

MidAtlantic

Engineering Partners

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Project # APR-2203

**STORMWATER MANAGEMENT REPORT
FOR
HERITAGE AT HOPEWELL
2500 PENNINGTON ROAD**

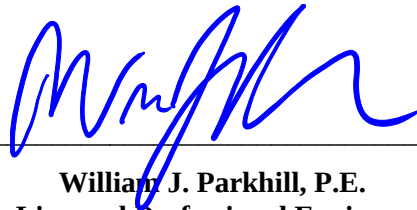
**BLOCK 78, LOT 17
HOPEWELL TOWNSHIP, MERCER COUNTY, NEW JERSEY**

PREPARED FOR:

AMERICAN PROPERTIES @ HOPEWELL II, LLC

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I. INTRODUCTION

A. Project Description & Location

The proposed project consists of 55 market rate townhomes as well as one affordable housing apartment building with 12 units and internal roadways, parking stalls, stormwater management measures which include green infrastructure and associated grading. The site is located at State Route 31, Hopewell Township, Mercer County and is known as Block 78, Lot 17. The site contains a total of 11.08 acres.

The project has been designed to collect stormwater runoff from within the project's limit of disturbance and convey the runoff via roof leaders, storm sewers and surface runoff to either a small scale bioretention basins that are sized to accommodate flows from the developed area during the 2, 10 and 100-year storms or porous pavement. The project has been designed to meet the state and local stormwater runoff quantity and stormwater runoff quality standards while complying with the green infrastructure rules. Detailed further below, the site's soil conditions are not conducive of groundwater recharge. The stormwater runoff design of conveyance, retention and discharge have been designed to meet the applicable soil erosion and sediment control standards to prevent erosion onsite and downstream of natural drainage patterns.

B. Existing Conditions

The property currently contains a single-family home with a detached garage, wooded areas, and a paved driveway. It has frontage along Pennington Road, New Jersey Route 31. The property contains a wetlands area and a freshwater stream towards the rear, which has been verified in a Letter of Interpretation (LOI), File No 1106-08-0012.1 FWW170001, issued August 17, 2018. A permit was issued by the NJDEP on September 22, 2023, for a Flood Hazard Individual Permit and Verification, multiple Freshwater Wetlands General Permits, and Transition Area Waiver Averaging Plan (File No. 1106-08-0012.1 LUP230001). All other required permits will be obtained prior to development.

In general, the topography of the subject property slopes from the south to the north. Onsite elevations range approximately from a high of ± 208 feet near the southern property line to a low of ± 198 feet within the wetlands which surround a stream tributary of Stony Brook. Soils onsite within the project area consist of Readington and Abbottstown silt loams (REFA), which is categorized as Hydrologic Soil Group 'C', and Doylestown and Reaville variant silt loams (DOZA) which is categorized as Hydrologic Soil Group 'D'. According to the New Jersey Best Management Practices manual, Chapter 6, page 6-17, section 7, "The development site areas that extensive site soil testing determine to have permeability rates less than 0.2 inches per hour may be considered to belong to Hydrologic Soil Group D in the NJGRS program. For such areas, the user may use any HSG D soil in the NJGRS soil series database to define such site areas in the NJGRS' Annual Recharge worksheet" As such, extensive soil pits were dug and

percolation rates were tested on samples taken in September 2017 and May 2023. All observations were consistent indicating that infiltration is not feasible (primarily cohesive soils) and supported by rates lower than 0.2 in/hr. Therefore, all onsite soils have been categorized as Hydrologic Soil Group 'D'.

II. METHODOLOGY AND SOFTWARE

In accordance with the NJDEP rules regarding stormwater management, N.J.A.C. 7:8-1.6, the criteria to handle stormwater for major developments is to design acceptable systems that effectively manage the stormwater with respect to applicable regulations regarding water quality, runoff quantity, green infrastructure and groundwater recharge. Each of these requirements was considered in a pre vs. post-development runoff analysis, conducted in conjunction with an evaluation of site conditions, local ordinance, and proposed construction specifications. This was done to facilitate designing an appropriate stormwater management system for the proposed site, based on sound engineering principles to maximize water quality and to reduce peak flows offsite per the NJDEP stormwater regulations.

Accordingly, stormwater management analysis in this report consists of: (1) calculating runoff from the 2, 10 and 100-year storm events for the pre and post-development conditions of each drainage area; (2) comparing the results of the pre-developed and post-developed conditions to ensure that an appropriate stormwater management plan has been implemented; and (3) providing a conclusion of the results of the analysis. The analysis demonstrates that the stormwater runoff will not adversely affect the area because of the proposed development of the property. Runoff is analyzed as a total flow split between two discharge points, hereafter referred to as DP-1 and DP-2.

The existing pre- and proposed post-development flows were calculated using the USDA Natural Resources Conservation Service methodology, as described in Technical Release 55 - Urban Hydrology for Small Watersheds (TR-55), dated June 1986. These modeling techniques are incorporated in the HydroCAD 10.00 software package, which was used to analyze the pre and post development flows. All undisturbed areas of the site have been assumed to be in good hydrologic condition, with good cover for the pre-development analysis. Any significant land features and structures that could reduce pre-construction stormwater runoff rates and volumes, including depressions and culverts have been accounted for in the pre-development analysis.

The stormwater management bioretention basins were modeled conservatively without the use of exfiltration and thus does not show the use of the 18-inch thick basin bottom soil material (see plan detail and BMP for detail) which is used to address stormwater quality storm event. The stormwater quality water surface elevation modeled in this conservative approach does not exceed the maximum allowable one foot of depth. An analysis showing the basins drain within 72 hours is provided in Appendix F.

The structural stormwater management measures have been designed to consider the existing site conditions including environmentally critical areas, slopes, depth to seasonally high-water table, soil types

and permeability. They have also been designed to be strong, durable and corrosion resistant to minimize maintenance, facilitate maintenance and repairs and ensure proper functioning within the context of their operational requirements.

III. PRE-DEVELOPMENT CONDITIONS

The entire site generally drains north towards a tributary branch of the Stony Brook. A ridge line, running in a general northeast-southwest direction, divides the existing site into three sub-drainage areas within the project's limit of disturbance. The first, labeled EA-1 discharges off the property to the northwest of the site, design point 1. The other two drainage areas, labeled EA-2 and EA-3 combine to discharge at the same location (design point 2) at the northern corner of the site.

To determine the applicable pre-development peak runoff rates from the site for 2, 10 and 100-year storms, the project area was analyzed as described above. Runoff for the pre-developed site was calculated using the HydroCAD 10.00 software package and is summarized in the table below:

Drainage Area	Design Point	2-Year Storm (cfs)	10-Year Storm (cfs)	100-Year Storm (cfs)
EA-1	DP-1	5.82	11.07	21.66
EA-2 & EA-3	DP-2	5.56	11.39	22.74

Table 1: Pre-Development Runoff Summary

IV. POST-DEVELOPMENT STORMWATER MANAGEMENT SUMMARY

Generally, the project site has been designed to collect stormwater in a series of storm sewer inlets and roof leaders to be conveyed via storm sewer pipes and overland flow to one of several surface bioretention basins or porous pavement areas to meet stormwater runoff quality and quantity standards. Road runoff is conveyed to one of the small-scale green infrastructure devices with a contributing drainage areas less than 2.50 acres which treat stormwater quality. Yard area and roof runoff is conveyed either via overland to yard inlets or roof leaders, which both lead to the storm sewers and is conveyed into a scale bioretention basin for stormwater runoff quantity standards.

A. Water Quantity

Water quantity rules are met through the use of small-scale bioretention basins as described in N.J.A.C. 7:8-5.3(c). The majority of site runoff will be collected via a conventional piped stormwater collection system and conveyed to a small-scale bioretention basin or porous pavement. All uncollected disturbed areas within the development are directed to follow existing drainage patterns to the north to a wetlands area or Stony Brook stream tributary.

The allowable peak runoff rates from the post-developed site were found by applying the required reductions to the pre-developed peak flows for the disturbed area at each Design Point. The reductions were

then added to the peak flows for the undisturbed area at each design point to determine the total allowable runoff for the post-developed condition.

Storm Event (yr)	Pre-Dev Runoff within Undisturbed Areas (cfs)	Pre-Dev Runoff within Project Disturbance (cfs)	% Reduction	Allowable Reduced Runoff within Project Disturbance (cfs)	Total Allowable Runoff (cfs)	Post-Dev Runoff (cfs)
A	B	C	D	E (CxD)	F (B+E)	G
2	1.41	4.42	50%	2.21	3.62	1.98
10	2.80	8.29	75%	6.22	9.02	3.76
100	5.62	16.07	80%	12.86	18.48	7.36

Table 2: DP-1 Allowable Runoff Summary

Storm Event (yr)	Pre-Dev Runoff within Undisturbed Areas (cfs)	Pre-Dev Runoff within Project Disturbance (cfs)	% Reduction	Allowable Reduced Runoff within Project Disturbance (cfs)	Total Allowable Runoff (cfs)	Post-Dev Runoff (cfs)
A	B	C	D	E (CxD)	F (B+E)	G
2	1.93	1.81	50%	0.90	2.83	2.79
10	6.04	4.80	75%	3.60	9.64	9.57
100	13.01	9.52	80%	7.62	20.63	20.07

Table 3: DP-2 Allowable Runoff Summary

In the three analyzed storms for the site's Design Points, the proposed post-development runoff rates are less than the required reductions, thus meeting the requirements of the NJDEP Stormwater Management rules for stormwater quantity reductions.

B. Small Scale Bioretention System - Water Quality

The NJDEP Stormwater Management rules require that stormwater management measures be designed to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm by 80 percent of the anticipated load from the developed site. In order to achieve 80% TSS removal, the site incorporates two small-scale bioretention basins following the New Jersey Stormwater Best Management Practices. Each basin has maximum contributing drainage area of 2.50 acres to meet the requirements of green infrastructure (i.e. basin area is not included). All proposed small-scale bioretention basins have been sized to hold and infiltrate the entire water quality

design storm through bioretention soil media and underdrain with a maximum water surface elevation of less than one foot during said water-quality storm event. Since the water quality storm runoff volume is completely infiltrated through the soil media, a total suspended solids (TSS) removal rate of 80% is provided, meeting the water quality requirements in N.J.A.C. 7:8-5.5. The proposed basins incorporate the standards outlined in the NJDEP Best Management Practices.

The northern small-scale bioretention Basin #1 accepts runoff from 2.40 acres (2.22 acres of contributing drainage area plus 0.18 acres of basin area).

Storm (Yr.)	Basin Inflow (cfs)	Basin Outflow (cfs)	Maximum Pond Storage (cubic ft)	Basin Elevation
WQ	5.44	0.00	6,386	200.81
2	7.93	0.48	14,167	201.81
10	12.67	2.28	19,376	202.47
100	21.83	4.54	30,917	203.94

Table 4: Small-Scale Bioretention Basin #1 Summary

Flows from Basin #1 are attenuated by an outlet structure with the first outlet being a 4.5" diameter orifice set at the water quality storm water surface elevation 200.81. The second is a 19.5"W x 3.5"H rectangular orifice at elevation 201.81. These devices control flows from the 2,10, and 100-year storm events. An emergency overflow grate is set slightly above the peak 100-yr storm elevation at 203.90. For storms larger than a 100-year storm, a secondary 75' wide emergency spillway is set at elevation 203.95 and is provided as a means of discharge in the case of outlet structure failure. The outflow from the outlet structure will discharge via a 24" pipe to the tributary of Stony Brook.

The southern small-scale bioretention Basin #2 accepts runoff from 1.69 acres (1.43 acres of contributing drainage area plus 0.26 acres of basin area).

Storm (Yr.)	Basin Inflow (cfs)	Basin Outflow (cfs)	Maximum Pond Storage (cubic ft)	Basin Elevation
WQ	3.45	0.00	4,001	201.91
2	5.34	0.14	10,419	202.78
10	8.68	0.57	11,485	203.22
100	15.16	1.47	25,906	204.14

Table 5: Small-Scale Bioretention Basin #2 Summary

Flows from Basin #2 are attenuated by an outlet structure with the first outlet being a 2.5" diameter orifice set at the water quality storm water surface elevation 201.91. The second is 7"W x 3"H rectangular orifice at elevation 202.78. The third is an overflow grate orifice at elevation 204.10. These devices control flows from the 2,10, and 100-year storm events.. For storms larger than a 100-year storm, a secondary 50' wide emergency spillway is set at elevation 204.15 and is provided as a means of discharge in the case of outlet structure failure. The outflow from the outlet structure will discharge via a 24" pipe to a tributary of Stony Brook.

C. Porous Pavement - Water Quality

Water quality requirements for the northerly portions of the "motor vehicle surfaces" will be accomplished through the installation of two porous pavement systems. The NJBMP Manual specifies that the maximum ratio of additional inflow drainage area to surface area of the porous pavement system is 3:1. Porous Pavement Area #1, located north of Building 5, covers an area of 2,437 sq-ft and will receive an additional 9,583 sq-ft. of surface runoff, resulting in a ratio of 2.93:1 and thus satisfying the requirement. Similarly, the Porous Pavement Area #2, located west of Building 5, covers an area of 3,275 sq-ft and will receive an additional 13,068 sq-ft. of surface runoff, resulting in a ratio of 2.99:1. Each of these systems is designed with a 4" porous pavement section with a 1" choker course and a minimum 24" stone storage section beneath. Additionally, each porous pavement section will be under drained via a 6" perforated PVC pipe 3" above the 4' wide trench bottom. Inlets have been provided at typical surface low points to provide adequate drainage during larger storm events.

The tables below provide a summary for each porous pavement system, including inflow, outflow, and water surface elevation.

Storm (Yr.)	Porous Pavement Area #1 Inflow (cfs)	Porous Pavement Area #1 Outflow (cfs)	Maximum Storage (cubic ft)	Porous Pavement Water Surface Elevation
WQ	0.58	0.15	376	200.73
2	0.78	0.17	590	200.95
10	1.22	0.20	1,050	201.42
100	2.05	1.28	1,464	201.85

Table 6: Porous Pavement Area #1 Summary

Flows from Porous Pavement Area #1 are attenuated by an outlet structure with the first outlet being a 2.5" diameter orifice set at 199.78. The second is a 4' weir at elevation 201.52. These devices

control flows from the 2,10, and 100-year storm events. The outflow from the outlet structure will discharge via a 6" pipe to the tributary of Stony Brook.

Storm (Yr.)	Porous Pavement Area #2 Inflow (cfs)	Porous Pavement Area #2 Outflow (cfs)	Maximum Storage (cubic ft)	Porous Pavement Water Surface Elevation
WQ	0.60	0.15	344	201.16
2	0.94	0.17	696	201.43
10	1.53	0.21	1,374	201.95
100	2.68	0.95	2,268	202.63

Table 7: Porous Pavement Area #2 Summary

Flows from the Porous Pavement Area #2 section are attenuated by an outlet structure with the first outlet being a 2.5" diameter orifice set at 200.25. The second is a 4' weir at elevation 202.47. These devices control flows from the 2,10, and 100-year storm events. The outflow from the outlet structure will discharge via a 6" pipe to the tributary of Stony Brook.

D. Bioretention System – Emergency Spillway

An emergency spillway and emergency overflow grate have been incorporated into the design of the bioretention basins in the event the outlets become clogged or storms larger than the 100-year storm event occur. Flow discharging over the spillway flow overland toward the existing wetlands with spillway's set 10 ft. wide and a top of berm elevation set at least one foot above the 100-yr peak water surface elevation flowing over the spillway with the basin full.

Basin	Spillway Length	Spillway Elevation	Spillway Water Surface Elevation	Berm Elevation	Discharge Velocity
1	75'	203.95	204.19	205.20	3.87 ft/sec
2	50'	204.15	204.39	205.40	3.86 ft/sec

Table 8: Emergency Spillway Design

The velocities were calculated using a trapezoidal channel section, with 3:1 side slopes, the bottom width equal to the spillway length, and the bottom slope equal to the basin down slope. The spillways were assumed to be vegetated, in good condition, and were analyzed under a C vegetal retardance class, with silt loam soils. The spillways were analyzed using Erosion Control Materials Design Software, version 5.0, by North American Green, which has been developed to analyze channel erosion. According to the North American Green software, the spillways are shown to be stable with velocities below 5 ft/sec. The

emergency spillways stability calculations, provided in the Appendix of this report, were calculated for the 100-year storm, with the basins filled to the spillways. Hydrograph routings for the 100-year storm down the spillway are provided in the Appendix.

E. Green Infrastructure

The green infrastructure requirements set forth in N.J.A.C. 7:8-5.3 are met by limiting the contributing drainage areas to the associated green infrastructure best management practice as listed in said section. Each small scale bioretention basin has a contributing drainage area of less than 2.5 acres (does not include basin area per definition of Contributory Drainage Area listed in N.J.A.C. 7:8-1.2) and meets the rules of this section as described in N.J.A.C. 7:8-5.3(b). The two small scale bioretention basins and two porous pavement sections are spread out throughout the site, are not clustered in one area and are close to the source of their respective runoff. Therefore, the project meets the intent and rules of the green infrastructure rule.

F. Ground Water Recharge

The groundwater recharge standards set forth in N.J.A.C. 7:8-5.4(a)2 require recharging the increase in runoff volume from pre to post development for the 2-year storm event. According to the New Jersey Best Management Practices manual, Chapter 6, page 6-17, section 7, “The development site areas that extensive site soil testing determine to have permeability rates less than 0.2 inches per hour may be considered to belong to Hydrologic Soil Group D in the NJGRS program. For such areas, the user may use any HSG D soil in the NJGRS soil series database to define such site areas in the NJGRS’ Annual Recharge worksheet” As such, extensive soil pits were dug and percolation rates were tested on samples taken in September 2017 and May 2023. All observations were consistent indicating that infiltration is not feasible (primarily cohesive soils) and supported by rates lower than 0.2 in/hr. Therefore, underdrains have been included in each basin or porous pavement section. Since no location on site is suitable for groundwater recharge, this section does not apply.

G. Nonstructural Strategies and Low Impact Development

NJDEP outlines numerous nonstructural stormwater strategies that can be incorporated into a given site design. The following elements are incorporated into the subject application:

- Soil compaction will be minimized via the Soil Erosion Standards for soil de-compaction and testing.
- Vegetated areas surrounding the existing wetlands are maintained to the maximum extent possible. Transition area averaging reduces farmland buffer and compensates with vegetated portions.
- Proposed landscaping is native and low-maintenance.

H. Soil Erosion and Sediment Control

To minimize the effects of erosion, the proposed design and construction incorporates the standards for Soil Erosion and Sediment Control in New Jersey as provided by the New Jersey State Soil Conservation Committee. These temporary erosion deterrents during construction include but are not limited to the use of silt fence or other sediment barriers at downgrade slopes and inlet protection, dust control measures, and stone tracking mats will be utilized.

In addition, permanent erosion deterrents include conduit outlet protection such as riprap scour holes which will be constructed at all stormwater outfalls and permanent vegetative cover throughout the project site. Both basins combine and discharge to the stream tributary to Stony Brook which have discharge rates below the pre-development flow rate. This meets the standards of Point Discharge & Downstream Stability per Chapter 21 of The Standards for Soil Erosion & Sediment Control in New Jersey which discharge into a defined waterway. Further, the discharge flow rate from the basins have been reduced by 50% and 75% for the 2-year and 10-year storm events meeting the requirement for downstream stability.

General notes and guidelines are provided on the Soil Erosion and Sediment Control Plans for the contractor in order to ensure against soil erosion on the site while construction is in progress. The Soil Erosion and Sediment Control Plans will be reviewed by the Mercer County Soil Conservation District, which also monitors site activities during construction. The District will inspect the site and may also recommend additional erosion and sediment control measures as appropriate.

I. Storm Drainage System Discussion (Methodology)

The stormwater conduits on site were designed according to the following criteria:

1. The Rational Method was used to determine the design flows.
2. NJ Rainfall Intensity Curves, with a minimum 25-year storm frequency were utilized to size all stormwater conduits.
3. All conduits are designed to convey the design storm by open channel flow.
4. A minimum time of concentration (Tc) of 1 minute was used.
5. All proposed stormwater conduits are reinforced concrete pipe, Class III with an “n” value of 0.013, or high density polyethylene pipe with an “n” value of 0.011.
6. A minimum of 12” of cover is provided for all Class III Stormwater conduits.

V. CONCLUSION

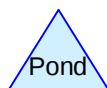
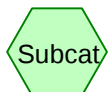
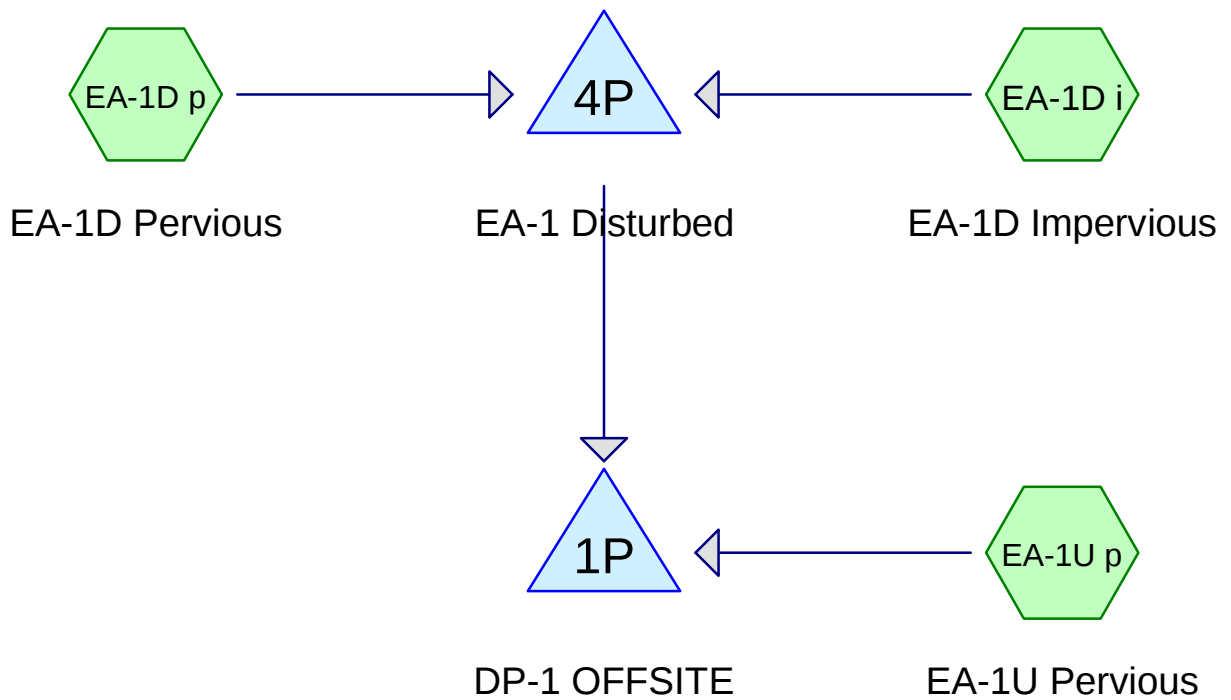
The routing summaries provided for the stormwater management system demonstrate that the design of this project will store the increases in the post-development runoff volumes and attenuate the outflows to below the pre-developed peak runoff rates in accordance with the required reductions. This

design also exceeds water-quality standards through utilization of a proposed small-scale infiltration basins that achieve an estimated 90% TSS removal. The use of small-scale bioretention basins for water quality with contributing drainage areas of no more than 2.5 acres meets the rules of green infrastructure. Since no location on site is suitable for groundwater recharge, this section does not apply.

The stormwater management basin has been designed to meet the requirements of the “NJDEP Stormwater and Non-point Source Pollution – Best Management Practices Manual.” This stormwater management system meets the technical requirements as well as the overall intent of the NJDEP regulations in an aesthetically pleasing and technically compliant manner.

APPENDIX A

PRE-DEVELOPMENT DRAINAGE ANALYSIS



Routing Diagram for Pre-Development

Prepared by {enter your company name here}, Printed 11/15/2023
HydroCAD® 10.00-26 s/n 07360 © 2020 HydroCAD Software Solutions LLC

Pre-Development

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 07360 © 2020 HydroCAD Software Solutions LLC

NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/15/2023

Summary for Subcatchment EA-1D i: EA-1D Impervious

Runoff = 0.56 cfs @ 1.29 hrs, Volume= 0.026 af, Depth= 1.03"

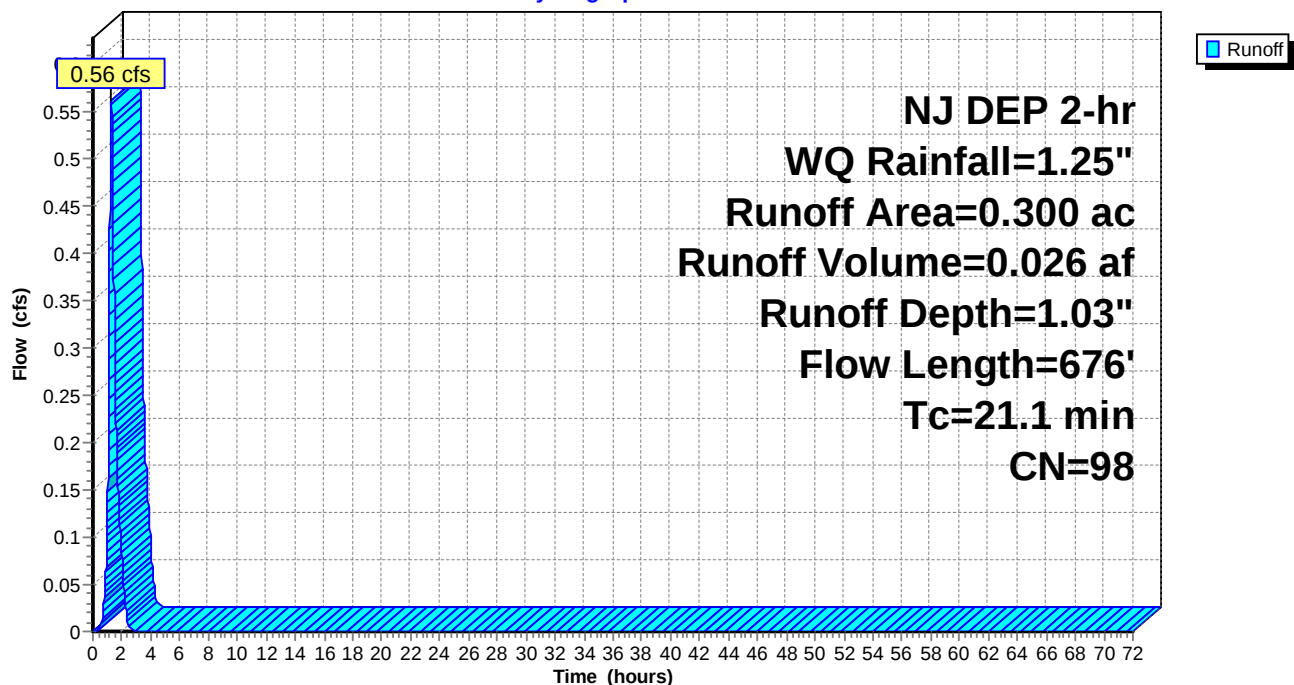
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
* 0.300	98	Impervious, HSG D
0.300		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	72	0.0116	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
2.6	324	0.0162	2.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	11	0.0082	1.84		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	86	0.0263	2.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
8.7	183	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	676	Total			

Subcatchment EA-1D i: EA-1D Impervious

Hydrograph



Pre-Development

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 07360 © 2020 HydroCAD Software Solutions LLC

NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/15/2023

Summary for Subcatchment EA-1D p: EA-1D Pervious

Runoff = 0.84 cfs @ 1.38 hrs, Volume= 0.044 af, Depth= 0.17"

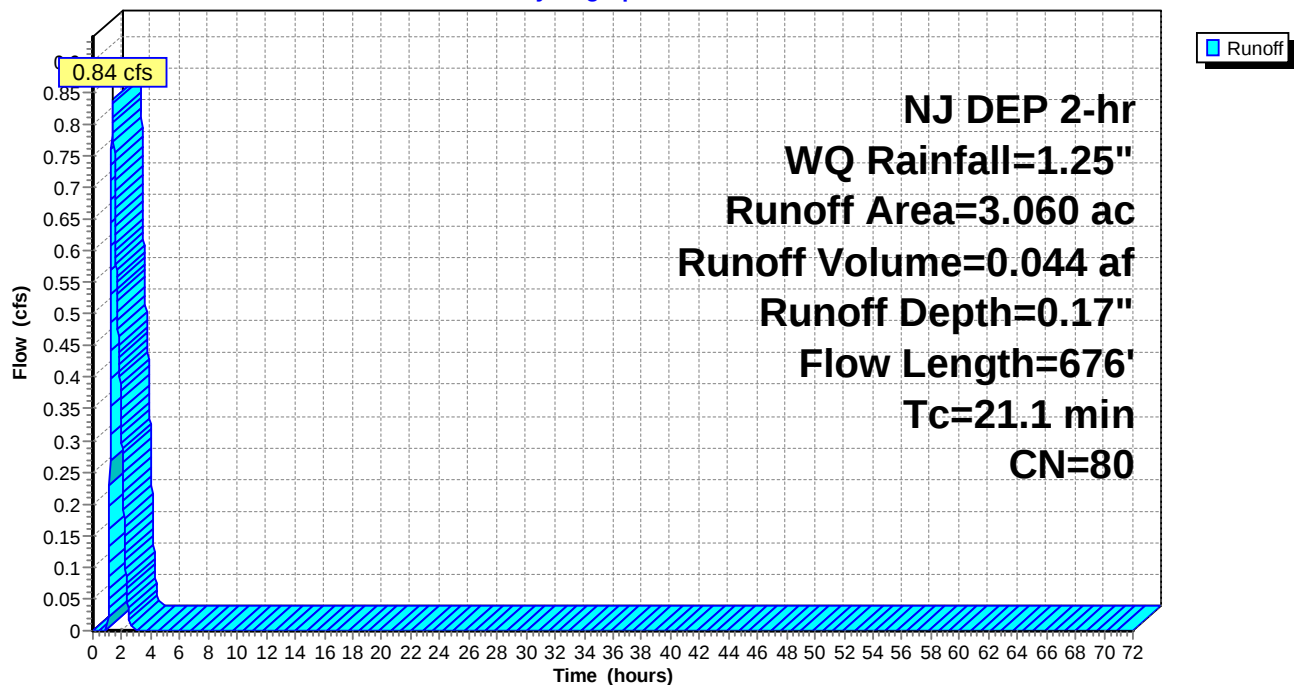
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
2.950	80	>75% Grass cover, Good, HSG D
0.110	79	Woods/grass comb., Good, HSG D
3.060	80	Weighted Average
3.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	72	0.0116	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
2.6	324	0.0162	2.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	11	0.0082	1.84		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	86	0.0263	2.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
8.7	183	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	676	Total			

Subcatchment EA-1D p: EA-1D Pervious

Hydrograph



Pre-Development

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NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment EA-1U p: EA-1U Pervious

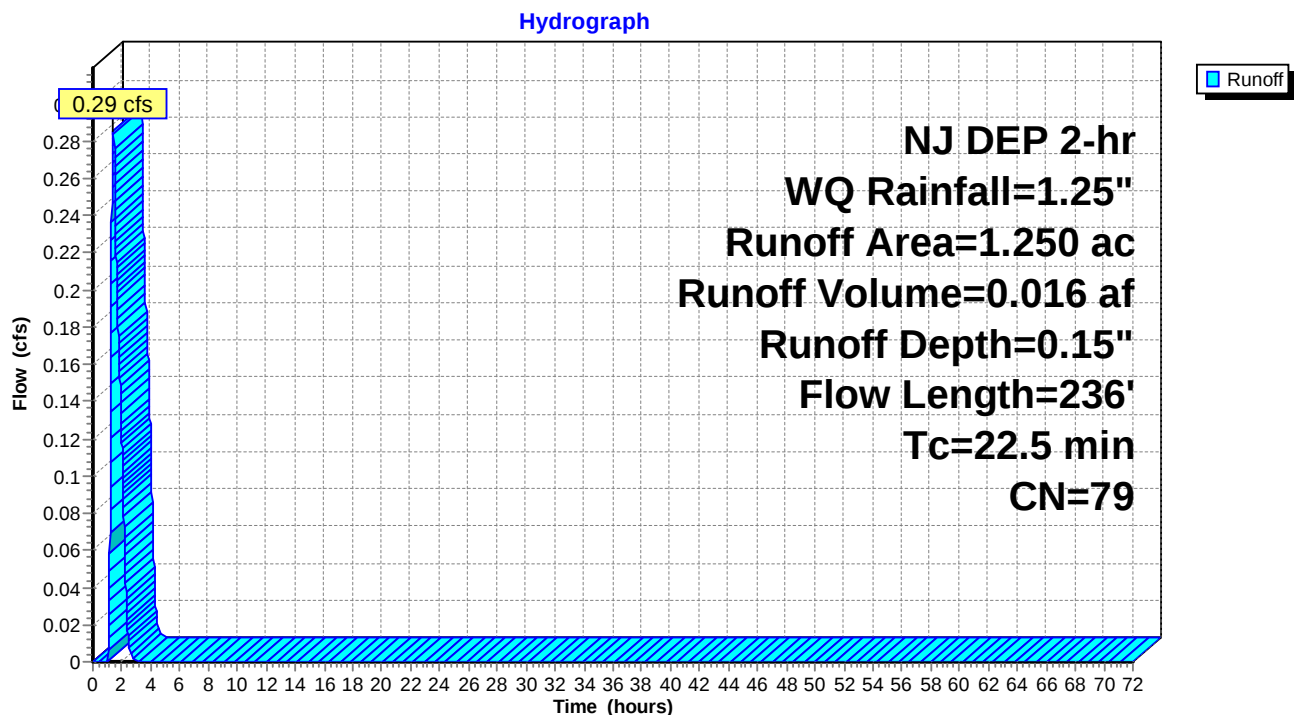
Runoff = 0.29 cfs @ 1.41 hrs, Volume= 0.016 af, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.460	80	>75% Grass cover, Good, HSG D
0.790	79	Woods/grass comb., Good, HSG D
1.250	79	Weighted Average
1.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	53	0.0263	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.4	18	0.0049	0.03		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
7.9	165	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.5	236	Total			

Subcatchment EA-1U p: EA-1U Pervious



Pre-Development

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NJ DEP 2-hr WQ Rainfall=1.25"

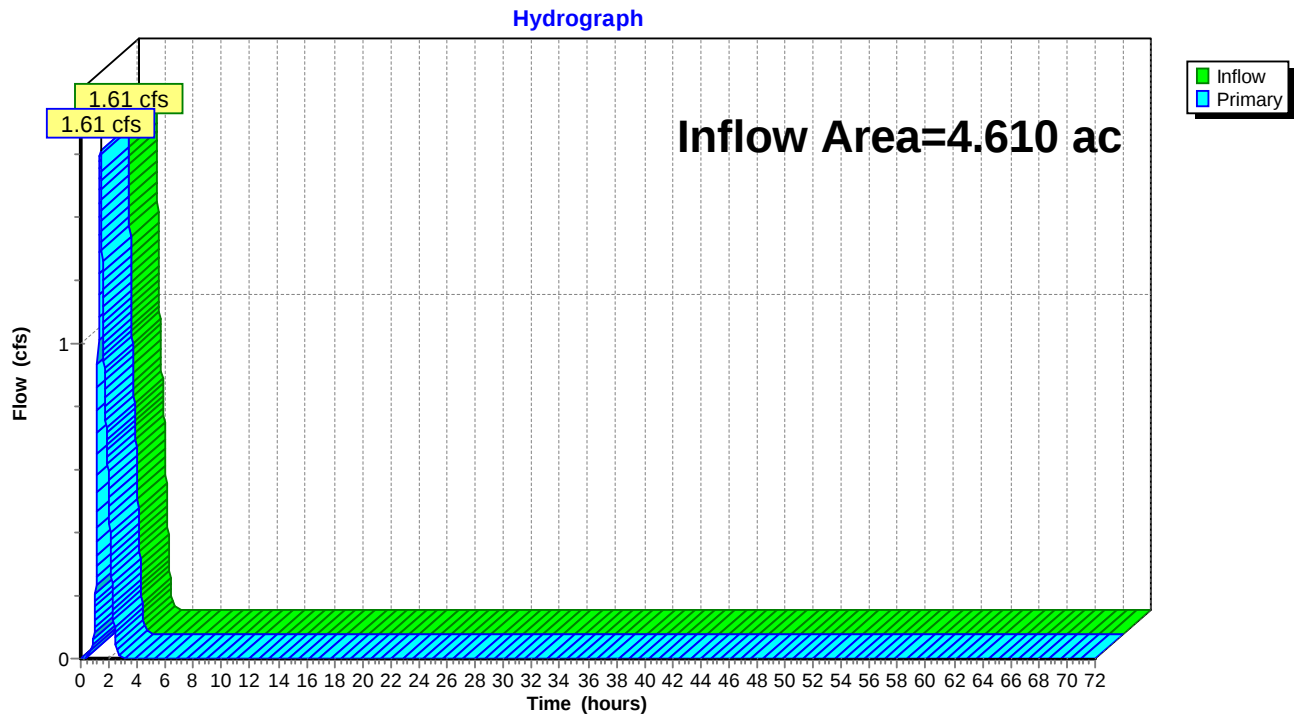
Printed 11/15/2023

Summary for Pond 1P: DP-1 OFFSITE

Inflow Area = 4.610 ac, 6.51% Impervious, Inflow Depth = 0.22" for WQ event
Inflow = 1.61 cfs @ 1.36 hrs, Volume= 0.086 af
Primary = 1.61 cfs @ 1.36 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 1P: DP-1 OFFSITE



Pre-Development

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NJ DEP 2-hr WQ Rainfall=1.25"

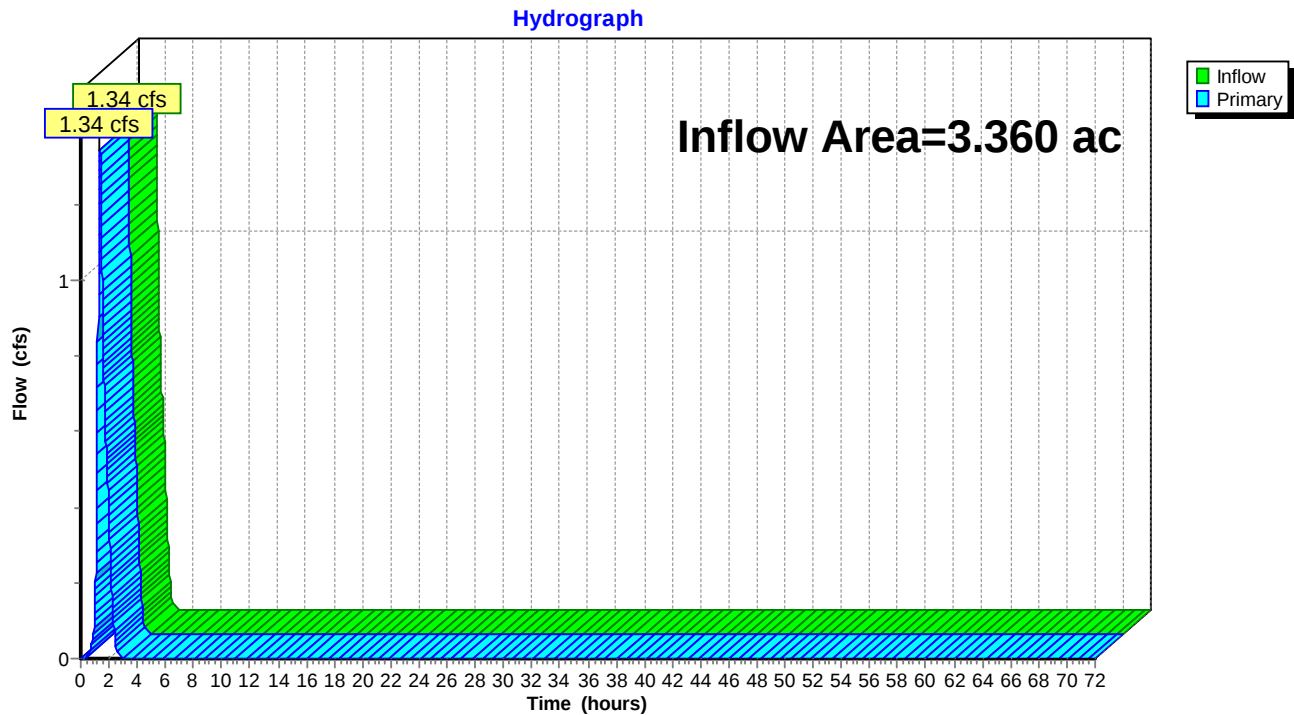
Printed 11/15/2023

Summary for Pond 4P: EA-1 Disturbed

Inflow Area = 3.360 ac, 8.93% Impervious, Inflow Depth = 0.25" for WQ event
Inflow = 1.34 cfs @ 1.34 hrs, Volume= 0.070 af
Primary = 1.34 cfs @ 1.34 hrs, Volume= 0.070 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 4P: EA-1 Disturbed



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NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Subcatchment EA-1D i: EA-1D Impervious

Runoff = 0.68 cfs @ 12.30 hrs, Volume= 0.077 af, Depth= 3.08"

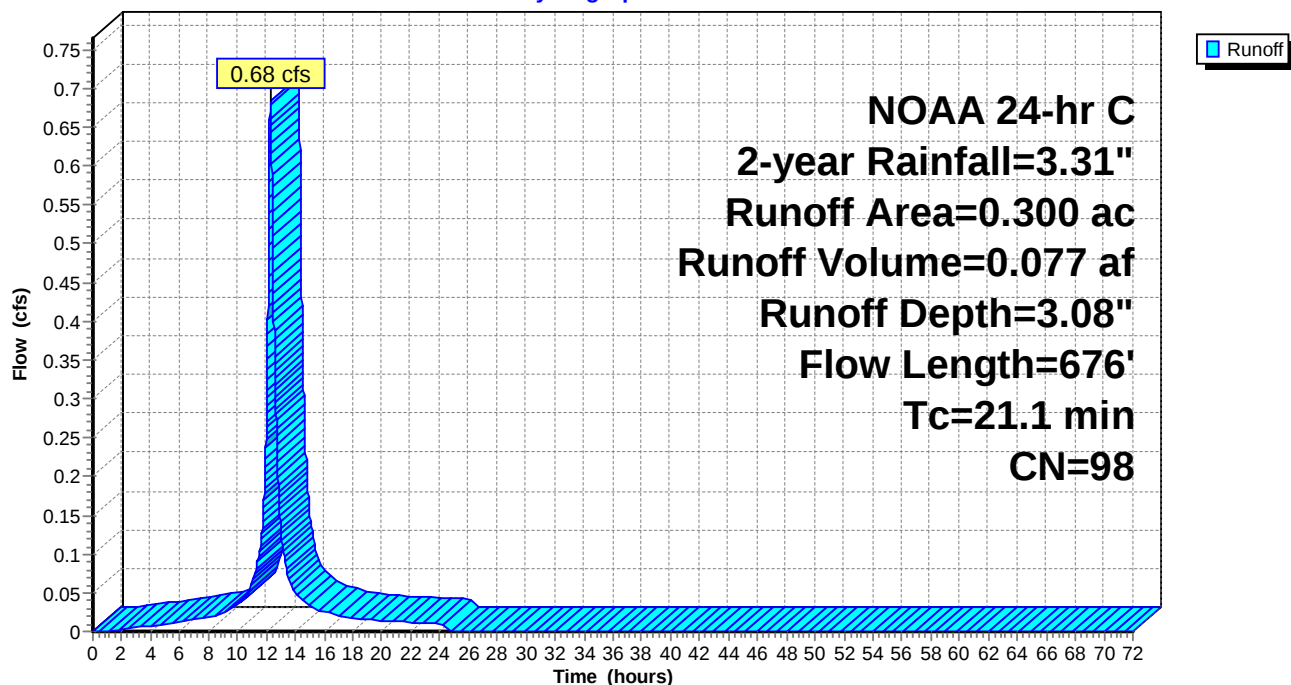
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
* 0.300	98	Impervious, HSG D
0.300		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	72	0.0116	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
2.6	324	0.0162	2.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	11	0.0082	1.84		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	86	0.0263	2.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
8.7	183	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	676	Total			

Subcatchment EA-1D i: EA-1D Impervious

Hydrograph



Pre-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Subcatchment EA-1D p: EA-1D Pervious

Runoff = 3.74 cfs @ 12.31 hrs, Volume= 0.379 af, Depth= 1.49"

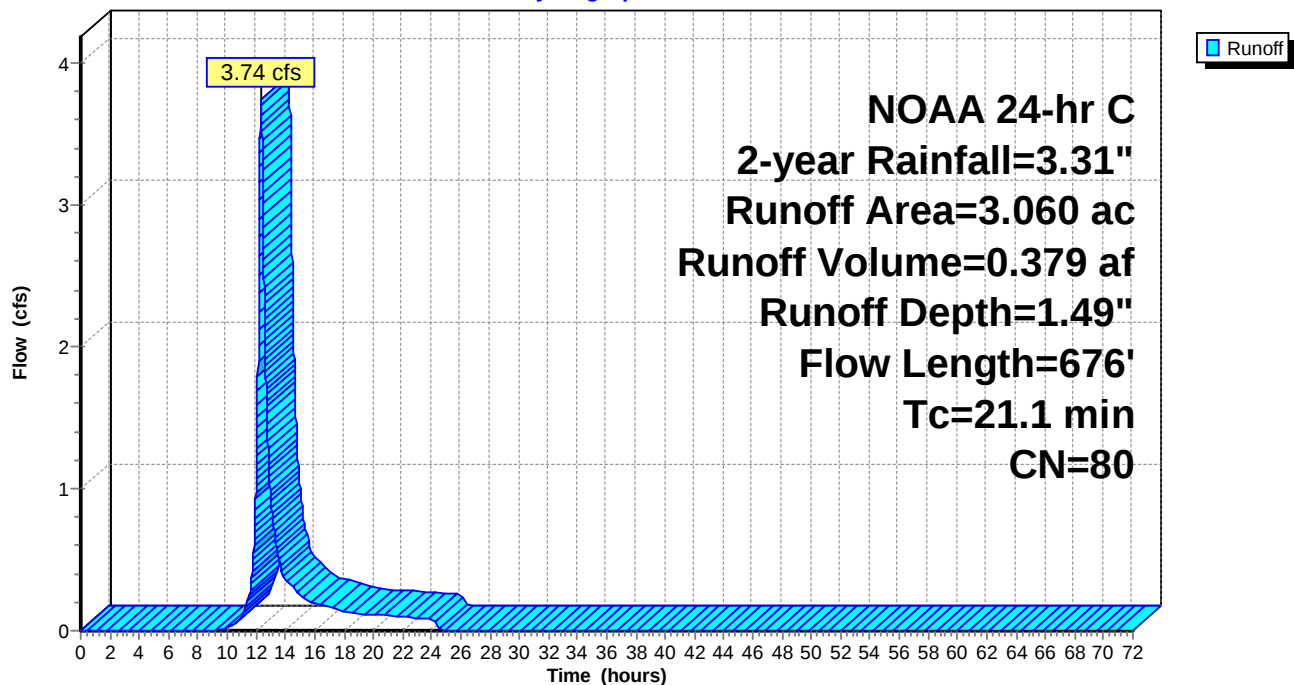
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
2.950	80	>75% Grass cover, Good, HSG D
0.110	79	Woods/grass comb., Good, HSG D
3.060	80	Weighted Average
3.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	72	0.0116	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
2.6	324	0.0162	2.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	11	0.0082	1.84		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	86	0.0263	2.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
8.7	183	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	676	Total			

Subcatchment EA-1D p: EA-1D Pervious

Hydrograph



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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/15/2023

Summary for Subcatchment EA-1U p: EA-1U Pervious

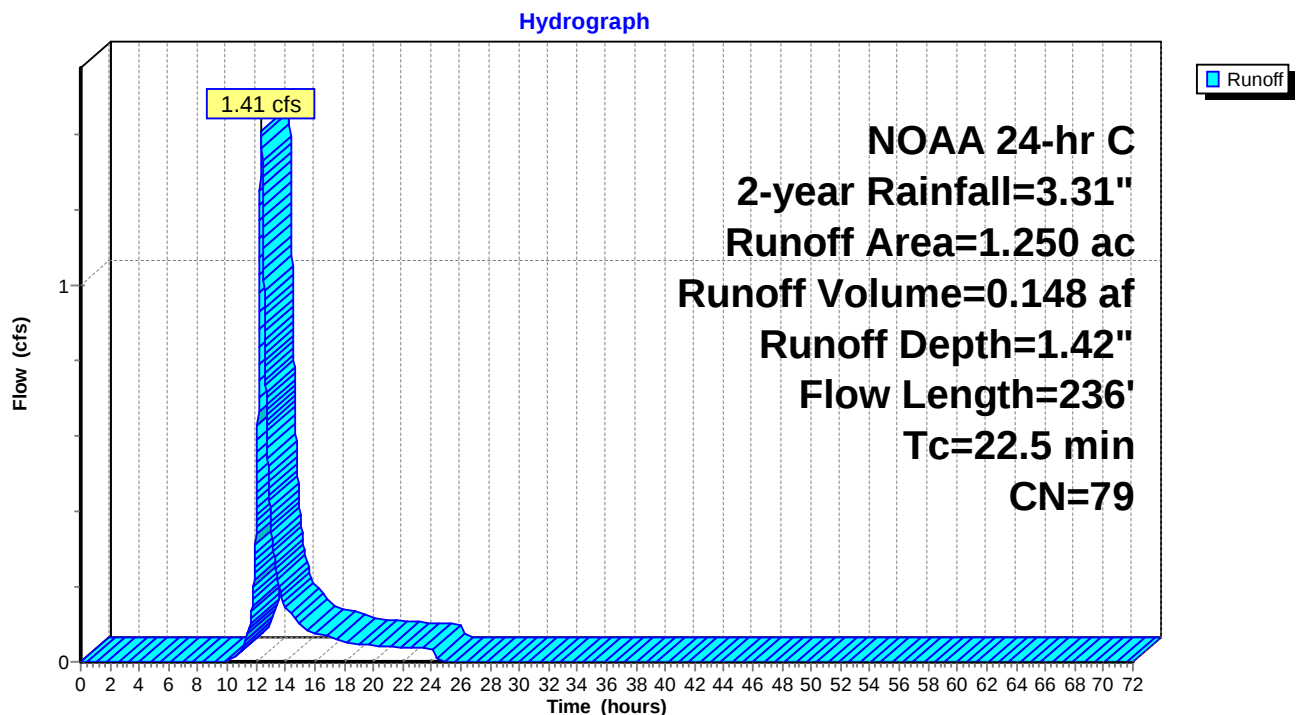
Runoff = 1.41 cfs @ 12.33 hrs, Volume= 0.148 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.460	80	>75% Grass cover, Good, HSG D
0.790	79	Woods/grass comb., Good, HSG D
1.250	79	Weighted Average
1.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	53	0.0263	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.4	18	0.0049	0.03		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
7.9	165	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.5	236	Total			

Subcatchment EA-1U p: EA-1U Pervious



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NOAA 24-hr C 2-year Rainfall=3.31"

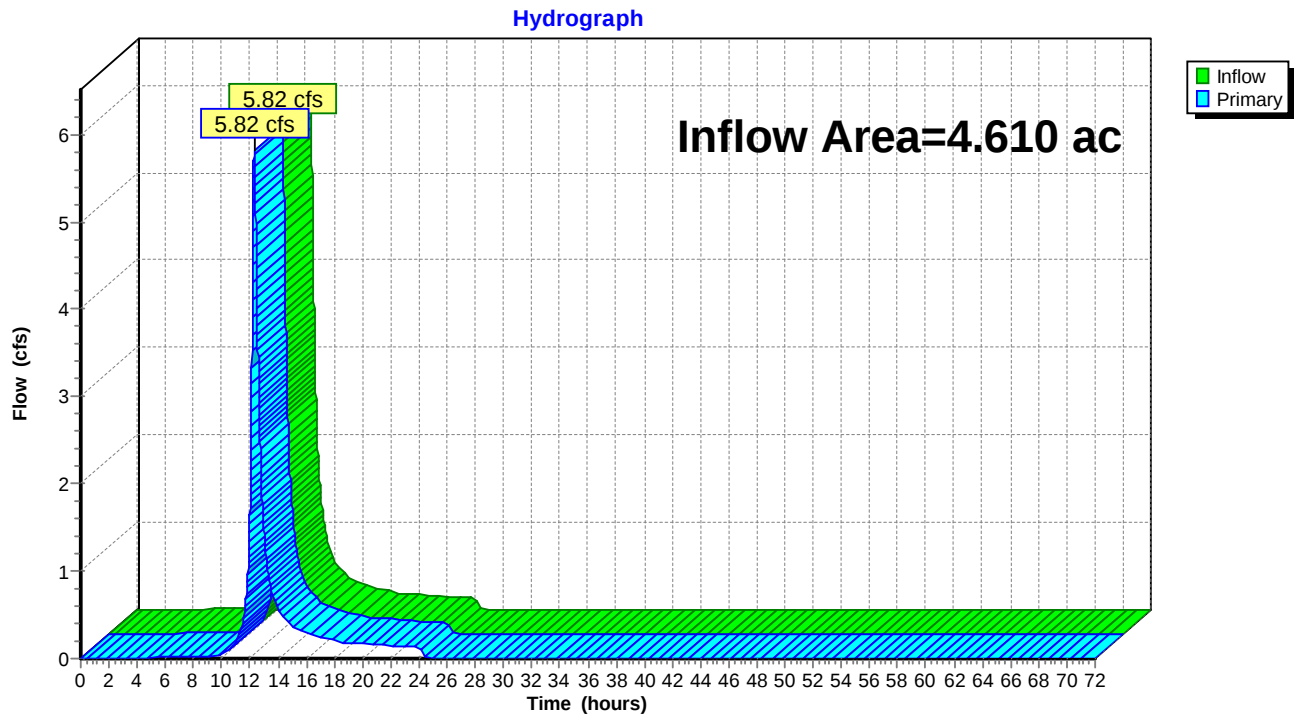
Printed 11/15/2023

Summary for Pond 1P: DP-1 OFFSITE

Inflow Area = 4.610 ac, 6.51% Impervious, Inflow Depth = 1.57" for 2-year event
Inflow = 5.82 cfs @ 12.31 hrs, Volume= 0.604 af
Primary = 5.82 cfs @ 12.31 hrs, Volume= 0.604 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 1P: DP-1 OFFSITE



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NOAA 24-hr C 2-year Rainfall=3.31"

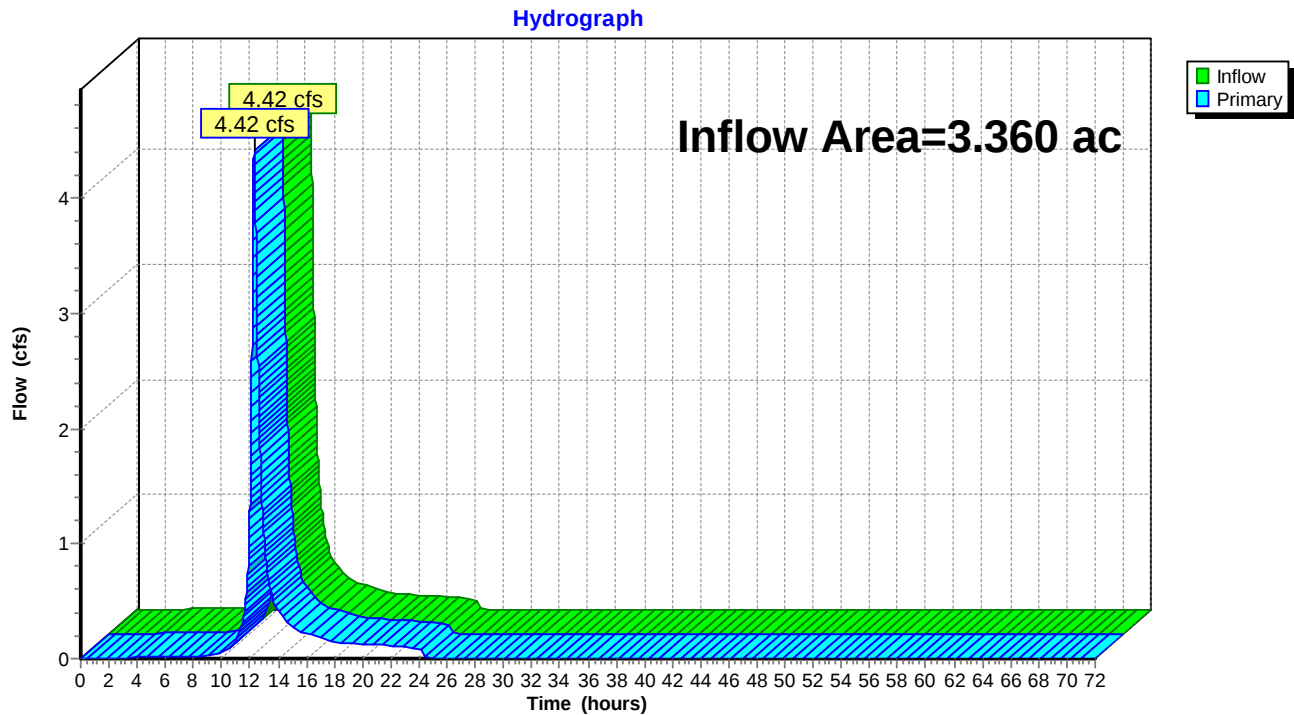
Printed 11/15/2023

Summary for Pond 4P: EA-1 Disturbed

Inflow Area = 3.360 ac, 8.93% Impervious, Inflow Depth = 1.63" for 2-year event
Inflow = 4.42 cfs @ 12.31 hrs, Volume= 0.456 af
Primary = 4.42 cfs @ 12.31 hrs, Volume= 0.456 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 4P: EA-1 Disturbed



Pre-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment EA-1D i: EA-1D Impervious

Runoff = 1.03 cfs @ 12.30 hrs, Volume= 0.118 af, Depth= 4.73"

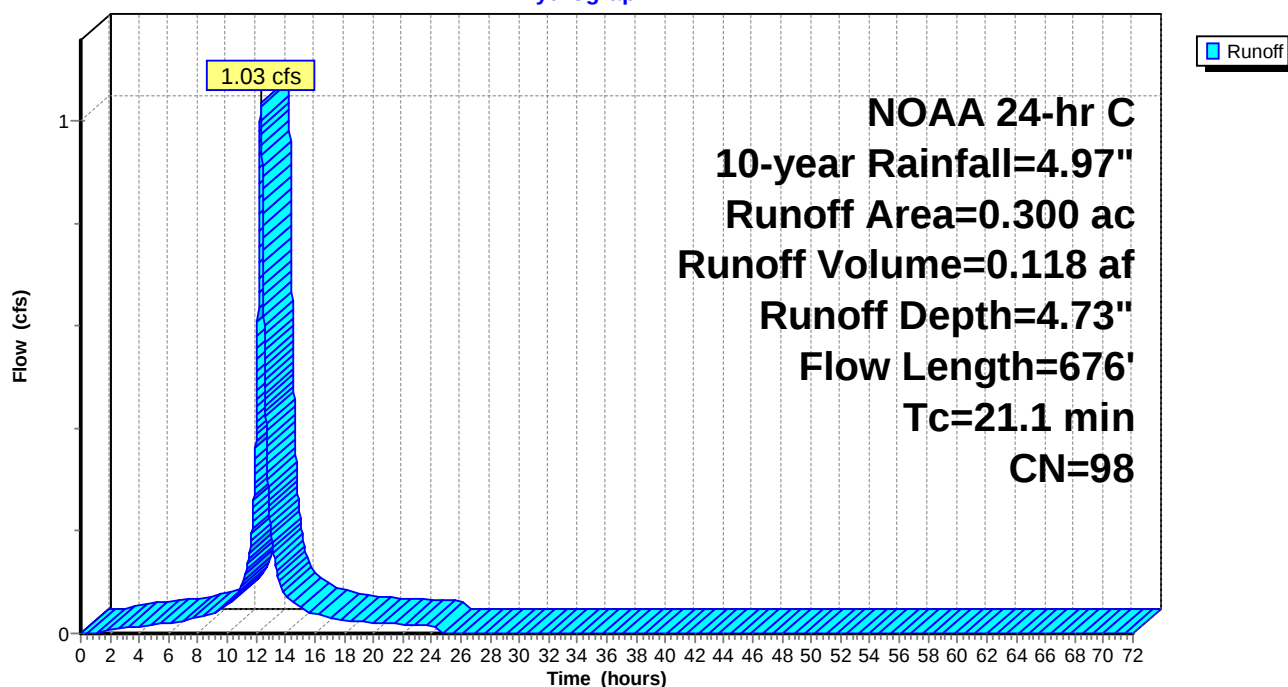
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
* 0.300	98	Impervious, HSG D
0.300		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	72	0.0116	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
2.6	324	0.0162	2.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	11	0.0082	1.84		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	86	0.0263	2.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
8.7	183	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	676	Total			

Subcatchment EA-1D i: EA-1D Impervious

Hydrograph



Pre-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment EA-1D p: EA-1D Pervious

Runoff = 7.26 cfs @ 12.31 hrs, Volume= 0.731 af, Depth= 2.87"

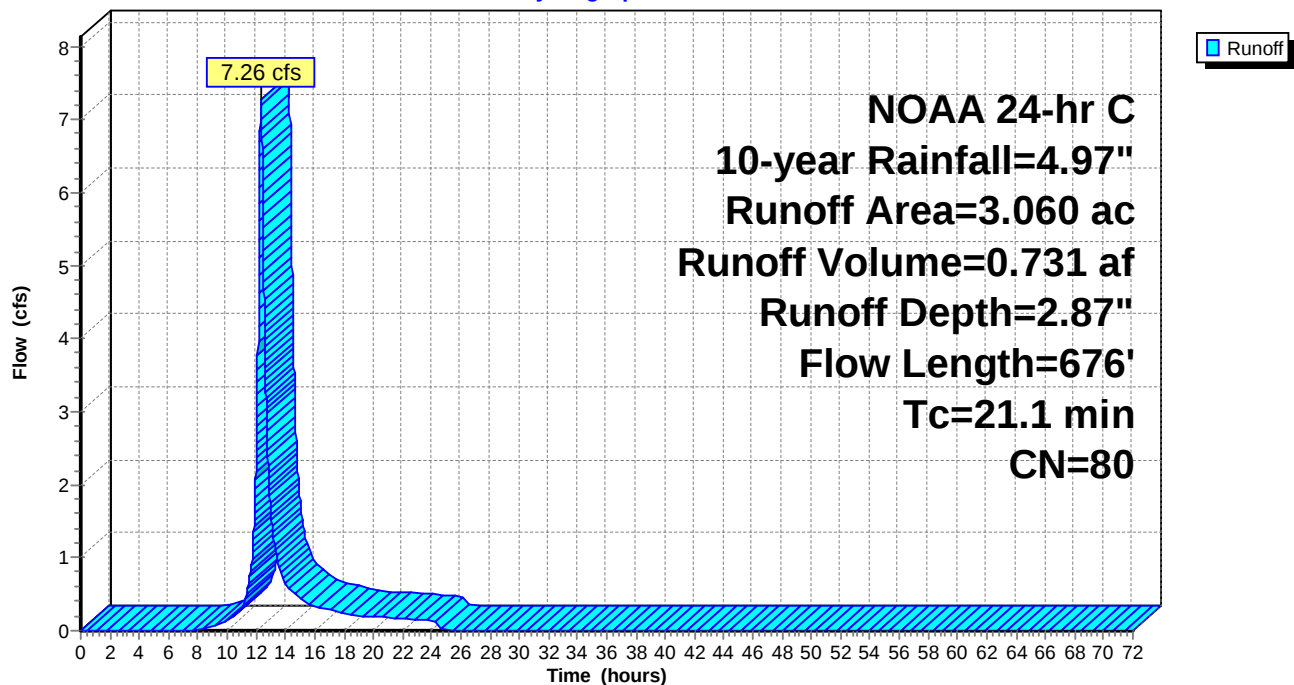
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
2.950	80	>75% Grass cover, Good, HSG D
0.110	79	Woods/grass comb., Good, HSG D
3.060	80	Weighted Average
3.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	72	0.0116	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
2.6	324	0.0162	2.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	11	0.0082	1.84		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	86	0.0263	2.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
8.7	183	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	676	Total			

Subcatchment EA-1D p: EA-1D Pervious

Hydrograph



Pre-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment EA-1U p: EA-1U Pervious

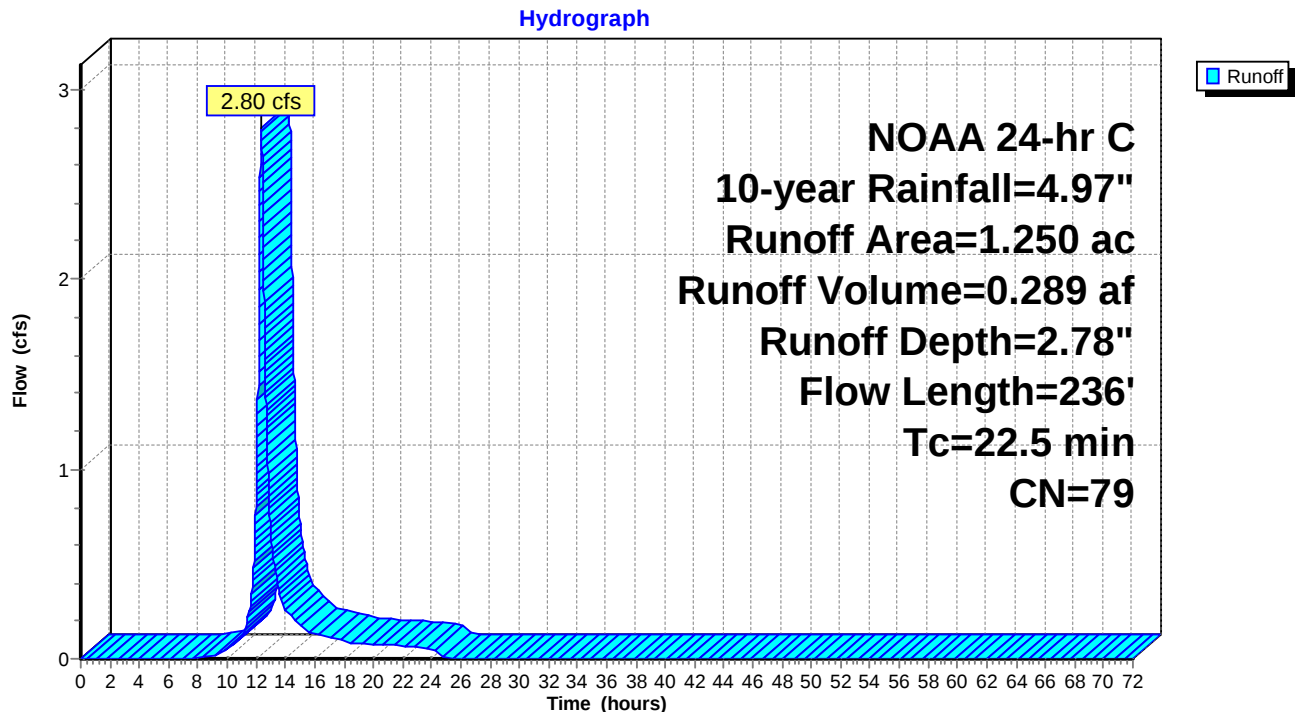
Runoff = 2.80 cfs @ 12.32 hrs, Volume= 0.289 af, Depth= 2.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.460	80	>75% Grass cover, Good, HSG D
0.790	79	Woods/grass comb., Good, HSG D
1.250	79	Weighted Average
1.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	53	0.0263	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.4	18	0.0049	0.03		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
7.9	165	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.5	236	Total			

Subcatchment EA-1U p: EA-1U Pervious



Pre-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

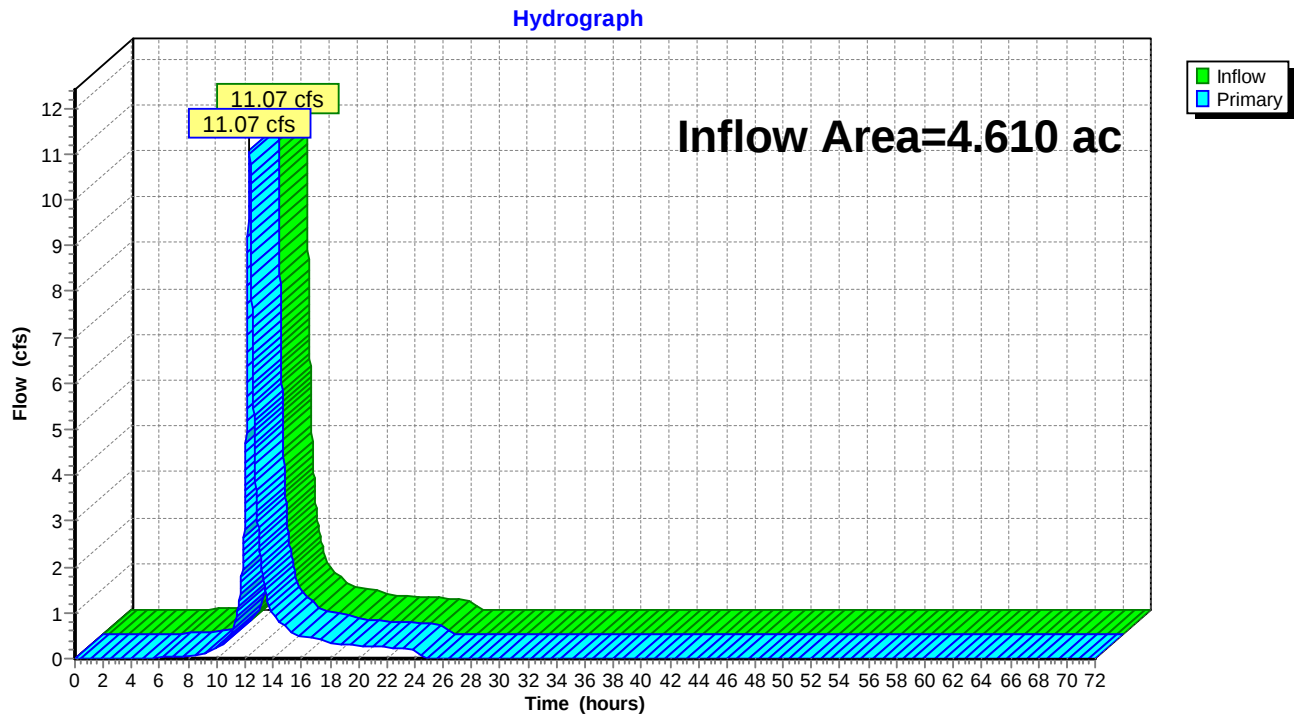
Printed 11/15/2023

Summary for Pond 1P: DP-1 OFFSITE

Inflow Area = 4.610 ac, 6.51% Impervious, Inflow Depth = 2.96" for 10-year event
Inflow = 11.07 cfs @ 12.31 hrs, Volume= 1.138 af
Primary = 11.07 cfs @ 12.31 hrs, Volume= 1.138 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 1P: DP-1 OFFSITE



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NOAA 24-hr C 10-year Rainfall=4.97"

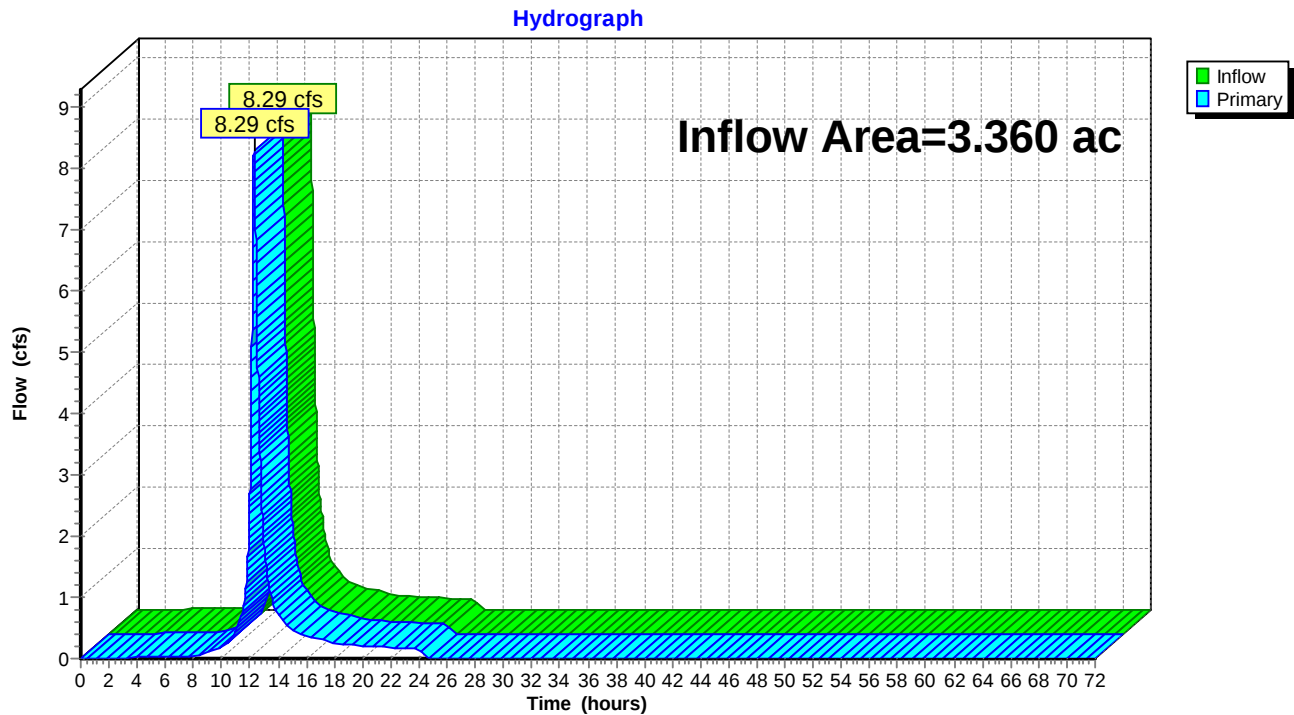
Printed 11/15/2023

Summary for Pond 4P: EA-1 Disturbed

Inflow Area = 3.360 ac, 8.93% Impervious, Inflow Depth = 3.03" for 10-year event
Inflow = 8.29 cfs @ 12.31 hrs, Volume= 0.849 af
Primary = 8.29 cfs @ 12.31 hrs, Volume= 0.849 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 4P: EA-1 Disturbed



Pre-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment EA-1D i: EA-1D Impervious

Runoff = 1.70 cfs @ 12.30 hrs, Volume= 0.198 af, Depth= 7.91"

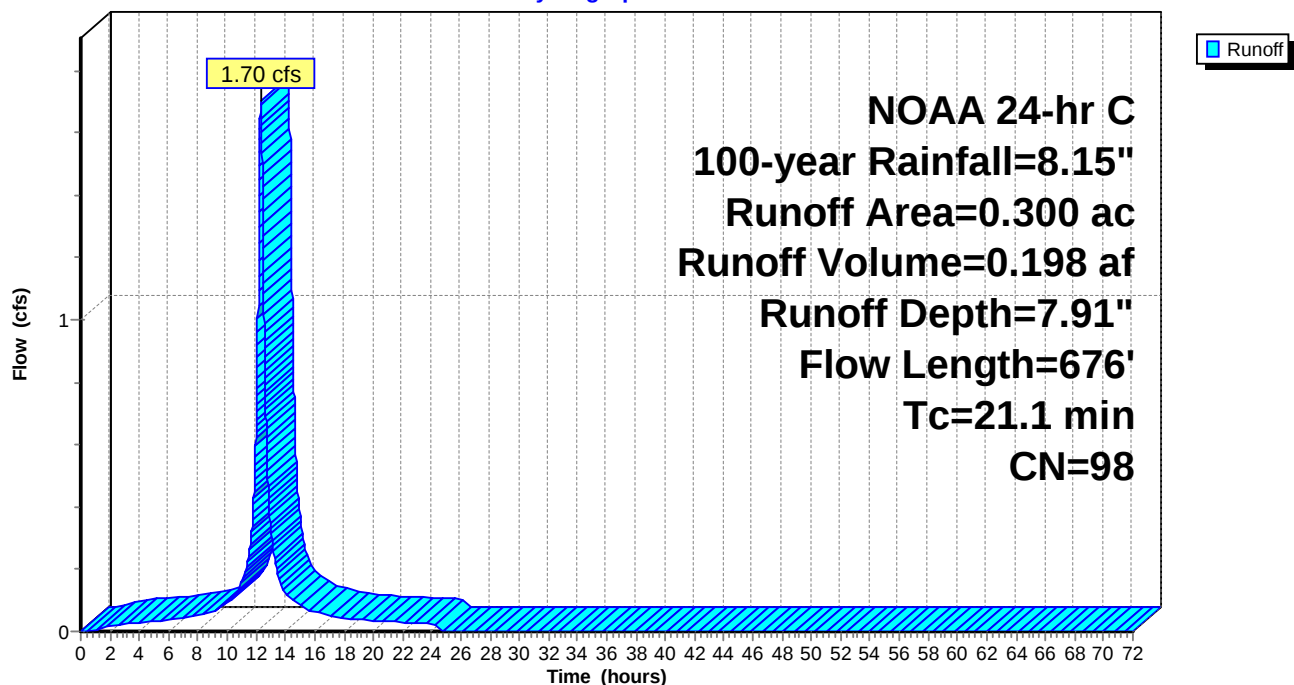
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
* 0.300	98	Impervious, HSG D
0.300		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	72	0.0116	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
2.6	324	0.0162	2.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	11	0.0082	1.84		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	86	0.0263	2.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
8.7	183	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	676	Total			

Subcatchment EA-1D i: EA-1D Impervious

Hydrograph



Pre-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/15/2023

Summary for Subcatchment EA-1D p: EA-1D Pervious

Runoff = 14.37 cfs @ 12.31 hrs, Volume= 1.470 af, Depth= 5.77"

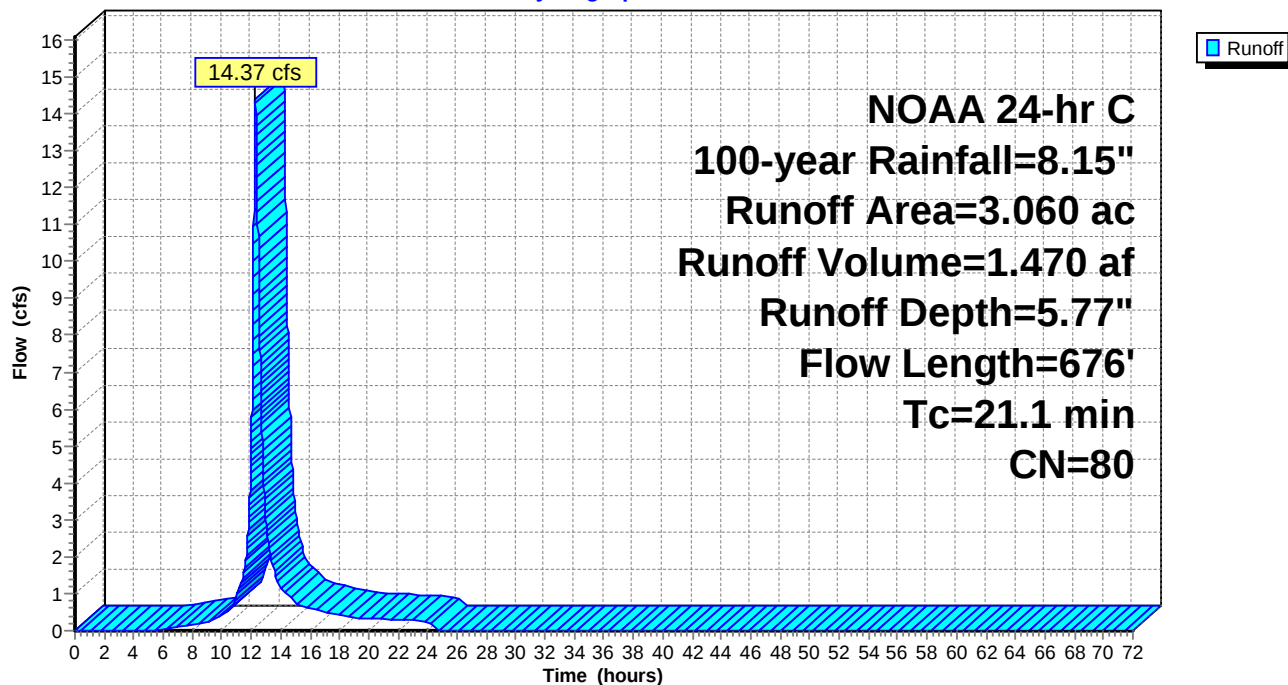
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
2.950	80	>75% Grass cover, Good, HSG D
0.110	79	Woods/grass comb., Good, HSG D
3.060	80	Weighted Average
3.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	72	0.0116	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
2.6	324	0.0162	2.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	11	0.0082	1.84		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	86	0.0263	2.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
8.7	183	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	676	Total			

Subcatchment EA-1D p: EA-1D Pervious

Hydrograph



Pre-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment EA-1U p: EA-1U Pervious

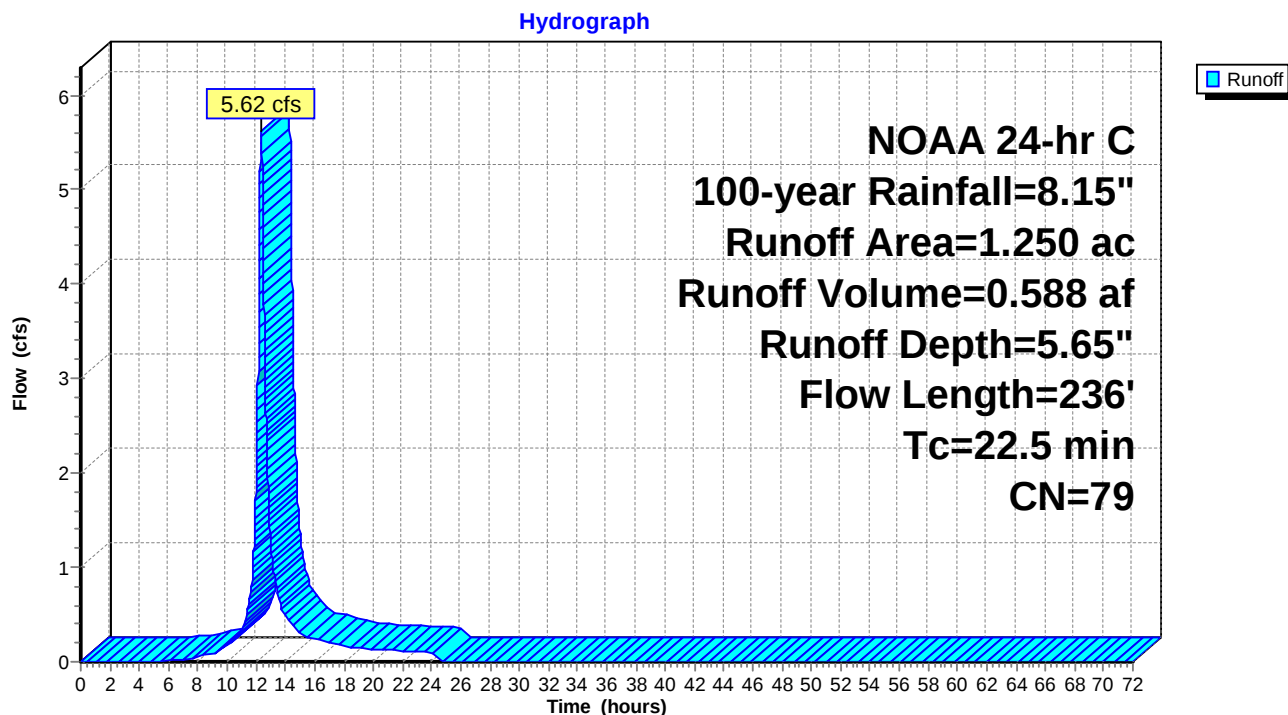
Runoff = 5.62 cfs @ 12.32 hrs, Volume= 0.588 af, Depth= 5.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.460	80	>75% Grass cover, Good, HSG D
0.790	79	Woods/grass comb., Good, HSG D
1.250	79	Weighted Average
1.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	53	0.0263	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.4	18	0.0049	0.03		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
7.9	165	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.5	236	Total			

Subcatchment EA-1U p: EA-1U Pervious



Pre-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

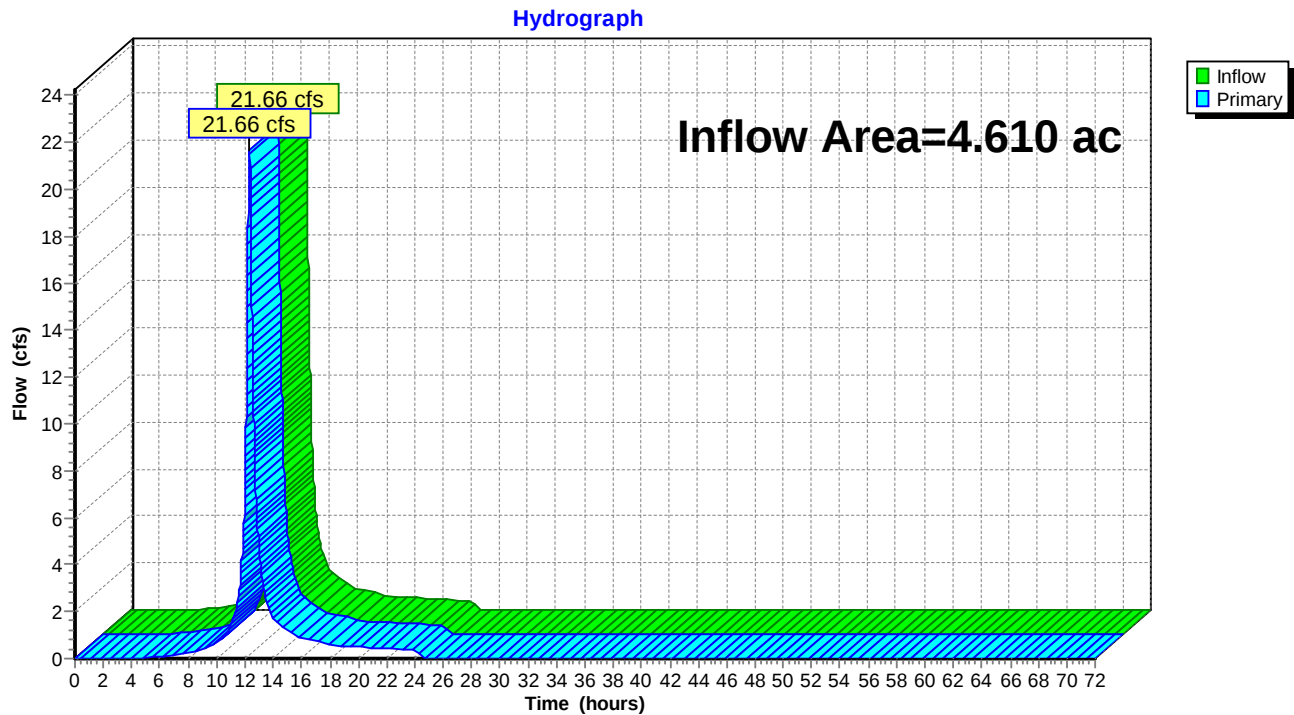
Printed 11/15/2023

Summary for Pond 1P: DP-1 OFFSITE

Inflow Area = 4.610 ac, 6.51% Impervious, Inflow Depth = 5.87" for 100-year event
Inflow = 21.66 cfs @ 12.31 hrs, Volume= 2.256 af
Primary = 21.66 cfs @ 12.31 hrs, Volume= 2.256 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 1P: DP-1 OFFSITE



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NOAA 24-hr C 100-year Rainfall=8.15"

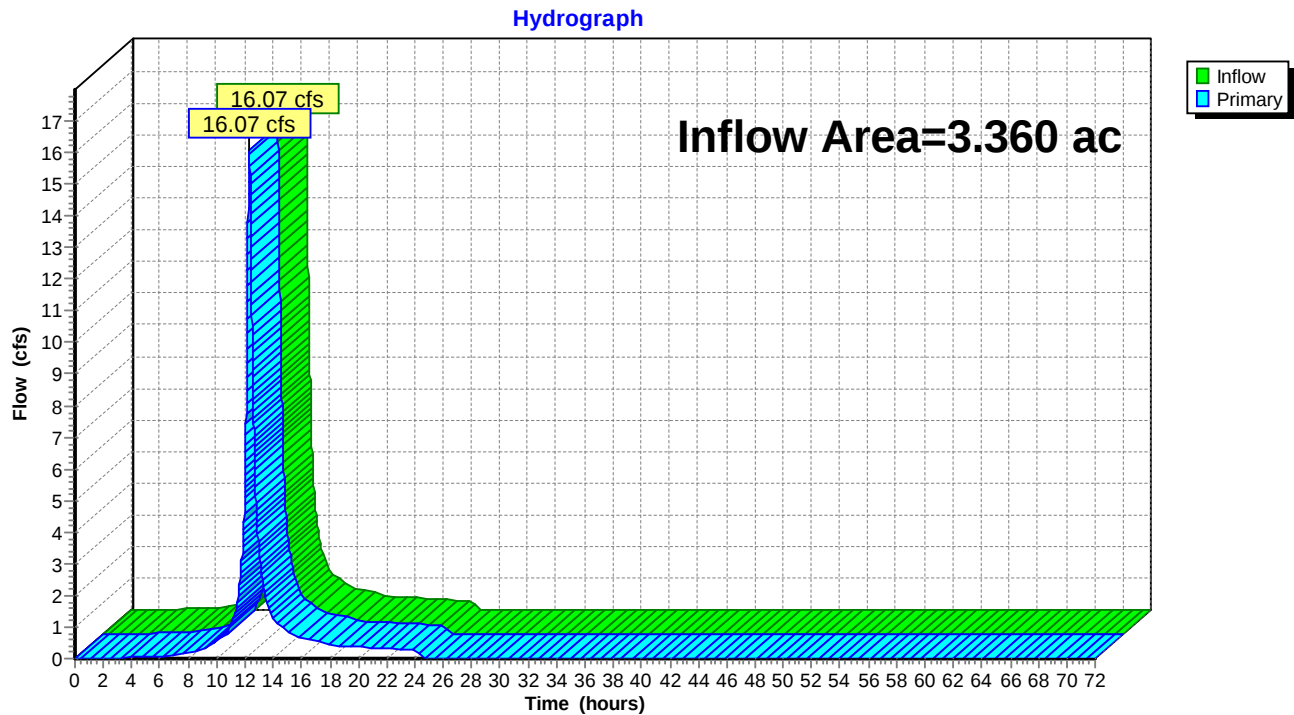
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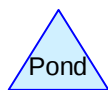
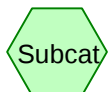
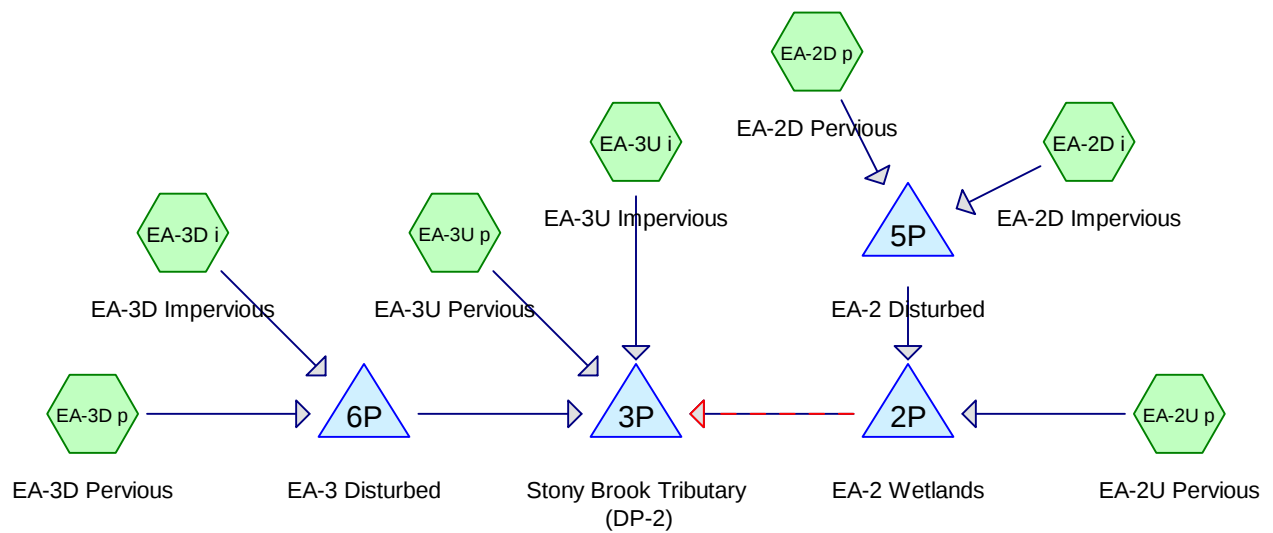
Summary for Pond 4P: EA-1 Disturbed

Inflow Area = 3.360 ac, 8.93% Impervious, Inflow Depth = 5.96" for 100-year event
Inflow = 16.07 cfs @ 12.31 hrs, Volume= 1.668 af
Primary = 16.07 cfs @ 12.31 hrs, Volume= 1.668 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 4P: EA-1 Disturbed





Routing Diagram for Pre-Development

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/15/2023

Summary for Subcatchment EA-2D i: EA-2D Impervious

Runoff = 0.22 cfs @ 1.25 hrs, Volume= 0.009 af, Depth= 1.03"

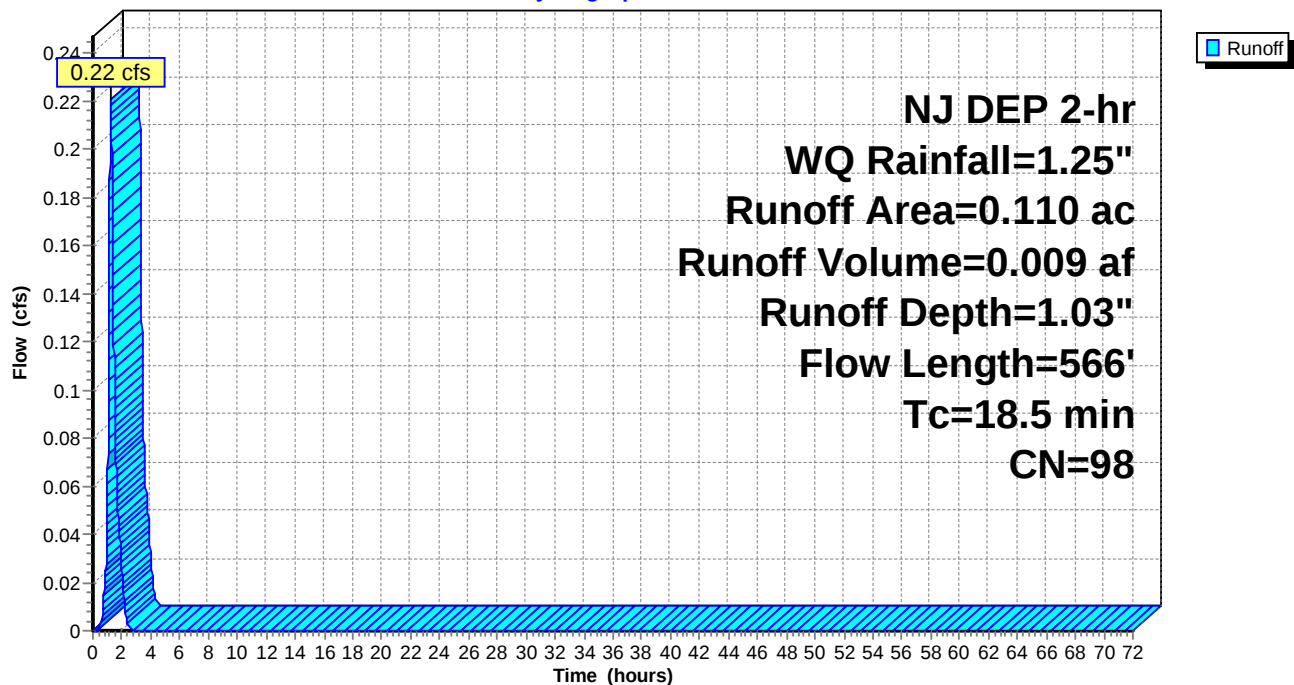
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
* 0.110	98	Impervious Areas
0.110		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	23	0.0413	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.3	31	0.0149	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
2.1	70	0.0129	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	149	0.0105	1.65		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.4	120	0.0083	1.47		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.0	173	0.0081	1.45		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.5	566	Total			

Subcatchment EA-2D i: EA-2D Impervious

Hydrograph



Pre-Development

Prepared by {enter your company name here}

NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment EA-2D p: EA-2D Pervious

Runoff = 0.46 cfs @ 1.34 hrs, Volume= 0.023 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
1.330	80	>75% Grass cover, Good, HSG D
0.230	79	Woods/grass comb., Good, HSG D
1.560	80	Weighted Average
1.560		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	23	0.0413	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.3	31	0.0149	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
2.1	70	0.0129	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	149	0.0105	1.65		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.4	120	0.0083	1.47		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.0	173	0.0081	1.45		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.5	566	Total			

Pre-Development

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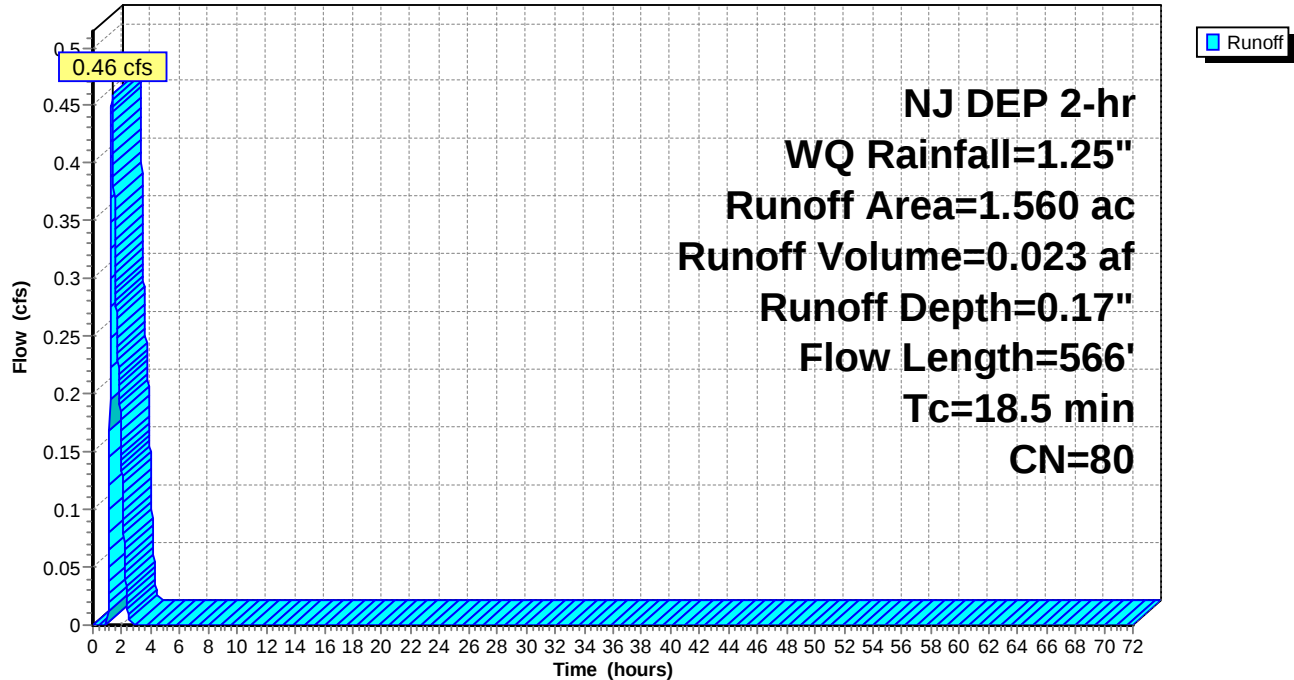
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NJ DEP 2-hr WQ Rainfall=1.25"

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Subcatchment EA-2D p: EA-2D Pervious

Hydrograph



Pre-Development

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NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment EA-2U p: EA-2U Pervious

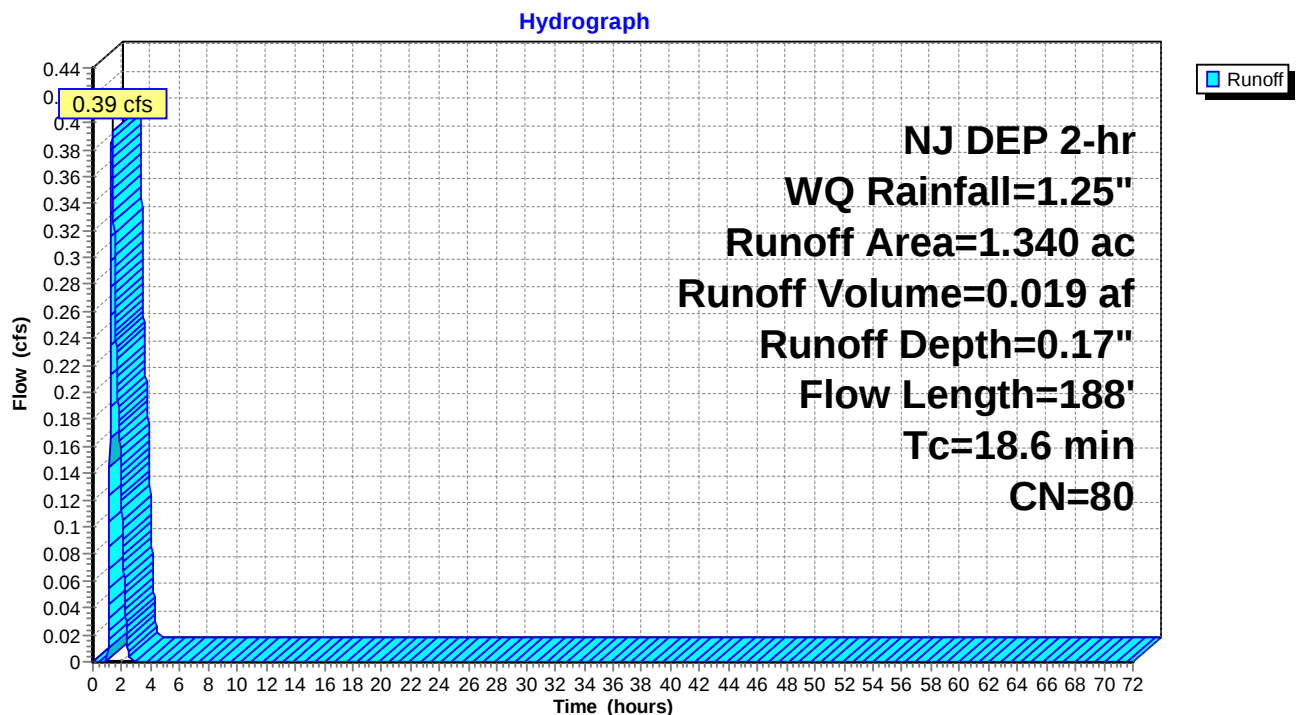
Runoff = 0.39 cfs @ 1.34 hrs, Volume= 0.019 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.750	80	>75% Grass cover, Good, HSG D
0.590	79	Woods/grass comb., Good, HSG D
1.340	80	Weighted Average
1.340		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	44	0.0303	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
8.9	113	0.0018	0.21		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.4	31	0.0065	1.30		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.6	188	Total			

Subcatchment EA-2U p: EA-2U Pervious



Pre-Development

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NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment EA-3D i: EA-3D Impervious

Runoff = 0.19 cfs @ 1.18 hrs, Volume= 0.007 af, Depth= 1.03"

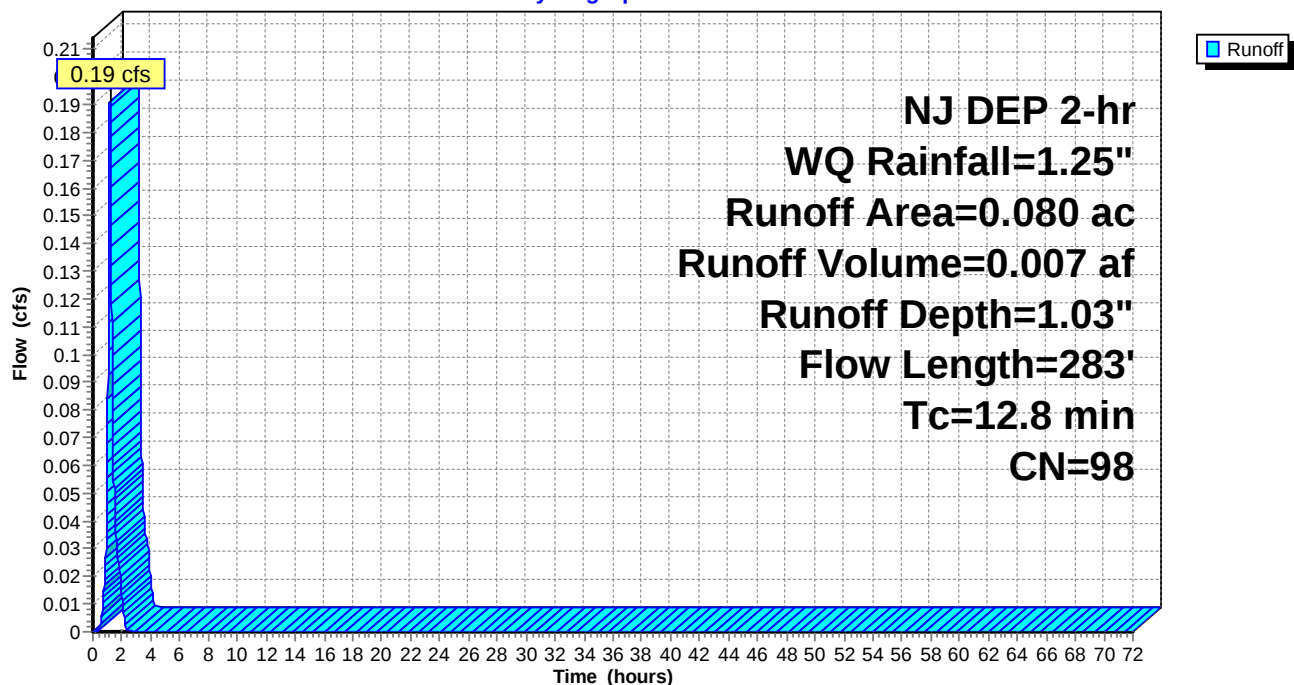
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
* 0.080	98	Impervious Areas
0.080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	85	0.0162	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
0.4	55	0.0181	2.17		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	134	0.0213	0.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.8	283	Total			

Subcatchment EA-3D i: EA-3D Impervious

Hydrograph



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NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment EA-3D p: EA-3D Pervious

Runoff = 0.07 cfs @ 1.25 hrs, Volume= 0.003 af, Depth= 0.17"

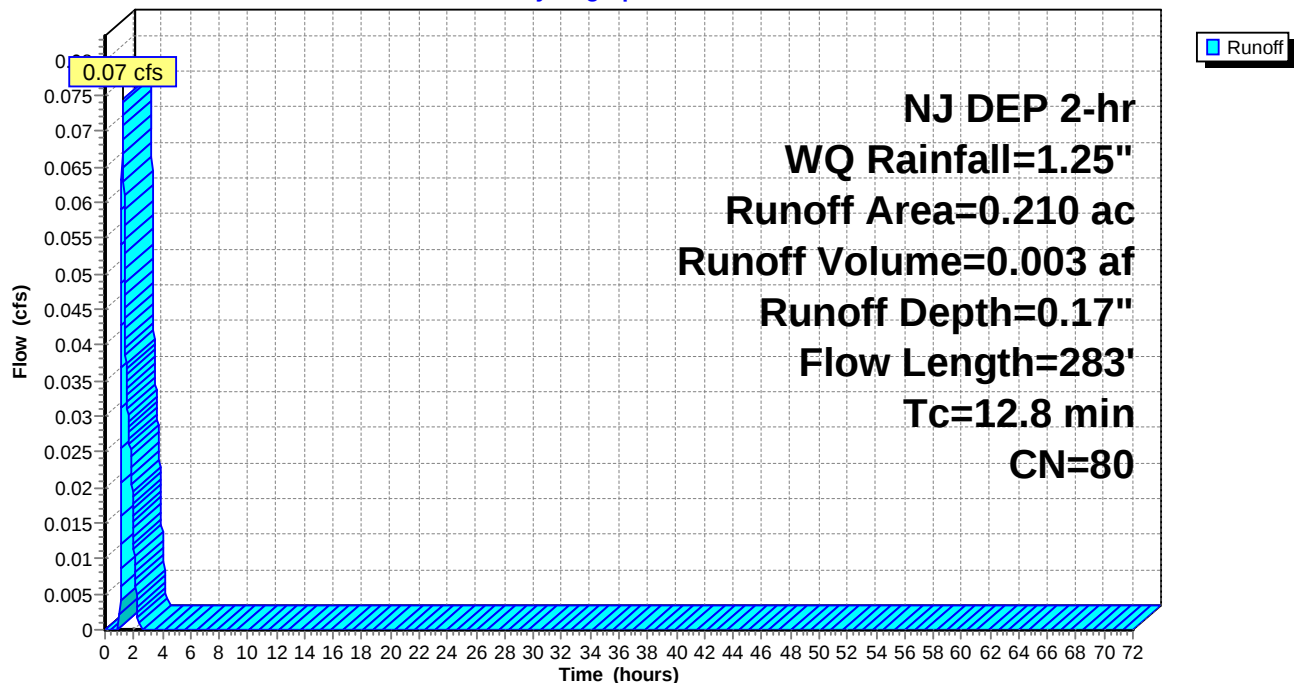
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.210	80	>75% Grass cover, Good, HSG D
0.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	85	0.0162	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
0.4	55	0.0181	2.17		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	134	0.0213	0.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.8	283	Total			

Subcatchment EA-3D p: EA-3D Pervious

Hydrograph



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NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment EA-3U i: EA-3U Impervious

Runoff = 0.12 cfs @ 1.19 hrs, Volume= 0.004 af, Depth= 1.03"

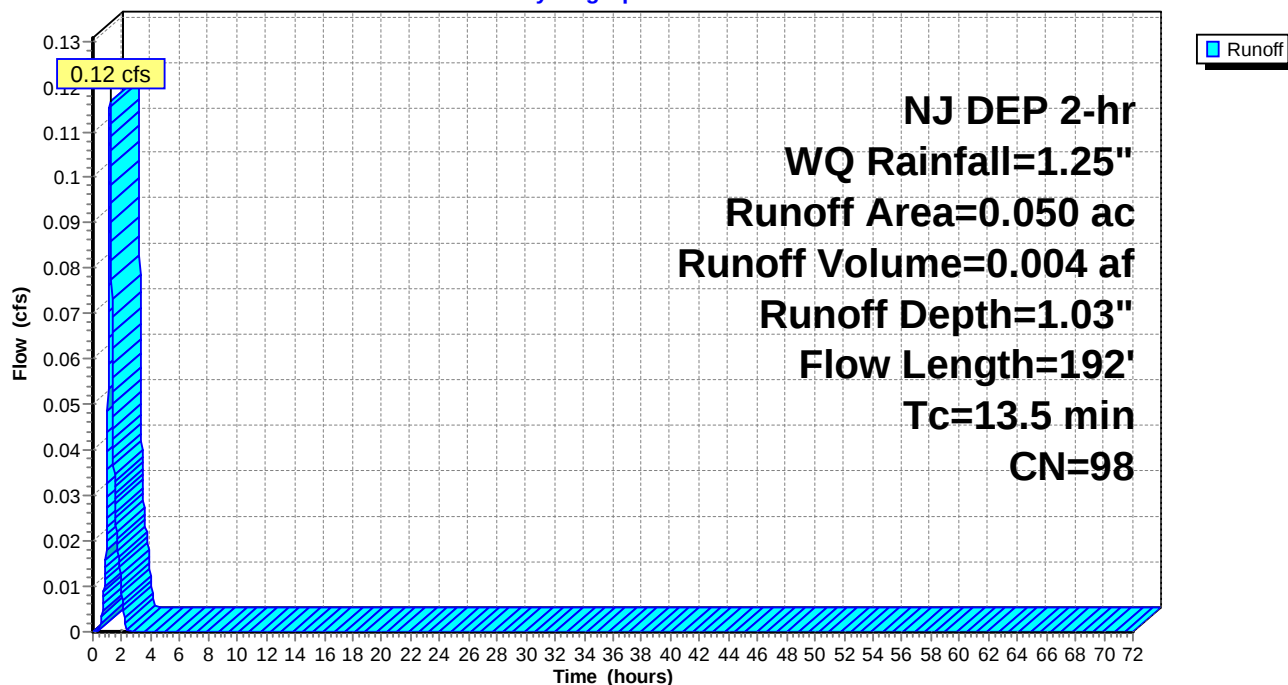
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
* 0.050	98	Impervious Areas
0.050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	6	0.0193	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.5	192	Total			

Subcatchment EA-3U i: EA-3U Impervious

Hydrograph



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NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment EA-3U p: EA-3U Pervious

Runoff = 0.38 cfs @ 1.27 hrs, Volume= 0.016 af, Depth= 0.15"

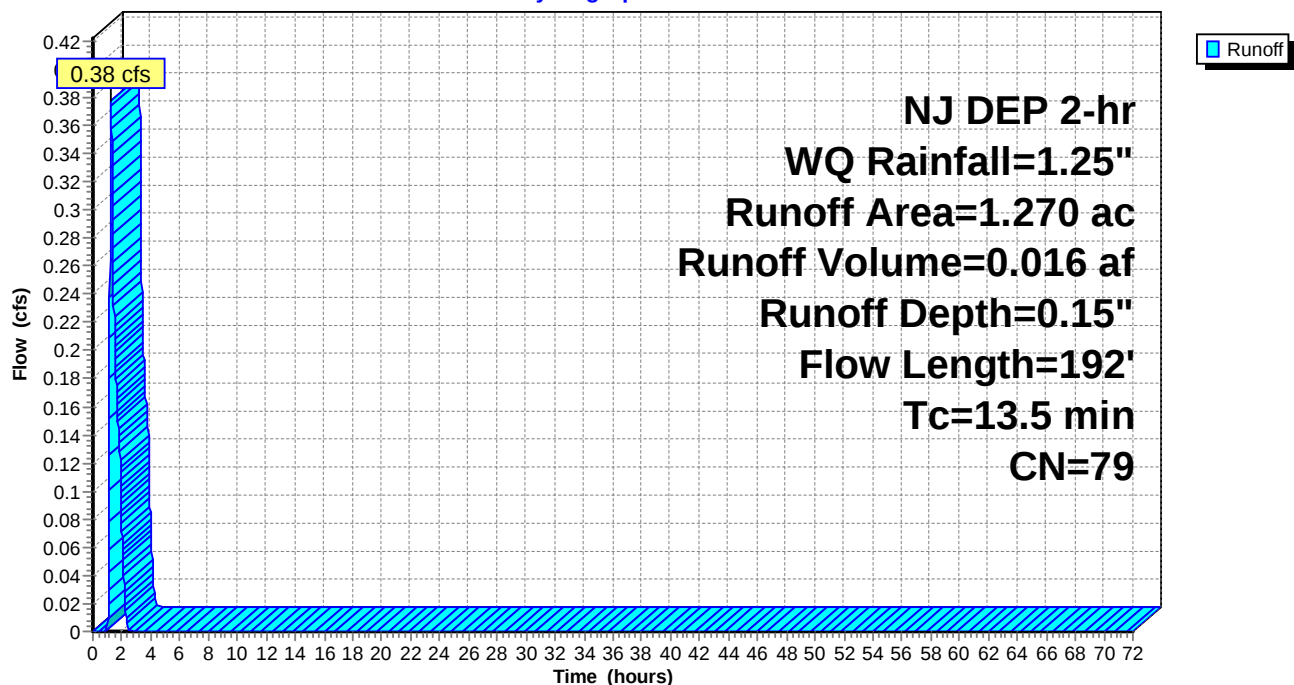
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.450	80	>75% Grass cover, Good, HSG D
0.820	79	Woods/grass comb., Good, HSG D
1.270	79	Weighted Average
1.270		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	6	0.0193	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.5	192	Total			

Subcatchment EA-3U p: EA-3U Pervious

Hydrograph



Pre-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Pond 2P: EA-2 Wetlands

Inflow Area = 3.010 ac, 3.65% Impervious, Inflow Depth = 0.20" for WQ event
Inflow = 1.04 cfs @ 1.33 hrs, Volume= 0.051 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
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 202.97' @ 3.07 hrs Surf.Area= 14,008 sf Storage= 2,235 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	202.60'	8,536 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.60	467	0	0
202.70	2,559	151	151
202.80	5,796	418	569
202.90	10,670	823	1,392
203.00	15,559	1,311	2,704
203.10	18,857	1,721	4,425
203.20	20,626	1,974	6,399
203.30	22,113	2,137	8,536

Device	Routing	Invert	Outlet Devices
#1	Primary	202.97'	179.4 deg x 11.0' long x 0.33' rise Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)
#2	Secondary	203.01'	65.0' 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=202.60' (Free Discharge)

↑ **1=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=202.60' (Free Discharge)

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

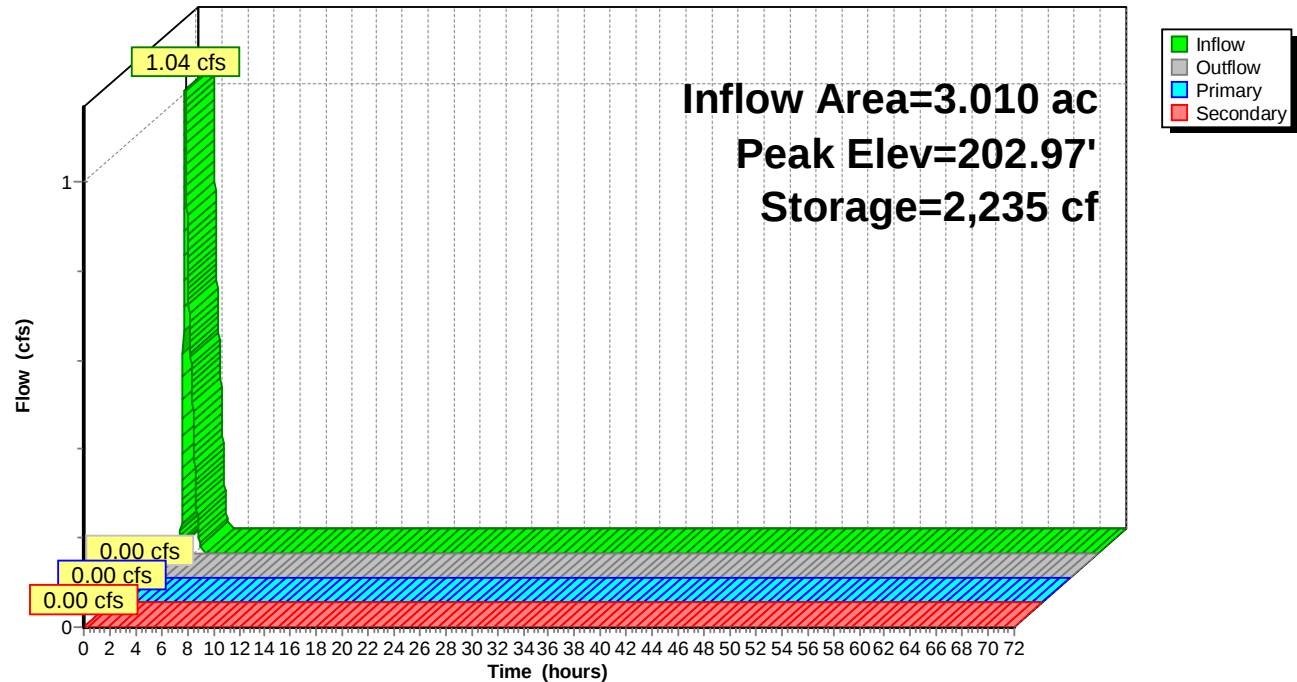
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NJ DEP 2-hr WQ Rainfall=1.25"
Printed 11/15/2023

Pond 2P: EA-2 Wetlands

Hydrograph



Pre-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Hydrograph for Pond 2P: EA-2 Wetlands

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	202.60	0.00	0.00	0.00
2.00	0.27	2,036	202.95	0.00	0.00	0.00
4.00	0.00	2,235	202.97	0.00	0.00	0.00
6.00	0.00	2,235	202.97	0.00	0.00	0.00
8.00	0.00	2,235	202.97	0.00	0.00	0.00
10.00	0.00	2,235	202.97	0.00	0.00	0.00
12.00	0.00	2,235	202.97	0.00	0.00	0.00
14.00	0.00	2,235	202.97	0.00	0.00	0.00
16.00	0.00	2,235	202.97	0.00	0.00	0.00
18.00	0.00	2,235	202.97	0.00	0.00	0.00
20.00	0.00	2,235	202.97	0.00	0.00	0.00
22.00	0.00	2,235	202.97	0.00	0.00	0.00
24.00	0.00	2,235	202.97	0.00	0.00	0.00
26.00	0.00	2,235	202.97	0.00	0.00	0.00
28.00	0.00	2,235	202.97	0.00	0.00	0.00
30.00	0.00	2,235	202.97	0.00	0.00	0.00
32.00	0.00	2,235	202.97	0.00	0.00	0.00
34.00	0.00	2,235	202.97	0.00	0.00	0.00
36.00	0.00	2,235	202.97	0.00	0.00	0.00
38.00	0.00	2,235	202.97	0.00	0.00	0.00
40.00	0.00	2,235	202.97	0.00	0.00	0.00
42.00	0.00	2,235	202.97	0.00	0.00	0.00
44.00	0.00	2,235	202.97	0.00	0.00	0.00
46.00	0.00	2,235	202.97	0.00	0.00	0.00
48.00	0.00	2,235	202.97	0.00	0.00	0.00
50.00	0.00	2,235	202.97	0.00	0.00	0.00
52.00	0.00	2,235	202.97	0.00	0.00	0.00
54.00	0.00	2,235	202.97	0.00	0.00	0.00
56.00	0.00	2,235	202.97	0.00	0.00	0.00
58.00	0.00	2,235	202.97	0.00	0.00	0.00
60.00	0.00	2,235	202.97	0.00	0.00	0.00
62.00	0.00	2,235	202.97	0.00	0.00	0.00
64.00	0.00	2,235	202.97	0.00	0.00	0.00
66.00	0.00	2,235	202.97	0.00	0.00	0.00
68.00	0.00	2,235	202.97	0.00	0.00	0.00
70.00	0.00	2,235	202.97	0.00	0.00	0.00
72.00	0.00	2,235	202.97	0.00	0.00	0.00

Pre-Development

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NJ DEP 2-hr WQ Rainfall=1.25"

