

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Stage-Area-Storage for Pond W4X: Wetland 4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
898.00	10,000	0	903.20	739,520	1,280,992
898.10	14,667	1,233	903.30	768,330	1,356,384
898.20	19,333	2,933	903.40	797,140	1,434,658
898.30	24,000	5,100	903.50	825,950	1,515,813
898.40	28,667	7,733	903.60	854,760	1,599,848
898.50	33,333	10,833	903.70	883,570	1,686,765
898.60	38,000	14,400	903.80	912,380	1,776,562
898.70	42,667	18,433	903.90	941,190	1,869,240
898.80	47,333	22,933	904.00	970,000	1,964,800
898.90	52,000	27,900			
899.00	56,667	33,333			
899.10	61,333	39,233			
899.20	66,000	45,600			
899.30	70,667	52,433			
899.40	75,333	59,733			
899.50	80,000	67,500			
899.60	82,960	75,648			
899.70	85,920	84,092			
899.80	88,880	92,832			
899.90	91,840	101,868			
900.00	94,800	111,200			
900.10	109,870	121,434			
900.20	124,940	133,174			
900.30	140,010	146,421			
900.40	155,080	161,176			
900.50	170,150	177,438			
900.60	185,220	195,206			
900.70	200,290	214,482			
900.80	215,360	235,264			
900.90	230,430	257,553			
901.00	245,500	281,350			
901.10	260,330	306,642			
901.20	275,160	333,416			
901.30	289,990	361,673			
901.40	304,820	391,414			
901.50	319,650	422,638			
901.60	334,480	455,344			
901.70	349,310	489,534			
901.80	364,140	525,206			
901.90	378,970	562,361			
902.00	393,800	601,000			
902.10	422,610	641,821			
902.20	451,420	685,522			
902.30	480,230	732,104			
902.40	509,040	781,568			
902.50	537,850	833,913			
902.60	566,660	889,138			
902.70	595,470	947,245			
902.80	624,280	1,008,232			
902.90	653,090	1,072,100			
903.00	681,900	1,138,850			
903.10	710,710	1,208,481			

Summary for Pond W5X: Wetland 5

Inflow Area = 22.000 ac, 0.00% Impervious, Inflow Depth = 1.60" for 10-yr event
 Inflow = 27.14 cfs @ 12.53 hrs, Volume= 2.933 af
 Outflow = 14.95 cfs @ 12.92 hrs, Volume= 2.369 af, Atten= 45%, Lag= 23.7 min
 Primary = 14.95 cfs @ 12.92 hrs, Volume= 2.369 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 901.62' @ 12.92 hrs Surf.Area= 90,141 sf Storage= 48,916 cf

Plug-Flow detention time= 142.7 min calculated for 2.369 af (81% of inflow)
 Center-of-Mass det. time= 69.8 min (915.8 - 846.0)

Volume	Invert	Avail.Storage	Storage Description
#1	900.50'	524,637 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

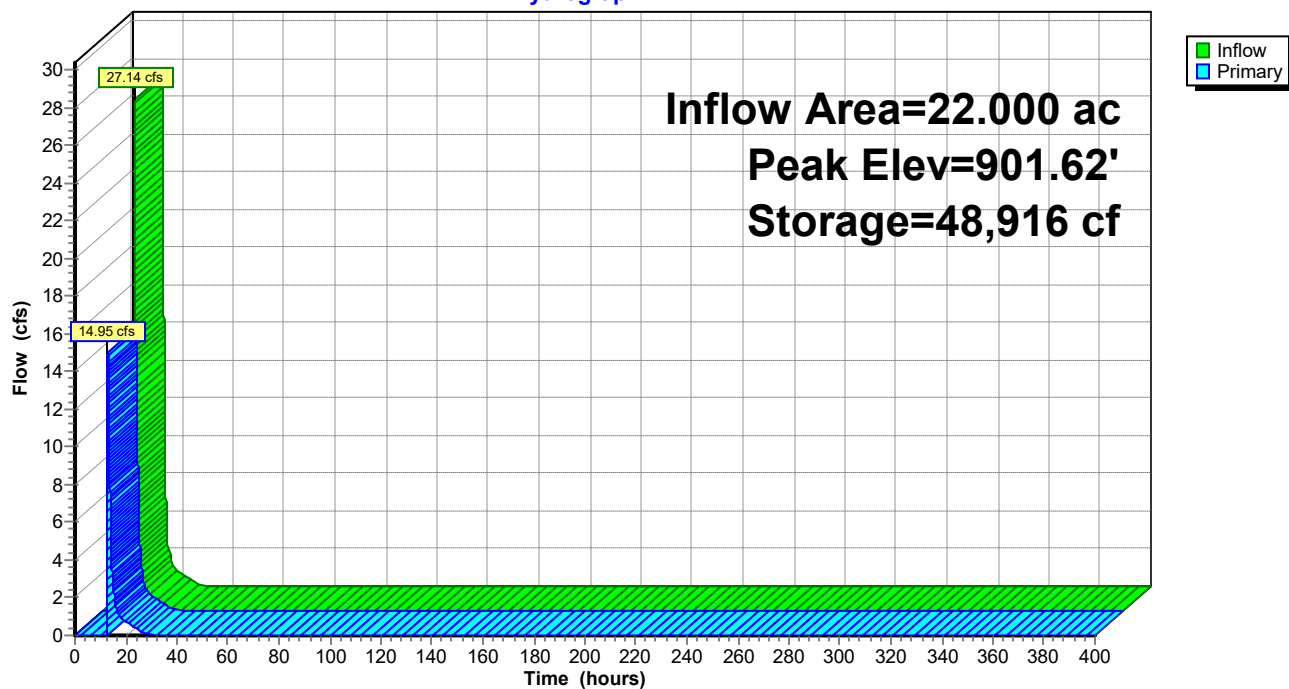
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.50	10	0	0
900.80	30,900	4,636	4,636
901.00	31,600	6,250	10,887
902.00	125,300	78,450	89,337
904.00	310,000	435,300	524,637

Device	Routing	Invert	Outlet Devices
#1	Primary	901.30'	30.0' long x 30.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=14.95 cfs @ 12.92 hrs HW=901.62' TW=900.03' (Dynamic Tailwater)
 ↑1=Broad-Crested Rectangular Weir (Weir Controls 14.95 cfs @ 1.53 fps)

Pond W5X: Wetland 5

Hydrograph



2026-02-09 Peltier Ponds - Prelim*MSE 24-hr 3 10-yr Rainfall=4.17"*

Prepared by James R. Hill, Inc.

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Stage-Area-Storage for Pond W5X: Wetland 5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
900.50	10	0	903.10	226,885	283,038
900.55	5,158	129	903.15	231,502	294,498
900.60	10,307	516	903.20	236,120	306,189
900.65	15,455	1,160	903.25	240,738	318,110
900.70	20,603	2,061	903.30	245,355	330,262
900.75	25,752	3,220	903.35	249,973	342,645
900.80	30,900	4,636	903.40	254,590	355,259
900.85	31,075	6,186	903.45	259,208	368,104
900.90	31,250	7,744	903.50	263,825	381,180
900.95	31,425	9,311	903.55	268,442	394,487
901.00	31,600	10,887	903.60	273,060	408,025
901.05	36,285	12,584	903.65	277,677	421,793
901.10	40,970	14,515	903.70	282,295	435,792
901.15	45,655	16,681	903.75	286,913	450,022
901.20	50,340	19,081	903.80	291,530	464,483
901.25	55,025	21,715	903.85	296,148	479,175
901.30	59,710	24,583	903.90	300,765	494,098
901.35	64,395	27,686	903.95	305,383	509,252
901.40	69,080	31,022	904.00	310,000	524,637
901.45	73,765	34,594			
901.50	78,450	38,399			
901.55	83,135	42,439			
901.60	87,820	46,713			
901.65	92,505	51,221			
901.70	97,190	55,963			
901.75	101,875	60,940			
901.80	106,560	66,150			
901.85	111,245	71,596			
901.90	115,930	77,275			
901.95	120,615	83,189			
902.00	125,300	89,337			
902.05	129,917	95,717			
902.10	134,535	102,328			
902.15	139,152	109,170			
902.20	143,770	116,244			
902.25	148,388	123,547			
902.30	153,005	131,082			
902.35	157,623	138,848			
902.40	162,240	146,844			
902.45	166,858	155,072			
902.50	171,475	163,530			
902.55	176,092	172,219			
902.60	180,710	181,140			
902.65	185,327	190,290			
902.70	189,945	199,672			
902.75	194,563	209,285			
902.80	199,180	219,128			
902.85	203,798	229,203			
902.90	208,415	239,508			
902.95	213,033	250,044			
903.00	217,650	260,812			
903.05	222,267	271,809			

Summary for Subcatchment 1.1X: Existing Direct Drainage to Lake

Runoff = 16.07 cfs @ 12.33 hrs, Volume= 1.285 af, Depth= 4.83"

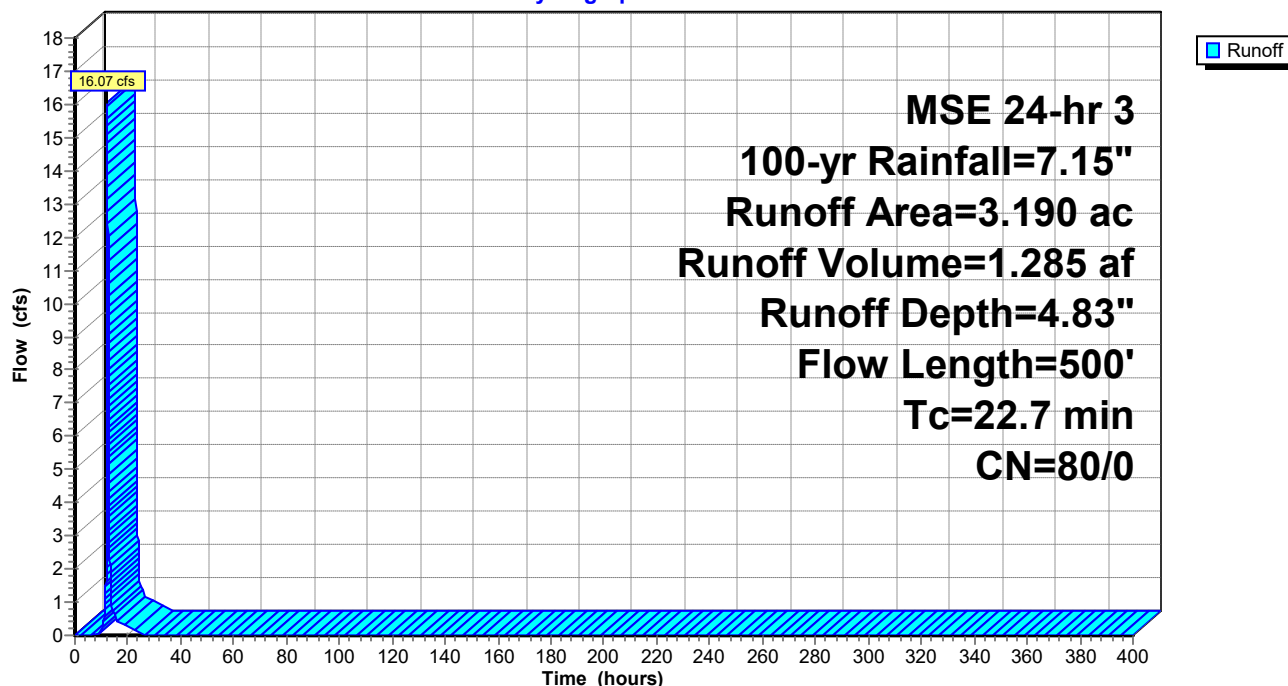
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
* 2.940	80	Row crops, straight row, Good, HSG D
* 0.250	80	Woods/grass comb., Fair, HSG D
3.190	80	Weighted Average
3.190	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.2	200	0.0200	0.17		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
2.5	300	0.0500	2.01		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
22.7	500	Total			

Subcatchment 1.1X: Existing Direct Drainage to Lake

Hydrograph



Summary for Subcatchment 1X: Existing Drainage to Ex STRM

Runoff = 11.91 cfs @ 12.41 hrs, Volume= 1.112 af, Depth= 4.83"

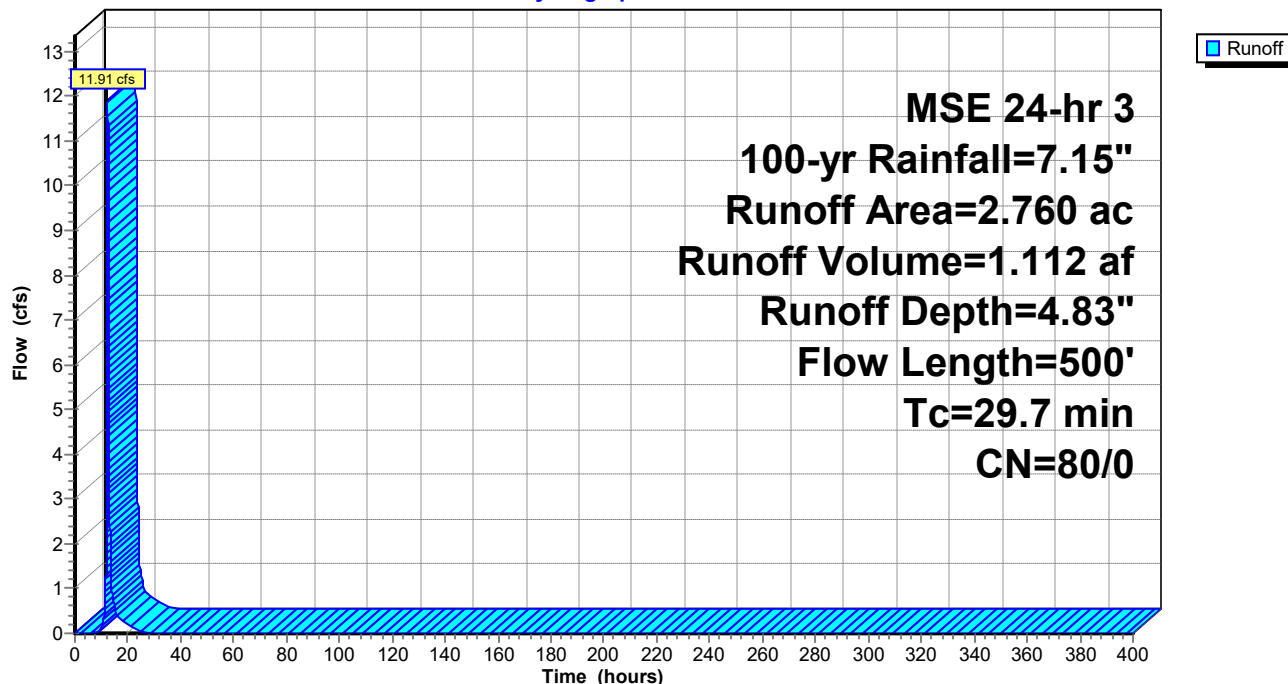
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
* 2.510	80	Row crops, straight row, Good, HSG D
* 0.250	80	Woods/grass comb., Fair, HSG D
2.760	80	Weighted Average
2.760	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
3.1	300	0.0330	1.63		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
29.7	500	Total			

Subcatchment 1X: Existing Drainage to Ex STRM

Hydrograph



Summary for Subcatchment 2.1X: Existing Drainage to Wetland 10

Runoff = 15.53 cfs @ 12.23 hrs, Volume= 1.019 af, Depth= 4.83"

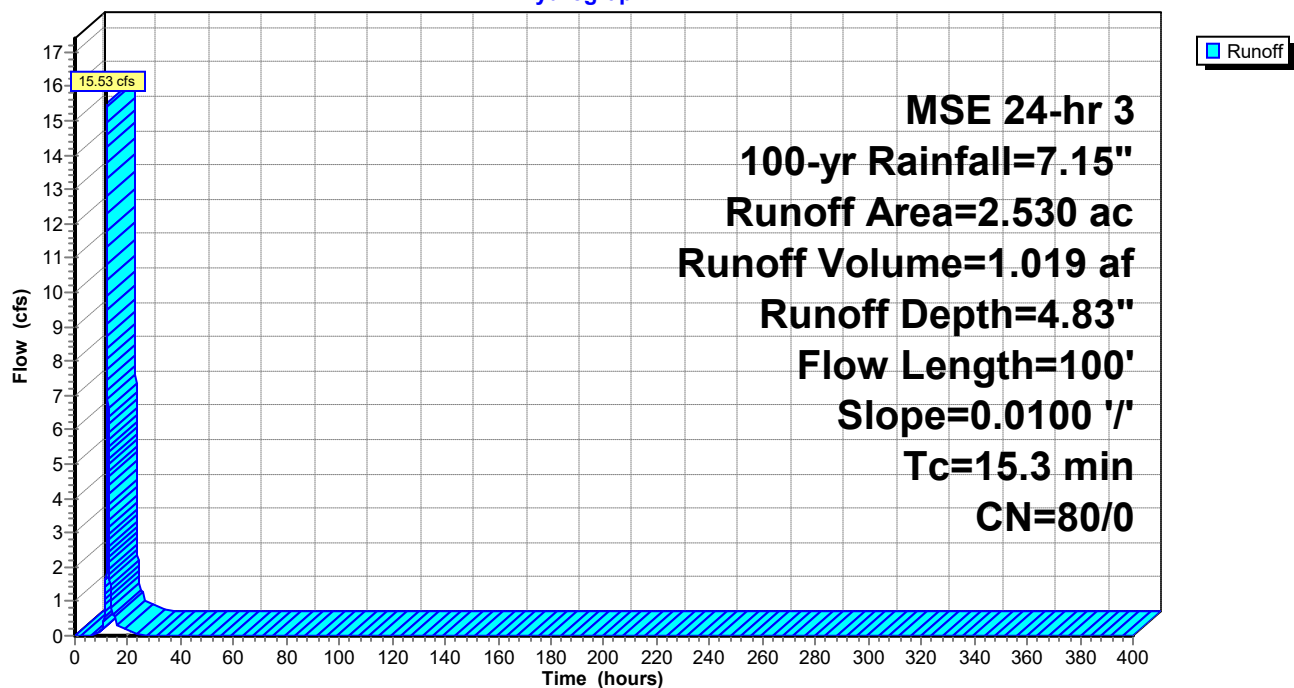
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
* 2.530	80	Row crops, straight row, Good, HSG D
* 0.000	80	Woods/grass comb., Fair, HSG D
2.530	80	Weighted Average
2.530	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	100	0.0100	0.11		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"

Subcatchment 2.1X: Existing Drainage to Wetland 10

Hydrograph



Summary for Subcatchment 2X: Existing Drainage to Tributary 2

Runoff = 68.95 cfs @ 12.65 hrs, Volume= 8.772 af, Depth= 4.83"

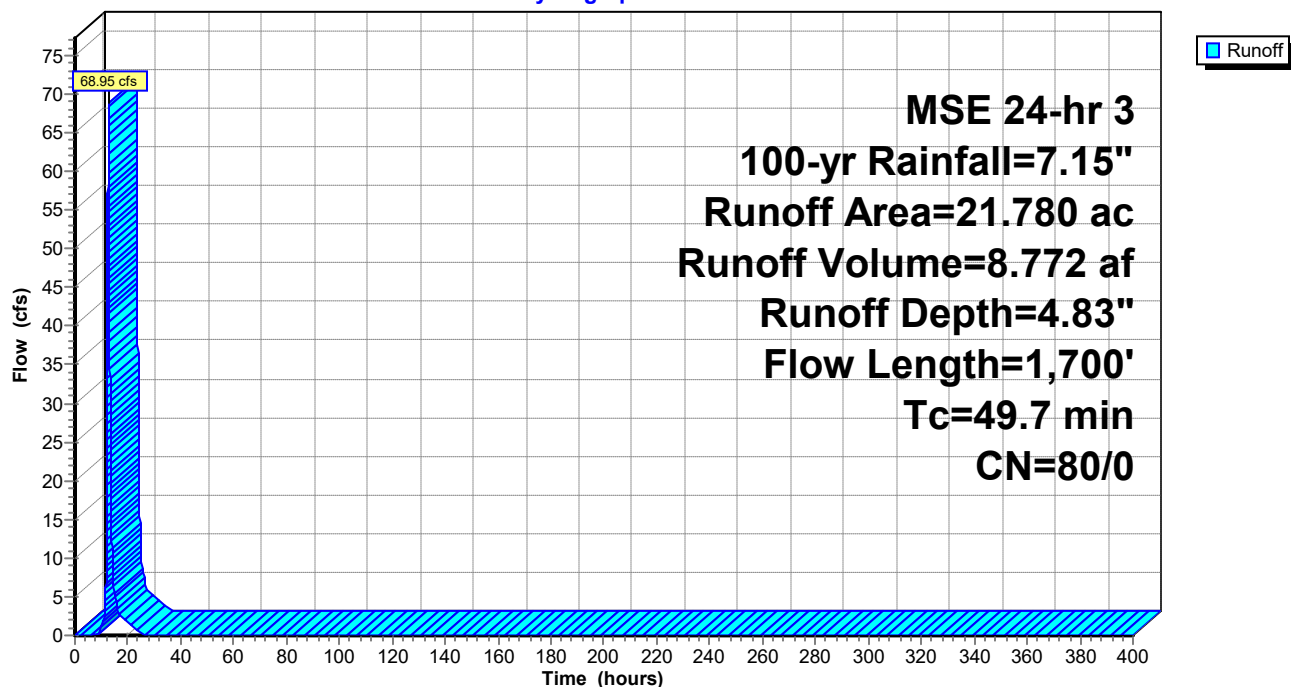
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
* 16.030	80	Row crops, straight row, Good, HSG D
* 5.750	80	Woods/grass comb., Fair, HSG D
21.780	80	Weighted Average
21.780	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
12.0	500	0.0060	0.70		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
11.1	1,000	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
49.7	1,700	Total			

Subcatchment 2X: Existing Drainage to Tributary 2

Hydrograph



2026-02-09 Peltier Ponds - Prelim

Prepared by James R. Hill, Inc.

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MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Subcatchment 3X: Existing Drainage to Wetland 14

Runoff = 49.40 cfs @ 14.14 hrs, Volume= 14.141 af, Depth= 4.83"

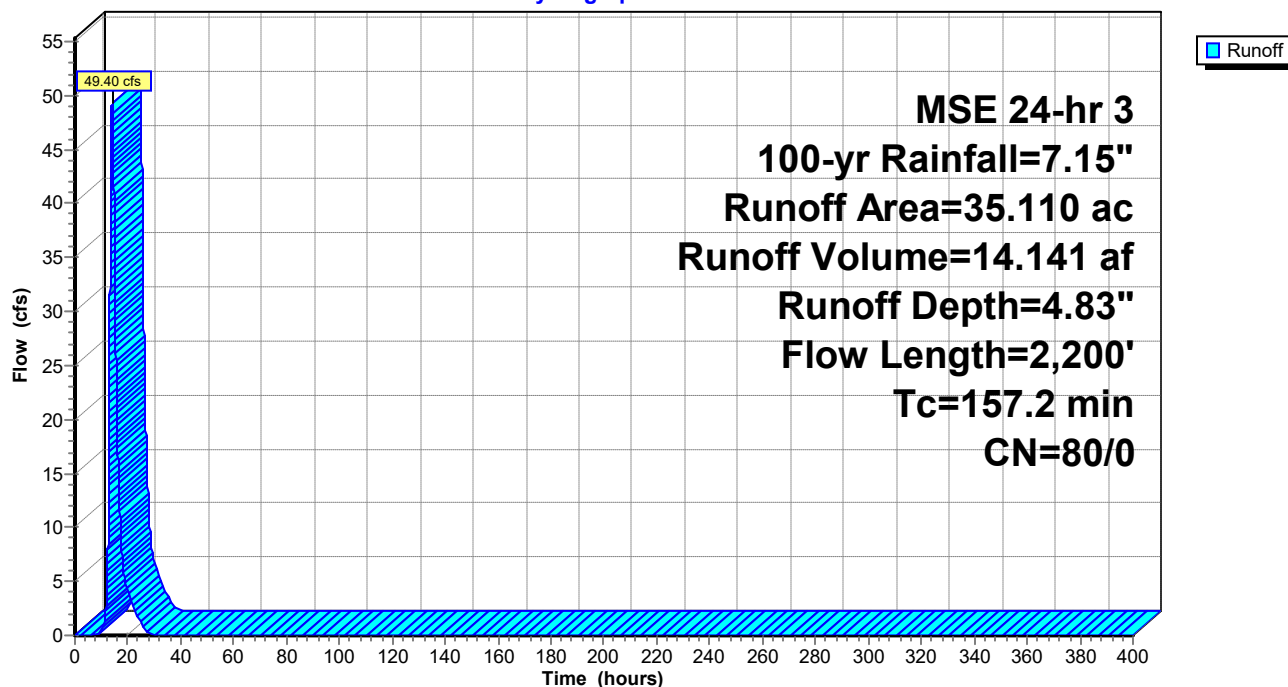
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
* 14.110	80	Row crops, straight row, Good, HSG D
* 21.000	80	Woods/grass comb., Fair, HSG D
35.110	80	Weighted Average
35.110	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
3.9	300	0.0200	1.27		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
126.7	1,700	0.0020	0.22		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
157.2	2,200	Total			

Subcatchment 3X: Existing Drainage to Wetland 14

Hydrograph



Summary for Subcatchment 4.1X: Existing Drainage to Wetland 5

Runoff = 59.87 cfs @ 12.52 hrs, Volume= 6.396 af, Depth= 4.83"

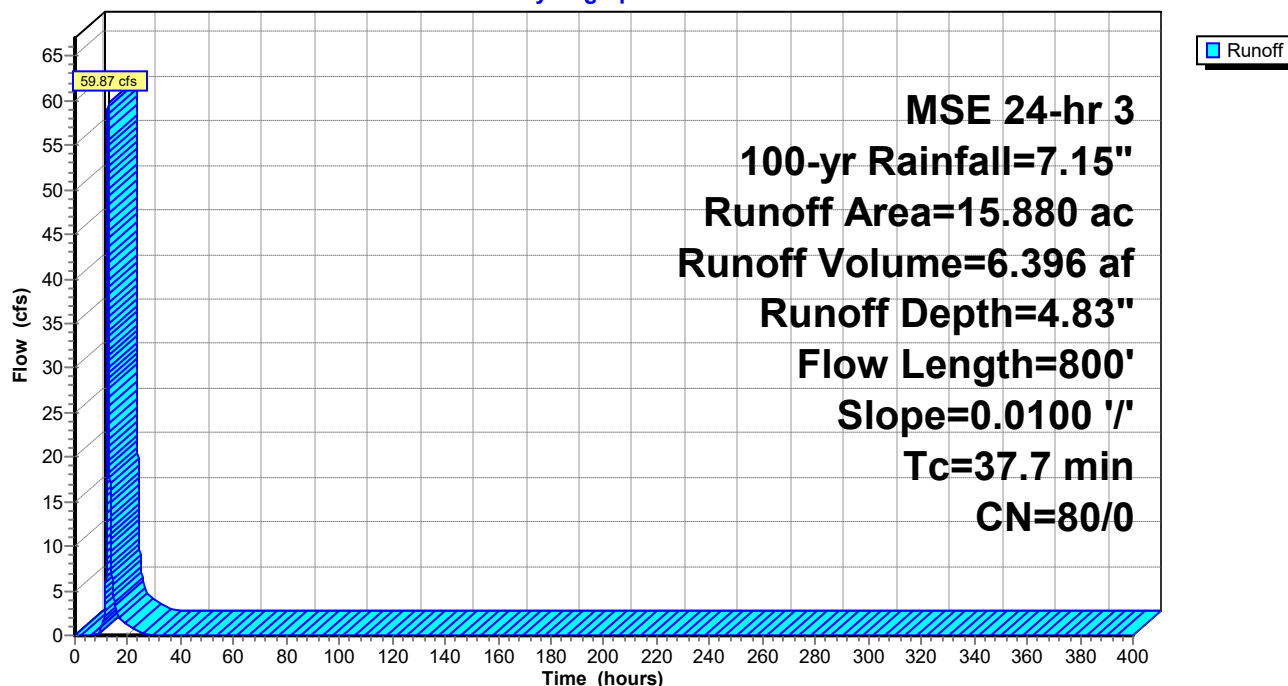
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
* 15.880	80	Row crops, straight row, Good, HSG D
* 0.000	80	Woods/grass comb., Fair, HSG D
15.880	80	Weighted Average
15.880	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
11.1	600	0.0100	0.90		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
37.7	800	Total			

Subcatchment 4.1X: Existing Drainage to Wetland 5

Hydrograph



Summary for Subcatchment 4.2X: Existing Drainage to Wetland 12

Runoff = 21.54 cfs @ 12.57 hrs, Volume= 2.465 af, Depth= 4.83"

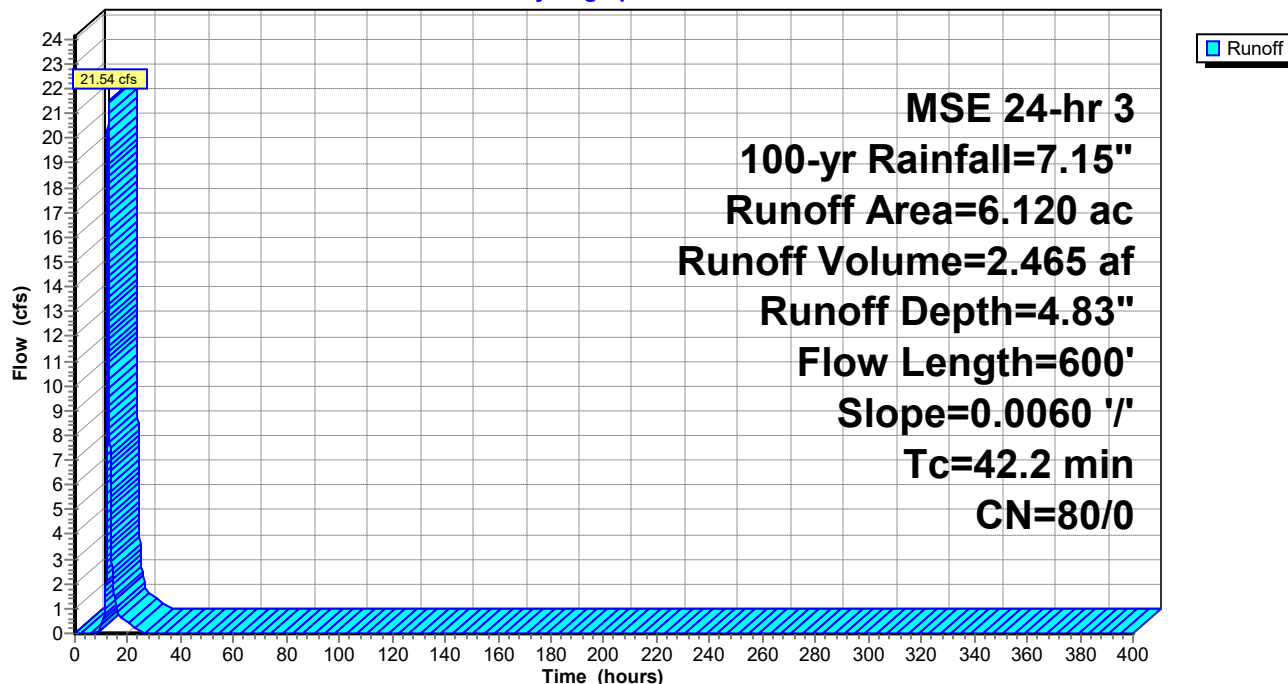
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
* 6.120	80	Row crops, straight row, Good, HSG D
* 0.000	80	Woods/grass comb., Fair, HSG D
6.120	80	Weighted Average
6.120	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.6	200	0.0060	0.10		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
9.6	400	0.0060	0.70		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
42.2	600	Total			

Subcatchment 4.2X: Existing Drainage to Wetland 12

Hydrograph



Summary for Subcatchment 4X: Existing Drainage to Wetland 4

Runoff = 90.31 cfs @ 13.01 hrs, Volume= 15.164 af, Depth= 4.83"

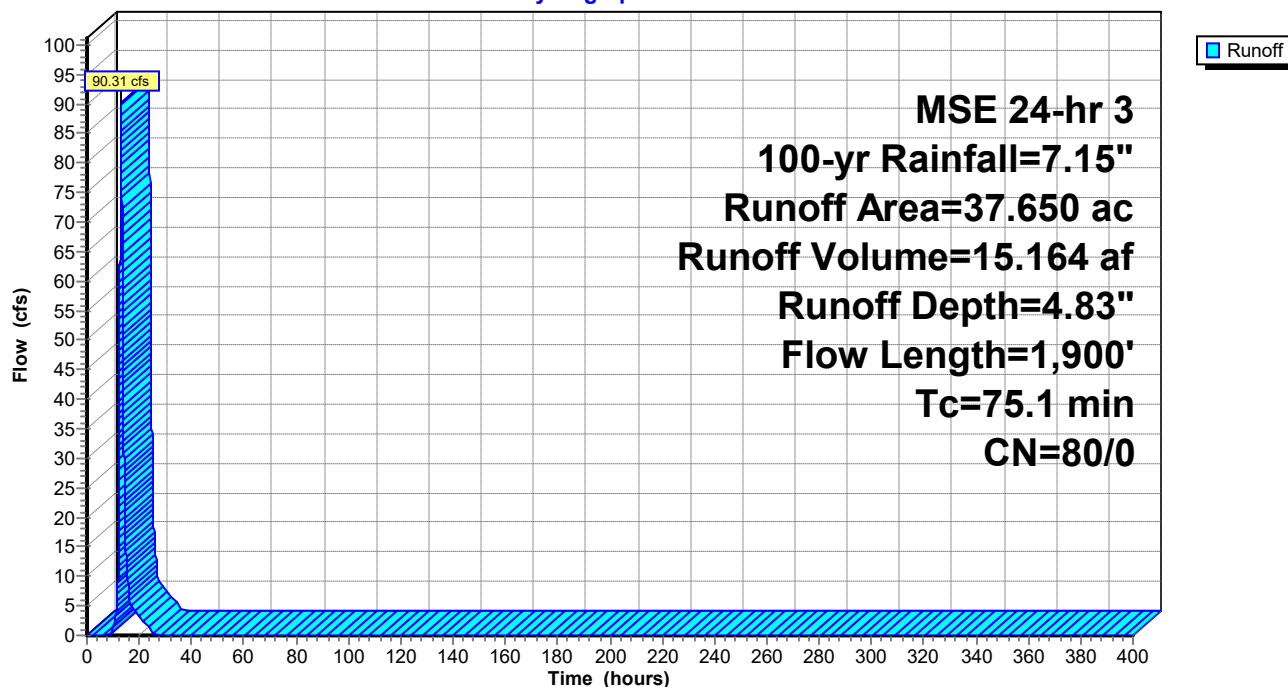
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
* 37.150	80	Row crops, straight row, Good, HSG D
* 0.500	80	Woods/grass comb., Fair, HSG D
37.650	80	Weighted Average
37.650	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
19.5	1,000	0.0090	0.85		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
29.0	700	0.0020	0.40		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
75.1	1,900	Total			

Subcatchment 4X: Existing Drainage to Wetland 4

Hydrograph



Summary for Subcatchment 20X: OFFSITE Existing Drainage to Tributary 2

Runoff = 41.35 cfs @ 13.09 hrs, Volume= 7.552 af, Depth= 4.83"

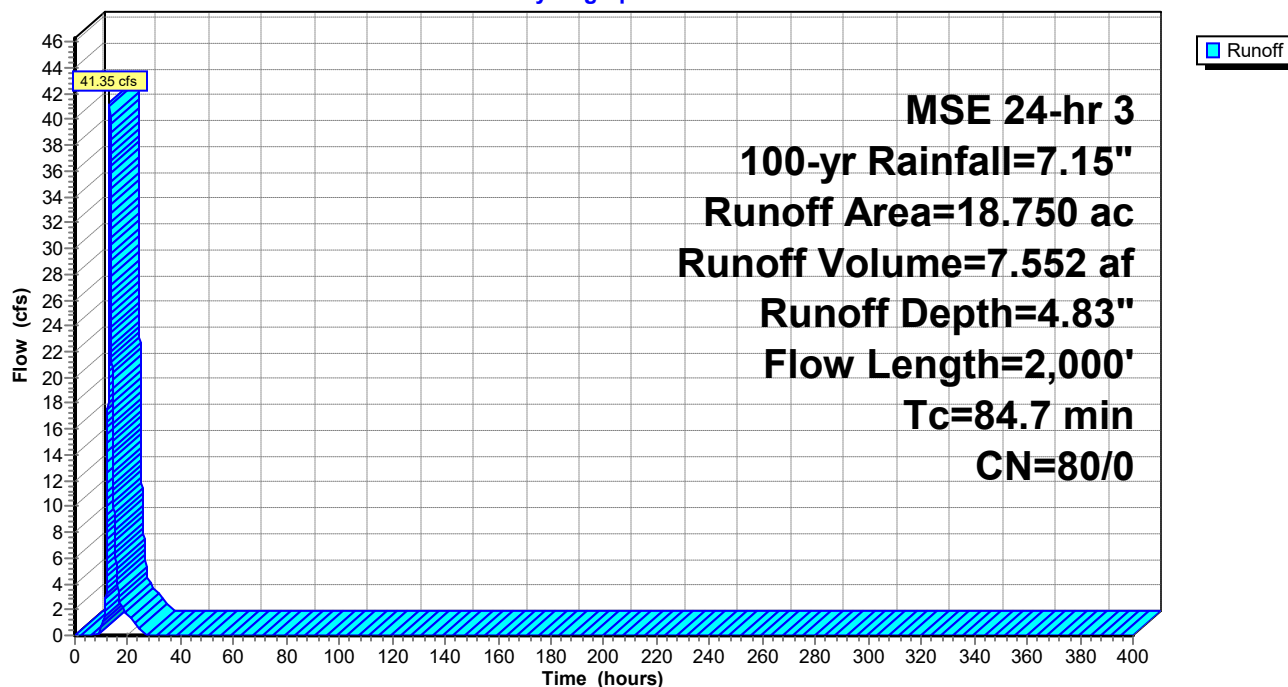
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
* 0.000	80	Row crops, straight row, Good, HSG D
* 18.750	80	Woods/grass comb., Fair, HSG D
18.750	80	Weighted Average
18.750	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.0	200	0.0100	0.10		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"
43.0	1,000	0.0060	0.39		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.7	800	0.0175	1.98		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
84.7	2,000	Total			

Subcatchment 20X: OFFSITE Existing Drainage to Tributary 2

Hydrograph



Summary for Subcatchment 30X: OFFSITE Existing Drainage to Wetland 14

Runoff = 11.88 cfs @ 12.44 hrs, Volume= 1.136 af, Depth= 4.83"

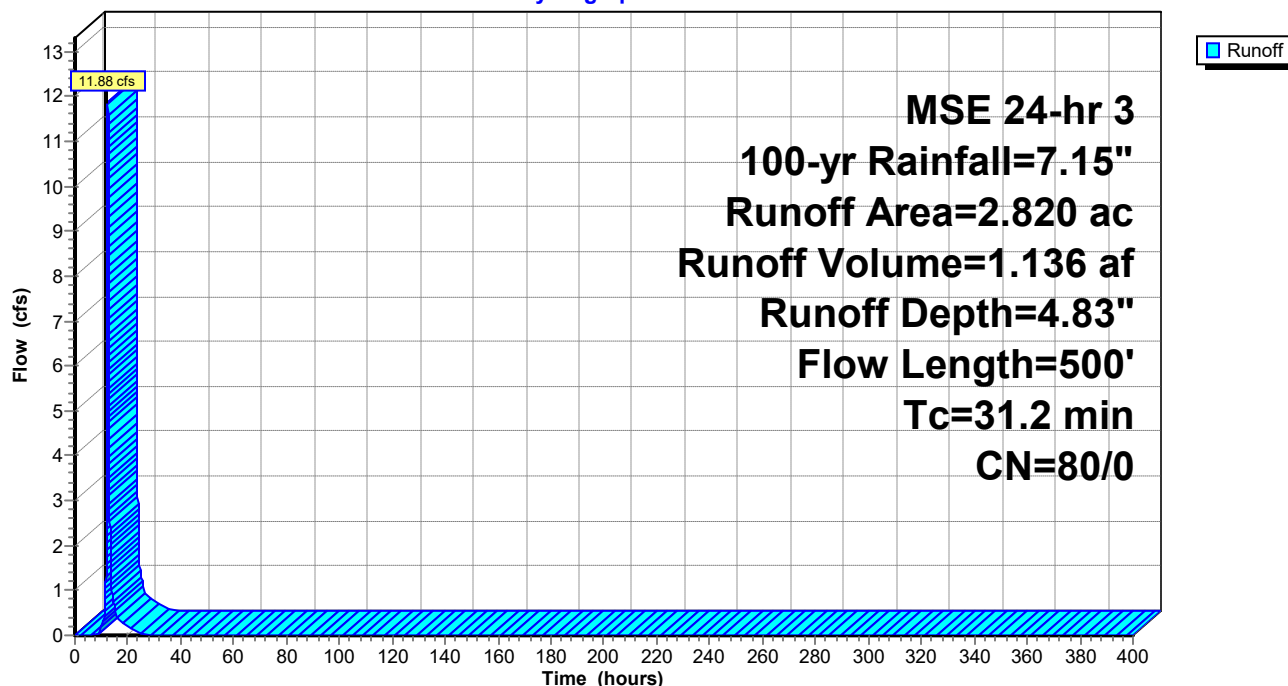
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
* 0.000	80	Row crops, straight row, Good, HSG D
* 2.820	80	Woods/grass comb., Fair, HSG D
2.820	80	Weighted Average
2.820	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.1	200	0.0100	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
7.1	300	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
31.2	500	Total			

Subcatchment 30X: OFFSITE Existing Drainage to Wetland 14

Hydrograph



Summary for Subcatchment 40X: OFFSITE Existing Drainage to Wetland 4

Runoff = 22.46 cfs @ 12.77 hrs, Volume= 3.269 af, Depth= 5.34"

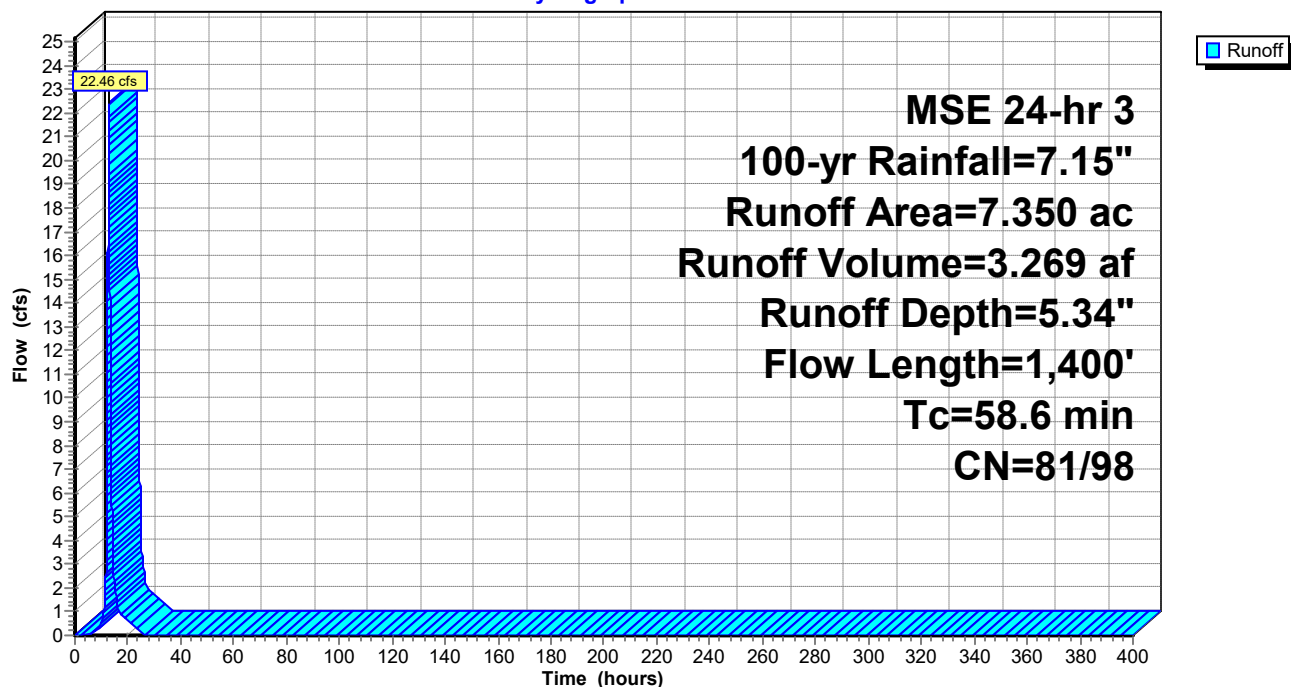
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
0.000	89	Row crops, straight row, Good, HSG D
0.000	82	Woods/grass comb., Fair, HSG D
7.350	84	1 acre lots, 20% imp, HSG D
7.350	84	Weighted Average
5.880	81	80.00% Pervious Area
1.470	98	20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	200	0.0200	0.18		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
40.4	1,200	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
58.6	1,400	Total			

Subcatchment 40X: OFFSITE Existing Drainage to Wetland 4

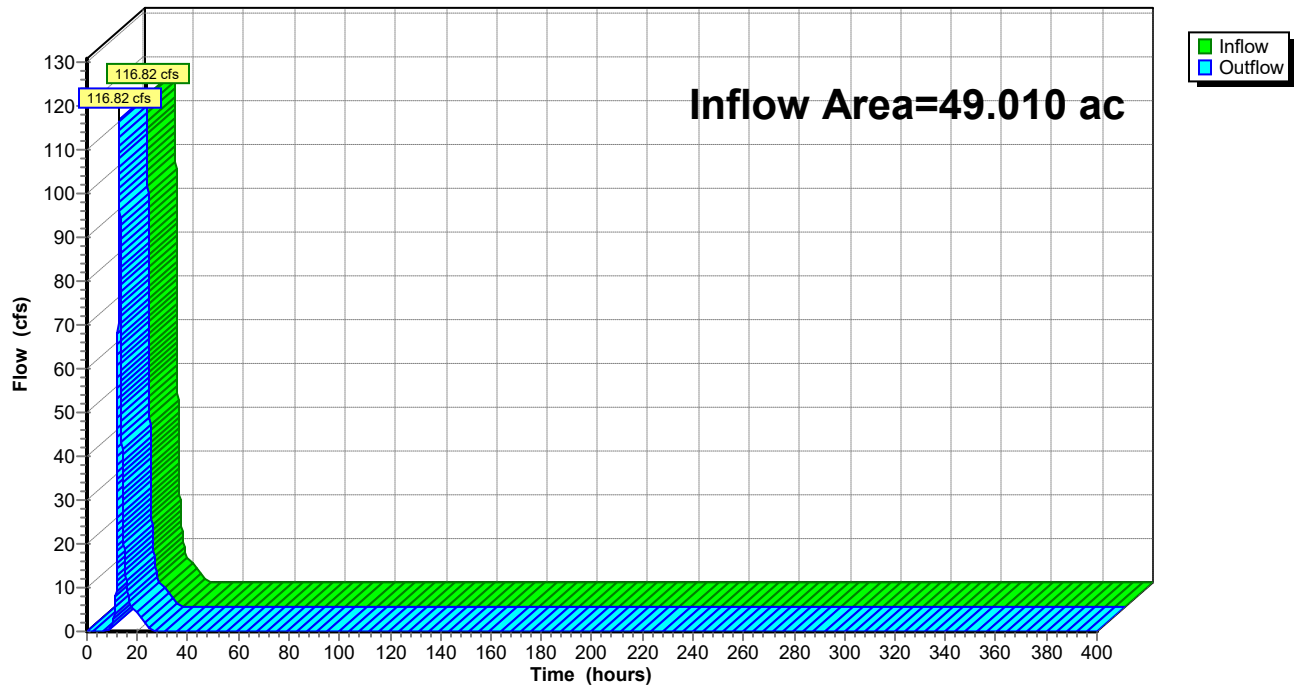
Hydrograph



Summary for Reach 1XR: To Lake Peltier

Inflow Area = 49.010 ac, 0.00% Impervious, Inflow Depth = 4.78" for 100-yr event
Inflow = 116.82 cfs @ 12.70 hrs, Volume= 19.537 af
Outflow = 116.82 cfs @ 12.70 hrs, Volume= 19.537 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 1XR: To Lake Peltier**Hydrograph**

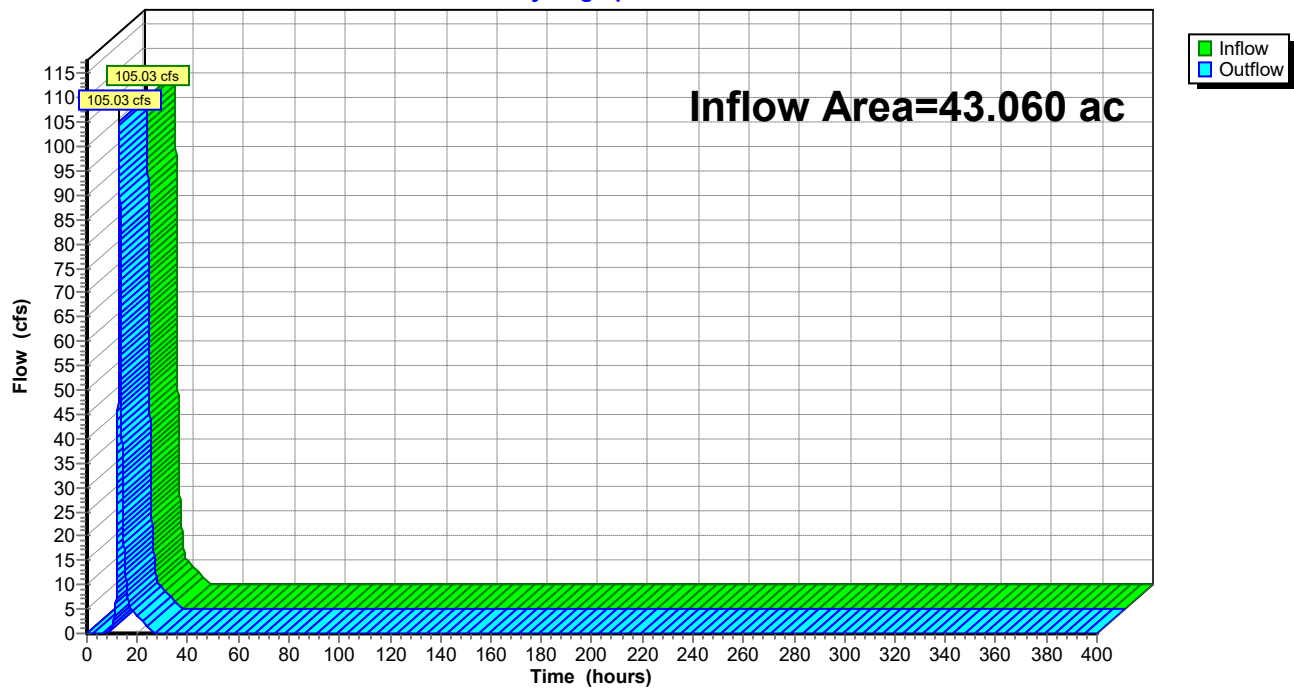
Summary for Reach 2XR: Tributary 2

Inflow Area = 43.060 ac, 0.00% Impervious, Inflow Depth = 4.78" for 100-yr event
Inflow = 105.03 cfs @ 12.76 hrs, Volume= 17.140 af
Outflow = 105.03 cfs @ 12.76 hrs, Volume= 17.140 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 2XR: Tributary 2

Hydrograph



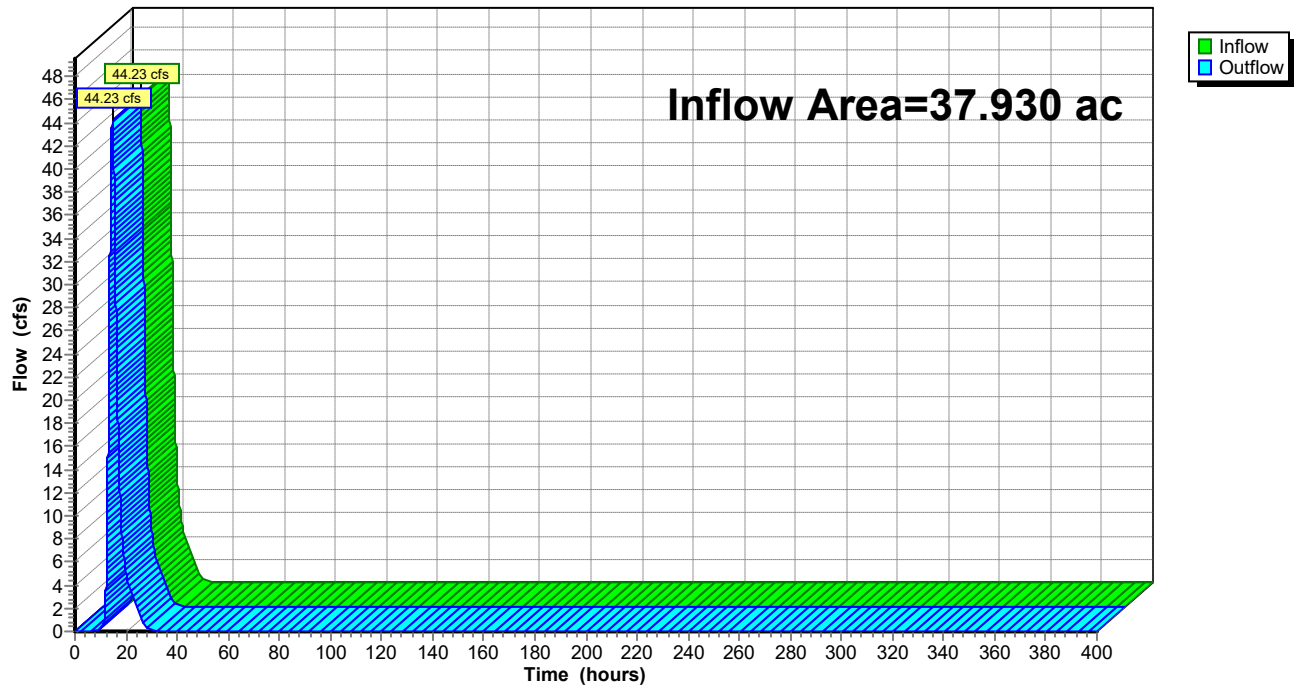
Summary for Reach 3XR: To South

Inflow Area = 37.930 ac, 0.00% Impervious, Inflow Depth = 4.83" for 100-yr event
 Inflow = 44.23 cfs @ 14.63 hrs, Volume= 15.276 af
 Outflow = 44.23 cfs @ 14.63 hrs, Volume= 15.276 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 3XR: To South

Hydrograph



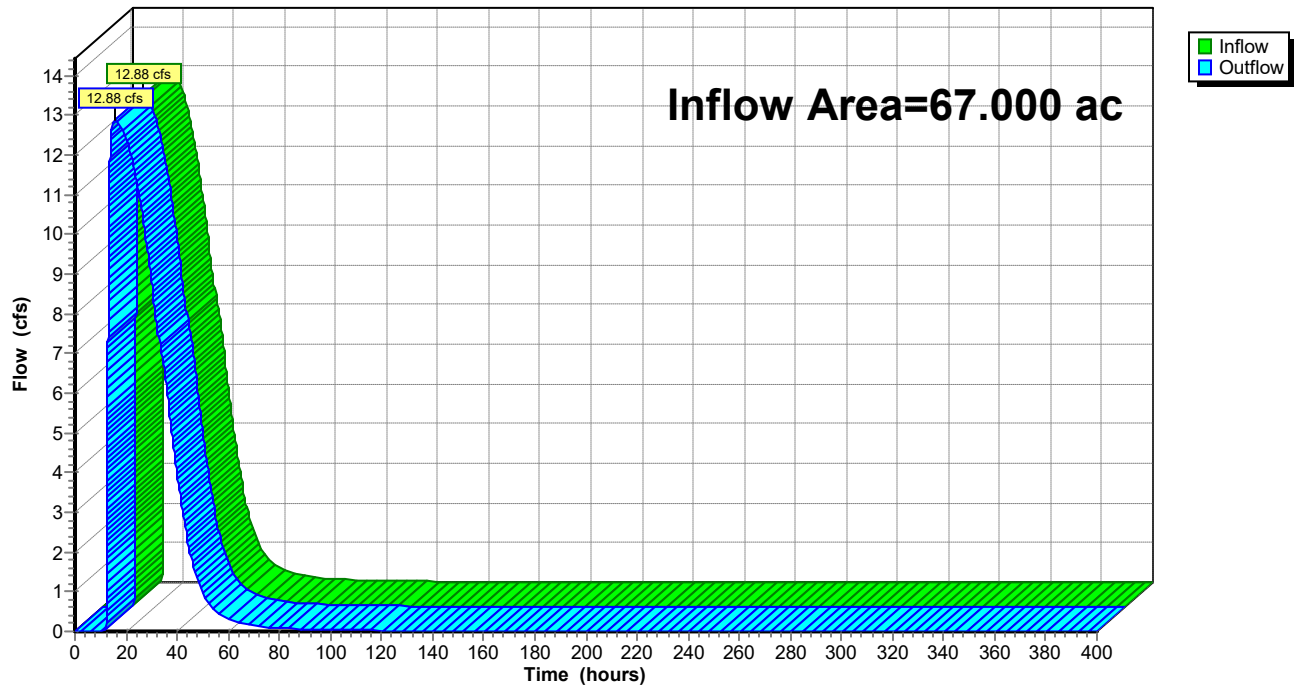
Summary for Reach 4XR: To North

Inflow Area = 67.000 ac, 2.19% Impervious, Inflow Depth = 4.40" for 100-yr event
 Inflow = 12.88 cfs @ 15.91 hrs, Volume= 24.570 af
 Outflow = 12.88 cfs @ 15.91 hrs, Volume= 24.570 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 4XR: To North

Hydrograph



Summary for Pond 1XP: Ex 18" STRM

Inflow Area = 2.760 ac, 0.00% Impervious, Inflow Depth = 4.83" for 100-yr event
 Inflow = 11.91 cfs @ 12.41 hrs, Volume= 1.112 af
 Outflow = 11.91 cfs @ 12.41 hrs, Volume= 1.112 af, Atten= 0%, Lag= 0.1 min
 Primary = 11.91 cfs @ 12.41 hrs, Volume= 1.112 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 894.22' @ 12.41 hrs Surf.Area= 237 sf Storage= 94 cf

Plug-Flow detention time= 0.5 min calculated for 1.112 af (100% of inflow)
 Center-of-Mass det. time= 0.2 min (811.5 - 811.2)

Volume	Invert	Avail.Storage	Storage Description
#1	892.96'	1,547 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
892.96	20	0	0
894.00	90	57	57
896.00	1,400	1,490	1,547

Device	Routing	Invert	Outlet Devices
#1	Primary	892.96'	18.0" Round Culvert L= 43.6' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 892.96' / 888.72' S= 0.0972 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Primary	894.10'	50.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

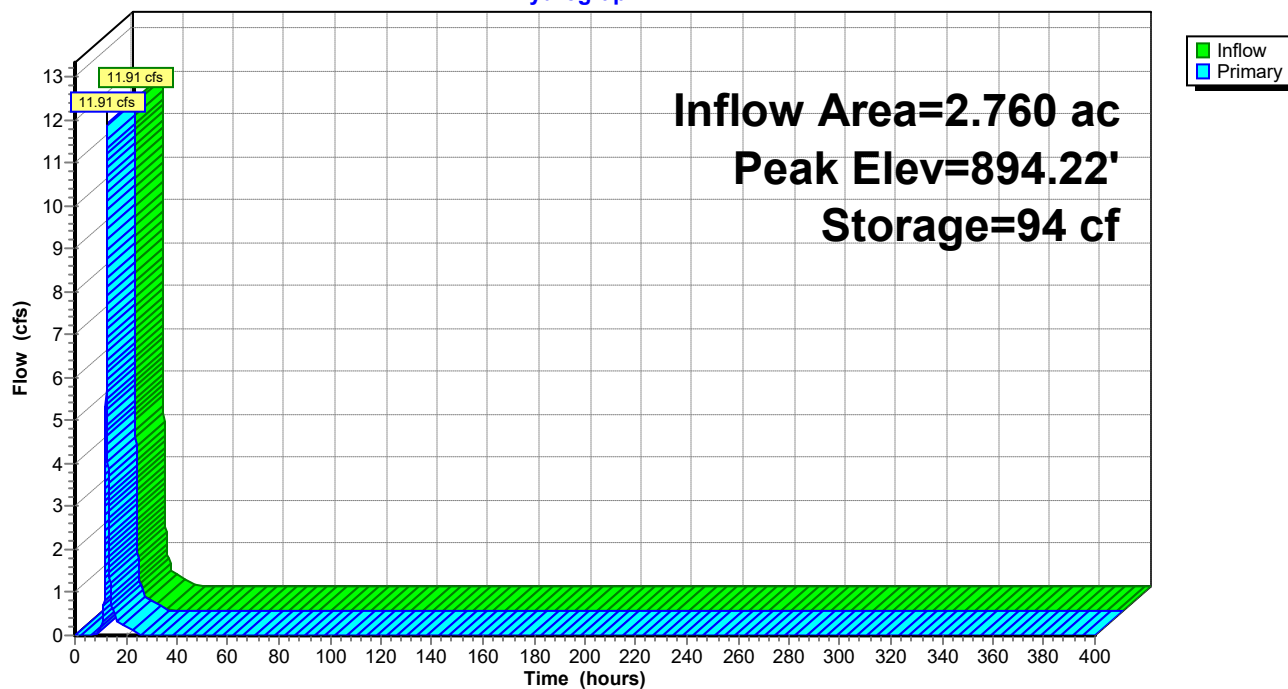
Primary OutFlow Max=11.91 cfs @ 12.41 hrs HW=894.22' TW=0.00' (Dynamic Tailwater)

1=Culvert (Inlet Controls 6.08 cfs @ 3.83 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 5.83 cfs @ 0.94 fps)

Pond 1XP: Ex 18" STRM

Hydrograph



2026-02-09 Peltier Ponds - Prelim*MSE 24-hr 3 100-yr Rainfall=7.15"*

Prepared by James R. Hill, Inc.

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Stage-Area-Storage for Pond 1XP: Ex 18" STRM

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
892.96	20	0	895.56	1,112	995
893.01	23	1	895.61	1,145	1,051
893.06	27	2	895.66	1,177	1,109
893.11	30	4	895.71	1,210	1,169
893.16	33	5	895.76	1,243	1,230
893.21	37	7	895.81	1,276	1,293
893.26	40	9	895.86	1,308	1,358
893.31	44	11	895.91	1,341	1,424
893.36	47	13	895.96	1,374	1,492
893.41	50	16			
893.46	54	18			
893.51	57	21			
893.56	60	24			
893.61	64	27			
893.66	67	30			
893.71	70	34			
893.76	74	38			
893.81	77	41			
893.86	81	45			
893.91	84	49			
893.96	87	54			
894.01	97	58			
894.06	129	64			
894.11	162	71			
894.16	195	80			
894.21	228	91			
894.26	260	103			
894.31	293	117			
894.36	326	132			
894.41	359	149			
894.46	391	168			
894.51	424	188			
894.56	457	210			
894.61	490	234			
894.66	522	259			
894.71	555	286			
894.76	588	315			
894.81	621	345			
894.86	653	377			
894.91	686	410			
894.96	719	445			
895.01	752	482			
895.06	784	521			
895.11	817	561			
895.16	850	602			
895.21	883	646			
895.26	915	691			
895.31	948	737			
895.36	981	785			
895.41	1,014	835			
895.46	1,046	887			
895.51	1,079	940			

Summary for Pond 2XP: Ex STRM Structure

Inflow Area = 43.060 ac, 0.00% Impervious, Inflow Depth = 4.78" for 100-yr event
 Inflow = 105.03 cfs @ 12.76 hrs, Volume= 17.140 af
 Outflow = 104.93 cfs @ 12.77 hrs, Volume= 17.140 af, Atten= 0%, Lag= 0.6 min
 Primary = 104.93 cfs @ 12.77 hrs, Volume= 17.140 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 889.49' @ 12.77 hrs Surf.Area= 5,583 sf Storage= 6,448 cf

Plug-Flow detention time= 1.6 min calculated for 17.140 af (100% of inflow)
 Center-of-Mass det. time= 1.6 min (847.1 - 845.5)

Volume	Invert	Avail.Storage	Storage Description
#1	886.82'	46,909 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
886.82	10	0	0
888.00	1,700	1,009	1,009
890.00	6,900	8,600	9,609
892.00	30,400	37,300	46,909

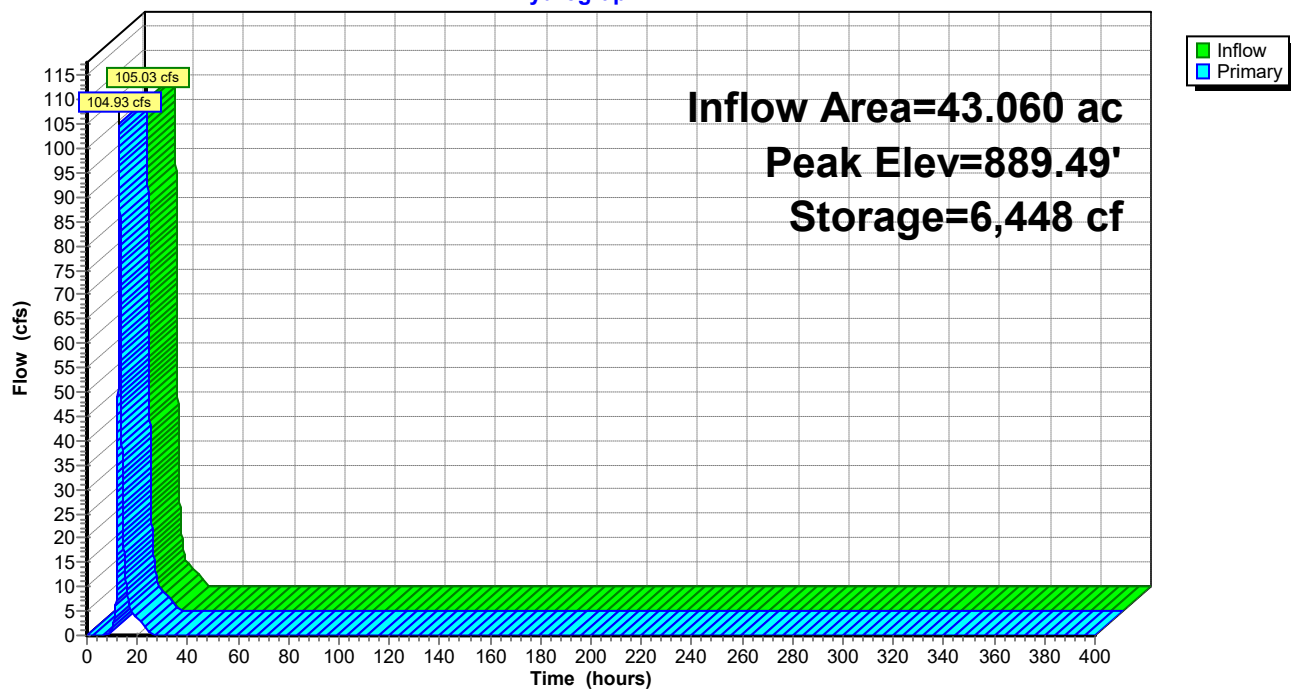
Device	Routing	Invert	Outlet Devices
#1	Primary	886.36'	21.0" Round Ex 21" CMP L= 37.5' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 886.36' / 885.72' S= 0.0171 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 2.41 sf
#2	Device 1	886.82'	21.0" Vert. EX STRUCTURE OPENNING C= 0.600
#3	Primary	888.40'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=104.93 cfs @ 12.77 hrs HW=889.49' TW=0.00' (Dynamic Tailwater)

1=Ex 21" CMP (Barrel Controls 14.54 cfs @ 6.05 fps)
 2=EX STRUCTURE OPENNING (Passes 14.54 cfs of 15.53 cfs potential flow)
 3=Broad-Crested Rectangular Weir (Weir Controls 90.39 cfs @ 2.76 fps)

Pond 2XP: Ex STRM Structure

Hydrograph



Stage-Area-Storage for Pond 2XP: Ex STRM Structure

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
886.82	10	0
886.92	153	8
887.02	296	31
887.12	440	67
887.22	583	119
887.32	726	184
887.42	869	264
887.52	1,013	358
887.62	1,156	466
887.72	1,299	589
887.82	1,442	726
887.92	1,585	877
888.02	1,752	1,043
888.12	2,012	1,232
888.22	2,272	1,446
888.32	2,532	1,686
888.42	2,792	1,952
888.52	3,052	2,244
888.62	3,312	2,563
888.72	3,572	2,907
888.82	3,832	3,277
888.92	4,092	3,673
889.02	4,352	4,095
889.12	4,612	4,544
889.22	4,872	5,018
889.32	5,132	5,518
889.42	5,392	6,044
889.52	5,652	6,596
889.62	5,912	7,175
889.72	6,172	7,779
889.82	6,432	8,409
889.92	6,692	9,065
890.02	7,135	9,749
890.12	8,310	10,521
890.22	9,485	11,411
890.32	10,660	12,419
890.42	11,835	13,543
890.52	13,010	14,786
890.62	14,185	16,145
890.72	15,360	17,623
890.82	16,535	19,217
890.92	17,710	20,930
891.02	18,885	22,759
891.12	20,060	24,707
891.22	21,235	26,771
891.32	22,410	28,954
891.42	23,585	31,253
891.52	24,760	33,671
891.62	25,935	36,205
891.72	27,110	38,858
891.82	28,285	41,627
891.92	29,460	44,515

Summary for Pond W10X: Wetland 10

Inflow Area = 2.530 ac, 0.00% Impervious, Inflow Depth = 4.83" for 100-yr event
 Inflow = 15.53 cfs @ 12.23 hrs, Volume= 1.019 af
 Outflow = 7.28 cfs @ 12.46 hrs, Volume= 0.817 af, Atten= 53%, Lag= 13.4 min
 Primary = 7.28 cfs @ 12.46 hrs, Volume= 0.817 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 908.53' @ 12.46 hrs Surf.Area= 31,637 sf Storage= 18,940 cf

Plug-Flow detention time= 121.2 min calculated for 0.817 af (80% of inflow)
 Center-of-Mass det. time= 60.0 min (857.9 - 797.9)

Volume	Invert	Avail.Storage	Storage Description
#1	907.00'	112,600 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

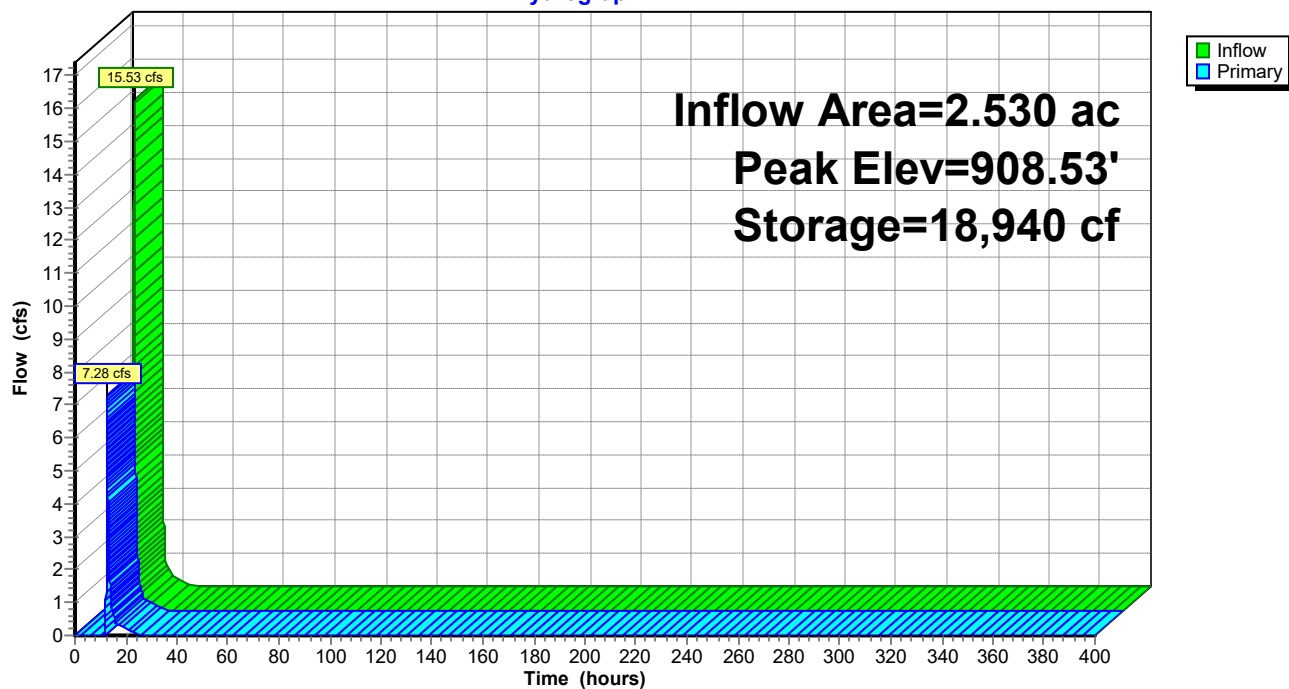
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
907.00	2,300	0	0
907.50	7,900	2,550	2,550
908.00	11,700	4,900	7,450
909.00	49,300	30,500	37,950
910.00	100,000	74,650	112,600

Device	Routing	Invert	Outlet Devices
#1	Primary	908.10'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=7.28 cfs @ 12.46 hrs HW=908.53' TW=0.00' (Dynamic Tailwater)
 ↑1=Broad-Crested Rectangular Weir (Weir Controls 7.28 cfs @ 1.69 fps)

Pond W10X: Wetland 10

Hydrograph



2026-02-09 Peltier Ponds - Prelim*MSE 24-hr 3 100-yr Rainfall=7.15"*

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Stage-Area-Storage for Pond W10X: Wetland 10

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
907.00	2,300	0	909.60	79,720	76,656
907.05	2,860	129	909.65	82,255	80,705
907.10	3,420	286	909.70	84,790	84,882
907.15	3,980	471	909.75	87,325	89,184
907.20	4,540	684	909.80	89,860	93,614
907.25	5,100	925	909.85	92,395	98,170
907.30	5,660	1,194	909.90	94,930	102,853
907.35	6,220	1,491	909.95	97,465	107,663
907.40	6,780	1,816	910.00	100,000	112,600
907.45	7,340	2,169			
907.50	7,900	2,550			
907.55	8,280	2,954			
907.60	8,660	3,378			
907.65	9,040	3,820			
907.70	9,420	4,282			
907.75	9,800	4,763			
907.80	10,180	5,262			
907.85	10,560	5,781			
907.90	10,940	6,318			
907.95	11,320	6,875			
908.00	11,700	7,450			
908.05	13,580	8,082			
908.10	15,460	8,808			
908.15	17,340	9,628			
908.20	19,220	10,542			
908.25	21,100	11,550			
908.30	22,980	12,652			
908.35	24,860	13,848			
908.40	26,740	15,138			
908.45	28,620	16,522			
908.50	30,500	18,000			
908.55	32,380	19,572			
908.60	34,260	21,238			
908.65	36,140	22,998			
908.70	38,020	24,852			
908.75	39,900	26,800			
908.80	41,780	28,842			
908.85	43,660	30,978			
908.90	45,540	33,208			
908.95	47,420	35,532			
909.00	49,300	37,950			
909.05	51,835	40,478			
909.10	54,370	43,134			
909.15	56,905	45,915			
909.20	59,440	48,824			
909.25	61,975	51,859			
909.30	64,510	55,021			
909.35	67,045	58,310			
909.40	69,580	61,726			
909.45	72,115	65,268			
909.50	74,650	68,938			
909.55	77,185	72,733			

Summary for Pond W12X: Wetland 12

Inflow Area = 6.120 ac, 0.00% Impervious, Inflow Depth = 4.83" for 100-yr event
 Inflow = 21.54 cfs @ 12.57 hrs, Volume= 2.465 af
 Outflow = 6.18 cfs @ 13.37 hrs, Volume= 1.396 af, Atten= 71%, Lag= 48.0 min
 Primary = 6.18 cfs @ 13.37 hrs, Volume= 1.396 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 907.75' @ 13.37 hrs Surf.Area= 75,239 sf Storage= 63,432 cf

Plug-Flow detention time= 218.4 min calculated for 1.396 af (57% of inflow)
 Center-of-Mass det. time= 137.6 min (960.4 - 822.8)

Volume	Invert	Avail.Storage	Storage Description
#1	905.50'	84,245 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

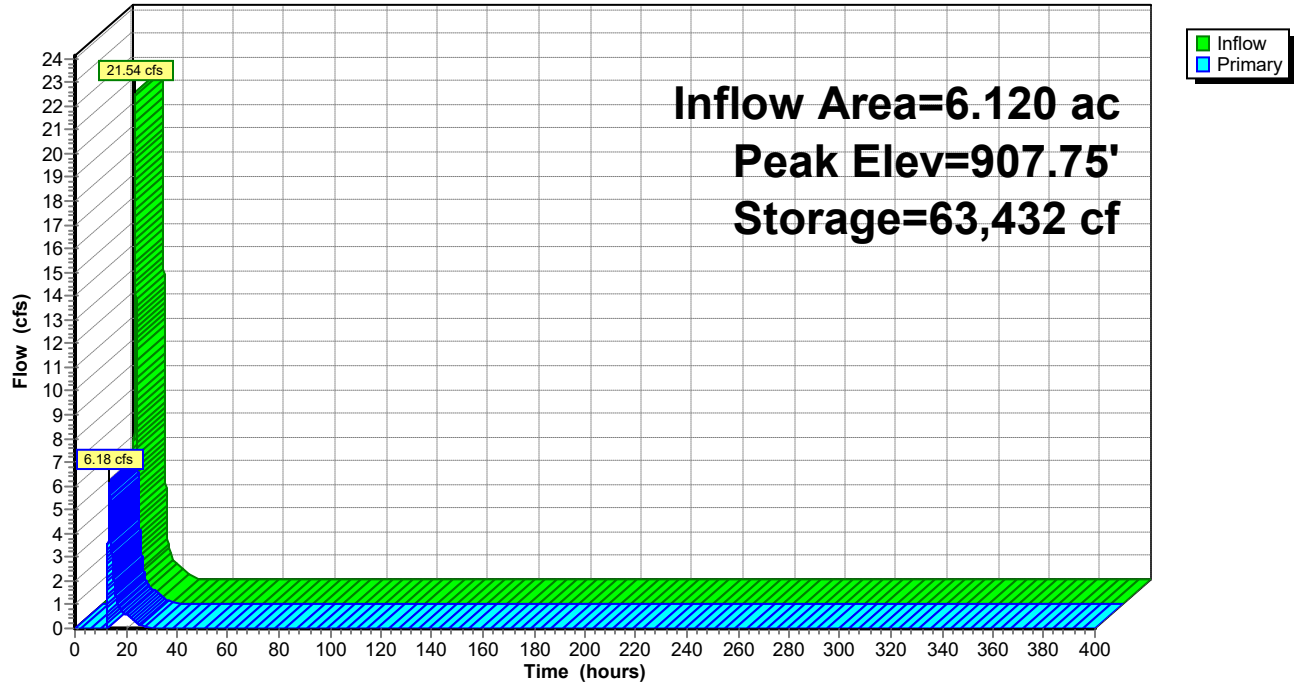
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
905.50	890	0	0
906.00	9,030	2,480	2,480
907.00	32,400	20,715	23,195
908.00	89,700	61,050	84,245

Device	Routing	Invert	Outlet Devices
#1	Primary	907.50'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=6.18 cfs @ 13.37 hrs HW=907.75' TW=901.86' (Dynamic Tailwater)
 ↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 6.18 cfs @ 1.25 fps)

Pond W12X: Wetland 12

Hydrograph



2026-02-09 Peltier Ponds - Prelim*MSE 24-hr 3 100-yr Rainfall=7.15"*

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Stage-Area-Storage for Pond W12X: Wetland 12

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
905.50	890	0
905.55	1,704	65
905.60	2,518	170
905.65	3,332	317
905.70	4,146	504
905.75	4,960	731
905.80	5,774	1,000
905.85	6,588	1,309
905.90	7,402	1,658
905.95	8,216	2,049
906.00	9,030	2,480
906.05	10,198	2,961
906.10	11,367	3,500
906.15	12,535	4,097
906.20	13,704	4,753
906.25	14,873	5,468
906.30	16,041	6,241
906.35	17,210	7,072
906.40	18,378	7,962
906.45	19,547	8,910
906.50	20,715	9,916
906.55	21,883	10,981
906.60	23,052	12,105
906.65	24,220	13,286
906.70	25,389	14,527
906.75	26,558	15,825
906.80	27,726	17,182
906.85	28,895	18,598
906.90	30,063	20,072
906.95	31,232	21,604
907.00	32,400	23,195
907.05	35,265	24,887
907.10	38,130	26,722
907.15	40,995	28,700
907.20	43,860	30,821
907.25	46,725	33,086
907.30	49,590	35,493
907.35	52,455	38,045
907.40	55,320	40,739
907.45	58,185	43,577
907.50	61,050	46,558
907.55	63,915	49,682
907.60	66,780	52,949
907.65	69,645	56,360
907.70	72,510	59,914
907.75	75,375	63,611
907.80	78,240	67,451
907.85	81,105	71,435
907.90	83,970	75,561
907.95	86,835	79,832
908.00	89,700	84,245

Summary for Pond W14X: Wetland 14

Inflow Area = 37.930 ac, 0.00% Impervious, Inflow Depth = 4.83" for 100-yr event
 Inflow = 50.20 cfs @ 14.14 hrs, Volume= 15.276 af
 Outflow = 44.23 cfs @ 14.63 hrs, Volume= 15.276 af, Atten= 12%, Lag= 29.6 min
 Primary = 44.23 cfs @ 14.63 hrs, Volume= 15.276 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 904.88' @ 14.63 hrs Surf.Area= 181,756 sf Storage= 101,784 cf

Plug-Flow detention time= 41.4 min calculated for 15.276 af (100% of inflow)
 Center-of-Mass det. time= 41.5 min (962.5 - 921.0)

Volume	Invert	Avail.Storage	Storage Description
#1	904.00'	594,000 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

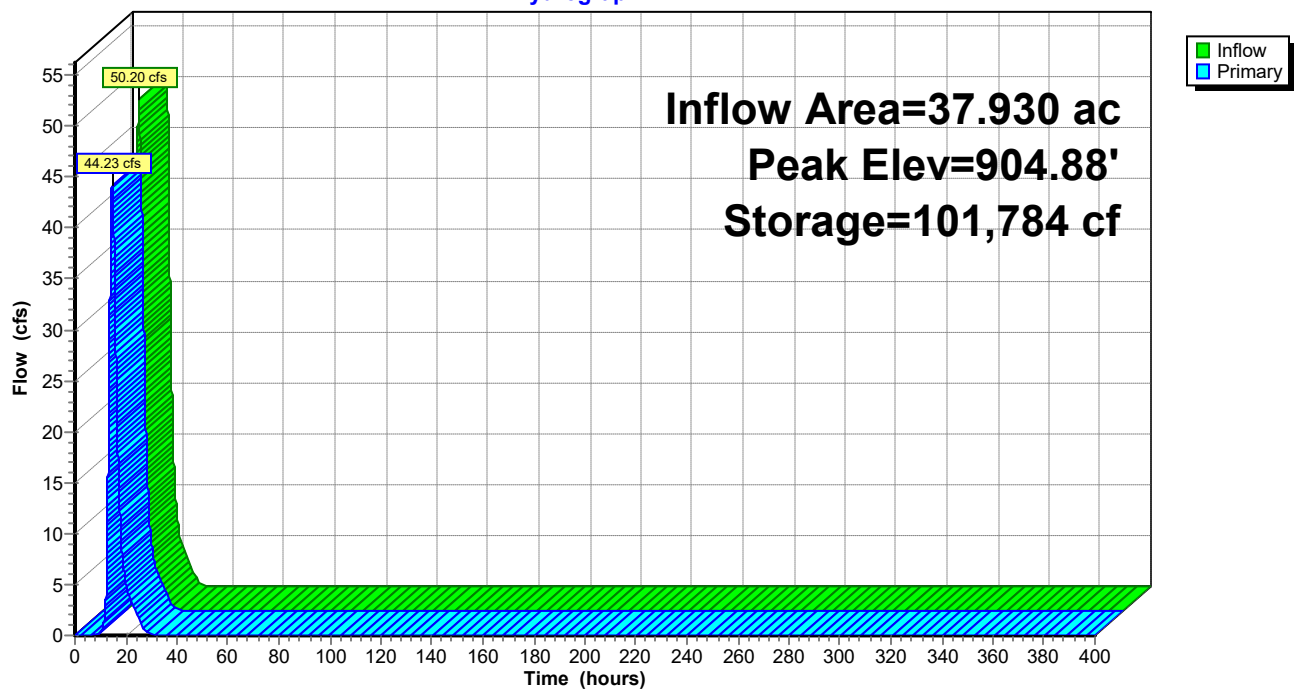
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
904.00	50,000	0	0
905.00	200,000	125,000	125,000
906.00	738,000	469,000	594,000

Device	Routing	Invert	Outlet Devices
#1	Primary	904.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=44.22 cfs @ 14.63 hrs HW=904.88' TW=0.00' (Dynamic Tailwater)
 ↑1=**Broad-Crested Rectangular Weir** (Weir Controls 44.22 cfs @ 2.52 fps)

Pond W14X: Wetland 14

Hydrograph



2026-02-09 Peltier Ponds - Prelim*MSE 24-hr 3 100-yr Rainfall=7.15"*

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Stage-Area-Storage for Pond W14X: Wetland 14

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
904.00	50,000	0	905.04	221,520	133,430
904.02	53,000	1,030	905.06	232,280	137,968
904.04	56,000	2,120	905.08	243,040	142,722
904.06	59,000	3,270	905.10	253,800	147,690
904.08	62,000	4,480	905.12	264,560	152,874
904.10	65,000	5,750	905.14	275,320	158,272
904.12	68,000	7,080	905.16	286,080	163,886
904.14	71,000	8,470	905.18	296,840	169,716
904.16	74,000	9,920	905.20	307,600	175,760
904.18	77,000	11,430	905.22	318,360	182,020
904.20	80,000	13,000	905.24	329,120	188,494
904.22	83,000	14,630	905.26	339,880	195,184
904.24	86,000	16,320	905.28	350,640	202,090
904.26	89,000	18,070	905.30	361,400	209,210
904.28	92,000	19,880	905.32	372,160	216,546
904.30	95,000	21,750	905.34	382,920	224,096
904.32	98,000	23,680	905.36	393,680	231,862
904.34	101,000	25,670	905.38	404,440	239,844
904.36	104,000	27,720	905.40	415,200	248,040
904.38	107,000	29,830	905.42	425,960	256,452
904.40	110,000	32,000	905.44	436,720	265,078
904.42	113,000	34,230	905.46	447,480	273,920
904.44	116,000	36,520	905.48	458,240	282,978
904.46	119,000	38,870	905.50	469,000	292,250
904.48	122,000	41,280	905.52	479,760	301,738
904.50	125,000	43,750	905.54	490,520	311,440
904.52	128,000	46,280	905.56	501,280	321,358
904.54	131,000	48,870	905.58	512,040	331,492
904.56	134,000	51,520	905.60	522,800	341,840
904.58	137,000	54,230	905.62	533,560	352,404
904.60	140,000	57,000	905.64	544,320	363,182
904.62	143,000	59,830	905.66	555,080	374,176
904.64	146,000	62,720	905.68	565,840	385,386
904.66	149,000	65,670	905.70	576,600	396,810
904.68	152,000	68,680	905.72	587,360	408,450
904.70	155,000	71,750	905.74	598,120	420,304
904.72	158,000	74,880	905.76	608,880	432,374
904.74	161,000	78,070	905.78	619,640	444,660
904.76	164,000	81,320	905.80	630,400	457,160
904.78	167,000	84,630	905.82	641,160	469,876
904.80	170,000	88,000	905.84	651,920	482,806
904.82	173,000	91,430	905.86	662,680	495,952
904.84	176,000	94,920	905.88	673,440	509,314
904.86	179,000	98,470	905.90	684,200	522,890
904.88	182,000	102,080	905.92	694,960	536,682
904.90	185,000	105,750	905.94	705,720	550,688
904.92	188,000	109,480	905.96	716,480	564,910
904.94	191,000	113,270	905.98	727,240	579,348
904.96	194,000	117,120	906.00	738,000	594,000
904.98	197,000	121,030			
905.00	200,000	125,000			
905.02	210,760	129,108			

Summary for Pond W4X: Wetland 4

Inflow Area = 67.000 ac, 2.19% Impervious, Inflow Depth = 4.60" for 100-yr event
 Inflow = 151.89 cfs @ 12.93 hrs, Volume= 25.661 af
 Outflow = 12.88 cfs @ 15.91 hrs, Volume= 24.570 af, Atten= 92%, Lag= 178.7 min
 Primary = 12.88 cfs @ 15.91 hrs, Volume= 24.570 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 902.24' @ 15.91 hrs Surf.Area= 462,860 sf Storage= 703,674 cf

Plug-Flow detention time= 802.4 min calculated for 24.570 af (96% of inflow)
 Center-of-Mass det. time= 768.3 min (1,677.6 - 909.3)

Volume	Invert	Avail.Storage	Storage Description
#1	898.00'	1,964,800 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
898.00	10,000	0	0
899.50	80,000	67,500	67,500
900.00	94,800	43,700	111,200
901.00	245,500	170,150	281,350
902.00	393,800	319,650	601,000
904.00	970,000	1,363,800	1,964,800

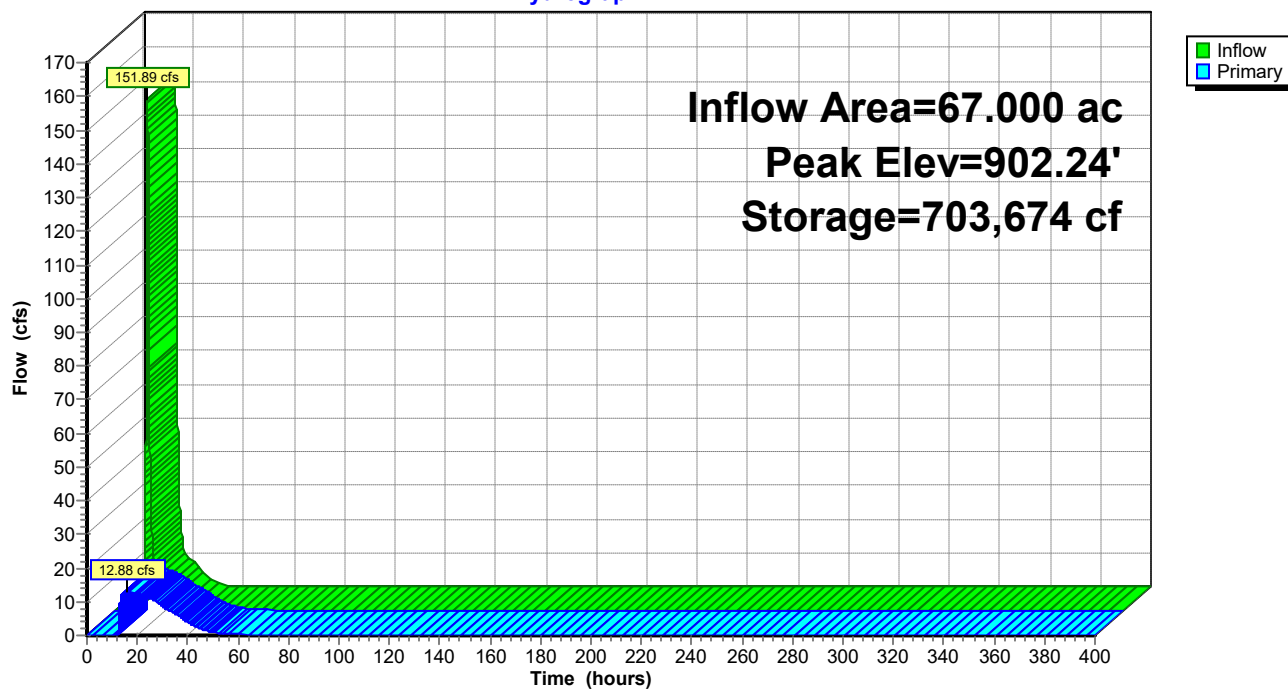
Device	Routing	Invert	Outlet Devices
#1	Primary	899.20'	18.0" Round Culvert L= 15.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 899.20' / 899.18' S= 0.0013 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.77 sf
#2	Primary	902.70'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=12.88 cfs @ 15.91 hrs HW=902.24' TW=0.00' (Dynamic Tailwater)

1=Culvert (Inlet Controls 12.88 cfs @ 7.29 fps)
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond W4X: Wetland 4

Hydrograph



2026-02-09 Peltier Ponds - Prelim*MSE 24-hr 3 100-yr Rainfall=7.15"*

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Stage-Area-Storage for Pond W4X: Wetland 4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
898.00	10,000	0	903.20	739,520	1,280,992
898.10	14,667	1,233	903.30	768,330	1,356,384
898.20	19,333	2,933	903.40	797,140	1,434,658
898.30	24,000	5,100	903.50	825,950	1,515,813
898.40	28,667	7,733	903.60	854,760	1,599,848
898.50	33,333	10,833	903.70	883,570	1,686,765
898.60	38,000	14,400	903.80	912,380	1,776,562
898.70	42,667	18,433	903.90	941,190	1,869,240
898.80	47,333	22,933	904.00	970,000	1,964,800
898.90	52,000	27,900			
899.00	56,667	33,333			
899.10	61,333	39,233			
899.20	66,000	45,600			
899.30	70,667	52,433			
899.40	75,333	59,733			
899.50	80,000	67,500			
899.60	82,960	75,648			
899.70	85,920	84,092			
899.80	88,880	92,832			
899.90	91,840	101,868			
900.00	94,800	111,200			
900.10	109,870	121,434			
900.20	124,940	133,174			
900.30	140,010	146,421			
900.40	155,080	161,176			
900.50	170,150	177,438			
900.60	185,220	195,206			
900.70	200,290	214,482			
900.80	215,360	235,264			
900.90	230,430	257,553			
901.00	245,500	281,350			
901.10	260,330	306,642			
901.20	275,160	333,416			
901.30	289,990	361,673			
901.40	304,820	391,414			
901.50	319,650	422,638			
901.60	334,480	455,344			
901.70	349,310	489,534			
901.80	364,140	525,206			
901.90	378,970	562,361			
902.00	393,800	601,000			
902.10	422,610	641,821			
902.20	451,420	685,522			
902.30	480,230	732,104			
902.40	509,040	781,568			
902.50	537,850	833,913			
902.60	566,660	889,138			
902.70	595,470	947,245			
902.80	624,280	1,008,232			
902.90	653,090	1,072,100			
903.00	681,900	1,138,850			
903.10	710,710	1,208,481			

Summary for Pond W5X: Wetland 5

Inflow Area = 22.000 ac, 0.00% Impervious, Inflow Depth = 4.25" for 100-yr event
 Inflow = 59.87 cfs @ 12.52 hrs, Volume= 7.792 af
 Outflow = 42.52 cfs @ 12.79 hrs, Volume= 7.227 af, Atten= 29%, Lag= 16.2 min
 Primary = 42.52 cfs @ 12.79 hrs, Volume= 7.227 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 902.24' @ 15.92 hrs Surf.Area= 147,463 sf Storage= 122,066 cf

Plug-Flow detention time= 257.9 min calculated for 7.227 af (93% of inflow)
 Center-of-Mass det. time= 220.9 min (1,065.0 - 844.1)

Volume	Invert	Avail.Storage	Storage Description
#1	900.50'	524,637 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

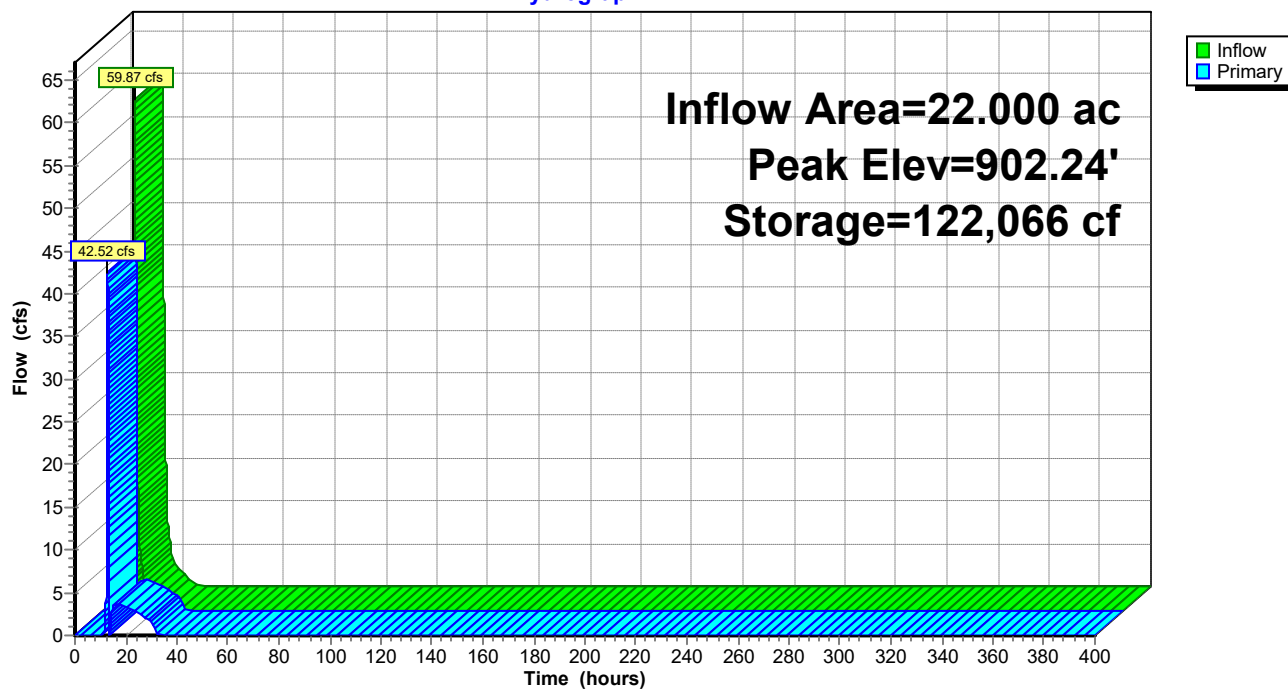
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.50	10	0	0
900.80	30,900	4,636	4,636
901.00	31,600	6,250	10,887
902.00	125,300	78,450	89,337
904.00	310,000	435,300	524,637

Device	Routing	Invert	Outlet Devices
#1	Primary	901.30'	30.0' long x 30.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=42.51 cfs @ 12.79 hrs HW=901.95' TW=900.89' (Dynamic Tailwater)
 ↑1=**Broad-Crested Rectangular Weir** (Weir Controls 42.51 cfs @ 2.17 fps)

Pond W5X: Wetland 5

Hydrograph



2026-02-09 Peltier Ponds - Prelim*MSE 24-hr 3 100-yr Rainfall=7.15"*

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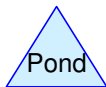
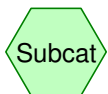
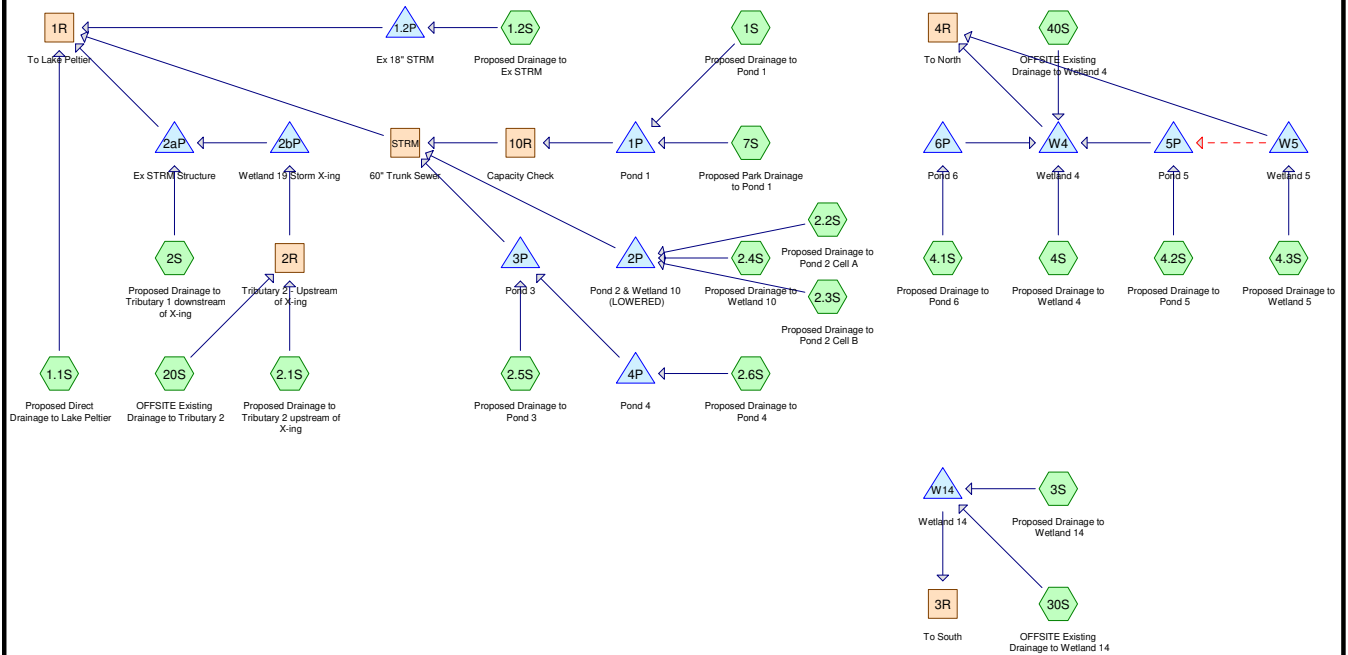
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Stage-Area-Storage for Pond W5X: Wetland 5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
900.50	10	0	903.10	226,885	283,038
900.55	5,158	129	903.15	231,502	294,498
900.60	10,307	516	903.20	236,120	306,189
900.65	15,455	1,160	903.25	240,738	318,110
900.70	20,603	2,061	903.30	245,355	330,262
900.75	25,752	3,220	903.35	249,973	342,645
900.80	30,900	4,636	903.40	254,590	355,259
900.85	31,075	6,186	903.45	259,208	368,104
900.90	31,250	7,744	903.50	263,825	381,180
900.95	31,425	9,311	903.55	268,442	394,487
901.00	31,600	10,887	903.60	273,060	408,025
901.05	36,285	12,584	903.65	277,677	421,793
901.10	40,970	14,515	903.70	282,295	435,792
901.15	45,655	16,681	903.75	286,913	450,022
901.20	50,340	19,081	903.80	291,530	464,483
901.25	55,025	21,715	903.85	296,148	479,175
901.30	59,710	24,583	903.90	300,765	494,098
901.35	64,395	27,686	903.95	305,383	509,252
901.40	69,080	31,022	904.00	310,000	524,637
901.45	73,765	34,594			
901.50	78,450	38,399			
901.55	83,135	42,439			
901.60	87,820	46,713			
901.65	92,505	51,221			
901.70	97,190	55,963			
901.75	101,875	60,940			
901.80	106,560	66,150			
901.85	111,245	71,596			
901.90	115,930	77,275			
901.95	120,615	83,189			
902.00	125,300	89,337			
902.05	129,917	95,717			
902.10	134,535	102,328			
902.15	139,152	109,170			
902.20	143,770	116,244			
902.25	148,388	123,547			
902.30	153,005	131,082			
902.35	157,623	138,848			
902.40	162,240	146,844			
902.45	166,858	155,072			
902.50	171,475	163,530			
902.55	176,092	172,219			
902.60	180,710	181,140			
902.65	185,327	190,290			
902.70	189,945	199,672			
902.75	194,563	209,285			
902.80	199,180	219,128			
902.85	203,798	229,203			
902.90	208,415	239,508			
902.95	213,033	250,044			
903.00	217,650	260,812			
903.05	222,267	271,809			

APPENDIX D – PROPOSED HYDROCAD REPORT

PROPOSED



2026-04-01 Peltier Ponds - Prelim

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
7.350	84	1 acre lots, 20% imp, HSG D (40S)
43.020	80	>75% Grass cover, Good, HSG D (1.1S, 1.2S, 1S, 2.2S, 2.3S, 2.4S, 2.5S, 2.6S, 4.1S, 4.2S)
5.560	90	Fallow, crop residue, Good, HSG D (4.3S, 4S)
33.820	98	Paved parking, HSG D (1S, 2.1S, 2.2S, 2.3S, 2.4S, 2.5S, 2.6S, 2S, 3S, 4.1S, 4.2S, 4.3S, 4S, 7S)
0.300	98	Unconnected pavement, HSG D (1.1S)
0.410	98	Unconnected roofs, HSG D (1.2S)
9.270	98	Water Surface, 0% imp, HSG D (1S, 2.2S, 2.3S, 2.5S, 2.6S, 4.1S, 4.2S)
54.220	80	Woods/grass comb., Fair, HSG D (1.1S, 2.1S, 2S, 3S, 7S, 20S, 30S)
153.950	86	TOTAL AREA

2026-04-01 Peltier Ponds - Prelim

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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 1.1S: Proposed Direct Drainage to Lake Peltier

Runoff = 4.18 cfs @ 12.16 hrs, Volume= 0.214 af, Depth= 1.33"

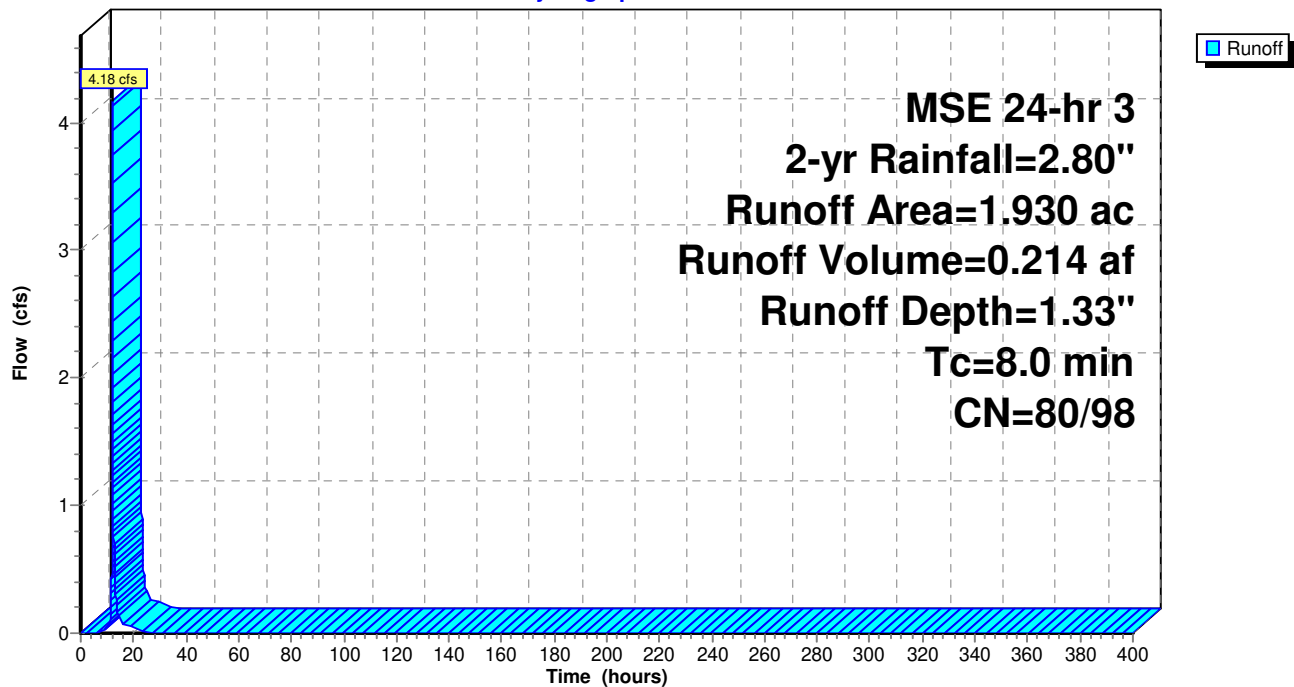
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
0.300	98	Unconnected pavement, HSG D
1.530	80	>75% Grass cover, Good, HSG D
* 0.100	80	Woods/grass comb., Fair, HSG D
1.930	83	Weighted Average
1.630	80	84.46% Pervious Area
0.300	98	15.54% Impervious Area

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

Subcatchment 1.1S: Proposed Direct Drainage to Lake Peltier

Hydrograph



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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 1.2S: Proposed Drainage to Ex STRM

Runoff = 2.49 cfs @ 12.15 hrs, Volume= 0.134 af, Depth= 1.76"

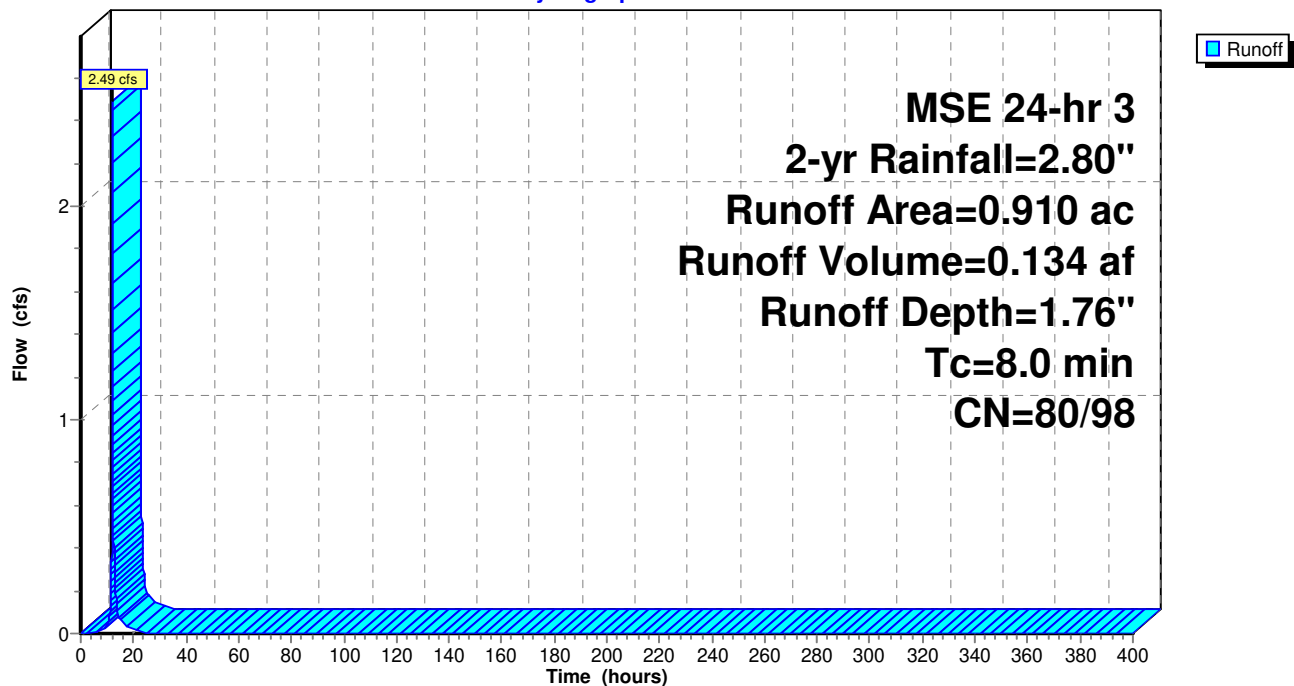
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
0.410	98	Unconnected roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
0.910	88	Weighted Average
0.500	80	54.95% Pervious Area
0.410	98	45.05% Impervious Area