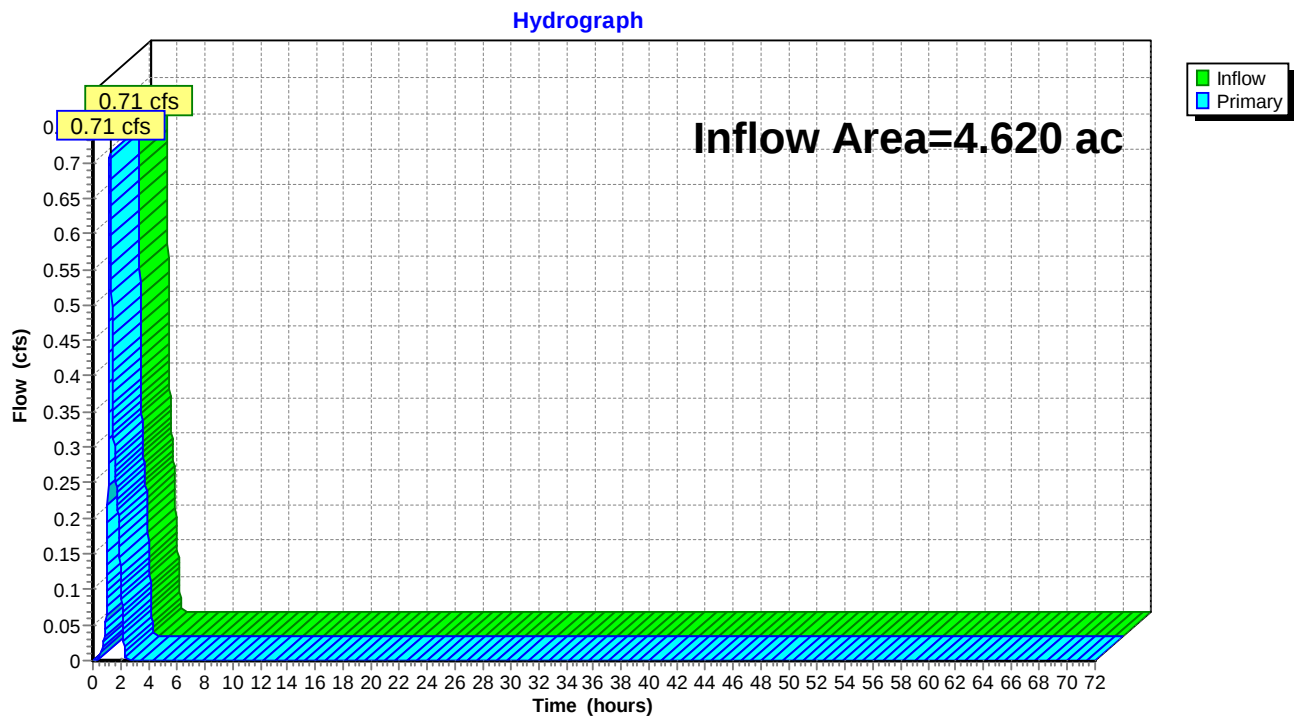
Printed 11/15/2023

Summary for Pond 3P: Stony Brook Tributary (DP-2)

Inflow Area = 4.620 ac, 5.19% Impervious, Inflow Depth = 0.08" for WQ event
Inflow = 0.71 cfs @ 1.24 hrs, Volume= 0.030 af
Primary = 0.71 cfs @ 1.24 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 3P: Stony Brook Tributary (DP-2)



Pre-Development

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NJ DEP 2-hr WQ Rainfall=1.25"

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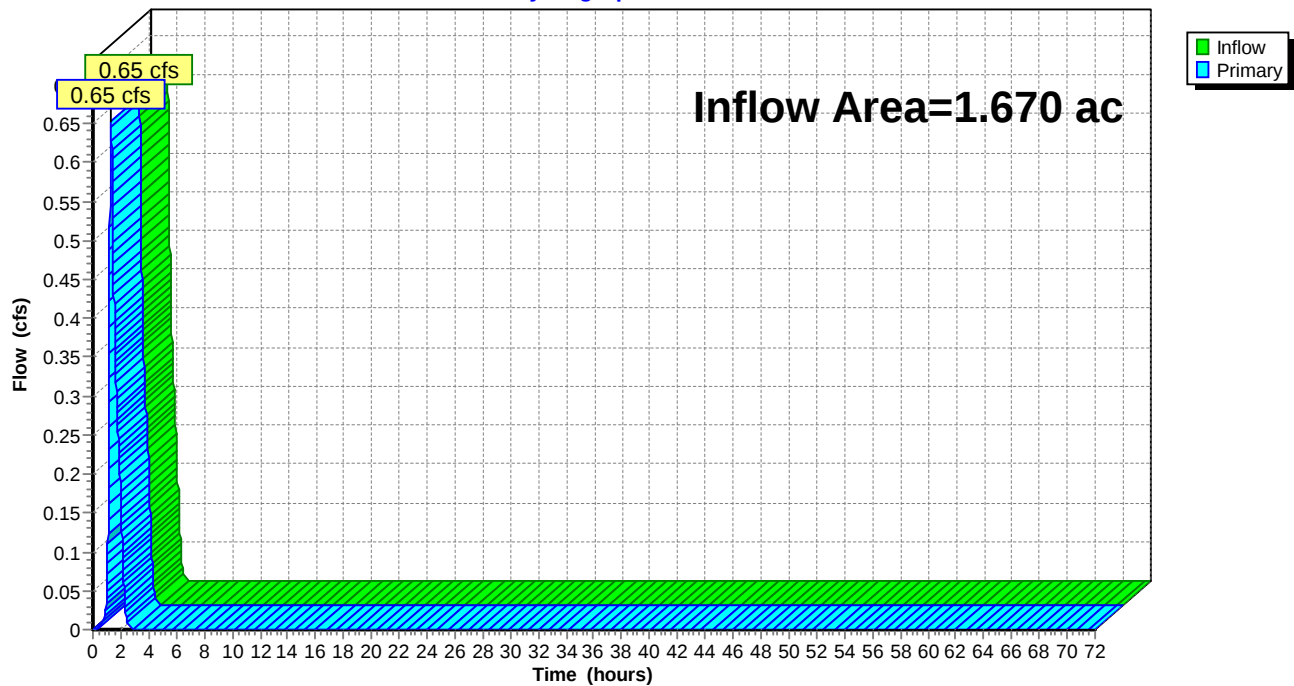
Summary for Pond 5P: EA-2 Disturbed

Inflow Area = 1.670 ac, 6.59% Impervious, Inflow Depth = 0.23" for WQ event
Inflow = 0.65 cfs @ 1.32 hrs, Volume= 0.032 af
Primary = 0.65 cfs @ 1.32 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 5P: EA-2 Disturbed

Hydrograph



Pre-Development

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NJ DEP 2-hr WQ Rainfall=1.25"

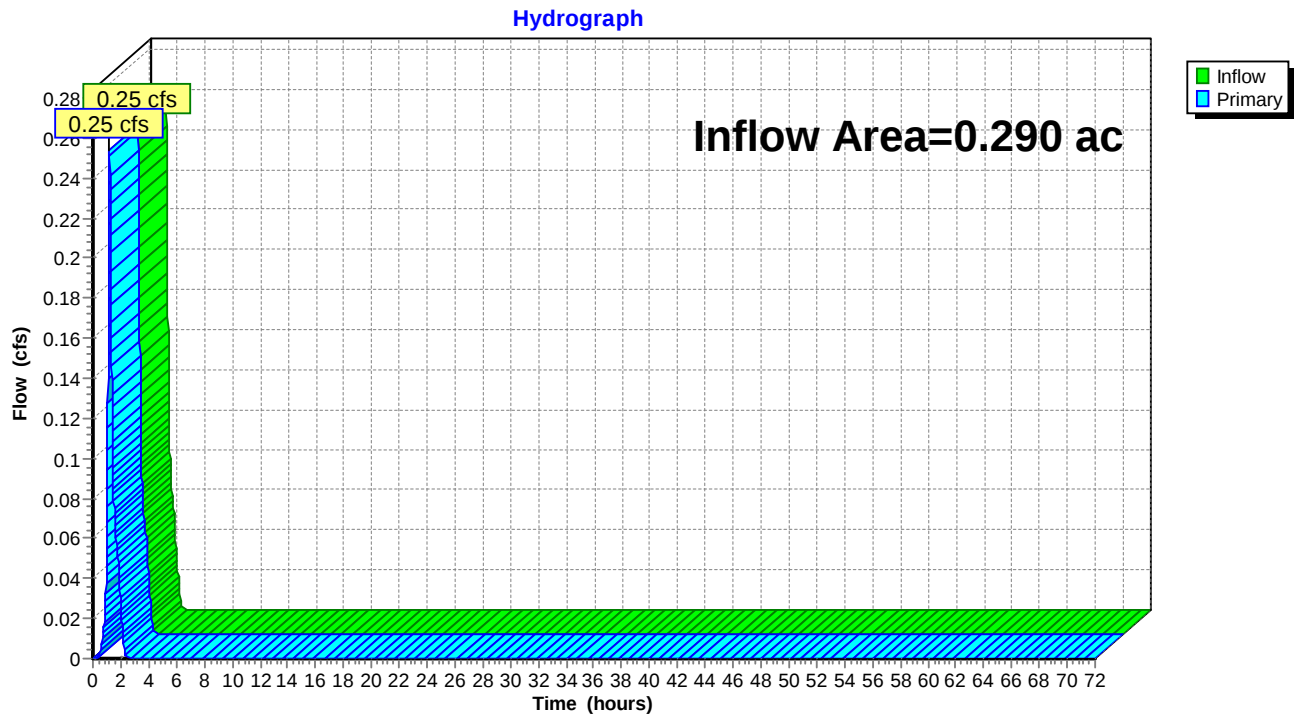
Printed 11/15/2023

Summary for Pond 6P: EA-3 Disturbed

Inflow Area = 0.290 ac, 27.59% Impervious, Inflow Depth = 0.41" for WQ event
Inflow = 0.25 cfs @ 1.20 hrs, Volume= 0.010 af
Primary = 0.25 cfs @ 1.20 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 6P: EA-3 Disturbed



Pre-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Subcatchment EA-2D i: EA-2D Impervious

Runoff = 0.26 cfs @ 12.27 hrs, Volume= 0.028 af, Depth= 3.08"

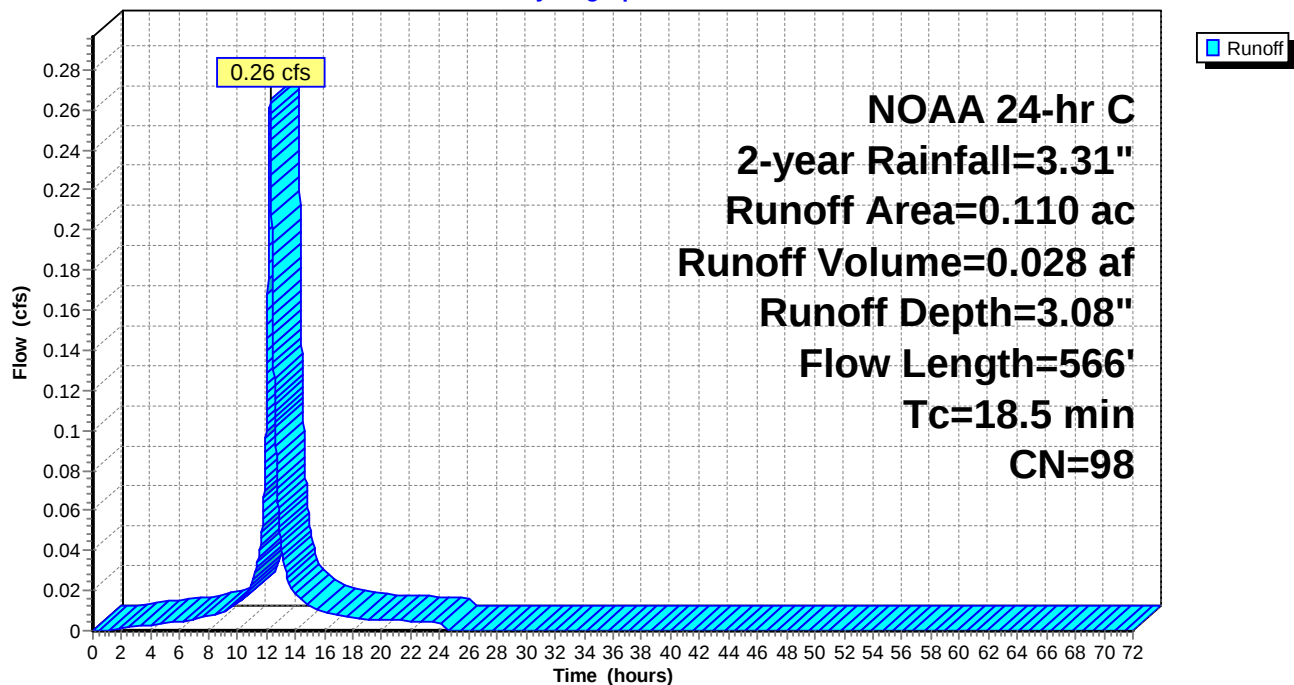
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
* 0.110	98	Impervious Areas
0.110		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	23	0.0413	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.3	31	0.0149	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
2.1	70	0.0129	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	149	0.0105	1.65		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.4	120	0.0083	1.47		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.0	173	0.0081	1.45		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.5	566	Total			

Subcatchment EA-2D i: EA-2D Impervious

Hydrograph



Pre-Development

NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Subcatchment EA-2D p: EA-2D Pervious

Runoff = 2.02 cfs @ 12.28 hrs, Volume= 0.193 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
1.330	80	>75% Grass cover, Good, HSG D
0.230	79	Woods/grass comb., Good, HSG D
1.560	80	Weighted Average
1.560		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	23	0.0413	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.3	31	0.0149	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
2.1	70	0.0129	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	149	0.0105	1.65		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.4	120	0.0083	1.47		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.0	173	0.0081	1.45		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.5	566	Total			

Pre-Development

Prepared by {enter your company name here}

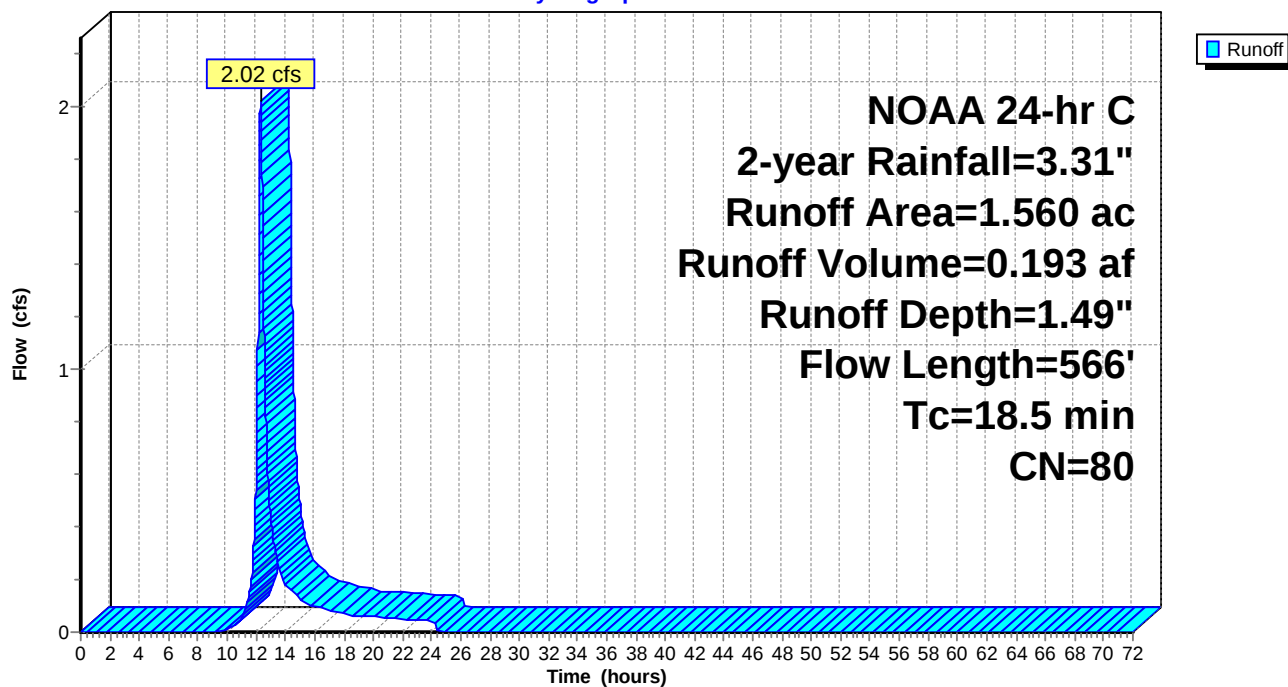
HydroCAD® 10.00-26 s/n 07360 © 2020 HydroCAD Software Solutions LLC

NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/15/2023

Subcatchment EA-2D p: EA-2D Pervious

Hydrograph



Pre-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/15/2023

Summary for Subcatchment EA-2U p: EA-2U Pervious

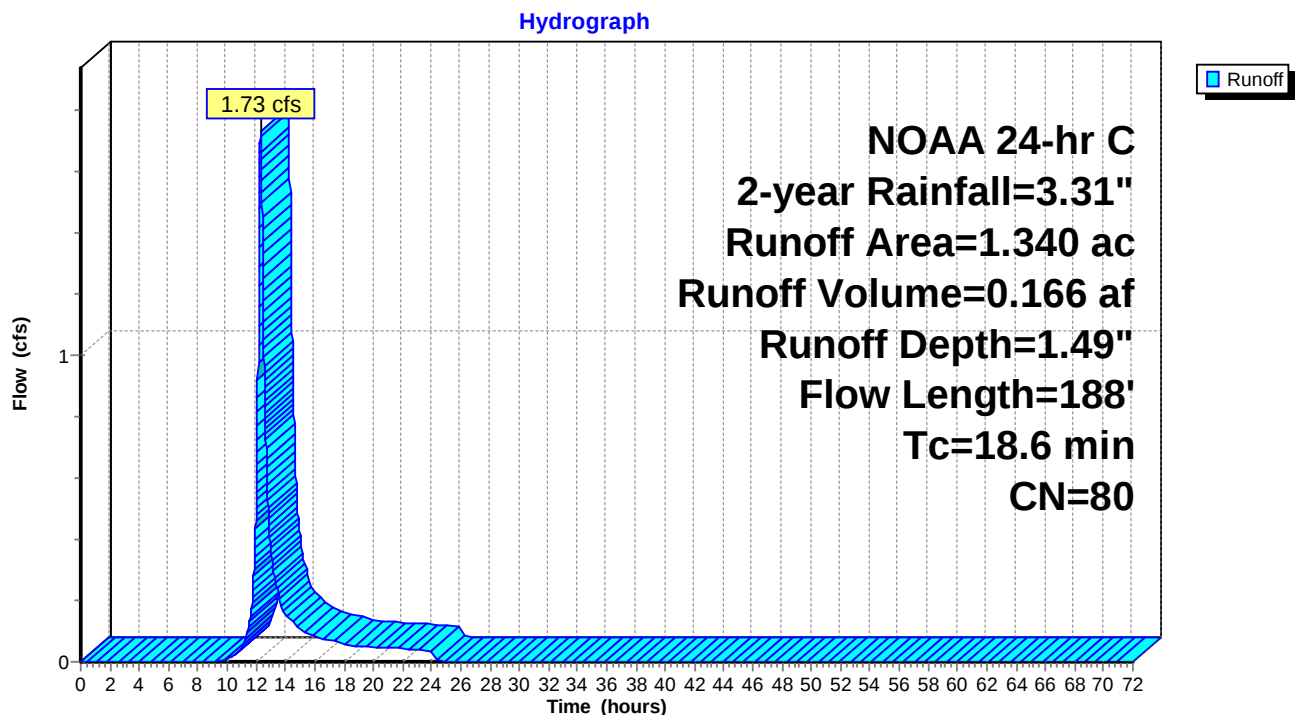
Runoff = 1.73 cfs @ 12.28 hrs, Volume= 0.166 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.750	80	>75% Grass cover, Good, HSG D
0.590	79	Woods/grass comb., Good, HSG D
1.340	80	Weighted Average
1.340		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	44	0.0303	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
8.9	113	0.0018	0.21		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.4	31	0.0065	1.30		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.6	188	Total			

Subcatchment EA-2U p: EA-2U Pervious



Pre-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/15/2023

Summary for Subcatchment EA-3D i: EA-3D Impervious

Runoff = 0.22 cfs @ 12.20 hrs, Volume= 0.021 af, Depth= 3.08"

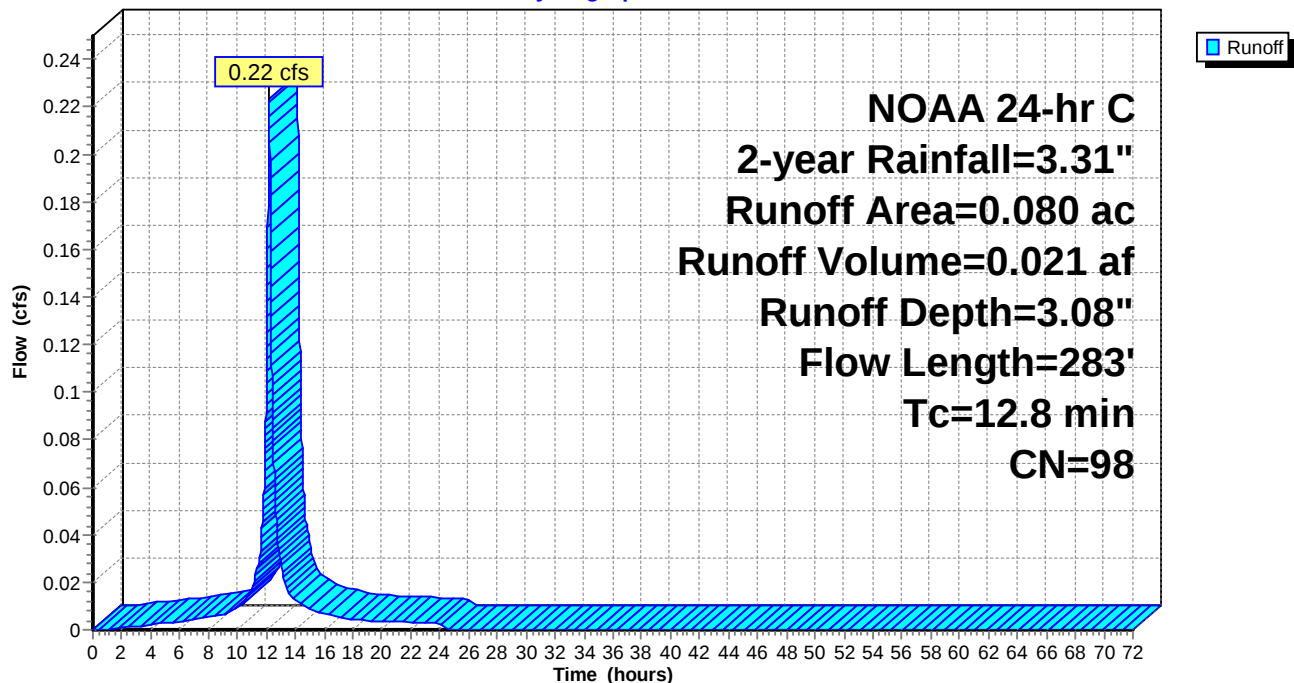
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
* 0.080	98	Impervious Areas
0.080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	85	0.0162	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
0.4	55	0.0181	2.17		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	134	0.0213	0.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.8	283	Total			

Subcatchment EA-3D i: EA-3D Impervious

Hydrograph



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NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Subcatchment EA-3D p: EA-3D Pervious

Runoff = 0.32 cfs @ 12.21 hrs, Volume= 0.026 af, Depth= 1.49"

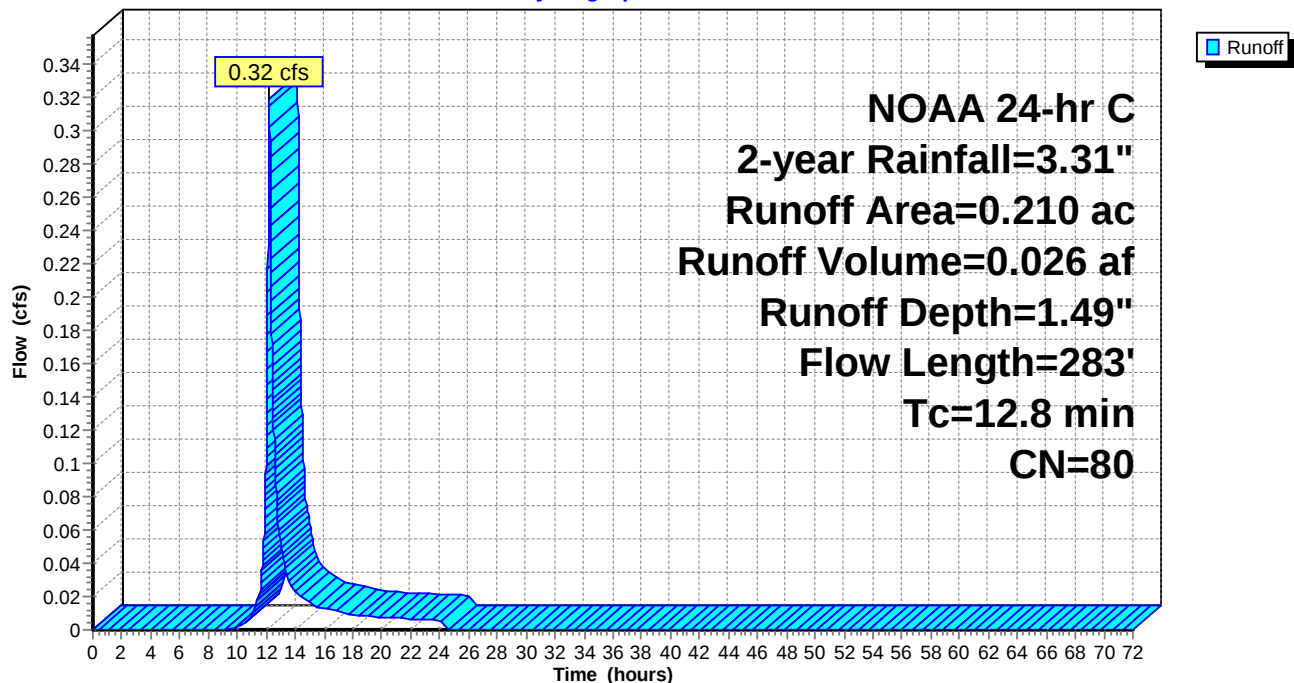
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.210	80	>75% Grass cover, Good, HSG D
0.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	85	0.0162	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
0.4	55	0.0181	2.17		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	134	0.0213	0.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.8	283	Total			

Subcatchment EA-3D p: EA-3D Pervious

Hydrograph



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NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Subcatchment EA-3U i: EA-3U Impervious

Runoff = 0.14 cfs @ 12.21 hrs, Volume= 0.013 af, Depth= 3.08"

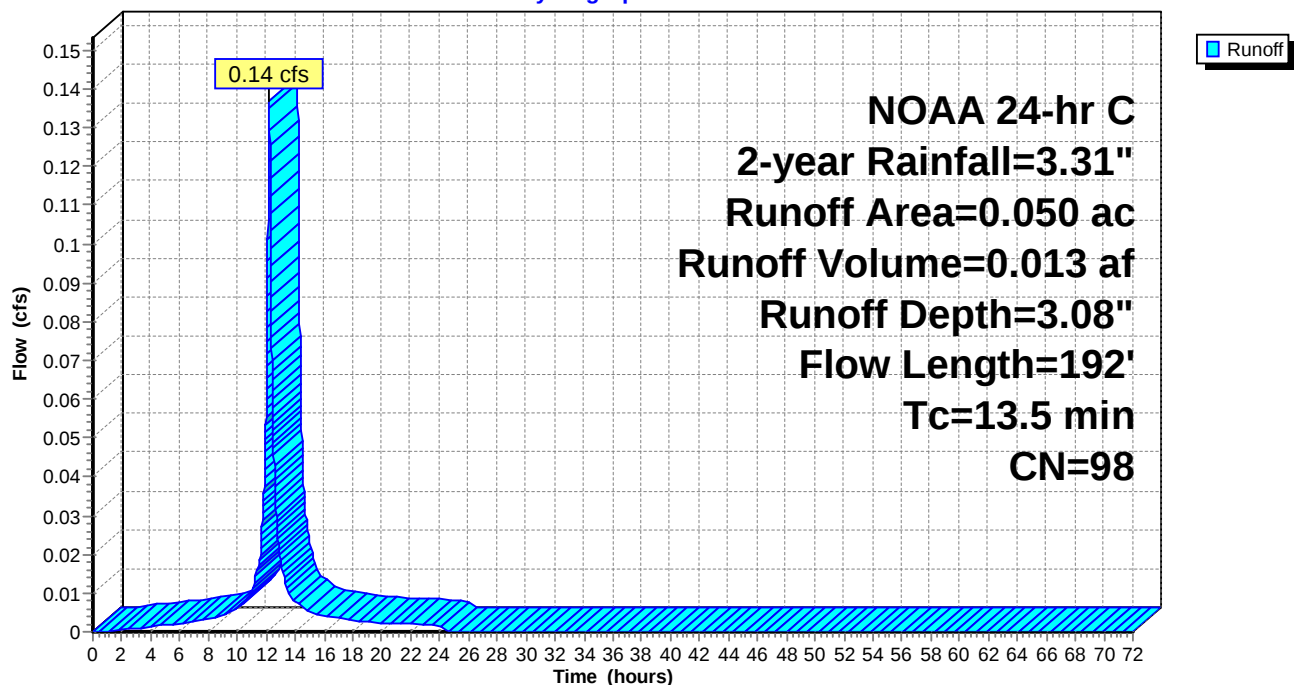
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
* 0.050	98	Impervious Areas
0.050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	6	0.0193	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.5	192	Total			

Subcatchment EA-3U i: EA-3U Impervious

Hydrograph



Pre-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Subcatchment EA-3U p: EA-3U Pervious

Runoff = 1.80 cfs @ 12.22 hrs, Volume= 0.150 af, Depth= 1.42"

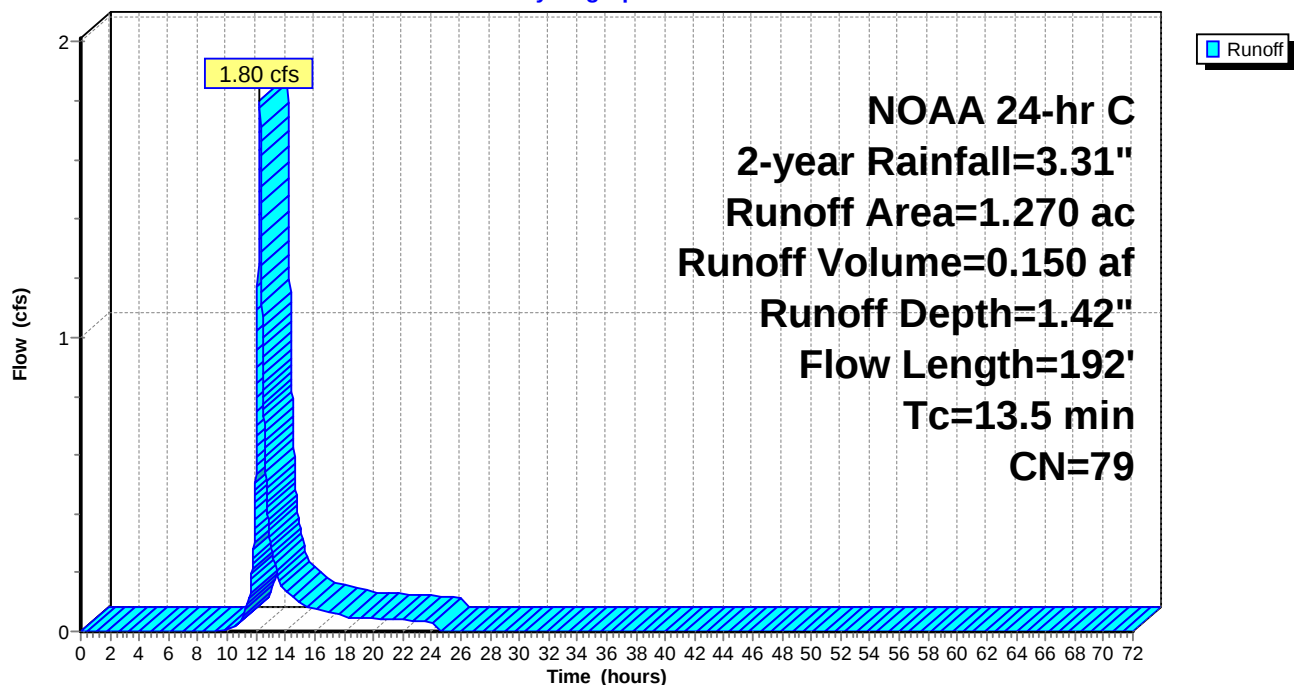
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.450	80	>75% Grass cover, Good, HSG D
0.820	79	Woods/grass comb., Good, HSG D
1.270	79	Weighted Average
1.270		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	6	0.0193	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.5	192	Total			

Subcatchment EA-3U p: EA-3U Pervious

Hydrograph



Pre-Development

NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Pond 2P: EA-2 Wetlands

Inflow Area = 3.010 ac, 3.65% Impervious, Inflow Depth = 1.55" for 2-year event
Inflow = 4.01 cfs @ 12.28 hrs, Volume= 0.388 af
Outflow = 3.72 cfs @ 12.35 hrs, Volume= 0.336 af, Atten= 7%, Lag= 4.1 min
Primary = 1.99 cfs @ 12.35 hrs, Volume= 0.268 af
Secondary = 1.73 cfs @ 12.35 hrs, Volume= 0.067 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 203.06' @ 12.35 hrs Surf.Area= 17,489 sf Storage= 3,671 cf

Plug-Flow detention time= 111.7 min calculated for 0.336 af (87% of inflow)
Center-of-Mass det. time= 47.8 min (897.5 - 849.7)

Volume	Invert	Avail.Storage	Storage Description
#1	202.60'	8,536 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.60	467	0	0
202.70	2,559	151	151
202.80	5,796	418	569
202.90	10,670	823	1,392
203.00	15,559	1,311	2,704
203.10	18,857	1,721	4,425
203.20	20,626	1,974	6,399
203.30	22,113	2,137	8,536

Device	Routing	Invert	Outlet Devices
#1	Primary	202.97'	179.4 deg x 11.0' long x 0.33' rise Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)
#2	Secondary	203.01'	65.0' 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=1.99 cfs @ 12.35 hrs HW=203.06' (Free Discharge)

↑ **1=Sharp-Crested Vee/Trap Weir** (Weir Controls 1.99 cfs @ 0.80 fps)

Secondary OutFlow Max=1.73 cfs @ 12.35 hrs HW=203.06' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 1.73 cfs @ 0.55 fps)

Pre-Development

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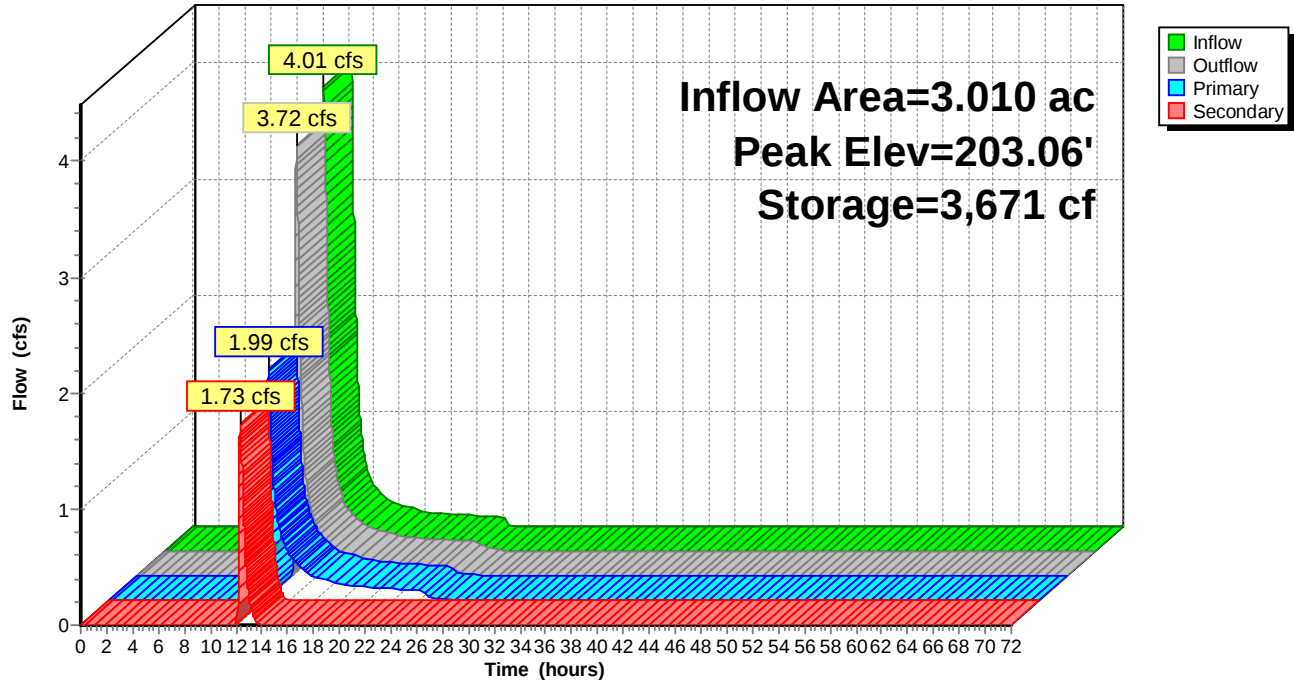
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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/15/2023

Pond 2P: EA-2 Wetlands

Hydrograph



Pre-Development

NOAA 24-hr C 2-year Rainfall=3.31"

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Hydrograph for Pond 2P: EA-2 Wetlands

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	202.60	0.00	0.00	0.00
2.00	0.00	1	202.60	0.00	0.00	0.00
4.00	0.00	15	202.62	0.00	0.00	0.00
6.00	0.00	41	202.64	0.00	0.00	0.00
8.00	0.01	83	202.67	0.00	0.00	0.00
10.00	0.03	169	202.71	0.00	0.00	0.00
12.00	1.20	1,812	202.94	0.00	0.00	0.00
14.00	0.35	2,839	203.01	0.40	0.40	0.00
16.00	0.19	2,651	203.00	0.20	0.20	0.00
18.00	0.13	2,580	202.99	0.14	0.14	0.00
20.00	0.11	2,537	202.99	0.12	0.12	0.00
22.00	0.10	2,515	202.99	0.10	0.10	0.00
24.00	0.08	2,492	202.99	0.09	0.09	0.00
26.00	0.00	2,310	202.97	0.01	0.01	0.00
28.00	0.00	2,275	202.97	0.00	0.00	0.00
30.00	0.00	2,268	202.97	0.00	0.00	0.00
32.00	0.00	2,264	202.97	0.00	0.00	0.00
34.00	0.00	2,262	202.97	0.00	0.00	0.00
36.00	0.00	2,261	202.97	0.00	0.00	0.00
38.00	0.00	2,260	202.97	0.00	0.00	0.00
40.00	0.00	2,260	202.97	0.00	0.00	0.00
42.00	0.00	2,259	202.97	0.00	0.00	0.00
44.00	0.00	2,259	202.97	0.00	0.00	0.00
46.00	0.00	2,259	202.97	0.00	0.00	0.00
48.00	0.00	2,259	202.97	0.00	0.00	0.00
50.00	0.00	2,259	202.97	0.00	0.00	0.00
52.00	0.00	2,259	202.97	0.00	0.00	0.00
54.00	0.00	2,259	202.97	0.00	0.00	0.00
56.00	0.00	2,259	202.97	0.00	0.00	0.00
58.00	0.00	2,259	202.97	0.00	0.00	0.00
60.00	0.00	2,259	202.97	0.00	0.00	0.00
62.00	0.00	2,259	202.97	0.00	0.00	0.00
64.00	0.00	2,259	202.97	0.00	0.00	0.00
66.00	0.00	2,259	202.97	0.00	0.00	0.00
68.00	0.00	2,259	202.97	0.00	0.00	0.00
70.00	0.00	2,259	202.97	0.00	0.00	0.00
72.00	0.00	2,259	202.97	0.00	0.00	0.00

Pre-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

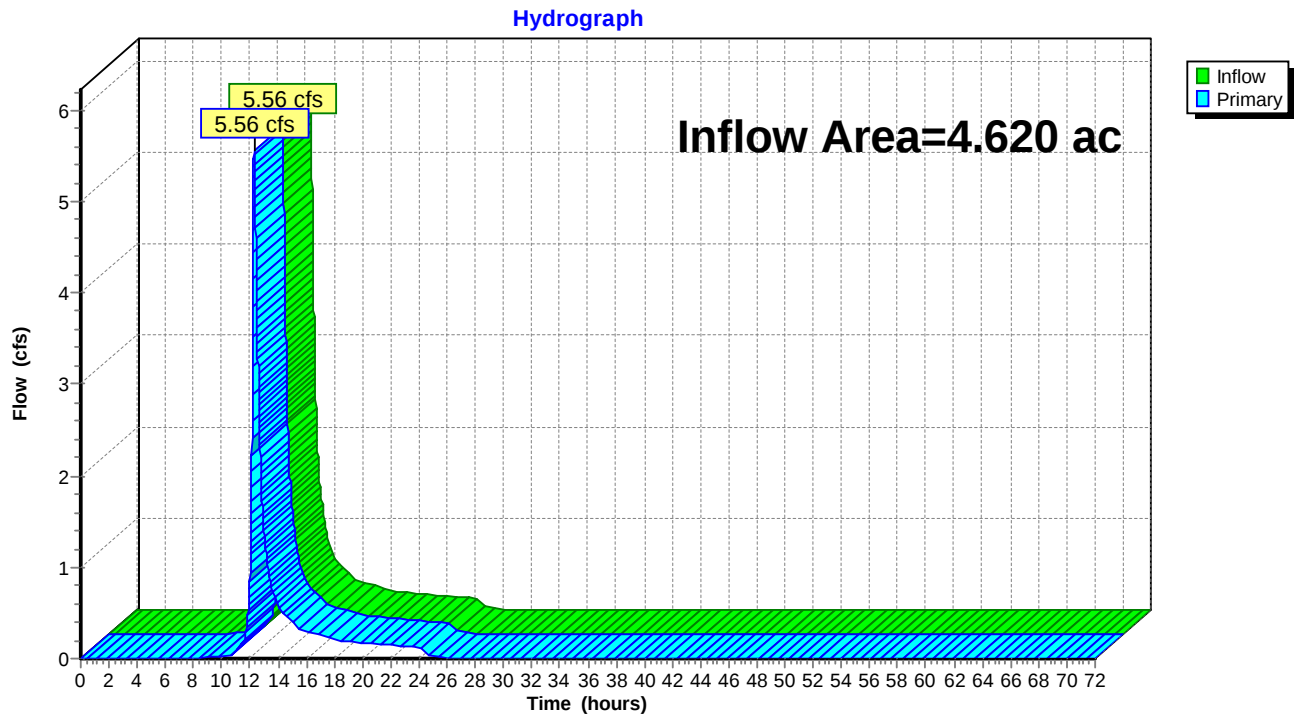
Printed 11/15/2023

Summary for Pond 3P: Stony Brook Tributary (DP-2)

Inflow Area = 4.620 ac, 5.19% Impervious, Inflow Depth = 1.42" for 2-year event
Inflow = 5.56 cfs @ 12.31 hrs, Volume= 0.545 af
Primary = 5.56 cfs @ 12.31 hrs, Volume= 0.545 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 3P: Stony Brook Tributary (DP-2)



Pre-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

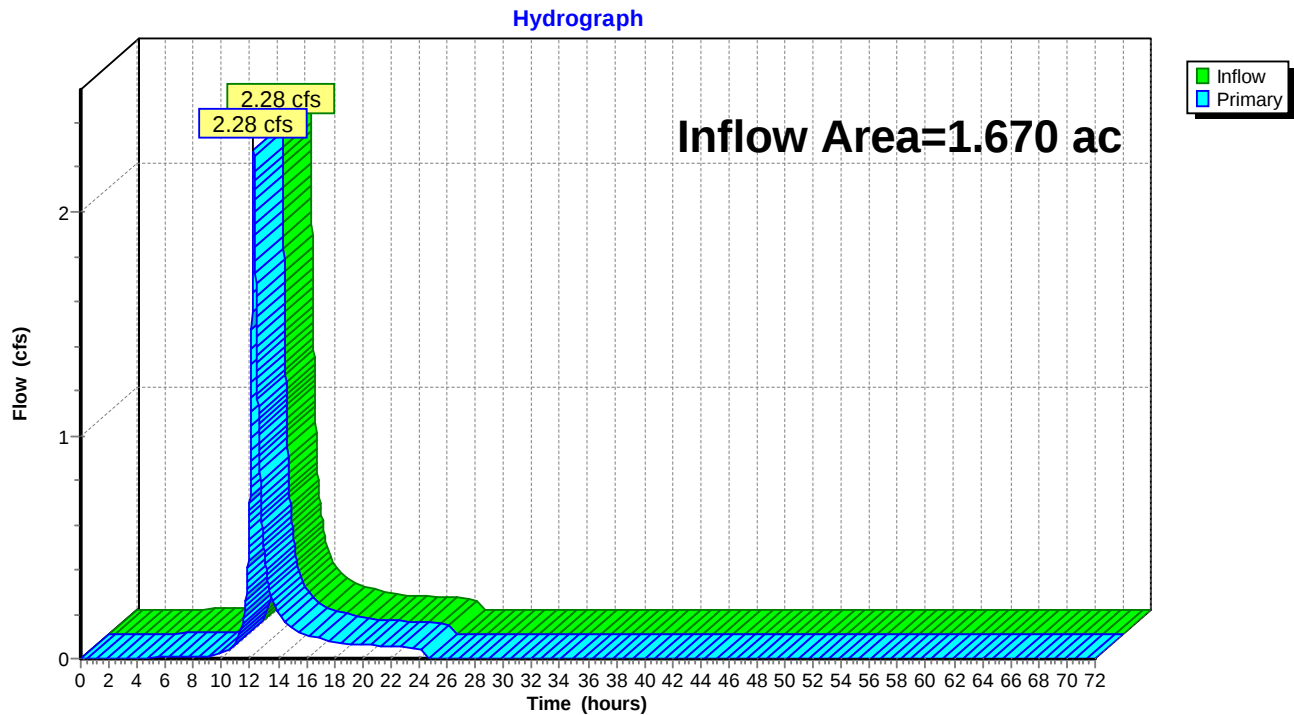
Printed 11/15/2023

Summary for Pond 5P: EA-2 Disturbed

Inflow Area = 1.670 ac, 6.59% Impervious, Inflow Depth = 1.59" for 2-year event
Inflow = 2.28 cfs @ 12.28 hrs, Volume= 0.222 af
Primary = 2.28 cfs @ 12.28 hrs, Volume= 0.222 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 5P: EA-2 Disturbed



Pre-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

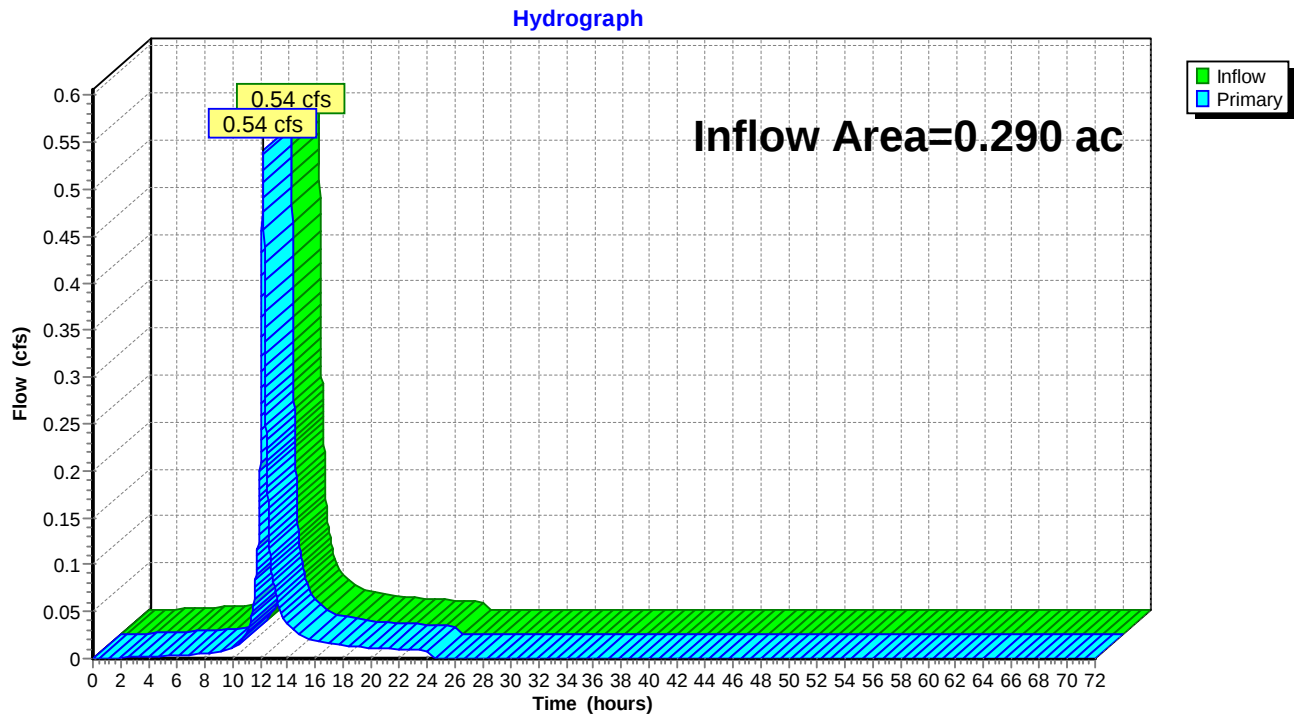
Printed 11/15/2023

Summary for Pond 6P: EA-3 Disturbed

Inflow Area = 0.290 ac, 27.59% Impervious, Inflow Depth = 1.93" for 2-year event
Inflow = 0.54 cfs @ 12.21 hrs, Volume= 0.047 af
Primary = 0.54 cfs @ 12.21 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 6P: EA-3 Disturbed



Pre-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

Printed 11/15/2023

Summary for Subcatchment EA-2D i: EA-2D Impervious

Runoff = 0.40 cfs @ 12.27 hrs, Volume= 0.043 af, Depth= 4.73"

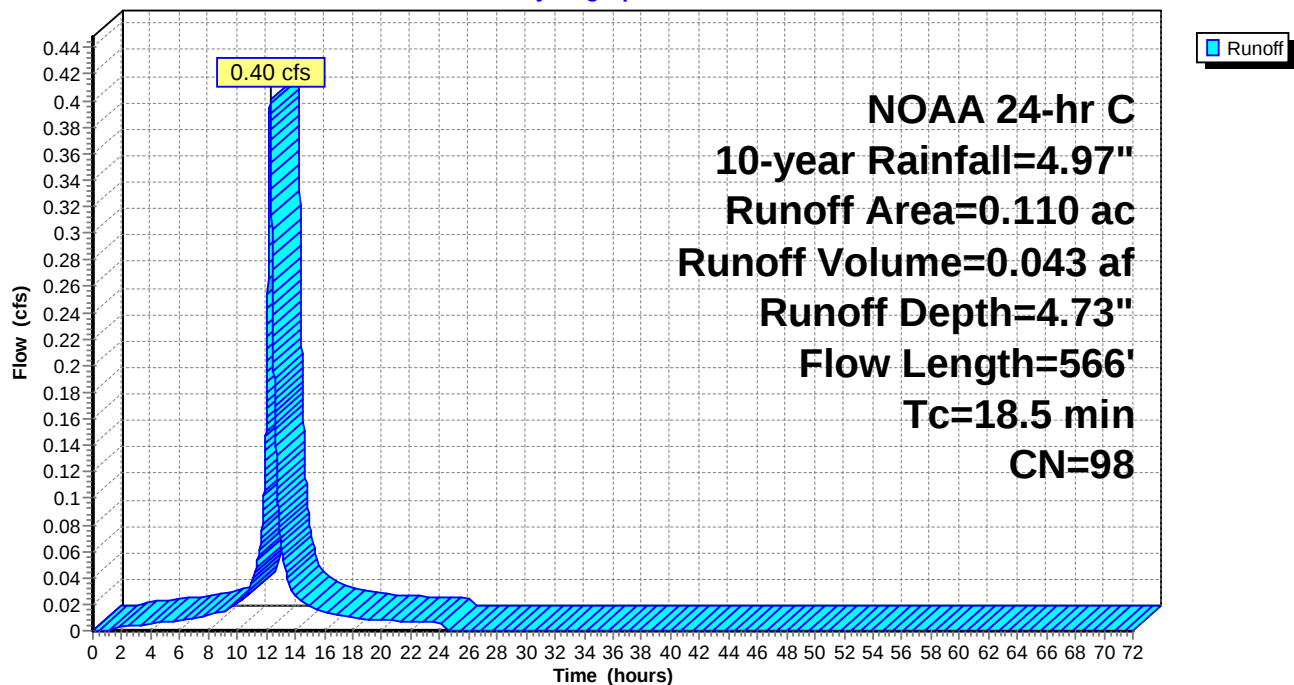
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
* 0.110	98	Impervious Areas
0.110		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	23	0.0413	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.3	31	0.0149	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
2.1	70	0.0129	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	149	0.0105	1.65		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.4	120	0.0083	1.47		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.0	173	0.0081	1.45		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.5	566	Total			

Subcatchment EA-2D i: EA-2D Impervious

Hydrograph



Pre-Development

NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment EA-2D p: EA-2D Pervious

Runoff = 3.92 cfs @ 12.27 hrs, Volume= 0.373 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
1.330	80	>75% Grass cover, Good, HSG D
0.230	79	Woods/grass comb., Good, HSG D
1.560	80	Weighted Average
1.560		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	23	0.0413	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.3	31	0.0149	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
2.1	70	0.0129	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	149	0.0105	1.65		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.4	120	0.0083	1.47		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.0	173	0.0081	1.45		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.5	566	Total			

Pre-Development

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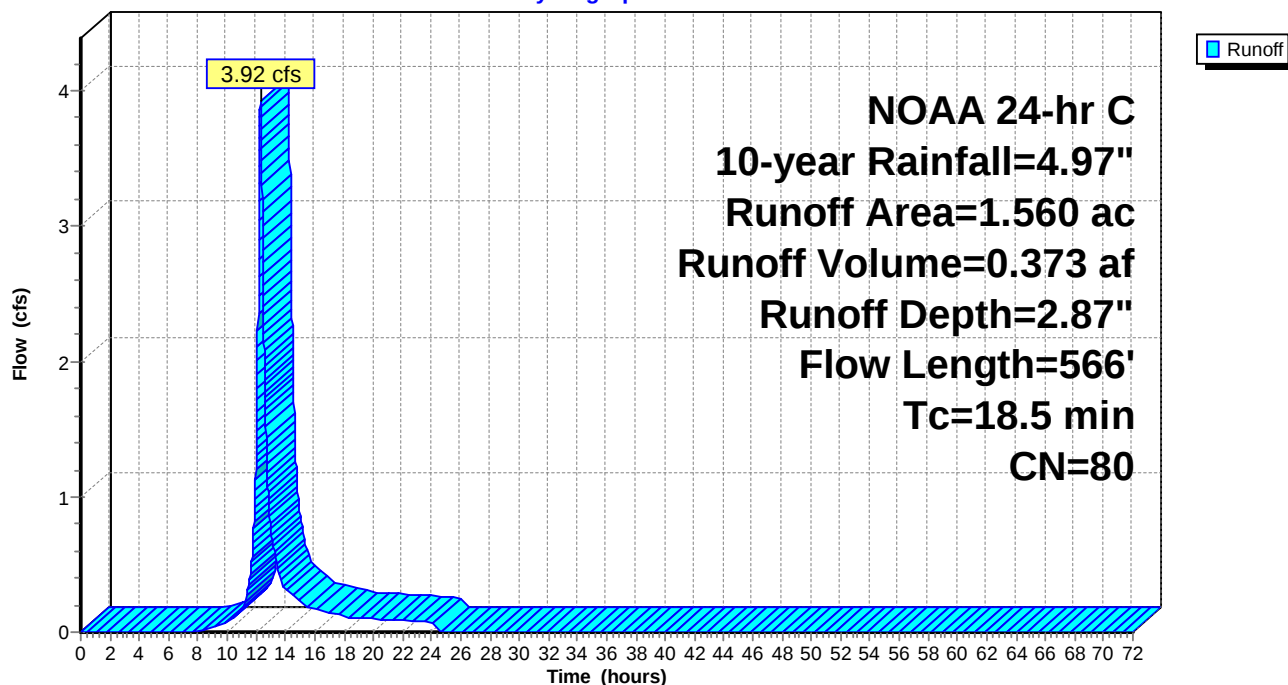
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NOAA 24-hr C 10-year Rainfall=4.97"

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Subcatchment EA-2D p: EA-2D Pervious

Hydrograph



Pre-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

Printed 11/15/2023

Summary for Subcatchment EA-2U p: EA-2U Pervious

Runoff = 3.36 cfs @ 12.28 hrs, Volume= 0.320 af, Depth= 2.87"

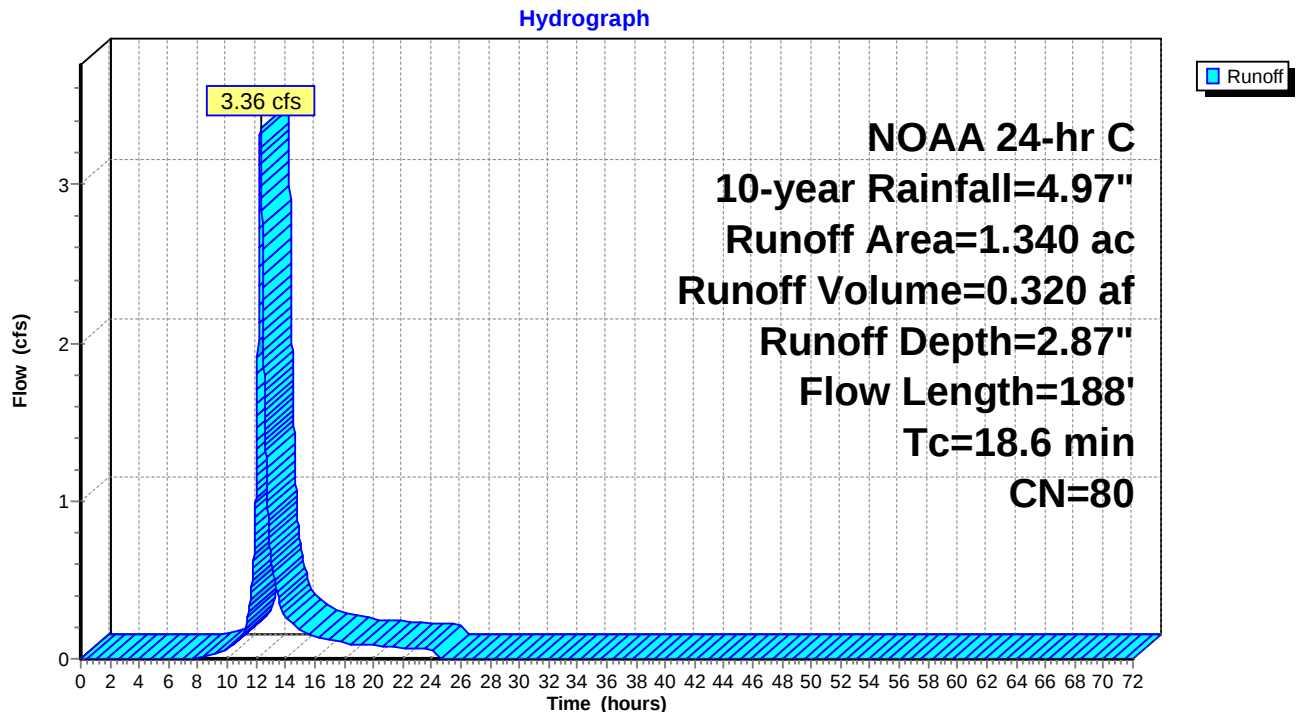
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.750	80	>75% Grass cover, Good, HSG D
0.590	79	Woods/grass comb., Good, HSG D
1.340	80	Weighted Average
1.340		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	44	0.0303	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
8.9	113	0.0018	0.21		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.4	31	0.0065	1.30		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.6	188	Total			

Subcatchment EA-2U p: EA-2U Pervious



Pre-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment EA-3D i: EA-3D Impervious

Runoff = 0.34 cfs @ 12.20 hrs, Volume= 0.032 af, Depth= 4.73"

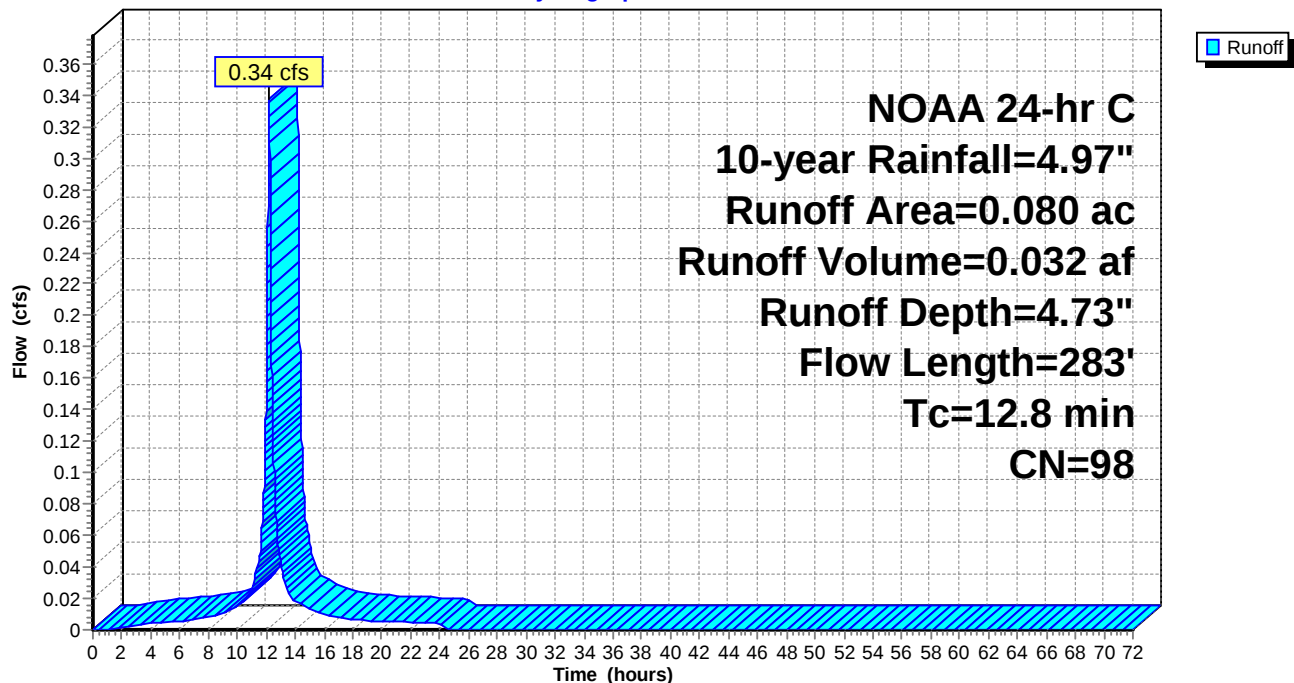
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
* 0.080	98	Impervious Areas
0.080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	85	0.0162	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
0.4	55	0.0181	2.17		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	134	0.0213	0.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.8	283	Total			

Subcatchment EA-3D i: EA-3D Impervious

Hydrograph



Pre-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment EA-3D p: EA-3D Pervious

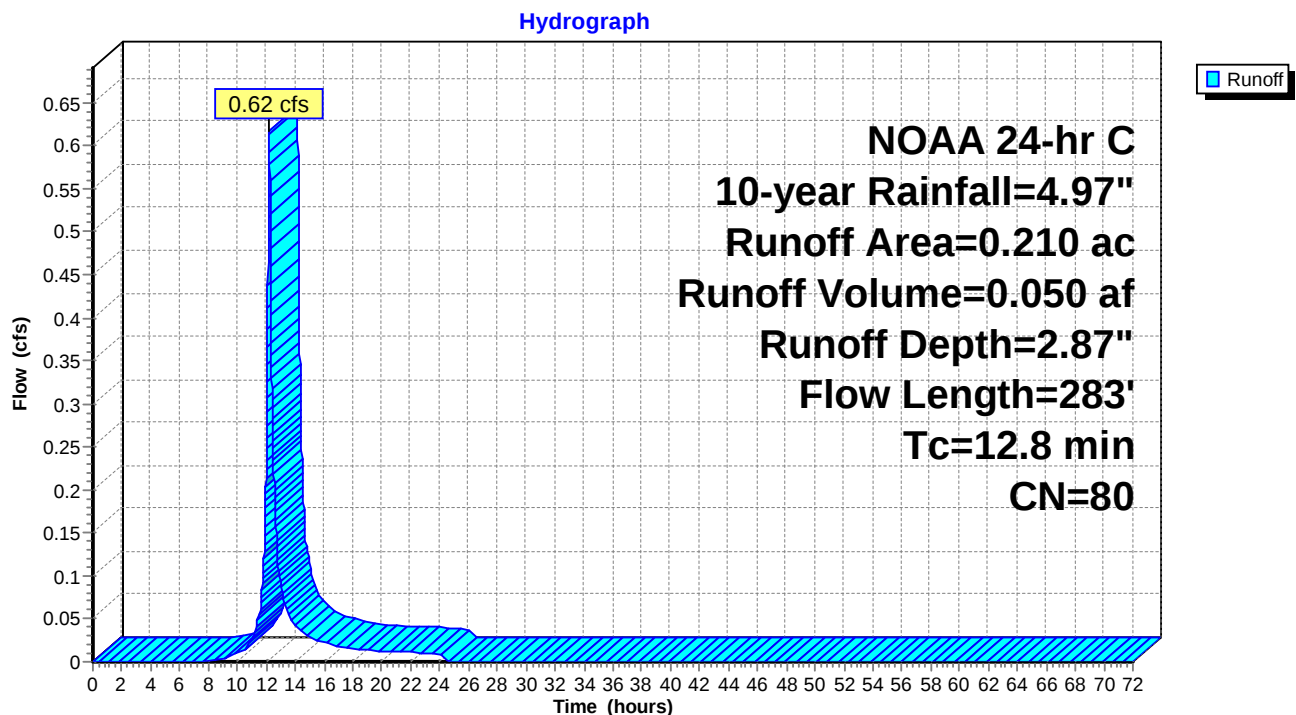
Runoff = 0.62 cfs @ 12.21 hrs, Volume= 0.050 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.210	80	>75% Grass cover, Good, HSG D
0.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	85	0.0162	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
0.4	55	0.0181	2.17		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	134	0.0213	0.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.8	283	Total			

Subcatchment EA-3D p: EA-3D Pervious



Pre-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment EA-3U i: EA-3U Impervious

Runoff = 0.21 cfs @ 12.21 hrs, Volume= 0.020 af, Depth= 4.73"

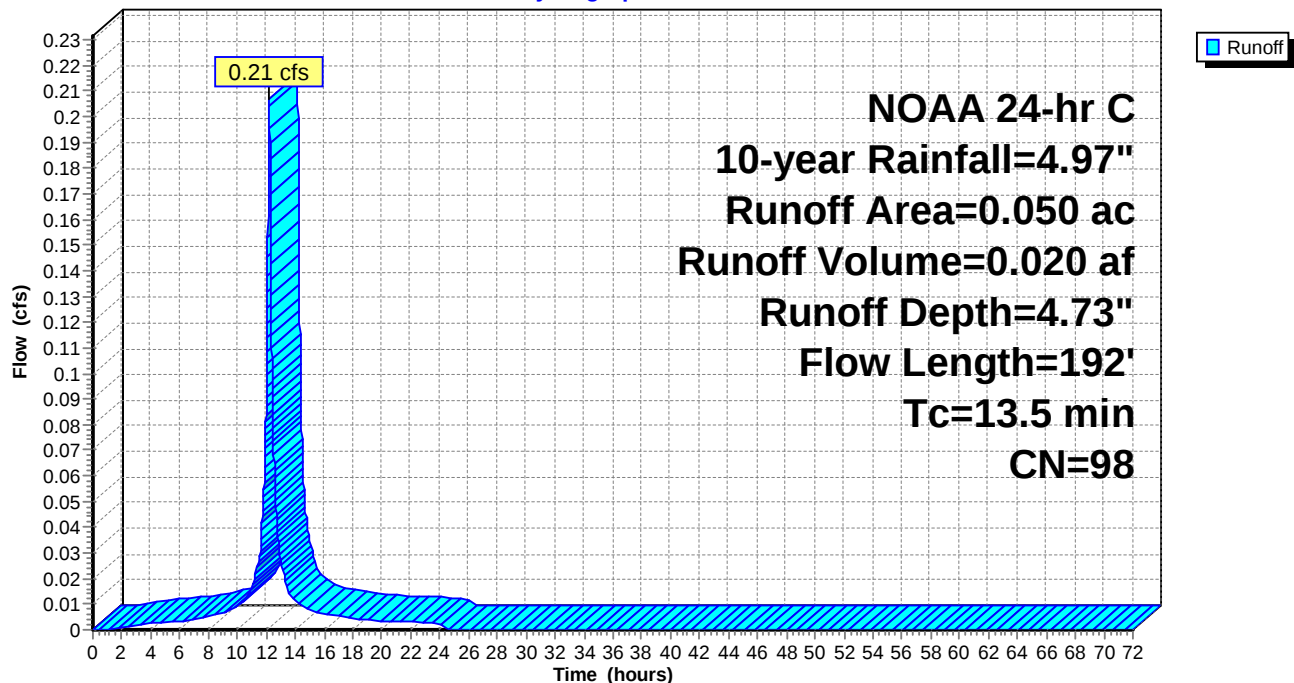
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
* 0.050	98	Impervious Areas
0.050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	6	0.0193	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.5	192	Total			

Subcatchment EA-3U i: EA-3U Impervious

Hydrograph



Pre-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment EA-3U p: EA-3U Pervious

Runoff = 3.54 cfs @ 12.22 hrs, Volume= 0.294 af, Depth= 2.78"

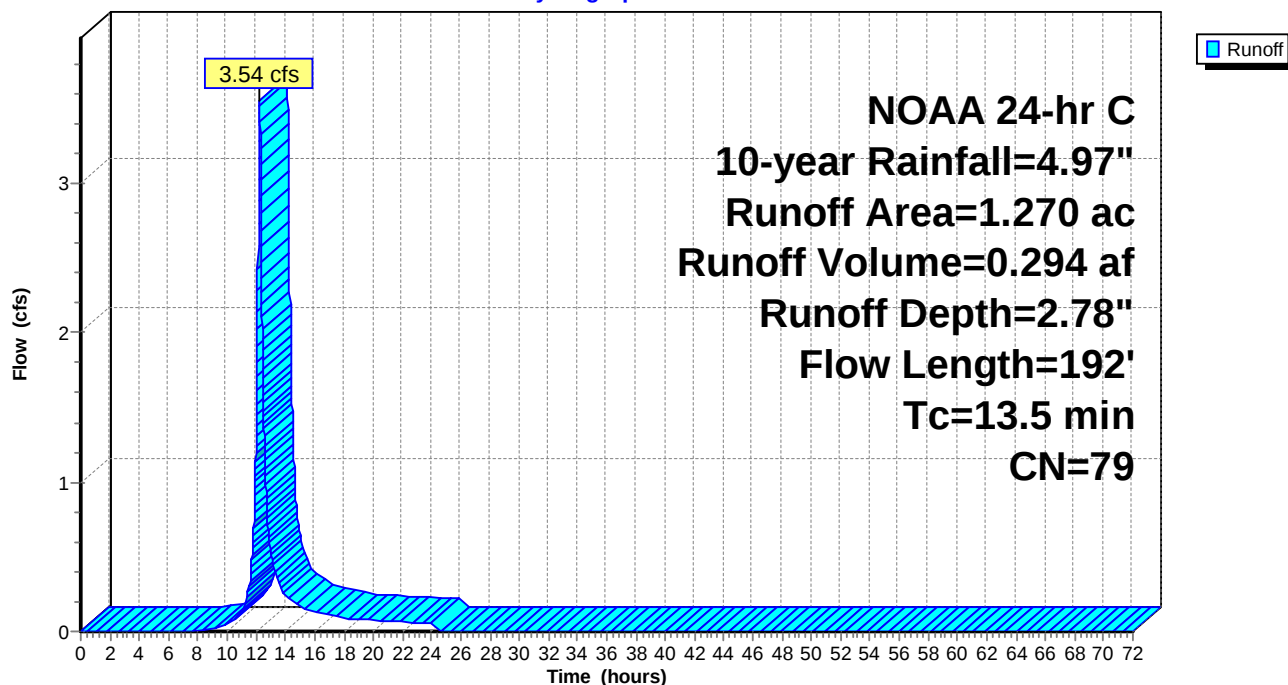
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.450	80	>75% Grass cover, Good, HSG D
0.820	79	Woods/grass comb., Good, HSG D
1.270	79	Weighted Average
1.270		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	6	0.0193	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.5	192	Total			

Subcatchment EA-3U p: EA-3U Pervious

Hydrograph



Pre-Development

NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Pond 2P: EA-2 Wetlands

Inflow Area = 3.010 ac, 3.65% Impervious, Inflow Depth = 2.93" for 10-year event
Inflow = 7.67 cfs @ 12.27 hrs, Volume= 0.736 af
Outflow = 7.45 cfs @ 12.32 hrs, Volume= 0.684 af, Atten= 3%, Lag= 2.6 min
Primary = 3.77 cfs @ 12.32 hrs, Volume= 0.489 af
Secondary = 3.68 cfs @ 12.32 hrs, Volume= 0.196 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 203.09' @ 12.32 hrs Surf.Area= 18,535 sf Storage= 4,242 cf

Plug-Flow detention time= 70.1 min calculated for 0.684 af (93% of inflow)
Center-of-Mass det. time= 32.2 min (864.6 - 832.4)

Volume	Invert	Avail.Storage	Storage Description
#1	202.60'	8,536 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.60	467	0	0
202.70	2,559	151	151
202.80	5,796	418	569
202.90	10,670	823	1,392
203.00	15,559	1,311	2,704
203.10	18,857	1,721	4,425
203.20	20,626	1,974	6,399
203.30	22,113	2,137	8,536

Device	Routing	Invert	Outlet Devices
#1	Primary	202.97'	179.4 deg x 11.0' long x 0.33' rise Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)
#2	Secondary	203.01'	65.0' 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=3.76 cfs @ 12.32 hrs HW=203.09' (Free Discharge)

↑ **1=Sharp-Crested Vee/Trap Weir** (Weir Controls 3.76 cfs @ 0.92 fps)

Secondary OutFlow Max=3.68 cfs @ 12.32 hrs HW=203.09' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 3.68 cfs @ 0.71 fps)

Pre-Development

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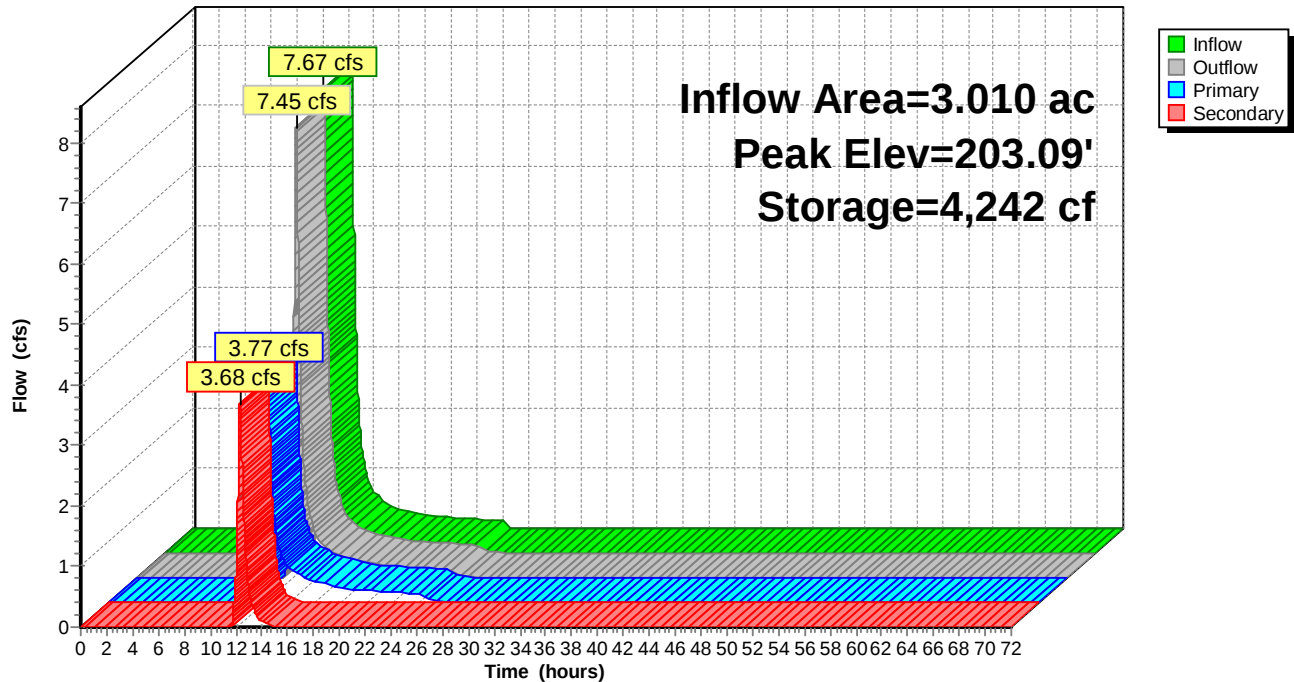
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NOAA 24-hr C 10-year Rainfall=4.97"

Printed 11/15/2023

Pond 2P: EA-2 Wetlands

Hydrograph



Pre-Development

NOAA 24-hr C 10-year Rainfall=4.97"

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Hydrograph for Pond 2P: EA-2 Wetlands

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	202.60	0.00	0.00	0.00
2.00	0.00	5	202.61	0.00	0.00	0.00
4.00	0.01	34	202.64	0.00	0.00	0.00
6.00	0.01	82	202.67	0.00	0.00	0.00
8.00	0.03	166	202.71	0.00	0.00	0.00
10.00	0.15	706	202.82	0.00	0.00	0.00
12.00	2.58	3,352	203.04	2.08	1.24	0.84
14.00	0.61	2,962	203.02	0.65	0.56	0.09
16.00	0.33	2,791	203.01	0.34	0.34	0.00
18.00	0.23	2,695	203.00	0.24	0.24	0.00
20.00	0.19	2,639	203.00	0.19	0.19	0.00
22.00	0.16	2,609	202.99	0.17	0.17	0.00
24.00	0.14	2,579	202.99	0.14	0.14	0.00
26.00	0.00	2,319	202.97	0.01	0.01	0.00
28.00	0.00	2,277	202.97	0.00	0.00	0.00
30.00	0.00	2,269	202.97	0.00	0.00	0.00
32.00	0.00	2,265	202.97	0.00	0.00	0.00
34.00	0.00	2,262	202.97	0.00	0.00	0.00
36.00	0.00	2,261	202.97	0.00	0.00	0.00
38.00	0.00	2,260	202.97	0.00	0.00	0.00
40.00	0.00	2,260	202.97	0.00	0.00	0.00
42.00	0.00	2,259	202.97	0.00	0.00	0.00
44.00	0.00	2,259	202.97	0.00	0.00	0.00
46.00	0.00	2,259	202.97	0.00	0.00	0.00
48.00	0.00	2,259	202.97	0.00	0.00	0.00
50.00	0.00	2,259	202.97	0.00	0.00	0.00
52.00	0.00	2,259	202.97	0.00	0.00	0.00
54.00	0.00	2,259	202.97	0.00	0.00	0.00
56.00	0.00	2,259	202.97	0.00	0.00	0.00
58.00	0.00	2,259	202.97	0.00	0.00	0.00
60.00	0.00	2,259	202.97	0.00	0.00	0.00
62.00	0.00	2,259	202.97	0.00	0.00	0.00
64.00	0.00	2,259	202.97	0.00	0.00	0.00
66.00	0.00	2,259	202.97	0.00	0.00	0.00
68.00	0.00	2,259	202.97	0.00	0.00	0.00
70.00	0.00	2,259	202.97	0.00	0.00	0.00
72.00	0.00	2,259	202.97	0.00	0.00	0.00

Pre-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

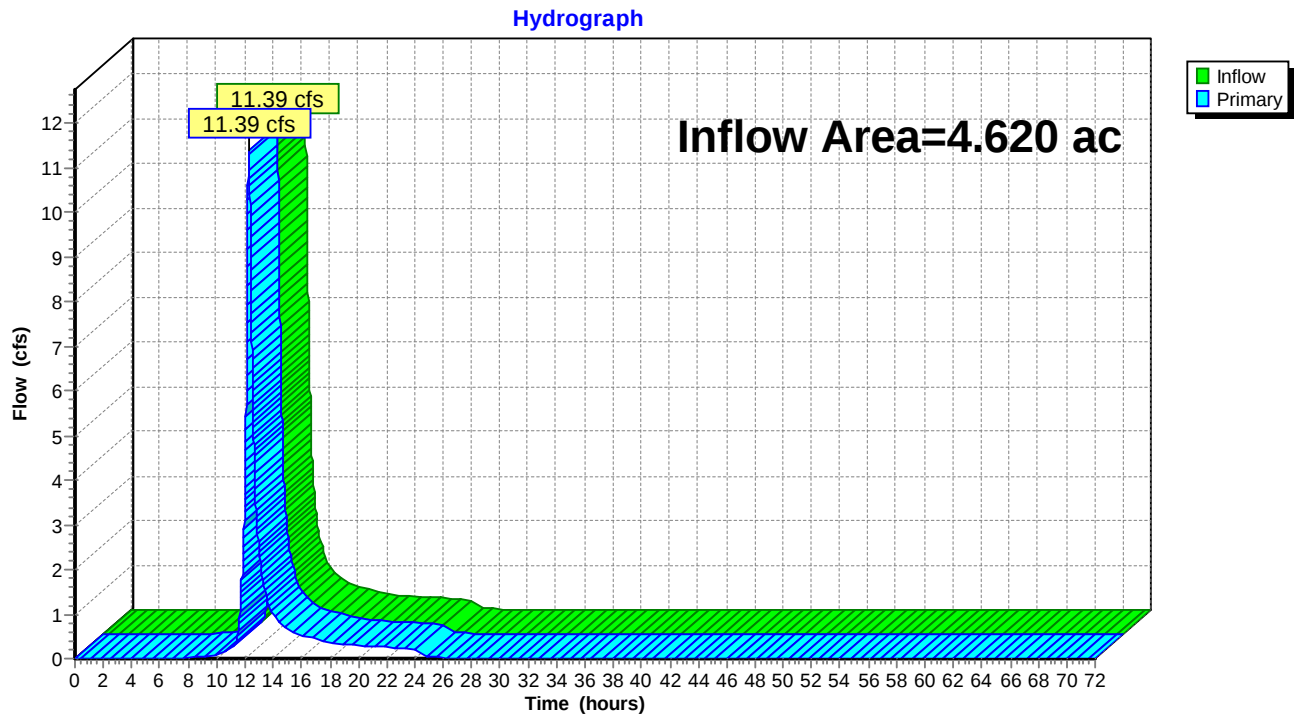
Printed 11/15/2023

Summary for Pond 3P: Stony Brook Tributary (DP-2)

Inflow Area = 4.620 ac, 5.19% Impervious, Inflow Depth = 2.80" for 10-year event
Inflow = 11.39 cfs @ 12.27 hrs, Volume= 1.080 af
Primary = 11.39 cfs @ 12.27 hrs, Volume= 1.080 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 3P: Stony Brook Tributary (DP-2)



Pre-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

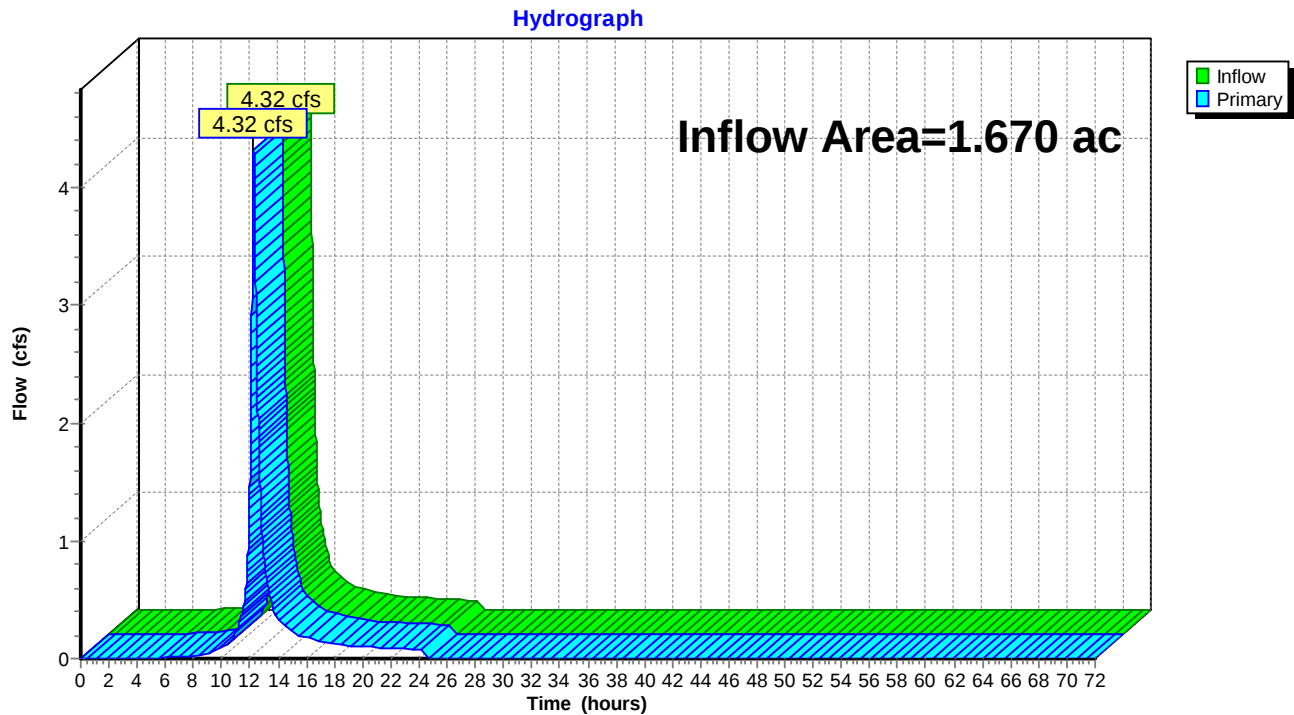
Printed 11/15/2023

Summary for Pond 5P: EA-2 Disturbed

Inflow Area = 1.670 ac, 6.59% Impervious, Inflow Depth = 2.99" for 10-year event
Inflow = 4.32 cfs @ 12.27 hrs, Volume= 0.416 af
Primary = 4.32 cfs @ 12.27 hrs, Volume= 0.416 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 5P: EA-2 Disturbed



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NOAA 24-hr C 10-year Rainfall=4.97"

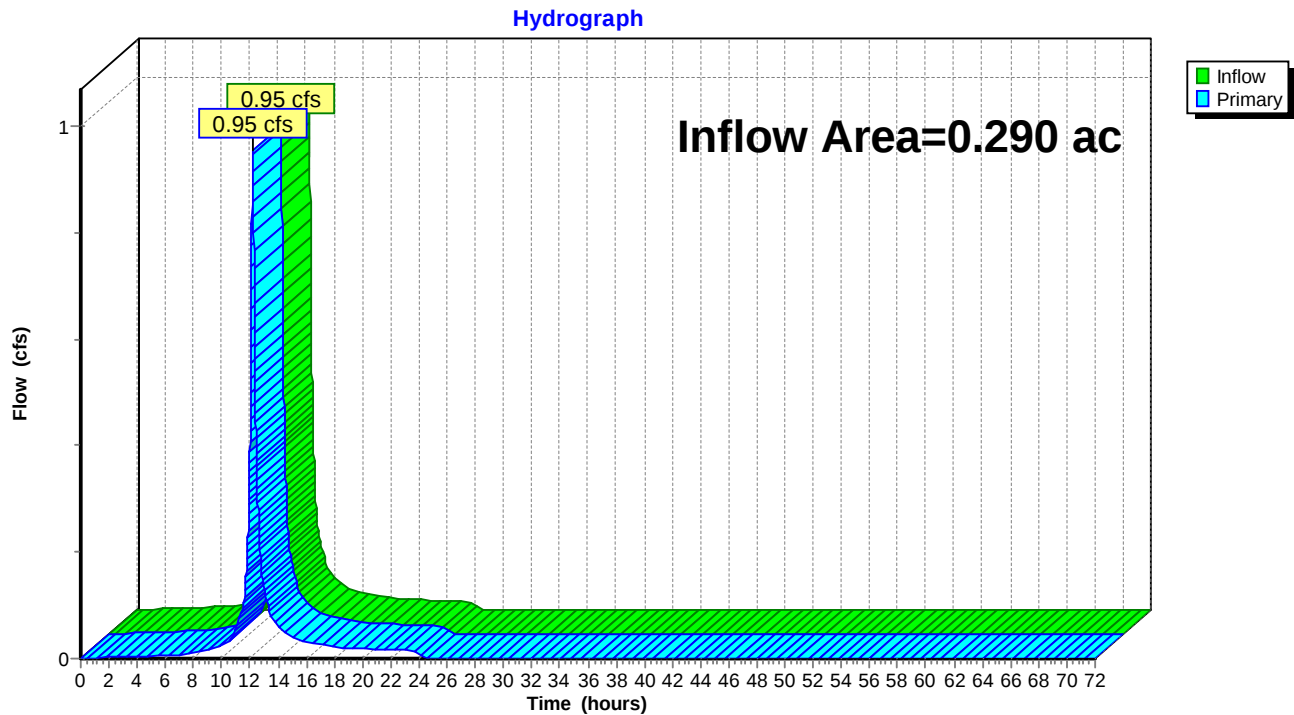
Printed 11/15/2023

Summary for Pond 6P: EA-3 Disturbed

Inflow Area = 0.290 ac, 27.59% Impervious, Inflow Depth = 3.38" for 10-year event
Inflow = 0.95 cfs @ 12.20 hrs, Volume= 0.082 af
Primary = 0.95 cfs @ 12.20 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 6P: EA-3 Disturbed



Pre-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment EA-2D i: EA-2D Impervious

Runoff = 0.66 cfs @ 12.27 hrs, Volume= 0.073 af, Depth= 7.91"

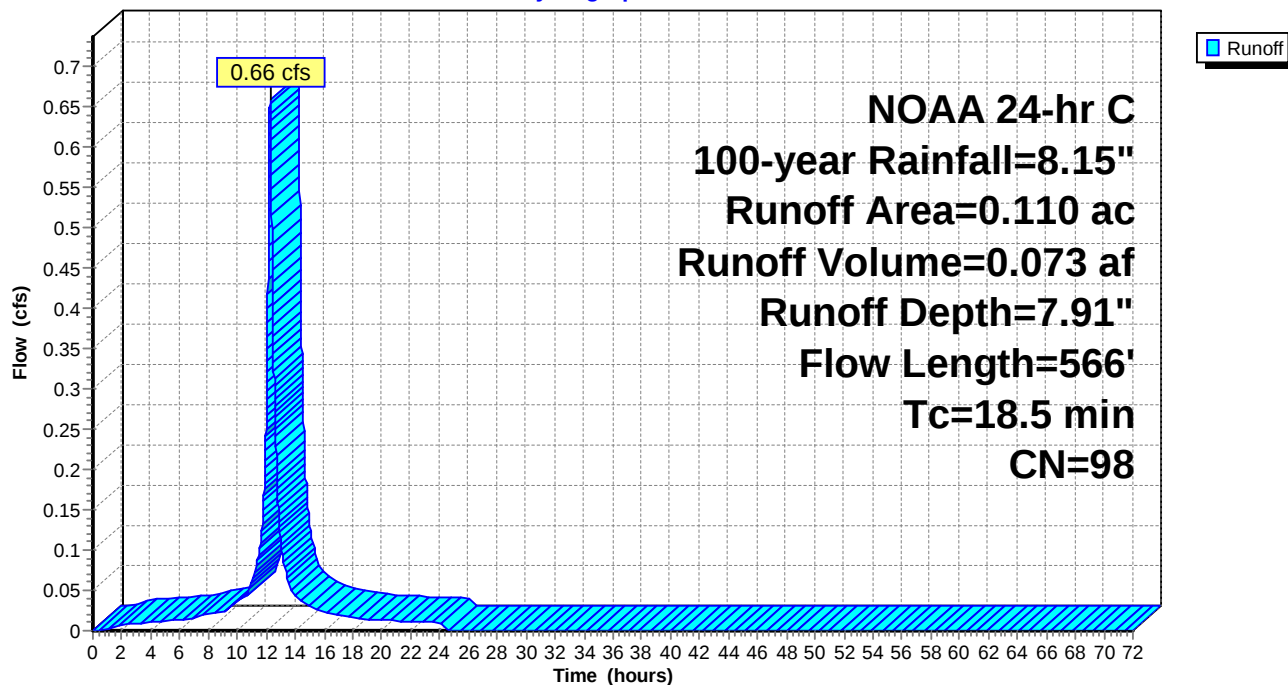
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
* 0.110	98	Impervious Areas
0.110		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	23	0.0413	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.3	31	0.0149	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
2.1	70	0.0129	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	149	0.0105	1.65		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.4	120	0.0083	1.47		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.0	173	0.0081	1.45		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.5	566	Total			

Subcatchment EA-2D i: EA-2D Impervious

Hydrograph



Pre-Development

NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment EA-2D p: EA-2D Pervious

Runoff = 7.75 cfs @ 12.27 hrs, Volume= 0.750 af, Depth= 5.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
1.330	80	>75% Grass cover, Good, HSG D
0.230	79	Woods/grass comb., Good, HSG D
1.560	80	Weighted Average
1.560		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	23	0.0413	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.3	31	0.0149	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
2.1	70	0.0129	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	149	0.0105	1.65		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.4	120	0.0083	1.47		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.0	173	0.0081	1.45		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.5	566	Total			

Pre-Development

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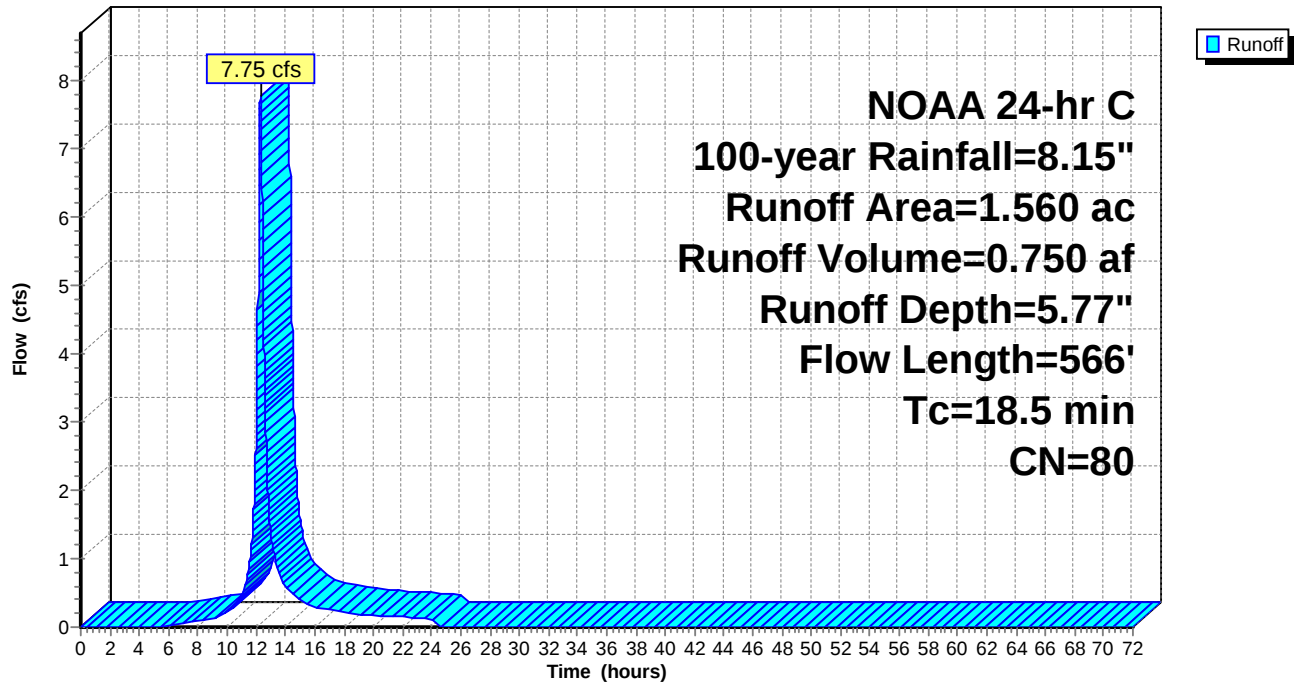
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NOAA 24-hr C 100-year Rainfall=8.15"

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Subcatchment EA-2D p: EA-2D Pervious

Hydrograph



Pre-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment EA-2U p: EA-2U Pervious

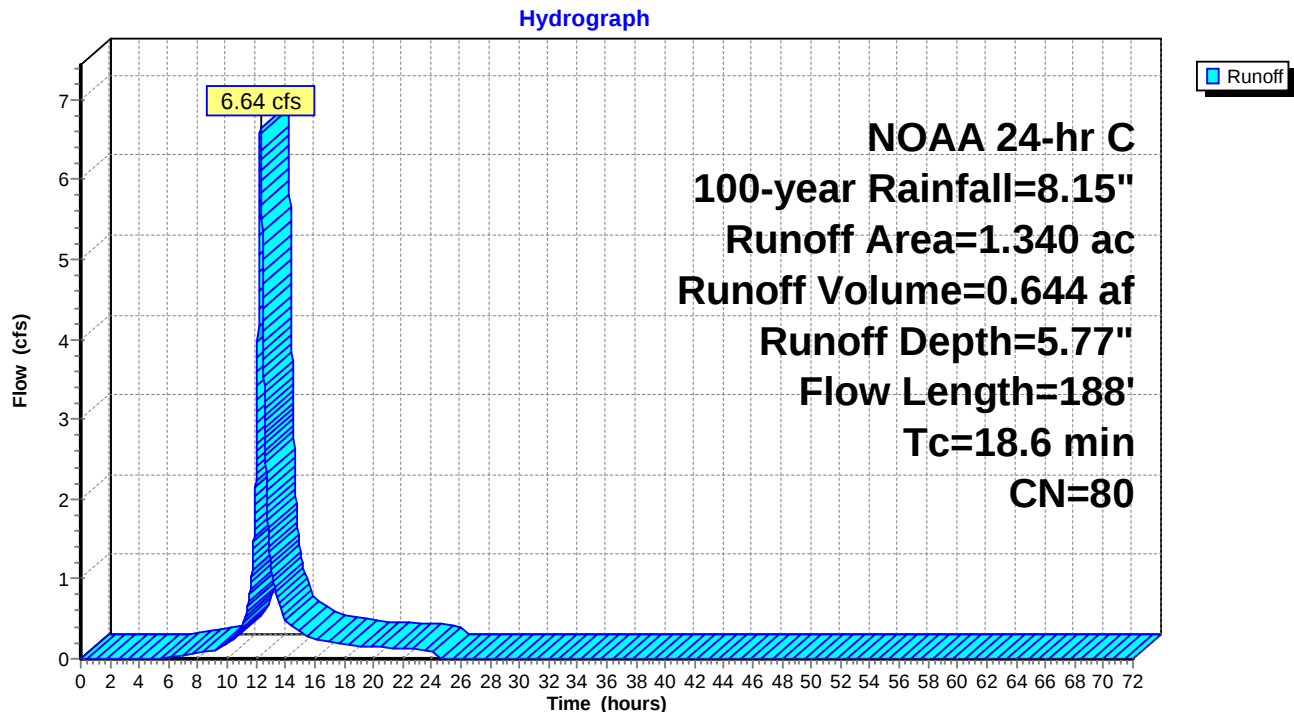
Runoff = 6.64 cfs @ 12.27 hrs, Volume= 0.644 af, Depth= 5.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.750	80	>75% Grass cover, Good, HSG D
0.590	79	Woods/grass comb., Good, HSG D
1.340	80	Weighted Average
1.340		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	44	0.0303	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
8.9	113	0.0018	0.21		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.4	31	0.0065	1.30		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.6	188	Total			

Subcatchment EA-2U p: EA-2U Pervious



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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment EA-3D i: EA-3D Impervious

Runoff = 0.55 cfs @ 12.20 hrs, Volume= 0.053 af, Depth= 7.91"

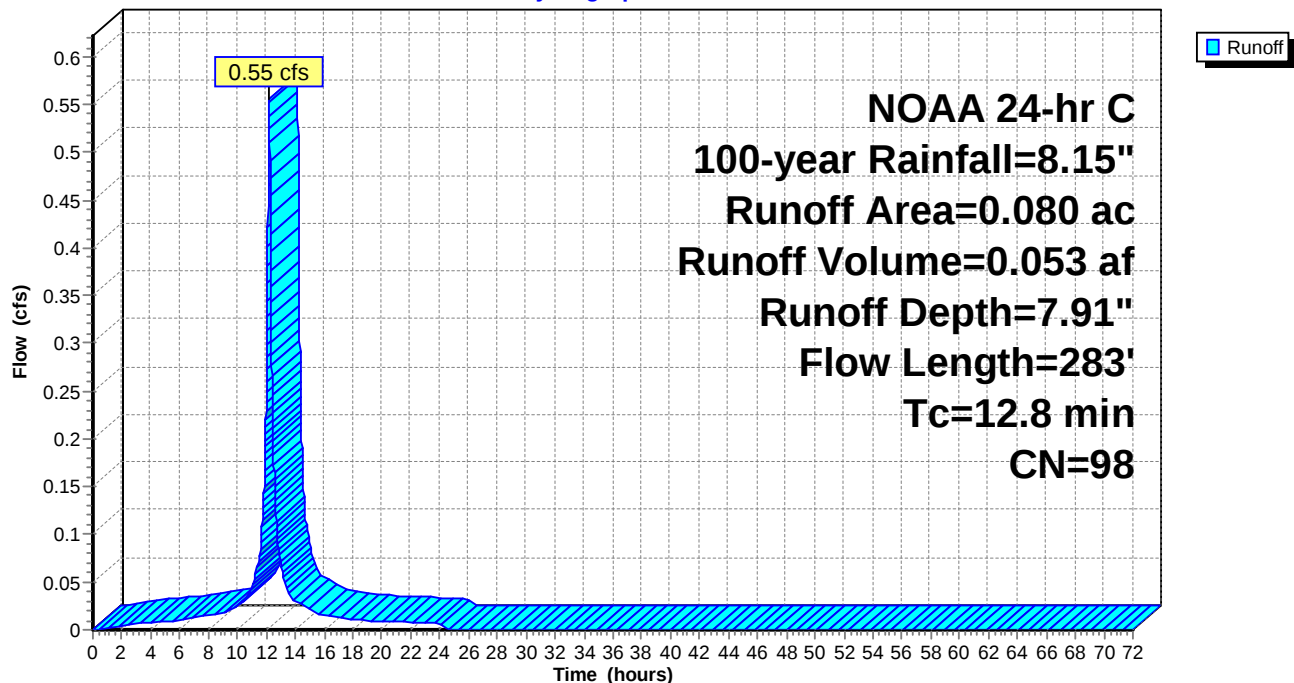
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
* 0.080	98	Impervious Areas
0.080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	85	0.0162	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
0.4	55	0.0181	2.17		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	134	0.0213	0.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.8	283	Total			

Subcatchment EA-3D i: EA-3D Impervious

Hydrograph



Pre-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment EA-3D p: EA-3D Pervious

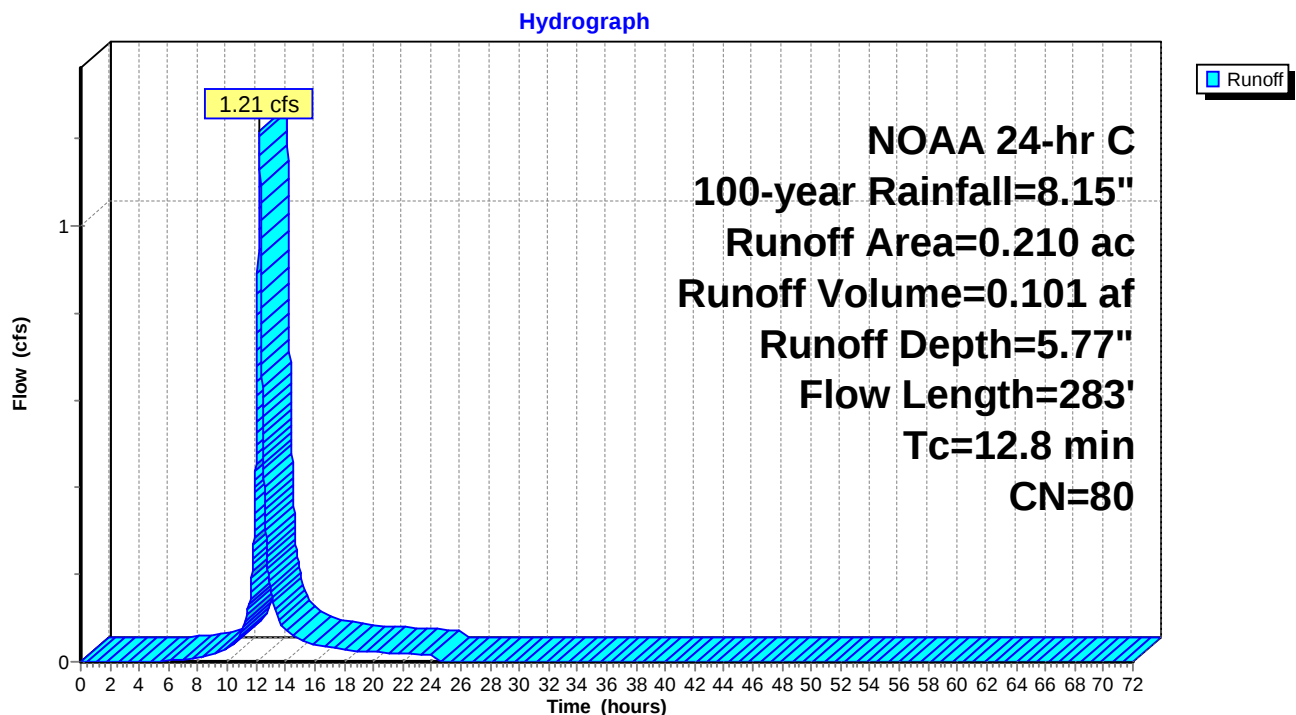
Runoff = 1.21 cfs @ 12.20 hrs, Volume= 0.101 af, Depth= 5.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.210	80	>75% Grass cover, Good, HSG D
0.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	85	0.0162	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
0.4	55	0.0181	2.17		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	134	0.0213	0.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.8	283	Total			

Subcatchment EA-3D p: EA-3D Pervious



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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment EA-3U i: EA-3U Impervious

Runoff = 0.34 cfs @ 12.21 hrs, Volume= 0.033 af, Depth= 7.91"

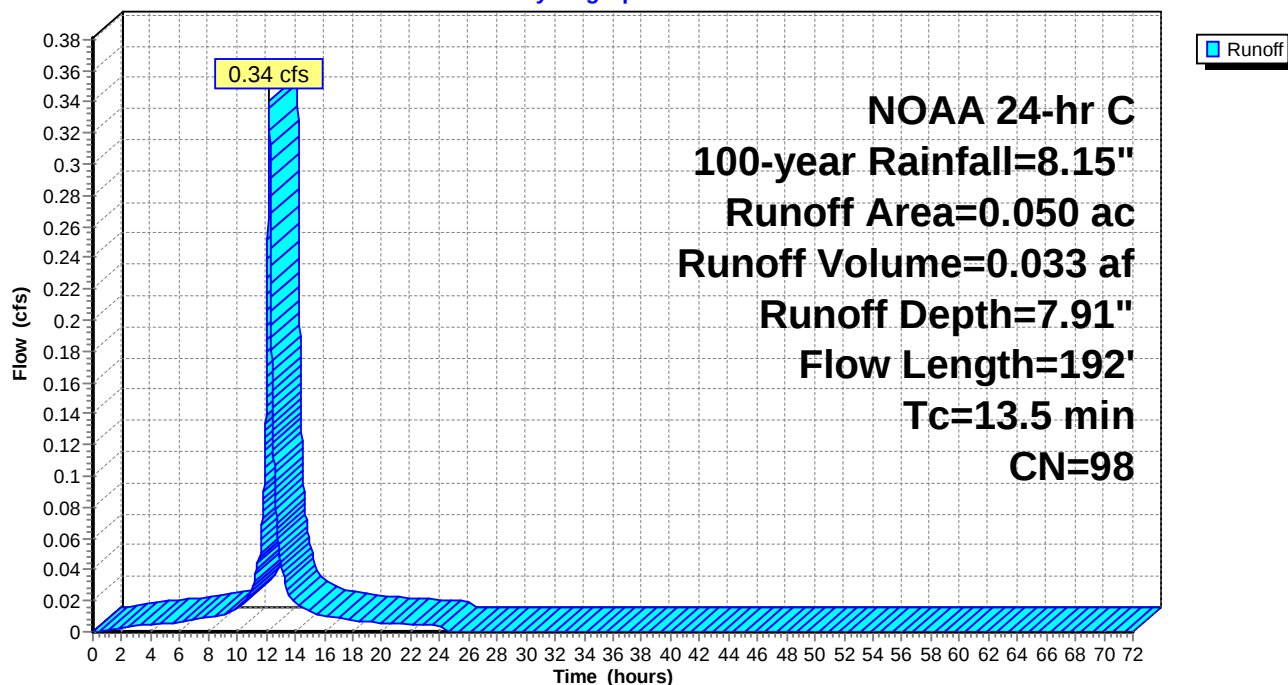
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
* 0.050	98	Impervious Areas
0.050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	6	0.0193	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.5	192	Total			

Subcatchment EA-3U i: EA-3U Impervious

Hydrograph



Pre-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/15/2023

Summary for Subcatchment EA-3U p: EA-3U Pervious

Runoff = 7.07 cfs @ 12.21 hrs, Volume= 0.598 af, Depth= 5.65"

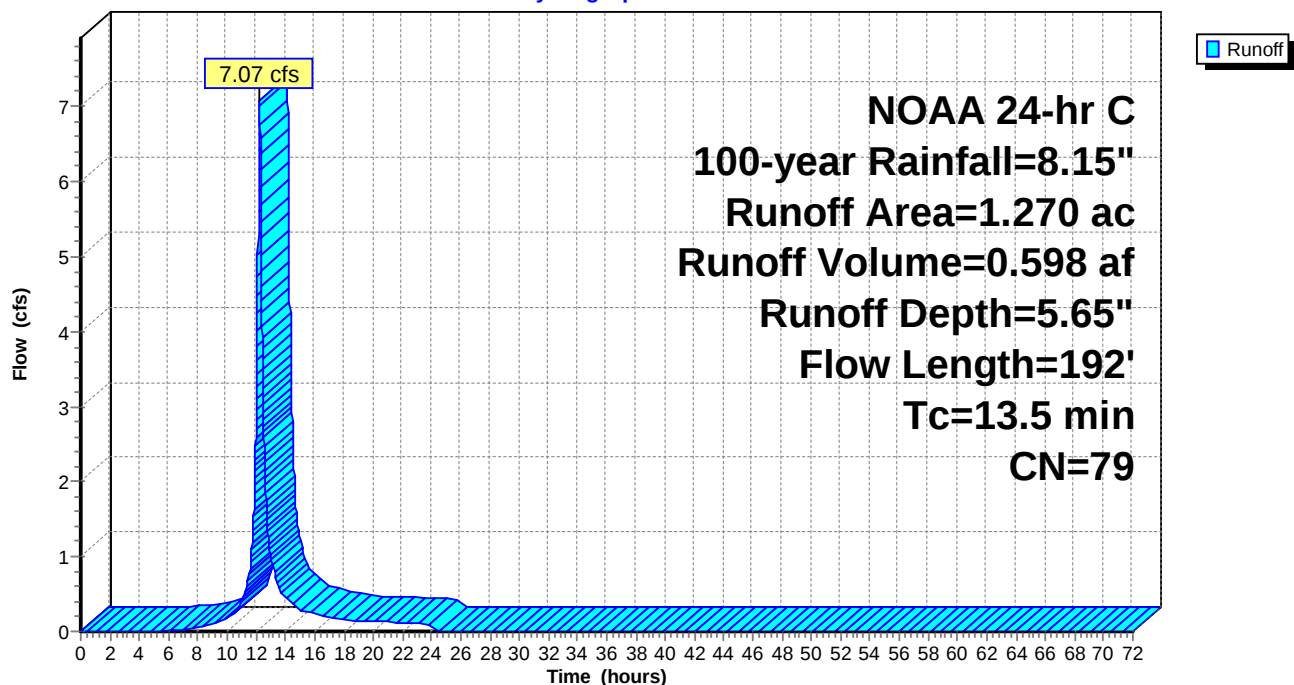
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.450	80	>75% Grass cover, Good, HSG D
0.820	79	Woods/grass comb., Good, HSG D
1.270	79	Weighted Average
1.270		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	6	0.0193	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.5	192	Total			

Subcatchment EA-3U p: EA-3U Pervious

Hydrograph



Pre-Development

NOAA 24-hr C 100-year Rainfall=8.15"

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Printed 11/15/2023

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Summary for Pond 2P: EA-2 Wetlands

Inflow Area = 3.010 ac, 3.65% Impervious, Inflow Depth = 5.84" for 100-year event
Inflow = 15.05 cfs @ 12.27 hrs, Volume= 1.466 af
Outflow = 14.77 cfs @ 12.30 hrs, Volume= 1.414 af, Atten= 2%, Lag= 1.9 min
Primary = 7.55 cfs @ 12.30 hrs, Volume= 0.932 af
Secondary = 7.22 cfs @ 12.30 hrs, Volume= 0.482 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 203.14' @ 12.30 hrs Surf.Area= 19,490 sf Storage= 5,111 cf

Plug-Flow detention time= 44.5 min calculated for 1.414 af (96% of inflow)
Center-of-Mass det. time= 23.4 min (836.9 - 813.5)

Volume	Invert	Avail.Storage	Storage Description
#1	202.60'	8,536 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.60	467	0	0
202.70	2,559	151	151
202.80	5,796	418	569
202.90	10,670	823	1,392
203.00	15,559	1,311	2,704
203.10	18,857	1,721	4,425
203.20	20,626	1,974	6,399
203.30	22,113	2,137	8,536

Device	Routing	Invert	Outlet Devices
#1	Primary	202.97'	179.4 deg x 11.0' long x 0.33' rise Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)
#2	Secondary	203.01'	65.0' 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=7.54 cfs @ 12.30 hrs HW=203.14' (Free Discharge)

↑ **1=Sharp-Crested Vee/Trap Weir** (Weir Controls 7.54 cfs @ 1.07 fps)

Secondary OutFlow Max=7.22 cfs @ 12.30 hrs HW=203.14' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 7.22 cfs @ 0.88 fps)

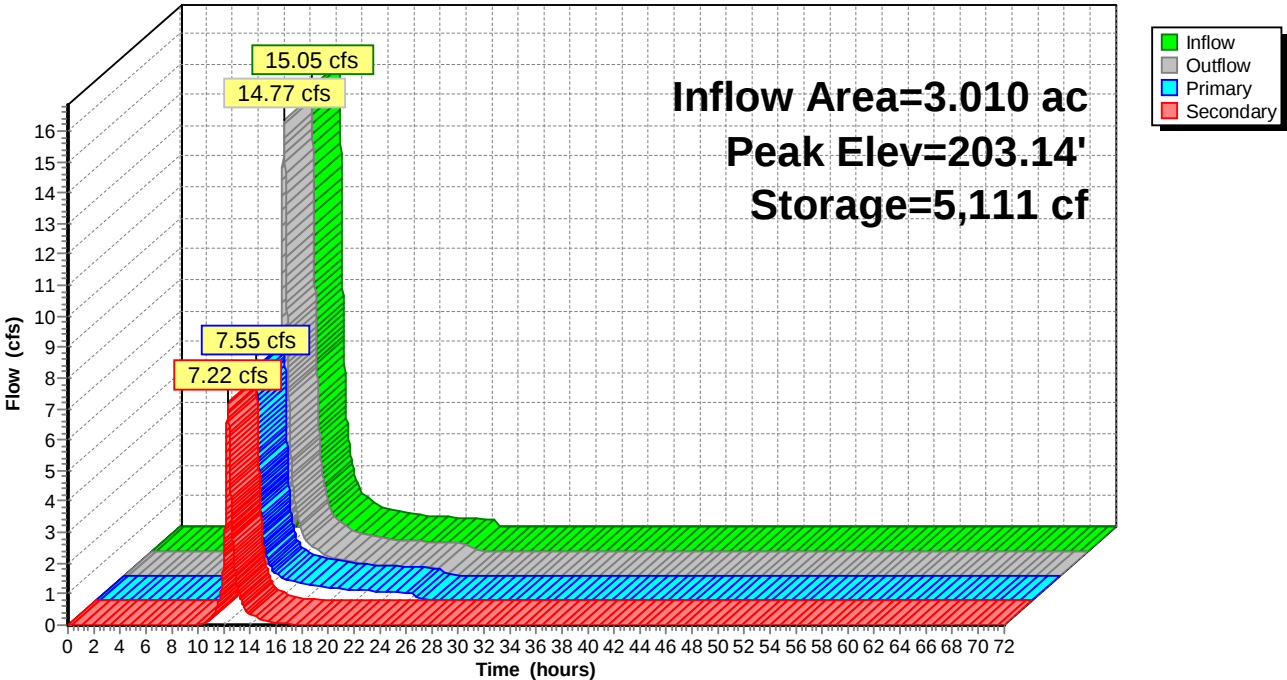
Pre-Development

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NOAA 24-hr C 100-year Rainfall=8.15"
Printed 11/15/2023

Pond 2P: EA-2 Wetlands

Hydrograph



Pre-Development

NOAA 24-hr C 100-year Rainfall=8.15"

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Printed 11/15/2023

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Hydrograph for Pond 2P: EA-2 Wetlands

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	202.60	0.00	0.00	0.00
2.00	0.01	17	202.62	0.00	0.00	0.00
4.00	0.01	80	202.67	0.00	0.00	0.00
6.00	0.04	216	202.72	0.00	0.00	0.00
8.00	0.17	927	202.85	0.00	0.00	0.00
10.00	0.46	2,731	203.00	0.28	0.28	0.00
12.00	5.49	3,841	203.07	4.73	2.46	2.27
14.00	1.10	3,125	203.03	1.15	0.81	0.34
16.00	0.58	2,941	203.01	0.59	0.53	0.07
18.00	0.40	2,858	203.01	0.42	0.42	0.00
20.00	0.34	2,792	203.01	0.34	0.34	0.00
22.00	0.29	2,749	203.00	0.30	0.30	0.00
24.00	0.25	2,705	203.00	0.25	0.25	0.00
26.00	0.00	2,328	202.97	0.02	0.02	0.00
28.00	0.00	2,278	202.97	0.00	0.00	0.00
30.00	0.00	2,269	202.97	0.00	0.00	0.00
32.00	0.00	2,265	202.97	0.00	0.00	0.00
34.00	0.00	2,262	202.97	0.00	0.00	0.00
36.00	0.00	2,261	202.97	0.00	0.00	0.00
38.00	0.00	2,260	202.97	0.00	0.00	0.00
40.00	0.00	2,260	202.97	0.00	0.00	0.00
42.00	0.00	2,259	202.97	0.00	0.00	0.00
44.00	0.00	2,259	202.97	0.00	0.00	0.00
46.00	0.00	2,259	202.97	0.00	0.00	0.00
48.00	0.00	2,259	202.97	0.00	0.00	0.00
50.00	0.00	2,259	202.97	0.00	0.00	0.00
52.00	0.00	2,259	202.97	0.00	0.00	0.00
54.00	0.00	2,259	202.97	0.00	0.00	0.00
56.00	0.00	2,259	202.97	0.00	0.00	0.00
58.00	0.00	2,259	202.97	0.00	0.00	0.00
60.00	0.00	2,259	202.97	0.00	0.00	0.00
62.00	0.00	2,259	202.97	0.00	0.00	0.00
64.00	0.00	2,259	202.97	0.00	0.00	0.00
66.00	0.00	2,259	202.97	0.00	0.00	0.00
68.00	0.00	2,259	202.97	0.00	0.00	0.00
70.00	0.00	2,259	202.97	0.00	0.00	0.00
72.00	0.00	2,259	202.97	0.00	0.00	0.00

Pre-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

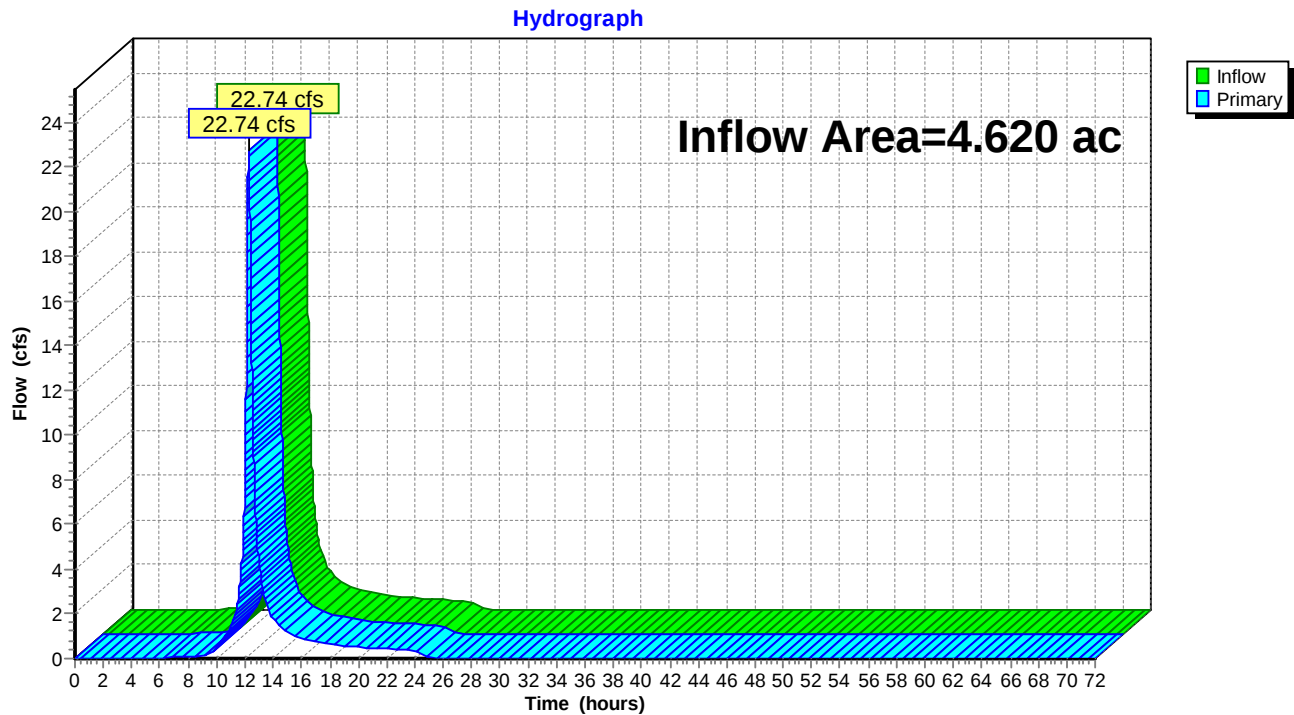
Printed 11/15/2023

Summary for Pond 3P: Stony Brook Tributary (DP-2)

Inflow Area = 4.620 ac, 5.19% Impervious, Inflow Depth = 5.71" for 100-year event
Inflow = 22.74 cfs @ 12.26 hrs, Volume= 2.198 af
Primary = 22.74 cfs @ 12.26 hrs, Volume= 2.198 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 3P: Stony Brook Tributary (DP-2)



Pre-Development

Prepared by {enter your company name here}

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NOAA 24-hr C 100-year Rainfall=8.15"

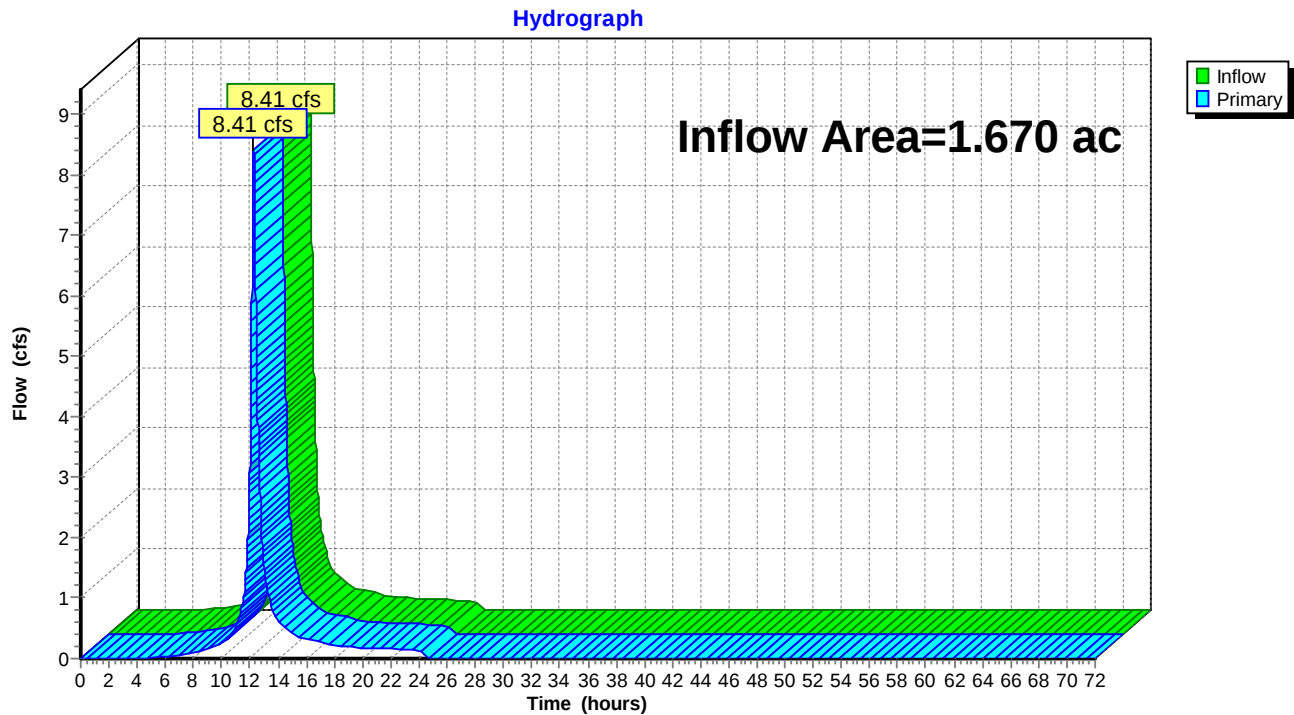
Printed 11/15/2023

Summary for Pond 5P: EA-2 Disturbed

Inflow Area = 1.670 ac, 6.59% Impervious, Inflow Depth = 5.91" for 100-year event
Inflow = 8.41 cfs @ 12.27 hrs, Volume= 0.822 af
Primary = 8.41 cfs @ 12.27 hrs, Volume= 0.822 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 5P: EA-2 Disturbed



Pre-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

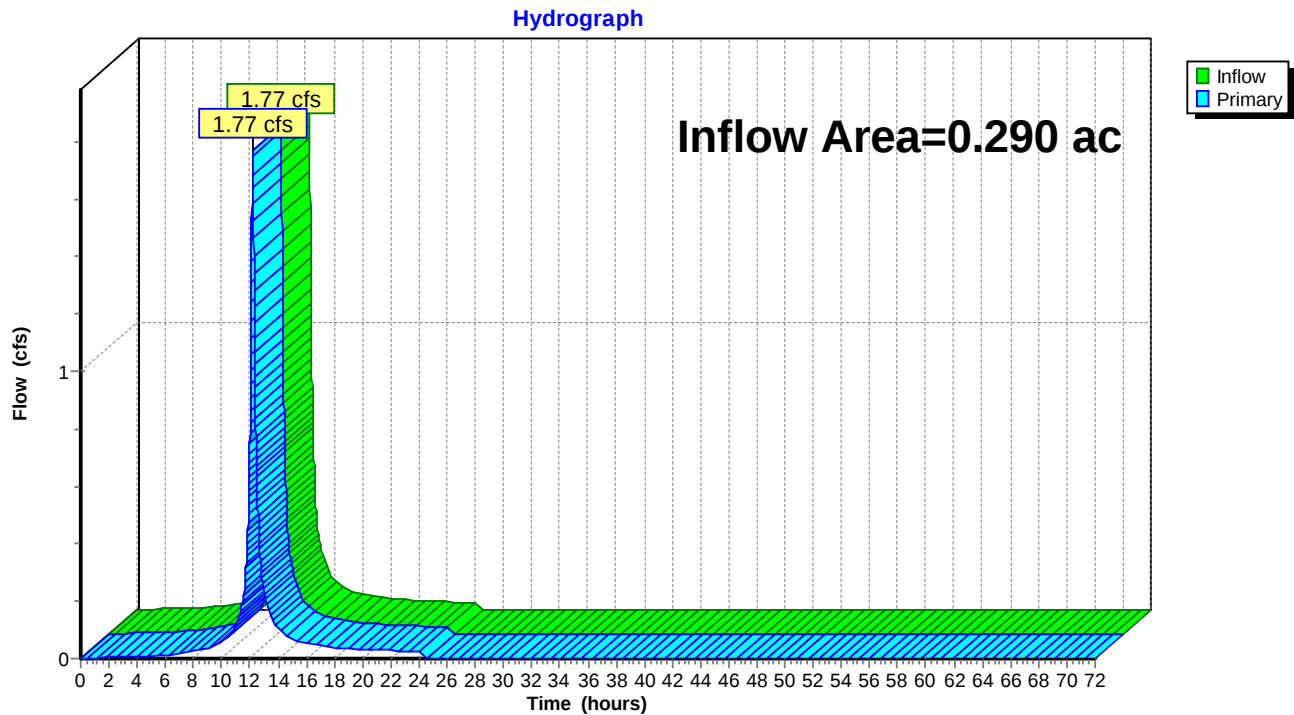
Printed 11/15/2023

Summary for Pond 6P: EA-3 Disturbed

Inflow Area = 0.290 ac, 27.59% Impervious, Inflow Depth = 6.36" for 100-year event
Inflow = 1.77 cfs @ 12.20 hrs, Volume= 0.154 af
Primary = 1.77 cfs @ 12.20 hrs, Volume= 0.154 af, Atten= 0%, Lag= 0.0 min

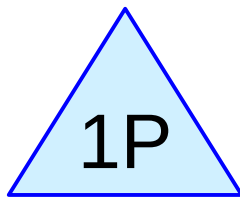
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 6P: EA-3 Disturbed

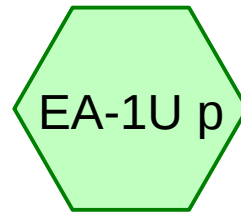


APPENDIX B

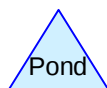
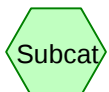
PRE-DEVELOPMENT DRAINAGE ANALYSIS
(UNDISTURBED)



DP-1 OFFSITE



EA-1U Pervious



Pre-Development (Undisturbed)

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment EA-1U p: EA-1U Pervious

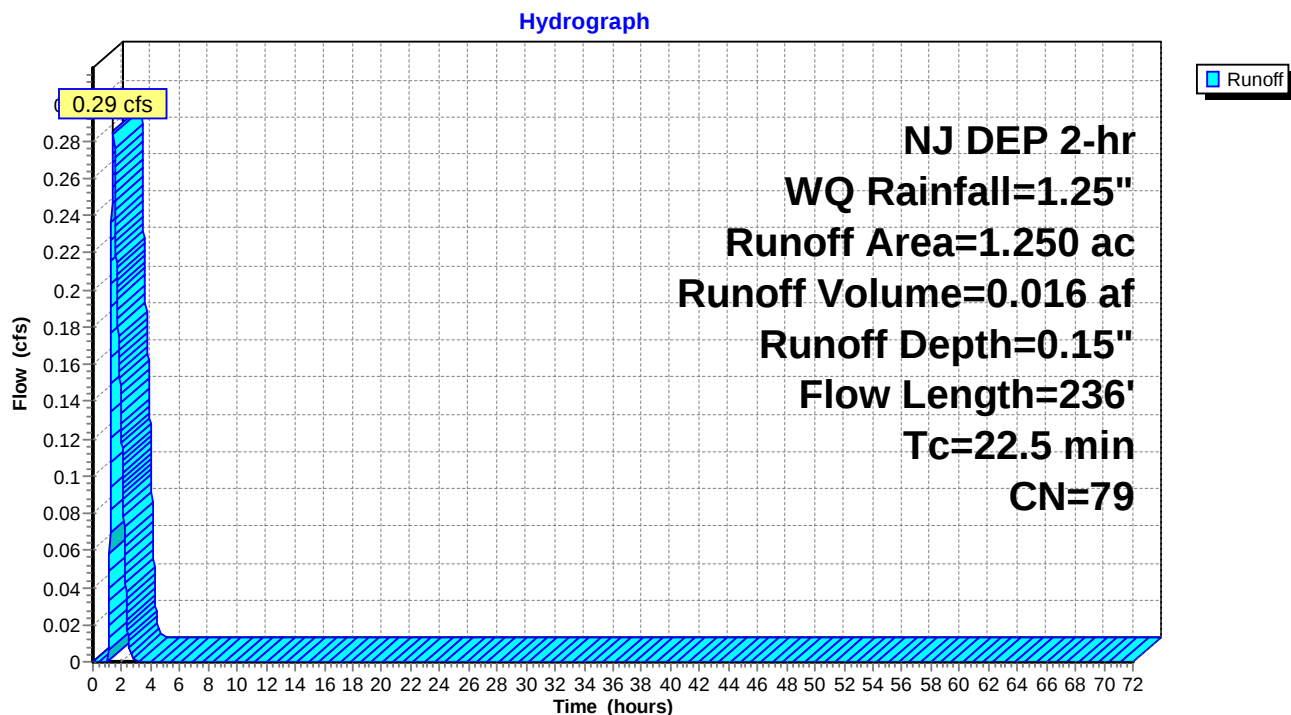
Runoff = 0.29 cfs @ 1.41 hrs, Volume= 0.016 af, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.460	80	>75% Grass cover, Good, HSG D
0.790	79	Woods/grass comb., Good, HSG D
1.250	79	Weighted Average
1.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	53	0.0263	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.4	18	0.0049	0.03		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
7.9	165	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.5	236	Total			

Subcatchment EA-1U p: EA-1U Pervious



Pre-Development (Undisturbed)

Prepared by {enter your company name here}

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

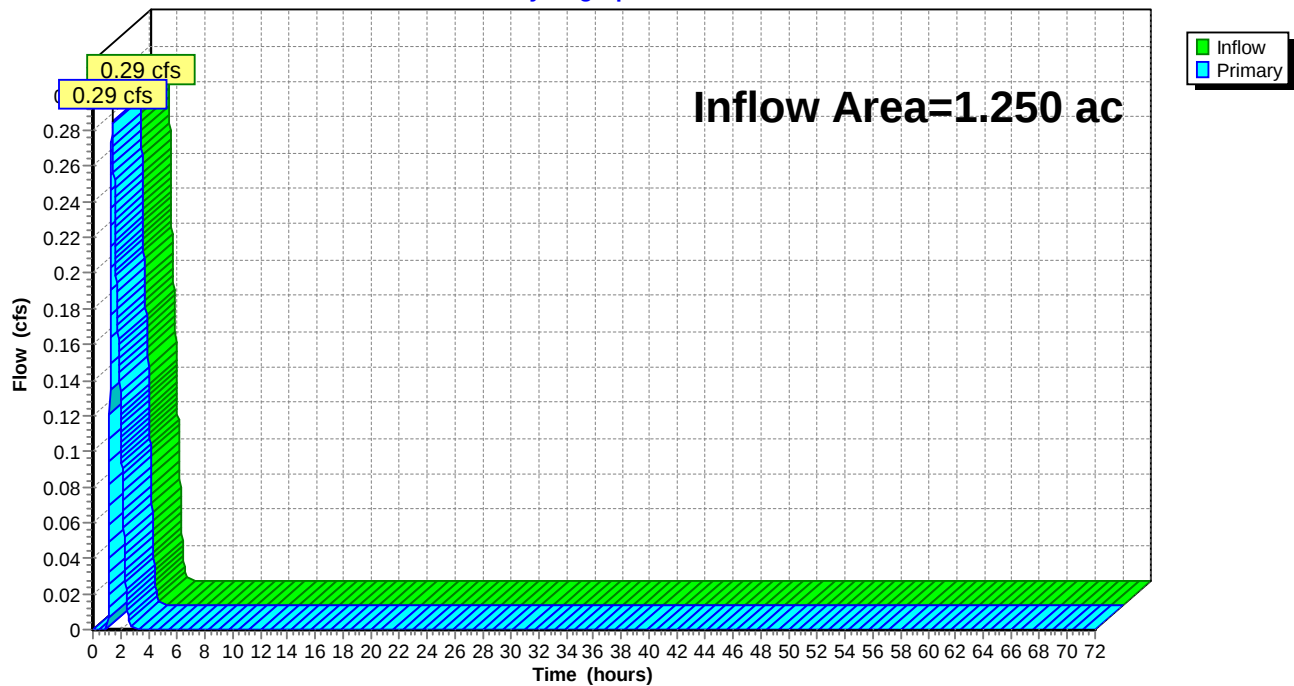
Summary for Pond 1P: DP-1 OFFSITE

Inflow Area = 1.250 ac, 0.00% Impervious, Inflow Depth = 0.15" for WQ event
Inflow = 0.29 cfs @ 1.41 hrs, Volume= 0.016 af
Primary = 0.29 cfs @ 1.41 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 1P: DP-1 OFFSITE

Hydrograph



Pre-Development (Undisturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Summary for Subcatchment EA-1U p: EA-1U Pervious

Runoff = 1.41 cfs @ 12.33 hrs, Volume= 0.148 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

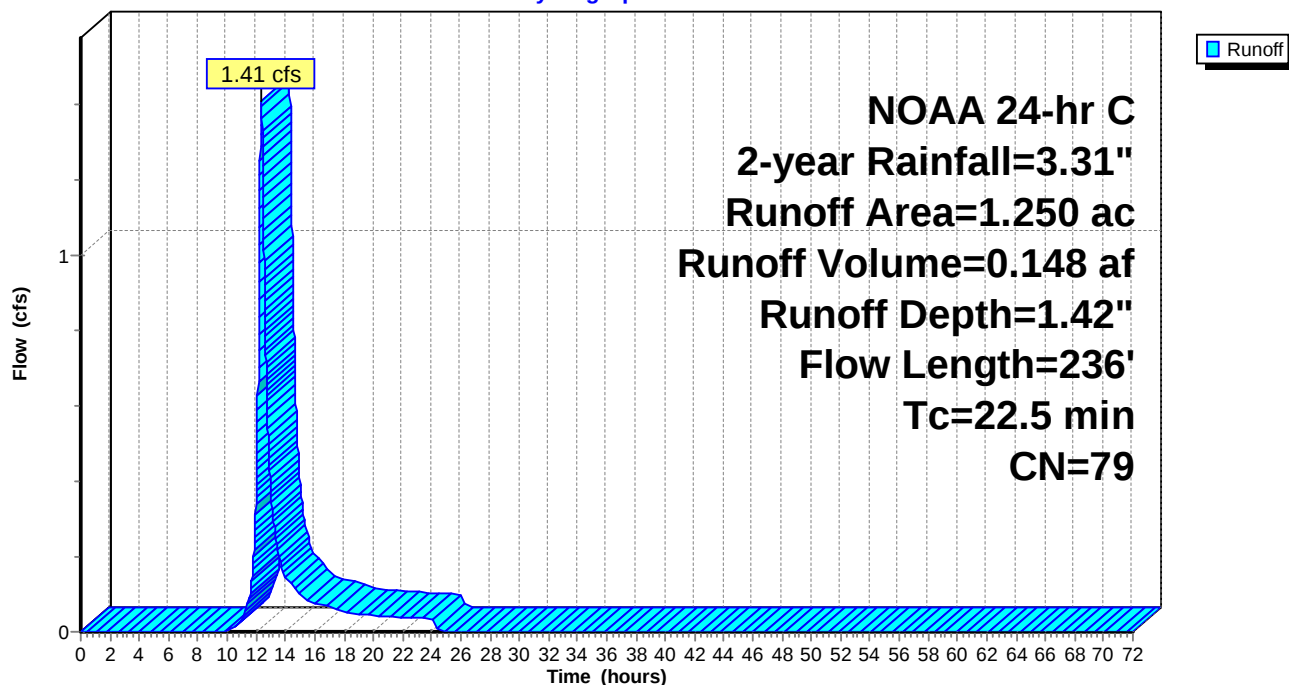
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.460	80	>75% Grass cover, Good, HSG D
0.790	79	Woods/grass comb., Good, HSG D
1.250	79	Weighted Average
1.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	53	0.0263	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.4	18	0.0049	0.03		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
7.9	165	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.5	236	Total			

Subcatchment EA-1U p: EA-1U Pervious

Hydrograph



Pre-Development (Undisturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 2-year Rainfall=3.31"

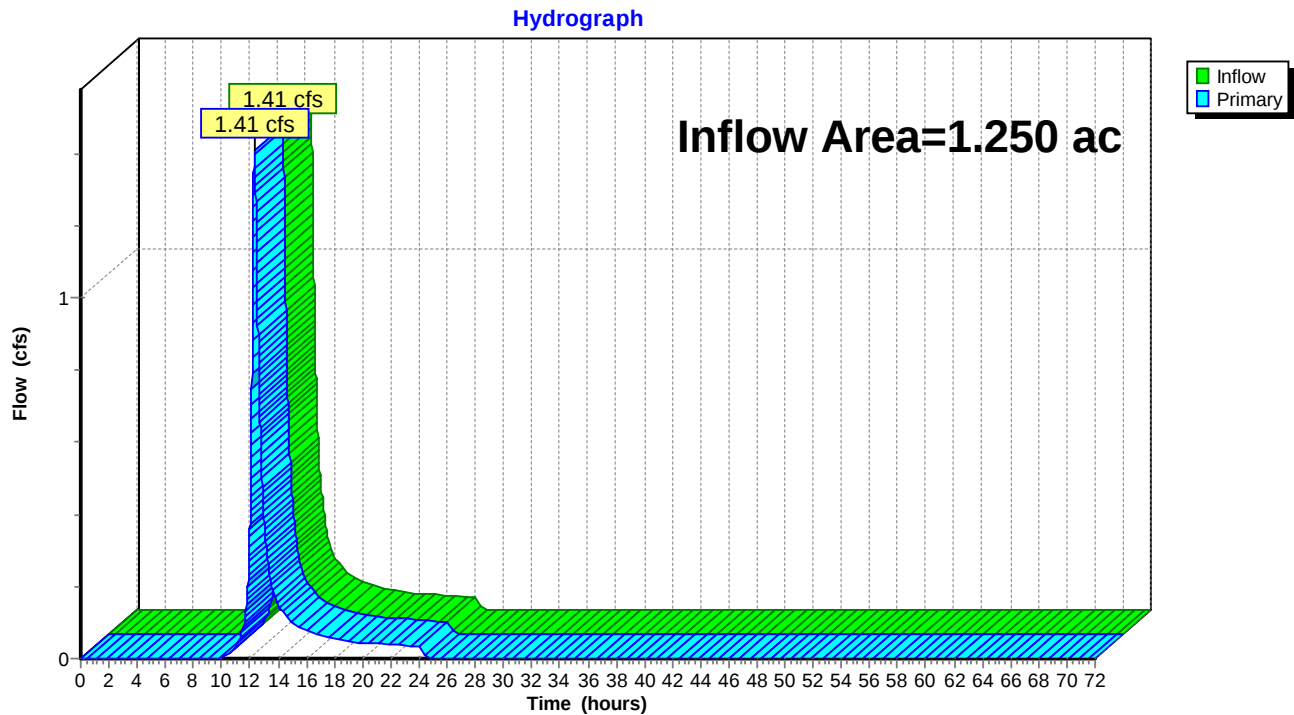
Printed 11/16/2023

Summary for Pond 1P: DP-1 OFFSITE

Inflow Area = 1.250 ac, 0.00% Impervious, Inflow Depth = 1.42" for 2-year event
Inflow = 1.41 cfs @ 12.33 hrs, Volume= 0.148 af
Primary = 1.41 cfs @ 12.33 hrs, Volume= 0.148 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 1P: DP-1 OFFSITE



Pre-Development (Undisturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 10-year Rainfall=4.97"

Printed 11/16/2023

Summary for Subcatchment EA-1U p: EA-1U Pervious

Runoff = 2.80 cfs @ 12.32 hrs, Volume= 0.289 af, Depth= 2.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

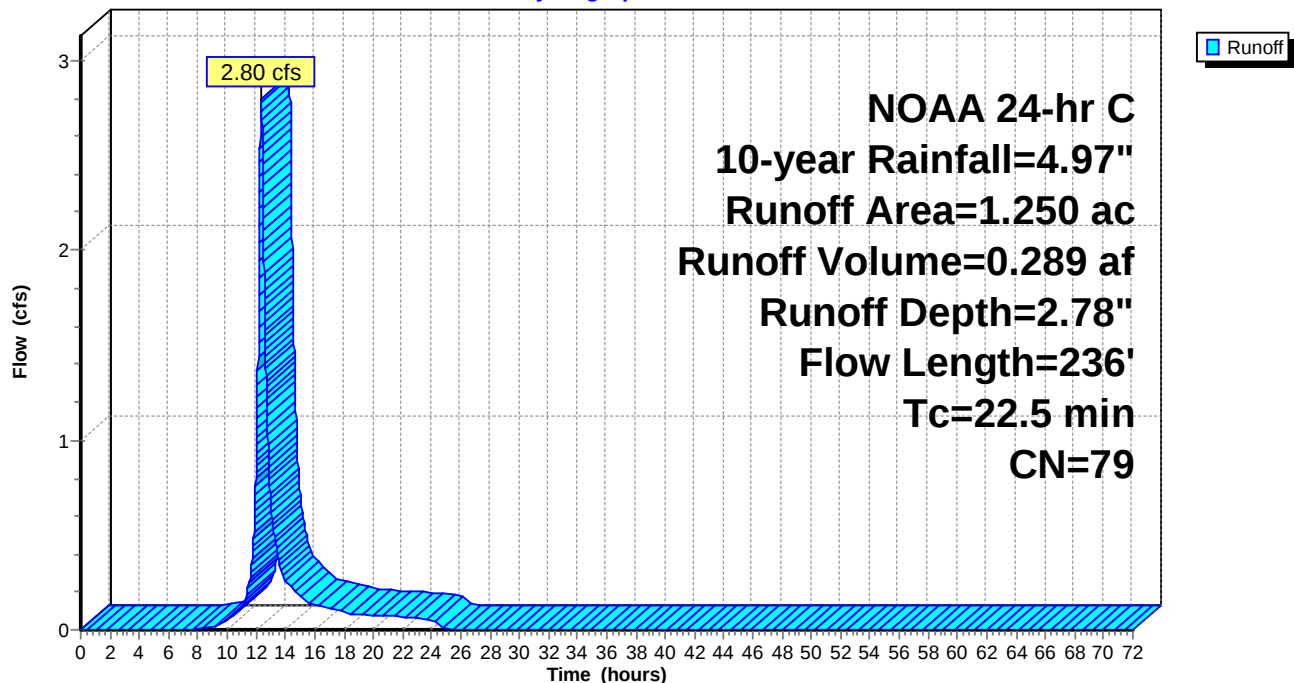
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.460	80	>75% Grass cover, Good, HSG D
0.790	79	Woods/grass comb., Good, HSG D
1.250	79	Weighted Average
1.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	53	0.0263	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.4	18	0.0049	0.03		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
7.9	165	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.5	236	Total			

Subcatchment EA-1U p: EA-1U Pervious

Hydrograph



Pre-Development (Undisturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 10-year Rainfall=4.97"

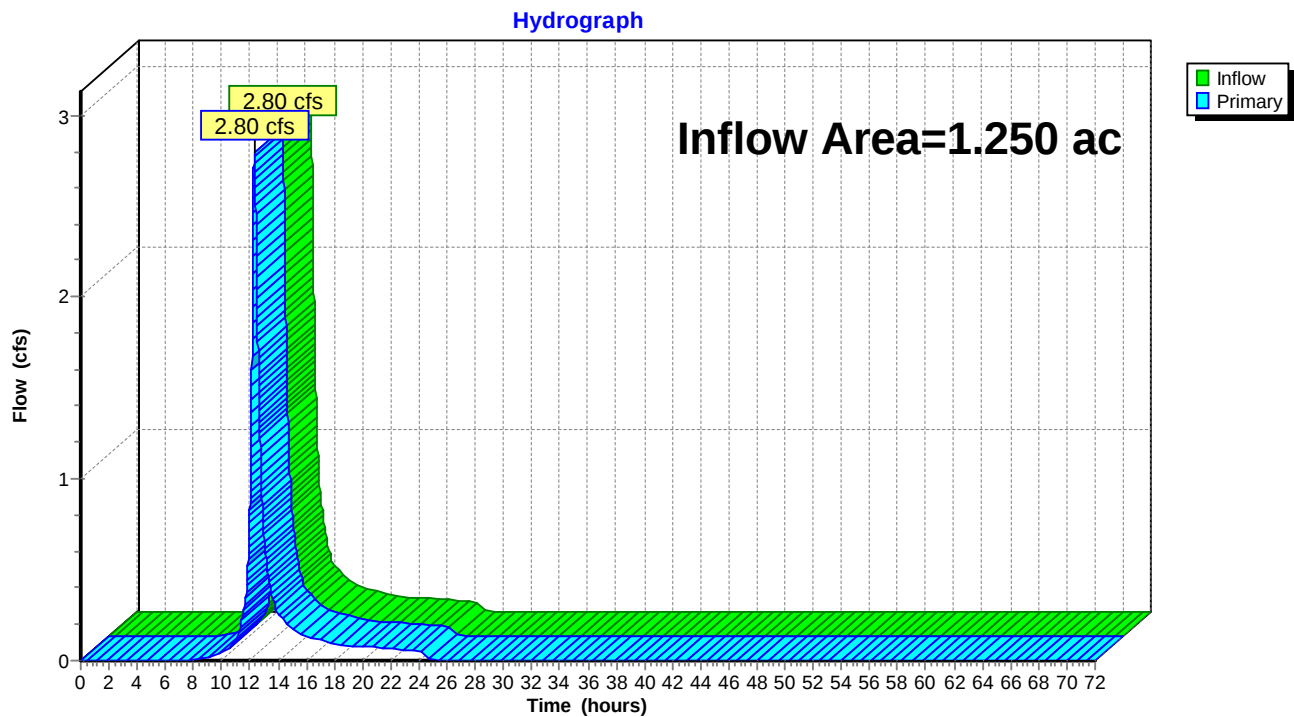
Printed 11/16/2023

Summary for Pond 1P: DP-1 OFFSITE

Inflow Area = 1.250 ac, 0.00% Impervious, Inflow Depth = 2.78" for 10-year event
Inflow = 2.80 cfs @ 12.32 hrs, Volume= 0.289 af
Primary = 2.80 cfs @ 12.32 hrs, Volume= 0.289 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 1P: DP-1 OFFSITE



Pre-Development (Undisturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/16/2023

Summary for Subcatchment EA-1U p: EA-1U Pervious

Runoff = 5.62 cfs @ 12.32 hrs, Volume= 0.588 af, Depth= 5.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

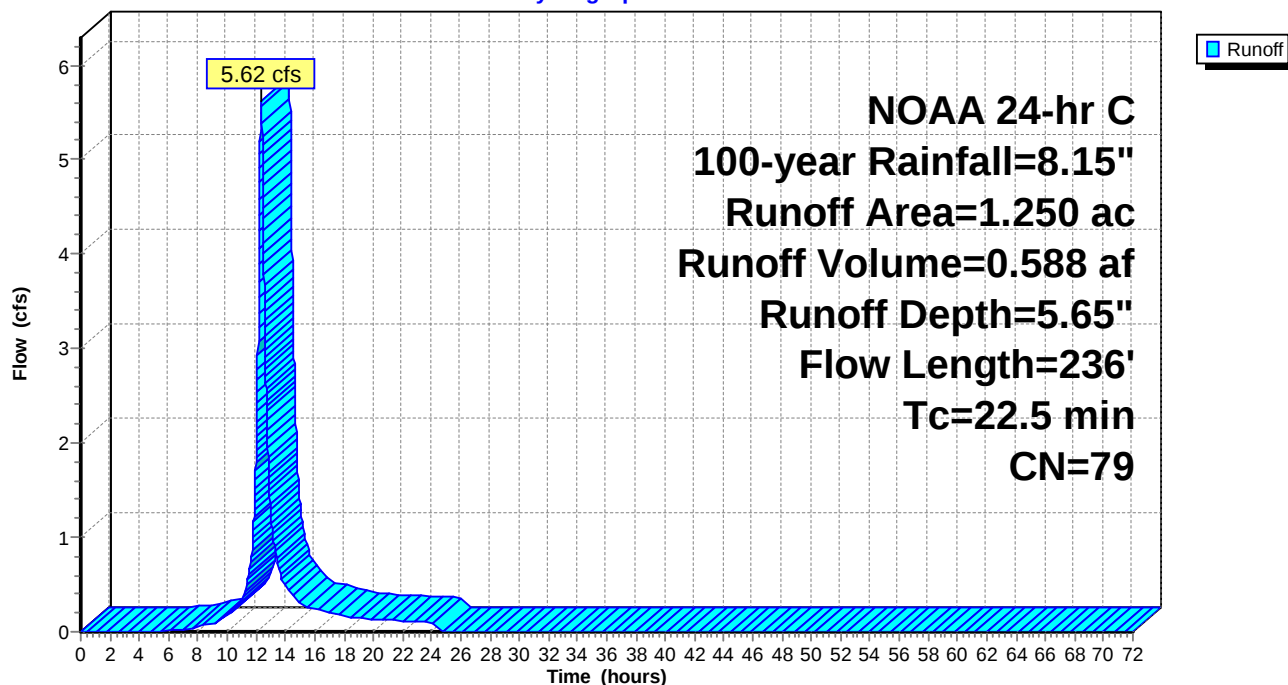
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.460	80	>75% Grass cover, Good, HSG D
0.790	79	Woods/grass comb., Good, HSG D
1.250	79	Weighted Average
1.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	53	0.0263	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.4	18	0.0049	0.03		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
7.9	165	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.5	236	Total			

Subcatchment EA-1U p: EA-1U Pervious

Hydrograph



Pre-Development (Undisturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/16/2023

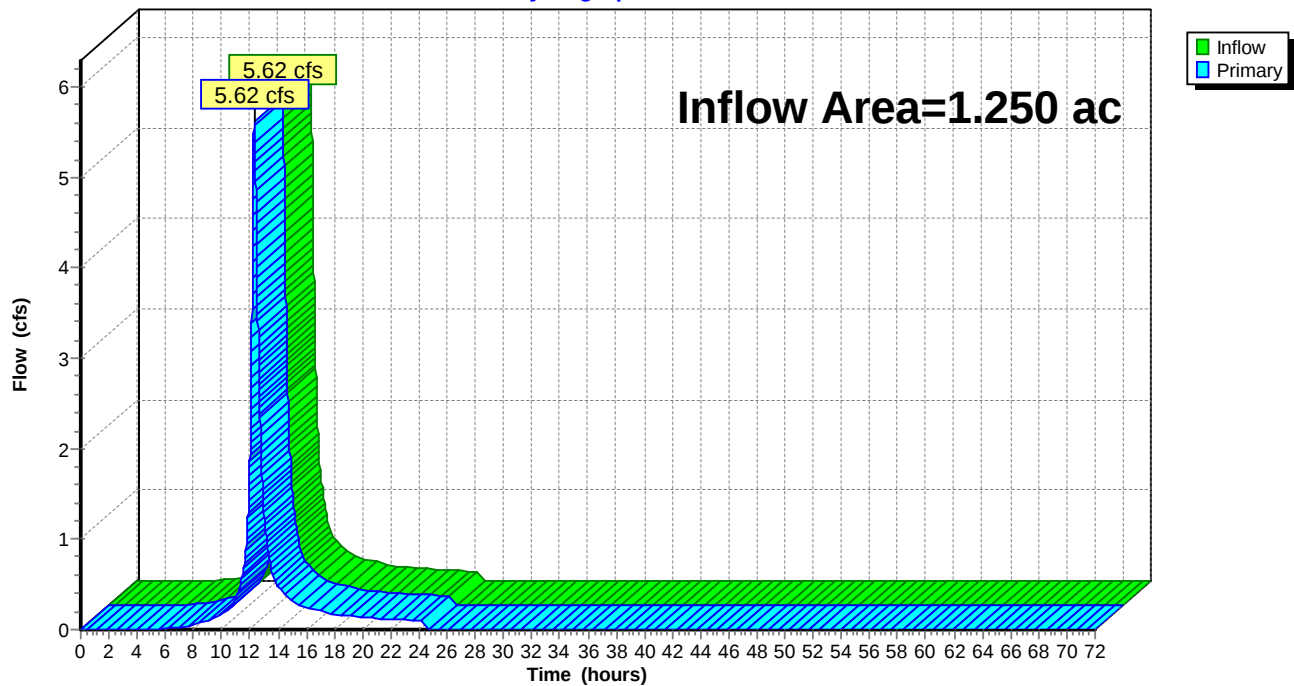
Summary for Pond 1P: DP-1 OFFSITE

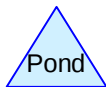
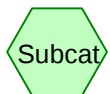
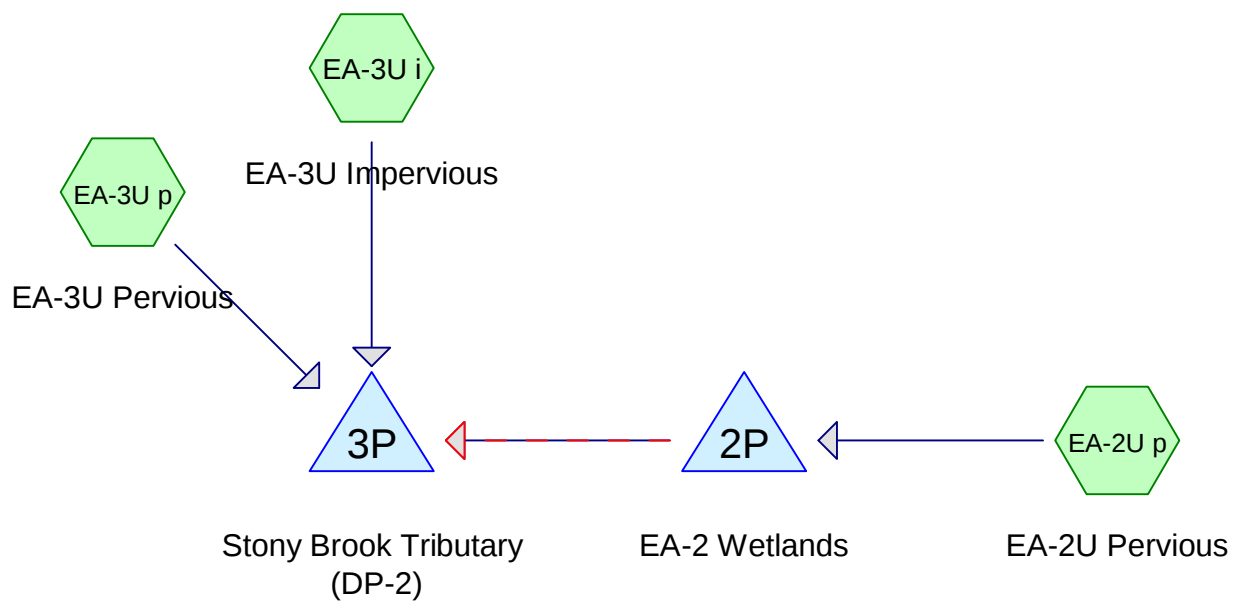
Inflow Area = 1.250 ac, 0.00% Impervious, Inflow Depth = 5.65" for 100-year event
Inflow = 5.62 cfs @ 12.32 hrs, Volume= 0.588 af
Primary = 5.62 cfs @ 12.32 hrs, Volume= 0.588 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 1P: DP-1 OFFSITE

Hydrograph





Routing Diagram for Pre-Development (Undisturbed)

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Pre-Development (Undisturbed)

Prepared by {enter your company name here}

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NJ DEP 2-hr WQ Rainfall=1.25"

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Page 2

Summary for Subcatchment EA-2U p: EA-2U Pervious

Runoff = 0.39 cfs @ 1.34 hrs, Volume= 0.019 af, Depth= 0.17"

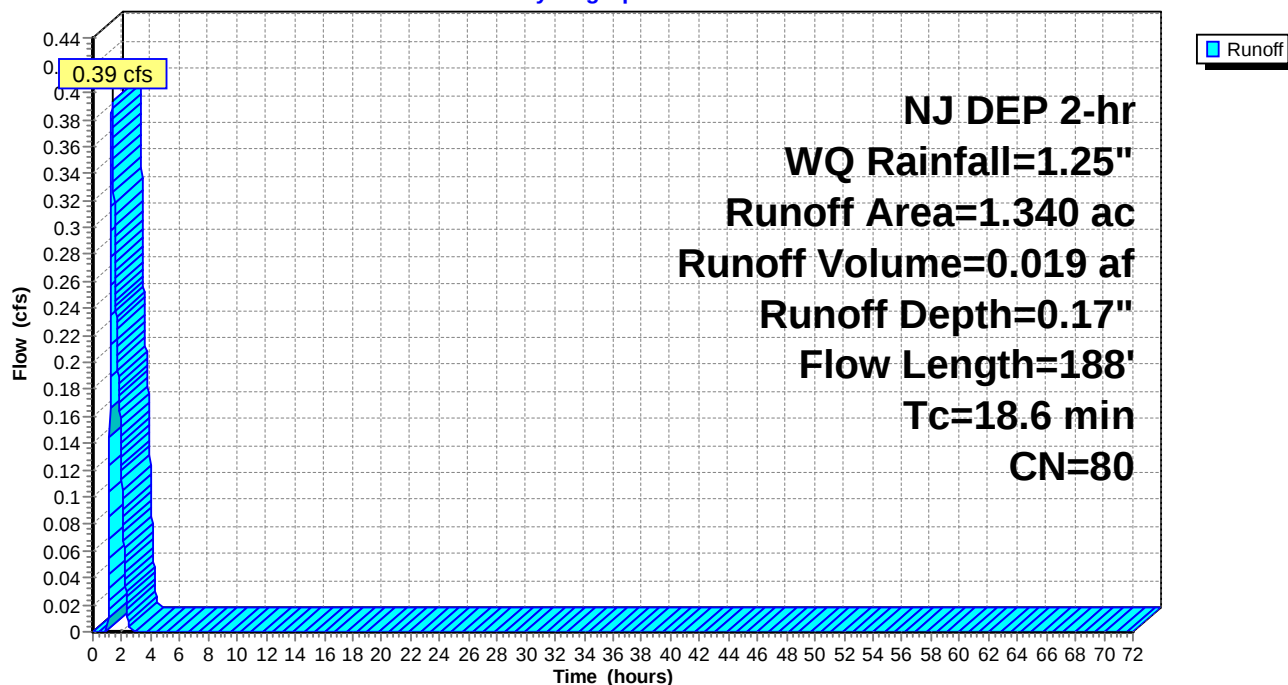
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.750	80	>75% Grass cover, Good, HSG D
0.590	79	Woods/grass comb., Good, HSG D
1.340	80	Weighted Average
1.340		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	44	0.0303	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
8.9	113	0.0018	0.21		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.4	31	0.0065	1.30		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.6	188	Total			

Subcatchment EA-2U p: EA-2U Pervious

Hydrograph



Pre-Development (Undisturbed)

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NJ DEP 2-hr WQ Rainfall=1.25"

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Page 3

Summary for Subcatchment EA-3U i: EA-3U Impervious

Runoff = 0.12 cfs @ 1.19 hrs, Volume= 0.004 af, Depth= 1.03"

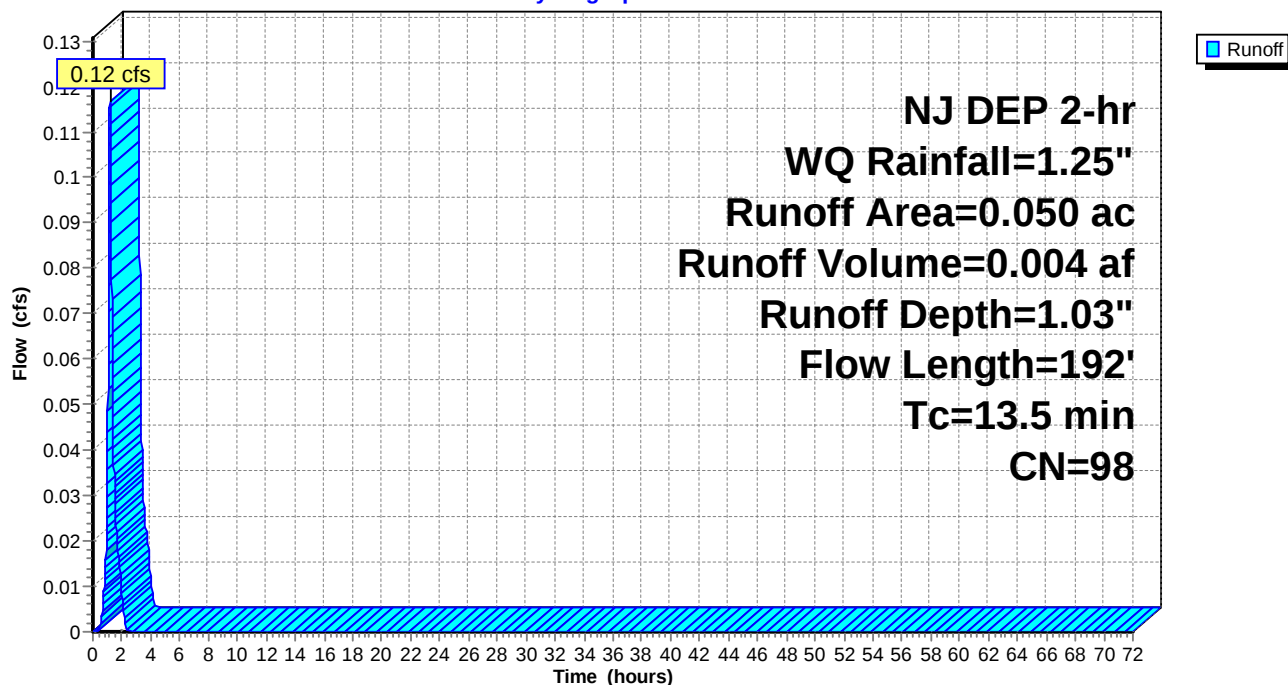
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
* 0.050	98	Impervious Areas
0.050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	6	0.0193	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.5	192	Total			

Subcatchment EA-3U i: EA-3U Impervious

Hydrograph



Pre-Development (Undisturbed)

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NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment EA-3U p: EA-3U Pervious

Runoff = 0.38 cfs @ 1.27 hrs, Volume= 0.016 af, Depth= 0.15"

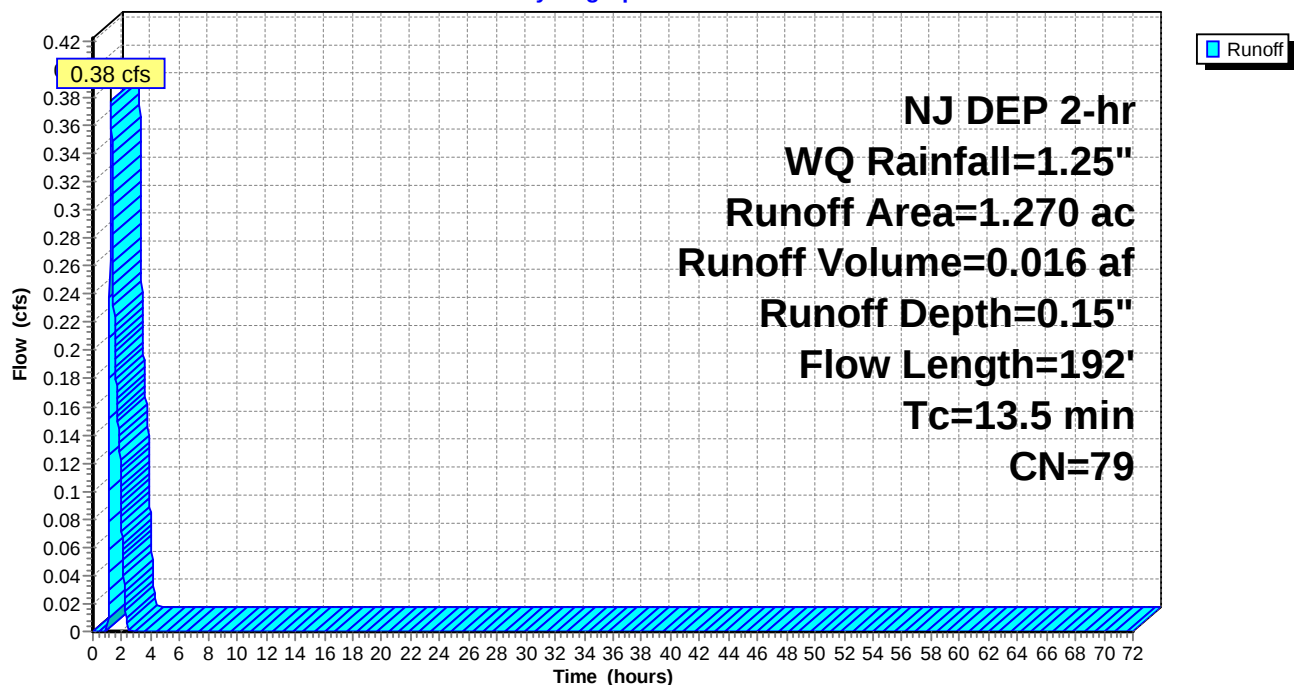
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.450	80	>75% Grass cover, Good, HSG D
0.820	79	Woods/grass comb., Good, HSG D
1.270	79	Weighted Average
1.270		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	6	0.0193	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.5	192	Total			

Subcatchment EA-3U p: EA-3U Pervious

Hydrograph



Pre-Development (Undisturbed)

NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Pond 2P: EA-2 Wetlands

Inflow Area = 1.340 ac, 0.00% Impervious, Inflow Depth = 0.17" for WQ event
 Inflow = 0.39 cfs @ 1.34 hrs, Volume= 0.019 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
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 202.84' @ 3.07 hrs Surf.Area= 7,757 sf Storage= 842 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	202.60'	8,536 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.60	467	0	0
202.70	2,559	151	151
202.80	5,796	418	569
202.90	10,670	823	1,392
203.00	15,559	1,311	2,704
203.10	18,857	1,721	4,425
203.20	20,626	1,974	6,399
203.30	22,113	2,137	8,536

Device	Routing	Invert	Outlet Devices
#1	Primary	202.97'	179.4 deg x 11.0' long x 0.33' rise Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)
#2	Secondary	203.01'	65.0' 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=202.60' (Free Discharge)↑**1=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=202.60' (Free Discharge)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pre-Development (Undisturbed)

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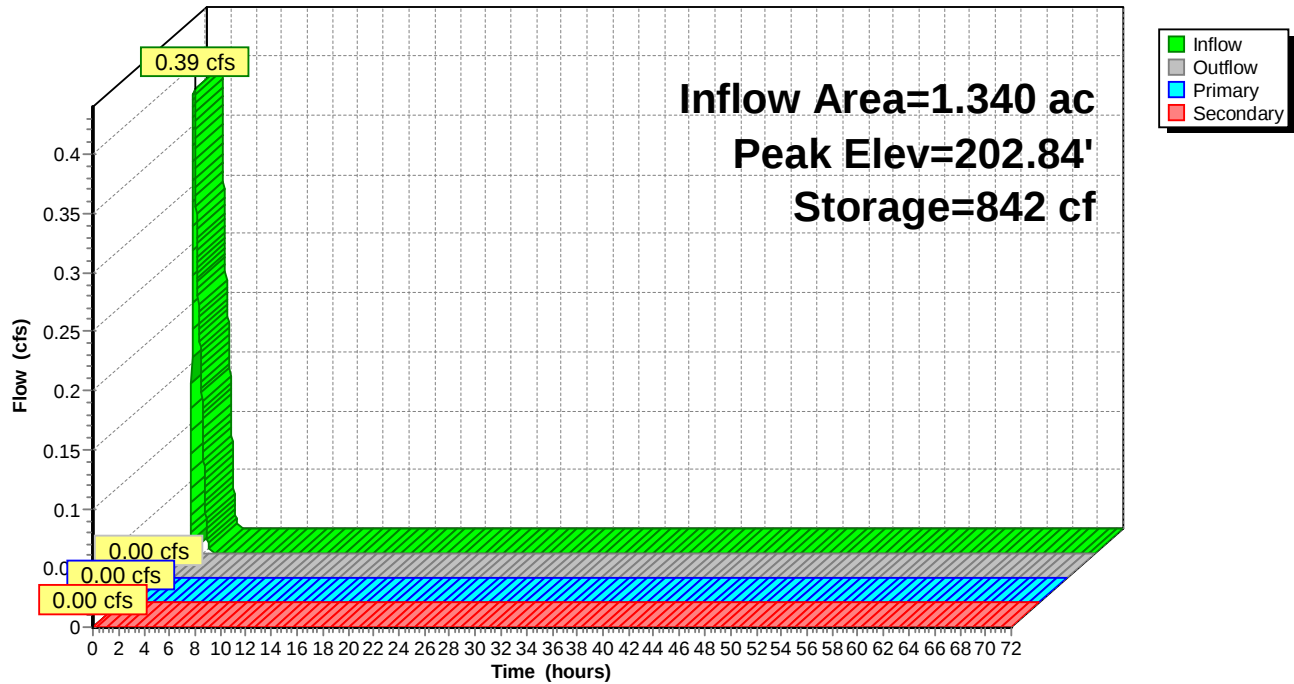
NJ DEP 2-hr WQ Rainfall=1.25"

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Pond 2P: EA-2 Wetlands

Hydrograph



Pre-Development (Undisturbed)

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Hydrograph for Pond 2P: EA-2 Wetlands

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	202.60	0.00	0.00	0.00
2.00	0.12	758	202.83	0.00	0.00	0.00
4.00	0.00	842	202.84	0.00	0.00	0.00
6.00	0.00	842	202.84	0.00	0.00	0.00
8.00	0.00	842	202.84	0.00	0.00	0.00
10.00	0.00	842	202.84	0.00	0.00	0.00
12.00	0.00	842	202.84	0.00	0.00	0.00
14.00	0.00	842	202.84	0.00	0.00	0.00
16.00	0.00	842	202.84	0.00	0.00	0.00
18.00	0.00	842	202.84	0.00	0.00	0.00
20.00	0.00	842	202.84	0.00	0.00	0.00
22.00	0.00	842	202.84	0.00	0.00	0.00
24.00	0.00	842	202.84	0.00	0.00	0.00
26.00	0.00	842	202.84	0.00	0.00	0.00
28.00	0.00	842	202.84	0.00	0.00	0.00
30.00	0.00	842	202.84	0.00	0.00	0.00
32.00	0.00	842	202.84	0.00	0.00	0.00
34.00	0.00	842	202.84	0.00	0.00	0.00
36.00	0.00	842	202.84	0.00	0.00	0.00
38.00	0.00	842	202.84	0.00	0.00	0.00
40.00	0.00	842	202.84	0.00	0.00	0.00
42.00	0.00	842	202.84	0.00	0.00	0.00
44.00	0.00	842	202.84	0.00	0.00	0.00
46.00	0.00	842	202.84	0.00	0.00	0.00
48.00	0.00	842	202.84	0.00	0.00	0.00
50.00	0.00	842	202.84	0.00	0.00	0.00
52.00	0.00	842	202.84	0.00	0.00	0.00
54.00	0.00	842	202.84	0.00	0.00	0.00
56.00	0.00	842	202.84	0.00	0.00	0.00
58.00	0.00	842	202.84	0.00	0.00	0.00
60.00	0.00	842	202.84	0.00	0.00	0.00
62.00	0.00	842	202.84	0.00	0.00	0.00
64.00	0.00	842	202.84	0.00	0.00	0.00
66.00	0.00	842	202.84	0.00	0.00	0.00
68.00	0.00	842	202.84	0.00	0.00	0.00
70.00	0.00	842	202.84	0.00	0.00	0.00
72.00	0.00	842	202.84	0.00	0.00	0.00

Pre-Development (Undisturbed)

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NJ DEP 2-hr WQ Rainfall=1.25"

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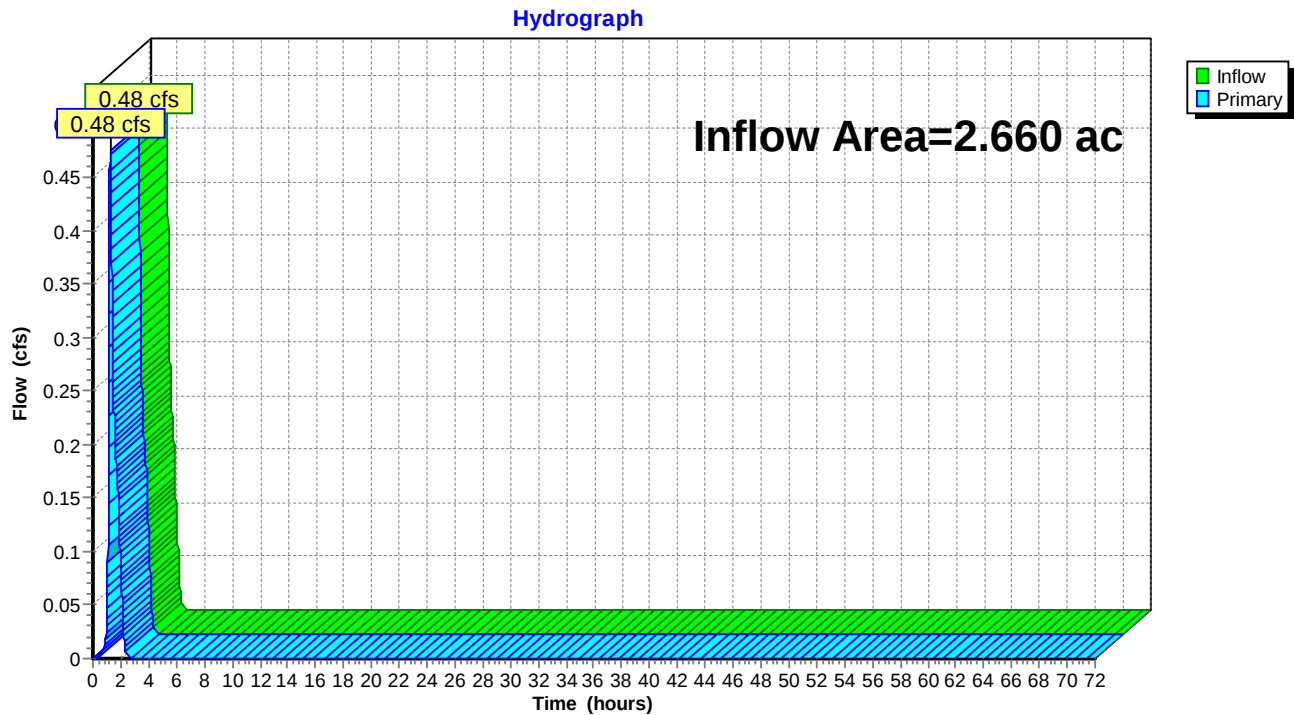
Page 7

Summary for Pond 3P: Stony Brook Tributary (DP-2)

Inflow Area = 2.660 ac, 1.88% Impervious, Inflow Depth = 0.09" for WQ event
Inflow = 0.48 cfs @ 1.25 hrs, Volume= 0.020 af
Primary = 0.48 cfs @ 1.25 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 3P: Stony Brook Tributary (DP-2)



Pre-Development (Undisturbed)

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NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Subcatchment EA-2U p: EA-2U Pervious

Runoff = 1.73 cfs @ 12.28 hrs, Volume= 0.166 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

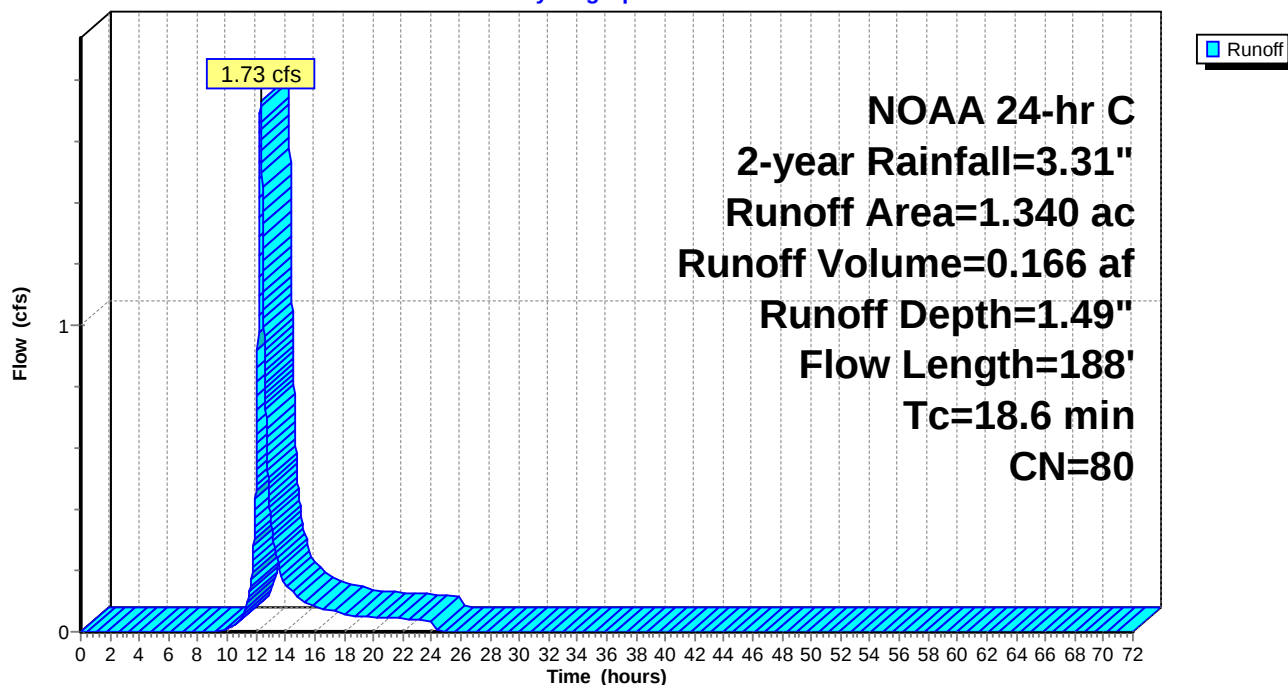
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.750	80	>75% Grass cover, Good, HSG D
0.590	79	Woods/grass comb., Good, HSG D
1.340	80	Weighted Average
1.340		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	44	0.0303	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
8.9	113	0.0018	0.21		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.4	31	0.0065	1.30		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.6	188	Total			

Subcatchment EA-2U p: EA-2U Pervious

Hydrograph



Pre-Development (Undisturbed)

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Summary for Subcatchment EA-3U i: EA-3U Impervious

Runoff = 0.14 cfs @ 12.21 hrs, Volume= 0.013 af, Depth= 3.08"

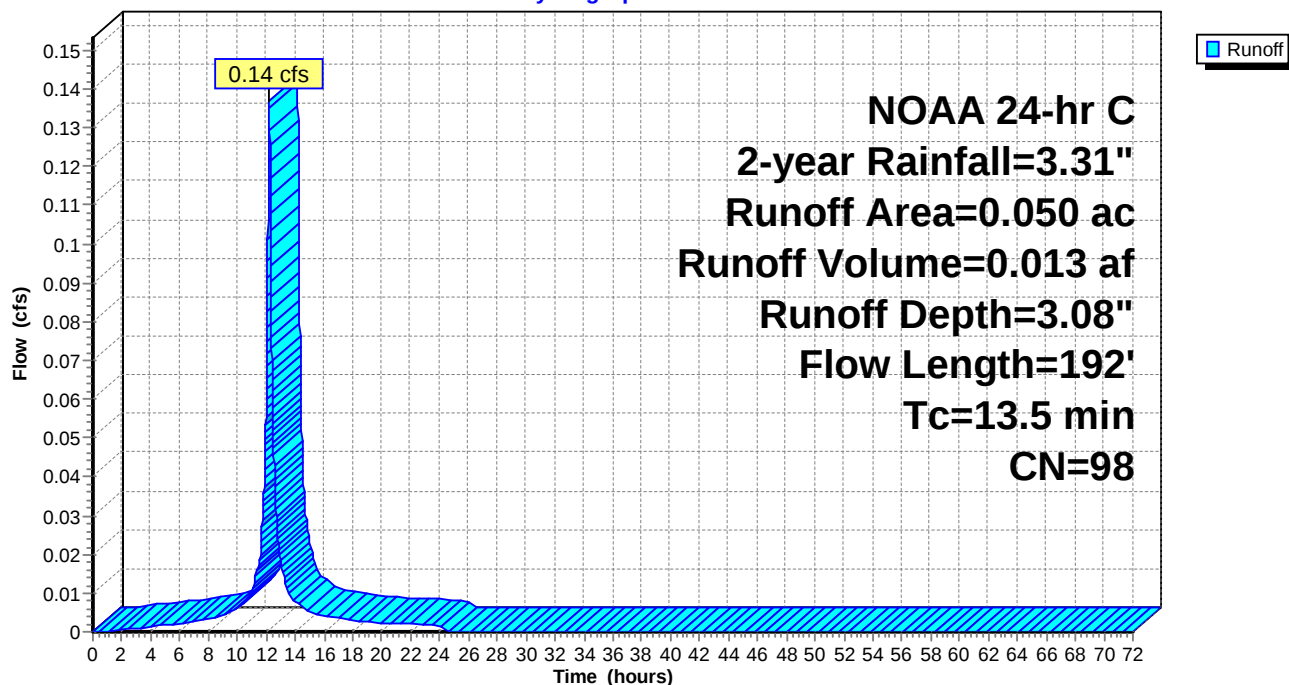
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
* 0.050	98	Impervious Areas
0.050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	6	0.0193	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.5	192	Total			

Subcatchment EA-3U i: EA-3U Impervious

Hydrograph



Pre-Development (Undisturbed)

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Summary for Subcatchment EA-3U p: EA-3U Pervious

Runoff = 1.80 cfs @ 12.22 hrs, Volume= 0.150 af, Depth= 1.42"

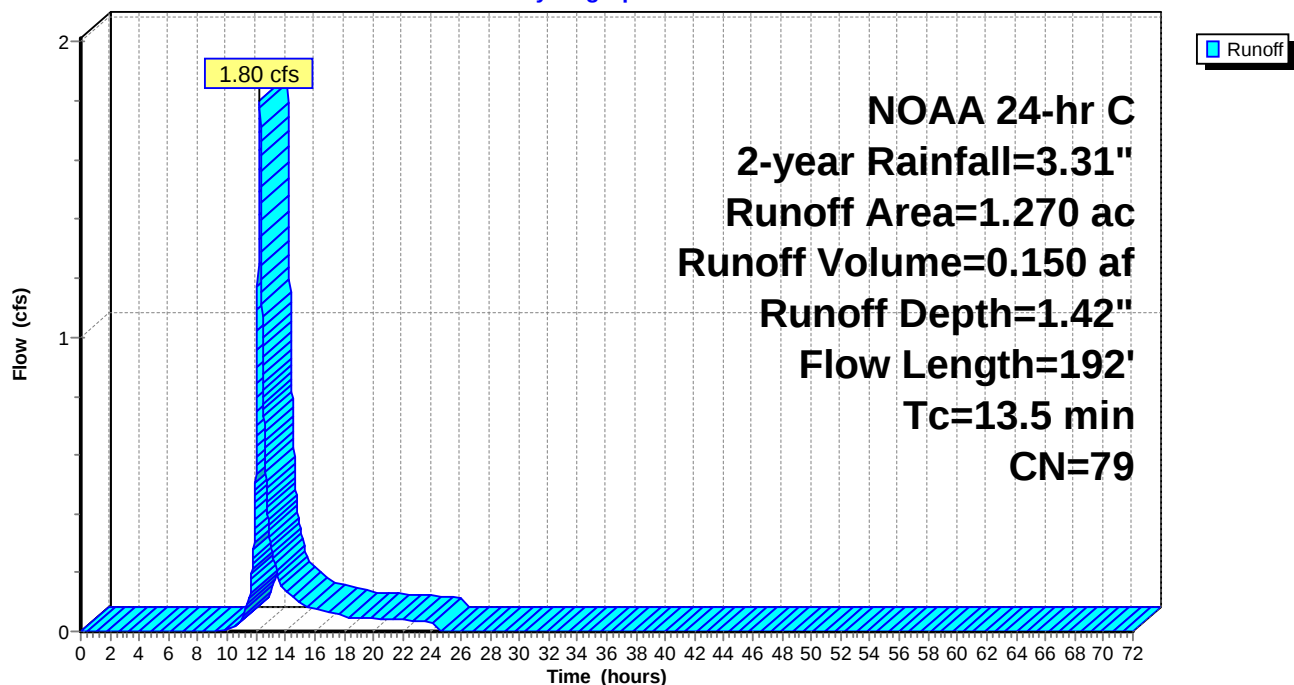
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.450	80	>75% Grass cover, Good, HSG D
0.820	79	Woods/grass comb., Good, HSG D
1.270	79	Weighted Average
1.270		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	6	0.0193	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.5	192	Total			

Subcatchment EA-3U p: EA-3U Pervious

Hydrograph



Pre-Development (Undisturbed)

NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Pond 2P: EA-2 Wetlands

Inflow Area = 1.340 ac, 0.00% Impervious, Inflow Depth = 1.49" for 2-year event
 Inflow = 1.73 cfs @ 12.28 hrs, Volume= 0.166 af
 Outflow = 0.71 cfs @ 12.66 hrs, Volume= 0.114 af, Atten= 59%, Lag= 22.5 min
 Primary = 0.59 cfs @ 12.66 hrs, Volume= 0.111 af
 Secondary = 0.12 cfs @ 12.66 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 203.02' @ 12.66 hrs Surf.Area= 16,145 sf Storage= 2,986 cf

Plug-Flow detention time= 205.6 min calculated for 0.114 af (69% of inflow)
 Center-of-Mass det. time= 99.4 min (955.5 - 856.1)

Volume	Invert	Avail.Storage	Storage Description
#1	202.60'	8,536 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.60	467	0	0
202.70	2,559	151	151
202.80	5,796	418	569
202.90	10,670	823	1,392
203.00	15,559	1,311	2,704
203.10	18,857	1,721	4,425
203.20	20,626	1,974	6,399
203.30	22,113	2,137	8,536

Device	Routing	Invert	Outlet Devices
#1	Primary	202.97'	179.4 deg x 11.0' long x 0.33' rise Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)
#2	Secondary	203.01'	65.0' 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=0.59 cfs @ 12.66 hrs HW=203.02' (Free Discharge)↑ **1=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.59 cfs @ 0.61 fps)**Secondary OutFlow** Max=0.11 cfs @ 12.66 hrs HW=203.02' (Free Discharge)↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.11 cfs @ 0.22 fps)

Pre-Development (Undisturbed)

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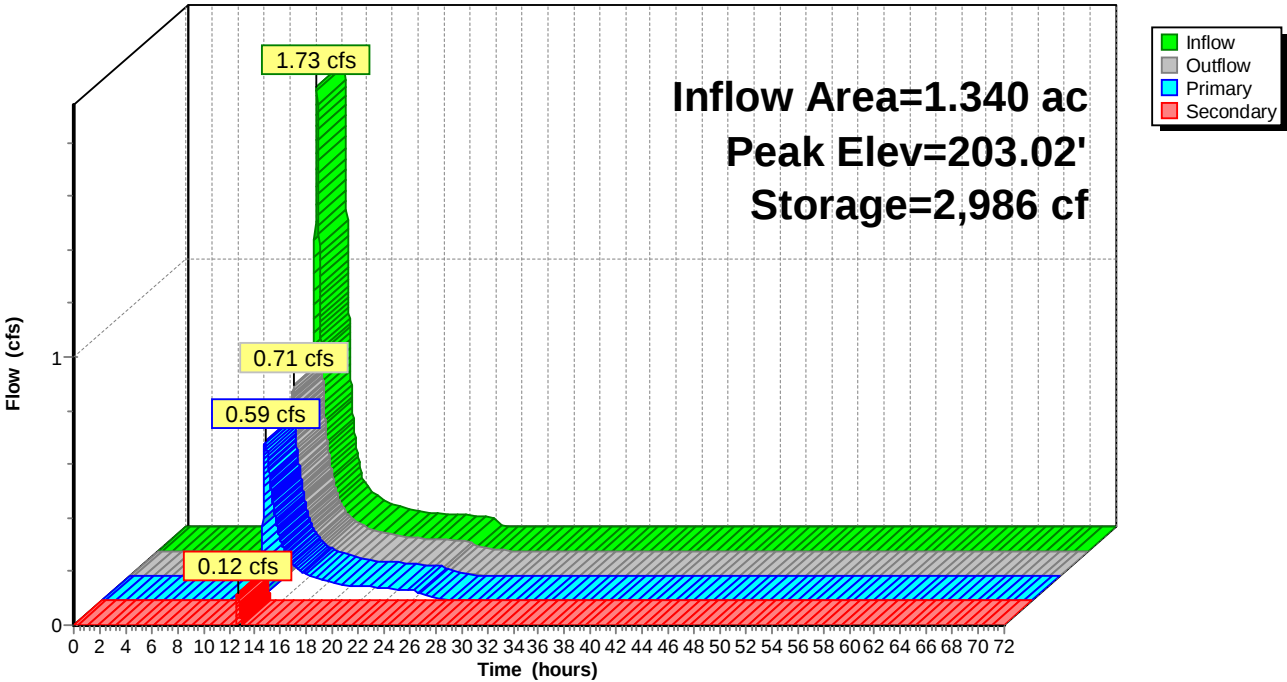
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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Pond 2P: EA-2 Wetlands

Hydrograph



Pre-Development (Undisturbed)

NOAA 24-hr C 2-year Rainfall=3.31"

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Printed 11/16/2023

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Hydrograph for Pond 2P: EA-2 Wetlands

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	202.60	0.00	0.00	0.00
2.00	0.00	0	202.60	0.00	0.00	0.00
4.00	0.00	0	202.60	0.00	0.00	0.00
6.00	0.00	0	202.60	0.00	0.00	0.00
8.00	0.00	0	202.60	0.00	0.00	0.00
10.00	0.01	8	202.61	0.00	0.00	0.00
12.00	0.51	663	202.82	0.00	0.00	0.00
14.00	0.16	2,643	203.00	0.20	0.20	0.00
16.00	0.08	2,502	202.99	0.09	0.09	0.00
18.00	0.06	2,456	202.98	0.07	0.07	0.00
20.00	0.05	2,426	202.98	0.05	0.05	0.00
22.00	0.04	2,412	202.98	0.04	0.04	0.00
24.00	0.04	2,398	202.98	0.04	0.04	0.00
26.00	0.00	2,295	202.97	0.01	0.01	0.00
28.00	0.00	2,273	202.97	0.00	0.00	0.00
30.00	0.00	2,267	202.97	0.00	0.00	0.00
32.00	0.00	2,264	202.97	0.00	0.00	0.00
34.00	0.00	2,262	202.97	0.00	0.00	0.00
36.00	0.00	2,261	202.97	0.00	0.00	0.00
38.00	0.00	2,260	202.97	0.00	0.00	0.00
40.00	0.00	2,260	202.97	0.00	0.00	0.00
42.00	0.00	2,259	202.97	0.00	0.00	0.00
44.00	0.00	2,259	202.97	0.00	0.00	0.00
46.00	0.00	2,259	202.97	0.00	0.00	0.00
48.00	0.00	2,259	202.97	0.00	0.00	0.00
50.00	0.00	2,259	202.97	0.00	0.00	0.00
52.00	0.00	2,259	202.97	0.00	0.00	0.00
54.00	0.00	2,259	202.97	0.00	0.00	0.00
56.00	0.00	2,259	202.97	0.00	0.00	0.00
58.00	0.00	2,259	202.97	0.00	0.00	0.00
60.00	0.00	2,259	202.97	0.00	0.00	0.00
62.00	0.00	2,259	202.97	0.00	0.00	0.00
64.00	0.00	2,259	202.97	0.00	0.00	0.00
66.00	0.00	2,259	202.97	0.00	0.00	0.00
68.00	0.00	2,259	202.97	0.00	0.00	0.00
70.00	0.00	2,259	202.97	0.00	0.00	0.00
72.00	0.00	2,259	202.97	0.00	0.00	0.00

Pre-Development (Undisturbed)

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NOAA 24-hr C 2-year Rainfall=3.31"

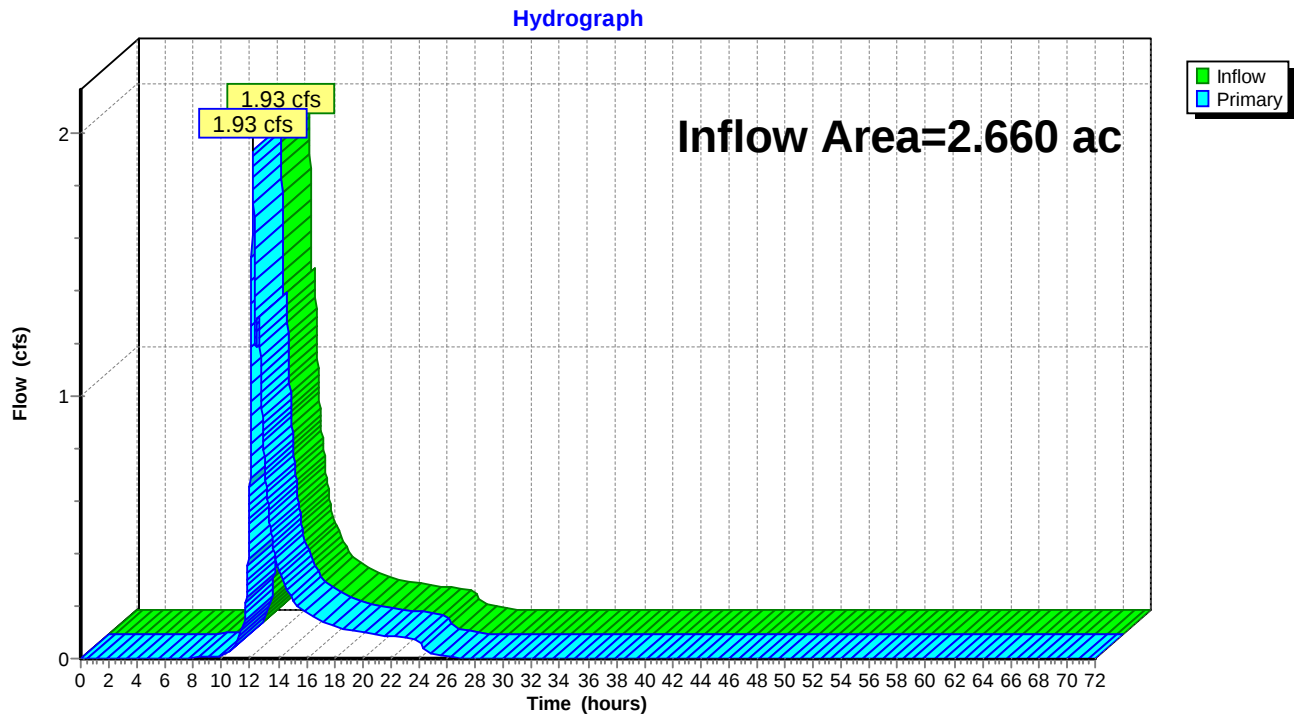
Printed 11/16/2023

Summary for Pond 3P: Stony Brook Tributary (DP-2)

Inflow Area = 2.660 ac, 1.88% Impervious, Inflow Depth = 1.25" for 2-year event
Inflow = 1.93 cfs @ 12.22 hrs, Volume= 0.277 af
Primary = 1.93 cfs @ 12.22 hrs, Volume= 0.277 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 3P: Stony Brook Tributary (DP-2)



Pre-Development (Undisturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 10-year Rainfall=4.97"

Printed 11/16/2023

Summary for Subcatchment EA-2U p: EA-2U Pervious

Runoff = 3.36 cfs @ 12.28 hrs, Volume= 0.320 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

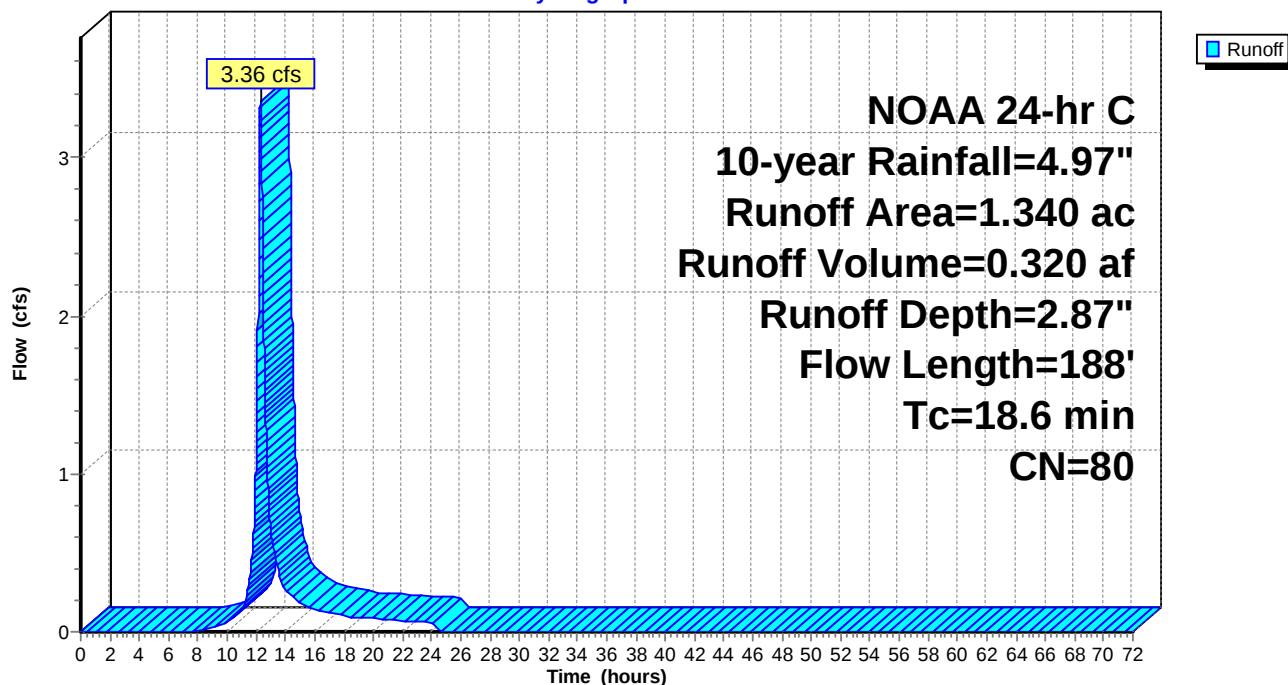
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.750	80	>75% Grass cover, Good, HSG D
0.590	79	Woods/grass comb., Good, HSG D
1.340	80	Weighted Average
1.340		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	44	0.0303	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
8.9	113	0.0018	0.21		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.4	31	0.0065	1.30		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.6	188	Total			

Subcatchment EA-2U p: EA-2U Pervious

Hydrograph



Pre-Development (Undisturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 10-year Rainfall=4.97"

Printed 11/16/2023

Summary for Subcatchment EA-3U i: EA-3U Impervious

Runoff = 0.21 cfs @ 12.21 hrs, Volume= 0.020 af, Depth= 4.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

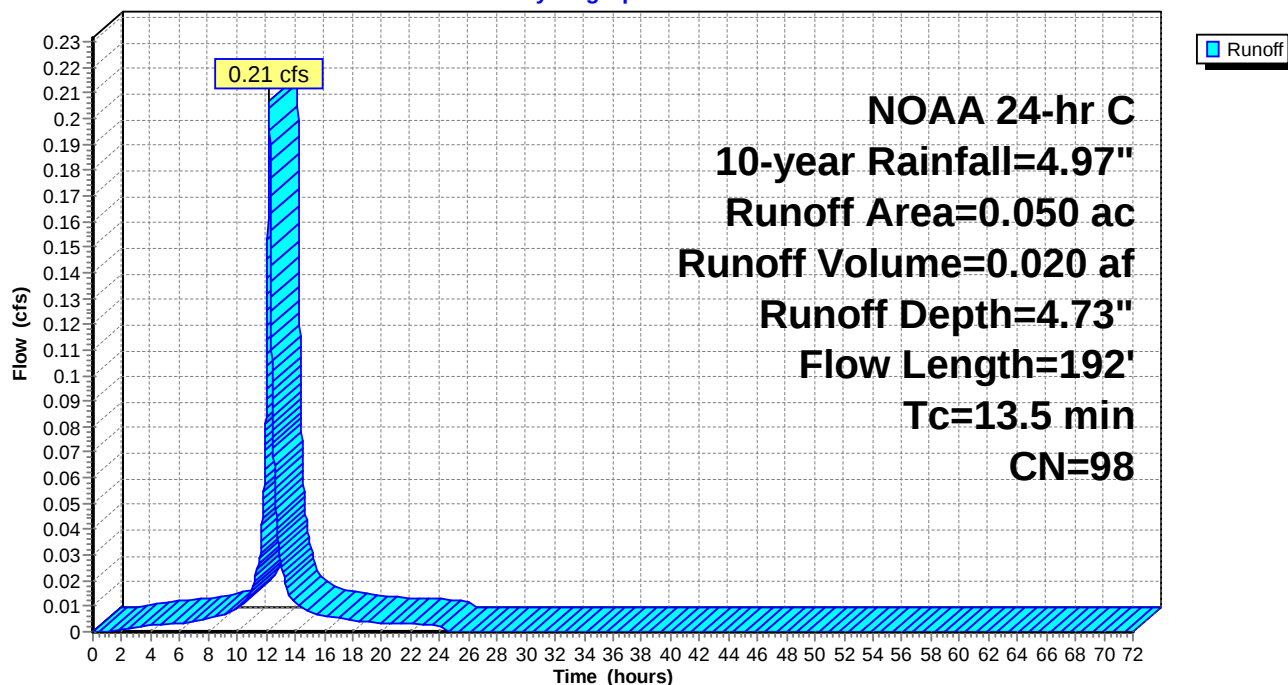
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
* 0.050	98	Impervious Areas
0.050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	6	0.0193	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.5	192	Total			

Subcatchment EA-3U i: EA-3U Impervious

Hydrograph



Pre-Development (Undisturbed)

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NOAA 24-hr C 10-year Rainfall=4.97"

Printed 11/16/2023

Summary for Subcatchment EA-3U p: EA-3U Pervious

Runoff = 3.54 cfs @ 12.22 hrs, Volume= 0.294 af, Depth= 2.78"

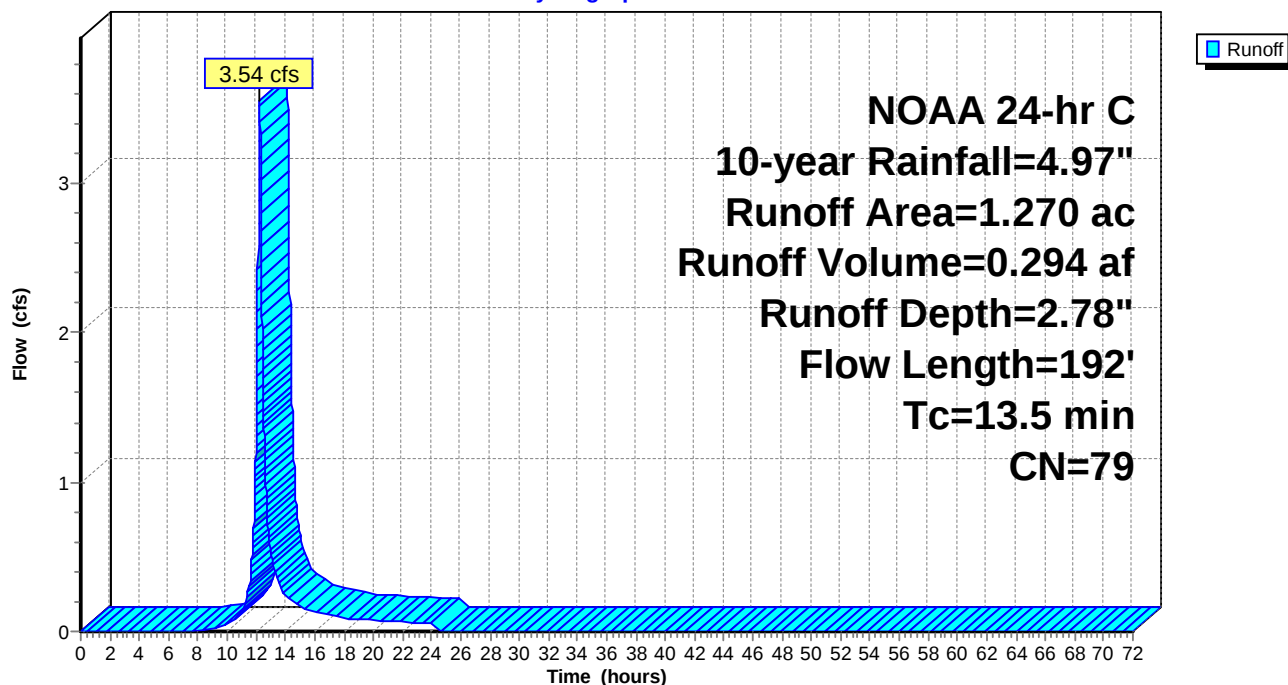
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.450	80	>75% Grass cover, Good, HSG D
0.820	79	Woods/grass comb., Good, HSG D
1.270	79	Weighted Average
1.270		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	6	0.0193	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.5	192	Total			

Subcatchment EA-3U p: EA-3U Pervious

Hydrograph



Pre-Development (Undisturbed)

NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Pond 2P: EA-2 Wetlands

Inflow Area = 1.340 ac, 0.00% Impervious, Inflow Depth = 2.87" for 10-year event
 Inflow = 3.36 cfs @ 12.28 hrs, Volume= 0.320 af
 Outflow = 3.09 cfs @ 12.35 hrs, Volume= 0.268 af, Atten= 8%, Lag= 4.2 min
 Primary = 1.70 cfs @ 12.35 hrs, Volume= 0.218 af
 Secondary = 1.39 cfs @ 12.35 hrs, Volume= 0.050 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 203.05' @ 12.35 hrs Surf.Area= 17,271 sf Storage= 3,556 cf

Plug-Flow detention time= 125.8 min calculated for 0.268 af (84% of inflow)
 Center-of-Mass det. time= 54.1 min (891.0 - 836.9)

Volume	Invert	Avail.Storage	Storage Description
#1	202.60'	8,536 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.60	467	0	0
202.70	2,559	151	151
202.80	5,796	418	569
202.90	10,670	823	1,392
203.00	15,559	1,311	2,704
203.10	18,857	1,721	4,425
203.20	20,626	1,974	6,399
203.30	22,113	2,137	8,536

Device	Routing	Invert	Outlet Devices
#1	Primary	202.97'	179.4 deg x 11.0' long x 0.33' rise Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)
#2	Secondary	203.01'	65.0' 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=1.69 cfs @ 12.35 hrs HW=203.05' (Free Discharge)↑ **1=Sharp-Crested Vee/Trap Weir** (Weir Controls 1.69 cfs @ 0.78 fps)**Secondary OutFlow** Max=1.39 cfs @ 12.35 hrs HW=203.05' (Free Discharge)↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 1.39 cfs @ 0.51 fps)

Pre-Development (Undisturbed)

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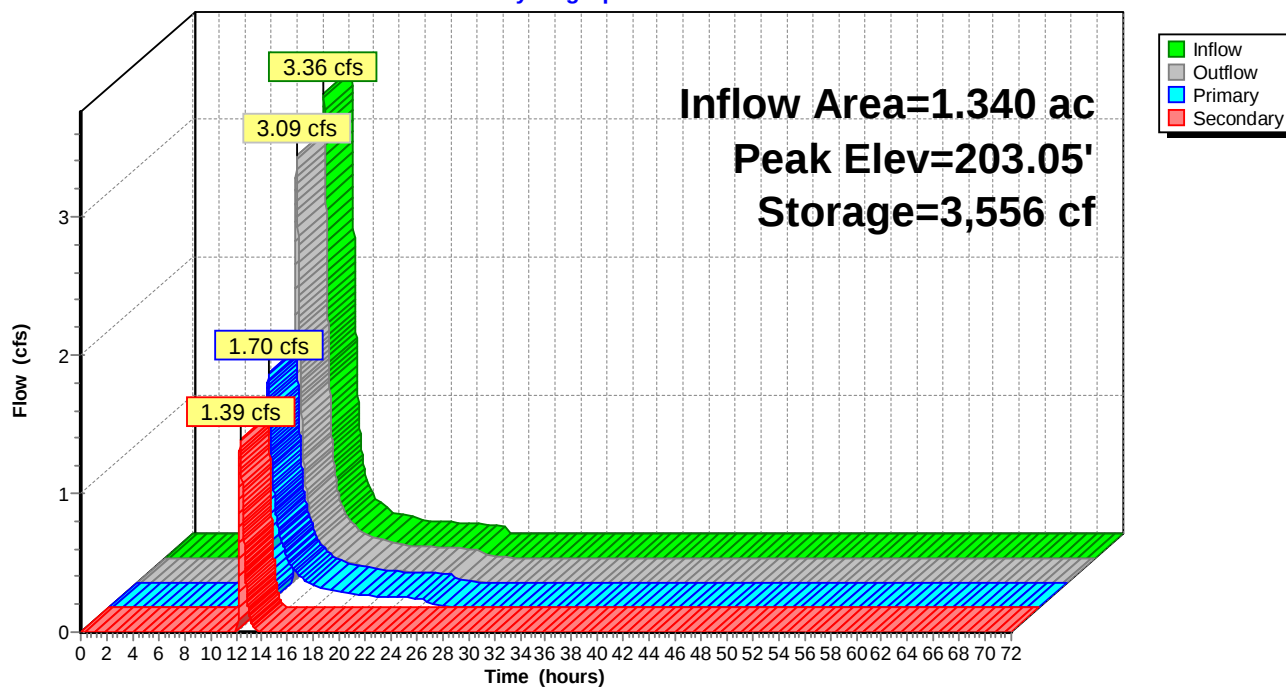
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NOAA 24-hr C 10-year Rainfall=4.97"

Printed 11/16/2023

Pond 2P: EA-2 Wetlands

Hydrograph



Pre-Development (Undisturbed)

NOAA 24-hr C 10-year Rainfall=4.97"

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Hydrograph for Pond 2P: EA-2 Wetlands

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	202.60	0.00	0.00	0.00
2.00	0.00	0	202.60	0.00	0.00	0.00
4.00	0.00	0	202.60	0.00	0.00	0.00
6.00	0.00	0	202.60	0.00	0.00	0.00
8.00	0.01	8	202.61	0.00	0.00	0.00
10.00	0.06	207	202.72	0.00	0.00	0.00
12.00	1.11	1,977	202.95	0.00	0.00	0.00
14.00	0.27	2,770	203.00	0.32	0.32	0.00
16.00	0.14	2,593	202.99	0.15	0.15	0.00
18.00	0.10	2,528	202.99	0.11	0.11	0.00
20.00	0.08	2,492	202.99	0.09	0.09	0.00
22.00	0.07	2,476	202.98	0.07	0.07	0.00
24.00	0.06	2,453	202.98	0.06	0.06	0.00
26.00	0.00	2,304	202.97	0.01	0.01	0.00
28.00	0.00	2,274	202.97	0.00	0.00	0.00
30.00	0.00	2,268	202.97	0.00	0.00	0.00
32.00	0.00	2,264	202.97	0.00	0.00	0.00
34.00	0.00	2,262	202.97	0.00	0.00	0.00
36.00	0.00	2,261	202.97	0.00	0.00	0.00
38.00	0.00	2,260	202.97	0.00	0.00	0.00
40.00	0.00	2,260	202.97	0.00	0.00	0.00
42.00	0.00	2,259	202.97	0.00	0.00	0.00
44.00	0.00	2,259	202.97	0.00	0.00	0.00
46.00	0.00	2,259	202.97	0.00	0.00	0.00
48.00	0.00	2,259	202.97	0.00	0.00	0.00
50.00	0.00	2,259	202.97	0.00	0.00	0.00
52.00	0.00	2,259	202.97	0.00	0.00	0.00
54.00	0.00	2,259	202.97	0.00	0.00	0.00
56.00	0.00	2,259	202.97	0.00	0.00	0.00
58.00	0.00	2,259	202.97	0.00	0.00	0.00
60.00	0.00	2,259	202.97	0.00	0.00	0.00
62.00	0.00	2,259	202.97	0.00	0.00	0.00
64.00	0.00	2,259	202.97	0.00	0.00	0.00
66.00	0.00	2,259	202.97	0.00	0.00	0.00
68.00	0.00	2,259	202.97	0.00	0.00	0.00
70.00	0.00	2,259	202.97	0.00	0.00	0.00
72.00	0.00	2,259	202.97	0.00	0.00	0.00

Pre-Development (Undisturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 10-year Rainfall=4.97"

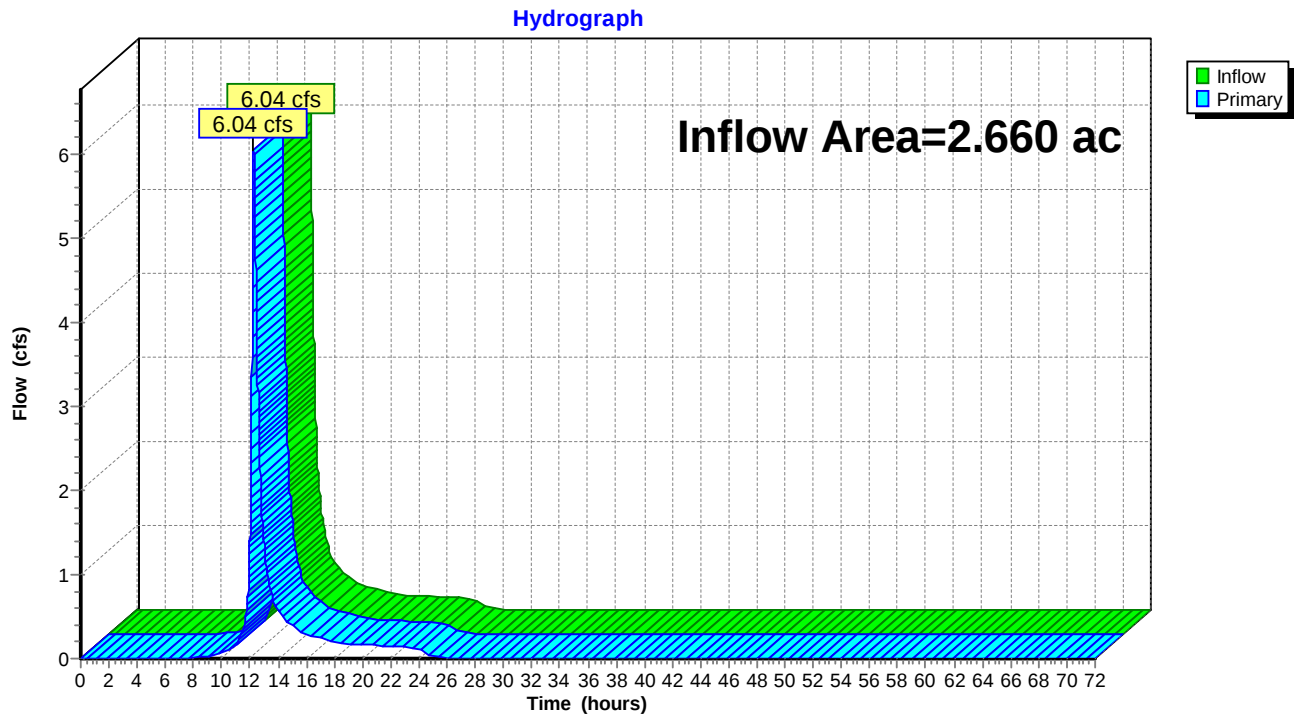
Printed 11/16/2023

Summary for Pond 3P: Stony Brook Tributary (DP-2)

Inflow Area = 2.660 ac, 1.88% Impervious, Inflow Depth = 2.62" for 10-year event
Inflow = 6.04 cfs @ 12.28 hrs, Volume= 0.582 af
Primary = 6.04 cfs @ 12.28 hrs, Volume= 0.582 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 3P: Stony Brook Tributary (DP-2)



Pre-Development (Undisturbed)

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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/16/2023

Summary for Subcatchment EA-2U p: EA-2U Pervious

Runoff = 6.64 cfs @ 12.27 hrs, Volume= 0.644 af, Depth= 5.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

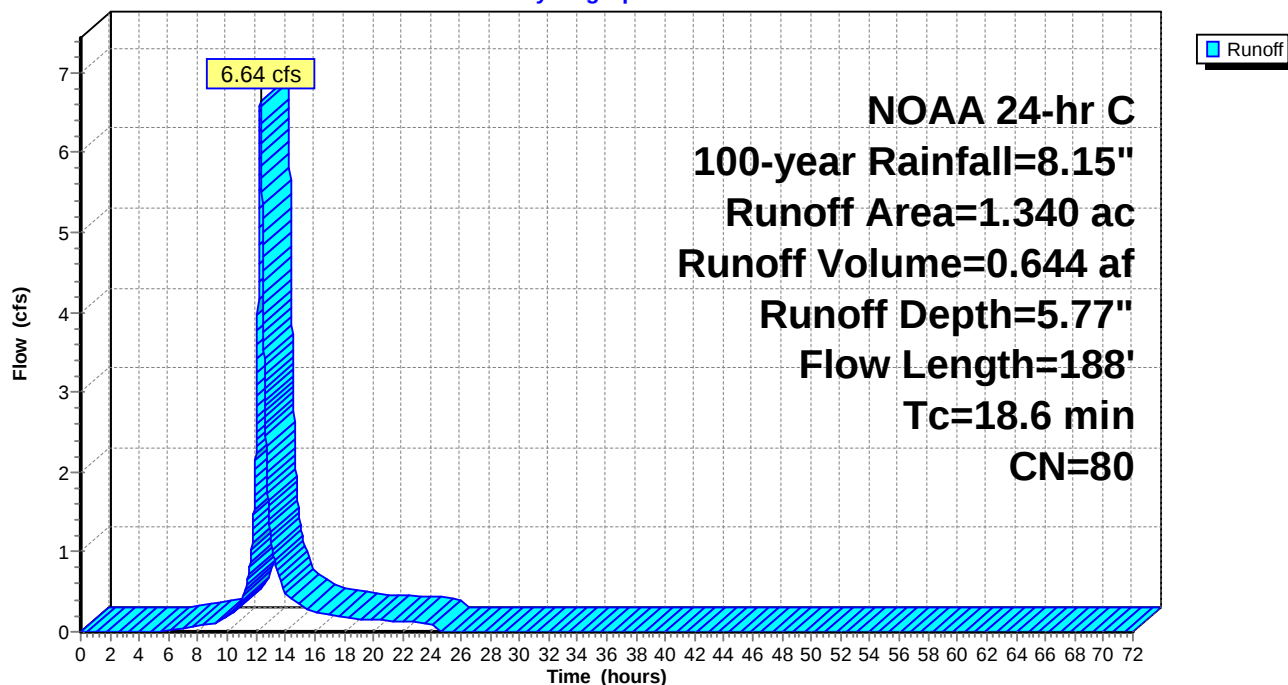
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.750	80	>75% Grass cover, Good, HSG D
0.590	79	Woods/grass comb., Good, HSG D
1.340	80	Weighted Average
1.340		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	44	0.0303	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
8.9	113	0.0018	0.21		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.4	31	0.0065	1.30		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.6	188	Total			

Subcatchment EA-2U p: EA-2U Pervious

Hydrograph



Pre-Development (Undisturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/16/2023

Summary for Subcatchment EA-3U i: EA-3U Impervious

Runoff = 0.34 cfs @ 12.21 hrs, Volume= 0.033 af, Depth= 7.91"

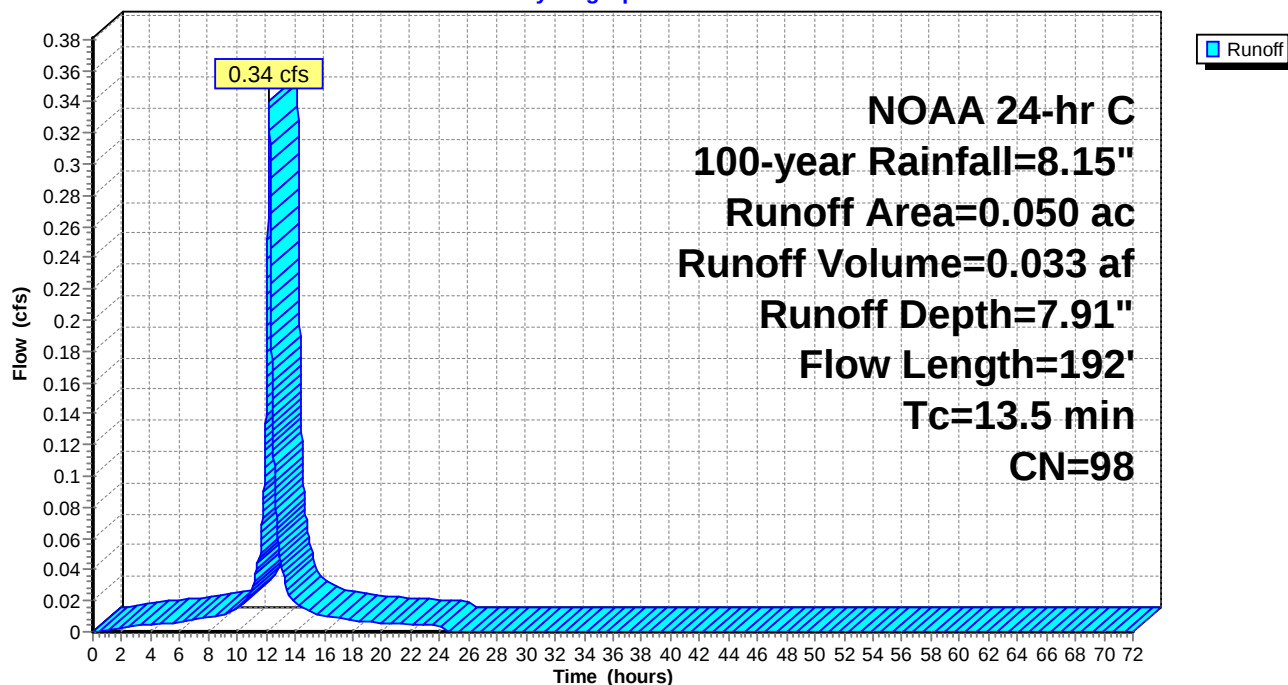
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
* 0.050	98	Impervious Areas
0.050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	6	0.0193	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.5	192	Total			

Subcatchment EA-3U i: EA-3U Impervious

Hydrograph



Pre-Development (Undisturbed)

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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment EA-3U p: EA-3U Pervious

Runoff = 7.07 cfs @ 12.21 hrs, Volume= 0.598 af, Depth= 5.65"

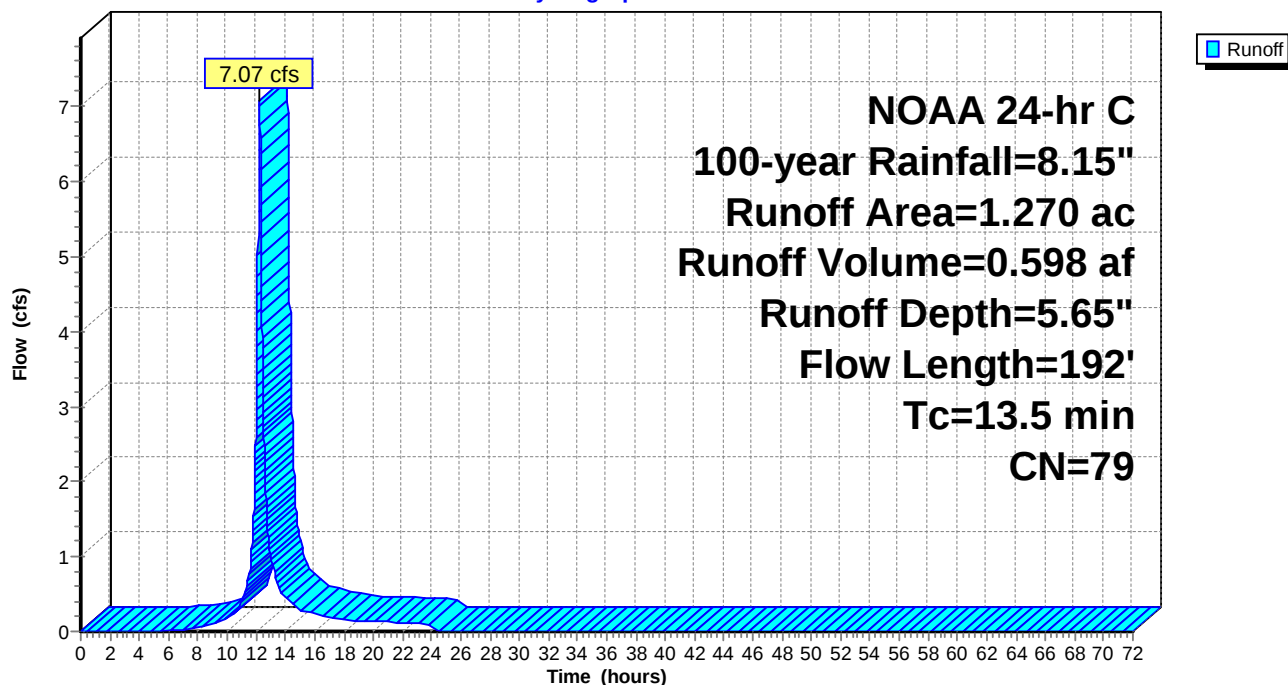
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.450	80	>75% Grass cover, Good, HSG D
0.820	79	Woods/grass comb., Good, HSG D
1.270	79	Weighted Average
1.270		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	6	0.0193	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.5	192	Total			

Subcatchment EA-3U p: EA-3U Pervious

Hydrograph



Pre-Development (Undisturbed)

NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Pond 2P: EA-2 Wetlands

Inflow Area = 1.340 ac, 0.00% Impervious, Inflow Depth = 5.77" for 100-year event
 Inflow = 6.64 cfs @ 12.27 hrs, Volume= 0.644 af
 Outflow = 6.43 cfs @ 12.31 hrs, Volume= 0.592 af, Atten= 3%, Lag= 2.7 min
 Primary = 3.27 cfs @ 12.31 hrs, Volume= 0.429 af
 Secondary = 3.16 cfs @ 12.31 hrs, Volume= 0.163 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 203.08' @ 12.31 hrs Surf.Area= 18,279 sf Storage= 4,099 cf

Plug-Flow detention time= 79.7 min calculated for 0.592 af (92% of inflow)
 Center-of-Mass det. time= 37.2 min (853.8 - 816.7)

Volume	Invert	Avail.Storage	Storage Description
#1	202.60'	8,536 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.60	467	0	0
202.70	2,559	151	151
202.80	5,796	418	569
202.90	10,670	823	1,392
203.00	15,559	1,311	2,704
203.10	18,857	1,721	4,425
203.20	20,626	1,974	6,399
203.30	22,113	2,137	8,536

Device	Routing	Invert	Outlet Devices
#1	Primary	202.97'	179.4 deg x 11.0' long x 0.33' rise Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)
#2	Secondary	203.01'	65.0' 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=3.27 cfs @ 12.31 hrs HW=203.08' (Free Discharge)↑ **1=Sharp-Crested Vee/Trap Weir** (Weir Controls 3.27 cfs @ 0.89 fps)**Secondary OutFlow** Max=3.16 cfs @ 12.31 hrs HW=203.08' (Free Discharge)↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 3.16 cfs @ 0.67 fps)

Pre-Development (Undisturbed)

Prepared by {enter your company name here}

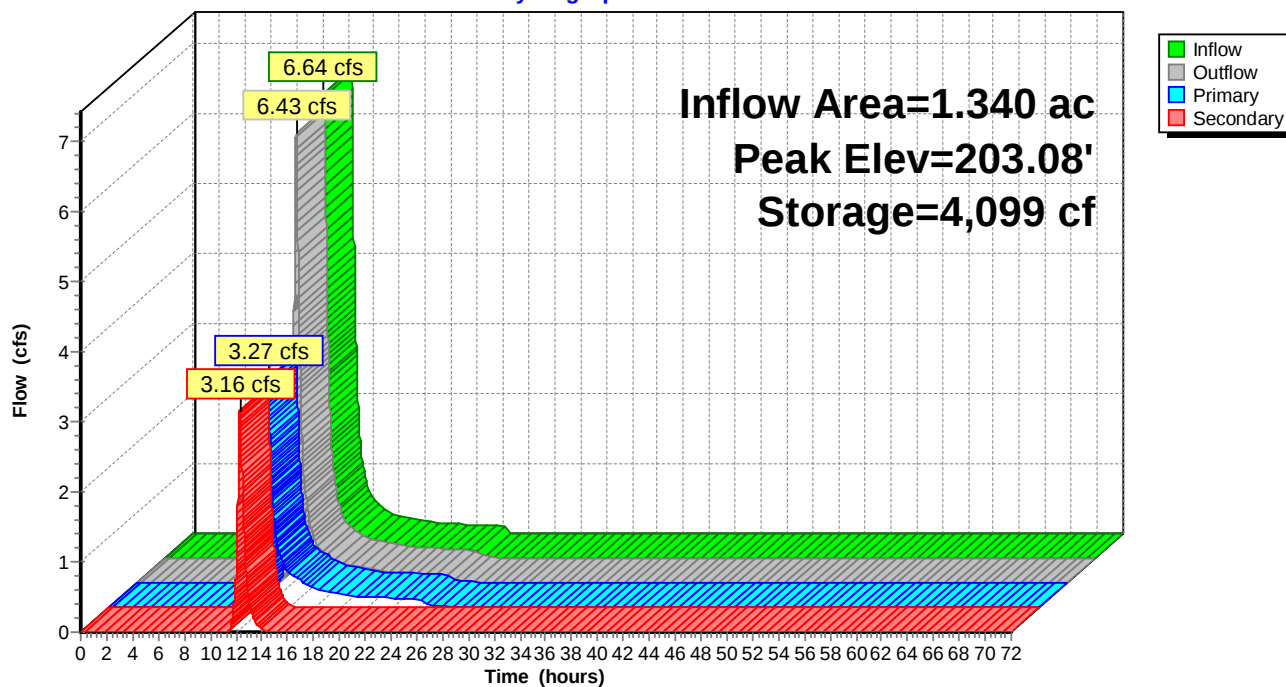
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NOAA 24-hr C 100-year Rainfall=8.15"

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Pond 2P: EA-2 Wetlands

Hydrograph



Pre-Development (Undisturbed)

NOAA 24-hr C 100-year Rainfall=8.15"

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Hydrograph for Pond 2P: EA-2 Wetlands

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	202.60	0.00	0.00	0.00
2.00	0.00	0	202.60	0.00	0.00	0.00
4.00	0.00	0	202.60	0.00	0.00	0.00
6.00	0.01	22	202.63	0.00	0.00	0.00
8.00	0.07	296	202.74	0.00	0.00	0.00
10.00	0.20	1,137	202.87	0.00	0.00	0.00
12.00	2.40	3,329	203.04	1.98	1.19	0.79
14.00	0.49	2,913	203.01	0.52	0.49	0.03
16.00	0.26	2,726	203.00	0.27	0.27	0.00
18.00	0.18	2,638	203.00	0.19	0.19	0.00
20.00	0.15	2,590	202.99	0.15	0.15	0.00
22.00	0.13	2,564	202.99	0.13	0.13	0.00
24.00	0.11	2,533	202.99	0.11	0.11	0.00
26.00	0.00	2,314	202.97	0.01	0.01	0.00
28.00	0.00	2,276	202.97	0.00	0.00	0.00
30.00	0.00	2,269	202.97	0.00	0.00	0.00
32.00	0.00	2,264	202.97	0.00	0.00	0.00
34.00	0.00	2,262	202.97	0.00	0.00	0.00
36.00	0.00	2,261	202.97	0.00	0.00	0.00
38.00	0.00	2,260	202.97	0.00	0.00	0.00
40.00	0.00	2,260	202.97	0.00	0.00	0.00
42.00	0.00	2,259	202.97	0.00	0.00	0.00
44.00	0.00	2,259	202.97	0.00	0.00	0.00
46.00	0.00	2,259	202.97	0.00	0.00	0.00
48.00	0.00	2,259	202.97	0.00	0.00	0.00
50.00	0.00	2,259	202.97	0.00	0.00	0.00
52.00	0.00	2,259	202.97	0.00	0.00	0.00
54.00	0.00	2,259	202.97	0.00	0.00	0.00
56.00	0.00	2,259	202.97	0.00	0.00	0.00
58.00	0.00	2,259	202.97	0.00	0.00	0.00
60.00	0.00	2,259	202.97	0.00	0.00	0.00
62.00	0.00	2,259	202.97	0.00	0.00	0.00
64.00	0.00	2,259	202.97	0.00	0.00	0.00
66.00	0.00	2,259	202.97	0.00	0.00	0.00
68.00	0.00	2,259	202.97	0.00	0.00	0.00
70.00	0.00	2,259	202.97	0.00	0.00	0.00
72.00	0.00	2,259	202.97	0.00	0.00	0.00

Pre-Development (Undisturbed)

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NOAA 24-hr C 100-year Rainfall=8.15"

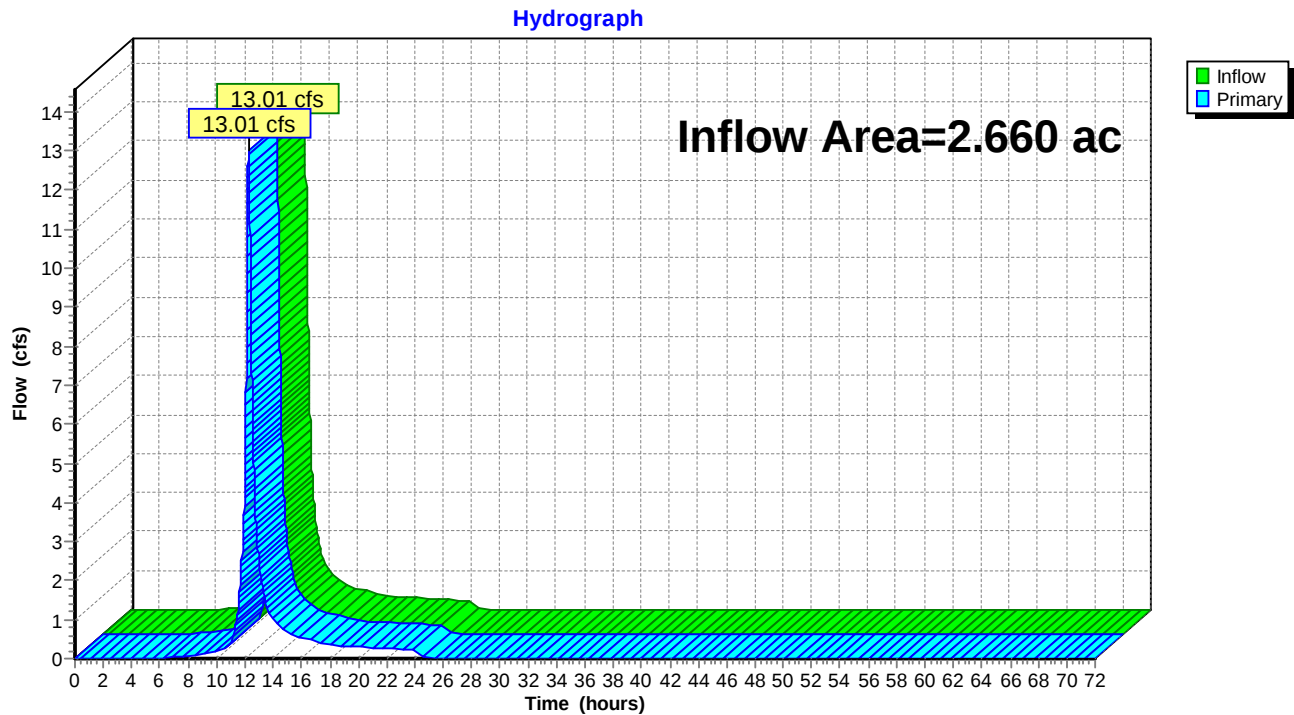
Printed 11/16/2023

Summary for Pond 3P: Stony Brook Tributary (DP-2)

Inflow Area = 2.660 ac, 1.88% Impervious, Inflow Depth = 5.52" for 100-year event
Inflow = 13.01 cfs @ 12.25 hrs, Volume= 1.223 af
Primary = 13.01 cfs @ 12.25 hrs, Volume= 1.223 af, Atten= 0%, Lag= 0.0 min

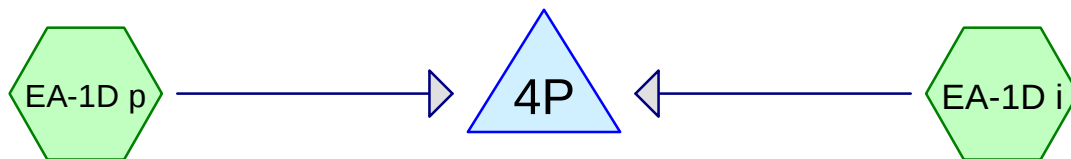
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 3P: Stony Brook Tributary (DP-2)



APPENDIX C

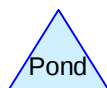
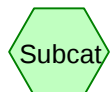
PRE-DEVELOPMENT DRAINAGE ANALYSIS (DISTURBED)



EA-1D Pervious

EA-1 Disturbed

EA-1D Impervious



Routing Diagram for Pre-Development (Disturbed)

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Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment EA-1D i: EA-1D Impervious

Runoff = 0.56 cfs @ 1.29 hrs, Volume= 0.026 af, Depth= 1.03"

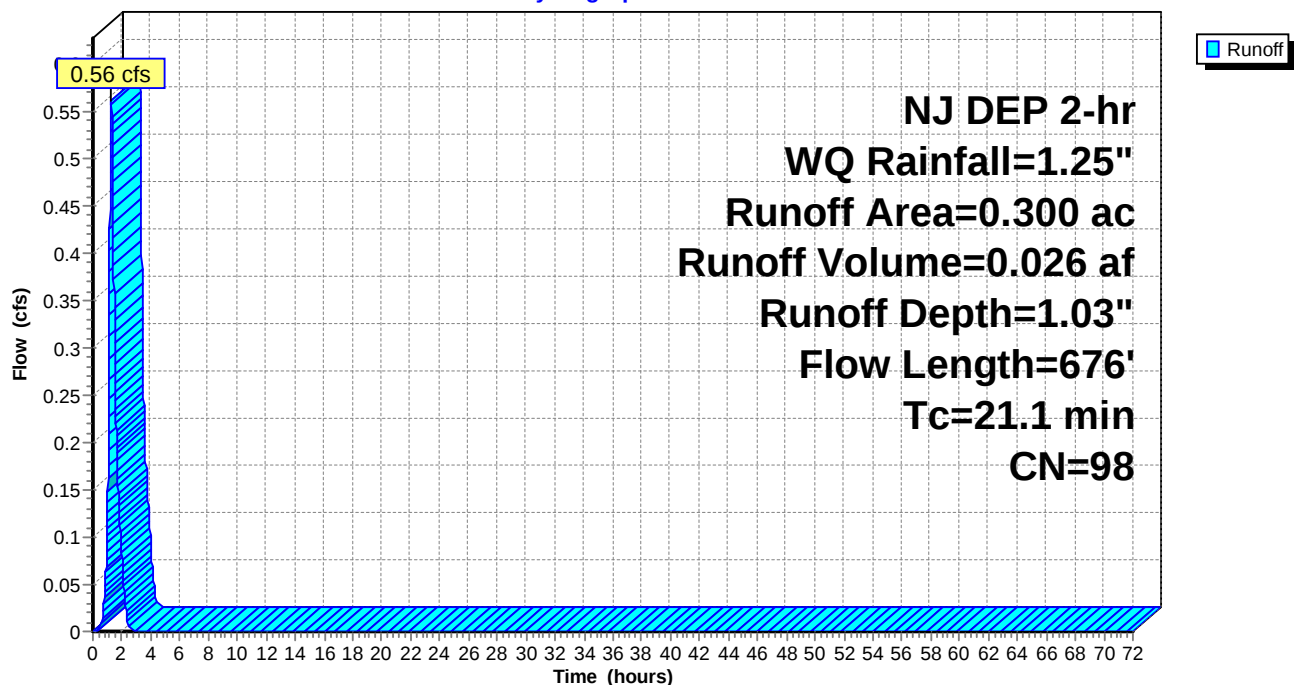
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
* 0.300	98	Impervious, HSG D
0.300		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	72	0.0116	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
2.6	324	0.0162	2.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	11	0.0082	1.84		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	86	0.0263	2.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
8.7	183	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	676	Total			

Subcatchment EA-1D i: EA-1D Impervious

Hydrograph



Pre-Development (Disturbed)

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment EA-1D p: EA-1D Pervious

Runoff = 0.84 cfs @ 1.38 hrs, Volume= 0.044 af, Depth= 0.17"

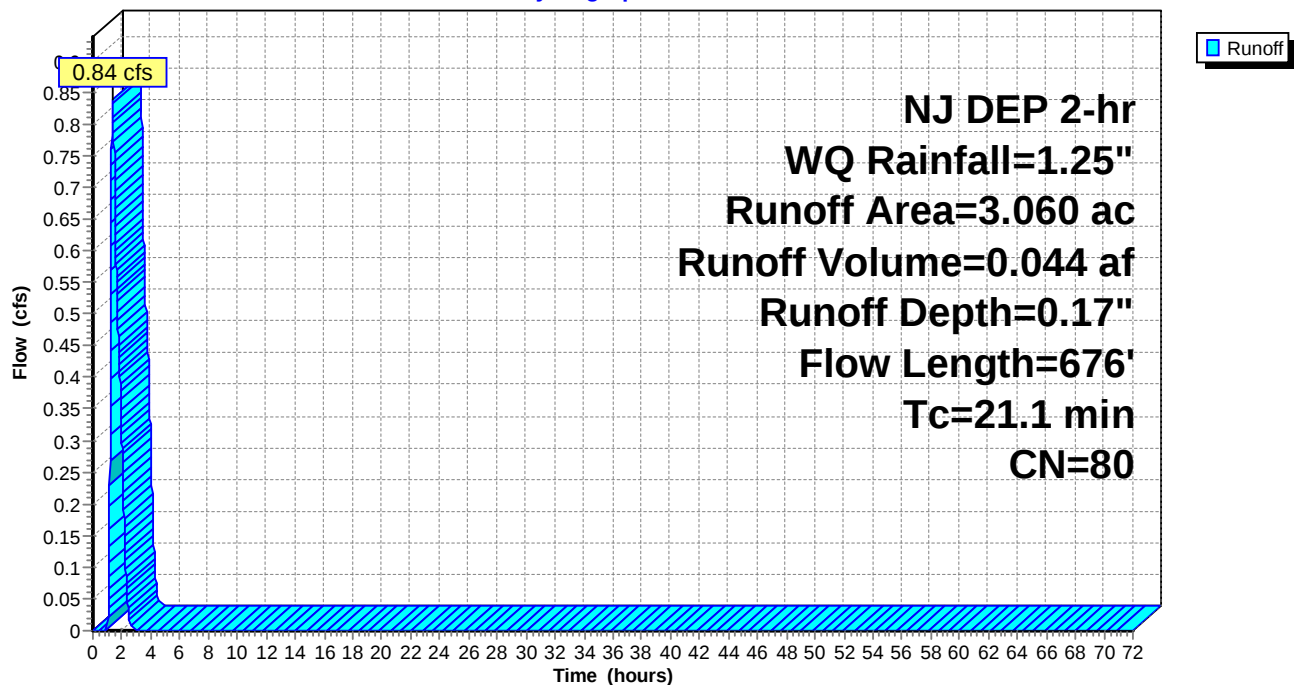
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
2.950	80	>75% Grass cover, Good, HSG D
0.110	79	Woods/grass comb., Good, HSG D
3.060	80	Weighted Average
3.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	72	0.0116	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
2.6	324	0.0162	2.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	11	0.0082	1.84		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	86	0.0263	2.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
8.7	183	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	676	Total			

Subcatchment EA-1D p: EA-1D Pervious

Hydrograph



Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NJ DEP 2-hr WQ Rainfall=1.25"