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

Subcatchment 1.2S: Proposed Drainage to Ex STRM

Hydrograph



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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 1S: Proposed Drainage to Pond 1

Runoff = 67.22 cfs @ 12.23 hrs, Volume= 4.605 af, Depth= 1.78"

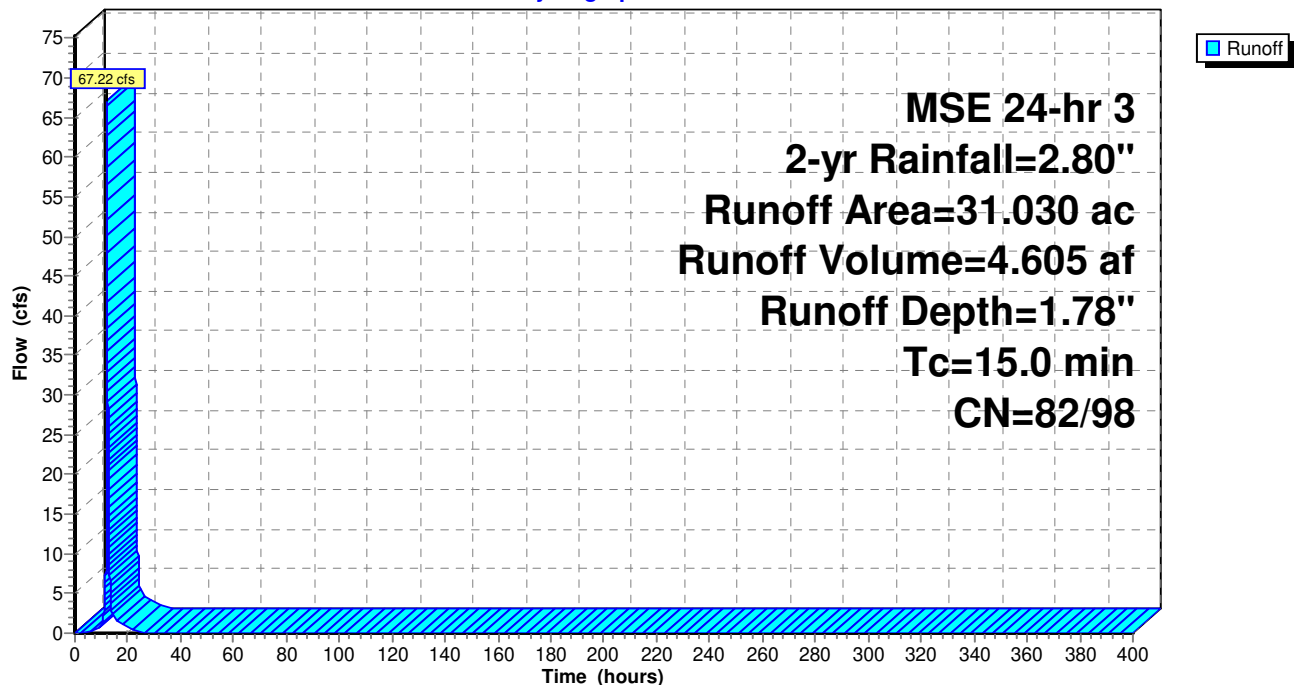
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
12.850	98	Paved parking, HSG D
2.280	98	Water Surface, 0% imp, HSG D
15.900	80	>75% Grass cover, Good, HSG D
31.030	89	Weighted Average
18.180	82	58.59% Pervious Area
12.850	98	41.41% Impervious Area

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

Subcatchment 1S: Proposed Drainage to Pond 1

Hydrograph



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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 2.1S: Proposed Drainage to Tributary 2 upstream of X-ing

Runoff = 4.20 cfs @ 12.59 hrs, Volume= 0.501 af, Depth= 1.20"

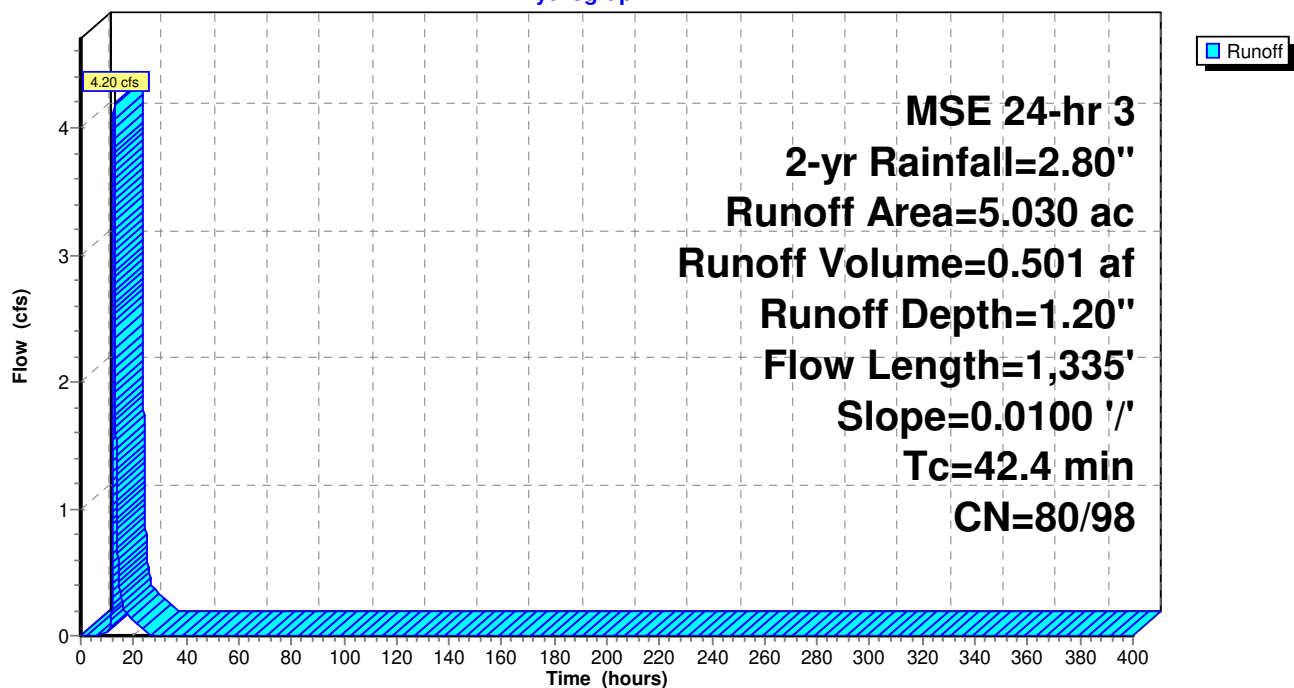
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
0.320	98	Paved parking, HSG D
* 4.710	80	Woods/grass comb., Fair, HSG D
5.030	81	Weighted Average
4.710	80	93.64% Pervious Area
0.320	98	6.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.1	200	0.0100	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
10.7	450	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.6	685	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
42.4	1,335	Total			

Subcatchment 2.1S: Proposed Drainage to Tributary 2 upstream of X-ing

Hydrograph



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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 2.2S: Proposed Drainage to Pond 2 Cell A

Runoff = 21.67 cfs @ 12.17 hrs, Volume= 1.248 af, Depth= 1.76"

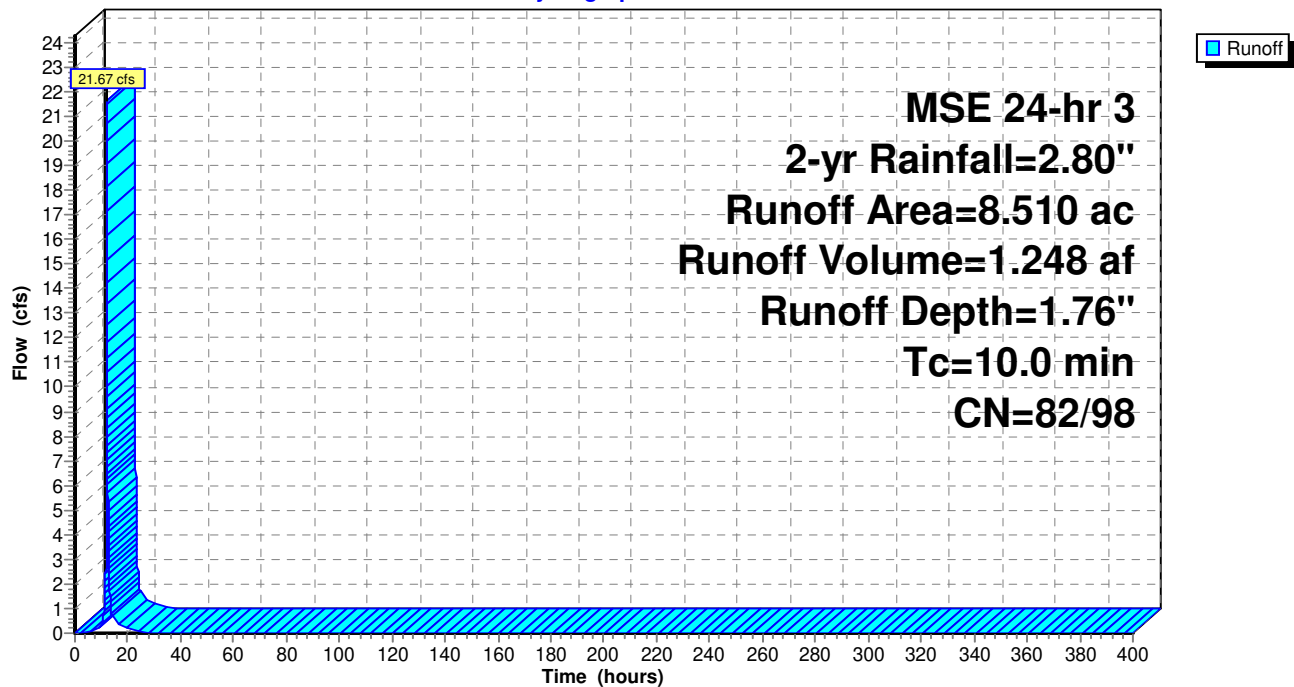
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
3.390	98	Paved parking, HSG D
0.660	98	Water Surface, 0% imp, HSG D
4.460	80	>75% Grass cover, Good, HSG D
8.510	89	Weighted Average
5.120	82	60.16% Pervious Area
3.390	98	39.84% Impervious Area

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

Subcatchment 2.2S: Proposed Drainage to Pond 2 Cell A

Hydrograph



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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 2.3S: Proposed Drainage to Pond 2 Cell B

Runoff = 4.90 cfs @ 12.18 hrs, Volume= 0.279 af, Depth= 1.70"

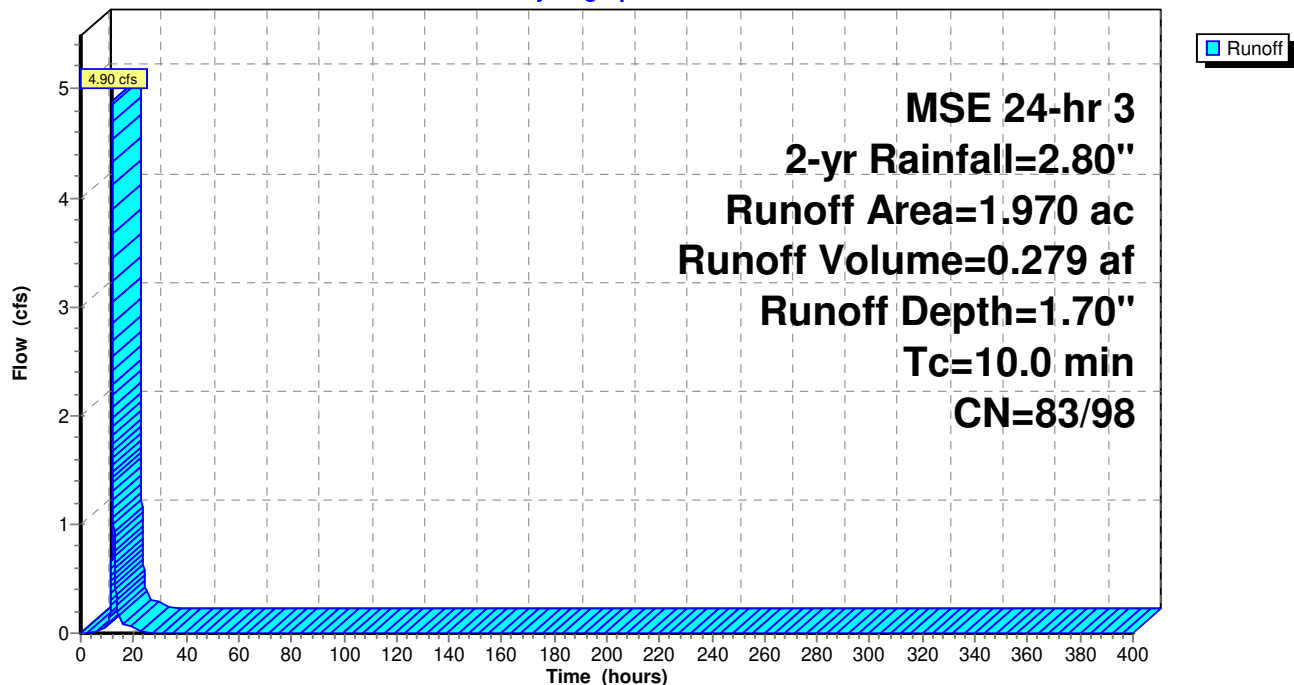
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
0.630	98	Paved parking, HSG D
0.260	98	Water Surface, 0% imp, HSG D
1.080	80	>75% Grass cover, Good, HSG D
1.970	88	Weighted Average
1.340	83	68.02% Pervious Area
0.630	98	31.98% Impervious Area

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

Subcatchment 2.3S: Proposed Drainage to Pond 2 Cell B

Hydrograph



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MSE 24-hr 3 2-yr Rainfall=2.80"

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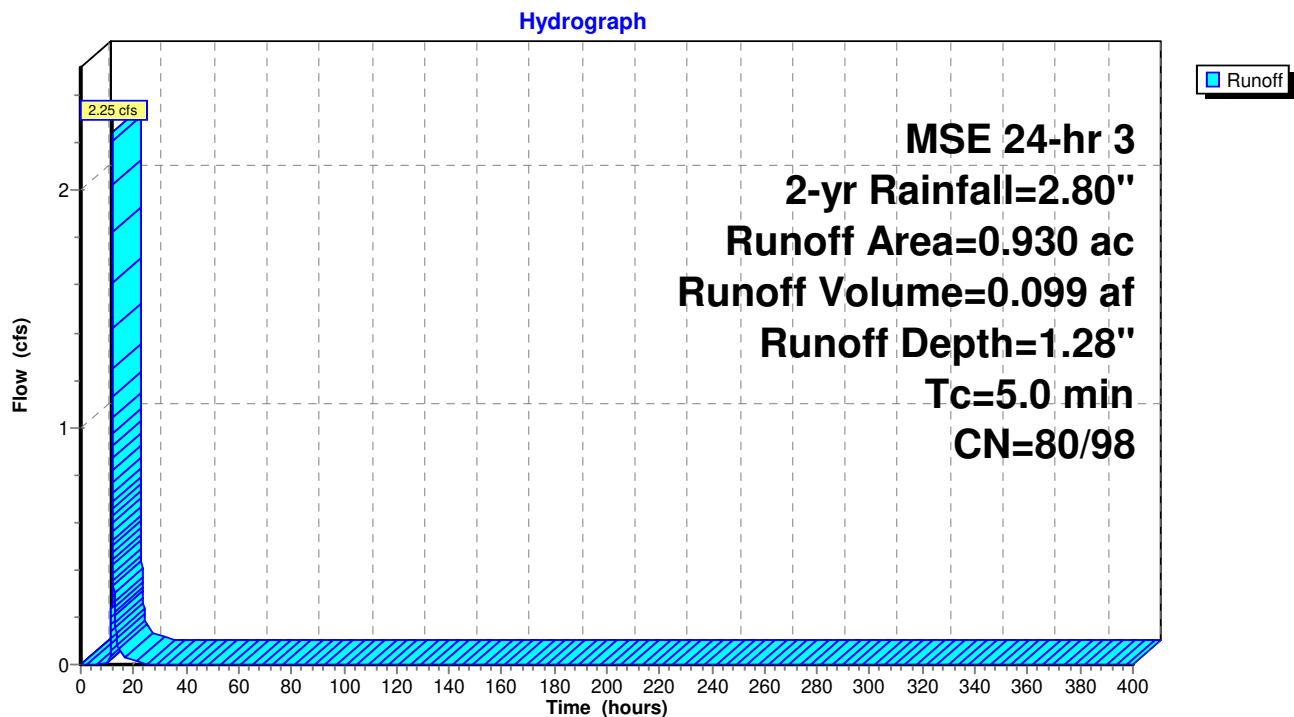
Summary for Subcatchment 2.4S: Proposed Drainage to Wetland 10

Runoff = 2.25 cfs @ 12.13 hrs, Volume= 0.099 af, Depth= 1.28"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
0.110	98	Paved parking, HSG D
0.820	80	>75% Grass cover, Good, HSG D
0.930	82	Weighted Average
0.820	80	88.17% Pervious Area
0.110	98	11.83% Impervious Area

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

Subcatchment 2.4S: Proposed Drainage to Wetland 10

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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 2.5S: Proposed Drainage to Pond 3

Runoff = 34.85 cfs @ 12.17 hrs, Volume= 1.979 af, Depth= 1.81"

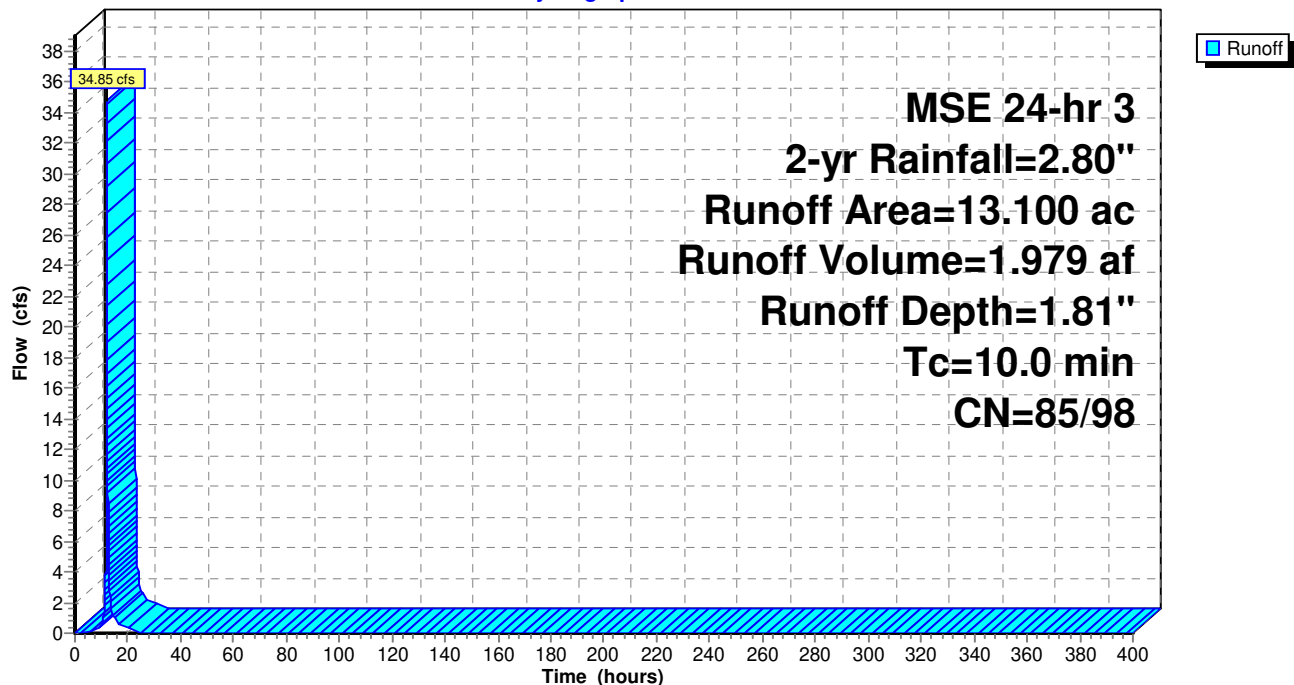
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
4.460	98	Paved parking, HSG D
2.310	98	Water Surface, 0% imp, HSG D
6.330	80	>75% Grass cover, Good, HSG D
13.100	89	Weighted Average
8.640	85	65.95% Pervious Area
4.460	98	34.05% Impervious Area

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

Subcatchment 2.5S: Proposed Drainage to Pond 3

Hydrograph



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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 2.6S: Proposed Drainage to Pond 4

Runoff = 16.87 cfs @ 12.17 hrs, Volume= 0.986 af, Depth= 1.87"

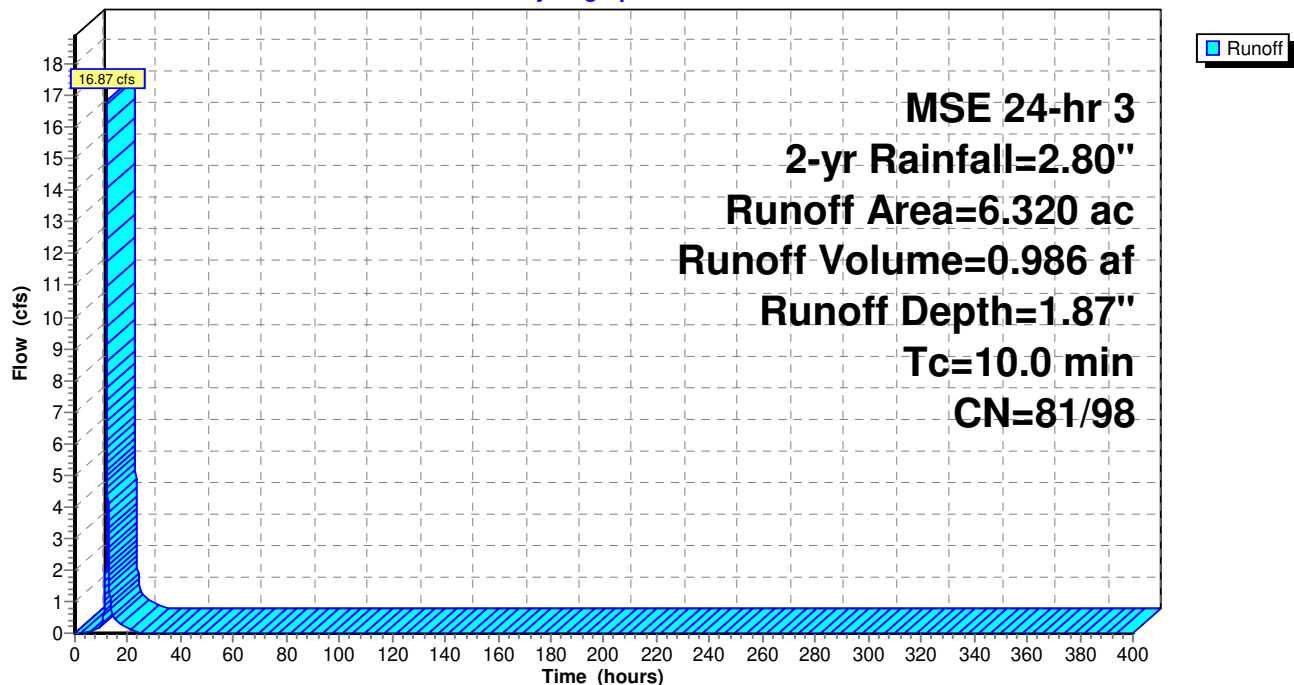
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
3.190	98	Paved parking, HSG D
0.210	98	Water Surface, 0% imp, HSG D
2.920	80	>75% Grass cover, Good, HSG D
6.320	90	Weighted Average
3.130	81	49.53% Pervious Area
3.190	98	50.47% Impervious Area

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

Subcatchment 2.6S: Proposed Drainage to Pond 4

Hydrograph



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MSE 24-hr 3 2-yr Rainfall=2.80"

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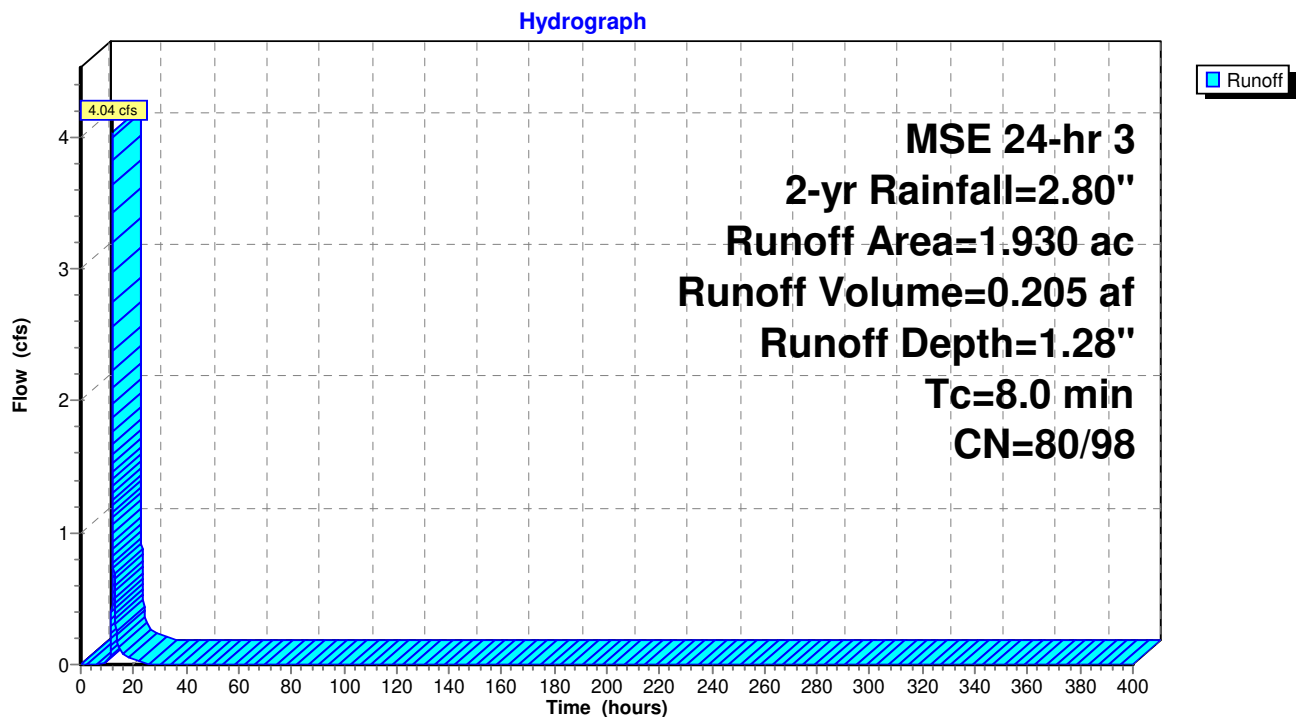
Summary for Subcatchment 2S: Proposed Drainage to Tributary 1 downstream of X-ing

Runoff = 4.04 cfs @ 12.16 hrs, Volume= 0.205 af, Depth= 1.28"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
0.230	98	Paved parking, HSG D
* 1.700	80	Woods/grass comb., Fair, HSG D
1.930	82	Weighted Average
1.700	80	88.08% Pervious Area
0.230	98	11.92% Impervious Area

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

Subcatchment 2S: Proposed Drainage to Tributary 1 downstream of X-ing

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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 3S: Proposed Drainage to Wetland 14

Runoff = 7.80 cfs @ 14.15 hrs, Volume= 2.323 af, Depth= 1.14"

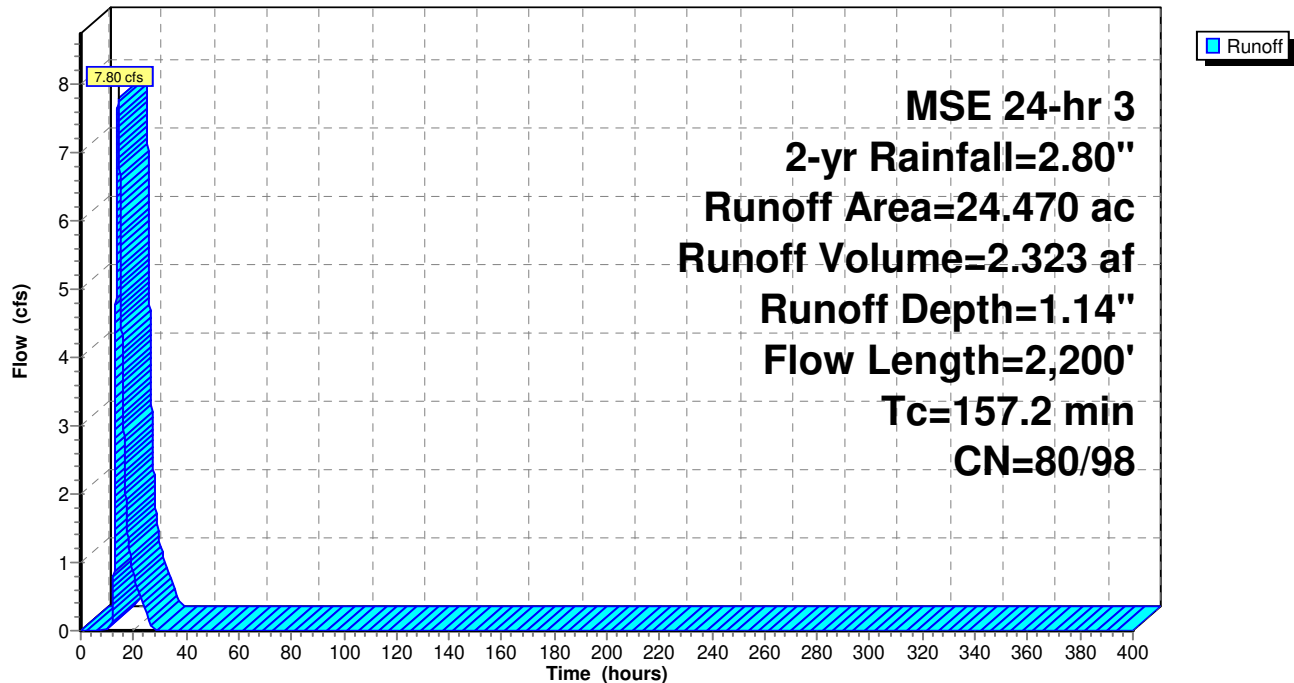
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
0.620	98	Paved parking, HSG D
* 23.850	80	Woods/grass comb., Fair, HSG D
24.470	80	Weighted Average
23.850	80	97.47% Pervious Area
0.620	98	2.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
3.9	300	0.0200	1.27		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
126.7	1,700	0.0020	0.22		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
157.2	2,200	Total			

Subcatchment 3S: Proposed Drainage to Wetland 14

Hydrograph



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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 4.1S: Proposed Drainage to Pond 6

Runoff = 12.21 cfs @ 12.17 hrs, Volume= 0.681 af, Depth= 1.90"

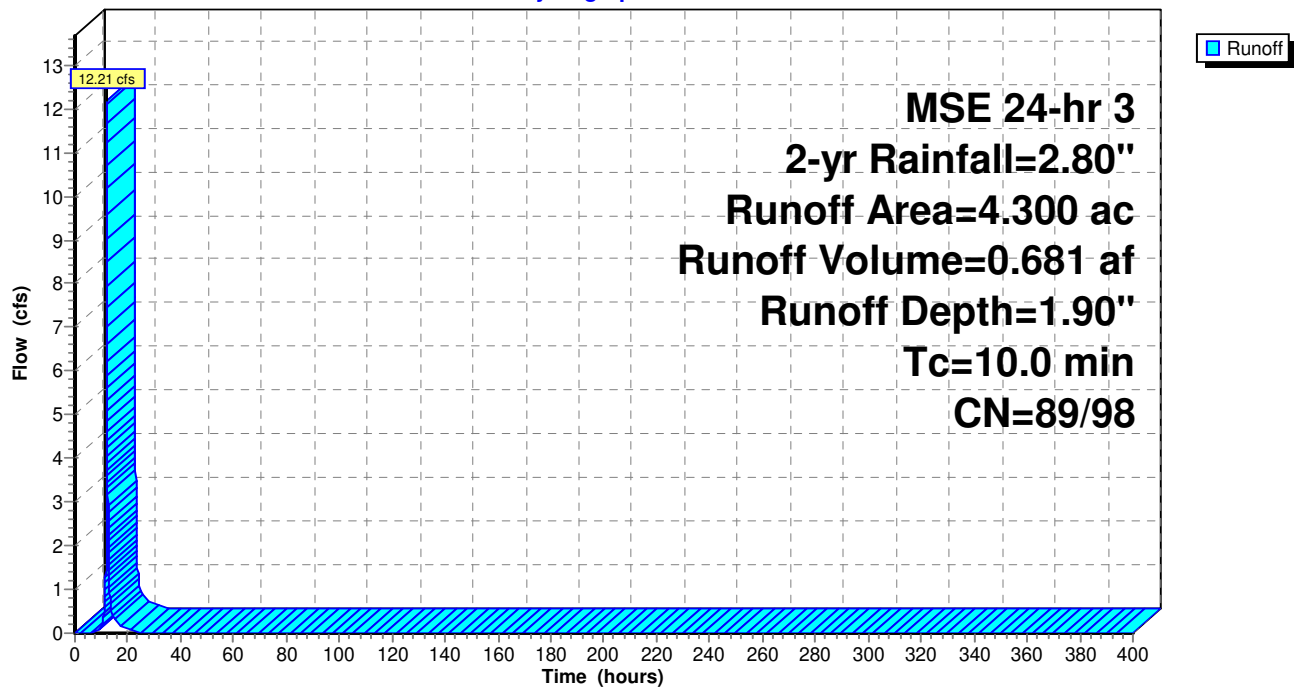
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
0.910	98	Paved parking, HSG D
1.620	98	Water Surface, 0% imp, HSG D
1.770	80	>75% Grass cover, Good, HSG D
4.300	91	Weighted Average
3.390	89	78.84% Pervious Area
0.910	98	21.16% Impervious Area

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

Subcatchment 4.1S: Proposed Drainage to Pond 6

Hydrograph



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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 4.2S: Proposed Drainage to Pond 5

Runoff = 41.64 cfs @ 12.17 hrs, Volume= 2.383 af, Depth= 1.82"

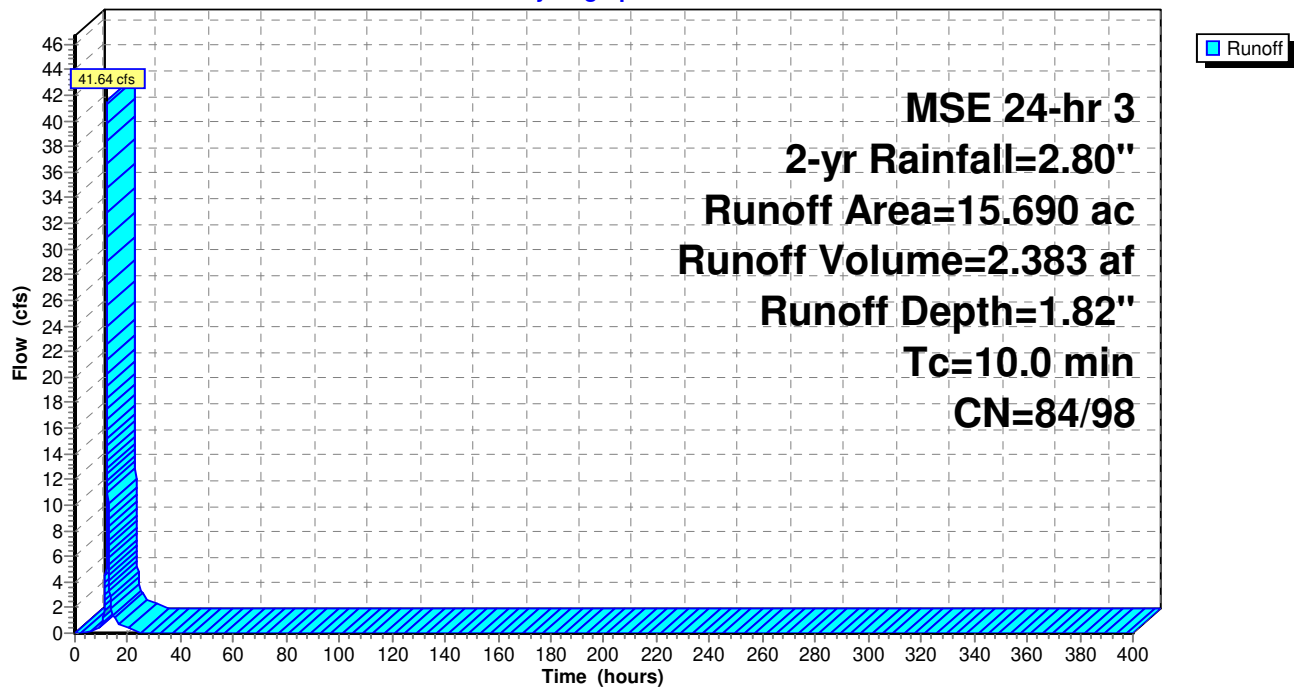
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
6.050	98	Paved parking, HSG D
1.930	98	Water Surface, 0% imp, HSG D
7.710	80	>75% Grass cover, Good, HSG D
15.690	89	Weighted Average
9.640	84	61.44% Pervious Area
6.050	98	38.56% Impervious Area

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

Subcatchment 4.2S: Proposed Drainage to Pond 5

Hydrograph



Summary for Subcatchment 4.3S: Proposed Drainage to Wetland 5

Runoff = 8.67 cfs @ 12.12 hrs, Volume= 0.386 af, Depth= 1.88"

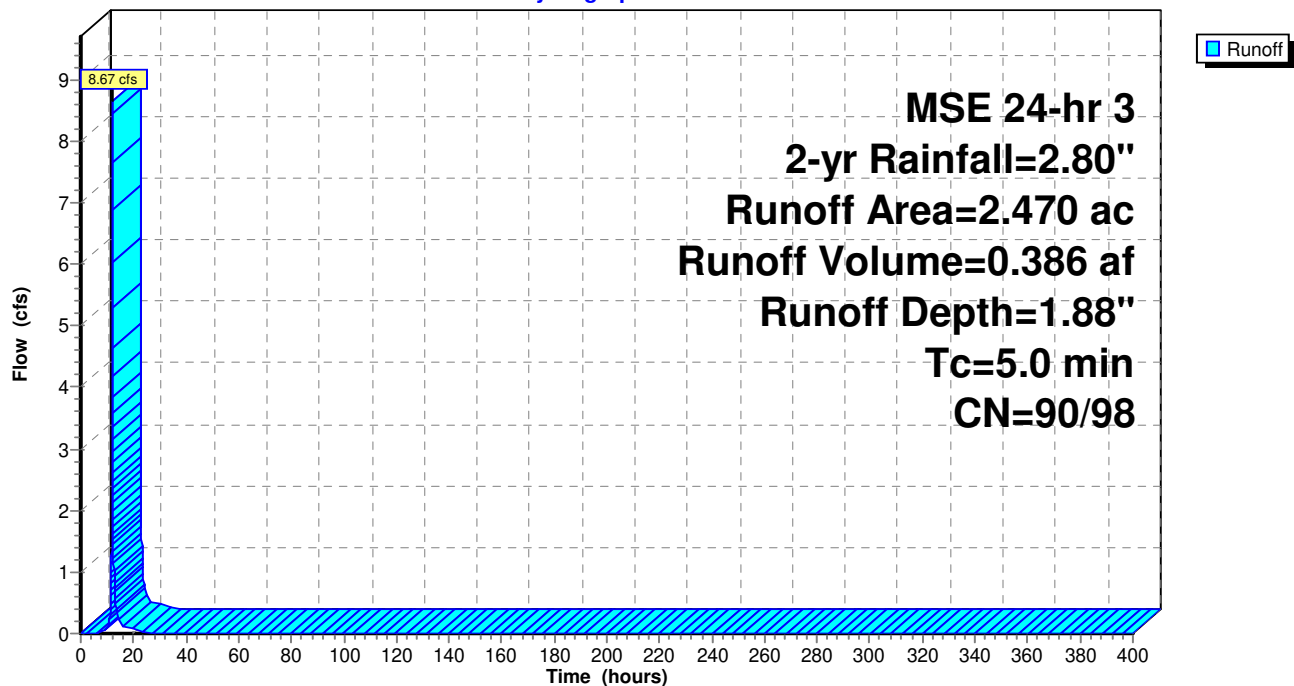
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG D
2.230	90	Fallow, crop residue, Good, HSG D
2.470	91	Weighted Average
2.230	90	90.28% Pervious Area
0.240	98	9.72% Impervious Area

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

Subcatchment 4.3S: Proposed Drainage to Wetland 5

Hydrograph



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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 4S: Proposed Drainage to Wetland 4

Runoff = 10.48 cfs @ 12.17 hrs, Volume= 0.577 af, Depth= 1.88"

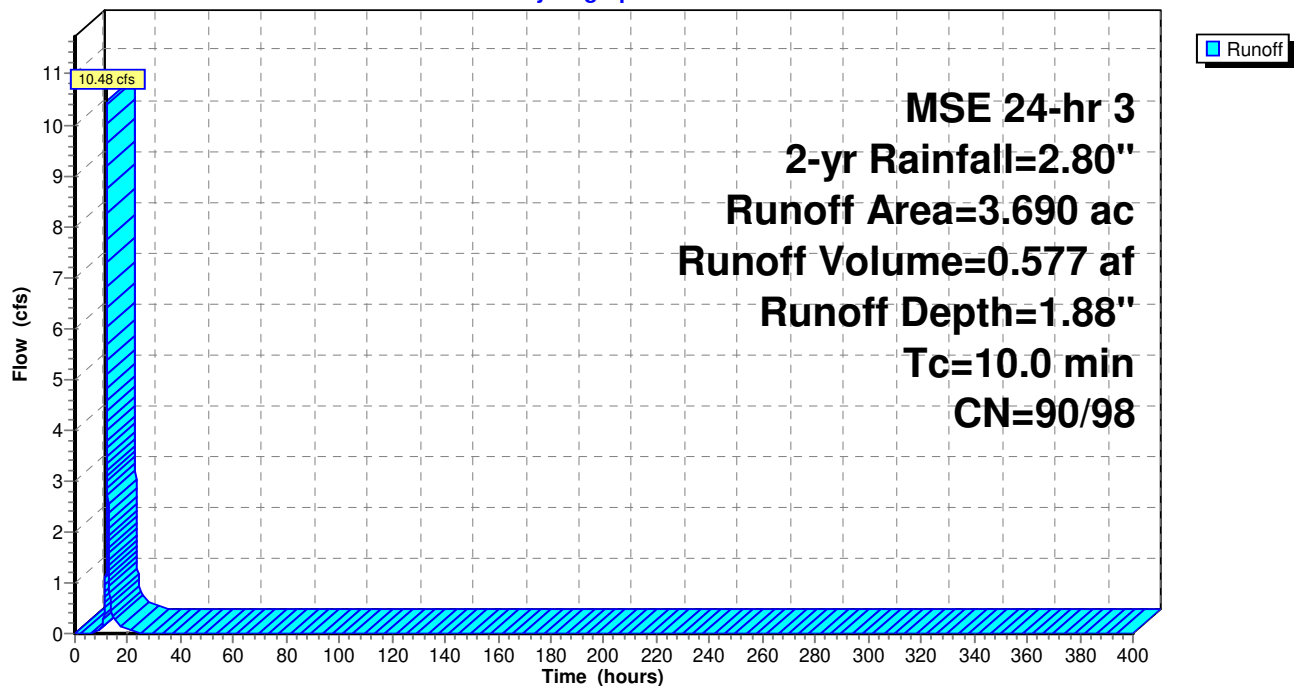
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
0.360	98	Paved parking, HSG D
3.330	90	Fallow, crop residue, Good, HSG D
3.690	91	Weighted Average
3.330	90	90.24% Pervious Area
0.360	98	9.76% Impervious Area

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

Subcatchment 4S: Proposed Drainage to Wetland 4

Hydrograph



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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 7S: Proposed Park Drainage to Pond 1

Runoff = 3.72 cfs @ 12.33 hrs, Volume= 0.309 af, Depth= 1.35"

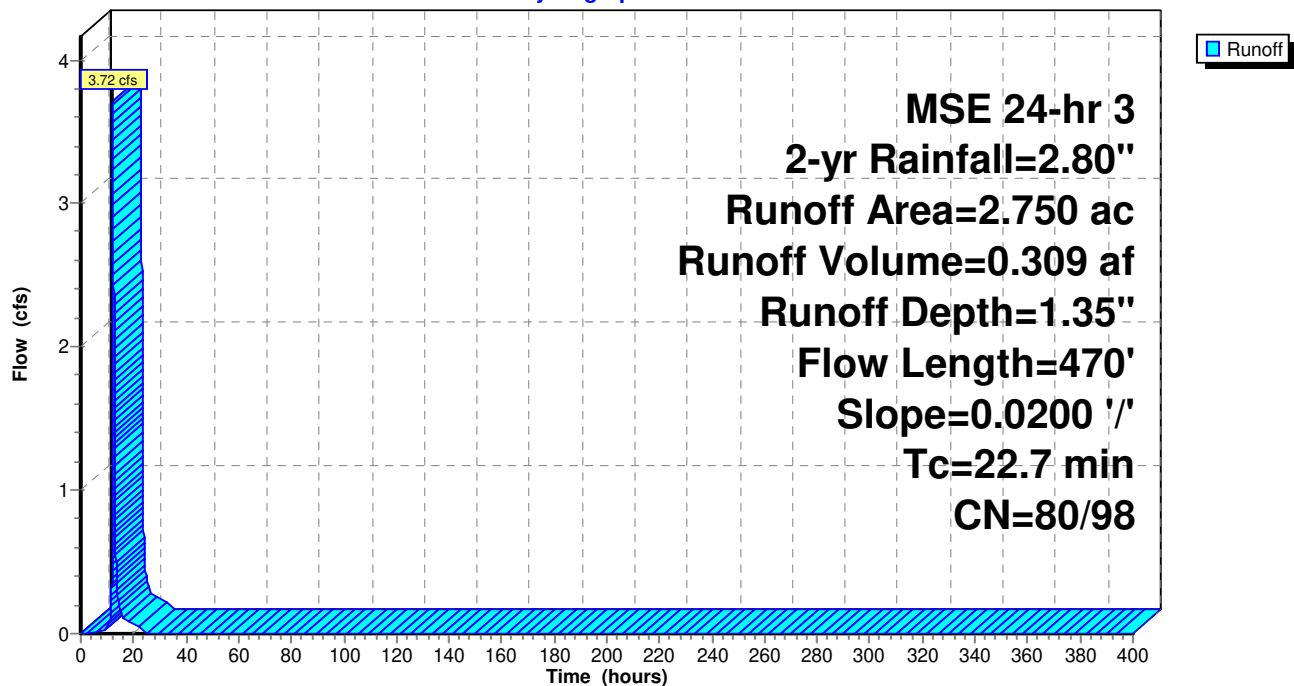
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
0.460	98	Paved parking, HSG D
* 2.290	80	Woods/grass comb., Fair, HSG D
2.750	83	Weighted Average
2.290	80	83.27% Pervious Area
0.460	98	16.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	200	0.0200	0.18		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
4.5	270	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
22.7	470	Total			

Subcatchment 7S: Proposed Park Drainage to Pond 1

Hydrograph



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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 20S: OFFSITE Existing Drainage to Tributary 2

Runoff = 9.07 cfs @ 13.18 hrs, Volume= 1.722 af, Depth= 1.10"

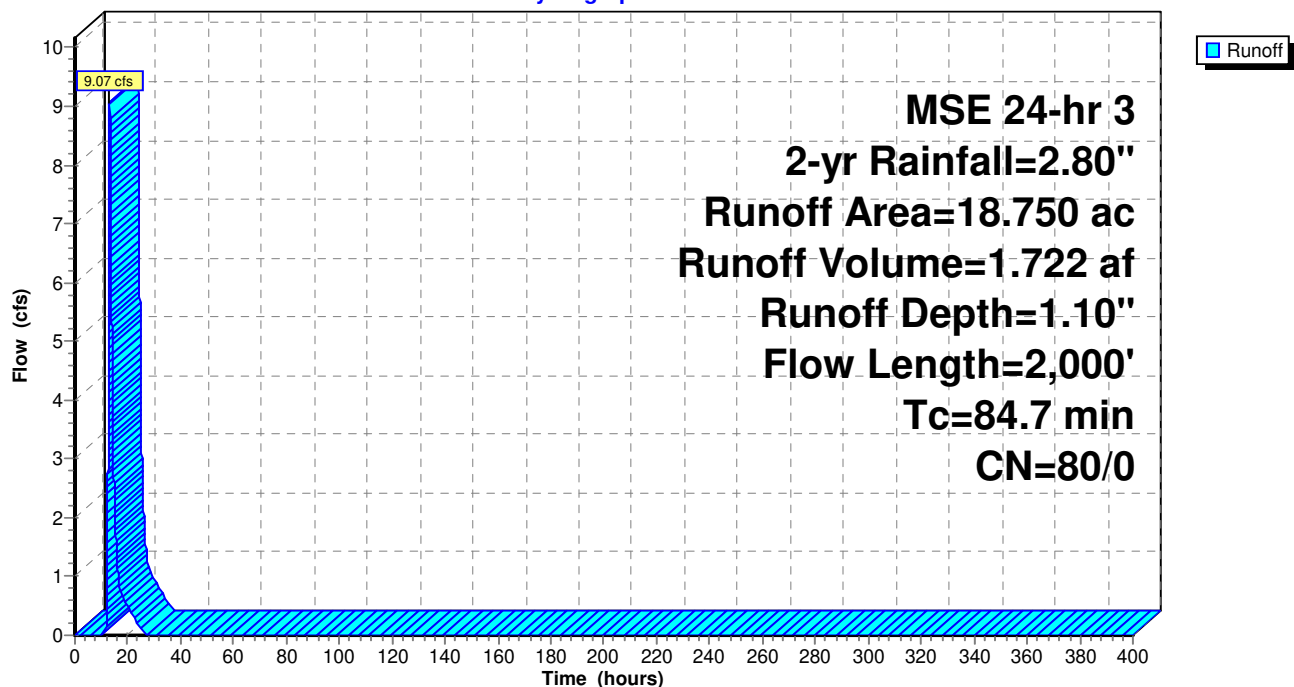
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
* 0.000	80	Row crops, straight row, Good, HSG D
* 18.750	80	Woods/grass comb., Fair, HSG D
18.750	80	Weighted Average
18.750	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.0	200	0.0100	0.10		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"
43.0	1,000	0.0060	0.39		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.7	800	0.0175	1.98		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
84.7	2,000	Total			

Subcatchment 20S: OFFSITE Existing Drainage to Tributary 2

Hydrograph



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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 30S: OFFSITE Existing Drainage to Wetland 14

Runoff = 2.66 cfs @ 12.45 hrs, Volume= 0.259 af, Depth= 1.10"

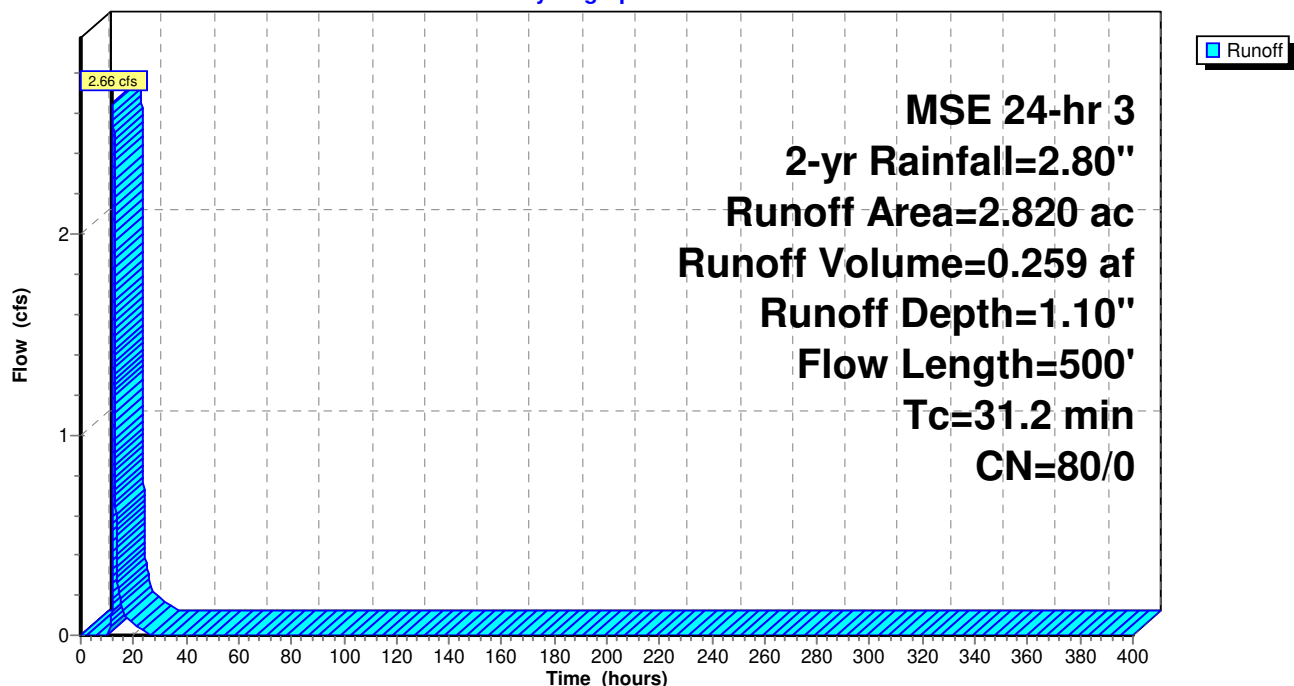
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
* 0.000	80	Row crops, straight row, Good, HSG D
* 2.820	80	Woods/grass comb., Fair, HSG D
2.820	80	Weighted Average
2.820	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.1	200	0.0100	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
7.1	300	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
31.2	500	Total			

Subcatchment 30S: OFFSITE Existing Drainage to Wetland 14

Hydrograph



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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Subcatchment 40S: OFFSITE Existing Drainage to Wetland 4

Runoff = 6.00 cfs @ 12.82 hrs, Volume= 0.884 af, Depth= 1.44"

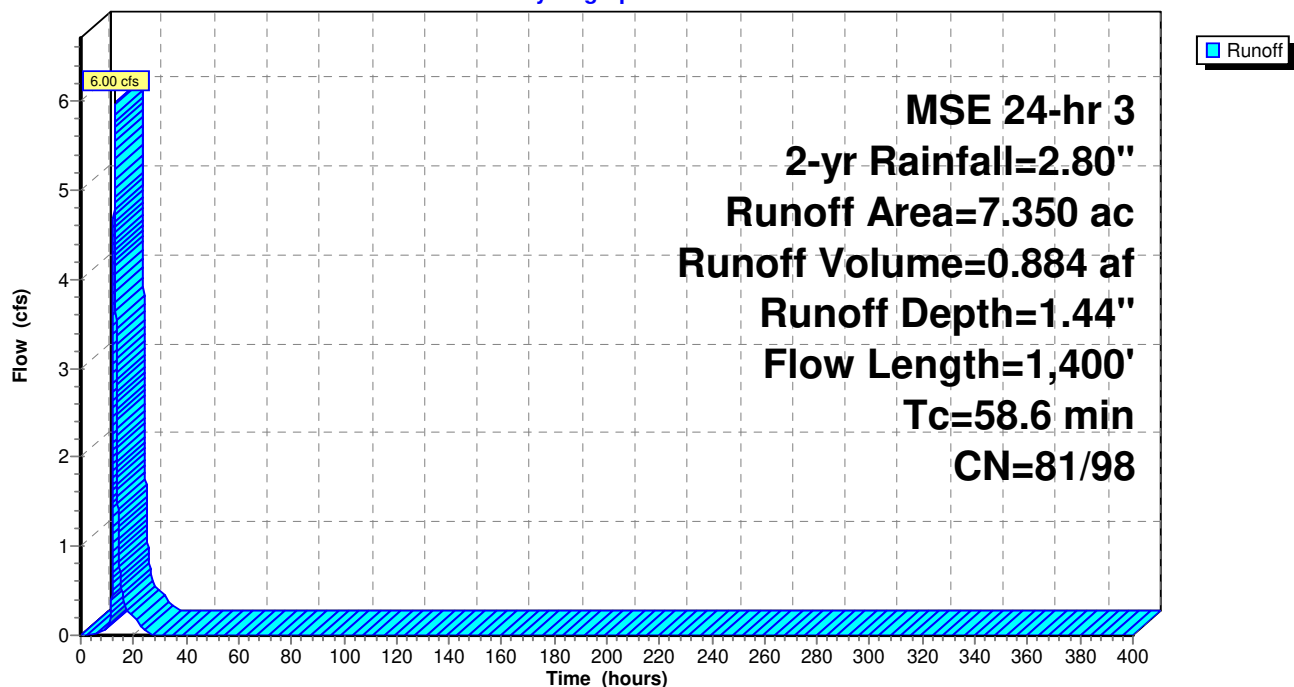
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-yr Rainfall=2.80"

Area (ac)	CN	Description
0.000	89	Row crops, straight row, Good, HSG D
0.000	82	Woods/grass comb., Fair, HSG D
7.350	84	1 acre lots, 20% imp, HSG D
7.350	84	Weighted Average
5.880	81	80.00% Pervious Area
1.470	98	20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	200	0.0200	0.18		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
40.4	1,200	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
58.6	1,400	Total			

Subcatchment 40S: OFFSITE Existing Drainage to Wetland 4

Hydrograph



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MSE 24-hr 3 2-yr Rainfall=2.80"

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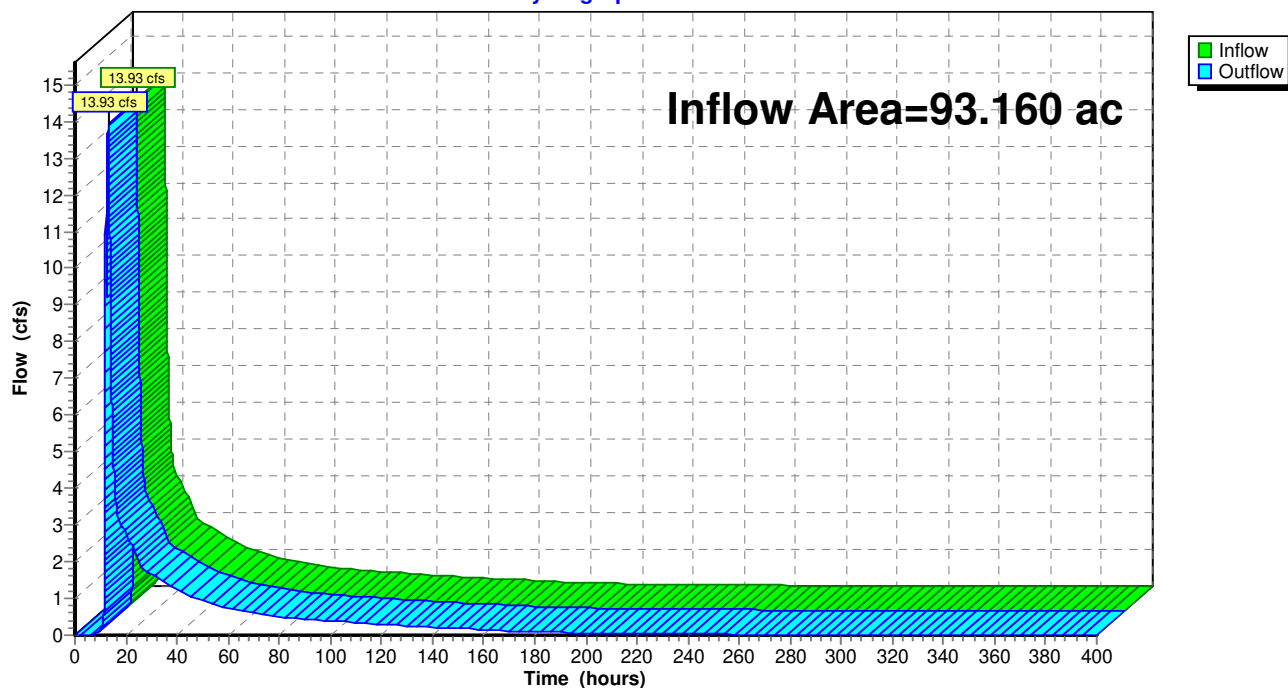
Summary for Reach 1R: To Lake Peltier

Inflow Area = 93.160 ac, 28.28% Impervious, Inflow Depth > 1.56" for 2-yr event
Inflow = 13.93 cfs @ 13.09 hrs, Volume= 12.113 af
Outflow = 13.93 cfs @ 13.09 hrs, Volume= 12.113 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 1R: To Lake Peltier

Hydrograph



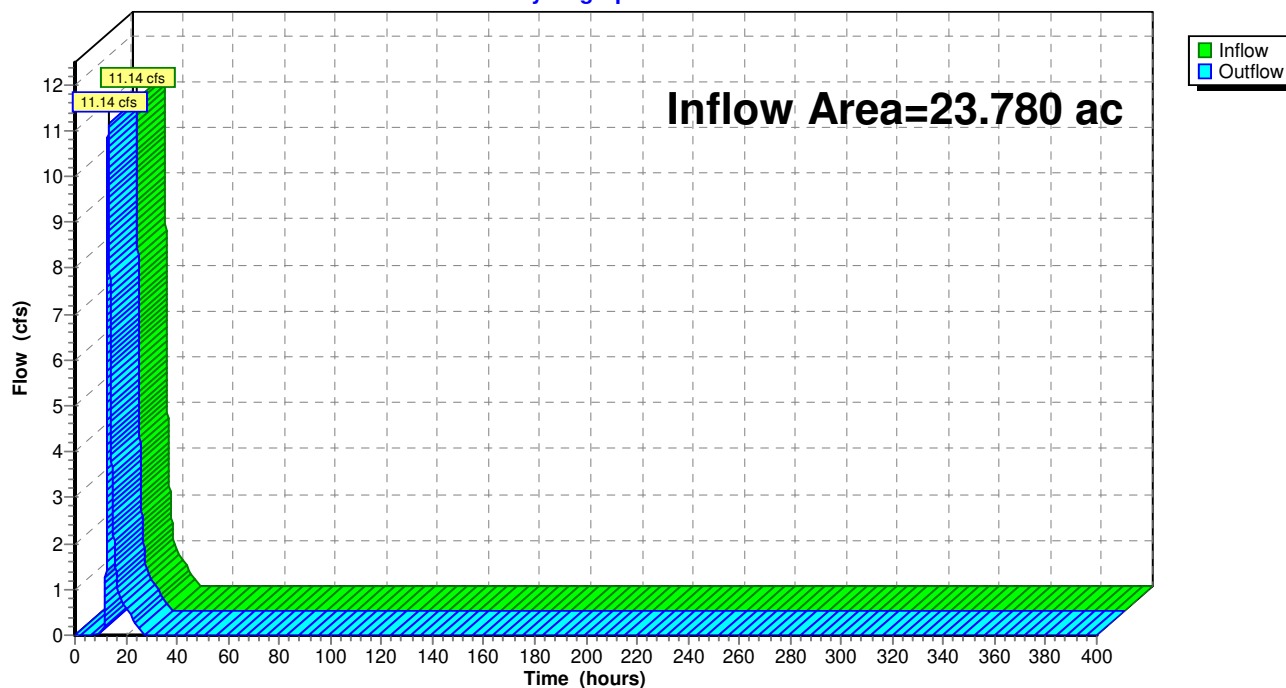
Summary for Reach 2R: Tributary 2 - Upstream of X-ing

Inflow Area = 23.780 ac, 1.35% Impervious, Inflow Depth = 1.12" for 2-yr event
Inflow = 11.14 cfs @ 13.08 hrs, Volume= 2.223 af
Outflow = 11.14 cfs @ 13.08 hrs, Volume= 2.223 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 2R: Tributary 2 - Upstream of X-ing

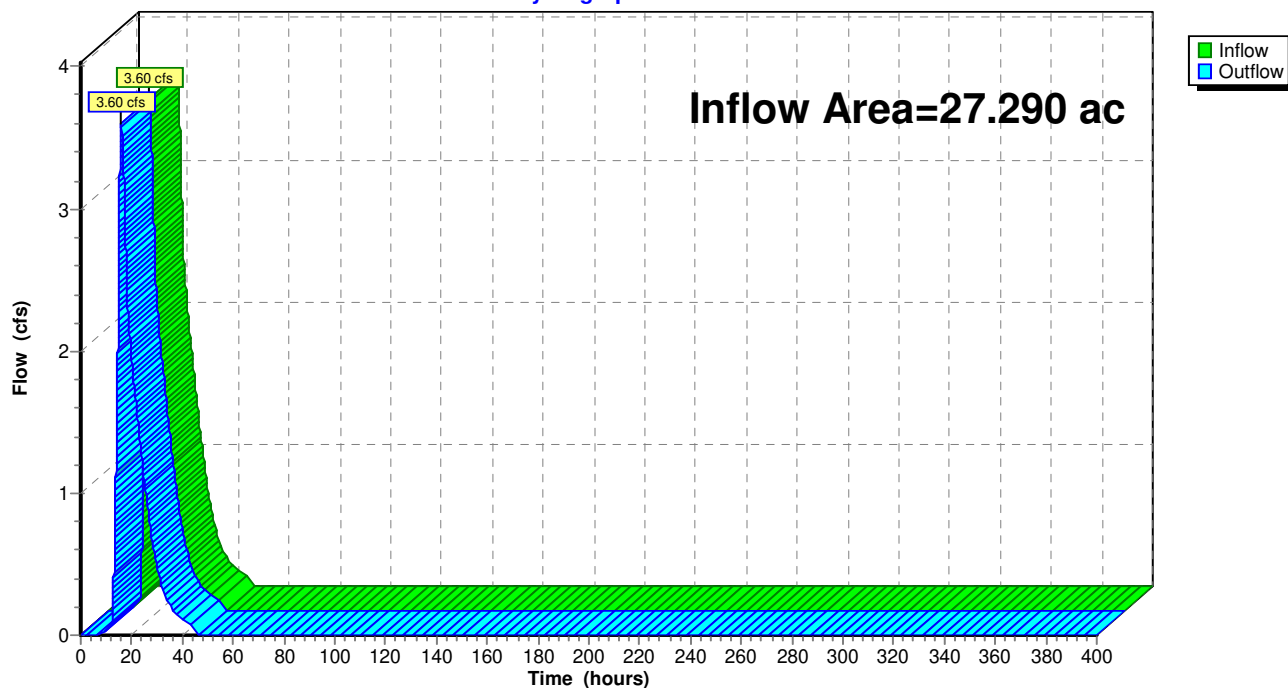
Hydrograph



Summary for Reach 3R: To South

Inflow Area = 27.290 ac, 2.27% Impervious, Inflow Depth = 1.14" for 2-yr event
Inflow = 3.60 cfs @ 16.00 hrs, Volume= 2.582 af
Outflow = 3.60 cfs @ 16.00 hrs, Volume= 2.582 af, Atten= 0%, Lag= 0.0 min

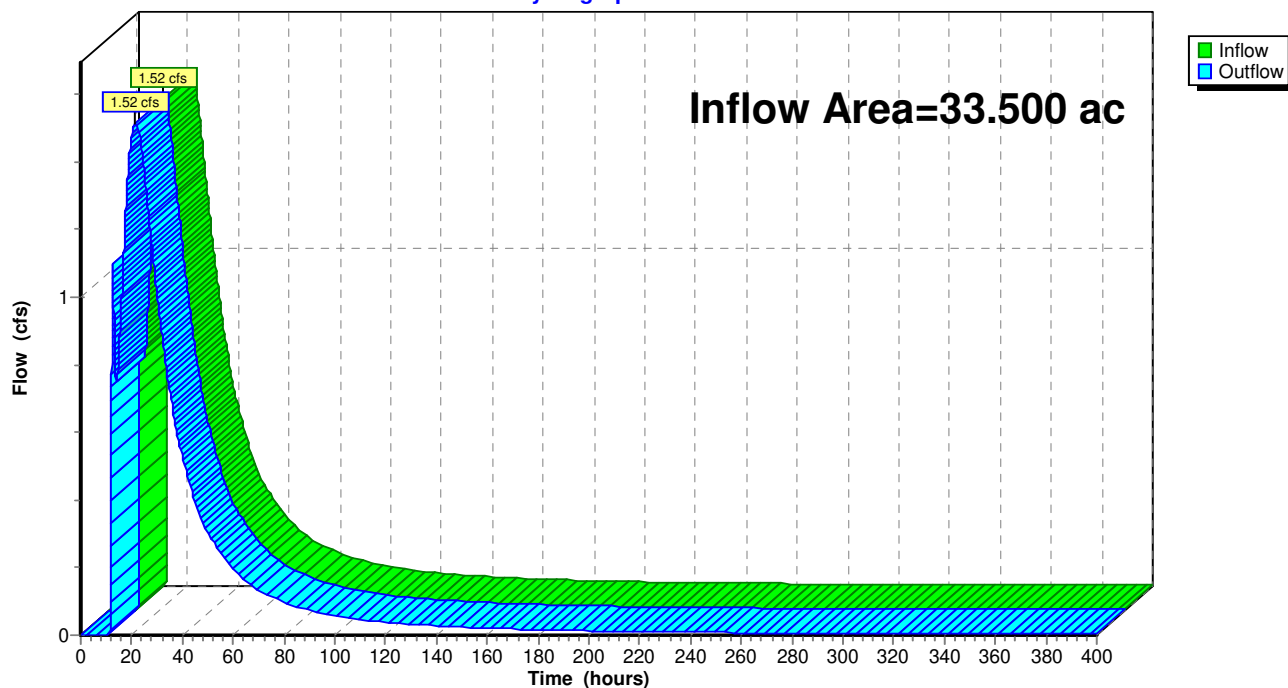
Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 3R: To South**Hydrograph**

Summary for Reach 4R: To North

Inflow Area = 33.500 ac, 26.96% Impervious, Inflow Depth > 1.30" for 2-yr event
Inflow = 1.52 cfs @ 21.59 hrs, Volume= 3.636 af
Outflow = 1.52 cfs @ 21.59 hrs, Volume= 3.636 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 4R: To North**Hydrograph**

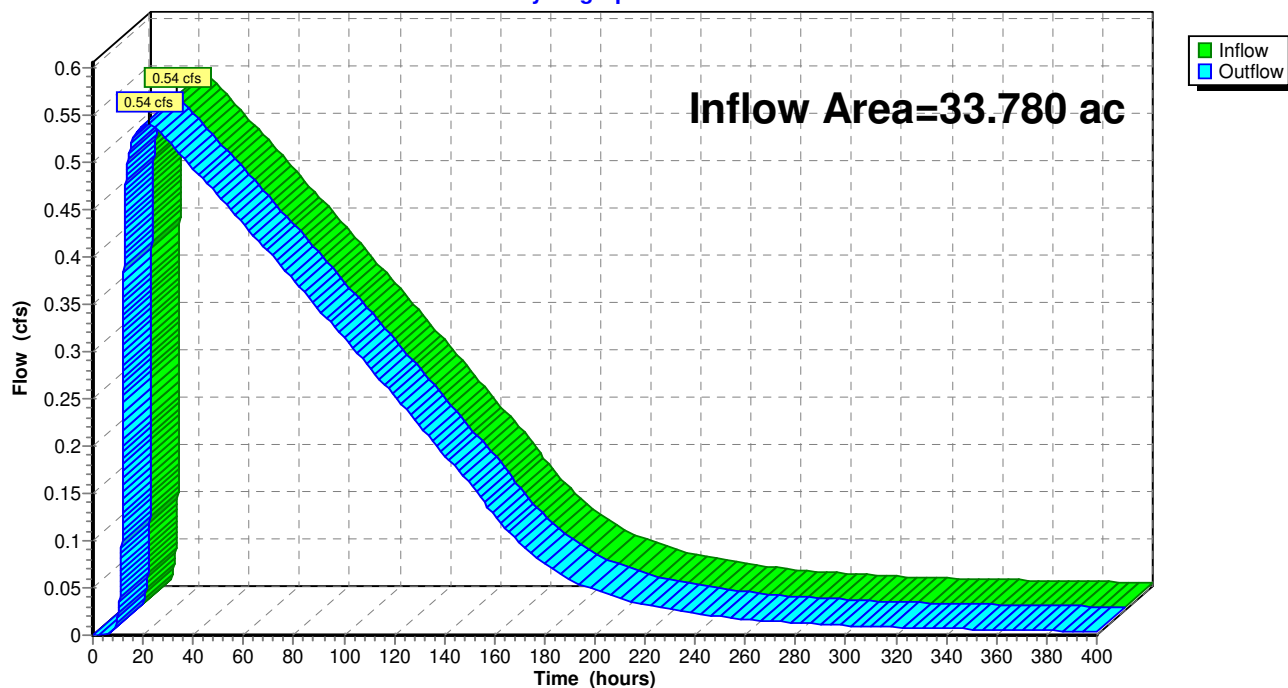
Summary for Reach 10R: Capacity Check

Inflow Area = 33.780 ac, 39.40% Impervious, Inflow Depth > 1.71" for 2-yr event
Inflow = 0.54 cfs @ 22.19 hrs, Volume= 4.820 af
Outflow = 0.54 cfs @ 22.19 hrs, Volume= 4.820 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 10R: Capacity Check

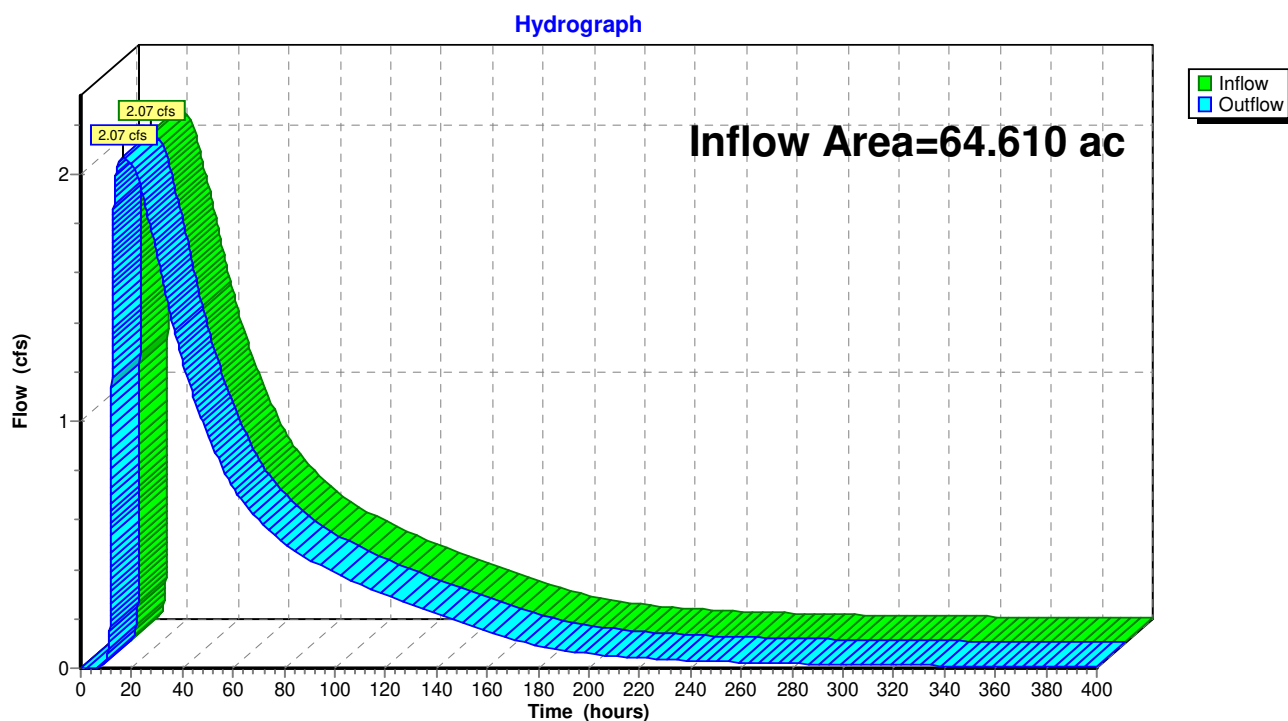
Hydrograph



Summary for Reach STRM: 60" Trunk Sewer

Inflow Area = 64.610 ac, 38.83% Impervious, Inflow Depth > 1.73" for 2-yr event
Inflow = 2.07 cfs @ 16.45 hrs, Volume= 9.340 af
Outflow = 2.07 cfs @ 16.45 hrs, Volume= 9.340 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach STRM: 60" Trunk Sewer

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Summary for Pond 1.2P: Ex 18" STRM

Inflow Area = 0.910 ac, 45.05% Impervious, Inflow Depth = 1.76" for 2-yr event
 Inflow = 2.49 cfs @ 12.15 hrs, Volume= 0.134 af
 Outflow = 2.45 cfs @ 12.17 hrs, Volume= 0.134 af, Atten= 2%, Lag= 0.8 min
 Primary = 2.45 cfs @ 12.17 hrs, Volume= 0.134 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 893.68' @ 12.17 hrs Surf.Area= 320 sf Storage= 123 cf

Plug-Flow detention time= 1.3 min calculated for 0.134 af (100% of inflow)
 Center-of-Mass det. time= 1.0 min (779.4 - 778.4)

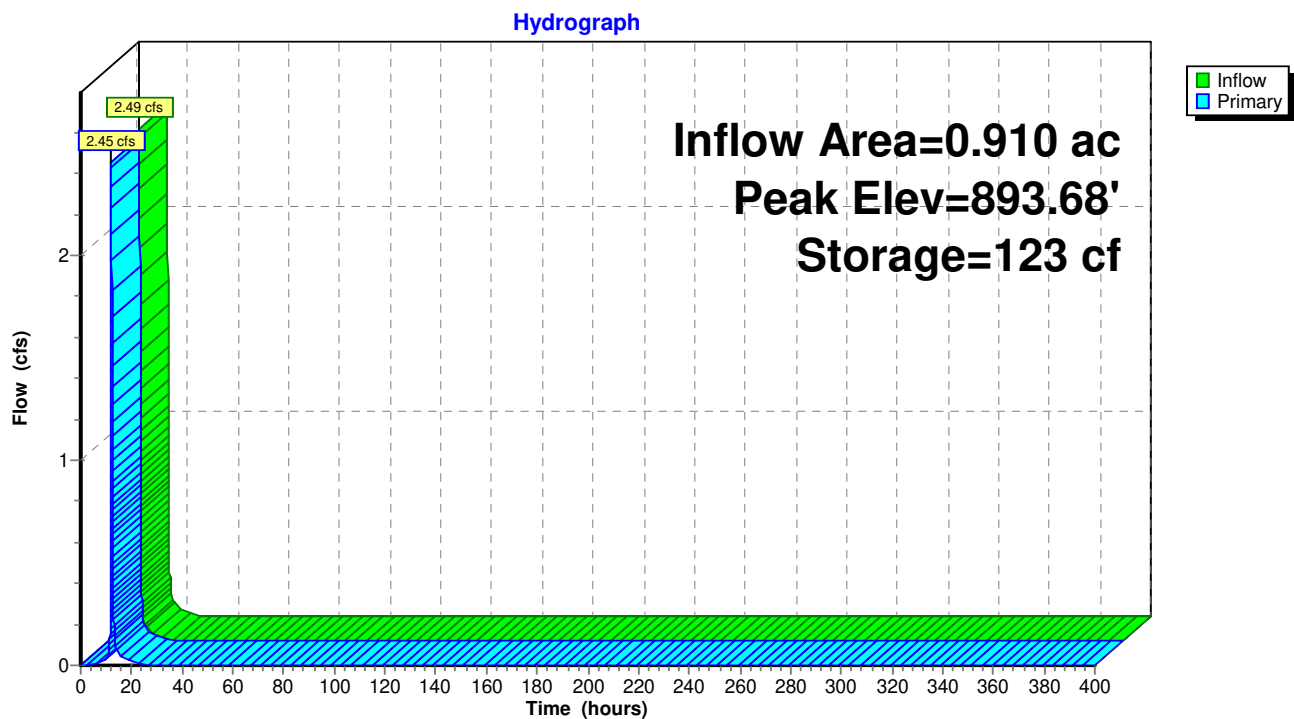
Volume	Invert	Avail.Storage	Storage Description
#1	892.96'	13,494 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
892.96	20	0	0
894.00	450	244	244
896.00	2,900	3,350	3,594
898.00	7,000	9,900	13,494

Device	Routing	Invert	Outlet Devices
#1	Primary	892.96'	18.0" Round Culvert L= 43.6' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 892.96' / 888.72' S= 0.0972 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Primary	894.10'	50.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.45 cfs @ 12.17 hrs HW=893.68' TW=0.00' (Dynamic Tailwater)

1=Culvert (Inlet Controls 2.45 cfs @ 2.90 fps)
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1.2P: Ex 18" STRM



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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Pond 1P: Pond 1

Inflow Area = 33.780 ac, 39.40% Impervious, Inflow Depth = 1.75" for 2-yr event
 Inflow = 70.24 cfs @ 12.23 hrs, Volume= 4.913 af
 Outflow = 0.54 cfs @ 22.19 hrs, Volume= 4.820 af, Atten= 99%, Lag= 597.2 min
 Primary = 0.54 cfs @ 22.19 hrs, Volume= 4.820 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Starting Elev= 892.00' Surf.Area= 198,200 sf Storage= 672,500 cf

Peak Elev= 893.82' @ 22.19 hrs Surf.Area= 210,678 sf Storage= 864,379 cf (191,879 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 4,378.0 min (5,166.5 - 788.5)

Volume	Invert	Avail.Storage	Storage Description
#1	882.00'	672,500 cf	WET VOL (Prismatic) Listed below (Recalc)
#2	892.00'	1,174,300 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)
		1,846,800 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
882.00	47,700	0	0
884.00	54,700	102,400	102,400
886.00	62,200	116,900	219,300
888.00	70,100	132,300	351,600
890.00	78,700	148,800	500,400
891.00	83,200	80,950	581,350
892.00	99,100	91,150	672,500

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
892.00	99,100	0	0
894.00	112,800	211,900	211,900
896.00	127,000	239,800	451,700
898.00	141,800	268,800	720,500
900.00	156,000	297,800	1,018,300
901.00	156,000	156,000	1,174,300

Device	Routing	Invert	Outlet Devices
#1	Primary	892.00'	15.0" Round Culvert L= 351.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 892.00' / 890.25' S= 0.0050 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Device 1	892.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Primary	900.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

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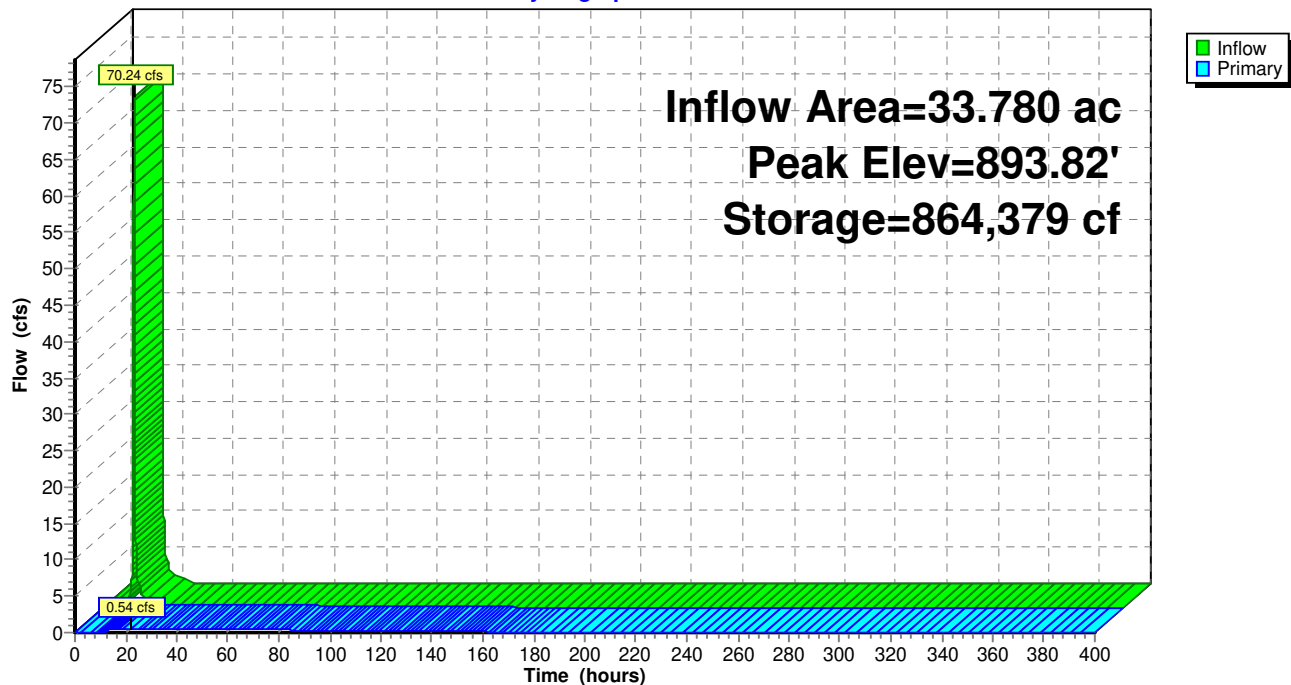
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Primary OutFlow Max=0.54 cfs @ 22.19 hrs HW=893.82' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 0.54 cfs of 4.26 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.54 cfs @ 6.19 fps)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: Pond 1

Hydrograph



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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Pond 2aP: Ex STRM Structure

Inflow Area = 25.710 ac, 2.14% Impervious, Inflow Depth = 1.13" for 2-yr event
 Inflow = 11.50 cfs @ 13.08 hrs, Volume= 2.425 af
 Outflow = 11.49 cfs @ 13.09 hrs, Volume= 2.425 af, Atten= 0%, Lag= 0.7 min
 Primary = 11.49 cfs @ 13.09 hrs, Volume= 2.425 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 888.46' @ 13.09 hrs Surf.Area= 2,902 sf Storage= 2,073 cf

Plug-Flow detention time= 2.7 min calculated for 2.425 af (100% of inflow)
 Center-of-Mass det. time= 2.7 min (878.7 - 876.1)

Volume	Invert	Avail.Storage	Storage Description
#1	886.82'	46,909 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

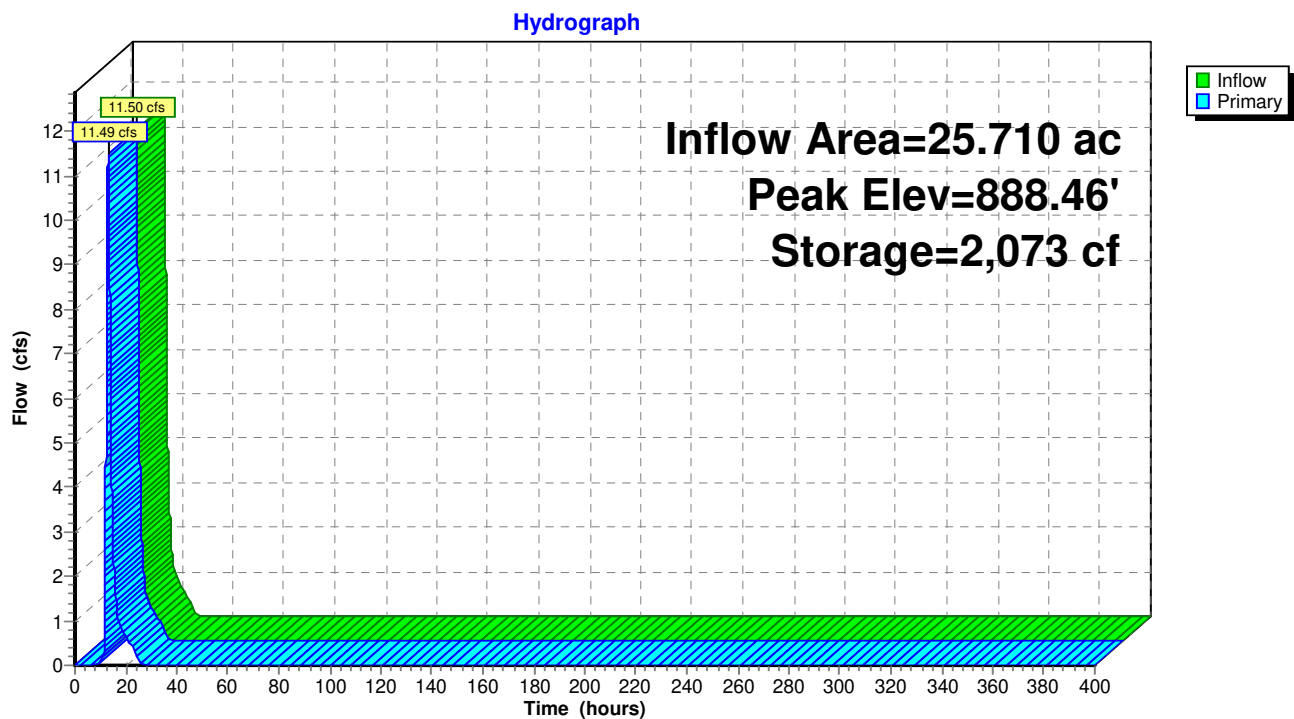
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
886.82	10	0	0
888.00	1,700	1,009	1,009
890.00	6,900	8,600	9,609
892.00	30,400	37,300	46,909

Device	Routing	Invert	Outlet Devices
#1	Primary	886.36'	21.0" Round Ex 21" CMP L= 37.5' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 886.36' / 885.72' S= 0.0171 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 2.41 sf
#2	Device 1	886.82'	21.0" Vert. EX STRUCTURE OPENNING C= 0.600
#3	Primary	888.40'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=11.49 cfs @ 13.09 hrs HW=888.46' TW=0.00' (Dynamic Tailwater)

1=Ex 21" CMP (Passes 10.23 cfs of 11.17 cfs potential flow)
 2=EX STRUCTURE OPENNING (Orifice Controls 10.23 cfs @ 4.36 fps)
 3=Broad-Crested Rectangular Weir (Weir Controls 1.26 cfs @ 0.67 fps)

Pond 2aP: Ex STRM Structure



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MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Pond 2bP: Wetland 19 Storm X-ing

Inflow Area = 23.780 ac, 1.35% Impervious, Inflow Depth = 1.12" for 2-yr event
 Inflow = 11.14 cfs @ 13.08 hrs, Volume= 2.223 af
 Outflow = 11.14 cfs @ 13.08 hrs, Volume= 2.220 af, Atten= 0%, Lag= 0.1 min
 Primary = 11.14 cfs @ 13.08 hrs, Volume= 2.220 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 893.96' @ 13.08 hrs Surf.Area= 737 sf Storage= 301 cf

Plug-Flow detention time= 1.9 min calculated for 2.220 af (100% of inflow)
 Center-of-Mass det. time= 1.0 min (882.6 - 881.6)

Volume	Invert	Avail.Storage	Storage Description
#1	893.20'	167,198 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

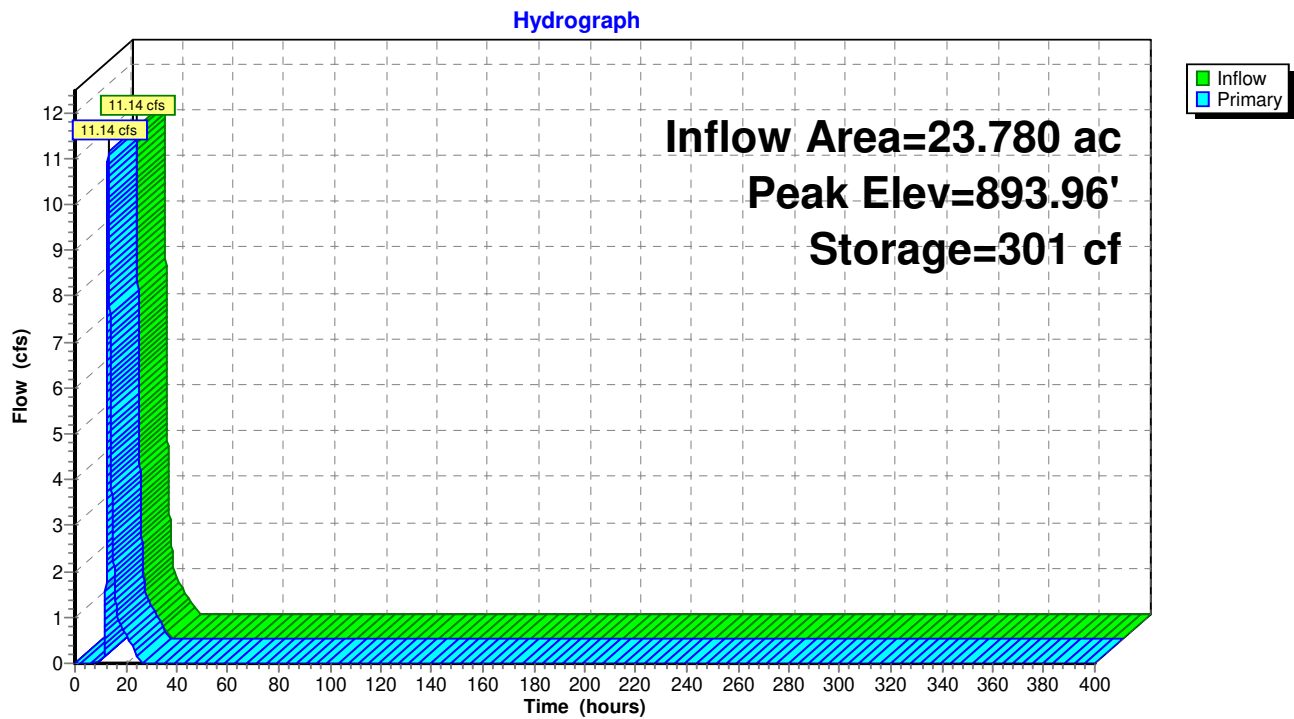
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
893.20	50	0	0
894.00	770	328	328
896.00	12,800	13,570	13,898
898.00	31,000	43,800	57,698
899.00	52,000	41,500	99,198
900.00	84,000	68,000	167,198

Device	Routing	Invert	Outlet Devices
#1	Primary	890.00'	30.0" Round Culvert x 2 X 2.00 L= 99.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 890.00' / 889.80' S= 0.0020 ' S= 0.0020 ' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 4.91 sf
#2	Device 1	893.70'	48.0" Horiz. Grate x 2 X 2.00 C= 0.600 Limited to weir flow at low heads
#3	Primary	898.50'	30.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=11.14 cfs @ 13.08 hrs HW=893.96' TW=888.46' (Dynamic Tailwater)

1=Culvert x 2 (Passes 11.14 cfs of 61.53 cfs potential flow)
 2=Grate x 2 (Weir Controls 11.14 cfs @ 1.68 fps)
 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2bP: Wetland 19 Storm X-ing



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Summary for Pond 2P: Pond 2 & Wetland 10 (LOWERED)

Inflow Area = 11.410 ac, 36.20% Impervious, Inflow Depth = 1.71" for 2-yr event
 Inflow = 28.14 cfs @ 12.17 hrs, Volume= 1.625 af
 Outflow = 0.76 cfs @ 15.11 hrs, Volume= 1.612 af, Atten= 97%, Lag= 176.4 min
 Primary = 0.76 cfs @ 15.11 hrs, Volume= 1.612 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Starting Elev= 901.00' Surf.Area= 79,800 sf Storage= 133,013 cf

Peak Elev= 901.90' @ 15.11 hrs Surf.Area= 102,747 sf Storage= 185,489 cf (52,476 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 1,366.1 min (2,151.2 - 785.1)

Volume	Invert	Avail.Storage	Storage Description
#1	891.00'	99,968 cf	WET VOL 2A (Prismatic) Listed below (Recalc)
#2	901.00'	195,950 cf	LIVE STORAGE 2A (Prismatic) Listed below (Recalc)
#3	891.00'	33,045 cf	WET VOL 2B (Prismatic) Listed below (Recalc)
#4	901.00'	92,450 cf	LIVE STORAGE 2B (Prismatic) Listed below (Recalc)
#5	901.01'	105,540 cf	WETLAND 10 (Prismatic) Listed below (Recalc)
		526,953 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
891.00	1,600	0	0
892.00	2,100	1,850	1,850
893.99	3,500	5,572	7,422
894.00	5,700	46	7,468
896.00	9,100	14,800	22,268
898.00	13,300	22,400	44,668
900.00	18,500	31,800	76,468
901.00	28,500	23,500	99,968

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
901.00	28,500	0	0
902.00	32,600	30,550	30,550
904.00	41,300	73,900	104,450
905.00	45,700	43,500	147,950
906.00	50,300	48,000	195,950

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
891.00	280	0	0
892.00	570	425	425
894.00	1,400	1,970	2,395
896.00	2,600	4,000	6,395
898.00	4,300	6,900	13,295
900.00	6,500	10,800	24,095
901.00	11,400	8,950	33,045

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
901.00	11,400	0	0
902.00	14,000	12,700	12,700
904.00	19,900	33,900	46,600
905.00	22,900	21,400	68,000
906.00	26,000	24,450	92,450

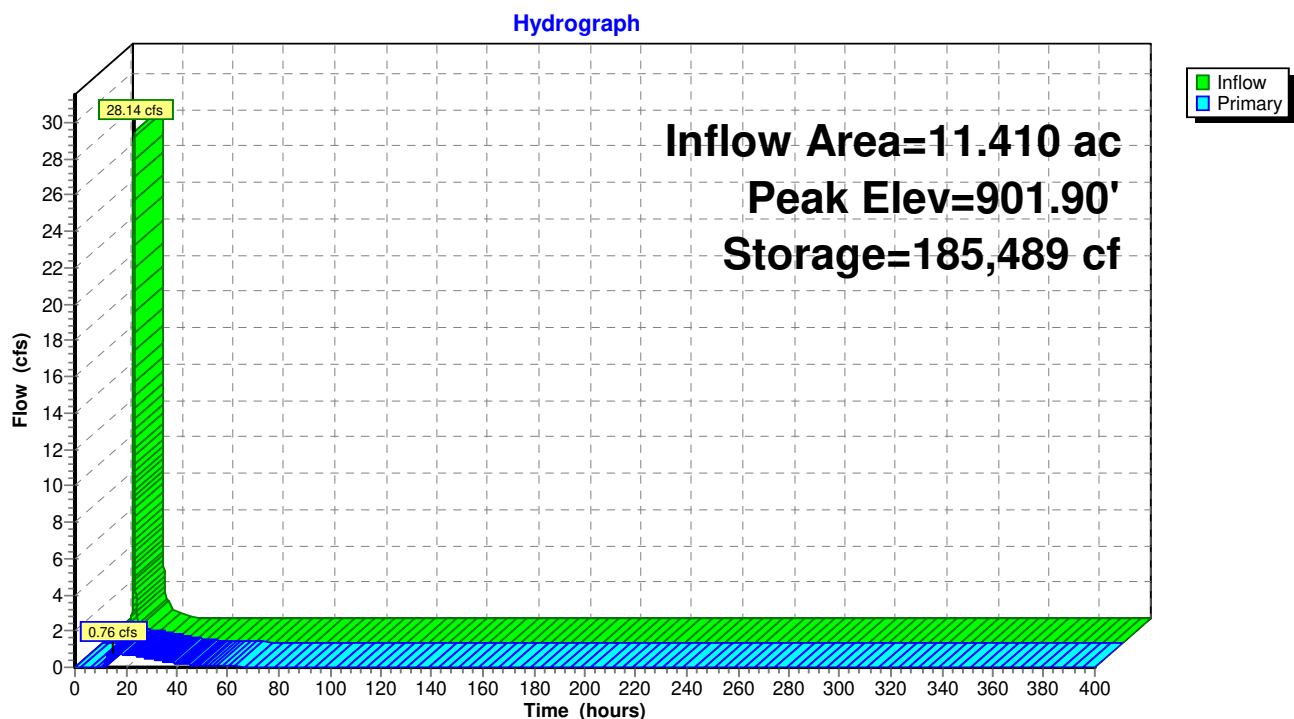
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
901.01	14,800	0	0
902.00	17,200	15,840	15,840
904.00	22,300	39,500	55,340
905.00	25,100	23,700	79,040
906.00	27,900	26,500	105,540

Device	Routing	Invert	Outlet Devices
#1	Primary	901.00'	15.0" Round Culvert L= 50.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 901.00' / 900.50' S= 0.0099 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Device 1	901.00'	6.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.76 cfs @ 15.11 hrs HW=901.90' TW=0.00' (Dynamic Tailwater)

1=Culvert (Passes 0.76 cfs of 2.66 cfs potential flow)

2=Orifice/Grate (Orifice Controls 0.76 cfs @ 3.87 fps)

Pond 2P: Pond 2 & Wetland 10 (LOWERED)

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Summary for Pond 3P: Pond 3

Inflow Area = 19.420 ac, 39.39% Impervious, Inflow Depth = 1.83" for 2-yr event
 Inflow = 38.36 cfs @ 12.18 hrs, Volume= 2.964 af
 Outflow = 0.80 cfs @ 17.94 hrs, Volume= 2.907 af, Atten= 98%, Lag= 345.4 min
 Primary = 0.80 cfs @ 17.94 hrs, Volume= 2.907 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Starting Elev= 900.00' Surf.Area= 67,800 sf Storage= 134,150 cf

Peak Elev= 900.96' @ 17.94 hrs Surf.Area= 142,941 sf Storage= 234,861 cf (100,711 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 2,198.4 min (3,029.8 - 831.5)

Volume	Invert	Avail.Storage	Storage Description
#1	890.00'	134,150 cf	POND 3 WET VOL (Prismatic) Listed below (Recalc)
#2	900.00'	613,280 cf	POND 3 & EWRK LIVE STORAGE (Prismatic) Listed below (Recalc)
		747,430 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
890.00	2,400	0	0
892.00	5,200	7,600	7,600
894.00	9,900	15,100	22,700
896.00	15,100	25,000	47,700
898.00	20,600	35,700	83,400
899.00	23,500	22,050	105,450
900.00	33,900	28,700	134,150

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.00	33,900	0	0
900.01	100,800	673	673
902.00	118,000	217,706	218,380
903.00	127,000	122,500	340,880
904.00	136,600	131,800	472,680
904.50	140,600	69,300	541,980
905.00	144,600	71,300	613,280

Device	Routing	Invert	Outlet Devices
#1	Primary	900.00'	15.0" Round Culvert L= 448.4' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 900.00' / 897.34' S= 0.0059 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Device 1	900.00'	6.0" Vert. Orifice/Grate C= 0.600
#3	Primary	904.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

2026-04-01 Peltier Ponds - Prelim

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MSE 24-hr 3 2-yr Rainfall=2.80"

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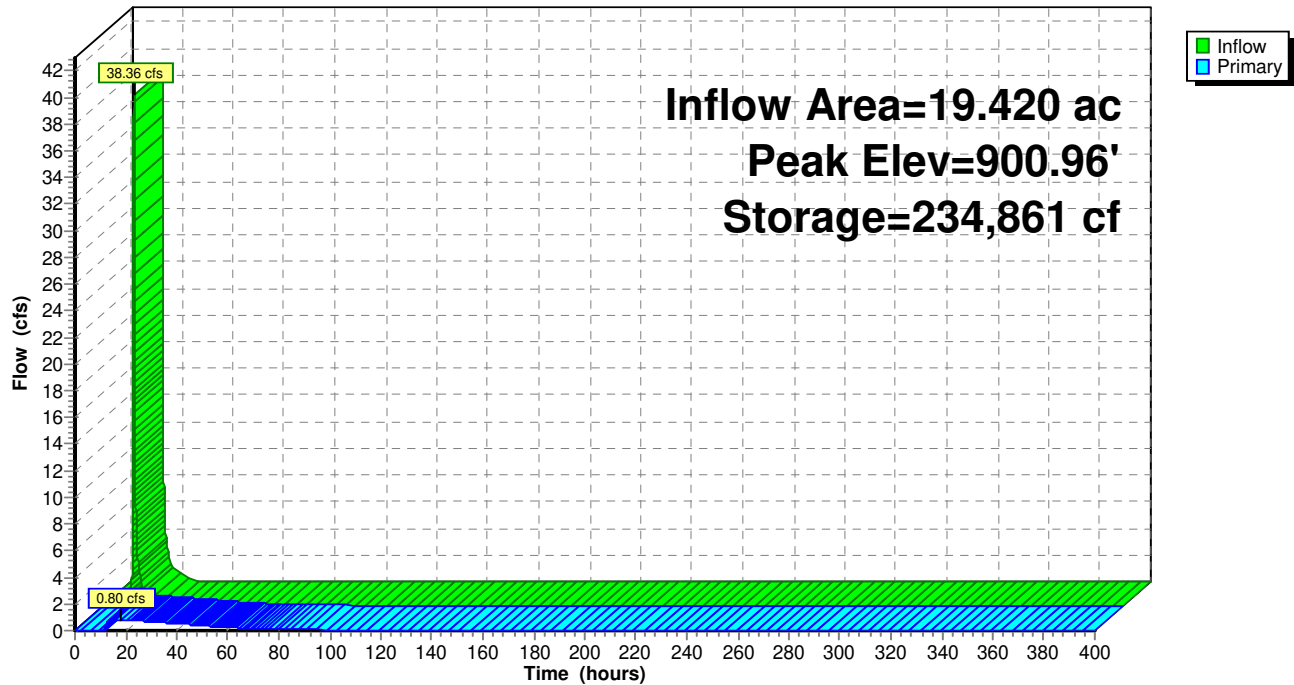
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Primary OutFlow Max=0.80 cfs @ 17.94 hrs HW=900.96' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 0.80 cfs of 2.69 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.80 cfs @ 4.07 fps)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: Pond 3

Hydrograph



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Summary for Pond 4P: Pond 4

Inflow Area = 6.320 ac, 50.47% Impervious, Inflow Depth = 1.87" for 2-yr event
 Inflow = 16.87 cfs @ 12.17 hrs, Volume= 0.986 af
 Outflow = 5.09 cfs @ 12.42 hrs, Volume= 0.985 af, Atten= 70%, Lag= 15.0 min
 Primary = 5.09 cfs @ 12.42 hrs, Volume= 0.985 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Starting Elev= 902.00' Surf.Area= 18,400 sf Storage= 13,975 cf
 Peak Elev= 903.60' @ 12.42 hrs Surf.Area= 22,479 sf Storage= 31,952 cf (17,977 cf above start)

Plug-Flow detention time= 317.6 min calculated for 0.664 af (67% of inflow)
 Center-of-Mass det. time= 147.4 min (924.6 - 777.1)

Volume	Invert	Avail.Storage	Storage Description
#1	896.00'	13,975 cf	WET VOL (Prismatic) Listed below (Recalc)
#2	902.00'	104,125 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)
		118,100 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
896.00	65	0	0
898.00	630	695	695
900.00	2,700	3,330	4,025
901.00	4,000	3,350	7,375
902.00	9,200	6,600	13,975

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
902.00	9,200	0	0
904.00	14,300	23,500	23,500
906.00	20,100	34,400	57,900
907.00	23,100	21,600	79,500
907.50	24,600	11,925	91,425
908.00	26,200	12,700	104,125

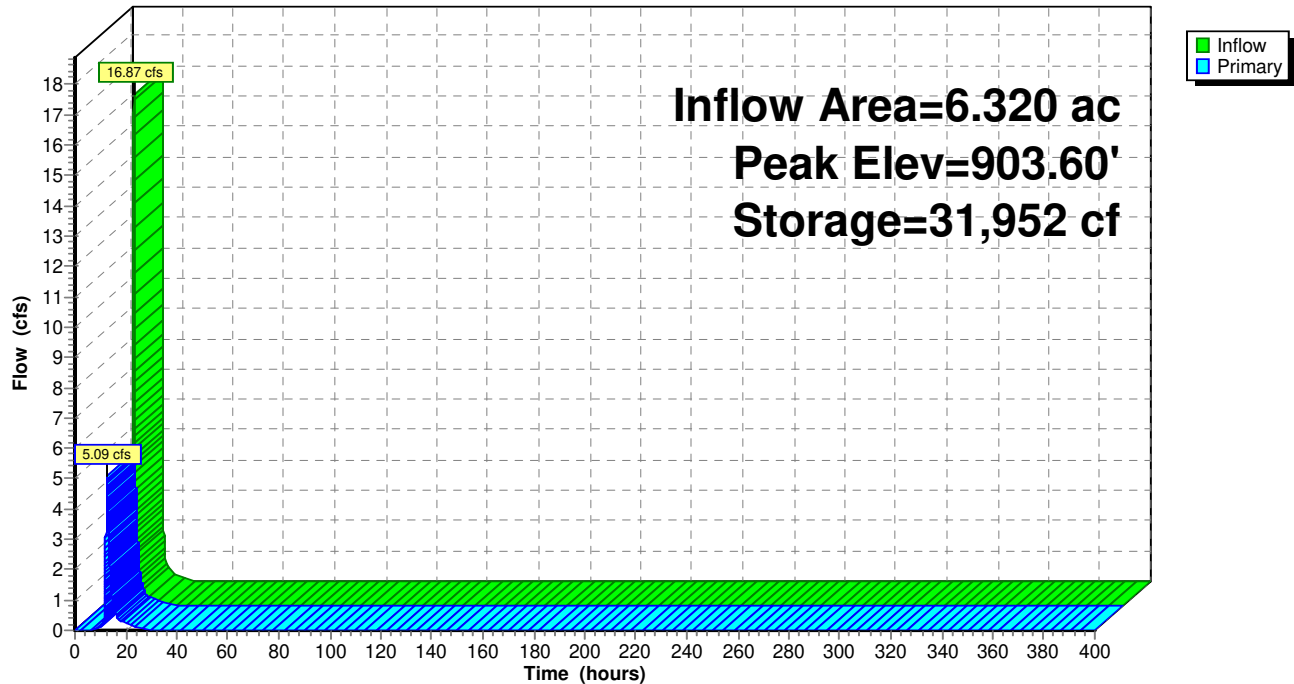
Device	Routing	Invert	Outlet Devices
#1	Primary	902.00'	18.0" Round Culvert L= 346.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 902.00' / 901.00' S= 0.0029 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.77 sf
#2	Primary	907.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=5.09 cfs @ 12.42 hrs HW=903.60' TW=900.58' (Dynamic Tailwater)

↑ **1=Culvert** (Barrel Controls 5.09 cfs @ 3.36 fps)
 ↓ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: Pond 4

Hydrograph



2026-04-01 Peltier Ponds - Prelim

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Summary for Pond 5P: Pond 5

Inflow Area = 15.690 ac, 38.56% Impervious, Inflow Depth = 1.82" for 2-yr event
 Inflow = 41.64 cfs @ 12.17 hrs, Volume= 2.383 af
 Outflow = 2.28 cfs @ 13.56 hrs, Volume= 2.350 af, Atten= 95%, Lag= 83.0 min
 Primary = 2.28 cfs @ 13.56 hrs, Volume= 2.350 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Starting Elev= 900.50' Surf.Area= 219,700 sf Storage= 422,075 cf