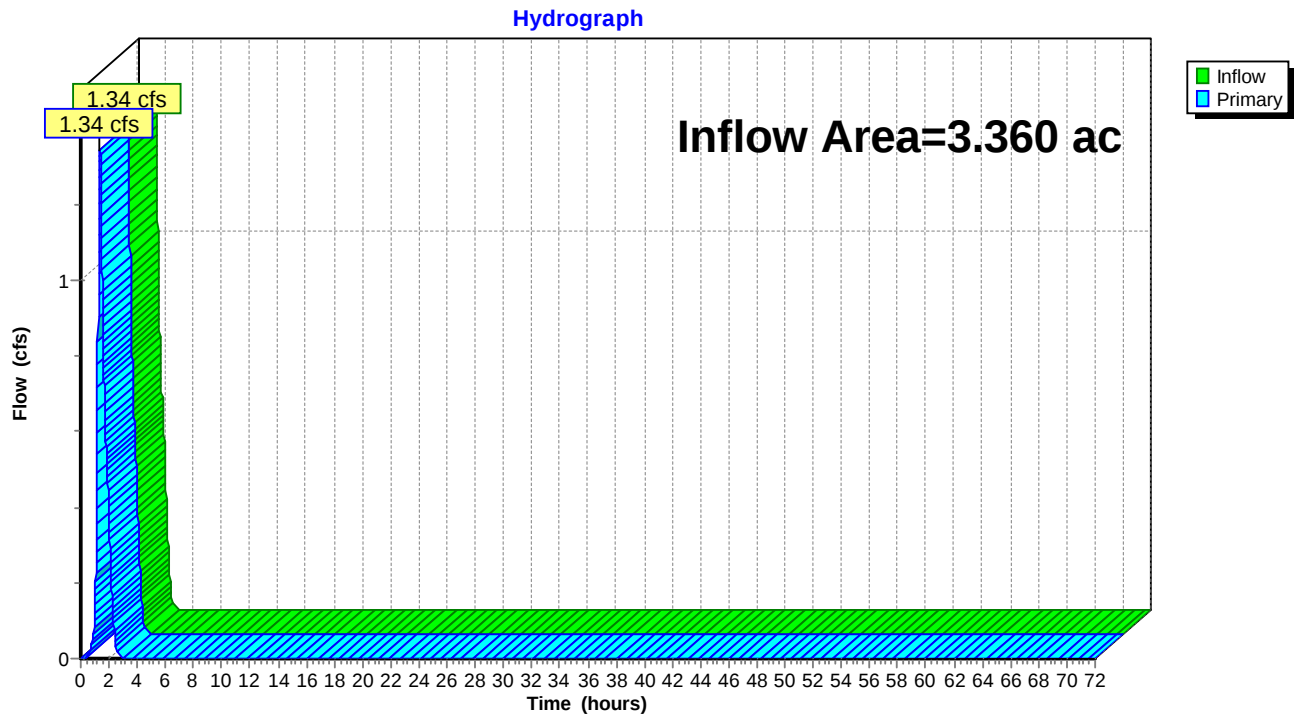
Printed 11/16/2023

Summary for Pond 4P: EA-1 Disturbed

Inflow Area = 3.360 ac, 8.93% Impervious, Inflow Depth = 0.25" for WQ event
Inflow = 1.34 cfs @ 1.34 hrs, Volume= 0.070 af
Primary = 1.34 cfs @ 1.34 hrs, Volume= 0.070 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 4P: EA-1 Disturbed



Pre-Development (Disturbed)

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NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Subcatchment EA-1D i: EA-1D Impervious

Runoff = 0.68 cfs @ 12.30 hrs, Volume= 0.077 af, Depth= 3.08"

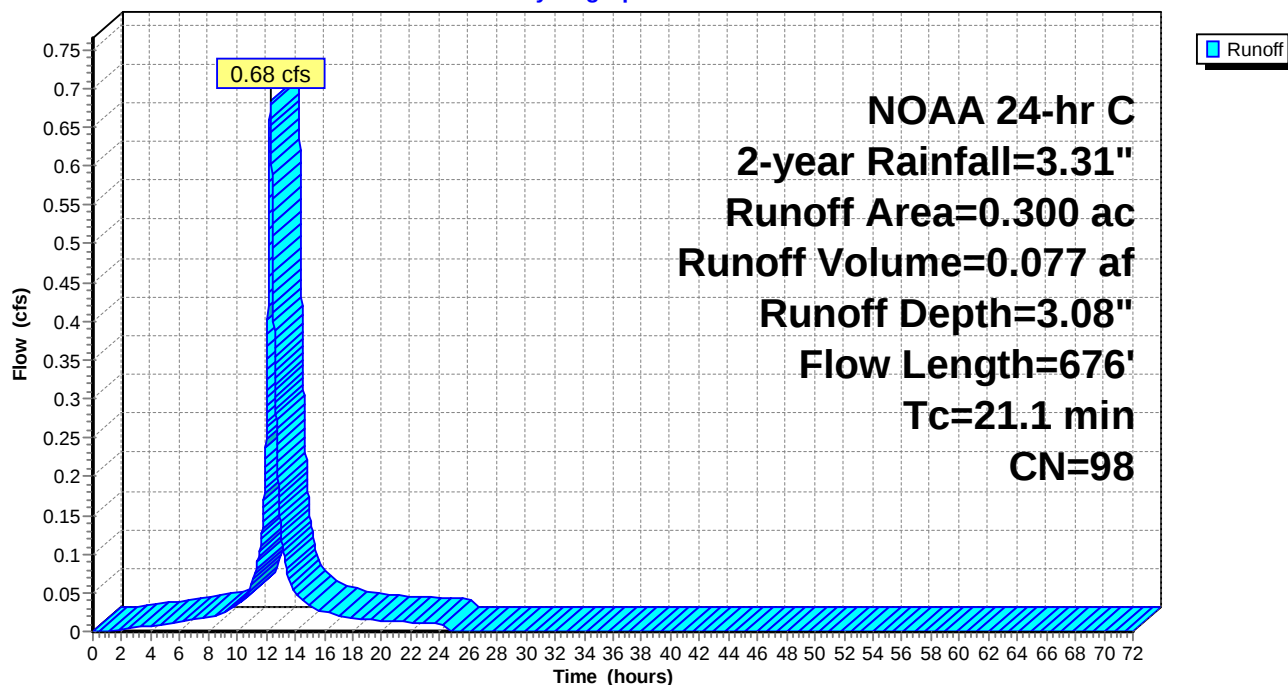
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
* 0.300	98	Impervious, HSG D
0.300		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	72	0.0116	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
2.6	324	0.0162	2.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	11	0.0082	1.84		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	86	0.0263	2.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
8.7	183	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	676	Total			

Subcatchment EA-1D i: EA-1D Impervious

Hydrograph



Pre-Development (Disturbed)

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NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Subcatchment EA-1D p: EA-1D Pervious

Runoff = 3.74 cfs @ 12.31 hrs, Volume= 0.379 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

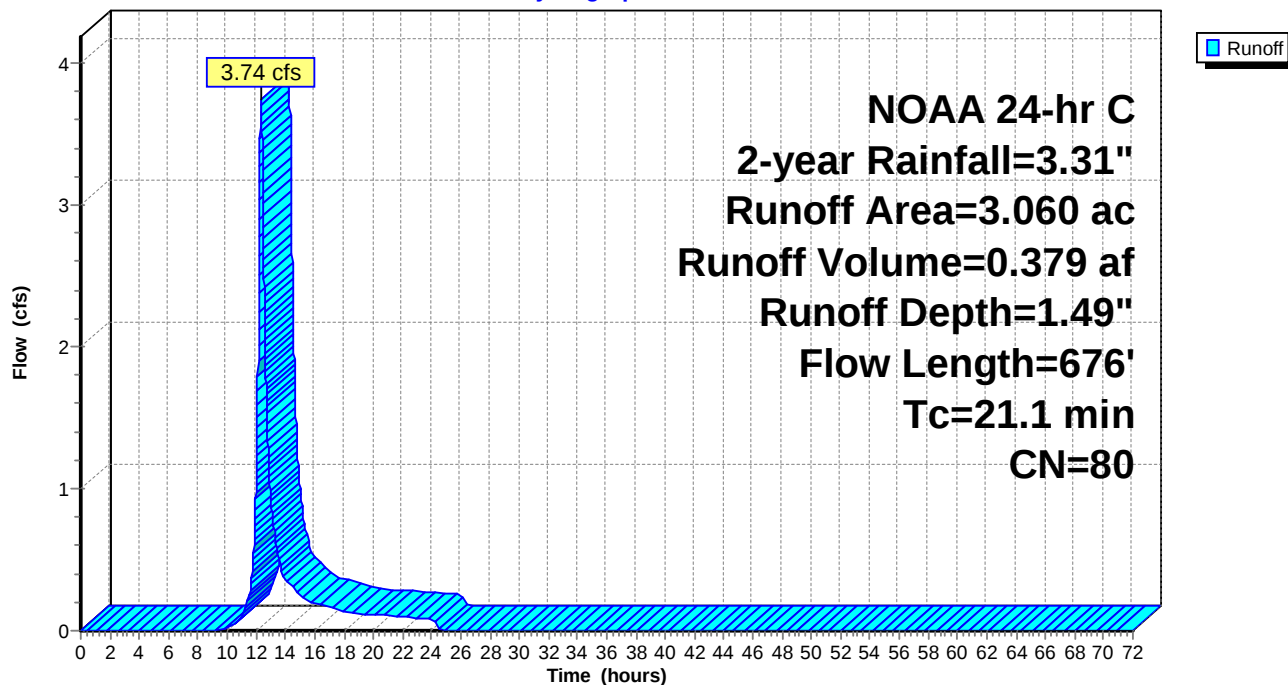
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
2.950	80	>75% Grass cover, Good, HSG D
0.110	79	Woods/grass comb., Good, HSG D
3.060	80	Weighted Average
3.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	72	0.0116	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
2.6	324	0.0162	2.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	11	0.0082	1.84		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	86	0.0263	2.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
8.7	183	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	676	Total			

Subcatchment EA-1D p: EA-1D Pervious

Hydrograph



Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 2-year Rainfall=3.31"

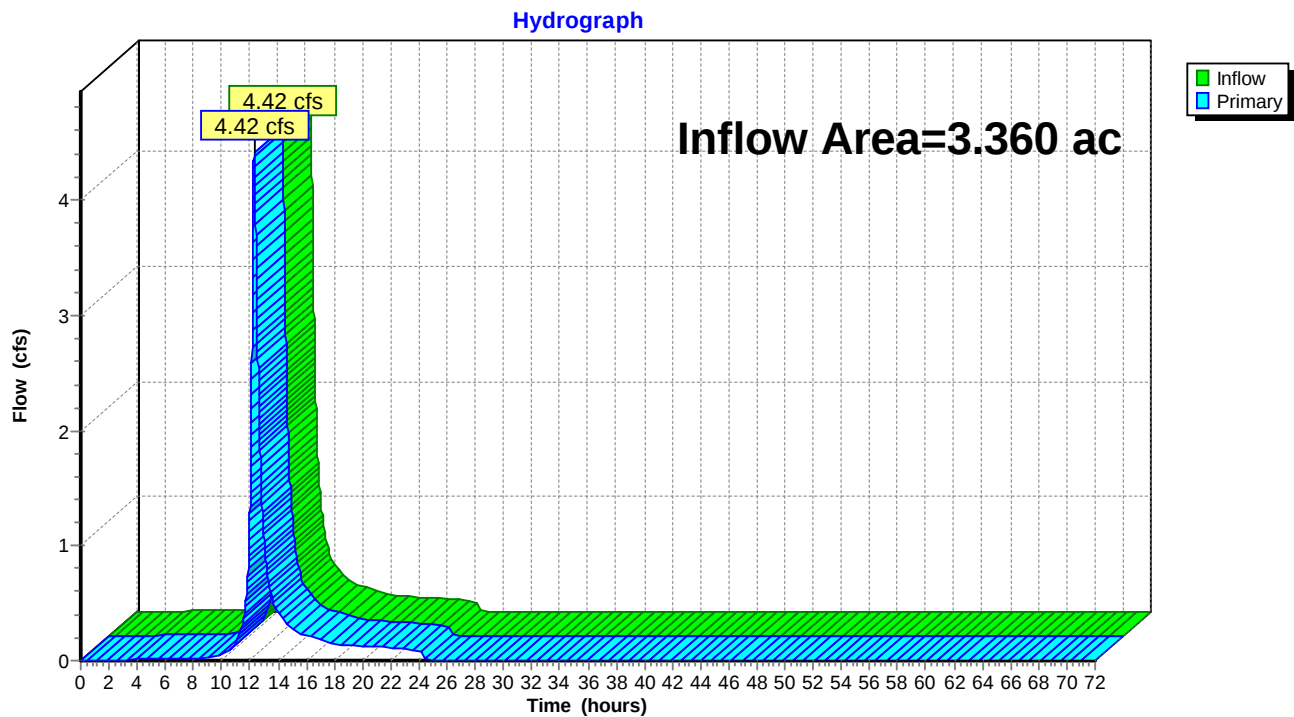
Printed 11/16/2023

Summary for Pond 4P: EA-1 Disturbed

Inflow Area = 3.360 ac, 8.93% Impervious, Inflow Depth = 1.63" for 2-year event
Inflow = 4.42 cfs @ 12.31 hrs, Volume= 0.456 af
Primary = 4.42 cfs @ 12.31 hrs, Volume= 0.456 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 4P: EA-1 Disturbed



Pre-Development (Disturbed)

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NOAA 24-hr C 10-year Rainfall=4.97"

Printed 11/16/2023

Summary for Subcatchment EA-1D i: EA-1D Impervious

Runoff = 1.03 cfs @ 12.30 hrs, Volume= 0.118 af, Depth= 4.73"

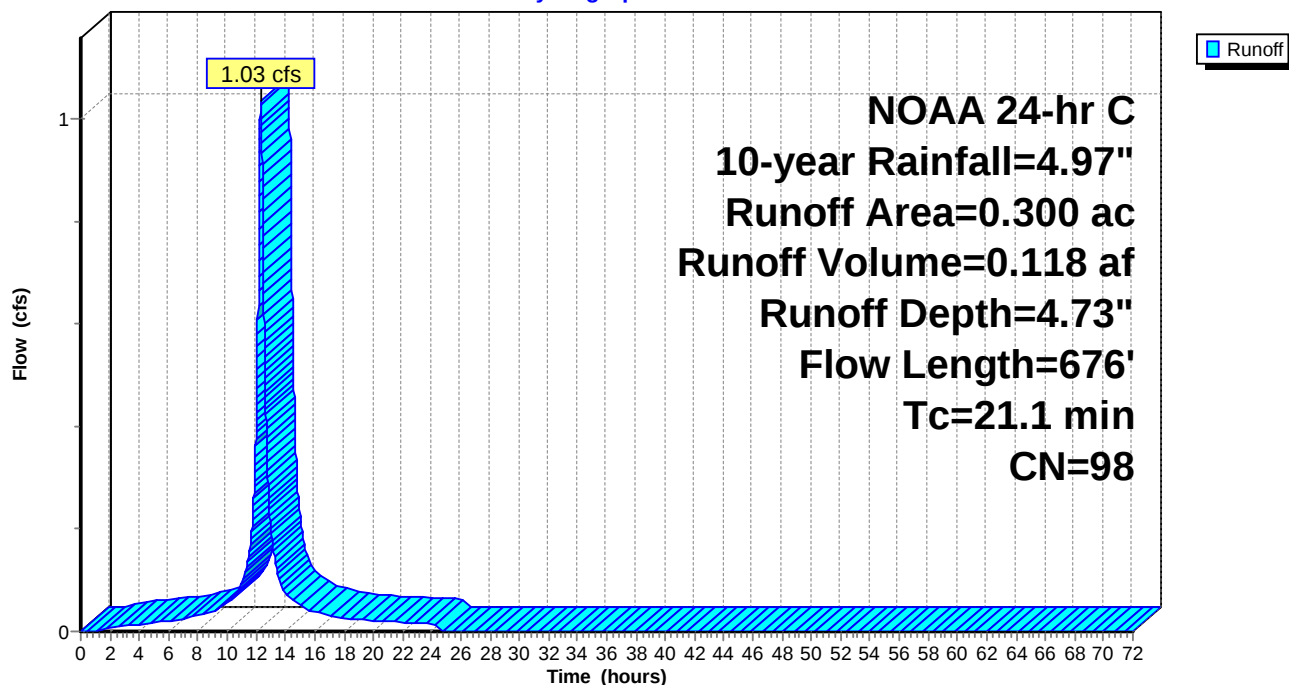
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
* 0.300	98	Impervious, HSG D
0.300		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	72	0.0116	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
2.6	324	0.0162	2.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	11	0.0082	1.84		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	86	0.0263	2.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
8.7	183	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	676	Total			

Subcatchment EA-1D i: EA-1D Impervious

Hydrograph



Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment EA-1D p: EA-1D Pervious

Runoff = 7.26 cfs @ 12.31 hrs, Volume= 0.731 af, Depth= 2.87"

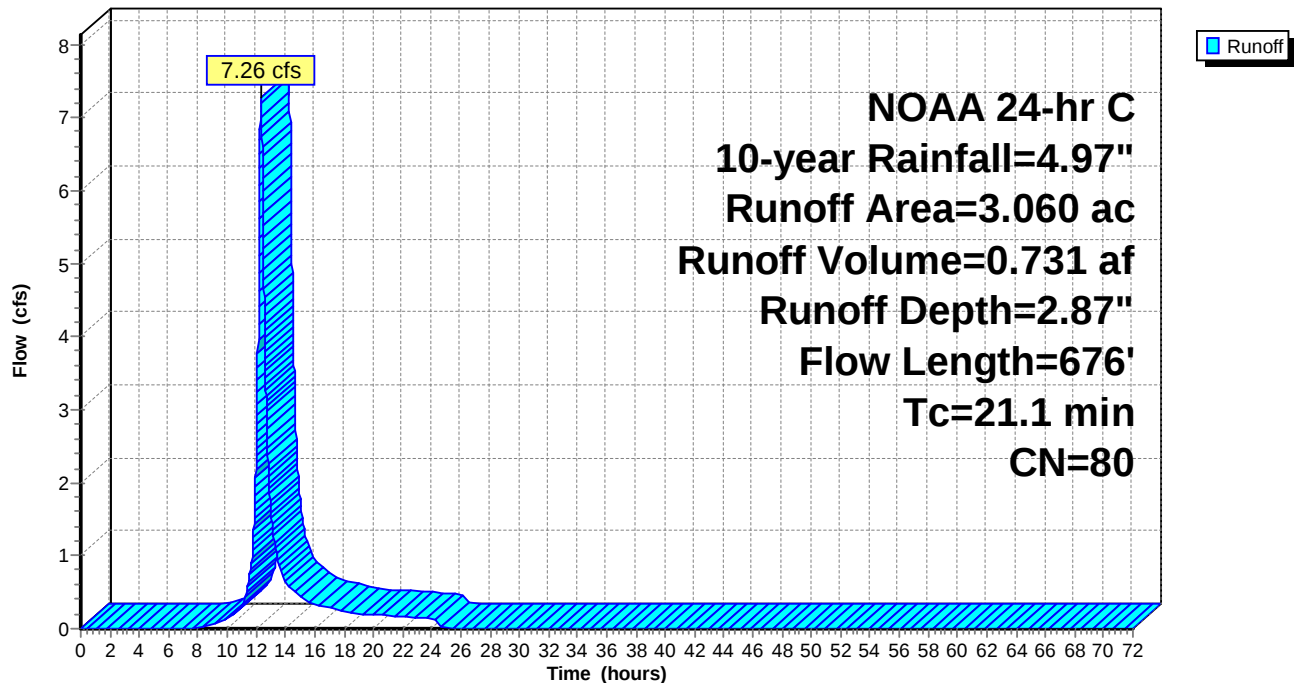
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
2.950	80	>75% Grass cover, Good, HSG D
0.110	79	Woods/grass comb., Good, HSG D
3.060	80	Weighted Average
3.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	72	0.0116	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
2.6	324	0.0162	2.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	11	0.0082	1.84		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	86	0.0263	2.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
8.7	183	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	676	Total			

Subcatchment EA-1D p: EA-1D Pervious

Hydrograph



Pre-Development (Disturbed)

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NOAA 24-hr C 10-year Rainfall=4.97"

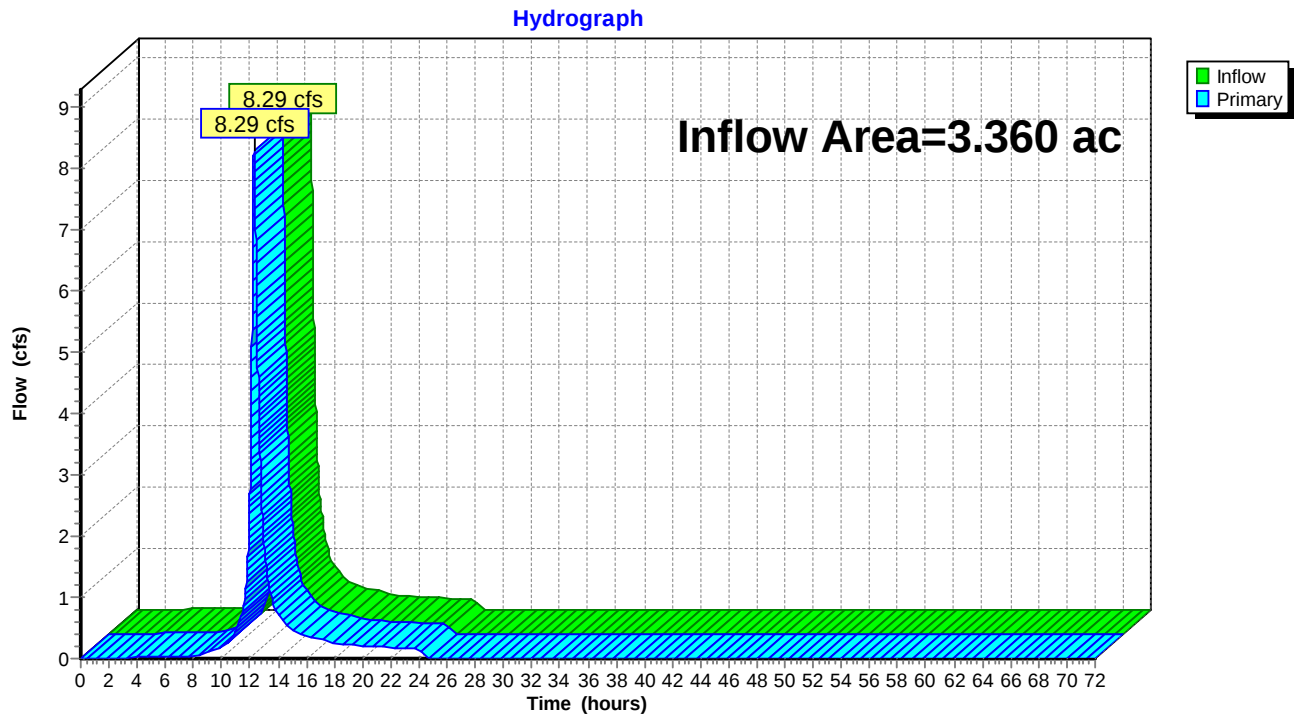
Printed 11/16/2023

Summary for Pond 4P: EA-1 Disturbed

Inflow Area = 3.360 ac, 8.93% Impervious, Inflow Depth = 3.03" for 10-year event
Inflow = 8.29 cfs @ 12.31 hrs, Volume= 0.849 af
Primary = 8.29 cfs @ 12.31 hrs, Volume= 0.849 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 4P: EA-1 Disturbed



Pre-Development (Disturbed)

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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment EA-1D i: EA-1D Impervious

Runoff = 1.70 cfs @ 12.30 hrs, Volume= 0.198 af, Depth= 7.91"

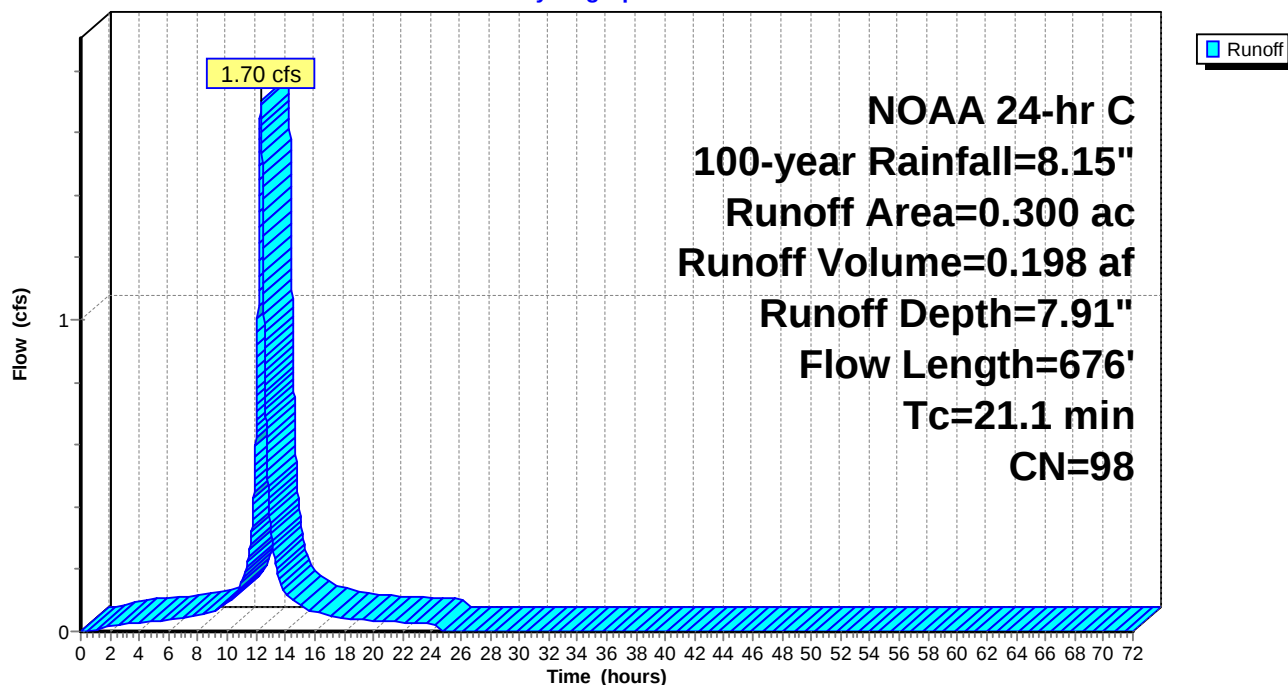
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
* 0.300	98	Impervious, HSG D
0.300		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	72	0.0116	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
2.6	324	0.0162	2.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	11	0.0082	1.84		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	86	0.0263	2.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
8.7	183	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	676	Total			

Subcatchment EA-1D i: EA-1D Impervious

Hydrograph



Pre-Development (Disturbed)

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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment EA-1D p: EA-1D Pervious

Runoff = 14.37 cfs @ 12.31 hrs, Volume= 1.470 af, Depth= 5.77"

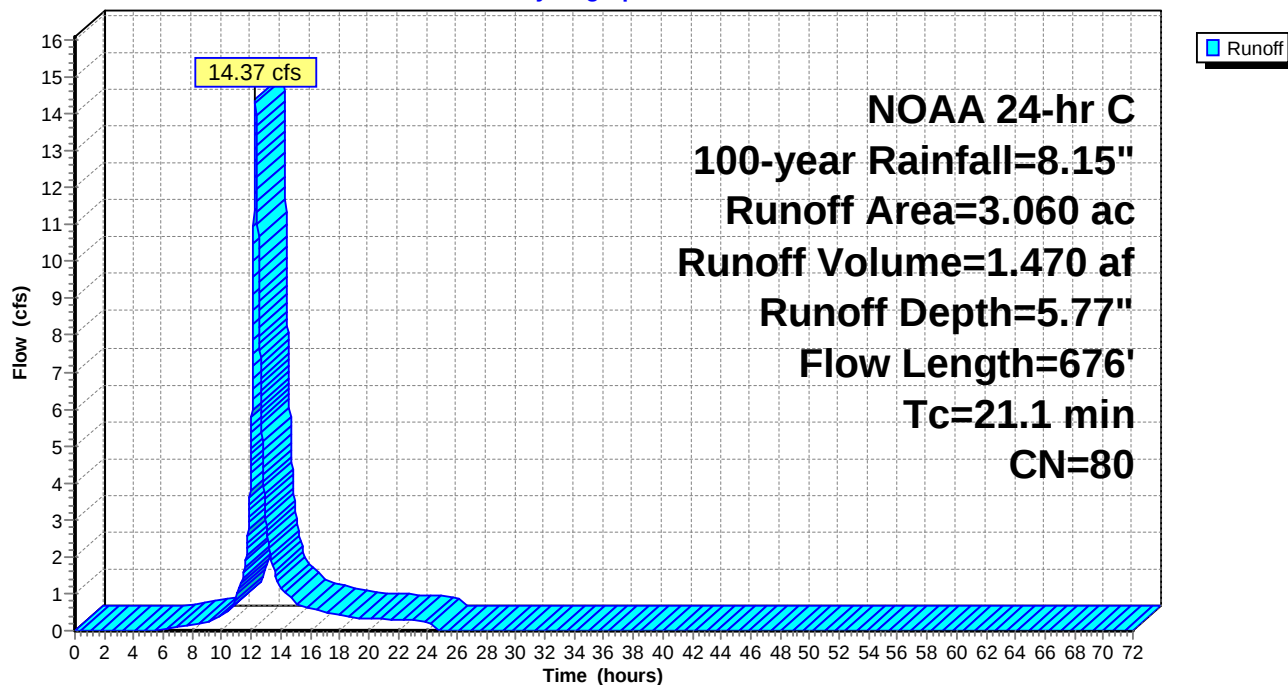
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
2.950	80	>75% Grass cover, Good, HSG D
0.110	79	Woods/grass comb., Good, HSG D
3.060	80	Weighted Average
3.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	72	0.0116	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
2.6	324	0.0162	2.05		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	11	0.0082	1.84		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	86	0.0263	2.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
8.7	183	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	676	Total			

Subcatchment EA-1D p: EA-1D Pervious

Hydrograph



Pre-Development (Disturbed)

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NOAA 24-hr C 100-year Rainfall=8.15"

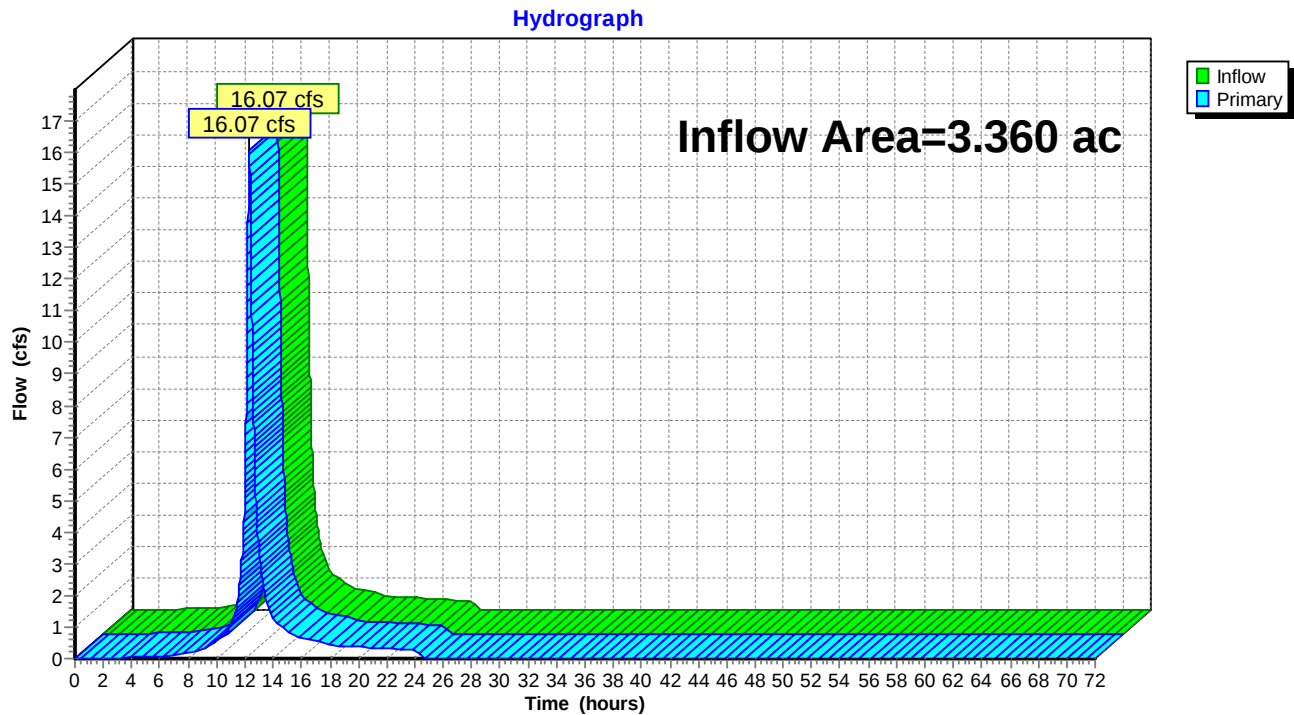
Printed 11/16/2023

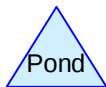
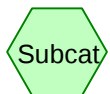
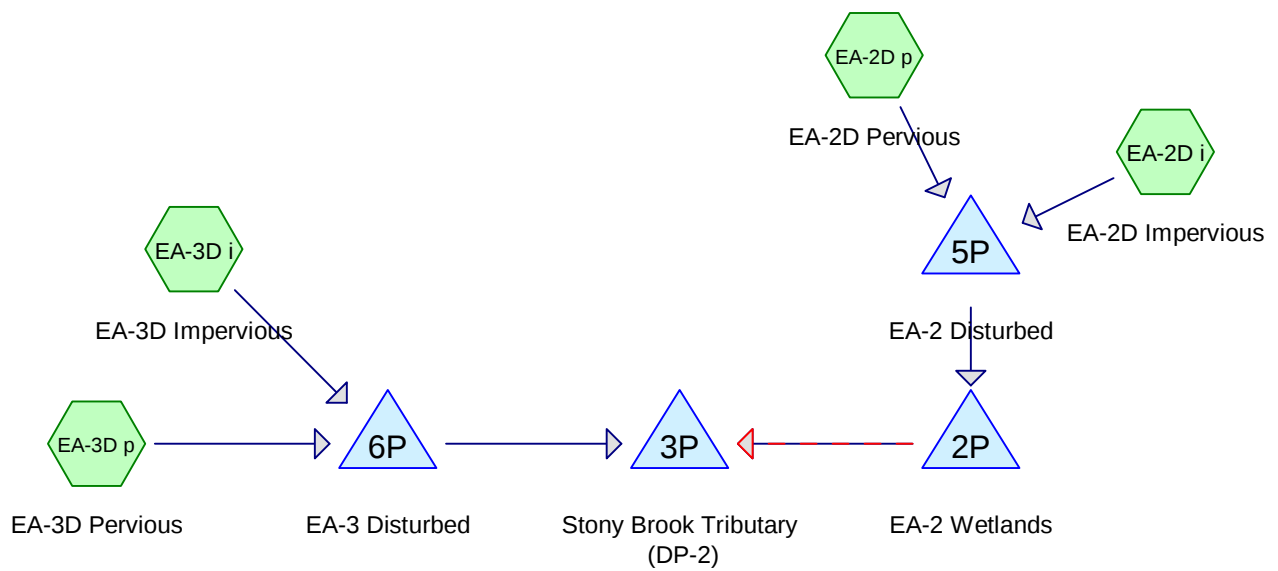
Summary for Pond 4P: EA-1 Disturbed

Inflow Area = 3.360 ac, 8.93% Impervious, Inflow Depth = 5.96" for 100-year event
Inflow = 16.07 cfs @ 12.31 hrs, Volume= 1.668 af
Primary = 16.07 cfs @ 12.31 hrs, Volume= 1.668 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 4P: EA-1 Disturbed





Routing Diagram for Pre-Development (Disturbed)

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Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment EA-2D i: EA-2D Impervious

Runoff = 0.22 cfs @ 1.25 hrs, Volume= 0.009 af, Depth= 1.03"

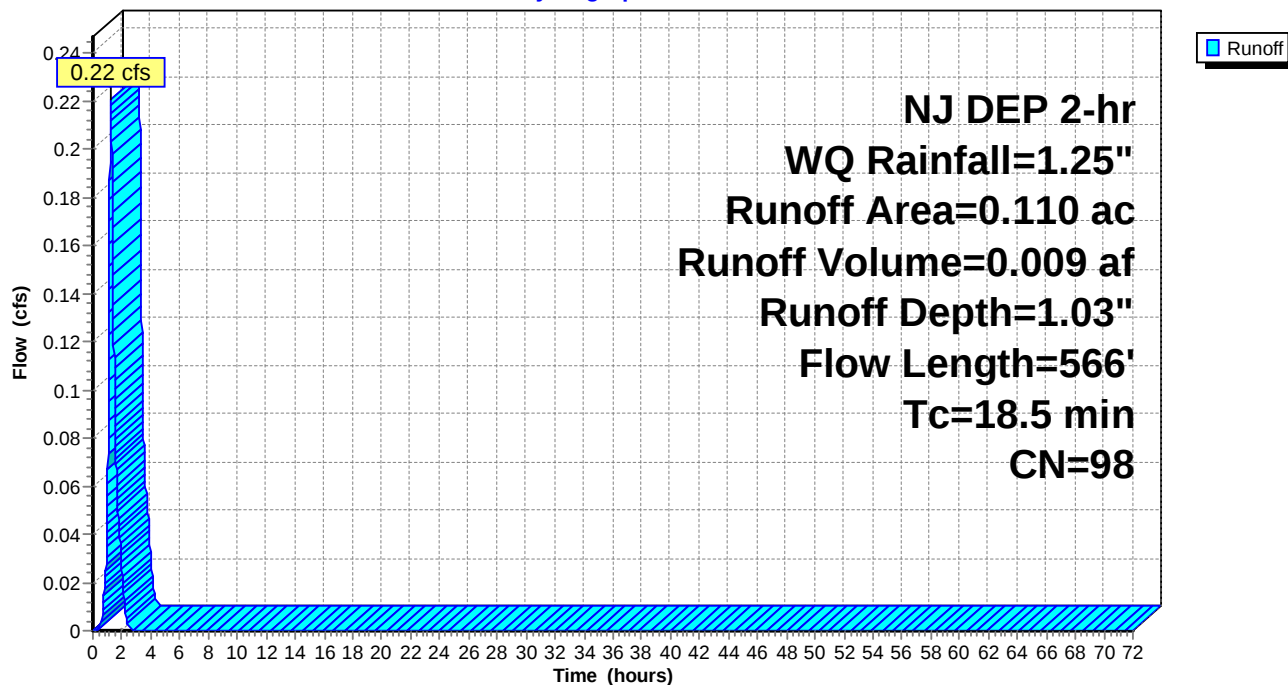
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
* 0.110	98	Impervious Areas
0.110		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	23	0.0413	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.3	31	0.0149	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
2.1	70	0.0129	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	149	0.0105	1.65		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.4	120	0.0083	1.47		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.0	173	0.0081	1.45		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.5	566	Total			

Subcatchment EA-2D i: EA-2D Impervious

Hydrograph



Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment EA-2D p: EA-2D Pervious

Runoff = 0.46 cfs @ 1.34 hrs, Volume= 0.023 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
1.330	80	>75% Grass cover, Good, HSG D
0.230	79	Woods/grass comb., Good, HSG D
1.560	80	Weighted Average
1.560		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	23	0.0413	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.3	31	0.0149	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
2.1	70	0.0129	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	149	0.0105	1.65		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.4	120	0.0083	1.47		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.0	173	0.0081	1.45		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.5	566	Total			

Pre-Development (Disturbed)

Prepared by {enter your company name here}

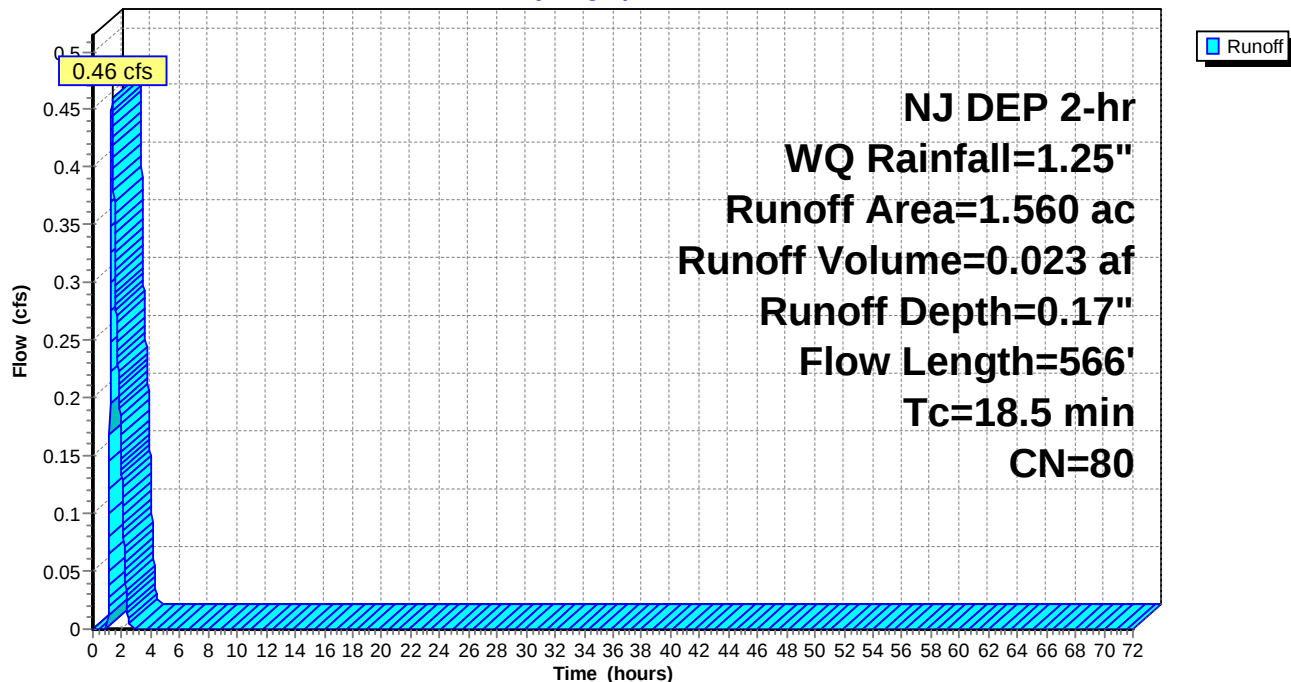
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NJ DEP 2-hr WQ Rainfall=1.25"

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Subcatchment EA-2D p: EA-2D Pervious

Hydrograph



Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment EA-3D i: EA-3D Impervious

Runoff = 0.19 cfs @ 1.18 hrs, Volume= 0.007 af, Depth= 1.03"

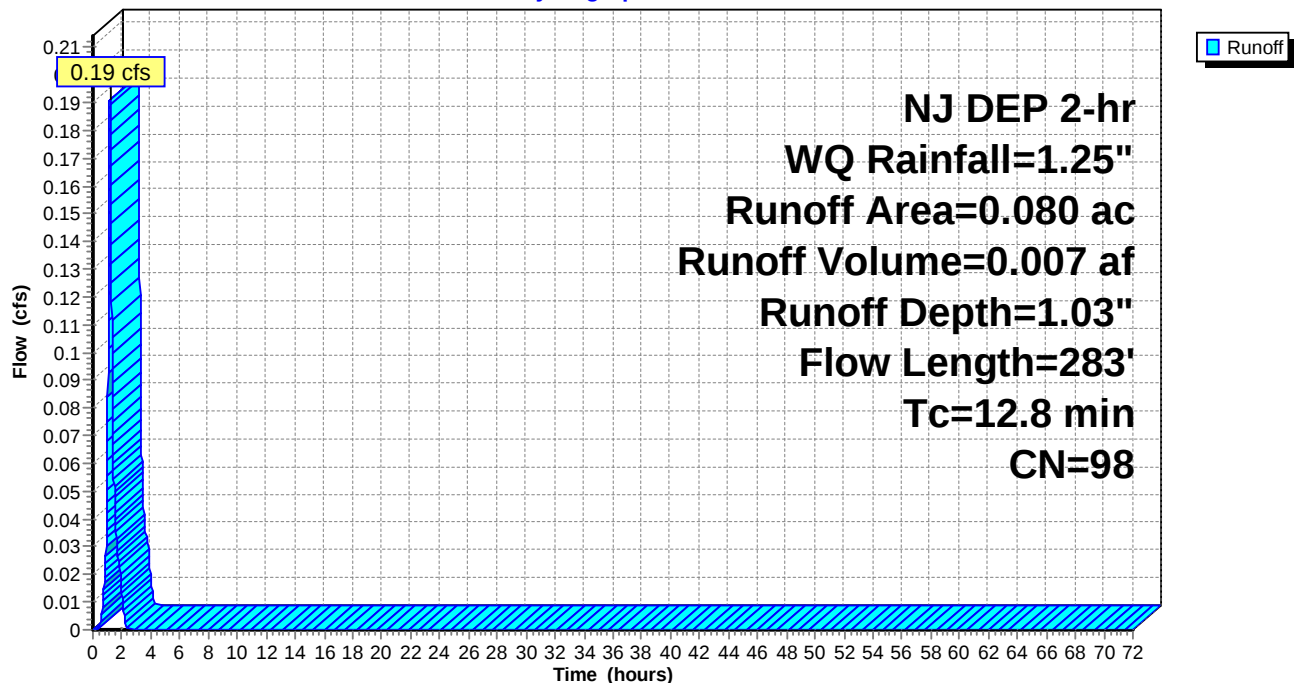
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
* 0.080	98	Impervious Areas
0.080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	85	0.0162	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
0.4	55	0.0181	2.17		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	134	0.0213	0.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.8	283	Total			

Subcatchment EA-3D i: EA-3D Impervious

Hydrograph



Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment EA-3D p: EA-3D Pervious

Runoff = 0.07 cfs @ 1.25 hrs, Volume= 0.003 af, Depth= 0.17"

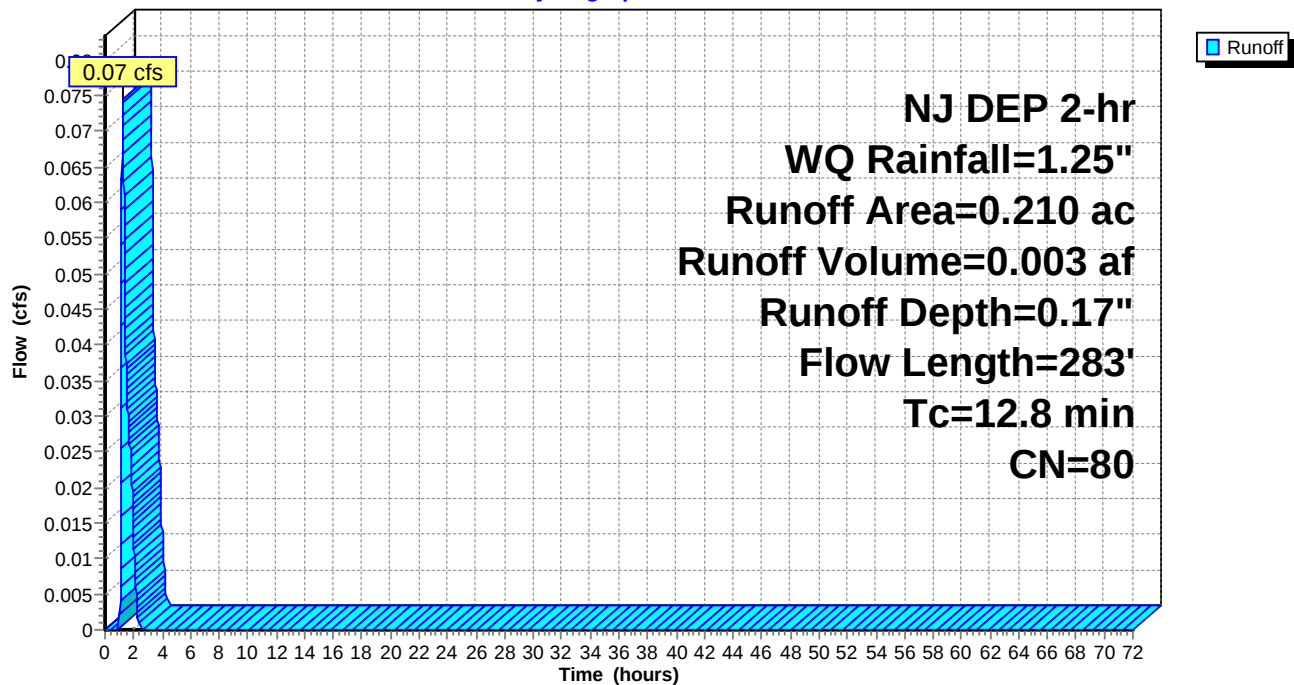
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.210	80	>75% Grass cover, Good, HSG D
0.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	85	0.0162	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
0.4	55	0.0181	2.17		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	134	0.0213	0.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.8	283	Total			

Subcatchment EA-3D p: EA-3D Pervious

Hydrograph



Pre-Development (Disturbed)

NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Pond 2P: EA-2 Wetlands

Inflow Area = 1.670 ac, 6.59% Impervious, Inflow Depth = 0.23" for WQ event
 Inflow = 0.65 cfs @ 1.32 hrs, Volume= 0.032 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
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 202.90' @ 3.05 hrs Surf.Area= 10,674 sf Storage= 1,393 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	202.60'	8,536 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.60	467	0	0
202.70	2,559	151	151
202.80	5,796	418	569
202.90	10,670	823	1,392
203.00	15,559	1,311	2,704
203.10	18,857	1,721	4,425
203.20	20,626	1,974	6,399
203.30	22,113	2,137	8,536

Device	Routing	Invert	Outlet Devices
#1	Primary	202.97'	179.4 deg x 11.0' long x 0.33' rise Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)
#2	Secondary	203.01'	65.0' 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=202.60' (Free Discharge)↑ **1=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=202.60' (Free Discharge)↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

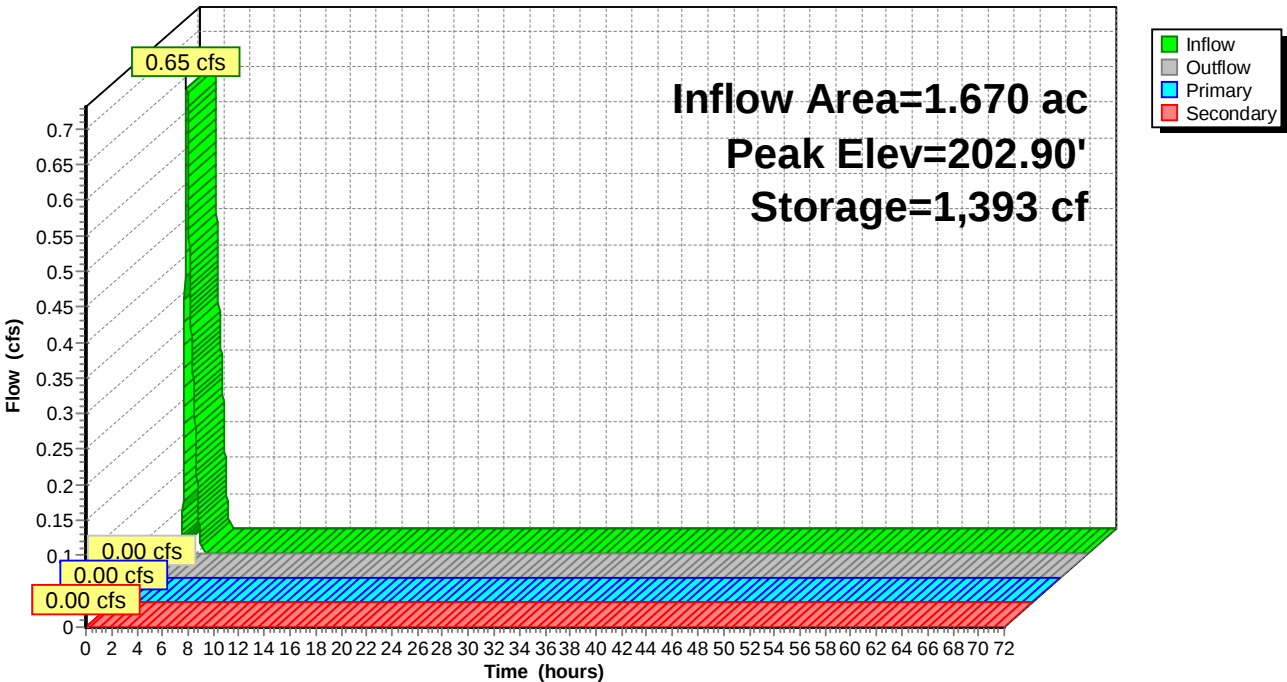
Pre-Development (Disturbed)

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NJ DEP 2-hr WQ Rainfall=1.25"
Printed 11/16/2023

Pond 2P: EA-2 Wetlands

Hydrograph



Pre-Development (Disturbed)

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Hydrograph for Pond 2P: EA-2 Wetlands

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	202.60	0.00	0.00	0.00
2.00	0.16	1,279	202.89	0.00	0.00	0.00
4.00	0.00	1,393	202.90	0.00	0.00	0.00
6.00	0.00	1,393	202.90	0.00	0.00	0.00
8.00	0.00	1,393	202.90	0.00	0.00	0.00
10.00	0.00	1,393	202.90	0.00	0.00	0.00
12.00	0.00	1,393	202.90	0.00	0.00	0.00
14.00	0.00	1,393	202.90	0.00	0.00	0.00
16.00	0.00	1,393	202.90	0.00	0.00	0.00
18.00	0.00	1,393	202.90	0.00	0.00	0.00
20.00	0.00	1,393	202.90	0.00	0.00	0.00
22.00	0.00	1,393	202.90	0.00	0.00	0.00
24.00	0.00	1,393	202.90	0.00	0.00	0.00
26.00	0.00	1,393	202.90	0.00	0.00	0.00
28.00	0.00	1,393	202.90	0.00	0.00	0.00
30.00	0.00	1,393	202.90	0.00	0.00	0.00
32.00	0.00	1,393	202.90	0.00	0.00	0.00
34.00	0.00	1,393	202.90	0.00	0.00	0.00
36.00	0.00	1,393	202.90	0.00	0.00	0.00
38.00	0.00	1,393	202.90	0.00	0.00	0.00
40.00	0.00	1,393	202.90	0.00	0.00	0.00
42.00	0.00	1,393	202.90	0.00	0.00	0.00
44.00	0.00	1,393	202.90	0.00	0.00	0.00
46.00	0.00	1,393	202.90	0.00	0.00	0.00
48.00	0.00	1,393	202.90	0.00	0.00	0.00
50.00	0.00	1,393	202.90	0.00	0.00	0.00
52.00	0.00	1,393	202.90	0.00	0.00	0.00
54.00	0.00	1,393	202.90	0.00	0.00	0.00
56.00	0.00	1,393	202.90	0.00	0.00	0.00
58.00	0.00	1,393	202.90	0.00	0.00	0.00
60.00	0.00	1,393	202.90	0.00	0.00	0.00
62.00	0.00	1,393	202.90	0.00	0.00	0.00
64.00	0.00	1,393	202.90	0.00	0.00	0.00
66.00	0.00	1,393	202.90	0.00	0.00	0.00
68.00	0.00	1,393	202.90	0.00	0.00	0.00
70.00	0.00	1,393	202.90	0.00	0.00	0.00
72.00	0.00	1,393	202.90	0.00	0.00	0.00

Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NJ DEP 2-hr WQ Rainfall=1.25"

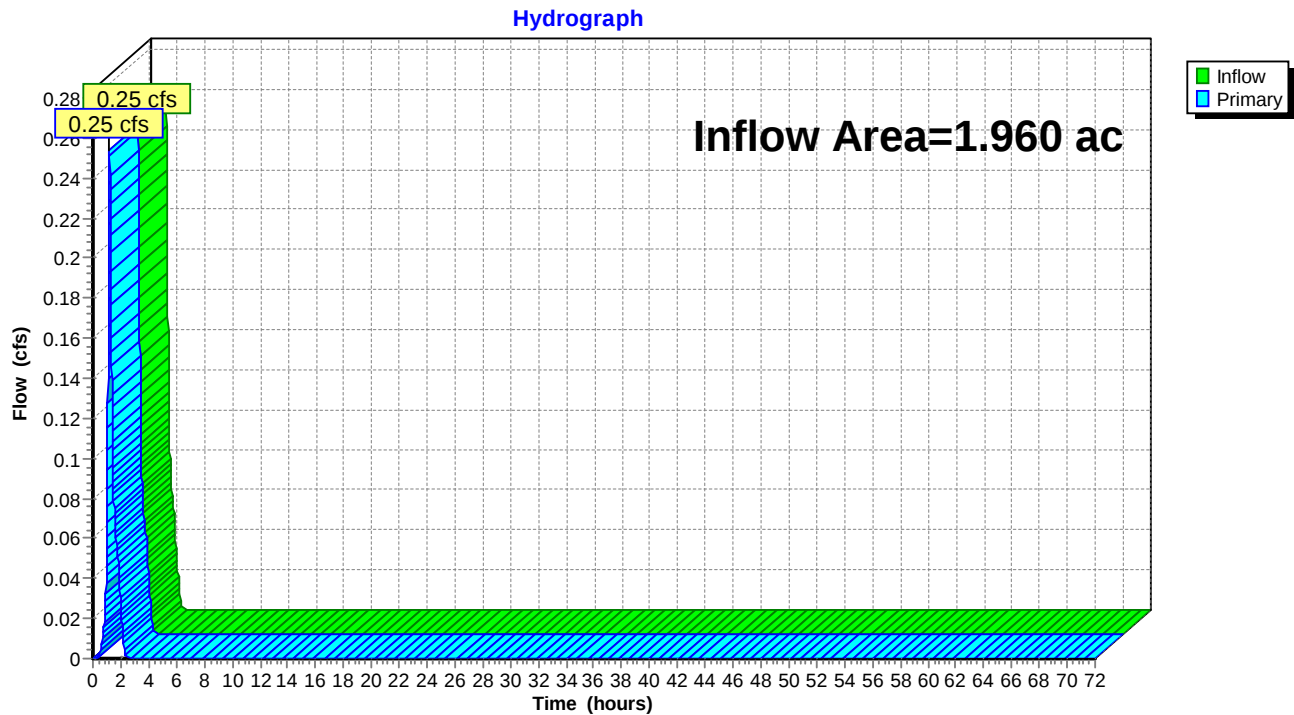
Printed 11/16/2023

Summary for Pond 3P: Stony Brook Tributary (DP-2)

Inflow Area = 1.960 ac, 9.69% Impervious, Inflow Depth = 0.06" for WQ event
Inflow = 0.25 cfs @ 1.20 hrs, Volume= 0.010 af
Primary = 0.25 cfs @ 1.20 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 3P: Stony Brook Tributary (DP-2)



Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

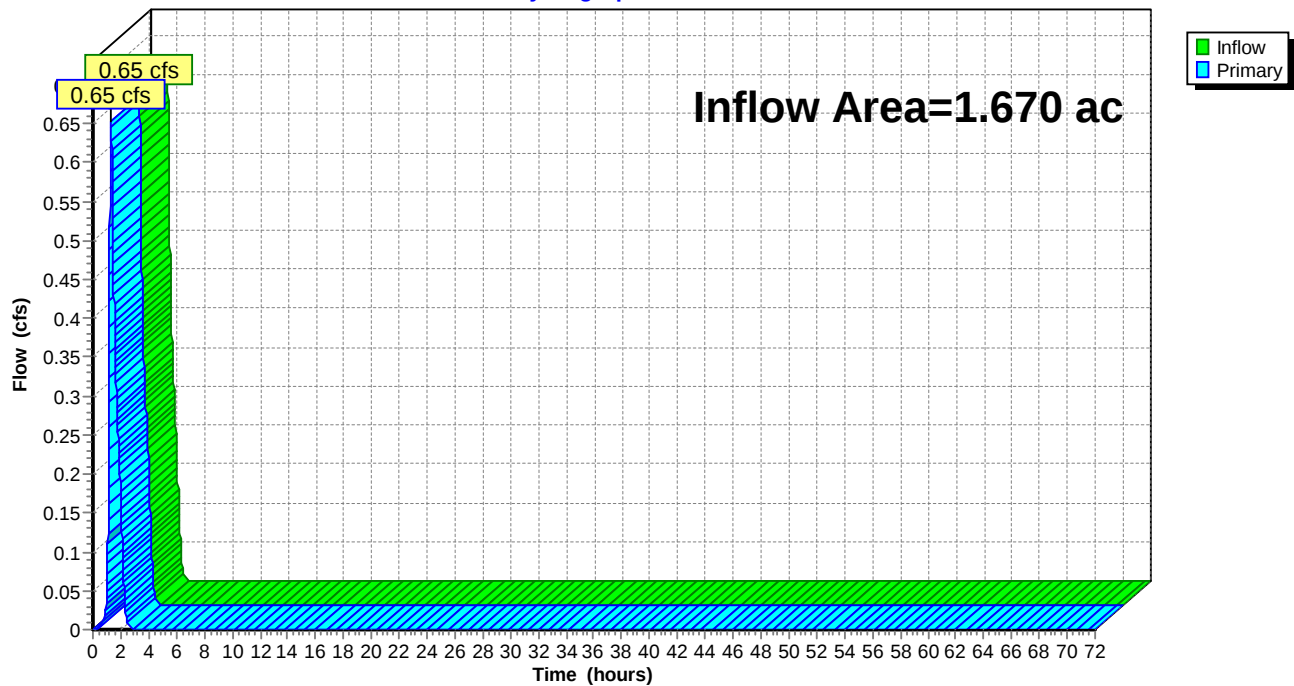
Summary for Pond 5P: EA-2 Disturbed

Inflow Area = 1.670 ac, 6.59% Impervious, Inflow Depth = 0.23" for WQ event
Inflow = 0.65 cfs @ 1.32 hrs, Volume= 0.032 af
Primary = 0.65 cfs @ 1.32 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 5P: EA-2 Disturbed

Hydrograph



Pre-Development (Disturbed)

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NJ DEP 2-hr WQ Rainfall=1.25"

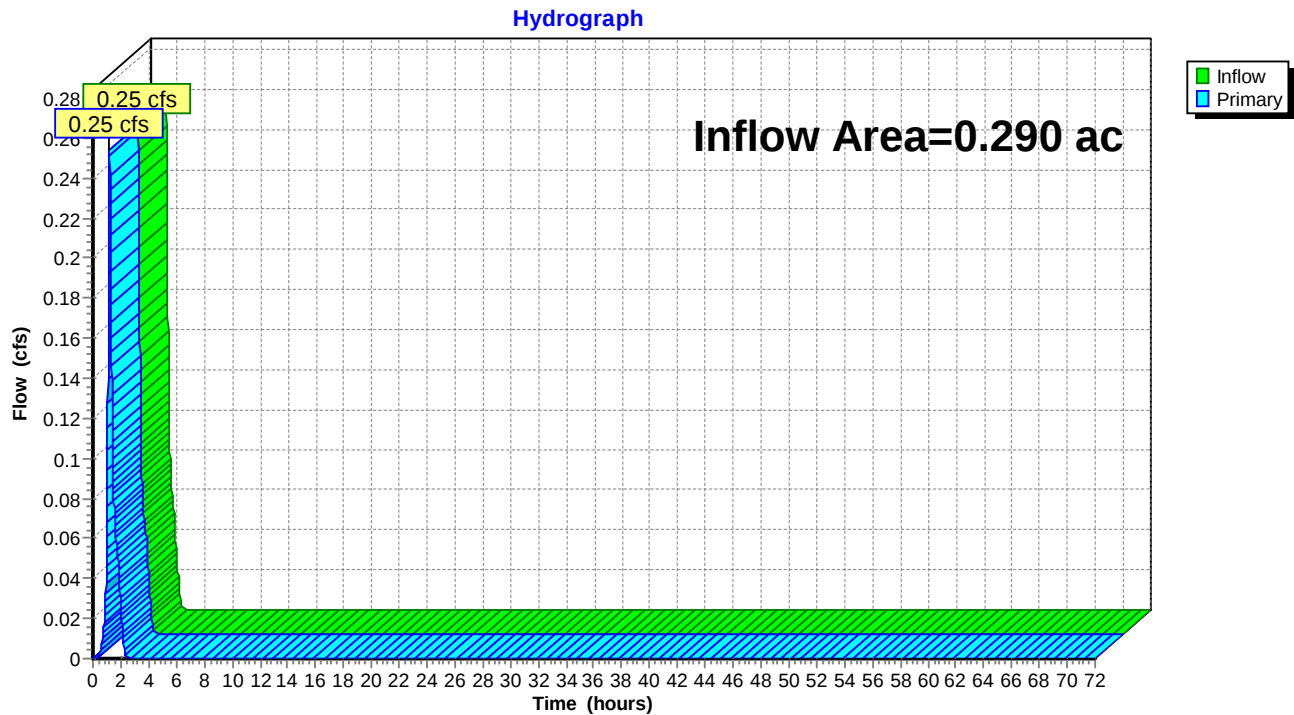
Printed 11/16/2023

Summary for Pond 6P: EA-3 Disturbed

Inflow Area = 0.290 ac, 27.59% Impervious, Inflow Depth = 0.41" for WQ event
Inflow = 0.25 cfs @ 1.20 hrs, Volume= 0.010 af
Primary = 0.25 cfs @ 1.20 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 6P: EA-3 Disturbed



Pre-Development (Disturbed)

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Summary for Subcatchment EA-2D i: EA-2D Impervious

Runoff = 0.26 cfs @ 12.27 hrs, Volume= 0.028 af, Depth= 3.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

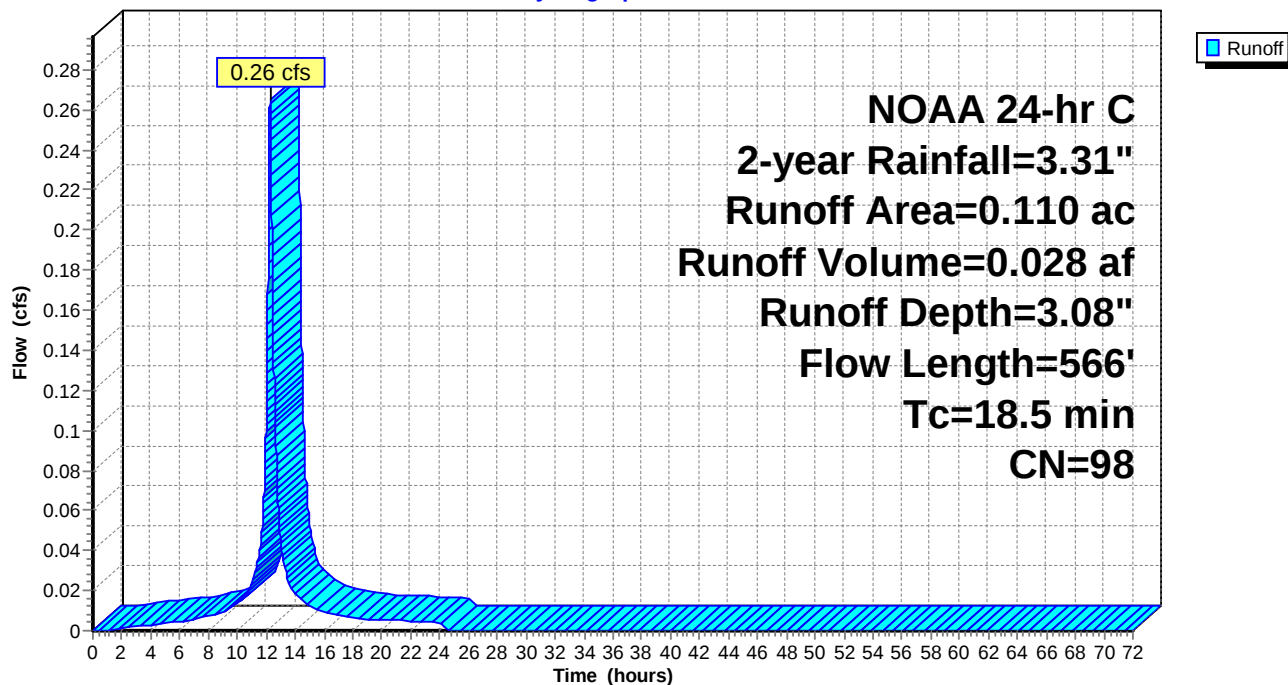
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
* 0.110	98	Impervious Areas
0.110		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	23	0.0413	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.3	31	0.0149	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
2.1	70	0.0129	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	149	0.0105	1.65		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.4	120	0.0083	1.47		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.0	173	0.0081	1.45		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.5	566	Total			

Subcatchment EA-2D i: EA-2D Impervious

Hydrograph



Pre-Development (Disturbed)

NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Subcatchment EA-2D p: EA-2D Pervious

Runoff = 2.02 cfs @ 12.28 hrs, Volume= 0.193 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
1.330	80	>75% Grass cover, Good, HSG D
0.230	79	Woods/grass comb., Good, HSG D
1.560	80	Weighted Average
1.560		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	23	0.0413	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.3	31	0.0149	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
2.1	70	0.0129	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	149	0.0105	1.65		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.4	120	0.0083	1.47		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.0	173	0.0081	1.45		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.5	566	Total			

Pre-Development (Disturbed)

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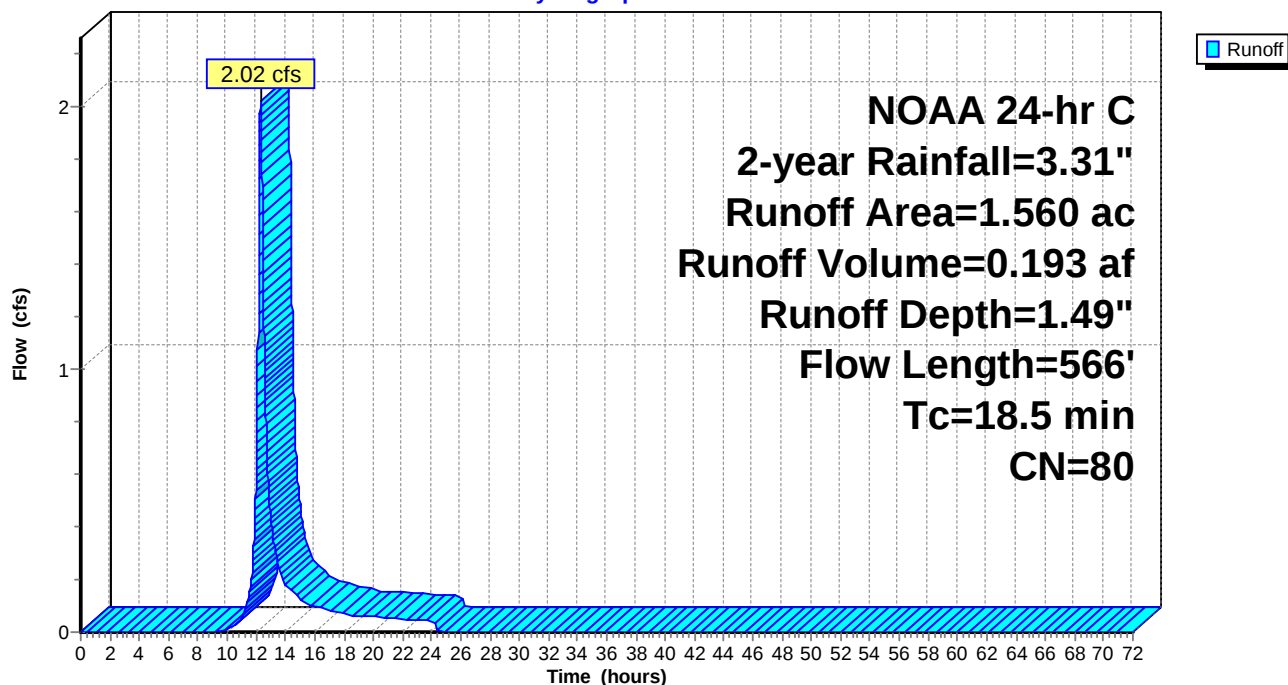
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NOAA 24-hr C 2-year Rainfall=3.31"

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Subcatchment EA-2D p: EA-2D Pervious

Hydrograph



Pre-Development (Disturbed)

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Summary for Subcatchment EA-3D i: EA-3D Impervious

Runoff = 0.22 cfs @ 12.20 hrs, Volume= 0.021 af, Depth= 3.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

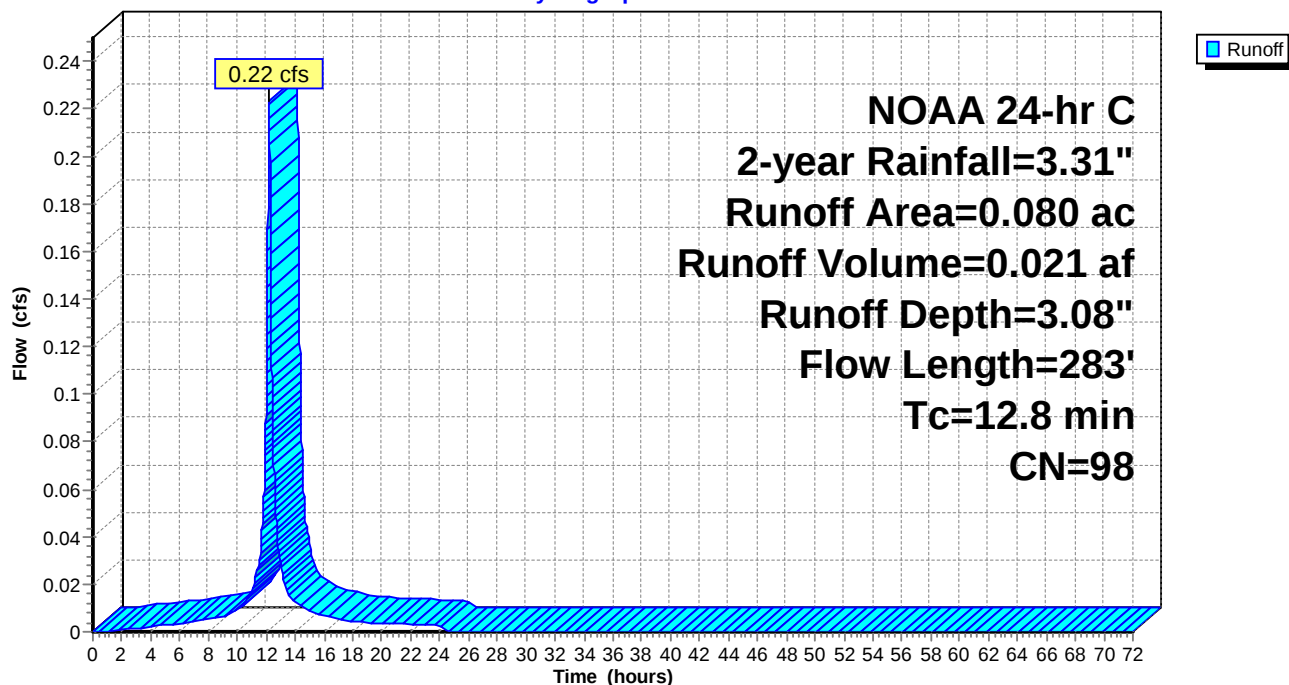
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
* 0.080	98	Impervious Areas
0.080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	85	0.0162	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
0.4	55	0.0181	2.17		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	134	0.0213	0.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.8	283	Total			

Subcatchment EA-3D i: EA-3D Impervious

Hydrograph



Pre-Development (Disturbed)

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Summary for Subcatchment EA-3D p: EA-3D Pervious

Runoff = 0.32 cfs @ 12.21 hrs, Volume= 0.026 af, Depth= 1.49"

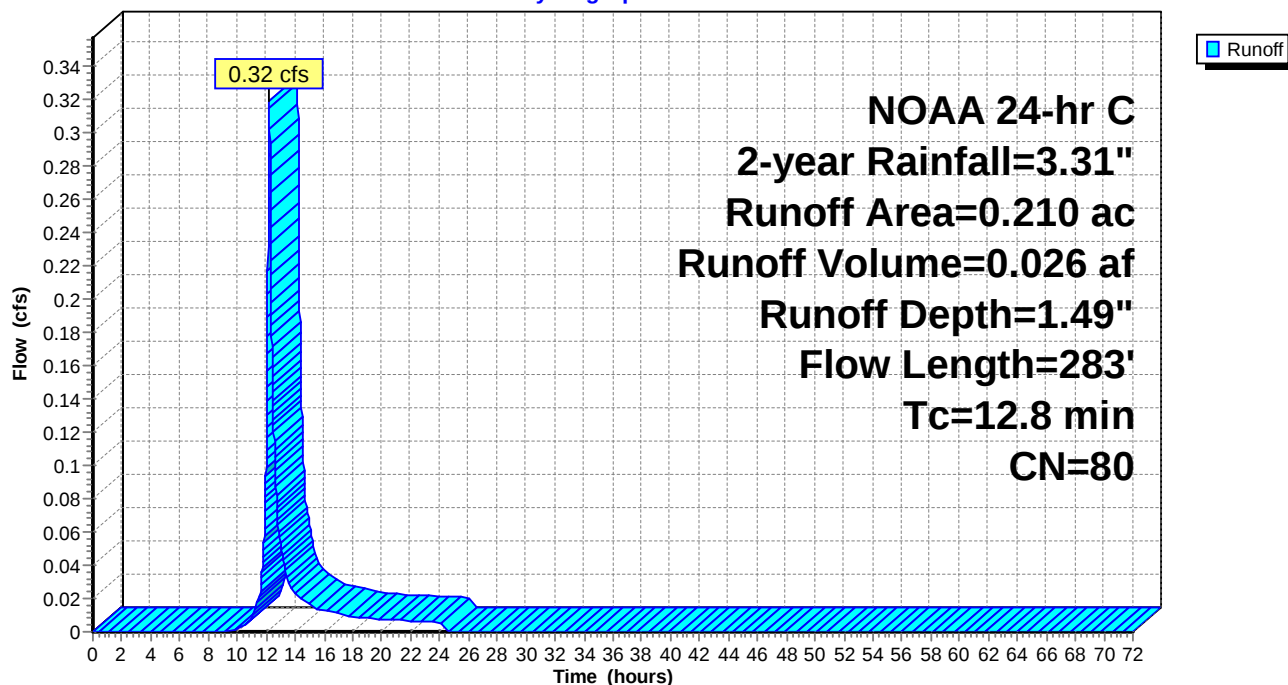
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.210	80	>75% Grass cover, Good, HSG D
0.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	85	0.0162	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
0.4	55	0.0181	2.17		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	134	0.0213	0.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.8	283	Total			

Subcatchment EA-3D p: EA-3D Pervious

Hydrograph



Pre-Development (Disturbed)

NOAA 24-hr C 2-year Rainfall=3.31"

Prepared by {enter your company name here}

Printed 11/16/2023

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Summary for Pond 2P: EA-2 Wetlands

Inflow Area = 1.670 ac, 6.59% Impervious, Inflow Depth = 1.59" for 2-year event
 Inflow = 2.28 cfs @ 12.28 hrs, Volume= 0.222 af
 Outflow = 1.58 cfs @ 12.45 hrs, Volume= 0.170 af, Atten= 31%, Lag= 10.5 min
 Primary = 1.01 cfs @ 12.45 hrs, Volume= 0.153 af
 Secondary = 0.57 cfs @ 12.45 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 203.03' @ 12.45 hrs Surf.Area= 16,650 sf Storage= 3,236 cf

Plug-Flow detention time= 169.2 min calculated for 0.170 af (77% of inflow)
 Center-of-Mass det. time= 77.4 min (922.2 - 844.9)

Volume	Invert	Avail.Storage	Storage Description
#1	202.60'	8,536 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.60	467	0	0
202.70	2,559	151	151
202.80	5,796	418	569
202.90	10,670	823	1,392
203.00	15,559	1,311	2,704
203.10	18,857	1,721	4,425
203.20	20,626	1,974	6,399
203.30	22,113	2,137	8,536

Device	Routing	Invert	Outlet Devices
#1	Primary	202.97'	179.4 deg x 11.0' long x 0.33' rise Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)
#2	Secondary	203.01'	65.0' 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=1.00 cfs @ 12.45 hrs HW=203.03' (Free Discharge)↑ **1=Sharp-Crested Vee/Trap Weir** (Weir Controls 1.00 cfs @ 0.69 fps)**Secondary OutFlow** Max=0.57 cfs @ 12.45 hrs HW=203.03' (Free Discharge)↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.57 cfs @ 0.38 fps)

Pre-Development (Disturbed)

Prepared by {enter your company name here}

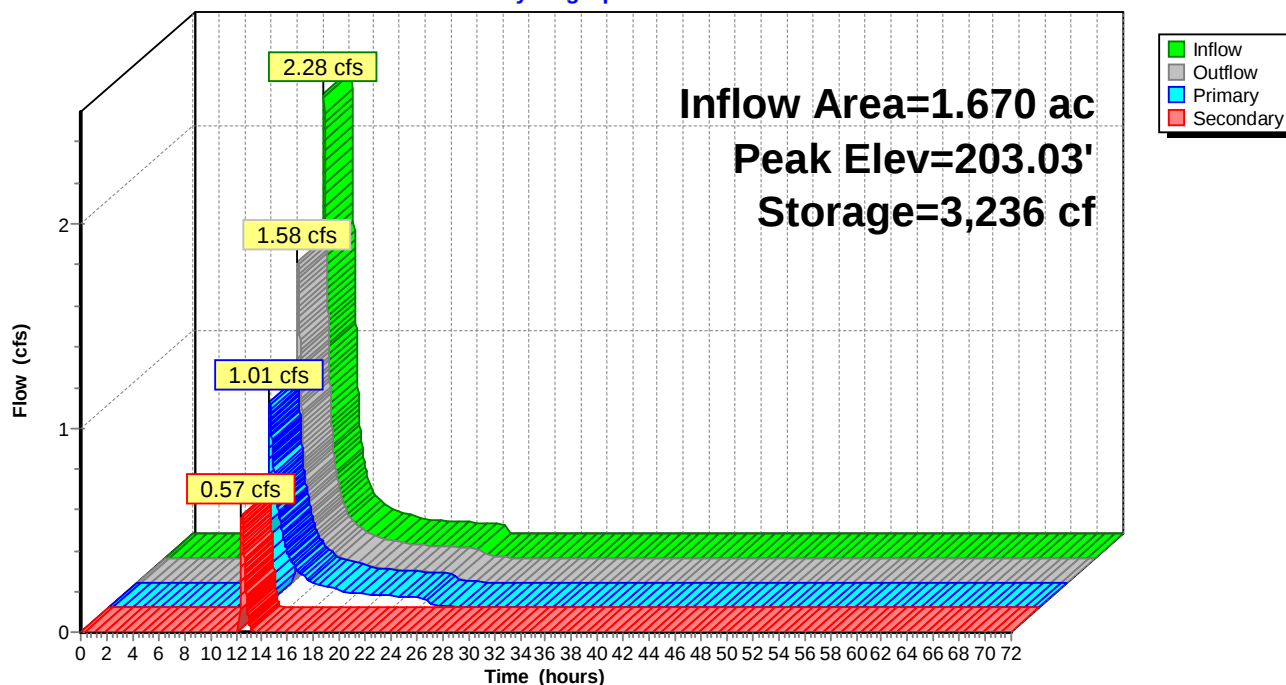
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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Pond 2P: EA-2 Wetlands

Hydrograph



Pre-Development (Disturbed)

NOAA 24-hr C 2-year Rainfall=3.31"

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Printed 11/16/2023

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Hydrograph for Pond 2P: EA-2 Wetlands

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	202.60	0.00	0.00	0.00
2.00	0.00	1	202.60	0.00	0.00	0.00
4.00	0.00	15	202.62	0.00	0.00	0.00
6.00	0.00	41	202.64	0.00	0.00	0.00
8.00	0.01	83	202.67	0.00	0.00	0.00
10.00	0.02	160	202.70	0.00	0.00	0.00
12.00	0.70	1,149	202.88	0.00	0.00	0.00
14.00	0.20	2,695	203.00	0.24	0.24	0.00
16.00	0.11	2,539	202.99	0.12	0.12	0.00
18.00	0.07	2,486	202.99	0.08	0.08	0.00
20.00	0.06	2,455	202.98	0.07	0.07	0.00
22.00	0.05	2,437	202.98	0.06	0.06	0.00
24.00	0.05	2,420	202.98	0.05	0.05	0.00
26.00	0.00	2,299	202.97	0.01	0.01	0.00
28.00	0.00	2,274	202.97	0.00	0.00	0.00
30.00	0.00	2,267	202.97	0.00	0.00	0.00
32.00	0.00	2,264	202.97	0.00	0.00	0.00
34.00	0.00	2,262	202.97	0.00	0.00	0.00
36.00	0.00	2,261	202.97	0.00	0.00	0.00
38.00	0.00	2,260	202.97	0.00	0.00	0.00
40.00	0.00	2,260	202.97	0.00	0.00	0.00
42.00	0.00	2,259	202.97	0.00	0.00	0.00
44.00	0.00	2,259	202.97	0.00	0.00	0.00
46.00	0.00	2,259	202.97	0.00	0.00	0.00
48.00	0.00	2,259	202.97	0.00	0.00	0.00
50.00	0.00	2,259	202.97	0.00	0.00	0.00
52.00	0.00	2,259	202.97	0.00	0.00	0.00
54.00	0.00	2,259	202.97	0.00	0.00	0.00
56.00	0.00	2,259	202.97	0.00	0.00	0.00
58.00	0.00	2,259	202.97	0.00	0.00	0.00
60.00	0.00	2,259	202.97	0.00	0.00	0.00
62.00	0.00	2,259	202.97	0.00	0.00	0.00
64.00	0.00	2,259	202.97	0.00	0.00	0.00
66.00	0.00	2,259	202.97	0.00	0.00	0.00
68.00	0.00	2,259	202.97	0.00	0.00	0.00
70.00	0.00	2,259	202.97	0.00	0.00	0.00
72.00	0.00	2,259	202.97	0.00	0.00	0.00

Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 2-year Rainfall=3.31"

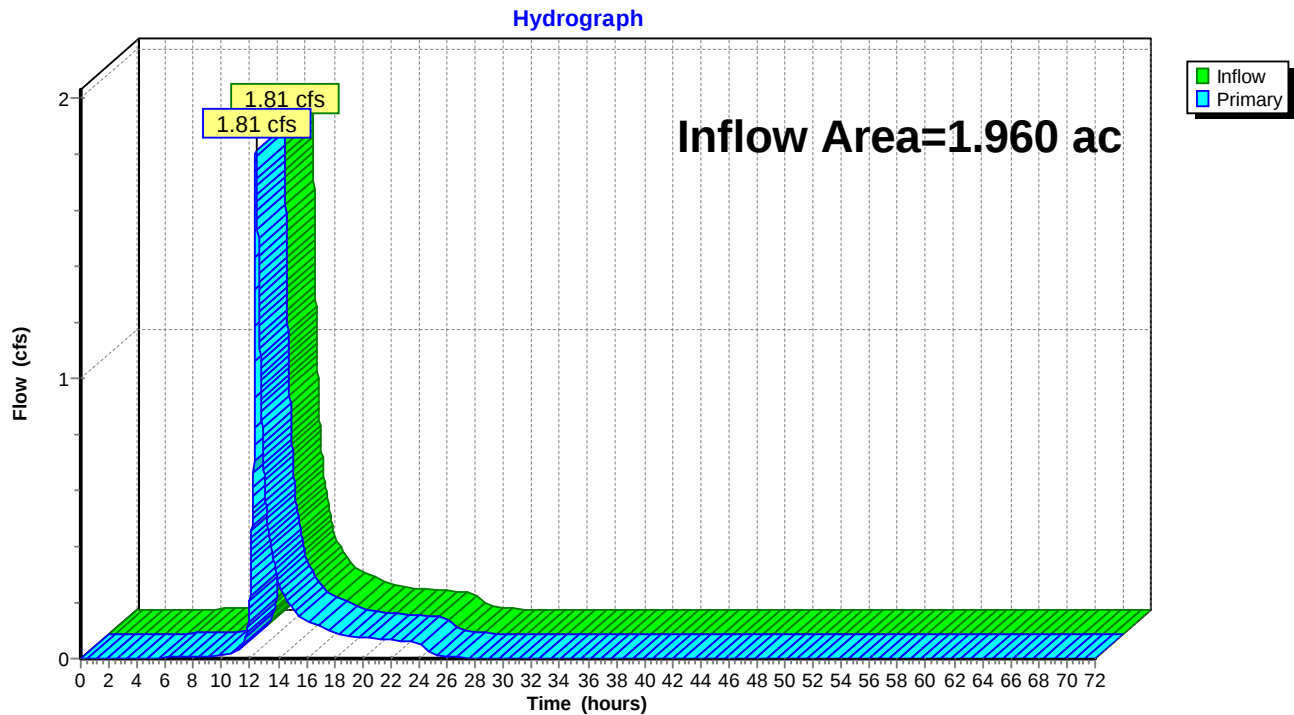
Printed 11/16/2023

Summary for Pond 3P: Stony Brook Tributary (DP-2)

Inflow Area = 1.960 ac, 9.69% Impervious, Inflow Depth = 1.32" for 2-year event
Inflow = 1.81 cfs @ 12.44 hrs, Volume= 0.216 af
Primary = 1.81 cfs @ 12.44 hrs, Volume= 0.216 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 3P: Stony Brook Tributary (DP-2)



Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 2-year Rainfall=3.31"

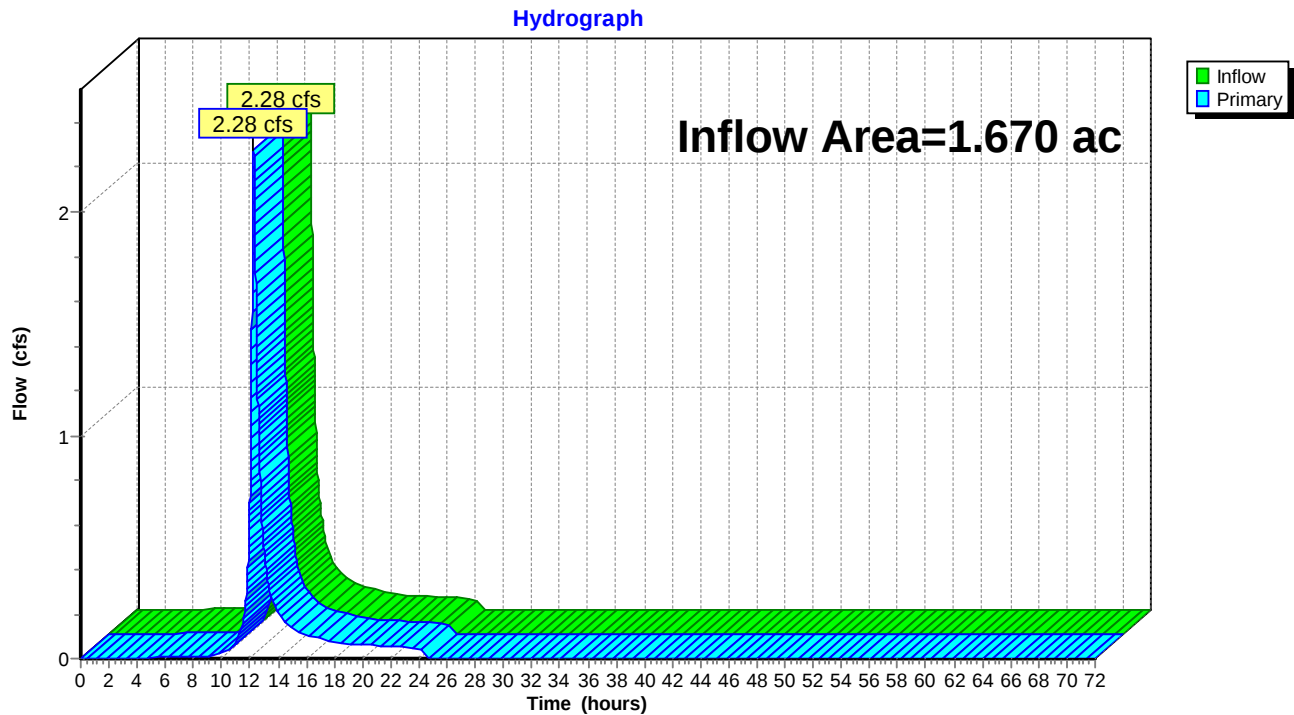
Printed 11/16/2023

Summary for Pond 5P: EA-2 Disturbed

Inflow Area = 1.670 ac, 6.59% Impervious, Inflow Depth = 1.59" for 2-year event
Inflow = 2.28 cfs @ 12.28 hrs, Volume= 0.222 af
Primary = 2.28 cfs @ 12.28 hrs, Volume= 0.222 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 5P: EA-2 Disturbed



Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 2-year Rainfall=3.31"

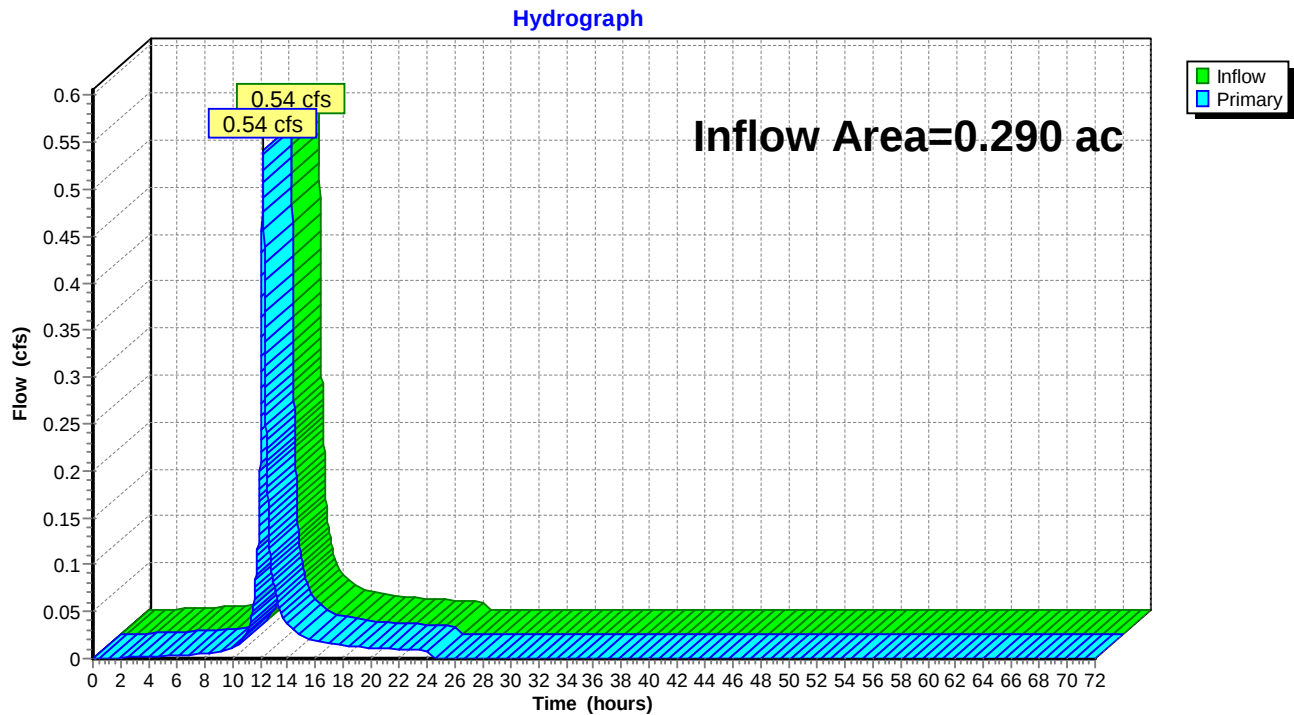
Printed 11/16/2023

Summary for Pond 6P: EA-3 Disturbed

Inflow Area = 0.290 ac, 27.59% Impervious, Inflow Depth = 1.93" for 2-year event
Inflow = 0.54 cfs @ 12.21 hrs, Volume= 0.047 af
Primary = 0.54 cfs @ 12.21 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 6P: EA-3 Disturbed



Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 10-year Rainfall=4.97"

Printed 11/16/2023

Summary for Subcatchment EA-2D i: EA-2D Impervious

Runoff = 0.40 cfs @ 12.27 hrs, Volume= 0.043 af, Depth= 4.73"

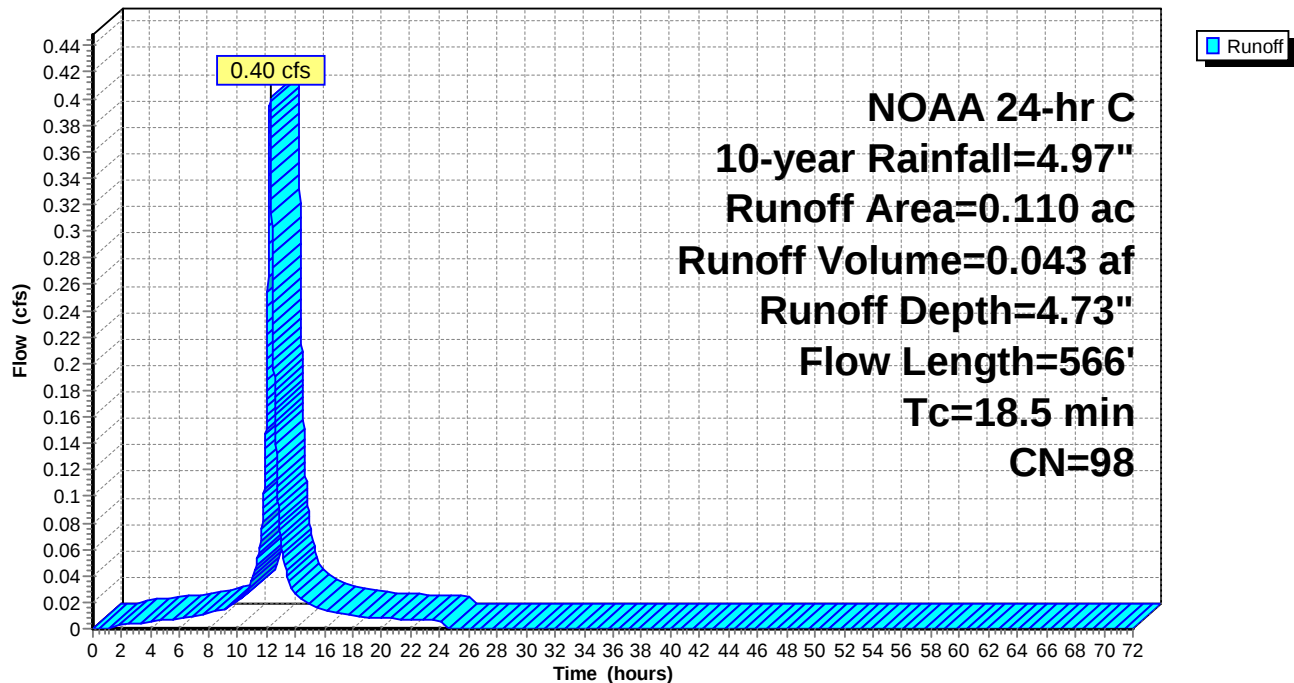
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
* 0.110	98	Impervious Areas
0.110		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	23	0.0413	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.3	31	0.0149	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
2.1	70	0.0129	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	149	0.0105	1.65		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.4	120	0.0083	1.47		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.0	173	0.0081	1.45		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.5	566	Total			

Subcatchment EA-2D i: EA-2D Impervious

Hydrograph



Pre-Development (Disturbed)

NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment EA-2D p: EA-2D Pervious

Runoff = 3.92 cfs @ 12.27 hrs, Volume= 0.373 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
1.330	80	>75% Grass cover, Good, HSG D
0.230	79	Woods/grass comb., Good, HSG D
1.560	80	Weighted Average
1.560		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	23	0.0413	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.3	31	0.0149	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
2.1	70	0.0129	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	149	0.0105	1.65		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.4	120	0.0083	1.47		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.0	173	0.0081	1.45		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.5	566	Total			

Pre-Development (Disturbed)

Prepared by {enter your company name here}

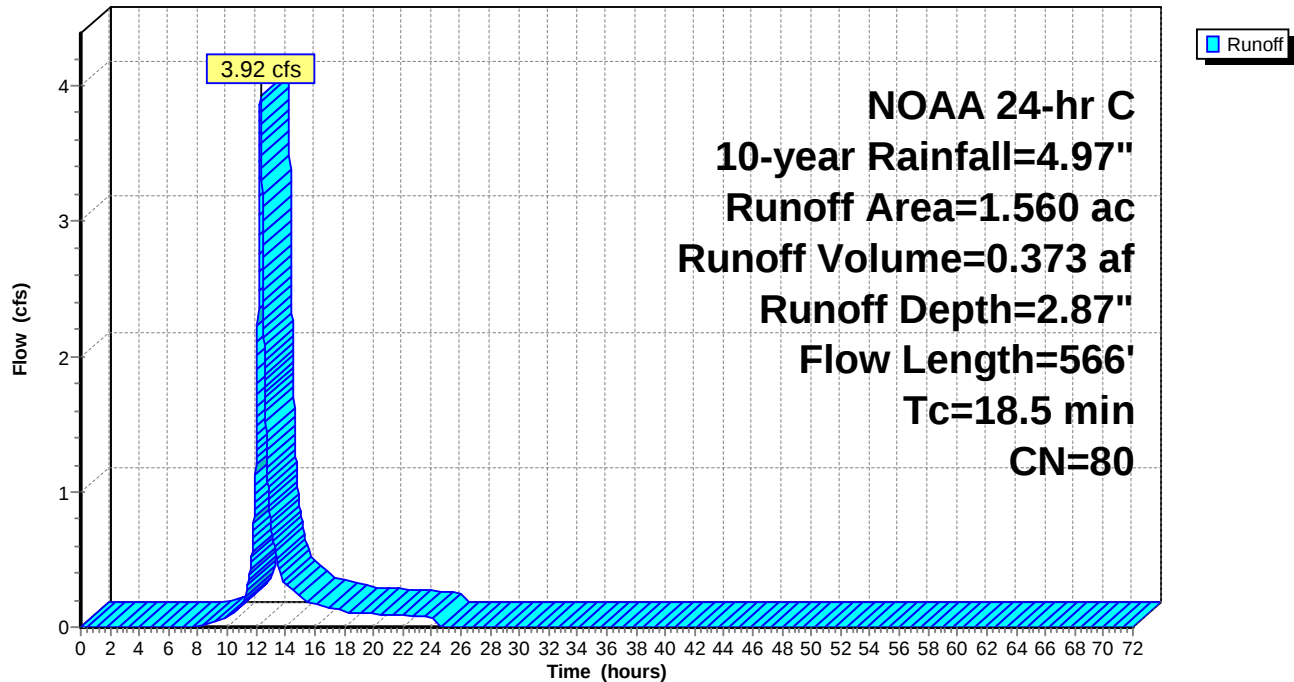
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NOAA 24-hr C 10-year Rainfall=4.97"

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Subcatchment EA-2D p: EA-2D Pervious

Hydrograph



Pre-Development (Disturbed)

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NOAA 24-hr C 10-year Rainfall=4.97"

Printed 11/16/2023

Summary for Subcatchment EA-3D i: EA-3D Impervious

Runoff = 0.34 cfs @ 12.20 hrs, Volume= 0.032 af, Depth= 4.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

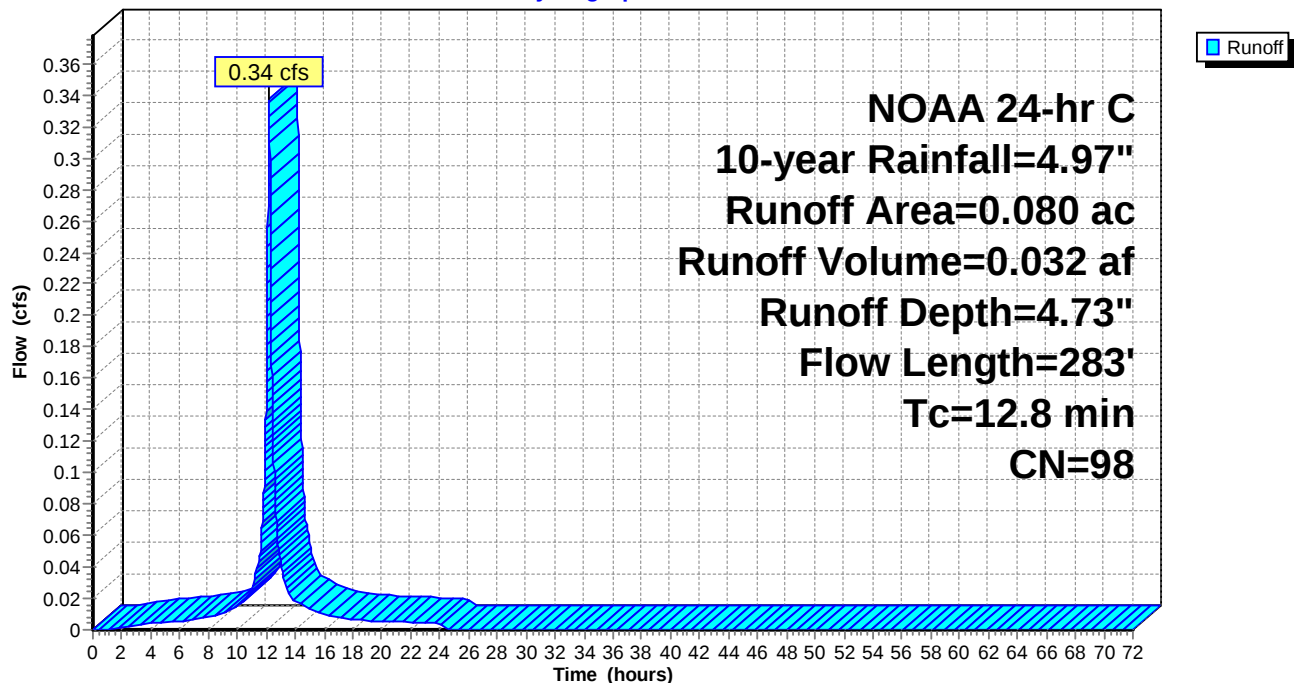
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
* 0.080	98	Impervious Areas
0.080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	85	0.0162	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
0.4	55	0.0181	2.17		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	134	0.0213	0.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.8	283	Total			

Subcatchment EA-3D i: EA-3D Impervious

Hydrograph



Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 10-year Rainfall=4.97"

Printed 11/16/2023

Summary for Subcatchment EA-3D p: EA-3D Pervious

Runoff = 0.62 cfs @ 12.21 hrs, Volume= 0.050 af, Depth= 2.87"

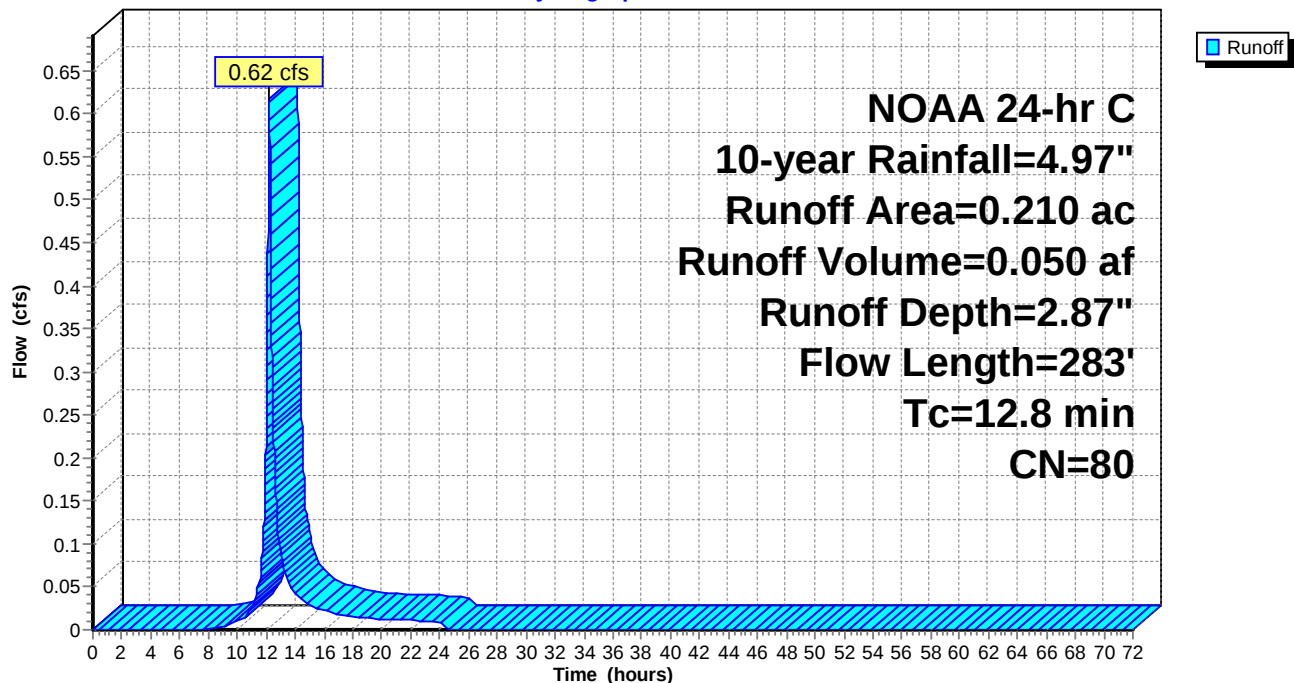
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.210	80	>75% Grass cover, Good, HSG D
0.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	85	0.0162	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
0.4	55	0.0181	2.17		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	134	0.0213	0.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.8	283	Total			

Subcatchment EA-3D p: EA-3D Pervious

Hydrograph



Pre-Development (Disturbed)

NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Pond 2P: EA-2 Wetlands

Inflow Area = 1.670 ac, 6.59% Impervious, Inflow Depth = 2.99" for 10-year event
 Inflow = 4.32 cfs @ 12.27 hrs, Volume= 0.416 af
 Outflow = 4.12 cfs @ 12.33 hrs, Volume= 0.364 af, Atten= 5%, Lag= 3.2 min
 Primary = 2.17 cfs @ 12.33 hrs, Volume= 0.282 af
 Secondary = 1.95 cfs @ 12.33 hrs, Volume= 0.082 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 203.06' @ 12.33 hrs Surf.Area= 17,620 sf Storage= 3,740 cf

Plug-Flow detention time= 108.3 min calculated for 0.364 af (88% of inflow)
 Center-of-Mass det. time= 48.1 min (877.0 - 828.9)

Volume	Invert	Avail.Storage	Storage Description
#1	202.60'	8,536 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.60	467	0	0
202.70	2,559	151	151
202.80	5,796	418	569
202.90	10,670	823	1,392
203.00	15,559	1,311	2,704
203.10	18,857	1,721	4,425
203.20	20,626	1,974	6,399
203.30	22,113	2,137	8,536

Device	Routing	Invert	Outlet Devices
#1	Primary	202.97'	179.4 deg x 11.0' long x 0.33' rise Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)
#2	Secondary	203.01'	65.0' 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=2.17 cfs @ 12.33 hrs HW=203.06' (Free Discharge)↑ **1=Sharp-Crested Vee/Trap Weir** (Weir Controls 2.17 cfs @ 0.82 fps)**Secondary OutFlow** Max=1.94 cfs @ 12.33 hrs HW=203.06' (Free Discharge)↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 1.94 cfs @ 0.57 fps)

Pre-Development (Disturbed)

Prepared by {enter your company name here}

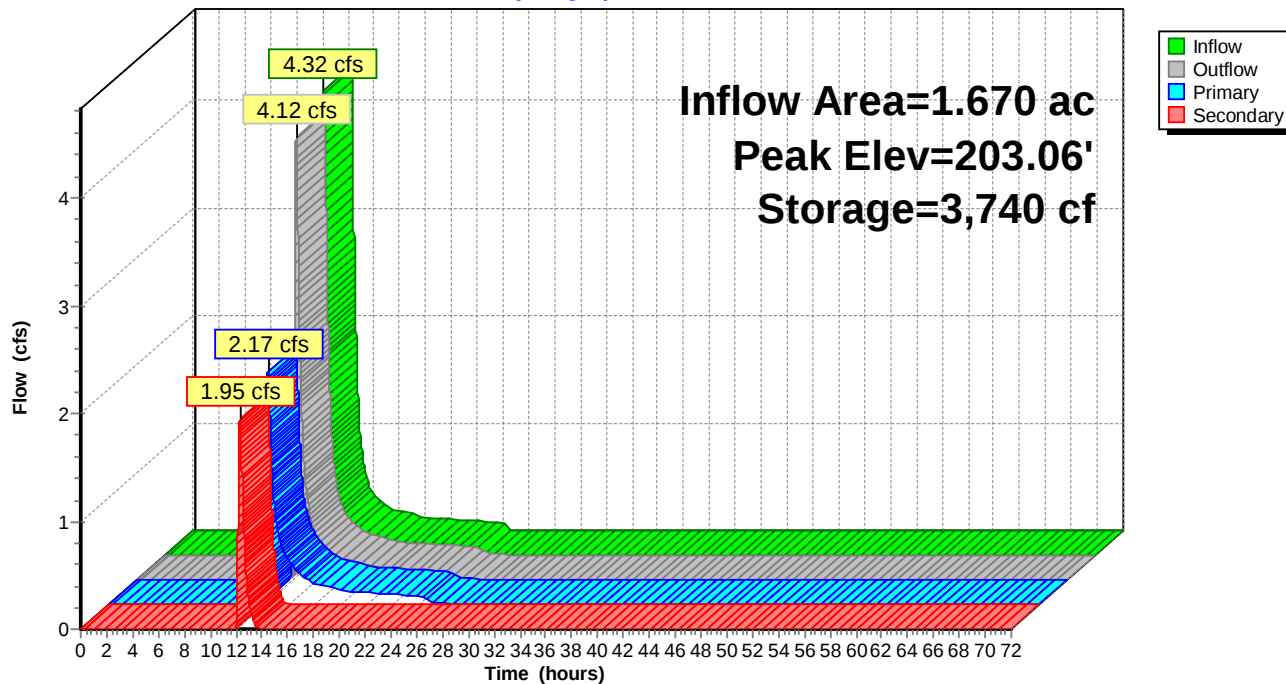
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NOAA 24-hr C 10-year Rainfall=4.97"

Printed 11/16/2023

Pond 2P: EA-2 Wetlands

Hydrograph



Pre-Development (Disturbed)

NOAA 24-hr C 10-year Rainfall=4.97"

Prepared by {enter your company name here}

Printed 11/16/2023

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Hydrograph for Pond 2P: EA-2 Wetlands

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	202.60	0.00	0.00	0.00
2.00	0.00	5	202.61	0.00	0.00	0.00
4.00	0.01	34	202.64	0.00	0.00	0.00
6.00	0.01	82	202.67	0.00	0.00	0.00
8.00	0.02	159	202.70	0.00	0.00	0.00
10.00	0.09	499	202.79	0.00	0.00	0.00
12.00	1.46	2,829	203.01	0.38	0.38	0.00
14.00	0.34	2,830	203.01	0.38	0.38	0.00
16.00	0.18	2,640	203.00	0.19	0.19	0.00
18.00	0.13	2,570	202.99	0.14	0.14	0.00
20.00	0.11	2,526	202.99	0.11	0.11	0.00
22.00	0.09	2,505	202.99	0.09	0.09	0.00
24.00	0.08	2,484	202.99	0.08	0.08	0.00
26.00	0.00	2,308	202.97	0.01	0.01	0.00
28.00	0.00	2,275	202.97	0.00	0.00	0.00
30.00	0.00	2,268	202.97	0.00	0.00	0.00
32.00	0.00	2,264	202.97	0.00	0.00	0.00
34.00	0.00	2,262	202.97	0.00	0.00	0.00
36.00	0.00	2,261	202.97	0.00	0.00	0.00
38.00	0.00	2,260	202.97	0.00	0.00	0.00
40.00	0.00	2,260	202.97	0.00	0.00	0.00
42.00	0.00	2,259	202.97	0.00	0.00	0.00
44.00	0.00	2,259	202.97	0.00	0.00	0.00
46.00	0.00	2,259	202.97	0.00	0.00	0.00
48.00	0.00	2,259	202.97	0.00	0.00	0.00
50.00	0.00	2,259	202.97	0.00	0.00	0.00
52.00	0.00	2,259	202.97	0.00	0.00	0.00
54.00	0.00	2,259	202.97	0.00	0.00	0.00
56.00	0.00	2,259	202.97	0.00	0.00	0.00
58.00	0.00	2,259	202.97	0.00	0.00	0.00
60.00	0.00	2,259	202.97	0.00	0.00	0.00
62.00	0.00	2,259	202.97	0.00	0.00	0.00
64.00	0.00	2,259	202.97	0.00	0.00	0.00
66.00	0.00	2,259	202.97	0.00	0.00	0.00
68.00	0.00	2,259	202.97	0.00	0.00	0.00
70.00	0.00	2,259	202.97	0.00	0.00	0.00
72.00	0.00	2,259	202.97	0.00	0.00	0.00

Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 10-year Rainfall=4.97"

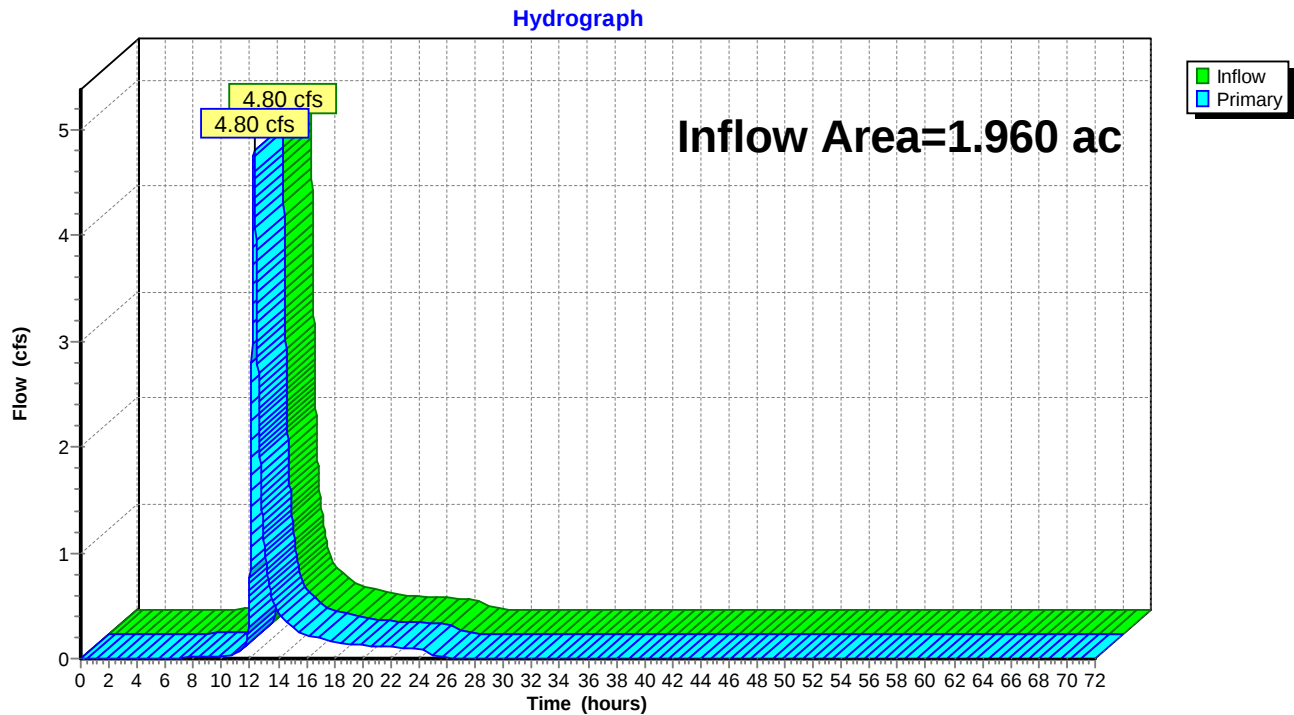
Printed 11/16/2023

Summary for Pond 3P: Stony Brook Tributary (DP-2)

Inflow Area = 1.960 ac, 9.69% Impervious, Inflow Depth = 2.73" for 10-year event
Inflow = 4.80 cfs @ 12.31 hrs, Volume= 0.446 af
Primary = 4.80 cfs @ 12.31 hrs, Volume= 0.446 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 3P: Stony Brook Tributary (DP-2)



Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 10-year Rainfall=4.97"

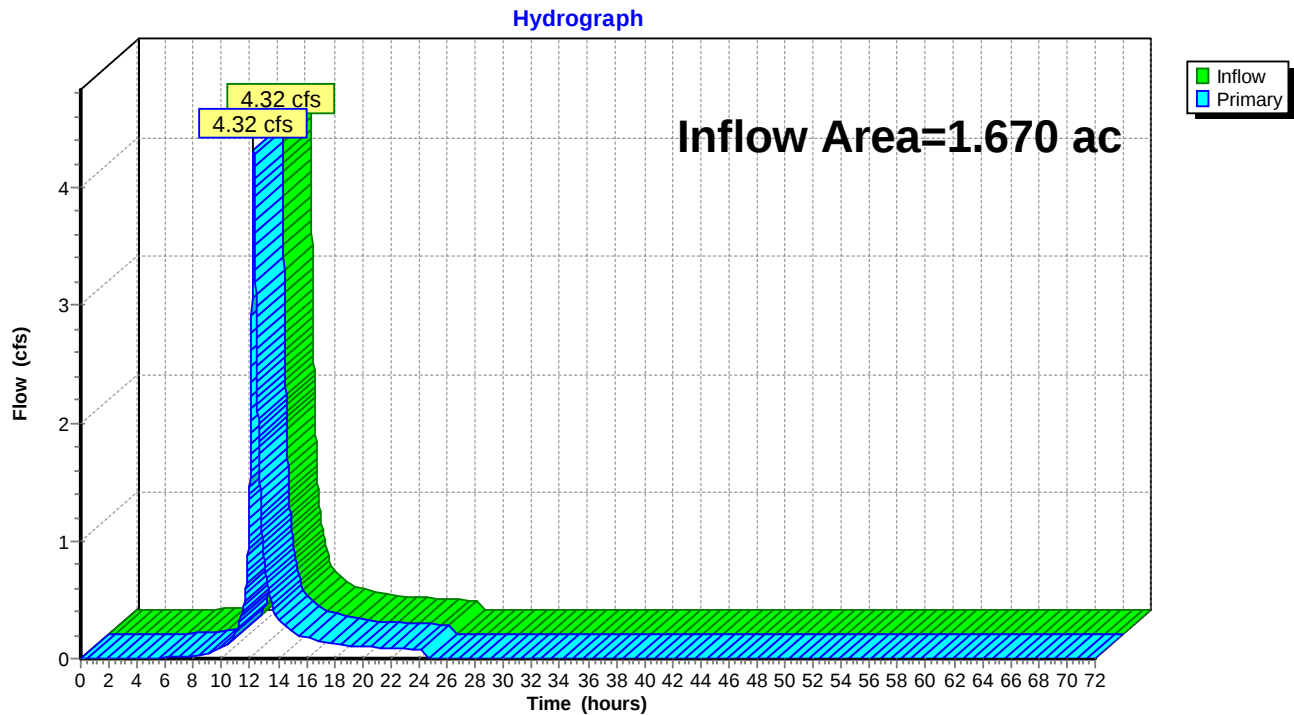
Printed 11/16/2023

Summary for Pond 5P: EA-2 Disturbed

Inflow Area = 1.670 ac, 6.59% Impervious, Inflow Depth = 2.99" for 10-year event
Inflow = 4.32 cfs @ 12.27 hrs, Volume= 0.416 af
Primary = 4.32 cfs @ 12.27 hrs, Volume= 0.416 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 5P: EA-2 Disturbed



Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 10-year Rainfall=4.97"

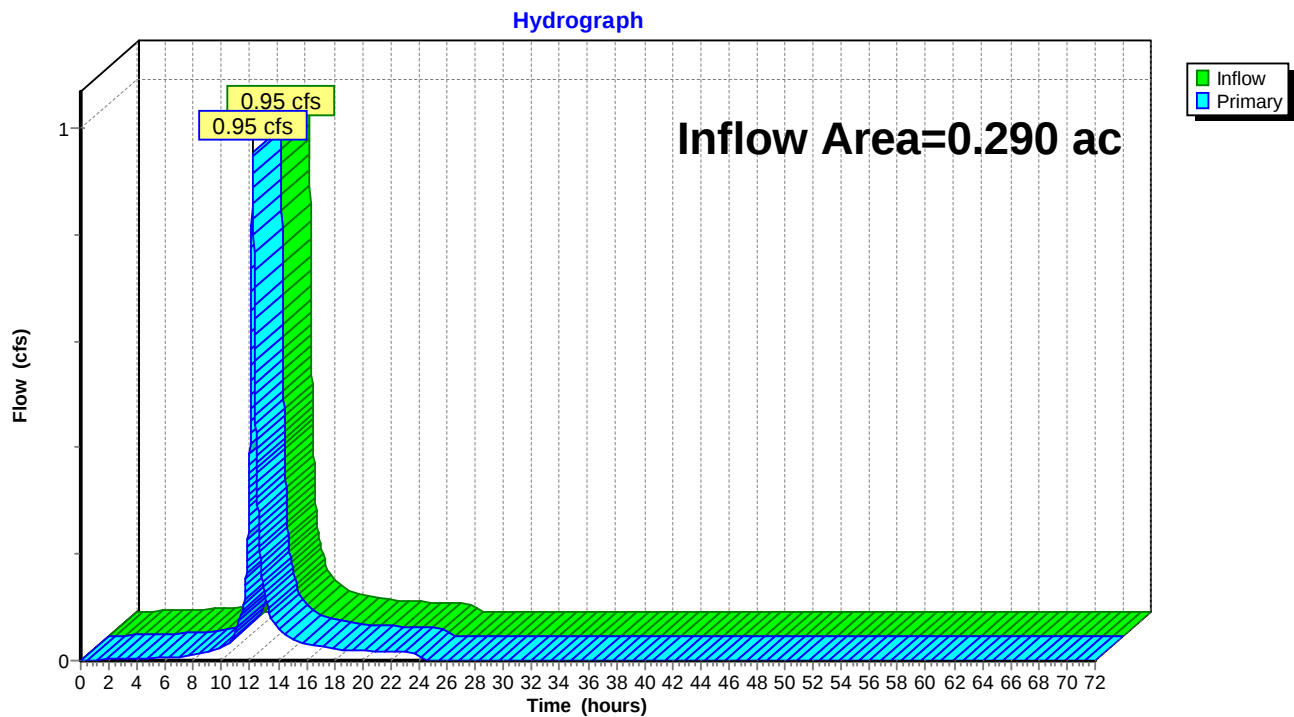
Printed 11/16/2023

Summary for Pond 6P: EA-3 Disturbed

Inflow Area = 0.290 ac, 27.59% Impervious, Inflow Depth = 3.38" for 10-year event
Inflow = 0.95 cfs @ 12.20 hrs, Volume= 0.082 af
Primary = 0.95 cfs @ 12.20 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 6P: EA-3 Disturbed



Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/16/2023

Summary for Subcatchment EA-2D i: EA-2D Impervious

Runoff = 0.66 cfs @ 12.27 hrs, Volume= 0.073 af, Depth= 7.91"

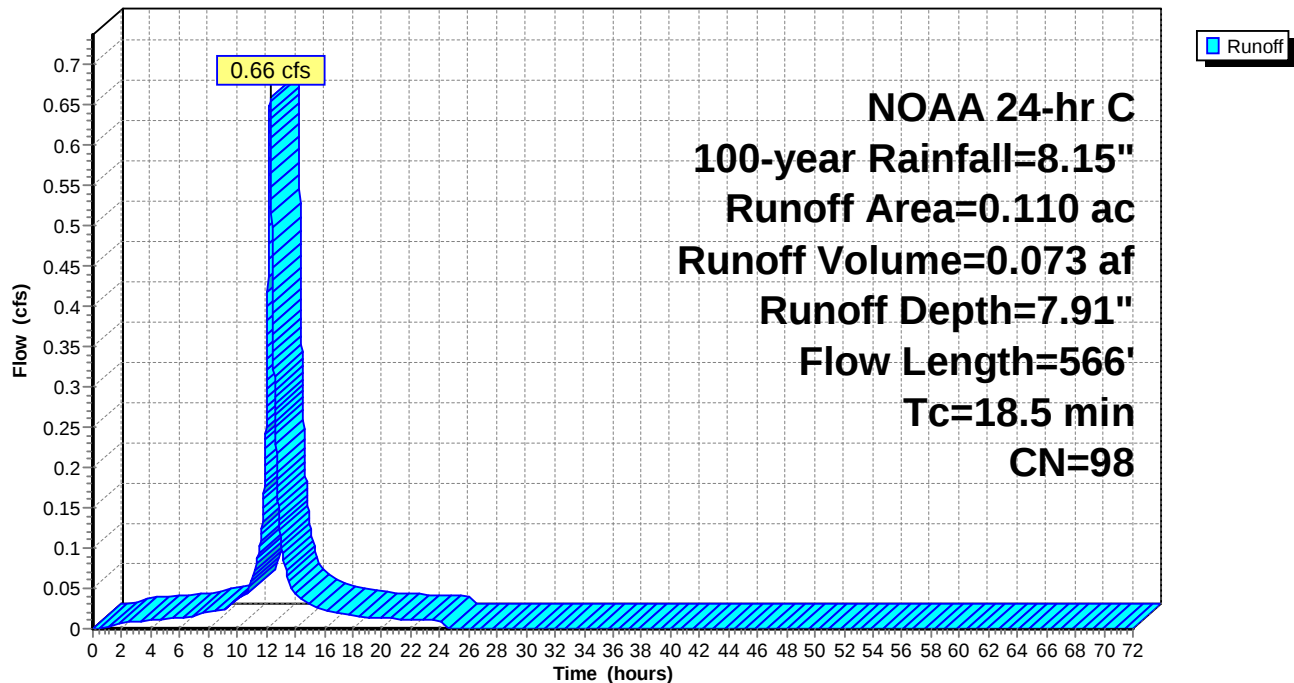
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
* 0.110	98	Impervious Areas
0.110		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	23	0.0413	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.3	31	0.0149	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
2.1	70	0.0129	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	149	0.0105	1.65		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.4	120	0.0083	1.47		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.0	173	0.0081	1.45		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.5	566	Total			

Subcatchment EA-2D i: EA-2D Impervious

Hydrograph



Pre-Development (Disturbed)

NOAA 24-hr C 100-year Rainfall=8.15"

Prepared by {enter your company name here}

Printed 11/16/2023

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Summary for Subcatchment EA-2D p: EA-2D Pervious

Runoff = 7.75 cfs @ 12.27 hrs, Volume= 0.750 af, Depth= 5.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
1.330	80	>75% Grass cover, Good, HSG D
0.230	79	Woods/grass comb., Good, HSG D
1.560	80	Weighted Average
1.560		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	23	0.0413	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
9.3	31	0.0149	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
2.1	70	0.0129	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	149	0.0105	1.65		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.4	120	0.0083	1.47		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.0	173	0.0081	1.45		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.5	566	Total			

Pre-Development (Disturbed)

Prepared by {enter your company name here}

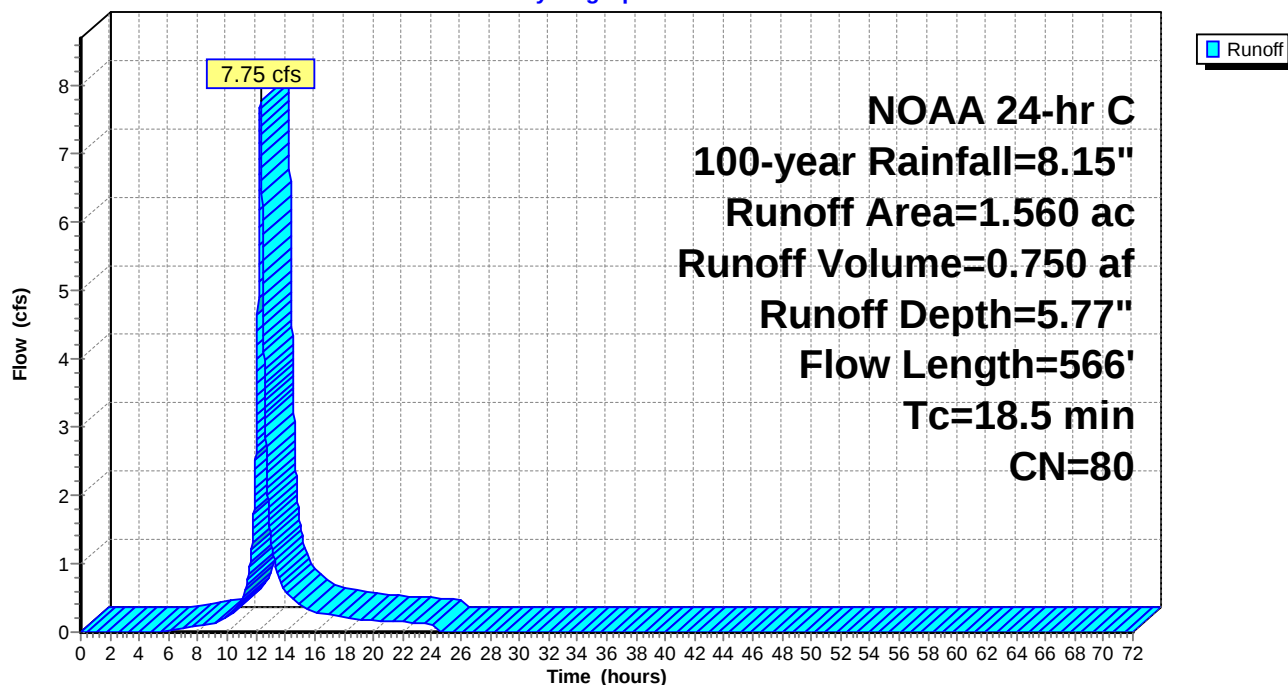
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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/16/2023

Subcatchment EA-2D p: EA-2D Pervious

Hydrograph



Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/16/2023

Summary for Subcatchment EA-3D i: EA-3D Impervious

Runoff = 0.55 cfs @ 12.20 hrs, Volume= 0.053 af, Depth= 7.91"

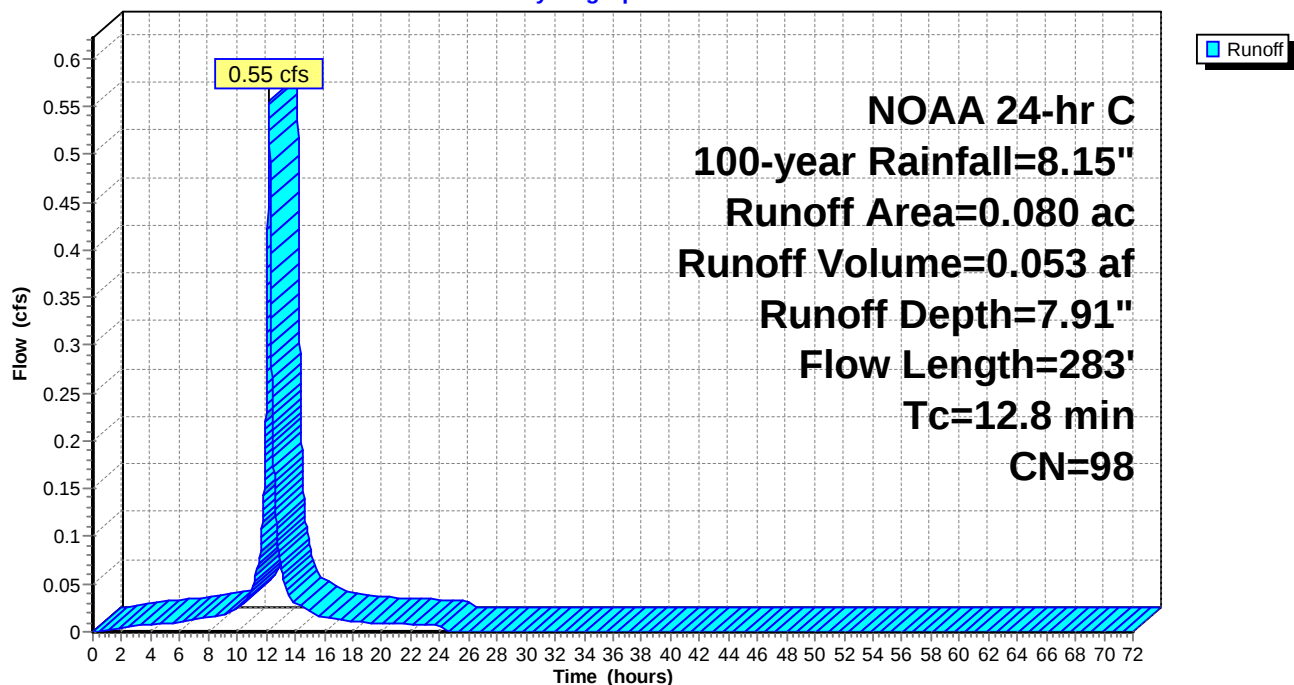
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
* 0.080	98	Impervious Areas
0.080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	85	0.0162	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
0.4	55	0.0181	2.17		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	134	0.0213	0.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.8	283	Total			

Subcatchment EA-3D i: EA-3D Impervious

Hydrograph



Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/16/2023

Summary for Subcatchment EA-3D p: EA-3D Pervious

Runoff = 1.21 cfs @ 12.20 hrs, Volume= 0.101 af, Depth= 5.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

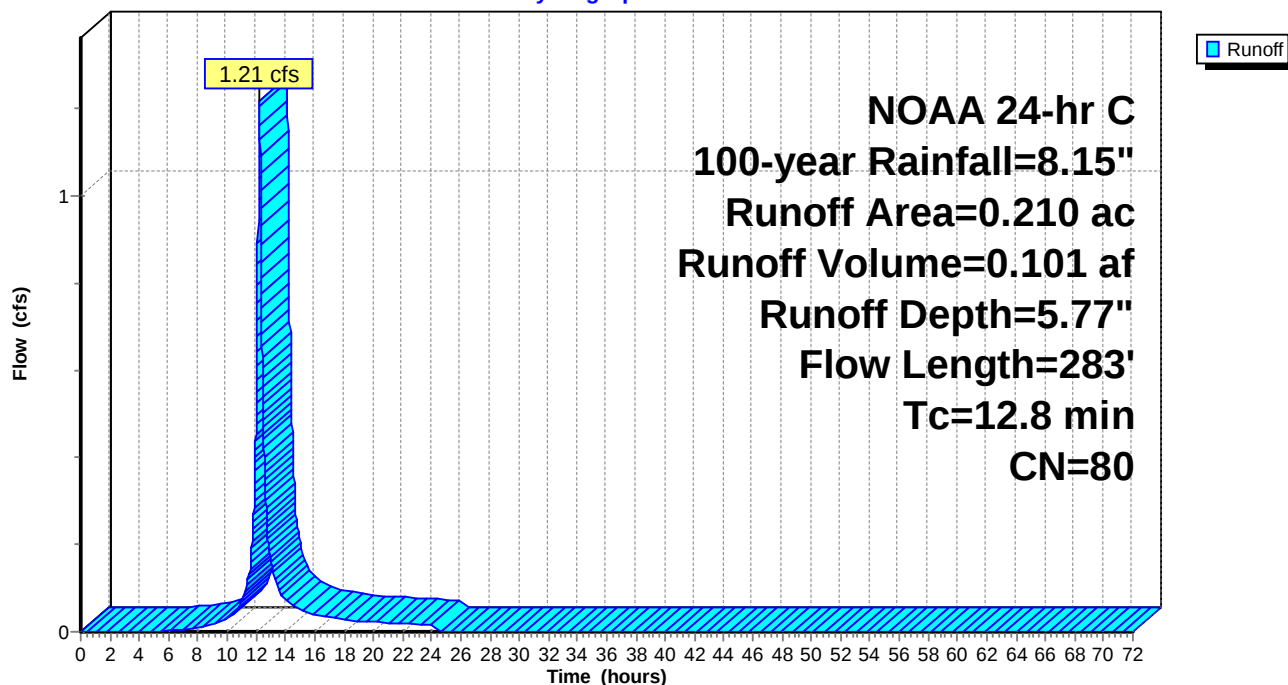
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.210	80	>75% Grass cover, Good, HSG D
0.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	85	0.0162	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.31"
0.4	55	0.0181	2.17		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
3.1	134	0.0213	0.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.8	283	Total			

Subcatchment EA-3D p: EA-3D Pervious

Hydrograph



Pre-Development (Disturbed)

NOAA 24-hr C 100-year Rainfall=8.15"

Prepared by {enter your company name here}

Printed 11/16/2023

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Summary for Pond 2P: EA-2 Wetlands

Inflow Area = 1.670 ac, 6.59% Impervious, Inflow Depth = 5.91" for 100-year event
 Inflow = 8.41 cfs @ 12.27 hrs, Volume= 0.822 af
 Outflow = 8.17 cfs @ 12.31 hrs, Volume= 0.770 af, Atten= 3%, Lag= 2.3 min
 Primary = 4.12 cfs @ 12.31 hrs, Volume= 0.544 af
 Secondary = 4.04 cfs @ 12.31 hrs, Volume= 0.226 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 203.10' @ 12.31 hrs Surf.Area= 18,706 sf Storage= 4,339 cf

Plug-Flow detention time= 69.7 min calculated for 0.770 af (94% of inflow)
 Center-of-Mass det. time= 34.5 min (845.5 - 811.0)

Volume	Invert	Avail.Storage	Storage Description
#1	202.60'	8,536 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.60	467	0	0
202.70	2,559	151	151
202.80	5,796	418	569
202.90	10,670	823	1,392
203.00	15,559	1,311	2,704
203.10	18,857	1,721	4,425
203.20	20,626	1,974	6,399
203.30	22,113	2,137	8,536

Device	Routing	Invert	Outlet Devices
#1	Primary	202.97'	179.4 deg x 11.0' long x 0.33' rise Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)
#2	Secondary	203.01'	65.0' 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=4.12 cfs @ 12.31 hrs HW=203.10' (Free Discharge)↑ **1=Sharp-Crested Vee/Trap Weir** (Weir Controls 4.12 cfs @ 0.94 fps)**Secondary OutFlow** Max=4.04 cfs @ 12.31 hrs HW=203.10' (Free Discharge)↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 4.04 cfs @ 0.73 fps)

Pre-Development (Disturbed)

Prepared by {enter your company name here}

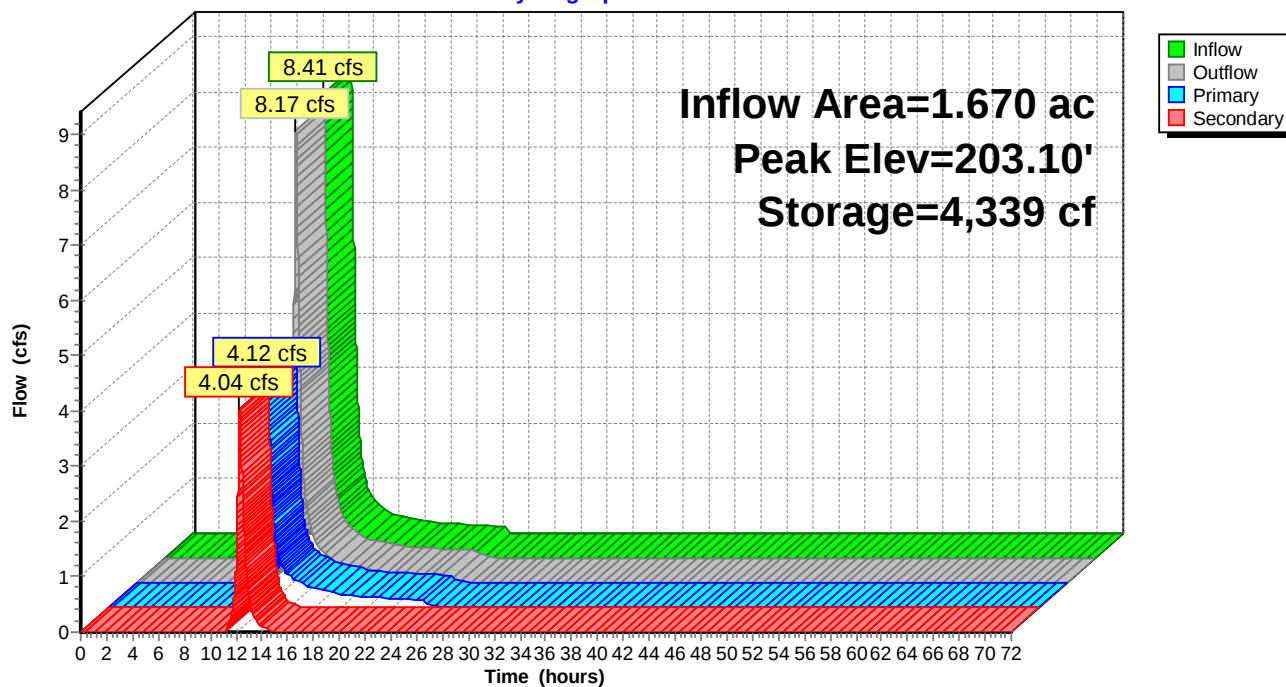
HydroCAD® 10.00-26 s/n 07360 © 2020 HydroCAD Software Solutions LLC

NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/16/2023

Pond 2P: EA-2 Wetlands

Hydrograph



Pre-Development (Disturbed)

NOAA 24-hr C 100-year Rainfall=8.15"

Prepared by {enter your company name here}

Printed 11/16/2023

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Hydrograph for Pond 2P: EA-2 Wetlands

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	202.60	0.00	0.00	0.00
2.00	0.01	17	202.62	0.00	0.00	0.00
4.00	0.01	80	202.67	0.00	0.00	0.00
6.00	0.03	193	202.71	0.00	0.00	0.00
8.00	0.10	631	202.81	0.00	0.00	0.00
10.00	0.27	1,793	202.93	0.00	0.00	0.00
12.00	3.08	3,456	203.05	2.58	1.46	1.11
14.00	0.61	2,963	203.02	0.65	0.56	0.09
16.00	0.32	2,790	203.01	0.34	0.34	0.00
18.00	0.22	2,692	203.00	0.24	0.24	0.00
20.00	0.19	2,636	203.00	0.19	0.19	0.00
22.00	0.16	2,606	202.99	0.17	0.17	0.00
24.00	0.14	2,575	202.99	0.14	0.14	0.00
26.00	0.00	2,318	202.97	0.01	0.01	0.00
28.00	0.00	2,277	202.97	0.00	0.00	0.00
30.00	0.00	2,269	202.97	0.00	0.00	0.00
32.00	0.00	2,265	202.97	0.00	0.00	0.00
34.00	0.00	2,262	202.97	0.00	0.00	0.00
36.00	0.00	2,261	202.97	0.00	0.00	0.00
38.00	0.00	2,260	202.97	0.00	0.00	0.00
40.00	0.00	2,260	202.97	0.00	0.00	0.00
42.00	0.00	2,259	202.97	0.00	0.00	0.00
44.00	0.00	2,259	202.97	0.00	0.00	0.00
46.00	0.00	2,259	202.97	0.00	0.00	0.00
48.00	0.00	2,259	202.97	0.00	0.00	0.00
50.00	0.00	2,259	202.97	0.00	0.00	0.00
52.00	0.00	2,259	202.97	0.00	0.00	0.00
54.00	0.00	2,259	202.97	0.00	0.00	0.00
56.00	0.00	2,259	202.97	0.00	0.00	0.00
58.00	0.00	2,259	202.97	0.00	0.00	0.00
60.00	0.00	2,259	202.97	0.00	0.00	0.00
62.00	0.00	2,259	202.97	0.00	0.00	0.00
64.00	0.00	2,259	202.97	0.00	0.00	0.00
66.00	0.00	2,259	202.97	0.00	0.00	0.00
68.00	0.00	2,259	202.97	0.00	0.00	0.00
70.00	0.00	2,259	202.97	0.00	0.00	0.00
72.00	0.00	2,259	202.97	0.00	0.00	0.00

Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 100-year Rainfall=8.15"

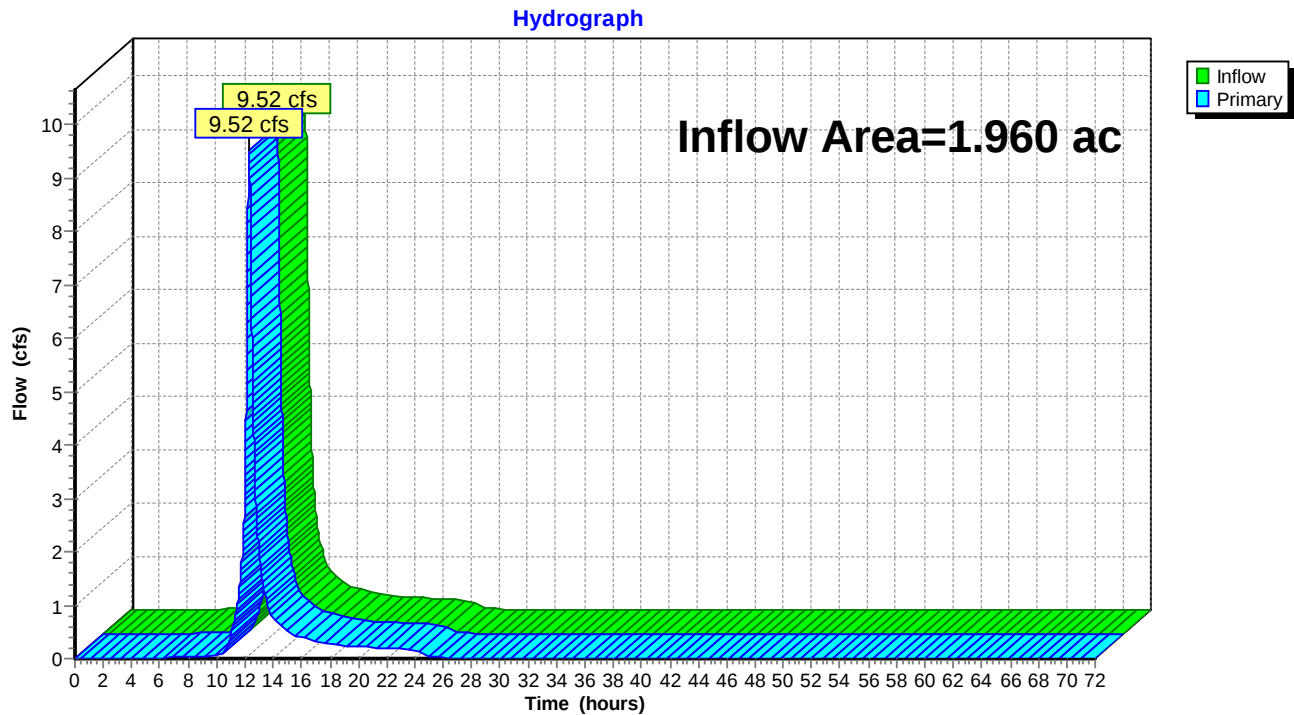
Printed 11/16/2023

Summary for Pond 3P: Stony Brook Tributary (DP-2)

Inflow Area = 1.960 ac, 9.69% Impervious, Inflow Depth = 5.66" for 100-year event
Inflow = 9.52 cfs @ 12.29 hrs, Volume= 0.924 af
Primary = 9.52 cfs @ 12.29 hrs, Volume= 0.924 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 3P: Stony Brook Tributary (DP-2)



Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 100-year Rainfall=8.15"

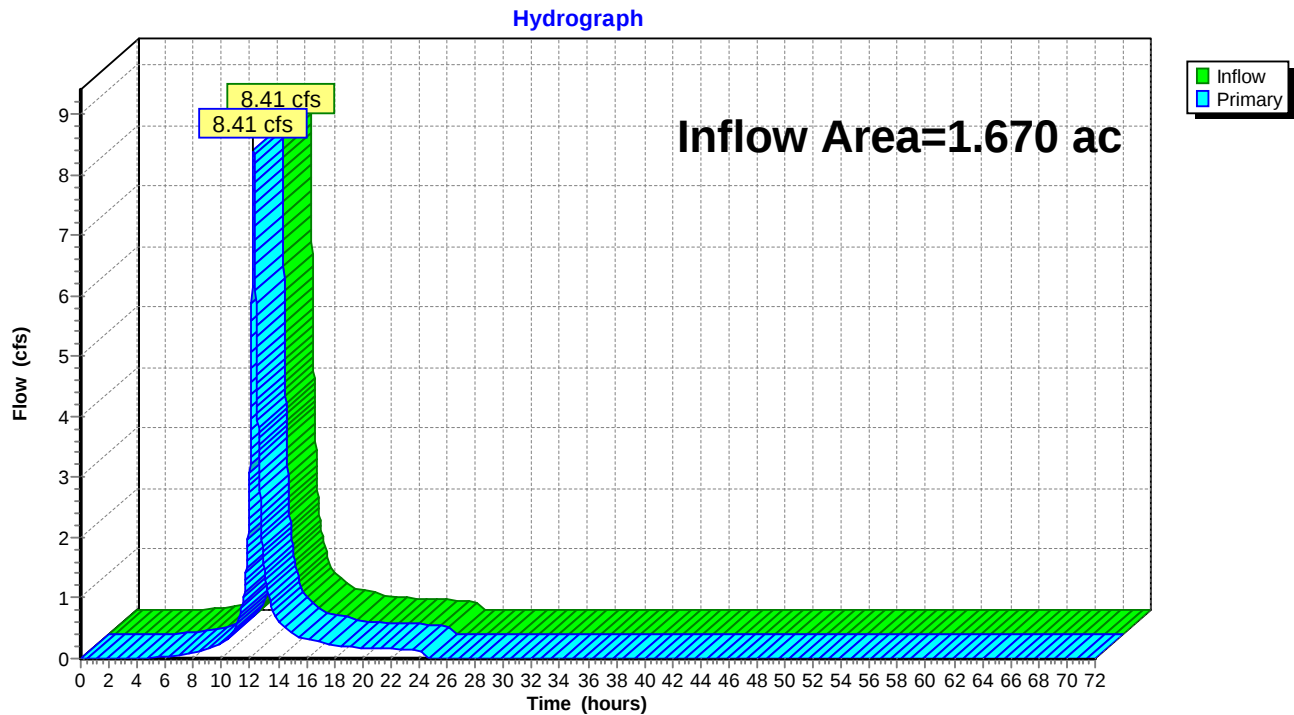
Printed 11/16/2023

Summary for Pond 5P: EA-2 Disturbed

Inflow Area = 1.670 ac, 6.59% Impervious, Inflow Depth = 5.91" for 100-year event
Inflow = 8.41 cfs @ 12.27 hrs, Volume= 0.822 af
Primary = 8.41 cfs @ 12.27 hrs, Volume= 0.822 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 5P: EA-2 Disturbed



Pre-Development (Disturbed)

Prepared by {enter your company name here}

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NOAA 24-hr C 100-year Rainfall=8.15"

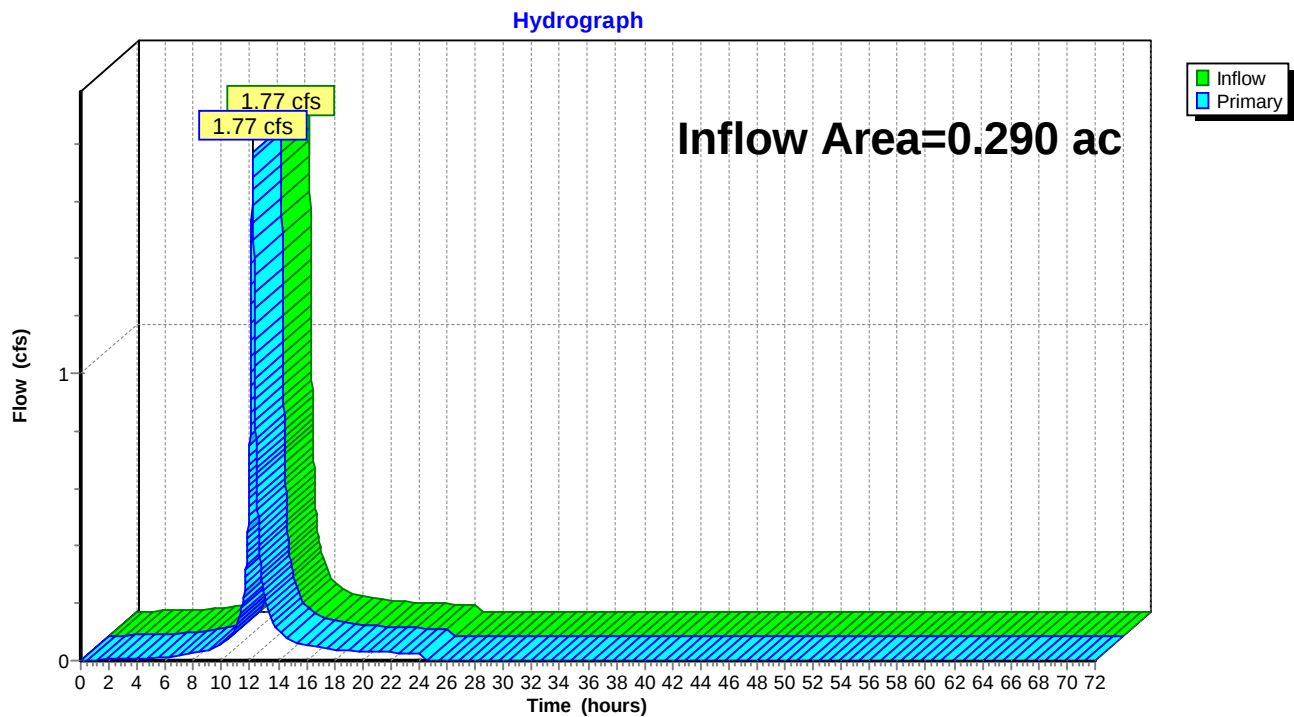
Printed 11/16/2023

Summary for Pond 6P: EA-3 Disturbed

Inflow Area = 0.290 ac, 27.59% Impervious, Inflow Depth = 6.36" for 100-year event
Inflow = 1.77 cfs @ 12.20 hrs, Volume= 0.154 af
Primary = 1.77 cfs @ 12.20 hrs, Volume= 0.154 af, Atten= 0%, Lag= 0.0 min

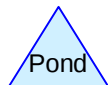
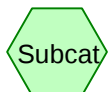
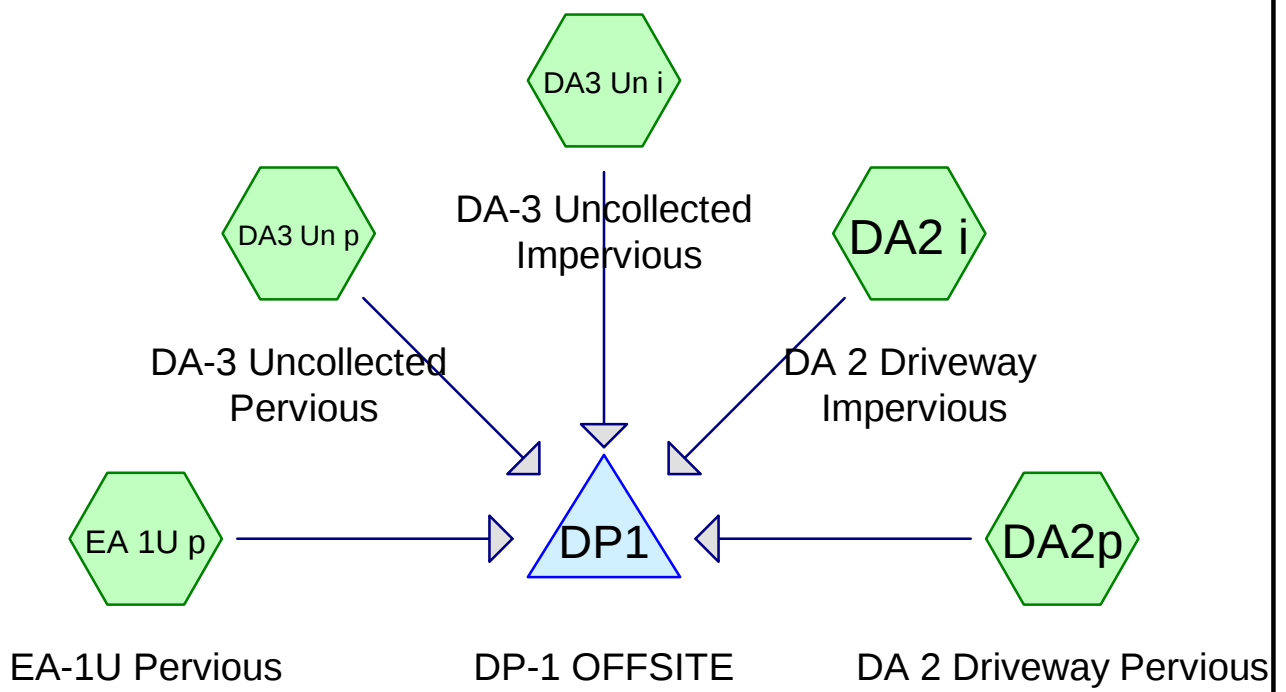
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 6P: EA-3 Disturbed



APPENDIX D

POST-DEVELOPMENT DRAINAGE ANALYSIS



Routing Diagram for Post-Development

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Post-Development

Prepared by {enter your company name here}

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment DA2 i: DA 2 Driveway Impervious

Runoff = 0.28 cfs @ 1.08 hrs, Volume= 0.008 af, Depth= 1.03"

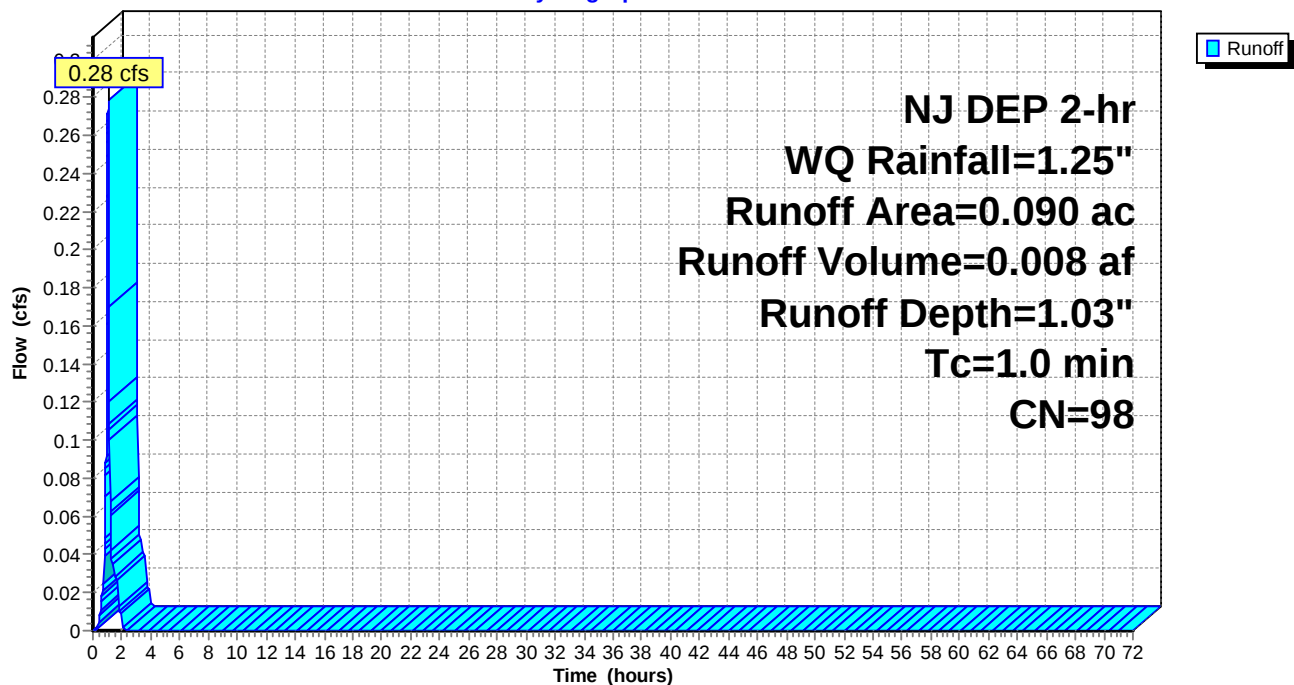
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
* 0.090	98	Paved parking, HSG D
0.090		100.00% Impervious Area

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

Subcatchment DA2 i: DA 2 Driveway Impervious

Hydrograph



Post-Development

Prepared by {enter your company name here}

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment DA2p: DA 2 Driveway Pervious

Runoff = 0.09 cfs @ 1.09 hrs, Volume= 0.002 af, Depth= 0.17"

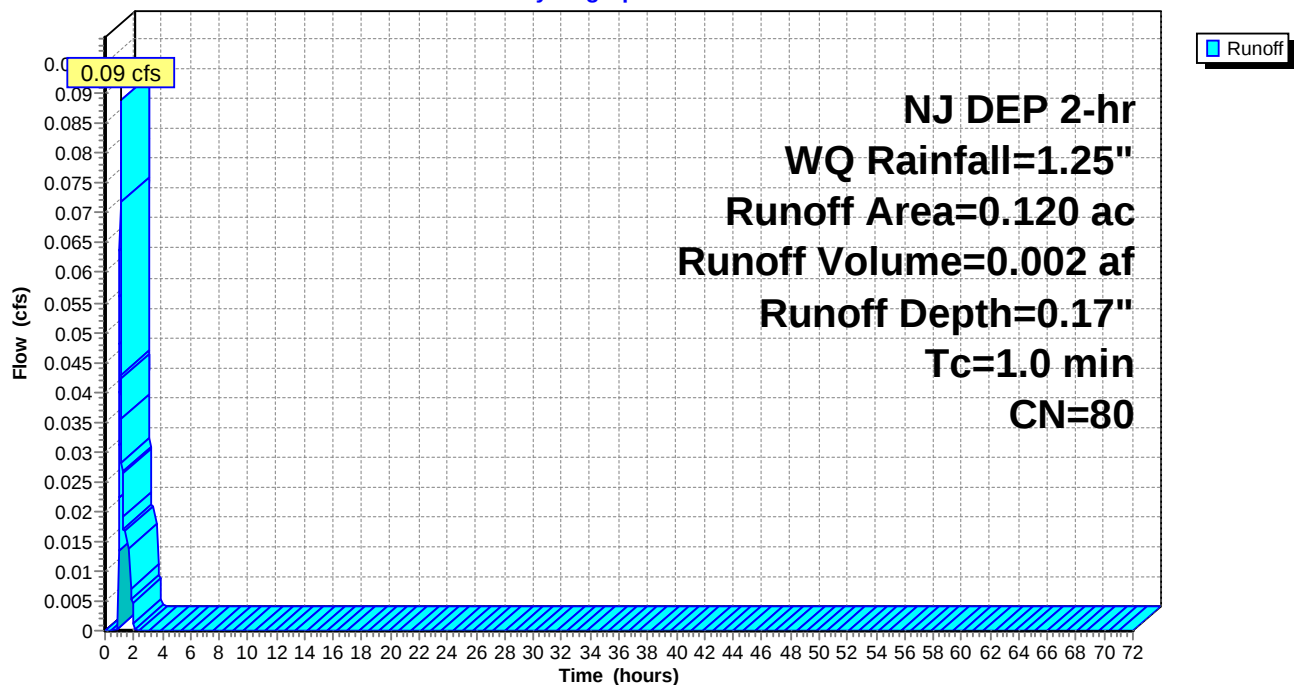
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.120	80	>75% Grass cover, Good, HSG D
0.120		100.00% Pervious Area

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

Subcatchment DA2p: DA 2 Driveway Pervious

Hydrograph



Post-Development

Prepared by {enter your company name here}

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment DA3 Un i: DA-3 Uncollected Impervious

Runoff = 0.00 cfs @ 1.09 hrs, Volume= 0.000 af, Depth= 0.17"

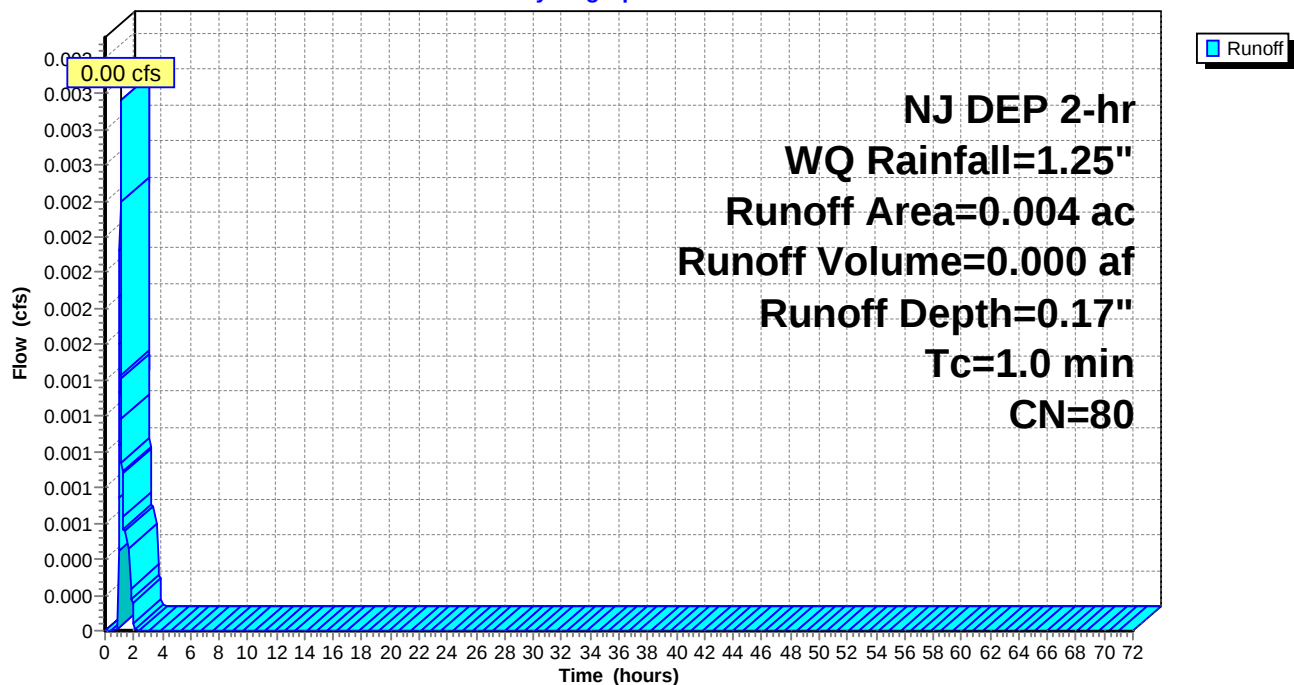
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.004	80	>75% Grass cover, Good, HSG D
0.004		100.00% Pervious Area

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

Subcatchment DA3 Un i: DA-3 Uncollected Impervious

Hydrograph



Post-Development

Prepared by {enter your company name here}

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment DA3 Un p: DA-3 Uncollected Pervious

Runoff = 0.26 cfs @ 1.09 hrs, Volume= 0.005 af, Depth= 0.17"

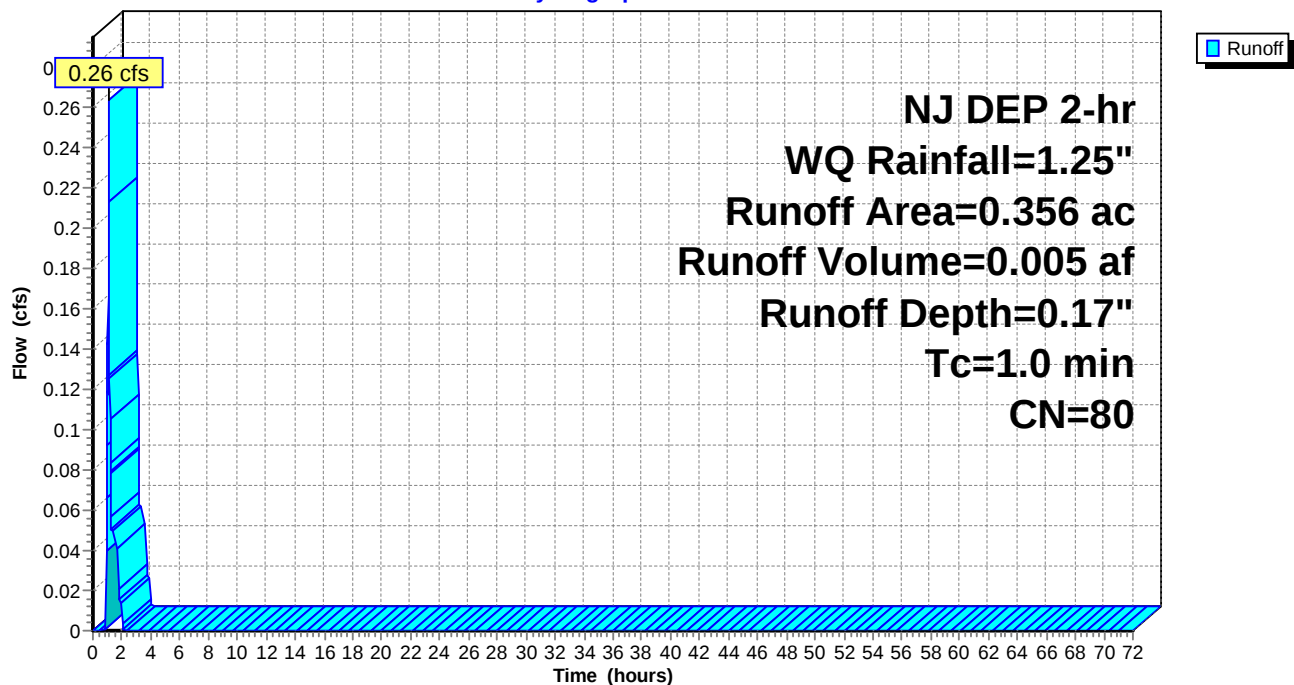
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.356	80	>75% Grass cover, Good, HSG D
0.356		100.00% Pervious Area

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

Subcatchment DA3 Un p: DA-3 Uncollected Pervious

Hydrograph



Post-Development

Prepared by {enter your company name here}

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment EA 1U p: EA-1U Pervious

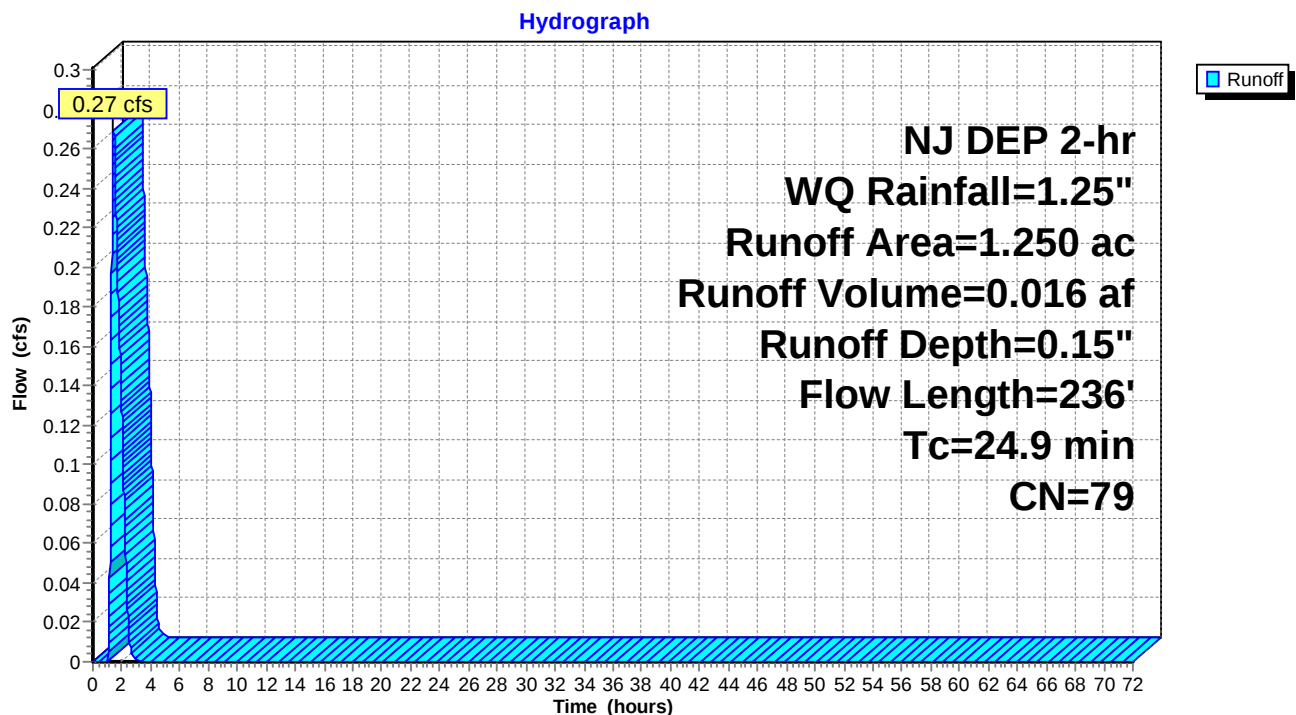
Runoff = 0.27 cfs @ 1.44 hrs, Volume= 0.016 af, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.450	80	>75% Grass cover, Good, HSG D
0.800	79	Woods/grass comb., Good, HSG D
1.250	79	Weighted Average
1.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	53	0.0263	0.12		Sheet Flow, Grass: Dense n= 0.240 P2= 3.31"
9.4	18	0.0049	0.03		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
7.9	165	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
24.9	236	Total			

Subcatchment EA 1U p: EA-1U Pervious



Post-Development

Prepared by {enter your company name here}

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

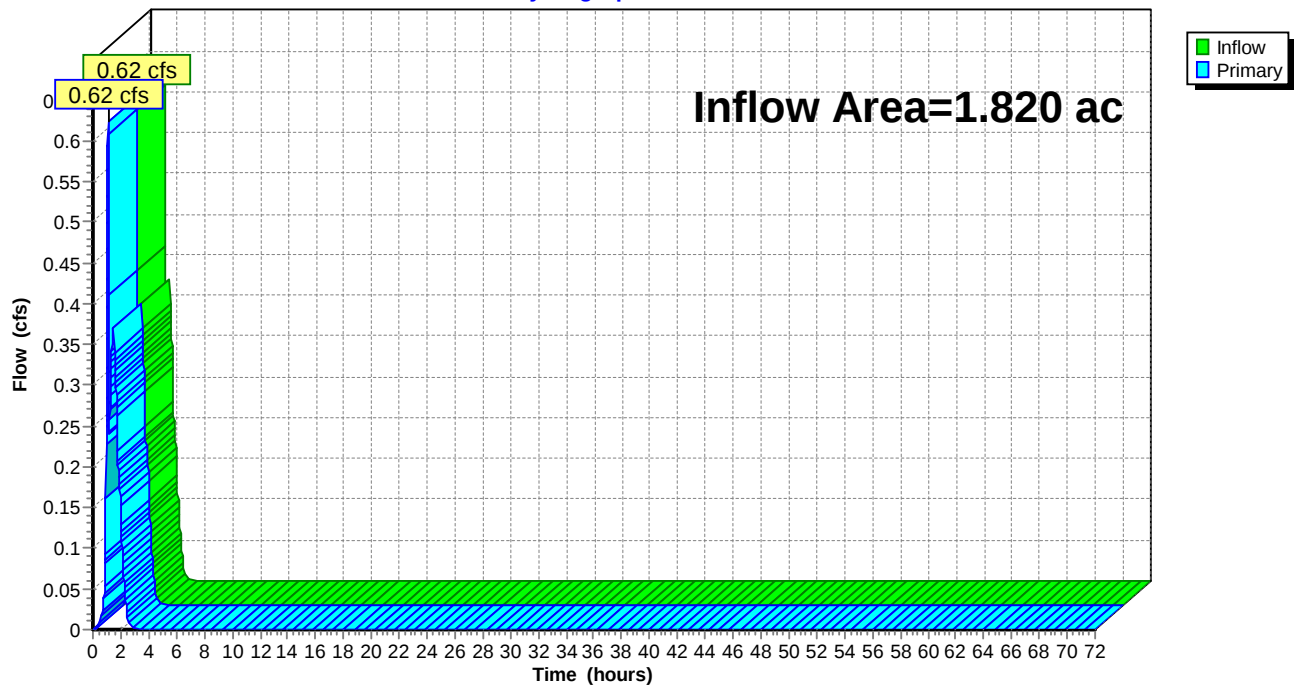
Summary for Pond DP1: DP-1 OFFSITE

Inflow Area = 1.820 ac, 4.95% Impervious, Inflow Depth = 0.20" for WQ event
Inflow = 0.62 cfs @ 1.08 hrs, Volume= 0.031 af
Primary = 0.62 cfs @ 1.08 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond DP1: DP-1 OFFSITE

Hydrograph



Post-Development

Prepared by {enter your company name here}

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Summary for Subcatchment DA2 i: DA 2 Driveway Impervious

Runoff = 0.35 cfs @ 12.09 hrs, Volume= 0.023 af, Depth= 3.08"

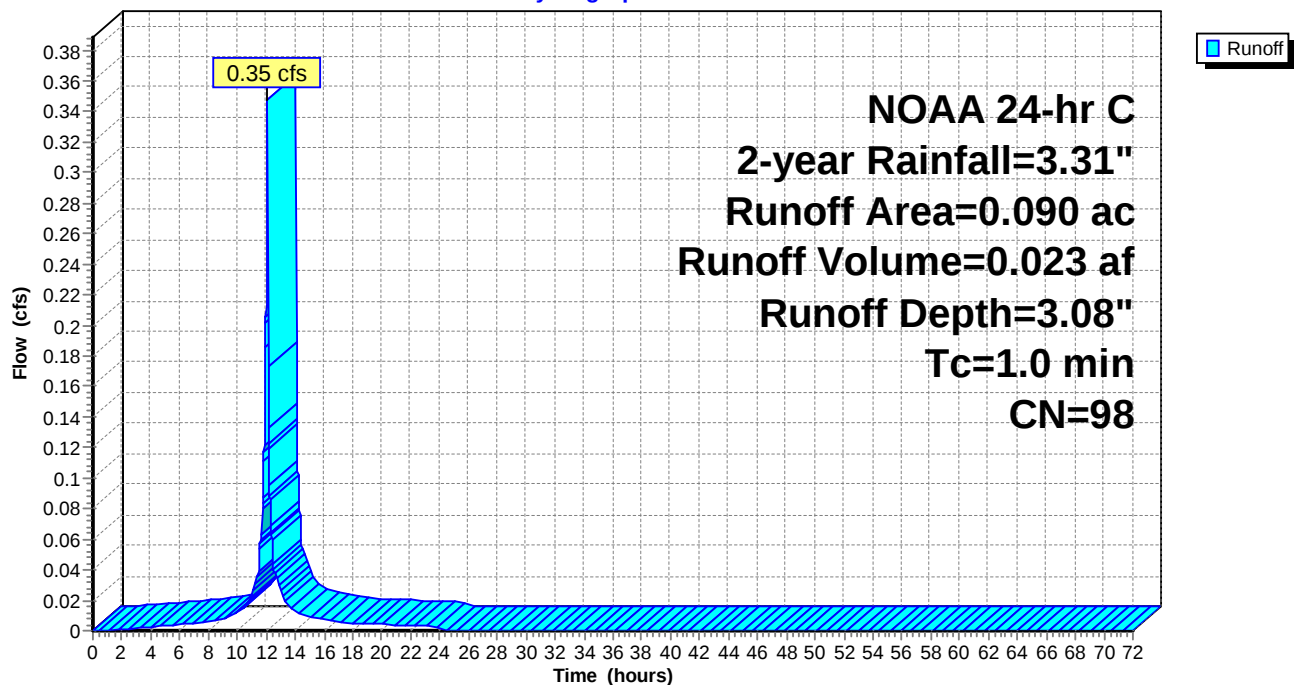
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
* 0.090	98	Paved parking, HSG D
0.090		100.00% Impervious Area

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

Subcatchment DA2 i: DA 2 Driveway Impervious

Hydrograph



Post-Development

Prepared by {enter your company name here}

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Summary for Subcatchment DA2p: DA 2 Driveway Pervious

Runoff = 0.28 cfs @ 12.10 hrs, Volume= 0.015 af, Depth= 1.49"

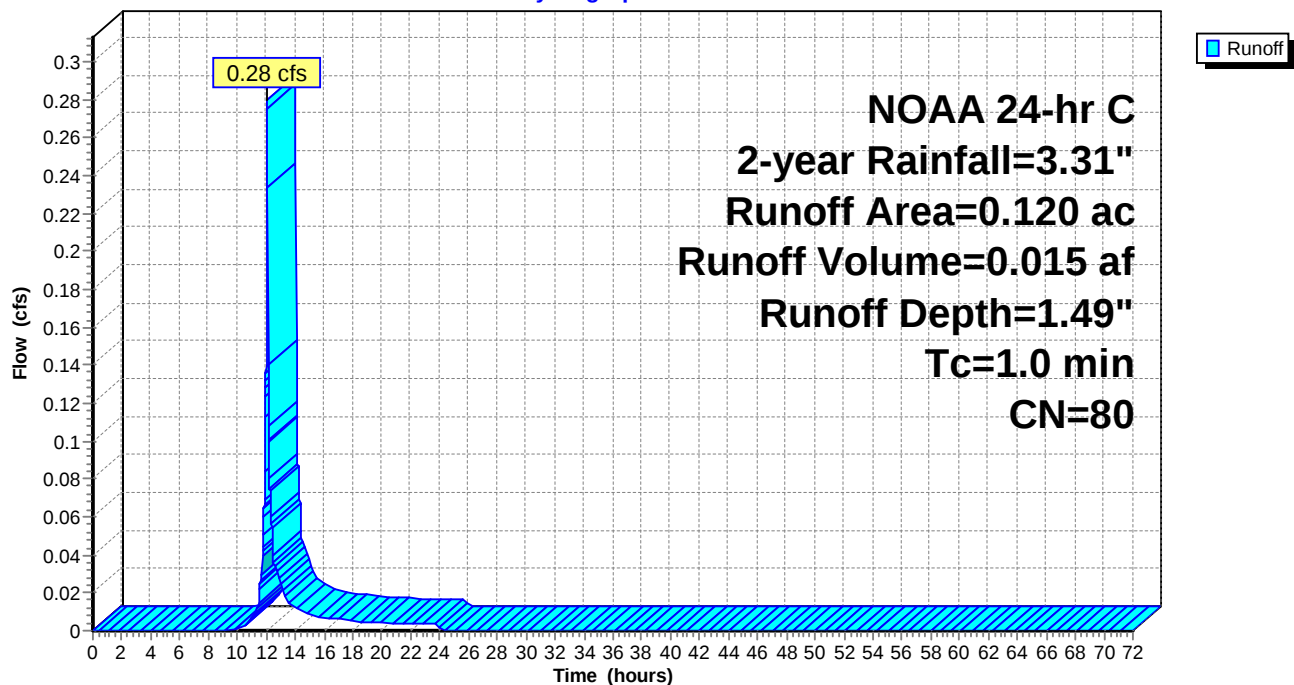
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.120	80	>75% Grass cover, Good, HSG D
0.120		100.00% Pervious Area

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

Subcatchment DA2p: DA 2 Driveway Pervious

Hydrograph



Post-Development

Prepared by {enter your company name here}

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Summary for Subcatchment DA3 Un i: DA-3 Uncollected Impervious

Runoff = 0.01 cfs @ 12.10 hrs, Volume= 0.000 af, Depth= 1.49"

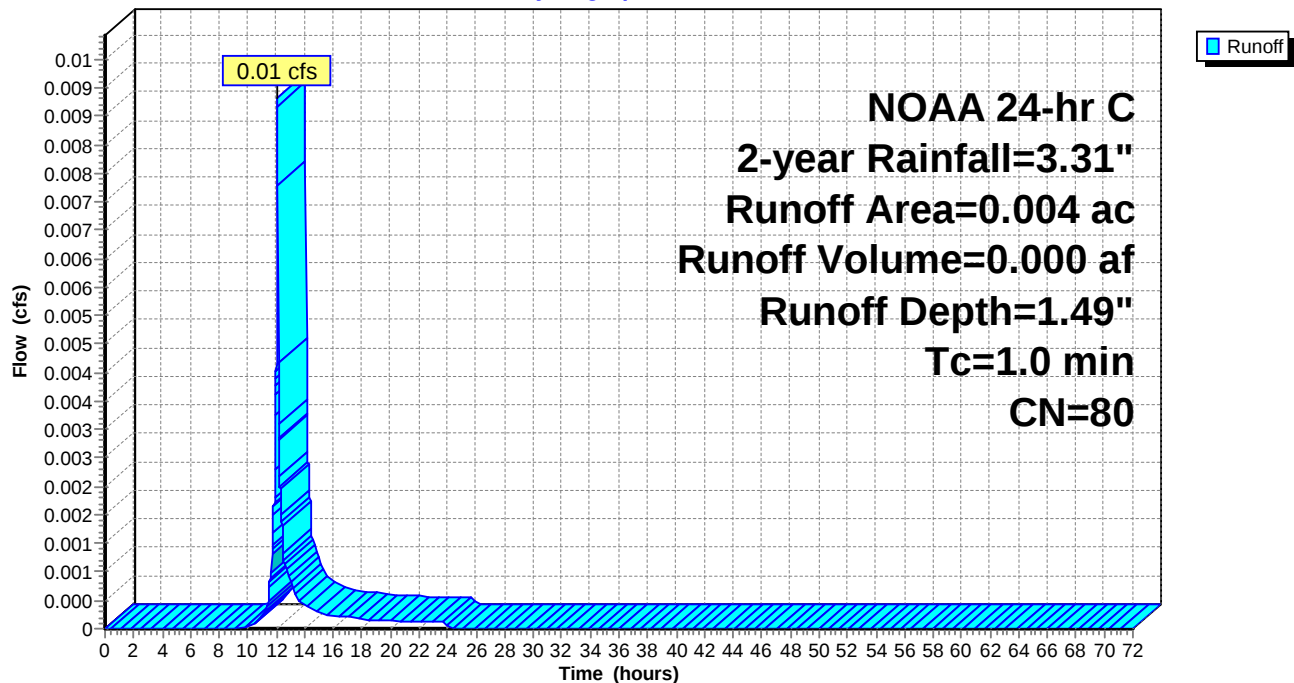
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.004	80	>75% Grass cover, Good, HSG D
0.004		100.00% Pervious Area

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

Subcatchment DA3 Un i: DA-3 Uncollected Impervious

Hydrograph



Post-Development

Prepared by {enter your company name here}

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Summary for Subcatchment DA3 Un p: DA-3 Uncollected Pervious

Runoff = 0.83 cfs @ 12.10 hrs, Volume= 0.044 af, Depth= 1.49"

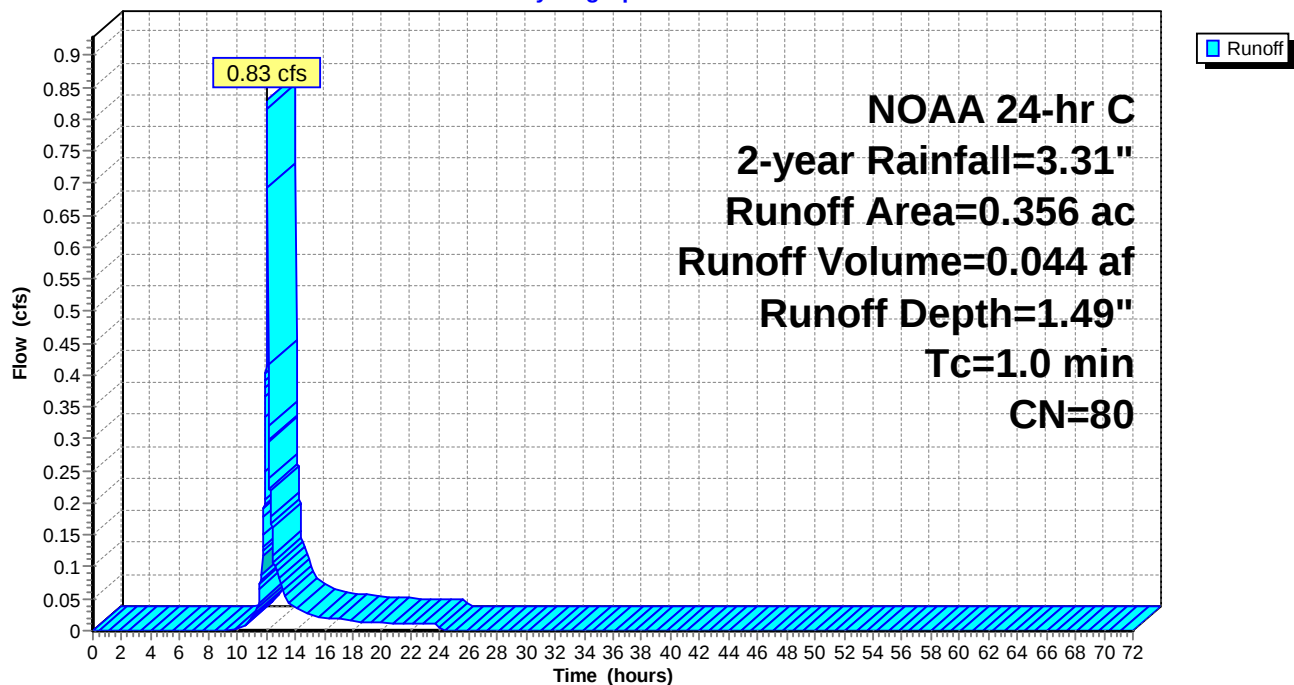
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.356	80	>75% Grass cover, Good, HSG D
0.356		100.00% Pervious Area

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

Subcatchment DA3 Un p: DA-3 Uncollected Pervious

Hydrograph



Post-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Summary for Subcatchment EA 1U p: EA-1U Pervious

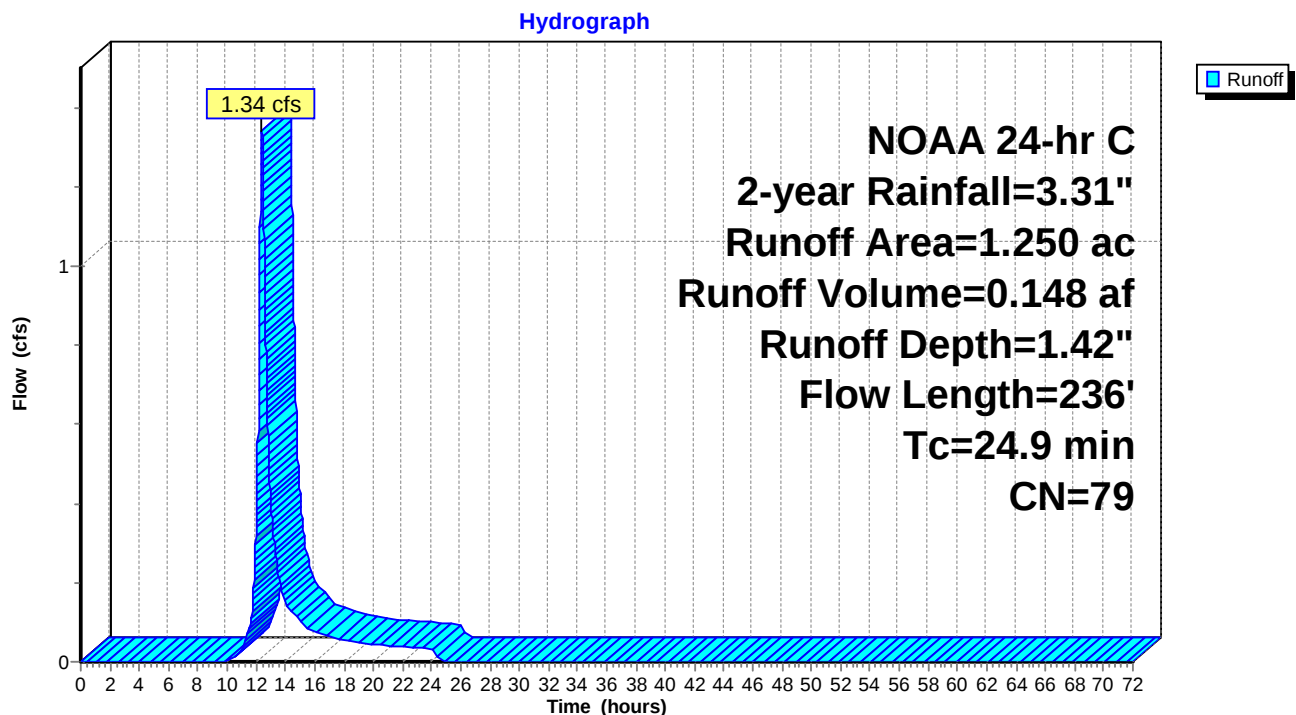
Runoff = 1.34 cfs @ 12.37 hrs, Volume= 0.148 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.450	80	>75% Grass cover, Good, HSG D
0.800	79	Woods/grass comb., Good, HSG D
1.250	79	Weighted Average
1.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	53	0.0263	0.12		Sheet Flow, Grass: Dense n= 0.240 P2= 3.31"
9.4	18	0.0049	0.03		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
7.9	165	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
24.9	236	Total			

Subcatchment EA 1U p: EA-1U Pervious



Post-Development

Prepared by {enter your company name here}

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NOAA 24-hr C 2-year Rainfall=3.31"

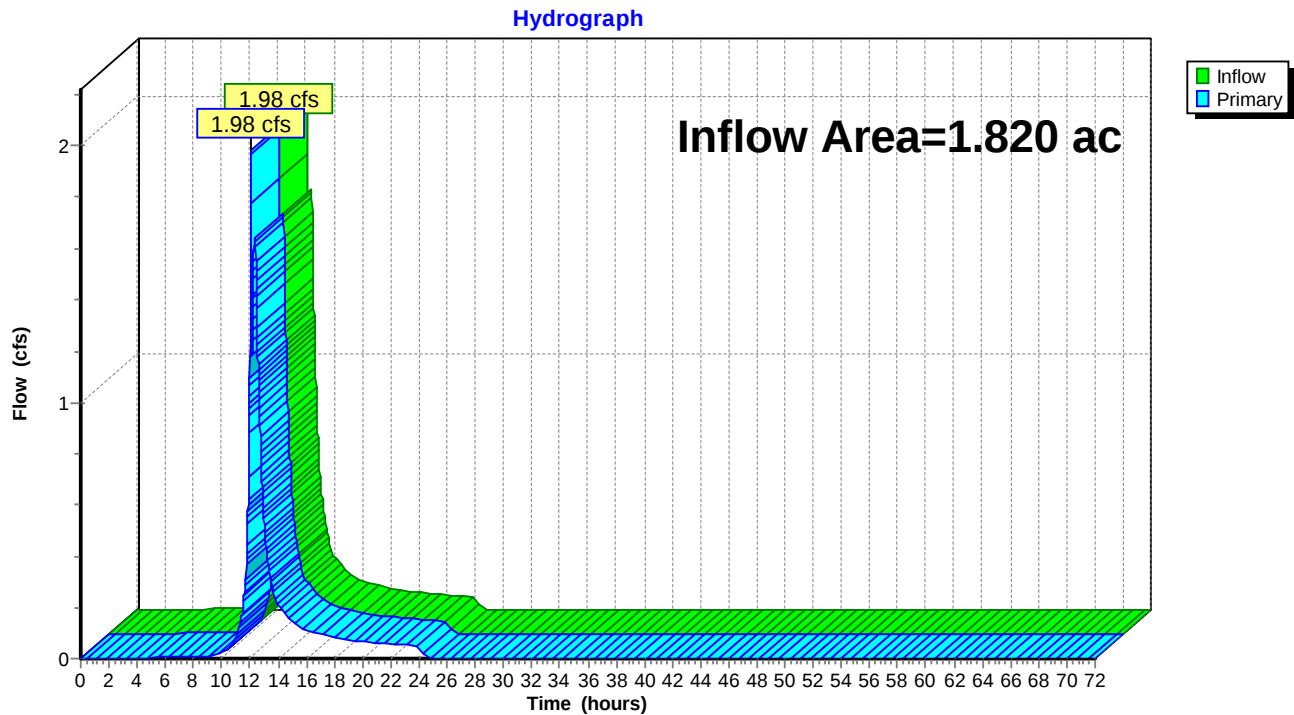
Printed 11/16/2023

Summary for Pond DP1: DP-1 OFFSITE

Inflow Area = 1.820 ac, 4.95% Impervious, Inflow Depth = 1.52" for 2-year event
Inflow = 1.98 cfs @ 12.10 hrs, Volume= 0.230 af
Primary = 1.98 cfs @ 12.10 hrs, Volume= 0.230 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond DP1: DP-1 OFFSITE



Post-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment DA2 i: DA 2 Driveway Impervious

Runoff = 0.52 cfs @ 12.09 hrs, Volume= 0.035 af, Depth= 4.73"

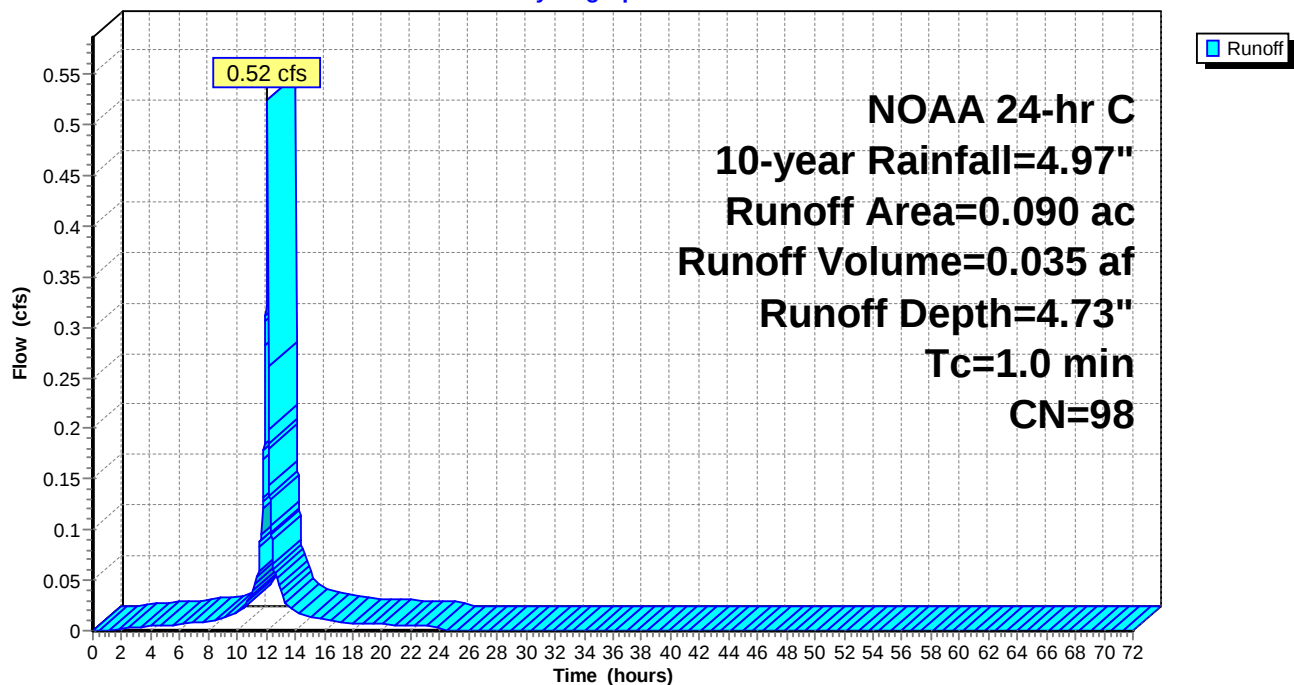
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
* 0.090	98	Paved parking, HSG D
0.090		100.00% Impervious Area

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

Subcatchment DA2 i: DA 2 Driveway Impervious

Hydrograph



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NOAA 24-hr C 10-year Rainfall=4.97"

Printed 11/16/2023

Summary for Subcatchment DA2p: DA 2 Driveway Pervious

Runoff = 0.52 cfs @ 12.10 hrs, Volume= 0.029 af, Depth= 2.87"

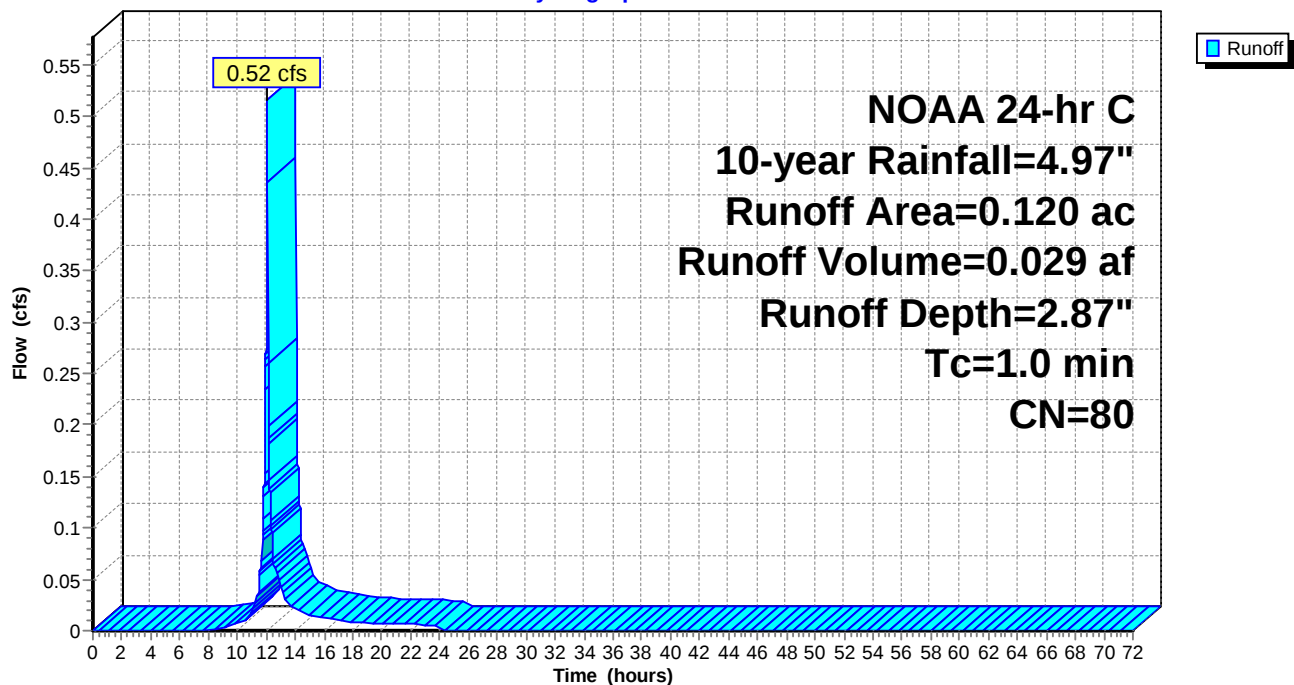
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.120	80	>75% Grass cover, Good, HSG D
0.120		100.00% Pervious Area

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

Subcatchment DA2p: DA 2 Driveway Pervious

Hydrograph



Post-Development

Prepared by {enter your company name here}
HydroCAD® 10.00-26 s/n 07360 © 2020 HydroCAD Software Solutions LLC

NOAA 24-hr C 10-year Rainfall=4.97"
Printed 11/16/2023

Summary for Subcatchment DA3 Un i: DA-3 Uncollected Impervious

Runoff = 0.02 cfs @ 12.10 hrs, Volume= 0.001 af, Depth= 2.87"

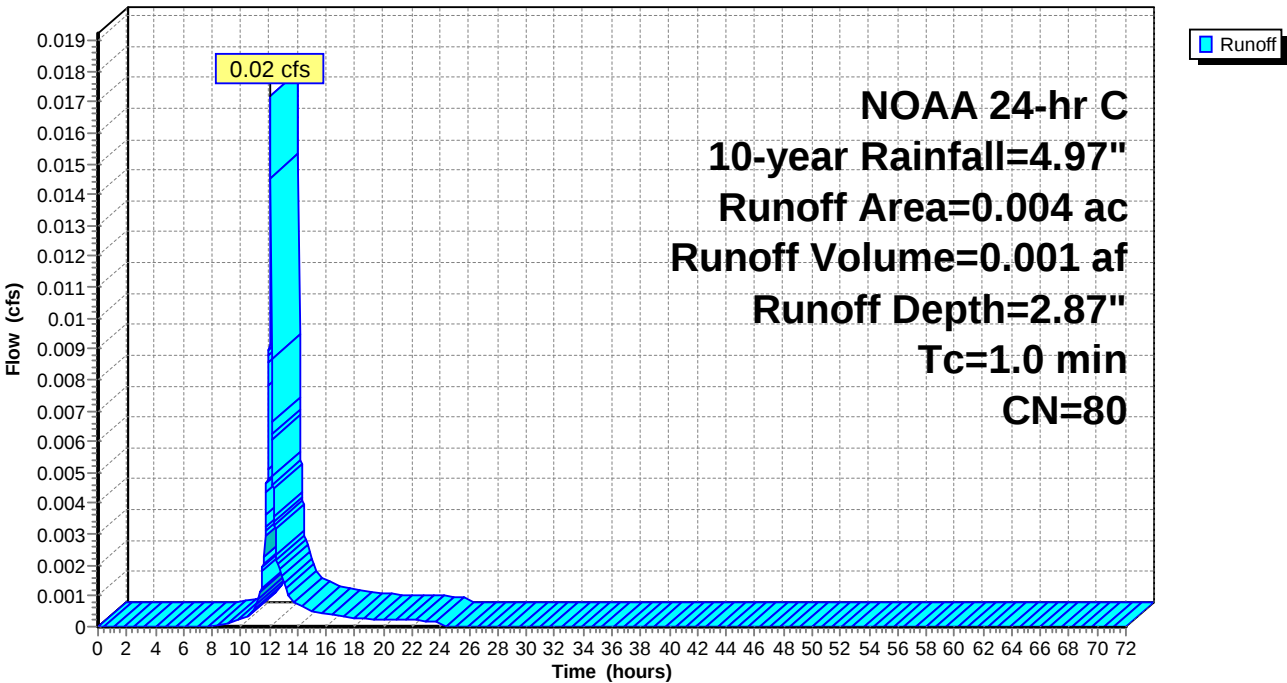
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.004	80	>75% Grass cover, Good, HSG D
0.004		100.00% Pervious Area

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

Subcatchment DA3 Un i: DA-3 Uncollected Impervious

Hydrograph



Post-Development

Prepared by {enter your company name here}

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NOAA 24-hr C 10-year Rainfall=4.97"

Printed 11/16/2023

Summary for Subcatchment DA3 Un p: DA-3 Uncollected Pervious

Runoff = 1.53 cfs @ 12.10 hrs, Volume= 0.085 af, Depth= 2.87"

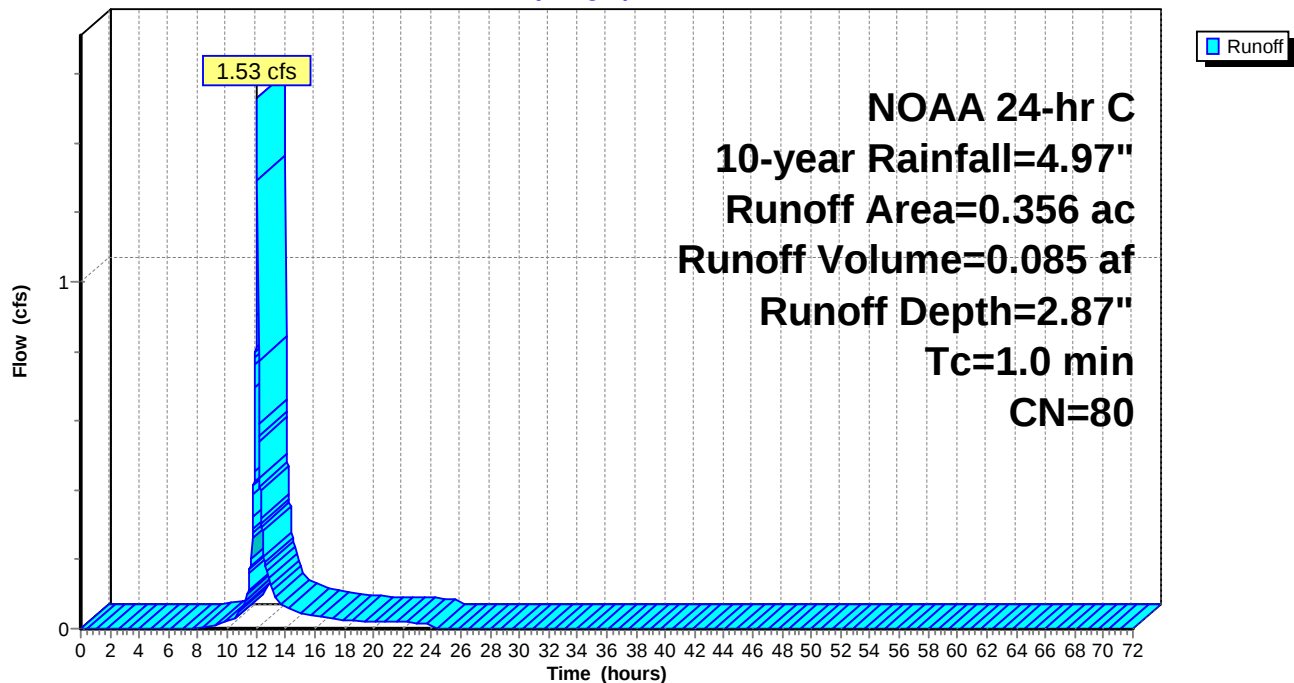
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.356	80	>75% Grass cover, Good, HSG D
0.356		100.00% Pervious Area

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

Subcatchment DA3 Un p: DA-3 Uncollected Pervious

Hydrograph



Post-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment EA 1U p: EA-1U Pervious

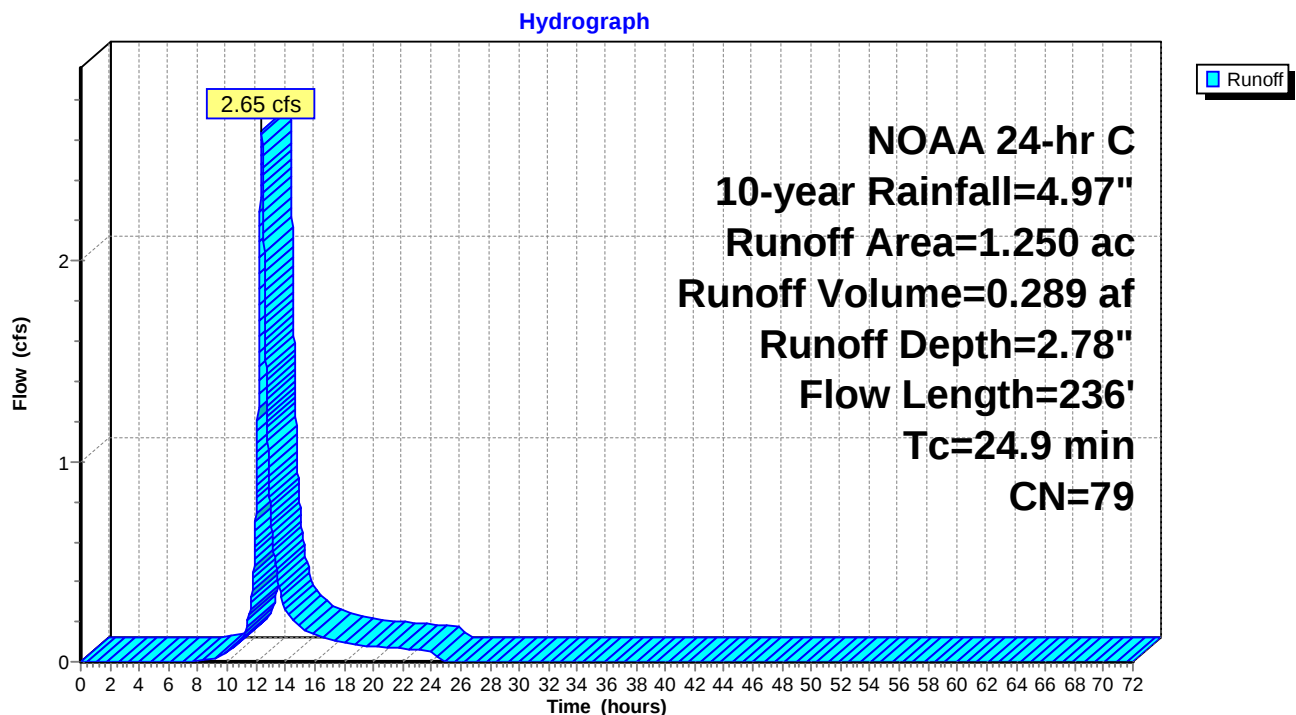
Runoff = 2.65 cfs @ 12.36 hrs, Volume= 0.289 af, Depth= 2.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.450	80	>75% Grass cover, Good, HSG D
0.800	79	Woods/grass comb., Good, HSG D
1.250	79	Weighted Average
1.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	53	0.0263	0.12		Sheet Flow, Grass: Dense n= 0.240 P2= 3.31"
9.4	18	0.0049	0.03		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
7.9	165	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
24.9	236	Total			

Subcatchment EA 1U p: EA-1U Pervious



Post-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

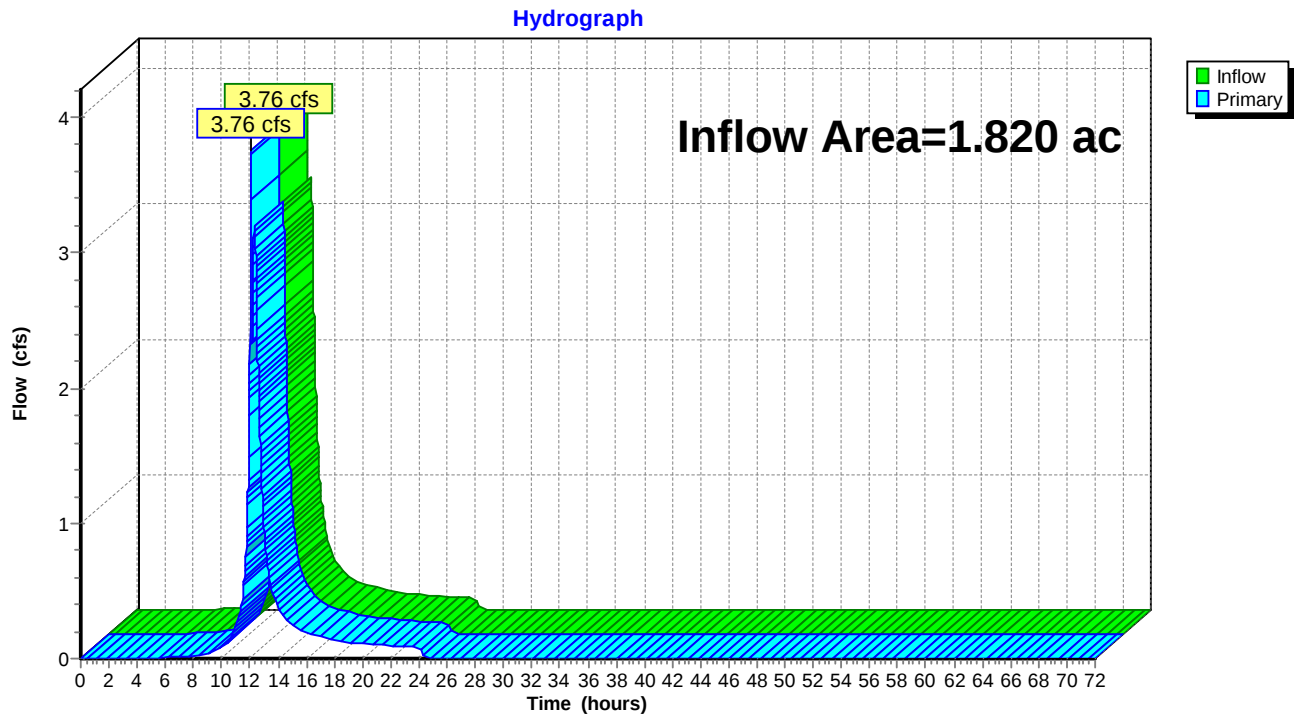
Printed 11/16/2023

Summary for Pond DP1: DP-1 OFFSITE

Inflow Area = 1.820 ac, 4.95% Impervious, Inflow Depth = 2.90" for 10-year event
Inflow = 3.76 cfs @ 12.10 hrs, Volume= 0.439 af
Primary = 3.76 cfs @ 12.10 hrs, Volume= 0.439 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond DP1: DP-1 OFFSITE



Post-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment DA2 i: DA 2 Driveway Impervious

Runoff = 0.86 cfs @ 12.09 hrs, Volume= 0.059 af, Depth= 7.91"

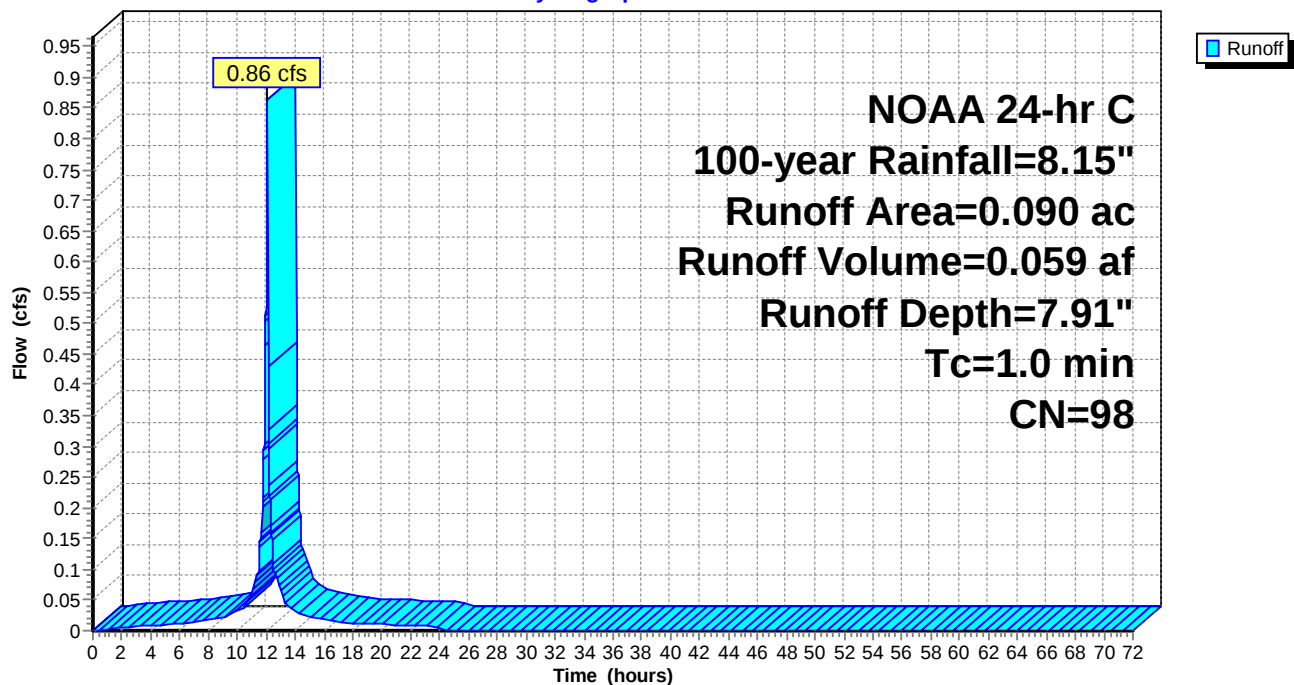
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
* 0.090	98	Paved parking, HSG D
0.090		100.00% Impervious Area

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

Subcatchment DA2 i: DA 2 Driveway Impervious

Hydrograph



Post-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/16/2023

Summary for Subcatchment DA2p: DA 2 Driveway Pervious

Runoff = 0.99 cfs @ 12.10 hrs, Volume= 0.058 af, Depth= 5.77"

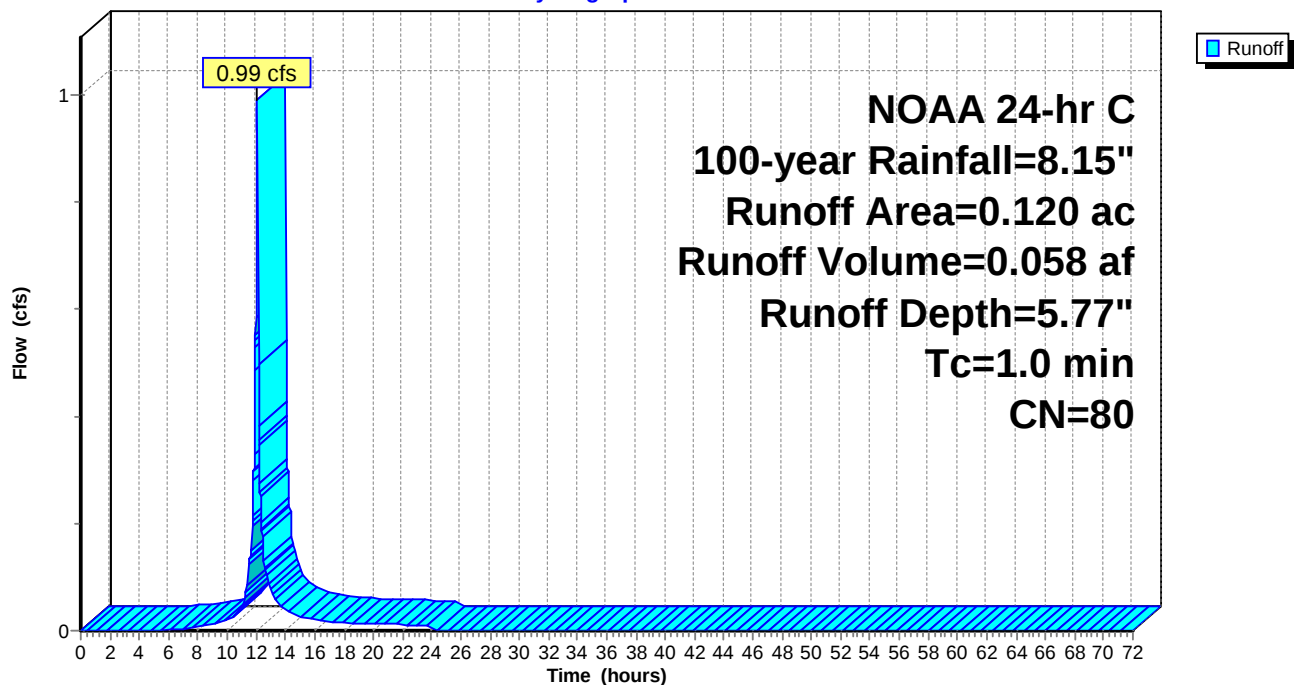
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.120	80	>75% Grass cover, Good, HSG D
0.120		100.00% Pervious Area

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

Subcatchment DA2p: DA 2 Driveway Pervious

Hydrograph



Post-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/16/2023

Summary for Subcatchment DA3 Un i: DA-3 Uncollected Impervious

Runoff = 0.03 cfs @ 12.10 hrs, Volume= 0.002 af, Depth= 5.77"

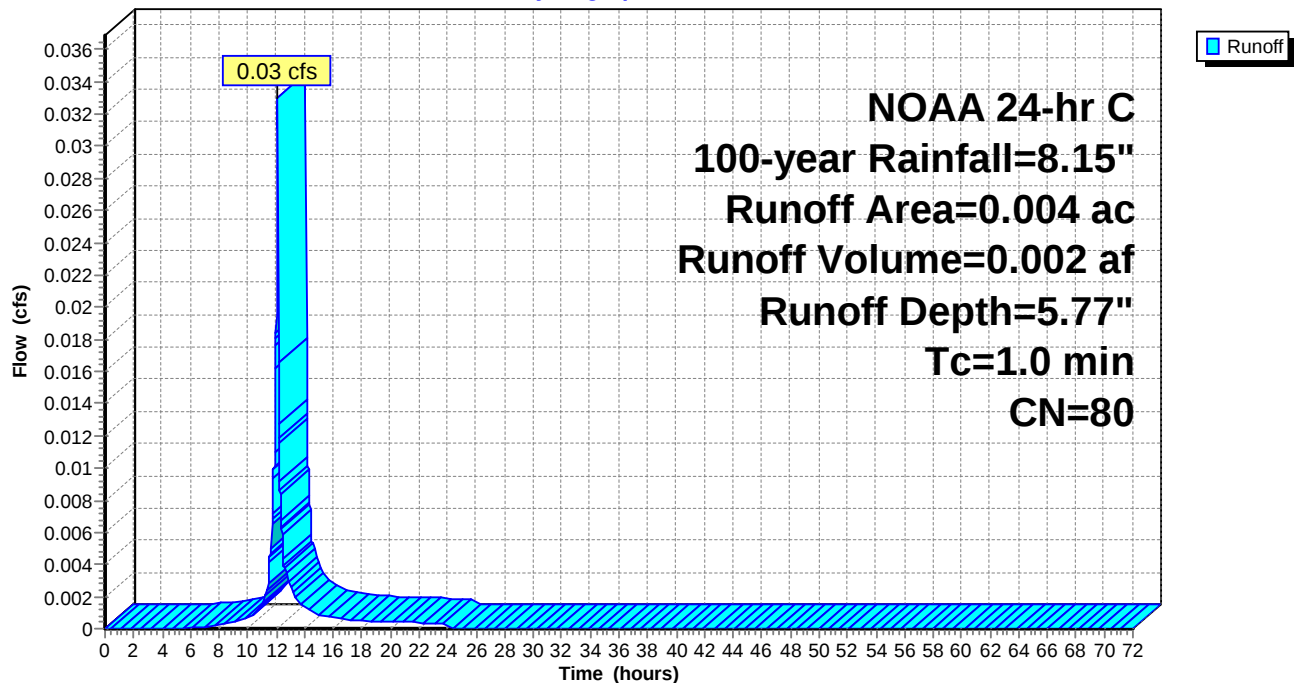
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.004	80	>75% Grass cover, Good, HSG D
0.004		100.00% Pervious Area

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

Subcatchment DA3 Un i: DA-3 Uncollected Impervious

Hydrograph



Post-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/16/2023

Summary for Subcatchment DA3 Un p: DA-3 Uncollected Pervious

Runoff = 2.93 cfs @ 12.10 hrs, Volume= 0.171 af, Depth= 5.77"

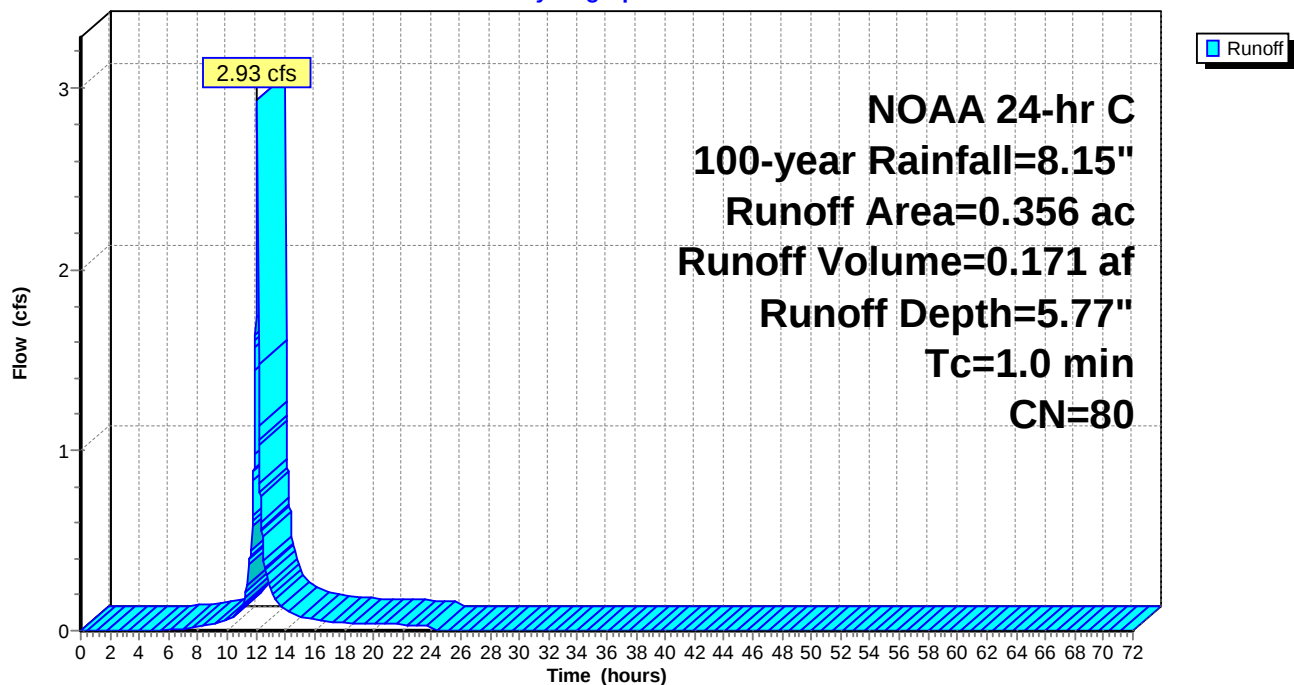
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.356	80	>75% Grass cover, Good, HSG D
0.356		100.00% Pervious Area

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

Subcatchment DA3 Un p: DA-3 Uncollected Pervious

Hydrograph



Post-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment EA 1U p: EA-1U Pervious

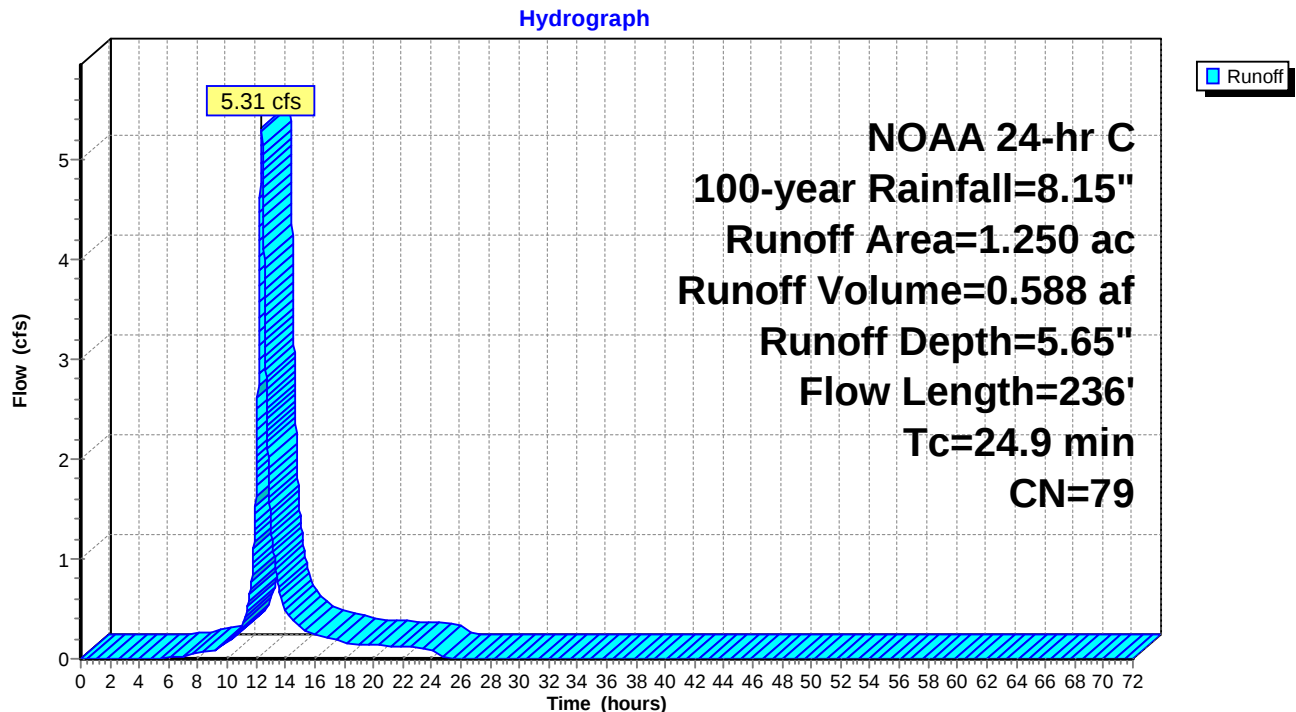
Runoff = 5.31 cfs @ 12.36 hrs, Volume= 0.588 af, Depth= 5.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.450	80	>75% Grass cover, Good, HSG D
0.800	79	Woods/grass comb., Good, HSG D
1.250	79	Weighted Average
1.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	53	0.0263	0.12		Sheet Flow, Grass: Dense n= 0.240 P2= 3.31"
9.4	18	0.0049	0.03		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
7.9	165	0.0049	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
24.9	236	Total			

Subcatchment EA 1U p: EA-1U Pervious



Post-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

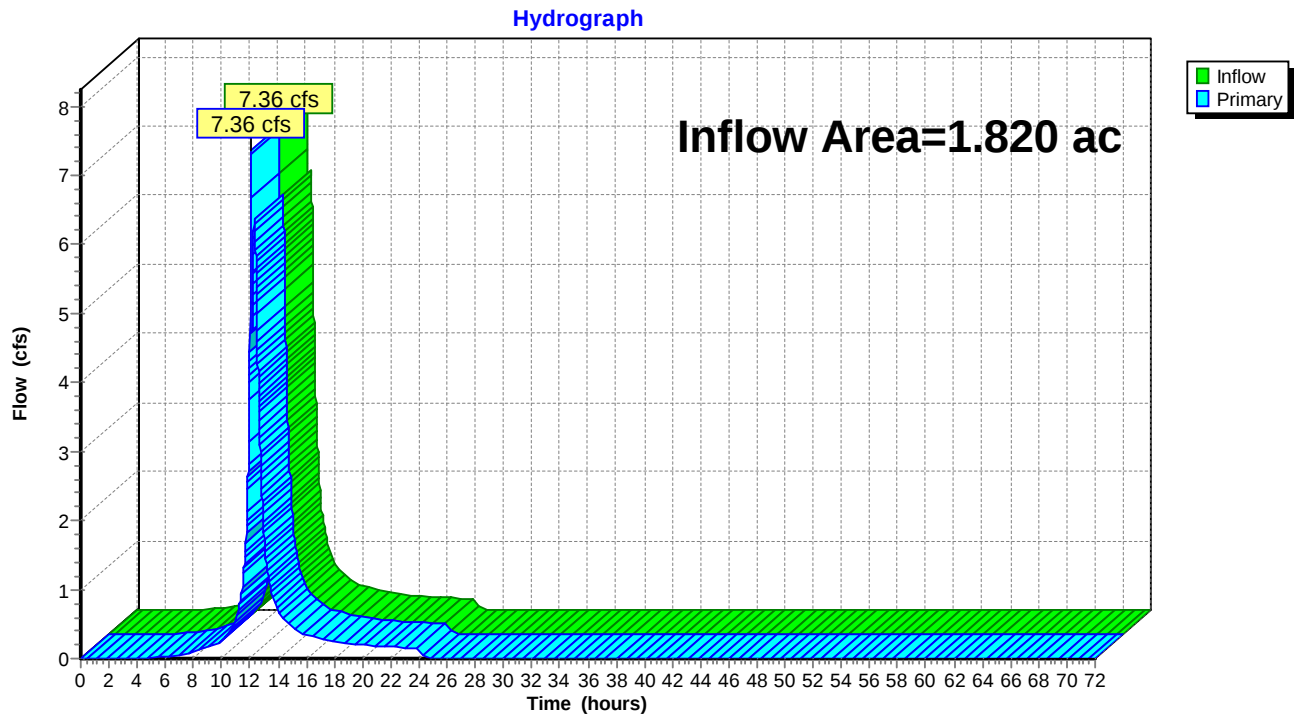
Printed 11/16/2023

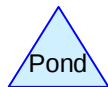
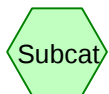
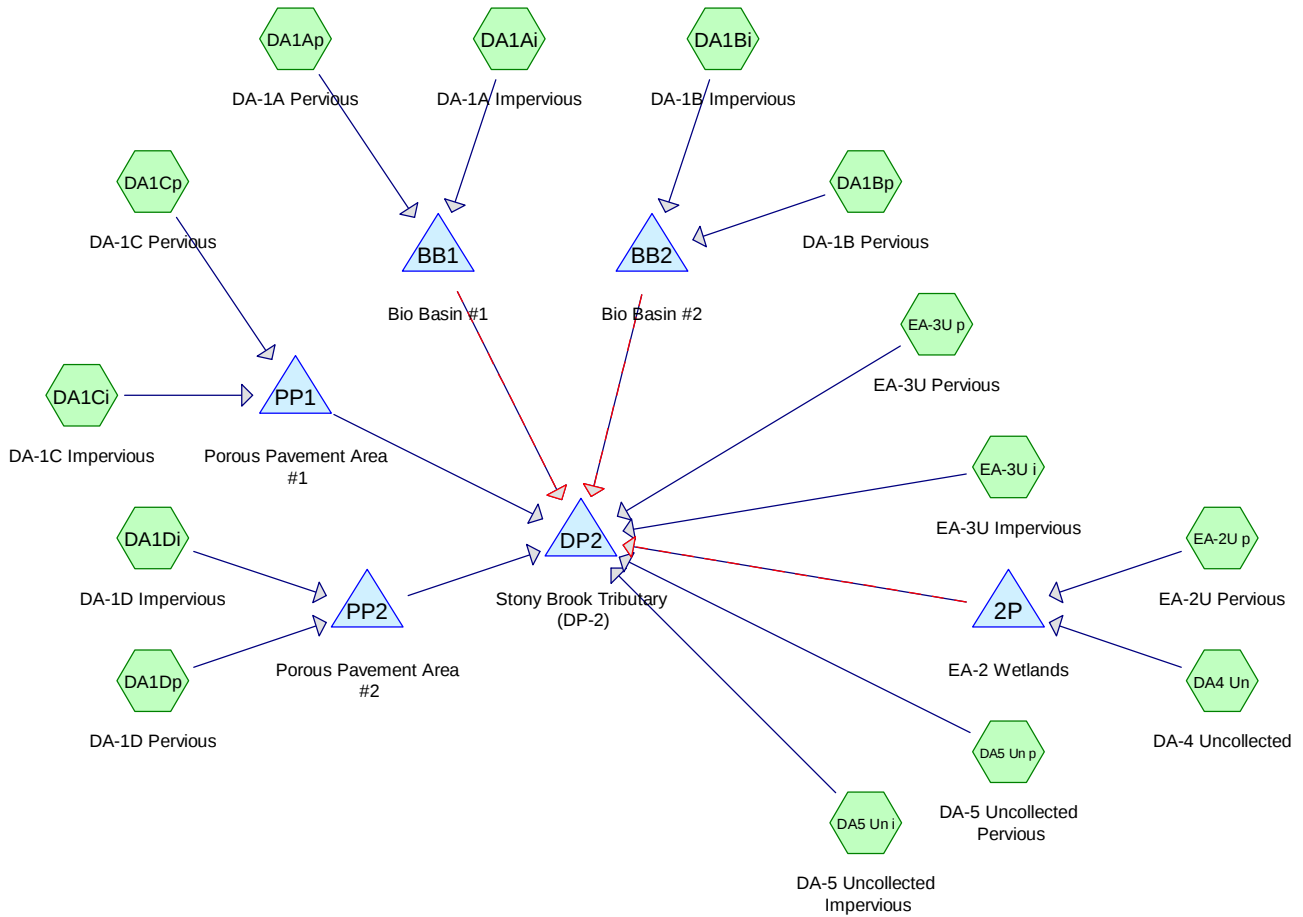
Summary for Pond DP1: DP-1 OFFSITE

Inflow Area = 1.820 ac, 4.95% Impervious, Inflow Depth = 5.79" for 100-year event
Inflow = 7.36 cfs @ 12.10 hrs, Volume= 0.878 af
Primary = 7.36 cfs @ 12.10 hrs, Volume= 0.878 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond DP1: DP-1 OFFSITE





Routing Diagram for Post-Development

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Post-Development

Prepared by {enter your company name here}

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment DA1Ai: DA-1A Impervious

Runoff = 4.82 cfs @ 1.08 hrs, Volume= 0.134 af, Depth= 1.03"

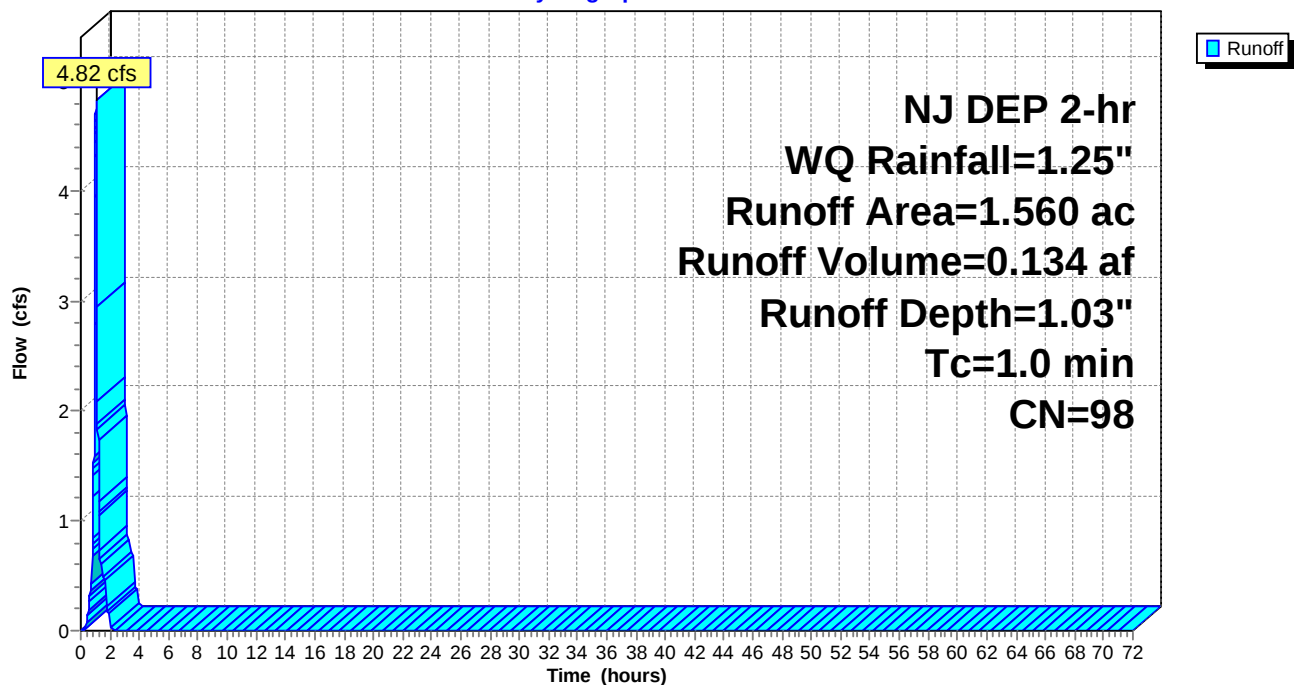
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
1.560	98	Roofs, HSG D
1.560		100.00% Impervious Area

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

Subcatchment DA1Ai: DA-1A Impervious

Hydrograph



Post-Development

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment DA1Ap: DA-1A Pervious

Runoff = 0.62 cfs @ 1.09 hrs, Volume= 0.012 af, Depth= 0.17"