Peak Elev= 901.31' @ 13.56 hrs Surf.Area= 226,753 sf Storage= 492,764 cf (70,689 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 1,081.5 min (1,864.5 - 783.0)

Volume	Invert	Avail.Storage	Storage Description
#1	890.50'	130,450 cf	Wet Cell A (Prismatic) Listed below (Recalc)
#2	890.50'	102,150 cf	Wet Cell B (Prismatic) Listed below (Recalc)
#3	897.50'	189,475 cf	WET VOL >897.5 (Prismatic) Listed below (Recalc)
#4	900.50'	406,150 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)
		828,225 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
890.50	10,200	0	0
892.00	12,500	17,025	17,025
894.00	16,900	29,400	46,425
896.00	25,200	42,100	88,525
897.50	30,700	41,925	130,450

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
890.50	8,900	0	0
892.00	11,100	15,000	15,000
894.00	14,400	25,500	40,500
896.00	18,000	32,400	72,900
897.50	21,000	29,250	102,150

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
897.50	51,700	0	0
898.00	55,100	26,700	26,700
899.50	63,700	89,100	115,800
900.00	73,500	34,300	150,100
900.50	84,000	39,375	189,475

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MSE 24-hr 3 2-yr Rainfall=2.80"

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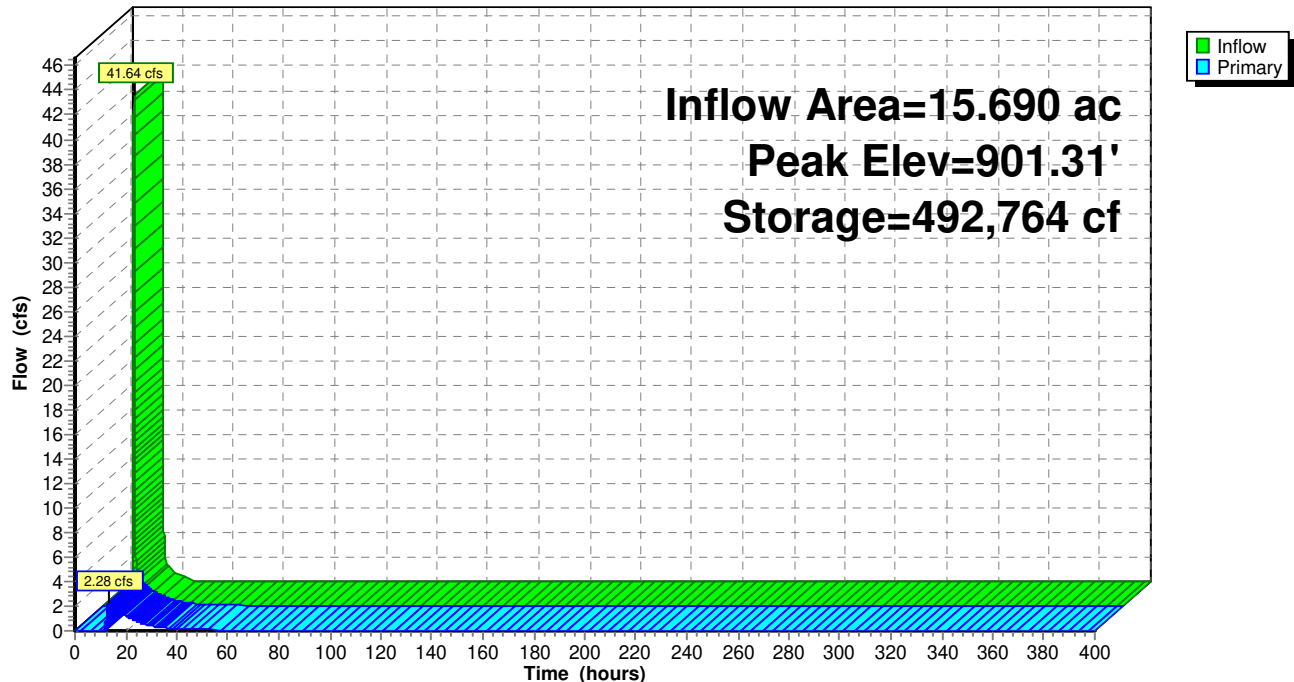
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.50	84,000	0	0
902.00	97,100	135,825	135,825
903.00	105,900	101,500	237,325
903.50	110,300	54,050	291,375
904.00	114,800	56,275	347,650
904.50	119,200	58,500	406,150

Device	Routing	Invert	Outlet Devices
#1	Primary	900.50'	15.0" Round Culvert L= 48.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 900.50' / 900.00' S= 0.0104 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Primary	903.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=2.28 cfs @ 13.56 hrs HW=901.31' TW=899.35' (Dynamic Tailwater)

1=Culvert (Barrel Controls 2.28 cfs @ 3.86 fps)

2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 5P: Pond 5**Hydrograph**

2026-04-01 Peltier Ponds - Prelim

MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Pond 6P: Pond 6

Inflow Area = 4.300 ac, 21.16% Impervious, Inflow Depth = 1.90" for 2-yr event
 Inflow = 12.21 cfs @ 12.17 hrs, Volume= 0.681 af
 Outflow = 0.42 cfs @ 13.85 hrs, Volume= 0.660 af, Atten= 97%, Lag= 100.8 min
 Primary = 0.42 cfs @ 13.85 hrs, Volume= 0.660 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 900.80' @ 13.85 hrs Surf.Area= 73,860 sf Storage= 21,549 cf

Plug-Flow detention time= 1,751.9 min calculated for 0.660 af (97% of inflow)
 Center-of-Mass det. time= 1,735.5 min (2,523.1 - 787.6)

Volume	Invert	Avail.Storage	Storage Description
#1	900.50'	208,825 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.50	70,700	0	0
901.00	76,000	36,675	36,675
902.00	87,500	81,750	118,425
902.50	90,400	44,475	162,900
903.00	93,300	45,925	208,825

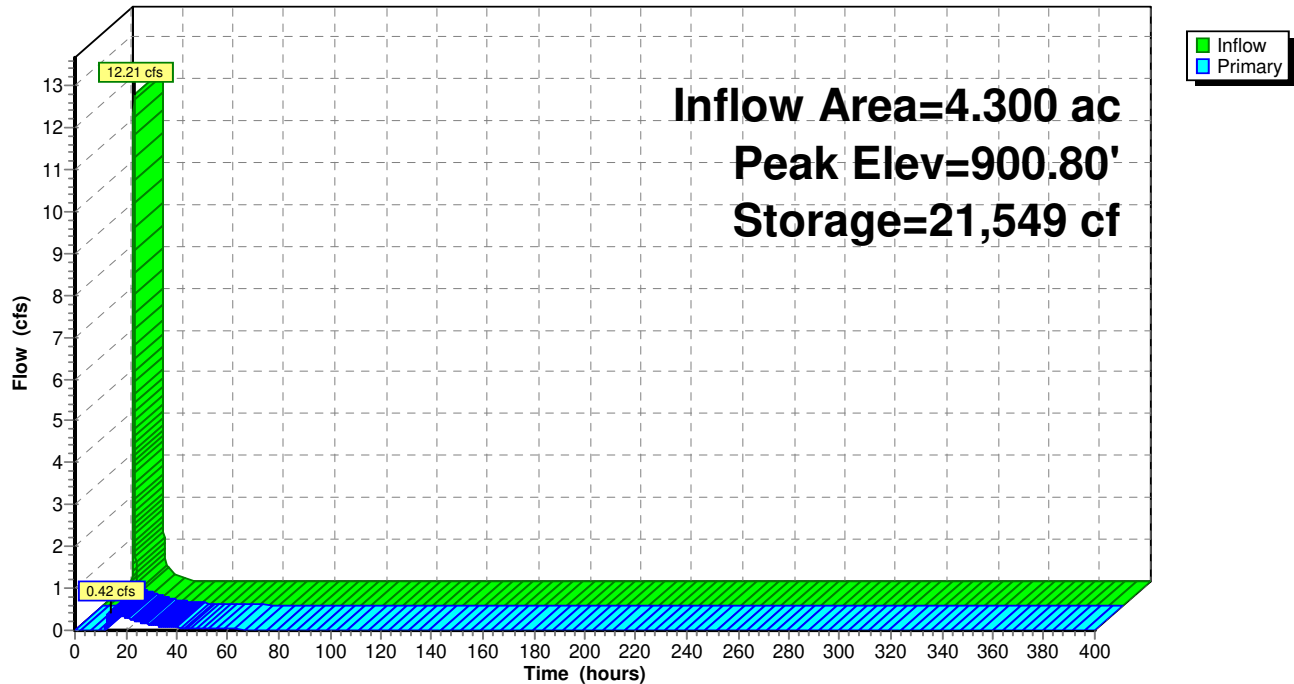
Device	Routing	Invert	Outlet Devices
#1	Primary	900.50'	15.0" Round Culvert L= 33.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 900.50' / 900.00' S= 0.0148 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Primary	902.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.42 cfs @ 13.85 hrs HW=900.80' TW=899.42' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 0.42 cfs @ 1.86 fps)
 — **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: Pond 6

Hydrograph



2026-04-01 Peltier Ponds - Prelim

MSE 24-hr 3 2-yr Rainfall=2.80"

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Summary for Pond W14: Wetland 14

Inflow Area = 27.290 ac, 2.27% Impervious, Inflow Depth = 1.14" for 2-yr event
 Inflow = 8.03 cfs @ 14.15 hrs, Volume= 2.582 af
 Outflow = 3.60 cfs @ 16.00 hrs, Volume= 2.582 af, Atten= 55%, Lag= 110.9 min
 Primary = 3.60 cfs @ 16.00 hrs, Volume= 2.582 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 904.57' @ 16.00 hrs Surf.Area= 135,938 sf Storage= 53,264 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 310.6 min (1,255.3 - 944.7)

Volume	Invert	Avail.Storage	Storage Description
#1	904.00'	594,000 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
904.00	50,000	0	0
905.00	200,000	125,000	125,000
906.00	738,000	469,000	594,000

Device	Routing	Invert	Outlet Devices
#1	Primary	903.90'	12.0" Round Culvert x 2 X 2.00 L= 28.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 903.90' / 903.62' S= 0.0100 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 0.79 sf
#2	Primary	904.50'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

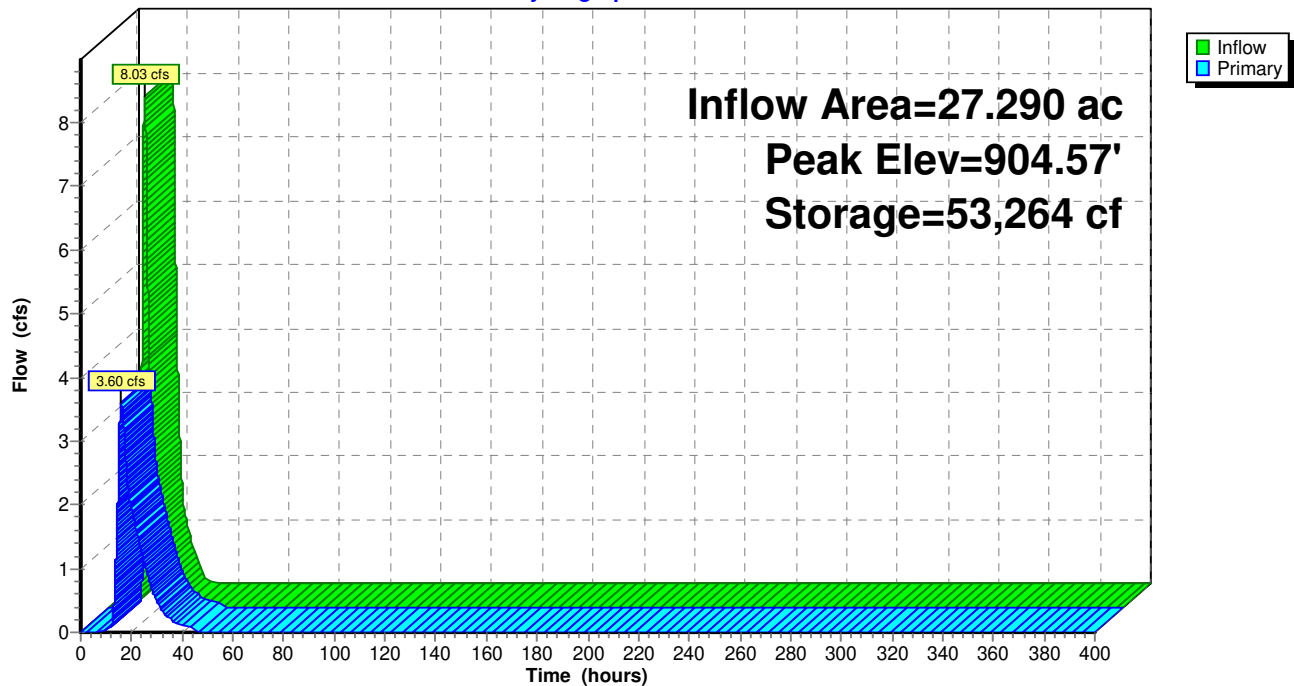
Primary OutFlow Max=3.60 cfs @ 16.00 hrs HW=904.57' TW=0.00' (Dynamic Tailwater)

1=Culvert x 2 (Barrel Controls 2.62 cfs @ 3.29 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 0.98 cfs @ 0.67 fps)

Pond W14: Wetland 14

Hydrograph



Summary for Pond W4: Wetland 4

Inflow Area = 31.030 ac, 28.33% Impervious, Inflow Depth > 1.73" for 2-yr event
 Inflow = 12.75 cfs @ 12.18 hrs, Volume= 4.471 af
 Outflow = 1.45 cfs @ 22.05 hrs, Volume= 3.356 af, Atten= 89%, Lag= 592.2 min
 Primary = 1.45 cfs @ 22.05 hrs, Volume= 3.356 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 899.92' @ 22.05 hrs Surf.Area= 92,431 sf Storage= 103,707 cf

Plug-Flow detention time= 2,069.6 min calculated for 3.356 af (75% of inflow)
 Center-of-Mass det. time= 1,395.3 min (3,016.7 - 1,621.4)

Volume	Invert	Avail.Storage	Storage Description
#1	898.00'	885,870 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
898.00	10,000	0	0
899.50	80,000	67,500	67,500
900.00	94,800	43,700	111,200
901.00	151,200	123,000	234,200
902.00	178,500	164,850	399,050
904.00	308,320	486,820	885,870

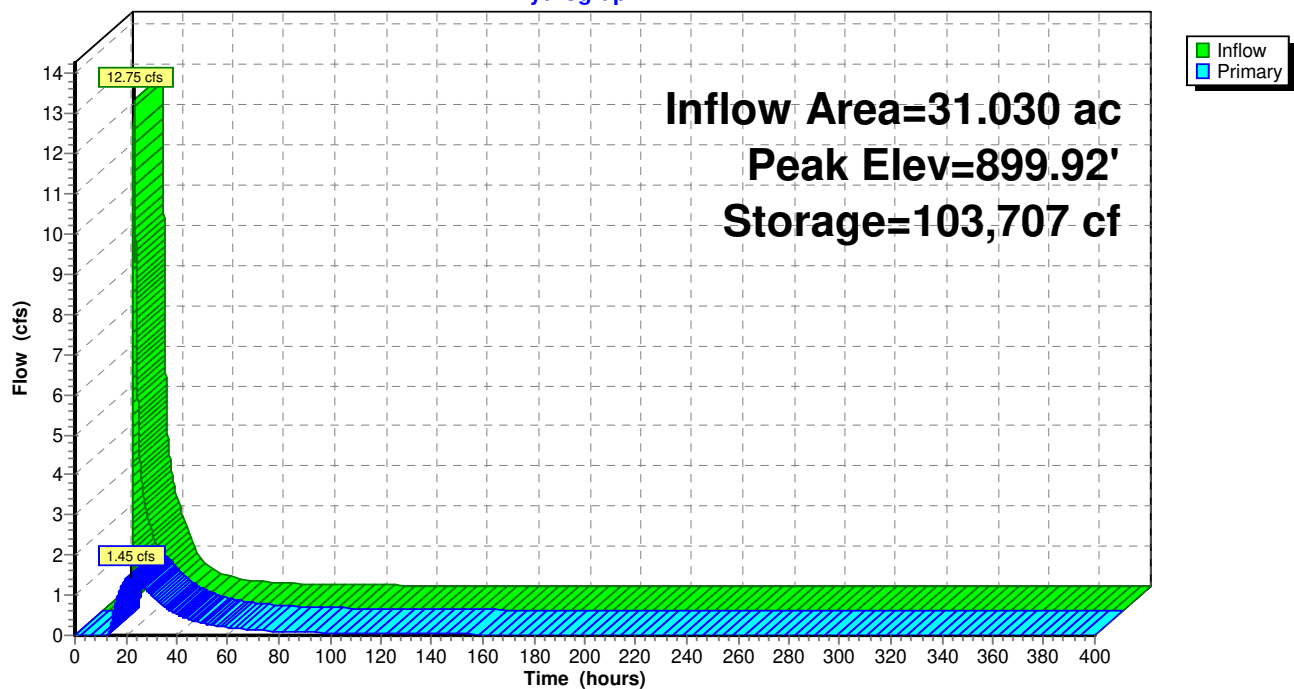
Device	Routing	Invert	Outlet Devices
#1	Primary	899.20'	18.0" Round Culvert L= 15.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 899.20' / 899.18' S= 0.0013 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.77 sf
#2	Primary	902.70'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=1.45 cfs @ 22.05 hrs HW=899.92' TW=0.00' (Dynamic Tailwater)

1=Culvert (Barrel Controls 1.45 cfs @ 2.53 fps)
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond W4: Wetland 4

Hydrograph



Summary for Pond W5: Wetland 5

Inflow Area = 2.470 ac, 9.72% Impervious, Inflow Depth = 1.88" for 2-yr event
 Inflow = 8.67 cfs @ 12.12 hrs, Volume= 0.386 af
 Outflow = 1.11 cfs @ 12.54 hrs, Volume= 0.280 af, Atten= 87%, Lag= 24.8 min
 Primary = 1.11 cfs @ 12.54 hrs, Volume= 0.280 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 900.93' @ 12.54 hrs Surf.Area= 44,743 sf Storage= 9,623 cf

Plug-Flow detention time= 215.9 min calculated for 0.280 af (72% of inflow)
 Center-of-Mass det. time= 146.9 min (933.6 - 786.7)

Volume	Invert	Avail.Storage	Storage Description
#1	900.50'	218,942 cf	Wetland 5 (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.50	10	0	0
900.80	30,900	4,636	4,636
901.00	51,900	8,280	12,917
902.00	55,800	53,850	66,767
904.00	63,900	119,700	186,467
904.50	66,000	32,475	218,942

Device	Routing	Invert	Outlet Devices
#1	Primary	895.72'	10.0" Round Culvert L= 302.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 895.72' / 895.25' S= 0.0016 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 0.55 sf
#2	Device 1	900.80'	27.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Secondary	904.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.11 cfs @ 12.54 hrs HW=900.93' TW=0.00' (Dynamic Tailwater)

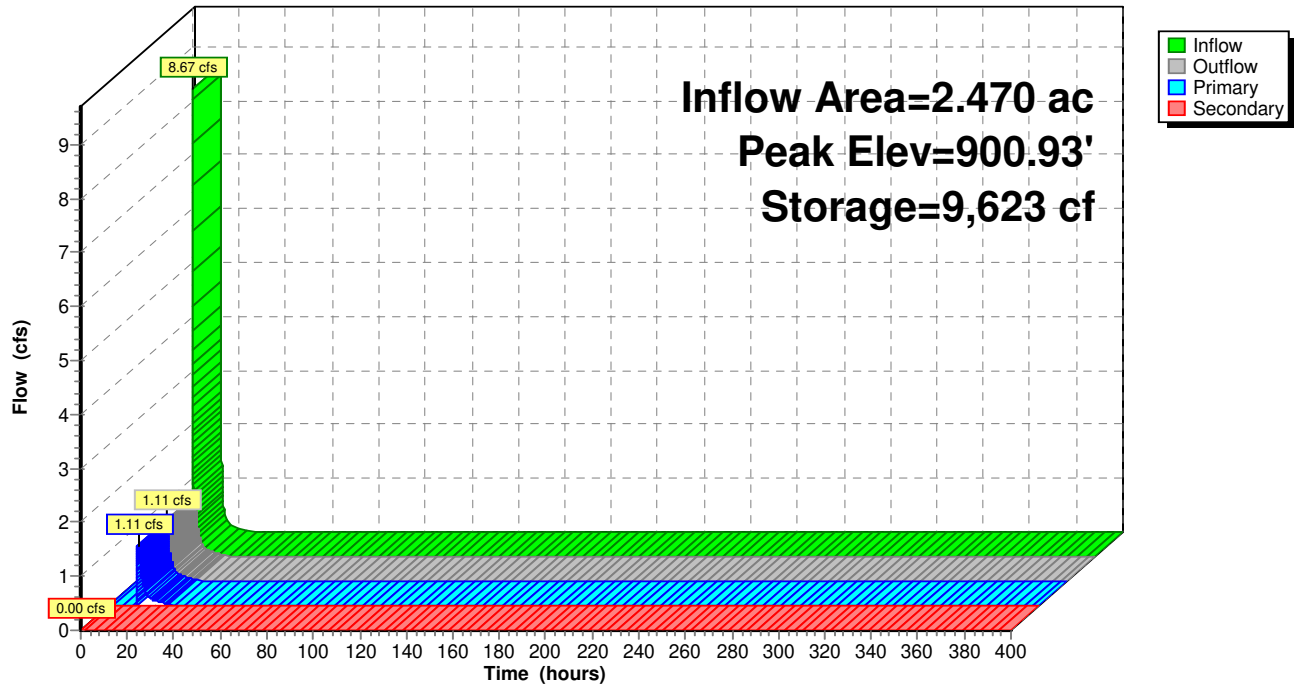
↑ **1=Culvert** (Passes 1.11 cfs of 2.30 cfs potential flow)
 ↑ **2=Orifice/Grate** (Weir Controls 1.11 cfs @ 1.19 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=900.50' TW=900.50' (Dynamic Tailwater)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond W5: Wetland 5

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 1.1S: Proposed Direct Drainage to Lake Peltier

Runoff = 7.76 cfs @ 12.15 hrs, Volume= 0.395 af, Depth= 2.46"

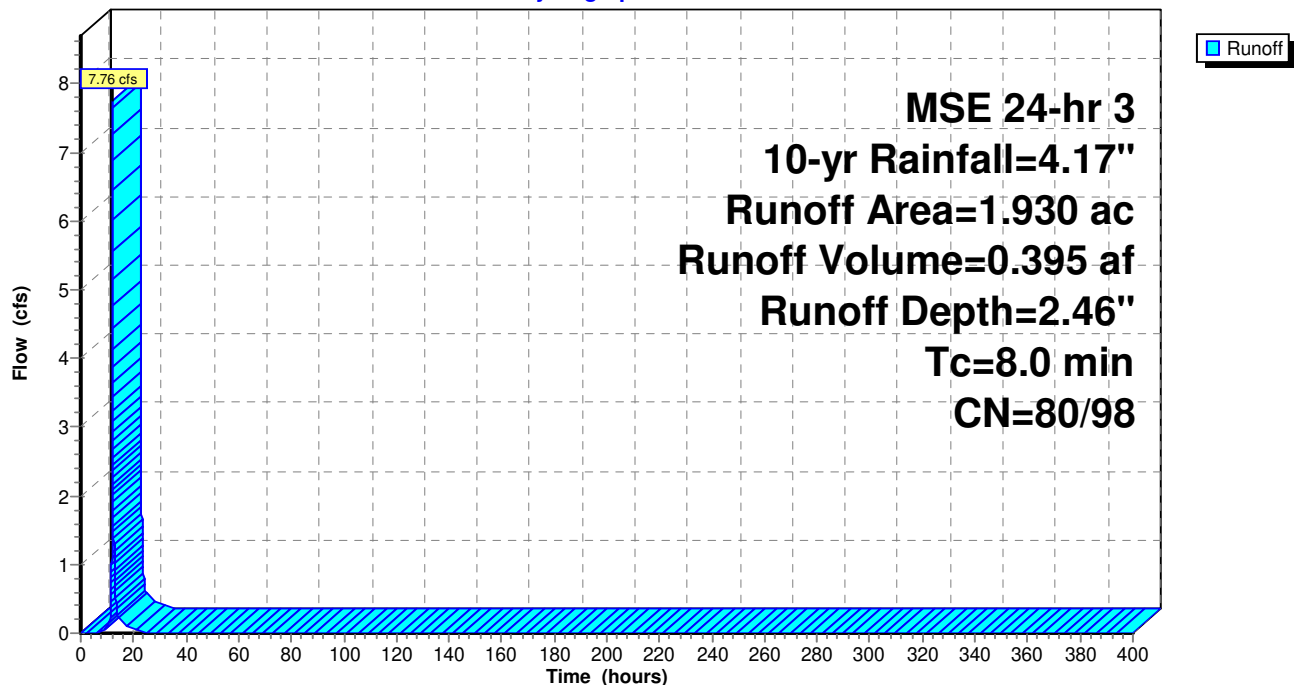
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
0.300	98	Unconnected pavement, HSG D
1.530	80	>75% Grass cover, Good, HSG D
* 0.100	80	Woods/grass comb., Fair, HSG D
1.930	83	Weighted Average
1.630	80	84.46% Pervious Area
0.300	98	15.54% Impervious Area

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

Subcatchment 1.1S: Proposed Direct Drainage to Lake Peltier

Hydrograph



Summary for Subcatchment 1.2S: Proposed Drainage to Ex STRM

Runoff = 4.20 cfs @ 12.15 hrs, Volume= 0.225 af, Depth= 2.97"

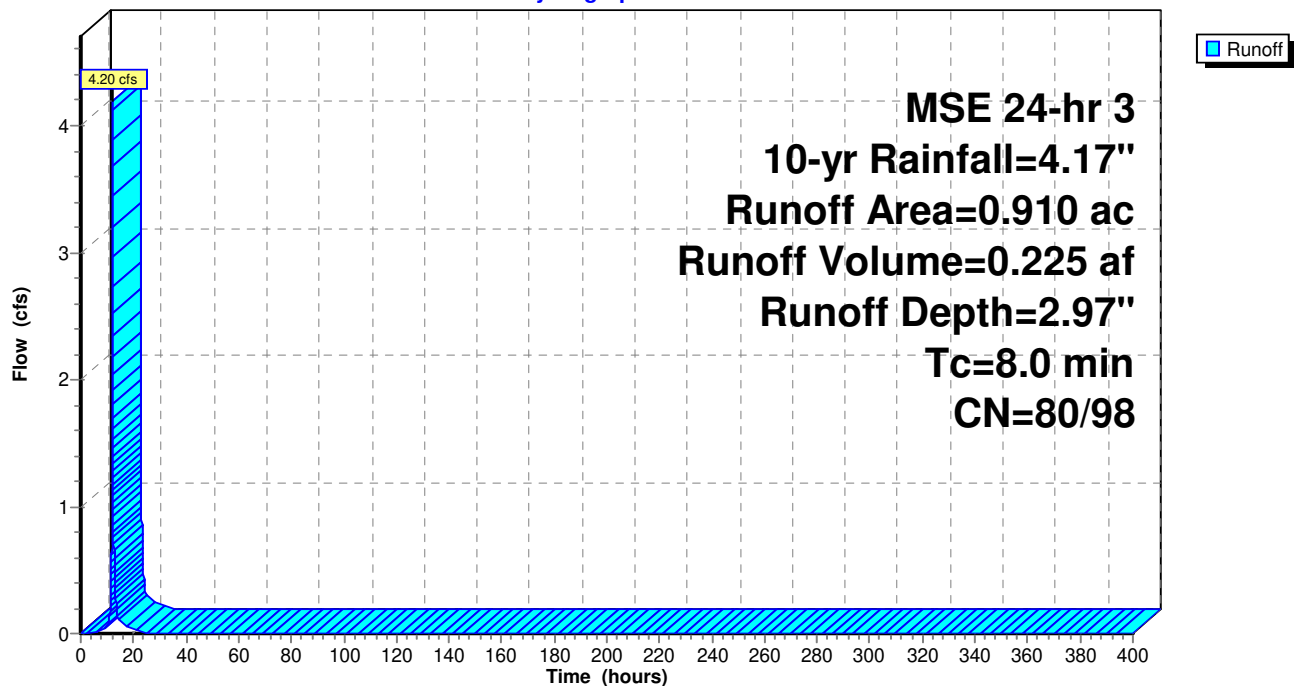
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
0.410	98	Unconnected roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
0.910	88	Weighted Average
0.500	80	54.95% Pervious Area
0.410	98	45.05% Impervious Area

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

Subcatchment 1.2S: Proposed Drainage to Ex STRM

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 1S: Proposed Drainage to Pond 1

Runoff = 113.50 cfs @ 12.23 hrs, Volume= 7.772 af, Depth= 3.01"

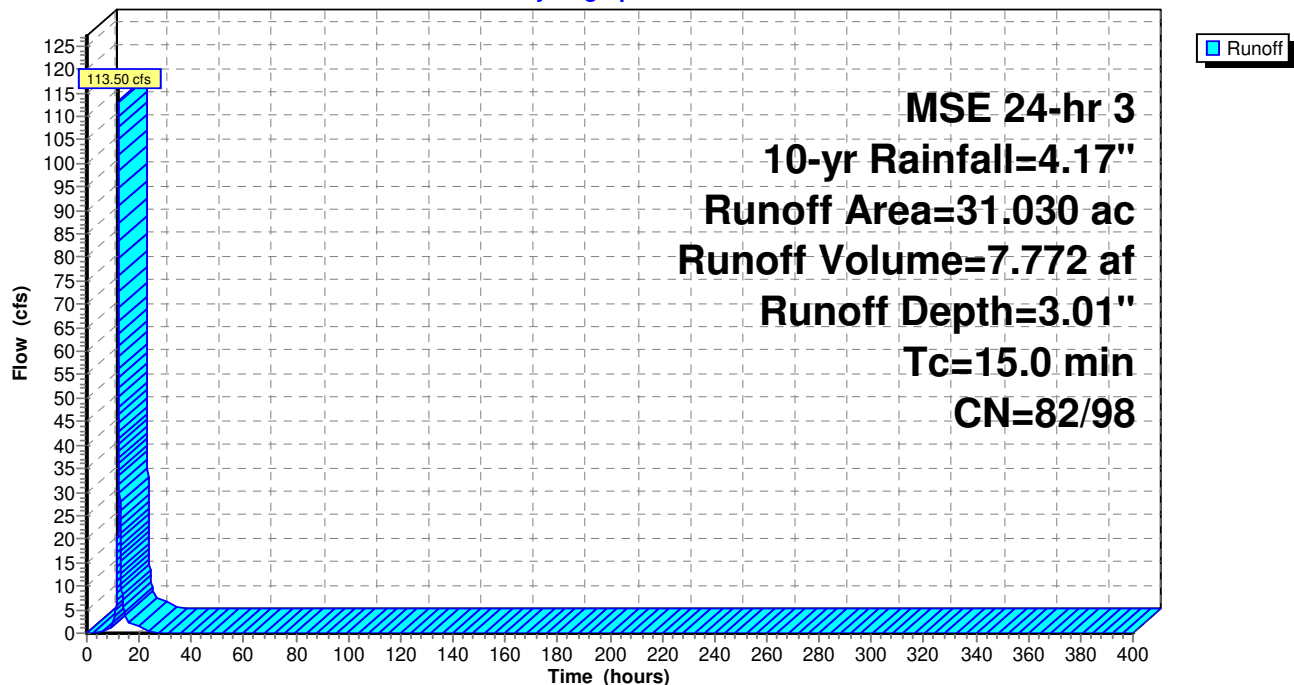
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
12.850	98	Paved parking, HSG D
2.280	98	Water Surface, 0% imp, HSG D
15.900	80	>75% Grass cover, Good, HSG D
31.030	89	Weighted Average
18.180	82	58.59% Pervious Area
12.850	98	41.41% Impervious Area

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

Subcatchment 1S: Proposed Drainage to Pond 1

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 2.1S: Proposed Drainage to Tributary 2 upstream of X-ing

Runoff = 8.29 cfs @ 12.58 hrs, Volume= 0.962 af, Depth= 2.29"

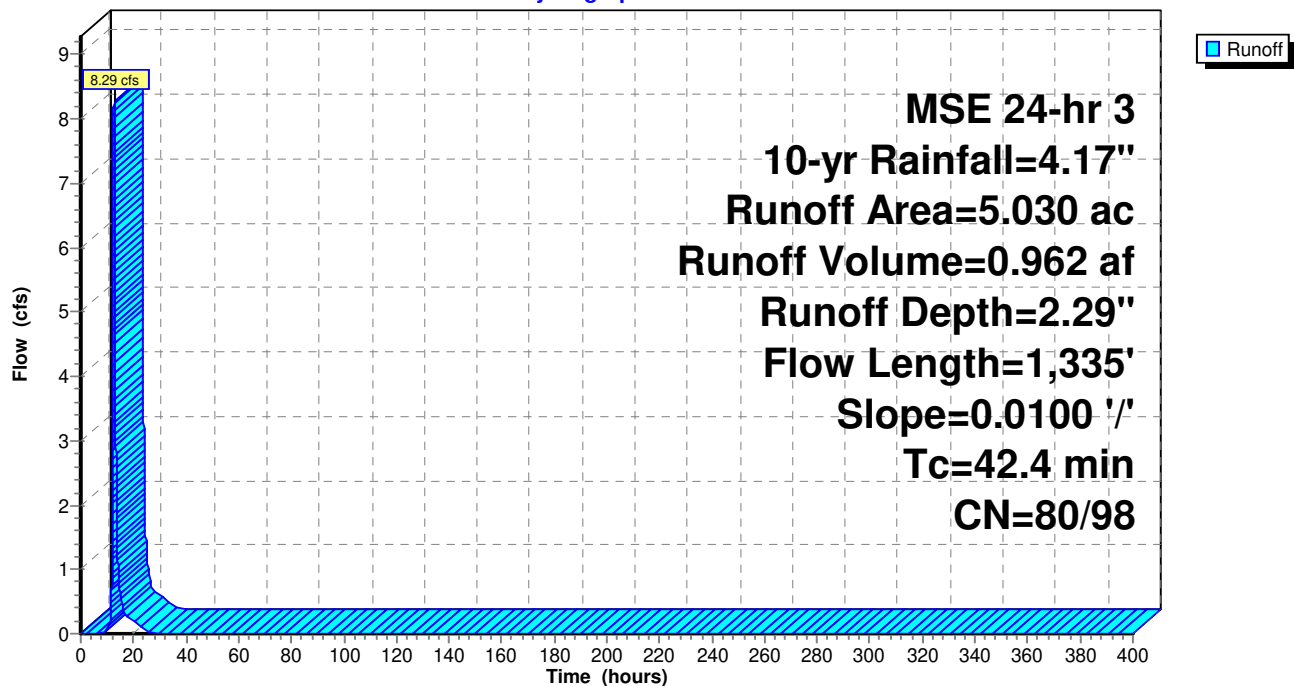
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
0.320	98	Paved parking, HSG D
* 4.710	80	Woods/grass comb., Fair, HSG D
5.030	81	Weighted Average
4.710	80	93.64% Pervious Area
0.320	98	6.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.1	200	0.0100	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
10.7	450	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.6	685	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
42.4	1,335	Total			

Subcatchment 2.1S: Proposed Drainage to Tributary 2 upstream of X-ing

Hydrograph



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Summary for Subcatchment 2.2S: Proposed Drainage to Pond 2 Cell A

Runoff = 36.63 cfs @ 12.17 hrs, Volume= 2.114 af, Depth= 2.98"

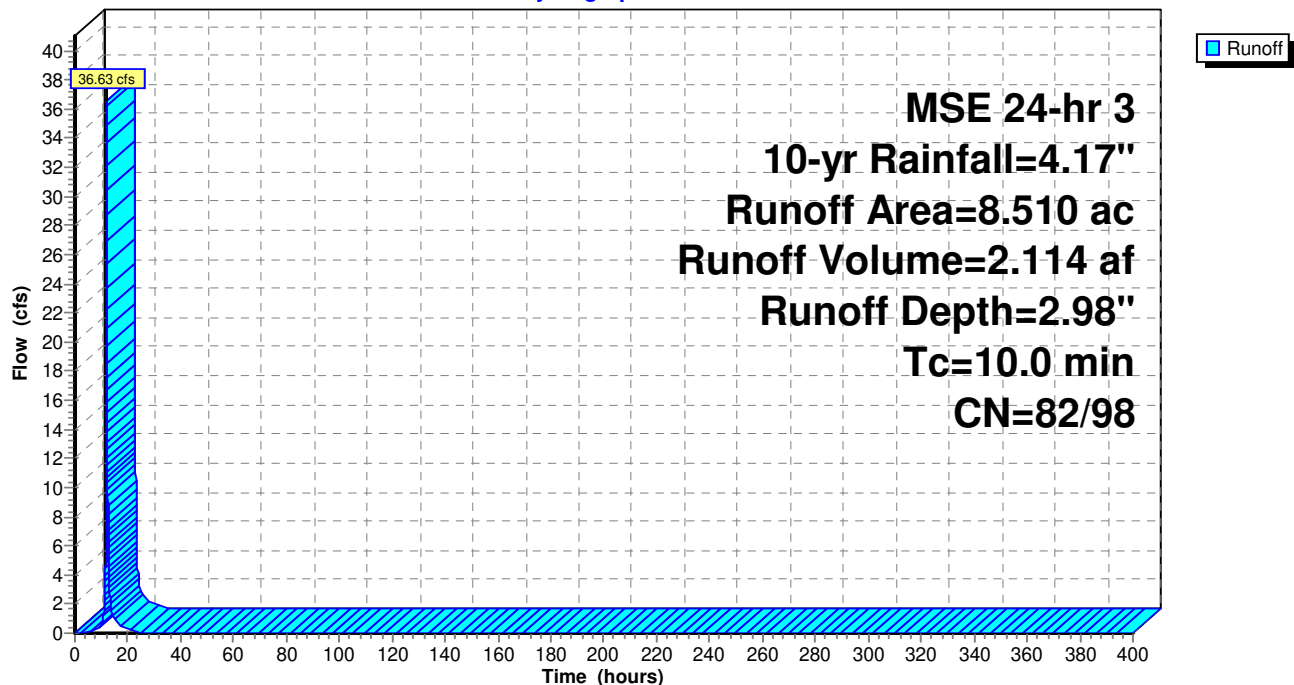
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
3.390	98	Paved parking, HSG D
0.660	98	Water Surface, 0% imp, HSG D
4.460	80	>75% Grass cover, Good, HSG D
8.510	89	Weighted Average
5.120	82	60.16% Pervious Area
3.390	98	39.84% Impervious Area

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

Subcatchment 2.2S: Proposed Drainage to Pond 2 Cell A

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 2.3S: Proposed Drainage to Pond 2 Cell B

Runoff = 8.39 cfs @ 12.17 hrs, Volume= 0.478 af, Depth= 2.91"

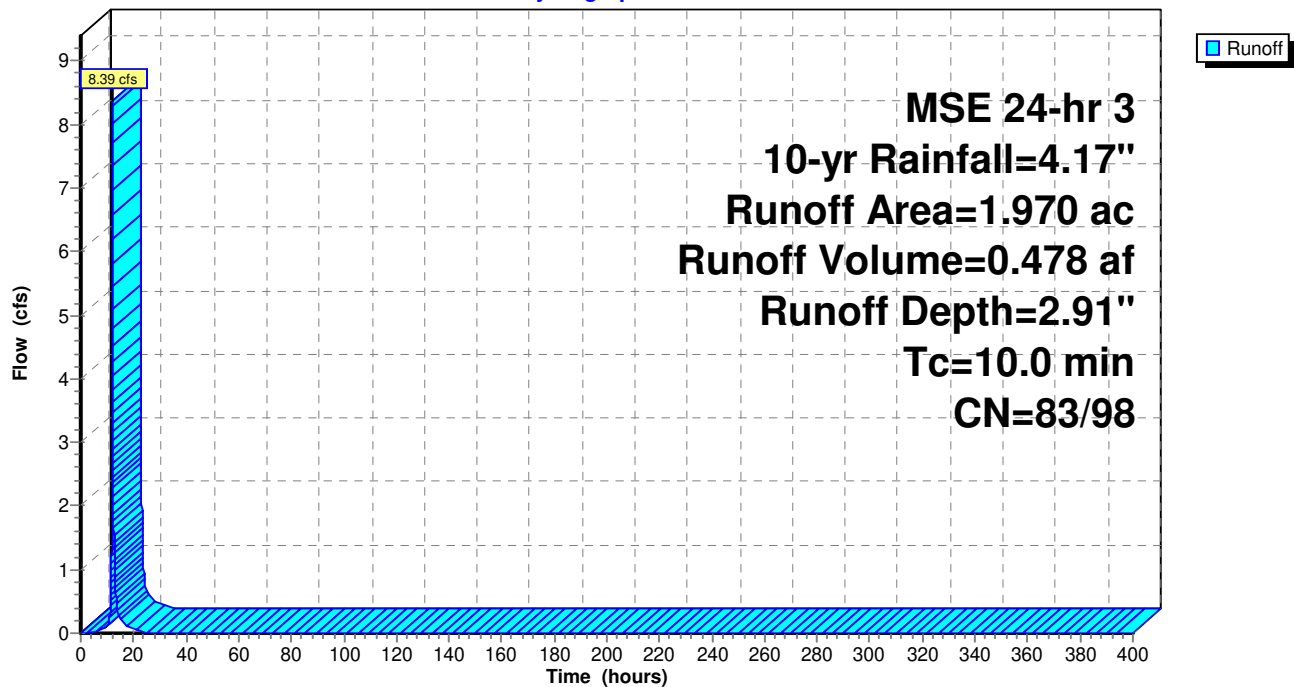
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
0.630	98	Paved parking, HSG D
0.260	98	Water Surface, 0% imp, HSG D
1.080	80	>75% Grass cover, Good, HSG D
1.970	88	Weighted Average
1.340	83	68.02% Pervious Area
0.630	98	31.98% Impervious Area

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

Subcatchment 2.3S: Proposed Drainage to Pond 2 Cell B

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 2.4S: Proposed Drainage to Wetland 10

Runoff = 4.20 cfs @ 12.12 hrs, Volume= 0.185 af, Depth= 2.39"

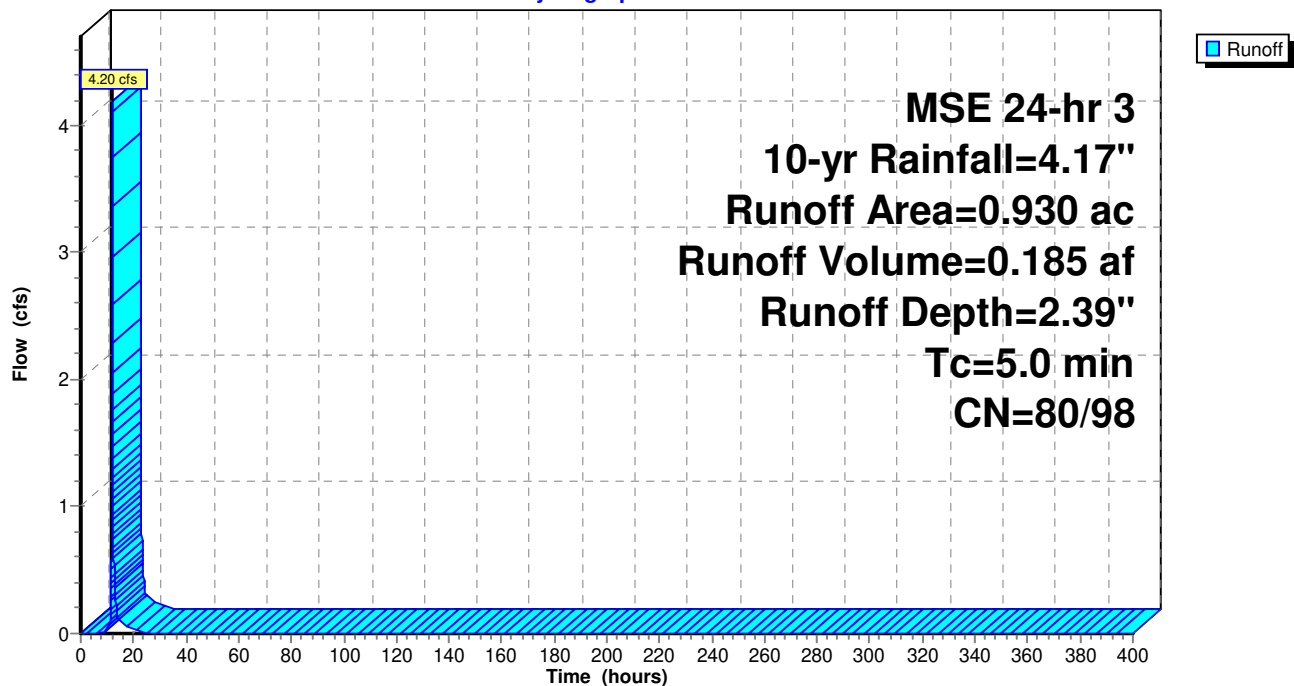
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
0.110	98	Paved parking, HSG D
0.820	80	>75% Grass cover, Good, HSG D
0.930	82	Weighted Average
0.820	80	88.17% Pervious Area
0.110	98	11.83% Impervious Area

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

Subcatchment 2.4S: Proposed Drainage to Wetland 10

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 2.5S: Proposed Drainage to Pond 3

Runoff = 58.37 cfs @ 12.17 hrs, Volume= 3.342 af, Depth= 3.06"

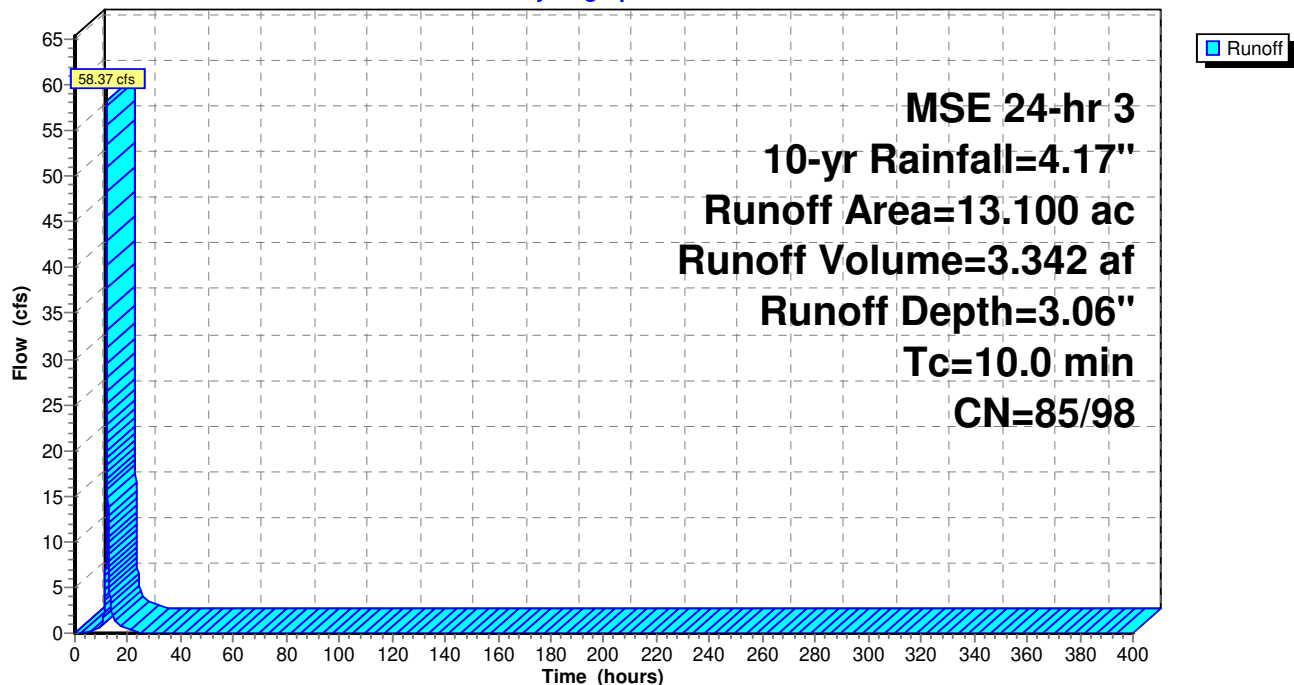
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
4.460	98	Paved parking, HSG D
2.310	98	Water Surface, 0% imp, HSG D
6.330	80	>75% Grass cover, Good, HSG D
13.100	89	Weighted Average
8.640	85	65.95% Pervious Area
4.460	98	34.05% Impervious Area

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

Subcatchment 2.5S: Proposed Drainage to Pond 3

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 2.6S: Proposed Drainage to Pond 4

Runoff = 27.92 cfs @ 12.17 hrs, Volume= 1.637 af, Depth= 3.11"

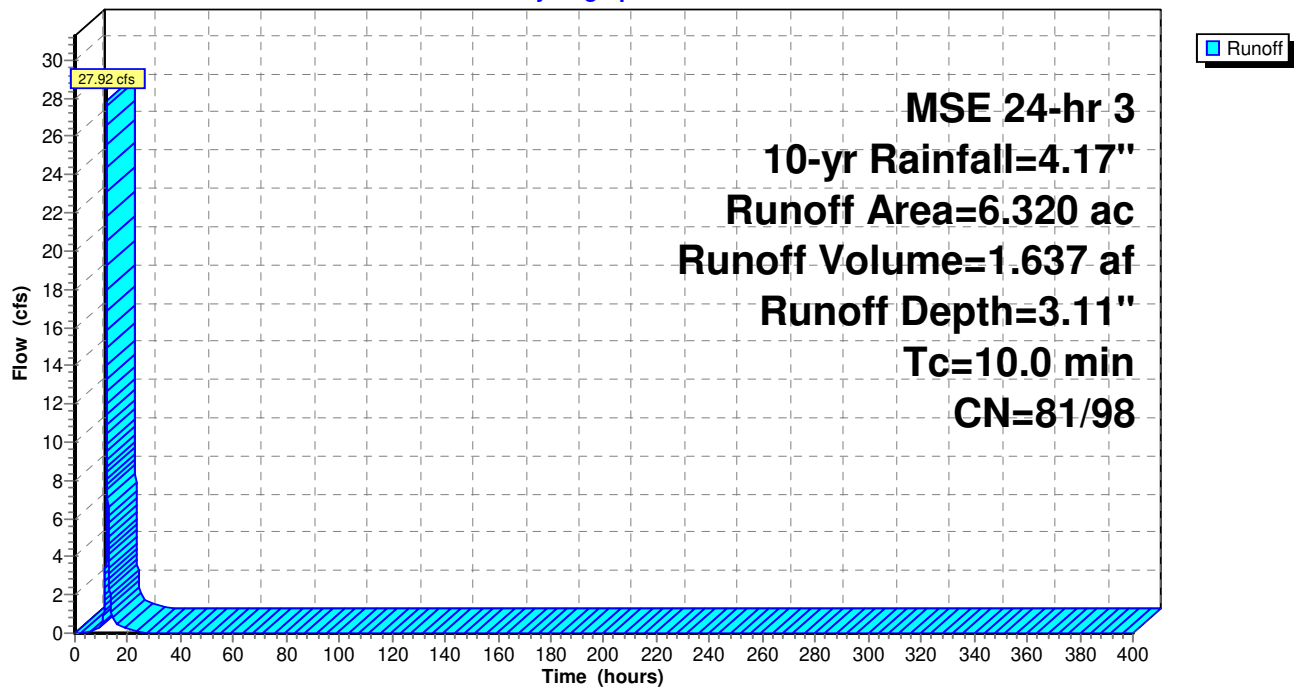
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
3.190	98	Paved parking, HSG D
0.210	98	Water Surface, 0% imp, HSG D
2.920	80	>75% Grass cover, Good, HSG D
6.320	90	Weighted Average
3.130	81	49.53% Pervious Area
3.190	98	50.47% Impervious Area

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

Subcatchment 2.6S: Proposed Drainage to Pond 4

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 2S: Proposed Drainage to Tributary 1 downstream of X-ing

Runoff = 7.62 cfs @ 12.15 hrs, Volume= 0.385 af, Depth= 2.39"

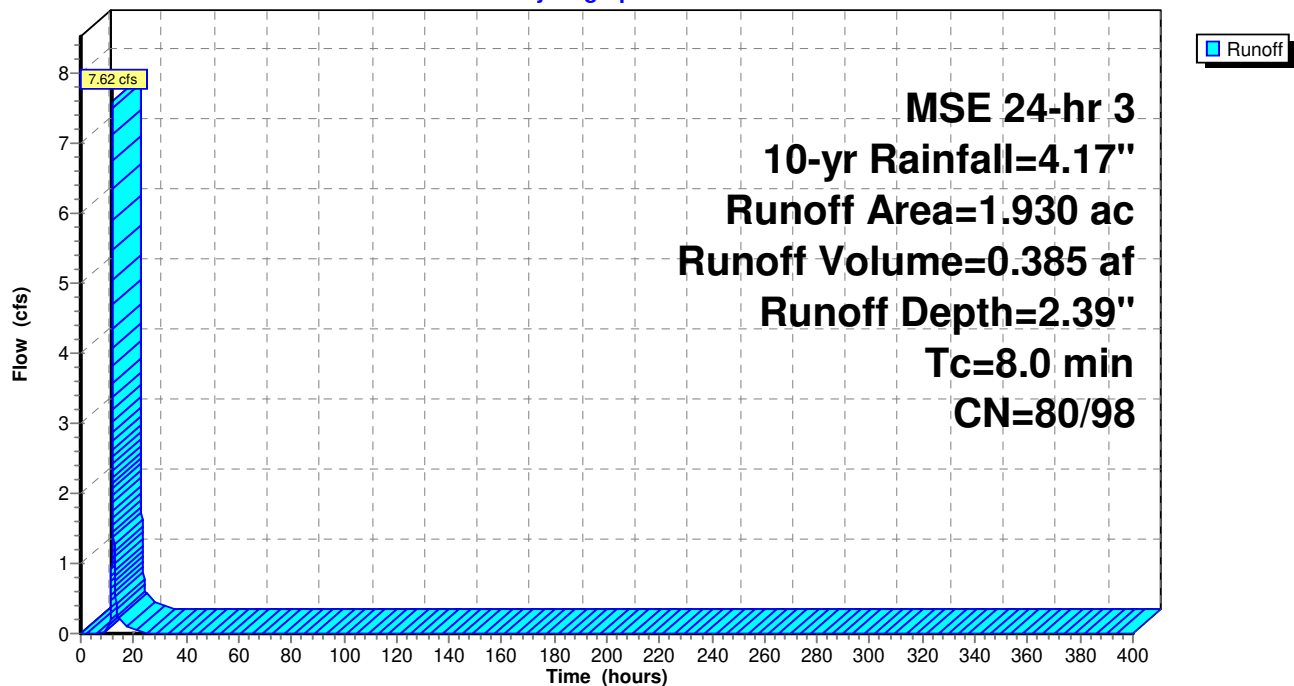
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
0.230	98	Paved parking, HSG D
* 1.700	80	Woods/grass comb., Fair, HSG D
1.930	82	Weighted Average
1.700	80	88.08% Pervious Area
0.230	98	11.92% Impervious Area

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

Subcatchment 2S: Proposed Drainage to Tributary 1 downstream of X-ing

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 3S: Proposed Drainage to Wetland 14

Runoff = 15.71 cfs @ 14.15 hrs, Volume= 4.542 af, Depth= 2.23"

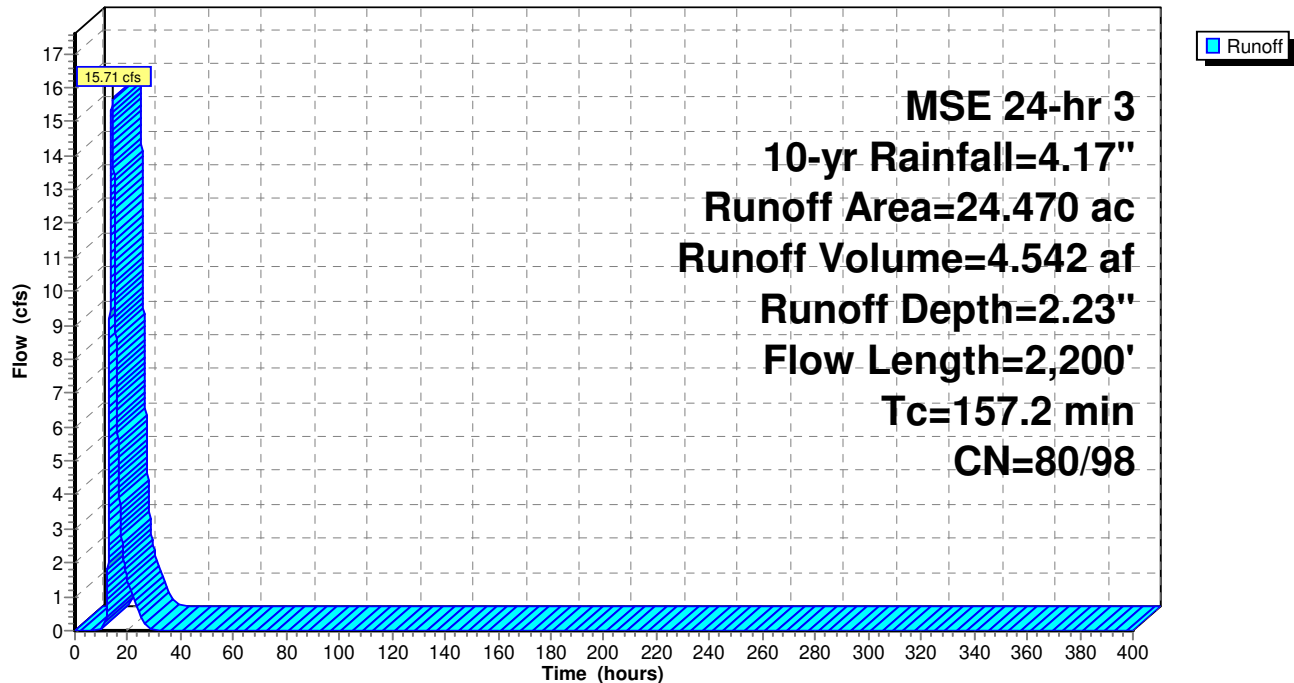
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
0.620	98	Paved parking, HSG D
* 23.850	80	Woods/grass comb., Fair, HSG D
24.470	80	Weighted Average
23.850	80	97.47% Pervious Area
0.620	98	2.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
3.9	300	0.0200	1.27		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
126.7	1,700	0.0020	0.22		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
157.2	2,200	Total			

Subcatchment 3S: Proposed Drainage to Wetland 14

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 4.1S: Proposed Drainage to Pond 6

Runoff = 20.09 cfs @ 12.17 hrs, Volume= 1.141 af, Depth= 3.18"

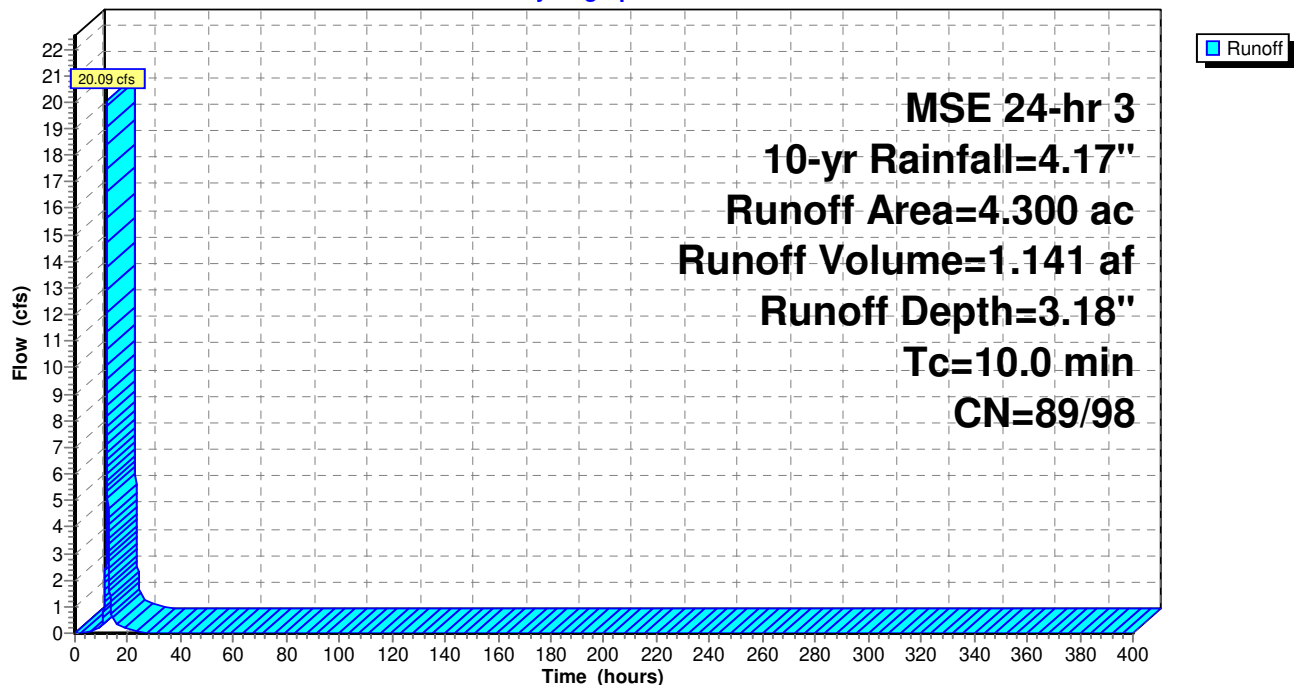
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
0.910	98	Paved parking, HSG D
1.620	98	Water Surface, 0% imp, HSG D
1.770	80	>75% Grass cover, Good, HSG D
4.300	91	Weighted Average
3.390	89	78.84% Pervious Area
0.910	98	21.16% Impervious Area

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

Subcatchment 4.1S: Proposed Drainage to Pond 6

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 4.2S: Proposed Drainage to Pond 5

Runoff = 69.61 cfs @ 12.17 hrs, Volume= 4.009 af, Depth= 3.07"

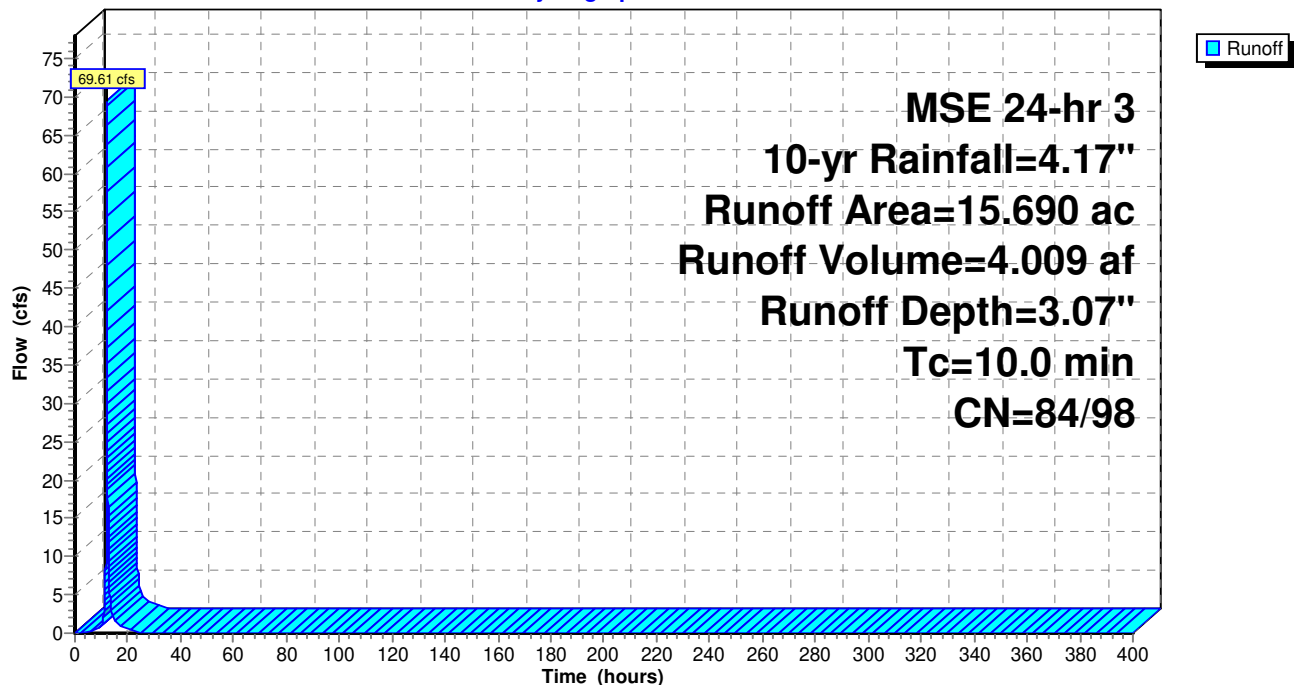
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
6.050	98	Paved parking, HSG D
1.930	98	Water Surface, 0% imp, HSG D
7.710	80	>75% Grass cover, Good, HSG D
15.690	89	Weighted Average
9.640	84	61.44% Pervious Area
6.050	98	38.56% Impervious Area

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

Subcatchment 4.2S: Proposed Drainage to Pond 5

Hydrograph



Summary for Subcatchment 4.3S: Proposed Drainage to Wetland 5

Runoff = 14.20 cfs @ 12.12 hrs, Volume= 0.651 af, Depth= 3.16"

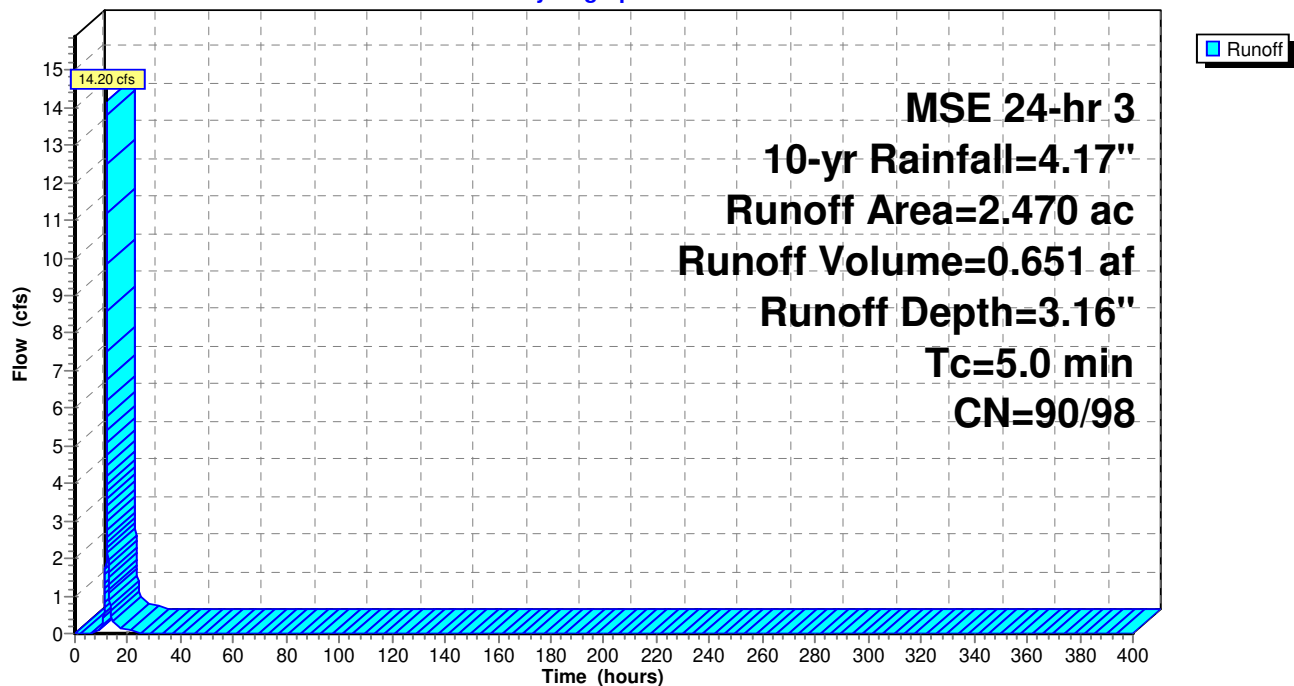
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG D
2.230	90	Fallow, crop residue, Good, HSG D
2.470	91	Weighted Average
2.230	90	90.28% Pervious Area
0.240	98	9.72% Impervious Area

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

Subcatchment 4.3S: Proposed Drainage to Wetland 5

Hydrograph



Summary for Subcatchment 4S: Proposed Drainage to Wetland 4

Runoff = 17.28 cfs @ 12.17 hrs, Volume= 0.973 af, Depth= 3.16"

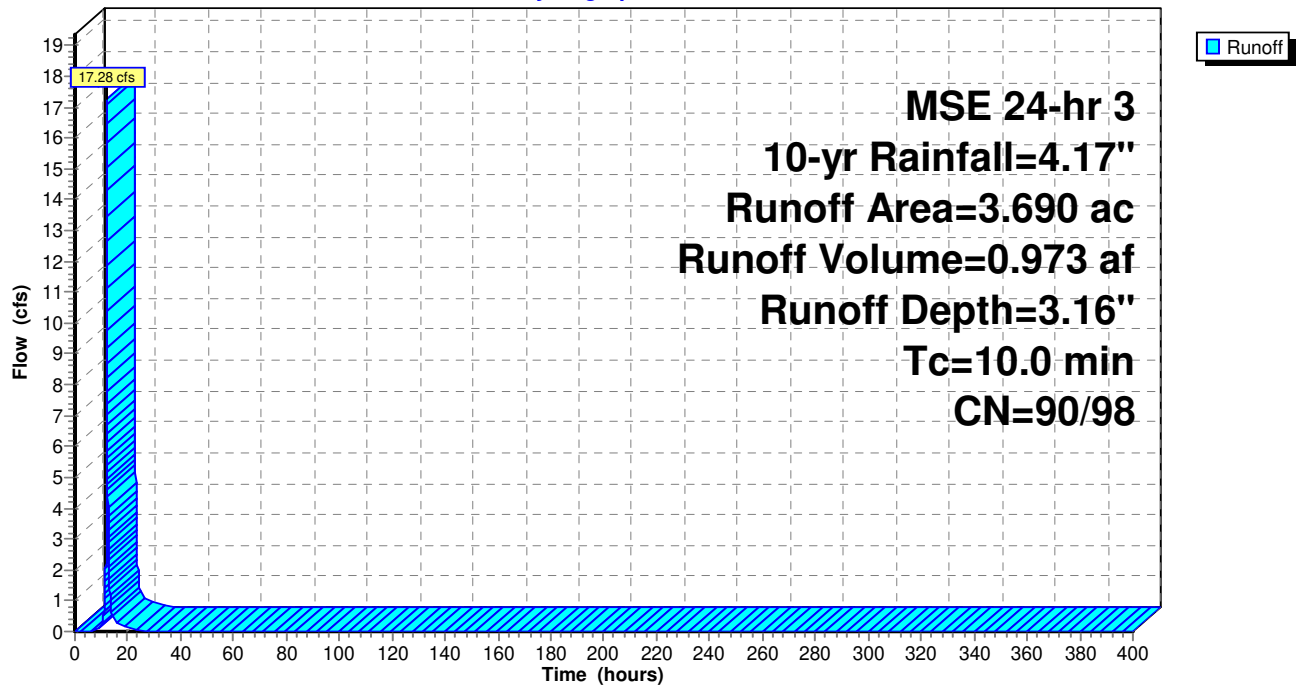
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
0.360	98	Paved parking, HSG D
3.330	90	Fallow, crop residue, Good, HSG D
3.690	91	Weighted Average
3.330	90	90.24% Pervious Area
0.360	98	9.76% Impervious Area

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

Subcatchment 4S: Proposed Drainage to Wetland 4

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 7S: Proposed Park Drainage to Pond 1

Runoff = 6.95 cfs @ 12.33 hrs, Volume= 0.567 af, Depth= 2.48"

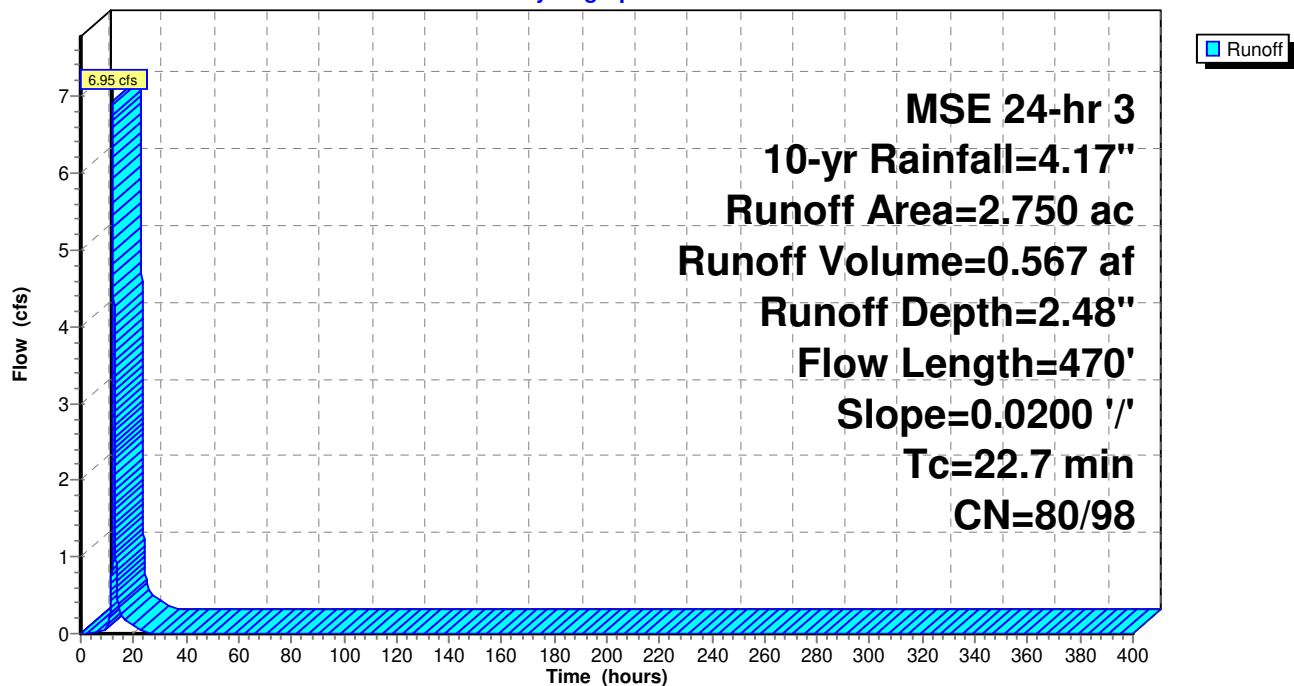
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
0.460	98	Paved parking, HSG D
* 2.290	80	Woods/grass comb., Fair, HSG D
2.750	83	Weighted Average
2.290	80	83.27% Pervious Area
0.460	98	16.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	200	0.0200	0.18		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
4.5	270	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
22.7	470	Total			

Subcatchment 7S: Proposed Park Drainage to Pond 1

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 20S: OFFSITE Existing Drainage to Tributary 2

Runoff = 18.54 cfs @ 13.17 hrs, Volume= 3.411 af, Depth= 2.18"

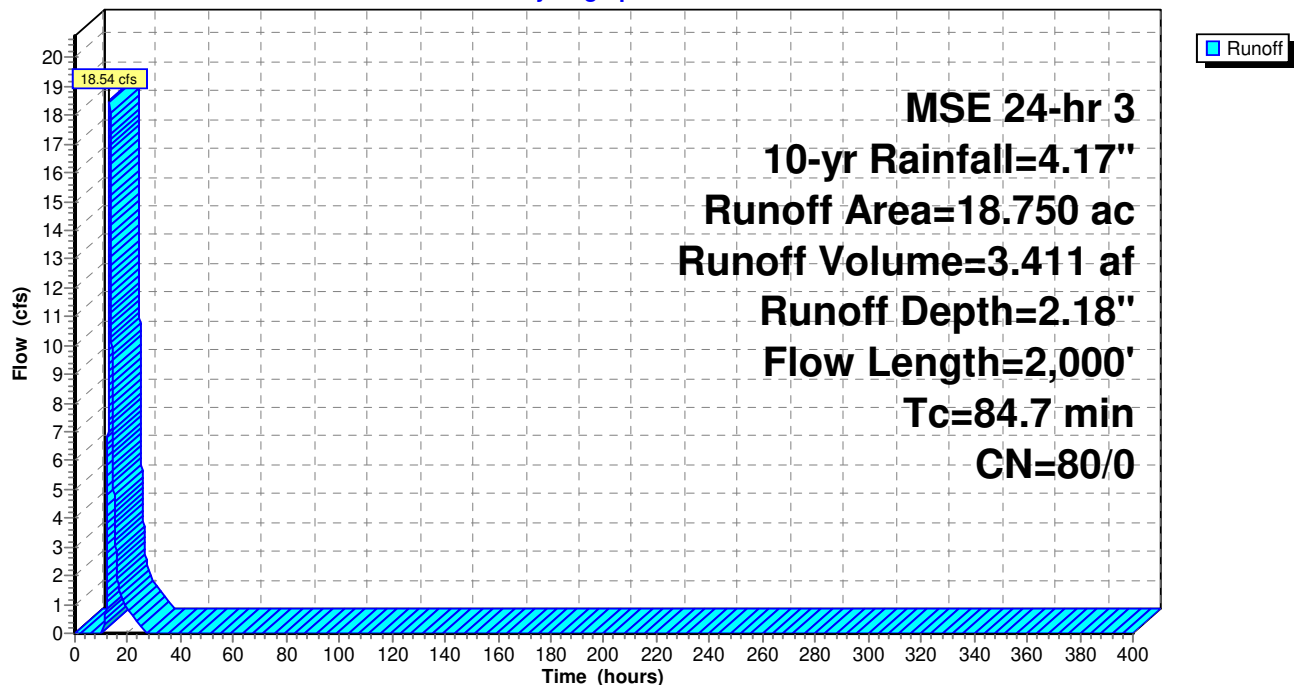
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
* 0.000	80	Row crops, straight row, Good, HSG D
* 18.750	80	Woods/grass comb., Fair, HSG D
18.750	80	Weighted Average
18.750	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.0	200	0.0100	0.10		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"
43.0	1,000	0.0060	0.39		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.7	800	0.0175	1.98		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
84.7	2,000	Total			

Subcatchment 20S: OFFSITE Existing Drainage to Tributary 2

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 30S: OFFSITE Existing Drainage to Wetland 14

Runoff = 5.40 cfs @ 12.45 hrs, Volume= 0.513 af, Depth= 2.18"

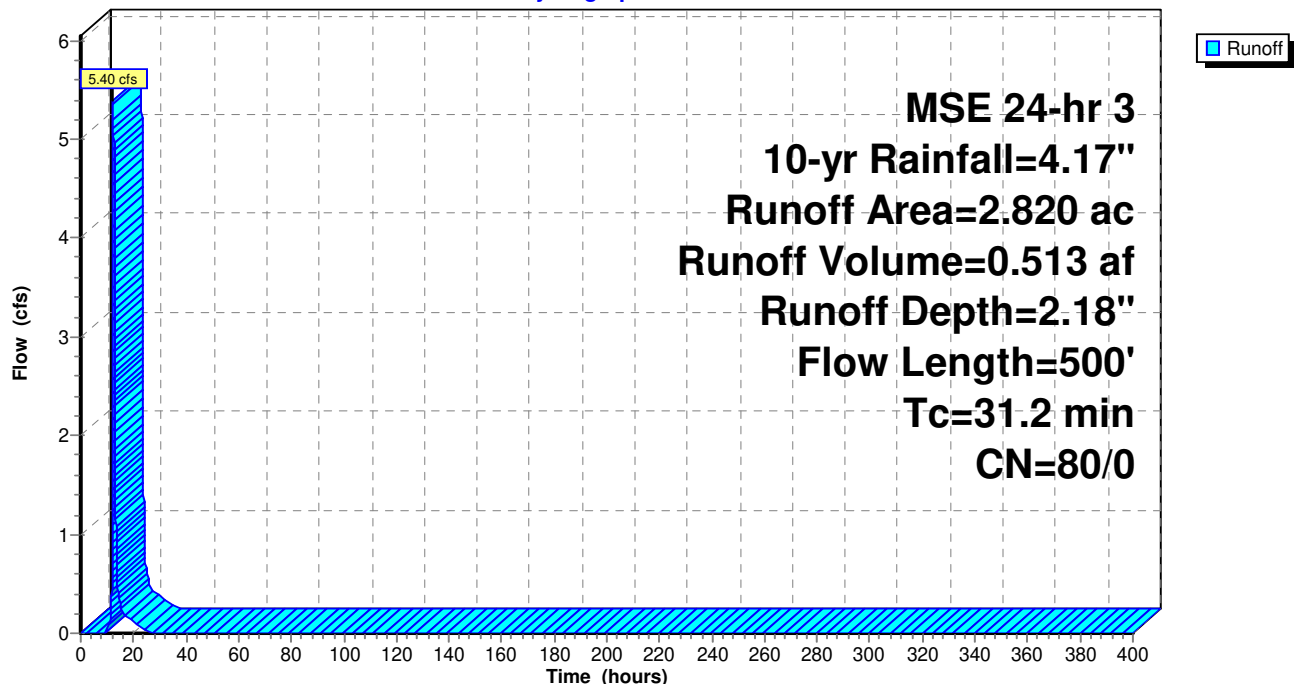
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
* 0.000	80	Row crops, straight row, Good, HSG D
* 2.820	80	Woods/grass comb., Fair, HSG D
2.820	80	Weighted Average
2.820	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.1	200	0.0100	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
7.1	300	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
31.2	500	Total			

Subcatchment 30S: OFFSITE Existing Drainage to Wetland 14

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Subcatchment 40S: OFFSITE Existing Drainage to Wetland 4

Runoff = 10.96 cfs @ 12.82 hrs, Volume= 1.592 af, Depth= 2.60"

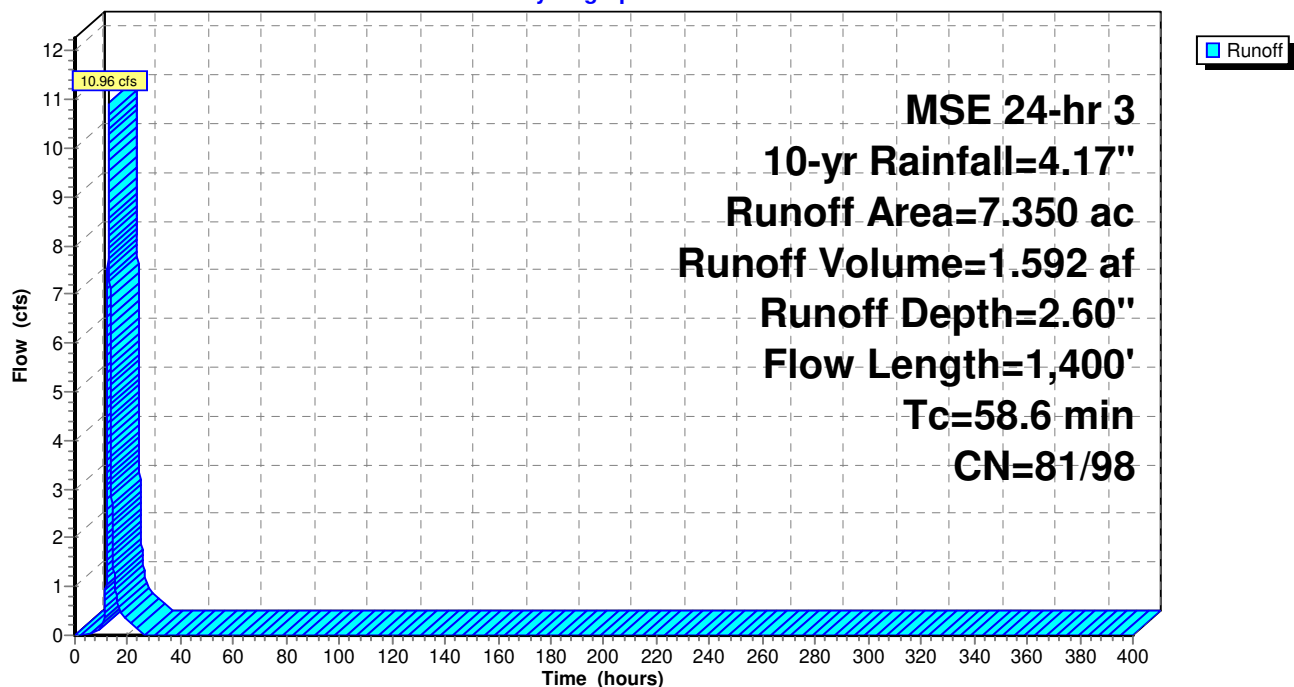
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-yr Rainfall=4.17"

Area (ac)	CN	Description
0.000	89	Row crops, straight row, Good, HSG D
0.000	82	Woods/grass comb., Fair, HSG D
7.350	84	1 acre lots, 20% imp, HSG D
7.350	84	Weighted Average
5.880	81	80.00% Pervious Area
1.470	98	20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	200	0.0200	0.18		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
40.4	1,200	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
58.6	1,400	Total			

Subcatchment 40S: OFFSITE Existing Drainage to Wetland 4

Hydrograph



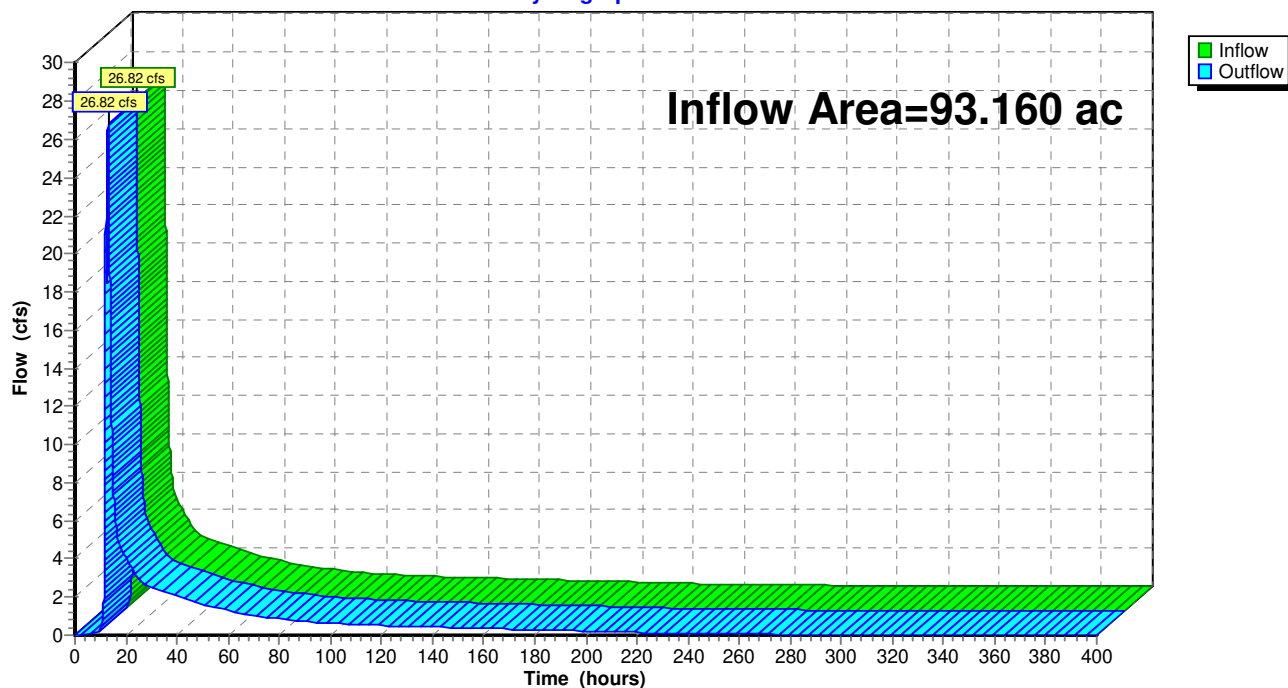
Summary for Reach 1R: To Lake Peltier

Inflow Area = 93.160 ac, 28.28% Impervious, Inflow Depth > 2.74" for 10-yr event
 Inflow = 26.82 cfs @ 13.00 hrs, Volume= 21.274 af
 Outflow = 26.82 cfs @ 13.00 hrs, Volume= 21.274 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 1R: To Lake Peltier

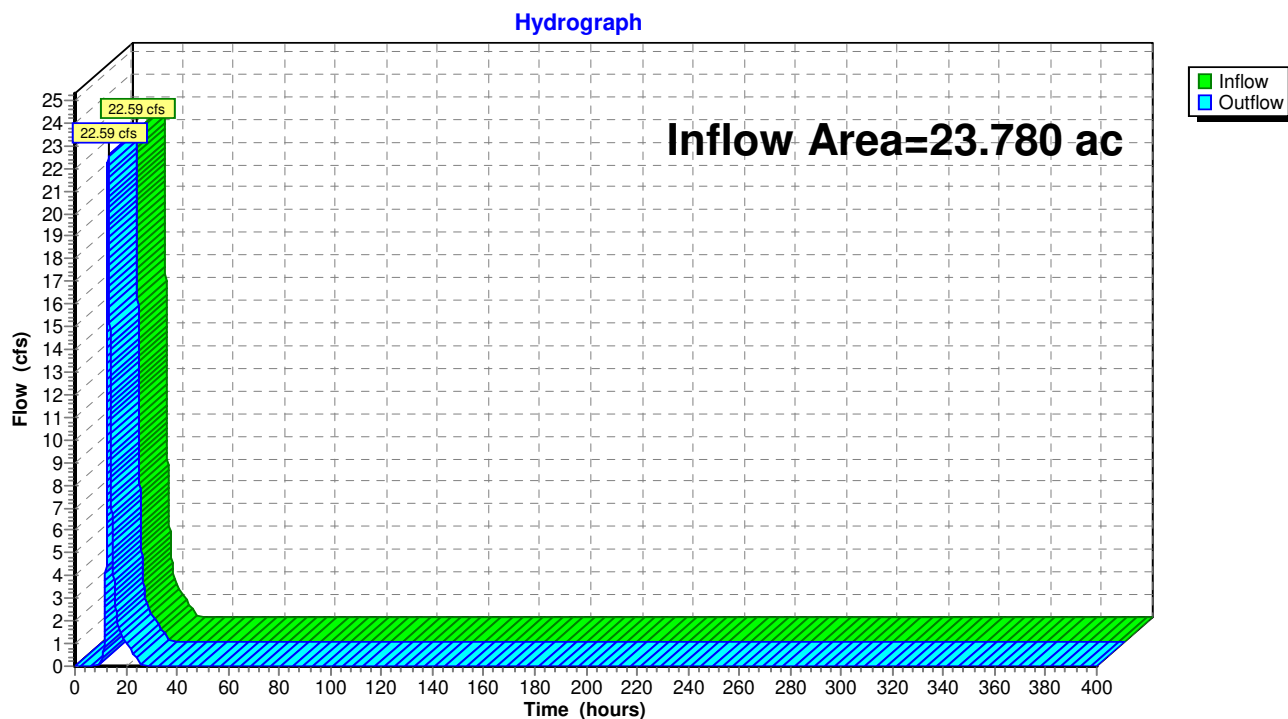
Hydrograph



Summary for Reach 2R: Tributary 2 - Upstream of X-ing

Inflow Area = 23.780 ac, 1.35% Impervious, Inflow Depth = 2.21" for 10-yr event
Inflow = 22.59 cfs @ 12.99 hrs, Volume= 4.373 af
Outflow = 22.59 cfs @ 12.99 hrs, Volume= 4.373 af, Atten= 0%, Lag= 0.0 min

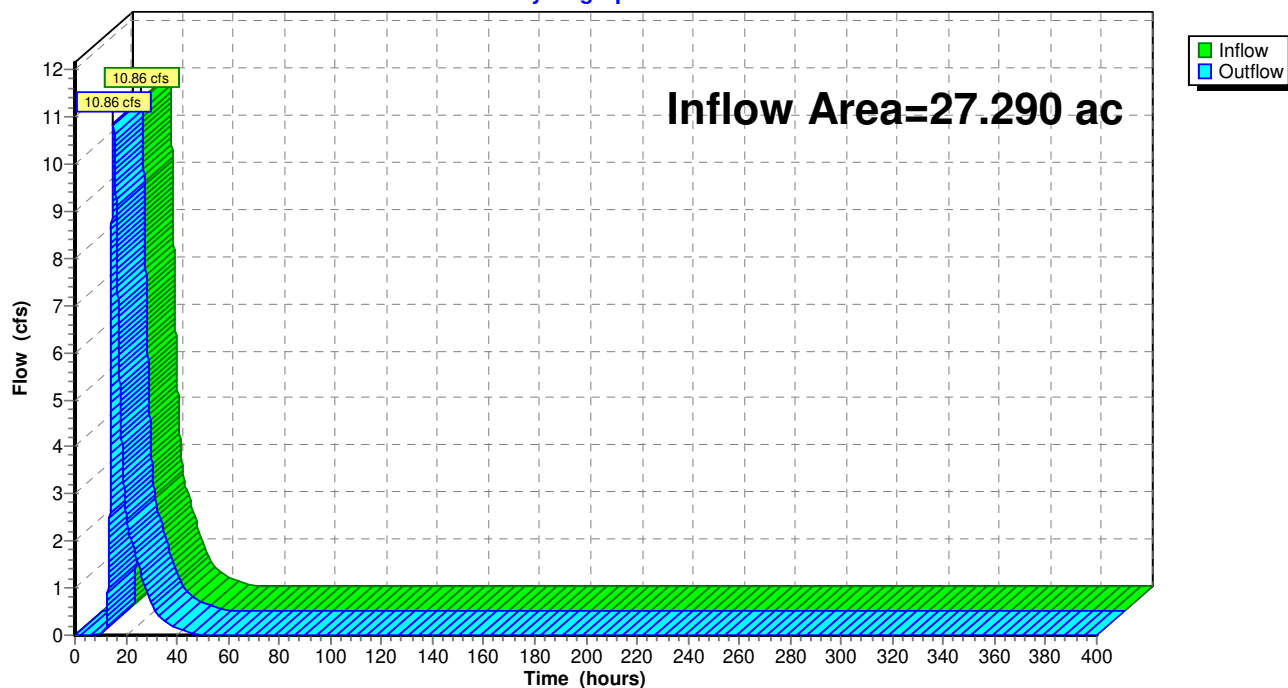
Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 2R: Tributary 2 - Upstream of X-ing

Summary for Reach 3R: To South

Inflow Area = 27.290 ac, 2.27% Impervious, Inflow Depth = 2.22" for 10-yr event
Inflow = 10.86 cfs @ 15.17 hrs, Volume= 5.055 af
Outflow = 10.86 cfs @ 15.17 hrs, Volume= 5.055 af, Atten= 0%, Lag= 0.0 min

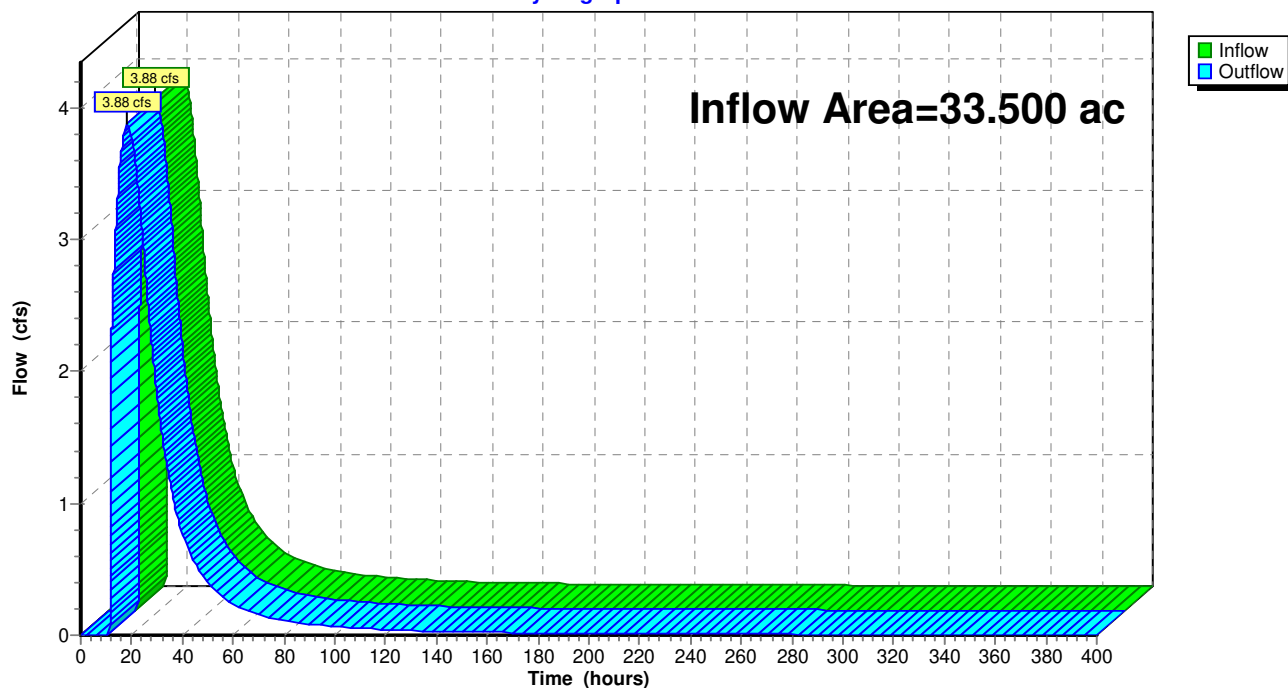
Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 3R: To South**Hydrograph**

Summary for Reach 4R: To North

Inflow Area = 33.500 ac, 26.96% Impervious, Inflow Depth > 2.54" for 10-yr event
Inflow = 3.88 cfs @ 18.29 hrs, Volume= 7.091 af
Outflow = 3.88 cfs @ 18.29 hrs, Volume= 7.091 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 4R: To North**Hydrograph**

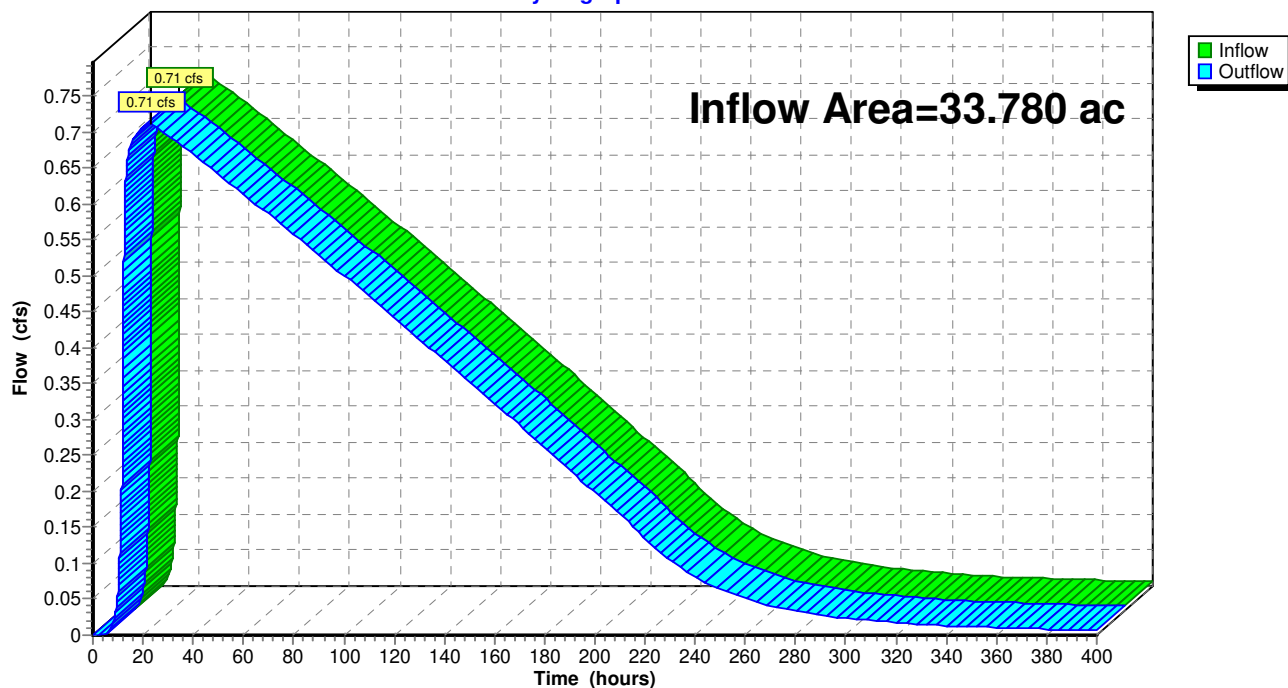
Summary for Reach 10R: Capacity Check

Inflow Area = 33.780 ac, 39.40% Impervious, Inflow Depth > 2.92" for 10-yr event
Inflow = 0.71 cfs @ 22.77 hrs, Volume= 8.218 af
Outflow = 0.71 cfs @ 22.77 hrs, Volume= 8.218 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 10R: Capacity Check

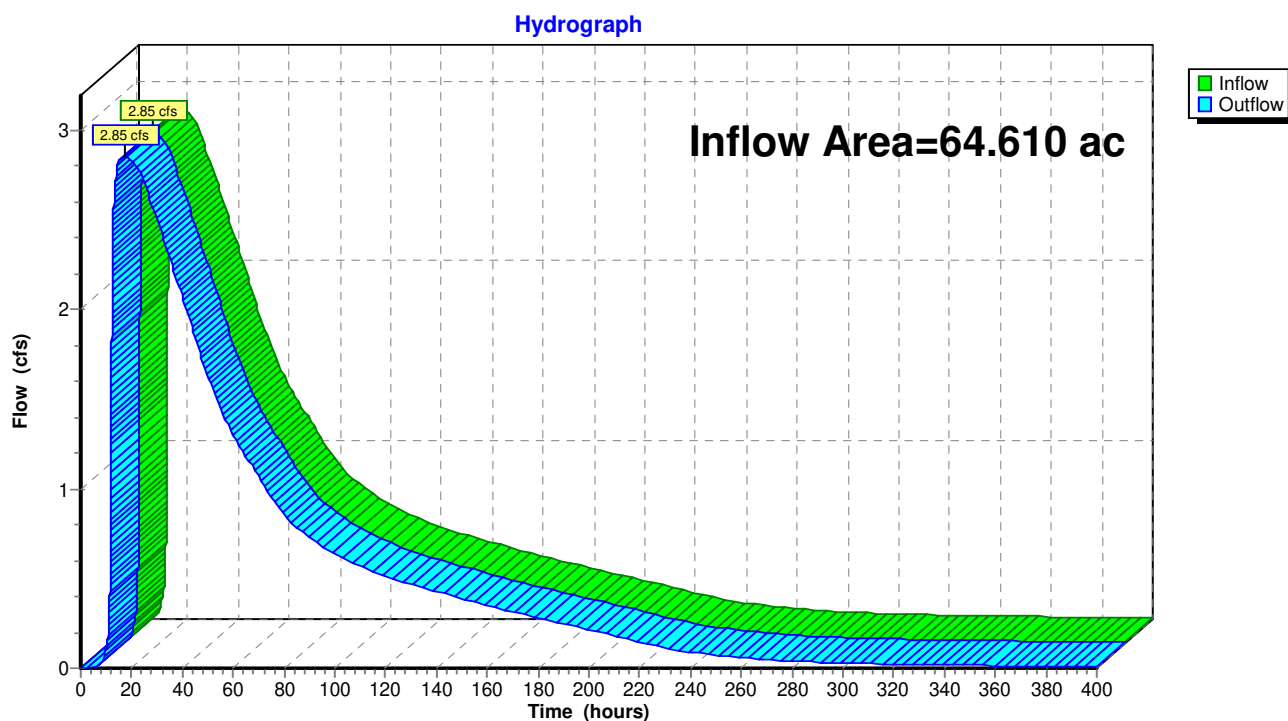
Hydrograph



Summary for Reach STRM: 60" Trunk Sewer

Inflow Area = 64.610 ac, 38.83% Impervious, Inflow Depth > 2.95" for 10-yr event
Inflow = 2.85 cfs @ 17.40 hrs, Volume= 15.900 af
Outflow = 2.85 cfs @ 17.40 hrs, Volume= 15.900 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach STRM: 60" Trunk Sewer

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Summary for Pond 1.2P: Ex 18" STRM

Inflow Area = 0.910 ac, 45.05% Impervious, Inflow Depth = 2.97" for 10-yr event
 Inflow = 4.20 cfs @ 12.15 hrs, Volume= 0.225 af
 Outflow = 4.11 cfs @ 12.17 hrs, Volume= 0.225 af, Atten= 2%, Lag= 0.9 min
 Primary = 4.11 cfs @ 12.17 hrs, Volume= 0.225 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 893.94' @ 12.17 hrs Surf.Area= 425 sf Storage= 217 cf

Plug-Flow detention time= 1.3 min calculated for 0.225 af (100% of inflow)
 Center-of-Mass det. time= 1.0 min (773.8 - 772.8)

Volume	Invert	Avail.Storage	Storage Description
#1	892.96'	13,494 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
892.96	20	0	0
894.00	450	244	244
896.00	2,900	3,350	3,594
898.00	7,000	9,900	13,494

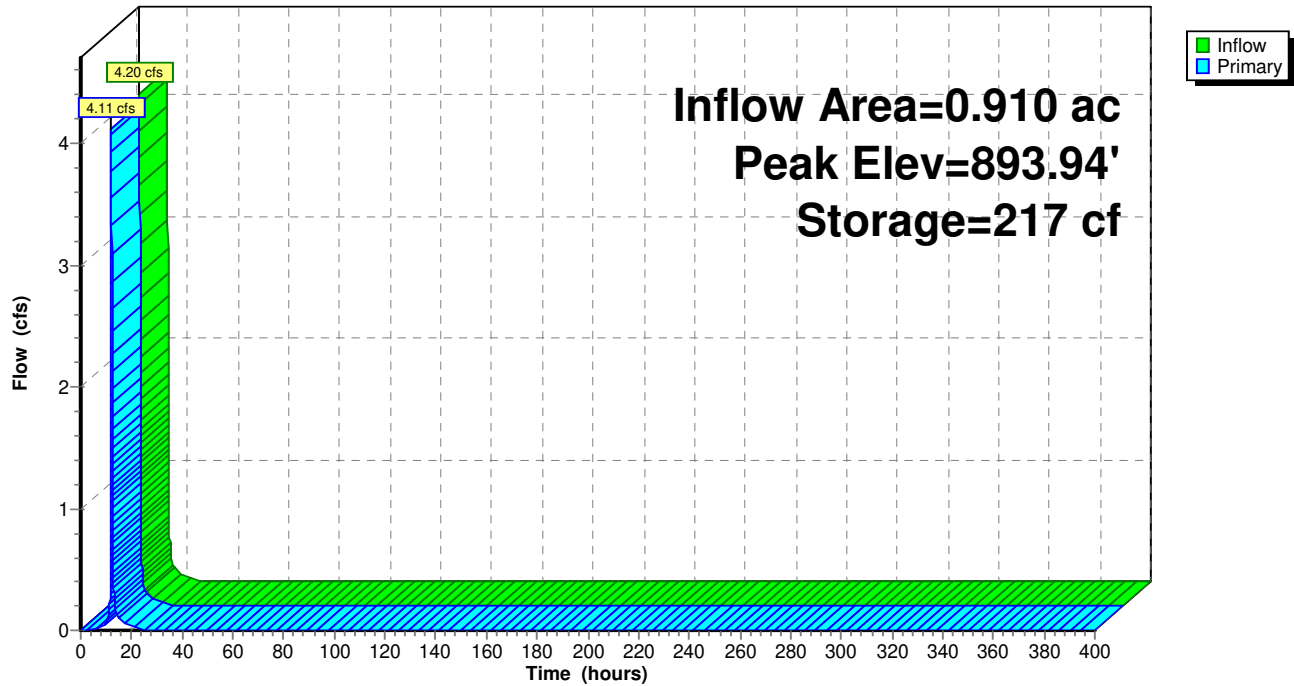
Device	Routing	Invert	Outlet Devices
#1	Primary	892.96'	18.0" Round Culvert L= 43.6' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 892.96' / 888.72' S= 0.0972 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Primary	894.10'	50.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.10 cfs @ 12.17 hrs HW=893.94' TW=0.00' (Dynamic Tailwater)

1=Culvert (Inlet Controls 4.10 cfs @ 3.37 fps)
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1.2P: Ex 18" STRM

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Pond 1P: Pond 1

Inflow Area = 33.780 ac, 39.40% Impervious, Inflow Depth = 2.96" for 10-yr event
 Inflow = 119.23 cfs @ 12.23 hrs, Volume= 8.340 af
 Outflow = 0.71 cfs @ 22.77 hrs, Volume= 8.218 af, Atten= 99%, Lag= 632.4 min
 Primary = 0.71 cfs @ 22.77 hrs, Volume= 8.218 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Starting Elev= 892.00' Surf.Area= 198,200 sf Storage= 672,500 cf

Peak Elev= 895.04' @ 22.77 hrs Surf.Area= 219,268 sf Storage= 1,005,283 cf (332,783 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 5,423.1 min (6,205.3 - 782.2)

Volume	Invert	Avail.Storage	Storage Description
#1	882.00'	672,500 cf	WET VOL (Prismatic) Listed below (Recalc)
#2	892.00'	1,174,300 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)
		1,846,800 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
882.00	47,700	0	0
884.00	54,700	102,400	102,400
886.00	62,200	116,900	219,300
888.00	70,100	132,300	351,600
890.00	78,700	148,800	500,400
891.00	83,200	80,950	581,350
892.00	99,100	91,150	672,500

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
892.00	99,100	0	0
894.00	112,800	211,900	211,900
896.00	127,000	239,800	451,700
898.00	141,800	268,800	720,500
900.00	156,000	297,800	1,018,300
901.00	156,000	156,000	1,174,300

Device	Routing	Invert	Outlet Devices
#1	Primary	892.00'	15.0" Round Culvert L= 351.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 892.00' / 890.25' S= 0.0050 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Device 1	892.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Primary	900.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

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MSE 24-hr 3 10-yr Rainfall=4.17"