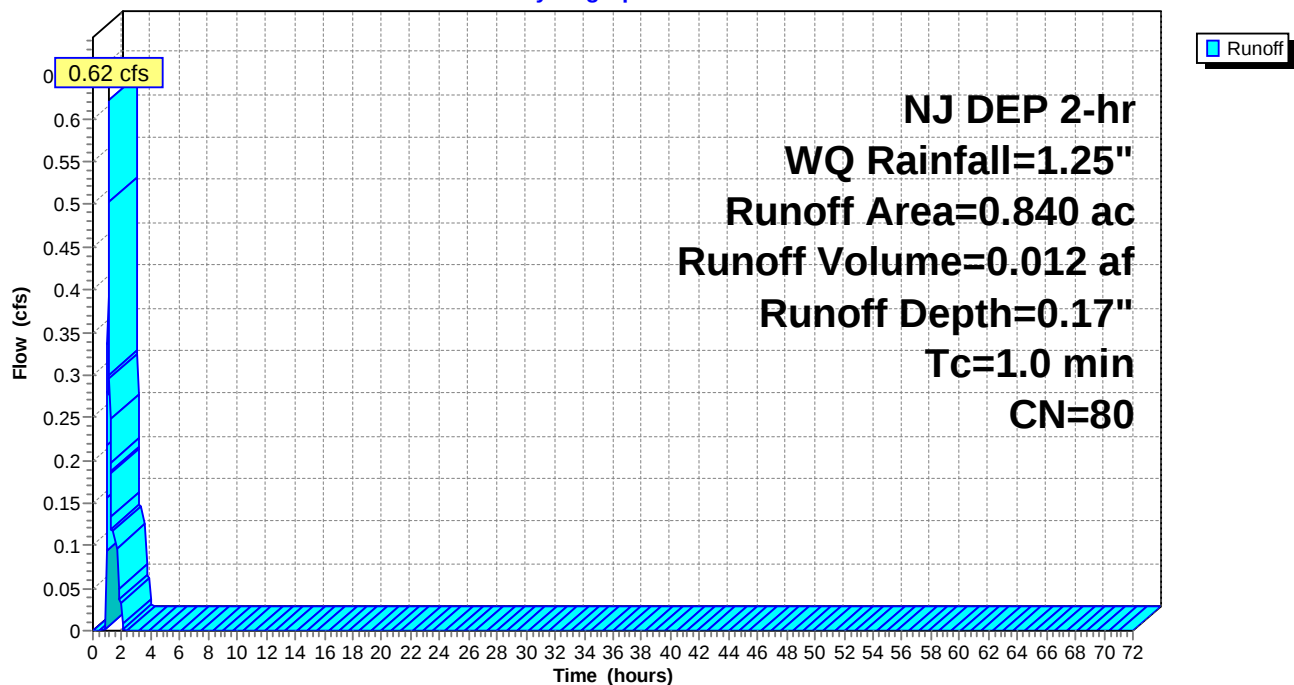
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.840	80	>75% Grass cover, Good, HSG D
0.840		100.00% Pervious Area

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

Subcatchment DA1Ap: DA-1A Pervious

Hydrograph



Post-Development

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment DA1Bi: DA-1B Impervious

Runoff = 2.91 cfs @ 1.08 hrs, Volume= 0.081 af, Depth= 1.03"

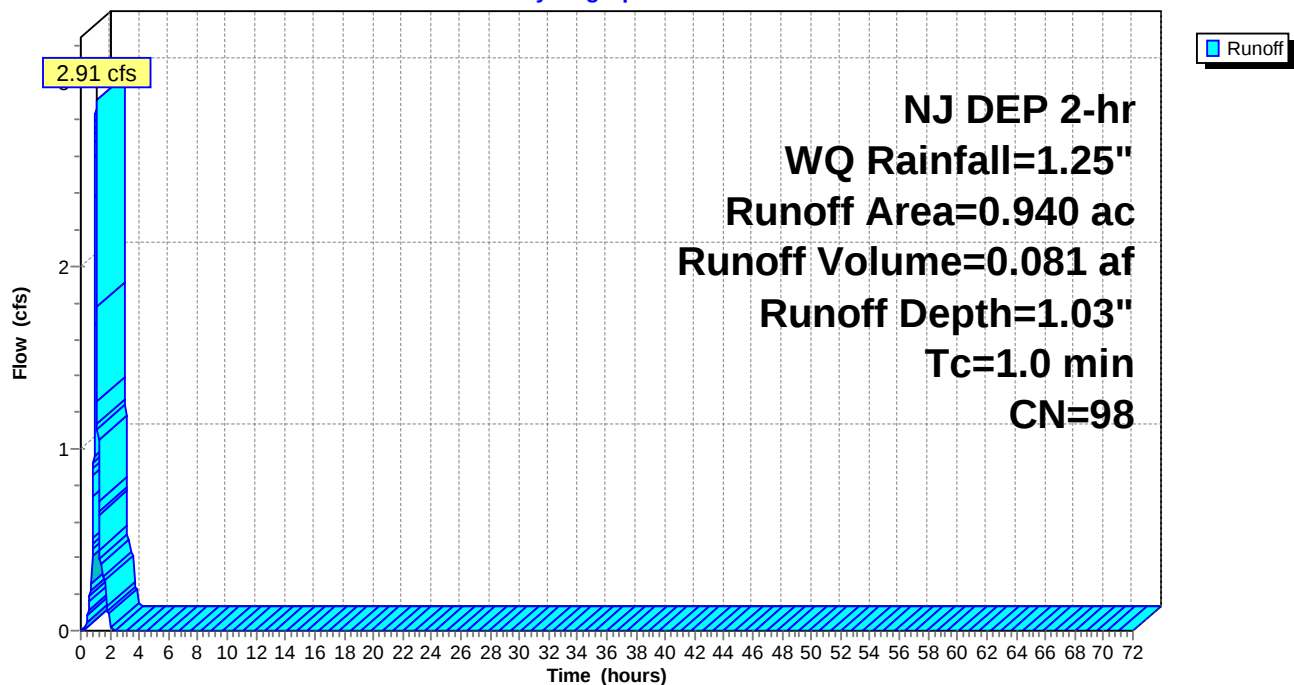
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
* 0.940	98	Paved parking, HSG D
0.940		100.00% Impervious Area

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

Subcatchment DA1Bi: DA-1B Impervious

Hydrograph



Post-Development

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment DA1Bp: DA-1B Pervious

Runoff = 0.55 cfs @ 1.09 hrs, Volume= 0.011 af, Depth= 0.17"

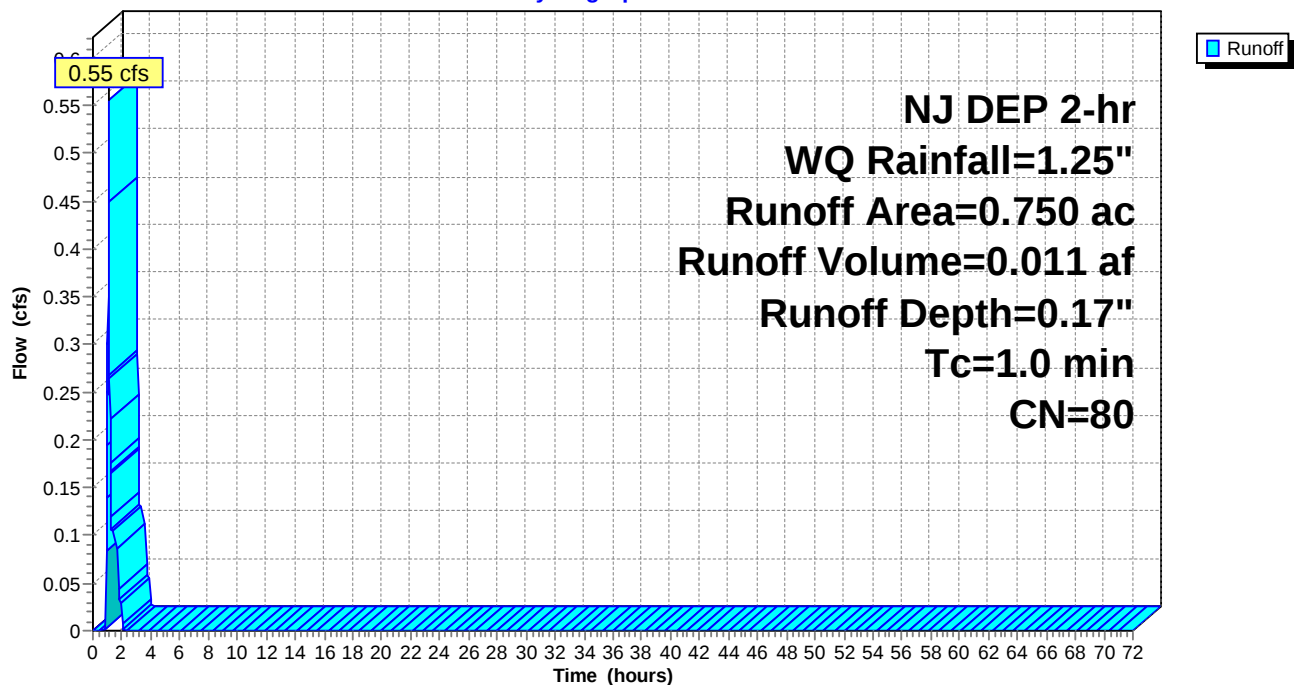
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.750	80	>75% Grass cover, Good, HSG D
0.750		100.00% Pervious Area

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

Subcatchment DA1Bp: DA-1B Pervious

Hydrograph



Post-Development

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment DA1Ci: DA-1C Impervious

Runoff = 0.56 cfs @ 1.08 hrs, Volume= 0.016 af, Depth= 1.03"

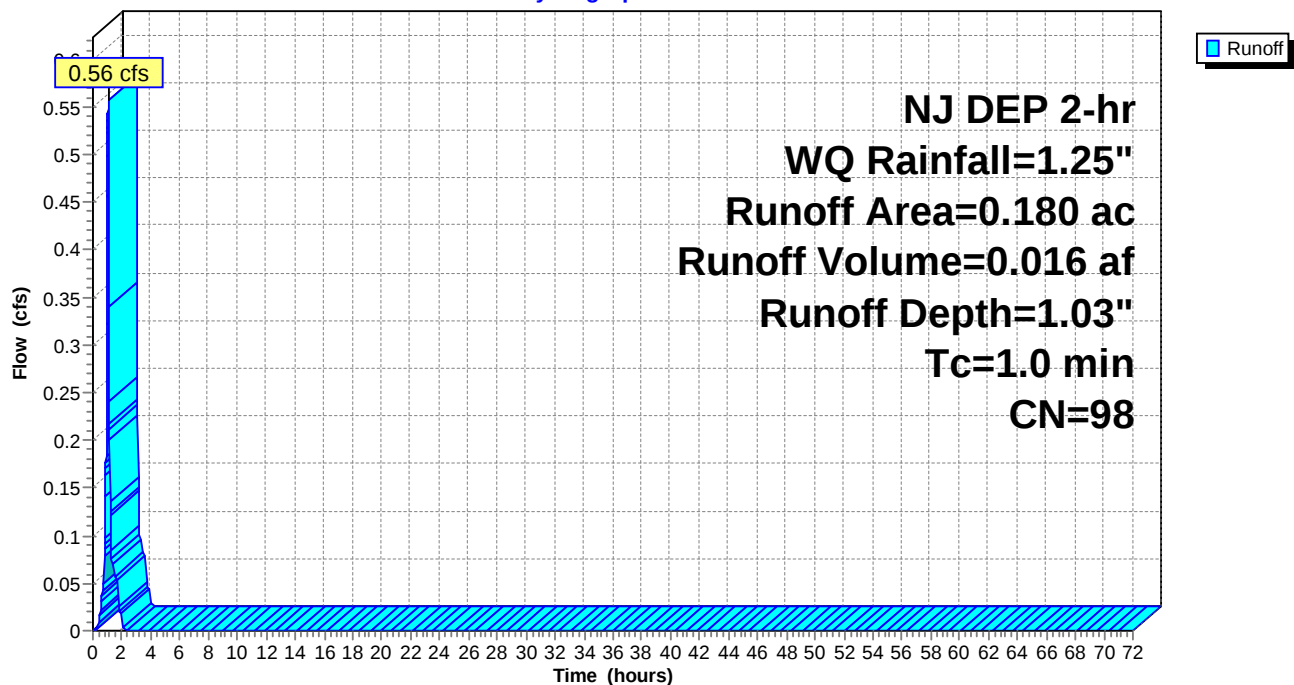
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.180	98	Paved parking, HSG D
0.180		100.00% Impervious Area

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

Subcatchment DA1Ci: DA-1C Impervious

Hydrograph



Post-Development

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment DA1Cp: DA-1C Pervious

Runoff = 0.03 cfs @ 1.09 hrs, Volume= 0.001 af, Depth= 0.17"

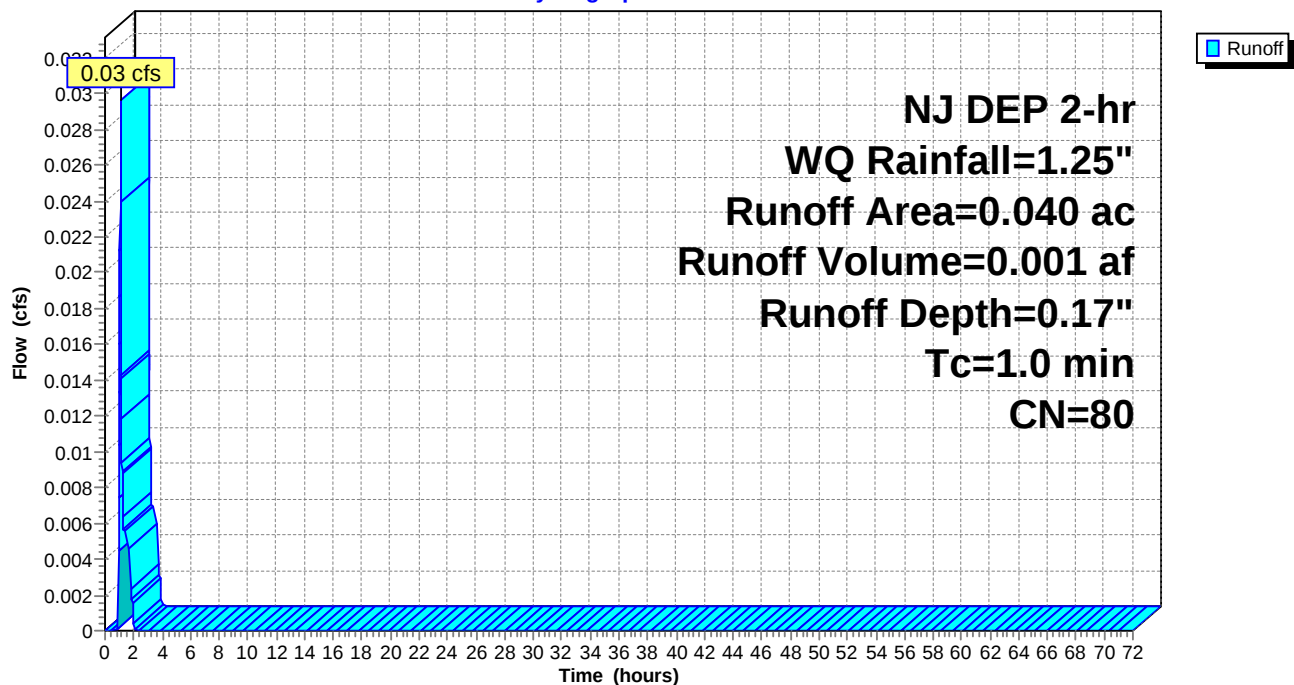
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.040	80	>75% Grass cover, Good, HSG D
0.040		100.00% Pervious Area

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

Subcatchment DA1Cp: DA-1C Pervious

Hydrograph



Post-Development

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment DA1Di: DA-1D Impervious

Runoff = 0.49 cfs @ 1.08 hrs, Volume= 0.014 af, Depth= 1.03"

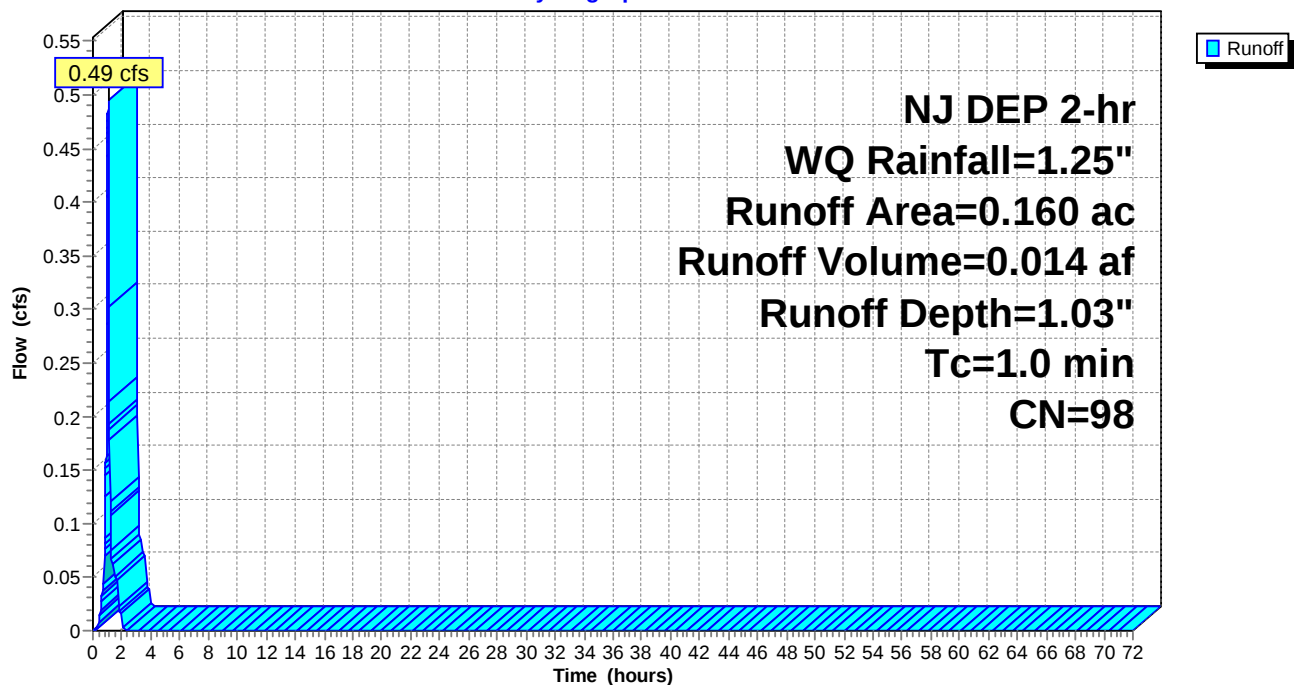
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
* 0.160	98	Paved parking, HSG D
0.160		100.00% Impervious Area

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

Subcatchment DA1Di: DA-1D Impervious

Hydrograph



Post-Development

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment DA1Dp: DA-1D Pervious

Runoff = 0.10 cfs @ 1.09 hrs, Volume= 0.002 af, Depth= 0.17"

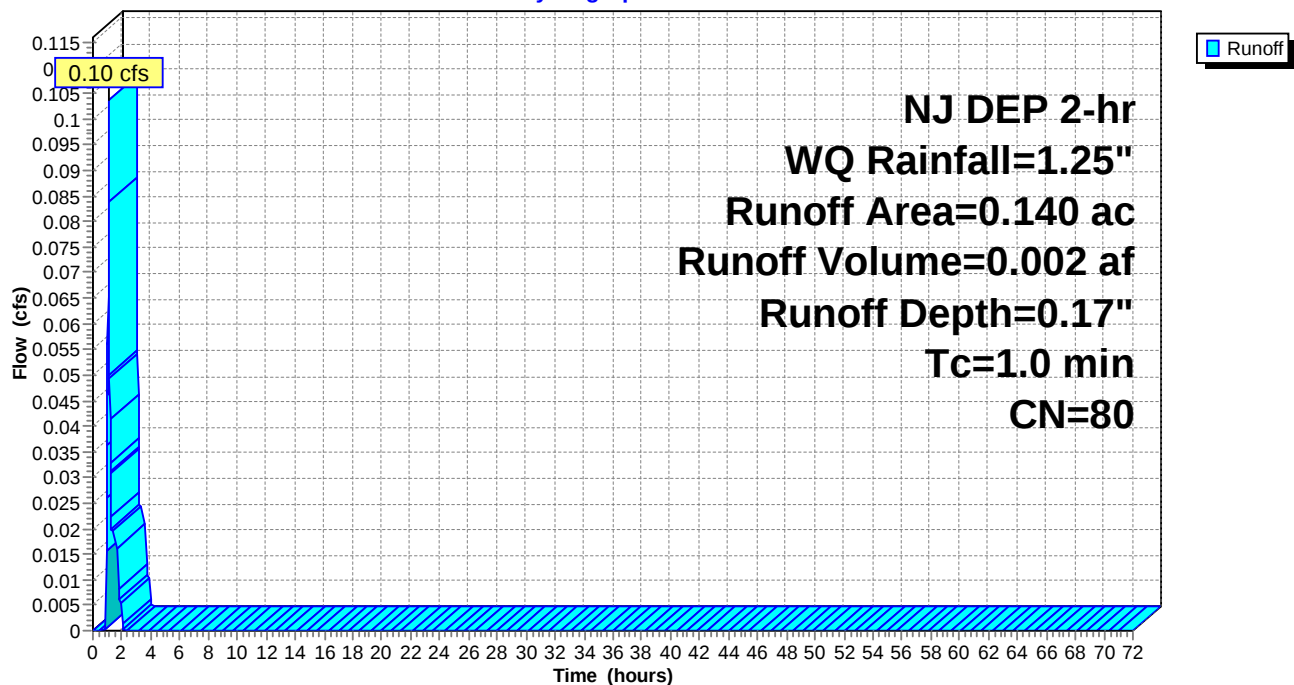
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.140	80	>75% Grass cover, Good, HSG D
0.140		100.00% Pervious Area

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

Subcatchment DA1Dp: DA-1D Pervious

Hydrograph



Post-Development

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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Summary for Subcatchment DA4 Un: DA-4 Uncollected

Runoff = 0.07 cfs @ 1.09 hrs, Volume= 0.001 af, Depth= 0.17"

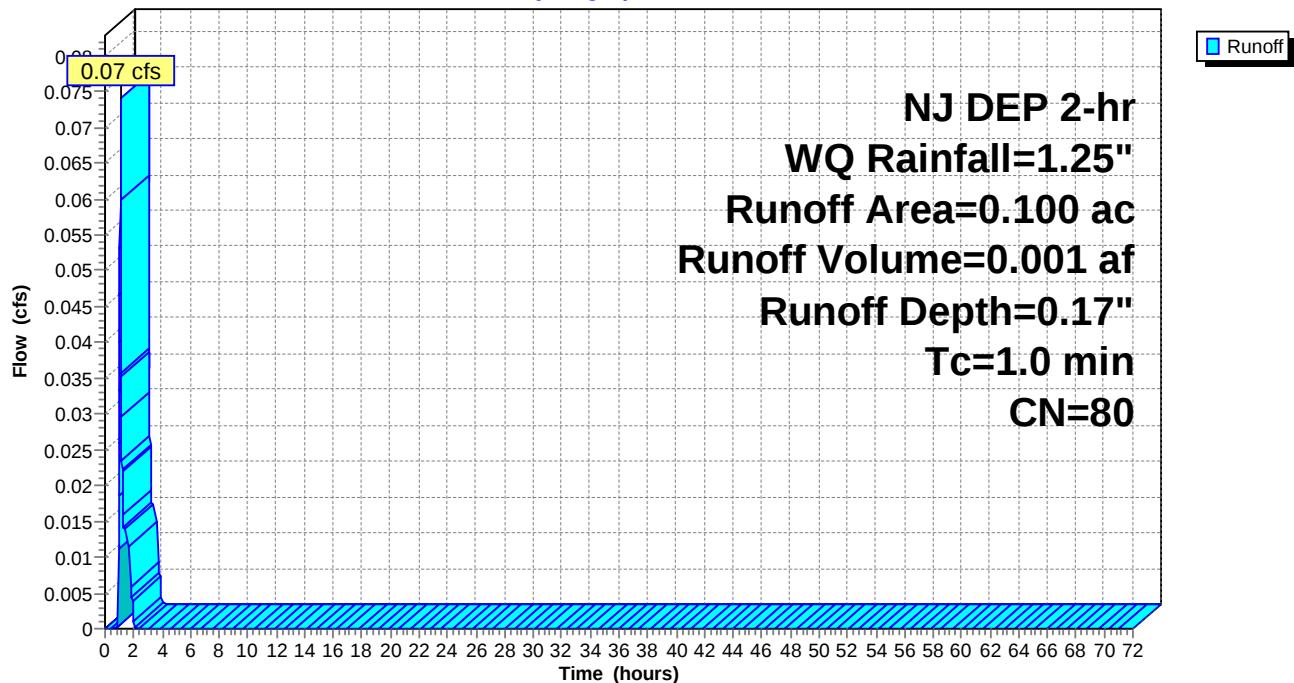
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.100	80	>75% Grass cover, Good, HSG D
0.100		100.00% Pervious Area

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

Subcatchment DA4 Un: DA-4 Uncollected

Hydrograph



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NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment DA5 Un i: DA-5 Uncollected Impervious

Runoff = 0.00 cfs @ 1.09 hrs, Volume= 0.000 af, Depth= 0.17"

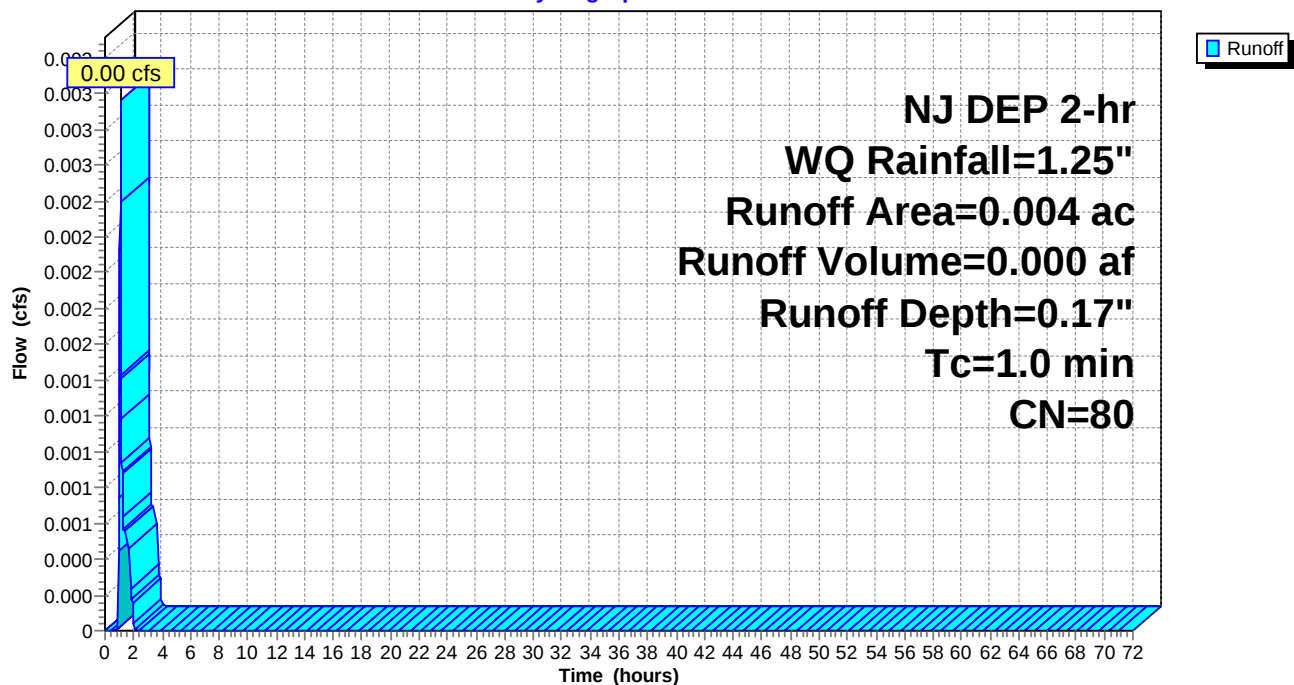
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.004	80	>75% Grass cover, Good, HSG D
0.004		100.00% Pervious Area

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

Subcatchment DA5 Un i: DA-5 Uncollected Impervious

Hydrograph



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NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment DA5 Un p: DA-5 Uncollected Pervious

Runoff = 0.03 cfs @ 1.09 hrs, Volume= 0.001 af, Depth= 0.17"

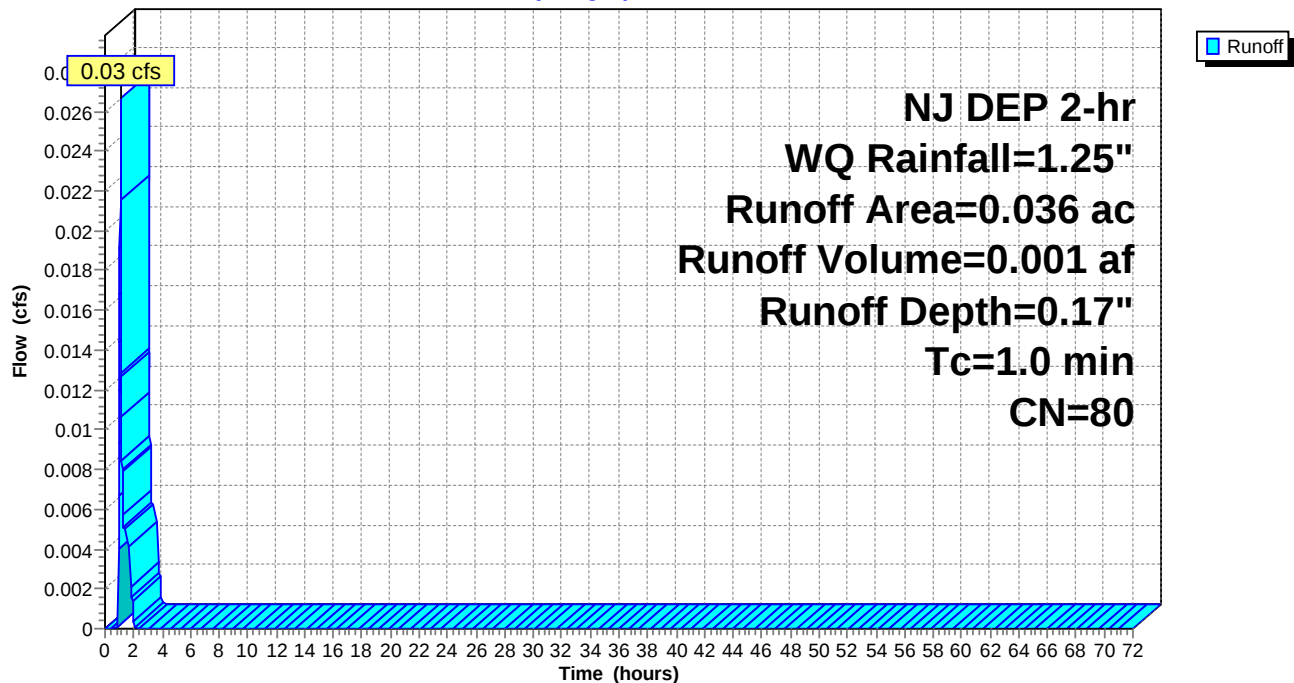
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.036	80	>75% Grass cover, Good, HSG D
0.036		100.00% Pervious Area

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

Subcatchment DA5 Un p: DA-5 Uncollected Pervious

Hydrograph



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NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment EA-2U p: EA-2U Pervious

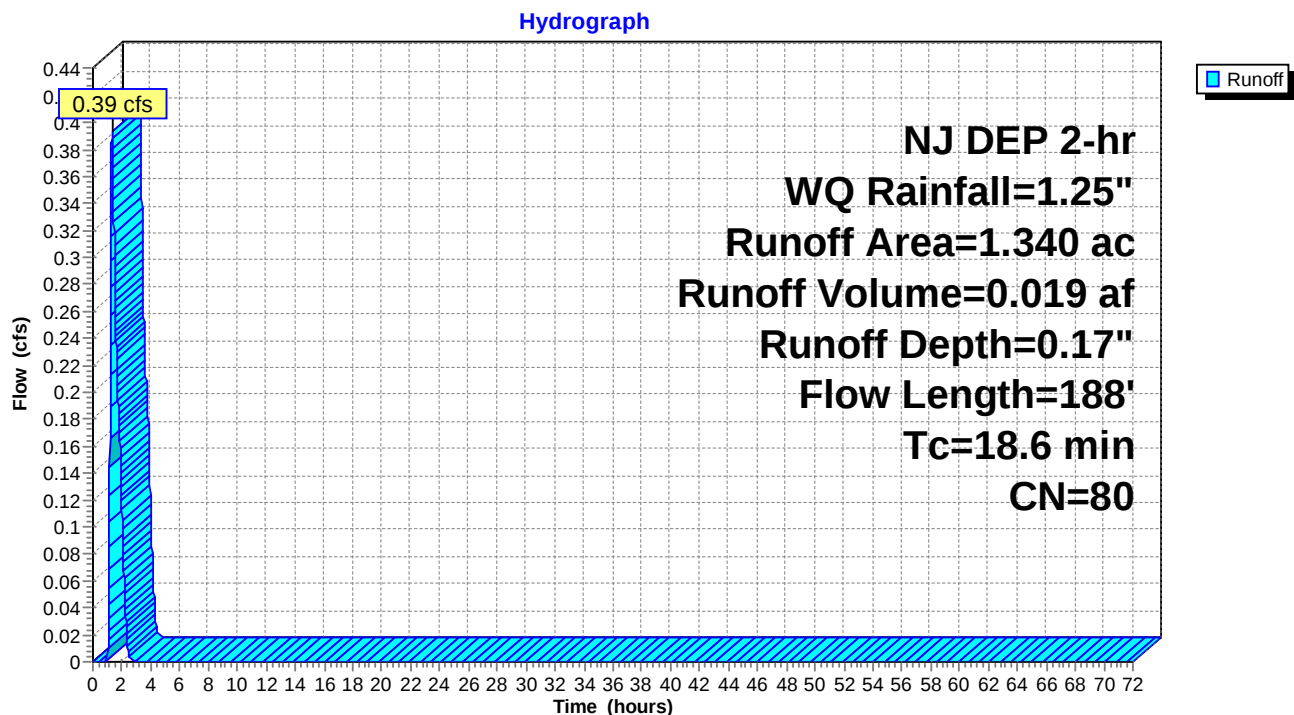
Runoff = 0.39 cfs @ 1.34 hrs, Volume= 0.019 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.600	79	Woods/grass comb., Good, HSG D
0.740	80	>75% Grass cover, Good, HSG D
1.340	80	Weighted Average
1.340		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	44	0.0303	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
8.9	113	0.0018	0.21		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.4	31	0.0065	1.30		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.6	188	Total			

Subcatchment EA-2U p: EA-2U Pervious



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NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment EA-3U i: EA-3U Impervious

Runoff = 0.11 cfs @ 1.19 hrs, Volume= 0.004 af, Depth= 1.03"

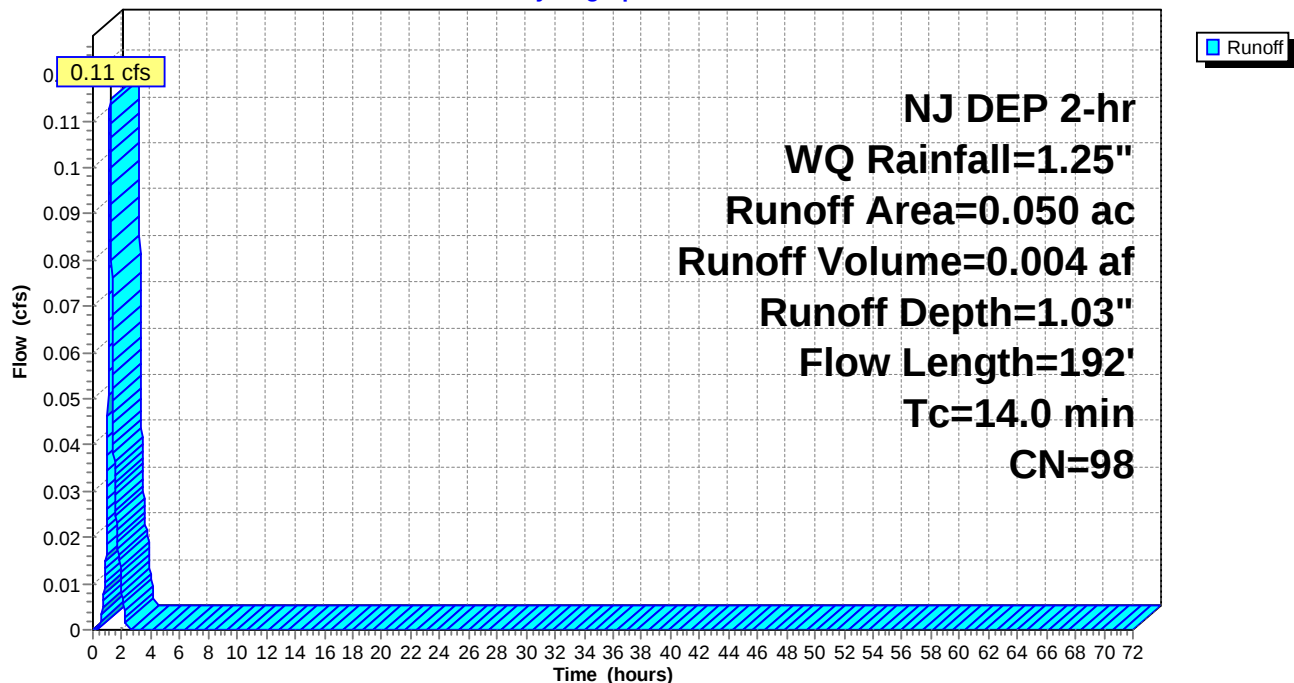
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
* 0.050	98	Impervious Areas
0.050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	6	0.0193	0.07		Sheet Flow, Grass: Dense n= 0.240 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.0	192	Total			

Subcatchment EA-3U i: EA-3U Impervious

Hydrograph



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NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment EA-3U p: EA-3U Pervious

Runoff = 0.37 cfs @ 1.28 hrs, Volume= 0.016 af, Depth= 0.15"

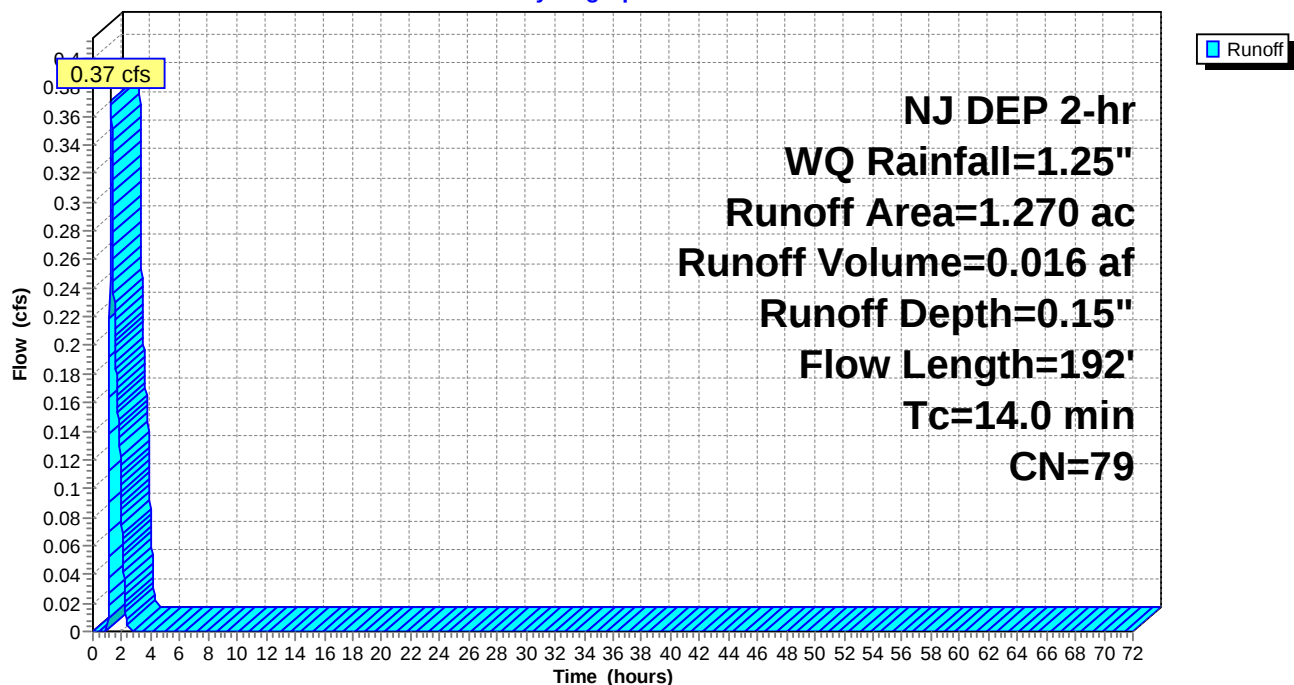
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.450	80	>75% Grass cover, Good, HSG D
0.820	79	Woods/grass comb., Good, HSG D
1.270	79	Weighted Average
1.270		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	6	0.0193	0.07		Sheet Flow, Grass: Dense n= 0.240 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.0	192	Total			

Subcatchment EA-3U p: EA-3U Pervious

Hydrograph



Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Pond 2P: EA-2 Wetlands

Inflow Area = 1.440 ac, 0.00% Impervious, Inflow Depth = 0.17" for WQ event
Inflow = 0.41 cfs @ 1.34 hrs, Volume= 0.021 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
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 202.85' @ 3.07 hrs Surf.Area= 8,142 sf Storage= 904 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	202.60'	8,536 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.60	467	0	0
202.70	2,559	151	151
202.80	5,796	418	569
202.90	10,670	823	1,392
203.00	15,559	1,311	2,704
203.10	18,857	1,721	4,425
203.20	20,626	1,974	6,399
203.30	22,113	2,137	8,536

Device	Routing	Invert	Outlet Devices
#1	Primary	202.97'	179.4 deg x 11.0' long x 0.33' rise Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)
#2	Secondary	203.01'	65.0' 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=202.60' (Free Discharge)

↑**1=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=202.60' (Free Discharge)

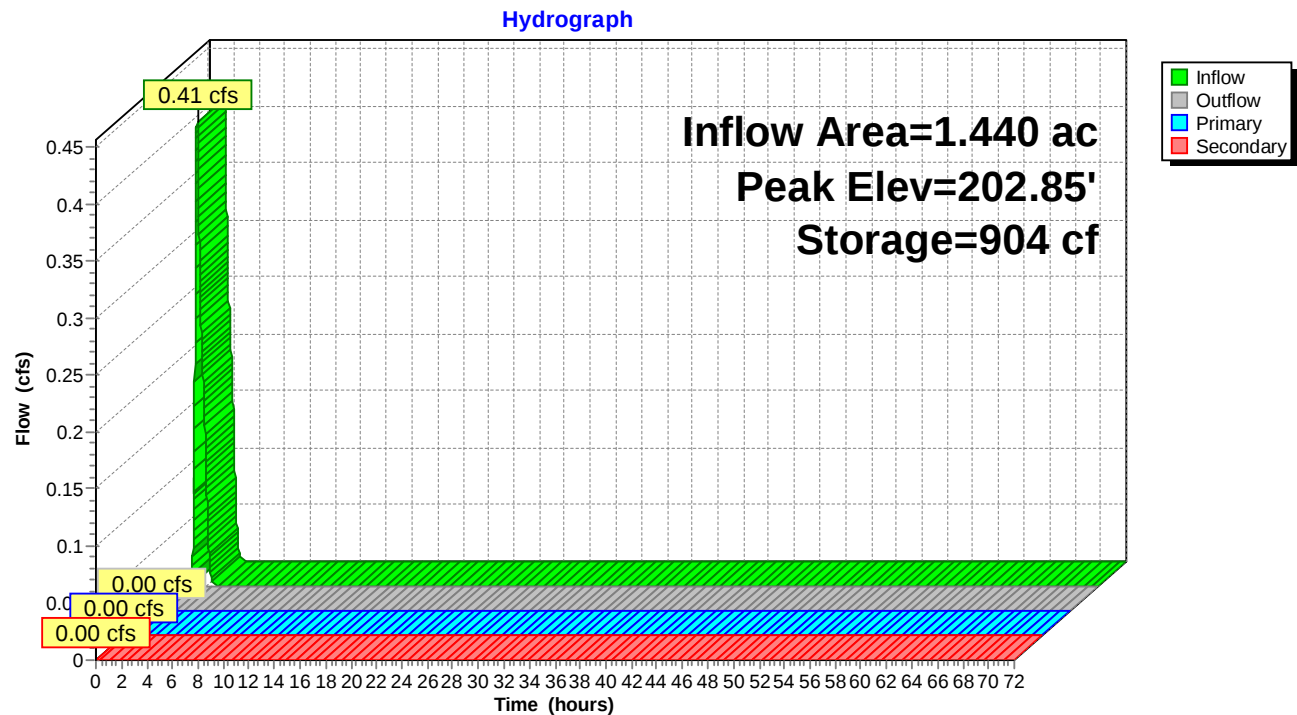
↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Post-Development

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NJ DEP 2-hr WQ Rainfall=1.25"
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Pond 2P: EA-2 Wetlands



Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Hydrograph for Pond 2P: EA-2 Wetlands

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	202.60	0.00	0.00	0.00
2.00	0.12	820	202.84	0.00	0.00	0.00
4.00	0.00	905	202.85	0.00	0.00	0.00
6.00	0.00	905	202.85	0.00	0.00	0.00
8.00	0.00	905	202.85	0.00	0.00	0.00
10.00	0.00	905	202.85	0.00	0.00	0.00
12.00	0.00	905	202.85	0.00	0.00	0.00
14.00	0.00	905	202.85	0.00	0.00	0.00
16.00	0.00	905	202.85	0.00	0.00	0.00
18.00	0.00	905	202.85	0.00	0.00	0.00
20.00	0.00	905	202.85	0.00	0.00	0.00
22.00	0.00	905	202.85	0.00	0.00	0.00
24.00	0.00	905	202.85	0.00	0.00	0.00
26.00	0.00	905	202.85	0.00	0.00	0.00
28.00	0.00	905	202.85	0.00	0.00	0.00
30.00	0.00	905	202.85	0.00	0.00	0.00
32.00	0.00	905	202.85	0.00	0.00	0.00
34.00	0.00	905	202.85	0.00	0.00	0.00
36.00	0.00	905	202.85	0.00	0.00	0.00
38.00	0.00	905	202.85	0.00	0.00	0.00
40.00	0.00	905	202.85	0.00	0.00	0.00
42.00	0.00	905	202.85	0.00	0.00	0.00
44.00	0.00	905	202.85	0.00	0.00	0.00
46.00	0.00	905	202.85	0.00	0.00	0.00
48.00	0.00	905	202.85	0.00	0.00	0.00
50.00	0.00	905	202.85	0.00	0.00	0.00
52.00	0.00	905	202.85	0.00	0.00	0.00
54.00	0.00	905	202.85	0.00	0.00	0.00
56.00	0.00	905	202.85	0.00	0.00	0.00
58.00	0.00	905	202.85	0.00	0.00	0.00
60.00	0.00	905	202.85	0.00	0.00	0.00
62.00	0.00	905	202.85	0.00	0.00	0.00
64.00	0.00	905	202.85	0.00	0.00	0.00
66.00	0.00	905	202.85	0.00	0.00	0.00
68.00	0.00	905	202.85	0.00	0.00	0.00
70.00	0.00	905	202.85	0.00	0.00	0.00
72.00	0.00	905	202.85	0.00	0.00	0.00

Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Pond BB1: Bio Basin #1

Inflow Area = 2.400 ac, 65.00% Impervious, Inflow Depth = 0.73" for WQ event
Inflow = 5.44 cfs @ 1.08 hrs, Volume= 0.147 af
Outflow = 0.00 cfs @ 2.05 hrs, Volume= 0.001 af, Atten= 100%, Lag= 58.5 min
Primary = 0.00 cfs @ 2.05 hrs, Volume= 0.001 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 200.81' @ 2.05 hrs Surf.Area= 7,845 sf Storage= 6,386 cf

Plug-Flow detention time= 1,174.0 min calculated for 0.001 af (0% of inflow)
Center-of-Mass det. time= 1,131.5 min (1,198.2 - 66.7)

Volume	Invert	Avail.Storage	Storage Description
#1	200.00'	39,225 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
200.00	7,845	0	0
201.00	7,845	7,845	7,845
202.00	7,845	7,845	15,690
203.00	7,845	7,845	23,535
204.00	7,845	7,845	31,380
205.00	7,845	7,845	39,225

Device	Routing	Invert	Outlet Devices
#1	Primary	197.20'	24.0" Round Culvert L= 75.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 197.20' / 196.83' S= 0.0049 ' / Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	200.81'	4.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	201.81'	19.5" W x 3.5" H Vert. Orifice/Grate C= 0.600
#4	Device 1	203.90'	16.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#5	Secondary	203.95'	75.0' 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 @ 2.05 hrs HW=200.81' (Free Discharge)

↑ **1=Culvert** (Passes 0.00 cfs of 22.76 cfs potential flow)
↑ **2=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.22 fps)
↑ **3=Orifice/Grate** (Controls 0.00 cfs)
↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=200.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

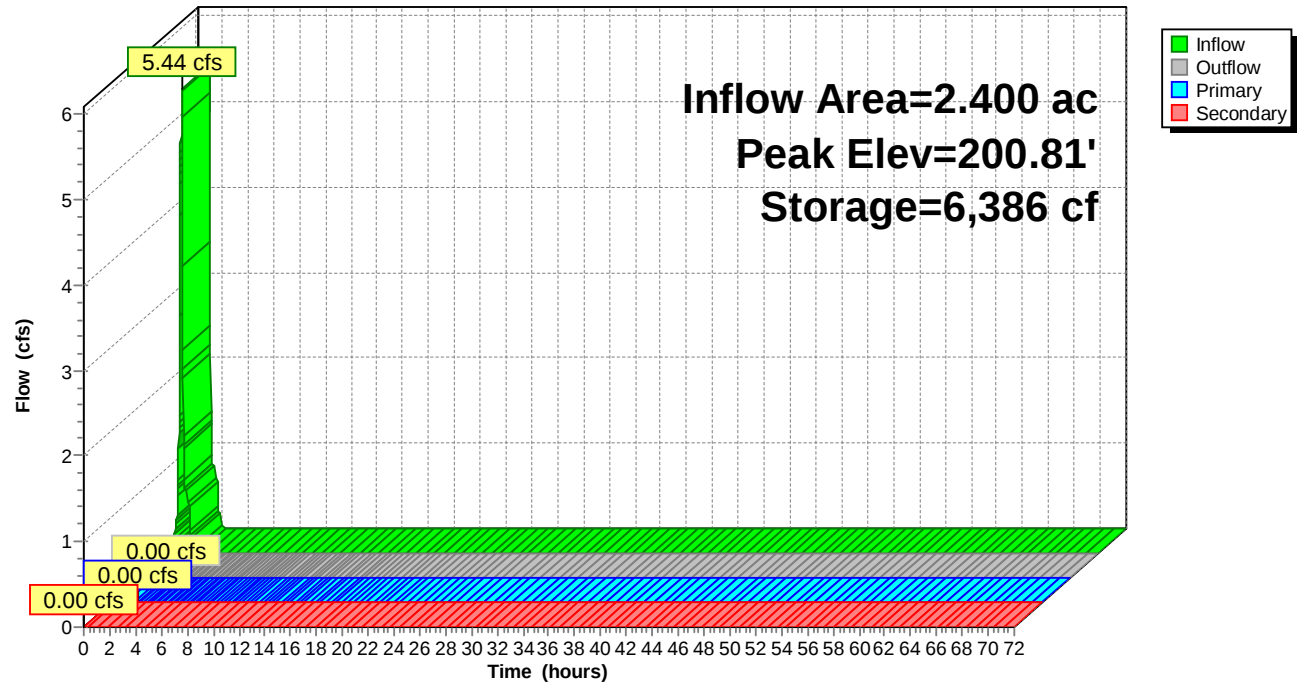
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Pond BB1: Bio Basin #1

Hydrograph



Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Hydrograph for Pond BB1: Bio Basin #1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	200.00	0.00	0.00	0.00
2.00	0.19	6,376	200.81	0.00	0.00	0.00
4.00	0.00	6,383	200.81	0.00	0.00	0.00
6.00	0.00	6,381	200.81	0.00	0.00	0.00
8.00	0.00	6,378	200.81	0.00	0.00	0.00
10.00	0.00	6,376	200.81	0.00	0.00	0.00
12.00	0.00	6,374	200.81	0.00	0.00	0.00
14.00	0.00	6,372	200.81	0.00	0.00	0.00
16.00	0.00	6,370	200.81	0.00	0.00	0.00
18.00	0.00	6,369	200.81	0.00	0.00	0.00
20.00	0.00	6,368	200.81	0.00	0.00	0.00
22.00	0.00	6,366	200.81	0.00	0.00	0.00
24.00	0.00	6,365	200.81	0.00	0.00	0.00
26.00	0.00	6,364	200.81	0.00	0.00	0.00
28.00	0.00	6,363	200.81	0.00	0.00	0.00
30.00	0.00	6,362	200.81	0.00	0.00	0.00
32.00	0.00	6,362	200.81	0.00	0.00	0.00
34.00	0.00	6,361	200.81	0.00	0.00	0.00
36.00	0.00	6,360	200.81	0.00	0.00	0.00
38.00	0.00	6,360	200.81	0.00	0.00	0.00
40.00	0.00	6,359	200.81	0.00	0.00	0.00
42.00	0.00	6,359	200.81	0.00	0.00	0.00
44.00	0.00	6,358	200.81	0.00	0.00	0.00
46.00	0.00	6,358	200.81	0.00	0.00	0.00
48.00	0.00	6,358	200.81	0.00	0.00	0.00
50.00	0.00	6,357	200.81	0.00	0.00	0.00
52.00	0.00	6,357	200.81	0.00	0.00	0.00
54.00	0.00	6,357	200.81	0.00	0.00	0.00
56.00	0.00	6,357	200.81	0.00	0.00	0.00
58.00	0.00	6,356	200.81	0.00	0.00	0.00
60.00	0.00	6,356	200.81	0.00	0.00	0.00
62.00	0.00	6,356	200.81	0.00	0.00	0.00
64.00	0.00	6,356	200.81	0.00	0.00	0.00
66.00	0.00	6,356	200.81	0.00	0.00	0.00
68.00	0.00	6,356	200.81	0.00	0.00	0.00
70.00	0.00	6,356	200.81	0.00	0.00	0.00
72.00	0.00	6,355	200.81	0.00	0.00	0.00

Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Pond BB2: Bio Basin #2

Inflow Area = 1.690 ac, 55.62% Impervious, Inflow Depth = 0.65" for WQ event
Inflow = 3.45 cfs @ 1.08 hrs, Volume= 0.092 af
Outflow = 0.00 cfs @ 2.06 hrs, Volume= 0.000 af, Atten= 100%, Lag= 59.1 min
Primary = 0.00 cfs @ 2.06 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 201.91' @ 2.06 hrs Surf.Area= 5,005 sf Storage= 4,001 cf

Plug-Flow detention time= 1,089.7 min calculated for 0.000 af (0% of inflow)
Center-of-Mass det. time= 1,043.5 min (1,110.6 - 67.1)

Volume	Invert	Avail.Storage	Storage Description
#1	201.00'	47,215 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
201.00	3,785	0	0
202.00	5,125	4,455	4,455
203.00	11,485	8,305	12,760
204.00	11,485	11,485	24,245
205.00	11,485	11,485	35,730
206.00	11,485	11,485	47,215

Device	Routing	Invert	Outlet Devices
#1	Primary	198.18'	24.0" Round Culvert L= 66.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 198.18' / 197.85' S= 0.0050 ' / ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	201.91'	2.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	202.78'	7.0" W x 3.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	204.10'	16.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#5	Secondary	204.15'	50.0' 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 @ 2.06 hrs HW=201.91' (Free Discharge)

↑ **1=Culvert** (Passes 0.00 cfs of 23.75 cfs potential flow)
↑ **2=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.07 fps)
↑ **3=Orifice/Grate** (Controls 0.00 cfs)
↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=201.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Post-Development

Prepared by {enter your company name here}

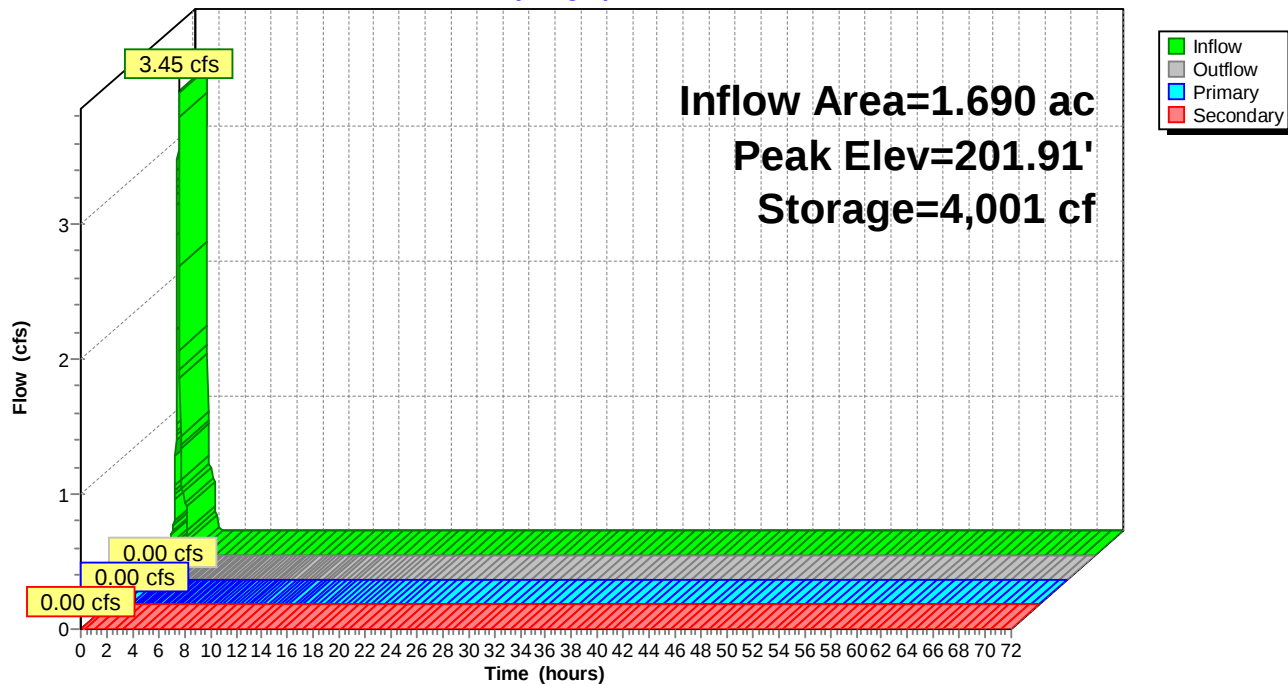
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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Pond BB2: Bio Basin #2

Hydrograph



Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

Prepared by {enter your company name here}

Printed 11/16/2023

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Hydrograph for Pond BB2: Bio Basin #2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	201.00	0.00	0.00	0.00
2.00	0.12	3,995	201.91	0.00	0.00	0.00
4.00	0.00	4,001	201.91	0.00	0.00	0.00
6.00	0.00	4,001	201.91	0.00	0.00	0.00
8.00	0.00	4,001	201.91	0.00	0.00	0.00
10.00	0.00	4,001	201.91	0.00	0.00	0.00
12.00	0.00	4,000	201.91	0.00	0.00	0.00
14.00	0.00	4,000	201.91	0.00	0.00	0.00
16.00	0.00	4,000	201.91	0.00	0.00	0.00
18.00	0.00	4,000	201.91	0.00	0.00	0.00
20.00	0.00	4,000	201.91	0.00	0.00	0.00
22.00	0.00	4,000	201.91	0.00	0.00	0.00
24.00	0.00	4,000	201.91	0.00	0.00	0.00
26.00	0.00	4,000	201.91	0.00	0.00	0.00
28.00	0.00	4,000	201.91	0.00	0.00	0.00
30.00	0.00	4,000	201.91	0.00	0.00	0.00
32.00	0.00	4,000	201.91	0.00	0.00	0.00
34.00	0.00	4,000	201.91	0.00	0.00	0.00
36.00	0.00	4,000	201.91	0.00	0.00	0.00
38.00	0.00	3,999	201.91	0.00	0.00	0.00
40.00	0.00	3,999	201.91	0.00	0.00	0.00
42.00	0.00	3,999	201.91	0.00	0.00	0.00
44.00	0.00	3,999	201.91	0.00	0.00	0.00
46.00	0.00	3,999	201.91	0.00	0.00	0.00
48.00	0.00	3,999	201.91	0.00	0.00	0.00
50.00	0.00	3,999	201.91	0.00	0.00	0.00
52.00	0.00	3,999	201.91	0.00	0.00	0.00
54.00	0.00	3,999	201.91	0.00	0.00	0.00
56.00	0.00	3,999	201.91	0.00	0.00	0.00
58.00	0.00	3,999	201.91	0.00	0.00	0.00
60.00	0.00	3,999	201.91	0.00	0.00	0.00
62.00	0.00	3,999	201.91	0.00	0.00	0.00
64.00	0.00	3,999	201.91	0.00	0.00	0.00
66.00	0.00	3,999	201.91	0.00	0.00	0.00
68.00	0.00	3,999	201.91	0.00	0.00	0.00
70.00	0.00	3,999	201.91	0.00	0.00	0.00
72.00	0.00	3,999	201.91	0.00	0.00	0.00

Post-Development

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NJ DEP 2-hr WQ Rainfall=1.25"

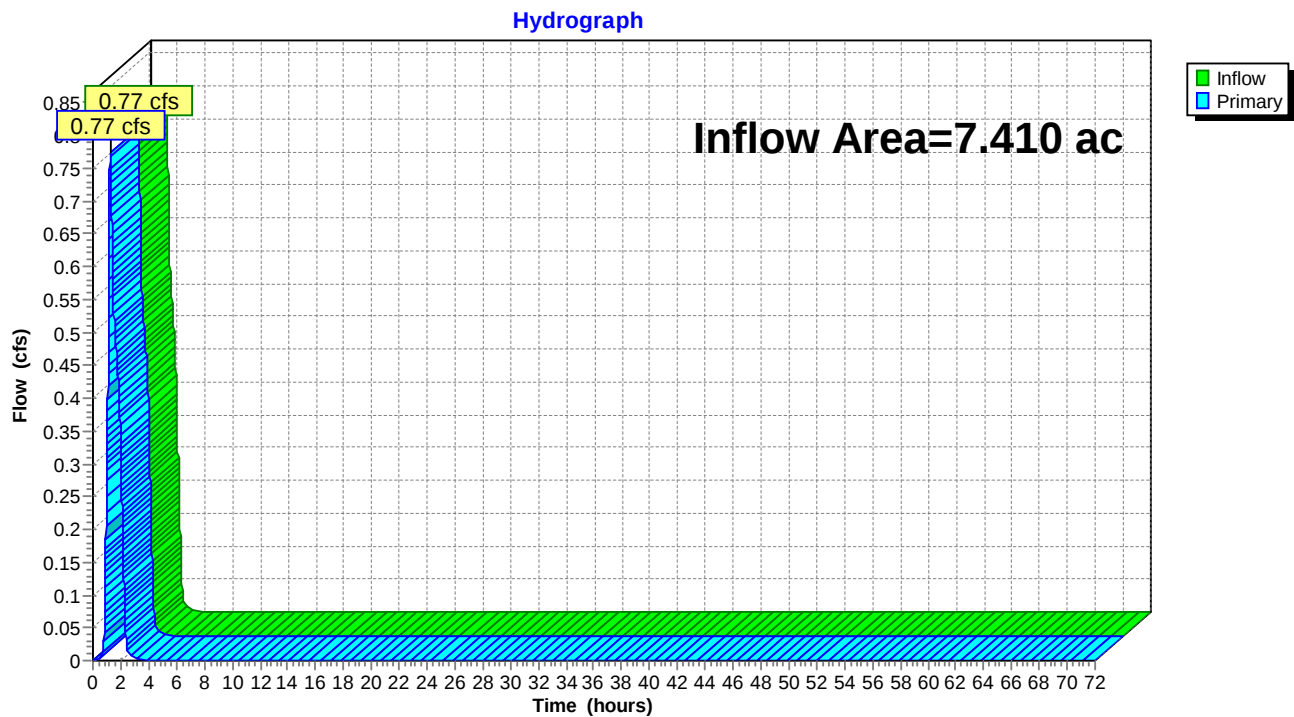
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Summary for Pond DP2: Stony Brook Tributary (DP-2)

Inflow Area = 7.410 ac, 39.00% Impervious, Inflow Depth = 0.08" for WQ event
Inflow = 0.77 cfs @ 1.26 hrs, Volume= 0.052 af
Primary = 0.77 cfs @ 1.26 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond DP2: Stony Brook Tributary (DP-2)



Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Pond PP1: Porous Pavement Area #1

Inflow Area = 0.220 ac, 81.82% Impervious, Inflow Depth = 0.88" for WQ event
Inflow = 0.58 cfs @ 1.08 hrs, Volume= 0.016 af
Outflow = 0.15 cfs @ 1.19 hrs, Volume= 0.015 af, Atten= 74%, Lag= 6.6 min
Primary = 0.15 cfs @ 1.19 hrs, Volume= 0.015 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 200.73' @ 1.19 hrs Surf.Area= 2,857 sf Storage= 376 cf

Plug-Flow detention time= 31.2 min calculated for 0.015 af (94% of inflow)
Center-of-Mass det. time= 28.4 min (94.5 - 66.1)

Volume	Invert	Avail.Storage	Storage Description
#1	200.53'	1,685 cf	18.00'W x 117.00'L x 2.00'H Prismaoid 4,212 cf Overall x 40.0% Voids
#2	200.53'	259 cf	13.50'W x 24.00'L x 2.00'H Prismaoid 648 cf Overall x 40.0% Voids
#3	200.53'	6 cf	1.40'W x 5.00'L x 2.00'H Prismaoid 14 cf Overall x 40.0% Voids
#4	199.53'	157 cf	4.00'W x 105.00'L x 1.00'H Prismaoid 420 cf Overall - 26 cf Embedded = 394 cf x 40.0% Voids
#5	199.78'	21 cf	6.0" Round Pipe Storage Inside #4 L= 105.0' S= 0.0010 '/ 26 cf Overall - 0.4" Wall Thickness = 21 cf
		2,128 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	199.78'	6.0" Round Culvert L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 199.78' / 199.77' S= 0.0008 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	199.78'	2.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	201.52'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.15 cfs @ 1.19 hrs HW=200.73' (Free Discharge)

- ↑ **1=Culvert** (Passes 0.15 cfs of 0.75 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.15 cfs @ 4.44 fps)
- ↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Post-Development

Prepared by {enter your company name here}

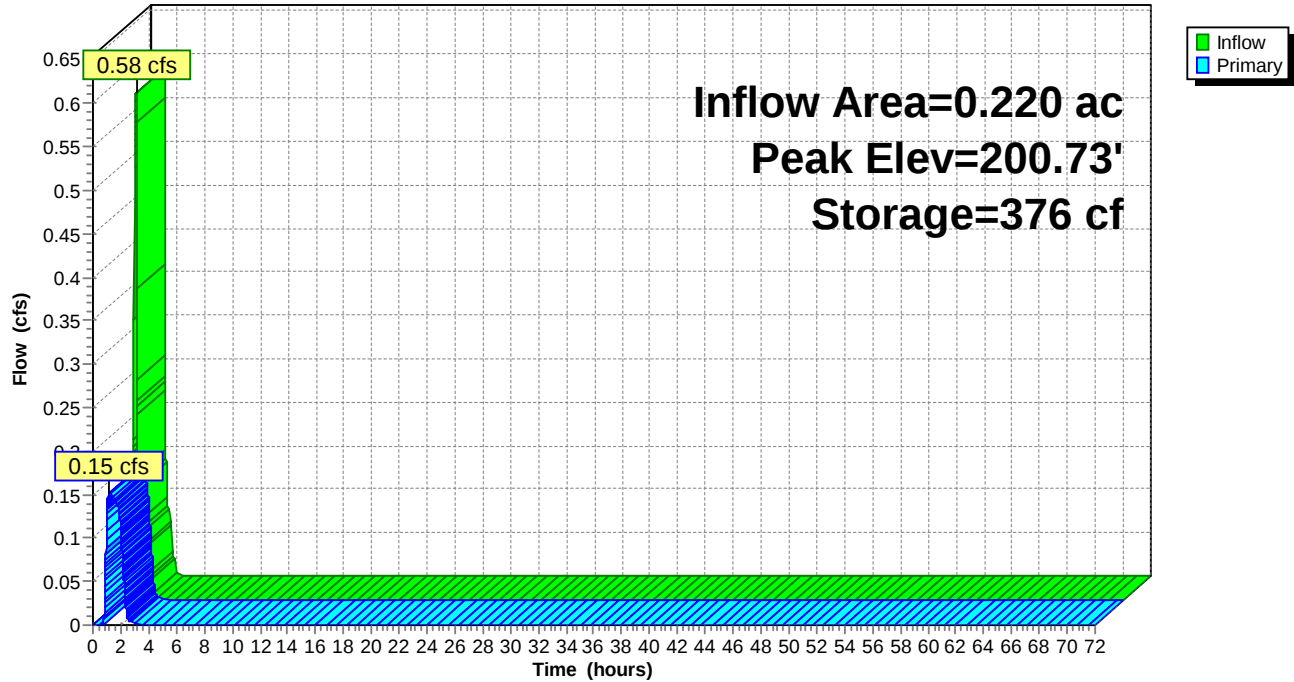
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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Pond PP1: Porous Pavement Area #1

Hydrograph



Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Hydrograph for Pond PP1: Porous Pavement Area #1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	199.53	0.00
2.00	0.02	141	200.31	0.11
4.00	0.00	45	199.80	0.00
6.00	0.00	43	199.79	0.00
8.00	0.00	43	199.78	0.00
10.00	0.00	42	199.78	0.00
12.00	0.00	42	199.78	0.00
14.00	0.00	42	199.78	0.00
16.00	0.00	42	199.78	0.00
18.00	0.00	42	199.78	0.00
20.00	0.00	42	199.78	0.00
22.00	0.00	42	199.78	0.00
24.00	0.00	42	199.78	0.00
26.00	0.00	42	199.78	0.00
28.00	0.00	42	199.78	0.00
30.00	0.00	42	199.78	0.00
32.00	0.00	42	199.78	0.00
34.00	0.00	42	199.78	0.00
36.00	0.00	42	199.78	0.00
38.00	0.00	42	199.78	0.00
40.00	0.00	42	199.78	0.00
42.00	0.00	42	199.78	0.00
44.00	0.00	42	199.78	0.00
46.00	0.00	42	199.78	0.00
48.00	0.00	42	199.78	0.00
50.00	0.00	42	199.78	0.00
52.00	0.00	42	199.78	0.00
54.00	0.00	42	199.78	0.00
56.00	0.00	42	199.78	0.00
58.00	0.00	42	199.78	0.00
60.00	0.00	42	199.78	0.00
62.00	0.00	42	199.78	0.00
64.00	0.00	42	199.78	0.00
66.00	0.00	42	199.78	0.00
68.00	0.00	42	199.78	0.00
70.00	0.00	42	199.78	0.00
72.00	0.00	42	199.78	0.00

Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Pond PP2: Porous Pavement Area #2

Inflow Area = 0.300 ac, 53.33% Impervious, Inflow Depth = 0.63" for WQ event
Inflow = 0.60 cfs @ 1.08 hrs, Volume= 0.016 af
Outflow = 0.15 cfs @ 1.20 hrs, Volume= 0.015 af, Atten= 75%, Lag= 7.1 min
Primary = 0.15 cfs @ 1.20 hrs, Volume= 0.015 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 201.16' @ 1.20 hrs Surf.Area= 3,595 sf Storage= 344 cf

Plug-Flow detention time= 28.1 min calculated for 0.015 af (95% of inflow)
Center-of-Mass det. time= 25.7 min (93.0 - 67.2)

Volume	Invert	Avail.Storage	Storage Description
#1	201.00'	1,574 cf	24.00'W x 82.00'L x 2.00'H Prismatic 3,936 cf Overall x 40.0% Voids
#2	201.00'	1,037 cf	18.00'W x 72.00'L x 2.00'H Prismatic 2,592 cf Overall x 40.0% Voids
#3	201.00'	9 cf	2.00'W x 5.50'L x 2.00'H Prismatic 22 cf Overall x 40.0% Voids
#4	200.00'	120 cf	4.00'W x 80.00'L x 1.00'H Prismatic 320 cf Overall - 20 cf Embedded = 300 cf x 40.0% Voids
#5	200.25'	16 cf	6.0" Round Pipe Storage Inside #4 L= 80.0' S= 0.0010 '/' 20 cf Overall - 0.4" Wall Thickness = 16 cf
		2,756 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	200.25'	6.0" Round Culvert L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 200.25' / 200.23' S= 0.0010 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	200.25'	2.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	202.47'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.15 cfs @ 1.20 hrs HW=201.16' (Free Discharge)

- ↑ **1=Culvert** (Passes 0.15 cfs of 0.66 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.15 cfs @ 4.32 fps)
- ↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Post-Development

Prepared by {enter your company name here}

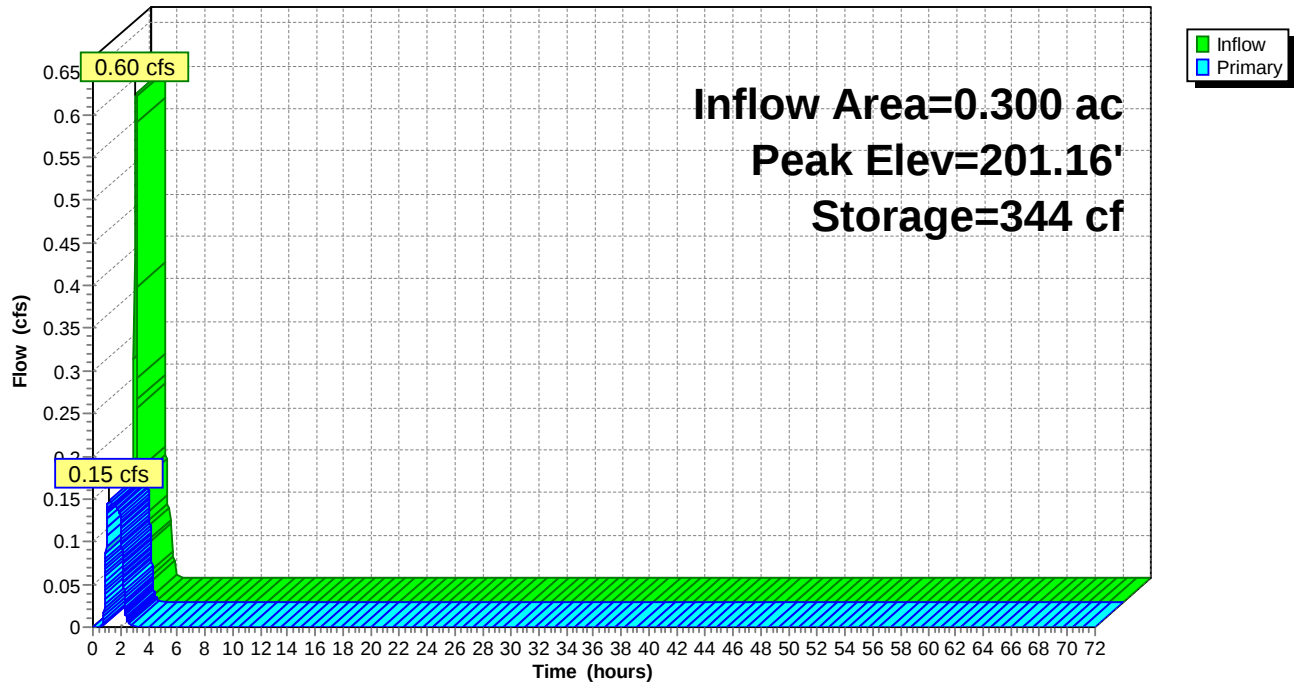
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NJ DEP 2-hr WQ Rainfall=1.25"

Printed 11/16/2023

Pond PP2: Porous Pavement Area #2

Hydrograph



Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Hydrograph for Pond PP2: Porous Pavement Area #2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	200.00	0.00
2.00	0.02	122	200.90	0.12
4.00	0.00	34	200.26	0.00
6.00	0.00	33	200.25	0.00
8.00	0.00	32	200.25	0.00
10.00	0.00	32	200.25	0.00
12.00	0.00	32	200.25	0.00
14.00	0.00	32	200.25	0.00
16.00	0.00	32	200.25	0.00
18.00	0.00	32	200.25	0.00
20.00	0.00	32	200.25	0.00
22.00	0.00	32	200.25	0.00
24.00	0.00	32	200.25	0.00
26.00	0.00	32	200.25	0.00
28.00	0.00	32	200.25	0.00
30.00	0.00	32	200.25	0.00
32.00	0.00	32	200.25	0.00
34.00	0.00	32	200.25	0.00
36.00	0.00	32	200.25	0.00
38.00	0.00	32	200.25	0.00
40.00	0.00	32	200.25	0.00
42.00	0.00	32	200.25	0.00
44.00	0.00	32	200.25	0.00
46.00	0.00	32	200.25	0.00
48.00	0.00	32	200.25	0.00
50.00	0.00	32	200.25	0.00
52.00	0.00	32	200.25	0.00
54.00	0.00	32	200.25	0.00
56.00	0.00	32	200.25	0.00
58.00	0.00	32	200.25	0.00
60.00	0.00	32	200.25	0.00
62.00	0.00	32	200.25	0.00
64.00	0.00	32	200.25	0.00
66.00	0.00	32	200.25	0.00
68.00	0.00	32	200.25	0.00
70.00	0.00	32	200.25	0.00
72.00	0.00	32	200.25	0.00

Post-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Summary for Subcatchment DA1Ai: DA-1A Impervious

Runoff = 6.02 cfs @ 12.09 hrs, Volume= 0.400 af, Depth= 3.08"

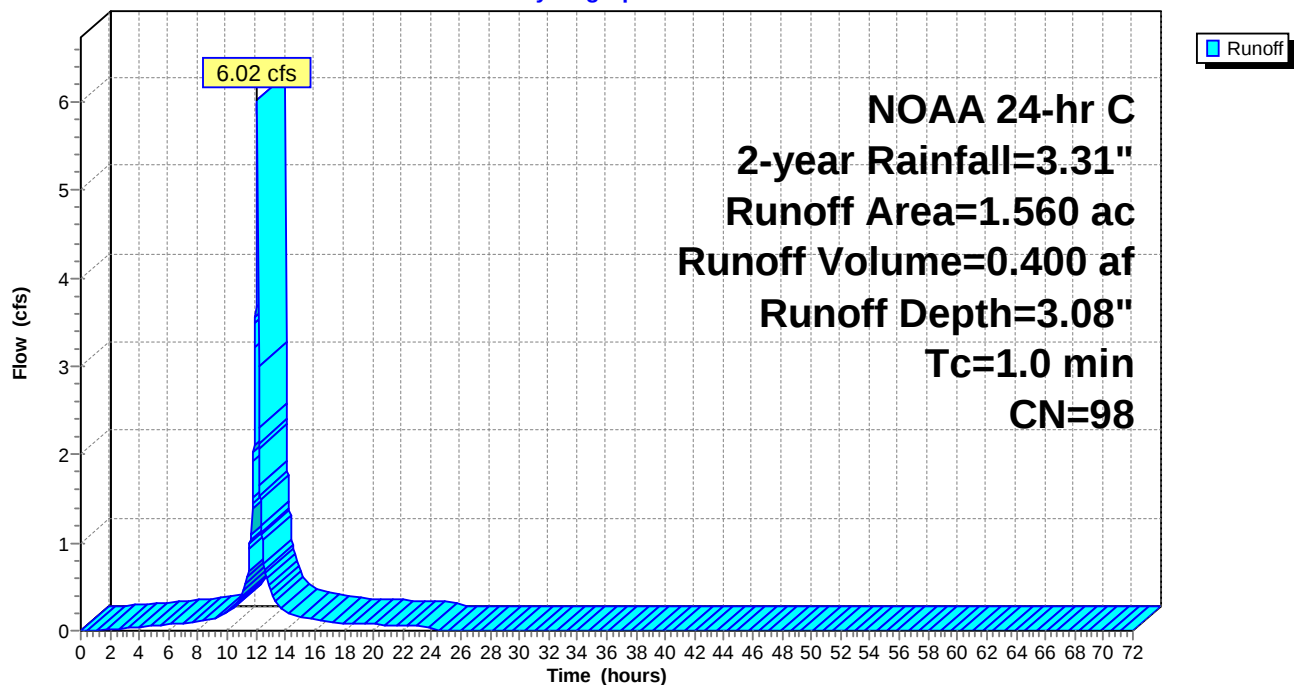
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
1.560	98	Roofs, HSG D
1.560		100.00% Impervious Area

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

Subcatchment DA1Ai: DA-1A Impervious

Hydrograph



Post-Development

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NOAA 24-hr C 2-year Rainfall=3.31"
Printed 11/16/2023

Summary for Subcatchment DA1Ap: DA-1A Pervious

Runoff = 1.96 cfs @ 12.10 hrs, Volume= 0.104 af, Depth= 1.49"

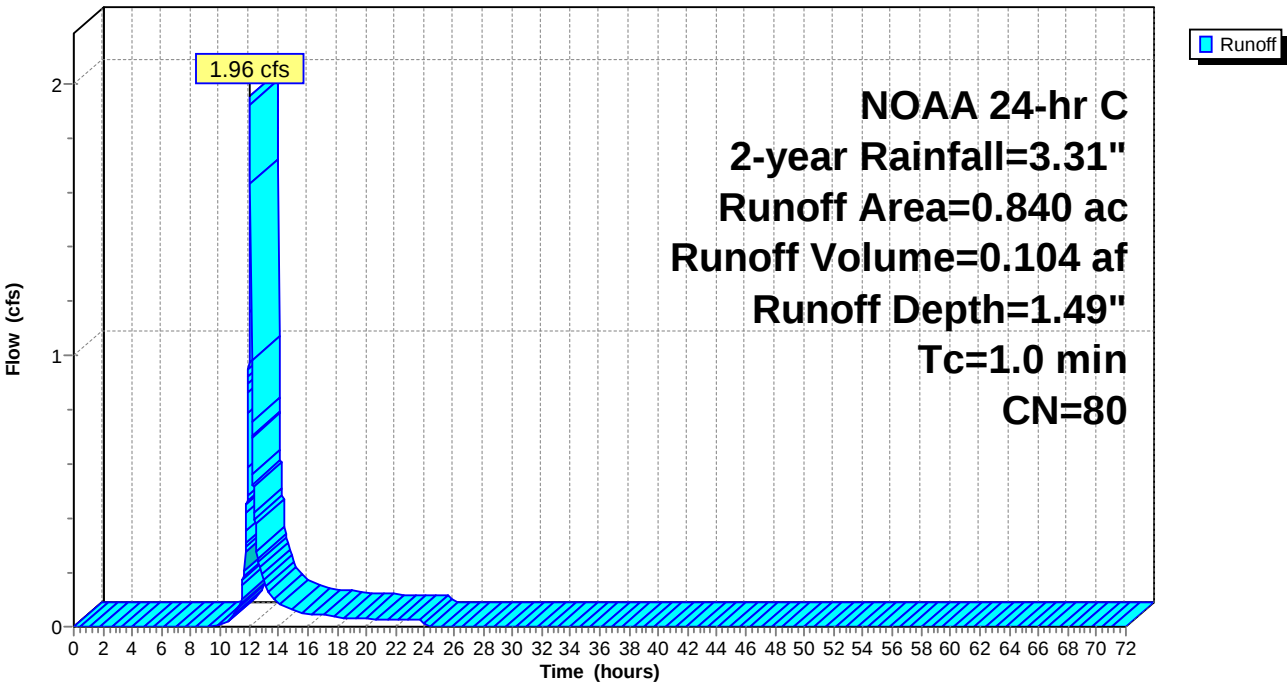
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.840	80	>75% Grass cover, Good, HSG D
0.840		100.00% Pervious Area

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

Subcatchment DA1Ap: DA-1A Pervious

Hydrograph



Post-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Summary for Subcatchment DA1Bi: DA-1B Impervious

Runoff = 3.62 cfs @ 12.09 hrs, Volume= 0.241 af, Depth= 3.08"

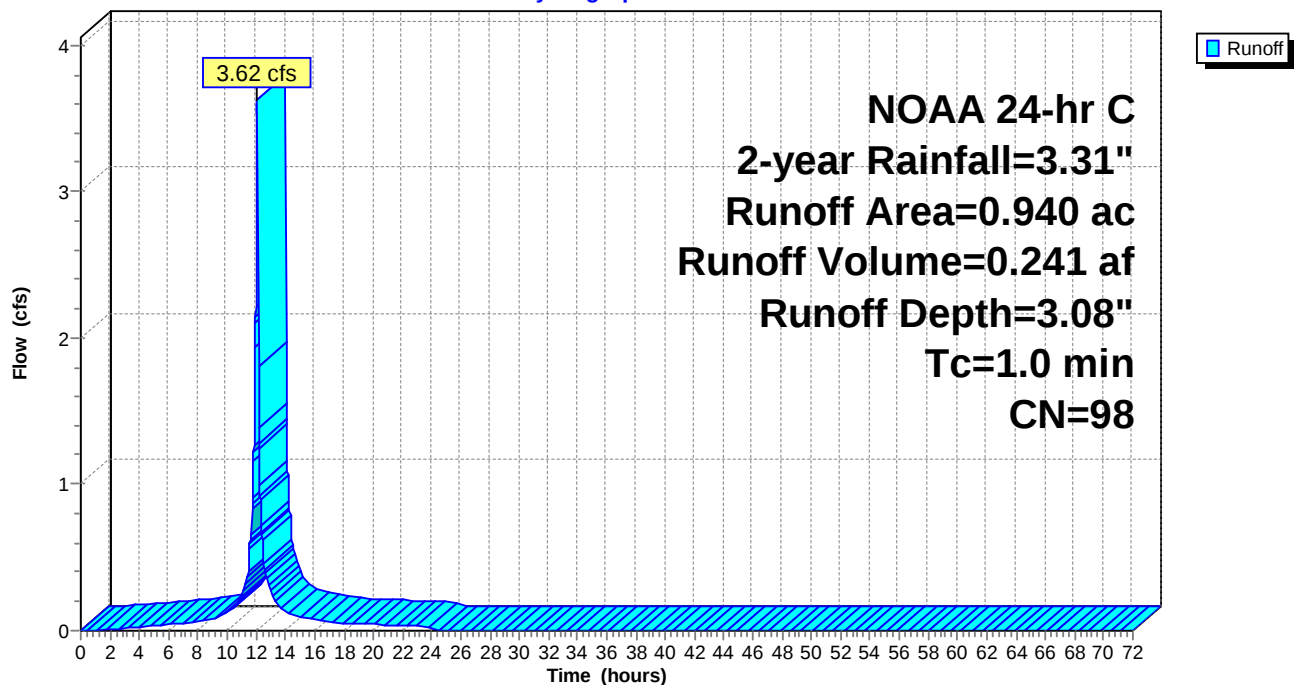
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
* 0.940	98	Paved parking, HSG D
0.940		100.00% Impervious Area

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

Subcatchment DA1Bi: DA-1B Impervious

Hydrograph



Post-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Subcatchment DA1Bp: DA-1B Pervious

Runoff = 1.75 cfs @ 12.10 hrs, Volume= 0.093 af, Depth= 1.49"

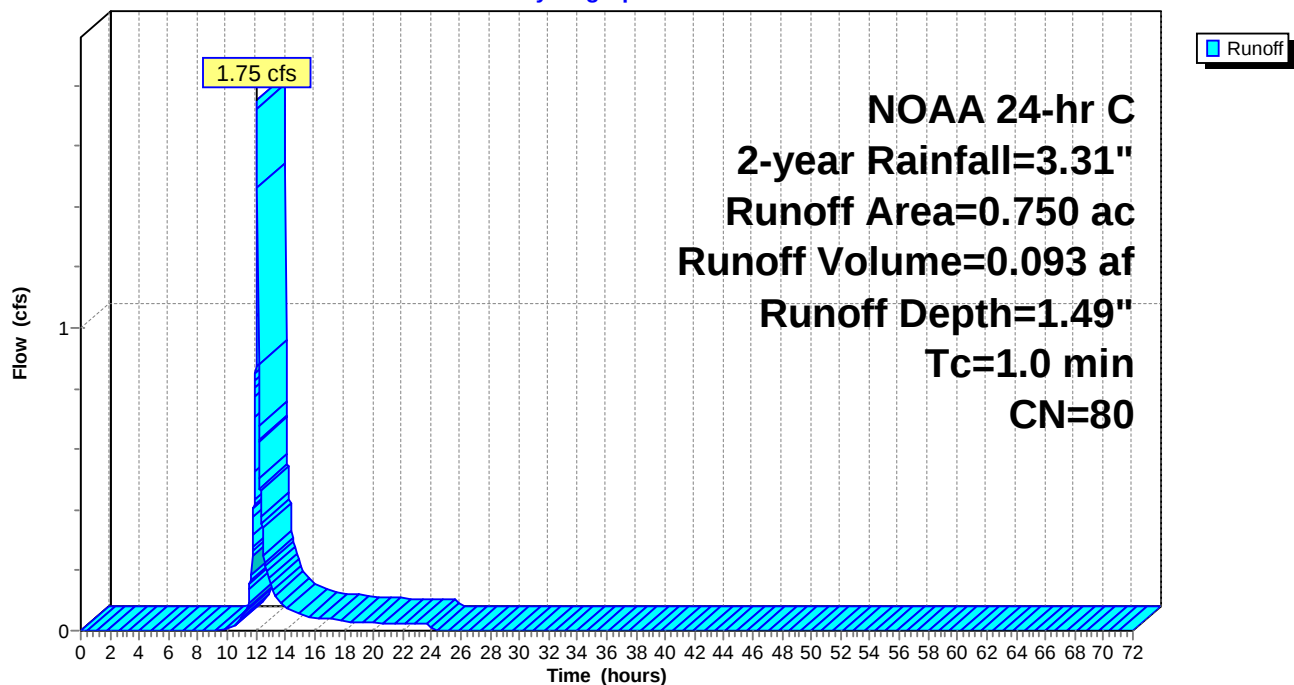
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.750	80	>75% Grass cover, Good, HSG D
0.750		100.00% Pervious Area

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

Subcatchment DA1Bp: DA-1B Pervious

Hydrograph



Post-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Summary for Subcatchment DA1Ci: DA-1C Impervious

Runoff = 0.69 cfs @ 12.09 hrs, Volume= 0.046 af, Depth= 3.08"

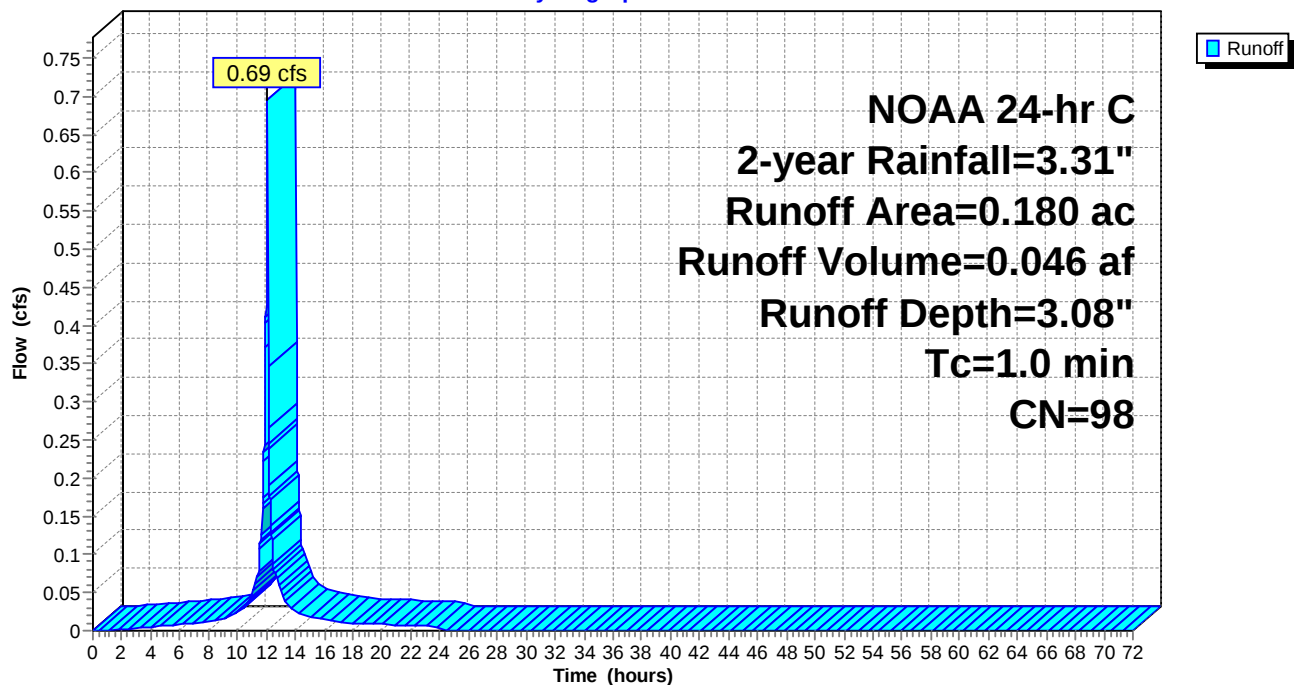
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.180	98	Paved parking, HSG D
0.180		100.00% Impervious Area

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

Subcatchment DA1Ci: DA-1C Impervious

Hydrograph



Post-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Summary for Subcatchment DA1Cp: DA-1C Pervious

Runoff = 0.09 cfs @ 12.10 hrs, Volume= 0.005 af, Depth= 1.49"

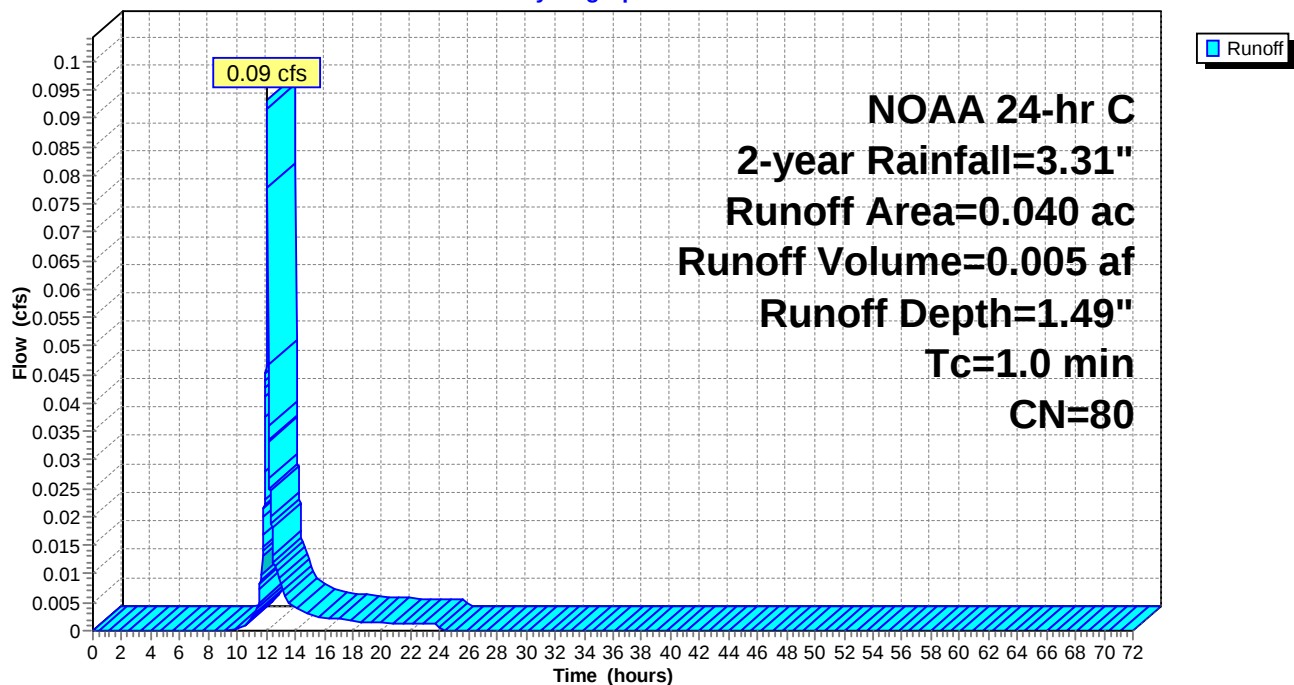
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.040	80	>75% Grass cover, Good, HSG D
0.040		100.00% Pervious Area

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

Subcatchment DA1Cp: DA-1C Pervious

Hydrograph



Post-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Summary for Subcatchment DA1Di: DA-1D Impervious

Runoff = 0.62 cfs @ 12.09 hrs, Volume= 0.041 af, Depth= 3.08"

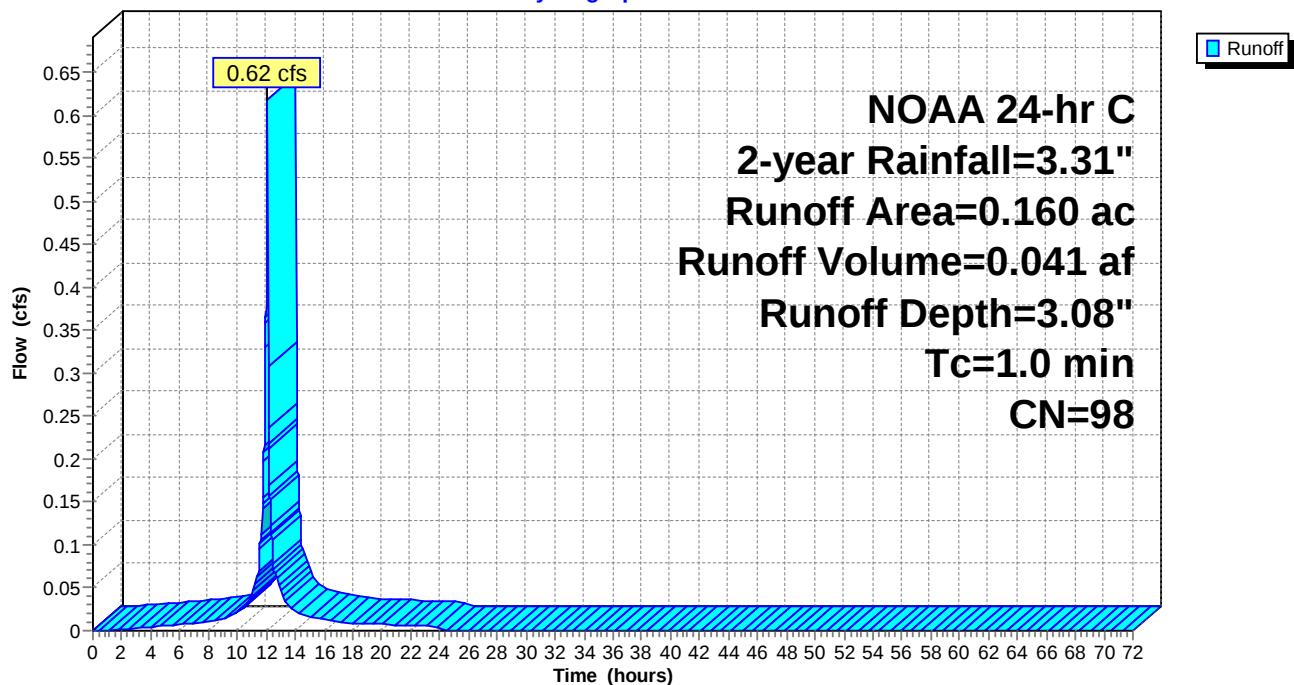
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
* 0.160	98	Paved parking, HSG D
0.160		100.00% Impervious Area

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

Subcatchment DA1Di: DA-1D Impervious

Hydrograph



Post-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Summary for Subcatchment DA1Dp: DA-1D Pervious

Runoff = 0.33 cfs @ 12.10 hrs, Volume= 0.017 af, Depth= 1.49"

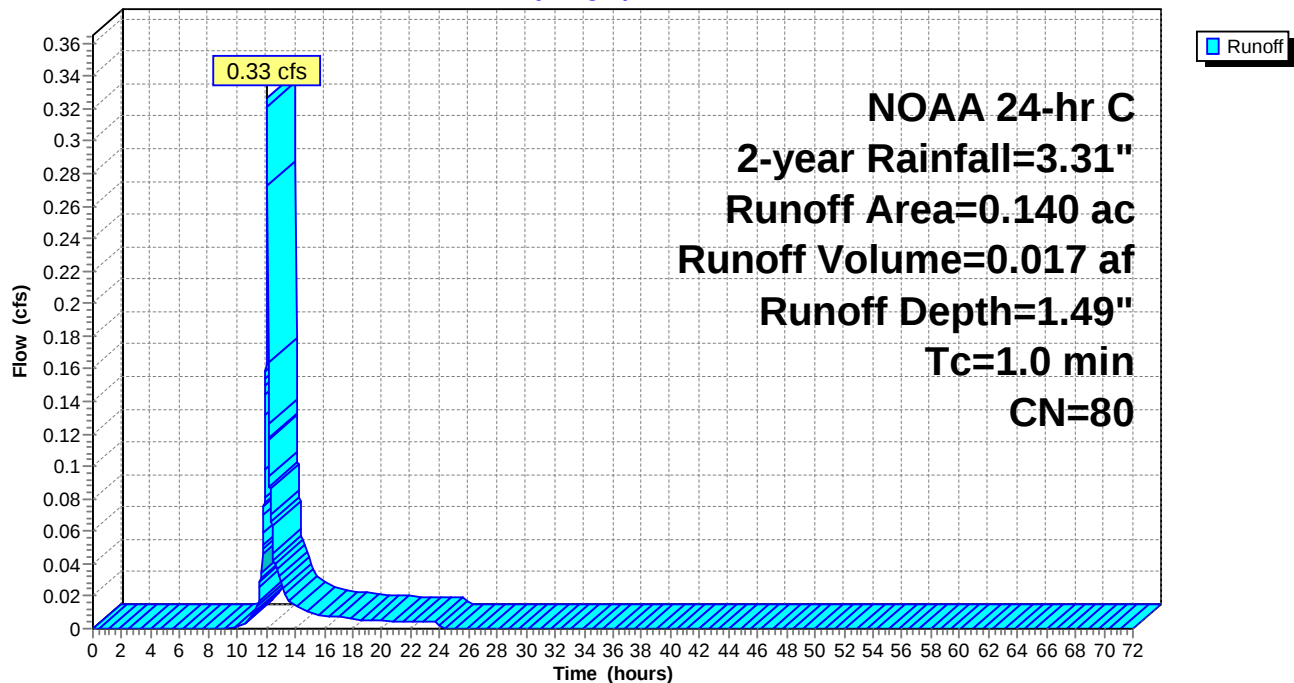
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.140	80	>75% Grass cover, Good, HSG D
0.140		100.00% Pervious Area

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

Subcatchment DA1Dp: DA-1D Pervious

Hydrograph



Post-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Subcatchment DA4 Un: DA-4 Uncollected

Runoff = 0.23 cfs @ 12.10 hrs, Volume= 0.012 af, Depth= 1.49"

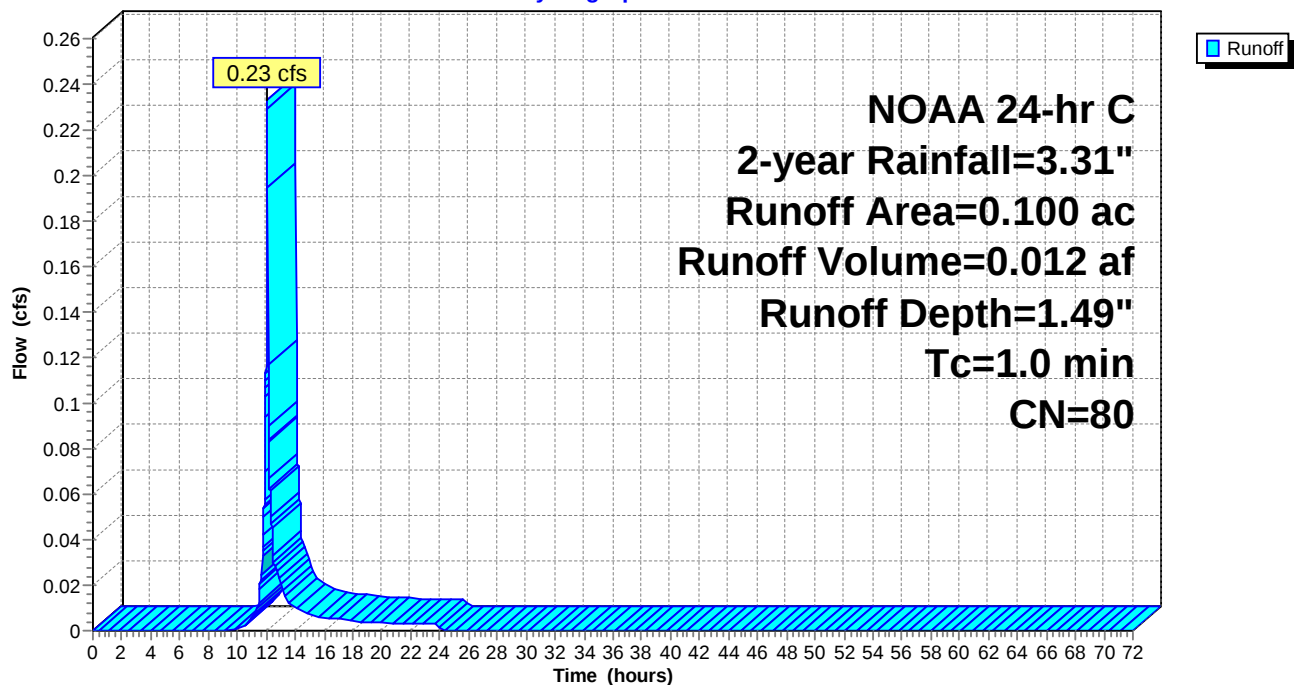
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.100	80	>75% Grass cover, Good, HSG D
0.100		100.00% Pervious Area

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

Subcatchment DA4 Un: DA-4 Uncollected

Hydrograph



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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Summary for Subcatchment DA5 Un i: DA-5 Uncollected Impervious

Runoff = 0.01 cfs @ 12.10 hrs, Volume= 0.000 af, Depth= 1.49"

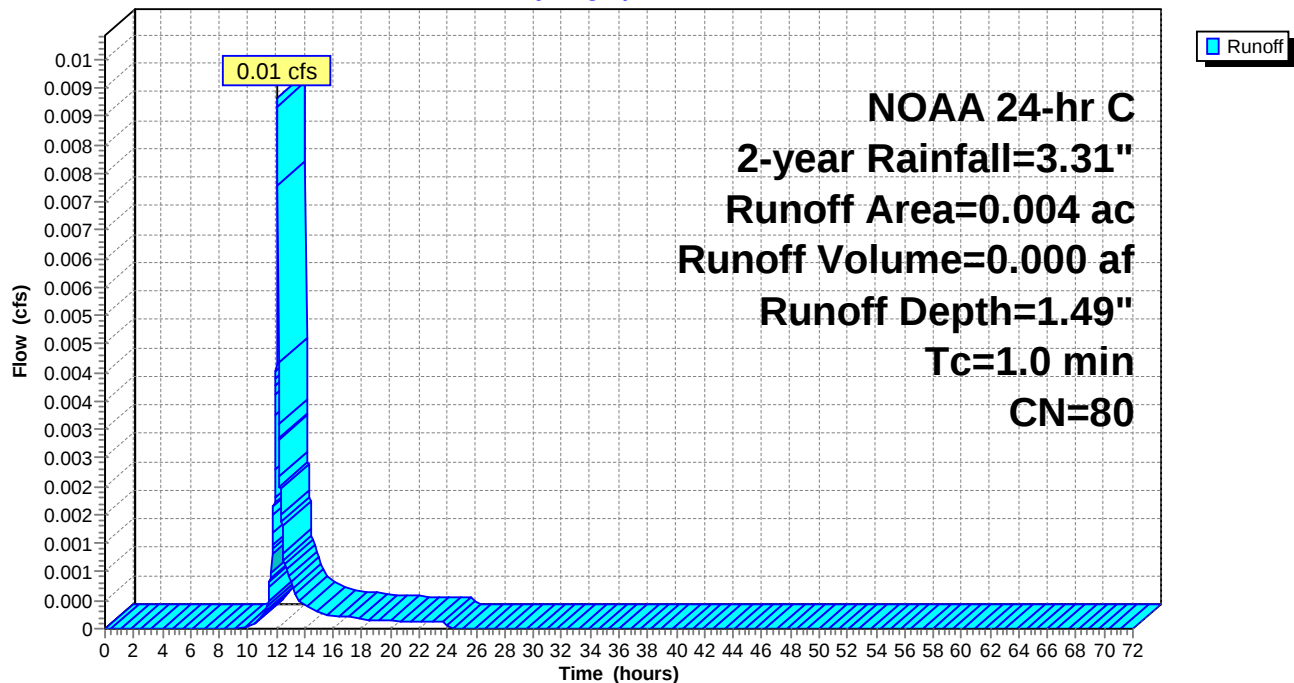
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.004	80	>75% Grass cover, Good, HSG D
0.004		100.00% Pervious Area

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

Subcatchment DA5 Un i: DA-5 Uncollected Impervious

Hydrograph



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NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Subcatchment DA5 Un p: DA-5 Uncollected Pervious

Runoff = 0.08 cfs @ 12.10 hrs, Volume= 0.004 af, Depth= 1.49"

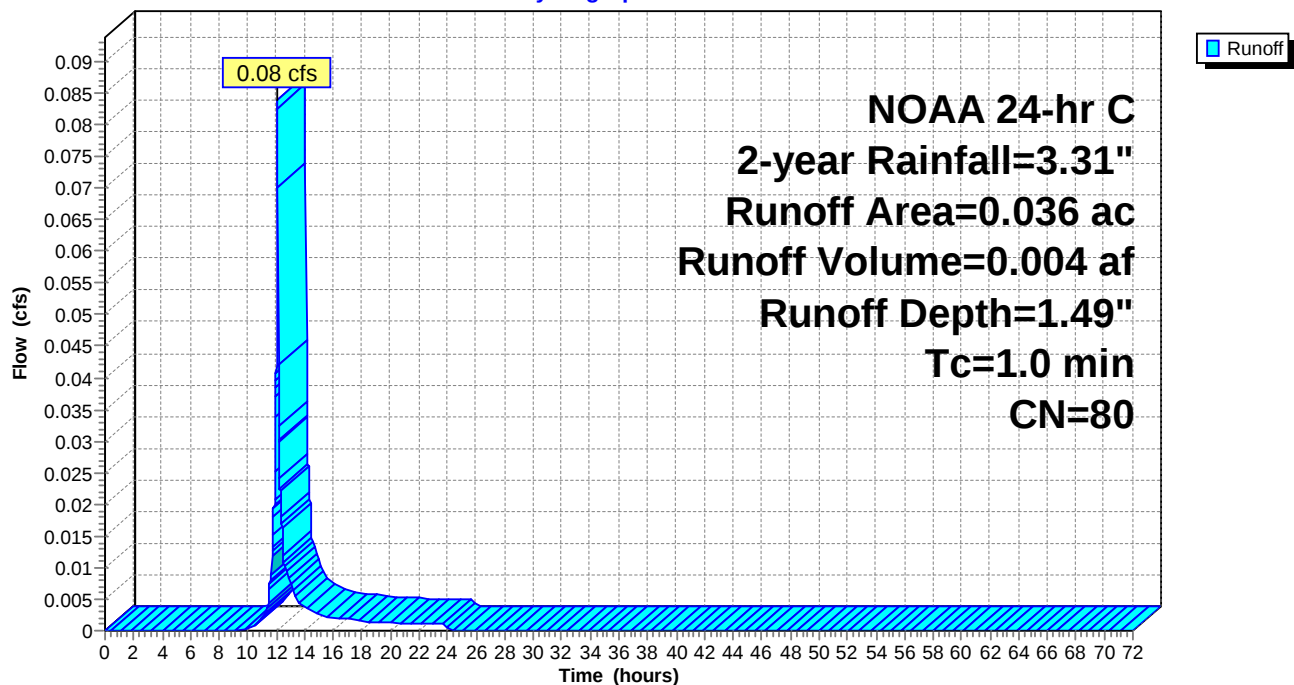
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.036	80	>75% Grass cover, Good, HSG D
0.036		100.00% Pervious Area

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

Subcatchment DA5 Un p: DA-5 Uncollected Pervious

Hydrograph



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NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Subcatchment EA-2U p: EA-2U Pervious

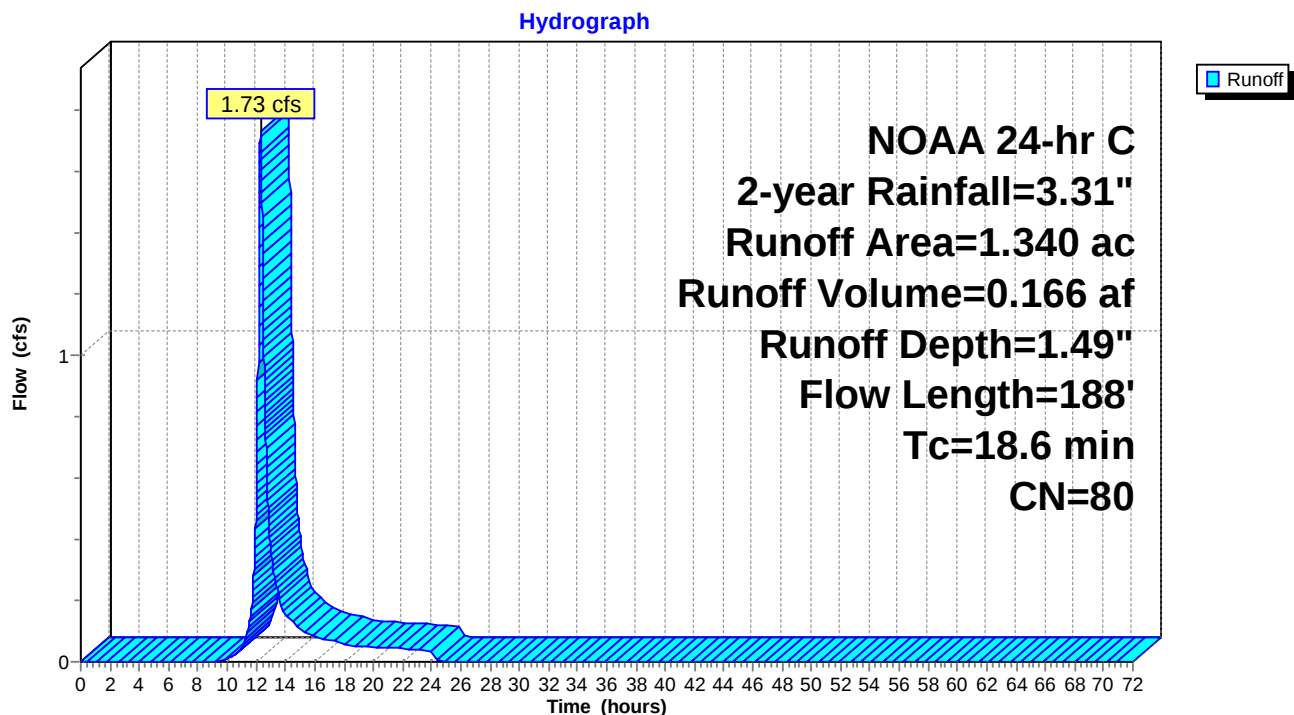
Runoff = 1.73 cfs @ 12.28 hrs, Volume= 0.166 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.600	79	Woods/grass comb., Good, HSG D
0.740	80	>75% Grass cover, Good, HSG D
1.340	80	Weighted Average
1.340		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	44	0.0303	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
8.9	113	0.0018	0.21		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.4	31	0.0065	1.30		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.6	188	Total			

Subcatchment EA-2U p: EA-2U Pervious



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NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Subcatchment EA-3U i: EA-3U Impervious

Runoff = 0.14 cfs @ 12.21 hrs, Volume= 0.013 af, Depth= 3.08"

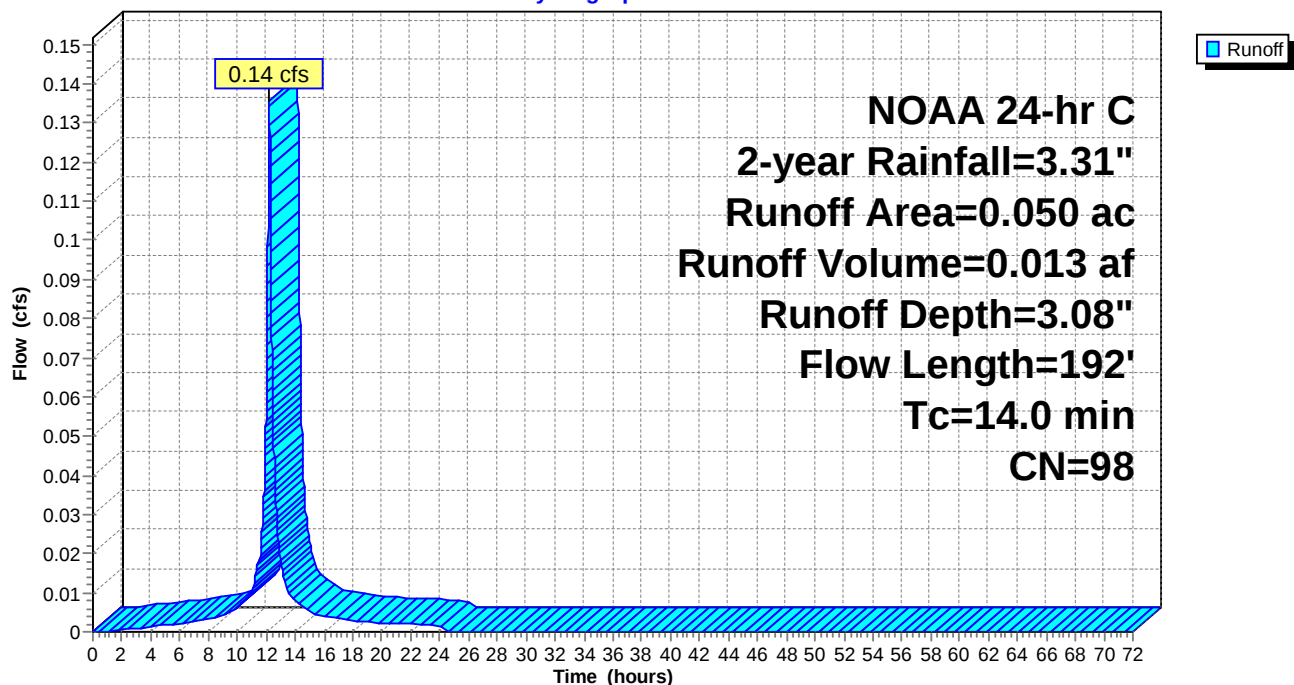
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
* 0.050	98	Impervious Areas
0.050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	6	0.0193	0.07		Sheet Flow, Grass: Dense n= 0.240 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.0	192	Total			

Subcatchment EA-3U i: EA-3U Impervious

Hydrograph



Post-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Subcatchment EA-3U p: EA-3U Pervious

Runoff = 1.77 cfs @ 12.22 hrs, Volume= 0.150 af, Depth= 1.42"

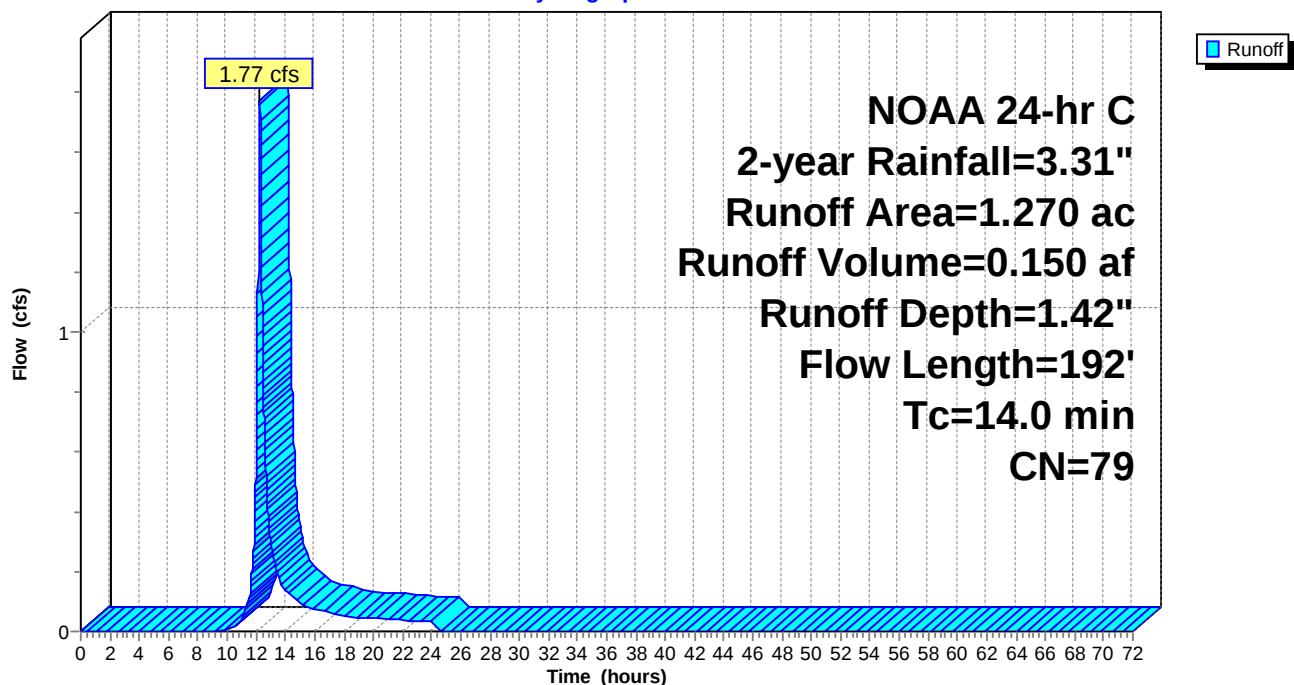
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2-year Rainfall=3.31"

Area (ac)	CN	Description
0.450	80	>75% Grass cover, Good, HSG D
0.820	79	Woods/grass comb., Good, HSG D
1.270	79	Weighted Average
1.270		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	6	0.0193	0.07		Sheet Flow, Grass: Dense n= 0.240 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.0	192	Total			

Subcatchment EA-3U p: EA-3U Pervious

Hydrograph



Post-Development

NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Pond 2P: EA-2 Wetlands

Inflow Area = 1.440 ac, 0.00% Impervious, Inflow Depth = 1.49" for 2-year event
Inflow = 1.79 cfs @ 12.28 hrs, Volume= 0.178 af
Outflow = 0.87 cfs @ 12.59 hrs, Volume= 0.127 af, Atten= 52%, Lag= 18.2 min
Primary = 0.67 cfs @ 12.59 hrs, Volume= 0.121 af
Secondary = 0.20 cfs @ 12.59 hrs, Volume= 0.005 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 203.02' @ 12.59 hrs Surf.Area= 16,258 sf Storage= 3,041 cf

Plug-Flow detention time= 194.9 min calculated for 0.127 af (71% of inflow)
Center-of-Mass det. time= 92.1 min (947.1 - 855.0)

Volume	Invert	Avail.Storage	Storage Description
#1	202.60'	8,536 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.60	467	0	0
202.70	2,559	151	151
202.80	5,796	418	569
202.90	10,670	823	1,392
203.00	15,559	1,311	2,704
203.10	18,857	1,721	4,425
203.20	20,626	1,974	6,399
203.30	22,113	2,137	8,536

Device	Routing	Invert	Outlet Devices
#1	Primary	202.97'	179.4 deg x 11.0' long x 0.33' rise Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)
#2	Secondary	203.01'	65.0' 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=0.67 cfs @ 12.59 hrs HW=203.02' (Free Discharge)

↑ **1=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.67 cfs @ 0.63 fps)

Secondary OutFlow Max=0.19 cfs @ 12.59 hrs HW=203.02' (Free Discharge)

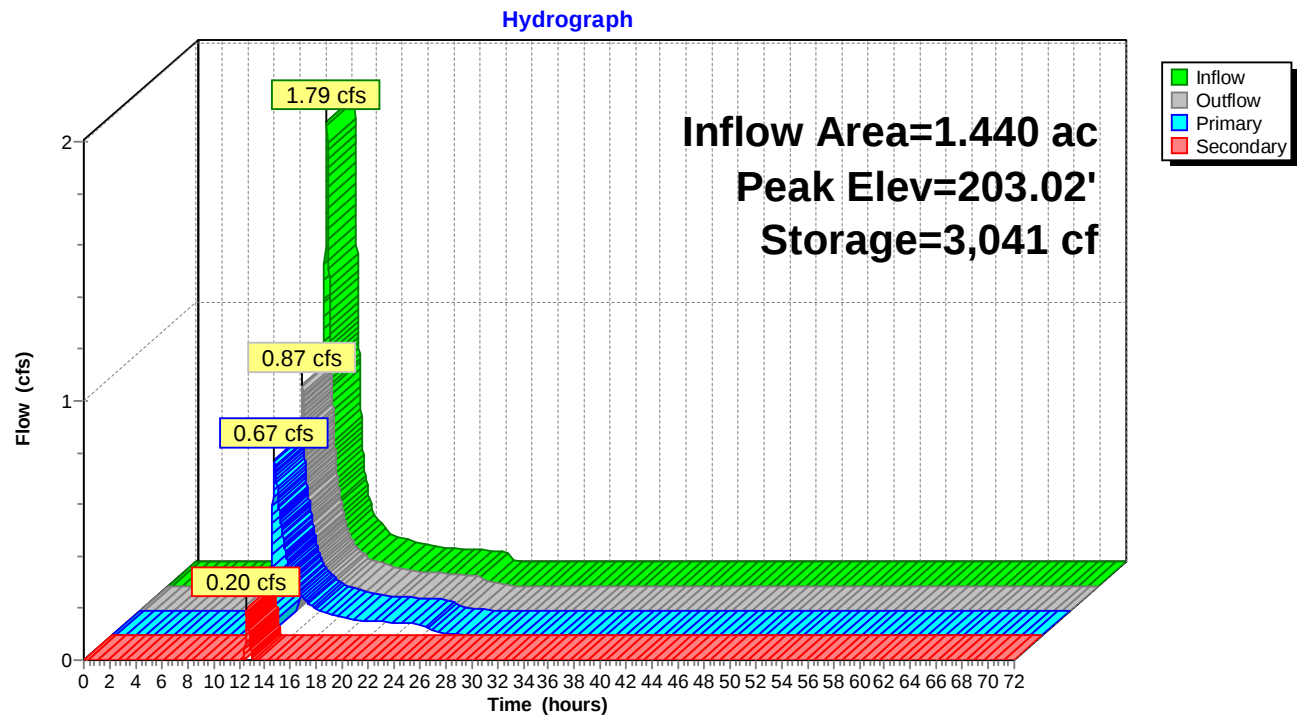
↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.19 cfs @ 0.26 fps)

Post-Development

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NOAA 24-hr C 2-year Rainfall=3.31"
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Pond 2P: EA-2 Wetlands



Post-Development

NOAA 24-hr C 2-year Rainfall=3.31"

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Hydrograph for Pond 2P: EA-2 Wetlands

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	202.60	0.00	0.00	0.00
2.00	0.00	0	202.60	0.00	0.00	0.00
4.00	0.00	0	202.60	0.00	0.00	0.00
6.00	0.00	0	202.60	0.00	0.00	0.00
8.00	0.00	0	202.60	0.00	0.00	0.00
10.00	0.01	10	202.62	0.00	0.00	0.00
12.00	0.62	774	202.83	0.00	0.00	0.00
14.00	0.17	2,655	203.00	0.21	0.21	0.00
16.00	0.09	2,512	202.99	0.10	0.10	0.00
18.00	0.06	2,465	202.98	0.07	0.07	0.00
20.00	0.05	2,434	202.98	0.06	0.06	0.00
22.00	0.05	2,419	202.98	0.05	0.05	0.00
24.00	0.04	2,404	202.98	0.04	0.04	0.00
26.00	0.00	2,296	202.97	0.01	0.01	0.00
28.00	0.00	2,273	202.97	0.00	0.00	0.00
30.00	0.00	2,267	202.97	0.00	0.00	0.00
32.00	0.00	2,264	202.97	0.00	0.00	0.00
34.00	0.00	2,262	202.97	0.00	0.00	0.00
36.00	0.00	2,261	202.97	0.00	0.00	0.00
38.00	0.00	2,260	202.97	0.00	0.00	0.00
40.00	0.00	2,260	202.97	0.00	0.00	0.00
42.00	0.00	2,259	202.97	0.00	0.00	0.00
44.00	0.00	2,259	202.97	0.00	0.00	0.00
46.00	0.00	2,259	202.97	0.00	0.00	0.00
48.00	0.00	2,259	202.97	0.00	0.00	0.00
50.00	0.00	2,259	202.97	0.00	0.00	0.00
52.00	0.00	2,259	202.97	0.00	0.00	0.00
54.00	0.00	2,259	202.97	0.00	0.00	0.00
56.00	0.00	2,259	202.97	0.00	0.00	0.00
58.00	0.00	2,259	202.97	0.00	0.00	0.00
60.00	0.00	2,259	202.97	0.00	0.00	0.00
62.00	0.00	2,259	202.97	0.00	0.00	0.00
64.00	0.00	2,259	202.97	0.00	0.00	0.00
66.00	0.00	2,259	202.97	0.00	0.00	0.00
68.00	0.00	2,259	202.97	0.00	0.00	0.00
70.00	0.00	2,259	202.97	0.00	0.00	0.00
72.00	0.00	2,259	202.97	0.00	0.00	0.00

Post-Development

NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Pond BB1: Bio Basin #1

Inflow Area = 2.400 ac, 65.00% Impervious, Inflow Depth = 2.52" for 2-year event
Inflow = 7.93 cfs @ 12.10 hrs, Volume= 0.504 af
Outflow = 0.48 cfs @ 13.31 hrs, Volume= 0.357 af, Atten= 94%, Lag= 72.4 min
Primary = 0.48 cfs @ 13.31 hrs, Volume= 0.357 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 201.81' @ 13.31 hrs Surf.Area= 7,845 sf Storage= 14,167 cf

Plug-Flow detention time= 437.5 min calculated for 0.357 af (71% of inflow)
Center-of-Mass det. time= 339.6 min (1,109.8 - 770.3)

Volume	Invert	Avail.Storage	Storage Description
#1	200.00'	39,225 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
200.00	7,845	0	0
201.00	7,845	7,845	7,845
202.00	7,845	7,845	15,690
203.00	7,845	7,845	23,535
204.00	7,845	7,845	31,380
205.00	7,845	7,845	39,225

Device	Routing	Invert	Outlet Devices
#1	Primary	197.20'	24.0" Round Culvert L= 75.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 197.20' / 196.83' S= 0.0049 ' / Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	200.81'	4.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	201.81'	19.5" W x 3.5" H Vert. Orifice/Grate C= 0.600
#4	Device 1	203.90'	16.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#5	Secondary	203.95'	75.0' 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=0.48 cfs @ 13.31 hrs HW=201.81' (Free Discharge)

↑ **1=Culvert** (Passes 0.48 cfs of 27.87 cfs potential flow)
↑ **2=Orifice/Grate** (Orifice Controls 0.48 cfs @ 4.33 fps)
↑ **3=Orifice/Grate** (Controls 0.00 cfs)
↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=200.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Post-Development

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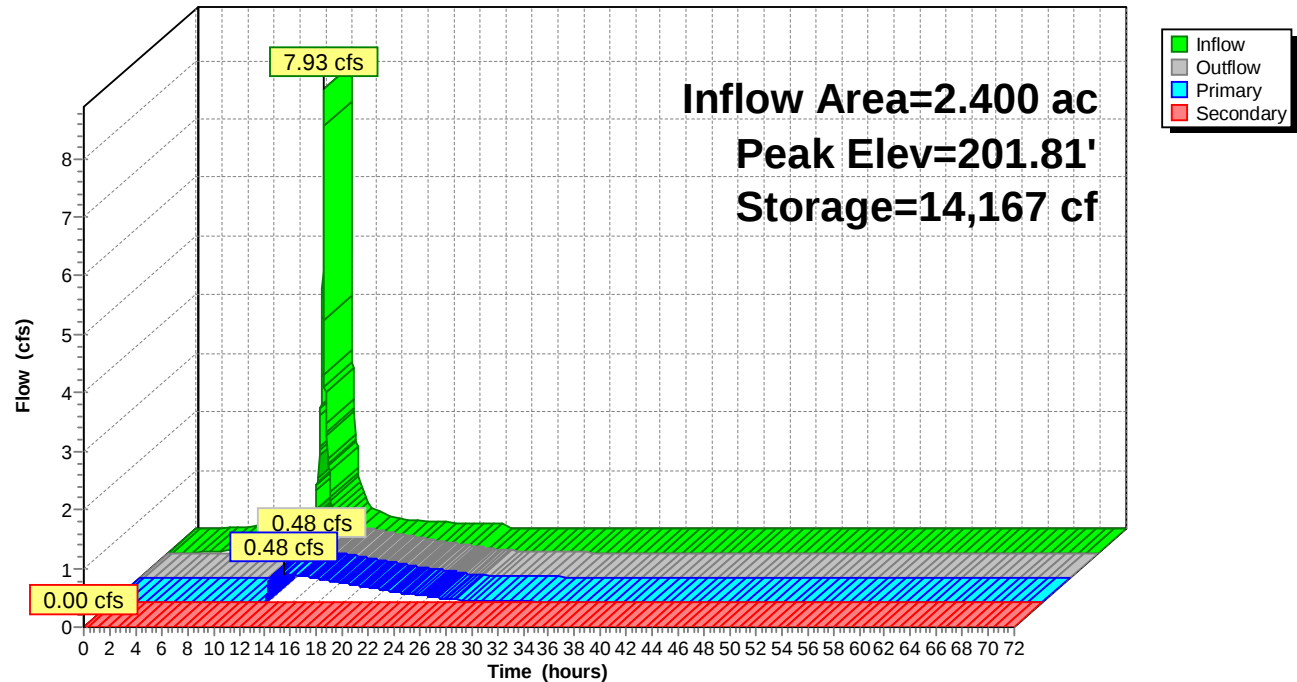
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NOAA 24-hr C 2-year Rainfall=3.31"

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Pond BB1: Bio Basin #1

Hydrograph



Post-Development

NOAA 24-hr C 2-year Rainfall=3.31"

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Hydrograph for Pond BB1: Bio Basin #1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	200.00	0.00	0.00	0.00
2.00	0.02	27	200.00	0.00	0.00	0.00
4.00	0.04	253	200.03	0.00	0.00	0.00
6.00	0.06	649	200.08	0.00	0.00	0.00
8.00	0.11	1,274	200.16	0.00	0.00	0.00
10.00	0.22	2,339	200.30	0.00	0.00	0.00
12.00	4.58	8,392	201.07	0.14	0.14	0.00
14.00	0.32	13,900	201.77	0.47	0.47	0.00
16.00	0.18	12,374	201.58	0.40	0.40	0.00
18.00	0.12	10,799	201.38	0.33	0.33	0.00
20.00	0.10	9,532	201.22	0.25	0.25	0.00
22.00	0.09	8,705	201.11	0.18	0.18	0.00
24.00	0.09	8,240	201.05	0.12	0.12	0.00
26.00	0.00	7,606	200.97	0.06	0.06	0.00
28.00	0.00	7,272	200.93	0.04	0.04	0.00
30.00	0.00	7,071	200.90	0.02	0.02	0.00
32.00	0.00	6,939	200.88	0.02	0.02	0.00
34.00	0.00	6,841	200.87	0.01	0.01	0.00
36.00	0.00	6,769	200.86	0.01	0.01	0.00
38.00	0.00	6,716	200.86	0.01	0.01	0.00
40.00	0.00	6,677	200.85	0.00	0.00	0.00
42.00	0.00	6,646	200.85	0.00	0.00	0.00
44.00	0.00	6,619	200.84	0.00	0.00	0.00
46.00	0.00	6,594	200.84	0.00	0.00	0.00
48.00	0.00	6,572	200.84	0.00	0.00	0.00
50.00	0.00	6,551	200.84	0.00	0.00	0.00
52.00	0.00	6,533	200.83	0.00	0.00	0.00
54.00	0.00	6,516	200.83	0.00	0.00	0.00
56.00	0.00	6,501	200.83	0.00	0.00	0.00
58.00	0.00	6,487	200.83	0.00	0.00	0.00
60.00	0.00	6,475	200.83	0.00	0.00	0.00
62.00	0.00	6,463	200.82	0.00	0.00	0.00
64.00	0.00	6,453	200.82	0.00	0.00	0.00
66.00	0.00	6,444	200.82	0.00	0.00	0.00
68.00	0.00	6,435	200.82	0.00	0.00	0.00
70.00	0.00	6,428	200.82	0.00	0.00	0.00
72.00	0.00	6,421	200.82	0.00	0.00	0.00

Post-Development

NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Pond BB2: Bio Basin #2

Inflow Area = 1.690 ac, 55.62% Impervious, Inflow Depth = 2.37" for 2-year event
Inflow = 5.34 cfs @ 12.10 hrs, Volume= 0.334 af
Outflow = 0.14 cfs @ 15.01 hrs, Volume= 0.241 af, Atten= 97%, Lag= 174.4 min
Primary = 0.14 cfs @ 15.01 hrs, Volume= 0.241 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 202.78' @ 15.01 hrs Surf.Area= 10,106 sf Storage= 10,419 cf

Plug-Flow detention time= 755.1 min calculated for 0.241 af (72% of inflow)
Center-of-Mass det. time= 658.8 min (1,435.3 - 776.6)

Volume	Invert	Avail.Storage	Storage Description
#1	201.00'	47,215 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
201.00	3,785	0	0
202.00	5,125	4,455	4,455
203.00	11,485	8,305	12,760
204.00	11,485	11,485	24,245
205.00	11,485	11,485	35,730
206.00	11,485	11,485	47,215

Device	Routing	Invert	Outlet Devices
#1	Primary	198.18'	24.0" Round Culvert L= 66.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 198.18' / 197.85' S= 0.0050 ' / Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	201.91'	2.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	202.78'	7.0" W x 3.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	204.10'	16.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#5	Secondary	204.15'	50.0' 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=0.14 cfs @ 15.01 hrs HW=202.78' (Free Discharge)

↑ **1=Culvert** (Passes 0.14 cfs of 28.33 cfs potential flow)
↑ **2=Orifice/Grate** (Orifice Controls 0.14 cfs @ 4.22 fps)
↑ **3=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.18 fps)
↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=201.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Post-Development

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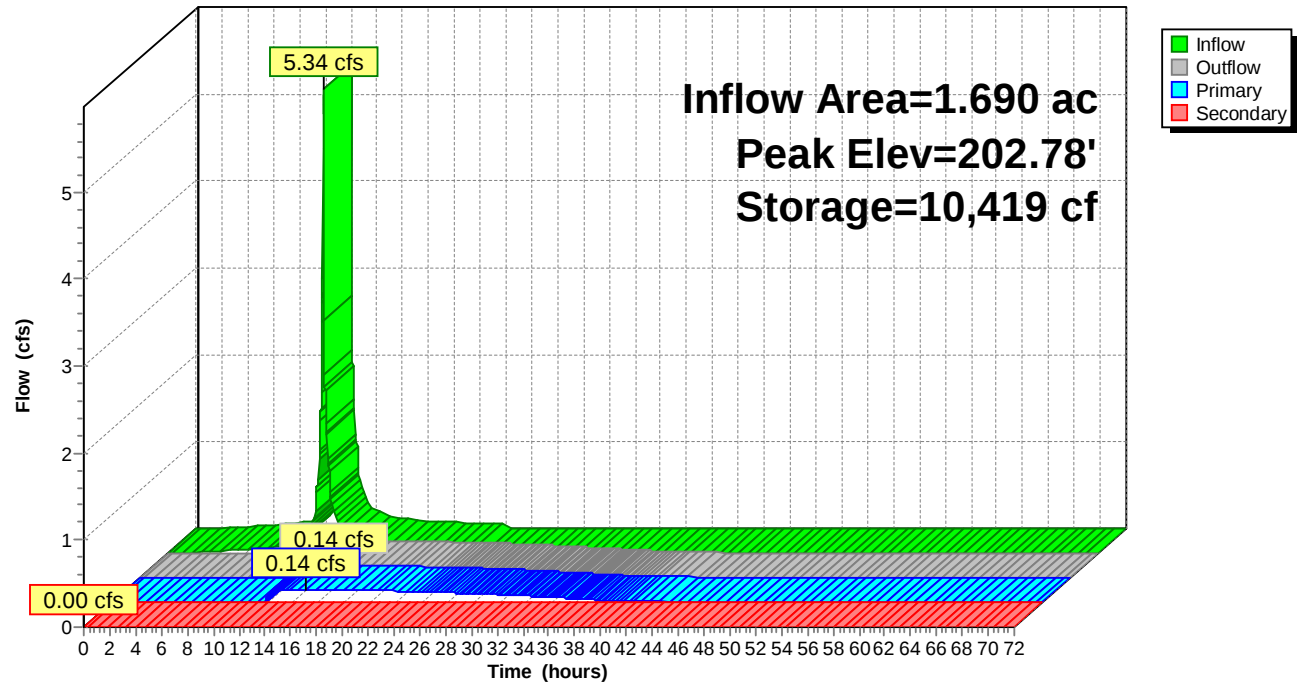
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NOAA 24-hr C 2-year Rainfall=3.31"

Printed 11/16/2023

Pond BB2: Bio Basin #2

Hydrograph



Post-Development

NOAA 24-hr C 2-year Rainfall=3.31"

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Hydrograph for Pond BB2: Bio Basin #2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	201.00	0.00	0.00	0.00
2.00	0.01	16	201.00	0.00	0.00	0.00
4.00	0.03	153	201.04	0.00	0.00	0.00
6.00	0.04	391	201.10	0.00	0.00	0.00
8.00	0.07	768	201.20	0.00	0.00	0.00
10.00	0.13	1,413	201.35	0.00	0.00	0.00
12.00	3.04	5,330	202.16	0.06	0.06	0.00
14.00	0.22	10,288	202.77	0.14	0.14	0.00
16.00	0.12	10,371	202.78	0.14	0.14	0.00
18.00	0.08	10,078	202.75	0.14	0.14	0.00
20.00	0.07	9,630	202.70	0.14	0.14	0.00
22.00	0.06	9,146	202.65	0.13	0.13	0.00
24.00	0.06	8,636	202.60	0.13	0.13	0.00
26.00	0.00	7,779	202.50	0.11	0.11	0.00
28.00	0.00	7,002	202.40	0.10	0.10	0.00
30.00	0.00	6,317	202.31	0.09	0.09	0.00
32.00	0.00	5,730	202.22	0.07	0.07	0.00
34.00	0.00	5,251	202.14	0.06	0.06	0.00
36.00	0.00	4,888	202.08	0.04	0.04	0.00
38.00	0.00	4,647	202.04	0.03	0.03	0.00
40.00	0.00	4,494	202.01	0.02	0.02	0.00
42.00	0.00	4,394	201.99	0.01	0.01	0.00
44.00	0.00	4,322	201.97	0.01	0.01	0.00
46.00	0.00	4,269	201.96	0.01	0.01	0.00
48.00	0.00	4,231	201.96	0.00	0.00	0.00
50.00	0.00	4,204	201.95	0.00	0.00	0.00
52.00	0.00	4,182	201.95	0.00	0.00	0.00
54.00	0.00	4,163	201.94	0.00	0.00	0.00
56.00	0.00	4,145	201.94	0.00	0.00	0.00
58.00	0.00	4,130	201.94	0.00	0.00	0.00
60.00	0.00	4,116	201.93	0.00	0.00	0.00
62.00	0.00	4,104	201.93	0.00	0.00	0.00
64.00	0.00	4,093	201.93	0.00	0.00	0.00
66.00	0.00	4,083	201.93	0.00	0.00	0.00
68.00	0.00	4,074	201.92	0.00	0.00	0.00
70.00	0.00	4,066	201.92	0.00	0.00	0.00
72.00	0.00	4,059	201.92	0.00	0.00	0.00

Post-Development

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NOAA 24-hr C 2-year Rainfall=3.31"

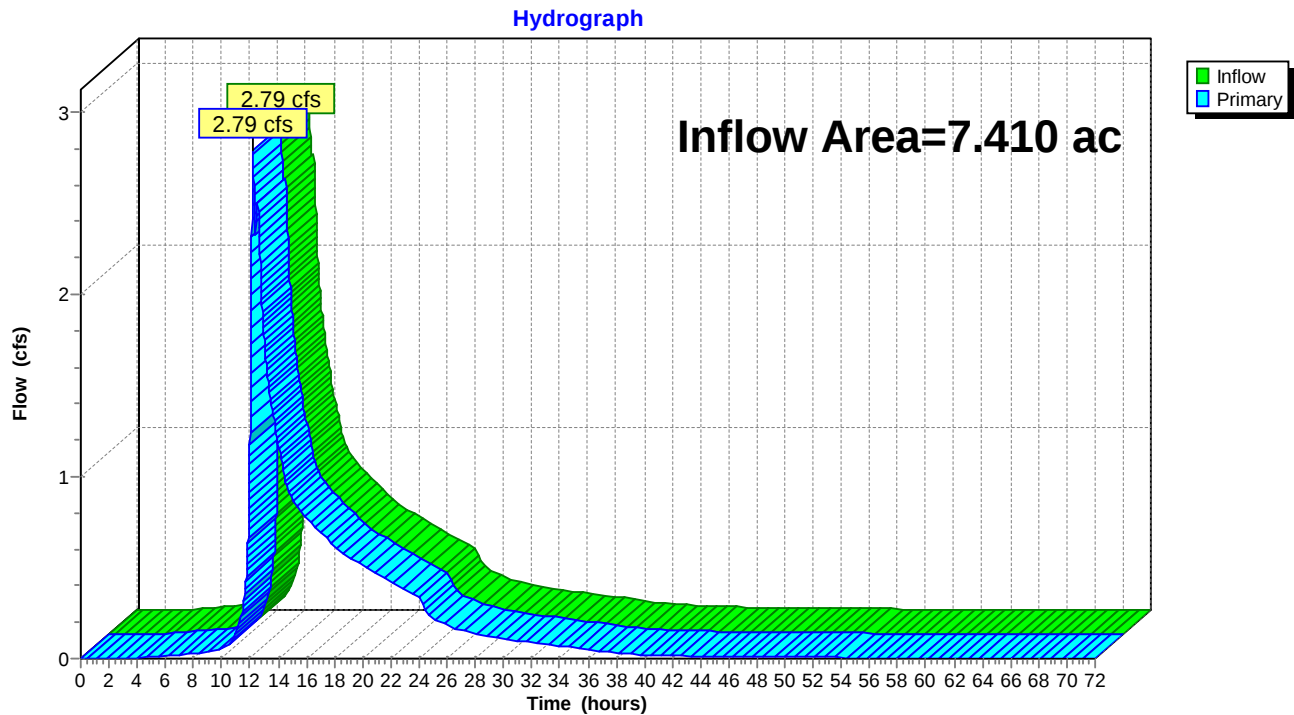
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Summary for Pond DP2: Stony Brook Tributary (DP-2)

Inflow Area = 7.410 ac, 39.00% Impervious, Inflow Depth > 1.62" for 2-year event
Inflow = 2.79 cfs @ 12.23 hrs, Volume= 1.000 af
Primary = 2.79 cfs @ 12.23 hrs, Volume= 1.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond DP2: Stony Brook Tributary (DP-2)



Post-Development

NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Pond PP1: Porous Pavement Area #1

Inflow Area = 0.220 ac, 81.82% Impervious, Inflow Depth = 2.79" for 2-year event
Inflow = 0.78 cfs @ 12.10 hrs, Volume= 0.051 af
Outflow = 0.17 cfs @ 12.32 hrs, Volume= 0.050 af, Atten= 78%, Lag= 13.0 min
Primary = 0.17 cfs @ 12.32 hrs, Volume= 0.050 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 200.95' @ 12.32 hrs Surf.Area= 2,857 sf Storage= 590 cf

Plug-Flow detention time= 51.5 min calculated for 0.050 af (98% of inflow)
Center-of-Mass det. time= 39.2 min (799.9 - 760.7)

Volume	Invert	Avail.Storage	Storage Description
#1	200.53'	1,685 cf	18.00'W x 117.00'L x 2.00'H Prismaoid 4,212 cf Overall x 40.0% Voids
#2	200.53'	259 cf	13.50'W x 24.00'L x 2.00'H Prismaoid 648 cf Overall x 40.0% Voids
#3	200.53'	6 cf	1.40'W x 5.00'L x 2.00'H Prismaoid 14 cf Overall x 40.0% Voids
#4	199.53'	157 cf	4.00'W x 105.00'L x 1.00'H Prismaoid 420 cf Overall - 26 cf Embedded = 394 cf x 40.0% Voids
#5	199.78'	21 cf	6.0" Round Pipe Storage Inside #4 L= 105.0' S= 0.0010 '/ 26 cf Overall - 0.4" Wall Thickness = 21 cf
		2,128 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	199.78'	6.0" Round Culvert L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 199.78' / 199.77' S= 0.0008 '/ Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	199.78'	2.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	201.52'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.17 cfs @ 12.32 hrs HW=200.95' (Free Discharge)

- ↑ **1=Culvert** (Passes 0.17 cfs of 0.91 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.17 cfs @ 4.98 fps)
- ↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Post-Development

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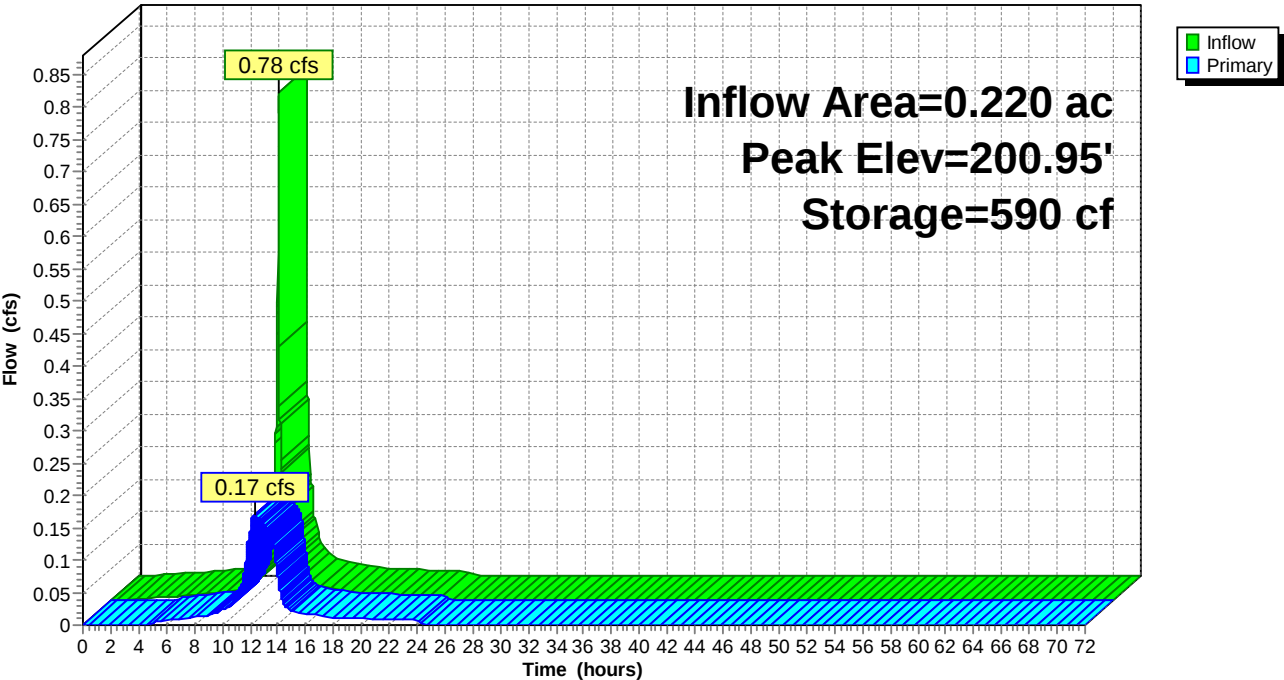
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Pond PP1: Porous Pavement Area #1

Hydrograph



Post-Development

NOAA 24-hr C 2-year Rainfall=3.31"

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Hydrograph for Pond PP1: Porous Pavement Area #1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	199.53	0.00
2.00	0.00	3	199.55	0.00
4.00	0.01	29	199.70	0.00
6.00	0.01	54	199.85	0.01
8.00	0.01	57	199.87	0.01
10.00	0.02	63	199.90	0.02
12.00	0.46	299	200.65	0.14
14.00	0.03	99	200.09	0.07
16.00	0.02	60	199.89	0.02
18.00	0.01	57	199.87	0.01
20.00	0.01	56	199.86	0.01
22.00	0.01	55	199.86	0.01
24.00	0.01	54	199.85	0.01
26.00	0.00	44	199.79	0.00
28.00	0.00	43	199.79	0.00
30.00	0.00	42	199.78	0.00
32.00	0.00	42	199.78	0.00
34.00	0.00	42	199.78	0.00
36.00	0.00	42	199.78	0.00
38.00	0.00	42	199.78	0.00
40.00	0.00	42	199.78	0.00
42.00	0.00	42	199.78	0.00
44.00	0.00	42	199.78	0.00
46.00	0.00	42	199.78	0.00
48.00	0.00	42	199.78	0.00
50.00	0.00	42	199.78	0.00
52.00	0.00	42	199.78	0.00
54.00	0.00	42	199.78	0.00
56.00	0.00	42	199.78	0.00
58.00	0.00	42	199.78	0.00
60.00	0.00	42	199.78	0.00
62.00	0.00	42	199.78	0.00
64.00	0.00	42	199.78	0.00
66.00	0.00	42	199.78	0.00
68.00	0.00	42	199.78	0.00
70.00	0.00	42	199.78	0.00
72.00	0.00	42	199.78	0.00

Post-Development

NOAA 24-hr C 2-year Rainfall=3.31"

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Summary for Pond PP2: Porous Pavement Area #2

Inflow Area = 0.300 ac, 53.33% Impervious, Inflow Depth = 2.34" for 2-year event
Inflow = 0.94 cfs @ 12.10 hrs, Volume= 0.058 af
Outflow = 0.17 cfs @ 12.43 hrs, Volume= 0.058 af, Atten= 82%, Lag= 19.9 min
Primary = 0.17 cfs @ 12.43 hrs, Volume= 0.058 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 201.43' @ 12.43 hrs Surf.Area= 3,595 sf Storage= 696 cf

Plug-Flow detention time= 46.7 min calculated for 0.058 af (99% of inflow)
Center-of-Mass det. time= 38.4 min (816.7 - 778.2)

Volume	Invert	Avail.Storage	Storage Description
#1	201.00'	1,574 cf	24.00'W x 82.00'L x 2.00'H Prismatic 3,936 cf Overall x 40.0% Voids
#2	201.00'	1,037 cf	18.00'W x 72.00'L x 2.00'H Prismatic 2,592 cf Overall x 40.0% Voids
#3	201.00'	9 cf	2.00'W x 5.50'L x 2.00'H Prismatic 22 cf Overall x 40.0% Voids
#4	200.00'	120 cf	4.00'W x 80.00'L x 1.00'H Prismatic 320 cf Overall - 20 cf Embedded = 300 cf x 40.0% Voids
#5	200.25'	16 cf	6.0" Round Pipe Storage Inside #4 L= 80.0' S= 0.0010 '/' 20 cf Overall - 0.4" Wall Thickness = 16 cf
		2,756 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	200.25'	6.0" Round Culvert L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 200.25' / 200.23' S= 0.0010 '/ Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	200.25'	2.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	202.47'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.17 cfs @ 12.43 hrs HW=201.43' (Free Discharge)

- ↑ **1=Culvert** (Passes 0.17 cfs of 0.84 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.17 cfs @ 4.99 fps)
- ↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Post-Development

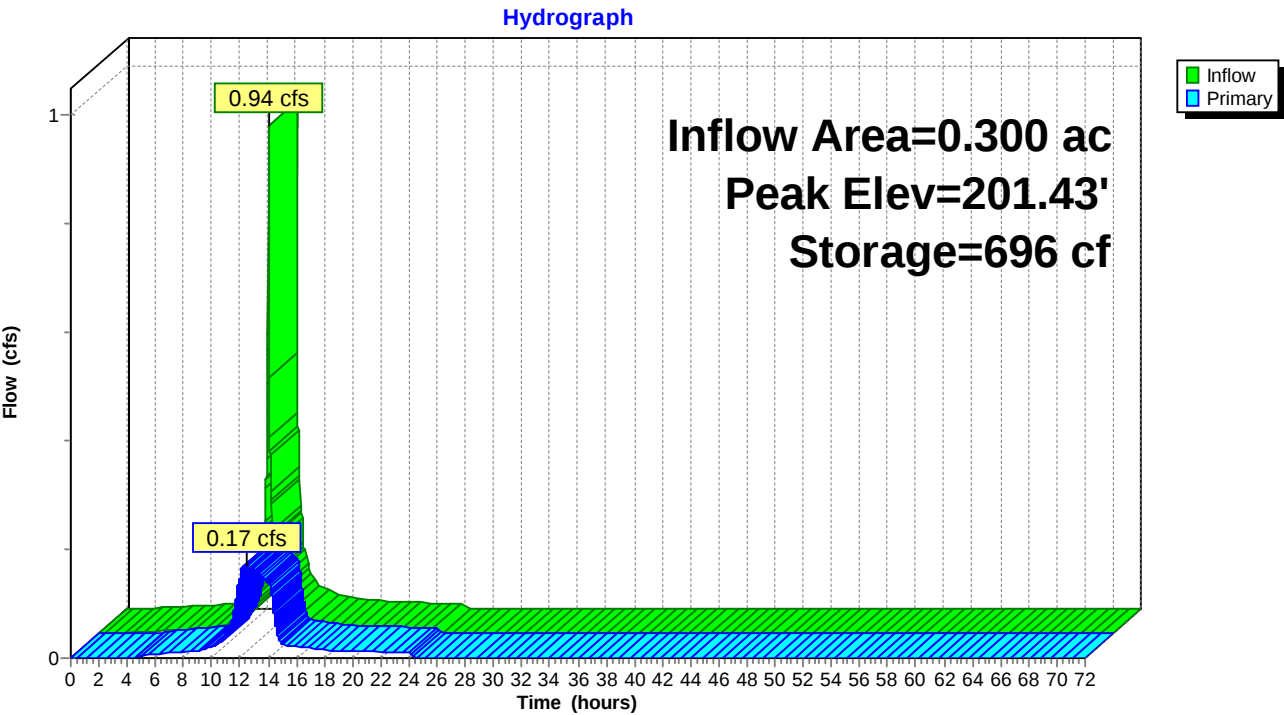
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Pond PP2: Porous Pavement Area #2



Post-Development

NOAA 24-hr C 2-year Rainfall=3.31"

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Hydrograph for Pond PP2: Porous Pavement Area #2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	200.00	0.00
2.00	0.00	3	200.02	0.00
4.00	0.00	26	200.20	0.00
6.00	0.01	41	200.32	0.01
8.00	0.01	43	200.34	0.01
10.00	0.02	48	200.37	0.02
12.00	0.53	311	201.13	0.14
14.00	0.04	210	201.06	0.14
16.00	0.02	48	200.37	0.02
18.00	0.01	45	200.35	0.01
20.00	0.01	44	200.34	0.01
22.00	0.01	43	200.34	0.01
24.00	0.01	43	200.34	0.01
26.00	0.00	33	200.26	0.00
28.00	0.00	32	200.25	0.00
30.00	0.00	32	200.25	0.00
32.00	0.00	32	200.25	0.00
34.00	0.00	32	200.25	0.00
36.00	0.00	32	200.25	0.00
38.00	0.00	32	200.25	0.00
40.00	0.00	32	200.25	0.00
42.00	0.00	32	200.25	0.00
44.00	0.00	32	200.25	0.00
46.00	0.00	32	200.25	0.00
48.00	0.00	32	200.25	0.00
50.00	0.00	32	200.25	0.00
52.00	0.00	32	200.25	0.00
54.00	0.00	32	200.25	0.00
56.00	0.00	32	200.25	0.00
58.00	0.00	32	200.25	0.00
60.00	0.00	32	200.25	0.00
62.00	0.00	32	200.25	0.00
64.00	0.00	32	200.25	0.00
66.00	0.00	32	200.25	0.00
68.00	0.00	32	200.25	0.00
70.00	0.00	32	200.25	0.00
72.00	0.00	32	200.25	0.00

Post-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

Printed 11/16/2023

Summary for Subcatchment DA1Ai: DA-1A Impervious

Runoff = 9.08 cfs @ 12.09 hrs, Volume= 0.615 af, Depth= 4.73"

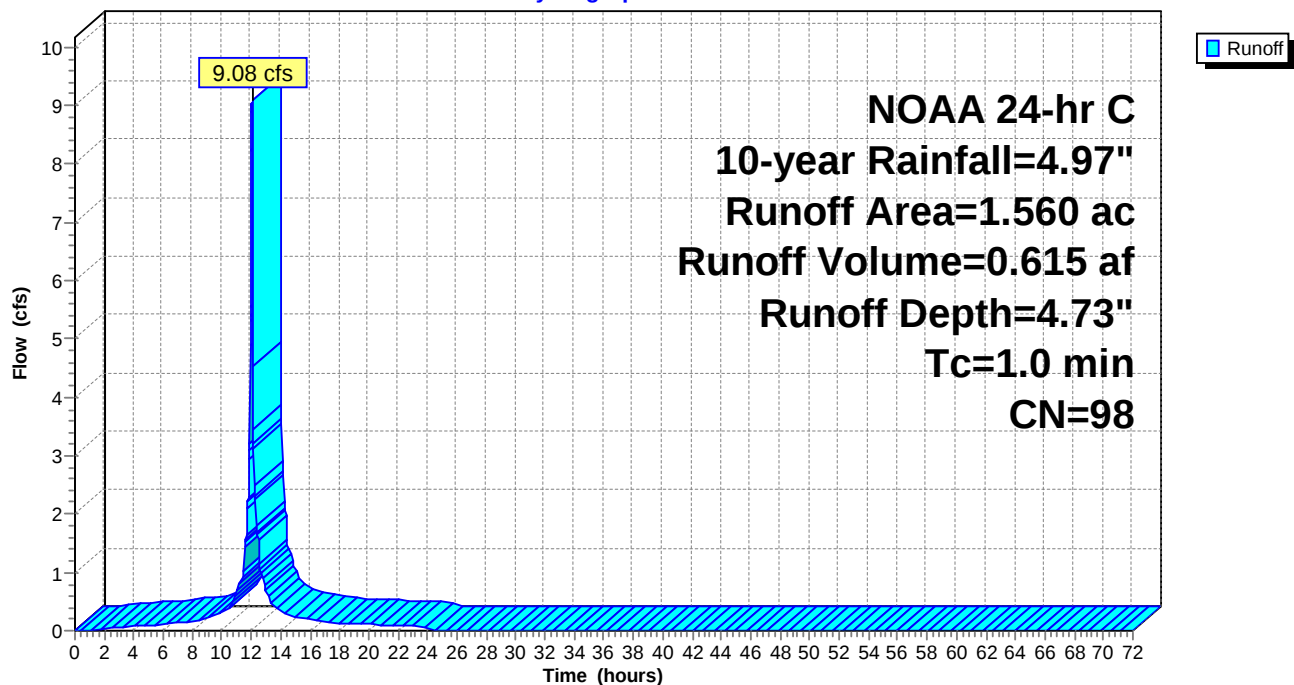
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
1.560	98	Roofs, HSG D
1.560		100.00% Impervious Area

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

Subcatchment DA1Ai: DA-1A Impervious

Hydrograph



Post-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

Printed 11/16/2023

Summary for Subcatchment DA1Ap: DA-1A Pervious

Runoff = 3.61 cfs @ 12.10 hrs, Volume= 0.201 af, Depth= 2.87"

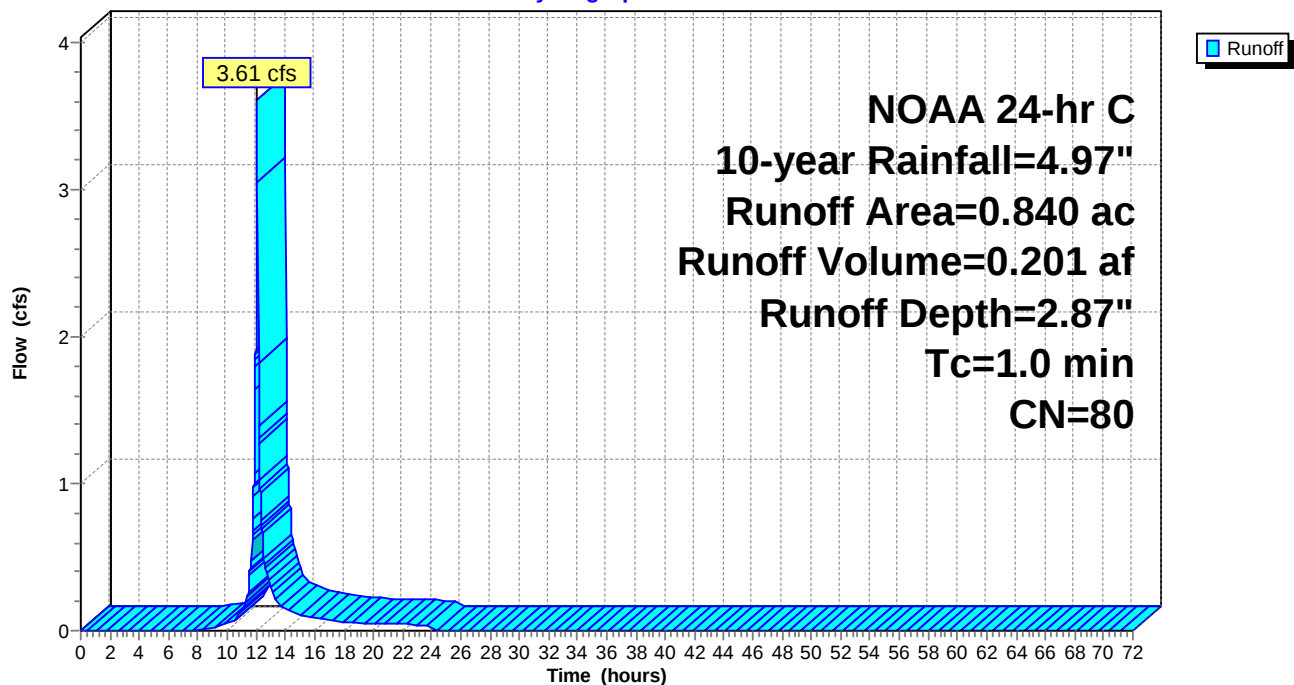
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.840	80	>75% Grass cover, Good, HSG D
0.840		100.00% Pervious Area

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

Subcatchment DA1Ap: DA-1A Pervious

Hydrograph



Post-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment DA1Bi: DA-1B Impervious

Runoff = 5.47 cfs @ 12.09 hrs, Volume= 0.371 af, Depth= 4.73"

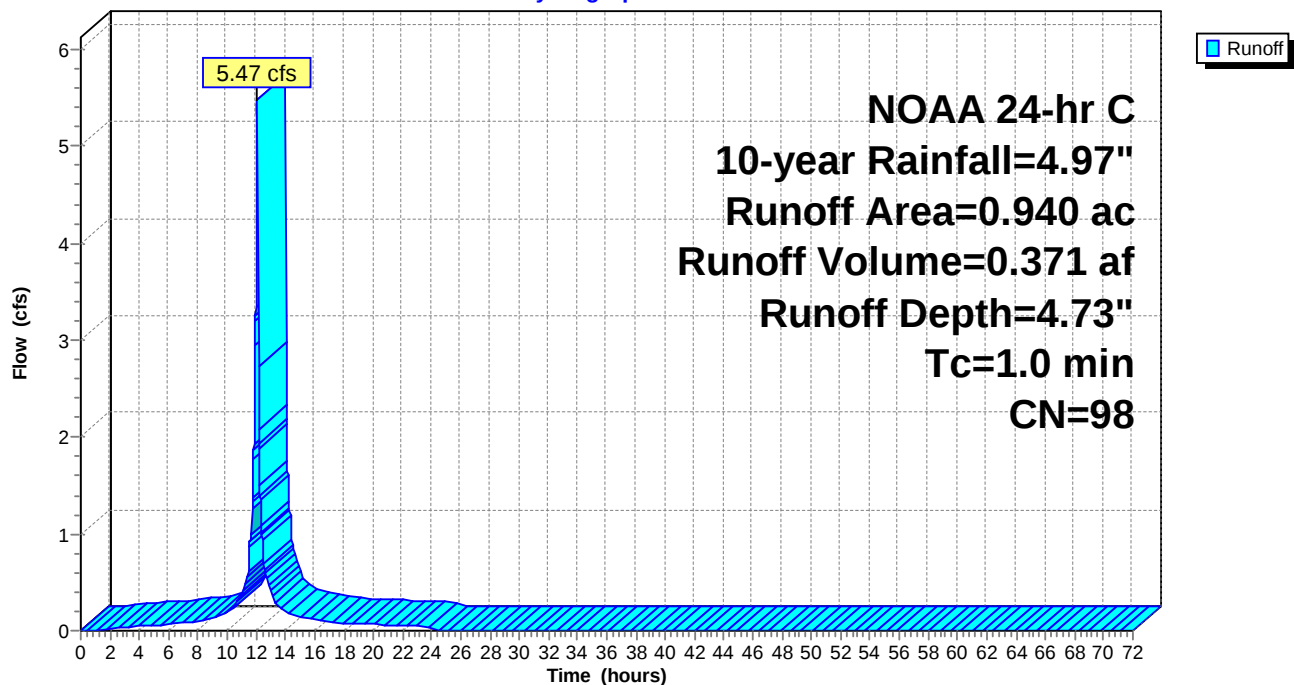
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
* 0.940	98	Paved parking, HSG D
0.940		100.00% Impervious Area

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

Subcatchment DA1Bi: DA-1B Impervious

Hydrograph



Post-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

Printed 11/16/2023

Summary for Subcatchment DA1Bp: DA-1B Pervious

Runoff = 3.22 cfs @ 12.10 hrs, Volume= 0.179 af, Depth= 2.87"

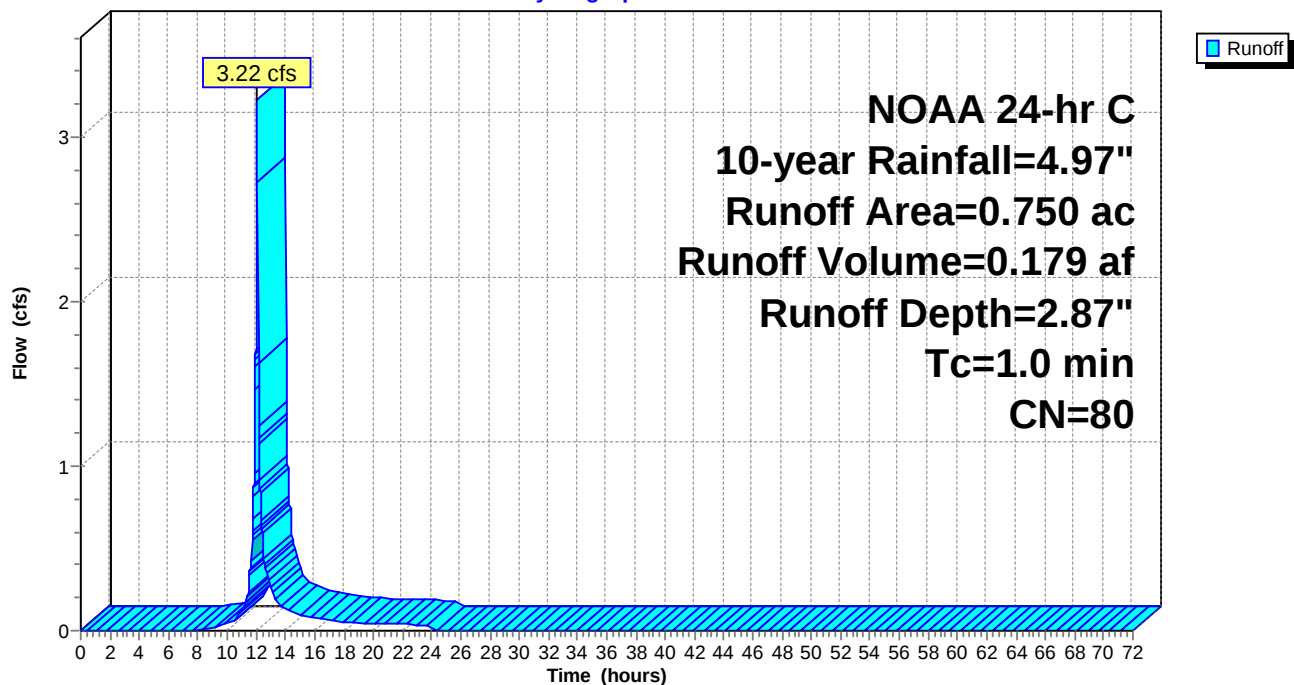
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.750	80	>75% Grass cover, Good, HSG D
0.750		100.00% Pervious Area

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

Subcatchment DA1Bp: DA-1B Pervious

Hydrograph



Post-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment DA1Ci: DA-1C Impervious

Runoff = 1.05 cfs @ 12.09 hrs, Volume= 0.071 af, Depth= 4.73"

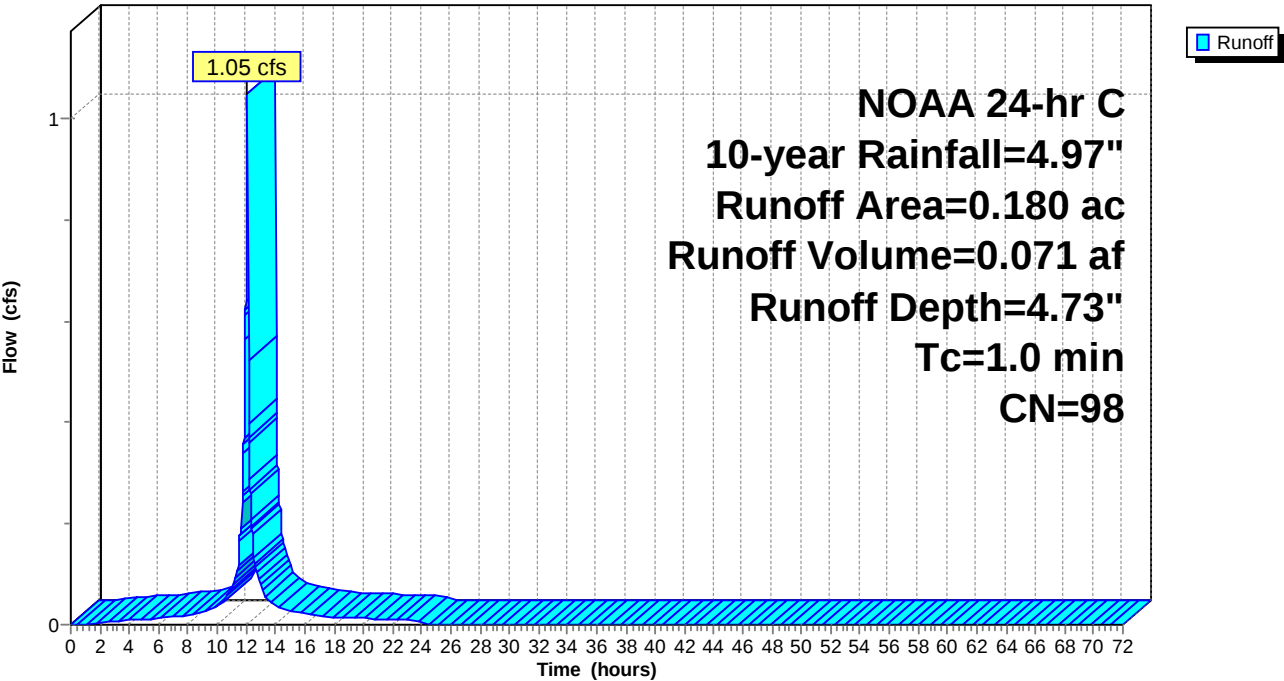
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.180	98	Paved parking, HSG D
0.180		100.00% Impervious Area

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

Subcatchment DA1Ci: DA-1C Impervious

Hydrograph



Post-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment DA1Cp: DA-1C Pervious

Runoff = 0.17 cfs @ 12.10 hrs, Volume= 0.010 af, Depth= 2.87"

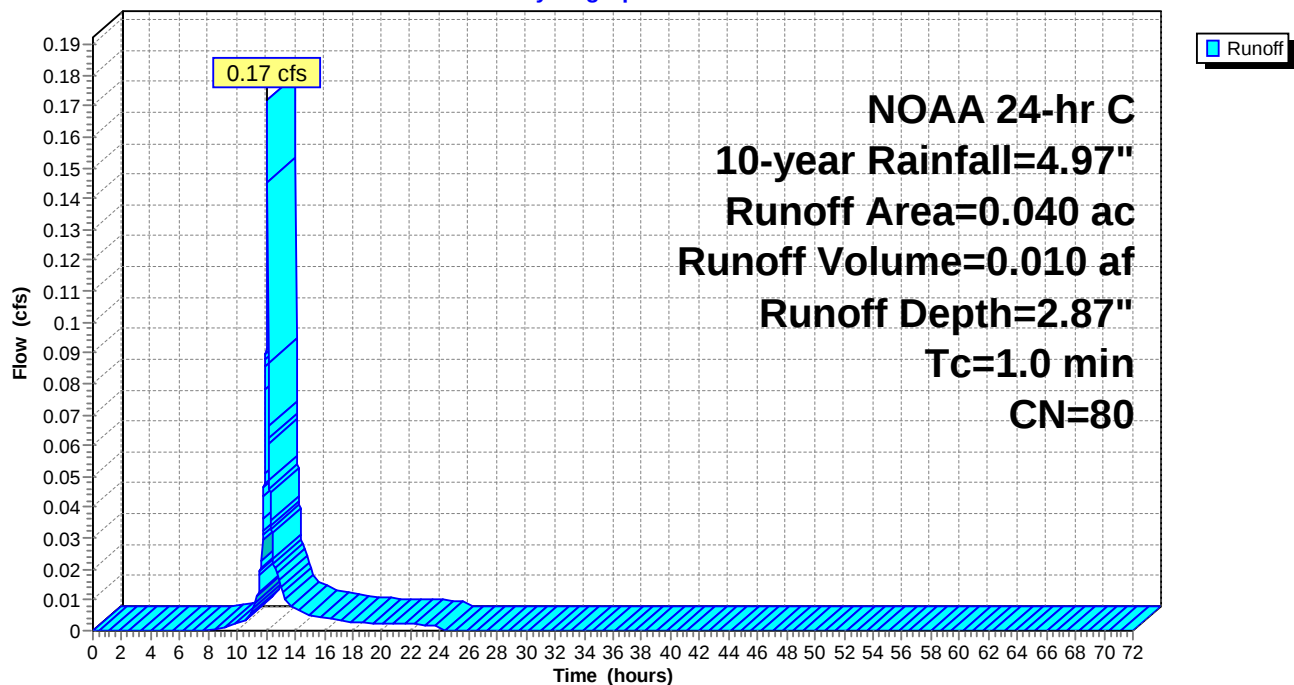
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.040	80	>75% Grass cover, Good, HSG D
0.040		100.00% Pervious Area

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

Subcatchment DA1Cp: DA-1C Pervious

Hydrograph



Post-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment DA1Di: DA-1D Impervious

Runoff = 0.93 cfs @ 12.09 hrs, Volume= 0.063 af, Depth= 4.73"

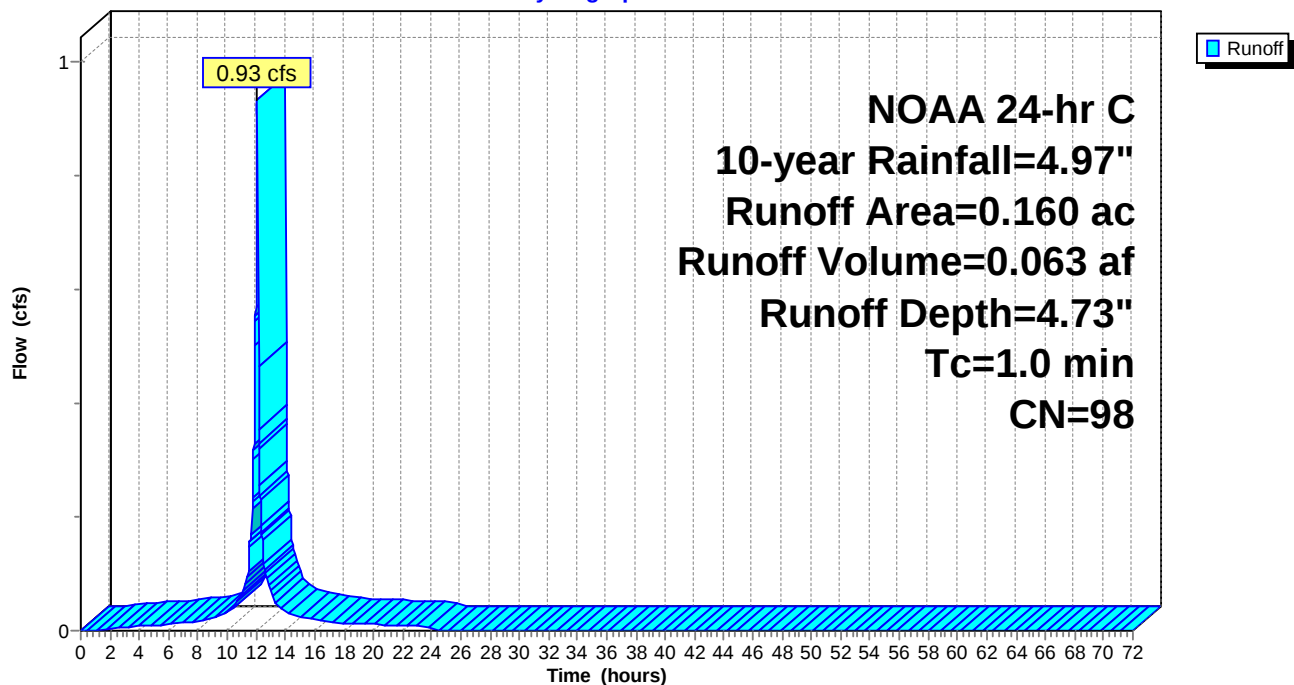
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
* 0.160	98	Paved parking, HSG D
0.160		100.00% Impervious Area

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

Subcatchment DA1Di: DA-1D Impervious

Hydrograph



Post-Development

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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment DA1Dp: DA-1D Pervious

Runoff = 0.60 cfs @ 12.10 hrs, Volume= 0.033 af, Depth= 2.87"

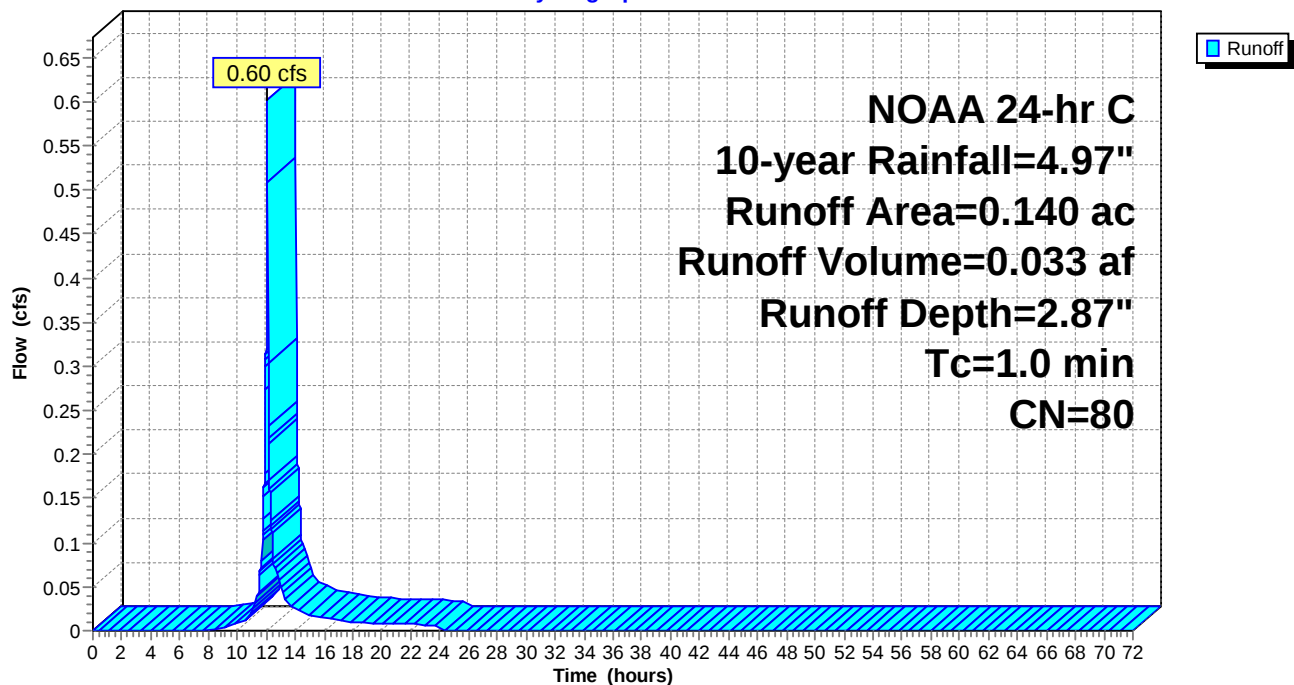
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.140	80	>75% Grass cover, Good, HSG D
0.140		100.00% Pervious Area

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

Subcatchment DA1Dp: DA-1D Pervious

Hydrograph



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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment DA4 Un: DA-4 Uncollected

Runoff = 0.43 cfs @ 12.10 hrs, Volume= 0.024 af, Depth= 2.87"

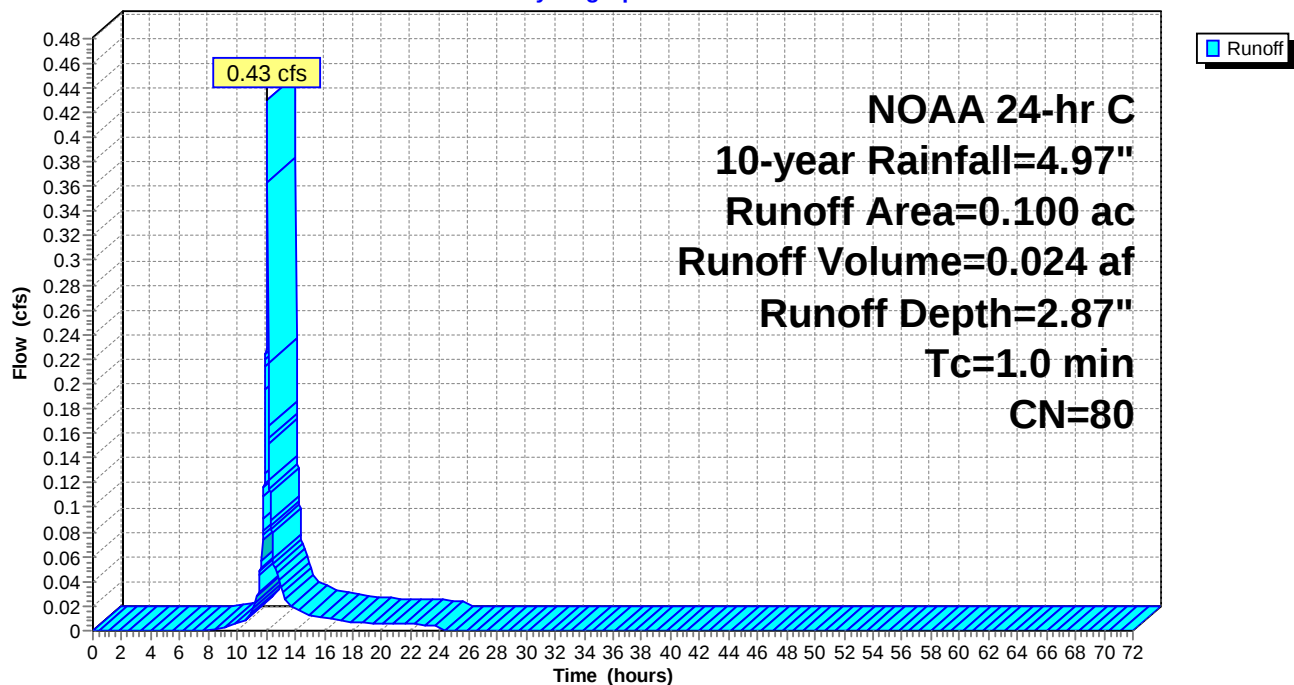
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.100	80	>75% Grass cover, Good, HSG D
0.100		100.00% Pervious Area

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

Subcatchment DA4 Un: DA-4 Uncollected

Hydrograph



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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment DA5 Un i: DA-5 Uncollected Impervious

Runoff = 0.02 cfs @ 12.10 hrs, Volume= 0.001 af, Depth= 2.87"

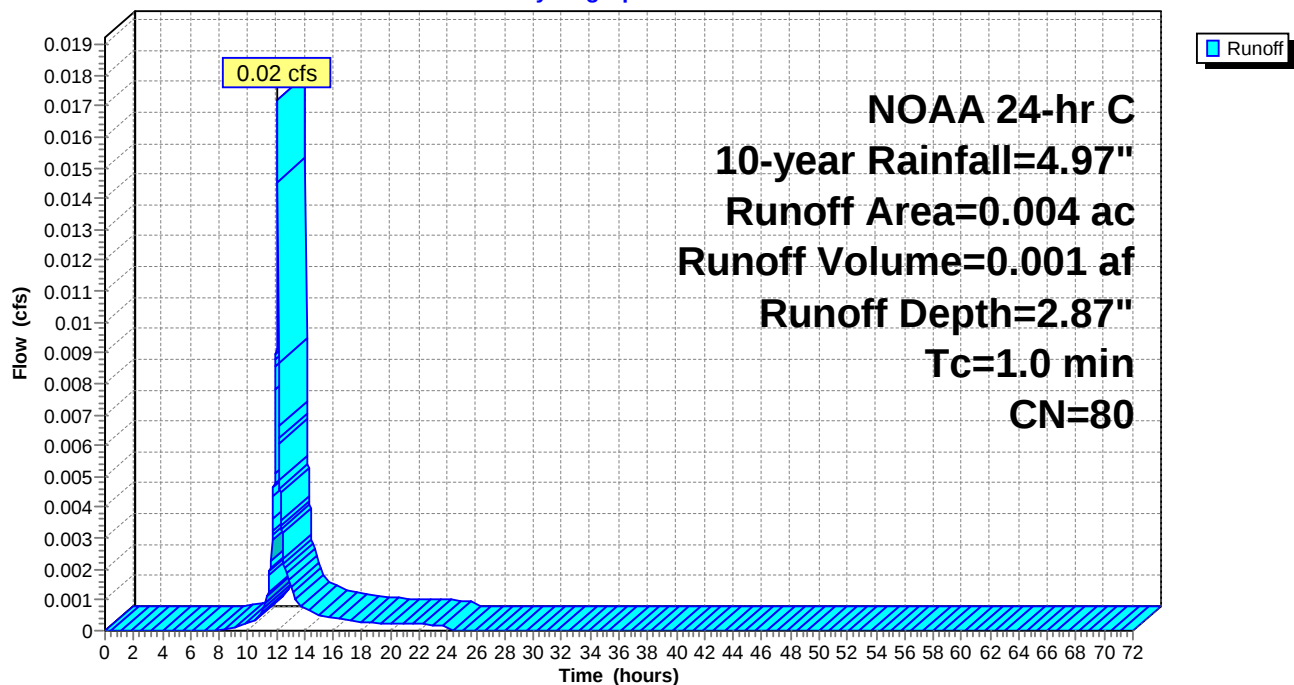
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.004	80	>75% Grass cover, Good, HSG D
0.004		100.00% Pervious Area

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

Subcatchment DA5 Un i: DA-5 Uncollected Impervious

Hydrograph



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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment DA5 Un p: DA-5 Uncollected Pervious

Runoff = 0.15 cfs @ 12.10 hrs, Volume= 0.009 af, Depth= 2.87"

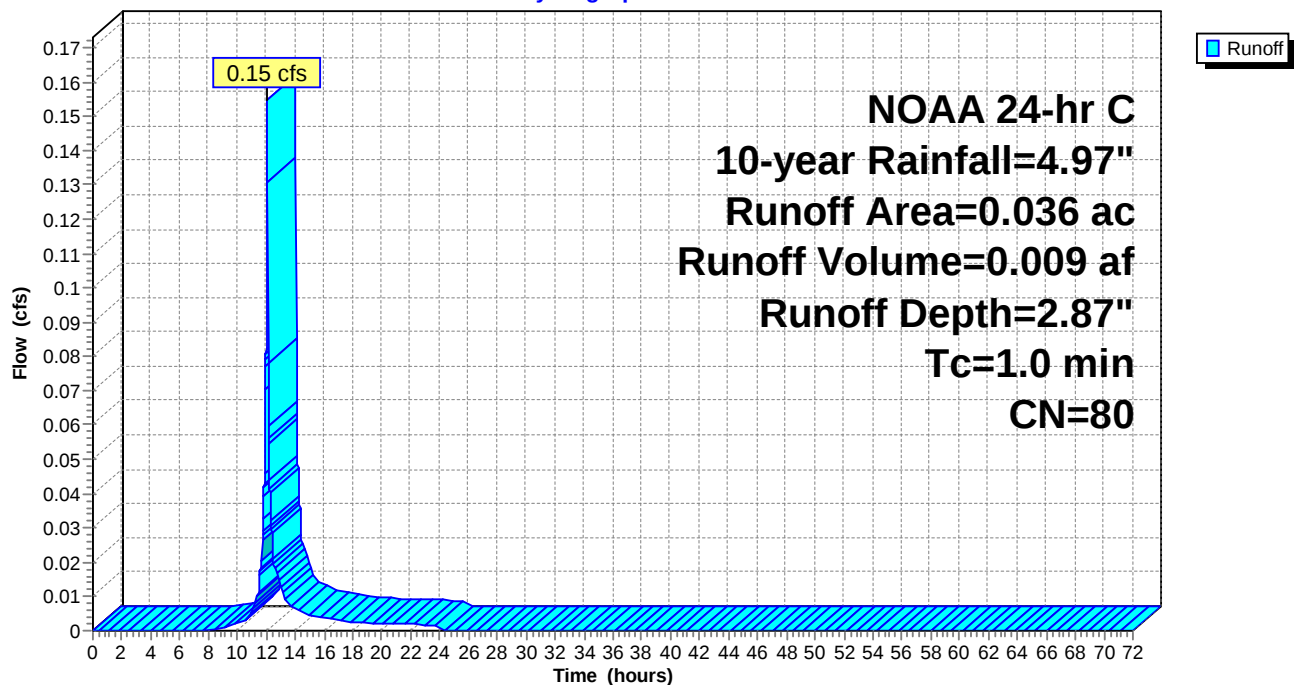
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.036	80	>75% Grass cover, Good, HSG D
0.036		100.00% Pervious Area

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

Subcatchment DA5 Un p: DA-5 Uncollected Pervious

Hydrograph



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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment EA-2U p: EA-2U Pervious

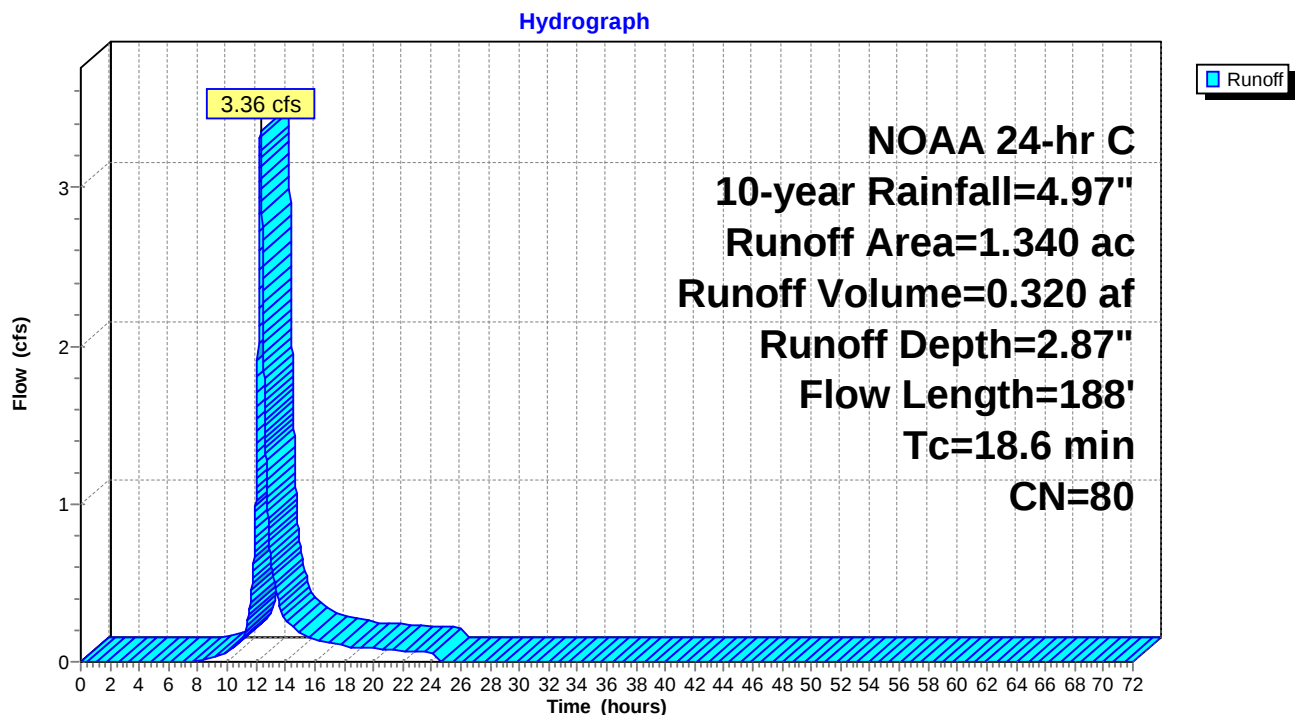
Runoff = 3.36 cfs @ 12.28 hrs, Volume= 0.320 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.600	79	Woods/grass comb., Good, HSG D
0.740	80	>75% Grass cover, Good, HSG D
1.340	80	Weighted Average
1.340		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	44	0.0303	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
8.9	113	0.0018	0.21		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.4	31	0.0065	1.30		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.6	188	Total			

Subcatchment EA-2U p: EA-2U Pervious



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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment EA-3U i: EA-3U Impervious

Runoff = 0.20 cfs @ 12.21 hrs, Volume= 0.020 af, Depth= 4.73"

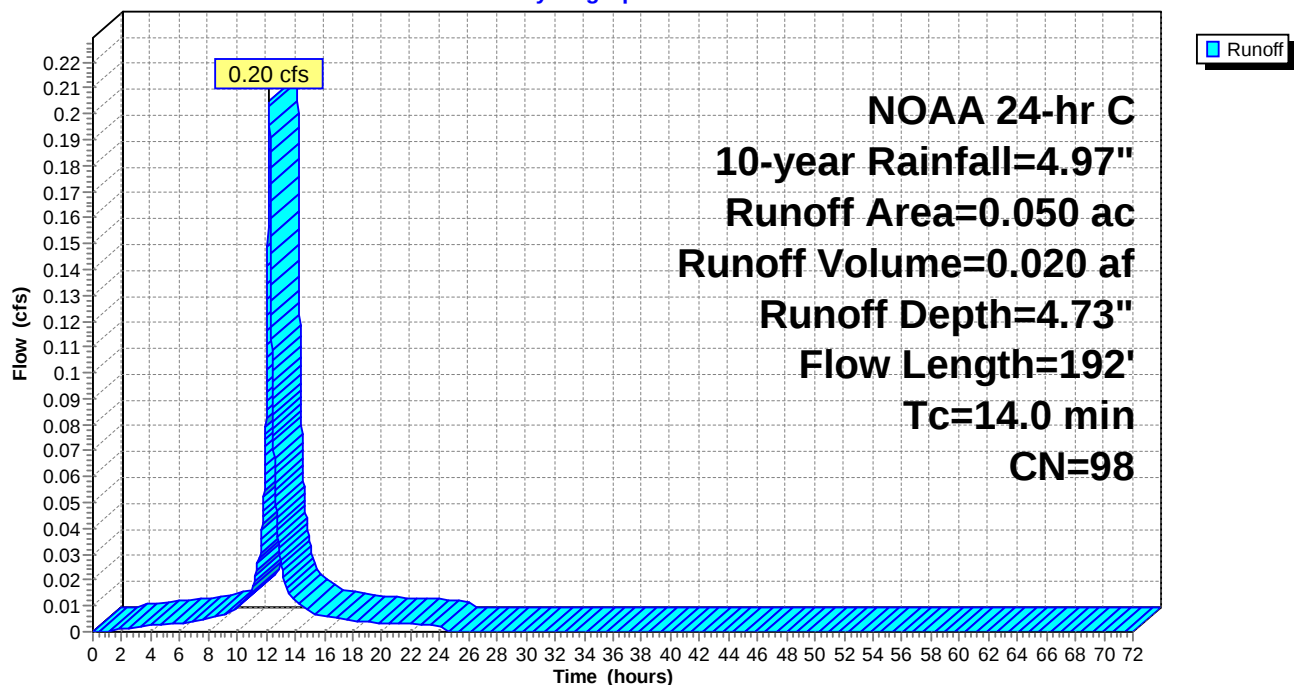
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
* 0.050	98	Impervious Areas
0.050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	6	0.0193	0.07		Sheet Flow, Grass: Dense n= 0.240 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.0	192	Total			

Subcatchment EA-3U i: EA-3U Impervious

Hydrograph



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NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Subcatchment EA-3U p: EA-3U Pervious

Runoff = 3.50 cfs @ 12.22 hrs, Volume= 0.294 af, Depth= 2.78"

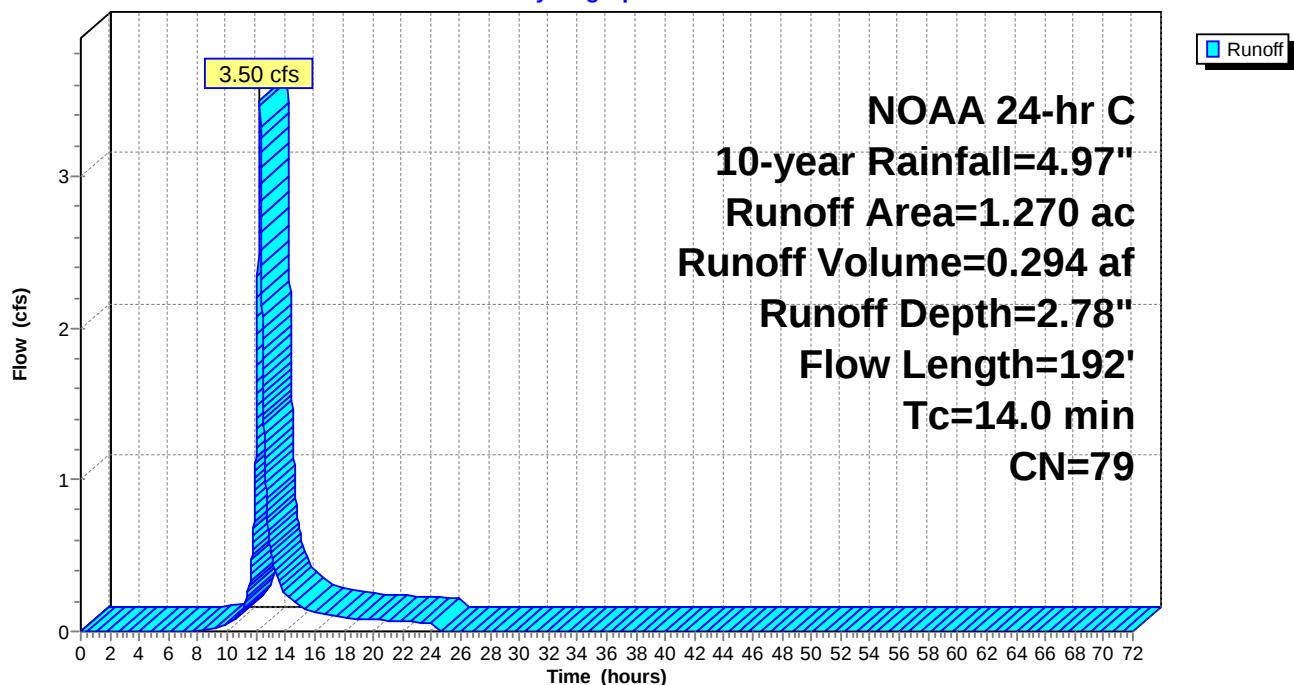
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10-year Rainfall=4.97"

Area (ac)	CN	Description
0.450	80	>75% Grass cover, Good, HSG D
0.820	79	Woods/grass comb., Good, HSG D
1.270	79	Weighted Average
1.270		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	6	0.0193	0.07		Sheet Flow, Grass: Dense n= 0.240 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.0	192	Total			

Subcatchment EA-3U p: EA-3U Pervious

Hydrograph



Post-Development

NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Pond 2P: EA-2 Wetlands

Inflow Area = 1.440 ac, 0.00% Impervious, Inflow Depth = 2.87" for 10-year event
 Inflow = 3.47 cfs @ 12.28 hrs, Volume= 0.344 af
 Outflow = 3.27 cfs @ 12.33 hrs, Volume= 0.292 af, Atten= 6%, Lag= 3.4 min
 Primary = 1.78 cfs @ 12.33 hrs, Volume= 0.235 af
 Secondary = 1.49 cfs @ 12.33 hrs, Volume= 0.057 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 203.05' @ 12.33 hrs Surf.Area= 17,334 sf Storage= 3,589 cf

Plug-Flow detention time= 119.7 min calculated for 0.292 af (85% of inflow)
 Center-of-Mass det. time= 51.3 min (887.1 - 835.8)

Volume	Invert	Avail.Storage	Storage Description
#1	202.60'	8,536 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.60	467	0	0
202.70	2,559	151	151
202.80	5,796	418	569
202.90	10,670	823	1,392
203.00	15,559	1,311	2,704
203.10	18,857	1,721	4,425
203.20	20,626	1,974	6,399
203.30	22,113	2,137	8,536

Device	Routing	Invert	Outlet Devices
#1	Primary	202.97'	179.4 deg x 11.0' long x 0.33' rise Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)
#2	Secondary	203.01'	65.0' 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=1.78 cfs @ 12.33 hrs HW=203.05' (Free Discharge)↑ **1=Sharp-Crested Vee/Trap Weir** (Weir Controls 1.78 cfs @ 0.78 fps)**Secondary OutFlow** Max=1.48 cfs @ 12.33 hrs HW=203.05' (Free Discharge)↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 1.48 cfs @ 0.52 fps)

Post-Development

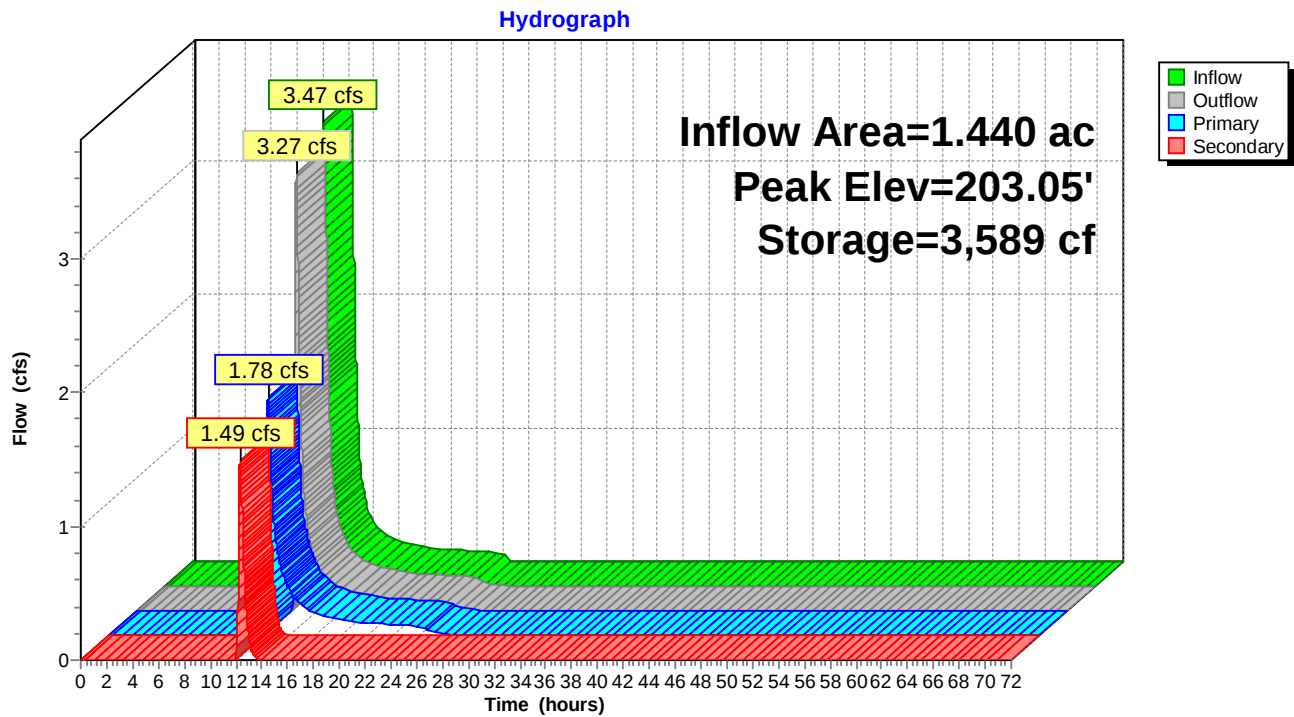
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NOAA 24-hr C 10-year Rainfall=4.97"

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Pond 2P: EA-2 Wetlands



Post-Development

NOAA 24-hr C 10-year Rainfall=4.97"

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Hydrograph for Pond 2P: EA-2 Wetlands

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	202.60	0.00	0.00	0.00
2.00	0.00	0	202.60	0.00	0.00	0.00
4.00	0.00	0	202.60	0.00	0.00	0.00
6.00	0.00	0	202.60	0.00	0.00	0.00
8.00	0.01	9	202.61	0.00	0.00	0.00
10.00	0.07	227	202.73	0.00	0.00	0.00
12.00	1.34	2,254	202.97	0.00	0.00	0.00
14.00	0.29	2,786	203.01	0.33	0.33	0.00
16.00	0.15	2,606	202.99	0.16	0.16	0.00
18.00	0.11	2,540	202.99	0.12	0.12	0.00
20.00	0.09	2,502	202.99	0.09	0.09	0.00
22.00	0.08	2,484	202.99	0.08	0.08	0.00
24.00	0.07	2,464	202.98	0.07	0.07	0.00
26.00	0.00	2,305	202.97	0.01	0.01	0.00
28.00	0.00	2,275	202.97	0.00	0.00	0.00
30.00	0.00	2,268	202.97	0.00	0.00	0.00
32.00	0.00	2,264	202.97	0.00	0.00	0.00
34.00	0.00	2,262	202.97	0.00	0.00	0.00
36.00	0.00	2,261	202.97	0.00	0.00	0.00
38.00	0.00	2,260	202.97	0.00	0.00	0.00
40.00	0.00	2,260	202.97	0.00	0.00	0.00
42.00	0.00	2,259	202.97	0.00	0.00	0.00
44.00	0.00	2,259	202.97	0.00	0.00	0.00
46.00	0.00	2,259	202.97	0.00	0.00	0.00
48.00	0.00	2,259	202.97	0.00	0.00	0.00
50.00	0.00	2,259	202.97	0.00	0.00	0.00
52.00	0.00	2,259	202.97	0.00	0.00	0.00
54.00	0.00	2,259	202.97	0.00	0.00	0.00
56.00	0.00	2,259	202.97	0.00	0.00	0.00
58.00	0.00	2,259	202.97	0.00	0.00	0.00
60.00	0.00	2,259	202.97	0.00	0.00	0.00
62.00	0.00	2,259	202.97	0.00	0.00	0.00
64.00	0.00	2,259	202.97	0.00	0.00	0.00
66.00	0.00	2,259	202.97	0.00	0.00	0.00
68.00	0.00	2,259	202.97	0.00	0.00	0.00
70.00	0.00	2,259	202.97	0.00	0.00	0.00
72.00	0.00	2,259	202.97	0.00	0.00	0.00

Post-Development

NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Pond BB1: Bio Basin #1

Inflow Area = 2.400 ac, 65.00% Impervious, Inflow Depth = 4.08" for 10-year event
Inflow = 12.67 cfs @ 12.10 hrs, Volume= 0.816 af
Outflow = 2.28 cfs @ 12.42 hrs, Volume= 0.668 af, Atten= 82%, Lag= 19.3 min
Primary = 2.28 cfs @ 12.42 hrs, Volume= 0.668 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 202.47' @ 12.42 hrs Surf.Area= 7,845 sf Storage= 19,376 cf

Plug-Flow detention time= 329.2 min calculated for 0.668 af (82% of inflow)
Center-of-Mass det. time= 252.4 min (1,015.5 - 763.1)

Volume	Invert	Avail.Storage	Storage Description
#1	200.00'	39,225 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
200.00	7,845	0	0
201.00	7,845	7,845	7,845
202.00	7,845	7,845	15,690
203.00	7,845	7,845	23,535
204.00	7,845	7,845	31,380
205.00	7,845	7,845	39,225

Device	Routing	Invert	Outlet Devices
#1	Primary	197.20'	24.0" Round Culvert L= 75.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 197.20' / 196.83' S= 0.0049 ' / Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	200.81'	4.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	201.81'	19.5" W x 3.5" H Vert. Orifice/Grate C= 0.600
#4	Device 1	203.90'	16.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#5	Secondary	203.95'	75.0' 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 @ 12.42 hrs HW=202.47' (Free Discharge)

↑ **1=Culvert** (Passes 2.28 cfs of 30.83 cfs potential flow)
↑ **2=Orifice/Grate** (Orifice Controls 0.65 cfs @ 5.84 fps)
↑ **3=Orifice/Grate** (Orifice Controls 1.63 cfs @ 3.44 fps)
↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=200.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

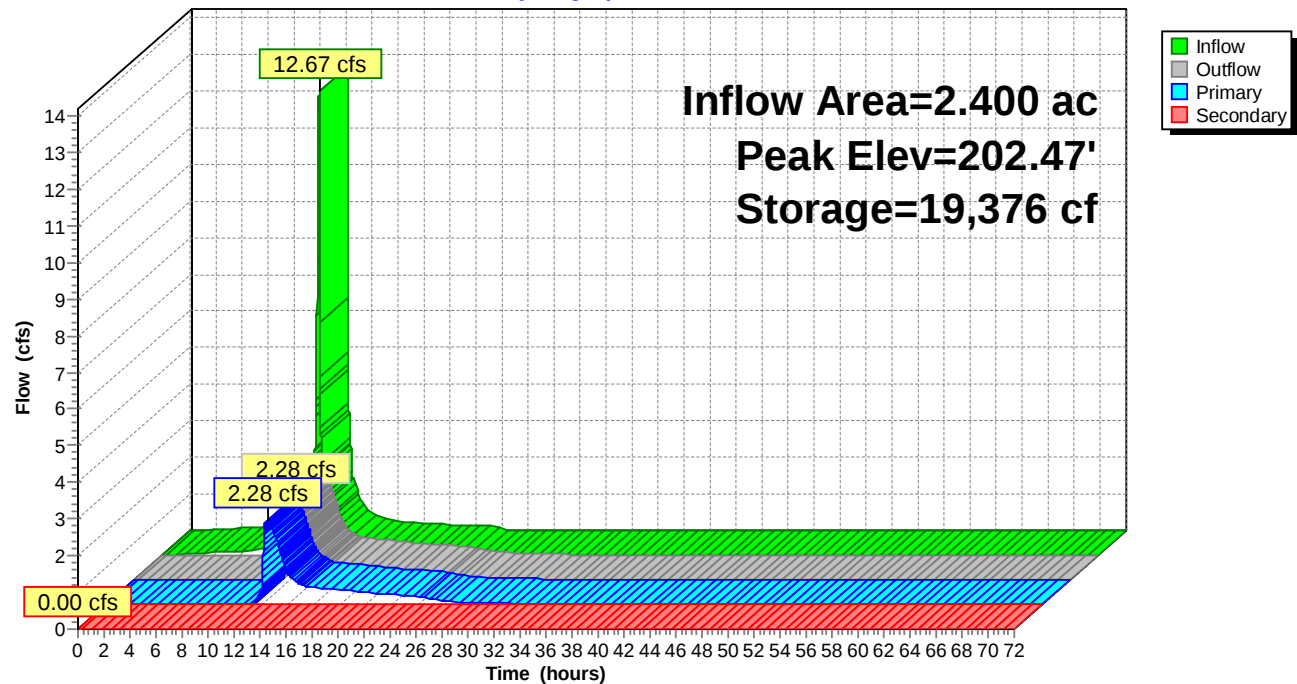
Post-Development

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NOAA 24-hr C 10-year Rainfall=4.97"
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Pond BB1: Bio Basin #1

Hydrograph



Post-Development

NOAA 24-hr C 10-year Rainfall=4.97"

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Hydrograph for Pond BB1: Bio Basin #1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	200.00	0.00	0.00	0.00
2.00	0.04	103	200.01	0.00	0.00	0.00
4.00	0.08	566	200.07	0.00	0.00	0.00
6.00	0.11	1,261	200.16	0.00	0.00	0.00
8.00	0.18	2,297	200.29	0.00	0.00	0.00
10.00	0.37	4,118	200.52	0.00	0.00	0.00
12.00	7.39	13,655	201.74	0.46	0.46	0.00
14.00	0.50	15,450	201.97	0.86	0.86	0.00
16.00	0.28	13,844	201.76	0.47	0.47	0.00
18.00	0.19	12,368	201.58	0.40	0.40	0.00
20.00	0.16	10,952	201.40	0.34	0.34	0.00
22.00	0.14	9,859	201.26	0.27	0.27	0.00
24.00	0.15	9,062	201.16	0.21	0.21	0.00
26.00	0.00	7,995	201.02	0.10	0.10	0.00
28.00	0.00	7,481	200.95	0.05	0.05	0.00
30.00	0.00	7,198	200.92	0.03	0.03	0.00
32.00	0.00	7,025	200.90	0.02	0.02	0.00
34.00	0.00	6,905	200.88	0.01	0.01	0.00
36.00	0.00	6,816	200.87	0.01	0.01	0.00
38.00	0.00	6,751	200.86	0.01	0.01	0.00
40.00	0.00	6,703	200.85	0.01	0.01	0.00
42.00	0.00	6,667	200.85	0.00	0.00	0.00
44.00	0.00	6,638	200.85	0.00	0.00	0.00
46.00	0.00	6,611	200.84	0.00	0.00	0.00
48.00	0.00	6,587	200.84	0.00	0.00	0.00
50.00	0.00	6,565	200.84	0.00	0.00	0.00
52.00	0.00	6,545	200.83	0.00	0.00	0.00
54.00	0.00	6,527	200.83	0.00	0.00	0.00
56.00	0.00	6,511	200.83	0.00	0.00	0.00
58.00	0.00	6,496	200.83	0.00	0.00	0.00
60.00	0.00	6,483	200.83	0.00	0.00	0.00
62.00	0.00	6,471	200.82	0.00	0.00	0.00
64.00	0.00	6,460	200.82	0.00	0.00	0.00
66.00	0.00	6,450	200.82	0.00	0.00	0.00
68.00	0.00	6,441	200.82	0.00	0.00	0.00
70.00	0.00	6,433	200.82	0.00	0.00	0.00
72.00	0.00	6,426	200.82	0.00	0.00	0.00

Post-Development

NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Pond BB2: Bio Basin #2

Inflow Area = 1.690 ac, 55.62% Impervious, Inflow Depth = 3.90" for 10-year event
Inflow = 8.68 cfs @ 12.10 hrs, Volume= 0.550 af
Outflow = 0.57 cfs @ 13.20 hrs, Volume= 0.456 af, Atten= 93%, Lag= 65.8 min
Primary = 0.57 cfs @ 13.20 hrs, Volume= 0.456 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 203.22' @ 13.20 hrs Surf.Area= 11,485 sf Storage= 15,262 cf

Plug-Flow detention time= 590.9 min calculated for 0.456 af (83% of inflow)
Center-of-Mass det. time= 517.0 min (1,286.1 - 769.2)

Volume	Invert	Avail.Storage	Storage Description
#1	201.00'	47,215 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
201.00	3,785	0	0
202.00	5,125	4,455	4,455
203.00	11,485	8,305	12,760
204.00	11,485	11,485	24,245
205.00	11,485	11,485	35,730
206.00	11,485	11,485	47,215

Device	Routing	Invert	Outlet Devices
#1	Primary	198.18'	24.0" Round Culvert L= 66.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 198.18' / 197.85' S= 0.0050 ' / Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	201.91'	2.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	202.78'	7.0" W x 3.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	204.10'	16.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#5	Secondary	204.15'	50.0' 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=0.57 cfs @ 13.20 hrs HW=203.22' (Free Discharge)

↑ **1=Culvert** (Passes 0.57 cfs of 30.36 cfs potential flow)
↑ **2=Orifice/Grate** (Orifice Controls 0.18 cfs @ 5.28 fps)
↑ **3=Orifice/Grate** (Orifice Controls 0.39 cfs @ 2.67 fps)
↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=201.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Post-Development

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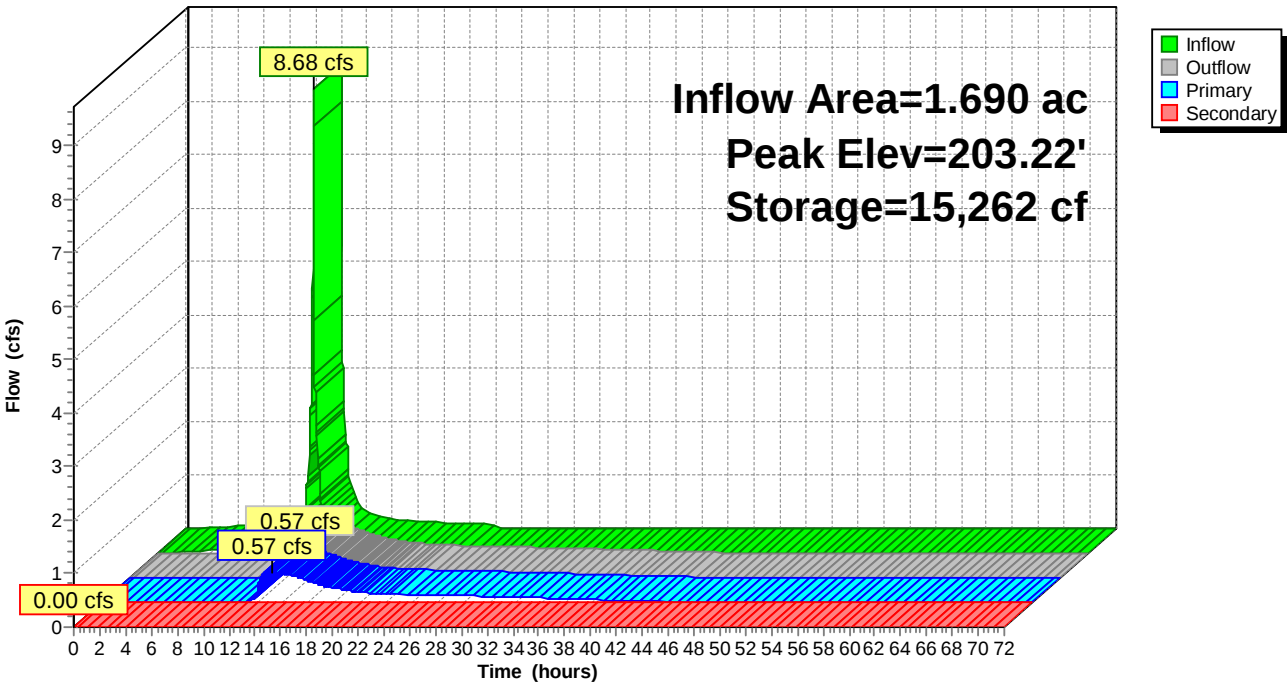
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Pond BB2: Bio Basin #2

Hydrograph



Post-Development

NOAA 24-hr C 10-year Rainfall=4.97"

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Hydrograph for Pond BB2: Bio Basin #2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	201.00	0.00	0.00	0.00
2.00	0.03	62	201.02	0.00	0.00	0.00
4.00	0.05	341	201.09	0.00	0.00	0.00
6.00	0.07	760	201.19	0.00	0.00	0.00
8.00	0.11	1,387	201.35	0.00	0.00	0.00
10.00	0.24	2,531	201.60	0.00	0.00	0.00
12.00	5.02	9,024	202.64	0.13	0.13	0.00
14.00	0.35	14,852	203.18	0.54	0.54	0.00
16.00	0.19	13,167	203.04	0.40	0.40	0.00
18.00	0.13	11,960	202.93	0.27	0.27	0.00
20.00	0.11	11,207	202.86	0.19	0.19	0.00
22.00	0.10	10,707	202.81	0.16	0.16	0.00
24.00	0.10	10,288	202.77	0.14	0.14	0.00
26.00	0.00	9,302	202.67	0.13	0.13	0.00
28.00	0.00	8,384	202.57	0.12	0.12	0.00
30.00	0.00	7,547	202.47	0.11	0.11	0.00
32.00	0.00	6,795	202.37	0.10	0.10	0.00
34.00	0.00	6,138	202.28	0.08	0.08	0.00
36.00	0.00	5,581	202.20	0.07	0.07	0.00
38.00	0.00	5,135	202.12	0.05	0.05	0.00
40.00	0.00	4,808	202.07	0.04	0.04	0.00
42.00	0.00	4,596	202.03	0.02	0.02	0.00
44.00	0.00	4,461	202.00	0.01	0.01	0.00
46.00	0.00	4,371	201.98	0.01	0.01	0.00
48.00	0.00	4,305	201.97	0.01	0.01	0.00
50.00	0.00	4,257	201.96	0.01	0.01	0.00
52.00	0.00	4,222	201.95	0.00	0.00	0.00
54.00	0.00	4,197	201.95	0.00	0.00	0.00
56.00	0.00	4,176	201.95	0.00	0.00	0.00
58.00	0.00	4,158	201.94	0.00	0.00	0.00
60.00	0.00	4,141	201.94	0.00	0.00	0.00
62.00	0.00	4,126	201.94	0.00	0.00	0.00
64.00	0.00	4,113	201.93	0.00	0.00	0.00
66.00	0.00	4,101	201.93	0.00	0.00	0.00
68.00	0.00	4,090	201.93	0.00	0.00	0.00
70.00	0.00	4,080	201.93	0.00	0.00	0.00
72.00	0.00	4,072	201.92	0.00	0.00	0.00

Post-Development

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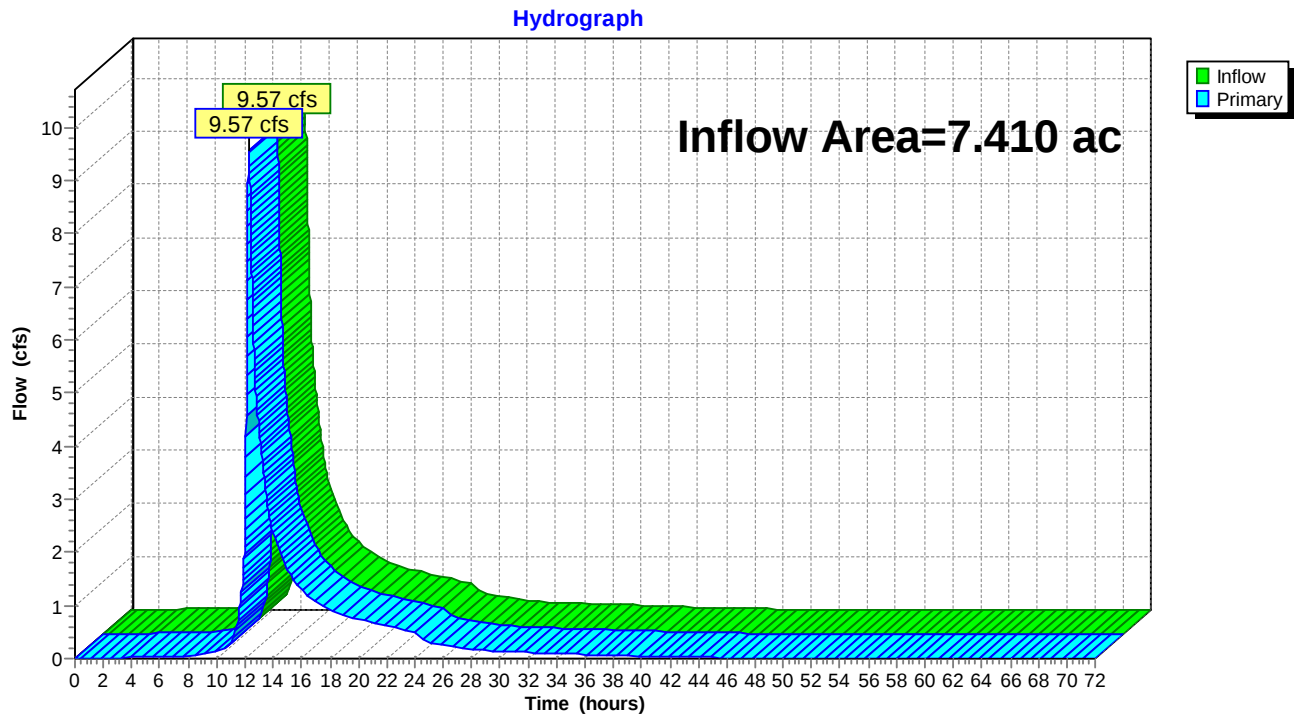
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Summary for Pond DP2: Stony Brook Tributary (DP-2)

Inflow Area = 7.410 ac, 39.00% Impervious, Inflow Depth > 3.10" for 10-year event
Inflow = 9.57 cfs @ 12.27 hrs, Volume= 1.916 af
Primary = 9.57 cfs @ 12.27 hrs, Volume= 1.916 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond DP2: Stony Brook Tributary (DP-2)



Post-Development

NOAA 24-hr C 10-year Rainfall=4.97"

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Summary for Pond PP1: Porous Pavement Area #1

Inflow Area = 0.220 ac, 81.82% Impervious, Inflow Depth = 4.39" for 10-year event
Inflow = 1.22 cfs @ 12.09 hrs, Volume= 0.081 af
Outflow = 0.20 cfs @ 12.51 hrs, Volume= 0.080 af, Atten= 83%, Lag= 24.9 min
Primary = 0.20 cfs @ 12.51 hrs, Volume= 0.080 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 201.42' @ 12.51 hrs Surf.Area= 2,857 sf Storage= 1,050 cf

Plug-Flow detention time= 55.5 min calculated for 0.080 af (99% of inflow)
Center-of-Mass det. time= 47.6 min (801.0 - 753.4)

Volume	Invert	Avail.Storage	Storage Description
#1	200.53'	1,685 cf	18.00'W x 117.00'L x 2.00'H Prismaoid 4,212 cf Overall x 40.0% Voids
#2	200.53'	259 cf	13.50'W x 24.00'L x 2.00'H Prismaoid 648 cf Overall x 40.0% Voids
#3	200.53'	6 cf	1.40'W x 5.00'L x 2.00'H Prismaoid 14 cf Overall x 40.0% Voids
#4	199.53'	157 cf	4.00'W x 105.00'L x 1.00'H Prismaoid 420 cf Overall - 26 cf Embedded = 394 cf x 40.0% Voids
#5	199.78'	21 cf	6.0" Round Pipe Storage Inside #4 L= 105.0' S= 0.0010 '/ 26 cf Overall - 0.4" Wall Thickness = 21 cf
		2,128 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	199.78'	6.0" Round Culvert L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 199.78' / 199.77' S= 0.0008 '/ Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	199.78'	2.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	201.52'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.20 cfs @ 12.51 hrs HW=201.42' (Free Discharge)

- ↑ **1=Culvert** (Passes 0.20 cfs of 1.12 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.20 cfs @ 5.98 fps)
- ↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Post-Development

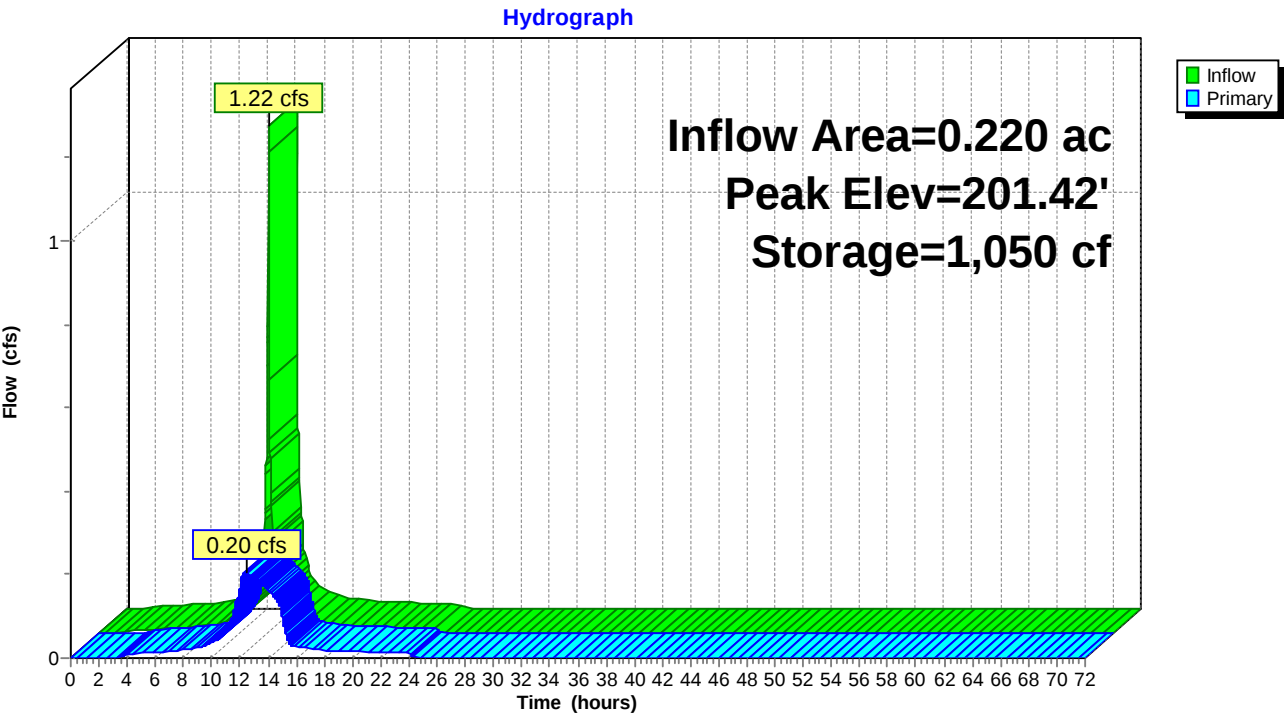
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Pond PP1: Porous Pavement Area #1



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Hydrograph for Pond PP1: Porous Pavement Area #1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	199.53	0.00
2.00	0.00	12	199.60	0.00
4.00	0.01	55	199.86	0.01
6.00	0.01	57	199.87	0.01
8.00	0.02	62	199.90	0.02
10.00	0.04	70	199.94	0.04
12.00	0.72	517	200.88	0.16
14.00	0.05	491	200.85	0.16
16.00	0.03	65	199.91	0.03
18.00	0.02	61	199.89	0.02
20.00	0.02	59	199.88	0.02
22.00	0.01	58	199.87	0.01
24.00	0.01	57	199.87	0.01
26.00	0.00	44	199.80	0.00
28.00	0.00	43	199.79	0.00
30.00	0.00	42	199.78	0.00
32.00	0.00	42	199.78	0.00
34.00	0.00	42	199.78	0.00
36.00	0.00	42	199.78	0.00
38.00	0.00	42	199.78	0.00
40.00	0.00	42	199.78	0.00
42.00	0.00	42	199.78	0.00
44.00	0.00	42	199.78	0.00
46.00	0.00	42	199.78	0.00
48.00	0.00	42	199.78	0.00
50.00	0.00	42	199.78	0.00
52.00	0.00	42	199.78	0.00
54.00	0.00	42	199.78	0.00
56.00	0.00	42	199.78	0.00
58.00	0.00	42	199.78	0.00
60.00	0.00	42	199.78	0.00
62.00	0.00	42	199.78	0.00
64.00	0.00	42	199.78	0.00
66.00	0.00	42	199.78	0.00
68.00	0.00	42	199.78	0.00
70.00	0.00	42	199.78	0.00
72.00	0.00	42	199.78	0.00

Post-Development

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Summary for Pond PP2: Porous Pavement Area #2

Inflow Area = 0.300 ac, 53.33% Impervious, Inflow Depth = 3.86" for 10-year event
 Inflow = 1.53 cfs @ 12.10 hrs, Volume= 0.097 af
 Outflow = 0.21 cfs @ 12.52 hrs, Volume= 0.096 af, Atten= 86%, Lag= 25.2 min
 Primary = 0.21 cfs @ 12.52 hrs, Volume= 0.096 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 201.95' @ 12.52 hrs Surf.Area= 3,595 sf Storage= 1,374 cf

Plug-Flow detention time= 61.1 min calculated for 0.096 af (99% of inflow)
 Center-of-Mass det. time= 56.2 min (826.9 - 770.7)

Volume	Invert	Avail.Storage	Storage Description
#1	201.00'	1,574 cf	24.00'W x 82.00'L x 2.00'H Prismatic 3,936 cf Overall x 40.0% Voids
#2	201.00'	1,037 cf	18.00'W x 72.00'L x 2.00'H Prismatic 2,592 cf Overall x 40.0% Voids
#3	201.00'	9 cf	2.00'W x 5.50'L x 2.00'H Prismatic 22 cf Overall x 40.0% Voids
#4	200.00'	120 cf	4.00'W x 80.00'L x 1.00'H Prismatic 320 cf Overall - 20 cf Embedded = 300 cf x 40.0% Voids
#5	200.25'	16 cf	6.0" Round Pipe Storage Inside #4 L= 80.0' S= 0.0010 '/' 20 cf Overall - 0.4" Wall Thickness = 16 cf
		2,756 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	200.25'	6.0" Round Culvert L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 200.25' / 200.23' S= 0.0010 '/ Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	200.25'	2.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	202.47'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.21 cfs @ 12.52 hrs HW=201.95' (Free Discharge)

- ↑ **1=Culvert** (Passes 0.21 cfs of 1.10 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.21 cfs @ 6.07 fps)
 ↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Post-Development

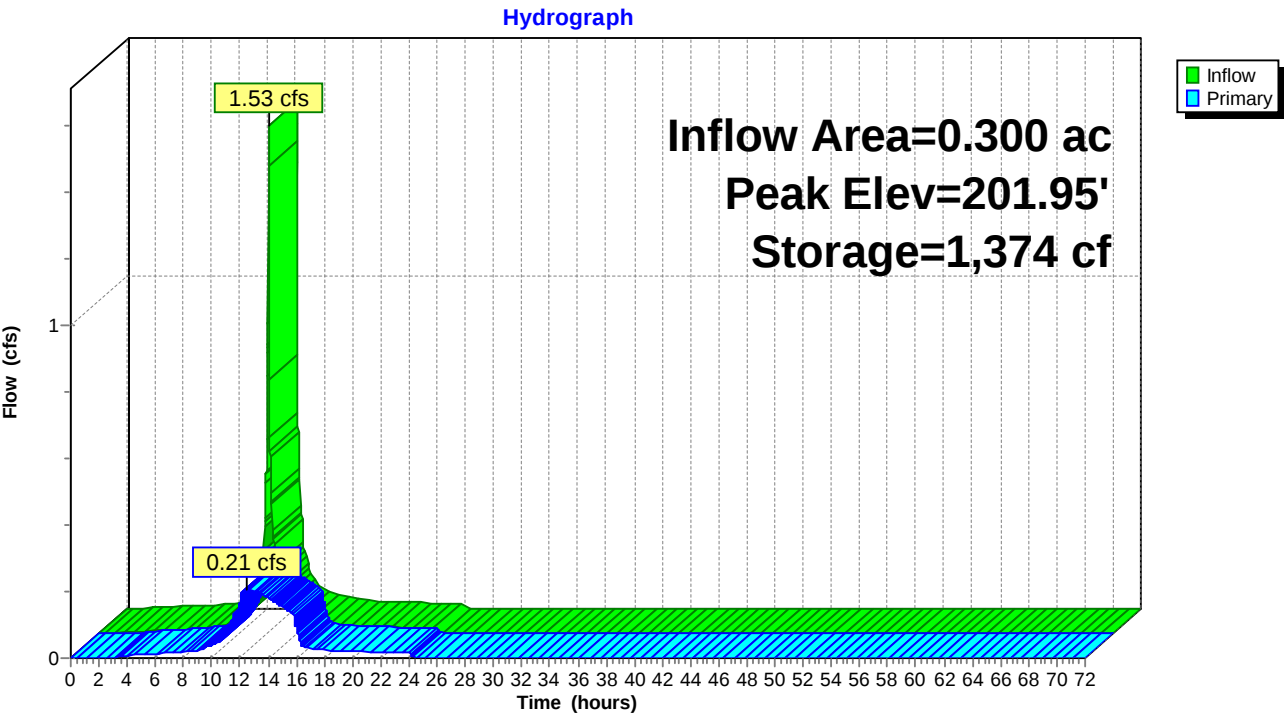
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Pond PP2: Porous Pavement Area #2



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Hydrograph for Pond PP2: Porous Pavement Area #2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	200.00	0.00
2.00	0.00	11	200.08	0.00
4.00	0.01	42	200.33	0.01
6.00	0.01	44	200.34	0.01
8.00	0.02	47	200.36	0.02
10.00	0.04	54	200.42	0.04
12.00	0.88	612	201.36	0.16
14.00	0.06	879	201.57	0.18
16.00	0.03	91	200.66	0.09
18.00	0.02	49	200.38	0.02
20.00	0.02	48	200.37	0.02
22.00	0.02	47	200.36	0.02
24.00	0.02	46	200.36	0.02
26.00	0.00	34	200.26	0.00
28.00	0.00	32	200.25	0.00
30.00	0.00	32	200.25	0.00
32.00	0.00	32	200.25	0.00
34.00	0.00	32	200.25	0.00
36.00	0.00	32	200.25	0.00
38.00	0.00	32	200.25	0.00
40.00	0.00	32	200.25	0.00
42.00	0.00	32	200.25	0.00
44.00	0.00	32	200.25	0.00
46.00	0.00	32	200.25	0.00
48.00	0.00	32	200.25	0.00
50.00	0.00	32	200.25	0.00
52.00	0.00	32	200.25	0.00
54.00	0.00	32	200.25	0.00
56.00	0.00	32	200.25	0.00
58.00	0.00	32	200.25	0.00
60.00	0.00	32	200.25	0.00
62.00	0.00	32	200.25	0.00
64.00	0.00	32	200.25	0.00
66.00	0.00	32	200.25	0.00
68.00	0.00	32	200.25	0.00
70.00	0.00	32	200.25	0.00
72.00	0.00	32	200.25	0.00

Post-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment DA1Ai: DA-1A Impervious

Runoff = 14.94 cfs @ 12.09 hrs, Volume= 1.028 af, Depth= 7.91"

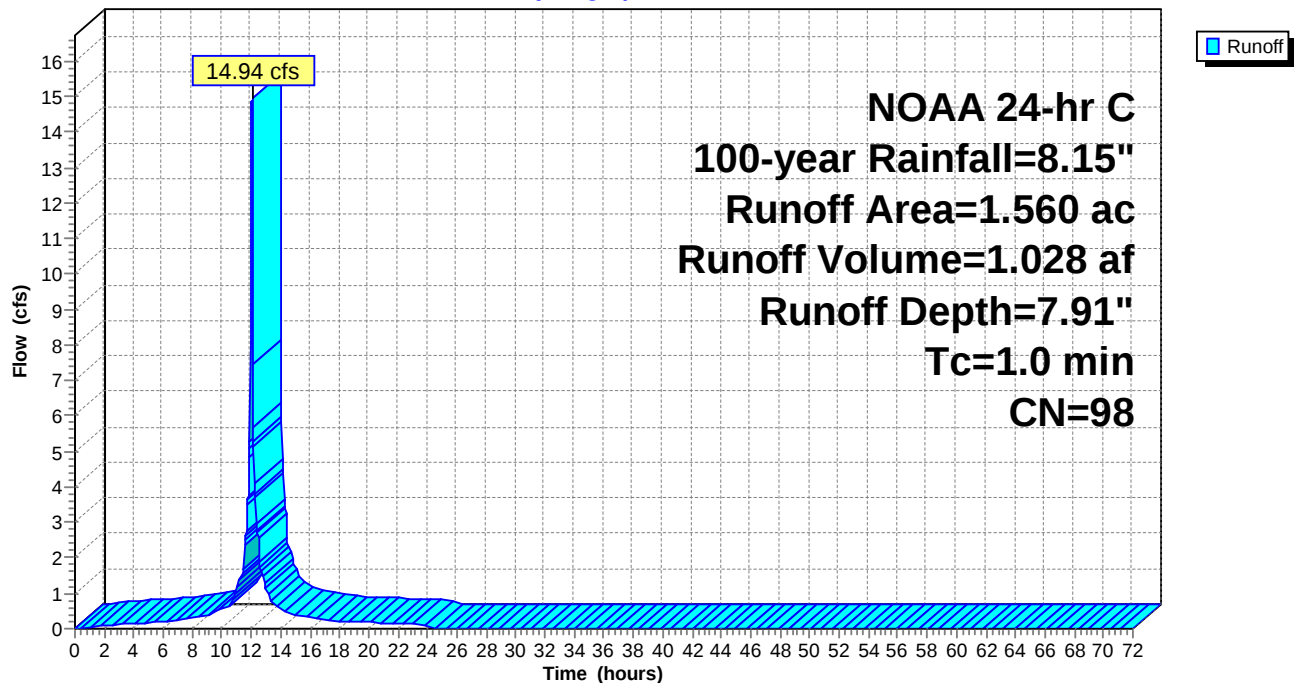
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
1.560	98	Roofs, HSG D
1.560		100.00% Impervious Area

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

Subcatchment DA1Ai: DA-1A Impervious

Hydrograph



Post-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/16/2023

Summary for Subcatchment DA1Ap: DA-1A Pervious

Runoff = 6.92 cfs @ 12.10 hrs, Volume= 0.404 af, Depth= 5.77"

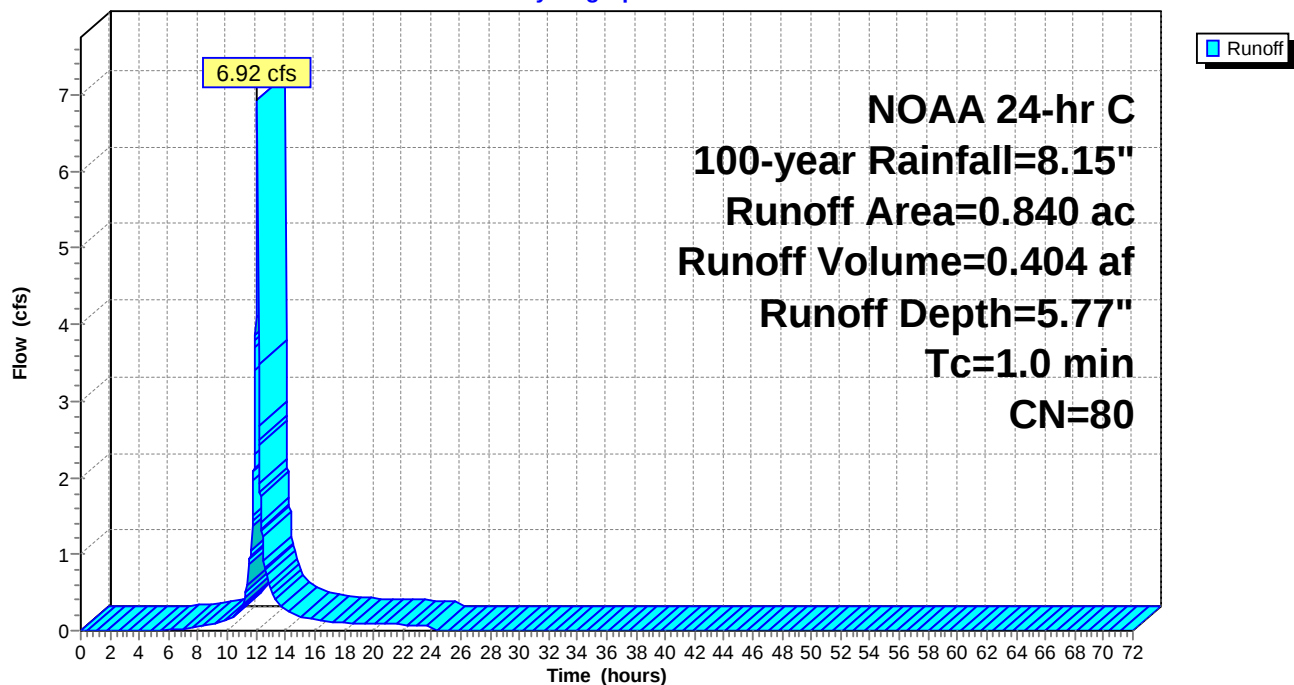
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.840	80	>75% Grass cover, Good, HSG D
0.840		100.00% Pervious Area