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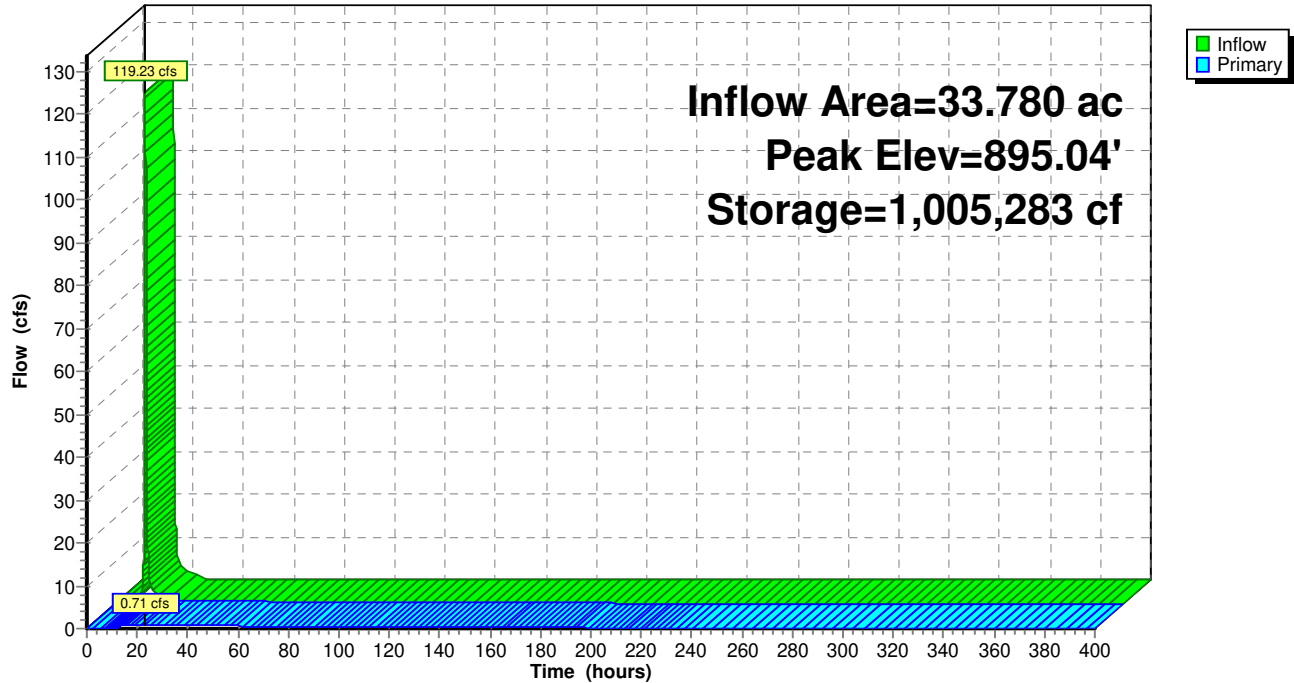
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Primary OutFlow Max=0.71 cfs @ 22.77 hrs HW=895.04' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 0.71 cfs of 5.26 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.71 cfs @ 8.16 fps)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: Pond 1

Hydrograph



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MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Pond 2aP: Ex STRM Structure

Inflow Area = 25.710 ac, 2.14% Impervious, Inflow Depth = 2.22" for 10-yr event
 Inflow = 23.25 cfs @ 12.99 hrs, Volume= 4.754 af
 Outflow = 23.23 cfs @ 13.01 hrs, Volume= 4.754 af, Atten= 0%, Lag= 0.9 min
 Primary = 23.23 cfs @ 13.01 hrs, Volume= 4.754 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 888.68' @ 13.01 hrs Surf.Area= 3,460 sf Storage= 2,756 cf

Plug-Flow detention time= 2.4 min calculated for 4.754 af (100% of inflow)
 Center-of-Mass det. time= 2.4 min (865.3 - 863.0)

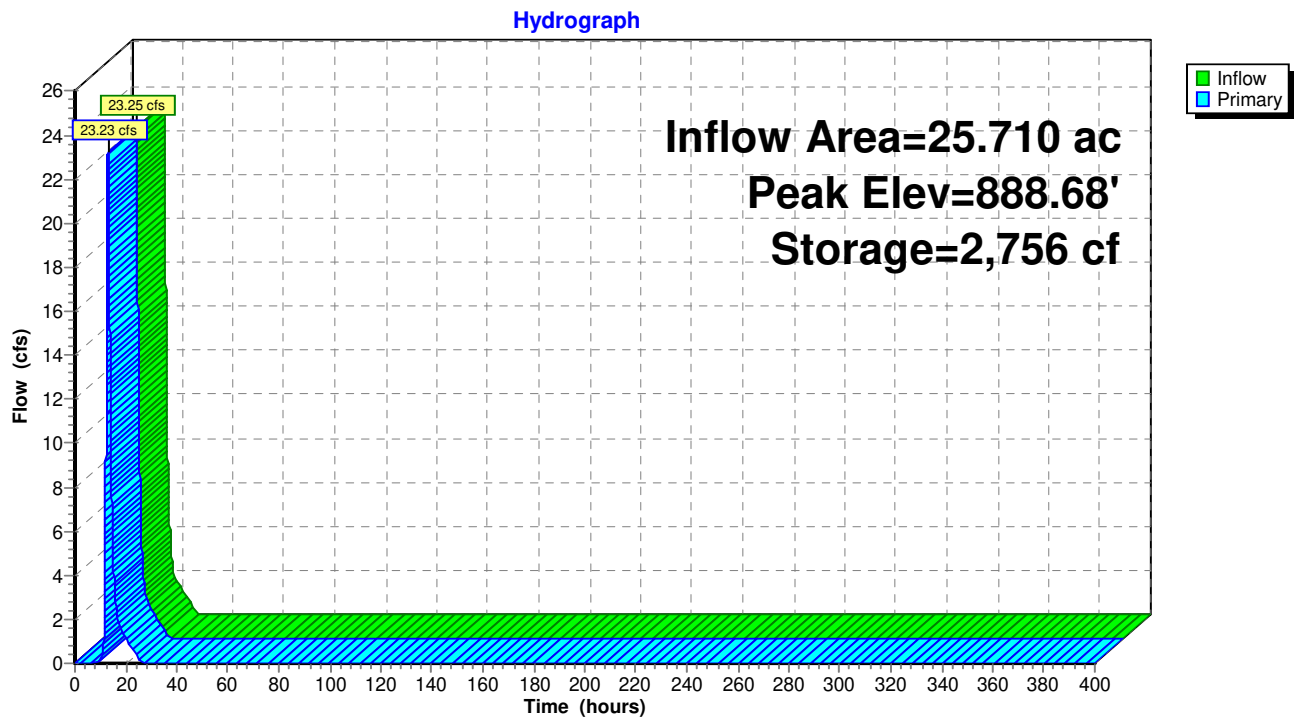
Volume	Invert	Avail.Storage	Storage Description
#1	886.82'	46,909 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
886.82	10	0	0
888.00	1,700	1,009	1,009
890.00	6,900	8,600	9,609
892.00	30,400	37,300	46,909

Device	Routing	Invert	Outlet Devices
#1	Primary	886.36'	21.0" Round Ex 21" CMP L= 37.5' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 886.36' / 885.72' S= 0.0171 ' S= 0.0171 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 2.41 sf
#2	Device 1	886.82'	21.0" Vert. EX STRUCTURE OPENNING C= 0.600
#3	Primary	888.40'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=23.23 cfs @ 13.01 hrs HW=888.68' TW=0.00' (Dynamic Tailwater)

1=Ex 21" CMP (Passes 11.48 cfs of 11.51 cfs potential flow)
 2=EX STRUCTURE OPENNING (Orifice Controls 11.48 cfs @ 4.77 fps)
 3=Broad-Crested Rectangular Weir (Weir Controls 11.76 cfs @ 1.41 fps)

Pond 2aP: Ex STRM Structure



Summary for Pond 2bP: Wetland 19 Storm X-ing

Inflow Area = 23.780 ac, 1.35% Impervious, Inflow Depth = 2.21" for 10-yr event
 Inflow = 22.59 cfs @ 12.99 hrs, Volume= 4.373 af
 Outflow = 22.59 cfs @ 13.00 hrs, Volume= 4.369 af, Atten= 0%, Lag= 0.4 min
 Primary = 22.59 cfs @ 13.00 hrs, Volume= 4.369 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 894.12' @ 13.00 hrs Surf.Area= 1,508 sf Storage= 468 cf

Plug-Flow detention time= 1.2 min calculated for 4.369 af (100% of inflow)
 Center-of-Mass det. time= 0.7 min (868.9 - 868.2)

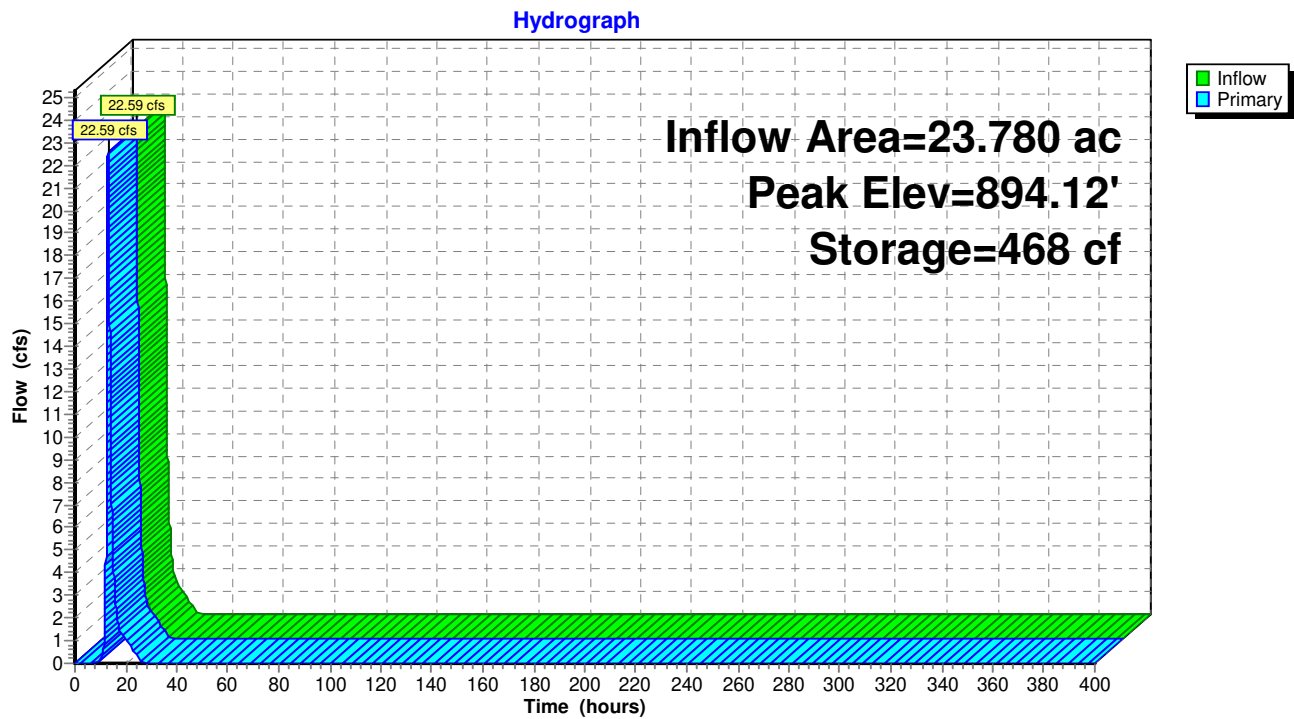
Volume	Invert	Avail.Storage	Storage Description
#1	893.20'	167,198 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
893.20	50	0	0
894.00	770	328	328
896.00	12,800	13,570	13,898
898.00	31,000	43,800	57,698
899.00	52,000	41,500	99,198
900.00	84,000	68,000	167,198

Device	Routing	Invert	Outlet Devices
#1	Primary	890.00'	30.0" Round Culvert x 2 X 2.00 L= 99.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 890.00' / 889.80' S= 0.0020 ' S= 0.0020 ' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 4.91 sf
#2	Device 1	893.70'	48.0" Horiz. Grate x 2 X 2.00 C= 0.600 Limited to weir flow at low heads
#3	Primary	898.50'	30.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=22.58 cfs @ 13.00 hrs HW=894.12' TW=888.68' (Dynamic Tailwater)

1=Culvert x 2 (Passes 22.58 cfs of 64.41 cfs potential flow)
 2=Grate x 2 (Weir Controls 22.58 cfs @ 2.13 fps)
 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2bP: Wetland 19 Storm X-ing



2026-04-01 Peltier Ponds - Prelim

MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Pond 2P: Pond 2 & Wetland 10 (LOWERED)

Inflow Area = 11.410 ac, 36.20% Impervious, Inflow Depth = 2.92" for 10-yr event
 Inflow = 47.96 cfs @ 12.17 hrs, Volume= 2.777 af
 Outflow = 1.06 cfs @ 15.16 hrs, Volume= 2.764 af, Atten= 98%, Lag= 179.5 min
 Primary = 1.06 cfs @ 15.16 hrs, Volume= 2.764 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Starting Elev= 901.00' Surf.Area= 79,800 sf Storage= 133,013 cf

Peak Elev= 902.51' @ 15.16 hrs Surf.Area= 108,680 sf Storage= 225,619 cf (92,606 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 1,385.4 min (2,163.9 - 778.5)

Volume	Invert	Avail.Storage	Storage Description
#1	891.00'	99,968 cf	WET VOL 2A (Prismatic) Listed below (Recalc)
#2	901.00'	195,950 cf	LIVE STORAGE 2A (Prismatic) Listed below (Recalc)
#3	891.00'	33,045 cf	WET VOL 2B (Prismatic) Listed below (Recalc)
#4	901.00'	92,450 cf	LIVE STORAGE 2B (Prismatic) Listed below (Recalc)
#5	901.01'	105,540 cf	WETLAND 10 (Prismatic) Listed below (Recalc)
		526,953 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
891.00	1,600	0	0
892.00	2,100	1,850	1,850
893.99	3,500	5,572	7,422
894.00	5,700	46	7,468
896.00	9,100	14,800	22,268
898.00	13,300	22,400	44,668
900.00	18,500	31,800	76,468
901.00	28,500	23,500	99,968

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
901.00	28,500	0	0
902.00	32,600	30,550	30,550
904.00	41,300	73,900	104,450
905.00	45,700	43,500	147,950
906.00	50,300	48,000	195,950

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
891.00	280	0	0
892.00	570	425	425
894.00	1,400	1,970	2,395
896.00	2,600	4,000	6,395
898.00	4,300	6,900	13,295
900.00	6,500	10,800	24,095
901.00	11,400	8,950	33,045

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
901.00	11,400	0	0
902.00	14,000	12,700	12,700
904.00	19,900	33,900	46,600
905.00	22,900	21,400	68,000
906.00	26,000	24,450	92,450

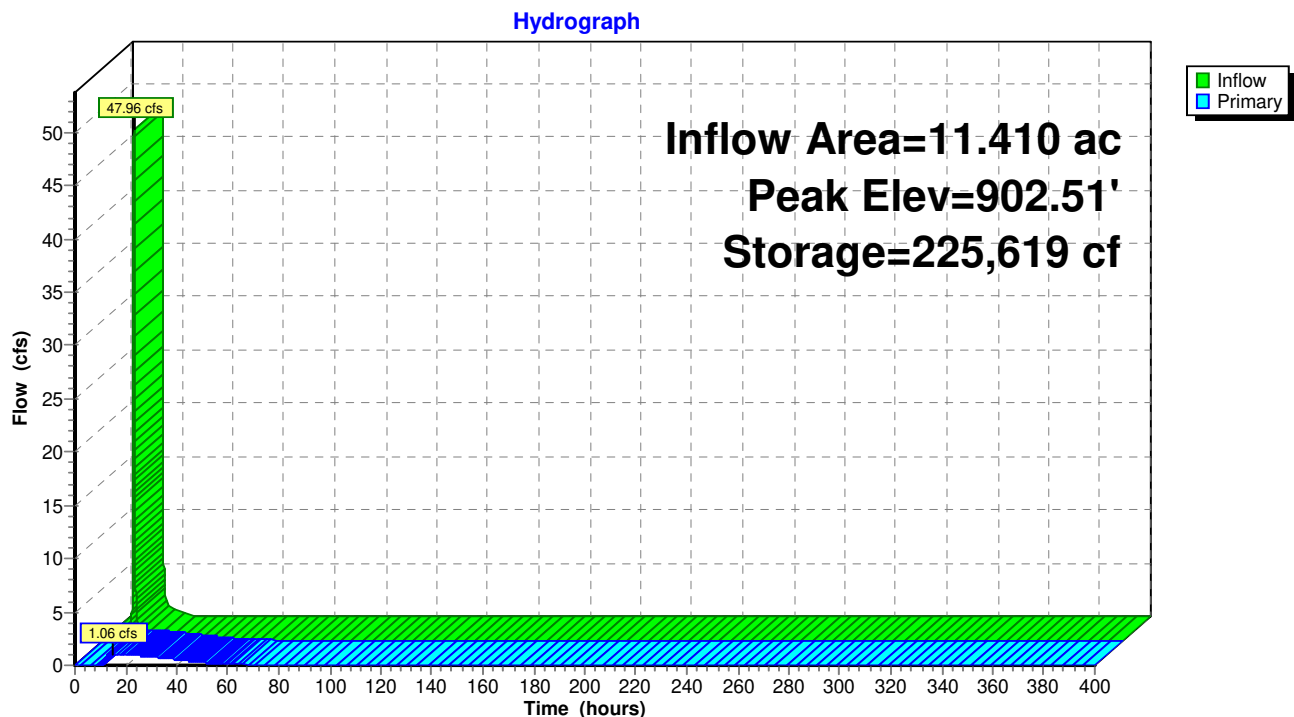
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
901.01	14,800	0	0
902.00	17,200	15,840	15,840
904.00	22,300	39,500	55,340
905.00	25,100	23,700	79,040
906.00	27,900	26,500	105,540

Device	Routing	Invert	Outlet Devices
#1	Primary	901.00'	15.0" Round Culvert L= 50.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 901.00' / 900.50' S= 0.0099 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Device 1	901.00'	6.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=1.06 cfs @ 15.16 hrs HW=902.51' TW=0.00' (Dynamic Tailwater)

1=Culvert (Passes 1.06 cfs of 5.29 cfs potential flow)

2=Orifice/Grate (Orifice Controls 1.06 cfs @ 5.40 fps)

Pond 2P: Pond 2 & Wetland 10 (LOWERED)

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Summary for Pond 3P: Pond 3

Inflow Area = 19.420 ac, 39.39% Impervious, Inflow Depth = 3.08" for 10-yr event
 Inflow = 64.04 cfs @ 12.17 hrs, Volume= 4.978 af
 Outflow = 1.11 cfs @ 18.60 hrs, Volume= 4.918 af, Atten= 98%, Lag= 385.4 min
 Primary = 1.11 cfs @ 18.60 hrs, Volume= 4.918 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Starting Elev= 900.00' Surf.Area= 67,800 sf Storage= 134,150 cf

Peak Elev= 901.63' @ 18.60 hrs Surf.Area= 148,699 sf Storage= 309,421 cf (175,271 cf above start)

Plug-Flow detention time= 4,656.9 min calculated for 1.838 af (37% of inflow)

Center-of-Mass det. time= 2,313.7 min (3,130.9 - 817.1)

Volume	Invert	Avail.Storage	Storage Description
#1	890.00'	134,150 cf	POND 3 WET VOL (Prismatic) Listed below (Recalc)
#2	900.00'	613,280 cf	POND 3 & EWRK LIVE STORAGE (Prismatic) Listed below (Recalc)
		747,430 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
890.00	2,400	0	0
892.00	5,200	7,600	7,600
894.00	9,900	15,100	22,700
896.00	15,100	25,000	47,700
898.00	20,600	35,700	83,400
899.00	23,500	22,050	105,450
900.00	33,900	28,700	134,150

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.00	33,900	0	0
900.01	100,800	673	673
902.00	118,000	217,706	218,380
903.00	127,000	122,500	340,880
904.00	136,600	131,800	472,680
904.50	140,600	69,300	541,980
905.00	144,600	71,300	613,280

Device	Routing	Invert	Outlet Devices
#1	Primary	900.00'	15.0" Round Culvert L= 448.4' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 900.00' / 897.34' S= 0.0059 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Device 1	900.00'	6.0" Vert. Orifice/Grate C= 0.600
#3	Primary	904.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

2026-04-01 Peltier Ponds - Prelim

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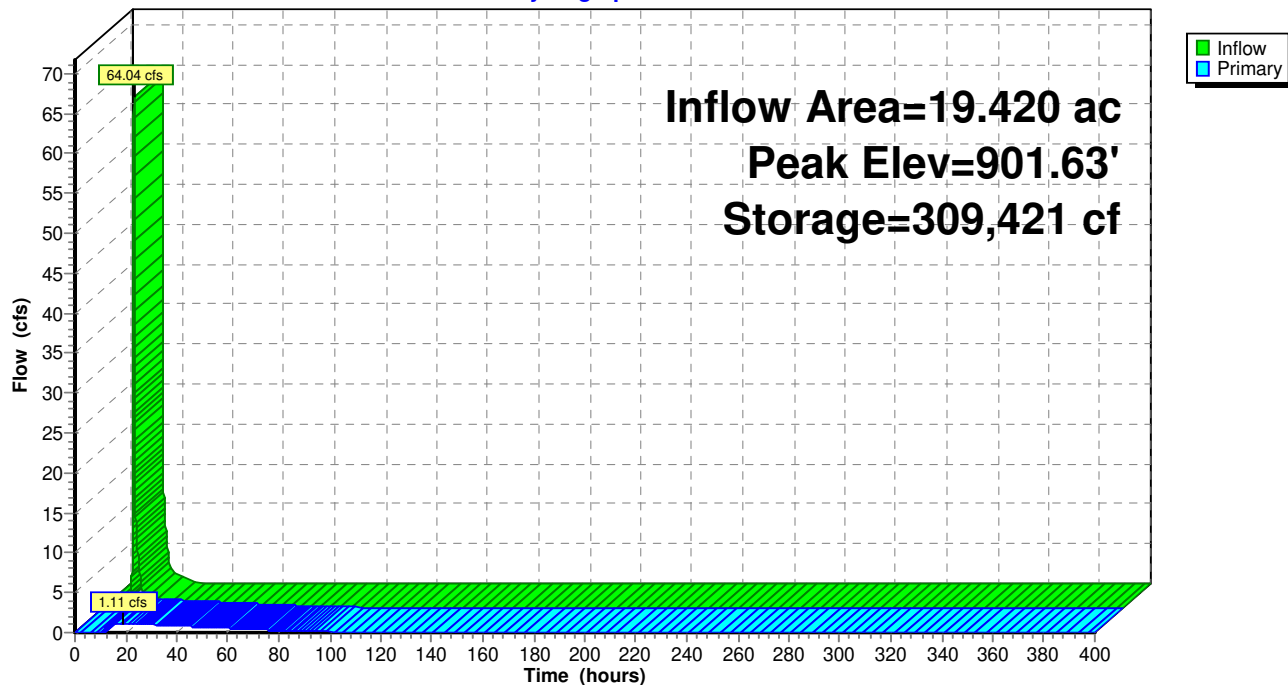
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Primary OutFlow Max=1.11 cfs @ 18.60 hrs HW=901.63' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 1.11 cfs of 4.62 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 1.11 cfs @ 5.66 fps)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: Pond 3

Hydrograph



Summary for Pond 4P: Pond 4

Inflow Area = 6.320 ac, 50.47% Impervious, Inflow Depth = 3.11" for 10-yr event
 Inflow = 27.92 cfs @ 12.17 hrs, Volume= 1.637 af
 Outflow = 6.32 cfs @ 12.50 hrs, Volume= 1.636 af, Atten= 77%, Lag= 19.4 min
 Primary = 6.32 cfs @ 12.50 hrs, Volume= 1.636 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Starting Elev= 902.00' Surf.Area= 18,400 sf Storage= 13,975 cf
 Peak Elev= 904.47' @ 12.50 hrs Surf.Area= 24,868 sf Storage= 44,542 cf (30,567 cf above start)

Plug-Flow detention time= 236.4 min calculated for 1.315 af (80% of inflow)
 Center-of-Mass det. time= 126.1 min (897.5 - 771.4)

Volume	Invert	Avail.Storage	Storage Description
#1	896.00'	13,975 cf	WET VOL (Prismatic) Listed below (Recalc)
#2	902.00'	104,125 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)
		118,100 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
896.00	65	0	0
898.00	630	695	695
900.00	2,700	3,330	4,025
901.00	4,000	3,350	7,375
902.00	9,200	6,600	13,975

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
902.00	9,200	0	0
904.00	14,300	23,500	23,500
906.00	20,100	34,400	57,900
907.00	23,100	21,600	79,500
907.50	24,600	11,925	91,425
908.00	26,200	12,700	104,125

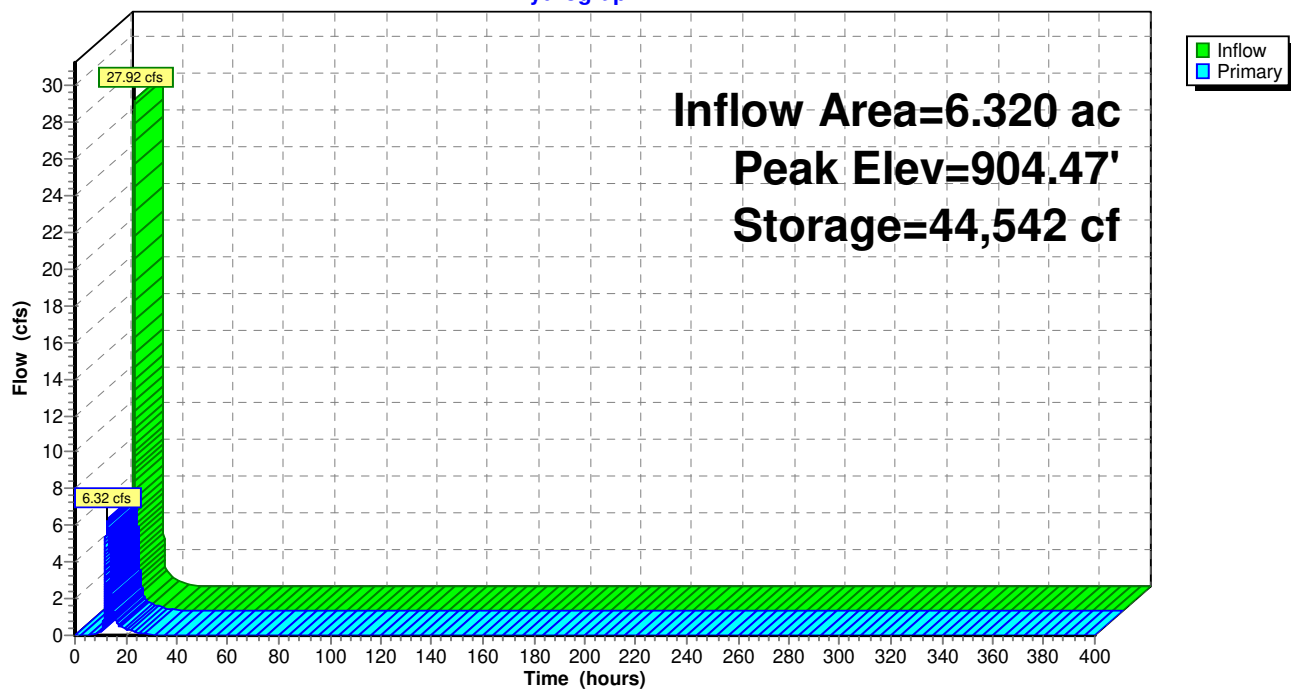
Device	Routing	Invert	Outlet Devices
#1	Primary	902.00'	18.0" Round Culvert L= 346.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 902.00' / 901.00' S= 0.0029 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.77 sf
#2	Primary	907.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=6.32 cfs @ 12.50 hrs HW=904.47' TW=901.04' (Dynamic Tailwater)

1=Culvert (Barrel Controls 6.32 cfs @ 3.58 fps)
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4P: Pond 4

Hydrograph



2026-04-01 Peltier Ponds - Prelim

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Summary for Pond 5P: Pond 5

Inflow Area = 15.690 ac, 38.56% Impervious, Inflow Depth = 3.07" for 10-yr event
 Inflow = 69.61 cfs @ 12.17 hrs, Volume= 4.009 af
 Outflow = 4.57 cfs @ 13.36 hrs, Volume= 3.976 af, Atten= 93%, Lag= 71.1 min
 Primary = 4.57 cfs @ 13.36 hrs, Volume= 3.976 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Starting Elev= 900.50' Surf.Area= 219,700 sf Storage= 422,075 cf

Peak Elev= 901.79' @ 13.36 hrs Surf.Area= 231,000 sf Storage= 538,075 cf (116,000 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 806.4 min (1,582.7 - 776.2)

Volume	Invert	Avail.Storage	Storage Description
#1	890.50'	130,450 cf	Wet Cell A (Prismatic) Listed below (Recalc)
#2	890.50'	102,150 cf	Wet Cell B (Prismatic) Listed below (Recalc)
#3	897.50'	189,475 cf	WET VOL >897.5 (Prismatic) Listed below (Recalc)
#4	900.50'	406,150 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)
		828,225 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
890.50	10,200	0	0
892.00	12,500	17,025	17,025
894.00	16,900	29,400	46,425
896.00	25,200	42,100	88,525
897.50	30,700	41,925	130,450

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
890.50	8,900	0	0
892.00	11,100	15,000	15,000
894.00	14,400	25,500	40,500
896.00	18,000	32,400	72,900
897.50	21,000	29,250	102,150

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
897.50	51,700	0	0
898.00	55,100	26,700	26,700
899.50	63,700	89,100	115,800
900.00	73,500	34,300	150,100
900.50	84,000	39,375	189,475

2026-04-01 Peltier Ponds - Prelim

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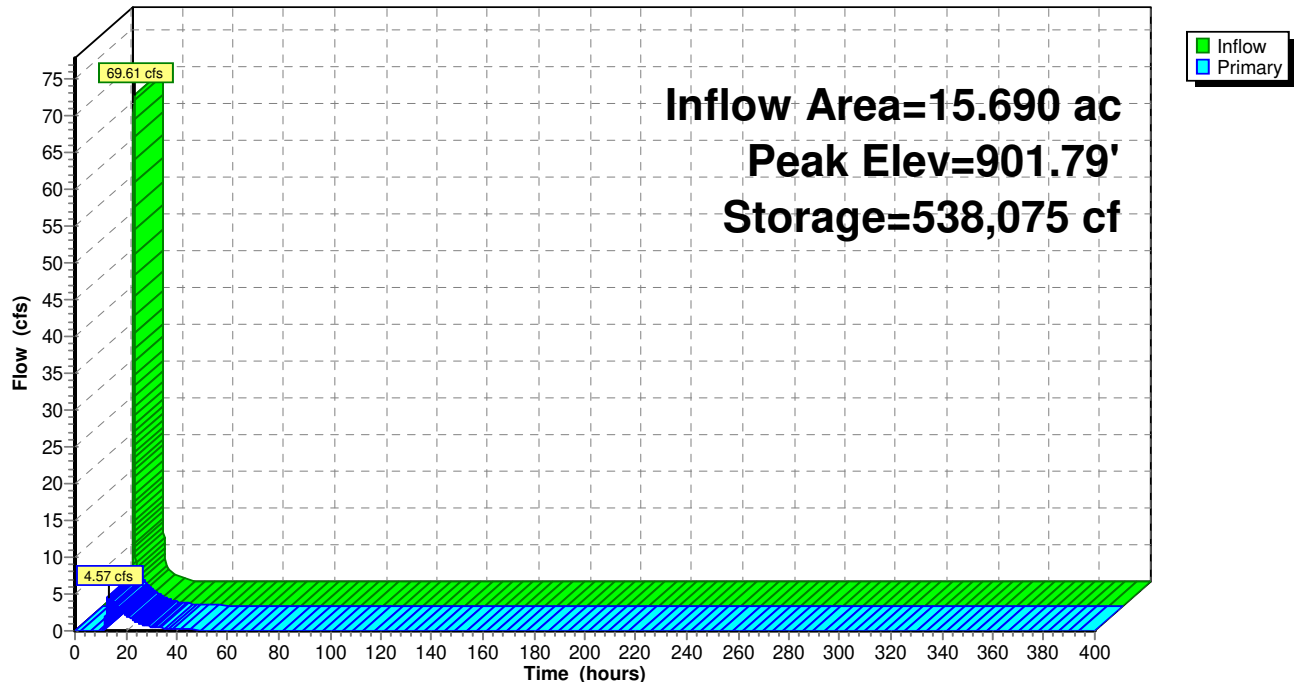
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.50	84,000	0	0
902.00	97,100	135,825	135,825
903.00	105,900	101,500	237,325
903.50	110,300	54,050	291,375
904.00	114,800	56,275	347,650
904.50	119,200	58,500	406,150

Device	Routing	Invert	Outlet Devices
#1	Primary	900.50'	15.0" Round Culvert L= 48.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 900.50' / 900.00' S= 0.0104 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Primary	903.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.57 cfs @ 13.36 hrs HW=901.79' TW=899.84' (Dynamic Tailwater)

1=Culvert (Barrel Controls 4.57 cfs @ 4.47 fps)

2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 5P: Pond 5**Hydrograph**

2026-04-01 Peltier Ponds - Prelim

MSE 24-hr 3 10-yr Rainfall=4.17"

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Summary for Pond 6P: Pond 6

Inflow Area = 4.300 ac, 21.16% Impervious, Inflow Depth = 3.18" for 10-yr event
 Inflow = 20.09 cfs @ 12.17 hrs, Volume= 1.141 af
 Outflow = 1.01 cfs @ 13.57 hrs, Volume= 1.121 af, Atten= 95%, Lag= 83.8 min
 Primary = 1.01 cfs @ 13.57 hrs, Volume= 1.121 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 900.98' @ 13.57 hrs Surf.Area= 75,765 sf Storage= 34,992 cf

Plug-Flow detention time= 1,281.0 min calculated for 1.120 af (98% of inflow)
 Center-of-Mass det. time= 1,271.0 min (2,049.8 - 778.8)

Volume	Invert	Avail.Storage	Storage Description
#1	900.50'	208,825 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.50	70,700	0	0
901.00	76,000	36,675	36,675
902.00	87,500	81,750	118,425
902.50	90,400	44,475	162,900
903.00	93,300	45,925	208,825

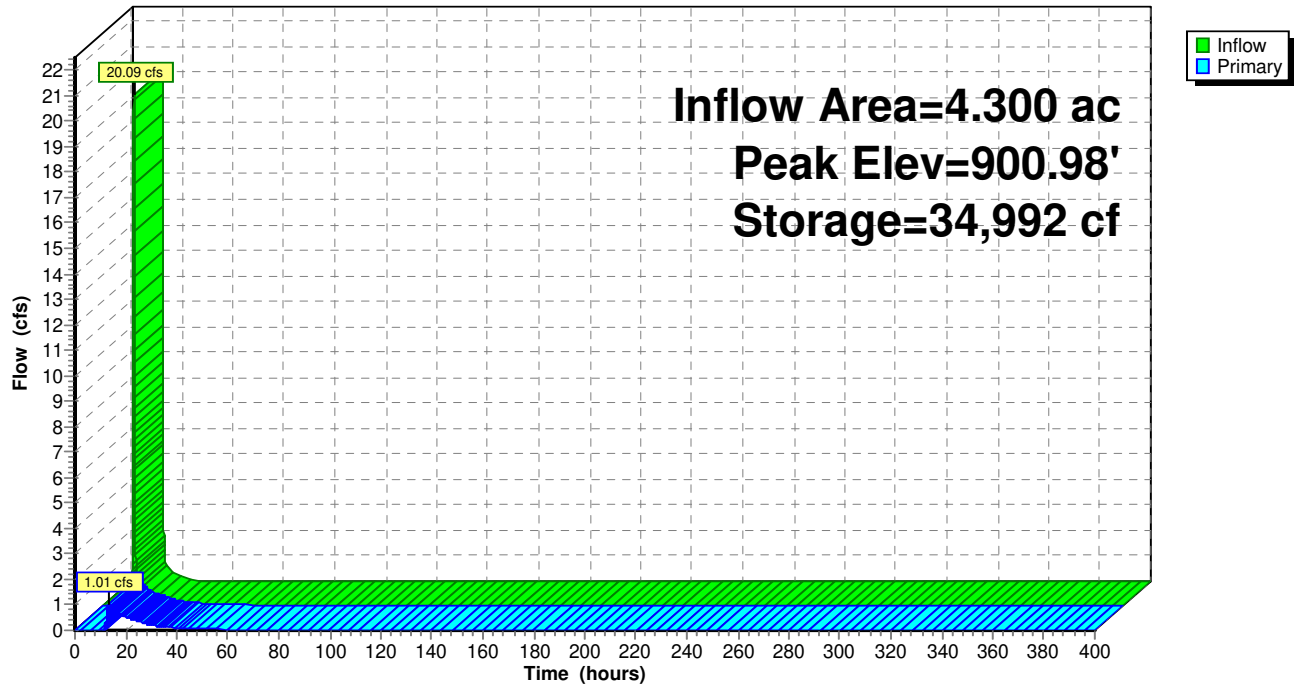
Device	Routing	Invert	Outlet Devices
#1	Primary	900.50'	15.0" Round Culvert L= 33.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 900.50' / 900.00' S= 0.0148 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Primary	902.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.01 cfs @ 13.57 hrs HW=900.98' TW=899.93' (Dynamic Tailwater)

↑ **1=Culvert** (Barrel Controls 1.01 cfs @ 3.46 fps)
 — **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: Pond 6

Hydrograph



Summary for Pond W14: Wetland 14

Inflow Area = 27.290 ac, 2.27% Impervious, Inflow Depth = 2.22" for 10-yr event
 Inflow = 16.12 cfs @ 14.15 hrs, Volume= 5.055 af
 Outflow = 10.86 cfs @ 15.17 hrs, Volume= 5.055 af, Atten= 33%, Lag= 61.4 min
 Primary = 10.86 cfs @ 15.17 hrs, Volume= 5.055 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 904.77' @ 15.17 hrs Surf.Area= 165,153 sf Storage= 82,585 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 222.1 min (1,153.5 - 931.4)

Volume	Invert	Avail.Storage	Storage Description
#1	904.00'	594,000 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
904.00	50,000	0	0
905.00	200,000	125,000	125,000
906.00	738,000	469,000	594,000

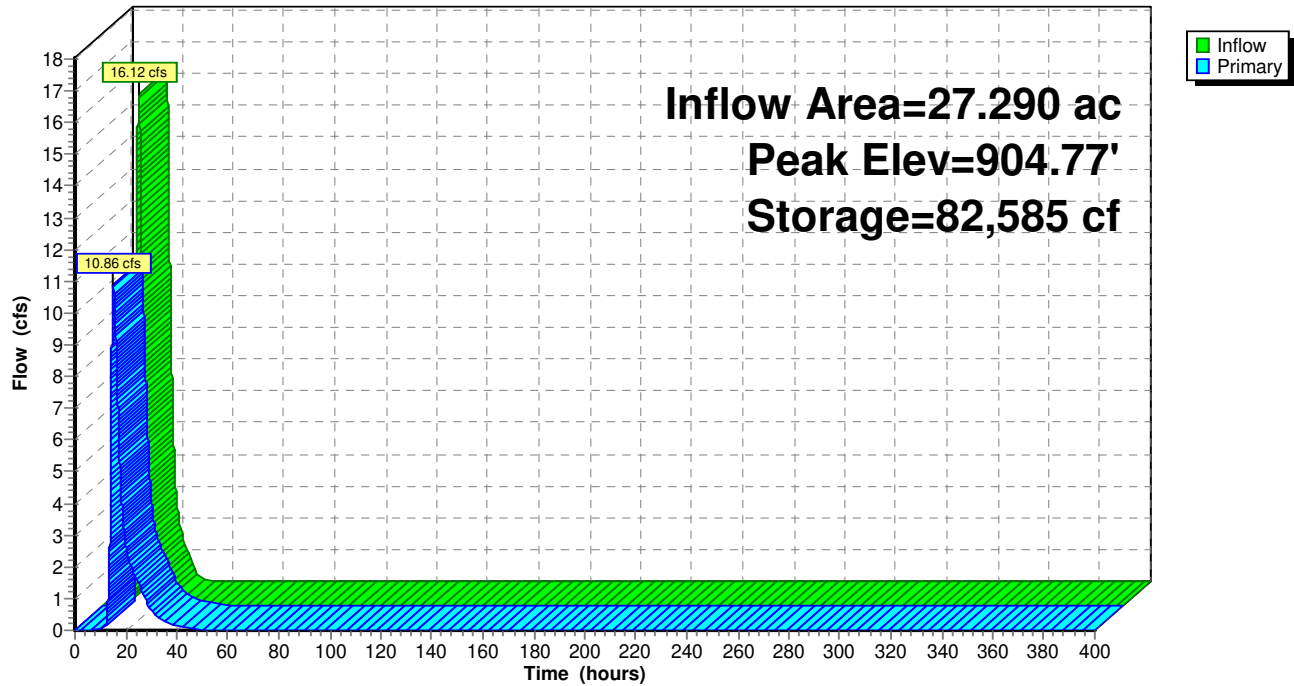
Device	Routing	Invert	Outlet Devices
#1	Primary	903.90'	12.0" Round Culvert x 2 X 2.00 L= 28.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 903.90' / 903.62' S= 0.0100 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 0.79 sf
#2	Primary	904.50'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=10.86 cfs @ 15.17 hrs HW=904.77' TW=0.00' (Dynamic Tailwater)

1=Culvert x 2 (Barrel Controls 3.90 cfs @ 3.60 fps)
 2=Broad-Crested Rectangular Weir (Weir Controls 6.96 cfs @ 1.30 fps)

Pond W14: Wetland 14

Hydrograph



Summary for Pond W4: Wetland 4

Inflow Area = 31.030 ac, 28.33% Impervious, Inflow Depth = 2.96" for 10-yr event
 Inflow = 22.63 cfs @ 12.19 hrs, Volume= 7.662 af
 Outflow = 3.69 cfs @ 18.77 hrs, Volume= 6.546 af, Atten= 84%, Lag= 395.3 min
 Primary = 3.69 cfs @ 18.77 hrs, Volume= 6.546 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 900.40' @ 18.77 hrs Surf.Area= 117,098 sf Storage= 153,086 cf

Plug-Flow detention time= 1,313.4 min calculated for 6.546 af (85% of inflow)
 Center-of-Mass det. time= 891.6 min (2,285.5 - 1,393.9)

Volume	Invert	Avail.Storage	Storage Description
#1	898.00'	885,870 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
898.00	10,000	0	0
899.50	80,000	67,500	67,500
900.00	94,800	43,700	111,200
901.00	151,200	123,000	234,200
902.00	178,500	164,850	399,050
904.00	308,320	486,820	885,870

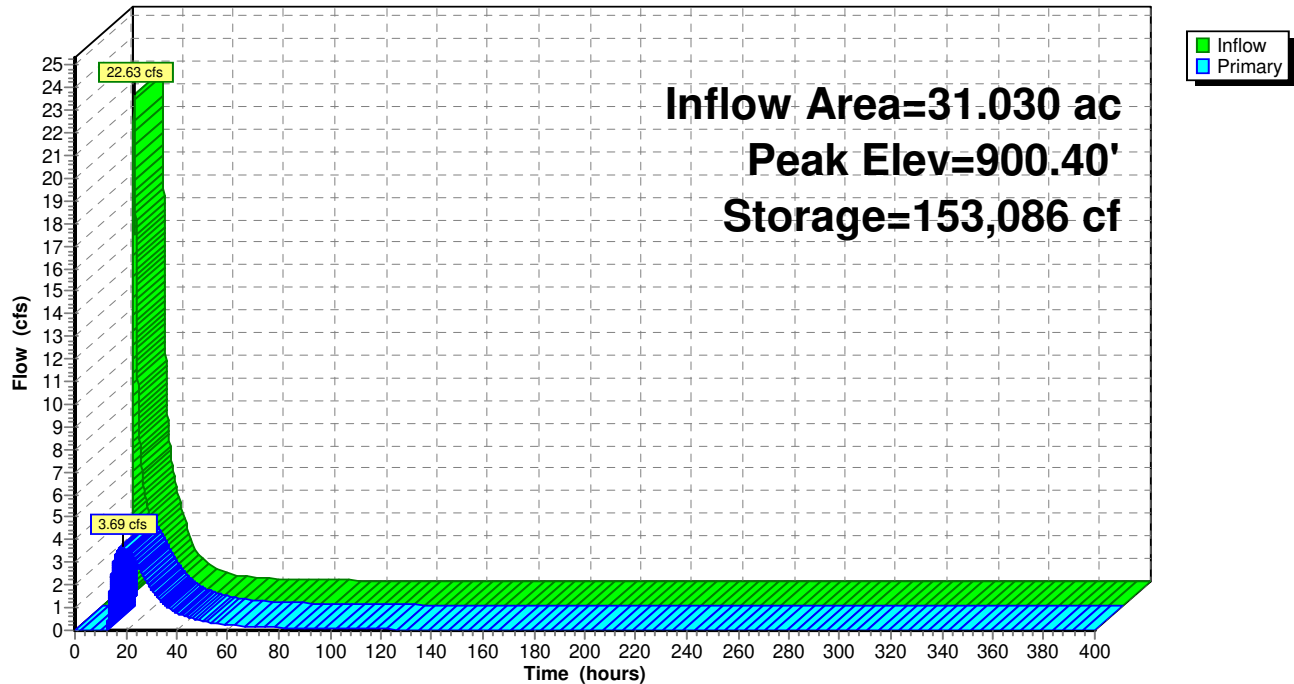
Device	Routing	Invert	Outlet Devices
#1	Primary	899.20'	18.0" Round Culvert L= 15.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 899.20' / 899.18' S= 0.0013 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.77 sf
#2	Primary	902.70'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.69 cfs @ 18.77 hrs HW=900.40' TW=0.00' (Dynamic Tailwater)

1=Culvert (Barrel Controls 3.69 cfs @ 3.35 fps)
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond W4: Wetland 4

Hydrograph



Summary for Pond W5: Wetland 5

Inflow Area = 2.470 ac, 9.72% Impervious, Inflow Depth = 3.16" for 10-yr event
 Inflow = 14.20 cfs @ 12.12 hrs, Volume= 0.651 af
 Outflow = 2.32 cfs @ 12.44 hrs, Volume= 0.545 af, Atten= 84%, Lag= 19.1 min
 Primary = 2.32 cfs @ 12.44 hrs, Volume= 0.545 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 901.05' @ 12.44 hrs Surf.Area= 52,088 sf Storage= 15,424 cf

Plug-Flow detention time= 171.8 min calculated for 0.545 af (84% of inflow)
 Center-of-Mass det. time= 116.8 min (893.8 - 777.0)

Volume	Invert	Avail.Storage	Storage Description
#1	900.50'	218,942 cf	Wetland 5 (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.50	10	0	0
900.80	30,900	4,636	4,636
901.00	51,900	8,280	12,917
902.00	55,800	53,850	66,767
904.00	63,900	119,700	186,467
904.50	66,000	32,475	218,942

Device	Routing	Invert	Outlet Devices
#1	Primary	895.72'	10.0" Round Culvert L= 302.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 895.72' / 895.25' S= 0.0016 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 0.55 sf
#2	Device 1	900.80'	27.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Secondary	904.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=2.32 cfs @ 12.44 hrs HW=901.05' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Barrel Controls 2.32 cfs @ 4.26 fps)

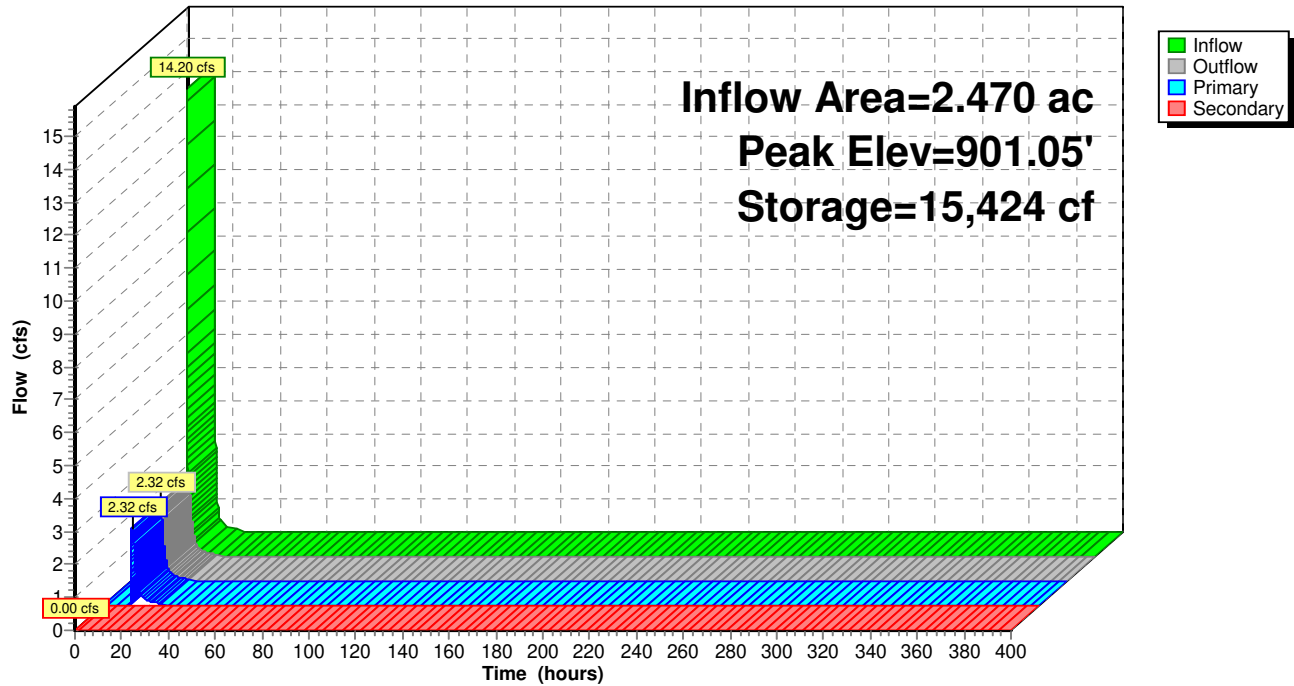
↑ **2=Orifice/Grate** (Passes 2.32 cfs of 2.86 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=900.50' TW=900.50' (Dynamic Tailwater)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond W5: Wetland 5

Hydrograph



2026-04-01 Peltier Ponds - Prelim

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MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Subcatchment 1.1S: Proposed Direct Drainage to Lake Peltier

Runoff = 16.02 cfs @ 12.15 hrs, Volume= 0.829 af, Depth= 5.16"

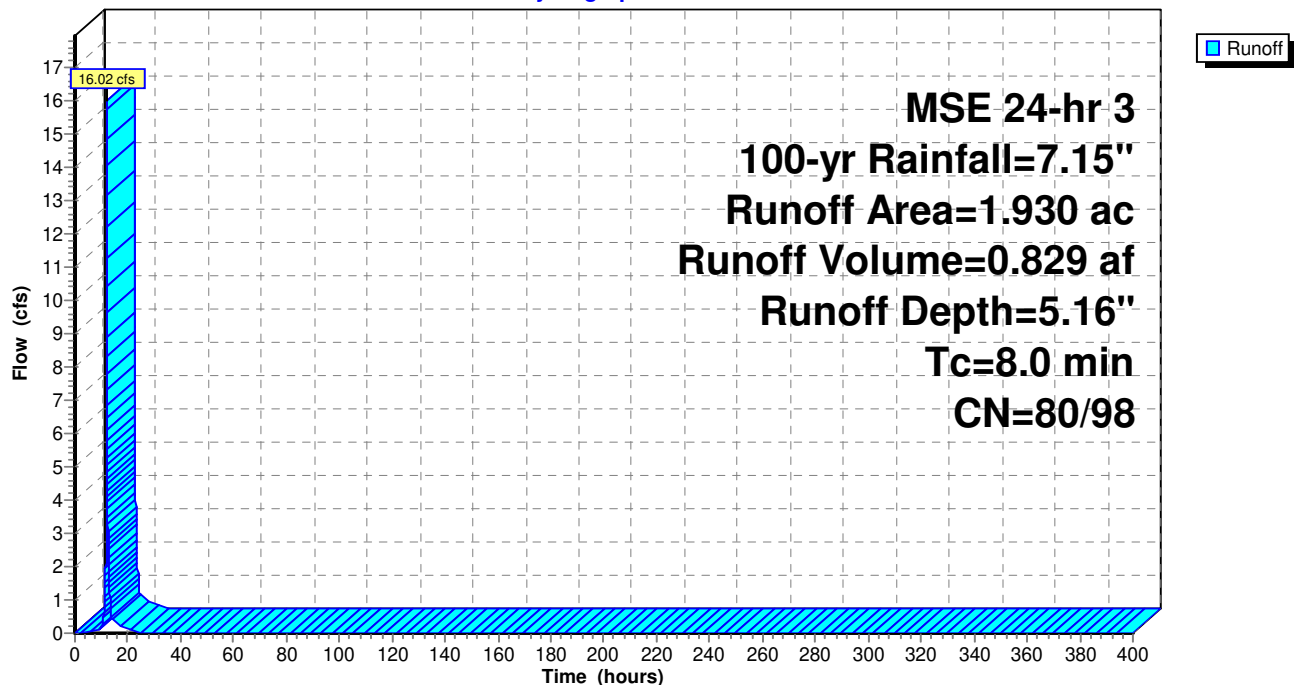
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
0.300	98	Unconnected pavement, HSG D
1.530	80	>75% Grass cover, Good, HSG D
* 0.100	80	Woods/grass comb., Fair, HSG D
1.930	83	Weighted Average
1.630	80	84.46% Pervious Area
0.300	98	15.54% Impervious Area

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

Subcatchment 1.1S: Proposed Direct Drainage to Lake Peltier

Hydrograph



Summary for Subcatchment 1.2S: Proposed Drainage to Ex STRM

Runoff = 8.06 cfs @ 12.15 hrs, Volume= 0.437 af, Depth= 5.77"

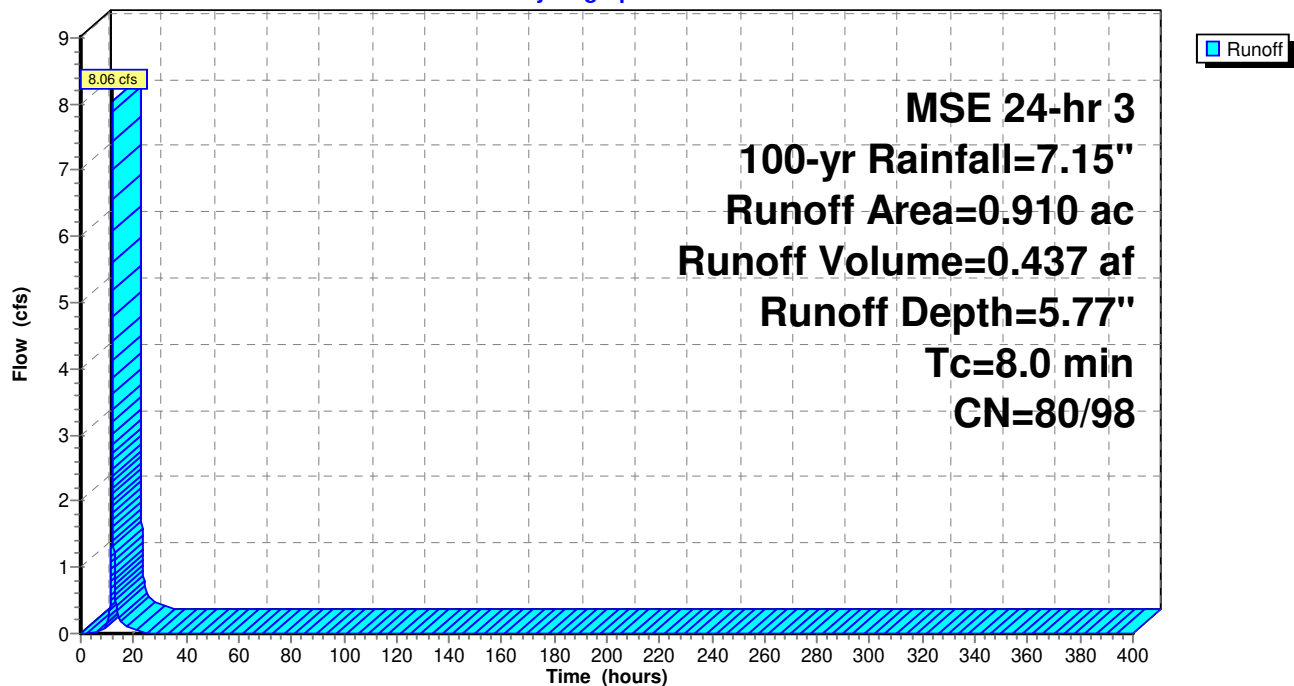
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
0.410	98	Unconnected roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
0.910	88	Weighted Average
0.500	80	54.95% Pervious Area
0.410	98	45.05% Impervious Area

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

Subcatchment 1.2S: Proposed Drainage to Ex STRM

Hydrograph



Summary for Subcatchment 1S: Proposed Drainage to Pond 1

Runoff = 217.50 cfs @ 12.22 hrs, Volume= 15.062 af, Depth= 5.82"

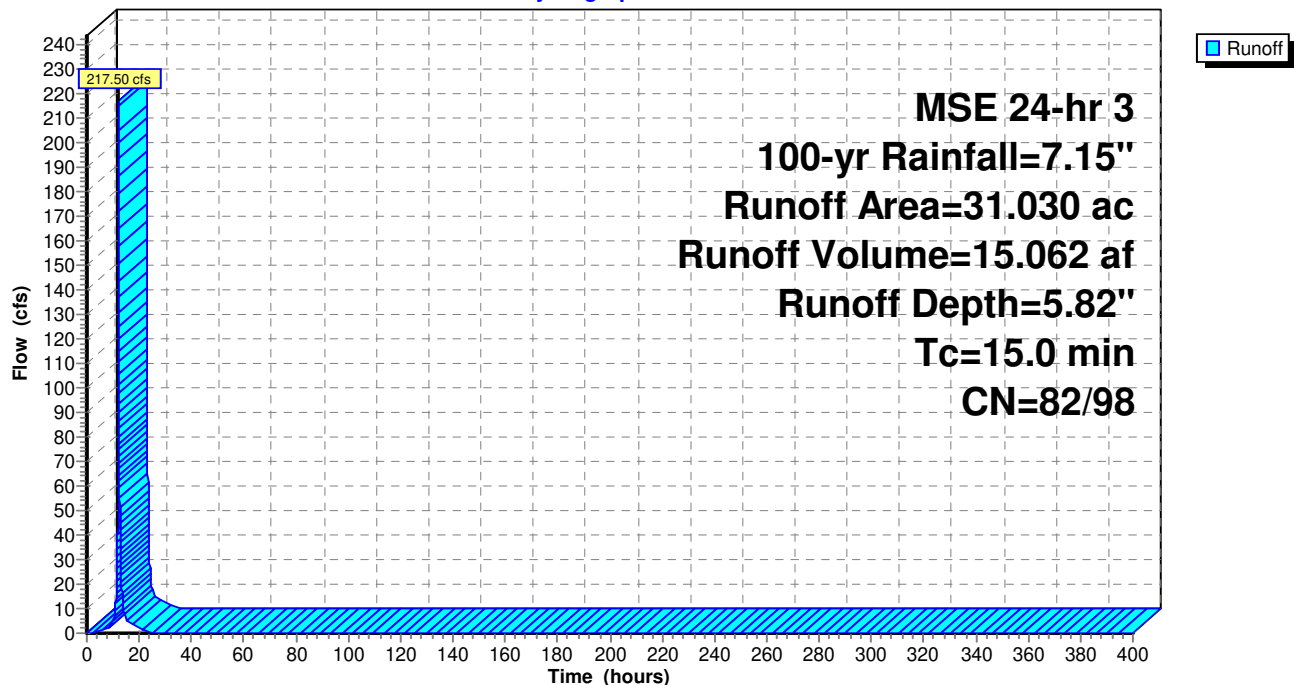
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
12.850	98	Paved parking, HSG D
2.280	98	Water Surface, 0% imp, HSG D
15.900	80	>75% Grass cover, Good, HSG D
31.030	89	Weighted Average
18.180	82	58.59% Pervious Area
12.850	98	41.41% Impervious Area

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

Subcatchment 1S: Proposed Drainage to Pond 1

Hydrograph



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MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Subcatchment 2.1S: Proposed Drainage to Tributary 2 upstream of X-ing

Runoff = 17.93 cfs @ 12.58 hrs, Volume= 2.081 af, Depth= 4.97"

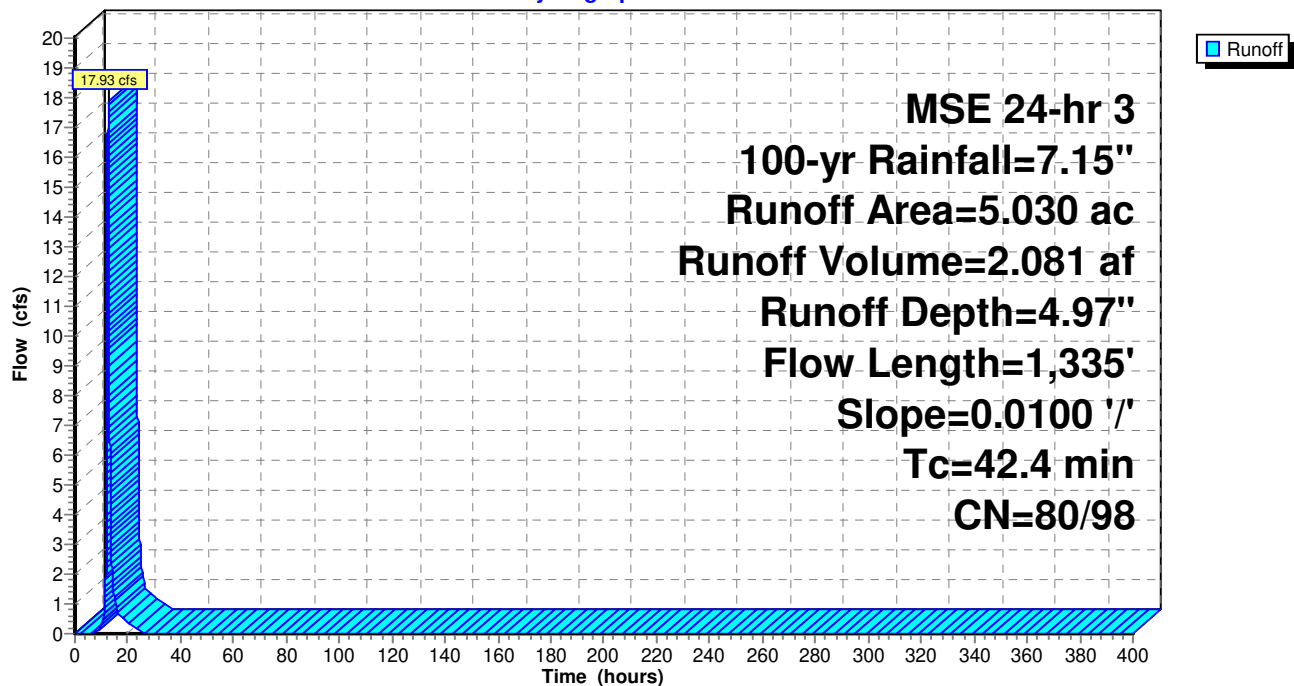
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
0.320	98	Paved parking, HSG D
* 4.710	80	Woods/grass comb., Fair, HSG D
5.030	81	Weighted Average
4.710	80	93.64% Pervious Area
0.320	98	6.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.1	200	0.0100	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
10.7	450	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.6	685	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
42.4	1,335	Total			

Subcatchment 2.1S: Proposed Drainage to Tributary 2 upstream of X-ing

Hydrograph



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MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Subcatchment 2.2S: Proposed Drainage to Pond 2 Cell A

Runoff = 70.13 cfs @ 12.17 hrs, Volume= 4.110 af, Depth= 5.80"

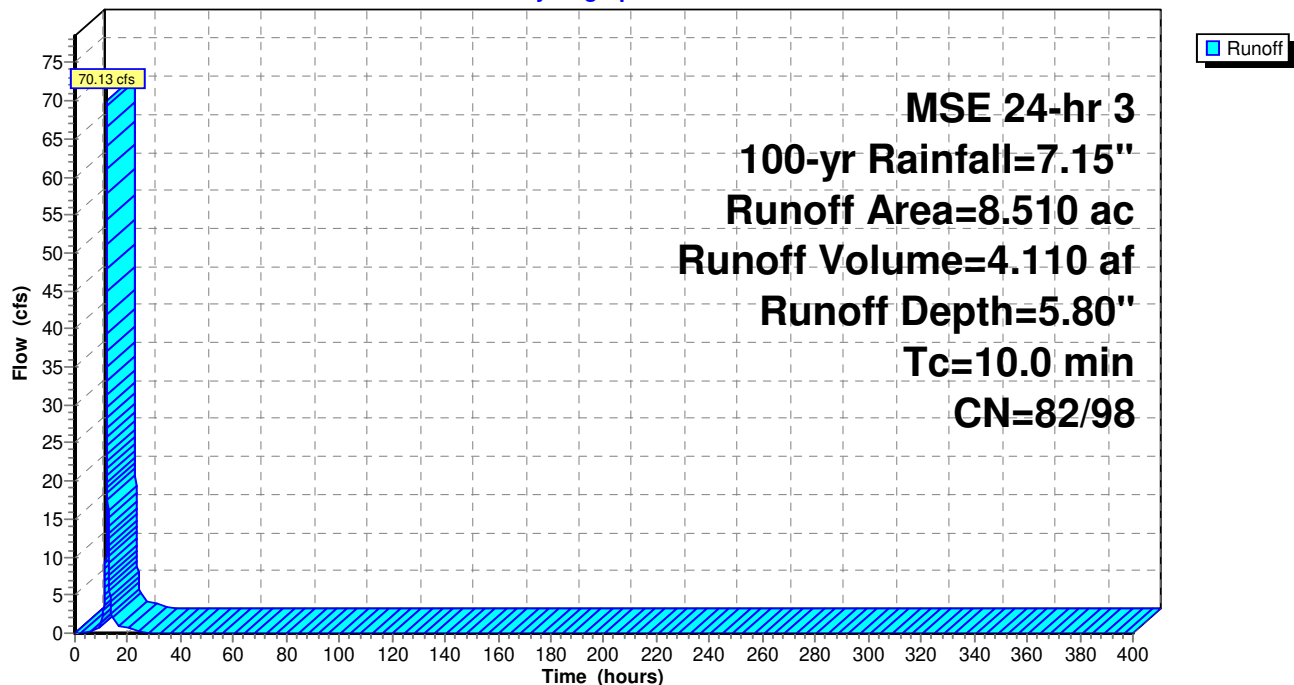
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
3.390	98	Paved parking, HSG D
0.660	98	Water Surface, 0% imp, HSG D
4.460	80	>75% Grass cover, Good, HSG D
8.510	89	Weighted Average
5.120	82	60.16% Pervious Area
3.390	98	39.84% Impervious Area

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

Subcatchment 2.2S: Proposed Drainage to Pond 2 Cell A

Hydrograph



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MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Subcatchment 2.3S: Proposed Drainage to Pond 2 Cell B

Runoff = 16.19 cfs @ 12.17 hrs, Volume= 0.940 af, Depth= 5.73"

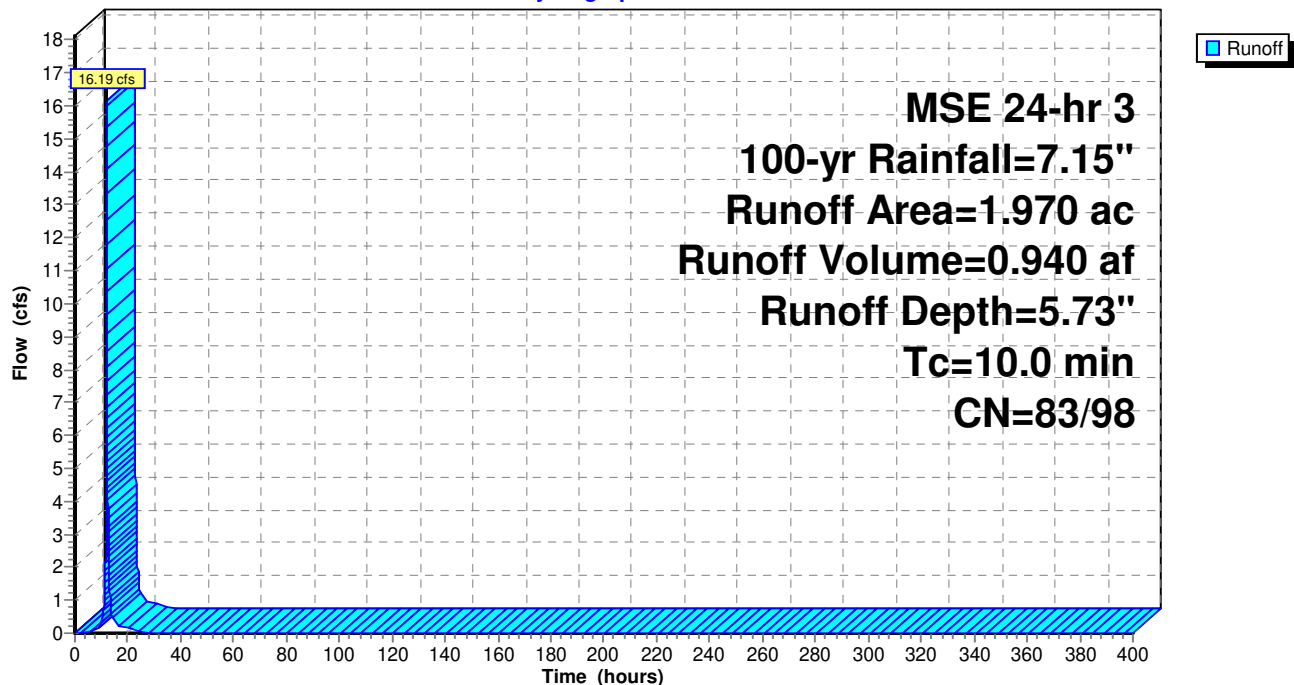
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
0.630	98	Paved parking, HSG D
0.260	98	Water Surface, 0% imp, HSG D
1.080	80	>75% Grass cover, Good, HSG D
1.970	88	Weighted Average
1.340	83	68.02% Pervious Area
0.630	98	31.98% Impervious Area

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

Subcatchment 2.3S: Proposed Drainage to Pond 2 Cell B

Hydrograph



Summary for Subcatchment 2.4S: Proposed Drainage to Wetland 10

Runoff = 8.68 cfs @ 12.12 hrs, Volume= 0.394 af, Depth= 5.08"

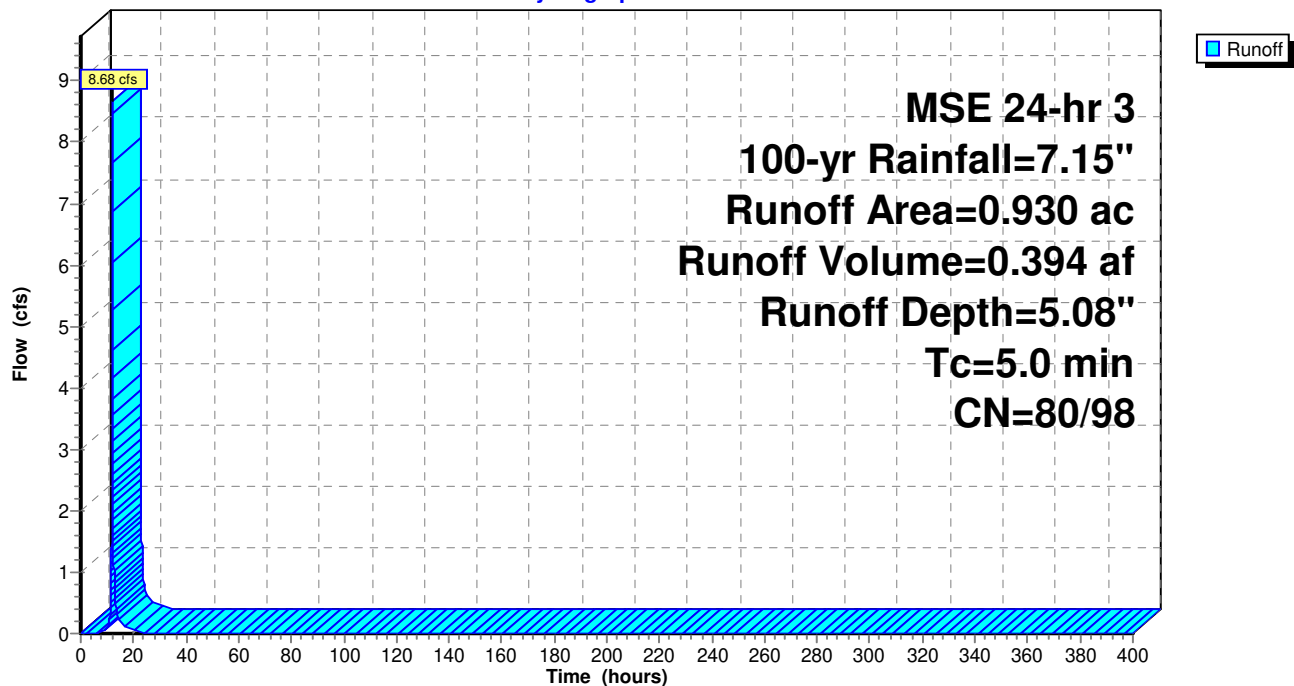
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
0.110	98	Paved parking, HSG D
0.820	80	>75% Grass cover, Good, HSG D
0.930	82	Weighted Average
0.820	80	88.17% Pervious Area
0.110	98	11.83% Impervious Area

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

Subcatchment 2.4S: Proposed Drainage to Wetland 10

Hydrograph



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MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Subcatchment 2.5S: Proposed Drainage to Pond 3

Runoff = 110.25 cfs @ 12.17 hrs, Volume= 6.454 af, Depth= 5.91"

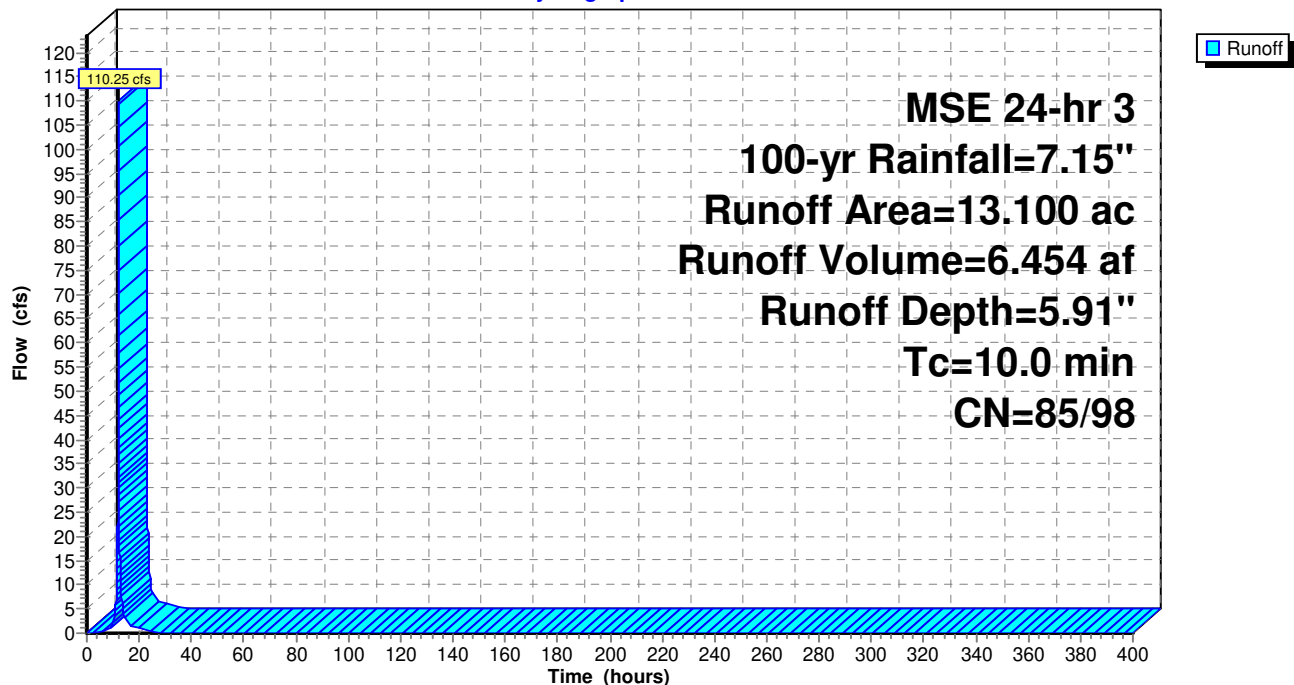
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
4.460	98	Paved parking, HSG D
2.310	98	Water Surface, 0% imp, HSG D
6.330	80	>75% Grass cover, Good, HSG D
13.100	89	Weighted Average
8.640	85	65.95% Pervious Area
4.460	98	34.05% Impervious Area

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

Subcatchment 2.5S: Proposed Drainage to Pond 3

Hydrograph



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MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Subcatchment 2.6S: Proposed Drainage to Pond 4

Runoff = 52.65 cfs @ 12.17 hrs, Volume= 3.127 af, Depth= 5.94"

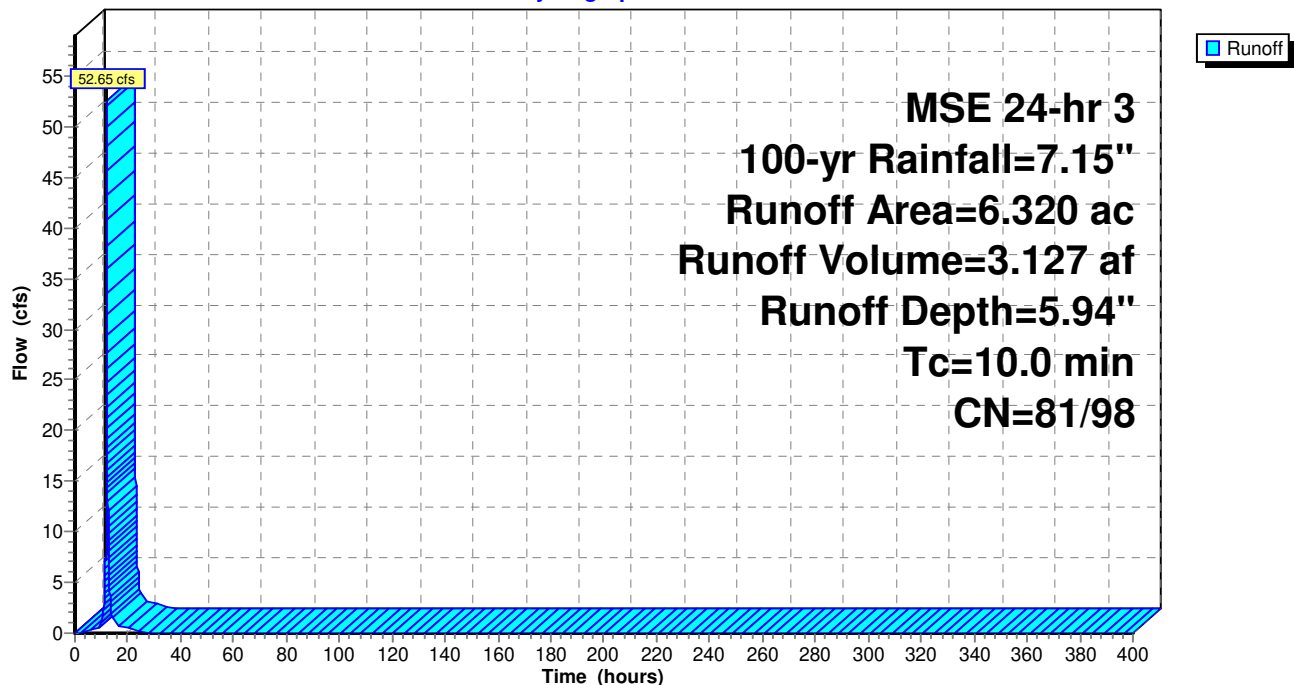
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
3.190	98	Paved parking, HSG D
0.210	98	Water Surface, 0% imp, HSG D
2.920	80	>75% Grass cover, Good, HSG D
6.320	90	Weighted Average
3.130	81	49.53% Pervious Area
3.190	98	50.47% Impervious Area

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

Subcatchment 2.6S: Proposed Drainage to Pond 4

Hydrograph



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MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Subcatchment 2S: Proposed Drainage to Tributary 1 downstream of X-ing

Runoff = 15.89 cfs @ 12.15 hrs, Volume= 0.817 af, Depth= 5.08"

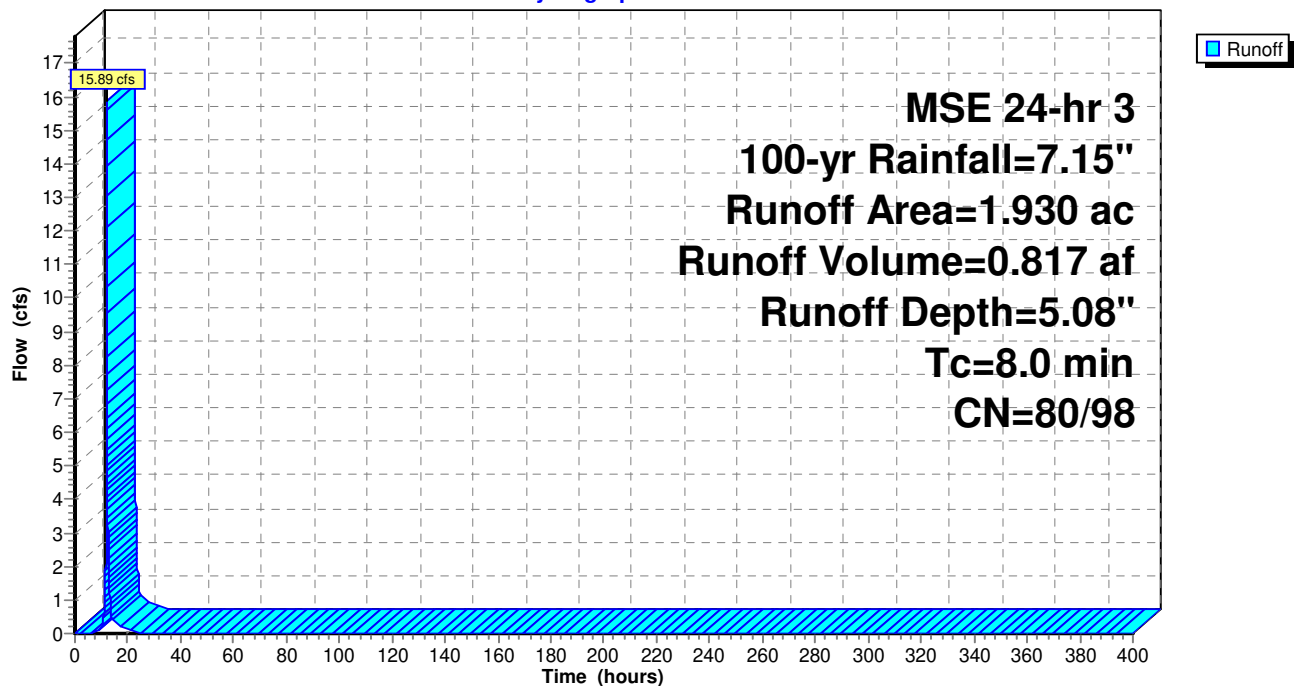
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
0.230	98	Paved parking, HSG D
* 1.700	80	Woods/grass comb., Fair, HSG D
1.930	82	Weighted Average
1.700	80	88.08% Pervious Area
0.230	98	11.92% Impervious Area

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

Subcatchment 2S: Proposed Drainage to Tributary 1 downstream of X-ing

Hydrograph



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MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Subcatchment 3S: Proposed Drainage to Wetland 14

Runoff = 34.70 cfs @ 14.14 hrs, Volume= 9.963 af, Depth= 4.89"

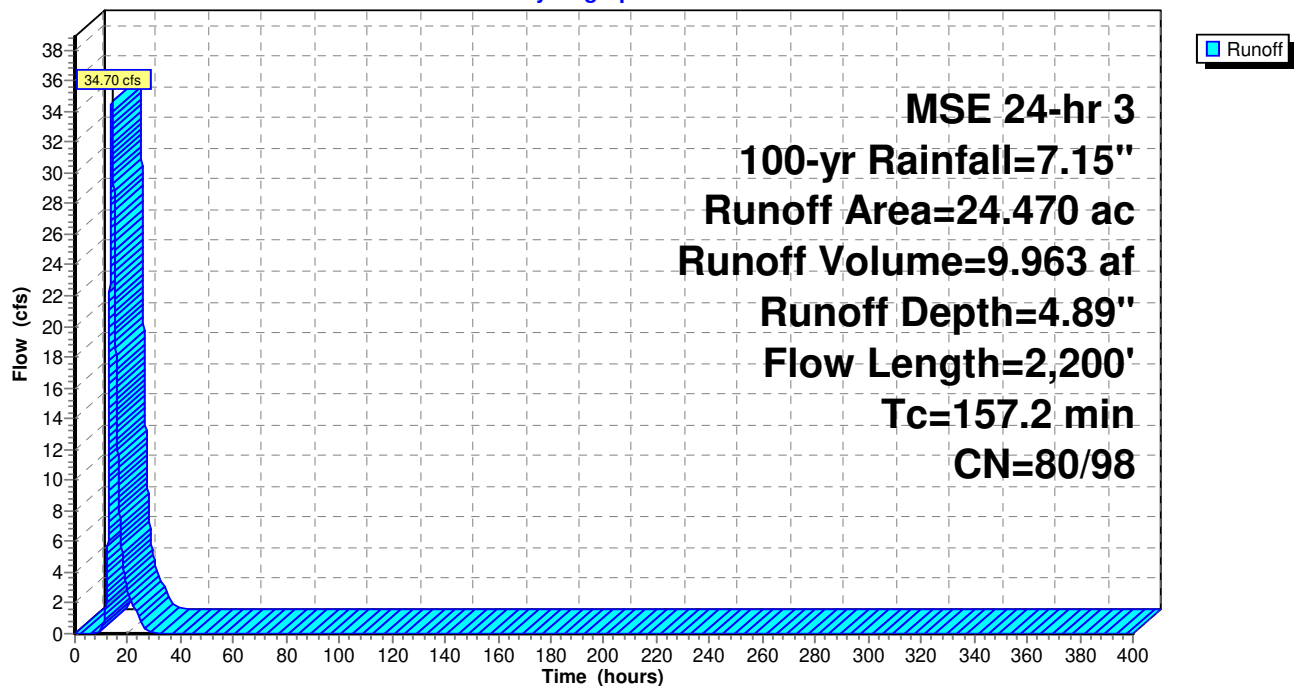
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
0.620	98	Paved parking, HSG D
* 23.850	80	Woods/grass comb., Fair, HSG D
24.470	80	Weighted Average
23.850	80	97.47% Pervious Area
0.620	98	2.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
3.9	300	0.0200	1.27		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
126.7	1,700	0.0020	0.22		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
157.2	2,200	Total			

Subcatchment 3S: Proposed Drainage to Wetland 14

Hydrograph



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MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Subcatchment 4.1S: Proposed Drainage to Pond 6

Runoff = 37.15 cfs @ 12.17 hrs, Volume= 2.178 af, Depth= 6.08"

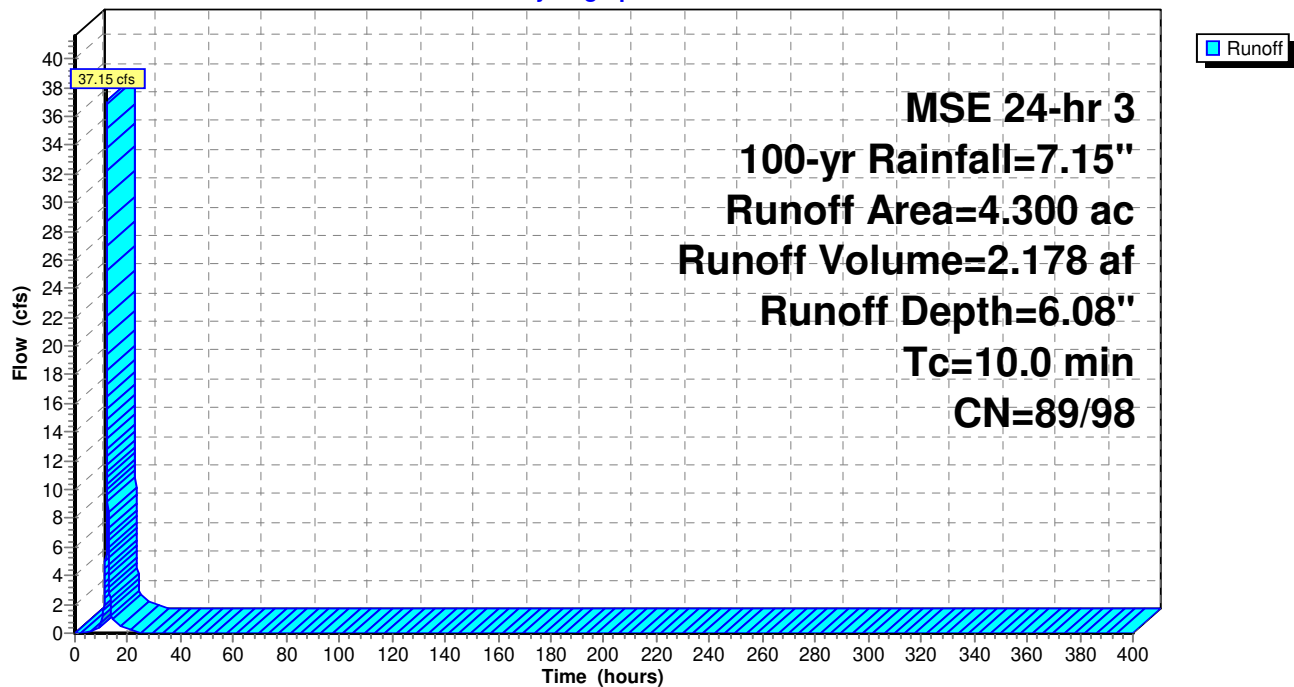
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
0.910	98	Paved parking, HSG D
1.620	98	Water Surface, 0% imp, HSG D
1.770	80	>75% Grass cover, Good, HSG D
4.300	91	Weighted Average
3.390	89	78.84% Pervious Area
0.910	98	21.16% Impervious Area

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

Subcatchment 4.1S: Proposed Drainage to Pond 6

Hydrograph



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MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Subcatchment 4.2S: Proposed Drainage to Pond 5

Runoff = 131.58 cfs @ 12.17 hrs, Volume= 7.728 af, Depth= 5.91"

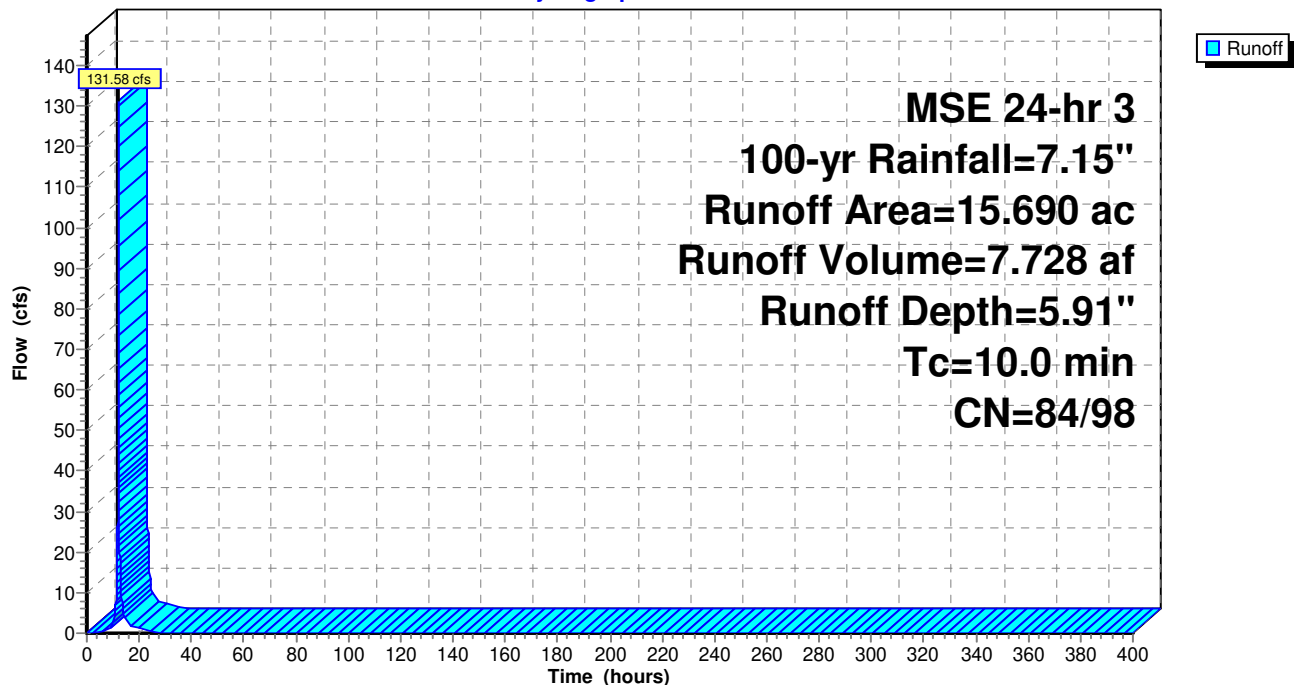
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
6.050	98	Paved parking, HSG D
1.930	98	Water Surface, 0% imp, HSG D
7.710	80	>75% Grass cover, Good, HSG D
15.690	89	Weighted Average
9.640	84	61.44% Pervious Area
6.050	98	38.56% Impervious Area

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

Subcatchment 4.2S: Proposed Drainage to Pond 5

Hydrograph



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MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Subcatchment 4.3S: Proposed Drainage to Wetland 5

Runoff = 26.11 cfs @ 12.12 hrs, Volume= 1.248 af, Depth= 6.06"

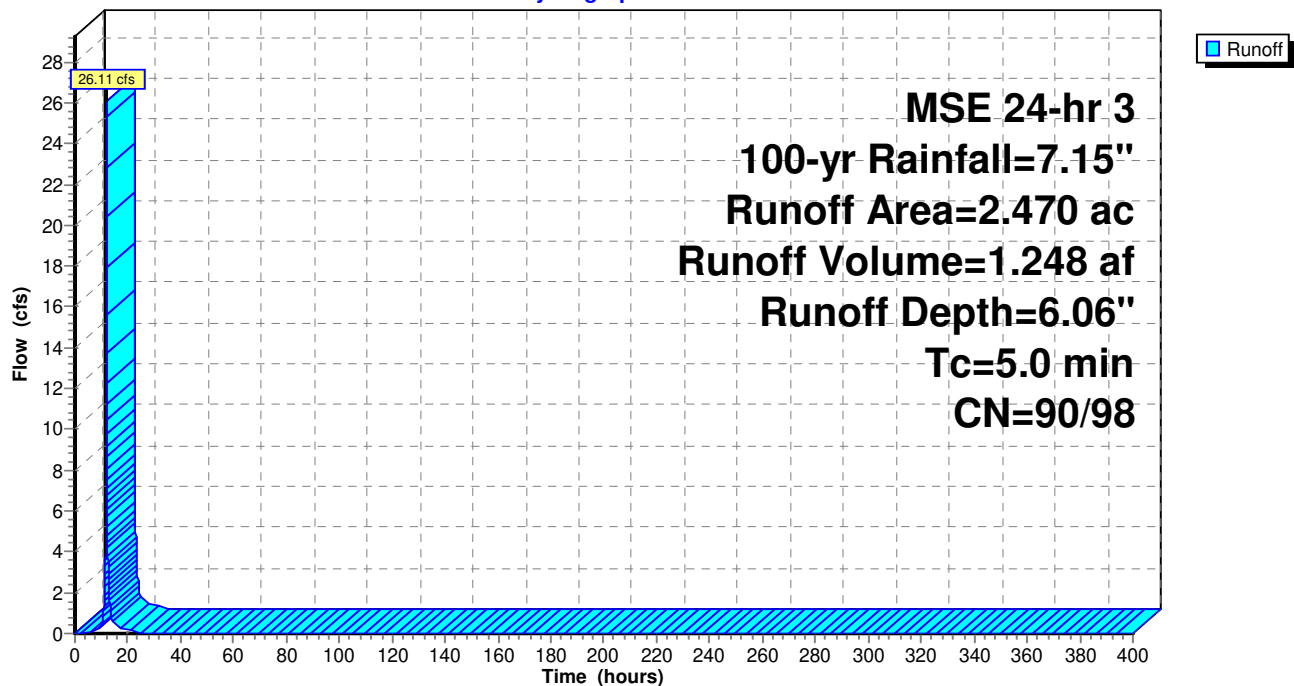
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG D
2.230	90	Fallow, crop residue, Good, HSG D
2.470	91	Weighted Average
2.230	90	90.28% Pervious Area
0.240	98	9.72% Impervious Area

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

Subcatchment 4.3S: Proposed Drainage to Wetland 5

Hydrograph



Summary for Subcatchment 4S: Proposed Drainage to Wetland 4

Runoff = 31.95 cfs @ 12.17 hrs, Volume= 1.864 af, Depth= 6.06"

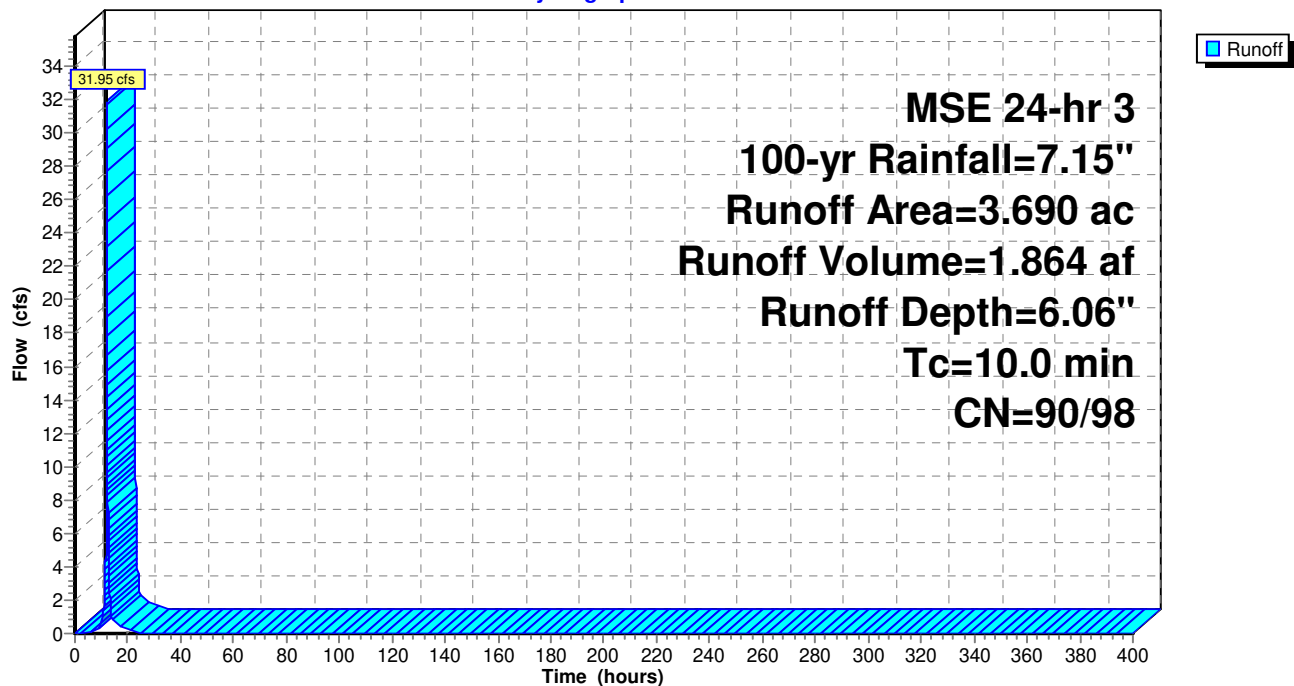
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
0.360	98	Paved parking, HSG D
3.330	90	Fallow, crop residue, Good, HSG D
3.690	91	Weighted Average
3.330	90	90.24% Pervious Area
0.360	98	9.76% Impervious Area

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

Subcatchment 4S: Proposed Drainage to Wetland 4

Hydrograph



2026-04-01 Peltier Ponds - Prelim

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MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Subcatchment 7S: Proposed Park Drainage to Pond 1

Runoff = 14.46 cfs @ 12.33 hrs, Volume= 1.187 af, Depth= 5.18"

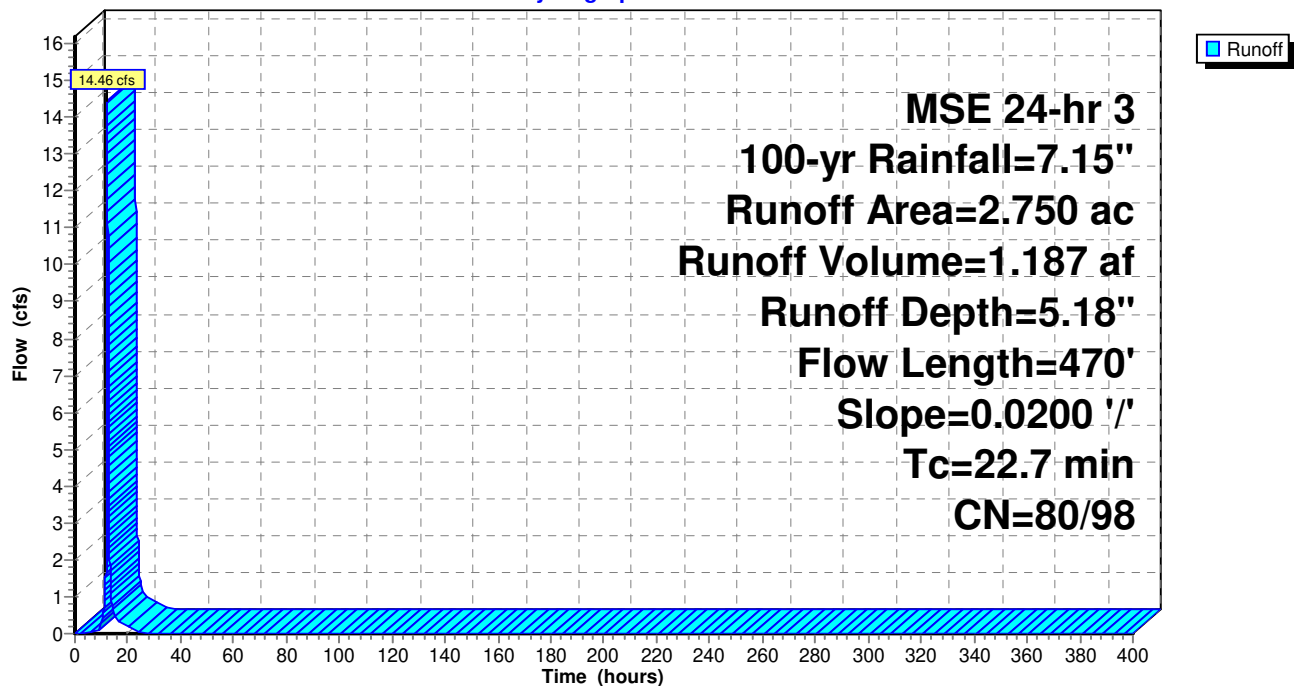
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
0.460	98	Paved parking, HSG D
* 2.290	80	Woods/grass comb., Fair, HSG D
2.750	83	Weighted Average
2.290	80	83.27% Pervious Area
0.460	98	16.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	200	0.0200	0.18		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
4.5	270	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
22.7	470	Total			

Subcatchment 7S: Proposed Park Drainage to Pond 1

Hydrograph



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MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Subcatchment 20S: OFFSITE Existing Drainage to Tributary 2

Runoff = 41.35 cfs @ 13.09 hrs, Volume= 7.552 af, Depth= 4.83"

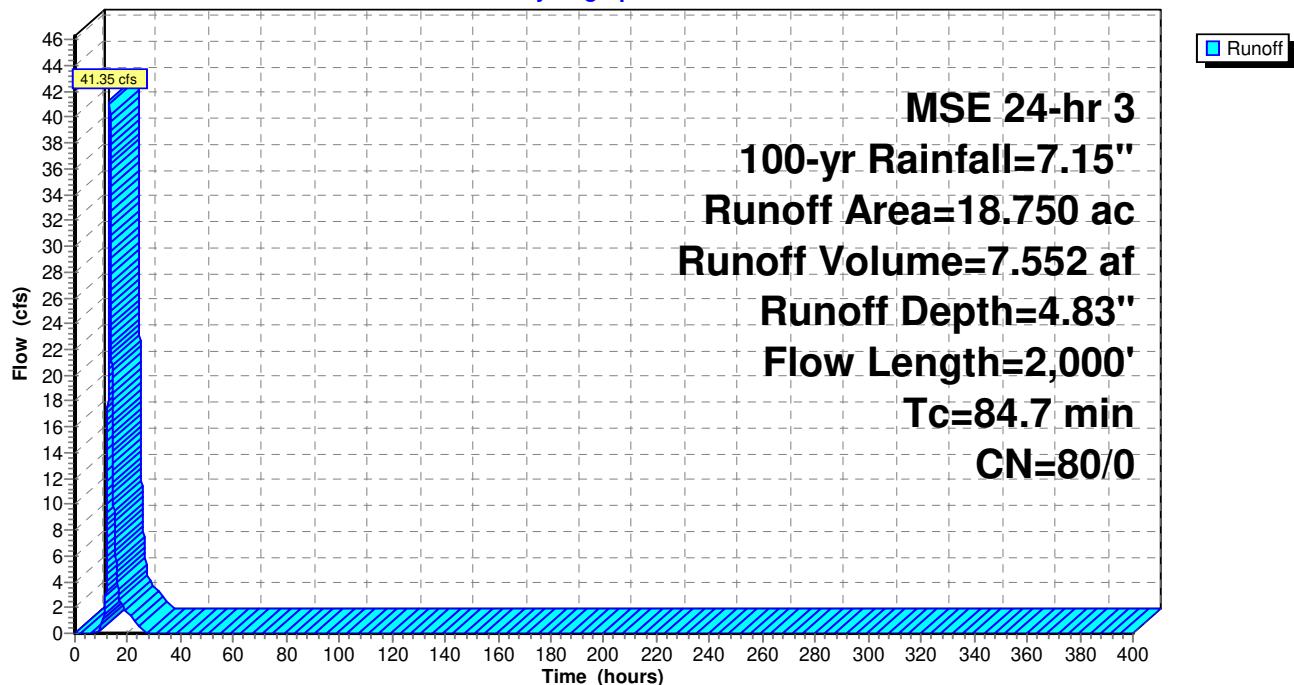
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
* 0.000	80	Row crops, straight row, Good, HSG D
* 18.750	80	Woods/grass comb., Fair, HSG D
18.750	80	Weighted Average
18.750	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.0	200	0.0100	0.10		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"
43.0	1,000	0.0060	0.39		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.7	800	0.0175	1.98		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
84.7	2,000	Total			

Subcatchment 20S: OFFSITE Existing Drainage to Tributary 2

Hydrograph



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MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Subcatchment 30S: OFFSITE Existing Drainage to Wetland 14

Runoff = 11.88 cfs @ 12.44 hrs, Volume= 1.136 af, Depth= 4.83"

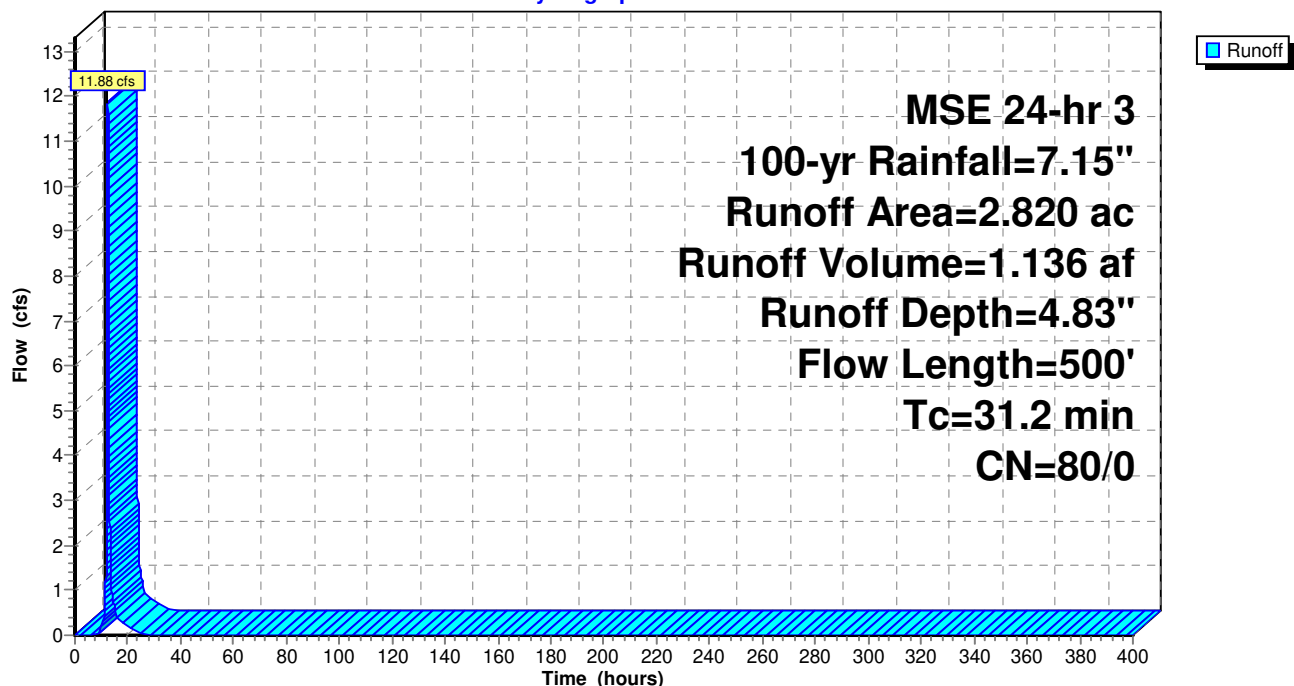
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
* 0.000	80	Row crops, straight row, Good, HSG D
* 2.820	80	Woods/grass comb., Fair, HSG D
2.820	80	Weighted Average
2.820	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.1	200	0.0100	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
7.1	300	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
31.2	500	Total			

Subcatchment 30S: OFFSITE Existing Drainage to Wetland 14

Hydrograph



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MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Subcatchment 40S: OFFSITE Existing Drainage to Wetland 4

Runoff = 22.46 cfs @ 12.77 hrs, Volume= 3.269 af, Depth= 5.34"

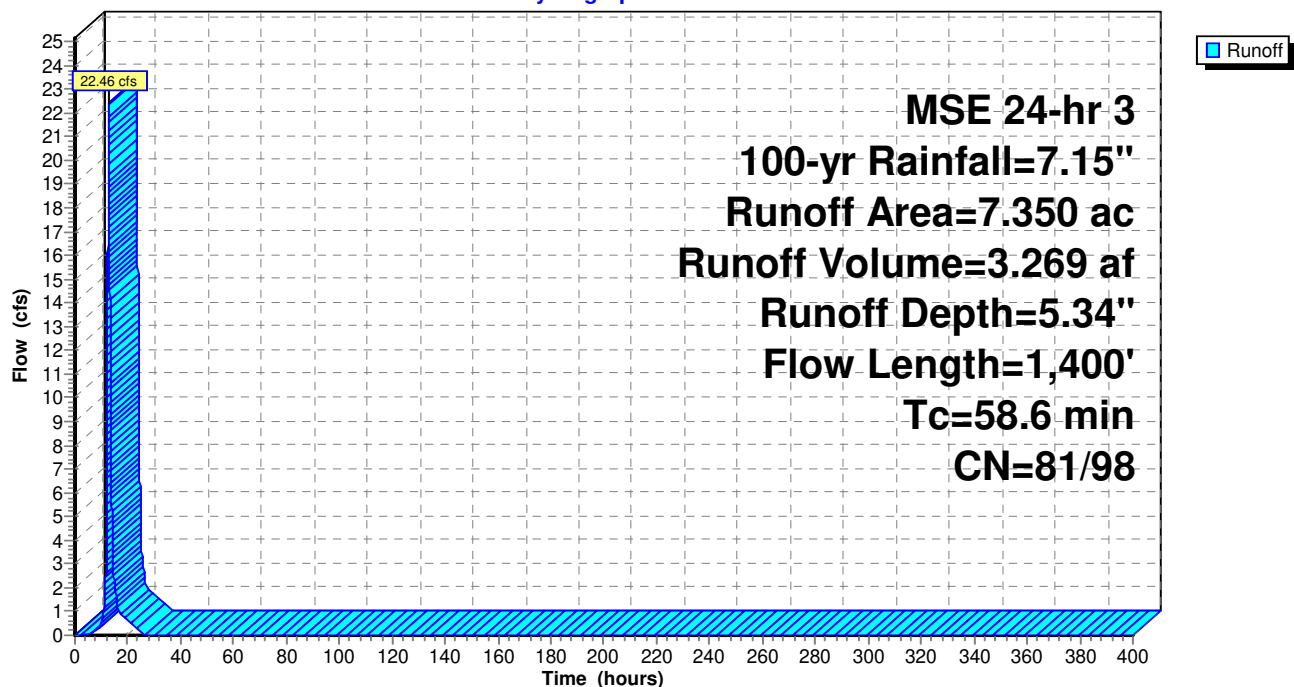
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-yr Rainfall=7.15"

Area (ac)	CN	Description
0.000	89	Row crops, straight row, Good, HSG D
0.000	82	Woods/grass comb., Fair, HSG D
7.350	84	1 acre lots, 20% imp, HSG D
7.350	84	Weighted Average
5.880	81	80.00% Pervious Area
1.470	98	20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	200	0.0200	0.18		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
40.4	1,200	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
58.6	1,400	Total			

Subcatchment 40S: OFFSITE Existing Drainage to Wetland 4

Hydrograph



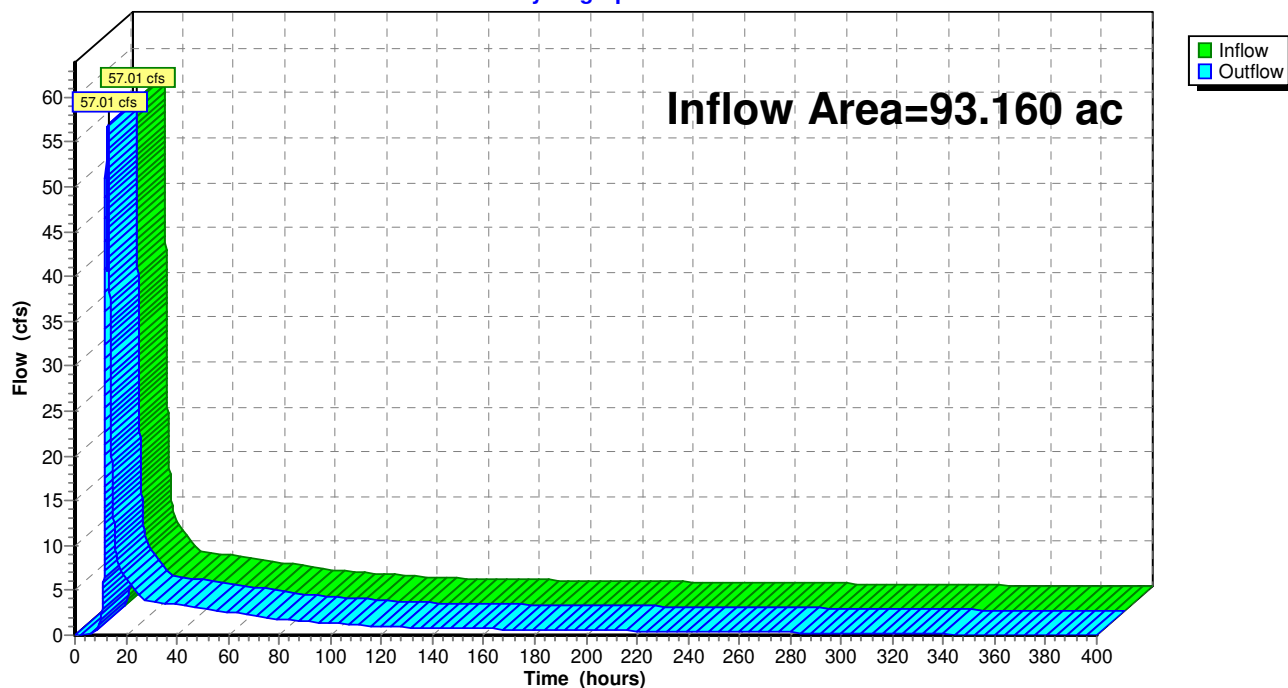
Summary for Reach 1R: To Lake Peltier

Inflow Area = 93.160 ac, 28.28% Impervious, Inflow Depth > 5.49" for 100-yr event
 Inflow = 57.01 cfs @ 12.93 hrs, Volume= 42.657 af
 Outflow = 57.01 cfs @ 12.93 hrs, Volume= 42.657 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 1R: To Lake Peltier

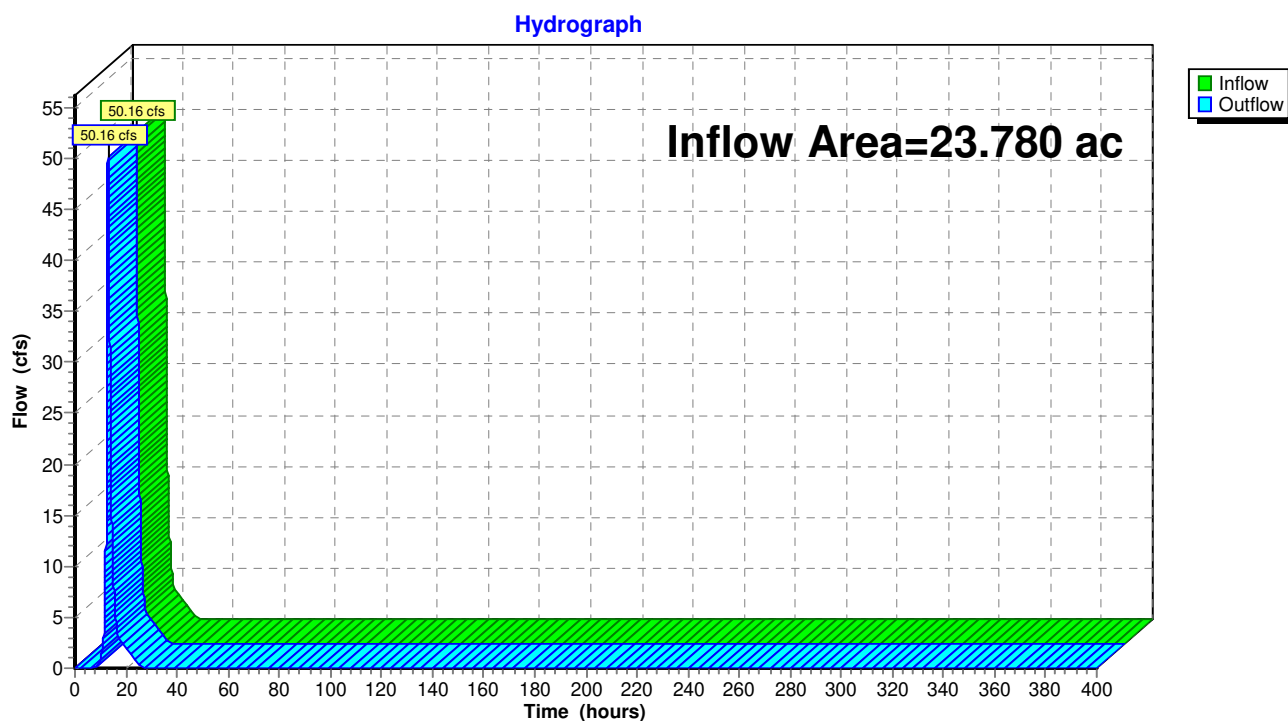
Hydrograph



Summary for Reach 2R: Tributary 2 - Upstream of X-ing

Inflow Area = 23.780 ac, 1.35% Impervious, Inflow Depth = 4.86" for 100-yr event
Inflow = 50.16 cfs @ 12.99 hrs, Volume= 9.633 af
Outflow = 50.16 cfs @ 12.99 hrs, Volume= 9.633 af, Atten= 0%, Lag= 0.0 min

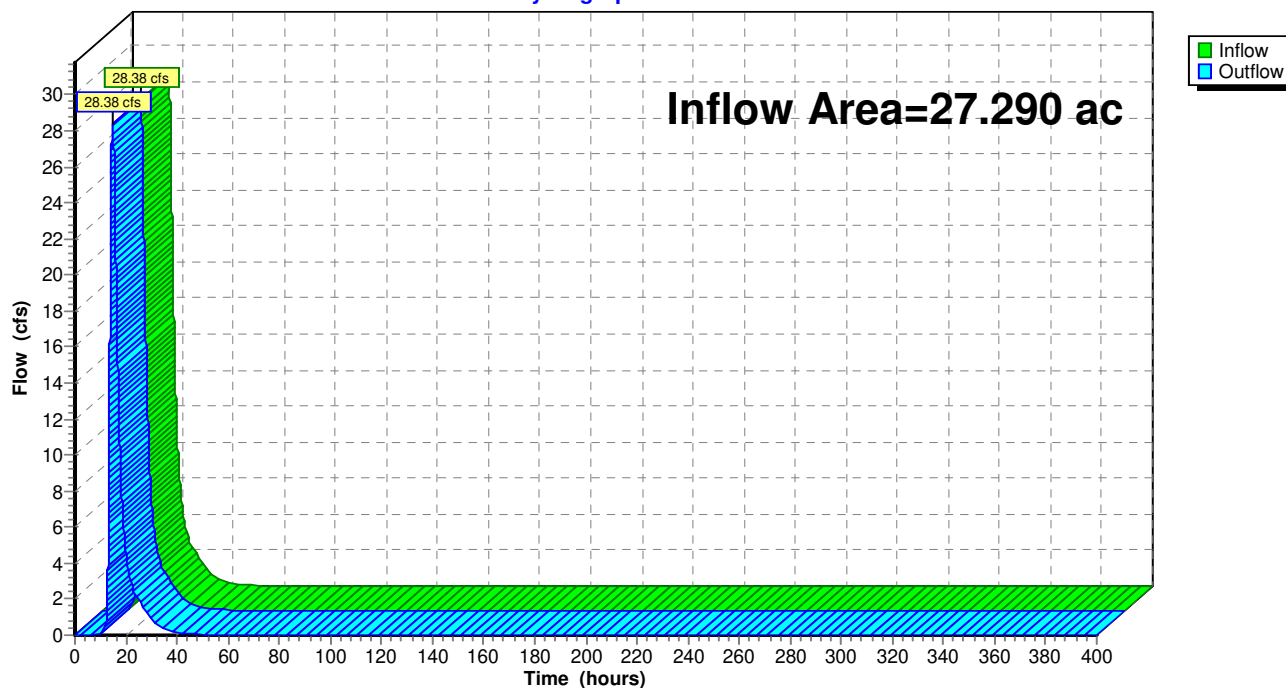
Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 2R: Tributary 2 - Upstream of X-ing

Summary for Reach 3R: To South

Inflow Area = 27.290 ac, 2.27% Impervious, Inflow Depth = 4.88" for 100-yr event
Inflow = 28.38 cfs @ 14.84 hrs, Volume= 11.099 af
Outflow = 28.38 cfs @ 14.84 hrs, Volume= 11.099 af, Atten= 0%, Lag= 0.0 min

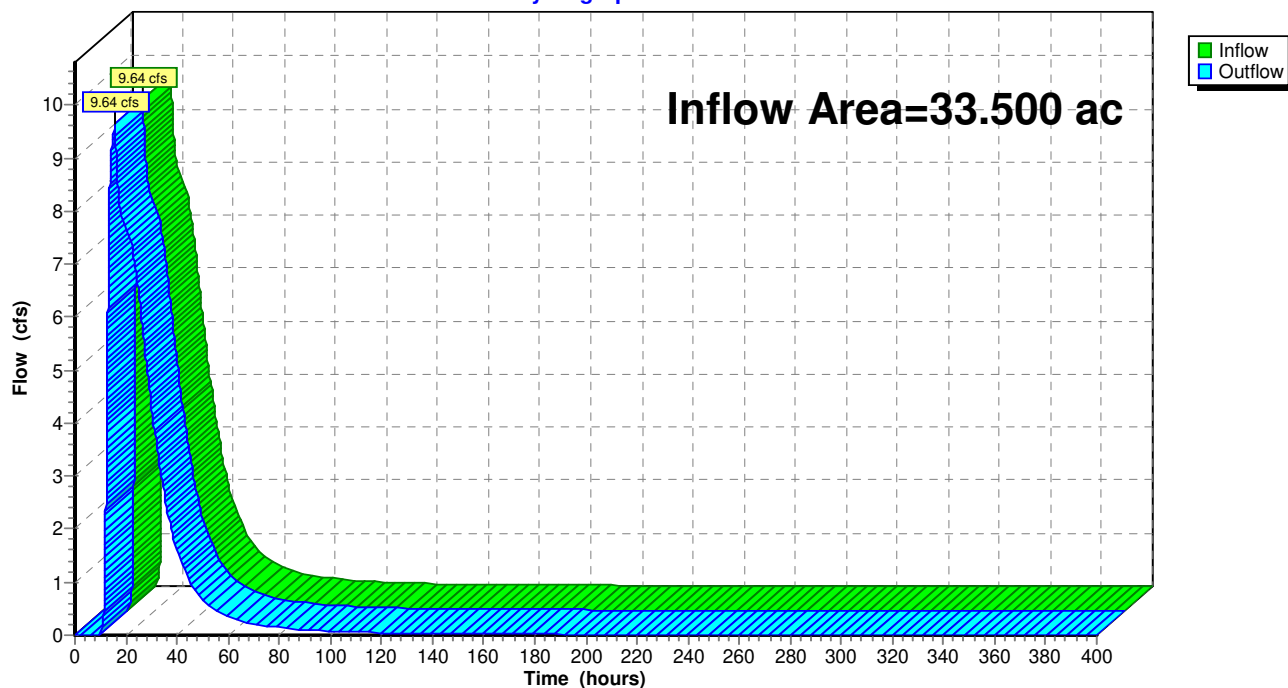
Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 3R: To South**Hydrograph**

Summary for Reach 4R: To North

Inflow Area = 33.500 ac, 26.96% Impervious, Inflow Depth > 5.38" for 100-yr event
Inflow = 9.64 cfs @ 15.79 hrs, Volume= 15.009 af
Outflow = 9.64 cfs @ 15.79 hrs, Volume= 15.009 af, Atten= 0%, Lag= 0.0 min

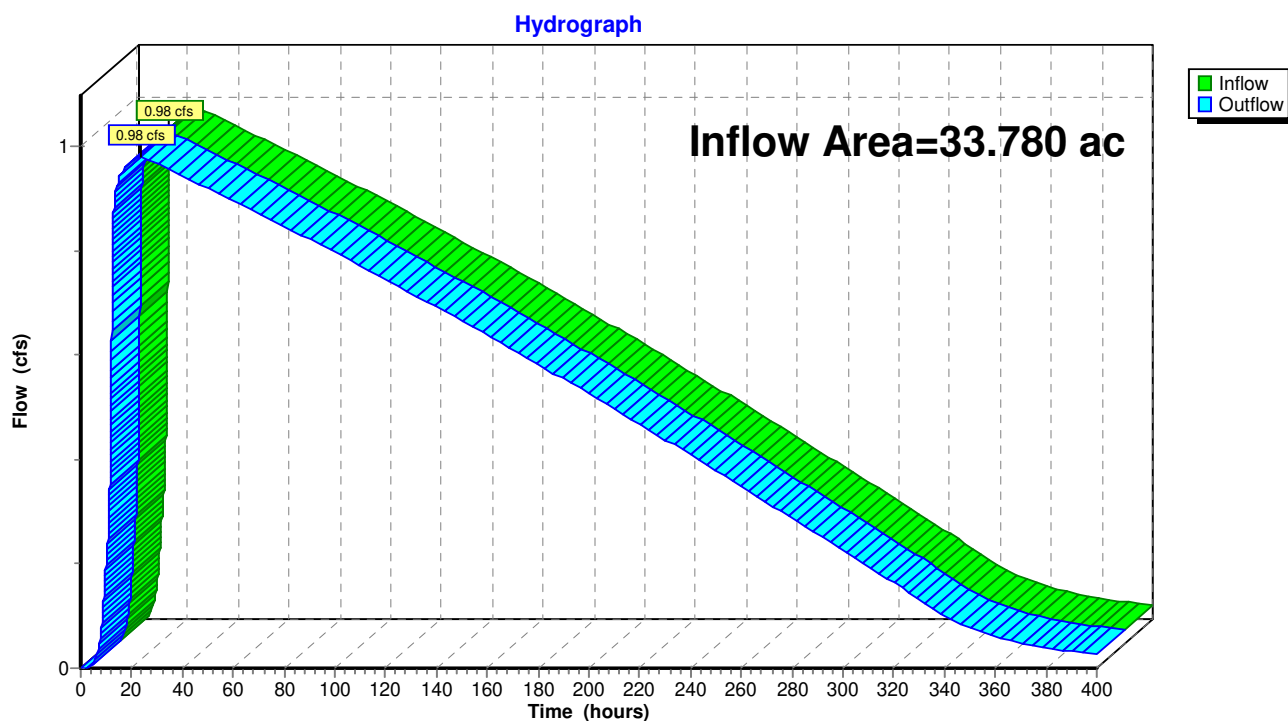
Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 4R: To North**Hydrograph**

Summary for Reach 10R: Capacity Check

Inflow Area = 33.780 ac, 39.40% Impervious, Inflow Depth > 5.68" for 100-yr event
Inflow = 0.98 cfs @ 23.42 hrs, Volume= 16.002 af
Outflow = 0.98 cfs @ 23.42 hrs, Volume= 16.002 af, Atten= 0%, Lag= 0.0 min

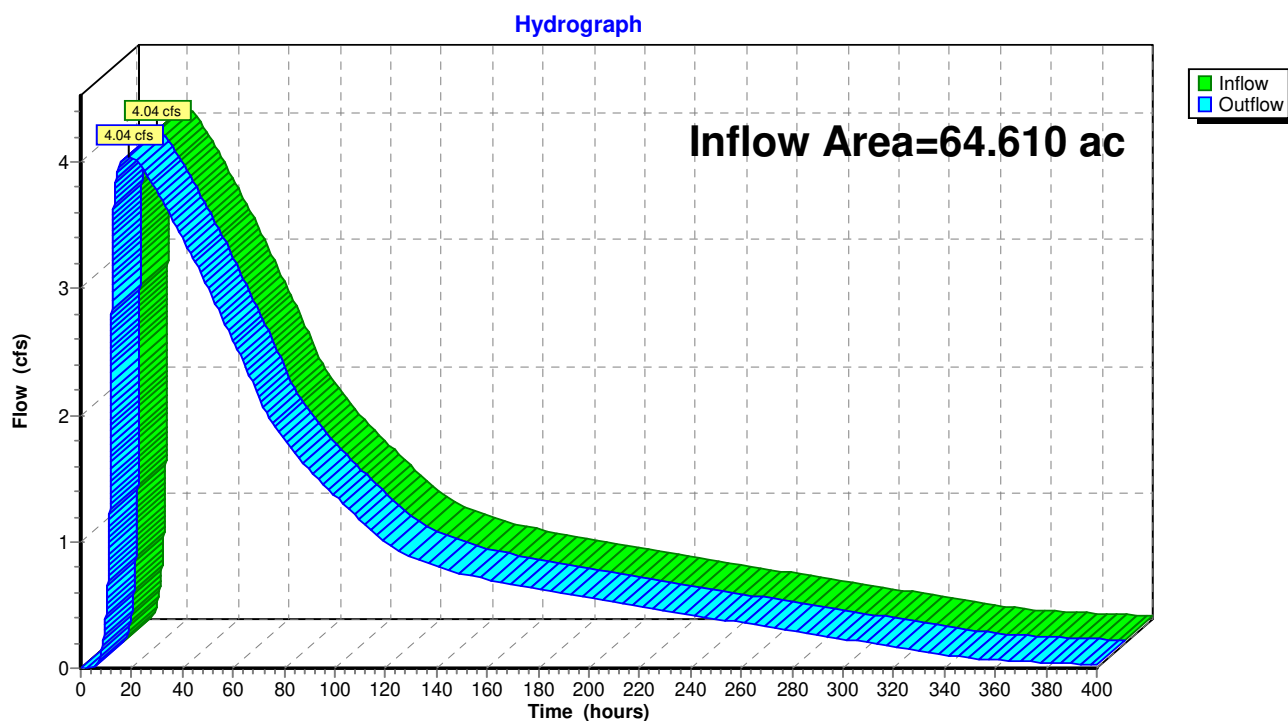
Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 10R: Capacity Check

Summary for Reach STRM: 60" Trunk Sewer

Inflow Area = 64.610 ac, 38.83% Impervious, Inflow Depth > 5.75" for 100-yr event
Inflow = 4.04 cfs @ 18.96 hrs, Volume= 30.943 af
Outflow = 4.04 cfs @ 18.96 hrs, Volume= 30.943 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach STRM: 60" Trunk Sewer

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Summary for Pond 1.2P: Ex 18" STRM

Inflow Area = 0.910 ac, 45.05% Impervious, Inflow Depth = 5.77" for 100-yr event
 Inflow = 8.06 cfs @ 12.15 hrs, Volume= 0.437 af
 Outflow = 8.05 cfs @ 12.15 hrs, Volume= 0.437 af, Atten= 0%, Lag= 0.2 min
 Primary = 8.05 cfs @ 12.15 hrs, Volume= 0.437 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 894.17' @ 12.15 hrs Surf.Area= 655 sf Storage= 337 cf

Plug-Flow detention time= 0.9 min calculated for 0.437 af (100% of inflow)
 Center-of-Mass det. time= 0.9 min (765.9 - 765.0)

Volume	Invert	Avail.Storage	Storage Description
#1	892.96'	13,494 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
892.96	20	0	0
894.00	450	244	244
896.00	2,900	3,350	3,594
898.00	7,000	9,900	13,494

Device	Routing	Invert	Outlet Devices
#1	Primary	892.96'	18.0" Round Culvert L= 43.6' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 892.96' / 888.72' S= 0.0972 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Primary	894.10'	50.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

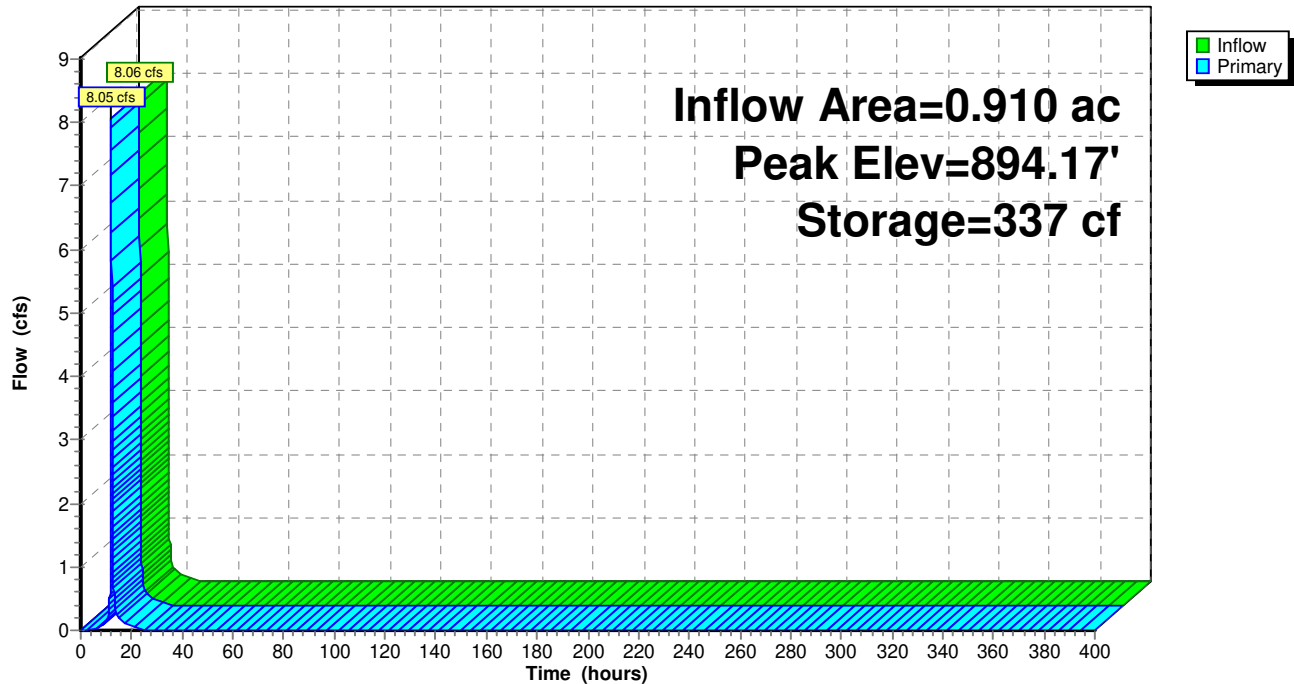
Primary OutFlow Max=8.03 cfs @ 12.15 hrs HW=894.17' TW=0.00' (Dynamic Tailwater)

1=Culvert (Inlet Controls 5.70 cfs @ 3.74 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 2.33 cfs @ 0.69 fps)

Pond 1.2P: Ex 18" STRM

Hydrograph



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MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Pond 1P: Pond 1

Inflow Area = 33.780 ac, 39.40% Impervious, Inflow Depth = 5.77" for 100-yr event
 Inflow = 229.49 cfs @ 12.23 hrs, Volume= 16.249 af
 Outflow = 0.98 cfs @ 23.42 hrs, Volume= 16.002 af, Atten= 100%, Lag= 671.9 min
 Primary = 0.98 cfs @ 23.42 hrs, Volume= 16.002 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Starting Elev= 892.00' Surf.Area= 198,200 sf Storage= 672,500 cf
 Peak Elev= 897.59' @ 23.42 hrs Surf.Area= 237,888 sf Storage= 1,335,891 cf (663,391 cf above start)

Plug-Flow detention time= 20,232.6 min calculated for 0.564 af (3% of inflow)
 Center-of-Mass det. time= 7,427.9 min (8,201.6 - 773.6)

Volume	Invert	Avail.Storage	Storage Description
#1	882.00'	672,500 cf	WET VOL (Prismatic) Listed below (Recalc)
#2	892.00'	1,174,300 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)
		1,846,800 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
882.00	47,700	0	0
884.00	54,700	102,400	102,400
886.00	62,200	116,900	219,300
888.00	70,100	132,300	351,600
890.00	78,700	148,800	500,400
891.00	83,200	80,950	581,350
892.00	99,100	91,150	672,500

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
892.00	99,100	0	0
894.00	112,800	211,900	211,900
896.00	127,000	239,800	451,700
898.00	141,800	268,800	720,500
900.00	156,000	297,800	1,018,300
901.00	156,000	156,000	1,174,300

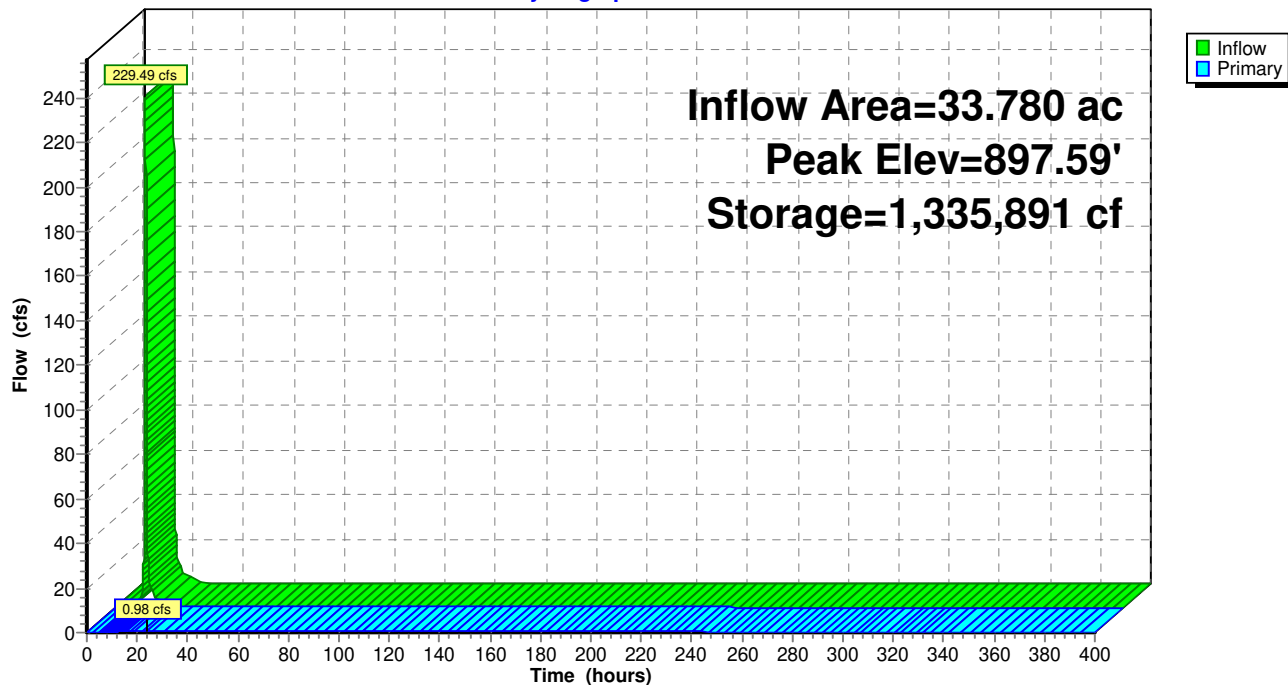
Device	Routing	Invert	Outlet Devices
#1	Primary	892.00'	15.0" Round Culvert L= 351.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 892.00' / 890.25' S= 0.0050 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Device 1	892.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Primary	900.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.98 cfs @ 23.42 hrs HW=897.59' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 0.98 cfs of 6.90 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.98 cfs @ 11.22 fps)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: Pond 1

Hydrograph



2026-04-01 Peltier Ponds - Prelim

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Summary for Pond 2aP: Ex STRM Structure

Inflow Area = 25.710 ac, 2.14% Impervious, Inflow Depth = 4.88" for 100-yr event
 Inflow = 51.43 cfs @ 12.99 hrs, Volume= 10.447 af
 Outflow = 51.42 cfs @ 13.00 hrs, Volume= 10.447 af, Atten= 0%, Lag= 0.5 min
 Primary = 51.42 cfs @ 13.00 hrs, Volume= 10.447 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 889.01' @ 13.00 hrs Surf.Area= 4,331 sf Storage= 4,060 cf

Plug-Flow detention time= 1.9 min calculated for 10.447 af (100% of inflow)
 Center-of-Mass det. time= 1.9 min (849.8 - 847.9)

Volume	Invert	Avail.Storage	Storage Description
#1	886.82'	46,909 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
886.82	10	0	0
888.00	1,700	1,009	1,009
890.00	6,900	8,600	9,609
892.00	30,400	37,300	46,909

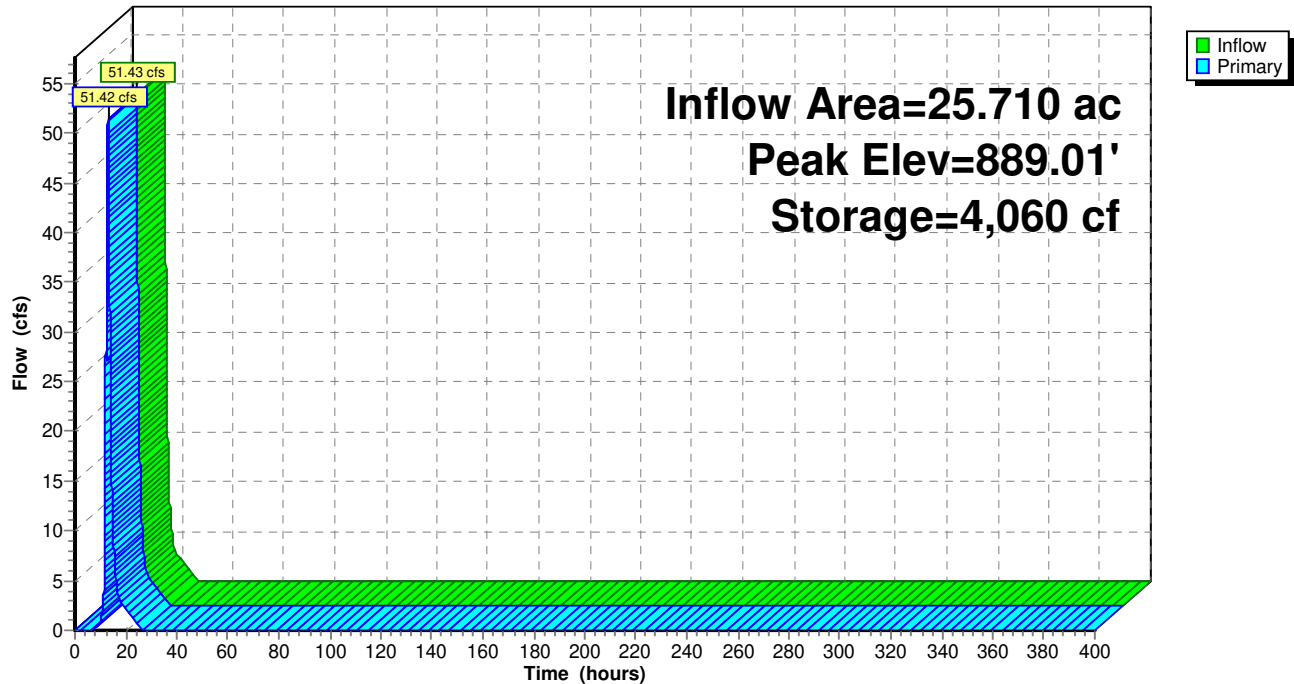
Device	Routing	Invert	Outlet Devices
#1	Primary	886.36'	21.0" Round Ex 21" CMP L= 37.5' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 886.36' / 885.72' S= 0.0171 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 2.41 sf
#2	Device 1	886.82'	21.0" Vert. EX STRUCTURE OPENNING C= 0.600
#3	Primary	888.40'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=51.42 cfs @ 13.00 hrs HW=889.01' TW=0.00' (Dynamic Tailwater)

1=Ex 21" CMP (Barrel Controls 12.69 cfs @ 5.28 fps)
 2=EX STRUCTURE OPENNING (Passes 12.69 cfs of 13.29 cfs potential flow)
 3=Broad-Crested Rectangular Weir (Weir Controls 38.72 cfs @ 2.11 fps)

Pond 2aP: Ex STRM Structure

Hydrograph



Summary for Pond 2bP: Wetland 19 Storm X-ing

Inflow Area = 23.780 ac, 1.35% Impervious, Inflow Depth = 4.86" for 100-yr event
 Inflow = 50.16 cfs @ 12.99 hrs, Volume= 9.633 af
 Outflow = 50.15 cfs @ 12.99 hrs, Volume= 9.630 af, Atten= 0%, Lag= 0.3 min
 Primary = 50.15 cfs @ 12.99 hrs, Volume= 9.630 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 894.42' @ 12.99 hrs Surf.Area= 3,293 sf Storage= 1,180 cf

Plug-Flow detention time= 0.7 min calculated for 9.630 af (100% of inflow)
 Center-of-Mass det. time= 0.5 min (853.4 - 852.9)

Volume	Invert	Avail.Storage	Storage Description
#1	893.20'	167,198 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

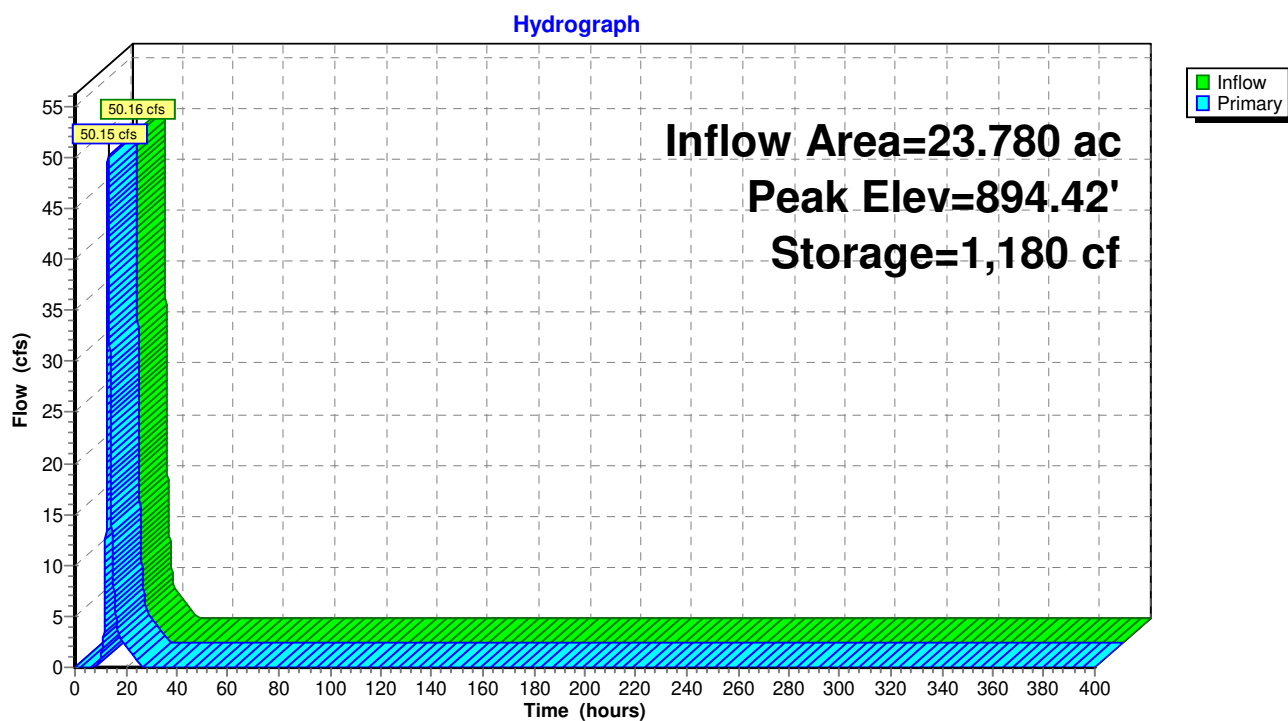
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
893.20	50	0	0
894.00	770	328	328
896.00	12,800	13,570	13,898
898.00	31,000	43,800	57,698
899.00	52,000	41,500	99,198
900.00	84,000	68,000	167,198

Device	Routing	Invert	Outlet Devices
#1	Primary	890.00'	30.0" Round Culvert x 2 X 2.00 L= 99.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 890.00' / 889.80' S= 0.0020 ' S= 0.0020 ' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 4.91 sf
#2	Device 1	893.70'	48.0" Horiz. Grate x 2 X 2.00 C= 0.600 Limited to weir flow at low heads
#3	Primary	898.50'	30.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=50.15 cfs @ 12.99 hrs HW=894.42' TW=889.01' (Dynamic Tailwater)

1=Culvert x 2 (Passes 50.15 cfs of 69.45 cfs potential flow)
 2=Grate x 2 (Weir Controls 50.15 cfs @ 2.77 fps)
 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2bP: Wetland 19 Storm X-ing



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MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Pond 2P: Pond 2 & Wetland 10 (LOWERED)

Inflow Area = 11.410 ac, 36.20% Impervious, Inflow Depth = 5.73" for 100-yr event
 Inflow = 92.44 cfs @ 12.17 hrs, Volume= 5.444 af
 Outflow = 1.50 cfs @ 15.73 hrs, Volume= 5.429 af, Atten= 98%, Lag= 214.1 min
 Primary = 1.50 cfs @ 15.73 hrs, Volume= 5.429 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Starting Elev= 901.00' Surf.Area= 79,800 sf Storage= 133,013 cf

Peak Elev= 903.78' @ 15.73 hrs Surf.Area= 121,267 sf Storage= 321,555 cf (188,542 cf above start)

Plug-Flow detention time= 3,001.1 min calculated for 2.375 af (44% of inflow)

Center-of-Mass det. time= 1,657.3 min (2,426.8 - 769.5)

Volume	Invert	Avail.Storage	Storage Description
#1	891.00'	99,968 cf	WET VOL 2A (Prismatic) Listed below (Recalc)
#2	901.00'	195,950 cf	LIVE STORAGE 2A (Prismatic) Listed below (Recalc)
#3	891.00'	33,045 cf	WET VOL 2B (Prismatic) Listed below (Recalc)
#4	901.00'	92,450 cf	LIVE STORAGE 2B (Prismatic) Listed below (Recalc)
#5	901.01'	105,540 cf	WETLAND 10 (Prismatic) Listed below (Recalc)
		526,953 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
891.00	1,600	0	0
892.00	2,100	1,850	1,850
893.99	3,500	5,572	7,422
894.00	5,700	46	7,468
896.00	9,100	14,800	22,268
898.00	13,300	22,400	44,668
900.00	18,500	31,800	76,468
901.00	28,500	23,500	99,968

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
901.00	28,500	0	0
902.00	32,600	30,550	30,550
904.00	41,300	73,900	104,450
905.00	45,700	43,500	147,950
906.00	50,300	48,000	195,950

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
891.00	280	0	0
892.00	570	425	425
894.00	1,400	1,970	2,395
896.00	2,600	4,000	6,395
898.00	4,300	6,900	13,295
900.00	6,500	10,800	24,095
901.00	11,400	8,950	33,045

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
901.00	11,400	0	0
902.00	14,000	12,700	12,700
904.00	19,900	33,900	46,600
905.00	22,900	21,400	68,000
906.00	26,000	24,450	92,450

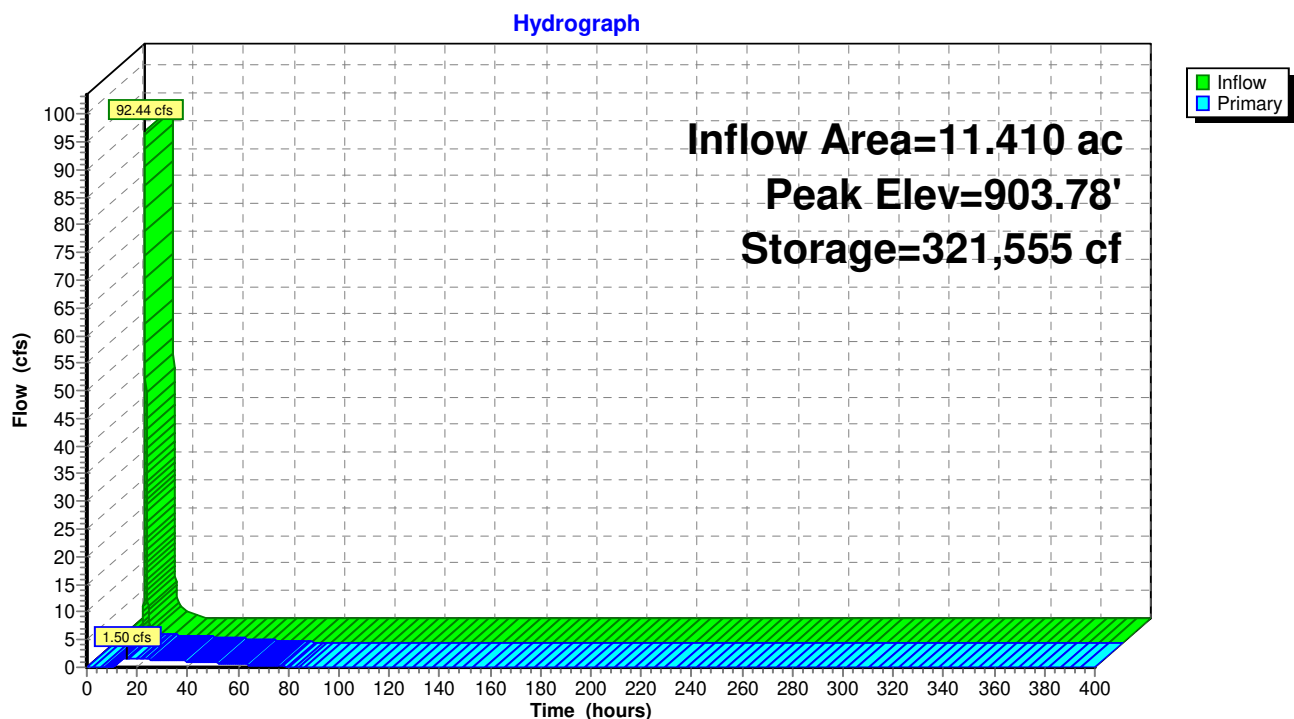
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
901.01	14,800	0	0
902.00	17,200	15,840	15,840
904.00	22,300	39,500	55,340
905.00	25,100	23,700	79,040
906.00	27,900	26,500	105,540

Device	Routing	Invert	Outlet Devices
#1	Primary	901.00'	15.0" Round Culvert L= 50.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 901.00' / 900.50' S= 0.0099 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Device 1	901.00'	6.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=1.50 cfs @ 15.73 hrs HW=903.78' TW=0.00' (Dynamic Tailwater)

1=Culvert (Passes 1.50 cfs of 8.01 cfs potential flow)

2=Orifice/Grate (Orifice Controls 1.50 cfs @ 7.66 fps)

Pond 2P: Pond 2 & Wetland 10 (LOWERED)

2026-04-01 Peltier Ponds - Prelim

MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Pond 3P: Pond 3

Inflow Area = 19.420 ac, 39.39% Impervious, Inflow Depth = 5.92" for 100-yr event
 Inflow = 117.36 cfs @ 12.17 hrs, Volume= 9.580 af
 Outflow = 1.58 cfs @ 19.68 hrs, Volume= 9.512 af, Atten= 99%, Lag= 450.6 min
 Primary = 1.58 cfs @ 19.68 hrs, Volume= 9.512 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Starting Elev= 900.00' Surf.Area= 67,800 sf Storage= 134,150 cf

Peak Elev= 903.04' @ 19.68 hrs Surf.Area= 161,330 sf Storage= 480,733 cf (346,583 cf above start)

Plug-Flow detention time= 3,972.2 min calculated for 6.433 af (67% of inflow)

Center-of-Mass det. time= 2,798.4 min (3,629.8 - 831.3)

Volume	Invert	Avail.Storage	Storage Description
#1	890.00'	134,150 cf	POND 3 WET VOL (Prismatic) Listed below (Recalc)
#2	900.00'	613,280 cf	POND 3 & EWRK LIVE STORAGE (Prismatic) Listed below (Recalc)
		747,430 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
890.00	2,400	0	0
892.00	5,200	7,600	7,600
894.00	9,900	15,100	22,700
896.00	15,100	25,000	47,700
898.00	20,600	35,700	83,400
899.00	23,500	22,050	105,450
900.00	33,900	28,700	134,150

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.00	33,900	0	0
900.01	100,800	673	673
902.00	118,000	217,706	218,380
903.00	127,000	122,500	340,880
904.00	136,600	131,800	472,680
904.50	140,600	69,300	541,980
905.00	144,600	71,300	613,280

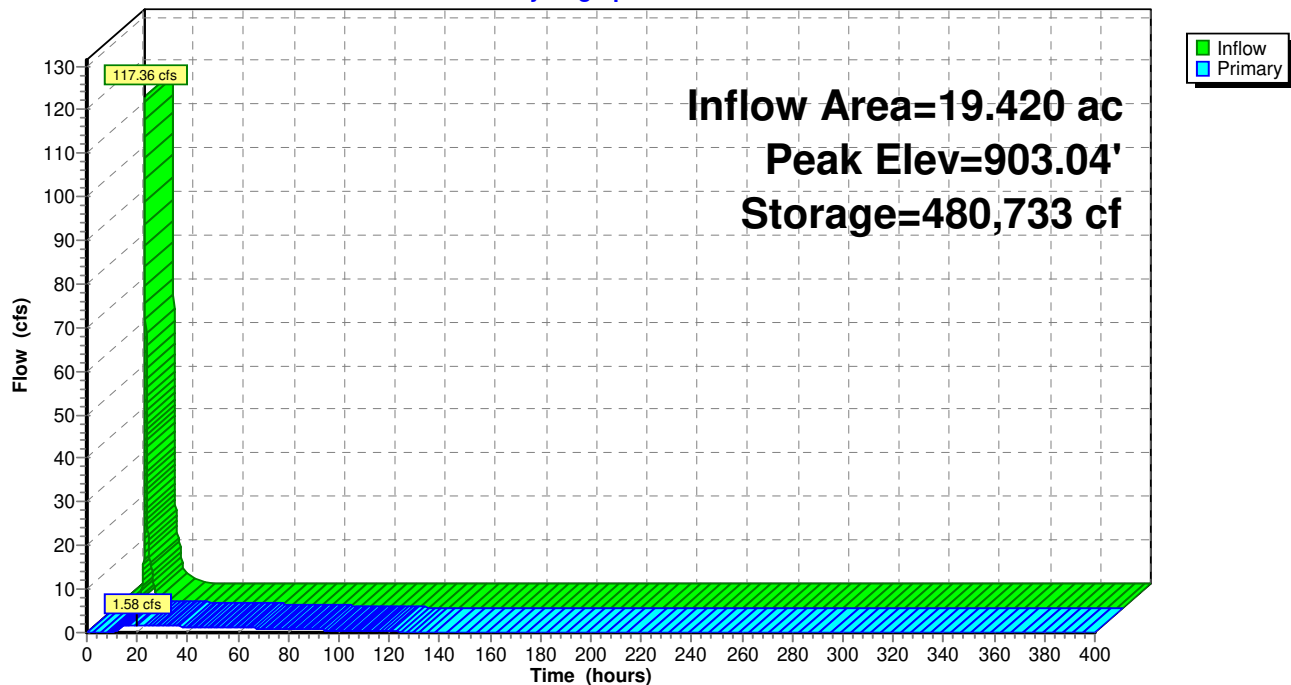
Device	Routing	Invert	Outlet Devices
#1	Primary	900.00'	15.0" Round Culvert L= 448.4' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 900.00' / 897.34' S= 0.0059 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Device 1	900.00'	6.0" Vert. Orifice/Grate C= 0.600
#3	Primary	904.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.58 cfs @ 19.68 hrs HW=903.04' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 1.58 cfs of 5.29 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 1.58 cfs @ 8.05 fps)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: Pond 3

Hydrograph



2026-04-01 Peltier Ponds - Prelim

MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Pond 4P: Pond 4

Inflow Area = 6.320 ac, 50.47% Impervious, Inflow Depth = 5.94" for 100-yr event
 Inflow = 52.65 cfs @ 12.17 hrs, Volume= 3.127 af
 Outflow = 8.64 cfs @ 12.58 hrs, Volume= 3.126 af, Atten= 84%, Lag= 24.8 min
 Primary = 8.64 cfs @ 12.58 hrs, Volume= 3.126 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Starting Elev= 902.00' Surf.Area= 18,400 sf Storage= 13,975 cf
 Peak Elev= 906.19' @ 12.58 hrs Surf.Area= 29,857 sf Storage= 75,656 cf (61,681 cf above start)

Plug-Flow detention time= 280.1 min calculated for 2.805 af (90% of inflow)
 Center-of-Mass det. time= 197.9 min (961.7 - 763.8)

Volume	Invert	Avail.Storage	Storage Description
#1	896.00'	13,975 cf	WET VOL (Prismatic) Listed below (Recalc)
#2	902.00'	104,125 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)
		118,100 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
896.00	65	0	0
898.00	630	695	695
900.00	2,700	3,330	4,025
901.00	4,000	3,350	7,375
902.00	9,200	6,600	13,975

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
902.00	9,200	0	0
904.00	14,300	23,500	23,500
906.00	20,100	34,400	57,900
907.00	23,100	21,600	79,500
907.50	24,600	11,925	91,425
908.00	26,200	12,700	104,125

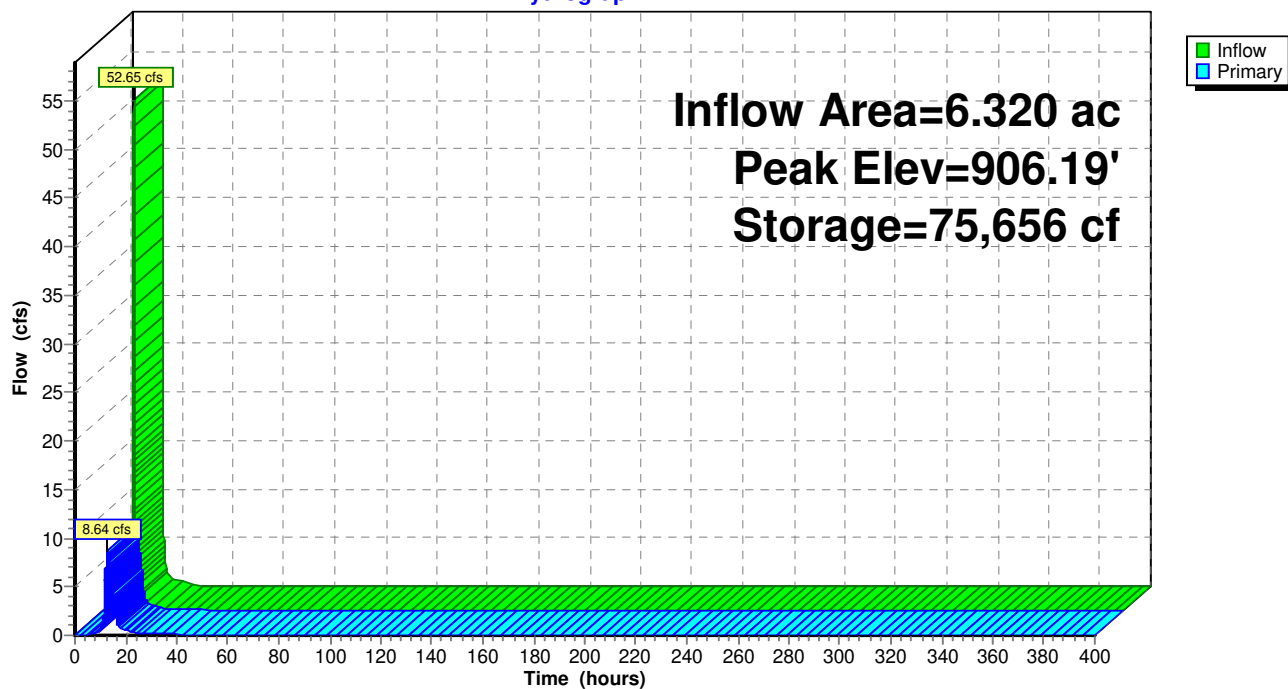
Device	Routing	Invert	Outlet Devices
#1	Primary	902.00'	18.0" Round Culvert L= 346.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 902.00' / 901.00' S= 0.0029 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.77 sf
#2	Primary	907.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=8.64 cfs @ 12.58 hrs HW=906.19' TW=902.04' (Dynamic Tailwater)

↑ **1=Culvert** (Barrel Controls 8.64 cfs @ 4.89 fps)
 ↓ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: Pond 4

Hydrograph



2026-04-01 Peltier Ponds - Prelim

MSE 24-hr 3 100-yr Rainfall=7.15"

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Summary for Pond 5P: Pond 5

Inflow Area = 15.690 ac, 38.56% Impervious, Inflow Depth = 5.91" for 100-yr event
 Inflow = 131.58 cfs @ 12.17 hrs, Volume= 7.728 af
 Outflow = 7.36 cfs @ 13.47 hrs, Volume= 7.694 af, Atten= 94%, Lag= 77.9 min
 Primary = 7.36 cfs @ 13.47 hrs, Volume= 7.694 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Starting Elev= 900.50' Surf.Area= 219,700 sf Storage= 422,075 cf

Peak Elev= 902.92' @ 13.47 hrs Surf.Area= 240,879 sf Storage= 650,755 cf (228,680 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 671.0 min (1,438.2 - 767.2)

Volume	Invert	Avail.Storage	Storage Description
#1	890.50'	130,450 cf	Wet Cell A (Prismatic) Listed below (Recalc)
#2	890.50'	102,150 cf	Wet Cell B (Prismatic) Listed below (Recalc)
#3	897.50'	189,475 cf	WET VOL >897.5 (Prismatic) Listed below (Recalc)
#4	900.50'	406,150 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)
		828,225 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
890.50	10,200	0	0
892.00	12,500	17,025	17,025
894.00	16,900	29,400	46,425
896.00	25,200	42,100	88,525
897.50	30,700	41,925	130,450

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
890.50	8,900	0	0
892.00	11,100	15,000	15,000
894.00	14,400	25,500	40,500
896.00	18,000	32,400	72,900
897.50	21,000	29,250	102,150

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
897.50	51,700	0	0
898.00	55,100	26,700	26,700
899.50	63,700	89,100	115,800
900.00	73,500	34,300	150,100
900.50	84,000	39,375	189,475

2026-04-01 Peltier Ponds - Prelim

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MSE 24-hr 3 100-yr Rainfall=7.15"

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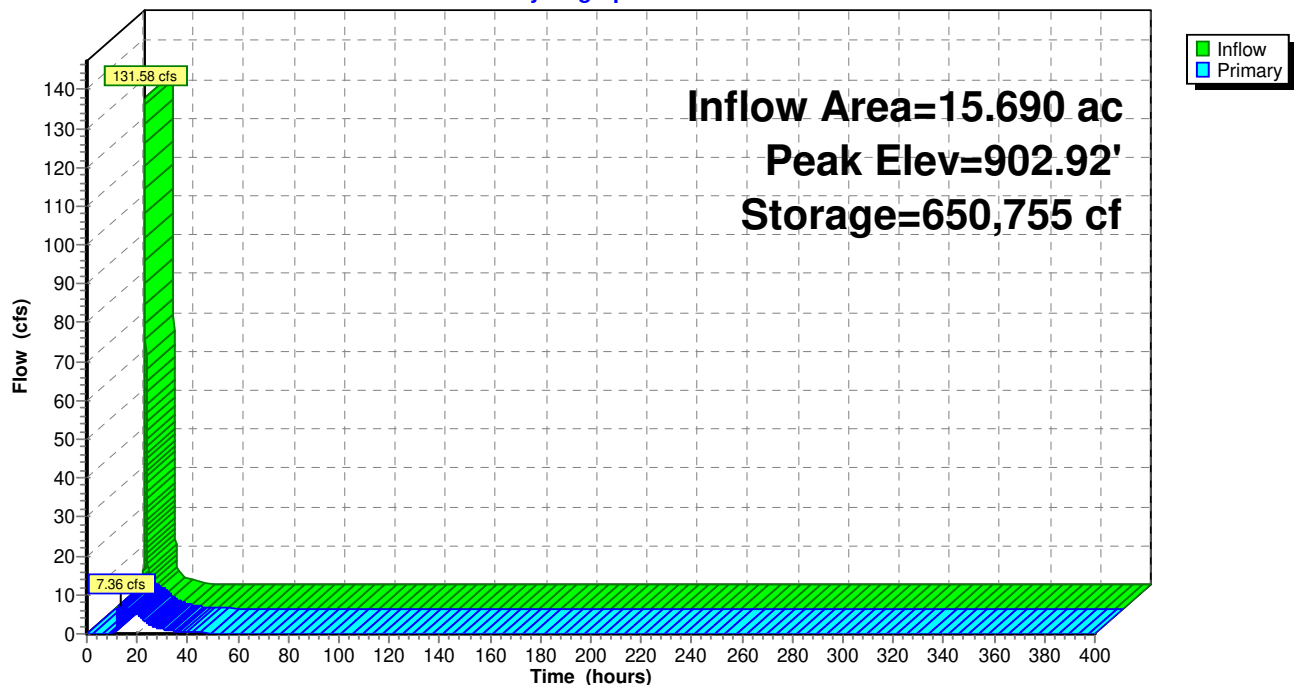
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.50	84,000	0	0
902.00	97,100	135,825	135,825
903.00	105,900	101,500	237,325
903.50	110,300	54,050	291,375
904.00	114,800	56,275	347,650
904.50	119,200	58,500	406,150

Device	Routing	Invert	Outlet Devices
#1	Primary	900.50'	15.0" Round Culvert L= 48.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 900.50' / 900.00' S= 0.0104 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Primary	903.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=7.36 cfs @ 13.47 hrs HW=902.92' TW=900.75' (Dynamic Tailwater)

1=Culvert (Barrel Controls 7.36 cfs @ 5.99 fps)

2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 5P: Pond 5**Hydrograph**

2026-04-01 Peltier Ponds - Prelim

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Summary for Pond 6P: Pond 6

Inflow Area = 4.300 ac, 21.16% Impervious, Inflow Depth = 6.08" for 100-yr event
 Inflow = 37.15 cfs @ 12.17 hrs, Volume= 2.178 af
 Outflow = 2.67 cfs @ 13.20 hrs, Volume= 2.157 af, Atten= 93%, Lag= 61.5 min
 Primary = 2.67 cfs @ 13.20 hrs, Volume= 2.157 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 901.35' @ 13.20 hrs Surf.Area= 79,995 sf Storage= 63,769 cf

Plug-Flow detention time= 1,101.7 min calculated for 2.157 af (99% of inflow)
 Center-of-Mass det. time= 1,095.6 min (1,863.5 - 767.9)

Volume	Invert	Avail.Storage	Storage Description
#1	900.50'	208,825 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.50	70,700	0	0
901.00	76,000	36,675	36,675
902.00	87,500	81,750	118,425
902.50	90,400	44,475	162,900
903.00	93,300	45,925	208,825

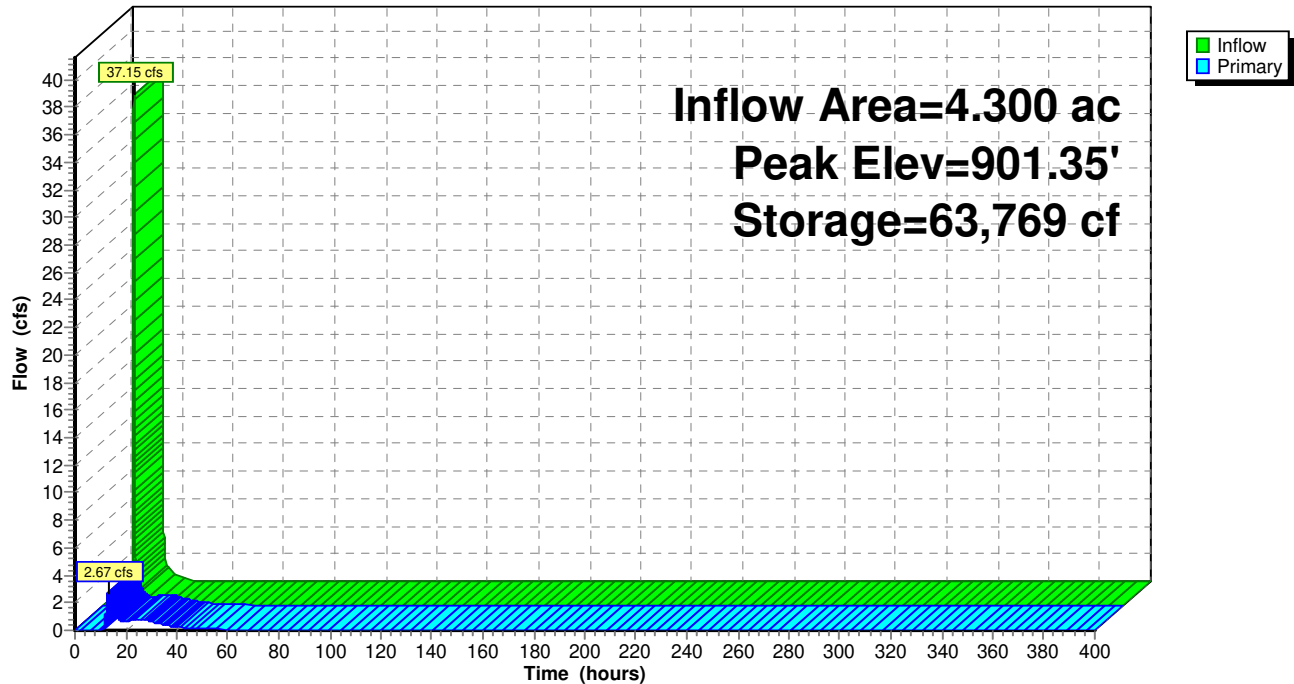
Device	Routing	Invert	Outlet Devices
#1	Primary	900.50'	15.0" Round Culvert L= 33.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 900.50' / 900.00' S= 0.0148 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Primary	902.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=2.67 cfs @ 13.20 hrs HW=901.35' TW=900.61' (Dynamic Tailwater)

1=Culvert (Barrel Controls 2.67 cfs @ 4.26 fps)
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 6P: Pond 6

Hydrograph



Summary for Pond W14: Wetland 14

Inflow Area = 27.290 ac, 2.27% Impervious, Inflow Depth = 4.88" for 100-yr event
 Inflow = 35.51 cfs @ 14.14 hrs, Volume= 11.099 af
 Outflow = 28.38 cfs @ 14.84 hrs, Volume= 11.099 af, Atten= 20%, Lag= 41.9 min
 Primary = 28.38 cfs @ 14.84 hrs, Volume= 11.099 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 905.06' @ 14.84 hrs Surf.Area= 234,740 sf Storage= 139,036 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 148.0 min (1,064.2 - 916.2)

Volume	Invert	Avail.Storage	Storage Description
#1	904.00'	594,000 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
904.00	50,000	0	0
905.00	200,000	125,000	125,000
906.00	738,000	469,000	594,000

Device	Routing	Invert	Outlet Devices
#1	Primary	903.90'	12.0" Round Culvert x 2 X 2.00 L= 28.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 903.90' / 903.62' S= 0.0100 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 0.79 sf
#2	Primary	904.50'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

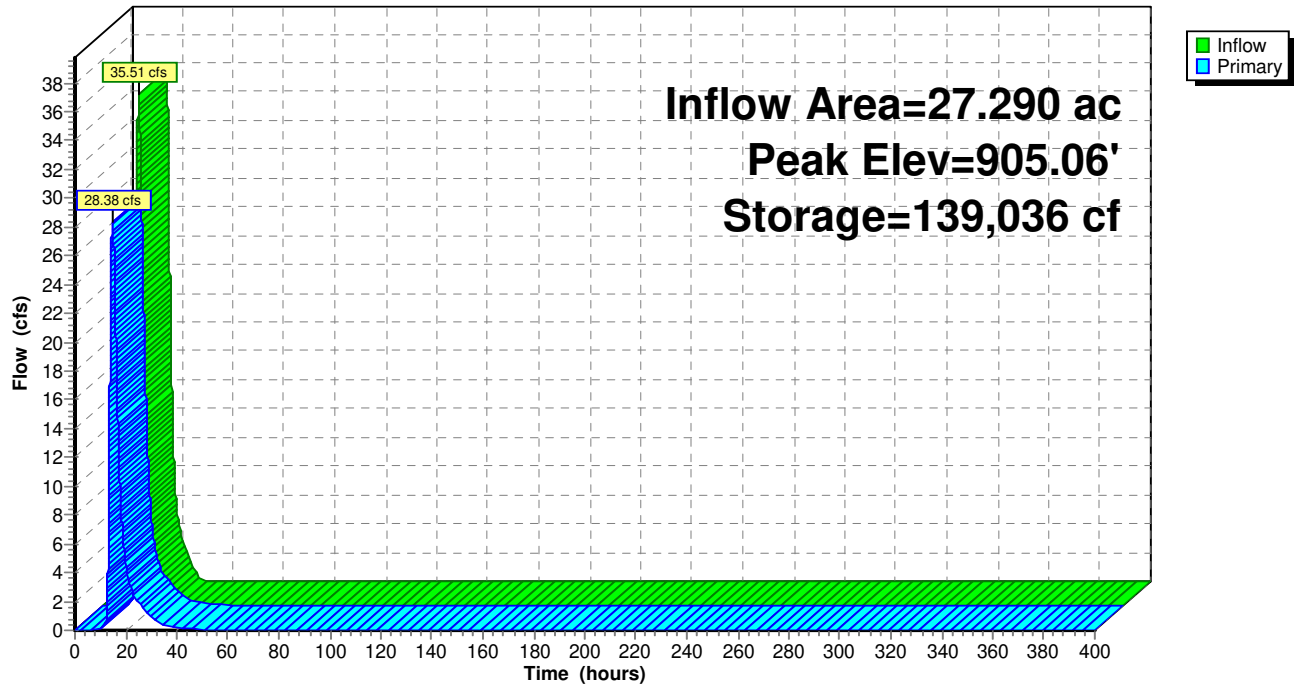
Primary OutFlow Max=28.38 cfs @ 14.84 hrs HW=905.06' TW=0.00' (Dynamic Tailwater)

1=Culvert x 2 (Barrel Controls 5.68 cfs @ 3.90 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 22.70 cfs @ 2.01 fps)

Pond W14: Wetland 14

Hydrograph



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Summary for Pond W4: Wetland 4

Inflow Area = 31.030 ac, 28.33% Impervious, Inflow Depth = 5.79" for 100-yr event
 Inflow = 44.96 cfs @ 12.18 hrs, Volume= 14.985 af
 Outflow = 7.47 cfs @ 18.32 hrs, Volume= 13.868 af, Atten= 83%, Lag= 368.6 min
 Primary = 7.47 cfs @ 18.32 hrs, Volume= 13.868 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 901.18' @ 18.32 hrs Surf.Area= 156,012 sf Storage= 261,275 cf

Plug-Flow detention time= 893.3 min calculated for 13.868 af (93% of inflow)
 Center-of-Mass det. time= 649.2 min (1,931.5 - 1,282.3)

Volume	Invert	Avail.Storage	Storage Description
#1	898.00'	885,870 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
898.00	10,000	0	0
899.50	80,000	67,500	67,500
900.00	94,800	43,700	111,200
901.00	151,200	123,000	234,200
902.00	178,500	164,850	399,050
904.00	308,320	486,820	885,870

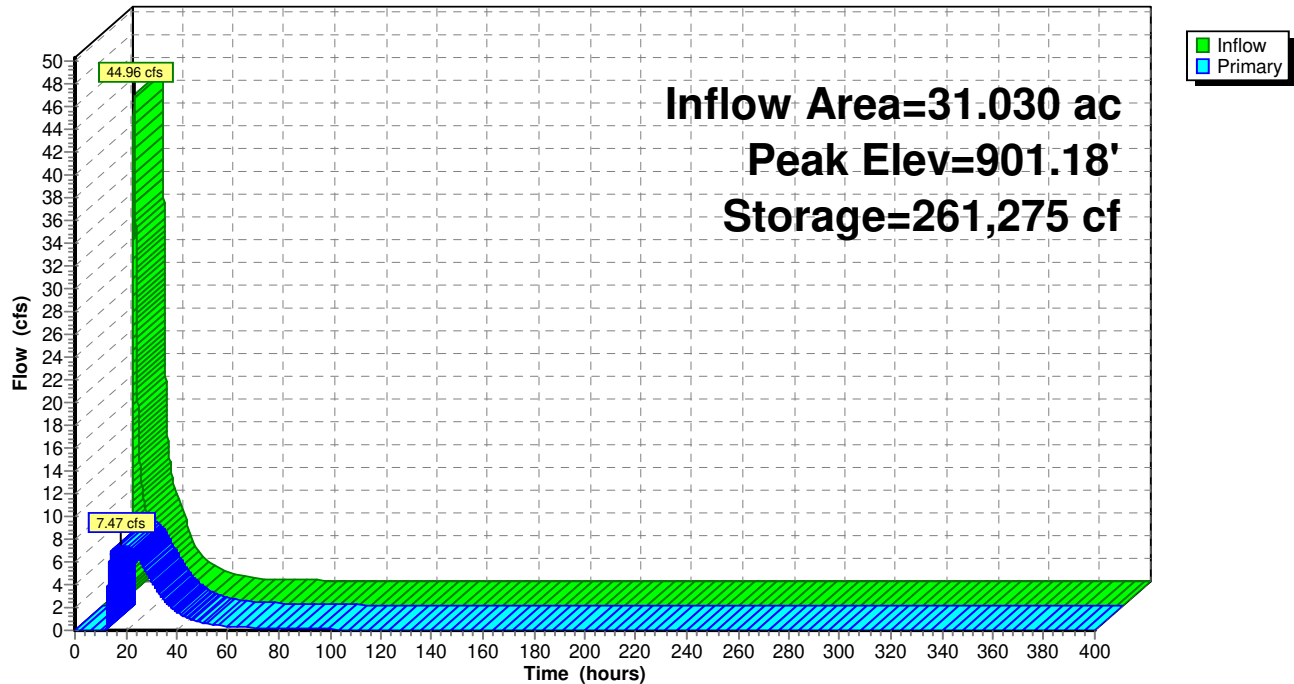
Device	Routing	Invert	Outlet Devices
#1	Primary	899.20'	18.0" Round Culvert L= 15.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 899.20' / 899.18' S= 0.0013 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.77 sf
#2	Primary	902.70'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=7.47 cfs @ 18.32 hrs HW=901.18' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Barrel Controls 7.47 cfs @ 4.24 fps)
 — **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond W4: Wetland 4

Hydrograph



Summary for Pond W5: Wetland 5

Inflow Area = 2.470 ac, 9.72% Impervious, Inflow Depth = 6.06" for 100-yr event
 Inflow = 26.11 cfs @ 12.12 hrs, Volume= 1.248 af
 Outflow = 2.39 cfs @ 12.60 hrs, Volume= 1.141 af, Atten= 91%, Lag= 28.8 min
 Primary = 2.39 cfs @ 12.60 hrs, Volume= 1.141 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 901.35' @ 12.60 hrs Surf.Area= 53,251 sf Storage= 31,126 cf

Plug-Flow detention time= 182.0 min calculated for 1.141 af (91% of inflow)
 Center-of-Mass det. time= 144.8 min (909.9 - 765.1)

Volume	Invert	Avail.Storage	Storage Description
#1	900.50'	218,942 cf	Wetland 5 (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.50	10	0	0
900.80	30,900	4,636	4,636
901.00	51,900	8,280	12,917
902.00	55,800	53,850	66,767
904.00	63,900	119,700	186,467
904.50	66,000	32,475	218,942

Device	Routing	Invert	Outlet Devices
#1	Primary	895.72'	10.0" Round Culvert L= 302.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 895.72' / 895.25' S= 0.0016 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 0.55 sf
#2	Device 1	900.80'	27.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Secondary	904.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=2.39 cfs @ 12.60 hrs HW=901.35' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Barrel Controls 2.39 cfs @ 4.39 fps)

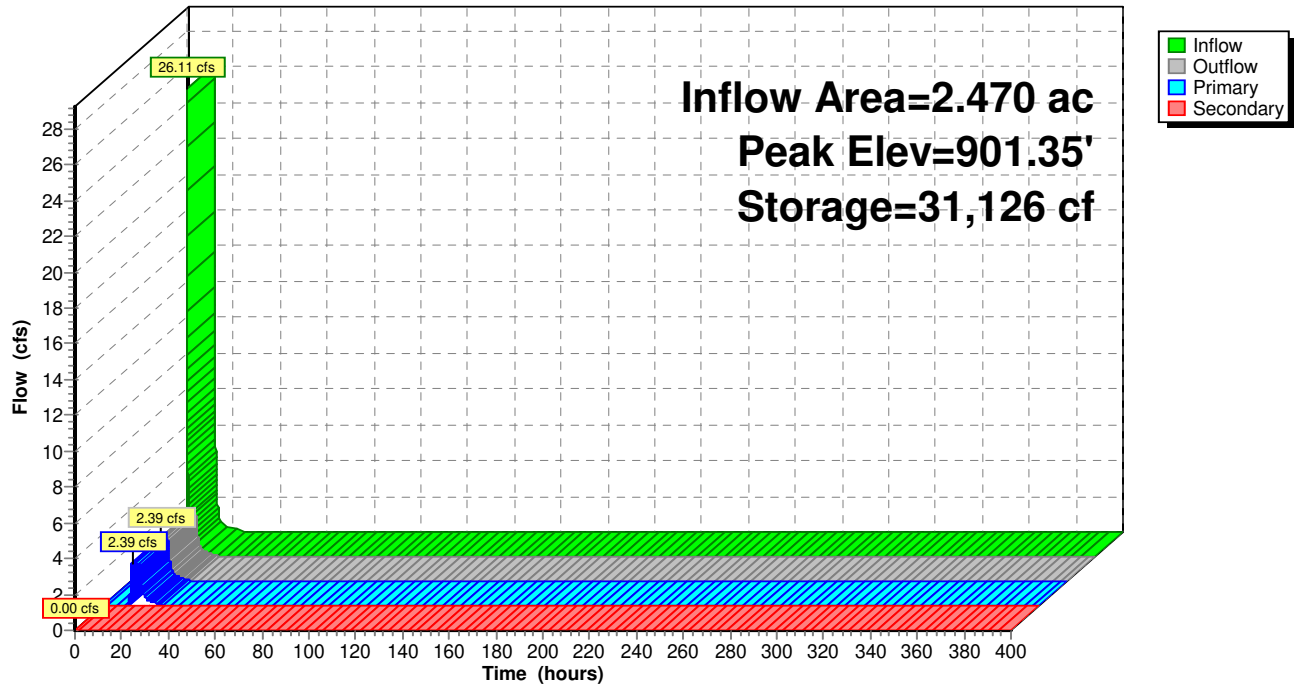
↑ **2=Orifice/Grate** (Passes 2.39 cfs of 9.33 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=900.50' TW=900.50' (Dynamic Tailwater)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond W5: Wetland 5

Hydrograph



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MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Subcatchment 1.1S: Proposed Direct Drainage to Lake Peltier

Runoff = 3.45 cfs @ 12.16 hrs, Volume= 0.178 af, Depth= 1.10"

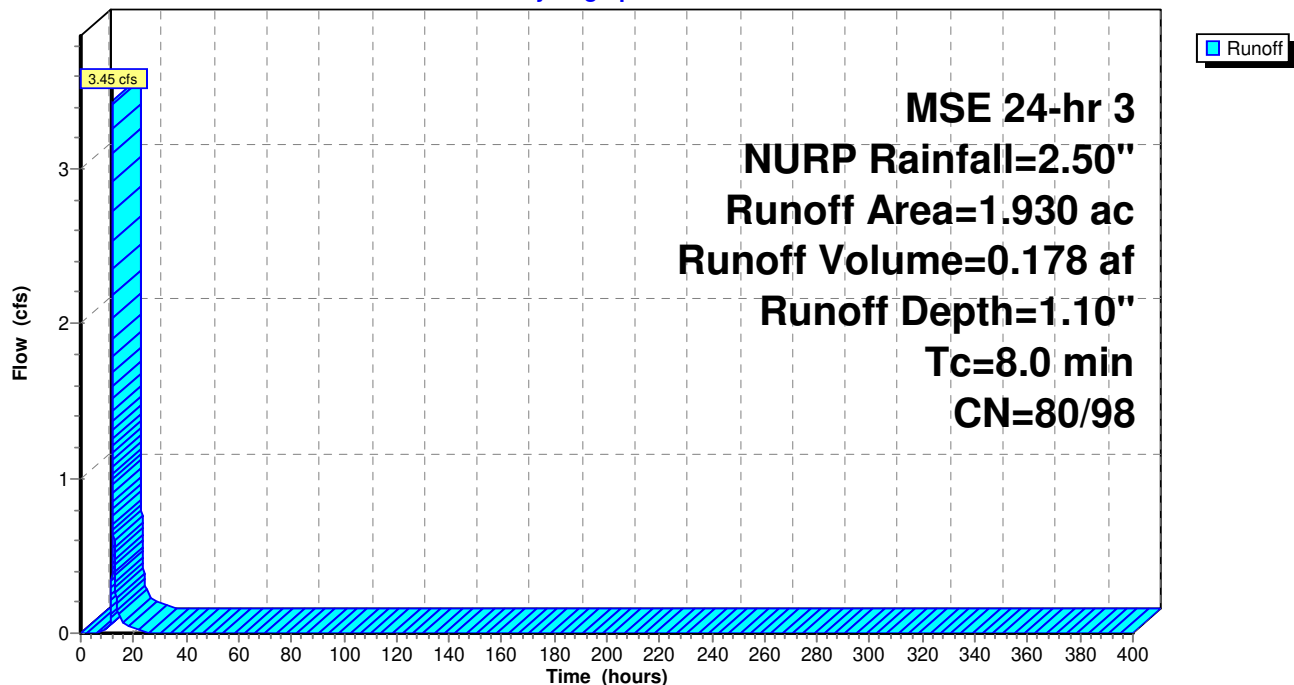
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
0.300	98	Unconnected pavement, HSG D
1.530	80	>75% Grass cover, Good, HSG D
* 0.100	80	Woods/grass comb., Fair, HSG D
1.930	83	Weighted Average
1.630	80	84.46% Pervious Area
0.300	98	15.54% Impervious Area

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

Subcatchment 1.1S: Proposed Direct Drainage to Lake Peltier

Hydrograph



Summary for Subcatchment 1.2S: Proposed Drainage to Ex STRM

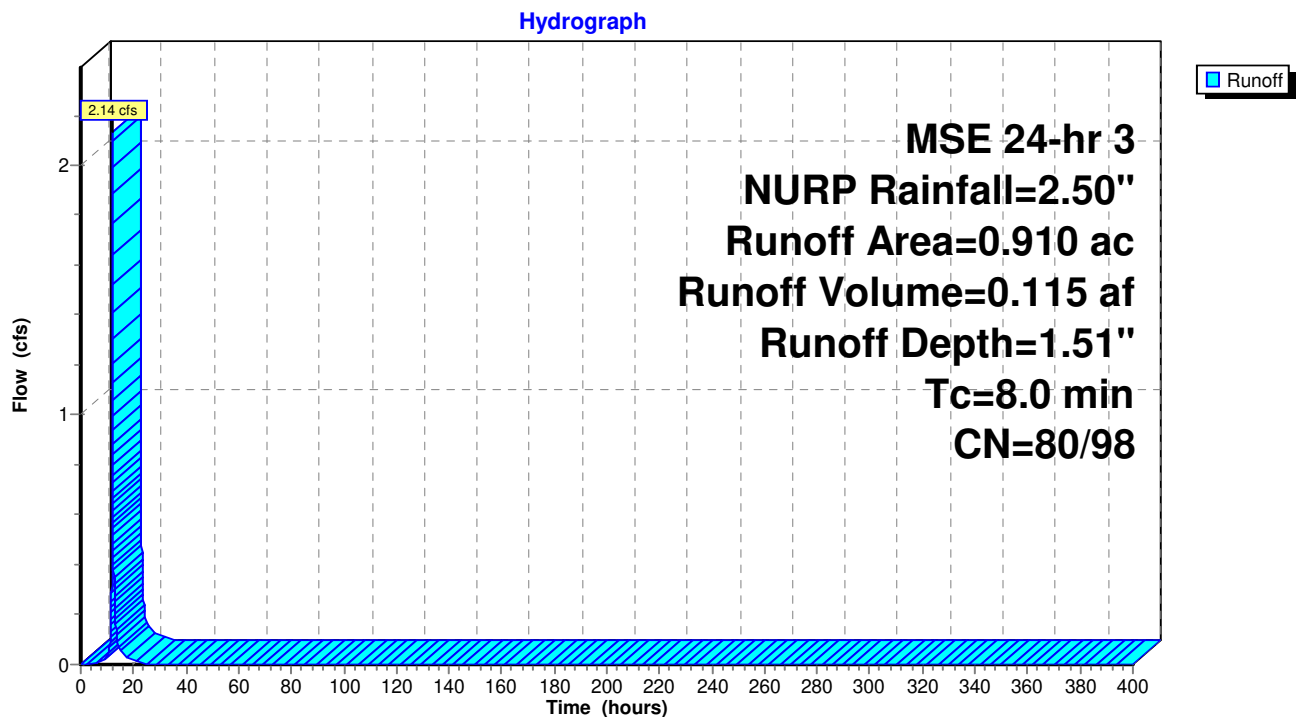
Runoff = 2.14 cfs @ 12.15 hrs, Volume= 0.115 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
0.410	98	Unconnected roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
0.910	88	Weighted Average
0.500	80	54.95% Pervious Area
0.410	98	45.05% Impervious Area

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

Subcatchment 1.2S: Proposed Drainage to Ex STRM



2026-04-01 Peltier Ponds - Prelim

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MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Subcatchment 1S: Proposed Drainage to Pond 1

Runoff = 57.46 cfs @ 12.23 hrs, Volume= 3.944 af, Depth= 1.53"

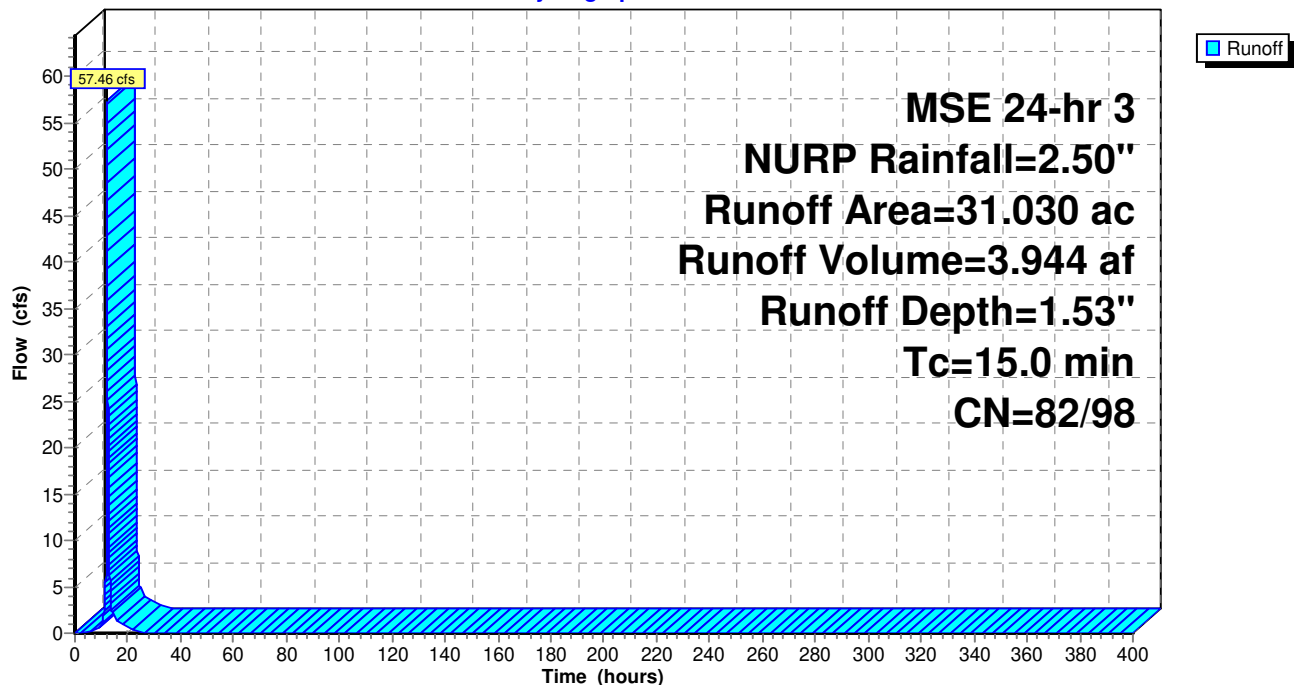
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
12.850	98	Paved parking, HSG D
2.280	98	Water Surface, 0% imp, HSG D
15.900	80	>75% Grass cover, Good, HSG D
31.030	89	Weighted Average
18.180	82	58.59% Pervious Area
12.850	98	41.41% Impervious Area

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

Subcatchment 1S: Proposed Drainage to Pond 1

Hydrograph



2026-04-01 Peltier Ponds - Prelim

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MSE 24-hr 3 NURP Rainfall=2.50"

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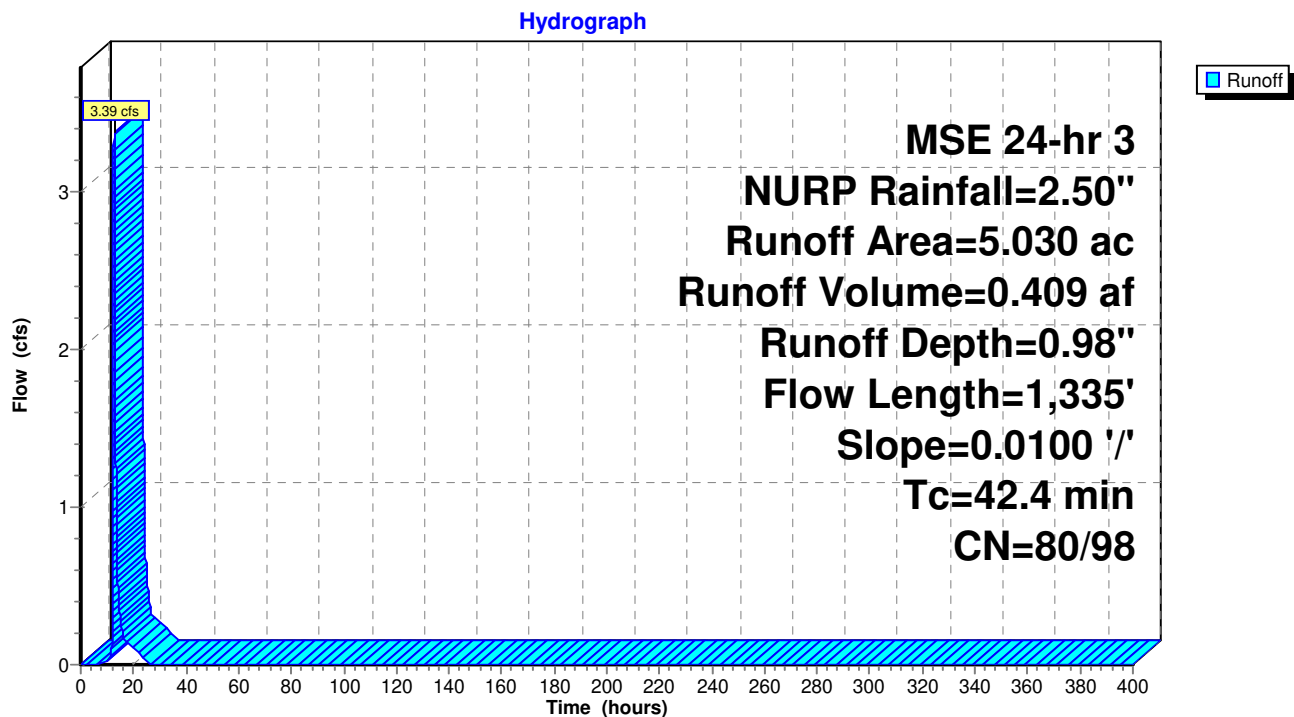
Summary for Subcatchment 2.1S: Proposed Drainage to Tributary 2 upstream of X-ing

Runoff = 3.39 cfs @ 12.62 hrs, Volume= 0.409 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
0.320	98	Paved parking, HSG D
* 4.710	80	Woods/grass comb., Fair, HSG D
5.030	81	Weighted Average
4.710	80	93.64% Pervious Area
0.320	98	6.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.1	200	0.0100	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
10.7	450	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.6	685	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
42.4	1,335	Total			

Subcatchment 2.1S: Proposed Drainage to Tributary 2 upstream of X-ing

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MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Subcatchment 2.2S: Proposed Drainage to Pond 2 Cell A

Runoff = 18.51 cfs @ 12.17 hrs, Volume= 1.067 af, Depth= 1.51"

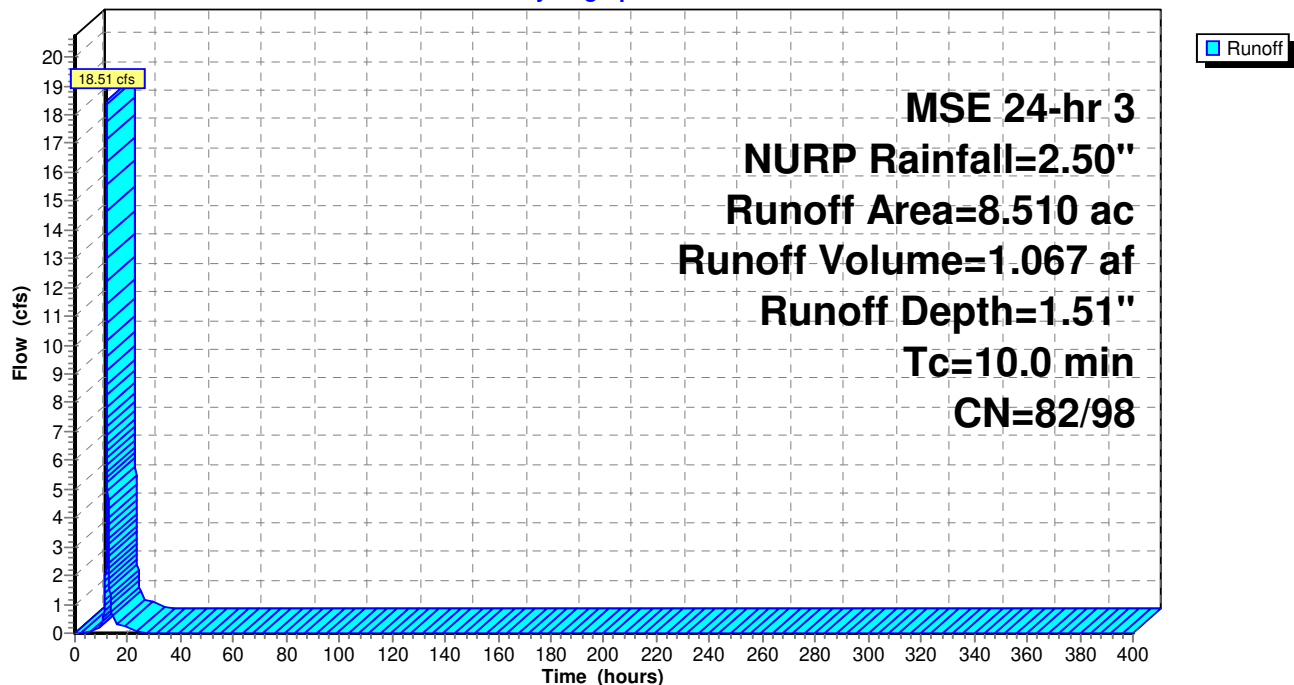
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
3.390	98	Paved parking, HSG D
0.660	98	Water Surface, 0% imp, HSG D
4.460	80	>75% Grass cover, Good, HSG D
8.510	89	Weighted Average
5.120	82	60.16% Pervious Area
3.390	98	39.84% Impervious Area

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

Subcatchment 2.2S: Proposed Drainage to Pond 2 Cell A

Hydrograph



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MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Subcatchment 2.3S: Proposed Drainage to Pond 2 Cell B

Runoff = 4.17 cfs @ 12.18 hrs, Volume= 0.237 af, Depth= 1.44"

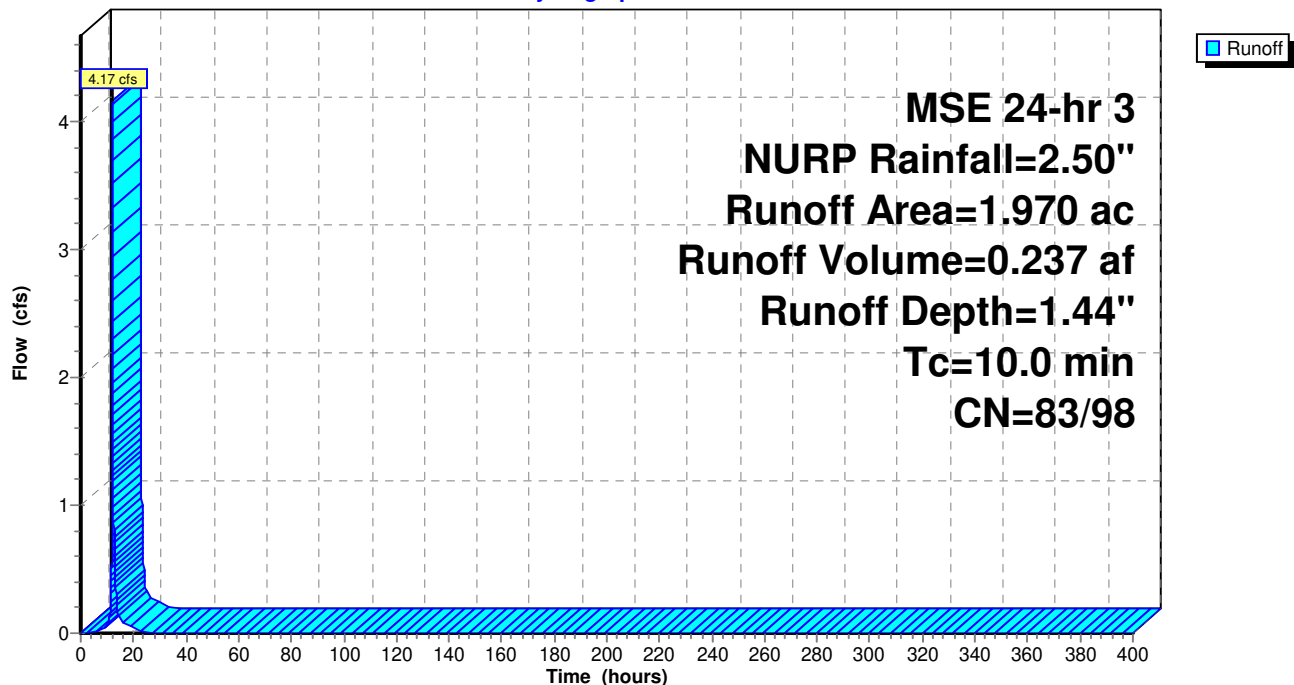
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
0.630	98	Paved parking, HSG D
0.260	98	Water Surface, 0% imp, HSG D
1.080	80	>75% Grass cover, Good, HSG D
1.970	88	Weighted Average
1.340	83	68.02% Pervious Area
0.630	98	31.98% Impervious Area

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

Subcatchment 2.3S: Proposed Drainage to Pond 2 Cell B

Hydrograph



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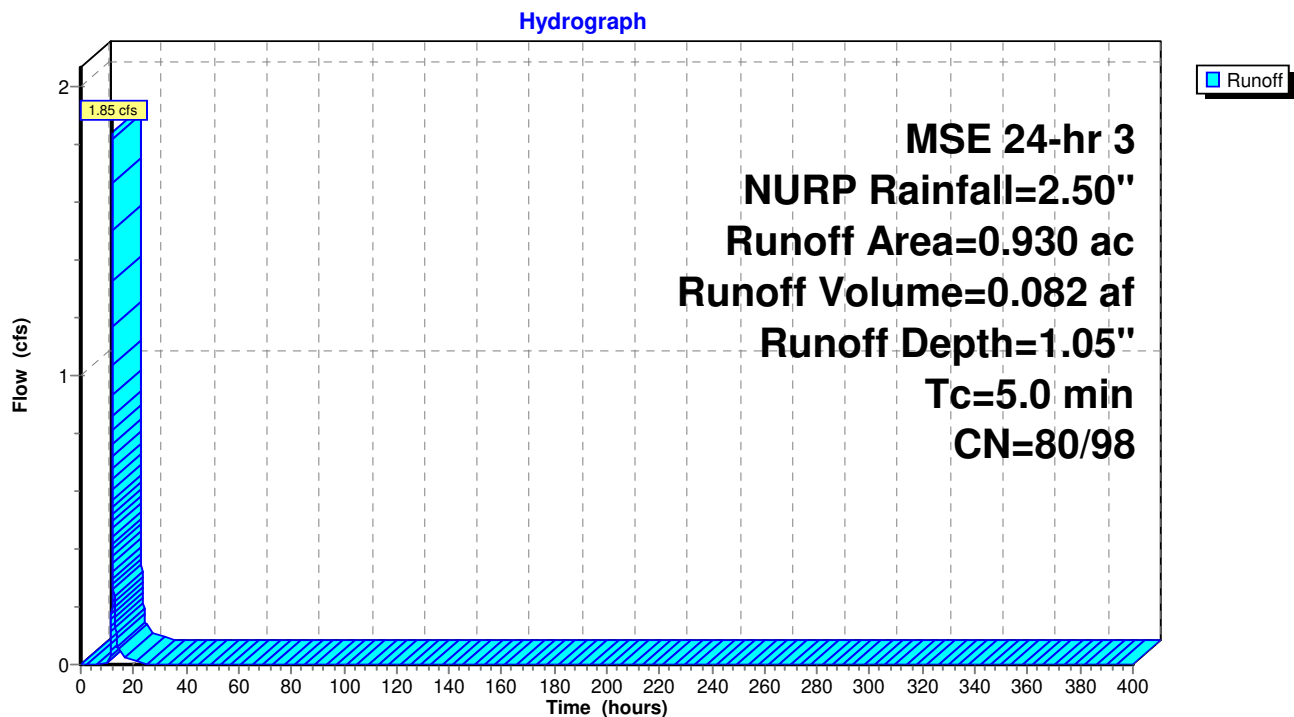
Summary for Subcatchment 2.4S: Proposed Drainage to Wetland 10

Runoff = 1.85 cfs @ 12.13 hrs, Volume= 0.082 af, Depth= 1.05"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
0.110	98	Paved parking, HSG D
0.820	80	>75% Grass cover, Good, HSG D
0.930	82	Weighted Average
0.820	80	88.17% Pervious Area
0.110	98	11.83% Impervious Area

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

Subcatchment 2.4S: Proposed Drainage to Wetland 10

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MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Subcatchment 2.5S: Proposed Drainage to Pond 3

Runoff = 29.83 cfs @ 12.17 hrs, Volume= 1.692 af, Depth= 1.55"

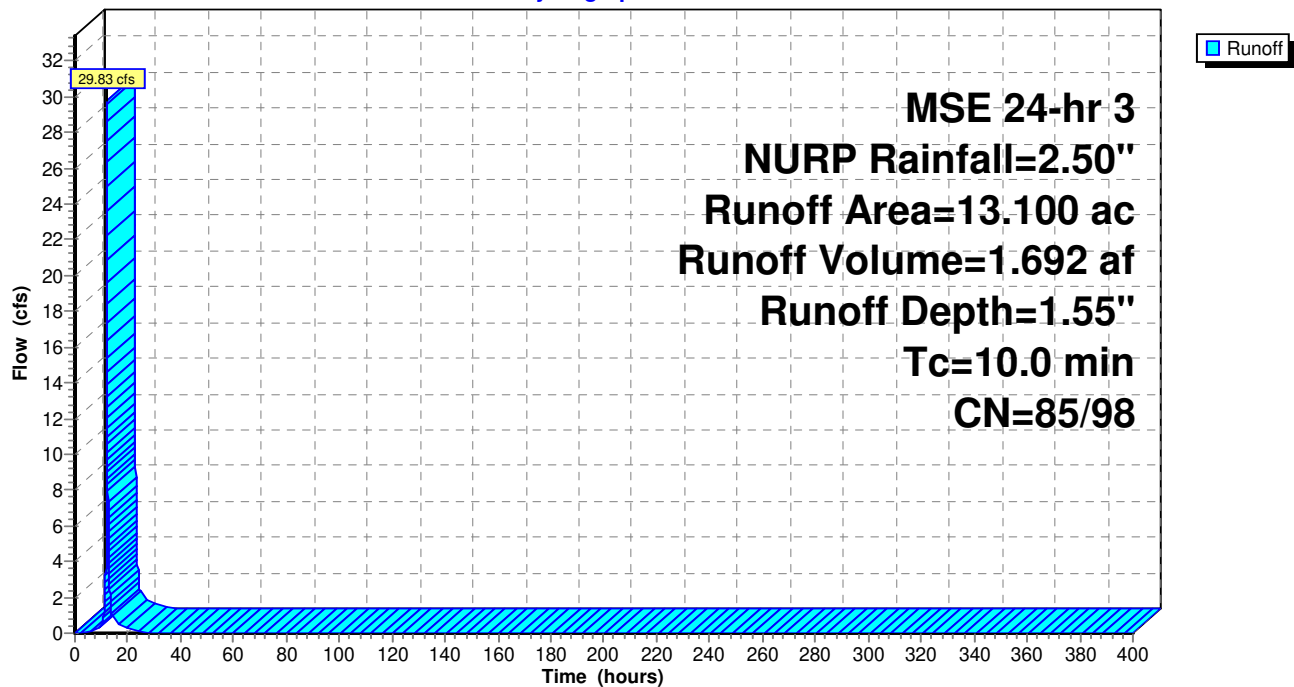
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
4.460	98	Paved parking, HSG D
2.310	98	Water Surface, 0% imp, HSG D
6.330	80	>75% Grass cover, Good, HSG D
13.100	89	Weighted Average
8.640	85	65.95% Pervious Area
4.460	98	34.05% Impervious Area

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

Subcatchment 2.5S: Proposed Drainage to Pond 3

Hydrograph



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MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Subcatchment 2.6S: Proposed Drainage to Pond 4

Runoff = 14.53 cfs @ 12.17 hrs, Volume= 0.849 af, Depth= 1.61"

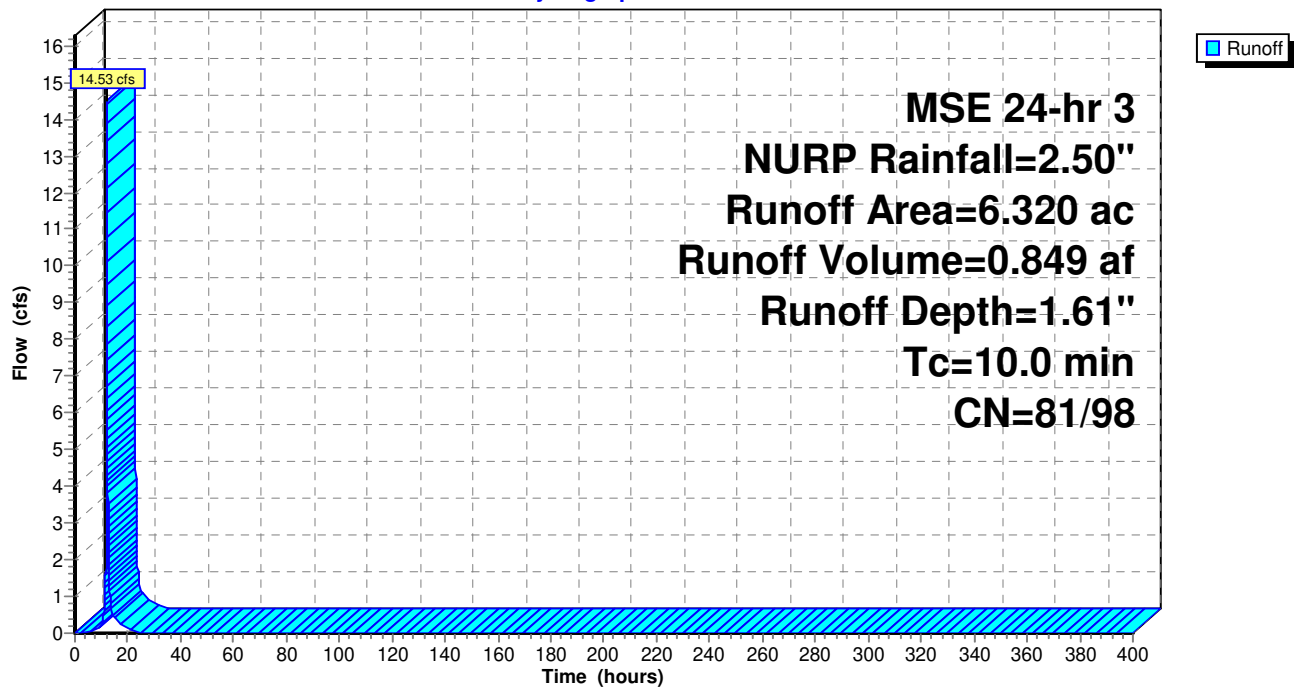
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
3.190	98	Paved parking, HSG D
0.210	98	Water Surface, 0% imp, HSG D
2.920	80	>75% Grass cover, Good, HSG D
6.320	90	Weighted Average
3.130	81	49.53% Pervious Area
3.190	98	50.47% Impervious Area

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

Subcatchment 2.6S: Proposed Drainage to Pond 4

Hydrograph



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MSE 24-hr 3 NURP Rainfall=2.50"

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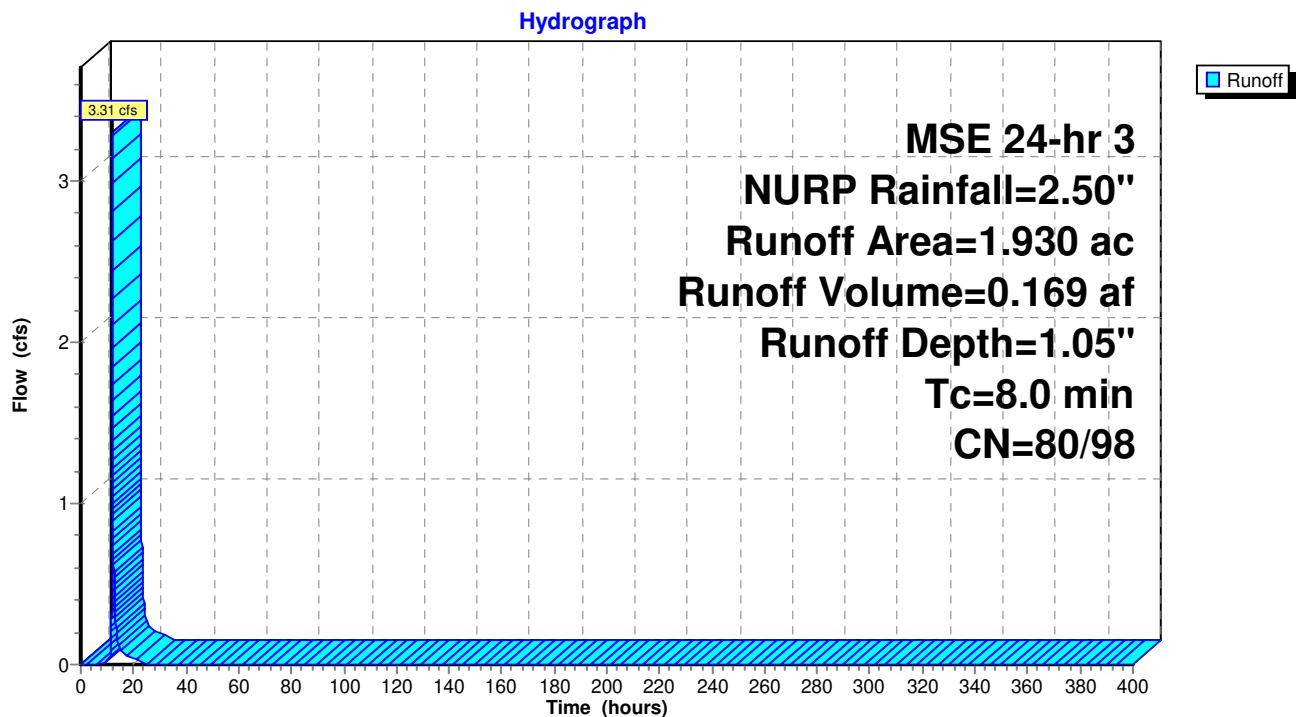
Summary for Subcatchment 2S: Proposed Drainage to Tributary 1 downstream of X-ing

Runoff = 3.31 cfs @ 12.16 hrs, Volume= 0.169 af, Depth= 1.05"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
0.230	98	Paved parking, HSG D
* 1.700	80	Woods/grass comb., Fair, HSG D
1.930	82	Weighted Average
1.700	80	88.08% Pervious Area
0.230	98	11.92% Impervious Area

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

Subcatchment 2S: Proposed Drainage to Tributary 1 downstream of X-ing

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MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Subcatchment 3S: Proposed Drainage to Wetland 14

Runoff = 6.23 cfs @ 14.15 hrs, Volume= 1.884 af, Depth= 0.92"

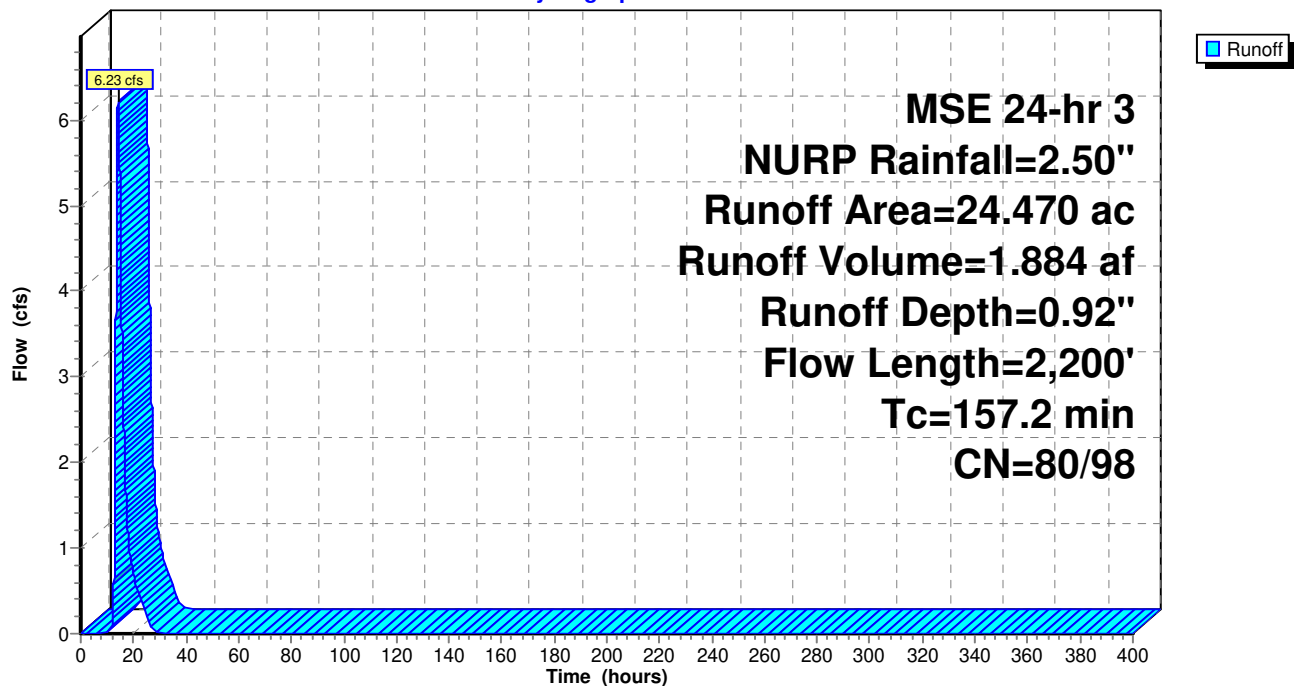
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
0.620	98	Paved parking, HSG D
* 23.850	80	Woods/grass comb., Fair, HSG D
24.470	80	Weighted Average
23.850	80	97.47% Pervious Area
0.620	98	2.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
3.9	300	0.0200	1.27		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
126.7	1,700	0.0020	0.22		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
157.2	2,200	Total			

Subcatchment 3S: Proposed Drainage to Wetland 14

Hydrograph



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MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Subcatchment 4.1S: Proposed Drainage to Pond 6

Runoff = 10.50 cfs @ 12.17 hrs, Volume= 0.583 af, Depth= 1.63"

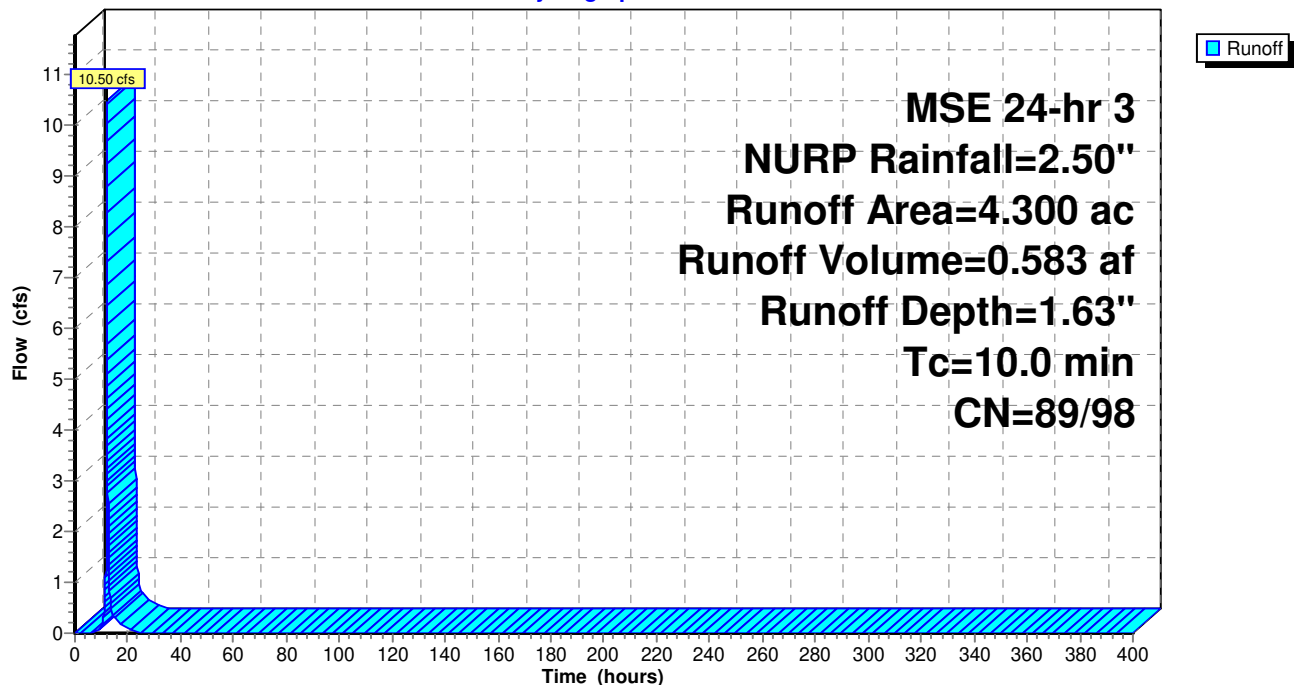
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
0.910	98	Paved parking, HSG D
1.620	98	Water Surface, 0% imp, HSG D
1.770	80	>75% Grass cover, Good, HSG D
4.300	91	Weighted Average
3.390	89	78.84% Pervious Area
0.910	98	21.16% Impervious Area

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

Subcatchment 4.1S: Proposed Drainage to Pond 6

Hydrograph



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MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Subcatchment 4.2S: Proposed Drainage to Pond 5

Runoff = 35.68 cfs @ 12.17 hrs, Volume= 2.041 af, Depth= 1.56"

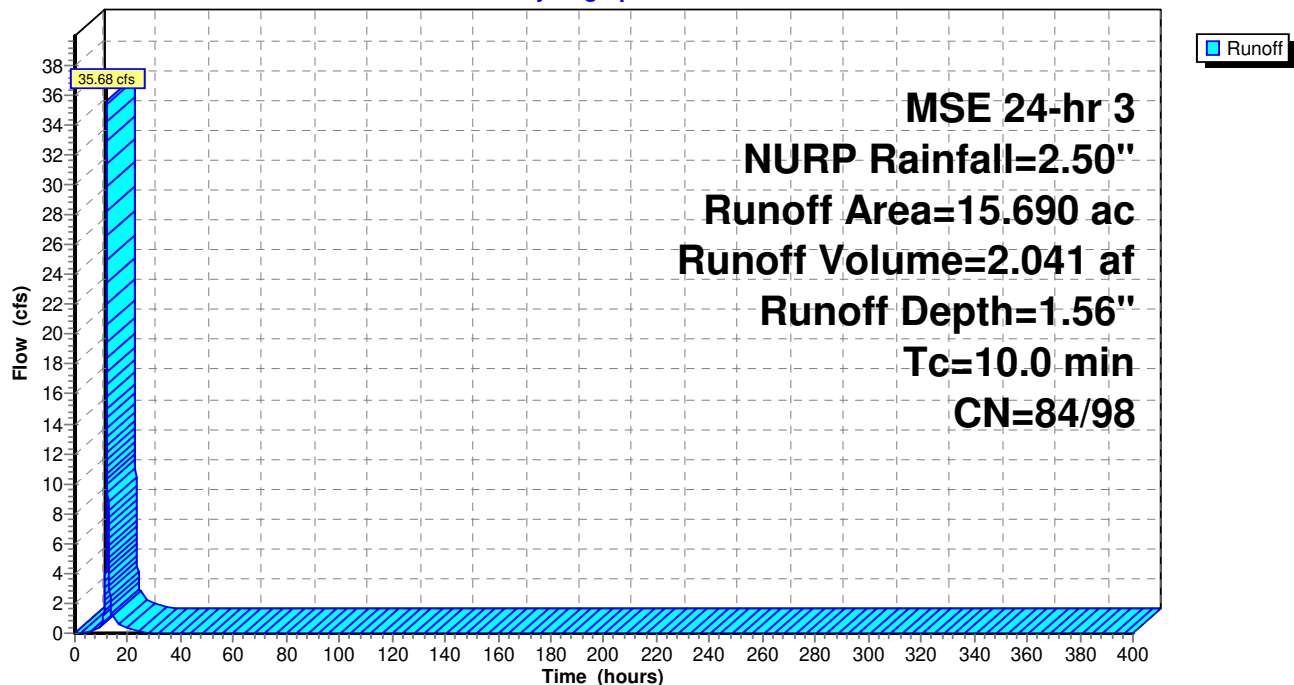
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
6.050	98	Paved parking, HSG D
1.930	98	Water Surface, 0% imp, HSG D
7.710	80	>75% Grass cover, Good, HSG D
15.690	89	Weighted Average
9.640	84	61.44% Pervious Area
6.050	98	38.56% Impervious Area

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

Subcatchment 4.2S: Proposed Drainage to Pond 5

Hydrograph



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MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Subcatchment 4.3S: Proposed Drainage to Wetland 5

Runoff = 7.46 cfs @ 12.12 hrs, Volume= 0.330 af, Depth= 1.60"

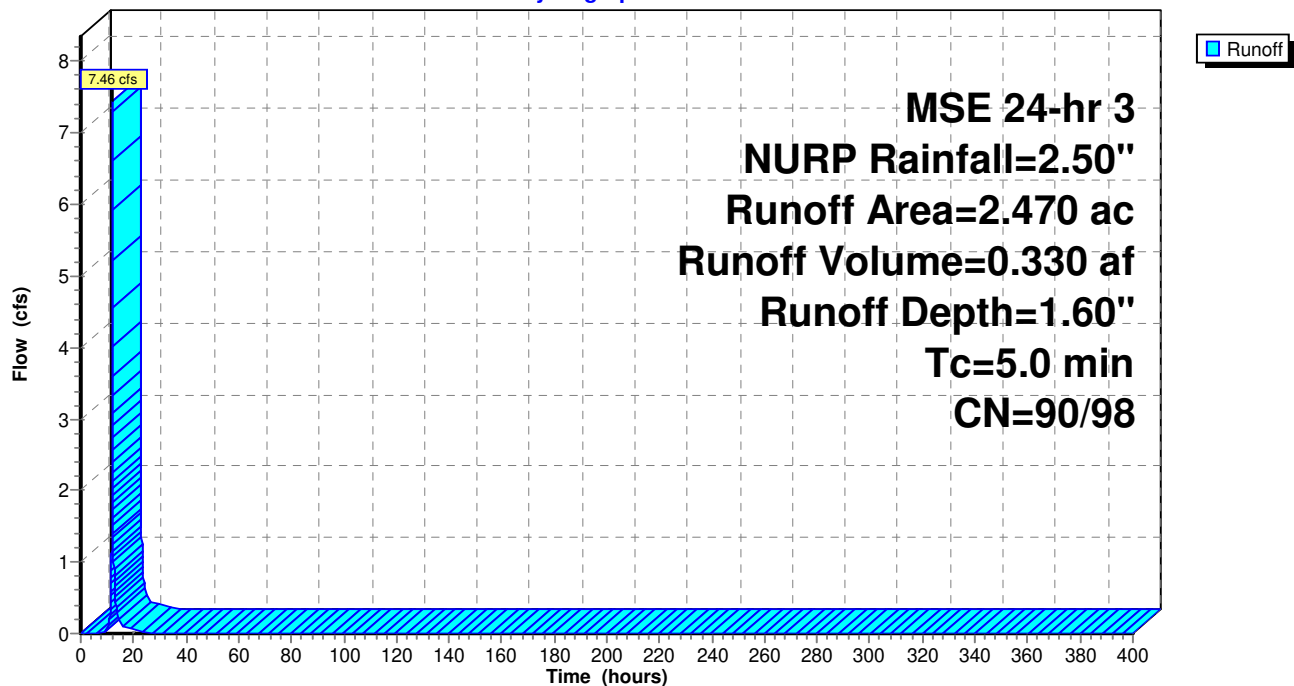
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG D
2.230	90	Fallow, crop residue, Good, HSG D
2.470	91	Weighted Average
2.230	90	90.28% Pervious Area
0.240	98	9.72% Impervious Area

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

Subcatchment 4.3S: Proposed Drainage to Wetland 5

Hydrograph



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MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Subcatchment 4S: Proposed Drainage to Wetland 4

Runoff = 9.00 cfs @ 12.17 hrs, Volume= 0.493 af, Depth= 1.60"

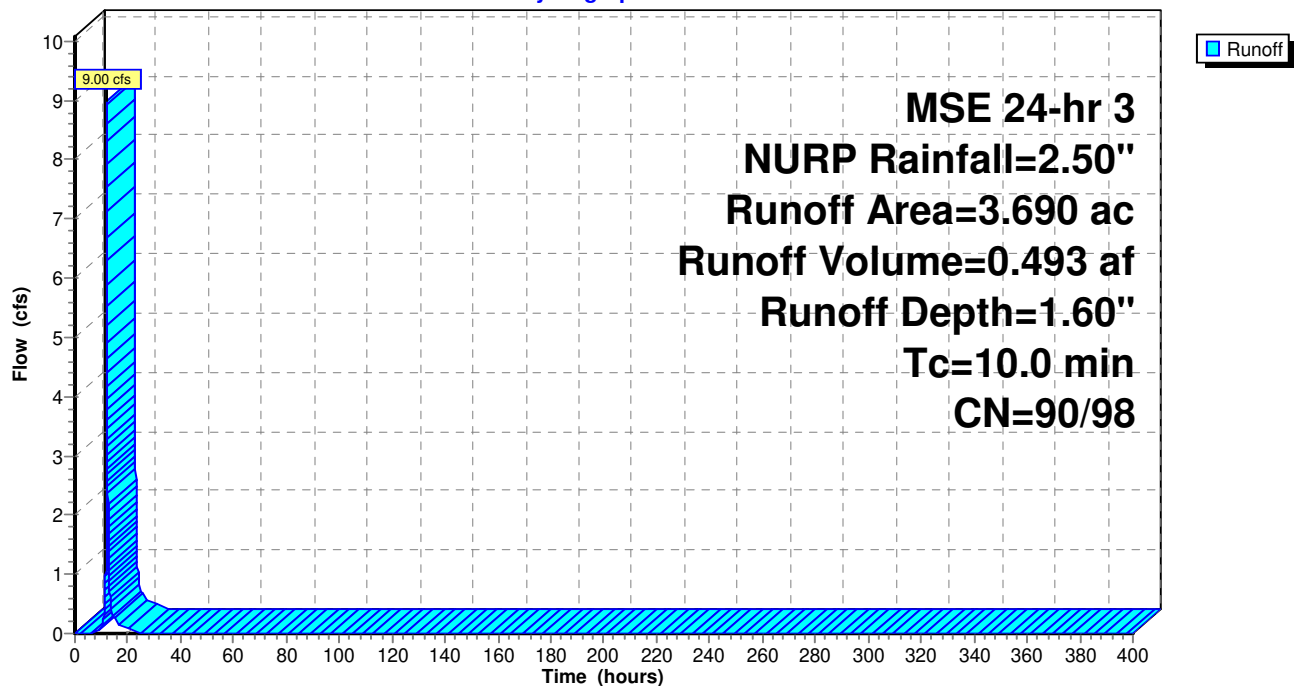
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
0.360	98	Paved parking, HSG D
3.330	90	Fallow, crop residue, Good, HSG D
3.690	91	Weighted Average
3.330	90	90.24% Pervious Area
0.360	98	9.76% Impervious Area

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

Subcatchment 4S: Proposed Drainage to Wetland 4

Hydrograph



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MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Subcatchment 7S: Proposed Park Drainage to Pond 1

Runoff = 3.06 cfs @ 12.33 hrs, Volume= 0.257 af, Depth= 1.12"

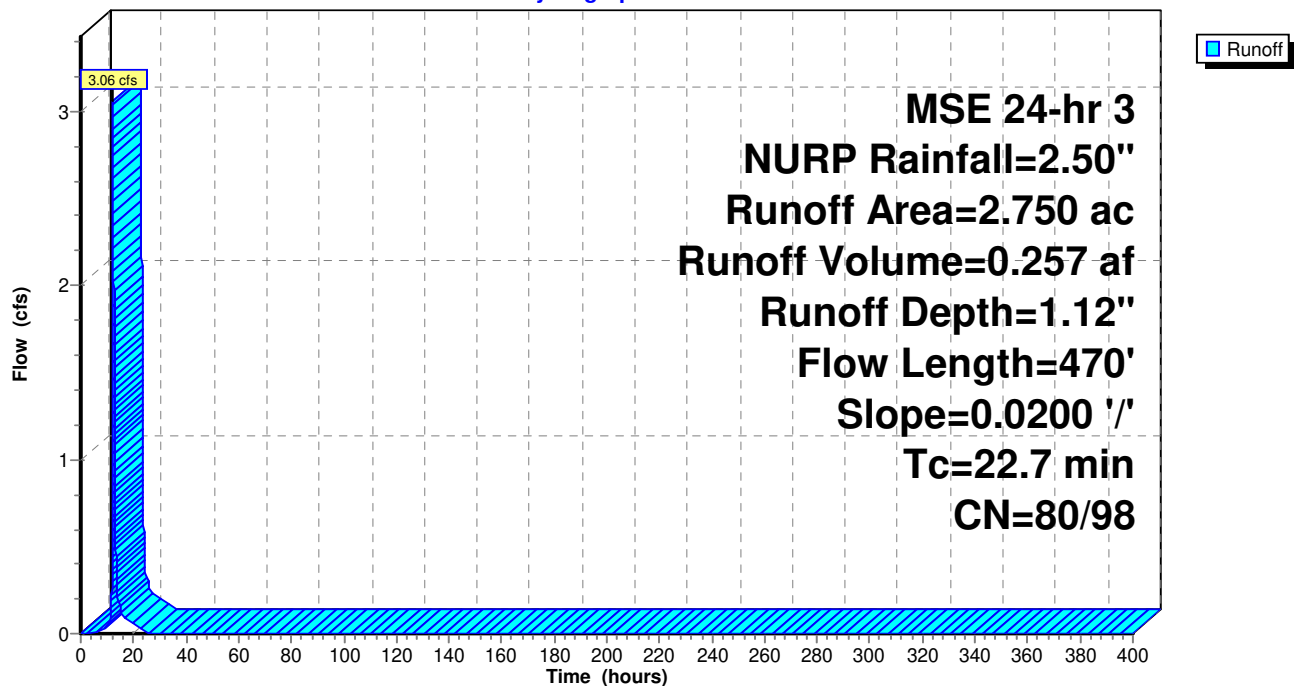
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
0.460	98	Paved parking, HSG D
* 2.290	80	Woods/grass comb., Fair, HSG D
2.750	83	Weighted Average
2.290	80	83.27% Pervious Area
0.460	98	16.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	200	0.0200	0.18		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
4.5	270	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
22.7	470	Total			

Subcatchment 7S: Proposed Park Drainage to Pond 1

Hydrograph



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MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Subcatchment 20S: OFFSITE Existing Drainage to Tributary 2

Runoff = 7.21 cfs @ 13.26 hrs, Volume= 1.389 af, Depth= 0.89"

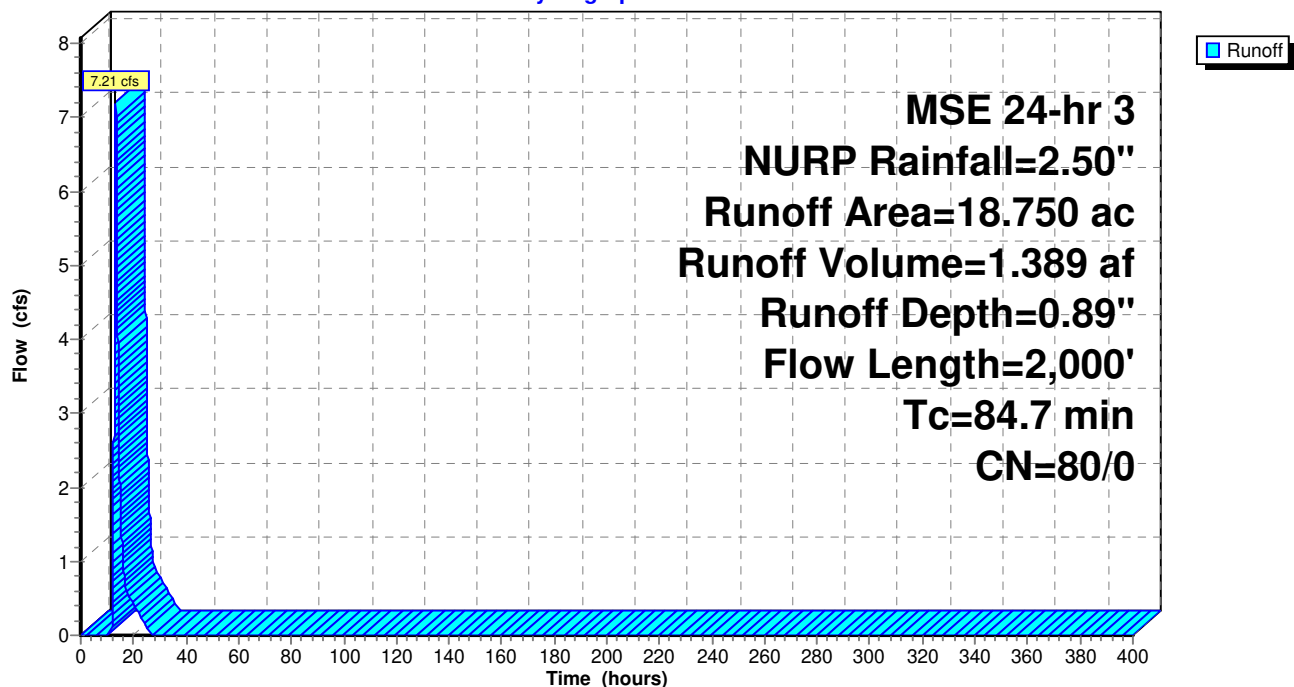
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
* 0.000	80	Row crops, straight row, Good, HSG D
* 18.750	80	Woods/grass comb., Fair, HSG D
18.750	80	Weighted Average
18.750	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.0	200	0.0100	0.10		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"
43.0	1,000	0.0060	0.39		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.7	800	0.0175	1.98		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
84.7	2,000	Total			

Subcatchment 20S: OFFSITE Existing Drainage to Tributary 2

Hydrograph



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MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Subcatchment 30S: OFFSITE Existing Drainage to Wetland 14

Runoff = 2.11 cfs @ 12.45 hrs, Volume= 0.209 af, Depth= 0.89"

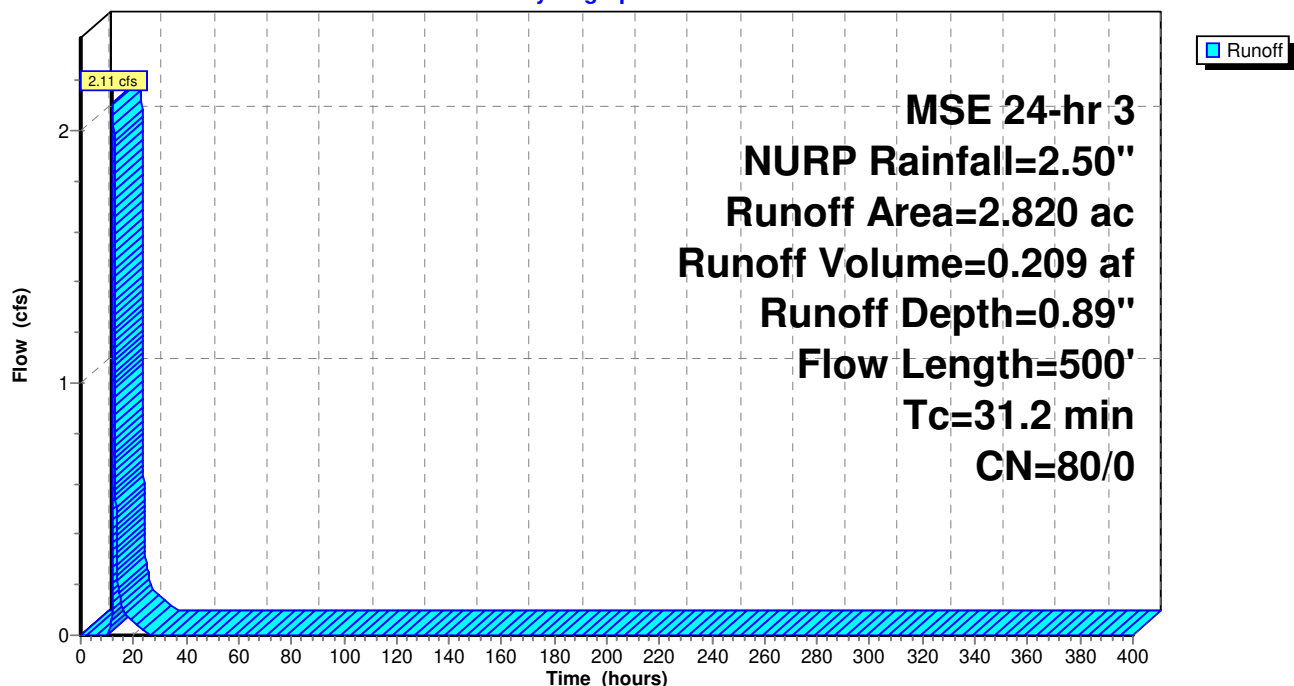
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
* 0.000	80	Row crops, straight row, Good, HSG D
* 2.820	80	Woods/grass comb., Fair, HSG D
2.820	80	Weighted Average
2.820	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.1	200	0.0100	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
7.1	300	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
31.2	500	Total			

Subcatchment 30S: OFFSITE Existing Drainage to Wetland 14

Hydrograph



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MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Subcatchment 40S: OFFSITE Existing Drainage to Wetland 4

Runoff = 4.98 cfs @ 12.82 hrs, Volume= 0.740 af, Depth= 1.21"

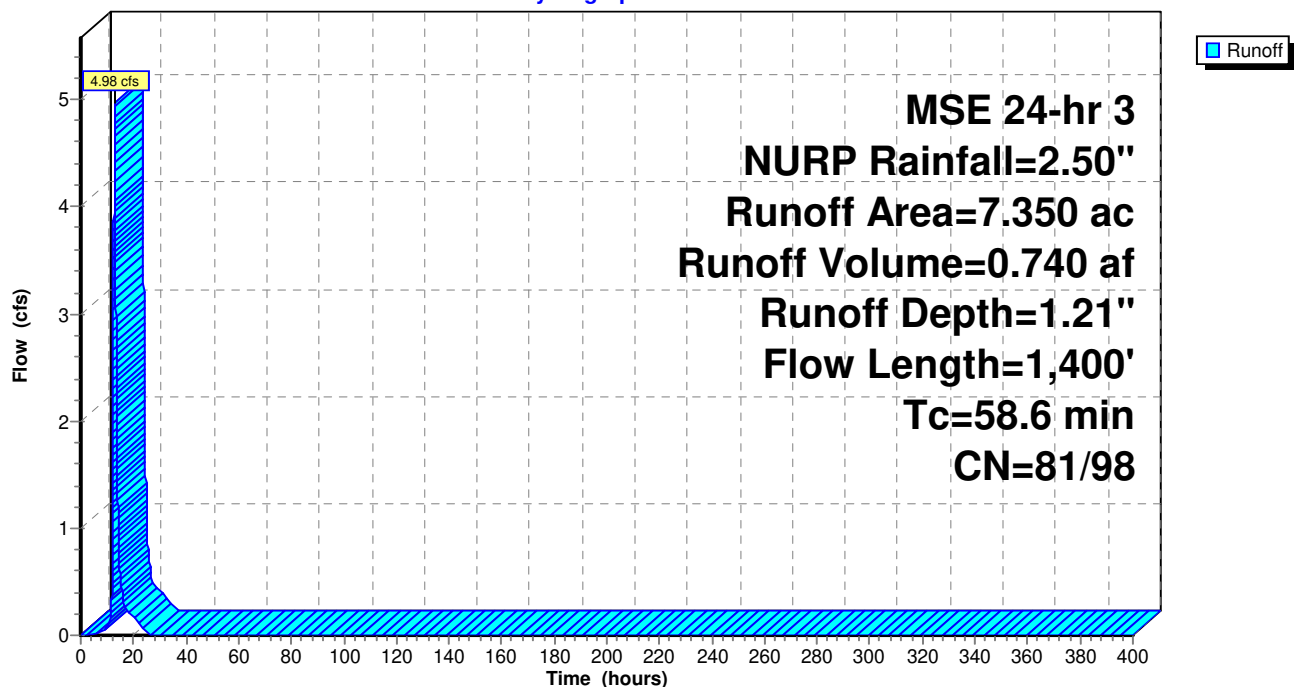
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 NURP Rainfall=2.50"

Area (ac)	CN	Description
0.000	89	Row crops, straight row, Good, HSG D
0.000	82	Woods/grass comb., Fair, HSG D
7.350	84	1 acre lots, 20% imp, HSG D
7.350	84	Weighted Average
5.880	81	80.00% Pervious Area
1.470	98	20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	200	0.0200	0.18		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
40.4	1,200	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
58.6	1,400	Total			

Subcatchment 40S: OFFSITE Existing Drainage to Wetland 4

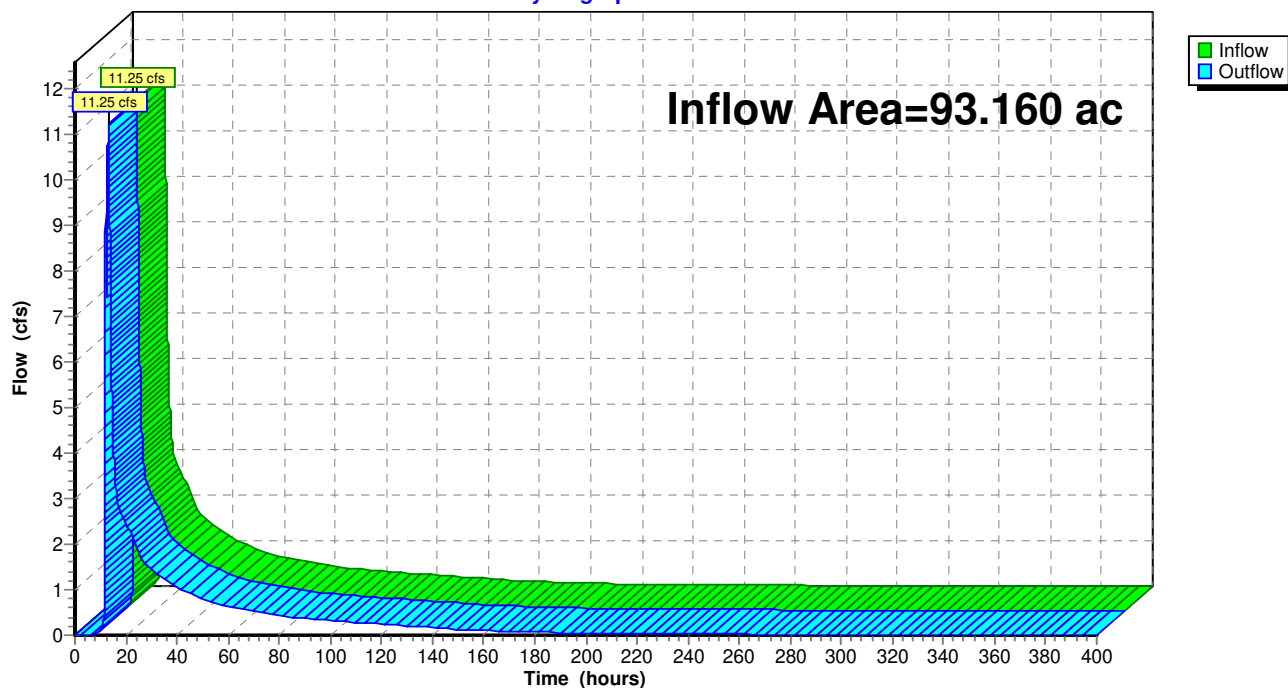
Hydrograph



Summary for Reach 1R: To Lake Peltier

Inflow Area = 93.160 ac, 28.28% Impervious, Inflow Depth > 1.32" for NURP event
Inflow = 11.25 cfs @ 13.13 hrs, Volume= 10.227 af
Outflow = 11.25 cfs @ 13.13 hrs, Volume= 10.227 af, Atten= 0%, Lag= 0.0 min

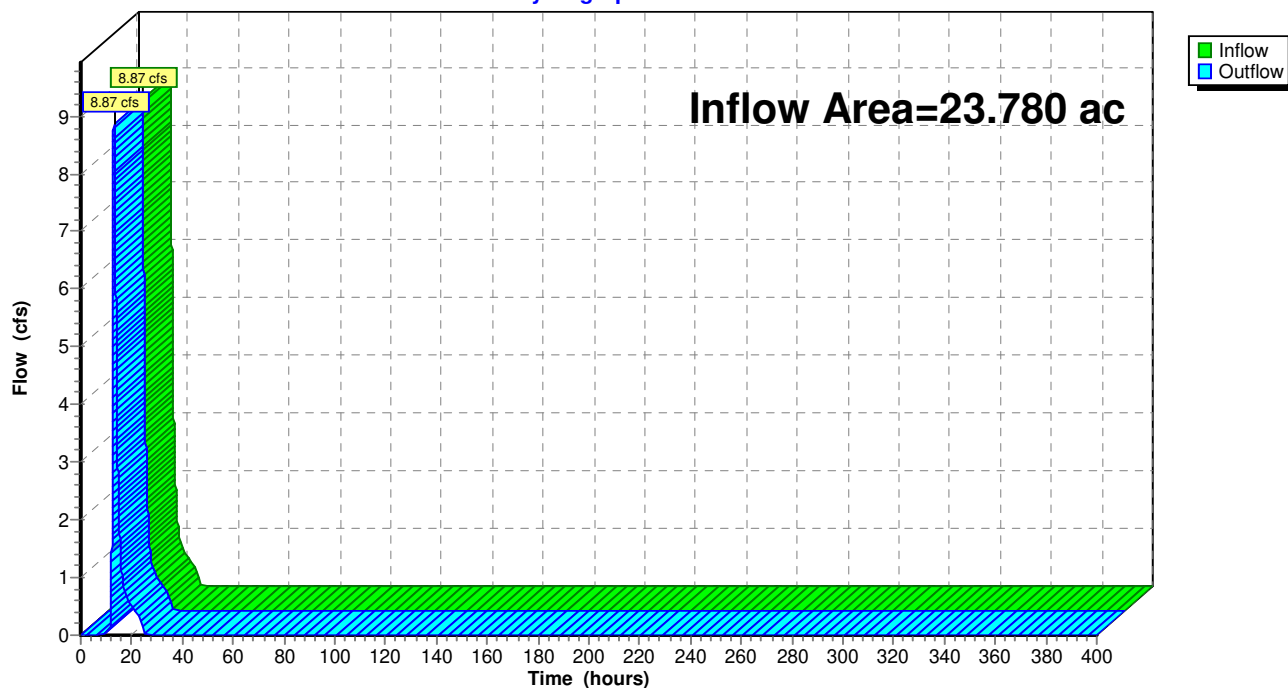
Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 1R: To Lake Peltier**Hydrograph**

Summary for Reach 2R: Tributary 2 - Upstream of X-ing

Inflow Area = 23.780 ac, 1.35% Impervious, Inflow Depth = 0.91" for NURP event
Inflow = 8.87 cfs @ 13.08 hrs, Volume= 1.798 af
Outflow = 8.87 cfs @ 13.08 hrs, Volume= 1.798 af, Atten= 0%, Lag= 0.0 min

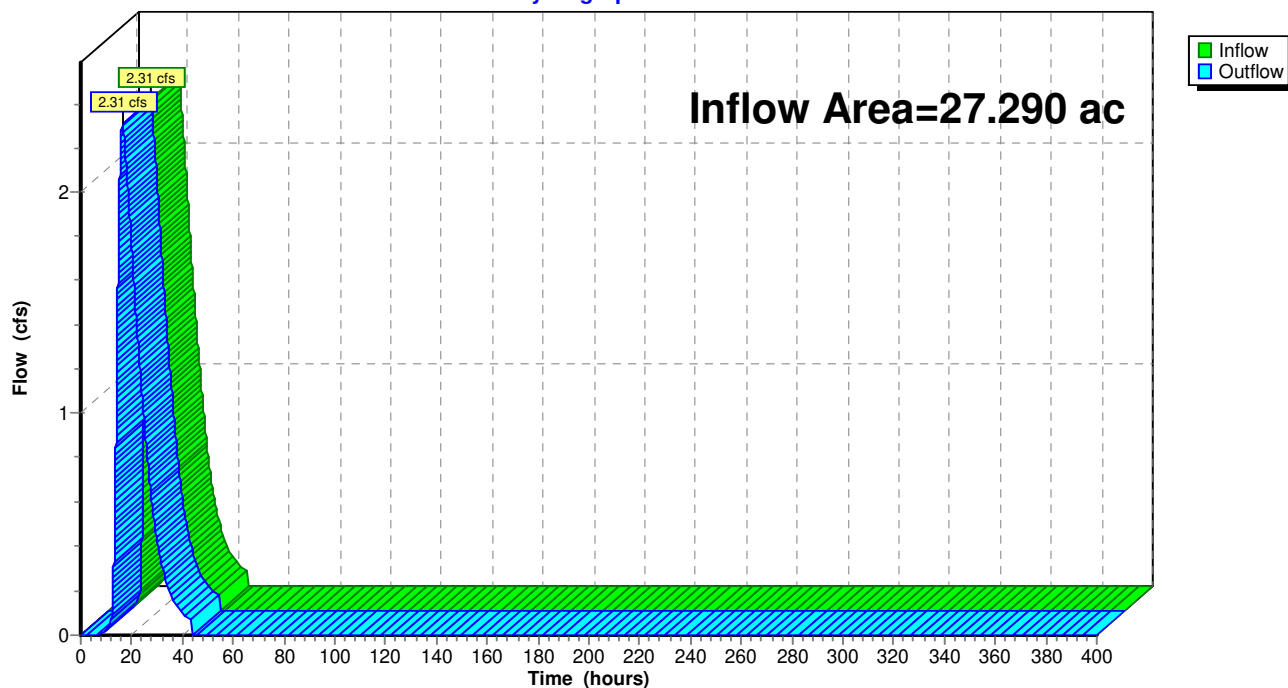
Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 2R: Tributary 2 - Upstream of X-ing**Hydrograph**

Summary for Reach 3R: To South

Inflow Area = 27.290 ac, 2.27% Impervious, Inflow Depth = 0.92" for NURP event
Inflow = 2.31 cfs @ 16.49 hrs, Volume= 2.093 af
Outflow = 2.31 cfs @ 16.49 hrs, Volume= 2.093 af, Atten= 0%, Lag= 0.0 min

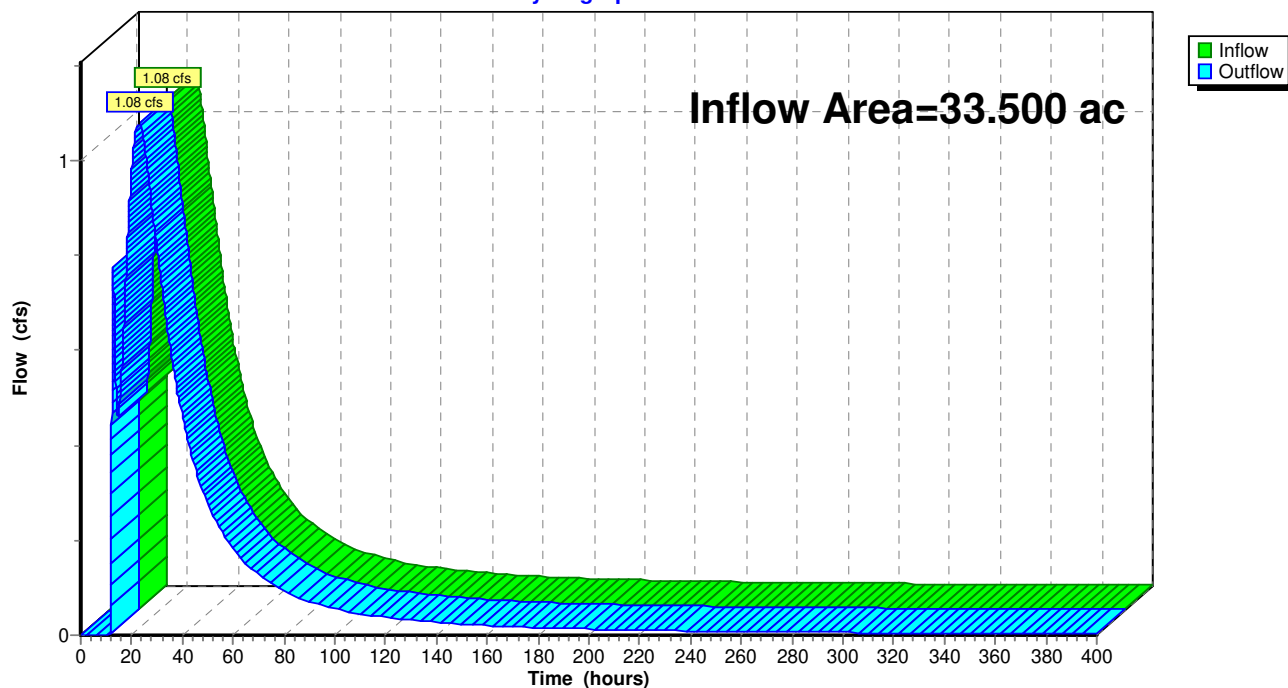
Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 3R: To South**Hydrograph**

Summary for Reach 4R: To North

Inflow Area = 33.500 ac, 26.96% Impervious, Inflow Depth > 1.04" for NURP event
Inflow = 1.08 cfs @ 22.93 hrs, Volume= 2.913 af
Outflow = 1.08 cfs @ 22.93 hrs, Volume= 2.913 af, Atten= 0%, Lag= 0.0 min

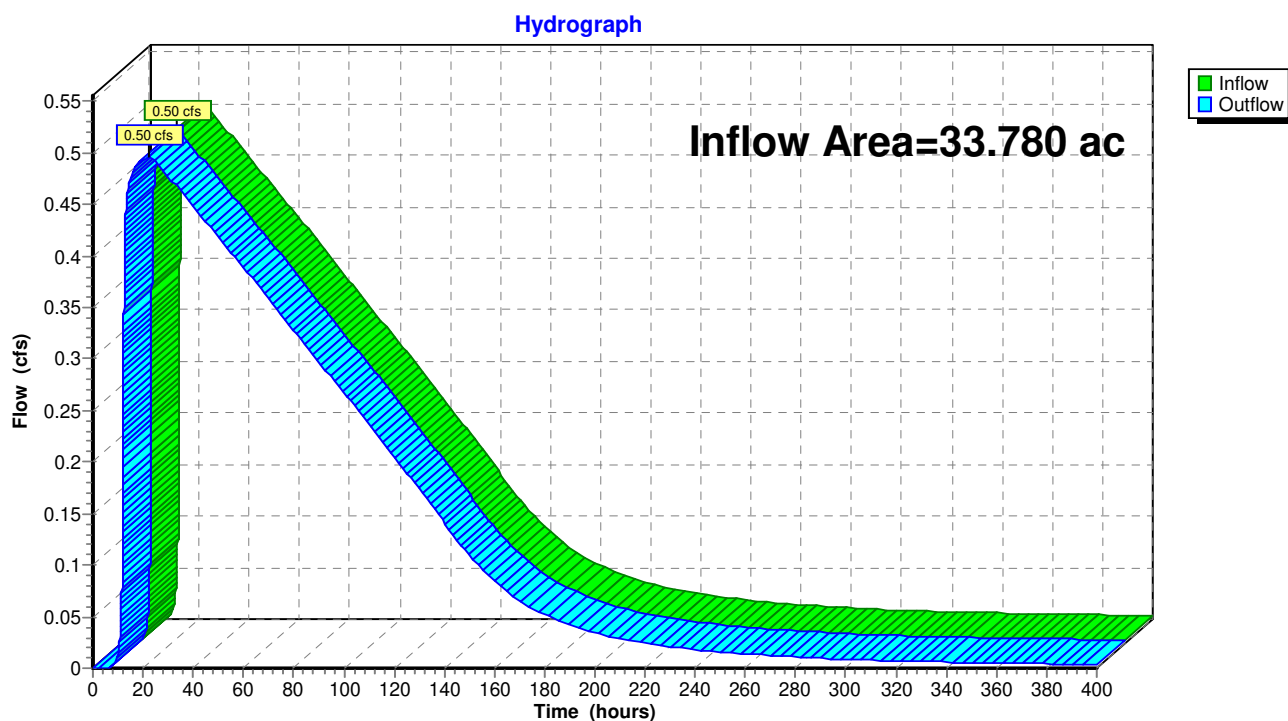
Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 4R: To North**Hydrograph**

Summary for Reach 10R: Capacity Check

Inflow Area = 33.780 ac, 39.40% Impervious, Inflow Depth > 1.46" for NURP event
Inflow = 0.50 cfs @ 21.99 hrs, Volume= 4.112 af
Outflow = 0.50 cfs @ 21.99 hrs, Volume= 4.112 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

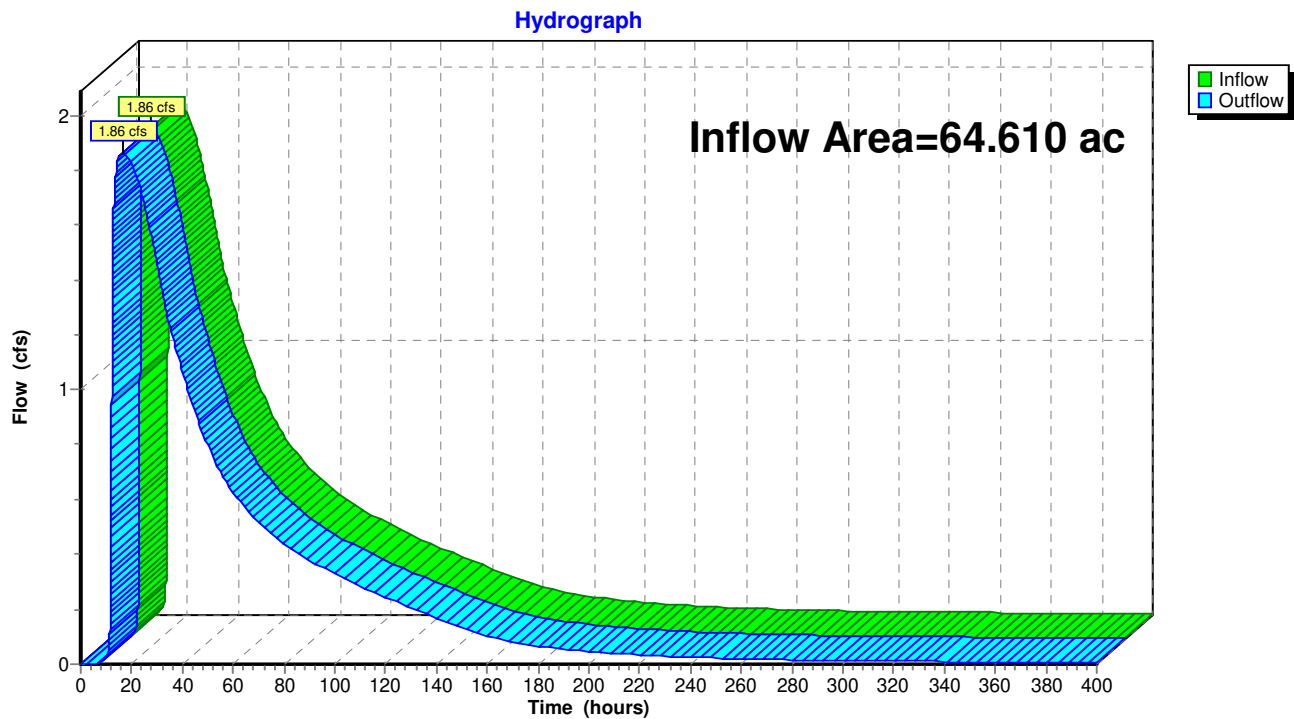
Reach 10R: Capacity Check

Summary for Reach STRM: 60" Trunk Sewer

Inflow Area = 64.610 ac, 38.83% Impervious, Inflow Depth > 1.48" for NURP event
 Inflow = 1.86 cfs @ 16.27 hrs, Volume= 7.971 af
 Outflow = 1.86 cfs @ 16.27 hrs, Volume= 7.971 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach STRM: 60" Trunk Sewer



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MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Pond 1.2P: Ex 18" STRM

Inflow Area = 0.910 ac, 45.05% Impervious, Inflow Depth = 1.51" for NURP event
 Inflow = 2.14 cfs @ 12.15 hrs, Volume= 0.115 af
 Outflow = 2.10 cfs @ 12.17 hrs, Volume= 0.115 af, Atten= 2%, Lag= 0.8 min
 Primary = 2.10 cfs @ 12.17 hrs, Volume= 0.115 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 893.62' @ 12.17 hrs Surf.Area= 295 sf Storage= 105 cf

Plug-Flow detention time= 1.4 min calculated for 0.115 af (100% of inflow)
 Center-of-Mass det. time= 1.1 min (781.0 - 780.0)

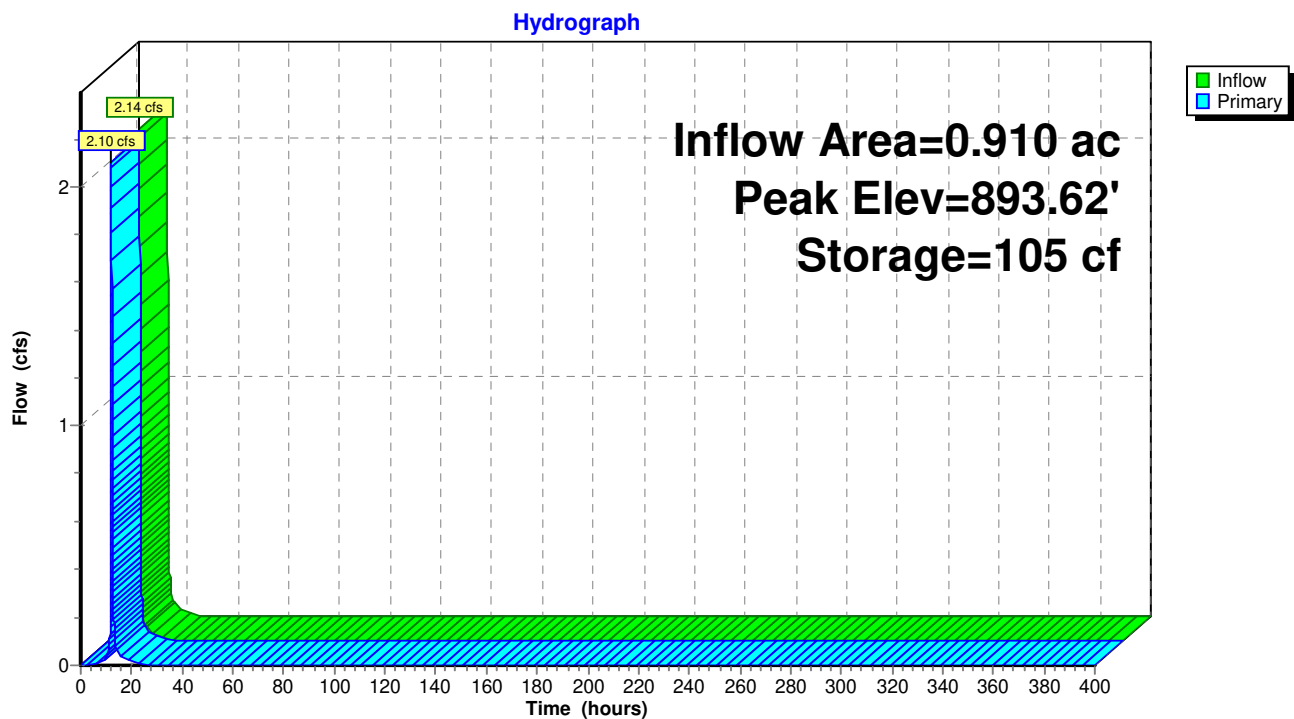
Volume	Invert	Avail.Storage	Storage Description
#1	892.96'	13,494 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
892.96	20	0	0
894.00	450	244	244
896.00	2,900	3,350	3,594
898.00	7,000	9,900	13,494

Device	Routing	Invert	Outlet Devices
#1	Primary	892.96'	18.0" Round Culvert L= 43.6' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 892.96' / 888.72' S= 0.0972 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Primary	894.10'	50.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.09 cfs @ 12.17 hrs HW=893.62' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 2.09 cfs @ 2.77 fps)
 ↓ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1.2P: Ex 18" STRM



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Summary for Pond 1P: Pond 1

Inflow Area = 33.780 ac, 39.40% Impervious, Inflow Depth = 1.49" for NURP event
 Inflow = 59.93 cfs @ 12.23 hrs, Volume= 4.200 af
 Outflow = 0.50 cfs @ 21.99 hrs, Volume= 4.112 af, Atten= 99%, Lag= 585.3 min
 Primary = 0.50 cfs @ 21.99 hrs, Volume= 4.112 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Starting Elev= 892.00' Surf.Area= 198,200 sf Storage= 672,500 cf

Peak Elev= 893.56' @ 21.99 hrs Surf.Area= 208,884 sf Storage= 835,393 cf (162,893 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 4,148.0 min (4,938.2 - 790.2)

Volume	Invert	Avail.Storage	Storage Description
#1	882.00'	672,500 cf	WET VOL (Prismatic) Listed below (Recalc)
#2	892.00'	1,174,300 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)
		1,846,800 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
882.00	47,700	0	0
884.00	54,700	102,400	102,400
886.00	62,200	116,900	219,300
888.00	70,100	132,300	351,600
890.00	78,700	148,800	500,400
891.00	83,200	80,950	581,350
892.00	99,100	91,150	672,500

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
892.00	99,100	0	0
894.00	112,800	211,900	211,900
896.00	127,000	239,800	451,700
898.00	141,800	268,800	720,500
900.00	156,000	297,800	1,018,300
901.00	156,000	156,000	1,174,300

Device	Routing	Invert	Outlet Devices
#1	Primary	892.00'	15.0" Round Culvert L= 351.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 892.00' / 890.25' S= 0.0050 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Device 1	892.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Primary	900.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

2026-04-01 Peltier Ponds - Prelim

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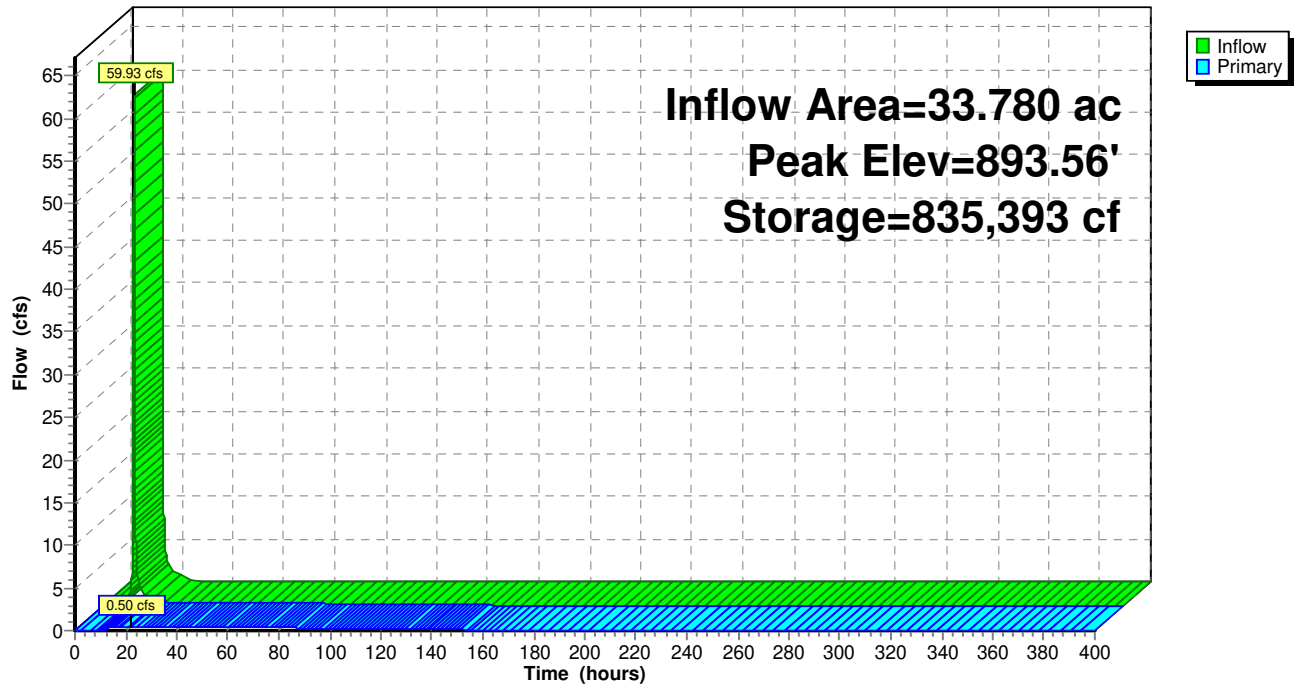
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Primary OutFlow Max=0.50 cfs @ 21.99 hrs HW=893.56' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 0.50 cfs of 4.34 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.50 cfs @ 5.68 fps)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: Pond 1

Hydrograph



2026-04-01 Peltier Ponds - Prelim

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Summary for Pond 2aP: Ex STRM Structure

Inflow Area = 25.710 ac, 2.14% Impervious, Inflow Depth = 0.92" for NURP event
 Inflow = 9.17 cfs @ 13.08 hrs, Volume= 1.965 af
 Outflow = 9.09 cfs @ 13.14 hrs, Volume= 1.965 af, Atten= 1%, Lag= 3.3 min
 Primary = 9.09 cfs @ 13.14 hrs, Volume= 1.965 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 888.31' @ 13.14 hrs Surf.Area= 2,511 sf Storage= 1,666 cf

Plug-Flow detention time= 2.6 min calculated for 1.965 af (100% of inflow)
 Center-of-Mass det. time= 2.6 min (882.9 - 880.3)

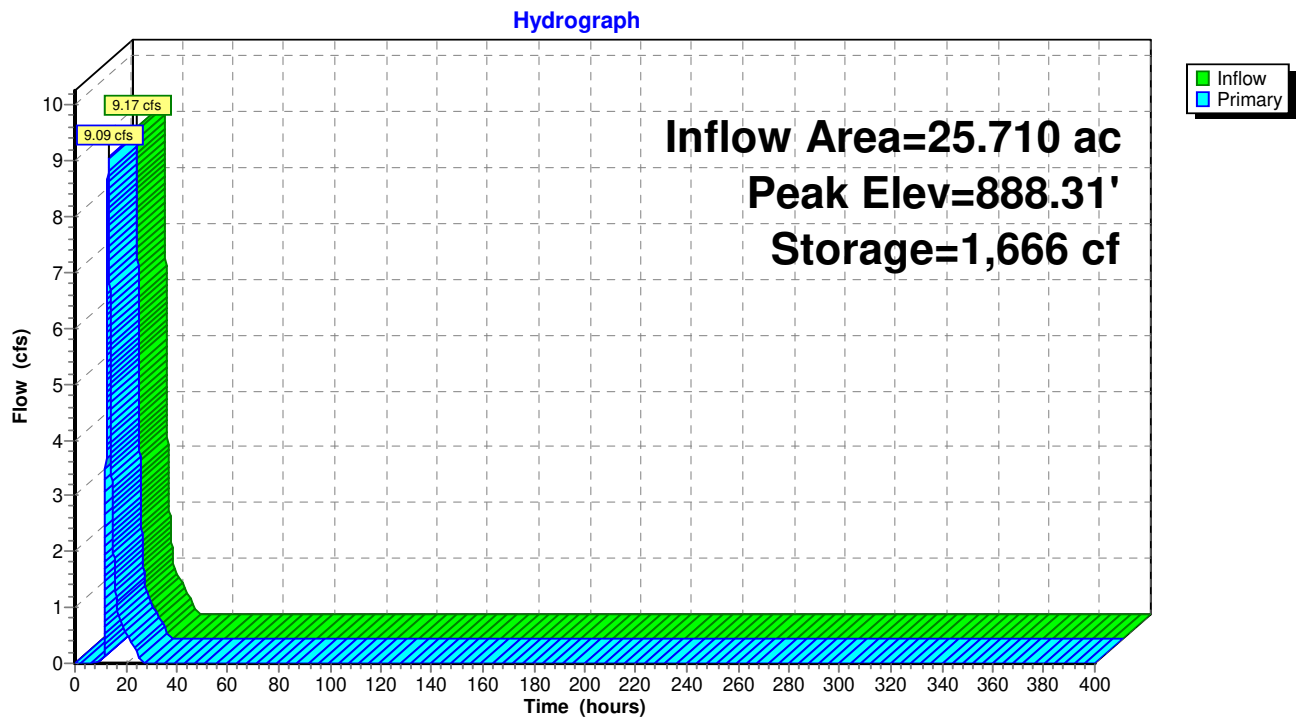
Volume	Invert	Avail.Storage	Storage Description
#1	886.82'	46,909 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
886.82	10	0	0
888.00	1,700	1,009	1,009
890.00	6,900	8,600	9,609
892.00	30,400	37,300	46,909

Device	Routing	Invert	Outlet Devices
#1	Primary	886.36'	21.0" Round Ex 21" CMP L= 37.5' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 886.36' / 885.72' S= 0.0171 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 2.41 sf
#2	Device 1	886.82'	21.0" Vert. EX STRUCTURE OPENNING C= 0.600
#3	Primary	888.40'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=9.09 cfs @ 13.14 hrs HW=888.31' TW=0.00' (Dynamic Tailwater)

1=Ex 21" CMP (Passes 9.09 cfs of 10.42 cfs potential flow)
 2=EX STRUCTURE OPENNING (Orifice Controls 9.09 cfs @ 4.16 fps)
 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2aP: Ex STRM Structure



Summary for Pond 2bP: Wetland 19 Storm X-ing

Inflow Area = 23.780 ac, 1.35% Impervious, Inflow Depth = 0.91" for NURP event
 Inflow = 8.87 cfs @ 13.08 hrs, Volume= 1.798 af
 Outflow = 8.86 cfs @ 13.08 hrs, Volume= 1.795 af, Atten= 0%, Lag= 0.2 min
 Primary = 8.86 cfs @ 13.08 hrs, Volume= 1.795 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 893.93' @ 13.08 hrs Surf.Area= 704 sf Storage= 274 cf

Plug-Flow detention time= 2.2 min calculated for 1.795 af (100% of inflow)
 Center-of-Mass det. time= 1.1 min (887.1 - 886.0)

Volume	Invert	Avail.Storage	Storage Description
#1	893.20'	167,198 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

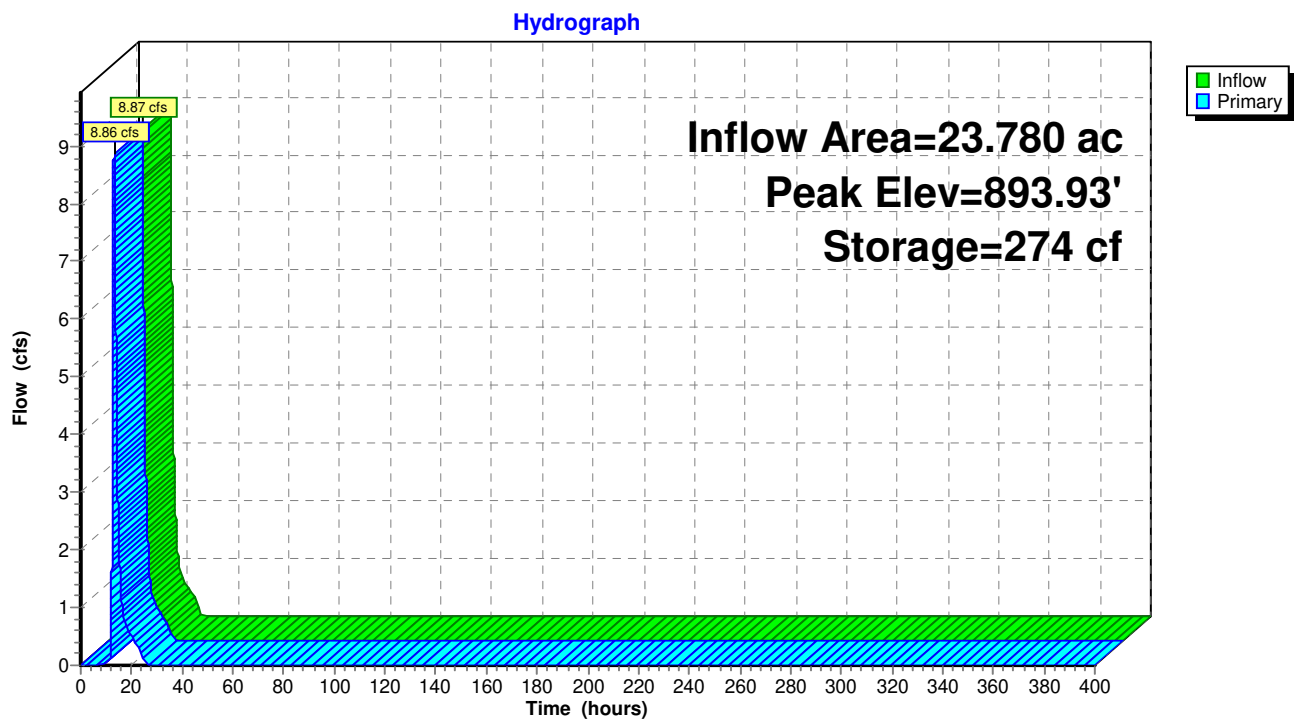
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
893.20	50	0	0
894.00	770	328	328
896.00	12,800	13,570	13,898
898.00	31,000	43,800	57,698
899.00	52,000	41,500	99,198
900.00	84,000	68,000	167,198

Device	Routing	Invert	Outlet Devices
#1	Primary	890.00'	30.0" Round Culvert x 2 X 2.00 L= 99.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 890.00' / 889.80' S= 0.0020 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 4.91 sf
#2	Device 1	893.70'	48.0" Horiz. Grate x 2 X 2.00 C= 0.600 Limited to weir flow at low heads
#3	Primary	898.50'	30.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=8.86 cfs @ 13.08 hrs HW=893.93' TW=888.31' (Dynamic Tailwater)

1=Culvert x 2 (Passes 8.86 cfs of 60.84 cfs potential flow)
 2=Grate x 2 (Weir Controls 8.86 cfs @ 1.56 fps)
 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2bP: Wetland 19 Storm X-ing



2026-04-01 Peltier Ponds - Prelim

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Summary for Pond 2P: Pond 2 & Wetland 10 (LOWERED)

Inflow Area = 11.410 ac, 36.20% Impervious, Inflow Depth = 1.46" for NURP event
 Inflow = 23.97 cfs @ 12.17 hrs, Volume= 1.386 af
 Outflow = 0.68 cfs @ 15.10 hrs, Volume= 1.373 af, Atten= 97%, Lag= 175.7 min
 Primary = 0.68 cfs @ 15.10 hrs, Volume= 1.373 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Starting Elev= 901.00' Surf.Area= 79,800 sf Storage= 133,013 cf

Peak Elev= 901.77' @ 15.10 hrs Surf.Area= 101,558 sf Storage= 177,379 cf (44,366 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 1,396.9 min (2,183.8 - 786.9)

Volume	Invert	Avail.Storage	Storage Description
#1	891.00'	99,968 cf	WET VOL 2A (Prismatic) Listed below (Recalc)
#2	901.00'	195,950 cf	LIVE STORAGE 2A (Prismatic) Listed below (Recalc)
#3	891.00'	33,045 cf	WET VOL 2B (Prismatic) Listed below (Recalc)
#4	901.00'	92,450 cf	LIVE STORAGE 2B (Prismatic) Listed below (Recalc)
#5	901.01'	105,540 cf	WETLAND 10 (Prismatic) Listed below (Recalc)
		526,953 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
891.00	1,600	0	0
892.00	2,100	1,850	1,850
893.99	3,500	5,572	7,422
894.00	5,700	46	7,468
896.00	9,100	14,800	22,268
898.00	13,300	22,400	44,668
900.00	18,500	31,800	76,468
901.00	28,500	23,500	99,968

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
901.00	28,500	0	0
902.00	32,600	30,550	30,550
904.00	41,300	73,900	104,450
905.00	45,700	43,500	147,950
906.00	50,300	48,000	195,950

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
891.00	280	0	0
892.00	570	425	425
894.00	1,400	1,970	2,395
896.00	2,600	4,000	6,395
898.00	4,300	6,900	13,295
900.00	6,500	10,800	24,095
901.00	11,400	8,950	33,045

2026-04-01 Peltier Ponds - Prelim

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
901.00	11,400	0	0
902.00	14,000	12,700	12,700
904.00	19,900	33,900	46,600
905.00	22,900	21,400	68,000
906.00	26,000	24,450	92,450

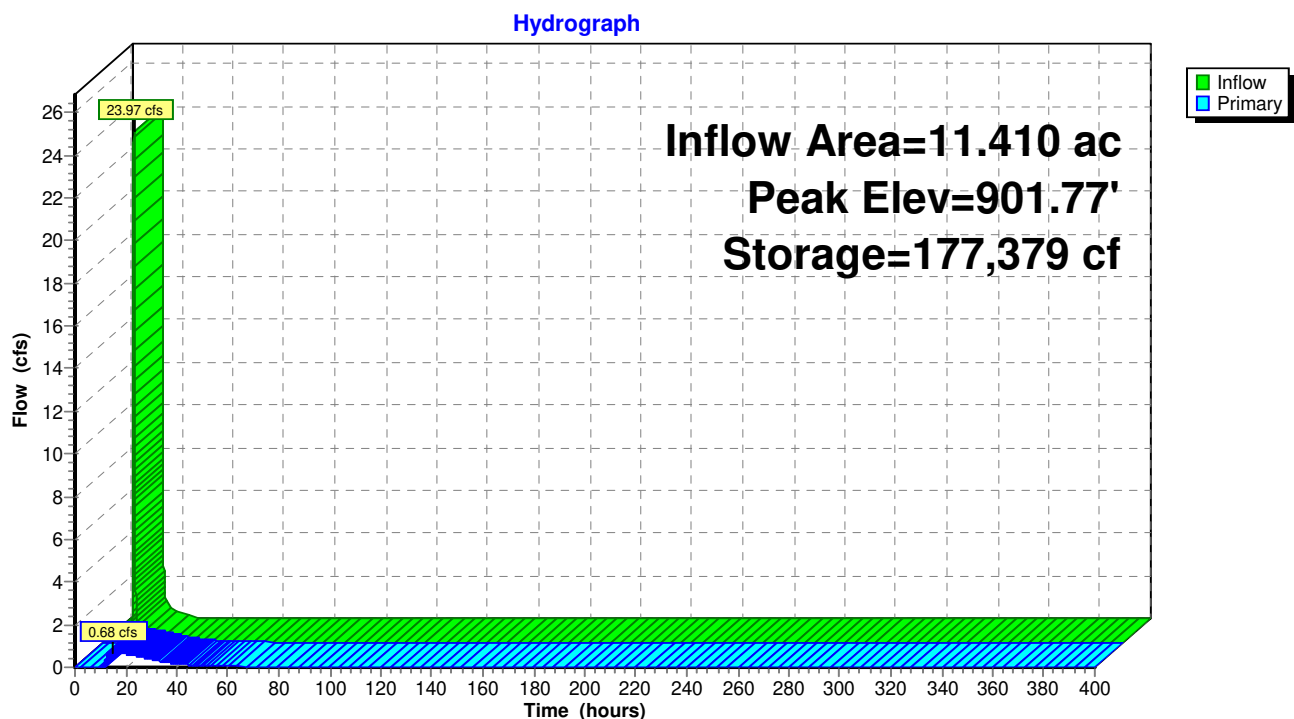
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
901.01	14,800	0	0
902.00	17,200	15,840	15,840
904.00	22,300	39,500	55,340
905.00	25,100	23,700	79,040
906.00	27,900	26,500	105,540

Device	Routing	Invert	Outlet Devices
#1	Primary	901.00'	15.0" Round Culvert L= 50.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 901.00' / 900.50' S= 0.0099 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Device 1	901.00'	6.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.68 cfs @ 15.10 hrs HW=901.77' TW=0.00' (Dynamic Tailwater)

1=Culvert (Passes 0.68 cfs of 2.05 cfs potential flow)

2=Orifice/Grate (Orifice Controls 0.68 cfs @ 3.46 fps)

Pond 2P: Pond 2 & Wetland 10 (LOWERED)

2026-04-01 Peltier Ponds - Prelim

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Summary for Pond 3P: Pond 3

Inflow Area = 19.420 ac, 39.39% Impervious, Inflow Depth = 1.57" for NURP event
 Inflow = 32.74 cfs @ 12.18 hrs, Volume= 2.541 af
 Outflow = 0.72 cfs @ 17.83 hrs, Volume= 2.486 af, Atten= 98%, Lag= 339.3 min
 Primary = 0.72 cfs @ 17.83 hrs, Volume= 2.486 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Starting Elev= 900.00' Surf.Area= 67,800 sf Storage= 134,150 cf

Peak Elev= 900.82' @ 17.83 hrs Surf.Area= 141,725 sf Storage= 219,609 cf (85,459 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 2,214.8 min (3,052.6 - 837.8)

Volume	Invert	Avail.Storage	Storage Description
#1	890.00'	134,150 cf	POND 3 WET VOL (Prismatic) Listed below (Recalc)
#2	900.00'	613,280 cf	POND 3 & EWRK LIVE STORAGE (Prismatic) Listed below (Recalc)
		747,430 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
890.00	2,400	0	0
892.00	5,200	7,600	7,600
894.00	9,900	15,100	22,700
896.00	15,100	25,000	47,700
898.00	20,600	35,700	83,400
899.00	23,500	22,050	105,450
900.00	33,900	28,700	134,150

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.00	33,900	0	0
900.01	100,800	673	673
902.00	118,000	217,706	218,380
903.00	127,000	122,500	340,880
904.00	136,600	131,800	472,680
904.50	140,600	69,300	541,980
905.00	144,600	71,300	613,280

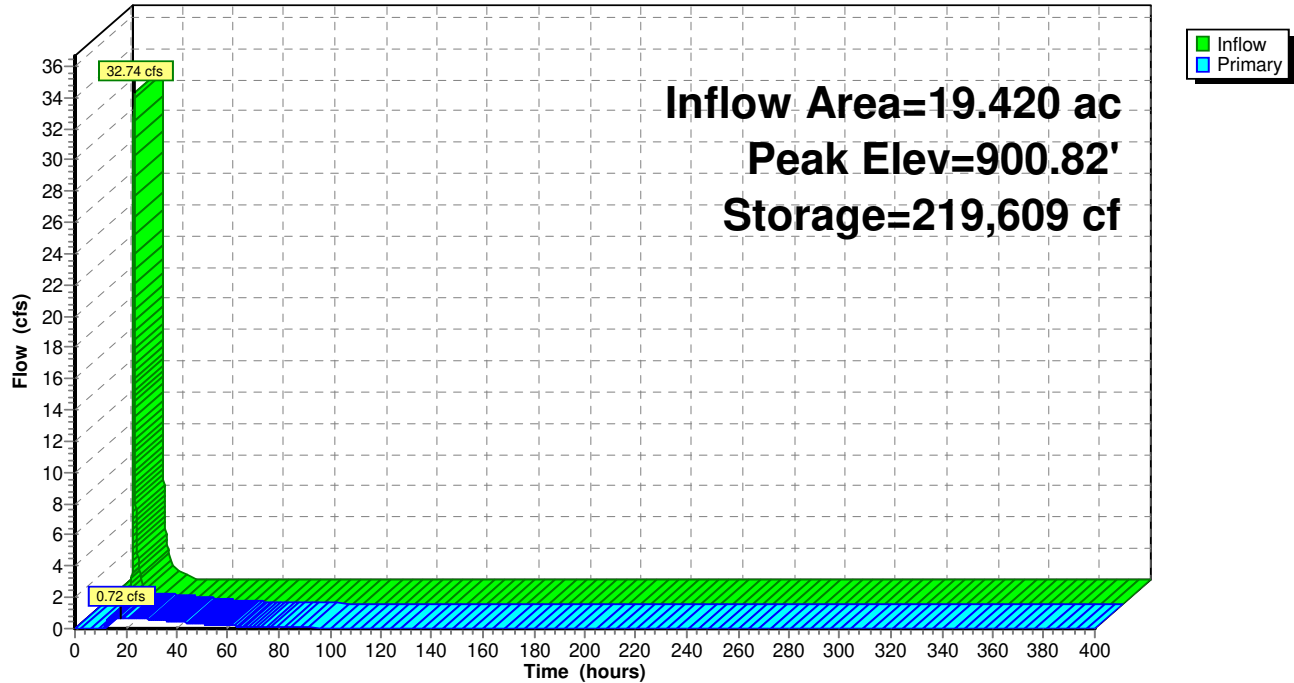
Device	Routing	Invert	Outlet Devices
#1	Primary	900.00'	15.0" Round Culvert L= 448.4' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 900.00' / 897.34' S= 0.0059 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Device 1	900.00'	6.0" Vert. Orifice/Grate C= 0.600
#3	Primary	904.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.72 cfs @ 17.83 hrs HW=900.82' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 0.72 cfs of 2.08 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.72 cfs @ 3.64 fps)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: Pond 3

Hydrograph



2026-04-01 Peltier Ponds - Prelim

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Summary for Pond 4P: Pond 4

Inflow Area = 6.320 ac, 50.47% Impervious, Inflow Depth = 1.61" for NURP event
 Inflow = 14.53 cfs @ 12.17 hrs, Volume= 0.849 af
 Outflow = 4.40 cfs @ 12.42 hrs, Volume= 0.849 af, Atten= 70%, Lag= 15.0 min
 Primary = 4.40 cfs @ 12.42 hrs, Volume= 0.849 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Starting Elev= 902.00' Surf.Area= 18,400 sf Storage= 13,975 cf
 Peak Elev= 903.43' @ 12.42 hrs Surf.Area= 22,034 sf Storage= 29,675 cf (15,700 cf above start)

Plug-Flow detention time= 363.1 min calculated for 0.528 af (62% of inflow)
 Center-of-Mass det. time= 159.9 min (938.6 - 778.7)

Volume	Invert	Avail.Storage	Storage Description
#1	896.00'	13,975 cf	WET VOL (Prismatic) Listed below (Recalc)
#2	902.00'	104,125 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)
		118,100 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
896.00	65	0	0
898.00	630	695	695
900.00	2,700	3,330	4,025
901.00	4,000	3,350	7,375
902.00	9,200	6,600	13,975

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
902.00	9,200	0	0
904.00	14,300	23,500	23,500
906.00	20,100	34,400	57,900
907.00	23,100	21,600	79,500
907.50	24,600	11,925	91,425
908.00	26,200	12,700	104,125

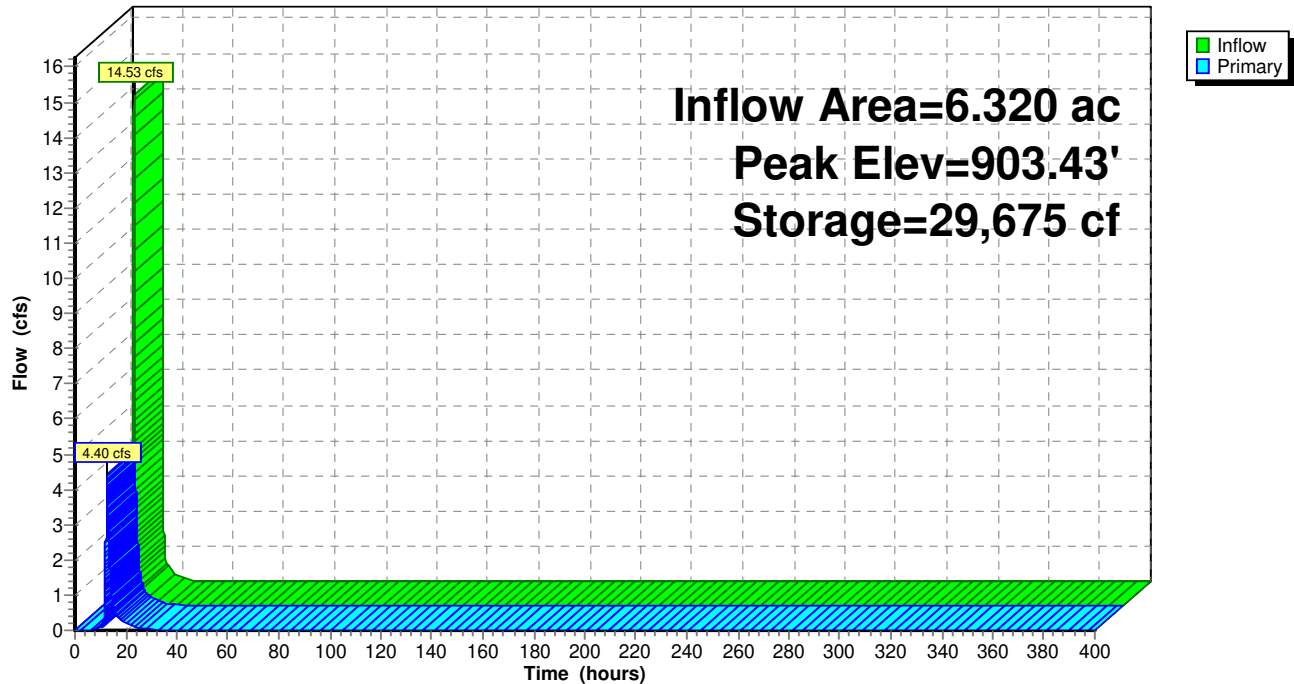
Device	Routing	Invert	Outlet Devices
#1	Primary	902.00'	18.0" Round Culvert L= 346.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 902.00' / 901.00' S= 0.0029 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.77 sf
#2	Primary	907.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.40 cfs @ 12.42 hrs HW=903.43' TW=900.49' (Dynamic Tailwater)

↑ **1=Culvert** (Barrel Controls 4.40 cfs @ 3.27 fps)
 ↓ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: Pond 4

Hydrograph



2026-04-01 Peltier Ponds - Prelim

MSE 24-hr 3 NURP Rainfall=2.50"

Prepared by James R. Hill, Inc.

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Summary for Pond 5P: Pond 5

Inflow Area = 15.690 ac, 38.56% Impervious, Inflow Depth = 1.56" for NURP event
 Inflow = 35.68 cfs @ 12.17 hrs, Volume= 2.041 af
 Outflow = 1.80 cfs @ 13.60 hrs, Volume= 2.008 af, Atten= 95%, Lag= 85.6 min
 Primary = 1.80 cfs @ 13.60 hrs, Volume= 2.008 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Starting Elev= 900.50' Surf.Area= 219,700 sf Storage= 422,075 cf

Peak Elev= 901.20' @ 13.60 hrs Surf.Area= 225,835 sf Storage= 483,235 cf (61,160 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 1,187.3 min (1,972.3 - 785.0)

Volume	Invert	Avail.Storage	Storage Description
#1	890.50'	130,450 cf	Wet Cell A (Prismatic) Listed below (Recalc)
#2	890.50'	102,150 cf	Wet Cell B (Prismatic) Listed below (Recalc)
#3	897.50'	189,475 cf	WET VOL >897.5 (Prismatic) Listed below (Recalc)
#4	900.50'	406,150 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)
		828,225 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
890.50	10,200	0	0
892.00	12,500	17,025	17,025
894.00	16,900	29,400	46,425
896.00	25,200	42,100	88,525
897.50	30,700	41,925	130,450

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
890.50	8,900	0	0
892.00	11,100	15,000	15,000
894.00	14,400	25,500	40,500
896.00	18,000	32,400	72,900
897.50	21,000	29,250	102,150

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
897.50	51,700	0	0
898.00	55,100	26,700	26,700
899.50	63,700	89,100	115,800
900.00	73,500	34,300	150,100
900.50	84,000	39,375	189,475

2026-04-01 Peltier Ponds - Prelim

MSE 24-hr 3 NURP Rainfall=2.50"

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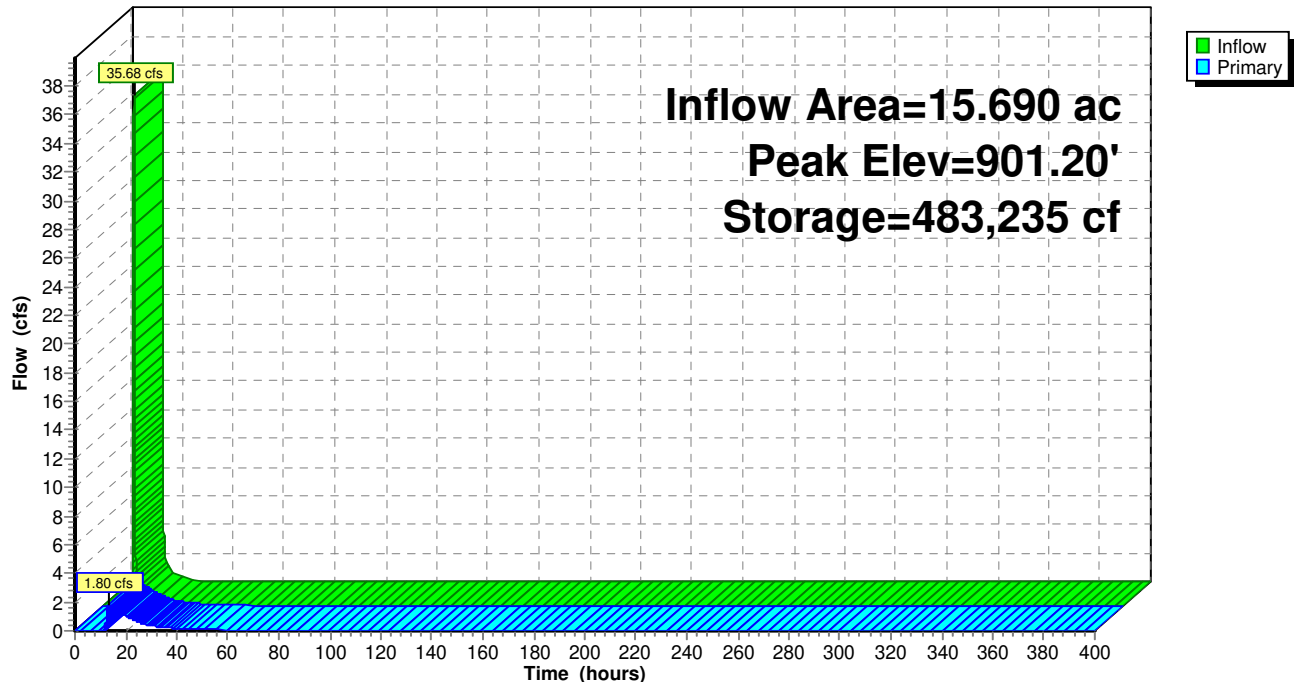
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.50	84,000	0	0
902.00	97,100	135,825	135,825
903.00	105,900	101,500	237,325
903.50	110,300	54,050	291,375
904.00	114,800	56,275	347,650
904.50	119,200	58,500	406,150

Device	Routing	Invert	Outlet Devices
#1	Primary	900.50'	15.0" Round Culvert L= 48.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 900.50' / 900.00' S= 0.0104 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Primary	903.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.80 cfs @ 13.60 hrs HW=901.20' TW=899.22' (Dynamic Tailwater)

1=Culvert (Barrel Controls 1.80 cfs @ 3.66 fps)

2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 5P: Pond 5**Hydrograph**

2026-04-01 Peltier Ponds - Prelim

MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Pond 6P: Pond 6

Inflow Area = 4.300 ac, 21.16% Impervious, Inflow Depth = 1.63" for NURP event
 Inflow = 10.50 cfs @ 12.17 hrs, Volume= 0.583 af
 Outflow = 0.32 cfs @ 14.88 hrs, Volume= 0.563 af, Atten= 97%, Lag= 162.5 min
 Primary = 0.32 cfs @ 14.88 hrs, Volume= 0.563 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 900.76' @ 14.88 hrs Surf.Area= 73,448 sf Storage= 18,683 cf

Plug-Flow detention time= 1,931.0 min calculated for 0.563 af (97% of inflow)
 Center-of-Mass det. time= 1,912.9 min (2,703.1 - 790.2)

Volume	Invert	Avail.Storage	Storage Description
#1	900.50'	208,825 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.50	70,700	0	0
901.00	76,000	36,675	36,675
902.00	87,500	81,750	118,425
902.50	90,400	44,475	162,900
903.00	93,300	45,925	208,825

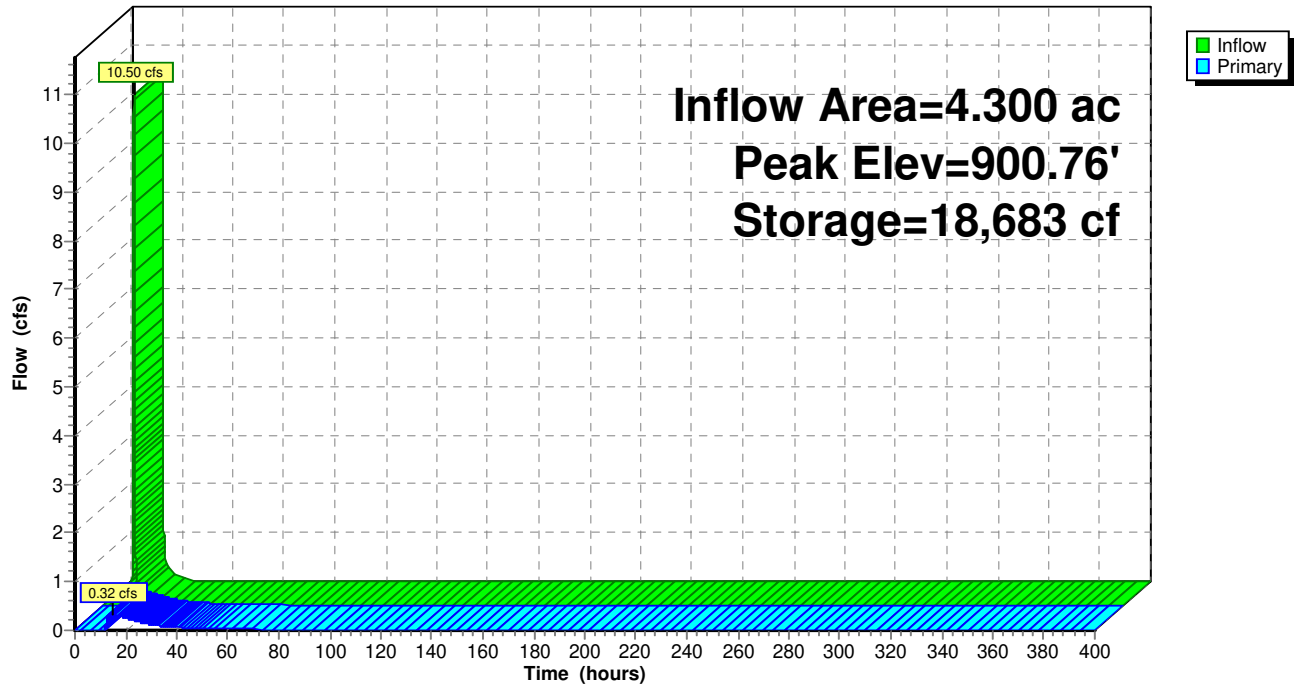
Device	Routing	Invert	Outlet Devices
#1	Primary	900.50'	15.0" Round Culvert L= 33.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 900.50' / 900.00' S= 0.0148 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Primary	902.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.32 cfs @ 14.88 hrs HW=900.76' TW=899.44' (Dynamic Tailwater)

1=Culvert (Inlet Controls 0.32 cfs @ 1.73 fps)
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 6P: Pond 6

Hydrograph



2026-04-01 Peltier Ponds - Prelim

MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Pond W14: Wetland 14

Inflow Area = 27.290 ac, 2.27% Impervious, Inflow Depth = 0.92" for NURP event
 Inflow = 6.42 cfs @ 14.15 hrs, Volume= 2.093 af
 Outflow = 2.31 cfs @ 16.49 hrs, Volume= 2.093 af, Atten= 64%, Lag= 140.3 min
 Primary = 2.31 cfs @ 16.49 hrs, Volume= 2.093 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 904.51' @ 16.49 hrs Surf.Area= 126,874 sf Storage= 45,323 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 332.2 min (1,281.3 - 949.0)

Volume	Invert	Avail.Storage	Storage Description
#1	904.00'	594,000 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
904.00	50,000	0	0
905.00	200,000	125,000	125,000
906.00	738,000	469,000	594,000

Device	Routing	Invert	Outlet Devices
#1	Primary	903.90'	12.0" Round Culvert x 2 X 2.00 L= 28.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 903.90' / 903.62' S= 0.0100 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 0.79 sf
#2	Primary	904.50'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

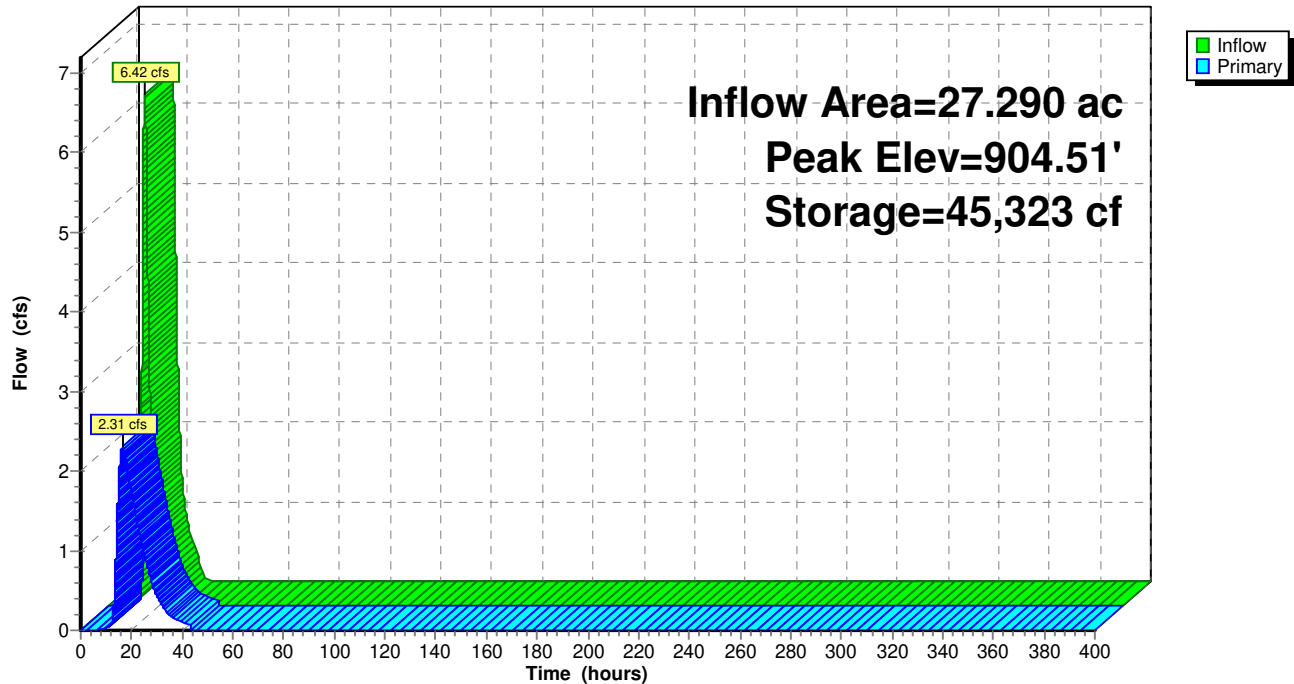
Primary OutFlow Max=2.31 cfs @ 16.49 hrs HW=904.51' TW=0.00' (Dynamic Tailwater)

1=Culvert x 2 (Barrel Controls 2.24 cfs @ 3.18 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 0.07 cfs @ 0.28 fps)

Pond W14: Wetland 14

Hydrograph



2026-04-01 Peltier Ponds - Prelim

MSE 24-hr 3 NURP Rainfall=2.50"

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Summary for Pond W4: Wetland 4

Inflow Area = 31.030 ac, 28.33% Impervious, Inflow Depth > 1.47" for NURP event
 Inflow = 10.74 cfs @ 12.18 hrs, Volume= 3.804 af
 Outflow = 1.03 cfs @ 23.48 hrs, Volume= 2.690 af, Atten= 90%, Lag= 677.6 min
 Primary = 1.03 cfs @ 23.48 hrs, Volume= 2.690 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 899.81' @ 23.48 hrs Surf.Area= 89,066 sf Storage= 93,390 cf

Plug-Flow detention time= 2,415.7 min calculated for 2.690 af (71% of inflow)
 Center-of-Mass det. time= 1,641.5 min (3,350.1 - 1,708.6)

Volume	Invert	Avail.Storage	Storage Description
#1	898.00'	885,870 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
898.00	10,000	0	0
899.50	80,000	67,500	67,500
900.00	94,800	43,700	111,200
901.00	151,200	123,000	234,200
902.00	178,500	164,850	399,050
904.00	308,320	486,820	885,870

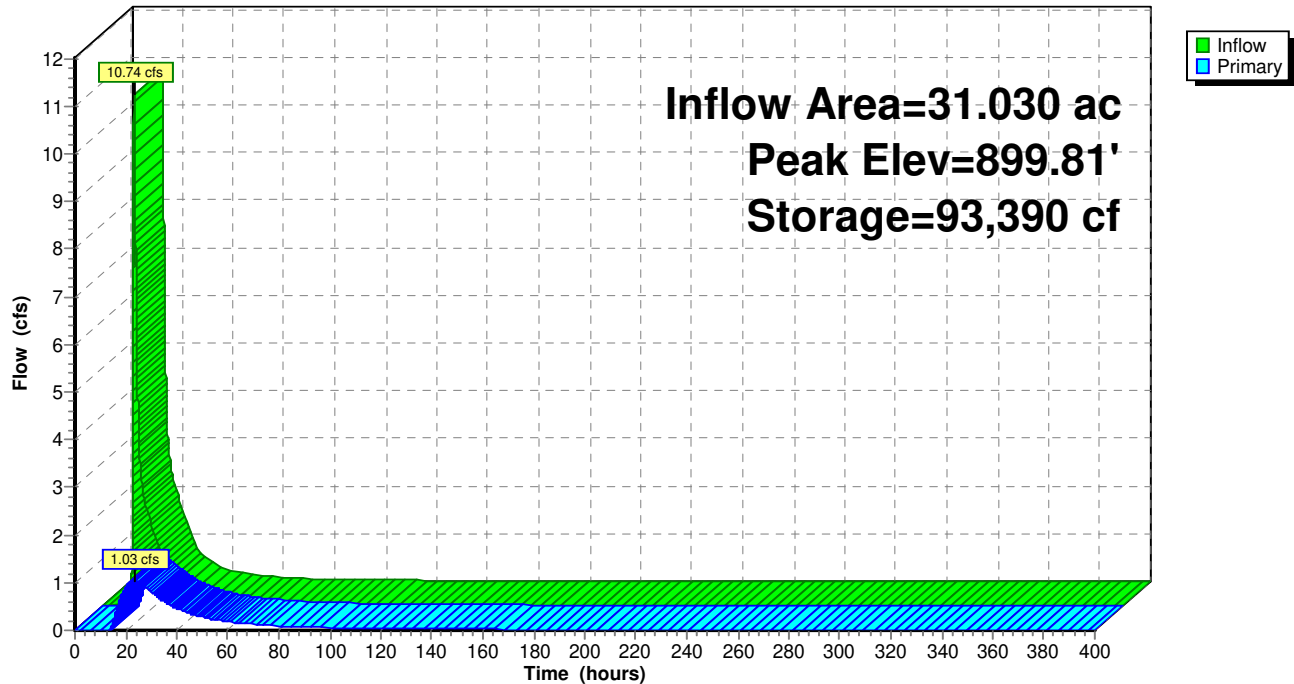
Device	Routing	Invert	Outlet Devices
#1	Primary	899.20'	18.0" Round Culvert L= 15.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 899.20' / 899.18' S= 0.0013 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.77 sf
#2	Primary	902.70'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=1.03 cfs @ 23.48 hrs HW=899.81' TW=0.00' (Dynamic Tailwater)

1=Culvert (Barrel Controls 1.03 cfs @ 2.28 fps)
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond W4: Wetland 4

Hydrograph



Summary for Pond W5: Wetland 5

Inflow Area = 2.470 ac, 9.72% Impervious, Inflow Depth = 1.60" for NURP event
 Inflow = 7.46 cfs @ 12.12 hrs, Volume= 0.330 af
 Outflow = 0.78 cfs @ 12.58 hrs, Volume= 0.223 af, Atten= 90%, Lag= 27.6 min
 Primary = 0.78 cfs @ 12.58 hrs, Volume= 0.223 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 900.90' @ 12.58 hrs Surf.Area= 41,882 sf Storage= 8,443 cf

Plug-Flow detention time= 236.3 min calculated for 0.223 af (68% of inflow)
 Center-of-Mass det. time= 163.0 min (952.6 - 789.6)

Volume	Invert	Avail.Storage	Storage Description
#1	900.50'	218,942 cf	Wetland 5 (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.50	10	0	0
900.80	30,900	4,636	4,636
901.00	51,900	8,280	12,917
902.00	55,800	53,850	66,767
904.00	63,900	119,700	186,467
904.50	66,000	32,475	218,942

Device	Routing	Invert	Outlet Devices
#1	Primary	895.72'	10.0" Round Culvert L= 302.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 895.72' / 895.25' S= 0.0016 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 0.55 sf
#2	Device 1	900.80'	27.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Secondary	904.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.78 cfs @ 12.58 hrs HW=900.90' TW=0.00' (Dynamic Tailwater)

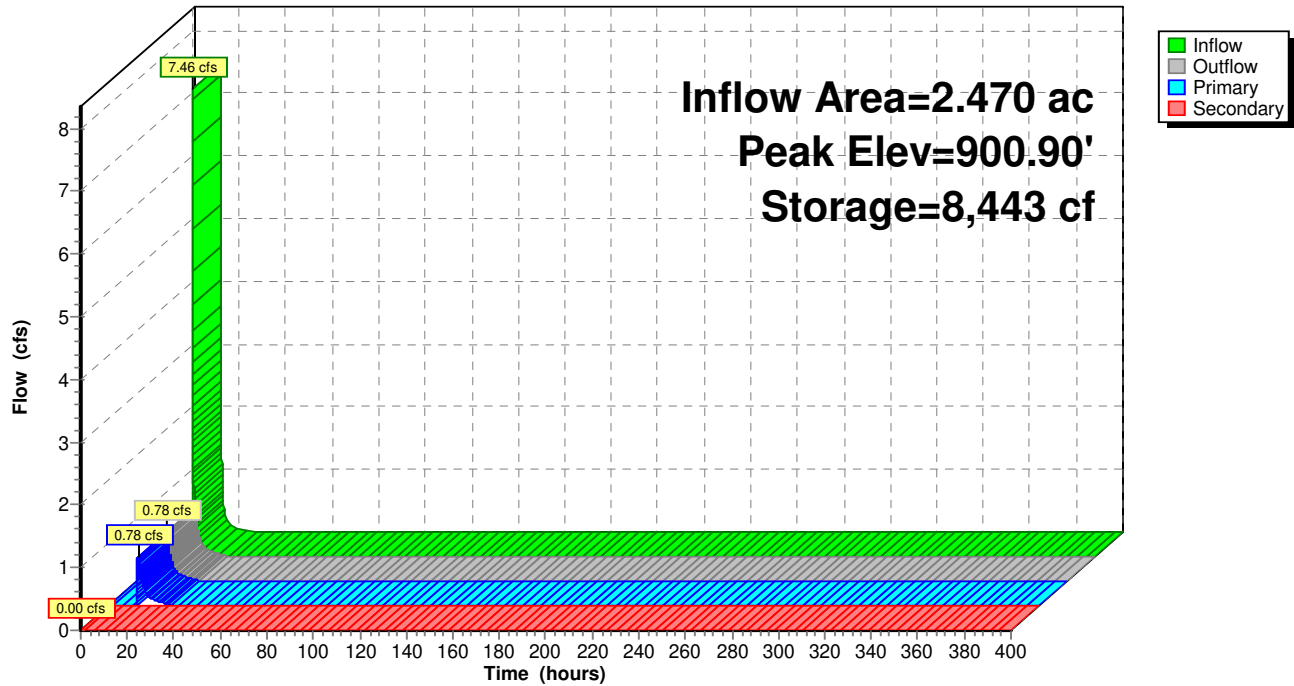
↑ **1=Culvert** (Passes 0.78 cfs of 2.29 cfs potential flow)
 ↑ **2=Orifice/Grate** (Weir Controls 0.78 cfs @ 1.06 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=900.50' TW=900.50' (Dynamic Tailwater)

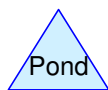
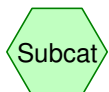
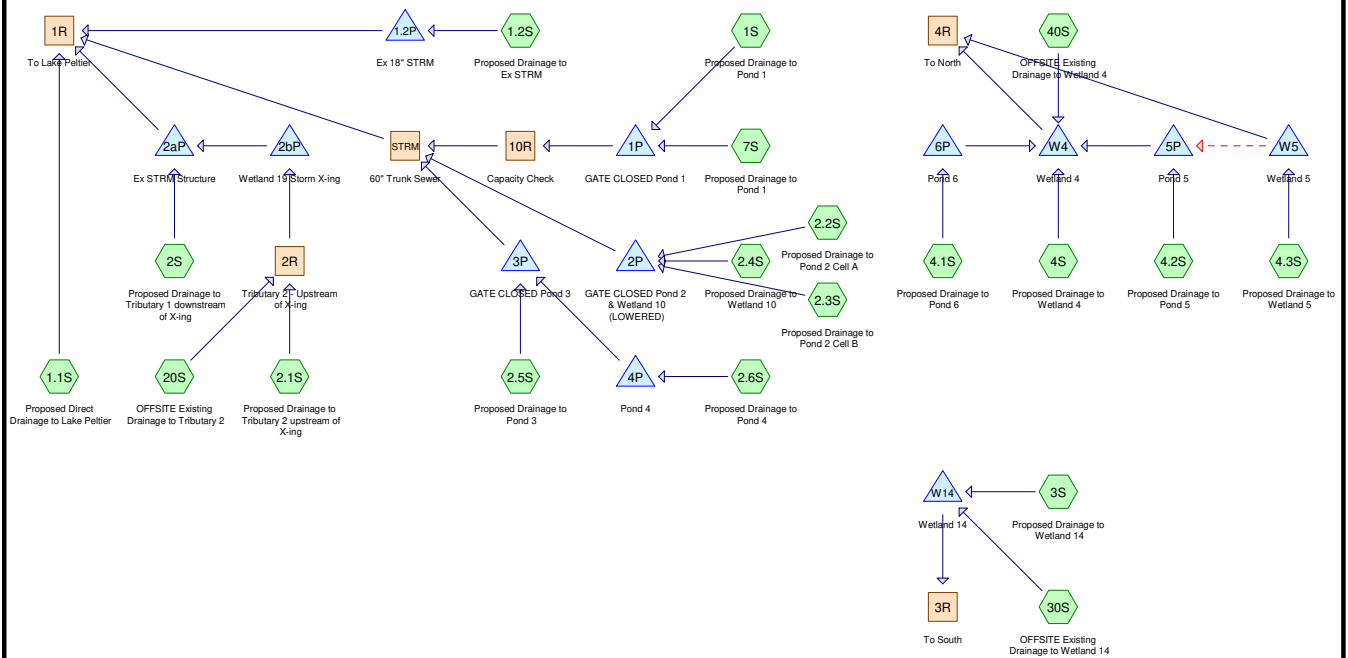
↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond W5: Wetland 5

Hydrograph



**GATE CLOSED -
PROPOSED**



Routing Diagram for GATE CLOSED 2026-04-01 Peltier Ponds - Prelim

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GATE CLOSED 2026-04-01 Peltier Ponds - Prelim

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
7.350	84	1 acre lots, 20% imp, HSG D (40S)
43.010	80	>75% Grass cover, Good, HSG D (1.1S, 1.2S, 1S, 2.2S, 2.3S, 2.4S, 2.5S, 2.6S, 4.1S, 4.2S)
5.560	90	Fallow, crop residue, Good, HSG D (4.3S, 4S)
34.120	98	Paved parking, HSG D (1.1S, 1S, 2.1S, 2.2S, 2.3S, 2.4S, 2.5S, 2.6S, 2S, 3S, 4.1S, 4.2S, 4.3S, 4S, 7S)
0.410	98	Unconnected roofs, HSG D (1.2S)
9.270	98	Water Surface, 0% imp, HSG D (1S, 2.2S, 2.3S, 2.5S, 2.6S, 4.1S, 4.2S)
54.220	80	Woods/grass comb., Fair, HSG D (1.1S, 2.1S, 2S, 3S, 7S, 20S, 30S)
153.940	86	TOTAL AREA

Summary for Subcatchment 1.1S: Proposed Direct Drainage to Lake Peltier

Runoff = 0.93 cfs @ 121.28 hrs, Volume= 1.120 af, Depth= 6.96"

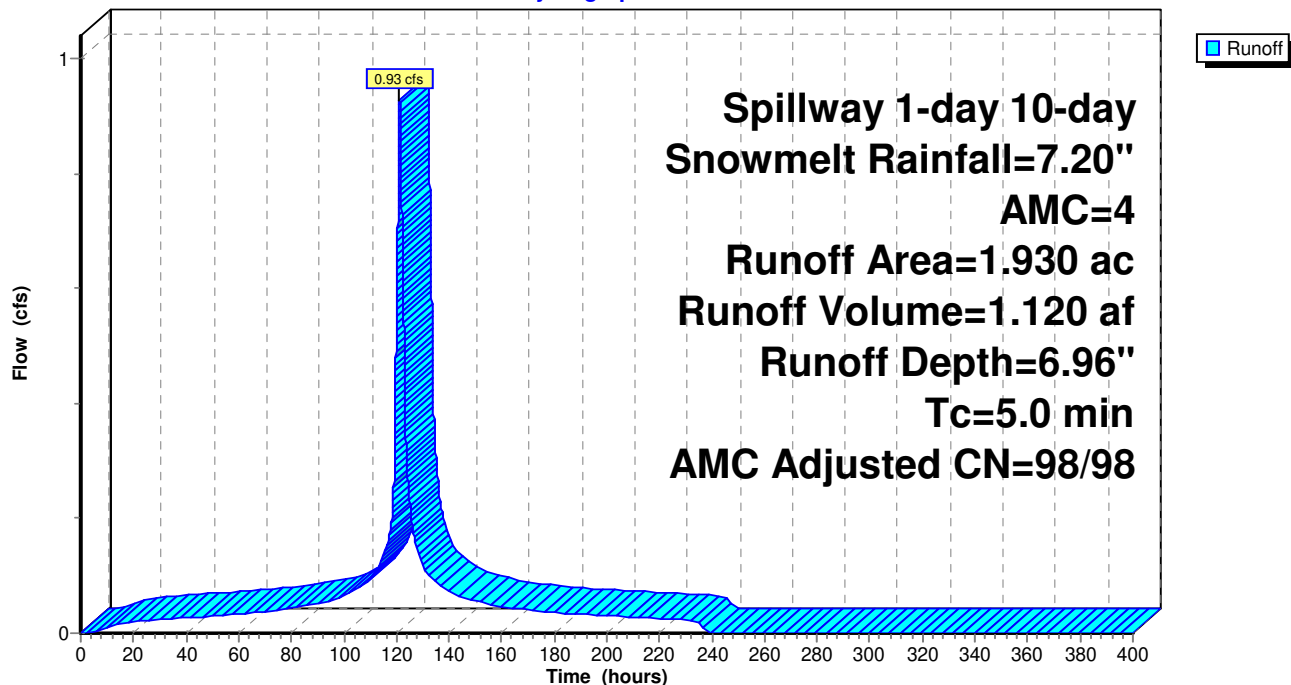
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
0.300	98		Paved parking, HSG D
1.530	80		>75% Grass cover, Good, HSG D
* 0.100	80		Woods/grass comb., Fair, HSG D
1.930	83	98	Weighted Average, AMC Adjusted
1.630	80	98	84.46% Pervious Area, AMC Adjusted
0.300	98	98	15.54% Impervious Area, AMC Adjusted

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

Subcatchment 1.1S: Proposed Direct Drainage to Lake Peltier

Hydrograph



Summary for Subcatchment 1.2S: Proposed Drainage to Ex STRM

Runoff = 0.44 cfs @ 121.28 hrs, Volume= 0.528 af, Depth= 6.96"

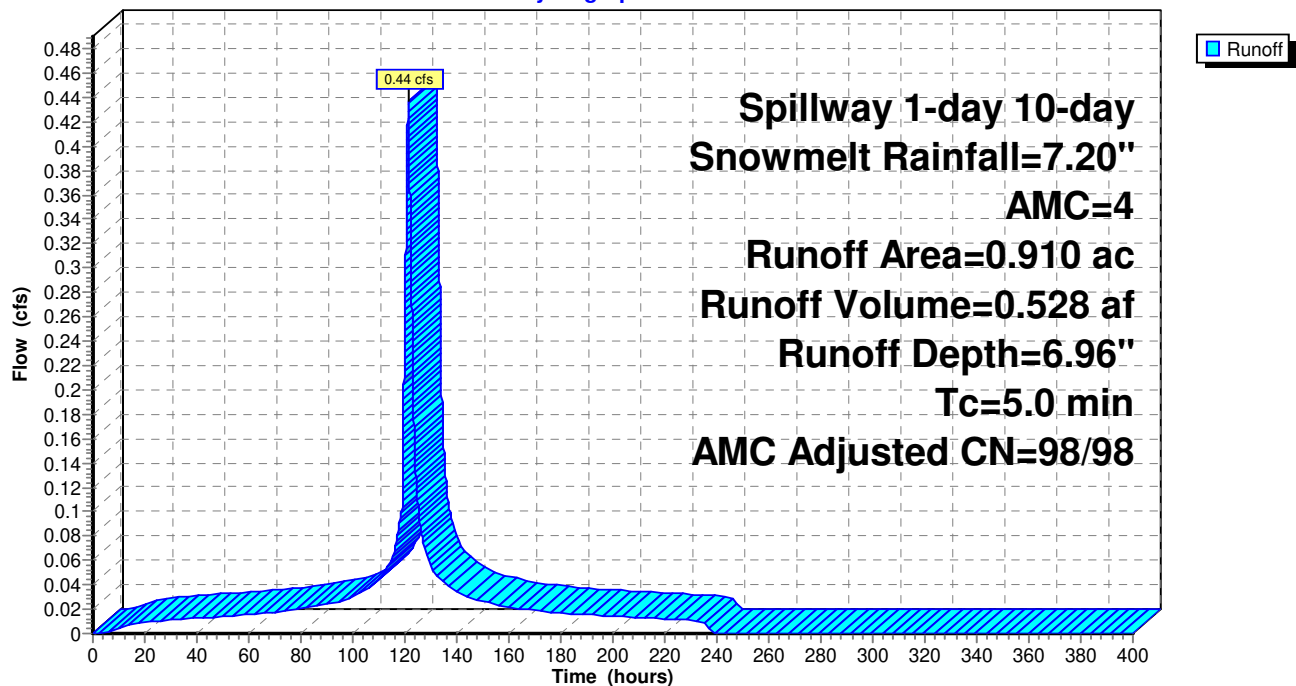
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
0.410	98		Unconnected roofs, HSG D
0.500	80		>75% Grass cover, Good, HSG D
0.910	88	98	Weighted Average, AMC Adjusted
0.500	80	98	54.95% Pervious Area, AMC Adjusted
0.410	98	98	45.05% Impervious Area, AMC Adjusted

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

Subcatchment 1.2S: Proposed Drainage to Ex STRM

Hydrograph



Summary for Subcatchment 1S: Proposed Drainage to Pond 1

Runoff = 14.67 cfs @ 121.42 hrs, Volume= 17.994 af, Depth= 6.96"

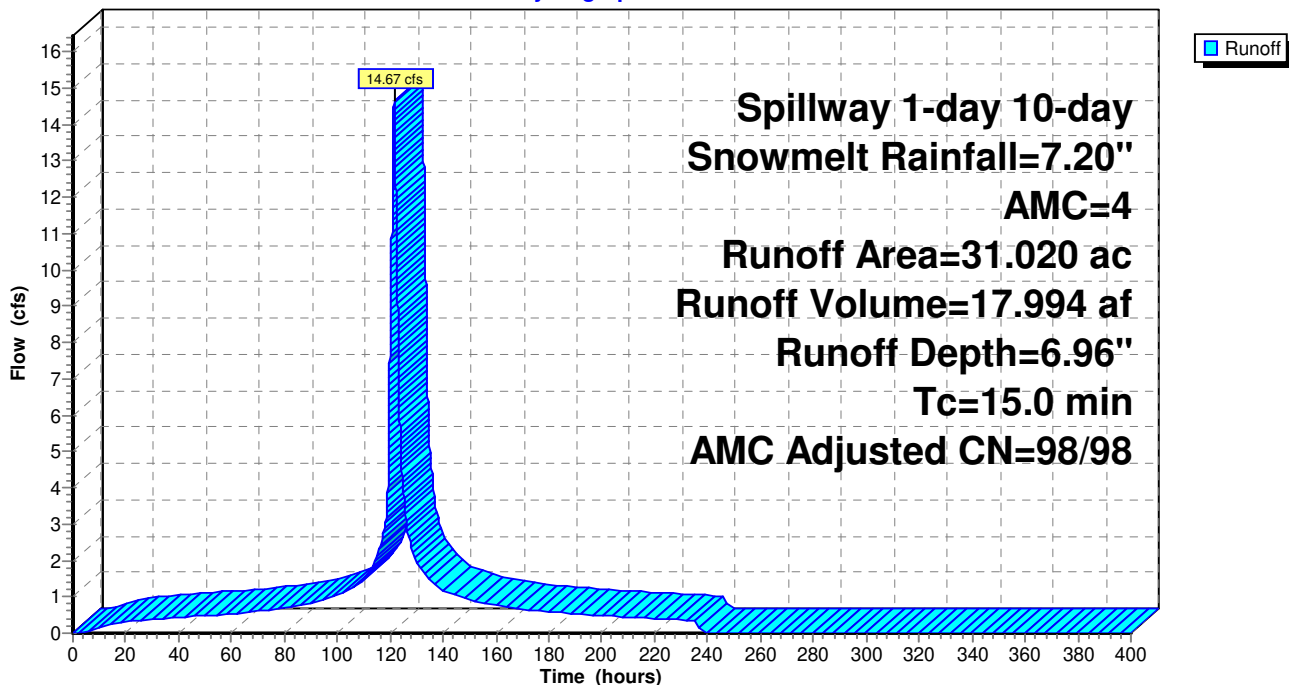
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
12.850	98		Paved parking, HSG D
2.280	98		Water Surface, 0% imp, HSG D
15.890	80		>75% Grass cover, Good, HSG D
31.020	89	98	Weighted Average, AMC Adjusted
18.170	82	98	58.58% Pervious Area, AMC Adjusted
12.850	98	98	41.42% Impervious Area, AMC Adjusted

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

Subcatchment 1S: Proposed Drainage to Pond 1

Hydrograph



Summary for Subcatchment 2.1S: Proposed Drainage to Tributary 2 upstream of X-ing

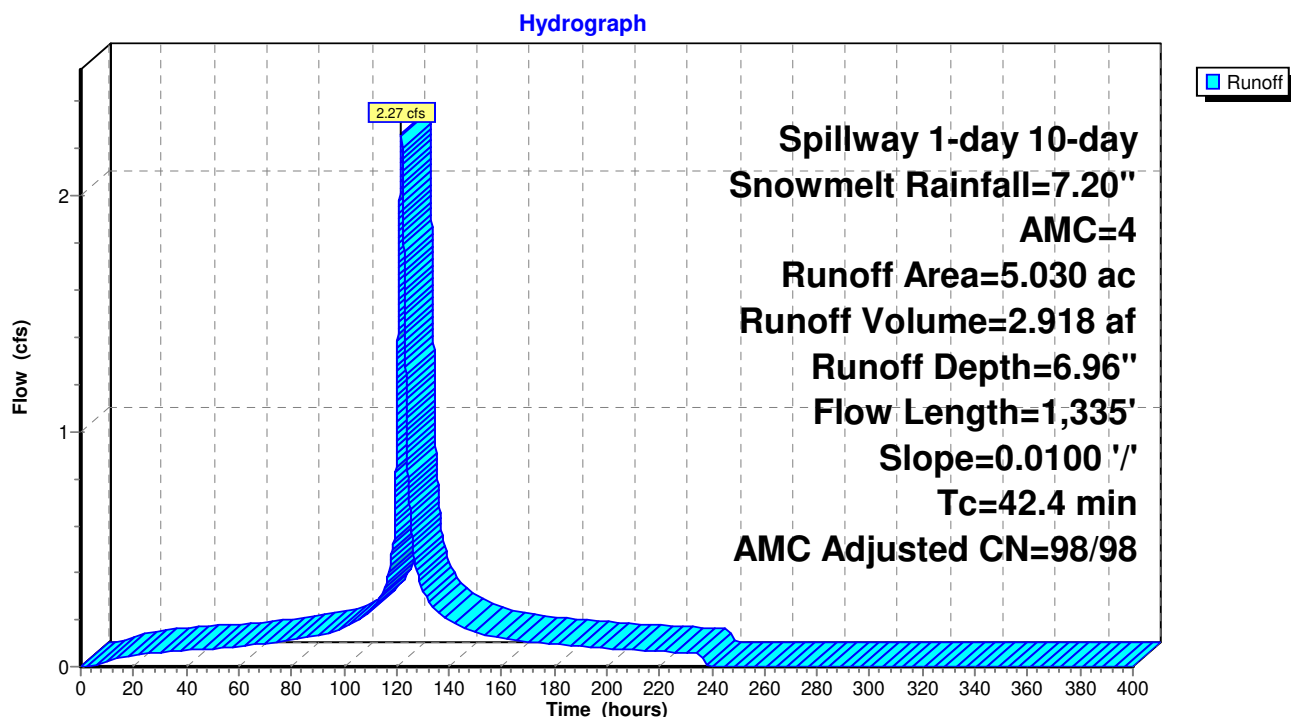
Runoff = 2.27 cfs @ 121.87 hrs, Volume= 2.918 af, Depth= 6.96"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
0.320	98		Paved parking, HSG D
* 4.710	80		Woods/grass comb., Fair, HSG D
5.030	81	98	Weighted Average, AMC Adjusted
4.710	80	98	93.64% Pervious Area, AMC Adjusted
0.320	98	98	6.36% Impervious Area, AMC Adjusted

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.1	200	0.0100	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
10.7	450	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.6	685	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
42.4	1,335	Total			

Subcatchment 2.1S: Proposed Drainage to Tributary 2 upstream of X-ing



Summary for Subcatchment 2.2S: Proposed Drainage to Pond 2 Cell A

Runoff = 4.06 cfs @ 121.37 hrs, Volume= 4.936 af, Depth= 6.96"

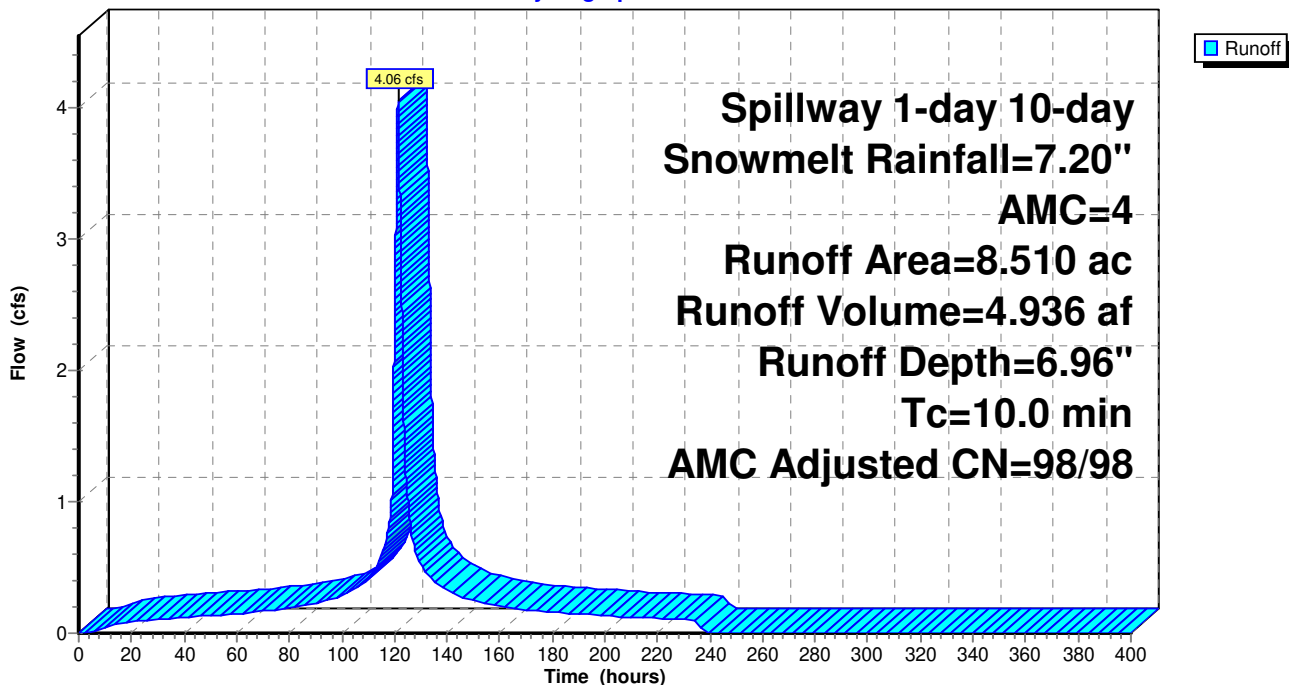
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
3.390	98		Paved parking, HSG D
0.660	98		Water Surface, 0% imp, HSG D
4.460	80		>75% Grass cover, Good, HSG D
8.510	89	98	Weighted Average, AMC Adjusted
5.120	82	98	60.16% Pervious Area, AMC Adjusted
3.390	98	98	39.84% Impervious Area, AMC Adjusted

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

Subcatchment 2.2S: Proposed Drainage to Pond 2 Cell A

Hydrograph



Summary for Subcatchment 2.3S: Proposed Drainage to Pond 2 Cell B

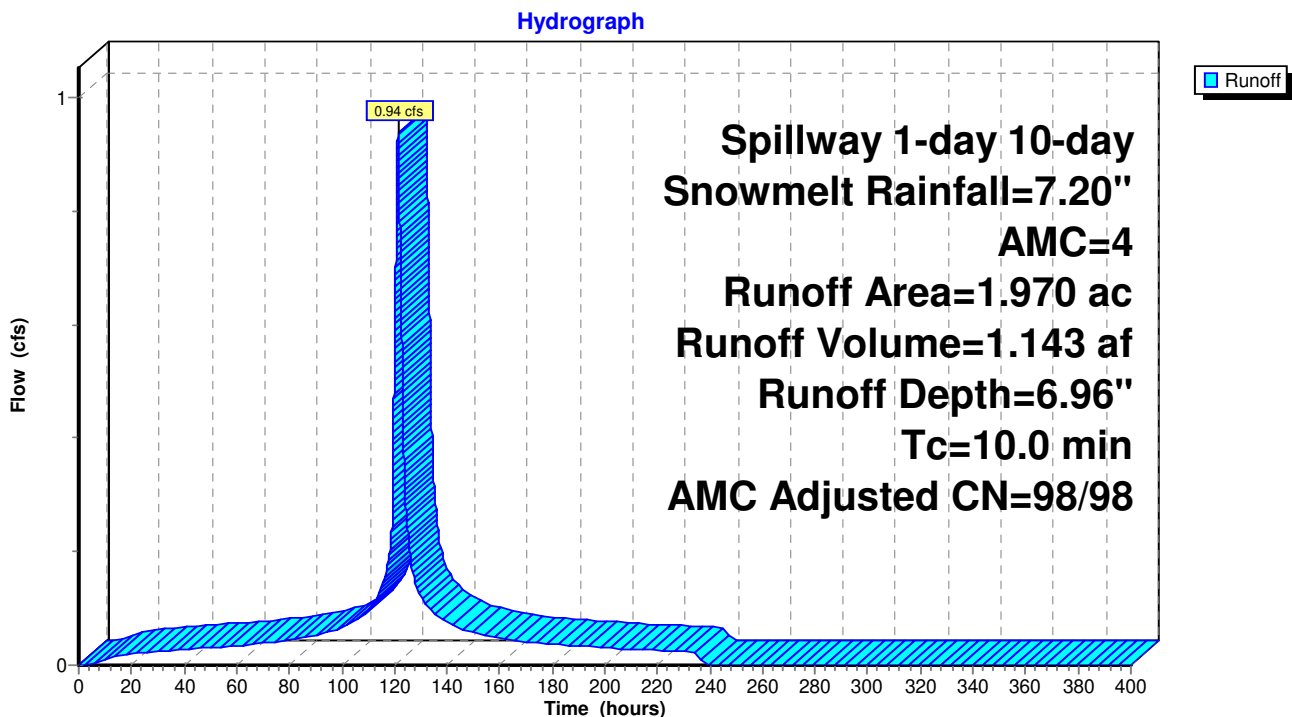
Runoff = 0.94 cfs @ 121.37 hrs, Volume= 1.143 af, Depth= 6.96"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
0.630	98		Paved parking, HSG D
0.260	98		Water Surface, 0% imp, HSG D
1.080	80		>75% Grass cover, Good, HSG D
1.970	88	98	Weighted Average, AMC Adjusted
1.340	83	98	68.02% Pervious Area, AMC Adjusted
0.630	98	98	31.98% Impervious Area, AMC Adjusted

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

Subcatchment 2.3S: Proposed Drainage to Pond 2 Cell B



Summary for Subcatchment 2.4S: Proposed Drainage to Wetland 10

Runoff = 0.45 cfs @ 121.28 hrs, Volume= 0.539 af, Depth= 6.96"

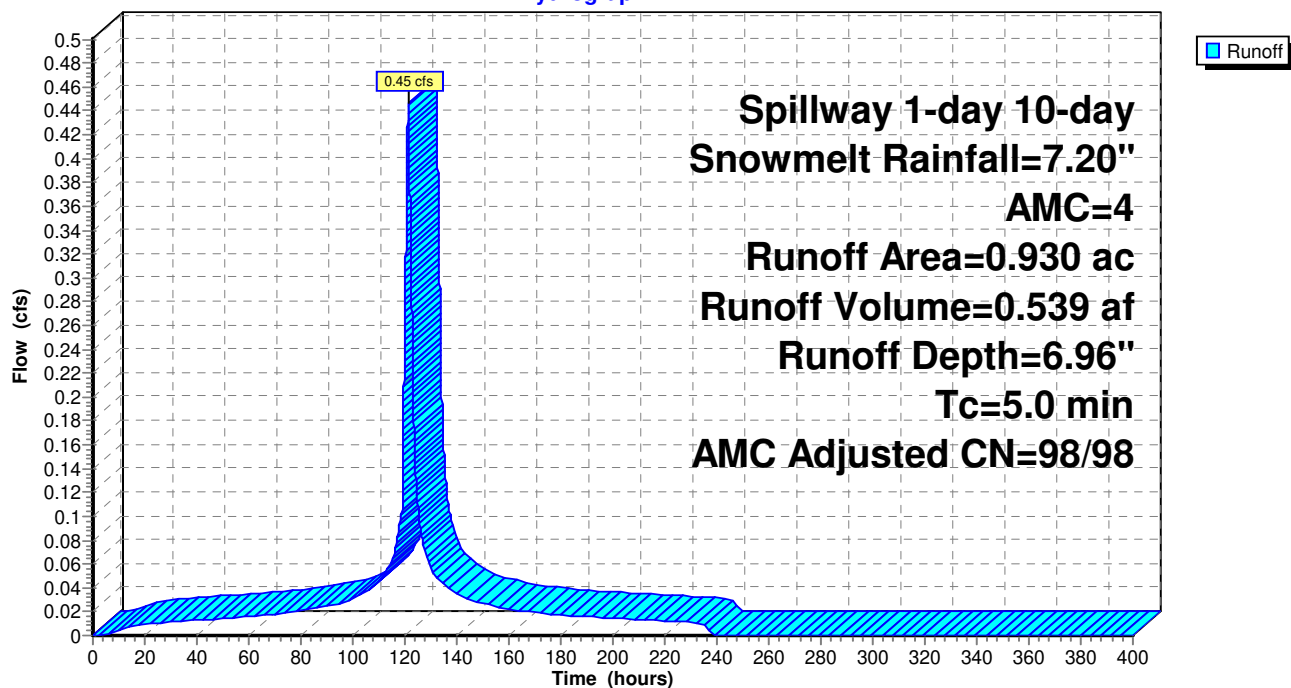
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
0.110	98		Paved parking, HSG D
0.820	80		>75% Grass cover, Good, HSG D
0.930	82	98	Weighted Average, AMC Adjusted
0.820	80	98	88.17% Pervious Area, AMC Adjusted
0.110	98	98	11.83% Impervious Area, AMC Adjusted

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

Subcatchment 2.4S: Proposed Drainage to Wetland 10

Hydrograph



Summary for Subcatchment 2.5S: Proposed Drainage to Pond 3

Runoff = 6.25 cfs @ 121.37 hrs, Volume= 7.599 af, Depth= 6.96"

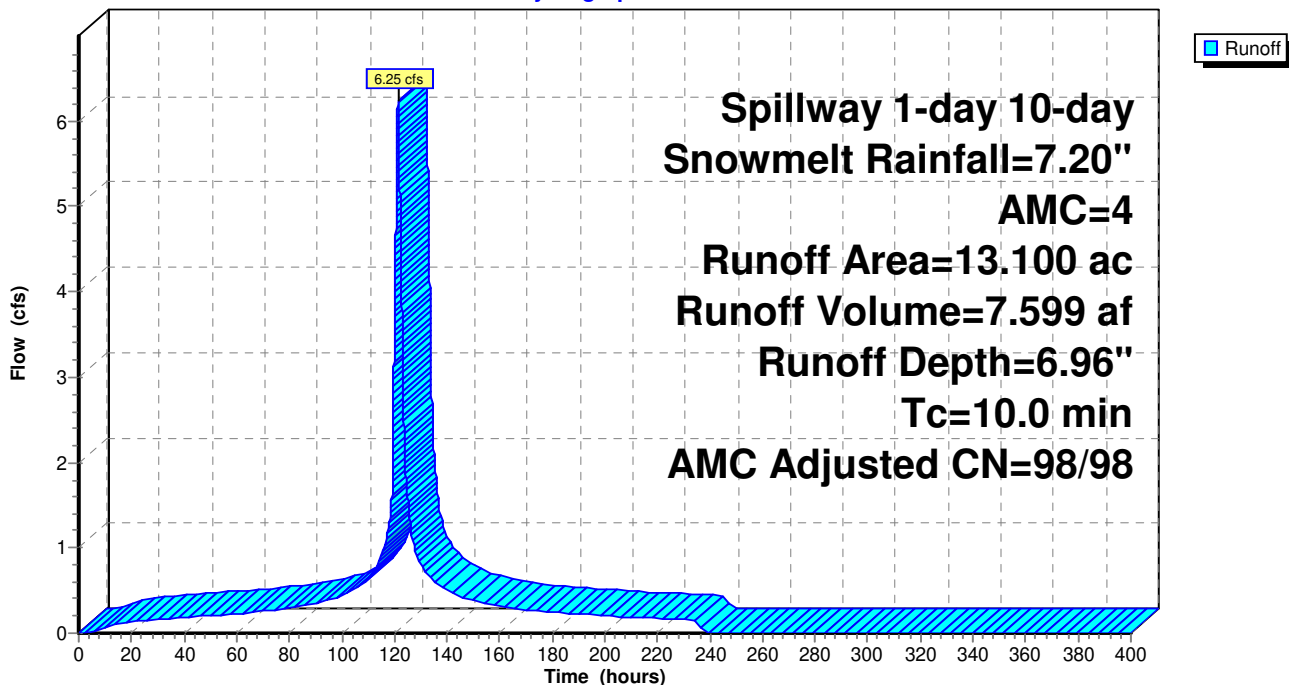
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
4.460	98		Paved parking, HSG D
2.310	98		Water Surface, 0% imp, HSG D
6.330	80		>75% Grass cover, Good, HSG D
13.100	89	98	Weighted Average, AMC Adjusted
8.640	85	98	65.95% Pervious Area, AMC Adjusted
4.460	98	98	34.05% Impervious Area, AMC Adjusted

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

Subcatchment 2.5S: Proposed Drainage to Pond 3

Hydrograph



Summary for Subcatchment 2.6S: Proposed Drainage to Pond 4

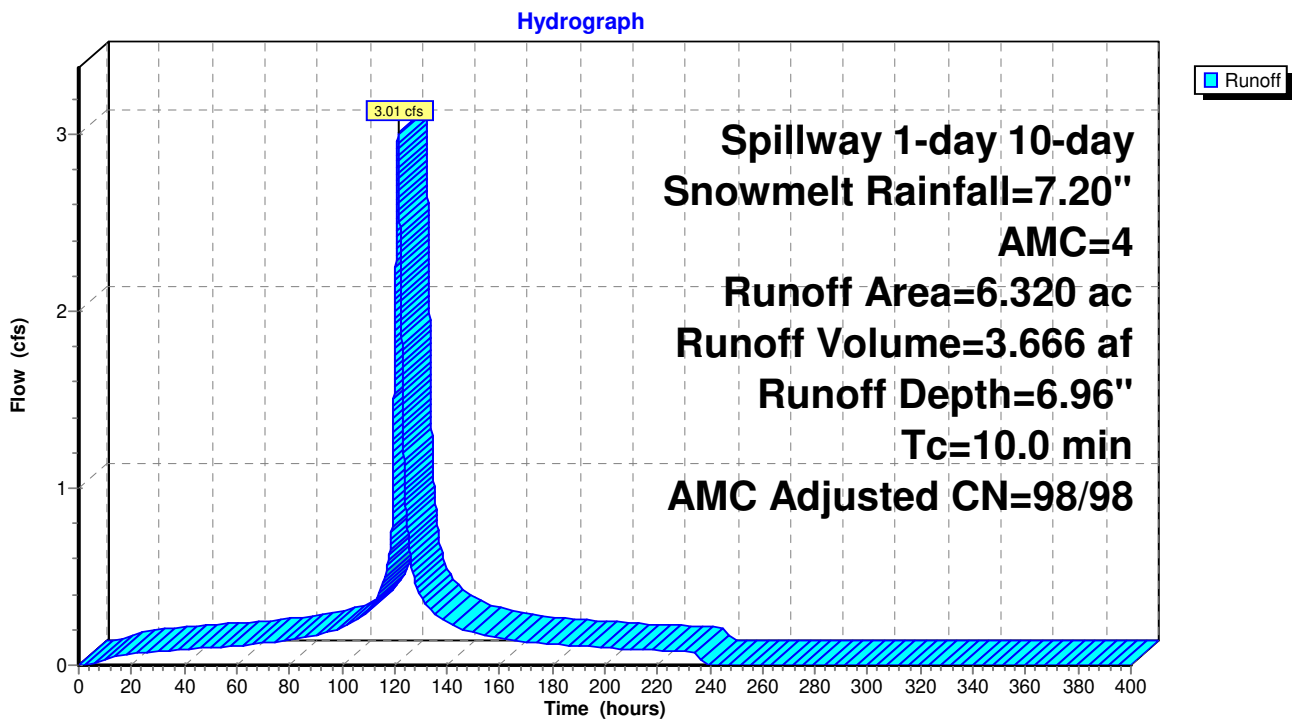
Runoff = 3.01 cfs @ 121.37 hrs, Volume= 3.666 af, Depth= 6.96"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
3.190	98		Paved parking, HSG D
0.210	98		Water Surface, 0% imp, HSG D
2.920	80		>75% Grass cover, Good, HSG D
6.320	90	98	Weighted Average, AMC Adjusted
3.130	81	98	49.53% Pervious Area, AMC Adjusted
3.190	98	98	50.47% Impervious Area, AMC Adjusted

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

Subcatchment 2.6S: Proposed Drainage to Pond 4



Summary for Subcatchment 2S: Proposed Drainage to Tributary 1 downstream of X-ing

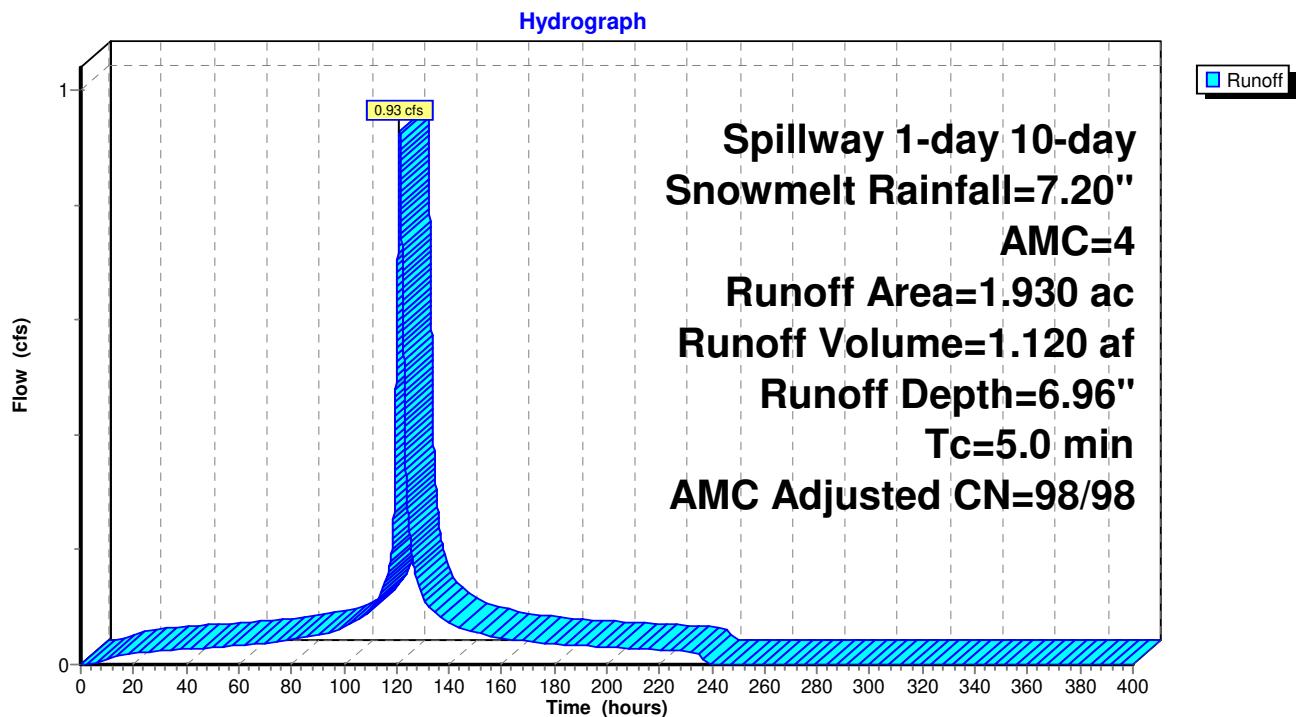
Runoff = 0.93 cfs @ 121.28 hrs, Volume= 1.120 af, Depth= 6.96"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
0.230	98		Paved parking, HSG D
* 1.700	80		Woods/grass comb., Fair, HSG D
1.930	82	98	Weighted Average, AMC Adjusted
1.700	80	98	88.08% Pervious Area, AMC Adjusted
0.230	98	98	11.92% Impervious Area, AMC Adjusted

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

Subcatchment 2S: Proposed Drainage to Tributary 1 downstream of X-ing



Summary for Subcatchment 3S: Proposed Drainage to Wetland 14

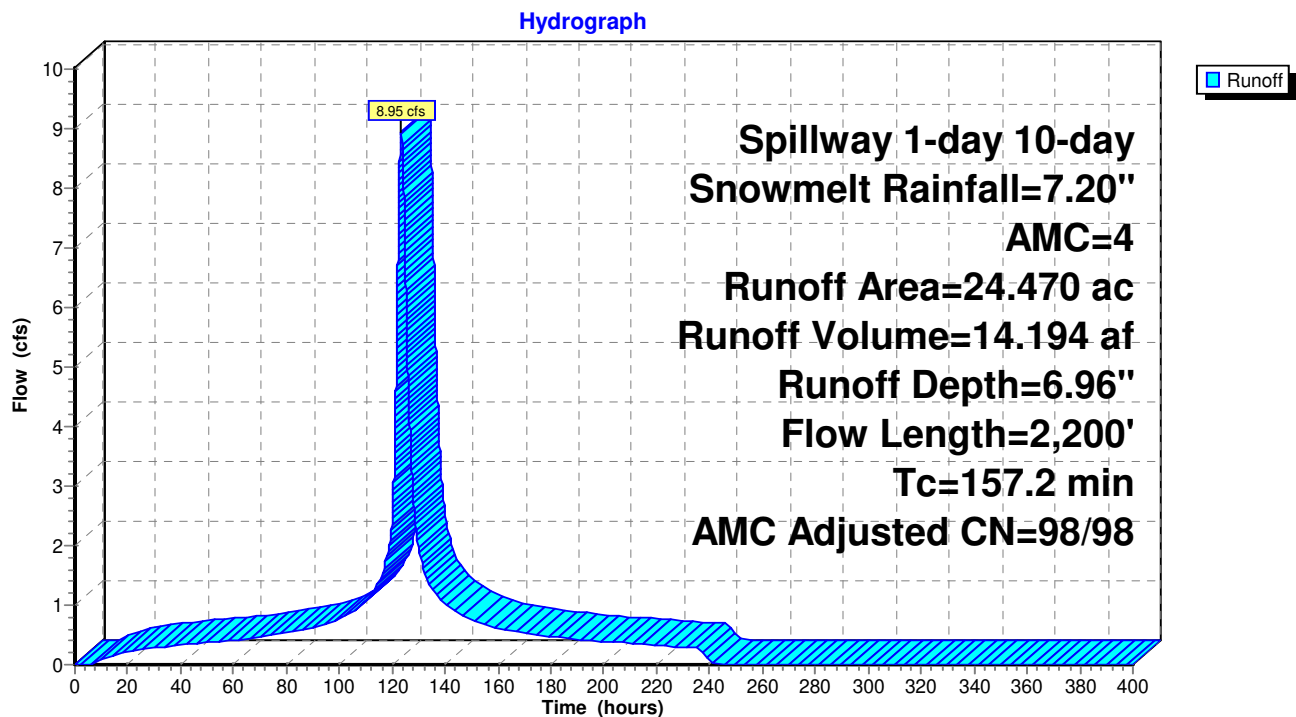
Runoff = 8.95 cfs @ 123.49 hrs, Volume= 14.194 af, Depth= 6.96"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
0.620	98		Paved parking, HSG D
* 23.850	80		Woods/grass comb., Fair, HSG D
24.470	80	98	Weighted Average, AMC Adjusted
23.850	80	98	97.47% Pervious Area, AMC Adjusted
0.620	98	98	2.53% Impervious Area, AMC Adjusted

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	200	0.0100	0.13		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.80"
3.9	300	0.0200	1.27		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
126.7	1,700	0.0020	0.22		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
157.2	2,200	Total			

Subcatchment 3S: Proposed Drainage to Wetland 14



Summary for Subcatchment 4.1S: Proposed Drainage to Pond 6

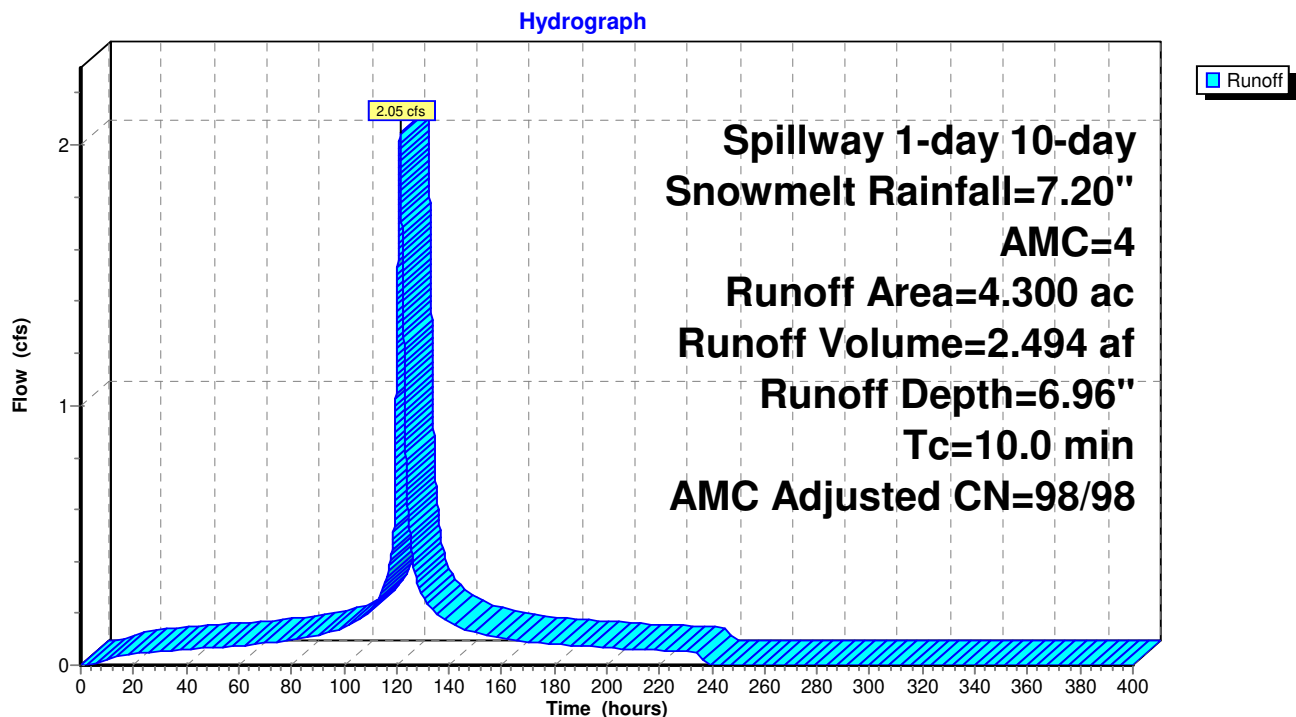
Runoff = 2.05 cfs @ 121.37 hrs, Volume= 2.494 af, Depth= 6.96"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
0.910	98		Paved parking, HSG D
1.620	98		Water Surface, 0% imp, HSG D
1.770	80		>75% Grass cover, Good, HSG D
4.300	91	98	Weighted Average, AMC Adjusted
3.390	89	98	78.84% Pervious Area, AMC Adjusted
0.910	98	98	21.16% Impervious Area, AMC Adjusted

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

Subcatchment 4.1S: Proposed Drainage to Pond 6



Summary for Subcatchment 4.2S: Proposed Drainage to Pond 5

Runoff = 7.48 cfs @ 121.37 hrs, Volume= 9.101 af, Depth= 6.96"

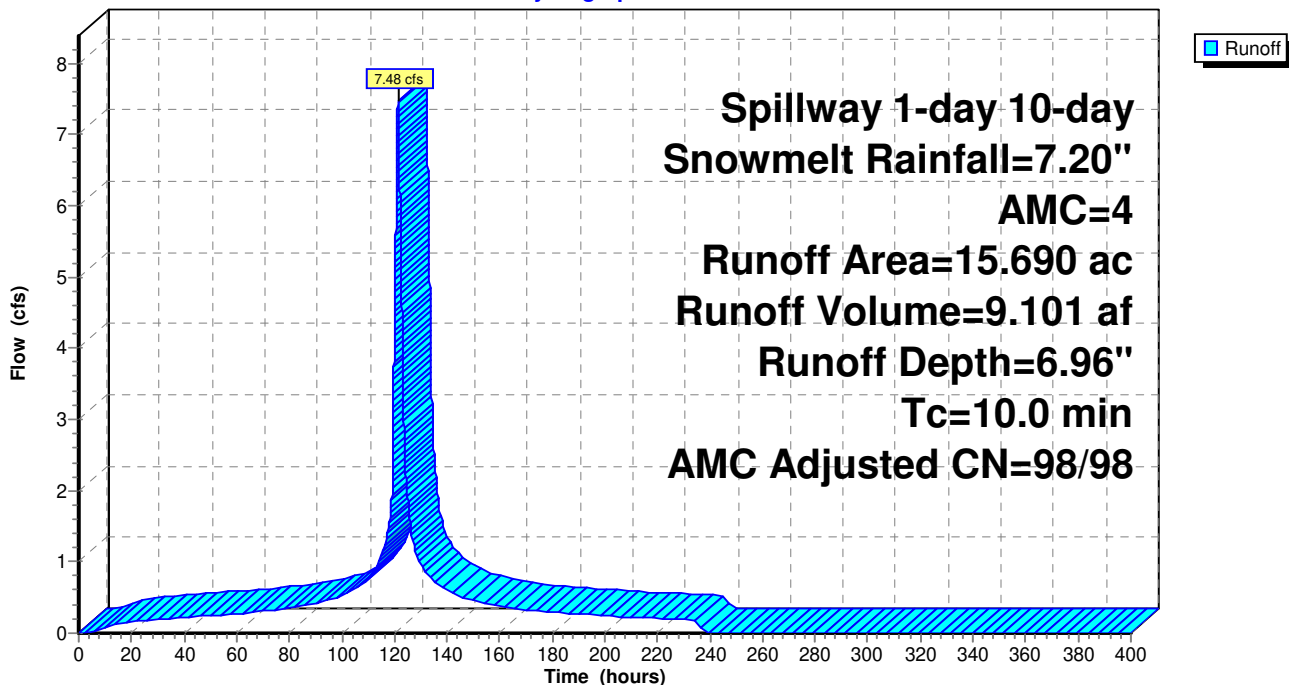
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
6.050	98		Paved parking, HSG D
1.930	98		Water Surface, 0% imp, HSG D
7.710	80		>75% Grass cover, Good, HSG D
15.690	89	98	Weighted Average, AMC Adjusted
9.640	84	98	61.44% Pervious Area, AMC Adjusted
6.050	98	98	38.56% Impervious Area, AMC Adjusted

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

Subcatchment 4.2S: Proposed Drainage to Pond 5

Hydrograph



Summary for Subcatchment 4.3S: Proposed Drainage to Wetland 5

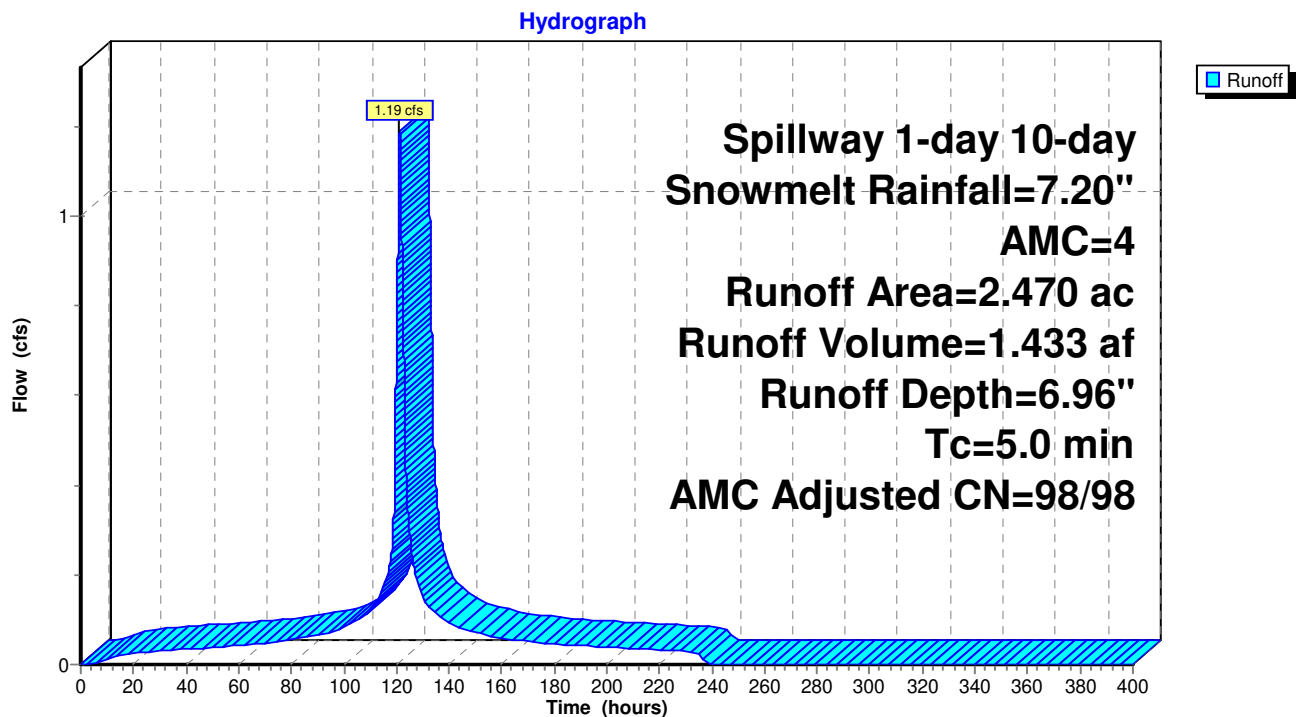
Runoff = 1.19 cfs @ 121.28 hrs, Volume= 1.433 af, Depth= 6.96"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
0.240	98		Paved parking, HSG D
2.230	90		Fallow, crop residue, Good, HSG D
2.470	91	98	Weighted Average, AMC Adjusted
2.230	90	98	90.28% Pervious Area, AMC Adjusted
0.240	98	98	9.72% Impervious Area, AMC Adjusted

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

Subcatchment 4.3S: Proposed Drainage to Wetland 5



Summary for Subcatchment 4S: Proposed Drainage to Wetland 4

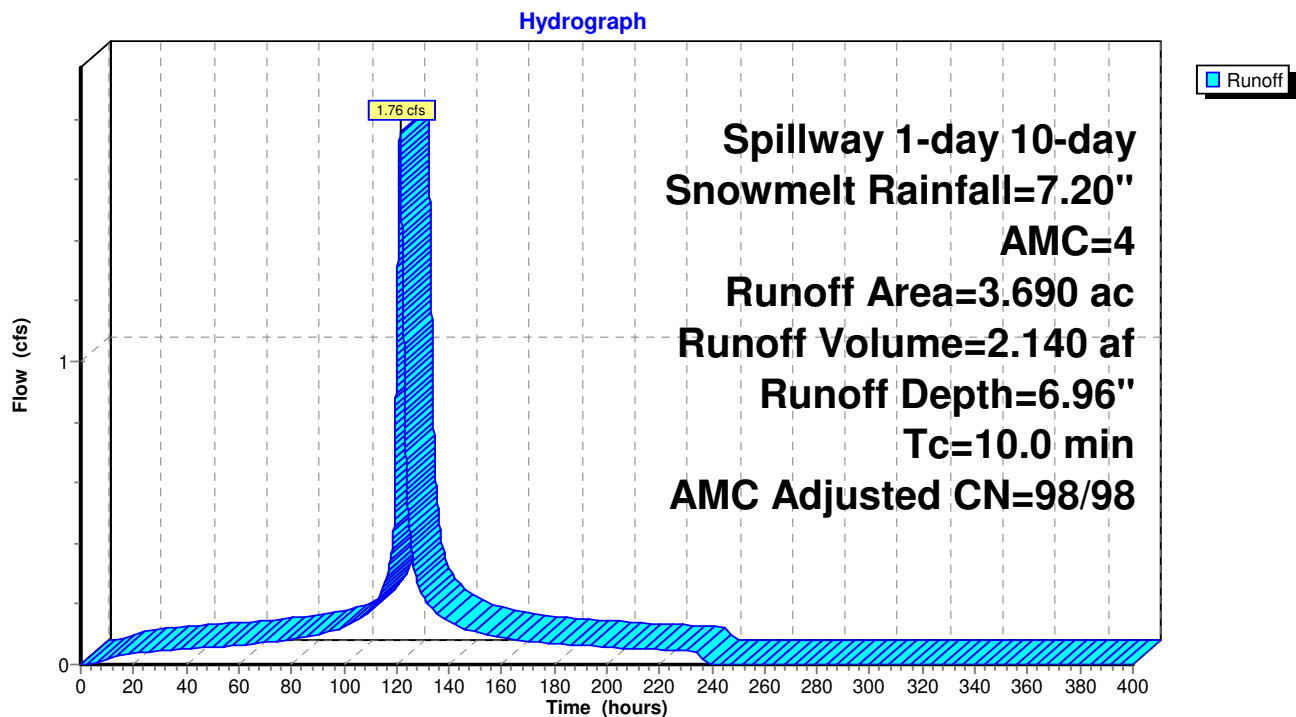
Runoff = 1.76 cfs @ 121.37 hrs, Volume= 2.140 af, Depth= 6.96"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
0.360	98		Paved parking, HSG D
3.330	90		Fallow, crop residue, Good, HSG D
3.690	91	98	Weighted Average, AMC Adjusted
3.330	90	98	90.24% Pervious Area, AMC Adjusted
0.360	98	98	9.76% Impervious Area, AMC Adjusted

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

Subcatchment 4S: Proposed Drainage to Wetland 4



Summary for Subcatchment 7S: Proposed Drainage to Pond 1

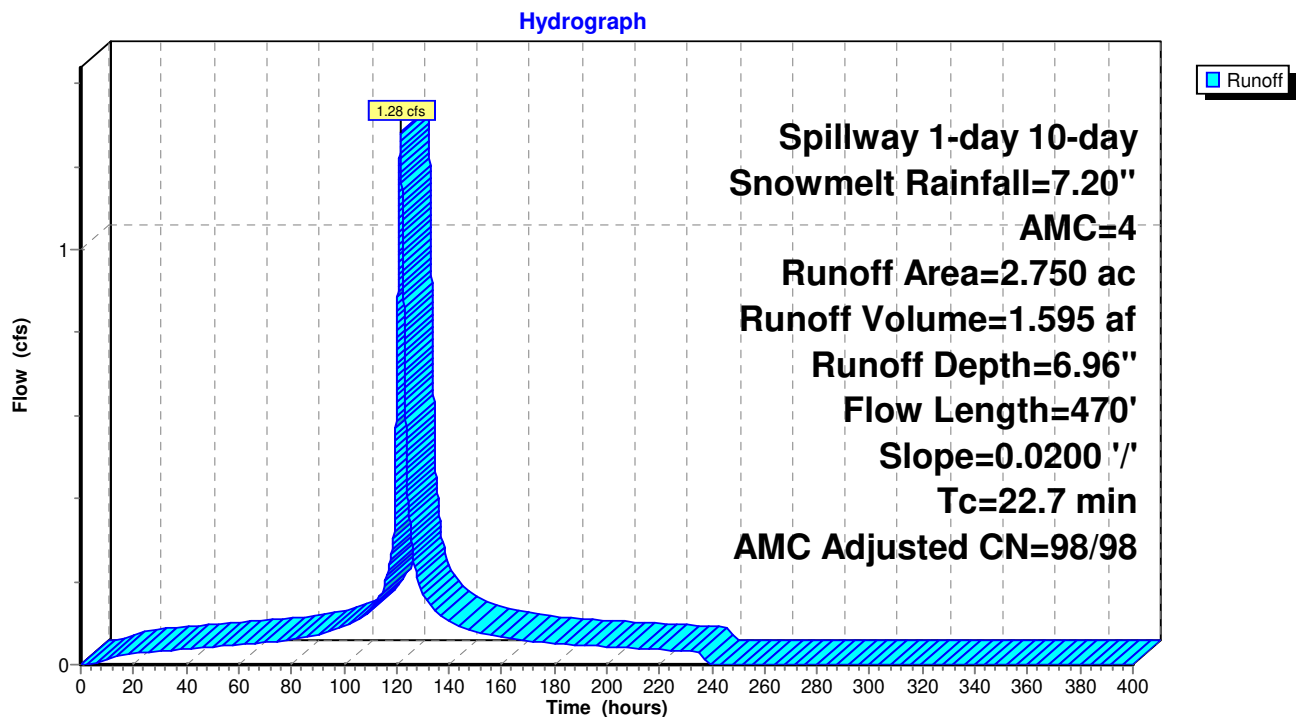
Runoff = 1.28 cfs @ 121.55 hrs, Volume= 1.595 af, Depth= 6.96"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
0.460	98		Paved parking, HSG D
* 2.290	80		Woods/grass comb., Fair, HSG D
2.750	83	98	Weighted Average, AMC Adjusted
2.290	80	98	83.27% Pervious Area, AMC Adjusted
0.460	98	98	16.73% Impervious Area, AMC Adjusted

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	200	0.0200	0.18		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
4.5	270	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
22.7	470	Total			

Subcatchment 7S: Proposed Drainage to Pond 1



Summary for Subcatchment 20S: OFFSITE Existing Drainage to Tributary 2

Runoff = 7.83 cfs @ 122.44 hrs, Volume= 10.876 af, Depth= 6.96"

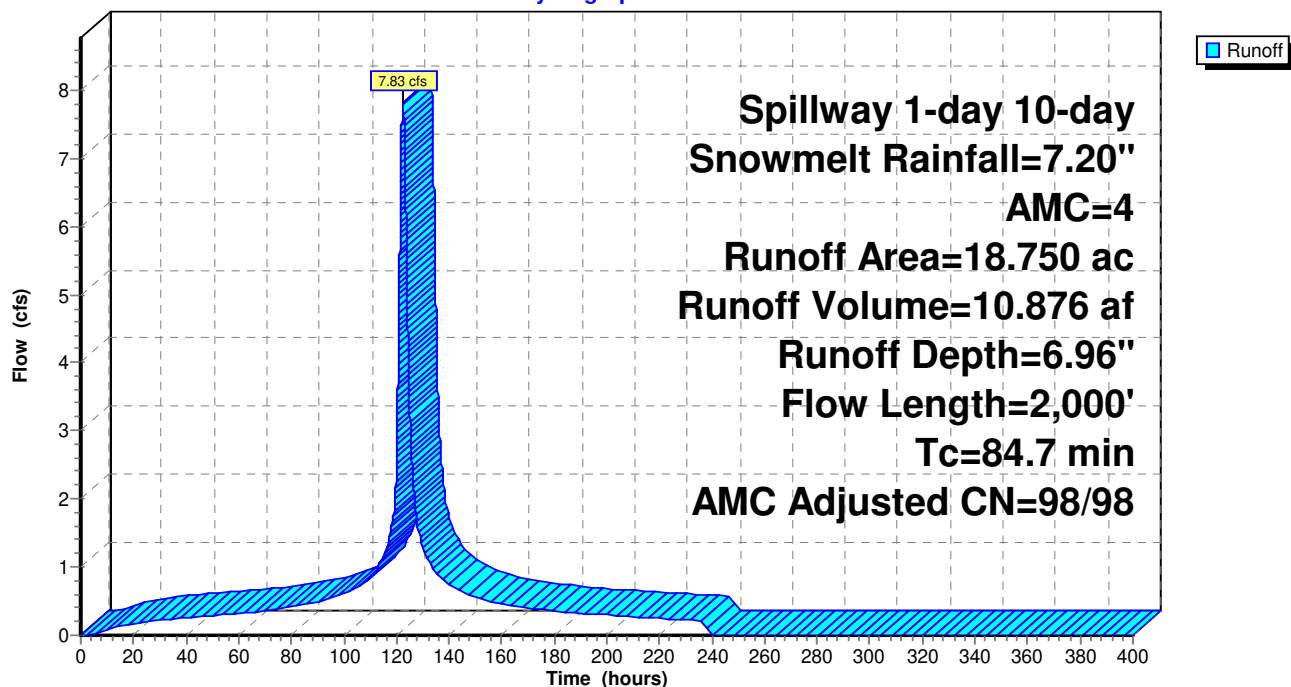
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
* 0.000	80		Row crops, straight row, Good, HSG D
* 18.750	80		Woods/grass comb., Fair, HSG D
18.750	80	98	Weighted Average, AMC Adjusted
18.750	80	98	100.00% Pervious Area, AMC Adjusted

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.0	200	0.0100	0.10		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"
43.0	1,000	0.0060	0.39		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.7	800	0.0175	1.98		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
84.7	2,000	Total			

Subcatchment 20S: OFFSITE Existing Drainage to Tributary 2

Hydrograph



Summary for Subcatchment 30S: OFFSITE Existing Drainage to Wetland 14

Runoff = 1.30 cfs @ 121.65 hrs, Volume= 1.636 af, Depth= 6.96"

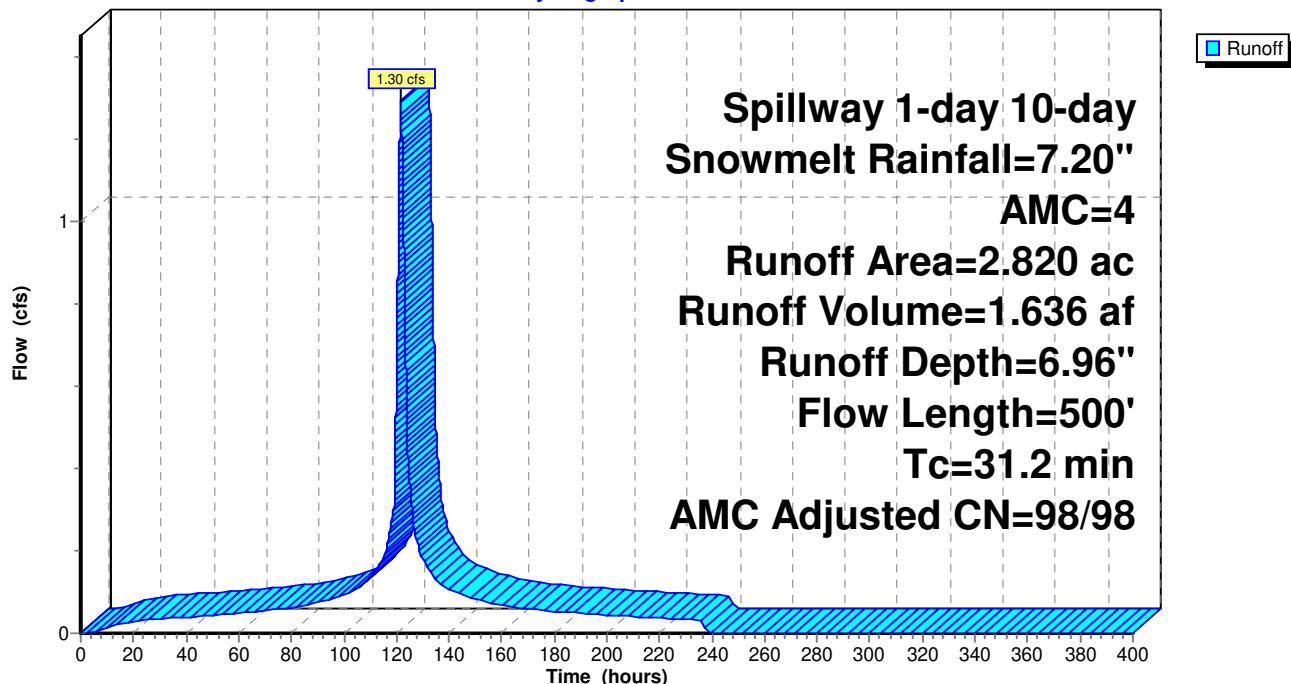
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
* 0.000	80		Row crops, straight row, Good, HSG D
* 2.820	80		Woods/grass comb., Fair, HSG D
2.820	80	98	Weighted Average, AMC Adjusted
2.820	80	98	100.00% Pervious Area, AMC Adjusted

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.1	200	0.0100	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
7.1	300	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
31.2	500	Total			

Subcatchment 30S: OFFSITE Existing Drainage to Wetland 14

Hydrograph



Summary for Subcatchment 40S: OFFSITE Existing Drainage to Wetland 4

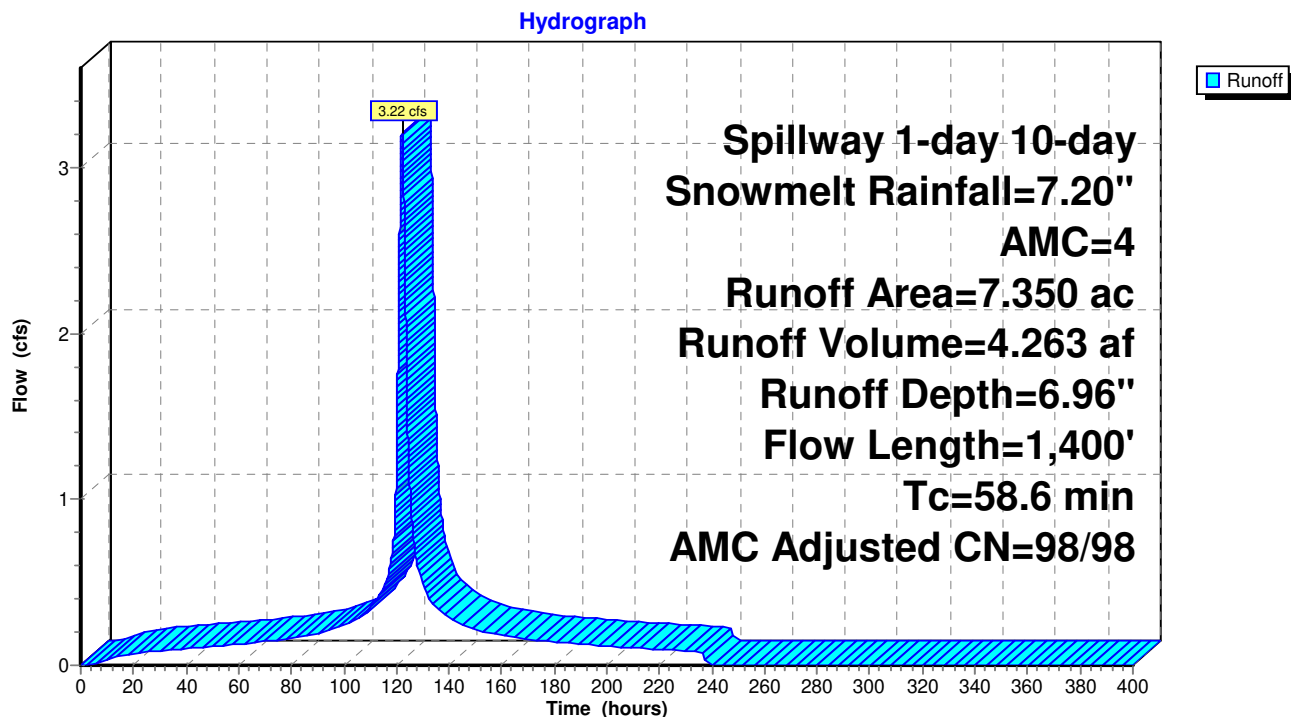
Runoff = 3.22 cfs @ 122.08 hrs, Volume= 4.263 af, Depth= 6.96"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Spillway 1-day 10-day Snowmelt Rainfall=7.20", AMC=4

Area (ac)	CN	Adj	Description
0.000	89		Row crops, straight row, Good, HSG D
0.000	82		Woods/grass comb., Fair, HSG D
7.350	84		1 acre lots, 20% imp, HSG D
7.350	84	98	Weighted Average, AMC Adjusted
5.880	81	98	80.00% Pervious Area, AMC Adjusted
1.470	98	98	20.00% Impervious Area, AMC Adjusted

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	200	0.0200	0.18		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
40.4	1,200	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
58.6	1,400	Total			

Subcatchment 40S: OFFSITE Existing Drainage to Wetland 4

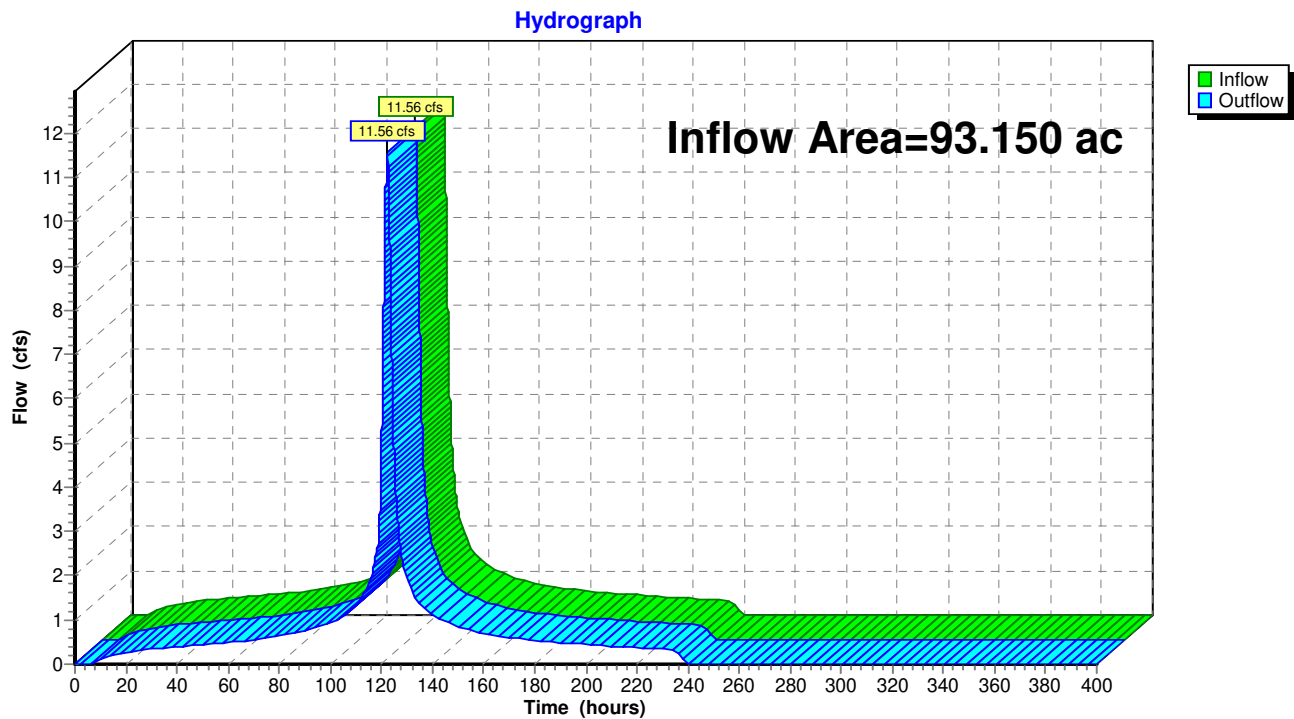


Summary for Reach 1R: To Lake Peltier

Inflow Area = 93.150 ac, 28.29% Impervious, Inflow Depth = 2.13" for Snowmelt event
Inflow = 11.56 cfs @ 122.25 hrs, Volume= 16.558 af
Outflow = 11.56 cfs @ 122.25 hrs, Volume= 16.558 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 1R: To Lake Peltier

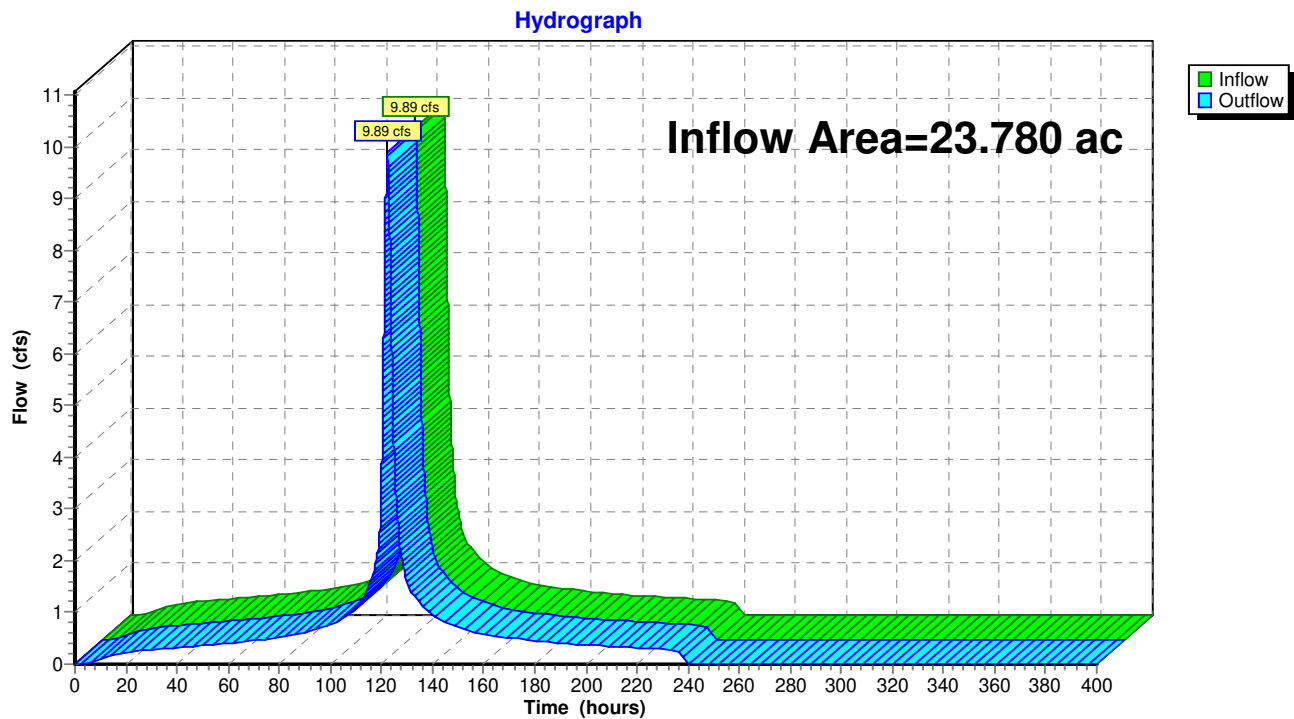


Summary for Reach 2R: Tributary 2 - Upstream of X-ing

Inflow Area = 23.780 ac, 1.35% Impervious, Inflow Depth = 6.96" for Snowmelt event
Inflow = 9.89 cfs @ 122.26 hrs, Volume= 13.794 af
Outflow = 9.89 cfs @ 122.26 hrs, Volume= 13.794 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

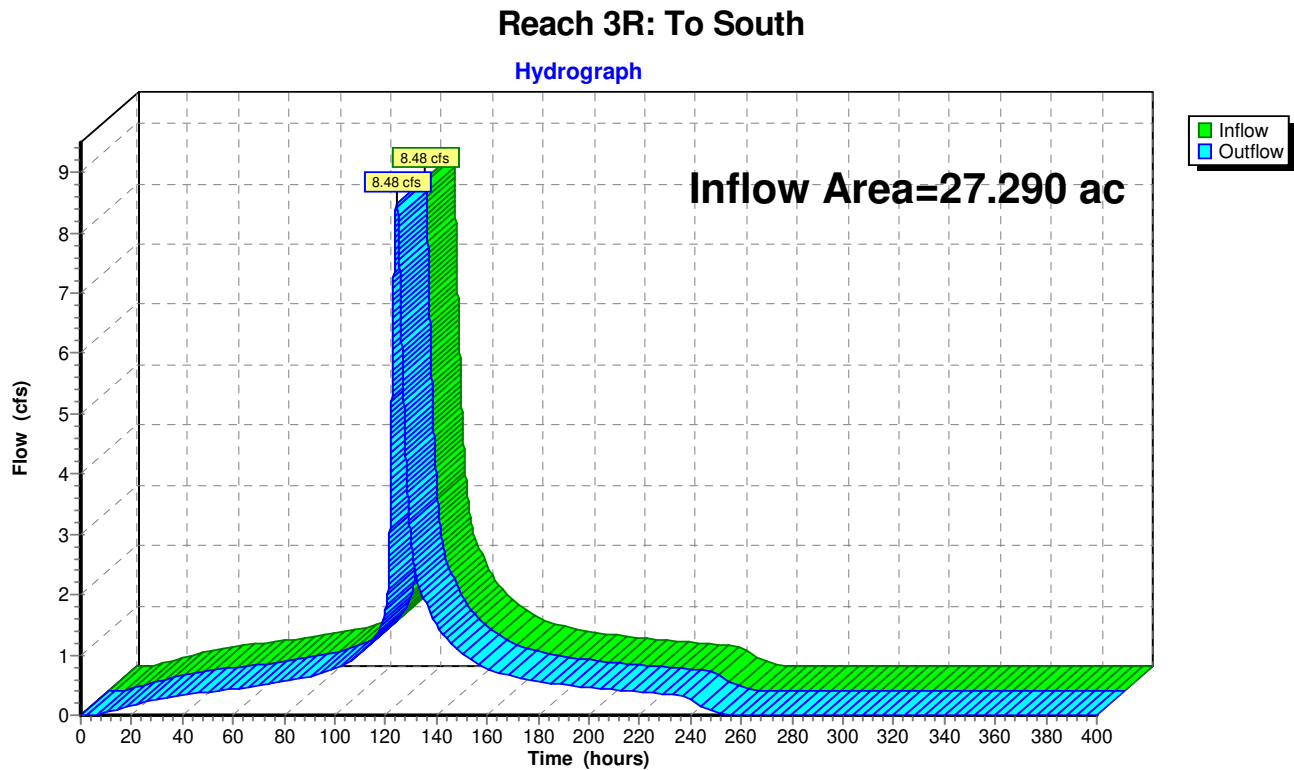
Reach 2R: Tributary 2 - Upstream of X-ing



Summary for Reach 3R: To South

Inflow Area = 27.290 ac, 2.27% Impervious, Inflow Depth = 6.96" for Snowmelt event
Inflow = 8.48 cfs @ 124.32 hrs, Volume= 15.830 af
Outflow = 8.48 cfs @ 124.32 hrs, Volume= 15.830 af, Atten= 0%, Lag= 0.0 min

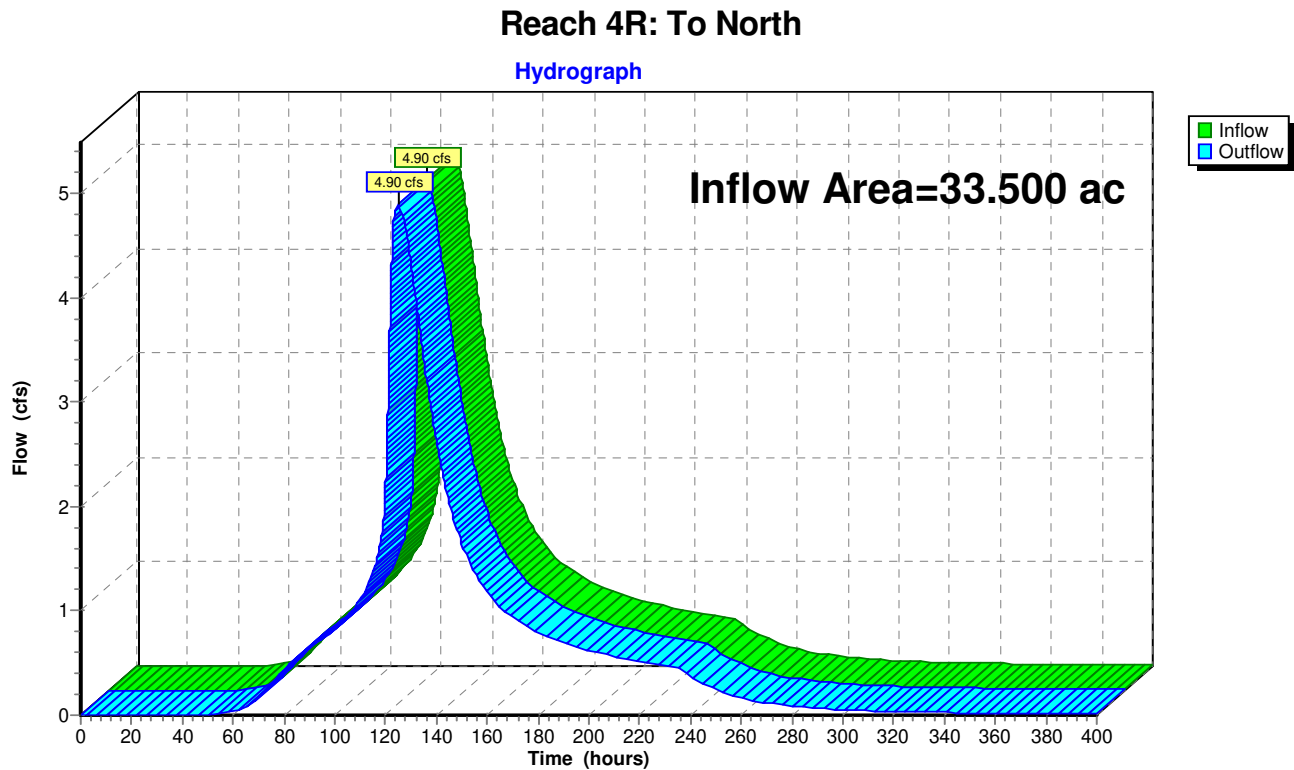
Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs



Summary for Reach 4R: To North

Inflow Area = 33.500 ac, 26.96% Impervious, Inflow Depth > 6.47" for Snowmelt event
Inflow = 4.90 cfs @ 124.91 hrs, Volume= 18.054 af
Outflow = 4.90 cfs @ 124.91 hrs, Volume= 18.054 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

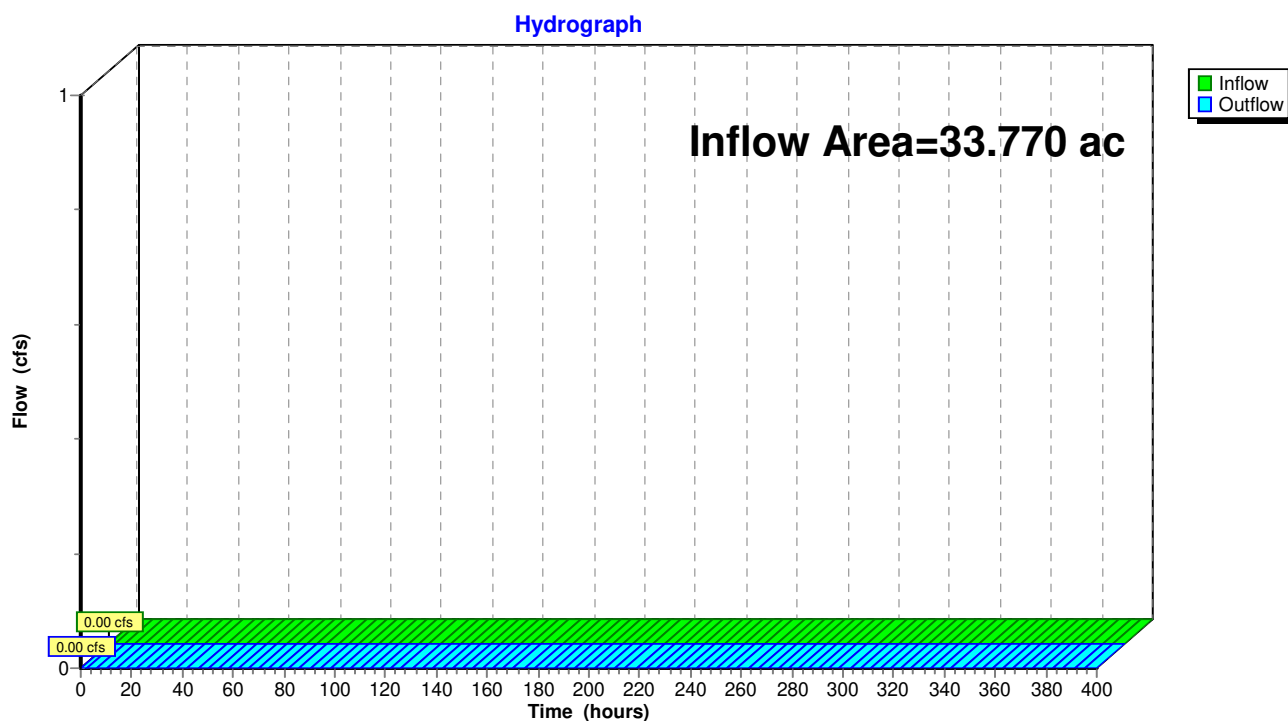


Summary for Reach 10R: Capacity Check

Inflow Area = 33.770 ac, 39.41% Impervious, Inflow Depth = 0.00" for Snowmelt event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach 10R: Capacity Check

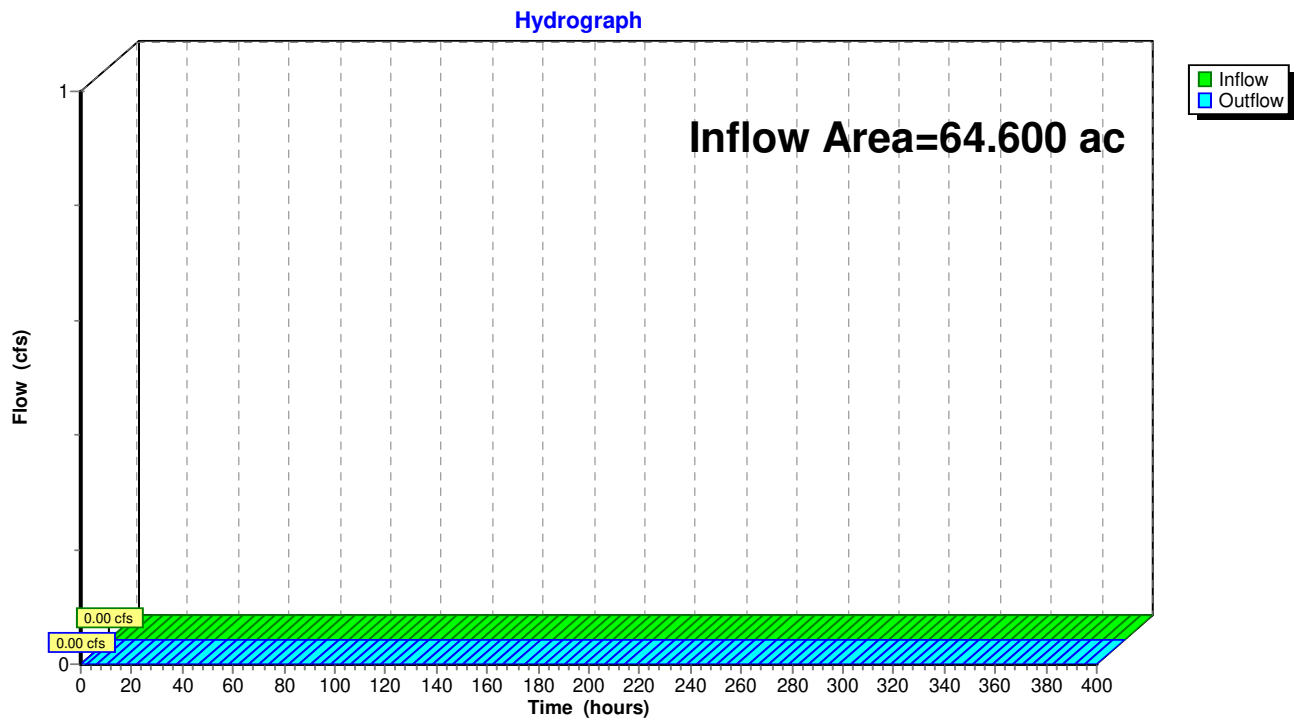


Summary for Reach STRM: 60" Trunk Sewer

Inflow Area = 64.600 ac, 38.84% Impervious, Inflow Depth = 0.00" for Snowmelt event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs

Reach STRM: 60" Trunk Sewer



Summary for Pond 1.2P: Ex 18" STRM

Inflow Area = 0.910 ac, 45.05% Impervious, Inflow Depth = 6.96" for Snowmelt event
 Inflow = 0.44 cfs @ 121.28 hrs, Volume= 0.528 af
 Outflow = 0.44 cfs @ 121.29 hrs, Volume= 0.528 af, Atten= 0%, Lag= 0.2 min
 Primary = 0.44 cfs @ 121.29 hrs, Volume= 0.528 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 893.25' @ 121.29 hrs Surf.Area= 39 sf Storage= 9 cf

Plug-Flow detention time= 0.9 min calculated for 0.528 af (100% of inflow)
 Center-of-Mass det. time= 0.9 min (7,409.9 - 7,409.0)

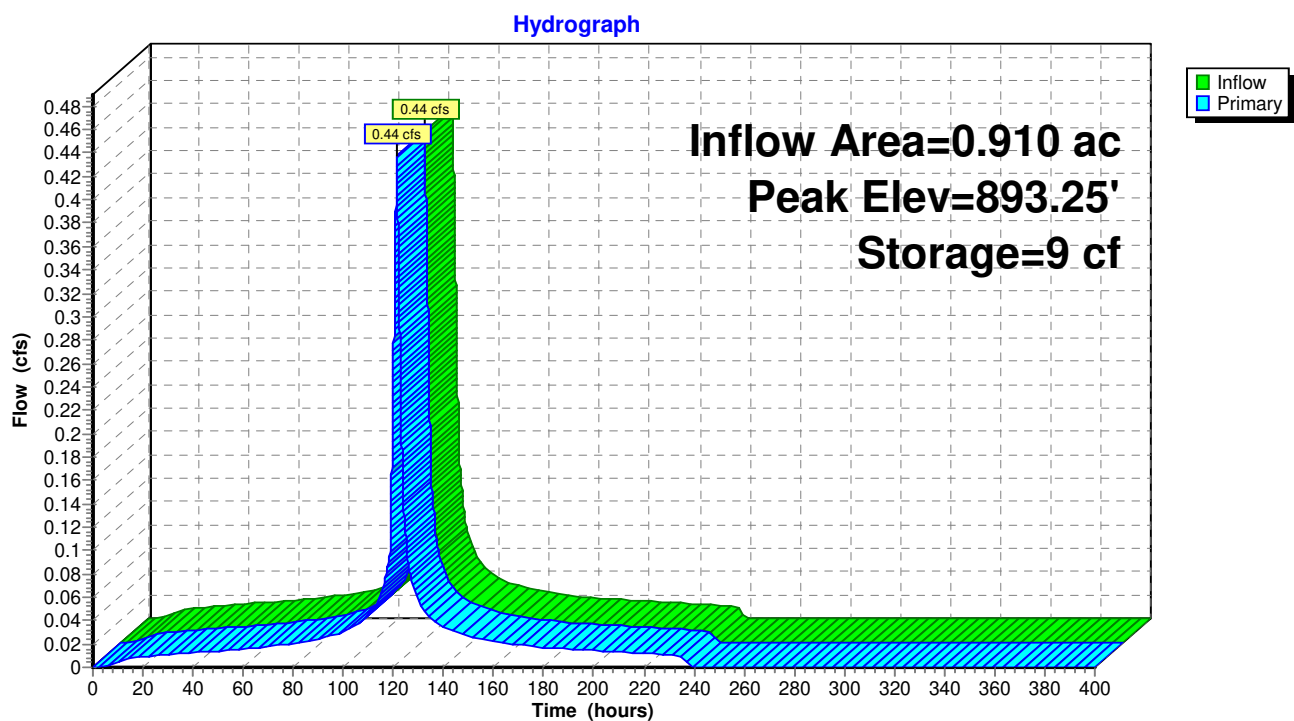
Volume	Invert	Avail.Storage	Storage Description
#1	892.96'	1,547 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
892.96	20	0	0
894.00	90	57	57
896.00	1,400	1,490	1,547

Device	Routing	Invert	Outlet Devices
#1	Primary	892.96'	18.0" Round Culvert L= 43.6' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 892.96' / 888.72' S= 0.0972 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Primary	894.10'	50.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.44 cfs @ 121.29 hrs HW=893.25' TW=0.00' (Dynamic Tailwater)
 1=Culvert (Inlet Controls 0.44 cfs @ 1.83 fps)
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1.2P: Ex 18" STRM



Summary for Pond 1P: GATE CLOSED Pond 1

Inflow Area = 33.770 ac, 39.41% Impervious, Inflow Depth = 6.96" for Snowmelt event
 Inflow = 15.95 cfs @ 121.45 hrs, Volume= 19.589 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Starting Elev= 892.00' Surf.Area= 198,200 sf Storage= 672,500 cf
 Peak Elev= 898.92' @ 241.28 hrs Surf.Area= 247,400 sf Storage= 1,525,785 cf (853,285 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	882.00'	672,500 cf	WET VOL (Prismatic) Listed below (Recalc)
#2	892.00'	1,174,300 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)
		1,846,800 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
882.00	47,700	0	0
884.00	54,700	102,400	102,400
886.00	62,200	116,900	219,300
888.00	70,100	132,300	351,600
890.00	78,700	148,800	500,400
891.00	83,200	80,950	581,350
892.00	99,100	91,150	672,500

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
892.00	99,100	0	0
894.00	112,800	211,900	211,900
896.00	127,000	239,800	451,700
898.00	141,800	268,800	720,500
900.00	156,000	297,800	1,018,300
901.00	156,000	156,000	1,174,300

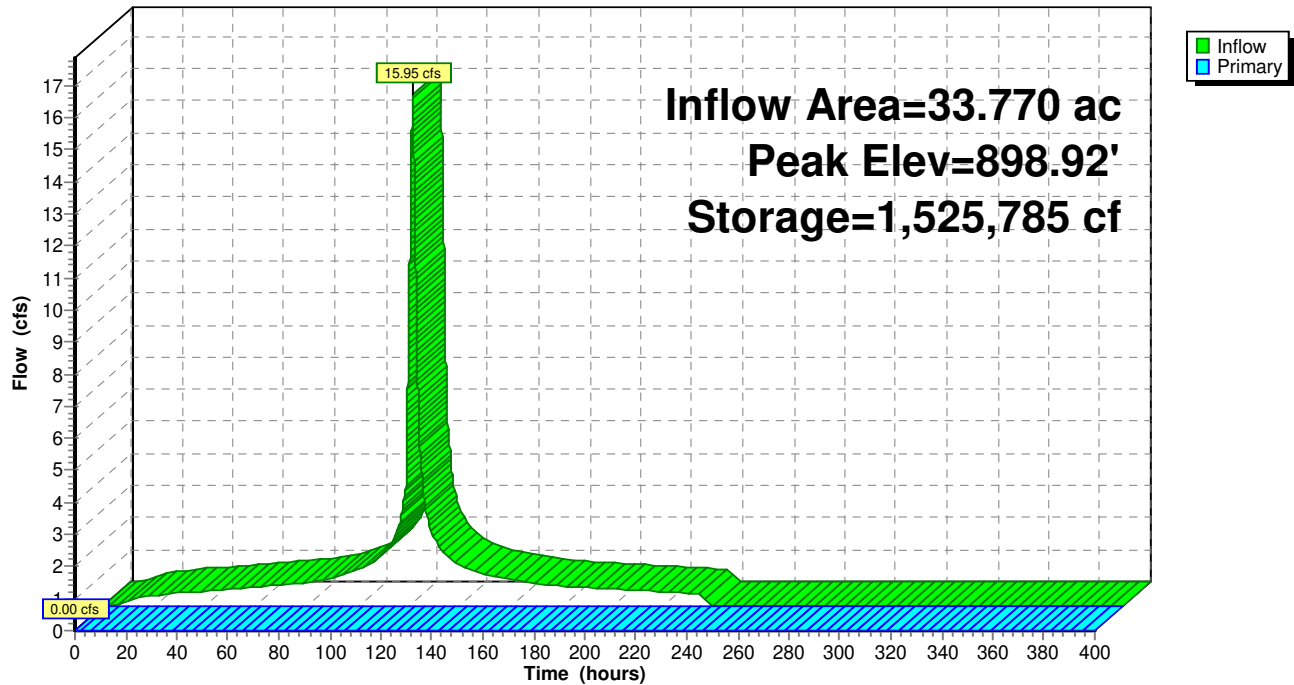
Device	Routing	Invert	Outlet Devices
#1	Primary	892.00'	15.0" Round Culvert X 0.00 L= 351.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 892.00' / 890.25' S= 0.0050 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Device 1	892.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Primary	900.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=892.00' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Controls 0.00 cfs)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: GATE CLOSED Pond 1

Hydrograph



Summary for Pond 2aP: Ex STRM Structure

Inflow Area = 25.710 ac, 2.14% Impervious, Inflow Depth = 6.96" for Snowmelt event
 Inflow = 10.57 cfs @ 122.25 hrs, Volume= 14.910 af
 Outflow = 10.56 cfs @ 122.27 hrs, Volume= 14.910 af, Atten= 0%, Lag= 1.2 min
 Primary = 10.56 cfs @ 122.27 hrs, Volume= 14.910 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 888.43' @ 122.27 hrs Surf.Area= 2,831 sf Storage= 1,994 cf

Plug-Flow detention time= 2.4 min calculated for 14.910 af (100% of inflow)
 Center-of-Mass det. time= 2.4 min (7,474.0 - 7,471.6)

Volume	Invert	Avail.Storage	Storage Description
#1	886.82'	46,909 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

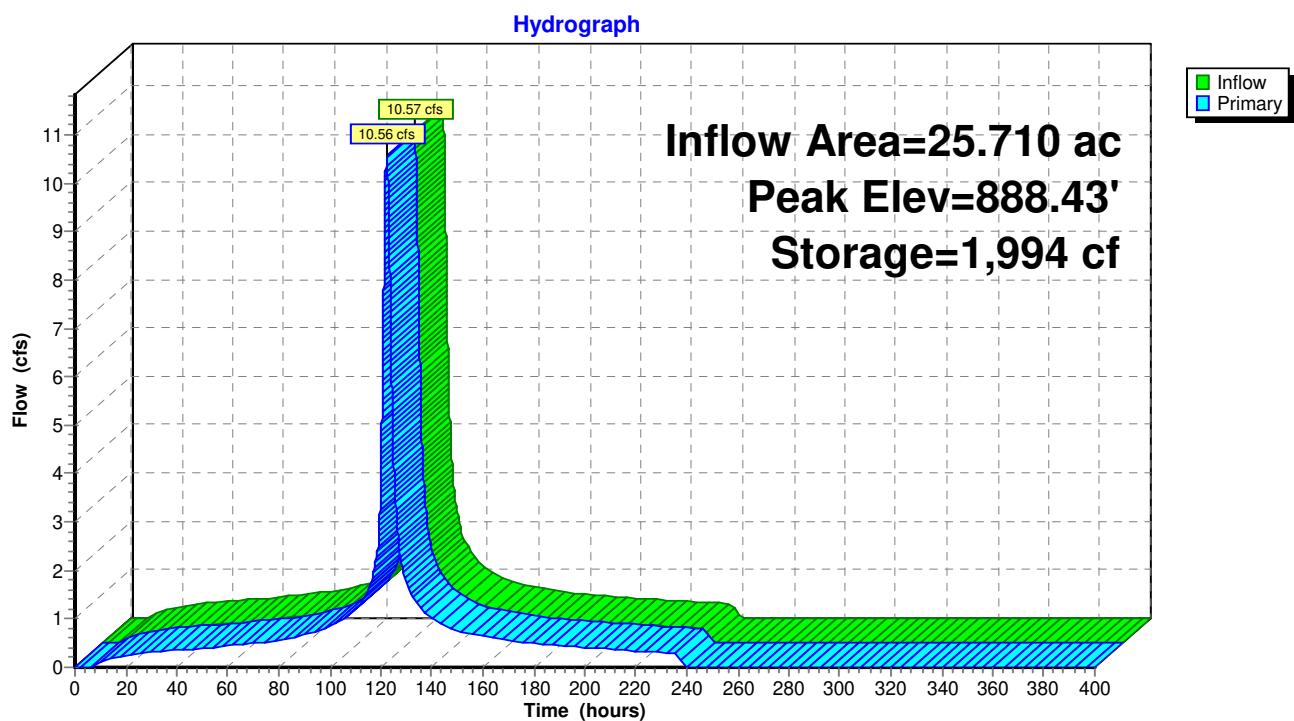
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
886.82	10	0	0
888.00	1,700	1,009	1,009
890.00	6,900	8,600	9,609
892.00	30,400	37,300	46,909

Device	Routing	Invert	Outlet Devices
#1	Primary	886.36'	21.0" Round Ex 21" CMP L= 37.5' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 886.36' / 885.72' S= 0.0171 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 2.41 sf
#2	Device 1	886.82'	21.0" Vert. EX STRUCTURE OPENNING C= 0.600
#3	Primary	888.40'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.56 cfs @ 122.27 hrs HW=888.43' TW=0.00' (Dynamic Tailwater)

1=Ex 21" CMP (Passes 10.04 cfs of 11.05 cfs potential flow)
 2=EX STRUCTURE OPENNING (Orifice Controls 10.04 cfs @ 4.33 fps)
 3=Broad-Crested Rectangular Weir (Weir Controls 0.52 cfs @ 0.50 fps)

Pond 2aP: Ex STRM Structure



Summary for Pond 2bP: Wetland 19 Storm X-ing

Inflow Area = 23.780 ac, 1.35% Impervious, Inflow Depth = 6.96" for Snowmelt event
 Inflow = 9.89 cfs @ 122.26 hrs, Volume= 13.794 af
 Outflow = 9.89 cfs @ 122.26 hrs, Volume= 13.791 af, Atten= 0%, Lag= 0.3 min
 Primary = 9.89 cfs @ 122.26 hrs, Volume= 13.791 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 893.94' @ 122.26 hrs Surf.Area= 719 sf Storage= 286 cf

Plug-Flow detention time= 3.7 min calculated for 13.791 af (100% of inflow)
 Center-of-Mass det. time= 2.1 min (7,476.7 - 7,474.6)

Volume	Invert	Avail.Storage	Storage Description
#1	893.20'	167,198 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

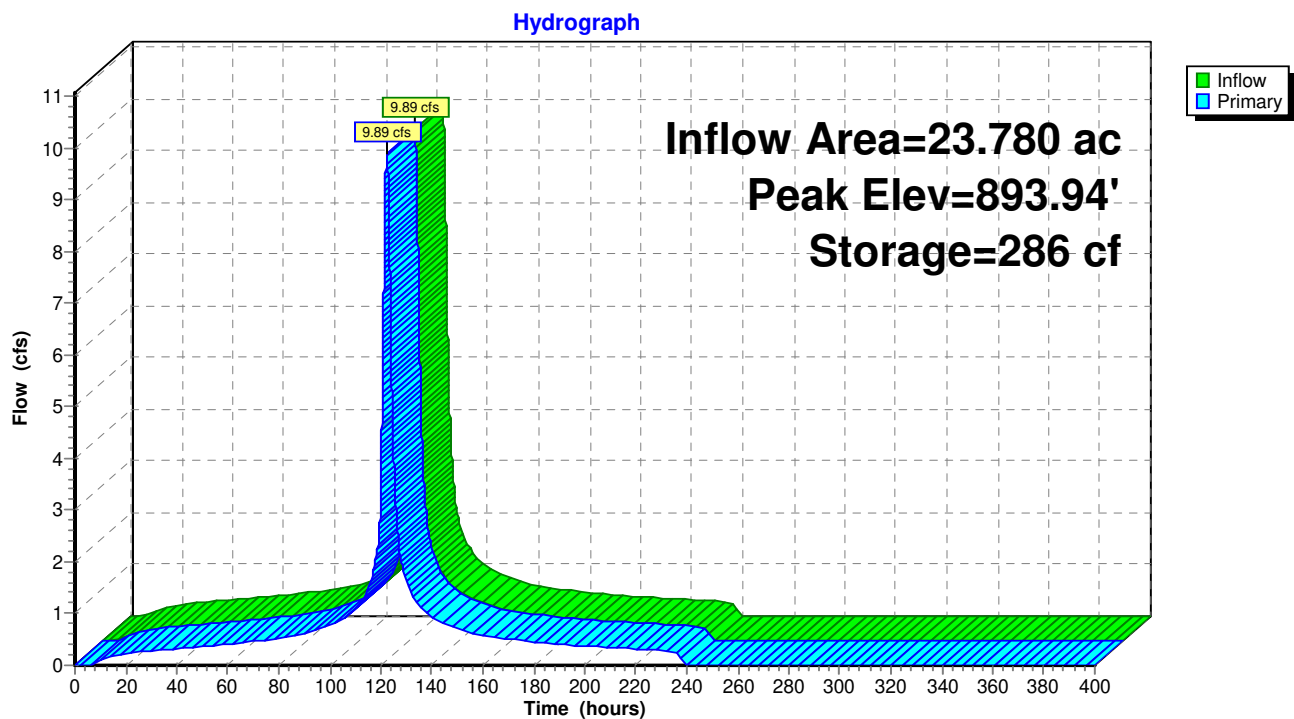
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
893.20	50	0	0
894.00	770	328	328
896.00	12,800	13,570	13,898
898.00	31,000	43,800	57,698
899.00	52,000	41,500	99,198
900.00	84,000	68,000	167,198

Device	Routing	Invert	Outlet Devices
#1	Primary	890.00'	30.0" Round Culvert x 2 X 2.00 L= 99.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 890.00' / 889.80' S= 0.0020 ' S= 0.0020 ' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 4.91 sf
#2	Device 1	893.70'	48.0" Horiz. Grate x 2 X 2.00 C= 0.600 Limited to weir flow at low heads
#3	Primary	898.50'	30.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=9.89 cfs @ 122.26 hrs HW=893.94' TW=888.43' (Dynamic Tailwater)

1=Culvert x 2 (Passes 9.89 cfs of 61.16 cfs potential flow)
 2=Grate x 2 (Weir Controls 9.89 cfs @ 1.61 fps)
 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2bP: Wetland 19 Storm X-ing



Summary for Pond 2P: GATE CLOSED Pond 2 & Wetland 10 (LOWERED)

Inflow Area = 11.410 ac, 36.20% Impervious, Inflow Depth = 6.96" for Snowmelt event
 Inflow = 5.44 cfs @ 121.35 hrs, Volume= 6.619 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Starting Elev= 901.00' Surf.Area= 79,800 sf Storage= 133,013 cf
 Peak Elev= 904.93' @ 240.56 hrs Surf.Area= 132,869 sf Storage= 421,316 cf (288,303 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	891.00'	99,968 cf	WET VOL 2A (Prismatic) Listed below (Recalc)
#2	901.00'	195,950 cf	LIVE STORAGE 2A (Prismatic) Listed below (Recalc)
#3	891.00'	33,045 cf	WET VOL 2B (Prismatic) Listed below (Recalc)
#4	901.00'	92,450 cf	LIVE STORAGE 2B (Prismatic) Listed below (Recalc)
#5	901.01'	105,540 cf	WETLAND 10 (Prismatic) Listed below (Recalc)
		526,953 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
891.00	1,600	0	0
892.00	2,100	1,850	1,850
893.99	3,500	5,572	7,422
894.00	5,700	46	7,468
896.00	9,100	14,800	22,268
898.00	13,300	22,400	44,668
900.00	18,500	31,800	76,468
901.00	28,500	23,500	99,968

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
901.00	28,500	0	0
902.00	32,600	30,550	30,550
904.00	41,300	73,900	104,450
905.00	45,700	43,500	147,950
906.00	50,300	48,000	195,950

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
891.00	280	0	0
892.00	570	425	425
894.00	1,400	1,970	2,395
896.00	2,600	4,000	6,395
898.00	4,300	6,900	13,295
900.00	6,500	10,800	24,095
901.00	11,400	8,950	33,045

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
901.00	11,400	0	0
902.00	14,000	12,700	12,700
904.00	19,900	33,900	46,600
905.00	22,900	21,400	68,000
906.00	26,000	24,450	92,450

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
901.01	14,800	0	0
902.00	17,200	15,840	15,840
904.00	22,300	39,500	55,340
905.00	25,100	23,700	79,040
906.00	27,900	26,500	105,540

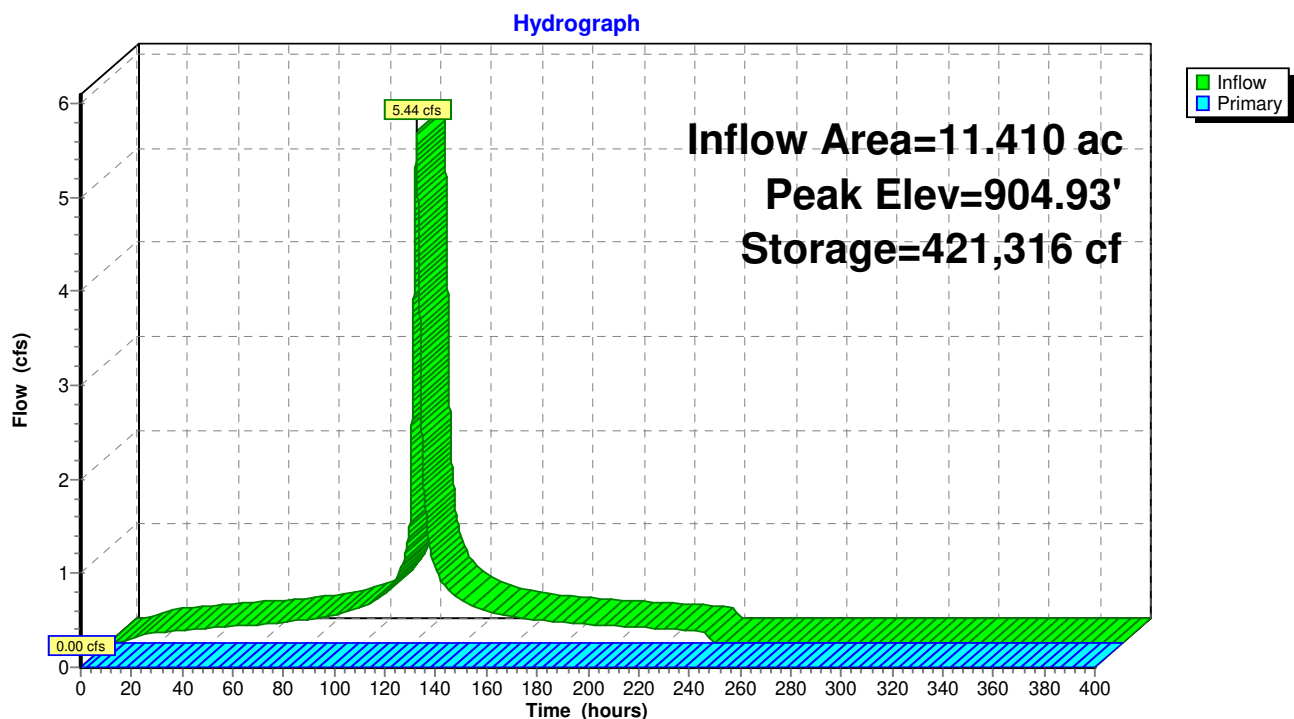
Device	Routing	Invert	Outlet Devices
#1	Primary	901.00'	15.0" Round Culvert X 0.00 L= 50.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 901.00' / 900.50' S= 0.0099 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Device 1	901.00'	6.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=901.00' TW=0.00' (Dynamic Tailwater)

1=Culvert (Controls 0.00 cfs)

2=Orifice/Grate (Controls 0.00 cfs)

Pond 2P: GATE CLOSED Pond 2 & Wetland 10 (LOWERED)



Summary for Pond 3P: GATE CLOSED Pond 3

Inflow Area = 19.420 ac, 39.39% Impervious, Inflow Depth = 6.63" for Snowmelt event
 Inflow = 8.49 cfs @ 121.39 hrs, Volume= 10.737 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Starting Elev= 900.00' Surf.Area= 67,800 sf Storage= 134,150 cf
 Peak Elev= 903.96' @ 400.00 hrs Surf.Area= 170,151 sf Storage= 601,874 cf (467,724 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	890.00'	134,150 cf	POND 3 WET VOL (Prismatic) Listed below (Recalc)
#2	900.00'	613,280 cf	POND 3 & EWRK LIVE STORAGE (Prismatic) Listed below (Recalc)
		747,430 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
890.00	2,400	0	0
892.00	5,200	7,600	7,600
894.00	9,900	15,100	22,700
896.00	15,100	25,000	47,700
898.00	20,600	35,700	83,400
899.00	23,500	22,050	105,450
900.00	33,900	28,700	134,150

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.00	33,900	0	0
900.01	100,800	673	673
902.00	118,000	217,706	218,380
903.00	127,000	122,500	340,880
904.00	136,600	131,800	472,680
904.50	140,600	69,300	541,980
905.00	144,600	71,300	613,280

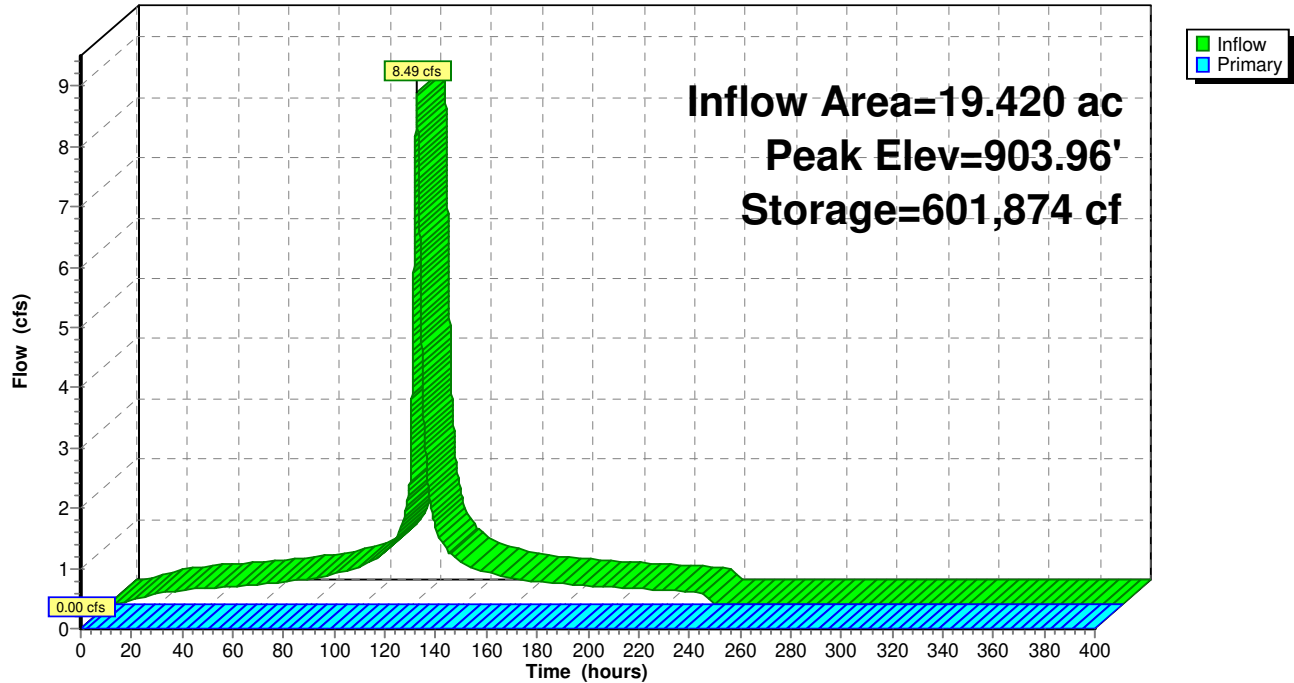
Device	Routing	Invert	Outlet Devices
#1	Primary	900.00'	15.0" Round Culvert X 0.00 L= 448.4' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 900.00' / 897.34' S= 0.0059 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Device 1	900.00'	6.0" Vert. Orifice/Grate C= 0.600
#3	Primary	904.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=900.00' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Controls 0.00 cfs)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: GATE CLOSED Pond 3

Hydrograph



Summary for Pond 4P: Pond 4

Inflow Area = 6.320 ac, 50.47% Impervious, Inflow Depth = 6.96" for Snowmelt event
 Inflow = 3.01 cfs @ 121.37 hrs, Volume= 3.666 af
 Outflow = 2.43 cfs @ 121.86 hrs, Volume= 3.139 af, Atten= 20%, Lag= 29.6 min
 Primary = 2.43 cfs @ 121.86 hrs, Volume= 3.139 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Starting Elev= 902.00' Surf.Area= 18,400 sf Storage= 13,975 cf
 Peak Elev= 903.96' @ 240.17 hrs Surf.Area= 23,407 sf Storage= 36,956 cf (22,981 cf above start)

Plug-Flow detention time= 1,453.8 min calculated for 2.818 af (77% of inflow)
 Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	896.00'	13,975 cf	WET VOL (Prismatic) Listed below (Recalc)
#2	902.00'	104,125 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)
		118,100 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
896.00	65	0	0
898.00	630	695	695
900.00	2,700	3,330	4,025
901.00	4,000	3,350	7,375
902.00	9,200	6,600	13,975

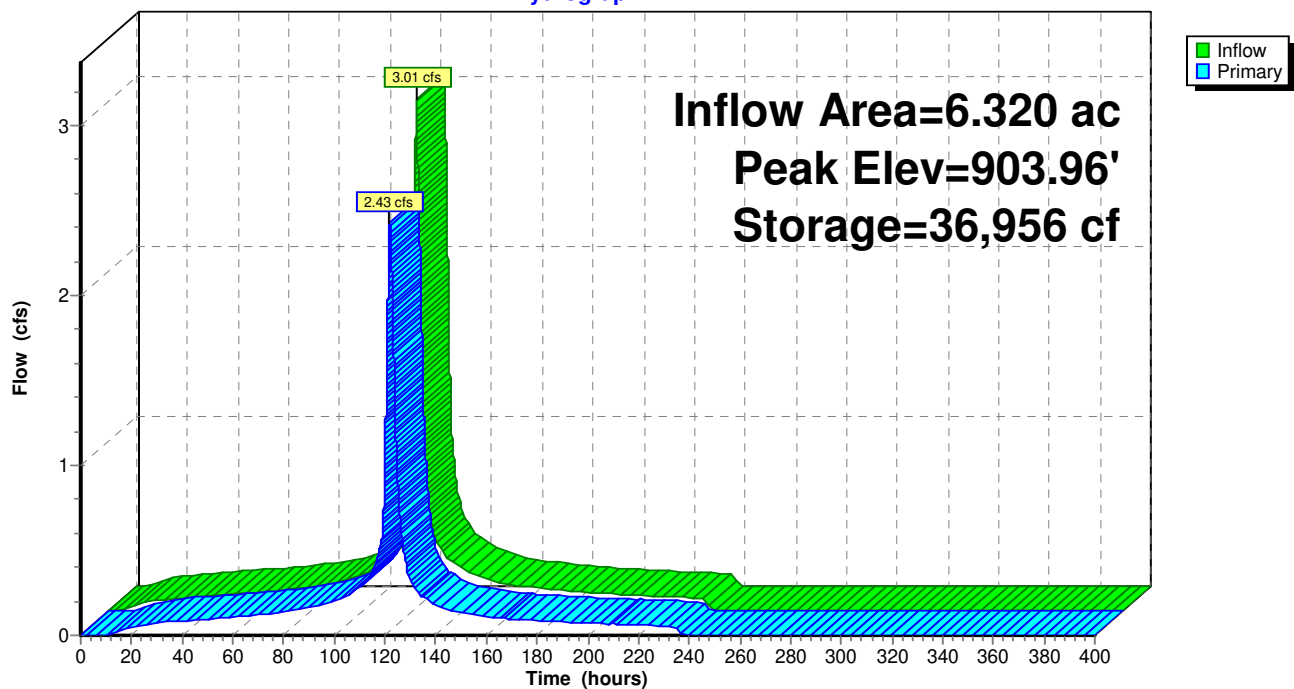
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
902.00	9,200	0	0
904.00	14,300	23,500	23,500
906.00	20,100	34,400	57,900
907.00	23,100	21,600	79,500
907.50	24,600	11,925	91,425
908.00	26,200	12,700	104,125

Device	Routing	Invert	Outlet Devices
#1	Primary	902.00'	18.0" Round Culvert L= 346.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 902.00' / 901.00' S= 0.0029 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.77 sf
#2	Primary	907.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=2.42 cfs @ 121.86 hrs HW=903.08' TW=902.16' (Dynamic Tailwater)
 1=Culvert (Outlet Controls 2.42 cfs @ 2.50 fps)
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4P: Pond 4

Hydrograph



Summary for Pond 5P: Pond 5

Inflow Area = 15.690 ac, 38.56% Impervious, Inflow Depth = 6.96" for Snowmelt event
 Inflow = 7.48 cfs @ 121.37 hrs, Volume= 9.101 af
 Outflow = 3.26 cfs @ 123.40 hrs, Volume= 9.038 af, Atten= 56%, Lag= 121.8 min
 Primary = 3.26 cfs @ 123.40 hrs, Volume= 9.038 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Starting Elev= 900.50' Surf.Area= 219,700 sf Storage= 422,075 cf
 Peak Elev= 901.51' @ 123.40 hrs Surf.Area= 228,557 sf Storage= 511,756 cf (89,681 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= 927.3 min (8,341.0 - 7,413.7)

Volume	Invert	Avail.Storage	Storage Description
#1	890.50'	130,450 cf	Wet Cell A (Prismatic) Listed below (Recalc)
#2	890.50'	102,150 cf	Wet Cell B (Prismatic) Listed below (Recalc)
#3	897.50'	189,475 cf	WET VOL >897.5 (Prismatic) Listed below (Recalc)
#4	900.50'	406,150 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)
		828,225 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
890.50	10,200	0	0
892.00	12,500	17,025	17,025
894.00	16,900	29,400	46,425
896.00	25,200	42,100	88,525
897.50	30,700	41,925	130,450

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
890.50	8,900	0	0
892.00	11,100	15,000	15,000
894.00	14,400	25,500	40,500
896.00	18,000	32,400	72,900
897.50	21,000	29,250	102,150

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
897.50	51,700	0	0
898.00	55,100	26,700	26,700
899.50	63,700	89,100	115,800
900.00	73,500	34,300	150,100
900.50	84,000	39,375	189,475

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.50	84,000	0	0
902.00	97,100	135,825	135,825
903.00	105,900	101,500	237,325
903.50	110,300	54,050	291,375
904.00	114,800	56,275	347,650
904.50	119,200	58,500	406,150

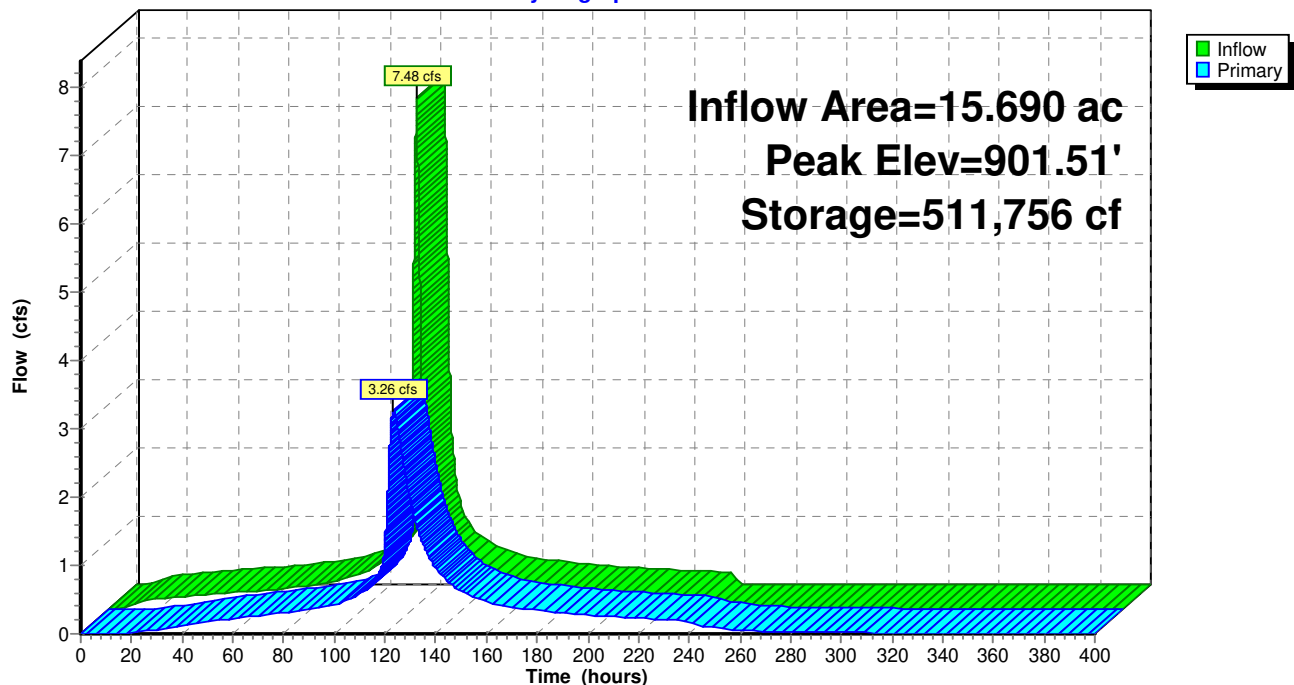
Device	Routing	Invert	Outlet Devices
#1	Primary	900.50'	15.0" Round Culvert L= 48.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 900.50' / 900.00' S= 0.0104 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Primary	903.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=3.26 cfs @ 123.40 hrs HW=901.51' TW=900.46' (Dynamic Tailwater)

- 1=Culvert (Barrel Controls 3.26 cfs @ 4.18 fps)
- 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 5P: Pond 5

Hydrograph



Summary for Pond 6P: Pond 6

Inflow Area = 4.300 ac, 21.16% Impervious, Inflow Depth = 6.96" for Snowmelt event
 Inflow = 2.05 cfs @ 121.37 hrs, Volume= 2.494 af
 Outflow = 0.70 cfs @ 122.94 hrs, Volume= 2.457 af, Atten= 66%, Lag= 94.5 min
 Primary = 0.70 cfs @ 122.94 hrs, Volume= 2.457 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 900.92' @ 123.81 hrs Surf.Area= 75,155 sf Storage= 30,652 cf

Plug-Flow detention time= 1,452.3 min calculated for 2.457 af (99% of inflow)
 Center-of-Mass det. time= 1,353.8 min (8,767.5 - 7,413.7)

Volume	Invert	Avail.Storage	Storage Description
#1	900.50'	208,825 cf	LIVE STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.50	70,700	0	0
901.00	76,000	36,675	36,675
902.00	87,500	81,750	118,425
902.50	90,400	44,475	162,900
903.00	93,300	45,925	208,825

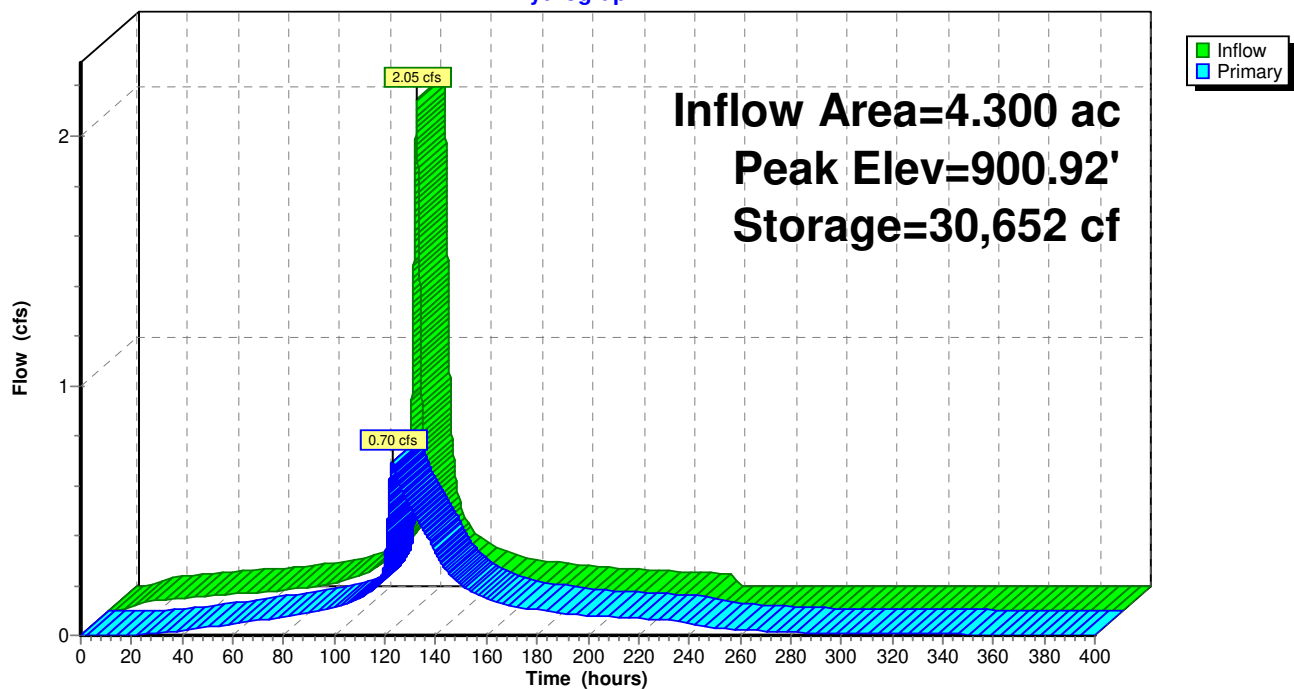
Device	Routing	Invert	Outlet Devices
#1	Primary	900.50'	15.0" Round Culvert L= 33.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 900.50' / 900.00' S= 0.0148 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.23 sf
#2	Primary	902.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.70 cfs @ 122.94 hrs HW=900.91' TW=900.41' (Dynamic Tailwater)

1=Culvert (Outlet Controls 0.70 cfs @ 2.95 fps)
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 6P: Pond 6

Hydrograph



Summary for Pond W14: Wetland 14

Inflow Area = 27.290 ac, 2.27% Impervious, Inflow Depth = 6.96" for Snowmelt event
 Inflow = 9.66 cfs @ 123.31 hrs, Volume= 15.830 af
 Outflow = 8.48 cfs @ 124.32 hrs, Volume= 15.830 af, Atten= 12%, Lag= 60.4 min
 Primary = 8.48 cfs @ 124.32 hrs, Volume= 15.830 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 904.71' @ 124.32 hrs Surf.Area= 157,093 sf Storage= 73,928 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 301.6 min (7,839.7 - 7,538.1)

Volume	Invert	Avail.Storage	Storage Description
#1	904.00'	594,000 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

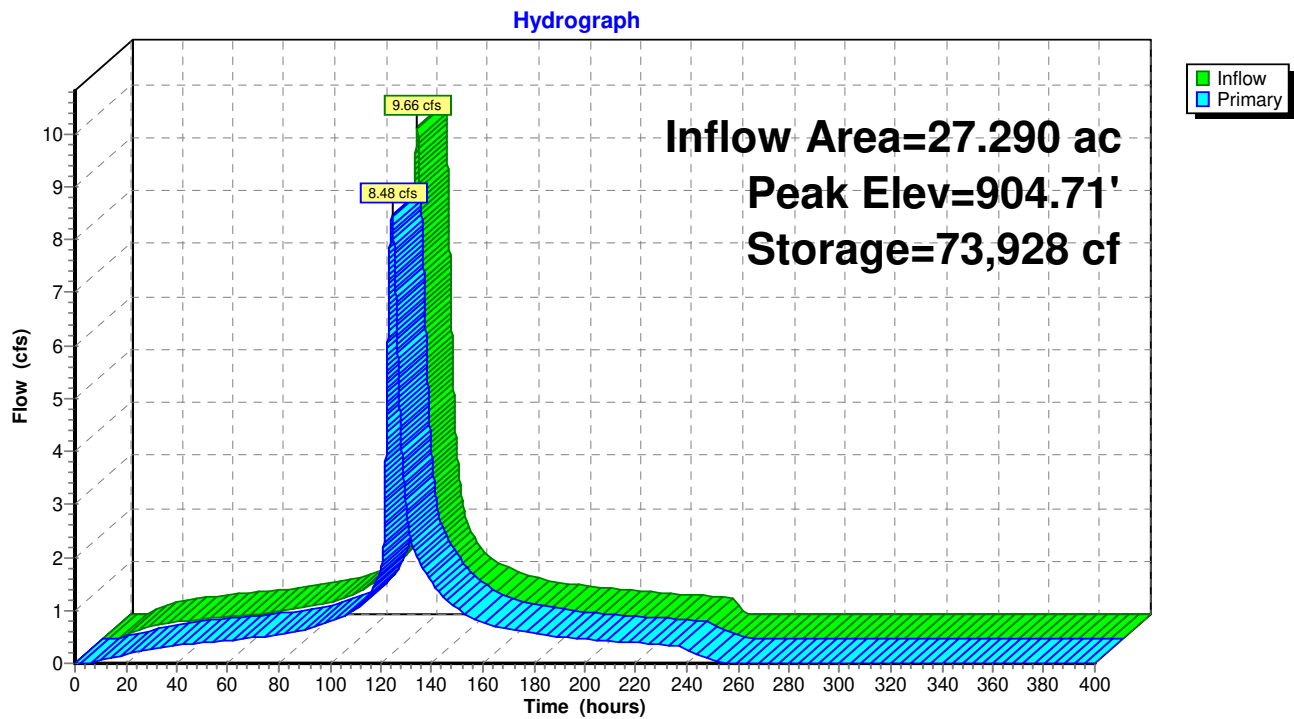
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
904.00	50,000	0	0
905.00	200,000	125,000	125,000
906.00	738,000	469,000	594,000

Device	Routing	Invert	Outlet Devices
#1	Primary	903.90'	12.0" Round Culvert x 2 X 2.00 L= 28.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 903.90' / 903.62' S= 0.0100 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 0.79 sf
#2	Primary	904.50'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=8.48 cfs @ 124.32 hrs HW=904.71' TW=0.00' (Dynamic Tailwater)

1=Culvert x 2 (Barrel Controls 3.54 cfs @ 3.52 fps)
 2=Broad-Crested Rectangular Weir (Weir Controls 4.94 cfs @ 1.15 fps)

Pond W14: Wetland 14



Summary for Pond W4: Wetland 4

Inflow Area = 31.030 ac, 28.33% Impervious, Inflow Depth > 6.92" for Snowmelt event
 Inflow = 8.20 cfs @ 122.10 hrs, Volume= 17.899 af
 Outflow = 4.52 cfs @ 126.13 hrs, Volume= 16.728 af, Atten= 45%, Lag= 242.1 min
 Primary = 4.52 cfs @ 126.13 hrs, Volume= 16.728 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 900.55' @ 126.13 hrs Surf.Area= 125,755 sf Storage= 171,725 cf

Plug-Flow detention time= 1,518.3 min calculated for 16.727 af (93% of inflow)
 Center-of-Mass det. time= 1,049.5 min (9,128.0 - 8,078.5)

Volume	Invert	Avail.Storage	Storage Description
#1	898.00'	885,870 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

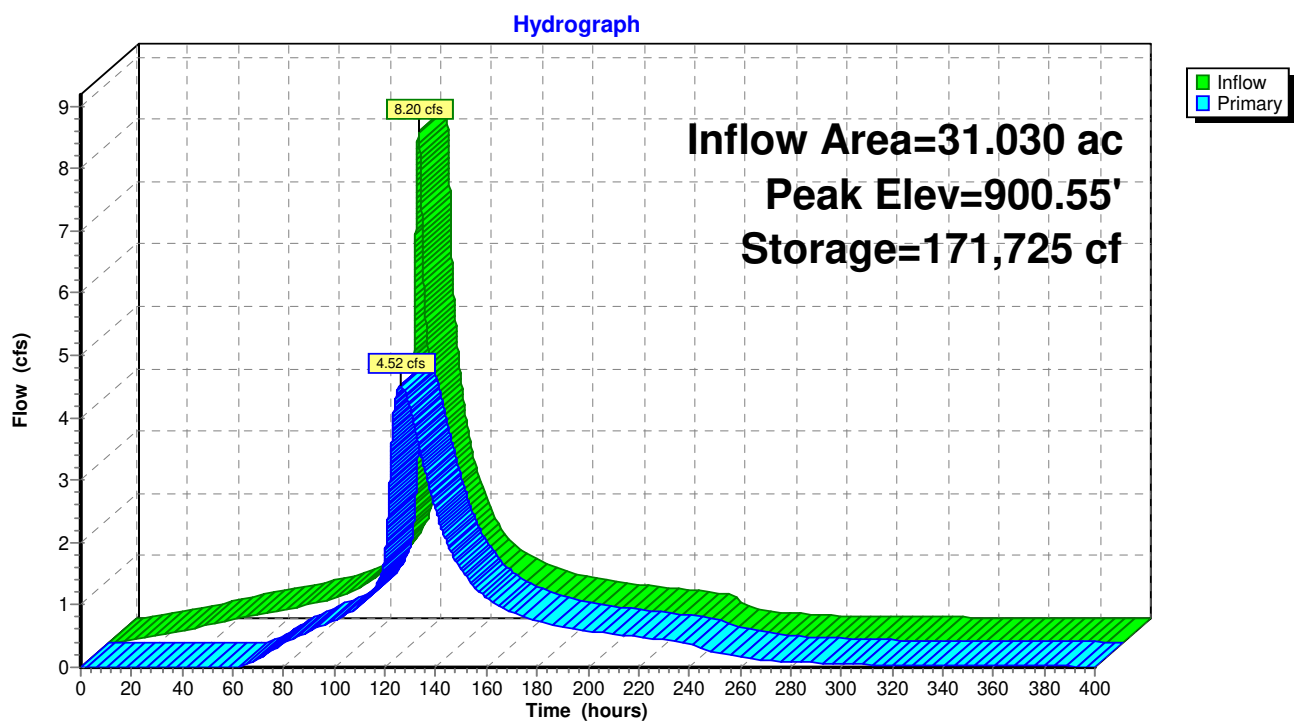
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
898.00	10,000	0	0
899.50	80,000	67,500	67,500
900.00	94,800	43,700	111,200
901.00	151,200	123,000	234,200
902.00	178,500	164,850	399,050
904.00	308,320	486,820	885,870

Device	Routing	Invert	Outlet Devices
#1	Primary	899.20'	18.0" Round Culvert L= 15.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 899.20' / 899.18' S= 0.0013 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.77 sf
#2	Primary	902.70'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.52 cfs @ 126.13 hrs HW=900.55' TW=0.00' (Dynamic Tailwater)

1=Culvert (Barrel Controls 4.52 cfs @ 3.57 fps)
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond W4: Wetland 4



Summary for Pond W5: Wetland 5

Inflow Area = 2.470 ac, 9.72% Impervious, Inflow Depth = 6.96" for Snowmelt event
 Inflow = 1.19 cfs @ 121.28 hrs, Volume= 1.433 af
 Outflow = 0.94 cfs @ 122.04 hrs, Volume= 1.326 af, Atten= 21%, Lag= 45.5 min
 Primary = 0.94 cfs @ 122.04 hrs, Volume= 1.326 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-400.00 hrs, dt= 0.01 hrs
 Peak Elev= 900.92' @ 122.04 hrs Surf.Area= 43,354 sf Storage= 9,040 cf

Plug-Flow detention time= 1,021.1 min calculated for 1.326 af (93% of inflow)
 Center-of-Mass det. time= 575.4 min (7,984.4 - 7,409.0)

Volume	Invert	Avail.Storage	Storage Description
#1	900.50'	218,942 cf	Wetland 5 (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.50	10	0	0
900.80	30,900	4,636	4,636
901.00	51,900	8,280	12,917
902.00	55,800	53,850	66,767
904.00	63,900	119,700	186,467
904.50	66,000	32,475	218,942

Device	Routing	Invert	Outlet Devices
#1	Primary	895.72'	10.0" Round Culvert L= 302.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 895.72' / 895.25' S= 0.0016 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 0.55 sf
#2	Device 1	900.80'	27.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Secondary	904.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.94 cfs @ 122.04 hrs HW=900.92' TW=0.00' (Dynamic Tailwater)

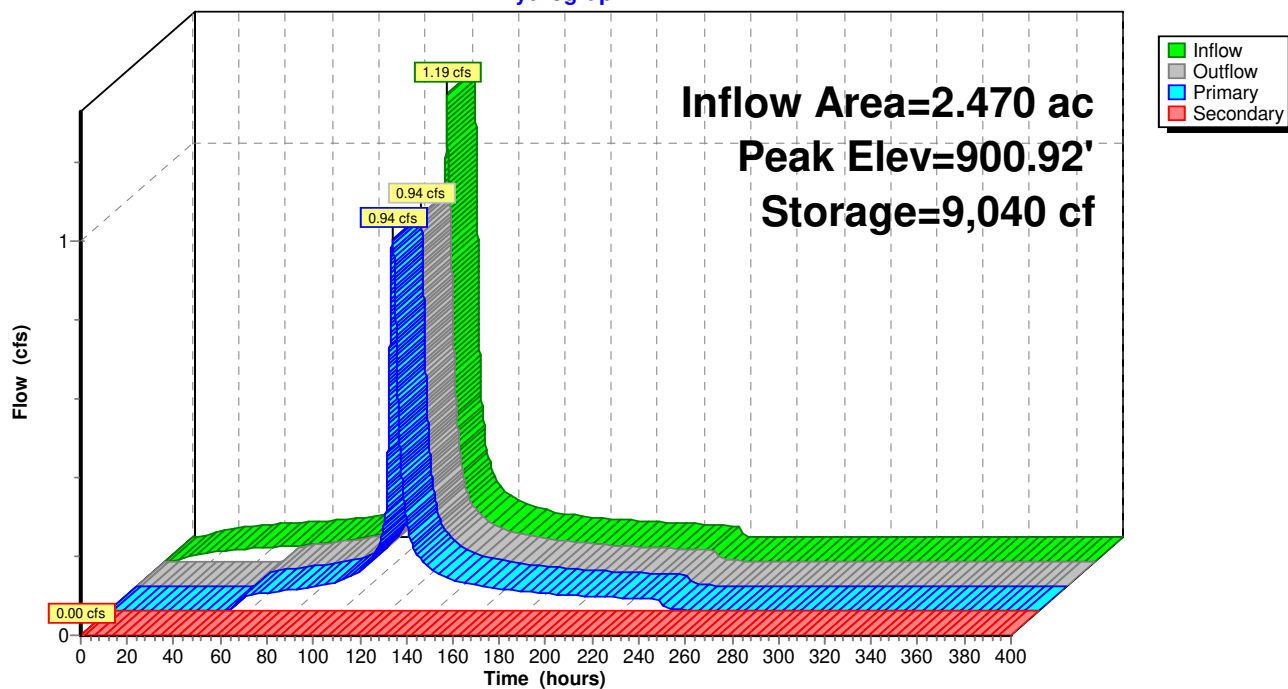
↑ **1=Culvert** (Passes 0.94 cfs of 2.29 cfs potential flow)
 ↑ **2=Orifice/Grate** (Weir Controls 0.94 cfs @ 1.13 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=900.50' TW=900.50' (Dynamic Tailwater)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond W5: Wetland 5

Hydrograph



APPENDIX E – GEOTECHNICAL EVALUATION REPORT

Geotechnical Evaluation Report

Leibel Property
South of Rehbein Street & West of 20th Avenue N
Lino Lakes, Minnesota

Prepared for

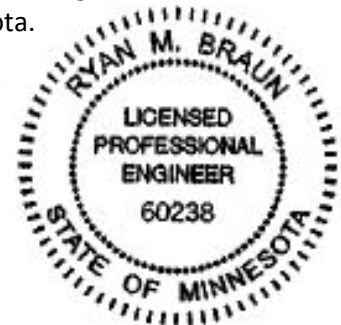
Lennar Corporation

Professional Certification:

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.



Ryan M. Braun, PE
Project Engineer
License Number: 60238
March 17, 2025



March 17, 2025

Project B2405975.01

Mr. Jacob Champeau
Lennar Corporation
16355 36th Avenue North, Suite #100
Plymouth, MN 55446

Re: Geotechnical Evaluation
Leibel Property
South of Rehbein Street and West of 20th Avenue N
Lino Lakes, Minnesota

Dear Mr. Champeau:

We are pleased to present this Geotechnical Evaluation Report for the proposed residential development at the Leibel Property in Lino Lakes, Minnesota.

Thank you for making Braun Intertec your geotechnical consultant for this project. If you have questions about this report, or if there are other services that we can provide in support of our work to date, please contact Ryan Braun at 952.738.2171 (rbraun@braunintertec.com) or Joe Westphal at 952.995.2238 (jwestphal@braunintertec.com).

Sincerely,

BRAUN INTERTEC CORPORATION



Ryan M. Braun, PE
Project Engineer



Joseph L. Westphal, PE
Director, Senior Engineer

c: Collin Coffman, Lennar Corporation
John Bender, PE, James R. Hill

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Appendix

Soil Boring Location Sketch

Log of Boring Sheets ST-1 through ST-12

Descriptive Terminology of Soil

A. Introduction

A.1. Project Description

This Geotechnical Evaluation Report addresses the proposed design and construction of a residential development at the Leibel Property located in Lino Lakes, Minnesota.

The preliminary development sketch provided shows plans to construct single-family house pads, row townhome pads, associated streets, stormwater management systems and underground utilities. Final grading plans were not available at the time of this report. We understand that the homes will consist of a variety of types within the development including slab-on-grade, full basement, walk-out and look-out style homes. Our soil boring location sketch in the Appendix of this report includes the proposed site plan.

A.1.a. Structural Loads

We have assumed that the construction will likely consist of one- to two-story, wood-framed homes or townhomes with or without basements, supported on spread footings. We have assumed that bearing wall loads associated with the proposed residential construction will range from 3 to 4 kips (3,000 to 4,000 pounds) per linear foot (klf) and column loads, if any, will be no greater than 50 kips per column.

A.1.b. Pavement and Traffic Loads

We have assumed that bituminous pavements, typical of residential neighborhoods, will be subject to normal traffic conditions of cars, with occasional school busses, garbage trucks and light delivery trucks and road maintenance equipment estimated to be under 150,000 equivalent single axle loads (ESAL) over an assumed design life of 20 years.

A.2. Site Conditions and History

Currently and historically, the site has consisted as wooded/marshy areas on the southern and western portions of the site, while the remainder of the site has consisted of agricultural land. The site is currently sloping down from the east to the west towards Peltier Lake with current site grades range from 900 to 910 feet. Based on available aerial photographs it appears that farmsteads may have been present along the eastern and western site boundaries from the mid-1930s to mid-1950s. Photograph 1 below depicts the site in 1949 while our soil boring sketch attached to this report depicts the site more or less in its current state.

Photograph 1. Aerial Photograph of the Site in 1949



Photograph provided by ERIS.

A.3. Purpose

The purpose of our geotechnical evaluation will be to characterize subsurface geologic conditions at selected boring locations, evaluate their impact on the project, and provide geotechnical recommendations for the design and construction of the proposed residential development.

A.4. Background Information and Reference Documents

We reviewed the following information:

- Existing topographic map prepared by MnTOPO.
- Proposed concept plan prepared by Westwood dated January 26, 2024.
- Phase I Environmental Site Assessment prepared by Braun Intertec under project number B2405975, dated August 14, 2024.
- Communications with Lennar Corporation regarding the proposed site layout and construction.

In addition to the provided sources, we have used several publicly available sources of information.

- Current and historic aerial photos from Google Earth, Minnesota Historical Aerial Photographs Online and Anoka County GIS for information on site history.
- Geologic Atlas of Anoka County, Minnesota – Surficial Geology map prepared and published by the Minnesota Geological Survey, dated 2011 for geological information of native soils.

We have described our understanding of the proposed construction and site to the extent others reported it to us. Depending on the extent of available information, we may have made assumptions based on our experience with similar projects. If we have not correctly recorded or interpreted the project details, the project team should notify us. New or changed information could require additional evaluation, analyses and/or recommendations.

A.5. Scope of Services

We performed our scope of services for the project in accordance with our Proposal QTB202146 to Lennar Corporation, dated August 28, 2024. The following list describes the geotechnical tasks completed in accordance with our authorized scope of services.

- Reviewing the background information and reference documents previously cited.
- Staking and clearing the exploration location of underground utilities. We selected and we staked the new exploration locations. We acquired the surface elevations and locations with GPS technology using the State of Minnesota's permanent GPS base station network. The Soil Boring Location Sketch included in the Appendix shows the approximate locations of the borings.

- Performing 12 standard penetration test (SPT) borings, denoted as ST-1 to ST-12, to nominal depths of 14 1/2 to 20 feet below grade across the site.
- Performing laboratory testing on select samples to aid in soil classification and engineering analysis.
- Preparing this report containing a boring location sketch, logs of soil borings, a summary of the soils encountered, results of laboratory tests, and recommendations for structure and pavement subgrade preparation and the design of foundations, floor slabs, exterior slabs, utilities, stormwater improvements and pavements.

Our current scope of services did not include any additional environmental services or testing beyond the recently completed Phase 1 ESA or the Internal Audit of soil conditions. Our geotechnical personnel performing this evaluation are not trained to provide environmental services or testing. We can provide additional environmental services or testing at your request.

B. Results

B.1. Geologic Overview

We based the geologic origins used in this report on the soil types, in-situ and laboratory testing, and available common knowledge of the geological history of the site. Because of the complex depositional history, geologic origins can be difficult to ascertain. We did not perform a detailed investigation of the geologic history for the site.

B.2. Boring Results

Table 1 provides a summary of the soil boring results, in the general order we encountered the strata. Please refer to the Log of Boring sheets in the Appendix for additional details. The Descriptive Terminology sheet in the Appendix includes definitions of abbreviations used in Table 1.

Table 1. Subsurface Profile Summary*

Strata	Soil Type - ASTM Classification	Range of Penetration Resistances	Commentary and Details
Topsoil	SM, SC	---	- Predominantly silty sand and clayey sand. - Thicknesses at boring locations about 1/2 foot. - Black in color. - Moisture condition generally moist.
Alluvial	CL	4 to 9 Blows per foot (BPF)	- Encountered by 8 of the 12 borings from below the topsoil to depths of 4 to 7 feet. - Gray in color. - Moisture condition generally moist.
Glacial deposits	SM	15 BPF	- Consisted of sandy lean clay or clayey sand with a layer of silty sand from 9 to 12 feet in Boring ST-7. - Brown to gray in color. - Moisture condition generally moist or wet.
	CL, SC	6 to 13 BPF	

*Abbreviations defined in the attached Descriptive Terminology sheet.

B.3. Groundwater

Table 2 summarizes the depths where we observed groundwater; the attached Log of Boring sheets in the Appendix also include this information and additional details. Borings that did not encounter groundwater were omitted from this table.

Table 2. Groundwater Summary

Location	Surface Elevation	Measured or Estimated Depth to Groundwater (ft)	Corresponding Groundwater Elevation (ft)
ST-7	906.9	9	898

The soil borings indicate a layered soil profile that is conducive for encountering perched water conditions. At the time of our observation, the groundwater encountered within Boring ST-7 appears to be in a perched condition.

It is our opinion, the static groundwater condition is a fixture of the large body of water immediately adjacent to the west, Lake Peltier. The water level of Peltier Lake at the time of drilling is around 882 to 884 feet and we anticipate long term groundwater levels would be around a similar elevation. Project planning should expect groundwater will fluctuate seasonally and annually.

B.4. Laboratory Test Results

The boring logs show the results of the laboratory testing we performed, next to the tested sample depth. The Appendix contains the results of these tests.

The moisture content tests (ASTM D 2216) of the selected clayey samples varied from approximately 15 to 34, indicating that the material was near or above of its probable optimum moisture content.

Our mechanical analyses test (ASTM C 117) on a selected soil sample from Boring ST-7 indicated that the selected sample contained 17 percent silt and clay by weight, classifying this soil as silty sand.

Pocket penetrometer tests were completed on selected clayey soil samples to assist in evaluating the unconfined compressive strength of these soils. The results ranged from 1 1/2 to 2 1/2 tons per square foot (tsf).

C. Recommendations

C.1. Design and Construction Discussion

C.1.a. Building Subgrade Preparation

Based on the soil boring results, the site appears generally suitable for support of the proposed residential development. Some typical soil correction work will be needed to prepare individual building pads and streets.

C.1.b. Reuse of On-Site Soils

Based on the results of the soil borings, the on-site, non-organic native soils should be suitable for reuse as engineered fill, but may require moisture conditioning prior to reuse and compaction. The borings indicate some of the clayey soils to be near optimum moisture contents but some of the alluvial clayey soils were judged to be wet of optimum. Proper drying of these soils would require space, time and favorable weather to dry the material for reuse.

If project constraints do not allow the time, or ideal weather conditions, the overly wet soil may need to be replaced with suitable material.

C.1.c. Groundwater

We encountered limited groundwater while performing our soil borings in a perched condition. However, given the perched groundwater, some dewatering should be anticipated within the excavation depths for construction. Some of the soils, such as silty sands, clayey sands and clay, will collect water from precipitation or if water drains to the site. We recommend the contractor remove any water that collects in work areas before performing further work.

Excavations for this project may encounter occasional zones of perched groundwater. We recommend project planning anticipate temporary excavation dewatering during construction. Based upon the boring observations, we anticipate sump pumps would be suitable for temporary dewatering.

C.1.d. Construction Disturbance

The contractor should note that some of the on-site clayey soils are highly susceptible to disturbance, due to repeated construction traffic. Disturbance of these soils may cause areas that were previously prepared, or that were suitable for pavement or structure support, to become unstable and require moisture conditioning and compaction. Subcutting and replacing the disturbed material with crushed, coarse gravel, free of fines is also an alternative. The contractor should use means and methods to limit disturbance of the soils.

C.2. Site Grading and Subgrade Preparation

C.2.a. Building Subgrade Excavations

We recommend removing unsuitable materials from beneath house pads and oversize areas. We define unsuitable materials as vegetation, topsoil, fill, organic soils, existing structures, existing utilities, and soft clays. In Table 3 we have provided anticipated excavation depths and bottom elevations at each of the current soil boring locations. As final plans are not available at this time and the site layout may change, we have included all borings in the table below. Although the borings did not encounter any fill soil, some could be encountered on this site, especially where the previous homesteads were located. These soils will need to be re-engineered so they can properly support new construction. In addition, agricultural fields will sometimes contain drain tile lines. These will also need to be removed and replaced with suitable soil.

Table 3. Building Excavation Depths

Location	Measured Surface Elevation (ft)	Anticipated Excavation Depth (ft)	Anticipated Bottom Elevation (ft)
ST-1	905.4	1	904 1/2
ST-2	904.6	2-4*	902 1/2-900 1/2*
ST-3	902.4	4	898 1/2
ST-4	905.0	1	904
ST-5	900.1	1	899
ST-6	906.6	1	905 1/2
ST-7	906.9	1/2	906 1/2
ST-8	905.2	2-4*	903-901*
ST-9	905.0	2-4*	903-901*
ST-10	909.0	1	908
ST-11	911.1	1/2	910 1/2
ST-12	906.4	1/2	906

*To be determined in the field during site grading.

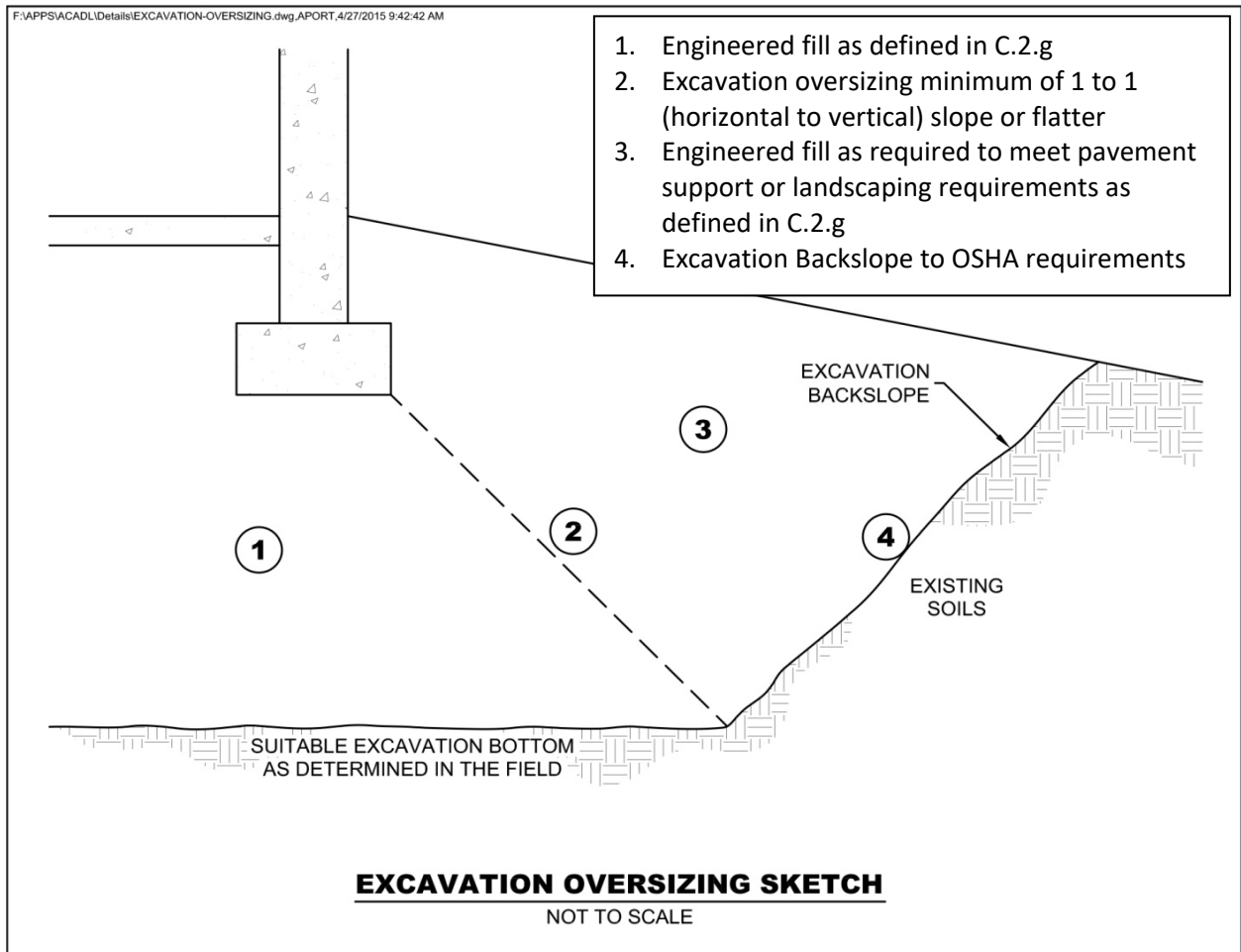
Excavation depths will vary between the borings. Portions of the excavations may also extend deeper than indicated by the borings. A geotechnical representative should observe the excavations to make the necessary field judgments regarding the suitability of the exposed soils.

The contractor should use equipment and techniques to minimize soil disturbance. If soils become disturbed or are wet, we recommend excavation and replacement.

C.2.b. Excavation Oversizing

When removing unsuitable materials below structures or pavements, we recommend the excavation extend outward and downward at a slope of 1H:1V (horizontal:vertical) or flatter. See Figure 2 for an illustration of excavation oversizing.

Figure 2. Generalized Illustration of Oversizing



C.2.c. Excavated Slopes

Based on the borings, we anticipate on-site soils in excavations will consist of clayey soils. These soils are typically considered Type B Soil under OSHA (Occupational Safety and Health Administration) guidelines. OSHA guidelines indicate unsupported excavations in Type B soils should have a gradient no steeper than 1H:1V. Slopes constructed in this manner may still exhibit surface sloughing. OSHA requires an engineer to evaluate slopes or excavations over 20 feet in depth.

An OSHA-approved qualified person should review the soil classification in the field. Excavations must comply with the requirements of OSHA 29 CFR, Part 1926, Subpart P, "Excavations and Trenches." This document states excavation safety is the responsibility of the contractor. The project specifications should reference these OSHA requirements.

C.2.d. Excavation Dewatering

We recommend removing groundwater from the excavations. Project planning should include temporary sumps and pumps for excavations in low-permeability soils, such as clays.

C.2.e. Pavement and Exterior Slab Subgrade Preparation

We recommend the following steps for pavement and exterior slab subgrade preparation. Note that project planning may need to require additional subcuts to limit frost heave.

1. Strip unsuitable soils consisting of topsoil, organic soils, vegetation, existing structures and pavements from the area, down to suitable native soils.
2. Have a geotechnical representative observe the excavated subgrade to evaluate if additional subgrade improvements are necessary.
3. Slope subgrade soils to areas of sand or drain tile to allow the removal of accumulating water.
4. Scarify, moisture condition and surface compact the subgrade with at least 3 passes of a large roller with a minimum drum diameter of 3 1/2 feet.
5. Place pavement engineered fill to grade and compact in accordance with Section C.2.f to bottom of pavement and exterior slab section.
6. Proofroll the pavement or exterior slab subgrade as described in Section C.2.e.

C.2.f. Pavement Subgrade Proofroll

After preparing the subgrade as described above and prior to the placement of the aggregate base, we recommend proofrolling the subgrade soils with a fully loaded tandem-axle truck. We also recommend having a geotechnical representative observe the proofroll. Areas that fail the proofroll likely indicate soft or weak areas that will require additional soil correction work to support pavements.

The contractor should correct areas that display excessive yielding or rutting during the proofroll, as determined by the geotechnical representative. Possible options for subgrade correction include moisture conditioning and re-compaction, subcutting and replacement with soil or crushed aggregate, chemical stabilization and/or geotextiles. We recommend performing a second proofroll after the aggregate base material is in place, and prior to placing bituminous or concrete pavement.

C.2.g. Engineered Fill Materials and Compaction

Table 4 below contains our recommendations for engineered fill materials.

Table 4. Engineered Fill Materials*

Locations To Be Used	Engineered Fill Classification	Possible Soil Type Descriptions	Gradation	Additional Requirements
- Below foundations - Below interior slabs	Structural fill	SP-SM, SM, SC, CL	100% passing 2-inch sieve	< 2% Organic Content (OC)
- Drainage layer - Non-frost-susceptible	- Free-draining - Non-frost-susceptible fill	GP, GW, SP, SW	100% passing 1-inch sieve < 50% passing #40 sieve < 5% passing #200 sieve	< 2% OC
Deep structural fill	Deep Sand fill	SP, SP-SM	100% passing 1-inch sieve < 12% passing #200 sieve	< 2% OC
Pavements	Pavement fill	SP, SP-SM, SM, SC, CL	100% passing 3-inch sieve	< 2% OC Plasticity Index < 15%
Below landscaped surfaces, where subsidence is not a concern	Non-structural fill	all soil types	100% passing 6-inch sieve	< 10% OC

*More select soils comprised of coarse sands with < 5% passing #200 sieve may be needed to accommodate work occurring in periods of wet or freezing weather.

If there is a need for some deeper soil correction work or if there is a need for large grade raises that will require more than 10 feet of compacted fill, we recommend placing sand fill (less than 12 percent passing the #200 sieve) as structural fill at depths deeper than 10 feet. If only clay fill is used to fill house pads where more than 10 feet of fill is needed, a construction delay of at least 3 to 9 months may be needed, depending on the final depths of clay fill used. As an alternative, on lots where deep fills are needed, deep sand fill could be used to initially fill the excavations below these house pads. The deep sand fill should be placed in thin compacted lifts, up to an elevation of 10 feet or less from the finished basement floor grades. On-site clay and silty sand fill can then be used to complete construction of the building pads. If the alternative method of filling the house pads partially with deep sand fill is used, a construction delay would not be needed. Deep sand fill may need to be imported to the site if needed in large amounts.

We recommend spreading engineered fill in loose lifts of approximately 8 to 12 inches thick. We recommend compacting engineered fill in accordance with the criteria presented below in Table 5. The project documents should specify relative compaction of engineered fill, based on the structure located above the engineered fill, and vertical proximity to that structure.

Table 5. Compaction Recommendations Summary

Reference	Relative Compaction, percent (ASTM D698 – Standard Proctor)	Moisture Content Variance from Optimum, percentage points	
		< 12% Passing #200 Sieve (typically SP, SP-SM)	> 12% Passing #200 Sieve (typically CL, SC, ML, SM)
Below building pads, less than 10 feet of fill	95	**	-1 to +3
Below building pads, greater than 10 feet of fill	98	**	-1 to +3
Below pavements, within 3 feet of top of subgrade elevations	100	**	-2 to +1
Below pavements, more than 3 feet below subgrade elevations	95	**	-1 to +3
Below landscaped surfaces	92	**	-1 to +5

*Increase compaction requirement to meet compaction required for structure supported by this engineered fill.

**The minimum moisture content should be no less than 5 percent and no more than 3 percentage points over optimum

The project documents should not allow the contractor to use frozen material as engineered fill or to place engineered fill on frozen material. Frost should not penetrate under foundations during construction.

We recommend performing density tests in engineered fill to evaluate if the contractors are effectively compacting the soil and meeting project requirements.

C.3. Spread Footings

C.3.a. Embedment Depth

For frost protection, we recommend embedding perimeter footings of the structures, including attached garages, a minimum of 42 inches below the lowest exterior grade. Interior footings may be placed directly below floor slabs unless they will be subjected to freezing. We recommend embedding building footings not heated during winter construction, and other unheated footings associated with porches, decks, or stoops 60 inches below the lowest exterior grade.

C.3.b. Subgrade Improvement

If a small amount of groundwater is present within the footing excavation, or if the footing subgrade soils become disturbed prior to placing forms or reinforcement, we recommend subcutting the soft or wet soil and placing a 6- to 8-inch layer of crushed aggregate, which should be compacted into the subgrade. The aggregate will provide a stable working surface and will allow for the flow of water to a drain tile or sump pump.

C.3.c. Net Allowable Bearing Pressure

We recommend sizing spread footings to exert a net allowable bearing pressure of up to 2,000 pounds per square foot (psf). This value includes a safety factor of at least 3.0 with regard to bearing capacity failure.

C.3.d. Settlement

We estimate that total and differential settlements among the footings will amount to less than 1- and 1/2-inch, respectively, under the assumed loads.

C.4. Below-Grade Walls

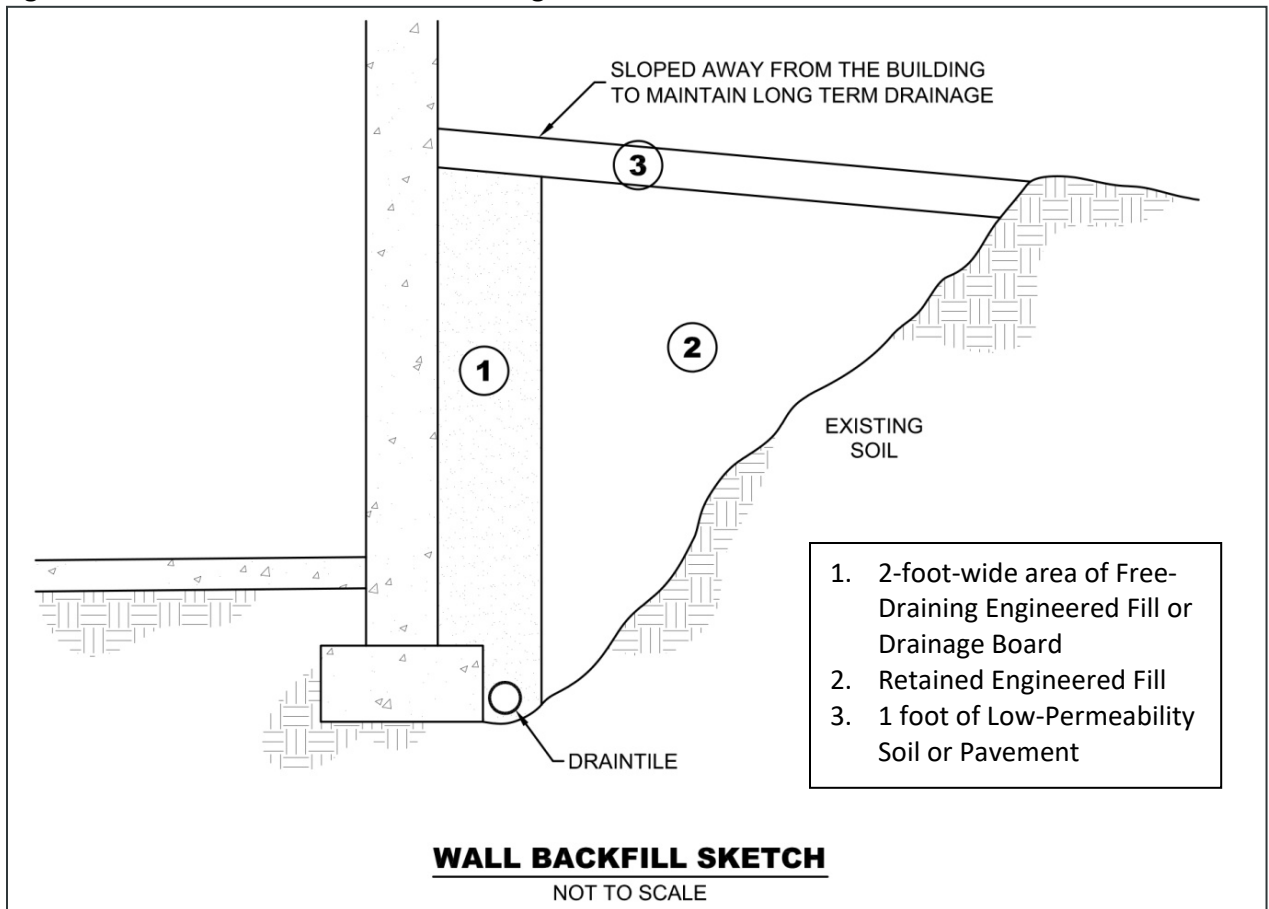
The following sections address soil parameters for basement wall design. Although retaining walls have not been specified on this site, these parameters can also be used for preliminary retaining wall design. However, we recommend additional borings and analyses for final retaining wall design.

C.4.a. Drainage Control

We recommend installing drain tile to remove water behind the below-grade walls, at the location shown in Figure 3. The below-grade wall drainage system should also incorporate free-draining, engineered fill or a drainage board placed against the wall and connected to the drain tile.

Even with the use of free-draining, engineered fill, we recommend general waterproofing of below-grade walls that surround occupied or potentially occupied areas because of the potential cost impacts related to seepage after construction is complete.

Figure 3. Generalized Illustration of Wall Engineered Fill



The materials listed in the sketch should meet the definitions in Section C.2.f. Low-permeability material that is capable of directing water away from the wall, like clay, topsoil or pavement should be used. The project documents should indicate if the contractor should brace the walls prior to filling and allowable unbalanced fill heights.

C.4.b. Selection, Placement, and Compaction of Backfill

Unless a drainage composite is placed against the backs of the exterior perimeter basement walls, we recommend that backfill placed within 2 horizontal feet of those walls consist of sand having less than 50 percent of the particles, by weight, passing a #40 sieve and less than 5 percent of the particles, by weight, passing a #200 sieve. Sand meeting this gradation will likely need to be imported to the site.

If clay must be considered for use to make up the balance of the below-grade wall backfill (assuming a drainage composite or sand is placed against the backs of the walls), post-compaction consolidation of the clay occurring under its own weight can be expected to continue beyond the end of the construction. The

magnitude of consolidation could amount to between 1 and 3 percent of the backfill thickness, or wall height, and if not accommodated, could cause slabs or pavements to settle unfavorable or be damaged.

Should clay still be considered for use as backfill, however, we further recommend that:

- The bottoms of the excavations required for basement wall construction are wide enough to accommodate compaction equipment.
- Backfill is placed at moisture contents at least equal to, but not more than, 3 percentage points above its optimum moisture content.
- Backfill is placed in loose lifts no thicker than 6 inches prior to compaction.
- The relative compaction of the backfill is measured through density testing at intervals not exceeding one test per 50 horizontal feet for each 2 vertical feet of backfill placed.

We recommend using a walk-behind compactor to compact the backfill placed within about 5 feet of the basement walls. Further away than that, a self-propelled compactor can be used. Compaction criteria for basement walls should be determined based on the compaction recommendations provided above in Section C.2.

Exterior wall backfill not capped with slabs or pavement should be capped with low-permeability soil to limit the infiltration of surface drainage into the backfill. The finished surface should also be sloped to divert water away from the walls.

C.4.c. Configuring and Resisting Lateral Loads

Below-grade wall design can use active earth pressure conditions if the walls can rotate slightly. If the wall design cannot tolerate rotation, then design should use at-rest earth pressure conditions. Rotation up to 0.002 times the wall height is generally required for walls supporting sand. Rotation up to 0.02 times the wall height is required when wall supports clay.

Table 6 presents our recommended lateral coefficients and equivalent fluid pressures for wall design of active, at-rest and passive earth pressure conditions. The table also provides recommended wet unit weights and internal friction angles. Designs should also consider the slope of any engineered fill and dead or live loads placed behind the walls within a horizontal distance that is equal to the height of the walls. Our recommended values assume the wall design provides drainage so water cannot accumulate

behind the walls. The construction documents should clearly identify what soils the contractor should use for engineered fill of walls.

Table 6. Recommended Below-Grade Wall Design Parameters – Drained Conditions

Retained Soil	Wet Unit Weight (pcf)	Friction Angle (degrees)	Equivalent Active Fluid Pressure (pcf)	Equivalent At-Rest Fluid Pressure (pcf)	Equivalent Passive Fluid Pressure* (pcf)
Imported Sand (SP, SP-SM)	120	33	35	55	N/A
Clay (CL, SC)	130	26	50	70	330

*Based on Rankine model for soils in a region behind the wall extending at least 2 horizontal feet beyond the bottom outer edges of the wall footings and then rising up and away from the wall at an angle no steeper than 60 degrees from horizontal.

Sliding resistance between the bottom of the footing and the soil can also resist lateral pressures. We recommend assuming a sliding coefficient equal to 0.3 between the concrete and clay soil.

The values presented in this section are un-factored.

C.5. Interior Slabs

C.5.a. Moisture Vapor Protection

Excess transmission of water vapor could cause floor dampness, certain types of floor bonding agents to separate, or mold to form under floor coverings. If project planning includes using floor coverings or coatings, we recommend placing a vapor retarder or vapor barrier immediately beneath the slab. We also recommend consulting with floor covering manufacturers regarding the appropriate type, use and installation of the vapor retarder or barrier to preserve warranty assurances.

C.5.b. Radon

We recommend installing radon resistant construction components for the proposed building, including appropriate sub-slab material and vent piping, if required by applicable local building codes. Our radon mitigation professionals can assist with evaluation of site-specific radon resistant construction requirements and/or design of a system, at your request.

C.6. Frost Protection

C.6.a. General

Clayey soils will underlie exterior slabs, as well as pavements. We consider these soils to be moderately to highly frost susceptible. Soils of this type can retain moisture and heave upon freezing. In general, this characteristic is not an issue unless these soils become saturated, due to surface runoff or infiltration, or are excessively wet in situ. Once frozen, unfavorable amounts of general and isolated heaving of the soils and the surface structures supported on them could develop. This type of heaving could affect design drainage patterns and the performance of exterior slabs and pavements, as well as any isolated exterior footings and piers.

Note that general runoff and infiltration from precipitation are not the only sources of water that can saturate subgrade soils and contribute to frost heave. Roof drainage and irrigation of landscaped areas close to exterior slabs, pavements, and isolated footings and piers, contribute as well.

C.6.b. Frost Heave Mitigation

To address most of the heave related issues, we recommend setting general site grades and grades for exterior surface features to direct surface drainage away from buildings, across large, paved areas and away from walkways. Such grading will limit the potential for saturation of the subgrade and subsequent heaving. General grades should also have enough “slope” to tolerate potential larger areas of heave, which may not fully settle after thawing.

Even small amounts of frost-related differential movement at walkway joints or cracks can create tripping hazards. Project planning can explore several subgrade improvement options to address this condition.

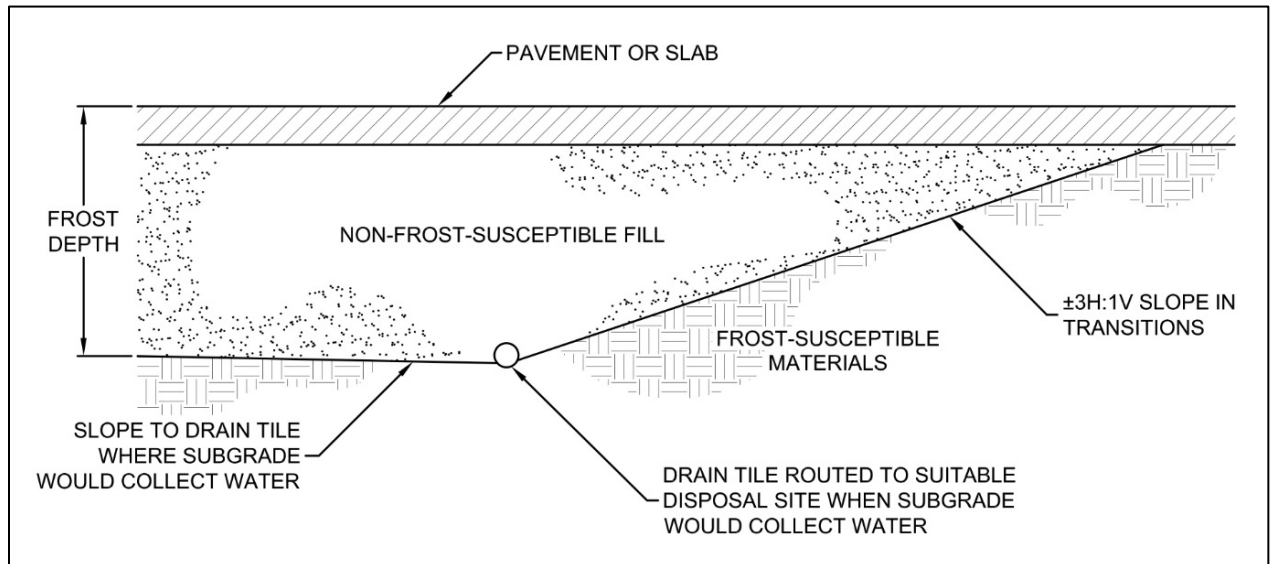
One of the more conservative subgrade improvement options to mitigate potential heave is removing any frost-susceptible soils present below the exterior slab areas down to a minimum depth of 4 feet below subgrade elevations. We recommend filling the resulting excavation with non-frost-susceptible fill. We also recommend sloping the bottom of the excavation toward one or more collection points to remove any water entering the engineered fill. This approach will not be effective in controlling frost heave without removing the water.

An important geometric aspect of the excavation and replacement approach described above is sloping the banks of the excavations to create a more gradual transition between the unexcavated soils considered frost susceptible and the engineered fill in the excavated area, which is not frost susceptible. The slope allows attenuation of differential movement that may occur along the excavation boundary.

We recommend slopes that are 3H:1V, or flatter, along transitions between frost-susceptible and non-frost-susceptible soils.

Figure 4 shows an illustration summarizing some of the recommendations.

Figure 4. Frost Protection Geometry Illustration



Another option is to limit frost heave in critical areas, such as doorways and entrances, via frost-depth footings or localized excavations with sloped transitions between frost-susceptible and non-frost-susceptible soils, as described above.

Over the life of slabs and pavements, cracks will develop and joints will open up, which will expose the subgrade and allow water to enter from the surface and either saturate or perch atop the subgrade soils. This water intrusion increases the potential for frost heave or moisture-related distress near the crack or joint. Therefore, we recommend implementing a detailed maintenance program to seal and/or fill any cracks and joints. The maintenance program should give special attention to areas where dissimilar materials abut one another, where construction joints occur and where shrinkage cracks develop.

C.7. Pavements and Exterior Slabs

C.7.a. Design Sections

Our scope of services for this project did not include laboratory tests on subgrade soils to determine an R-value for pavement design. Based on our experience with similar clay soils anticipated at the pavement

subgrade elevation, we recommend pavement design assume an R-value of 12. Note, the contractor may need to perform limited removal of unsuitable or less suitable soils to achieve this value.

We assume the pavement section will be designed in accordance with the City of Lino Lakes Standard Plates, including layer thickness and material specifications.

In the event there are areas of the site in which City standards are not required, we recommend the following. We assumed that pavements for the residential development will be subject to a maximum of 150,000 ESALs over a 20-year design life. Based upon the traffic volume and an R-value estimate of 12, we recommend a bituminous pavement section that includes a minimum of 3 1/2 inches of bituminous pavement (a 1 1/2-inch wear course over a 2-inch base course) over 8 inches of aggregate base material and 18 inches of select granular borrow.

C.7.b. Subgrade Drainage

We recommend installing perforated drainpipes throughout pavement areas at low points, around catch basins, and behind curb in landscaped areas. We also recommend installing drainpipes along pavement and exterior slab edges where exterior grades promote drainage toward those edge areas. The contractor should place drainpipes at the base of the granular subbase layer, or in shallow trenches below the aggregate base material where no subbase is present.

C.7.c. Performance and Maintenance

We based the above pavement designs on a 20-year performance life for bituminous. This is the amount of time before we anticipate the pavement will require reconstruction. This performance life assumes routine maintenance, such as seal coating and crack sealing. The actual pavement life will vary depending on variations in weather, traffic conditions and maintenance. It is common to place the non-wear course of bituminous and then delay placement of wear course through a minimum of one freeze-thaw cycle.

The ongoing performance of bituminous pavements is impacted by conditions under which the pavement is asked to perform in. These conditions include the environmental conditions, the actual use conditions, and the level of ongoing maintenance performed. Because of normal thermos-expansion and contraction, it is not unusual to have cracking develop within the first few years of placement and for the cracking to continue through the life of the pavement. A regular maintenance plan should be developed for filling cracks to lessen the potential impacts for cold weather distress due to frost heave or warm weather distress due to wetting and softening of the subgrade. It is also not unusual for the pavement to require a seal coat within the first 5 to 10 years to increase the long-term performance of the bituminous pavement.

C.8. Utilities

C.8.a. Subgrade Stabilization

Earthwork activities associated with utility installations located inside the building area should adhere to the recommendations in Section C.2.g.

For exterior utilities, we anticipate the soils at typical invert elevations will be suitable for utility support. However, if construction encounters unfavorable conditions such as soft clay, organic soils or perched water at invert grades, the unsuitable soils may require some additional subcutting and replacement with sand or crushed rock to prepare a proper subgrade for pipe support. Project design and construction should not place utilities within the 1H:1V oversizing of foundations.

C.8.b. Corrosion Potential

Based on our experience, the soils encountered by the borings are moderately corrosive to metallic conduits, but only marginally corrosive to concrete. We recommend specifying non-corrosive materials or providing corrosion protection, unless project planning chooses to perform additional tests to demonstrate the soils are not corrosive.

C.9. Stormwater

Based on the abundance of clayey, fine-grained soils encountered within the soil borings, we do not recommend infiltration of stormwater at this site. The site soils are judged to be in the Hydrologic Soil Group D according to the Minnesota Stormwater manual. However, if a design is requested, we recommend the following and consulting the Minnesota Stormwater Manual for stormwater design.

We estimated infiltration rates for some of the soils we encountered in our soil borings, as listed in Table 7. These infiltration rates represent the long-term infiltration capacity of a practice and not the capacity of the soils in their natural state. Field testing, such as with a double-ring infiltrometer (ASTM D3385), may justify the use of higher infiltration rates. However, we recommend adjusting field test rates by the appropriate correction factor, as provided for in the Minnesota Stormwater Manual or as allowed by the local watershed. We recommend consulting the Minnesota Stormwater Manual for stormwater design.

Table 7. Estimated Design Infiltration Rates Based on Soil Classification

Soil Type	Infiltration Rate * (inches/hour)
Clayey sands and clays	0.06 or less

* From Minnesota Stormwater Manual. Rates may differ at individual sites.

Fine-grained soils (silts and clays), topsoil or organic matter that mixes into or washes onto the soil will lower the permeability. The contractor should maintain and protect infiltration areas during construction. Furthermore, organic matter and silt washed into the system after construction can fill the soil pores and reduce permeability over time. Proper maintenance is important for long-term performance of infiltration systems.

This geotechnical evaluation does not constitute a review of site suitability for stormwater infiltration or evaluate the potential impacts, if any, from infiltration of large amounts of stormwater.

D. Procedures

D.1. Penetration Test Borings

We drilled the penetration test borings with an all-terrain mounted core and auger drill equipped with hollow-stem auger. We performed the borings in general accordance with ASTM D6151 taking penetration test samples at 2 1/2- or 5-foot intervals in general accordance with ASTM D1586. The boring logs show the actual sample intervals and corresponding depths.

We sealed penetration test boreholes meeting the Minnesota Department of Health (MDH) Environmental Borehole criteria with an MDH-approved grout. We will forward a sealing record for those boreholes to the Minnesota Department of Health Well Management Section.

D.2. Exploration Logs

D.2.a. Log of Boring Sheets

The Appendix includes Log of Boring sheets for our penetration test borings. The logs identify and describe the penetrated geologic materials and present the results of penetration resistance and other in-situ tests performed. The logs also present the results of the laboratory tests performed on penetration test samples, and groundwater measurements.

We inferred strata boundaries from changes in the penetration test samples and the auger cuttings. Because we did not perform continuous sampling, the strata boundary depths are only approximate. The boundary depths likely vary away from the boring locations, and the boundaries themselves may occur as gradual rather than abrupt transitions.

D.2.b. Geologic Origins

We assigned geologic origins to the materials shown on the logs and referenced within this report, based on: (1) a review of the background information and reference documents cited above, (2) visual classification of the various geologic material samples retrieved during the course of our subsurface exploration, (3) penetration resistance in-situ testing performed for the project, (4) laboratory test results, and (5) available common knowledge of the geologic processes and environments that have impacted the site and surrounding area in the past.

D.3. Material Classification and Testing

D.3.a. Visual and Manual Classification

We visually and manually classified the geologic materials encountered based on ASTM D2488. When we performed laboratory classification tests, we used the results to classify the geologic materials in accordance with ASTM D2487. The Appendix includes a chart explaining the classification system we used.

D.3.b. Laboratory Testing

The exploration logs in the Appendix note the results of the laboratory tests performed on geologic material samples. We performed the tests in general accordance with ASTM procedures.

D.4. Groundwater Measurements

The drillers checked for groundwater while advancing the penetration test borings, and again after auger withdrawal. We then filled the boreholes as noted on the boring logs.

E. Qualifications

E.1. Variations in Subsurface Conditions

E.1.a. Material Strata

We developed our evaluation, analyses and recommendations from a limited amount of site and subsurface information. It is not standard engineering practice to retrieve material samples from exploration locations continuously with depth. Therefore, we must infer strata boundaries and thicknesses to some extent. Strata boundaries may also be gradual transitions, and project planning should expect the strata to vary in depth, elevation and thickness, away from the exploration locations.

Variations in subsurface conditions present between exploration locations may not be revealed until performing additional exploration work or starting construction. If future activity for this project reveals any such variations, you should notify us so that we may reevaluate our recommendations. Such variations could increase construction costs, and we recommend including a contingency to accommodate them.

E.1.b. Groundwater Levels

We made groundwater measurements under the conditions reported herein and shown on the exploration logs and interpreted in the text of this report. Note that the observation periods were relatively short, and project planning can expect groundwater levels to fluctuate in response to rainfall, flooding, irrigation, seasonal freezing and thawing, surface drainage modifications and other seasonal and annual factors.

E.2. Continuity of Professional Responsibility

E.2.a. Plan Review

We based this report on a limited amount of information, and we made a number of assumptions to help us develop our recommendations. We should be retained to review the geotechnical aspects of the designs and specifications. This review will allow us to evaluate whether we anticipated the design correctly, if any design changes affect the validity of our recommendations, and if the design and specifications correctly interpret and implement our recommendations.

E.2.b. Construction Observations and Testing

We recommend retaining us to perform the required observations and testing during construction as part of the ongoing geotechnical evaluation. This will allow us to correlate the subsurface conditions exposed during construction with those encountered by the borings and provide professional continuity from the design phase to the construction phase. If we do not perform observations and testing during construction, it becomes the responsibility of others to validate the assumption made during the preparation of this report and to accept the construction-related geotechnical engineer-of-record responsibilities.

E.3. Use of Report

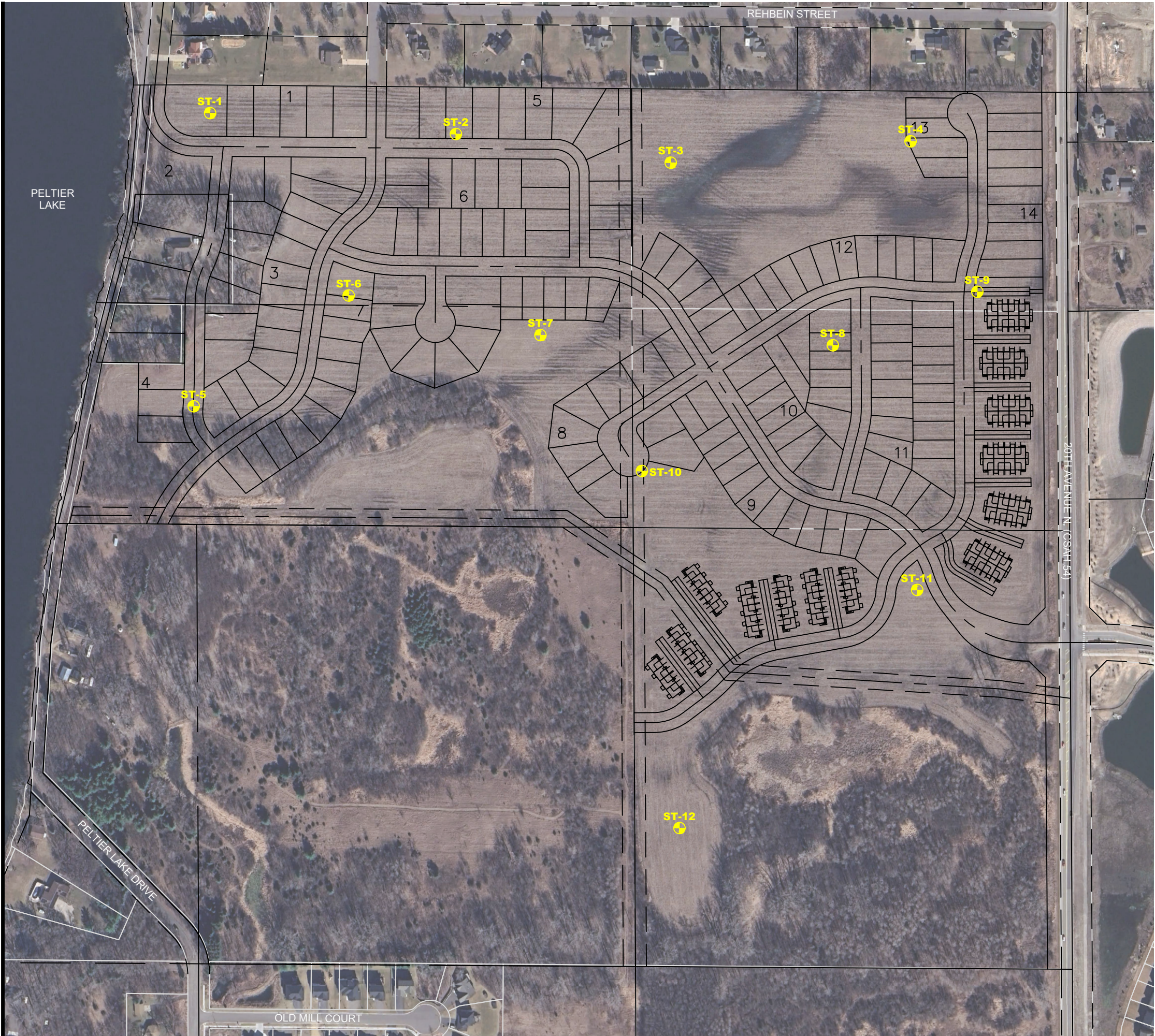
This report is for the exclusive use of the addressed parties. Without written approval, we assume no responsibility to other parties regarding this report. Our evaluation, analyses and recommendations may not be appropriate for other parties or projects.

E.4. Standard of Care

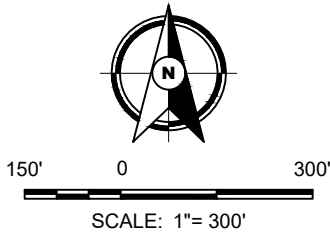
In performing its services, Braun Intertec used that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession currently practicing in the same locality. No warranty, express or implied, is made.

Appendix

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**DENOTES APPROXIMATE LOCATION OF
STANDARD PENETRATION TEST BORING**



**BRAUN
INTERTEC**
The Science You Build On.

11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No:
B2405975.01

Drawing No:
B2405975-01

Drawn By: JAG
Date Drawn: 9/9/24
Checked By: RB
Last Modified: 3/13/25

Project Information

Leibel Property

South of Rehbein Street
and 20th Avenue N.

Lino Lakes, Minnesota

**Soil Boring
Location Sketch**

Project Number B2405975.01 Geotechnical Evaluation Leibel Property - Lino Lakes S of Rehbein St & 20th Ave N Lino Lakes, Minnesota					BORING: ST-1		
					LOCATION: Captured with RTK GPS.		
					DATUM: NAD 1983 HARN Adj MN Anoka (US Feet)		
					NORTHING: 153516.0	EASTING: 555633.0	
DRILLER: M. Hoppe		LOGGED BY: R. Braun		START DATE: 09/17/24		END DATE: 09/17/24	
SURFACE ELEVATION: 905.4 ft		RIG: 7504		METHOD: 3 1/4" HSA		SURFACING: Soil WEATHER: Sunny	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
904.8		SILTY SAND (SM), fine to medium-grained, trace roots, black, moist (TOPSOIL) SANDY LEAN CLAY (CL), trace Gravel, gray to brown, moist, medium to stiff (GLACIAL TILL)					
0.6				3-4-5 (9) 18"			
			5	3-4-5 (9) 14"		15	
				3-3-4 (7) 18"	2.5		
			10	4-5-6 (11) 16"			
890.9				4-4-7 (11) 4"			
14.5		END OF BORING	15				Water not observed while drilling.
		Boring immediately backfilled					
			20				
			25				
			30				

Project Number B2405975.01 Geotechnical Evaluation Leibel Property - Lino Lakes S of Rehbein St & 20th Ave N Lino Lakes, Minnesota					BORING: ST-2		
					LOCATION: Captured with RTK GPS.		
					DATUM: NAD 1983 HARN Adj MN Anoka (US Feet)		
					NORTHING: 153452.9	EASTING: 556374.6	
DRILLER: M. Hoppe		LOGGED BY: R. Braun		START DATE: 09/18/24	END DATE: 09/18/24		
SURFACE ELEVATION: 904.6 ft		RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Soil		WEATHER: Sunny	
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
904.1 0.5		SILTY SAND (SM), fine to medium-grained, trace roots, black, moist (TOPSOIL)				19	
		LEAN CLAY (CL), gray, moist, medium (ALLUVIUM)		2-2-3 (5) 12"			
900.6 4.0		SANDY LEAN CLAY (CL), trace Gravel, brown to gray, moist, stiff (GLACIAL TILL)	5	3-4-5 (9) 14"			
		Gray at 7 1/2 feet		2-4-5 (9) 16"			
			10	3-5-5 (10) 18"			
890.1 14.5		END OF BORING	15	4-5-6 (11) 18"			Water not observed while drilling.
	Boring immediately backfilled						
			20				
			25				
			30				

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2405975.01 Geotechnical Evaluation Leibel Property - Lino Lakes S of Rehbein St & 20th Ave N Lino Lakes, Minnesota					BORING: ST-3		
					LOCATION: Captured with RTK GPS.		
					DATUM: NAD 1983 HARN Adj MN Anoka (US Feet)		
					NORTHING: 153366.4	EASTING: 557022.7	
DRILLER: M. Hoppe		LOGGED BY: R. Braun		START DATE: 09/18/24	END DATE: 09/18/24		
SURFACE ELEVATION: 902.4 ft		RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Soil		WEATHER: Sunny	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
902.0 0.4		CLAYEY SAND (SC), trace roots, black, moist (TOPSOIL)					
		LEAN CLAY (CL), gray, moist, soft to medium (ALLUVIUM)		1-1-3 (4) 12"	1.5		
			5	3-3-4 (7) 12"		17	
895.4 7.0		SANDY LEAN CLAY (CL), trace Gravel, gray, moist, medium to stiff (GLACIAL TILL)		4-5-6 (11) 14"	2.5	15	
			10	3-4-5 (9) 18"			
				2-3-5 (8) 12"			
			15	2-3-4 (7) 18"			
881.4 21.0		END OF BORING	20	3-4-4 (8) 18"			
		Boring immediately grouted					Water not observed while drilling.
			25				
			30				

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2405975.01 Geotechnical Evaluation Leibel Property - Lino Lakes S of Rehbein St & 20th Ave N Lino Lakes, Minnesota					BORING: ST-4		
					LOCATION: Captured with RTK GPS.		
					DATUM: NAD 1983 HARN Adj MN Anoka (US Feet)		
					NORTHING: 153430.9	EASTING: 557746.1	
DRILLER: M. Hoppe		LOGGED BY: R. Braun		START DATE: 09/18/24		END DATE: 09/18/24	
SURFACE ELEVATION: 905.0 ft		RIG: 7504	METHOD: 3 1/4" HSA		SURFACING: Soil		WEATHER: Sunny
Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
904.6 0.4		SILTY SAND (SM), fine to medium-grained, trace roots, black, moist (TOPSOIL)					
		LEAN CLAY (CL), gray, moist, medium (ALLUVIUM)		2-3-4 (7) 12"		34	
901.0 4.0		SANDY LEAN CLAY (CL), trace Gravel, brown to gray, moist, stiff (GLACIAL TILL)	5	3-4-5 (9) 14"			
				4-5-5 (10) 14"	2.5	15	
				4-5-7 (12) 16"			
				3-4-5 (9) 18"			
				4-5-5 (10) 18"			
884.0 21.0		Gray at 12 feet	15				
				3-4-5 (9) 18"			
		END OF BORING					Water not observed while drilling.
		Boring immediately backfilled					
			25				
			30				

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2405975.01 Geotechnical Evaluation Leibel Property - Lino Lakes S of Rehbein St & 20th Ave N Lino Lakes, Minnesota					BORING: ST-5		
					LOCATION: Captured with RTK GPS.		
					DATUM: NAD 1983 HARN Adj MN Anoka (US Feet)		
					NORTHING: 152631.5	EASTING: 555583.5	
DRILLER: M. Hoppe		LOGGED BY: R. Braun		START DATE: 09/17/24	END DATE: 09/17/24		
SURFACE ELEVATION: 900.1 ft		RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Soil		WEATHER: Sunny	
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
899.6 0.5		SILTY SAND (SM), fine to medium-grained, trace roots, black, moist (TOPSOIL)		3-4-3 (7) 12"	2	22	
		LEAN CLAY (CL), gray, moist, medium (ALLUVIUM)					
896.1 4.0		SANDY LEAN CLAY (CL), trace Gravel, brown to gray, moist, medium to stiff (GLACIAL TILL)	5	4-5-5 (10) 14"			
		Gray at 7 1/2 feet		3-4-5 (9) 16"			
			10	3-5-6 (11) 18"			
885.6 14.5		END OF BORING	15	2-3-3 (6) 18"	2		Water not observed while drilling.
		Boring immediately backfilled					
			20				
			25				
			30				

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2405975.01 Geotechnical Evaluation Leibel Property - Lino Lakes S of Rehbein St & 20th Ave N Lino Lakes, Minnesota					BORING: ST-6		
					LOCATION: Captured with RTK GPS.		
					DATUM: NAD 1983 HARN Adj MN Anoka (US Feet)		
					NORTHING: 152965.7	EASTING: 556051.3	
DRILLER: M. Hoppe		LOGGED BY: R. Braun		START DATE: 09/17/24	END DATE: 09/17/24		
SURFACE ELEVATION: 906.6 ft		RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Soil		WEATHER: Sunny	
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
906.2 0.4		SILTY SAND (SM), fine to medium-grained, trace roots, black, moist (TOPSOIL) LEAN CLAY (CL), gray, moist, stiff (ALLUVIUM)		3-4-5 (9) 14"	1.5	18	
902.6 4.0		SANDY LEAN CLAY (CL), trace Gravel, brown, moist, medium (GLACIAL TILL)	5	3-4-4 (8) 12"			
899.6 7.0		CLAYEY SAND (SC), trace Gravel, brown, moist, medium (GLACIAL TILL)		3-4-4 (8) 12"			
897.6 9.0		SANDY LEAN CLAY (CL), trace Gravel, brown to gray, moist, stiff (GLACIAL TILL)	10	3-5-6 (11) 14"			
892.1 14.5		Gray at 12 1/2 feet		4-6-7 (13) 12"			
		END OF BORING	15				Water not observed while drilling.
		Boring immediately backfilled					
			20				
			25				
			30				

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2405975.01 Geotechnical Evaluation Leibel Property - Lino Lakes S of Rehbein St & 20th Ave N Lino Lakes, Minnesota					BORING: ST-7				
					LOCATION: Captured with RTK GPS.				
					DATUM: NAD 1983 HARN Adj MN Anoka (US Feet)				
					NORTHING: 152846.2	EASTING: 556629.7			
DRILLER: M. Hoppe		LOGGED BY: R. Braun			START DATE: 09/17/24		END DATE: 09/17/24		
SURFACE ELEVATION: 906.9 ft		RIG: 7504		METHOD: 3 1/4" HSA		SURFACING: Soil		WEATHER: Sunny	
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)			Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
906.6 0.3	☒	SILTY SAND (SM), fine to medium-grained, trace roots, black, moist (TOPSOIL) LEAN CLAY (CL), gray, moist, medium (ALLUVIUM)				2-3-4 (7) 12"	2.5	14	P200=17%
902.9 4.0					5	3-3-4 (7) 12"			
			4-3-5 (8) 14"						
897.9 9.0		10	4-7-8 (15) 12"						
894.9 12.0			4-5-6 (11) 12"						
892.4 14.5		END OF BORING			15				
		Boring immediately backfilled							
					20				
					25				
					30				

Project Number B2405975.01 Geotechnical Evaluation Leibel Property - Lino Lakes S of Rehbein St & 20th Ave N Lino Lakes, Minnesota					BORING: ST-8		
					LOCATION: Captured with RTK GPS.		
					DATUM: NAD 1983 HARN Adj MN Anoka (US Feet)		
					NORTHING: 152815.5	EASTING: 557511.5	
DRILLER: M. Hoppe		LOGGED BY: R. Braun		START DATE: 09/18/24		END DATE: 09/18/24	
SURFACE ELEVATION: 905.2 ft		RIG: 7504	METHOD: 3 1/4" HSA		SURFACING: Soil		WEATHER: Sunny

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
904.8 0.4	Water Level	CLAYEY SAND (SC), trace roots, black, moist (TOPSOIL)					
		LEAN CLAY (CL), gray, moist, medium (ALLUVIUM)		2-2-3 (5) 12"		24	
901.2 4.0		SANDY LEAN CLAY (CL), trace Gravel, brown to gray, moist, medium (GLACIAL TILL)	5	2-4-3 (7) 14"	2.5		
				2-3-3 (6) 14"			
		Gray at 10 feet	10	2-3-4 (7) 14"			
890.7 14.5		END OF BORING	15	3-3-5 (8) 6"			Water not observed while drilling.
		Boring immediately backfilled					
			20				
			25				
			30				

Project Number B2405975.01 Geotechnical Evaluation Leibel Property - Lino Lakes S of Rehbein St & 20th Ave N Lino Lakes, Minnesota					BORING: ST-9		
					LOCATION: Captured with RTK GPS.		
					DATUM: NAD 1983 HARN Adj MN Anoka (US Feet)		
					NORTHING: 152976.8	EASTING: 557947.5	
DRILLER: M. Hoppe		LOGGED BY: R. Braun		START DATE: 09/18/24	END DATE: 09/18/24		
SURFACE ELEVATION: 905.0 ft		RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Soil		WEATHER: Sunny	
Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
904.6 0.4		SILTY SAND (SM), fine to medium-grained, trace roots, black, moist (TOPSOIL)		2-2-3 (5) 12"	2.5	21	
		LEAN CLAY (CL), gray, moist, medium (ALLUVIUM)					
901.0 4.0		SANDY LEAN CLAY (CL), trace Gravel, brown to gray, moist, medium to stiff (GLACIAL TILL)	5	4-3-3 (6) 14"			
				2-3-4 (7) 14"			
			10	4-5-7 (12) 16"			
		Gray at 12 feet					
890.5 14.5		END OF BORING	15	3-5-5 (10) 18"			Water not observed while drilling.
		Boring immediately backfilled					
			20				
			25				
			30				

Project Number B2405975.01 Geotechnical Evaluation Leibel Property - Lino Lakes S of Rehbein St & 20th Ave N Lino Lakes, Minnesota					BORING: ST-10		
					LOCATION: Captured with RTK GPS.		
					DATUM: NAD 1983 HARN Adj MN Anoka (US Feet)		
					NORTHING: 152436.2	EASTING: 556935.5	
DRILLER: M. Hoppe		LOGGED BY: R. Braun		START DATE: 09/17/24	END DATE: 09/17/24		
SURFACE ELEVATION: 909.0 ft		RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Soil		WEATHER: Sunny	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
908.7 0.3		SILTY SAND (SM), fine to medium-grained, trace roots, black, moist (TOPSOIL) SANDY LEAN CLAY (CL), trace Gravel, brown, moist, medium to stiff (GLACIAL TILL)		2-3-3 (6) 14"	1.5		
			5	2-3-4 (7) 12"		16	
				3-3-4 (7) 18"	2		
			10	3-4-6 (10) 18"			
		Gray at 12 1/2 feet		4-6-6 (12) 18"			
894.5 14.5		END OF BORING	15				Water not observed while drilling.
		Boring immediately backfilled					
			20				
			25				
			30				

Project Number B2405975.01 Geotechnical Evaluation Leibel Property - Lino Lakes S of Rehbein St & 20th Ave N Lino Lakes, Minnesota					BORING: ST-11		
					LOCATION: Captured with RTK GPS.		
					DATUM: NAD 1983 HARN Adj MN Anoka (US Feet)		
					NORTHING: 152077.2	EASTING: 557765.8	
DRILLER: M. Hoppe		LOGGED BY: R. Braun		START DATE: 09/17/24	END DATE: 09/17/24		
SURFACE ELEVATION: 911.1 ft		RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Soil		WEATHER: Sunny	

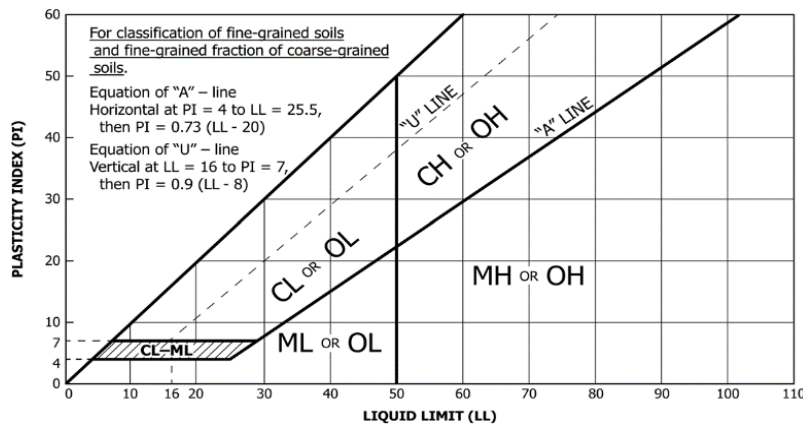
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
910.8 0.3		SILTY SAND (SM), fine to medium-grained, trace roots, black, moist (TOPSOIL)		3-3-3 (6) 14"		16	
		SANDY LEAN CLAY (CL), trace Gravel, brown, moist, medium to stiff (GLACIAL TILL)		4-5-4 (9) 16"	2.5		
			5	3-4-5 (9) 18"			
				3-5-6 (11) 16"			
			10				
		Gray at 12 1/2 feet		4-6-6 (12) 16"			
896.6 14.5		END OF BORING	15				Water not observed while drilling.
		Boring immediately backfilled					
			20				
			25				
			30				

Project Number B2405975.01 Geotechnical Evaluation Leibel Property - Lino Lakes S of Rehbein St & 20th Ave N Lino Lakes, Minnesota					BORING: ST-12	
					LOCATION: Captured with RTK GPS.	
					DATUM: NAD 1983 HARN Adj MN Anoka (US Feet)	
					NORTHING: 151358.6	EASTING: 557049.0
DRILLER: M. Hoppe		LOGGED BY: R. Braun		START DATE: 09/17/24	END DATE: 09/17/24	
SURFACE ELEVATION: 906.4 ft		RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Soil	WEATHER: Sunny	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
906.1 0.3		SILTY SAND (SM), fine to medium-grained, trace roots, black, moist (TOPSOIL) SANDY LEAN CLAY (CL), trace Gravel, brown, moist, medium to stiff (GLACIAL TILL)		2-3-5 (8) 12"		14	
			5	3-5-8 (13) 14"			
		Gray at 7 1/2 feet		4-5-6 (11) 18"		17	
			10	4-5-5 (10) 18"	2.5		
				3-4-4 (8) 18"			
			15	2-3-3 (6) 18"			
			20	3-4-4 (8) 18"			
885.4 21.0		END OF BORING Boring immediately backfilled					Water not observed while drilling.
			25				
			30				

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A				Group Symbol	Soil Classification
					Group Name ^B
Coarse-grained Soils (more than 50% retained on No. 200 sieve)	Gravels (More than 50% of coarse fraction retained on No. 4 sieve)	Clean Gravels (Less than 5% fines ^C)	$C_u \geq 4$ and $1 \leq C_c \leq 3^D$	GW	Well-graded gravel ^E
			$C_u < 4$ and/or ($C_c < 1$ or $C_c > 3$) ^D	GP	Poorly graded gravel ^E
		Gravels with Fines (More than 12% fines ^C)	Fines classify as ML or MH	GM	Silty gravel ^{EFG}
			Fines Classify as CL or CH	GC	Clayey gravel ^{EFG}
	Sands (50% or more coarse fraction passes No. 4 sieve)	Clean Sands (Less than 5% fines ^H)	$C_u \geq 6$ and $1 \leq C_c \leq 3^D$	SW	Well-graded sand ^I
			$C_u < 6$ and/or ($C_c < 1$ or $C_c > 3$) ^D	SP	Poorly graded sand ^I
		Sands with Fines (More than 12% fines ^H)	Fines classify as ML or MH	SM	Silty sand ^{FGI}
			Fines classify as CL or CH	SC	Clayey sand ^{FGI}
Fine-grained Soils (50% or more passes the No. 200 sieve)	Silts and Clays (Liquid limit less than 50)	Inorganic	PI > 7 and plots on or above "A" line ^J	CL	Lean clay ^{KLM}
			PI < 4 or plots below "A" line ^J	ML	Silt ^{KLM}
		Organic	Liquid Limit – oven dried Liquid Limit – not dried <0.75	OL	Organic clay ^{KLMN} Organic silt ^{KLMQ}
			PI plots on or above "A" line	CH	Fat clay ^{KLM}
	Silts and Clays (Liquid limit 50 or more)	Inorganic	PI plots below "A" line	MH	Elastic silt ^{KLM}
			Liquid Limit – oven dried Liquid Limit – not dried <0.75	OH	Organic clay ^{KLMP} Organic silt ^{KLMQ}
		Organic	Liquid Limit – oven dried Liquid Limit – not dried <0.75	OH	Organic clay ^{KLMP} Organic silt ^{KLMQ}
Highly Organic Soils		Primarily organic matter, dark in color, and organic odor		PT	Peat

- A. Based on the material passing the 3-inch (75-mm) sieve.
B. If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
C. Gravels with 5 to 12% fines require dual symbols:
GW-GM well-graded gravel with silt
GW-GC well-graded gravel with clay
GP-GM poorly graded gravel with silt
GP-GC poorly graded gravel with clay
D. $C_u = D_{60} / D_{10}$ $C_c = (D_{30})^2 / (D_{10} \times D_{60})$
E. If soil contains $\geq 15\%$ sand, add "with sand" to group name.
F. If fines classify as CL-ML, use dual symbol GC-GM or SC-SM.
G. If fines are organic, add "with organic fines" to group name.
H. Sands with 5 to 12% fines require dual symbols:
SW-SM well-graded sand with silt
SW-SC well-graded sand with clay
SP-SM poorly graded sand with silt
SP-SC poorly graded sand with clay
I. If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.
J. If Atterberg limits plot in hatched area, soil is CL-ML, silty clay.
K. If soil contains 15 to < 30% plus No. 200, add "with sand" or "with gravel", whichever is predominant.
L. If soil contains $\geq 30\%$ plus No. 200, predominantly sand, add "sandy" to group name.
M. If soil contains $\geq 30\%$ plus No. 200 predominantly gravel, add "gravelly" to group name.
N. PI ≥ 4 and plots on or above "A" line.
O. PI < 4 or plots below "A" line.
P. PI plots on or above "A" line.
Q. PI plots below "A" line.



DD Dry density, pcf
WD Wet density, pcf
P200 % Passing #200 sieve
MC Moisture content, %
OC Organic content, %

Laboratory Tests

q_p Pocket penetrometer strength, tsf
 q_u Unconfined compression test, tsf
LL Liquid limit
PL Plastic limit
PI Plasticity index

Particle Size Identification

Boulders..... over 12"
Cobbles..... 3" to 12"
Gravel
Coarse..... 3/4" to 3" (19.00 mm to 75.00 mm)
Fine..... No. 4 to 3/4" (4.75 mm to 19.00 mm)
Sand
Coarse..... No. 10 to No. 4 (2.00 mm to 4.75 mm)
Medium..... No. 40 to No. 10 (0.425 mm to 2.00 mm)
Fine..... No. 200 to No. 40 (0.075 mm to 0.425 mm)
Silt..... No. 200 (0.075 mm) to .005 mm
Clay..... < .005 mm

Relative Proportions^{L M}

trace..... 0 to 5%
little..... 6 to 14%
with..... $\geq 15\%$

Inclusion Thicknesses

lens..... 0 to 1/8"
seam..... 1/8" to 1"
layer..... over 1"

Apparent Relative Density of Cohesionless Soils

Very loose 0 to 4 BPF
Loose 5 to 10 BPF
Medium dense..... 11 to 30 BPF
Dense..... 31 to 50 BPF
Very dense..... over 50 BPF

Consistency of Cohesive Soils

Very soft..... 0 to 1 BPF..... < 0.25 tsf
Soft..... 2 to 4 BPF..... 0.25 to 0.5 tsf
Medium..... 5 to 8 BPF..... 0.5 to 1 tsf
Stiff..... 9 to 15 BPF..... 1 to 2 tsf
Very Stiff..... 16 to 30 BPF..... 2 to 4 tsf
Hard..... over 30 BPF..... > 4 tsf

Moisture Content:

Dry: Absence of moisture, dusty, dry to the touch.
Moist: Damp but no visible water.
Wet: Visible free water, usually soil is below water table.

Drilling Notes:

Blows/N-value: Blows indicate the driving resistance recorded for each 6-inch interval. The reported N-value is the blows per foot recorded by summing the second and third interval in accordance with the Standard Penetration Test, ASTM D1586.

Partial Penetration: If the sampler could not be driven through a full 6-inch interval, the number of blows for that partial penetration is shown as #/x" (i.e. 50/2"). The N-value is reported as "REF" indicating refusal.

Recovery: Indicates the inches of sample recovered from the sampled interval. For a standard penetration test, full recovery is 18", and is 24" for a thinwall/shelby tube sample.

WOH: Indicates the sampler penetrated soil under weight of hammer and rods alone; driving not required.

WOR: Indicates the sampler penetrated soil under weight of rods alone; hammer weight and driving not required.

Water Level: Indicates the water level measured by the drillers either while drilling (, at the end of drilling (, or at some time after drilling ().

Sample Symbols

 Standard Penetration Test
 Modified California (MC)
 Auger
 Grab Sample
 Rock Core
 Thinwall (TW)/Shelby Tube (SH)
 Texas Cone Penetrometer
 Dynamic Cone Penetrometer

APPENDIX F – P8 TABULATION AND ANALYSIS

p8 Existing Model Inputs

P8 Urban Catchment Model, Version 3.5

Case 24205 EX Peltier Ponds 2025-11-03.p8c

Title Existing Peltier Ponds

PrecFile MSP49-20220228.pcp

PartFile nurp50.p8p

Case Title	Existing Peltier Ponds
Case Data File	24205 EX Peltier Ponds 2025-11-03.p8c
Path	F:_Civil 3D Projects\24205\DOCUMENTS\ENGINEERING\DESIGN\STORMWATER\Prelim\2025-11-03 Prelim Rev 2\p8\
Case Notes:	Hill Incorporated Peltier Ponds Lennar
Storm Data File	MSP49-20220228.pcp
Particle File	nurp50.p8p
Air Temp File File	MSP49-20220228.tem

Time Steps Per Hour	4
Minimum Inter-Event Time (hrs)	10
Maximum Continuity Error %	2
Rainfall Breakpoint (inches)	0.8
Precipitation Scale Factor	1
Air Temp Offset (deg-F)	0
Loops Thru Storm File	1
Simulation Dates	
Start	6/1/1970
Keep	1/1/1971
Stop	12/31/1972

Swale Parameters									
Length of Flow Path (ft)									
Slope of Flow Path %									
Bottom Width (ft)									
Side Slope (ft-v/ft-h)									
Maximum Depth of Flow (ft)									
Mannings n Constant									
Hydraulic Model									
Pipe, Splitter, Aquifer Parameter									
Hydraulic Res. Time (hrs)	0	0	0	0					

Particle Data					
Particle File	nurp50.p8p				
Particle Class	P0%	P10%	P30%	P50%	P80%
Filtration Efficiency (%)	90	100	100	100	100
Settling Velocity (ft/hr)	0	0.03	0.3	1.5	15
First Order Decay Rate (1/day)	0	0	0	0	0
2nd Order Decay (1/day-ppm)	0	0	0	0	0
Impervious Runoff Conc (ppm)	1	0	0	0	0
Pervious Runoff Conc (ppm)	1	100	100	100	200
Pervious Conc Exponent	0	1	1	1	1
Accum. Rate (lbs-ac-day)	0	1.75	1.75	1.75	3.5
Particle Removal Rate (1/day)	0	0.25	0.25	0.25	0.25
Washoff Coefficient	0	20	20	20	20
Washoff Exponent	0	2	2	2	2
Sweeper Efficiency	0	0	0	5	15

Water Quality Component Data

Component Name	TSS	TP	TKN	CU	PB	ZN	HC			

Water Quality Criteria (ppm)

Level 1	5	0.025	2	2	0.02	5	0.1			
Level 2	10	0.05	1	0.0048	0.014	0.0362	0.5			
Level 3	20	0.1	0.5	0.02	0.015	0.38	1			

Content Scale Factor	1	1	1	1	1	1	1			

Particle Composition (mg/kg)

P0%	0	99000	600000	13600	2000	64000	250000			
P10%	1000000	3850	15000	340	180	1600	22500			
P30%	1000000	3850	15000	340	180	1600	22500			
P50%	1000000	3850	15000	340	180	1600	22500			
P80%	1000000	0	0	340	180	0	22500			

p8 Proposed Model Inputs

P8 Urban Catchment Model, Version 3.5
Case 24205 PR Peltier Ponds 2026-04-01.p8c
Title Proposed Peltier Ponds
PrecFile MSP49-20220228.pcp
PartFile nurp50.p8p

Case Title	Proposed Peltier Ponds
Case Data File	24205 PR Peltier Ponds 2026-04-01.p8c
Path	F:_Civil 3D Projects\24205\DOCUMENTS\ENGINEERING\DESIGN\STORMWATER\Prelim\2026-04-01 Prelim Rev 4 CAPROC\p8\
Case Notes:	Hill Incorporated Peltier Ponds Lennar
Storm Data File	MSP49-20220228.pcp
Particle File	nurp50.p8p
Air Temp File File	MSP49-20220228.tem

Time Steps Per Hour	4
Minimum Inter-Event Time (hrs)	10
Maximum Continuity Error %	2
Rainfall Breakpoint (inches)	0.8
Precipitation Scale Factor	1
Air Temp Offset (deg-F)	0
Loops Thru Storm File	1
Simulation Dates	
Start	6/1/1970
Keep	1/1/1971
Stop	12/31/1972

Max Snowfall Temperature (deg-f)	32.0
SnowMelt Temperature (deg-f)	32.0
Snowmelt Coef (in/degF-Day)	0.06
Soil Freeze Temp (deg-F)	32.0
Snowmelt Abstraction Factor	1.00
Evapo-Trans. Calibration Factor	1.00
Growing Season Start Month	5
Growing Season End Month	10

5-Day Antecedent Rainfall + Runoff (inches)		
CN Antecedent Moisture Condition	AMC-II	AMC-III
Growing Season	1.40	2.10
NonGrowing Season	0.50	1.10

Detention Pond Outlet Parameters																
Outlet Type	ORIFICE	ORIFICE	ORIFICE	ORIFICE	ORIFICE	ORIFICE	ORIFICE					ORIFICE	ORIFICE	ORIFICE		
Outlet Orifice Diameter (in)	6	8	8	6	18	15	15					15	10	12		
Orifice Discharge Coef	1	1	1	1	1	1	1					0.6	0.6	0.6		
Outlet Weir Length (ft)																
Weir Discharge Coef																
Perforated Riser Height (ft)																
Number of Holes in Riser																
Holes Diameter																
Flood Pool Drain Time (hrs)																
Swale Parameters																
Length of Flow Path (ft)																
Slope of Flow Path %																
Bottom Width (ft)																
Side Slope (ft-v/ft-h)																
Maximum Depth of Flow (ft)																
Mannings n Constant																
Hydraulic Model																
Pipe, Splitter, Aquifer Parameter																
Hydraulic Res. Time (hrs)								0	0	0	0					

Particle Data					
Particle File	nurp50.p8p				
Particle Class	P0%	P10%	P30%	P50%	P80%
Filtration Efficiency (%)	90	100	100	100	100
Settling Velocity (ft/hr)	0	0.03	0.3	1.5	15
First Order Decay Rate (1/day)	0	0	0	0	0
2nd Order Decay (1/day-ppm)	0	0	0	0	0
Impervious Runoff Conc (ppm)	1	0	0	0	0
Pervious Runoff Conc (ppm)	1	100	100	100	200
Pervious Conc Exponent	0	1	1	1	1
Accum. Rate (lbs-ac-day)	0	1.75	1.75	1.75	3.5
Particle Removal Rate (1/day)	0	0.25	0.25	0.25	0.25
Washoff Coefficient	0	20	20	20	20
Washoff Exponent	0	2	2	2	2
Sweeper Efficiency	0	0	0	5	15

Water Quality Component Data

Component Name	TSS	TP	TKN	CU	PB	ZN	HC			

Water Quality Criteria (ppm)

Level 1	5	0.025	2	2	0.02	5	0.1			
Level 2	10	0.05	1	0.0048	0.014	0.0362	0.5			
Level 3	20	0.1	0.5	0.02	0.015	0.38	1			

Content Scale Factor	1	1	1	1	1	1	1			

Particle Composition (mg/kg)

P0%	0	99000	600000	13600	2000	64000	250000			
P10%	1000000	3850	15000	340	180	1600	22500			
P30%	1000000	3850	15000	340	180	1600	22500			
P50%	1000000	3850	15000	340	180	1600	22500			
P80%	1000000	0	0	340	180	0	22500			

APPENDIX G – FLOODPLAIN ANALYSIS (ELEV 907)

APPENDIX H – RCWD REUSE DESIGN WORKSHEET

Project Name	Peltier Ponds	Permit Number	
Date	2/9/2026		
Project Type	Standard	Units	acres

Project Water Quality Treatment Calculator			
Enter Project Areas for Either [A] or [B]			
[A] Project Type: Standard Project			
Enter impervious area requiring treatment in square feet			
New/Reconstructed Impervious Surface	Area 12.9	Units acres	
[B] Project Type: Public Linear			
Enter relevant impervious areas requiring treatment in acres			
New Impervious Surface		acres	
Reconstructed Impervious Surface		acres	
Required Water Quality Treatment	51,310	cubic feet	
Irrigation Site Design			
Enter impervious area draining to storage in acres			
	Area 12.9	Units acres	
Enter pervious area to be irrigated in acres			
	Area 4.3	Units acres	
Irrigation rate (inches per week, not to exceed 0.5-inches)			
	0.5		
Start date of irrigation season	April 15	End date of irrigation season	October 15
Enter volume of irrigation storage in cubic feet			
	Volume 248,564	Units cubic feet	
Results			
Average annual stormwater irrigation volume (CF)	217,761		
Event based credit (CF)	11,754		
Required treatment volume (CF)	51,310		
Does the irrigation system meet water quality treatment requirement	No		