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

Subcatchment DA1Ap: DA-1A Pervious

Hydrograph



Post-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment DA1Bi: DA-1B Impervious

Runoff = 9.00 cfs @ 12.09 hrs, Volume= 0.620 af, Depth= 7.91"

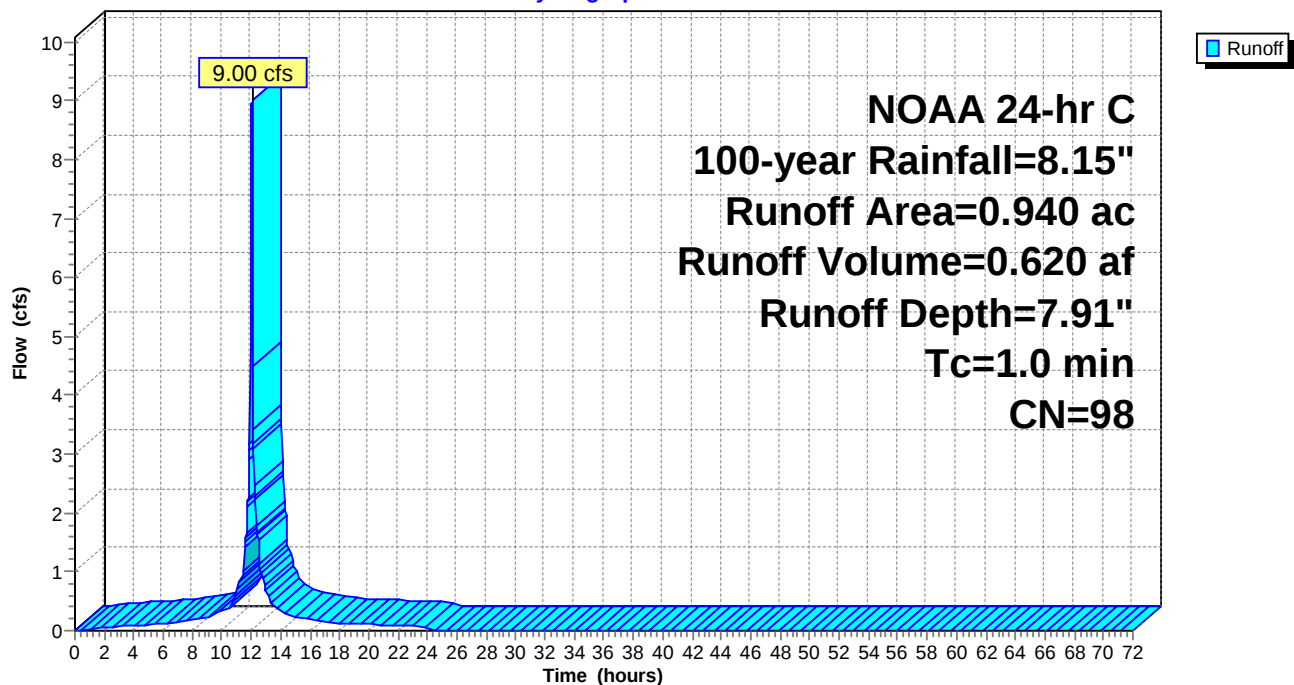
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
* 0.940	98	Paved parking, HSG D
0.940		100.00% Impervious Area

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

Subcatchment DA1Bi: DA-1B Impervious

Hydrograph



Post-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment DA1Bp: DA-1B Pervious

Runoff = 6.18 cfs @ 12.10 hrs, Volume= 0.360 af, Depth= 5.77"

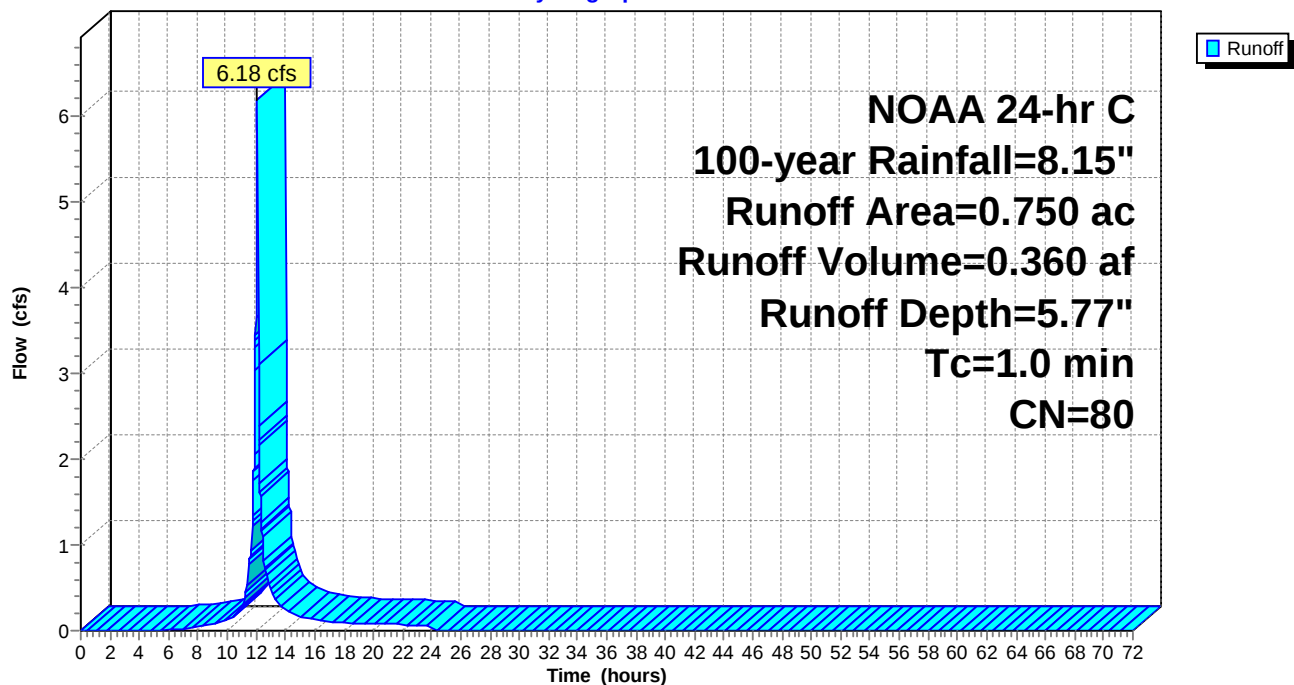
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.750	80	>75% Grass cover, Good, HSG D
0.750		100.00% Pervious Area

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

Subcatchment DA1Bp: DA-1B Pervious

Hydrograph



Post-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment DA1Ci: DA-1C Impervious

Runoff = 1.72 cfs @ 12.09 hrs, Volume= 0.119 af, Depth= 7.91"

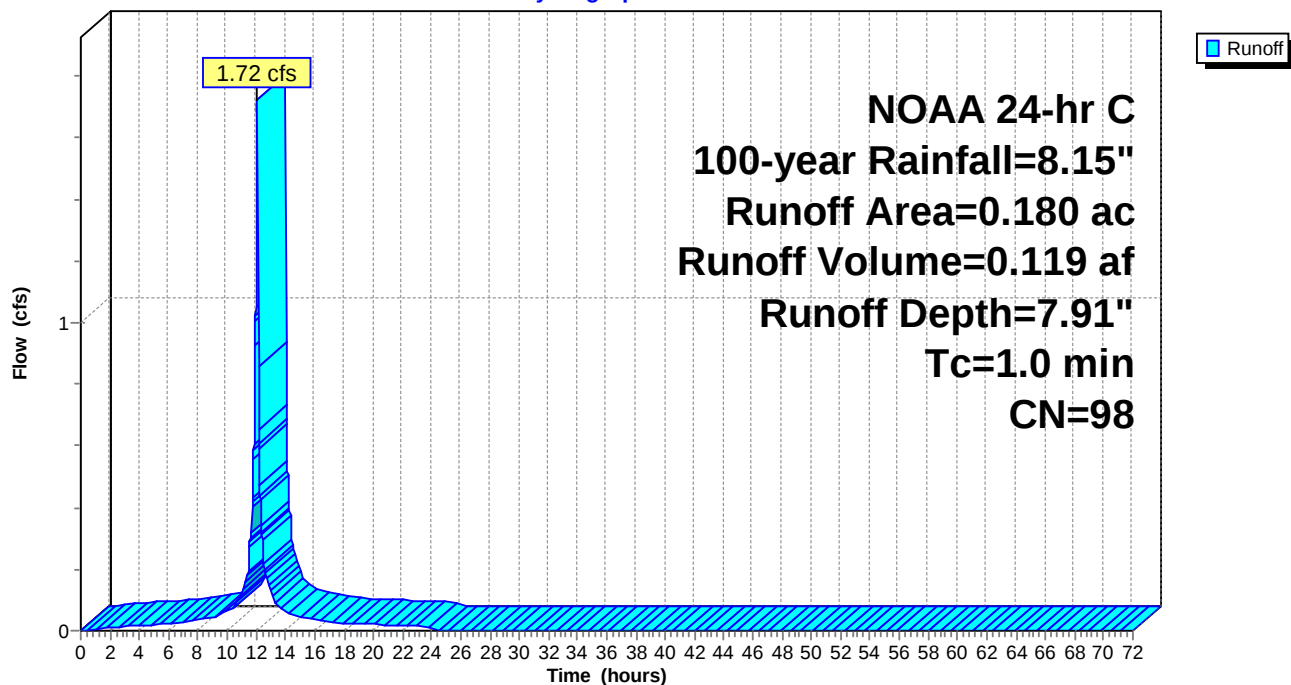
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.180	98	Paved parking, HSG D
0.180		100.00% Impervious Area

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

Subcatchment DA1Ci: DA-1C Impervious

Hydrograph



Post-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment DA1Cp: DA-1C Pervious

Runoff = 0.33 cfs @ 12.10 hrs, Volume= 0.019 af, Depth= 5.77"

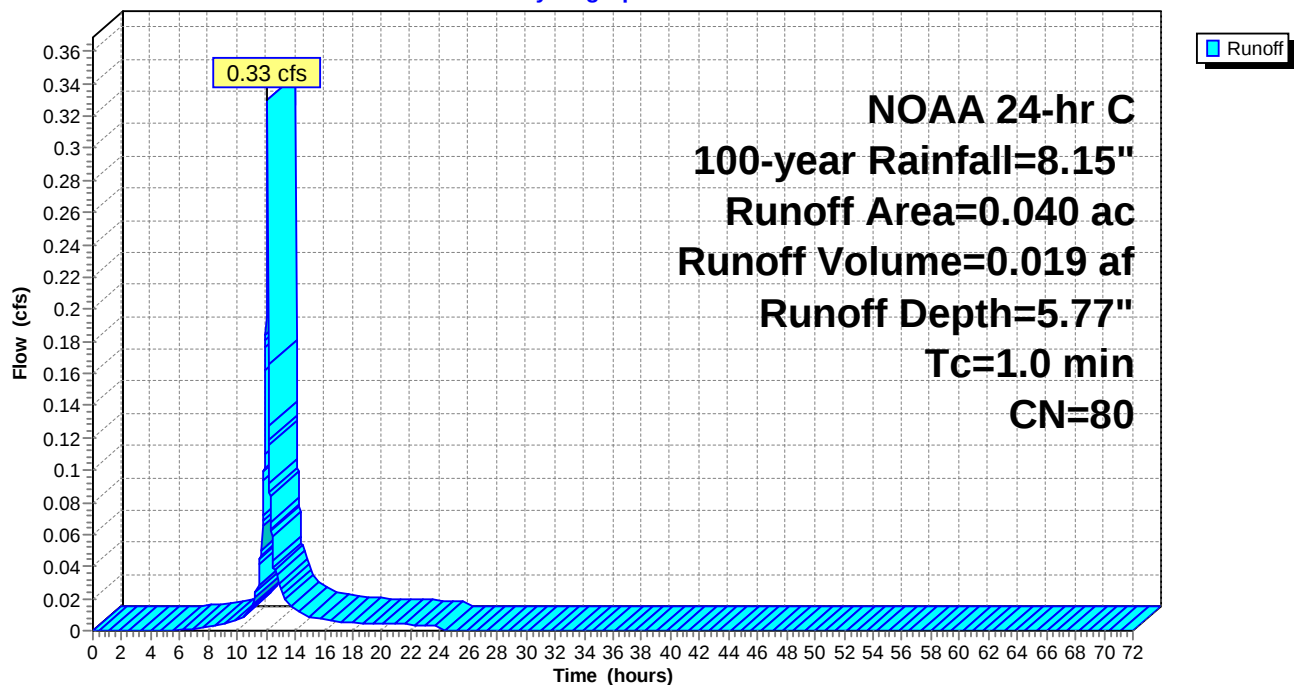
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.040	80	>75% Grass cover, Good, HSG D
0.040		100.00% Pervious Area

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

Subcatchment DA1Cp: DA-1C Pervious

Hydrograph



Post-Development

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NOAA 24-hr C 100-year Rainfall=8.15"
Printed 11/16/2023

Summary for Subcatchment DA1Di: DA-1D Impervious

Runoff = 1.53 cfs @ 12.09 hrs, Volume= 0.105 af, Depth= 7.91"

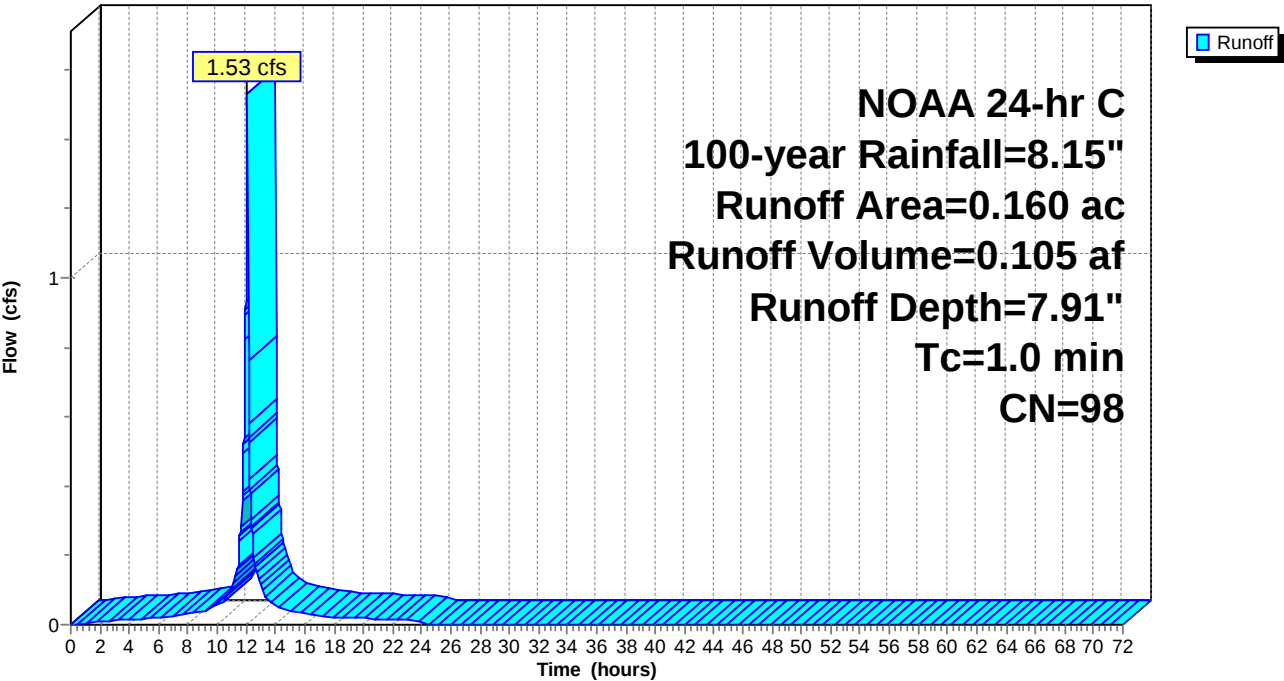
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
* 0.160	98	Paved parking, HSG D
0.160		100.00% Impervious Area

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

Subcatchment DA1Di: DA-1D Impervious

Hydrograph



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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment DA1Dp: DA-1D Pervious

Runoff = 1.15 cfs @ 12.10 hrs, Volume= 0.067 af, Depth= 5.77"

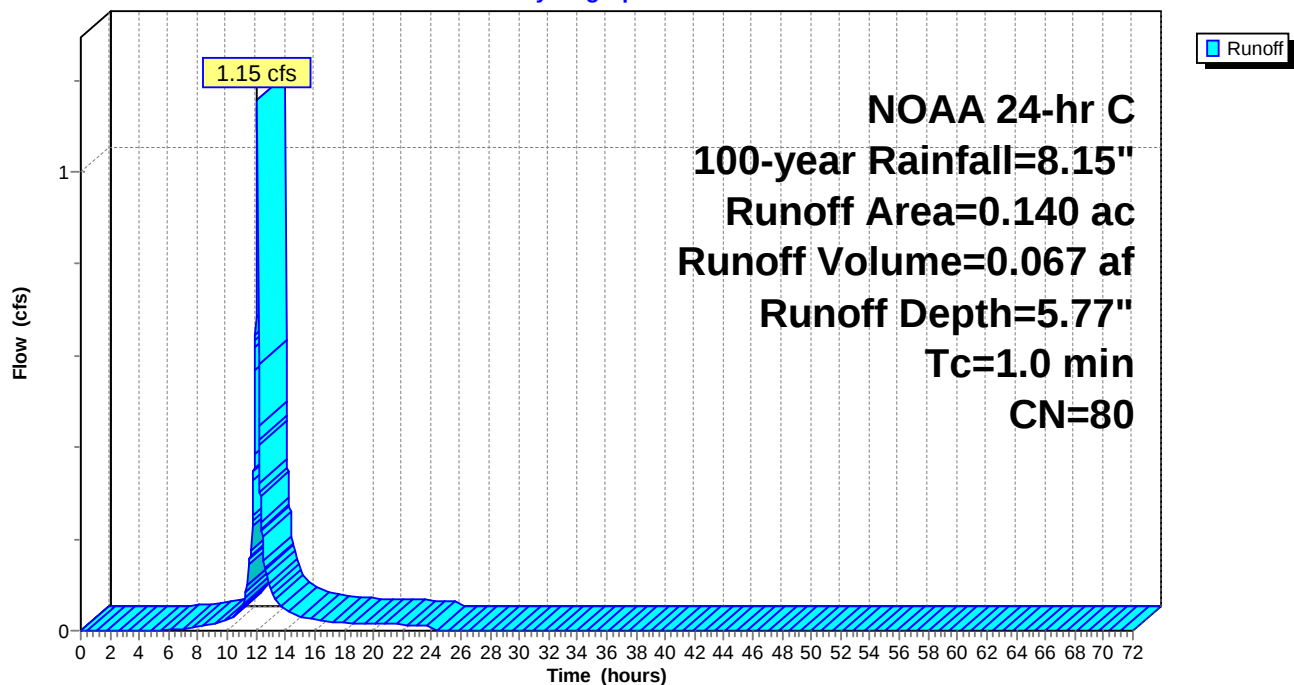
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.140	80	>75% Grass cover, Good, HSG D
0.140		100.00% Pervious Area

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

Subcatchment DA1Dp: DA-1D Pervious

Hydrograph



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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment DA4 Un: DA-4 Uncollected

Runoff = 0.82 cfs @ 12.10 hrs, Volume= 0.048 af, Depth= 5.77"

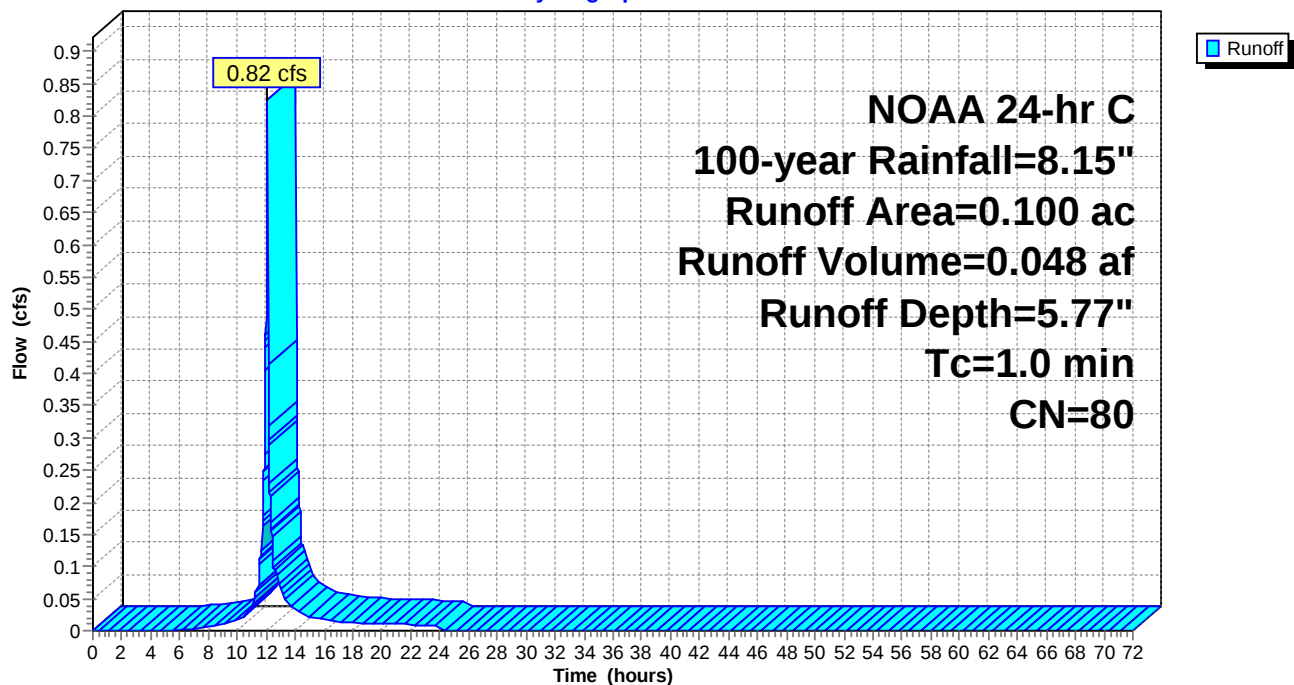
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.100	80	>75% Grass cover, Good, HSG D
0.100		100.00% Pervious Area

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

Subcatchment DA4 Un: DA-4 Uncollected

Hydrograph



Post-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/16/2023

Summary for Subcatchment DA5 Un i: DA-5 Uncollected Impervious

Runoff = 0.03 cfs @ 12.10 hrs, Volume= 0.002 af, Depth= 5.77"

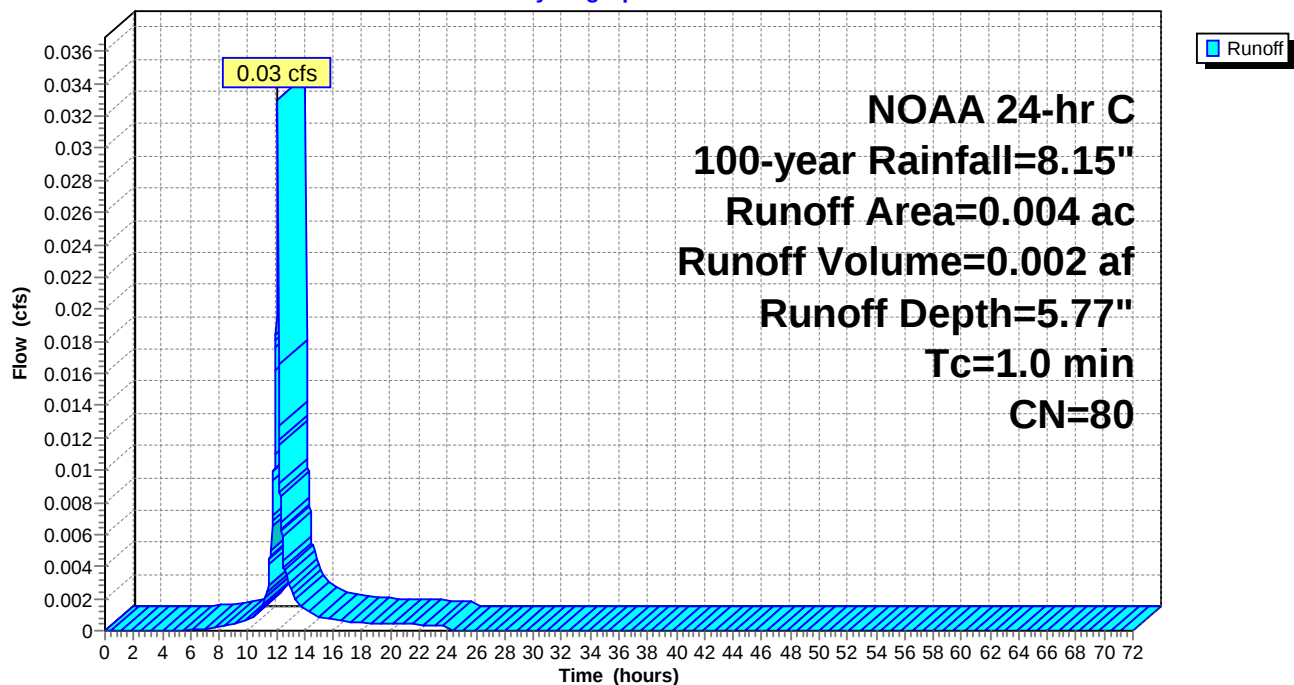
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.004	80	>75% Grass cover, Good, HSG D
0.004		100.00% Pervious Area

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

Subcatchment DA5 Un i: DA-5 Uncollected Impervious

Hydrograph



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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/16/2023

Summary for Subcatchment DA5 Un p: DA-5 Uncollected Pervious

Runoff = 0.30 cfs @ 12.10 hrs, Volume= 0.017 af, Depth= 5.77"

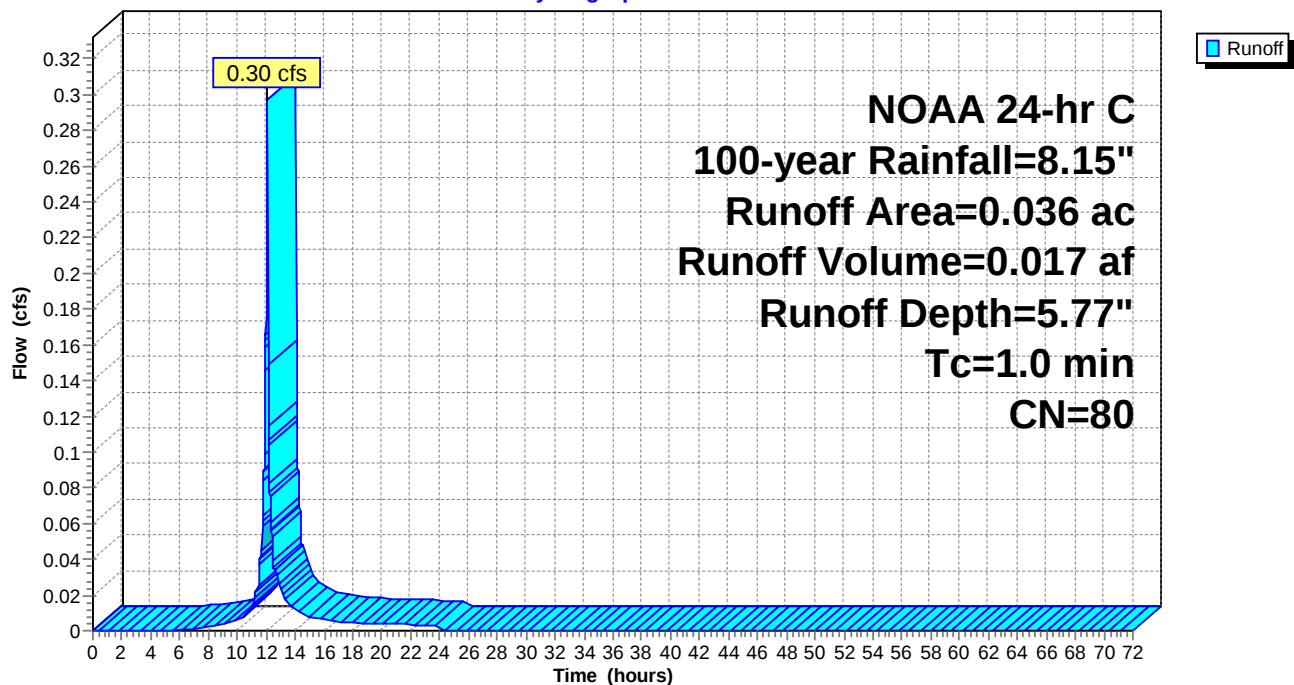
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.036	80	>75% Grass cover, Good, HSG D
0.036		100.00% Pervious Area

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

Subcatchment DA5 Un p: DA-5 Uncollected Pervious

Hydrograph



Post-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment EA-2U p: EA-2U Pervious

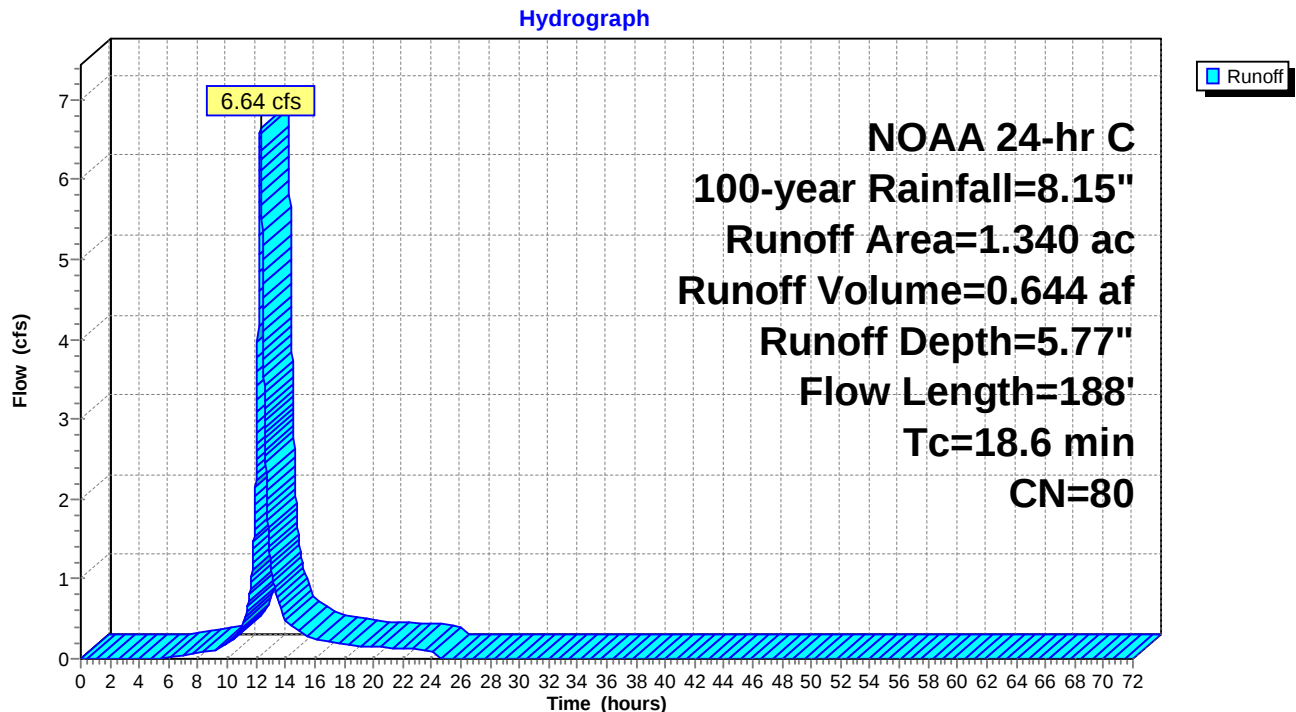
Runoff = 6.64 cfs @ 12.27 hrs, Volume= 0.644 af, Depth= 5.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.600	79	Woods/grass comb., Good, HSG D
0.740	80	>75% Grass cover, Good, HSG D
1.340	80	Weighted Average
1.340		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	44	0.0303	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
8.9	113	0.0018	0.21		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.4	31	0.0065	1.30		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
18.6	188	Total			

Subcatchment EA-2U p: EA-2U Pervious



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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment EA-3U i: EA-3U Impervious

Runoff = 0.34 cfs @ 12.21 hrs, Volume= 0.033 af, Depth= 7.91"

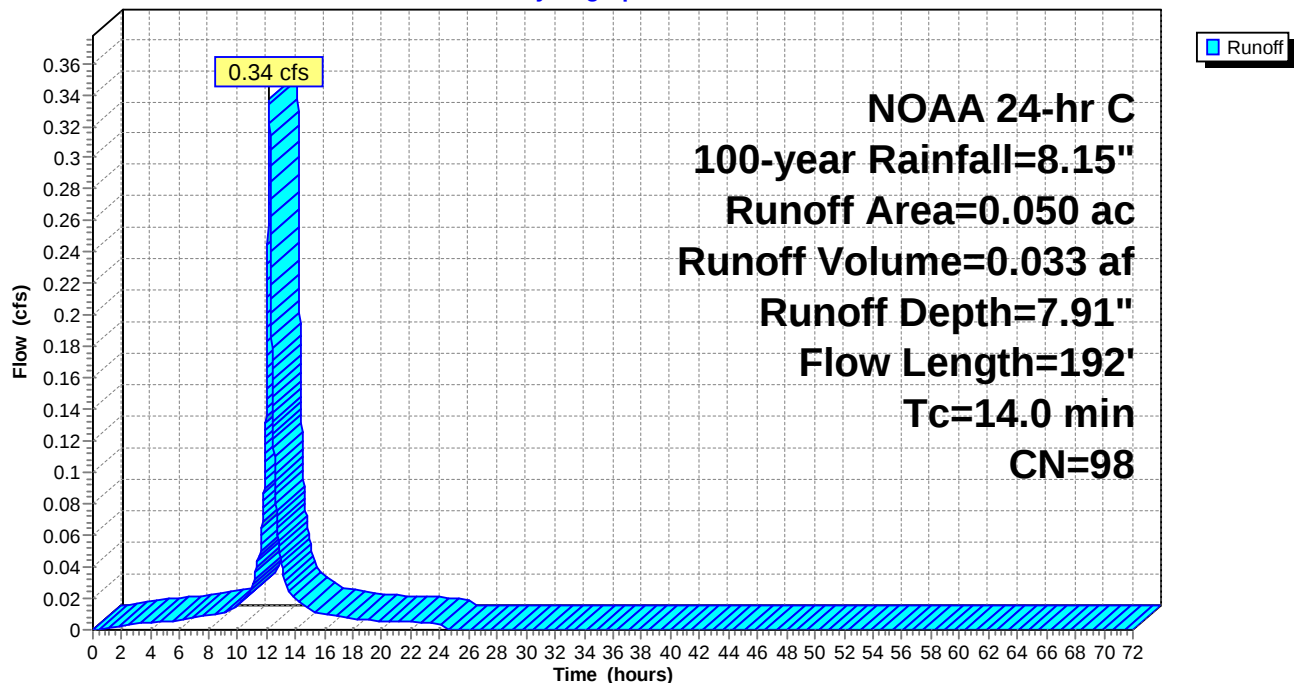
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
* 0.050	98	Impervious Areas
0.050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	6	0.0193	0.07		Sheet Flow, Grass: Dense n= 0.240 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.0	192	Total			

Subcatchment EA-3U i: EA-3U Impervious

Hydrograph



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NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Subcatchment EA-3U p: EA-3U Pervious

Runoff = 7.00 cfs @ 12.21 hrs, Volume= 0.598 af, Depth= 5.65"

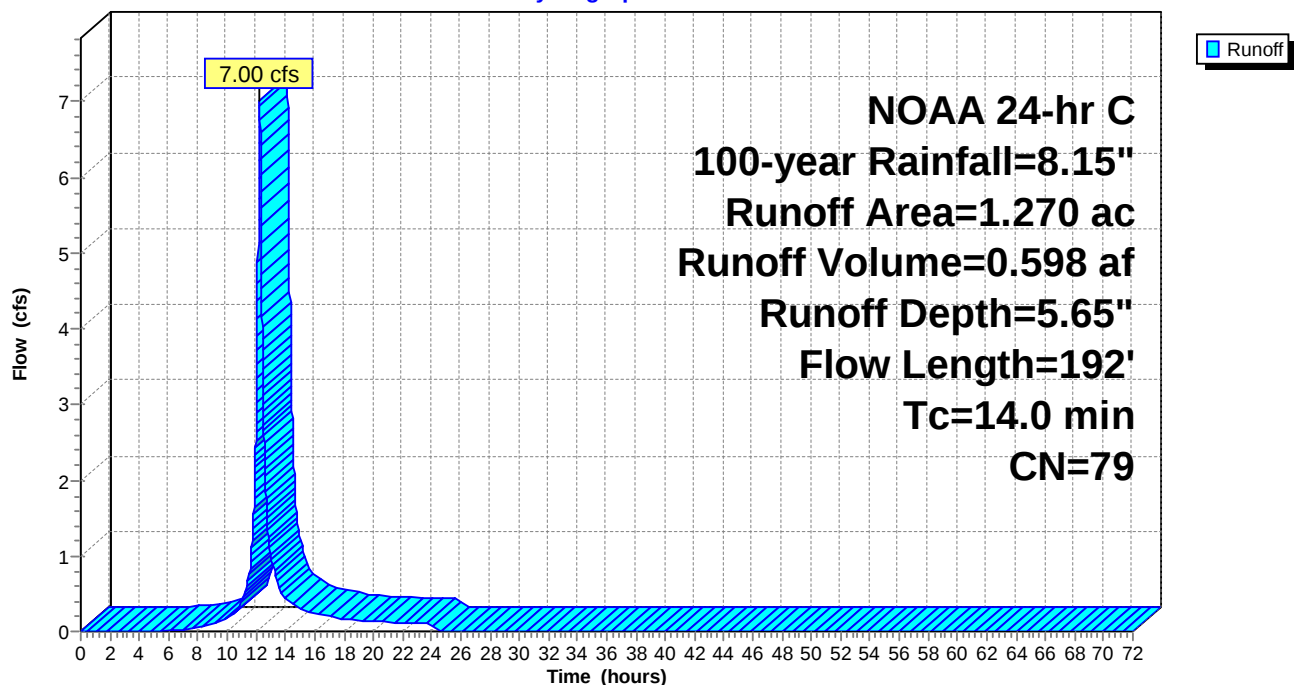
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100-year Rainfall=8.15"

Area (ac)	CN	Description
0.450	80	>75% Grass cover, Good, HSG D
0.820	79	Woods/grass comb., Good, HSG D
1.270	79	Weighted Average
1.270		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	6	0.0193	0.07		Sheet Flow, Grass: Dense n= 0.240 P2= 3.31"
9.2	35	0.0193	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.31"
3.2	142	0.0223	0.75		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2789	2.64		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.0	192	Total			

Subcatchment EA-3U p: EA-3U Pervious

Hydrograph



Post-Development

NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Pond 2P: EA-2 Wetlands

Inflow Area = 1.440 ac, 0.00% Impervious, Inflow Depth = 5.77" for 100-year event
Inflow = 6.85 cfs @ 12.27 hrs, Volume= 0.692 af
Outflow = 6.66 cfs @ 12.31 hrs, Volume= 0.640 af, Atten= 3%, Lag= 2.5 min
Primary = 3.38 cfs @ 12.31 hrs, Volume= 0.460 af
Secondary = 3.28 cfs @ 12.31 hrs, Volume= 0.180 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 203.08' @ 12.31 hrs Surf.Area= 18,339 sf Storage= 4,132 cf

Plug-Flow detention time= 76.0 min calculated for 0.640 af (93% of inflow)
Center-of-Mass det. time= 35.6 min (851.1 - 815.5)

Volume	Invert	Avail.Storage	Storage Description
#1	202.60'	8,536 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.60	467	0	0
202.70	2,559	151	151
202.80	5,796	418	569
202.90	10,670	823	1,392
203.00	15,559	1,311	2,704
203.10	18,857	1,721	4,425
203.20	20,626	1,974	6,399
203.30	22,113	2,137	8,536

Device	Routing	Invert	Outlet Devices
#1	Primary	202.97'	179.4 deg x 11.0' long x 0.33' rise Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)
#2	Secondary	203.01'	65.0' 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=3.38 cfs @ 12.31 hrs HW=203.08' (Free Discharge)

↑**1=Sharp-Crested Vee/Trap Weir** (Weir Controls 3.38 cfs @ 0.90 fps)

Secondary OutFlow Max=3.28 cfs @ 12.31 hrs HW=203.08' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 3.28 cfs @ 0.68 fps)

Post-Development

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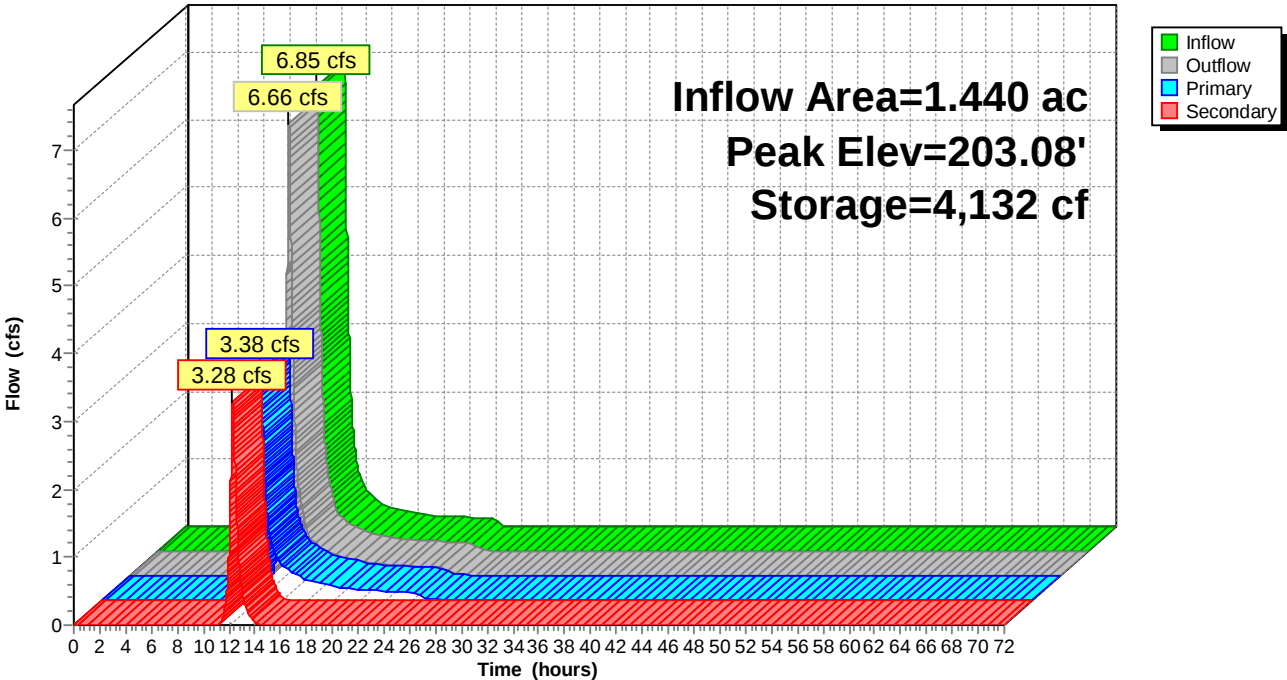
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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/16/2023

Pond 2P: EA-2 Wetlands

Hydrograph



Post-Development

NOAA 24-hr C 100-year Rainfall=8.15"

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Hydrograph for Pond 2P: EA-2 Wetlands

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	202.60	0.00	0.00	0.00
2.00	0.00	0	202.60	0.00	0.00	0.00
4.00	0.00	0	202.60	0.00	0.00	0.00
6.00	0.02	25	202.63	0.00	0.00	0.00
8.00	0.07	324	202.75	0.00	0.00	0.00
10.00	0.22	1,238	202.88	0.00	0.00	0.00
12.00	2.87	3,421	203.04	2.41	1.39	1.02
14.00	0.52	2,926	203.01	0.55	0.51	0.05
16.00	0.28	2,744	203.00	0.29	0.29	0.00
18.00	0.19	2,654	203.00	0.21	0.21	0.00
20.00	0.16	2,603	202.99	0.16	0.16	0.00
22.00	0.14	2,578	202.99	0.14	0.14	0.00
24.00	0.12	2,546	202.99	0.12	0.12	0.00
26.00	0.00	2,315	202.97	0.01	0.01	0.00
28.00	0.00	2,276	202.97	0.00	0.00	0.00
30.00	0.00	2,269	202.97	0.00	0.00	0.00
32.00	0.00	2,265	202.97	0.00	0.00	0.00
34.00	0.00	2,262	202.97	0.00	0.00	0.00
36.00	0.00	2,261	202.97	0.00	0.00	0.00
38.00	0.00	2,260	202.97	0.00	0.00	0.00
40.00	0.00	2,260	202.97	0.00	0.00	0.00
42.00	0.00	2,259	202.97	0.00	0.00	0.00
44.00	0.00	2,259	202.97	0.00	0.00	0.00
46.00	0.00	2,259	202.97	0.00	0.00	0.00
48.00	0.00	2,259	202.97	0.00	0.00	0.00
50.00	0.00	2,259	202.97	0.00	0.00	0.00
52.00	0.00	2,259	202.97	0.00	0.00	0.00
54.00	0.00	2,259	202.97	0.00	0.00	0.00
56.00	0.00	2,259	202.97	0.00	0.00	0.00
58.00	0.00	2,259	202.97	0.00	0.00	0.00
60.00	0.00	2,259	202.97	0.00	0.00	0.00
62.00	0.00	2,259	202.97	0.00	0.00	0.00
64.00	0.00	2,259	202.97	0.00	0.00	0.00
66.00	0.00	2,259	202.97	0.00	0.00	0.00
68.00	0.00	2,259	202.97	0.00	0.00	0.00
70.00	0.00	2,259	202.97	0.00	0.00	0.00
72.00	0.00	2,259	202.97	0.00	0.00	0.00

Post-Development

NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Pond BB1: Bio Basin #1

Inflow Area = 2.400 ac, 65.00% Impervious, Inflow Depth = 7.16" for 100-year event
Inflow = 21.83 cfs @ 12.09 hrs, Volume= 1.432 af
Outflow = 4.54 cfs @ 12.32 hrs, Volume= 1.284 af, Atten= 79%, Lag= 13.8 min
Primary = 4.54 cfs @ 12.32 hrs, Volume= 1.284 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 203.94' @ 12.32 hrs Surf.Area= 7,845 sf Storage= 30,917 cf

Plug-Flow detention time= 252.7 min calculated for 1.284 af (90% of inflow)
Center-of-Mass det. time= 199.2 min (954.0 - 754.8)

Volume	Invert	Avail.Storage	Storage Description
#1	200.00'	39,225 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
200.00	7,845	0	0
201.00	7,845	7,845	7,845
202.00	7,845	7,845	15,690
203.00	7,845	7,845	23,535
204.00	7,845	7,845	31,380
205.00	7,845	7,845	39,225

Device	Routing	Invert	Outlet Devices
#1	Primary	197.20'	24.0" Round Culvert L= 75.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 197.20' / 196.83' S= 0.0049 ' / Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	200.81'	4.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	201.81'	19.5" W x 3.5" H Vert. Orifice/Grate C= 0.600
#4	Device 1	203.90'	16.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#5	Secondary	203.95'	75.0' 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=4.50 cfs @ 12.32 hrs HW=203.94' (Free Discharge)

↑ **1=Culvert** (Passes 4.50 cfs of 36.24 cfs potential flow)
↑ **2=Orifice/Grate** (Orifice Controls 0.91 cfs @ 8.26 fps)
↑ **3=Orifice/Grate** (Orifice Controls 3.21 cfs @ 6.78 fps)
↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 0.37 cfs @ 0.57 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=200.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Post-Development

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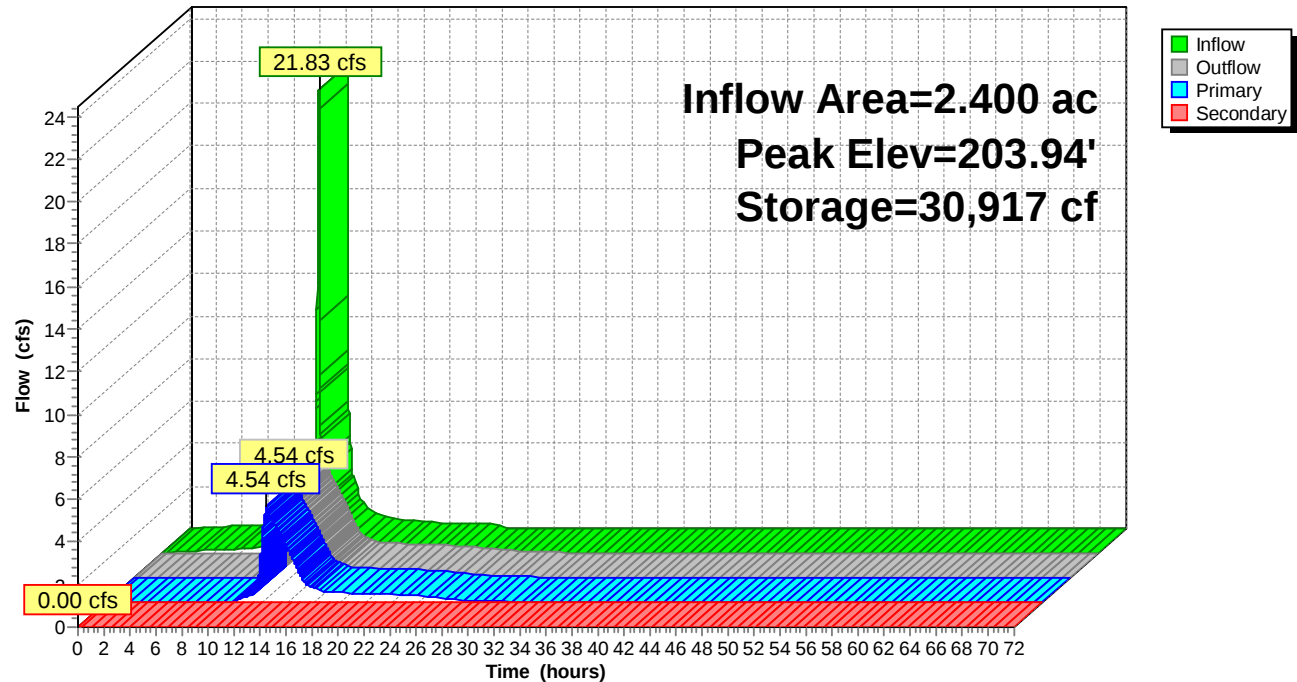
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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/16/2023

Pond BB1: Bio Basin #1

Hydrograph



Post-Development

NOAA 24-hr C 100-year Rainfall=8.15"

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Hydrograph for Pond BB1: Bio Basin #1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	200.00	0.00	0.00	0.00
2.00	0.10	330	200.04	0.00	0.00	0.00
4.00	0.16	1,283	200.16	0.00	0.00	0.00
6.00	0.20	2,575	200.33	0.00	0.00	0.00
8.00	0.35	4,563	200.58	0.00	0.00	0.00
10.00	0.69	7,899	201.01	0.09	0.09	0.00
12.00	12.89	22,043	202.81	2.82	2.82	0.00
14.00	0.85	20,360	202.60	2.49	2.49	0.00
16.00	0.47	14,920	201.90	0.65	0.65	0.00
18.00	0.32	13,930	201.78	0.47	0.47	0.00
20.00	0.27	12,816	201.63	0.42	0.42	0.00
22.00	0.24	11,761	201.50	0.38	0.38	0.00
24.00	0.25	10,798	201.38	0.33	0.33	0.00
26.00	0.00	8,916	201.14	0.20	0.20	0.00
28.00	0.00	7,923	201.01	0.09	0.09	0.00
30.00	0.00	7,444	200.95	0.05	0.05	0.00
32.00	0.00	7,176	200.91	0.03	0.03	0.00
34.00	0.00	7,011	200.89	0.02	0.02	0.00
36.00	0.00	6,895	200.88	0.01	0.01	0.00
38.00	0.00	6,809	200.87	0.01	0.01	0.00
40.00	0.00	6,745	200.86	0.01	0.01	0.00
42.00	0.00	6,698	200.85	0.01	0.01	0.00
44.00	0.00	6,664	200.85	0.00	0.00	0.00
46.00	0.00	6,635	200.85	0.00	0.00	0.00
48.00	0.00	6,608	200.84	0.00	0.00	0.00
50.00	0.00	6,584	200.84	0.00	0.00	0.00
52.00	0.00	6,563	200.84	0.00	0.00	0.00
54.00	0.00	6,543	200.83	0.00	0.00	0.00
56.00	0.00	6,525	200.83	0.00	0.00	0.00
58.00	0.00	6,509	200.83	0.00	0.00	0.00
60.00	0.00	6,495	200.83	0.00	0.00	0.00
62.00	0.00	6,482	200.83	0.00	0.00	0.00
64.00	0.00	6,470	200.82	0.00	0.00	0.00
66.00	0.00	6,459	200.82	0.00	0.00	0.00
68.00	0.00	6,449	200.82	0.00	0.00	0.00
70.00	0.00	6,440	200.82	0.00	0.00	0.00
72.00	0.00	6,432	200.82	0.00	0.00	0.00

Post-Development

NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Pond BB2: Bio Basin #2

Inflow Area = 1.690 ac, 55.62% Impervious, Inflow Depth = 6.96" for 100-year event
Inflow = 15.16 cfs @ 12.10 hrs, Volume= 0.980 af
Outflow = 1.47 cfs @ 12.80 hrs, Volume= 0.886 af, Atten= 90%, Lag= 42.1 min
Primary = 1.47 cfs @ 12.80 hrs, Volume= 0.886 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 204.14' @ 12.80 hrs Surf.Area= 11,485 sf Storage= 25,906 cf

Plug-Flow detention time= 470.4 min calculated for 0.886 af (90% of inflow)
Center-of-Mass det. time= 419.9 min (1,180.2 - 760.3)

Volume	Invert	Avail.Storage	Storage Description
#1	201.00'	47,215 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
201.00	3,785	0	0
202.00	5,125	4,455	4,455
203.00	11,485	8,305	12,760
204.00	11,485	11,485	24,245
205.00	11,485	11,485	35,730
206.00	11,485	11,485	47,215

Device	Routing	Invert	Outlet Devices
#1	Primary	198.18'	24.0" Round Culvert L= 66.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 198.18' / 197.85' S= 0.0050 ' / Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	201.91'	2.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	202.78'	7.0" W x 3.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	204.10'	16.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#5	Secondary	204.15'	50.0' 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=1.44 cfs @ 12.80 hrs HW=204.14' (Free Discharge)

↑ **1=Culvert** (Passes 1.44 cfs of 33.70 cfs potential flow)
↑ **2=Orifice/Grate** (Orifice Controls 0.24 cfs @ 7.03 fps)
↑ **3=Orifice/Grate** (Orifice Controls 0.78 cfs @ 5.36 fps)
↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 0.42 cfs @ 0.59 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=201.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Post-Development

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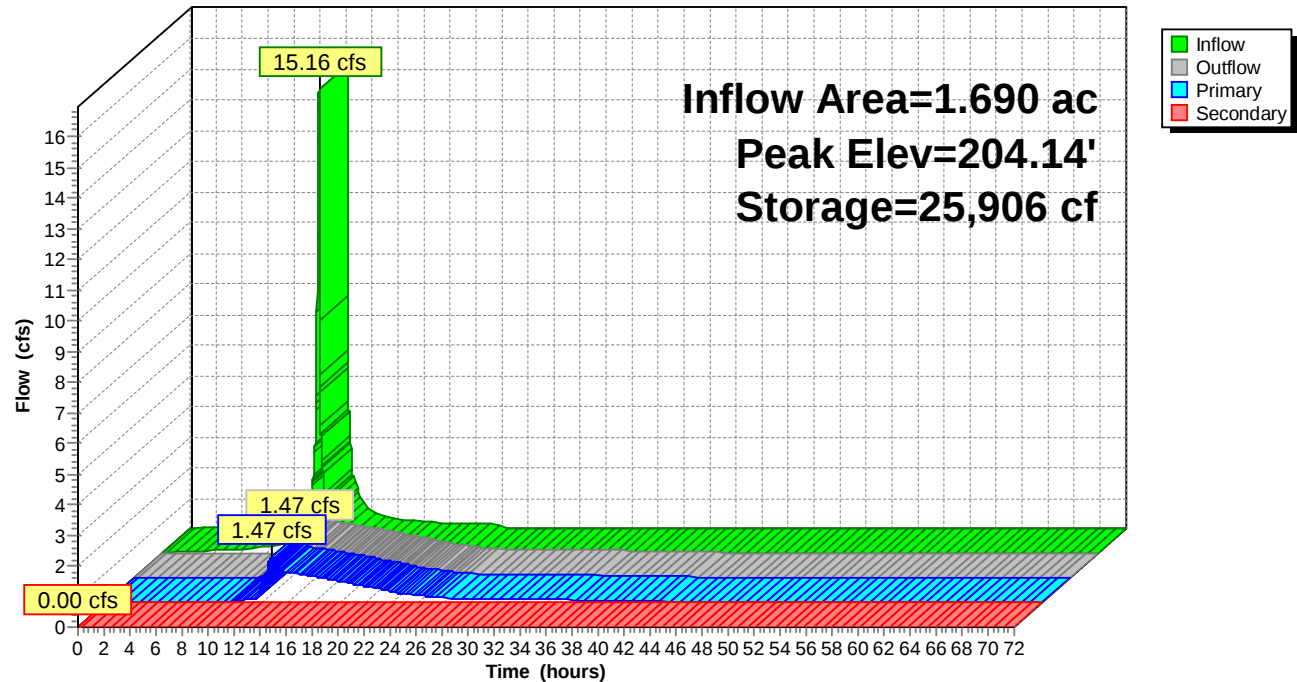
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NOAA 24-hr C 100-year Rainfall=8.15"

Printed 11/16/2023

Pond BB2: Bio Basin #2

Hydrograph



Post-Development

NOAA 24-hr C 100-year Rainfall=8.15"

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Hydrograph for Pond BB2: Bio Basin #2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	201.00	0.00	0.00	0.00
2.00	0.06	199	201.05	0.00	0.00	0.00
4.00	0.09	773	201.20	0.00	0.00	0.00
6.00	0.13	1,559	201.39	0.00	0.00	0.00
8.00	0.22	2,816	201.67	0.00	0.00	0.00
10.00	0.46	5,004	202.10	0.05	0.05	0.00
12.00	8.91	16,237	203.30	0.63	0.63	0.00
14.00	0.59	24,714	204.04	0.98	0.98	0.00
16.00	0.33	21,114	203.73	0.85	0.85	0.00
18.00	0.22	17,511	203.41	0.69	0.69	0.00
20.00	0.19	14,593	203.16	0.53	0.53	0.00
22.00	0.16	12,711	203.00	0.35	0.35	0.00
24.00	0.17	11,731	202.91	0.24	0.24	0.00
26.00	0.00	10,426	202.78	0.14	0.14	0.00
28.00	0.00	9,424	202.68	0.13	0.13	0.00
30.00	0.00	8,497	202.58	0.12	0.12	0.00
32.00	0.00	7,649	202.48	0.11	0.11	0.00
34.00	0.00	6,886	202.38	0.10	0.10	0.00
36.00	0.00	6,216	202.29	0.09	0.09	0.00
38.00	0.00	5,647	202.21	0.07	0.07	0.00
40.00	0.00	5,186	202.13	0.06	0.06	0.00
42.00	0.00	4,842	202.07	0.04	0.04	0.00
44.00	0.00	4,618	202.03	0.02	0.02	0.00
46.00	0.00	4,475	202.00	0.02	0.02	0.00
48.00	0.00	4,381	201.99	0.01	0.01	0.00
50.00	0.00	4,312	201.97	0.01	0.01	0.00
52.00	0.00	4,262	201.96	0.01	0.01	0.00
54.00	0.00	4,226	201.96	0.00	0.00	0.00
56.00	0.00	4,200	201.95	0.00	0.00	0.00
58.00	0.00	4,179	201.95	0.00	0.00	0.00
60.00	0.00	4,160	201.94	0.00	0.00	0.00
62.00	0.00	4,143	201.94	0.00	0.00	0.00
64.00	0.00	4,128	201.94	0.00	0.00	0.00
66.00	0.00	4,114	201.93	0.00	0.00	0.00
68.00	0.00	4,102	201.93	0.00	0.00	0.00
70.00	0.00	4,091	201.93	0.00	0.00	0.00
72.00	0.00	4,081	201.93	0.00	0.00	0.00

Post-Development

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NOAA 24-hr C 100-year Rainfall=8.15"

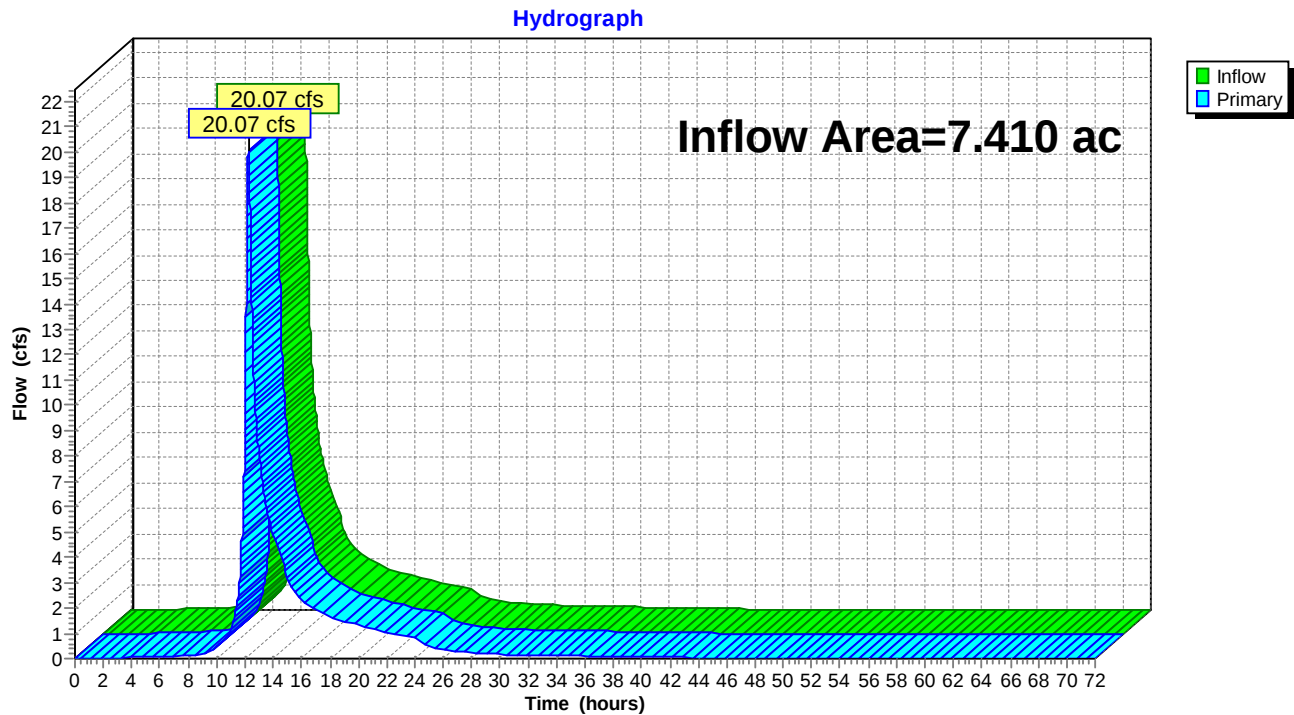
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Summary for Pond DP2: Stony Brook Tributary (DP-2)

Inflow Area = 7.410 ac, 39.00% Impervious, Inflow Depth > 6.10" for 100-year event
Inflow = 20.07 cfs @ 12.25 hrs, Volume= 3.769 af
Primary = 20.07 cfs @ 12.25 hrs, Volume= 3.769 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond DP2: Stony Brook Tributary (DP-2)



Post-Development

NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Pond PP1: Porous Pavement Area #1

Inflow Area = 0.220 ac, 81.82% Impervious, Inflow Depth = 7.52" for 100-year event
 Inflow = 2.05 cfs @ 12.09 hrs, Volume= 0.138 af
 Outflow = 1.28 cfs @ 12.12 hrs, Volume= 0.137 af, Atten= 38%, Lag= 1.6 min
 Primary = 1.28 cfs @ 12.12 hrs, Volume= 0.137 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 201.85' @ 12.12 hrs Surf.Area= 2,857 sf Storage= 1,464 cf

Plug-Flow detention time= 45.8 min calculated for 0.137 af (99% of inflow)
 Center-of-Mass det. time= 40.8 min (786.6 - 745.8)

Volume	Invert	Avail.Storage	Storage Description
#1	200.53'	1,685 cf	18.00'W x 117.00'L x 2.00'H Prismaoid 4,212 cf Overall x 40.0% Voids
#2	200.53'	259 cf	13.50'W x 24.00'L x 2.00'H Prismaoid 648 cf Overall x 40.0% Voids
#3	200.53'	6 cf	1.40'W x 5.00'L x 2.00'H Prismaoid 14 cf Overall x 40.0% Voids
#4	199.53'	157 cf	4.00'W x 105.00'L x 1.00'H Prismaoid 420 cf Overall - 26 cf Embedded = 394 cf x 40.0% Voids
#5	199.78'	21 cf	6.0" Round Pipe Storage Inside #4 L= 105.0' S= 0.0010 '/ 26 cf Overall - 0.4" Wall Thickness = 21 cf
		2,128 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	199.78'	6.0" Round Culvert L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 199.78' / 199.77' S= 0.0008 '/ Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	199.78'	2.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	201.52'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=1.27 cfs @ 12.12 hrs HW=201.85' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 1.27 cfs @ 6.49 fps)

↑ **2=Orifice/Grate** (Passes < 0.23 cfs potential flow)

↑ **3=Broad-Crested Rectangular Weir** (Passes < 2.16 cfs potential flow)

Post-Development

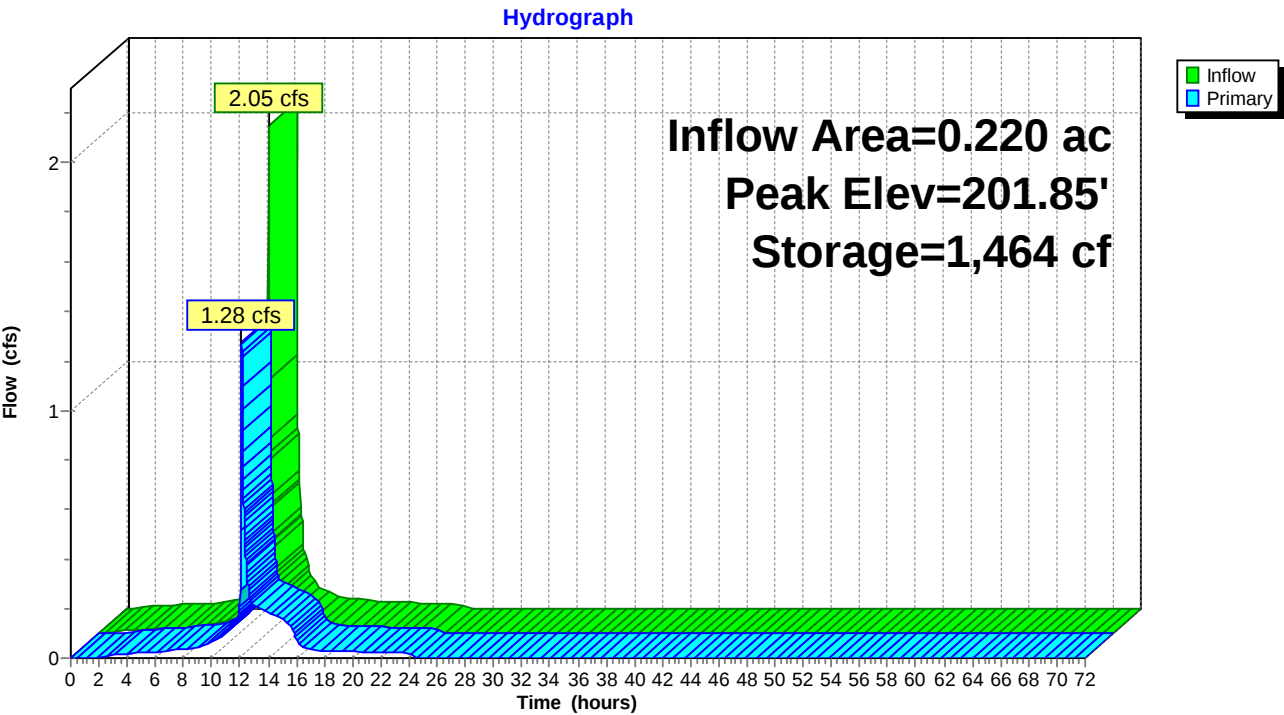
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Pond PP1: Porous Pavement Area #1



Post-Development

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Hydrograph for Pond PP1: Porous Pavement Area #1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	199.53	0.00
2.00	0.01	38	199.76	0.00
4.00	0.02	61	199.89	0.02
6.00	0.02	63	199.90	0.02
8.00	0.04	69	199.94	0.04
10.00	0.07	89	200.04	0.06
12.00	1.22	1,020	201.39	0.20
14.00	0.08	783	201.15	0.18
16.00	0.04	107	200.13	0.08
18.00	0.03	66	199.92	0.03
20.00	0.03	64	199.91	0.03
22.00	0.02	63	199.90	0.02
24.00	0.02	62	199.90	0.02
26.00	0.00	45	199.80	0.00
28.00	0.00	43	199.79	0.00
30.00	0.00	42	199.78	0.00
32.00	0.00	42	199.78	0.00
34.00	0.00	42	199.78	0.00
36.00	0.00	42	199.78	0.00
38.00	0.00	42	199.78	0.00
40.00	0.00	42	199.78	0.00
42.00	0.00	42	199.78	0.00
44.00	0.00	42	199.78	0.00
46.00	0.00	42	199.78	0.00
48.00	0.00	42	199.78	0.00
50.00	0.00	42	199.78	0.00
52.00	0.00	42	199.78	0.00
54.00	0.00	42	199.78	0.00
56.00	0.00	42	199.78	0.00
58.00	0.00	42	199.78	0.00
60.00	0.00	42	199.78	0.00
62.00	0.00	42	199.78	0.00
64.00	0.00	42	199.78	0.00
66.00	0.00	42	199.78	0.00
68.00	0.00	42	199.78	0.00
70.00	0.00	42	199.78	0.00
72.00	0.00	42	199.78	0.00

Post-Development

NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Pond PP2: Porous Pavement Area #2

Inflow Area = 0.300 ac, 53.33% Impervious, Inflow Depth = 6.91" for 100-year event
Inflow = 2.68 cfs @ 12.10 hrs, Volume= 0.173 af
Outflow = 0.95 cfs @ 12.14 hrs, Volume= 0.172 af, Atten= 64%, Lag= 2.4 min
Primary = 0.95 cfs @ 12.14 hrs, Volume= 0.172 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 202.63' @ 12.14 hrs Surf.Area= 3,595 sf Storage= 2,268 cf

Plug-Flow detention time= 69.4 min calculated for 0.172 af (100% of inflow)
Center-of-Mass det. time= 66.6 min (828.3 - 761.6)

Volume	Invert	Avail.Storage	Storage Description
#1	201.00'	1,574 cf	24.00'W x 82.00'L x 2.00'H Prismatic 3,936 cf Overall x 40.0% Voids
#2	201.00'	1,037 cf	18.00'W x 72.00'L x 2.00'H Prismatic 2,592 cf Overall x 40.0% Voids
#3	201.00'	9 cf	2.00'W x 5.50'L x 2.00'H Prismatic 22 cf Overall x 40.0% Voids
#4	200.00'	120 cf	4.00'W x 80.00'L x 1.00'H Prismatic 320 cf Overall - 20 cf Embedded = 300 cf x 40.0% Voids
#5	200.25'	16 cf	6.0" Round Pipe Storage Inside #4 L= 80.0' S= 0.0010 '/' 20 cf Overall - 0.4" Wall Thickness = 16 cf
		2,756 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	200.25'	6.0" Round Culvert L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 200.25' / 200.23' S= 0.0010 '/ Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	200.25'	2.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	202.47'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.95 cfs @ 12.14 hrs HW=202.63' (Free Discharge)

↑ **1=Culvert** (Passes 0.95 cfs of 1.38 cfs potential flow)

↑ **2=Orifice/Grate** (Orifice Controls 0.25 cfs @ 7.26 fps)

↑ **3=Broad-Crested Rectangular Weir** (Weir Controls 0.70 cfs @ 1.11 fps)

Post-Development

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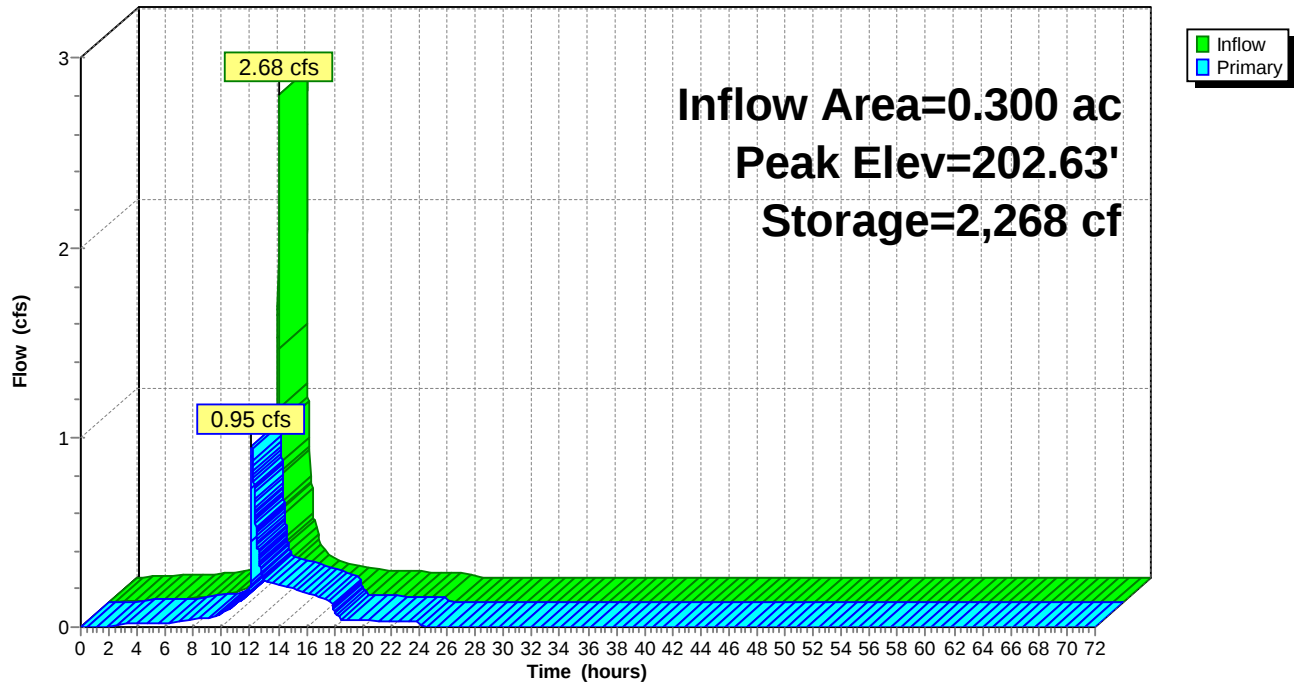
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Pond PP2: Porous Pavement Area #2

Hydrograph



Post-Development

NOAA 24-hr C 100-year Rainfall=8.15"

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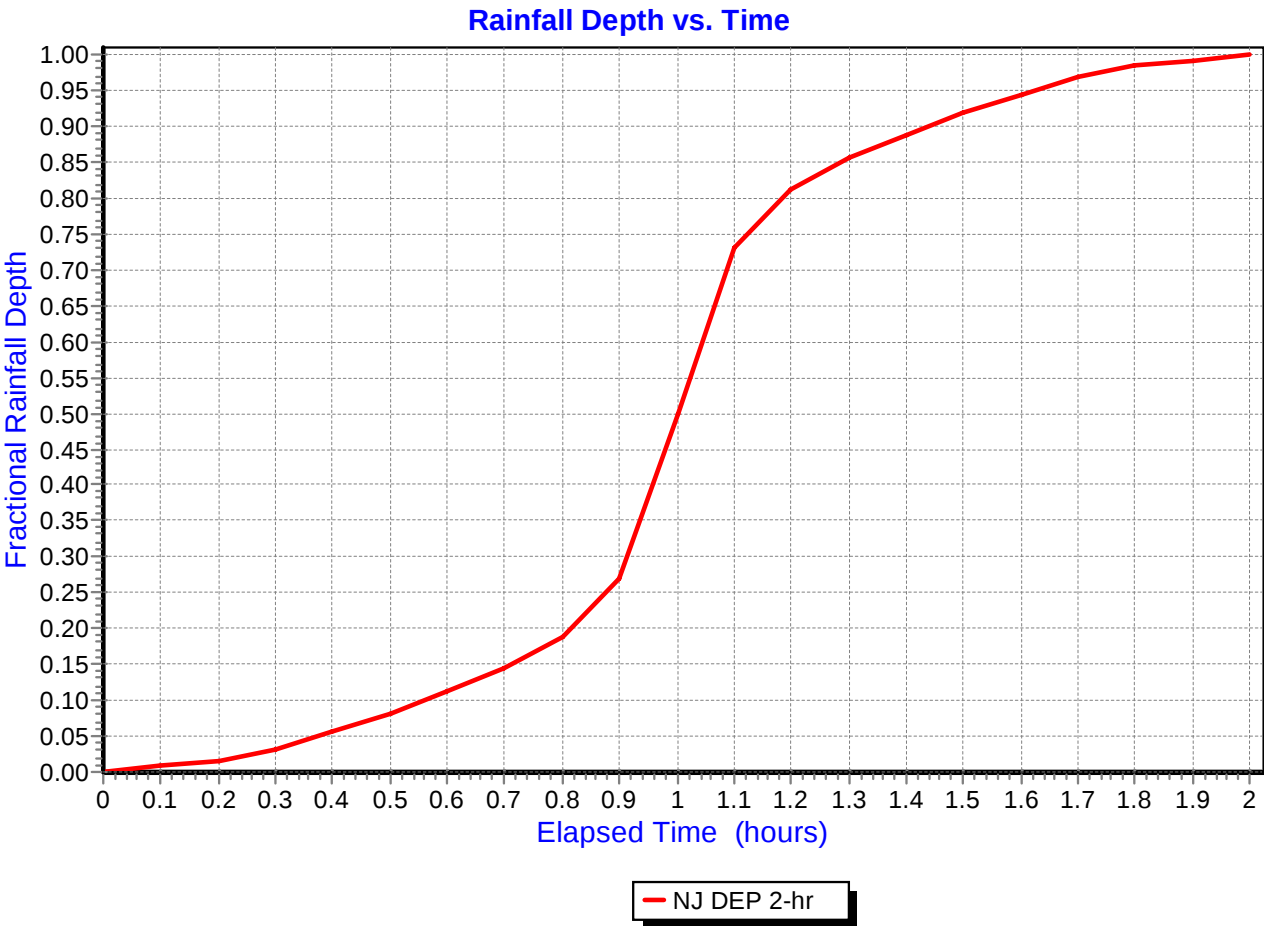
Hydrograph for Pond PP2: Porous Pavement Area #2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	200.00	0.00
2.00	0.01	34	200.26	0.00
4.00	0.02	46	200.36	0.02
6.00	0.02	48	200.37	0.02
8.00	0.04	54	200.41	0.04
10.00	0.08	75	200.56	0.07
12.00	1.57	1,341	201.92	0.21
14.00	0.11	1,727	202.21	0.22
16.00	0.06	814	201.52	0.18
18.00	0.04	85	200.62	0.09
20.00	0.03	53	200.40	0.03
22.00	0.03	51	200.39	0.03
24.00	0.03	51	200.39	0.03
26.00	0.00	34	200.26	0.00
28.00	0.00	32	200.25	0.00
30.00	0.00	32	200.25	0.00
32.00	0.00	32	200.25	0.00
34.00	0.00	32	200.25	0.00
36.00	0.00	32	200.25	0.00
38.00	0.00	32	200.25	0.00
40.00	0.00	32	200.25	0.00
42.00	0.00	32	200.25	0.00
44.00	0.00	32	200.25	0.00
46.00	0.00	32	200.25	0.00
48.00	0.00	32	200.25	0.00
50.00	0.00	32	200.25	0.00
52.00	0.00	32	200.25	0.00
54.00	0.00	32	200.25	0.00
56.00	0.00	32	200.25	0.00
58.00	0.00	32	200.25	0.00
60.00	0.00	32	200.25	0.00
62.00	0.00	32	200.25	0.00
64.00	0.00	32	200.25	0.00
66.00	0.00	32	200.25	0.00
68.00	0.00	32	200.25	0.00
70.00	0.00	32	200.25	0.00
72.00	0.00	32	200.25	0.00

APPENDIX E

NJDEP 2-HR WATER QUALITY & NOAA TYPE C STORM DISTRIBUTIONS

Storm Distribution Report



Post-Development

NOAA 24-hr C 100-year Rainfall=8.15"

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Rainfall Depth vs. Time

Time (hours)	NJ DEP 2-hr (depth)
0.00	0.000000
0.10	0.007968
0.20	0.015968
0.30	0.032000
0.40	0.056000
0.50	0.080000
0.60	0.111680
0.70	0.143680
0.80	0.187984
0.90	0.270640
1.00	0.500000
1.10	0.729360
1.20	0.812016
1.30	0.856320
1.40	0.888320
1.50	0.920000
1.60	0.944000
1.70	0.968000
1.80	0.984032
1.90	0.992032
2.00	1.000000

Post-Development

NOAA 24-hr C 100-year Rainfall=8.15"

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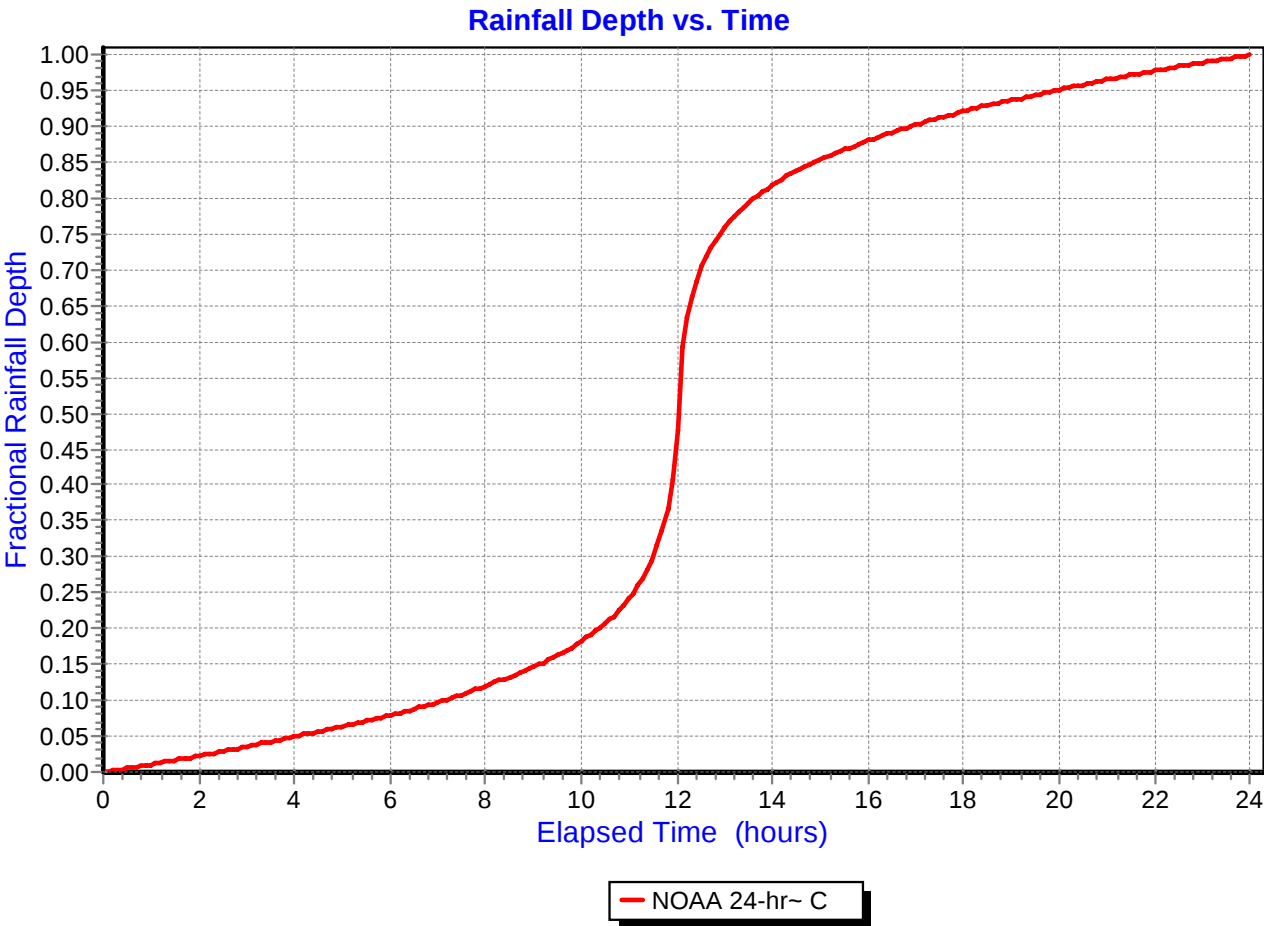
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Rainfall Intensity vs. Time

Time (hours)	NJ DEP 2-hr (per-hour)
0.00	0.00000
0.10	0.07968
0.20	0.08000
0.30	0.16032
0.40	0.24000
0.50	0.24000
0.60	0.31680
0.70	0.32000
0.80	0.44304
0.90	0.82656
1.00	2.29360
1.10	2.29360
1.20	0.82656
1.30	0.44304
1.40	0.32000
1.50	0.31680
1.60	0.24000
1.70	0.24000
1.80	0.16032
1.90	0.08000
2.00	0.07968

Storm Distribution Report



Post-Development

NOAA 24-hr C 100-year Rainfall=8.15"

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Rainfall Depth vs. Time

Time (hours)	NOAA 24-hr~ C (depth)	Time (hours)	NOAA 24-hr~ C (depth)	Time (hours)	NOAA 24-hr~ C (depth)	Time (hours)	NOAA 24-hr~ C (depth)
0.00	0.000000	5.40	0.069740	10.80	0.224710	16.20	0.884970
0.10	0.001280	5.50	0.071300	10.90	0.232060	16.30	0.887290
0.20	0.002310	5.60	0.072870	11.00	0.239990	16.40	0.889580
0.30	0.003350	5.70	0.074450	11.10	0.248990	16.50	0.891820
0.40	0.004410	5.80	0.076040	11.20	0.259070	16.60	0.894030
0.50	0.005470	5.90	0.077640	11.30	0.270220	16.70	0.896200
0.60	0.006540	6.00	0.079250	11.40	0.282450	16.80	0.898320
0.70	0.007630	6.10	0.080900	11.50	0.295500	16.90	0.900410
0.80	0.008720	6.20	0.082590	11.60	0.315720	17.00	0.902460
0.90	0.009820	6.30	0.084320	11.70	0.337000	17.10	0.904470
1.00	0.010930	6.40	0.086090	11.80	0.366180	17.20	0.906440
1.10	0.012060	6.50	0.087900	11.90	0.406690	17.30	0.908360
1.20	0.013190	6.60	0.089750	12.00	0.476600	17.40	0.910250
1.30	0.014330	6.70	0.091640	12.10	0.593310	17.50	0.912100
1.40	0.015480	6.80	0.093560	12.20	0.633820	17.60	0.913910
1.50	0.016650	6.90	0.095530	12.30	0.663000	17.70	0.915680
1.60	0.017820	7.00	0.097540	12.40	0.684280	17.80	0.917410
1.70	0.019000	7.10	0.099590	12.50	0.704500	17.90	0.919100
1.80	0.020190	7.20	0.101680	12.60	0.717550	18.00	0.920750
1.90	0.021400	7.30	0.103800	12.70	0.729780	18.10	0.922360
2.00	0.022610	7.40	0.105970	12.80	0.740930	18.20	0.923960
2.10	0.023830	7.50	0.108180	12.90	0.751010	18.30	0.925550
2.20	0.025060	7.60	0.110420	13.00	0.760010	18.40	0.927130
2.30	0.026310	7.70	0.112710	13.10	0.767940	18.50	0.928700
2.40	0.027560	7.80	0.115030	13.20	0.775290	18.60	0.930260
2.50	0.028820	7.90	0.117400	13.30	0.782070	18.70	0.931810
2.60	0.030090	8.00	0.119810	13.40	0.788270	18.80	0.933350
2.70	0.031370	8.10	0.122250	13.50	0.793900	18.90	0.934880
2.80	0.032670	8.20	0.124740	13.60	0.798960	19.00	0.936400
2.90	0.033970	8.30	0.127260	13.70	0.803860	19.10	0.937910
3.00	0.035280	8.40	0.129820	13.80	0.808610	19.20	0.939410
3.10	0.036600	8.50	0.132430	13.90	0.813220	19.30	0.940900
3.20	0.037930	8.60	0.135070	14.00	0.817670	19.40	0.942380
3.30	0.039270	8.70	0.137760	14.10	0.821970	19.50	0.943850
3.40	0.040620	8.80	0.140480	14.20	0.826130	19.60	0.945310
3.50	0.041990	8.90	0.143240	14.30	0.830130	19.70	0.946760
3.60	0.043360	9.00	0.146050	14.40	0.833980	19.80	0.948210
3.70	0.044740	9.10	0.149000	14.50	0.837690	19.90	0.949640
3.80	0.046130	9.20	0.152100	14.60	0.841240	20.00	0.951060
3.90	0.047530	9.30	0.155360	14.70	0.844640	20.10	0.952470
4.00	0.048940	9.40	0.158760	14.80	0.847900	20.20	0.953870
4.10	0.050360	9.50	0.162310	14.90	0.851000	20.30	0.955260
4.20	0.051790	9.60	0.166020	15.00	0.853950	20.40	0.956640
4.30	0.053240	9.70	0.169870	15.10	0.856760	20.50	0.958010
4.40	0.054690	9.80	0.173870	15.20	0.859520	20.60	0.959380
4.50	0.056150	9.90	0.178030	15.30	0.862240	20.70	0.960730
4.60	0.057620	10.00	0.182330	15.40	0.864930	20.80	0.962070
4.70	0.059100	10.10	0.186780	15.50	0.867570	20.90	0.963400
4.80	0.060590	10.20	0.191390	15.60	0.870180	21.00	0.964720
4.90	0.062090	10.30	0.196140	15.70	0.872740	21.10	0.966030
5.00	0.063600	10.40	0.201040	15.80	0.875260	21.20	0.967330
5.10	0.065120	10.50	0.206100	15.90	0.877750	21.30	0.968630
5.20	0.066650	10.60	0.211730	16.00	0.880190	21.40	0.969910
5.30	0.068190	10.70	0.217930	16.10	0.882600	21.50	0.971180

Post-Development

NOAA 24-hr C 100-year Rainfall=8.15"

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Rainfall Depth vs. Time (continued)

Time (hours)	NOAA 24-hr~ C (depth)
21.60	0.972440
21.70	0.973690
21.80	0.974940
21.90	0.976170
22.00	0.977390
22.10	0.978600
22.20	0.979810
22.30	0.981000
22.40	0.982180
22.50	0.983350
22.60	0.984520
22.70	0.985670
22.80	0.986810
22.90	0.987940
23.00	0.989070
23.10	0.990180
23.20	0.991280
23.30	0.992370
23.40	0.993460
23.50	0.994530
23.60	0.995590
23.70	0.996650
23.80	0.997690
23.90	0.998720
24.00	1.000000

Post-Development

NOAA 24-hr C 100-year Rainfall=8.15"

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Rainfall Intensity vs. Time

Time (hours)	NOAA 24-hr~ C (per-hour)	Time (hours)	NOAA 24-hr~ C (per-hour)	Time (hours)	NOAA 24-hr~ C (per-hour)	Time (hours)	NOAA 24-hr~ C (per-hour)
0.00	0.00000	5.40	0.01550	10.80	0.06780	16.20	0.02370
0.10	0.01280	5.50	0.01560	10.90	0.07350	16.30	0.02320
0.20	0.01030	5.60	0.01570	11.00	0.07930	16.40	0.02290
0.30	0.01040	5.70	0.01580	11.10	0.09000	16.50	0.02240
0.40	0.01060	5.80	0.01590	11.20	0.10080	16.60	0.02210
0.50	0.01060	5.90	0.01600	11.30	0.11150	16.70	0.02170
0.60	0.01070	6.00	0.01610	11.40	0.12230	16.80	0.02120
0.70	0.01090	6.10	0.01650	11.50	0.13050	16.90	0.02090
0.80	0.01090	6.20	0.01690	11.60	0.20220	17.00	0.02050
0.90	0.01100	6.30	0.01730	11.70	0.21280	17.10	0.02010
1.00	0.01110	6.40	0.01770	11.80	0.29180	17.20	0.01970
1.10	0.01130	6.50	0.01810	11.90	0.40510	17.30	0.01920
1.20	0.01130	6.60	0.01850	12.00	0.69910	17.40	0.01890
1.30	0.01140	6.70	0.01890	12.10	1.16710	17.50	0.01850
1.40	0.01150	6.80	0.01920	12.20	0.40510	17.60	0.01810
1.50	0.01170	6.90	0.01970	12.30	0.29180	17.70	0.01770
1.60	0.01170	7.00	0.02010	12.40	0.21280	17.80	0.01730
1.70	0.01180	7.10	0.02050	12.50	0.20220	17.90	0.01690
1.80	0.01190	7.20	0.02090	12.60	0.13050	18.00	0.01650
1.90	0.01210	7.30	0.02120	12.70	0.12230	18.10	0.01610
2.00	0.01210	7.40	0.02170	12.80	0.11150	18.20	0.01600
2.10	0.01220	7.50	0.02210	12.90	0.10080	18.30	0.01590
2.20	0.01230	7.60	0.02240	13.00	0.09000	18.40	0.01580
2.30	0.01250	7.70	0.02290	13.10	0.07930	18.50	0.01570
2.40	0.01250	7.80	0.02320	13.20	0.07350	18.60	0.01560
2.50	0.01260	7.90	0.02370	13.30	0.06780	18.70	0.01550
2.60	0.01270	8.00	0.02410	13.40	0.06200	18.80	0.01540
2.70	0.01280	8.10	0.02440	13.50	0.05630	18.90	0.01530
2.80	0.01300	8.20	0.02490	13.60	0.05060	19.00	0.01520
2.90	0.01300	8.30	0.02520	13.70	0.04900	19.10	0.01510
3.00	0.01310	8.40	0.02560	13.80	0.04750	19.20	0.01500
3.10	0.01320	8.50	0.02610	13.90	0.04610	19.30	0.01490
3.20	0.01330	8.60	0.02640	14.00	0.04450	19.40	0.01480
3.30	0.01340	8.70	0.02690	14.10	0.04300	19.50	0.01470
3.40	0.01350	8.80	0.02720	14.20	0.04160	19.60	0.01460
3.50	0.01370	8.90	0.02760	14.30	0.04000	19.70	0.01450
3.60	0.01370	9.00	0.02810	14.40	0.03850	19.80	0.01450
3.70	0.01380	9.10	0.02950	14.50	0.03710	19.90	0.01430
3.80	0.01390	9.20	0.03100	14.60	0.03550	20.00	0.01420
3.90	0.01400	9.30	0.03260	14.70	0.03400	20.10	0.01410
4.00	0.01410	9.40	0.03400	14.80	0.03260	20.20	0.01400
4.10	0.01420	9.50	0.03550	14.90	0.03100	20.30	0.01390
4.20	0.01430	9.60	0.03710	15.00	0.02950	20.40	0.01380
4.30	0.01450	9.70	0.03850	15.10	0.02810	20.50	0.01370
4.40	0.01450	9.80	0.04000	15.20	0.02760	20.60	0.01370
4.50	0.01460	9.90	0.04160	15.30	0.02720	20.70	0.01350
4.60	0.01470	10.00	0.04300	15.40	0.02690	20.80	0.01340
4.70	0.01480	10.10	0.04450	15.50	0.02640	20.90	0.01330
4.80	0.01490	10.20	0.04610	15.60	0.02610	21.00	0.01320
4.90	0.01500	10.30	0.04750	15.70	0.02560	21.10	0.01310
5.00	0.01510	10.40	0.04900	15.80	0.02520	21.20	0.01300
5.10	0.01520	10.50	0.05060	15.90	0.02490	21.30	0.01300
5.20	0.01530	10.60	0.05630	16.00	0.02440	21.40	0.01280
5.30	0.01540	10.70	0.06200	16.10	0.02410	21.50	0.01270

Post-Development

NOAA 24-hr C 100-year Rainfall=8.15"

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Rainfall Intensity vs. Time (continued)

Time (hours)	NOAA 24-hr~ C (per-hour)
21.60	0.01260
21.70	0.01250
21.80	0.01250
21.90	0.01230
22.00	0.01220
22.10	0.01210
22.20	0.01210
22.30	0.01190
22.40	0.01180
22.50	0.01170
22.60	0.01170
22.70	0.01150
22.80	0.01140
22.90	0.01130
23.00	0.01130
23.10	0.01110
23.20	0.01100
23.30	0.01090
23.40	0.01090
23.50	0.01070
23.60	0.01060
23.70	0.01060
23.80	0.01040
23.90	0.01030
24.00	0.01280

APPENDIX F

BIORETENTION BASIN AND POROUS PAVEMENT DRAIN TIME ANALYSIS

Post-Development (Drain Time)

NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Pond BB1: Bio Basin #1

Inflow Area = 2.400 ac, 65.00% Impervious, Inflow Depth = 7.16" for 100-year event
 Inflow = 21.83 cfs @ 12.09 hrs, Volume= 1.432 af
 Outflow = 4.05 cfs @ 12.34 hrs, Volume= 1.432 af, Atten= 81%, Lag= 15.2 min
 Discarded = 0.09 cfs @ 3.02 hrs, Volume= 0.352 af
 Primary = 3.96 cfs @ 12.34 hrs, Volume= 1.080 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 203.77' @ 12.34 hrs Surf.Area= 7,845 sf Storage= 29,554 cf

Plug-Flow detention time= 301.6 min calculated for 1.432 af (100% of inflow)
 Center-of-Mass det. time= 301.5 min (1,056.3 - 754.8)

Volume	Invert	Avail.Storage	Storage Description
#1	200.00'	39,225 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
200.00	7,845	0	0
201.00	7,845	7,845	7,845
202.00	7,845	7,845	15,690
203.00	7,845	7,845	23,535
204.00	7,845	7,845	31,380
205.00	7,845	7,845	39,225

Device	Routing	Invert	Outlet Devices
#1	Primary	197.20'	24.0" Round Culvert L= 75.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 197.20' / 196.83' S= 0.0049 ' / ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	200.81'	4.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	201.81'	19.5" W x 3.5" H Vert. Orifice/Grate C= 0.600
#4	Device 1	203.90'	16.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#5	Secondary	203.95'	75.0' 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
#6	Discarded	200.00'	0.500 in/hr Exfiltration over Surface area

Post-Development (Drain Time)

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Discarded OutFlow Max=0.09 cfs @ 3.02 hrs HW=200.05' (Free Discharge)

↑ **6=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=3.96 cfs @ 12.34 hrs HW=203.77' (Free Discharge)

↑ **1=Culvert** (Passes 3.96 cfs of 35.69 cfs potential flow)

↑ **2=Orifice/Grate** (Orifice Controls 0.89 cfs @ 8.01 fps)

↑ **3=Orifice/Grate** (Orifice Controls 3.07 cfs @ 6.48 fps)

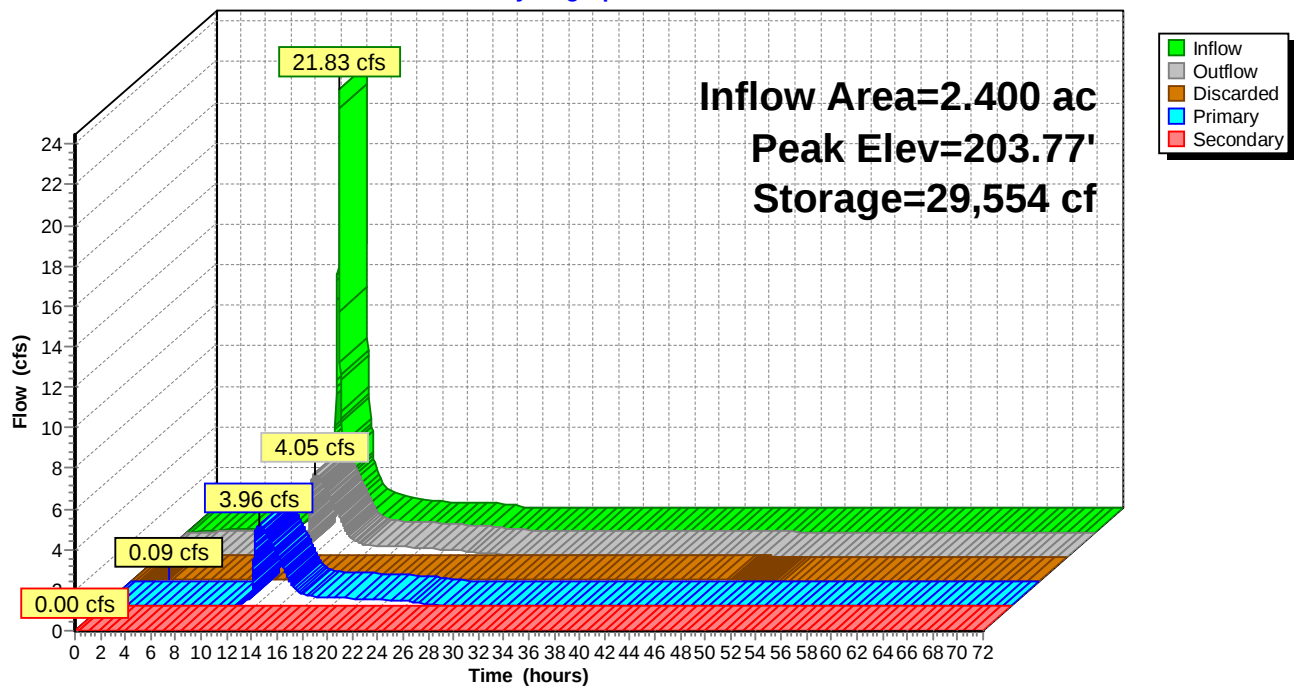
↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=200.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond BB1: Bio Basin #1

Hydrograph



Post-Development (Drain Time)

NOAA 24-hr C 100-year Rainfall=8.15"

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Hydrograph for Pond BB1: Bio Basin #1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	200.00	0.00	0.00	0.00	0.00
2.00	0.10	217	200.03	0.05	0.05	0.00	0.00
4.00	0.16	589	200.08	0.09	0.09	0.00	0.00
6.00	0.20	1,227	200.16	0.09	0.09	0.00	0.00
8.00	0.35	2,561	200.33	0.09	0.09	0.00	0.00
10.00	0.69	5,328	200.68	0.09	0.09	0.00	0.00
12.00	12.89	20,463	202.61	2.61	0.09	2.51	0.00
14.00	0.85	19,551	202.49	2.41	0.09	2.32	0.00
16.00	0.47	14,641	201.87	0.66	0.09	0.57	0.00
18.00	0.32	13,323	201.70	0.54	0.09	0.45	0.00
20.00	0.27	11,805	201.50	0.47	0.09	0.38	0.00
22.00	0.24	10,499	201.34	0.40	0.09	0.31	0.00
24.00	0.25	9,434	201.20	0.33	0.09	0.24	0.00
26.00	0.00	7,716	200.98	0.16	0.09	0.07	0.00
28.00	0.00	6,816	200.87	0.10	0.09	0.01	0.00
30.00	0.00	6,144	200.78	0.09	0.09	0.00	0.00
32.00	0.00	5,490	200.70	0.09	0.09	0.00	0.00
34.00	0.00	4,836	200.62	0.09	0.09	0.00	0.00
36.00	0.00	4,183	200.53	0.09	0.09	0.00	0.00
38.00	0.00	3,529	200.45	0.09	0.09	0.00	0.00
40.00	0.00	2,875	200.37	0.09	0.09	0.00	0.00
42.00	0.00	2,221	200.28	0.09	0.09	0.00	0.00
44.00	0.00	1,568	200.20	0.09	0.09	0.00	0.00
46.00	0.00	914	200.12	0.09	0.09	0.00	0.00
48.00	0.00	280	200.04	0.06	0.06	0.00	0.00
50.00	0.00	53	200.01	0.01	0.01	0.00	0.00
52.00	0.00	10	200.00	0.00	0.00	0.00	0.00
54.00	0.00	2	200.00	0.00	0.00	0.00	0.00
56.00	0.00	0	200.00	0.00	0.00	0.00	0.00
58.00	0.00	0	200.00	0.00	0.00	0.00	0.00
60.00	0.00	0	200.00	0.00	0.00	0.00	0.00
62.00	0.00	0	200.00	0.00	0.00	0.00	0.00
64.00	0.00	0	200.00	0.00	0.00	0.00	0.00
66.00	0.00	0	200.00	0.00	0.00	0.00	0.00
68.00	0.00	0	200.00	0.00	0.00	0.00	0.00
70.00	0.00	0	200.00	0.00	0.00	0.00	0.00
72.00	0.00	0	200.00	0.00	0.00	0.00	0.00

Post-Development (Drain Time)

NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Pond BB2: Bio Basin #2

Inflow Area = 1.690 ac, 55.62% Impervious, Inflow Depth = 6.96" for 100-year event
 Inflow = 15.16 cfs @ 12.10 hrs, Volume= 0.980 af
 Outflow = 1.11 cfs @ 13.02 hrs, Volume= 0.980 af, Atten= 93%, Lag= 55.0 min
 Discarded = 0.13 cfs @ 11.94 hrs, Volume= 0.342 af
 Primary = 0.98 cfs @ 13.02 hrs, Volume= 0.638 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 204.04' @ 13.02 hrs Surf.Area= 11,485 sf Storage= 24,665 cf

Plug-Flow detention time= 468.5 min calculated for 0.980 af (100% of inflow)
 Center-of-Mass det. time= 468.5 min (1,228.7 - 760.3)

Volume	Invert	Avail.Storage	Storage Description
#1	201.00'	47,215 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
201.00	3,785	0	0
202.00	5,125	4,455	4,455
203.00	11,485	8,305	12,760
204.00	11,485	11,485	24,245
205.00	11,485	11,485	35,730
206.00	11,485	11,485	47,215

Device	Routing	Invert	Outlet Devices
#1	Primary	198.18'	24.0" Round Culvert L= 66.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 198.18' / 197.85' S= 0.0050 ' / ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	201.91'	2.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	202.78'	7.0" W x 3.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	204.10'	16.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#5	Secondary	204.15'	50.0' 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
#6	Discarded	201.00'	0.500 in/hr Exfiltration over Surface area

Post-Development (Drain Time)

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Discarded OutFlow Max=0.13 cfs @ 11.94 hrs HW=203.01' (Free Discharge)

↑ **6=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=0.98 cfs @ 13.02 hrs HW=204.04' (Free Discharge)

↑ **1=Culvert** (Passes 0.98 cfs of 33.34 cfs potential flow)

↑ **2=Orifice/Grate** (Orifice Controls 0.23 cfs @ 6.85 fps)

↑ **3=Orifice/Grate** (Orifice Controls 0.75 cfs @ 5.12 fps)

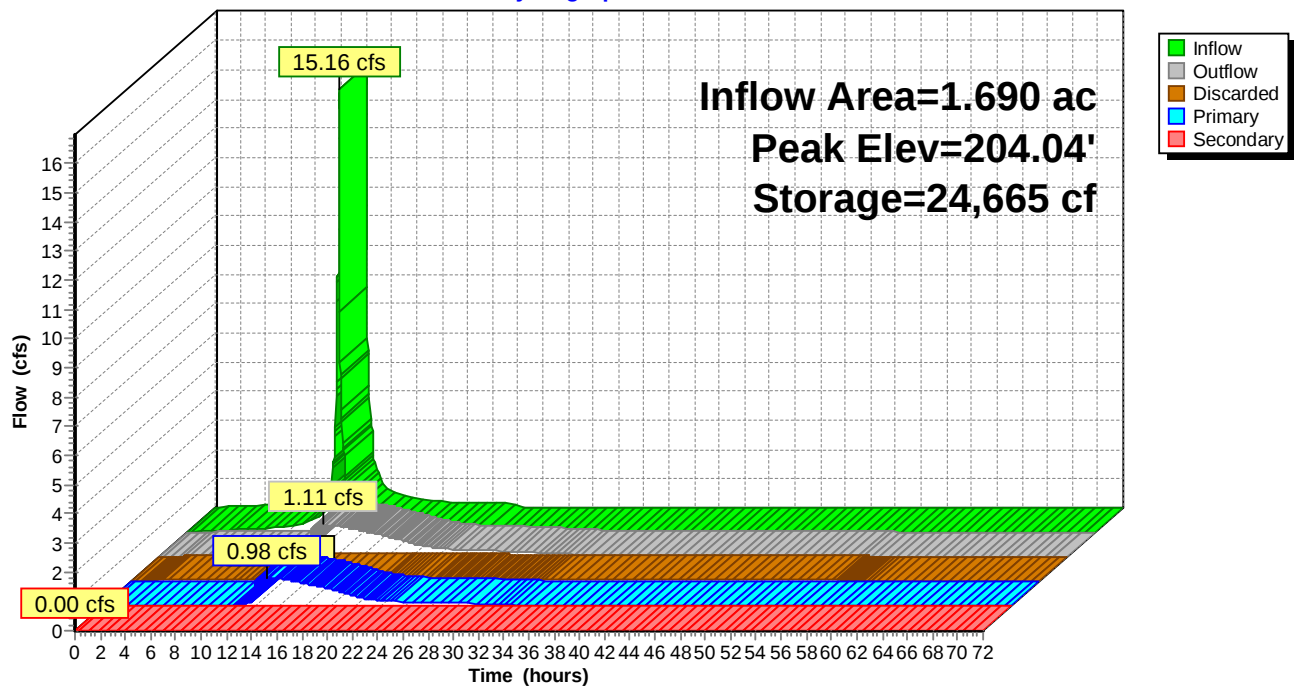
↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=201.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond BB2: Bio Basin #2

Hydrograph



Post-Development (Drain Time)

NOAA 24-hr C 100-year Rainfall=8.15"

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Hydrograph for Pond BB2: Bio Basin #2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	201.00	0.00	0.00	0.00	0.00
2.00	0.06	131	201.03	0.03	0.03	0.00	0.00
4.00	0.09	396	201.10	0.05	0.05	0.00	0.00
6.00	0.13	849	201.22	0.05	0.05	0.00	0.00
8.00	0.22	1,756	201.43	0.05	0.05	0.00	0.00
10.00	0.46	3,612	201.83	0.06	0.06	0.00	0.00
12.00	8.91	14,649	203.16	0.66	0.13	0.53	0.00
14.00	0.59	23,511	203.94	1.07	0.13	0.94	0.00
16.00	0.33	19,360	203.57	0.91	0.13	0.78	0.00
18.00	0.22	15,454	203.23	0.71	0.13	0.58	0.00
20.00	0.19	12,616	202.99	0.47	0.13	0.34	0.00
22.00	0.16	11,167	202.86	0.31	0.12	0.19	0.00
24.00	0.17	10,259	202.77	0.26	0.12	0.14	0.00
26.00	0.00	8,524	202.58	0.23	0.10	0.12	0.00
28.00	0.00	7,021	202.40	0.19	0.09	0.10	0.00
30.00	0.00	5,785	202.23	0.15	0.08	0.08	0.00
32.00	0.00	4,854	202.07	0.10	0.06	0.04	0.00
34.00	0.00	4,270	201.96	0.06	0.06	0.01	0.00
36.00	0.00	3,842	201.88	0.06	0.06	0.00	0.00
38.00	0.00	3,433	201.80	0.06	0.06	0.00	0.00
40.00	0.00	3,033	201.71	0.05	0.05	0.00	0.00
42.00	0.00	2,643	201.63	0.05	0.05	0.00	0.00
44.00	0.00	2,262	201.55	0.05	0.05	0.00	0.00
46.00	0.00	1,890	201.46	0.05	0.05	0.00	0.00
48.00	0.00	1,528	201.38	0.05	0.05	0.00	0.00
50.00	0.00	1,175	201.30	0.05	0.05	0.00	0.00
52.00	0.00	831	201.21	0.05	0.05	0.00	0.00
54.00	0.00	497	201.13	0.05	0.05	0.00	0.00
56.00	0.00	173	201.05	0.04	0.04	0.00	0.00
58.00	0.00	32	201.01	0.01	0.01	0.00	0.00
60.00	0.00	6	201.00	0.00	0.00	0.00	0.00
62.00	0.00	1	201.00	0.00	0.00	0.00	0.00
64.00	0.00	0	201.00	0.00	0.00	0.00	0.00
66.00	0.00	0	201.00	0.00	0.00	0.00	0.00
68.00	0.00	0	201.00	0.00	0.00	0.00	0.00
70.00	0.00	0	201.00	0.00	0.00	0.00	0.00
72.00	0.00	0	201.00	0.00	0.00	0.00	0.00

Post-Development (Drain Time)

NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Pond PP1: Porous Pavement Area #1

Inflow Area = 0.220 ac, 81.82% Impervious, Inflow Depth = 7.52" for 100-year event
 Inflow = 2.05 cfs @ 12.09 hrs, Volume= 0.138 af
 Outflow = 1.29 cfs @ 12.12 hrs, Volume= 0.138 af, Atten= 37%, Lag= 1.6 min
 Discarded = 0.03 cfs @ 11.29 hrs, Volume= 0.019 af
 Primary = 1.26 cfs @ 12.12 hrs, Volume= 0.119 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 201.80' @ 12.12 hrs Surf.Area= 2,857 sf Storage= 1,420 cf

Plug-Flow detention time= 40.7 min calculated for 0.138 af (100% of inflow)
 Center-of-Mass det. time= 40.8 min (786.5 - 745.8)

Volume	Invert	Avail.Storage	Storage Description
#1	200.53'	1,685 cf	18.00'W x 117.00'L x 2.00'H Prismatic 4,212 cf Overall x 40.0% Voids
#2	200.53'	259 cf	13.50'W x 24.00'L x 2.00'H Prismatic 648 cf Overall x 40.0% Voids
#3	200.53'	6 cf	1.40'W x 5.00'L x 2.00'H Prismatic 14 cf Overall x 40.0% Voids
#4	199.53'	157 cf	4.00'W x 105.00'L x 1.00'H Prismatic 420 cf Overall - 26 cf Embedded = 394 cf x 40.0% Voids
#5	199.78'	21 cf	6.0" Round Pipe Storage Inside #4 L= 105.0' S= 0.0010 '/ 26 cf Overall - 0.4" Wall Thickness = 21 cf
		2,128 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	199.78'	6.0" Round Culvert L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 199.78' / 199.77' S= 0.0008 '/ Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	199.78'	2.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	201.52'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#4	Discarded	199.53'	0.500 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.03 cfs @ 11.29 hrs HW=200.53' (Free Discharge)

↑ **4=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=1.26 cfs @ 12.12 hrs HW=201.80' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 1.26 cfs @ 6.41 fps)

↑ **2=Orifice/Grate** (Passes < 0.23 cfs potential flow)

↑ **3=Broad-Crested Rectangular Weir** (Passes < 1.71 cfs potential flow)

Post-Development (Drain Time)

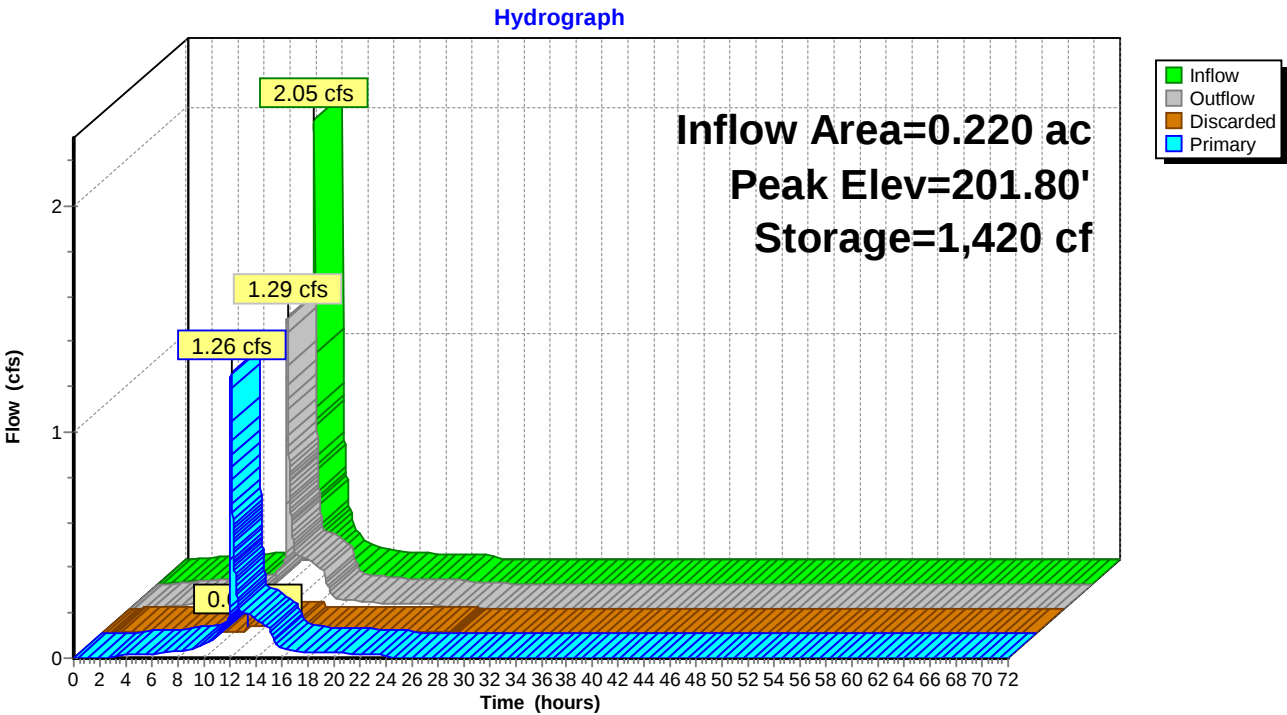
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Pond PP1: Porous Pavement Area #1



Post-Development (Drain Time)

NOAA 24-hr C 100-year Rainfall=8.15"

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Hydrograph for Pond PP1: Porous Pavement Area #1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	199.53	0.00	0.00	0.00
2.00	0.01	19	199.64	0.00	0.00	0.00
4.00	0.02	58	199.87	0.02	0.00	0.01
6.00	0.02	61	199.89	0.02	0.00	0.02
8.00	0.04	67	199.92	0.04	0.00	0.03
10.00	0.07	85	200.02	0.06	0.00	0.06
12.00	1.22	938	201.31	0.23	0.03	0.20
14.00	0.08	648	201.01	0.21	0.03	0.17
16.00	0.04	72	199.95	0.05	0.00	0.04
18.00	0.03	64	199.91	0.03	0.00	0.03
20.00	0.03	62	199.90	0.03	0.00	0.02
22.00	0.02	60	199.89	0.02	0.00	0.02
24.00	0.02	59	199.88	0.02	0.00	0.02
26.00	0.00	18	199.64	0.00	0.00	0.00
28.00	0.00	0	199.53	0.00	0.00	0.00
30.00	0.00	0	199.53	0.00	0.00	0.00
32.00	0.00	0	199.53	0.00	0.00	0.00
34.00	0.00	0	199.53	0.00	0.00	0.00
36.00	0.00	0	199.53	0.00	0.00	0.00
38.00	0.00	0	199.53	0.00	0.00	0.00
40.00	0.00	0	199.53	0.00	0.00	0.00
42.00	0.00	0	199.53	0.00	0.00	0.00
44.00	0.00	0	199.53	0.00	0.00	0.00
46.00	0.00	0	199.53	0.00	0.00	0.00
48.00	0.00	0	199.53	0.00	0.00	0.00
50.00	0.00	0	199.53	0.00	0.00	0.00
52.00	0.00	0	199.53	0.00	0.00	0.00
54.00	0.00	0	199.53	0.00	0.00	0.00
56.00	0.00	0	199.53	0.00	0.00	0.00
58.00	0.00	0	199.53	0.00	0.00	0.00
60.00	0.00	0	199.53	0.00	0.00	0.00
62.00	0.00	0	199.53	0.00	0.00	0.00
64.00	0.00	0	199.53	0.00	0.00	0.00
66.00	0.00	0	199.53	0.00	0.00	0.00
68.00	0.00	0	199.53	0.00	0.00	0.00
70.00	0.00	0	199.53	0.00	0.00	0.00
72.00	0.00	0	199.53	0.00	0.00	0.00

Post-Development (Drain Time)

NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Pond PP2: Porous Pavement Area #2

Inflow Area = 0.300 ac, 53.33% Impervious, Inflow Depth = 6.91" for 100-year event
 Inflow = 2.68 cfs @ 12.10 hrs, Volume= 0.173 af
 Outflow = 0.83 cfs @ 12.21 hrs, Volume= 0.173 af, Atten= 69%, Lag= 6.8 min
 Discarded = 0.04 cfs @ 11.06 hrs, Volume= 0.026 af
 Primary = 0.78 cfs @ 12.21 hrs, Volume= 0.147 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 202.60' @ 12.21 hrs Surf.Area= 3,595 sf Storage= 2,234 cf

Plug-Flow detention time= 58.9 min calculated for 0.173 af (100% of inflow)
 Center-of-Mass det. time= 58.9 min (820.5 - 761.6)

Volume	Invert	Avail.Storage	Storage Description
#1	201.00'	1,574 cf	24.00'W x 82.00'L x 2.00'H Prismatic 3,936 cf Overall x 40.0% Voids
#2	201.00'	1,037 cf	18.00'W x 72.00'L x 2.00'H Prismatic 2,592 cf Overall x 40.0% Voids
#3	201.00'	9 cf	2.00'W x 5.50'L x 2.00'H Prismatic 22 cf Overall x 40.0% Voids
#4	200.00'	120 cf	4.00'W x 80.00'L x 1.00'H Prismatic 320 cf Overall - 20 cf Embedded = 300 cf x 40.0% Voids
#5	200.25'	16 cf	6.0" Round Pipe Storage Inside #4 L= 80.0' S= 0.0010 '/' 20 cf Overall - 0.4" Wall Thickness = 16 cf
		2,756 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	200.25'	6.0" Round Culvert L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 200.25' / 200.23' S= 0.0010 '/ Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	200.25'	2.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	202.47'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#4	Discarded	200.00'	0.500 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.04 cfs @ 11.06 hrs HW=201.00' (Free Discharge)

↑ **4=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.78 cfs @ 12.21 hrs HW=202.60' (Free Discharge)

↑ **1=Culvert** (Passes 0.78 cfs of 1.37 cfs potential flow)

↑ **2=Orifice/Grate** (Orifice Controls 0.25 cfs @ 7.22 fps)

↑ **3=Broad-Crested Rectangular Weir** (Weir Controls 0.53 cfs @ 1.02 fps)

Post-Development (Drain Time)

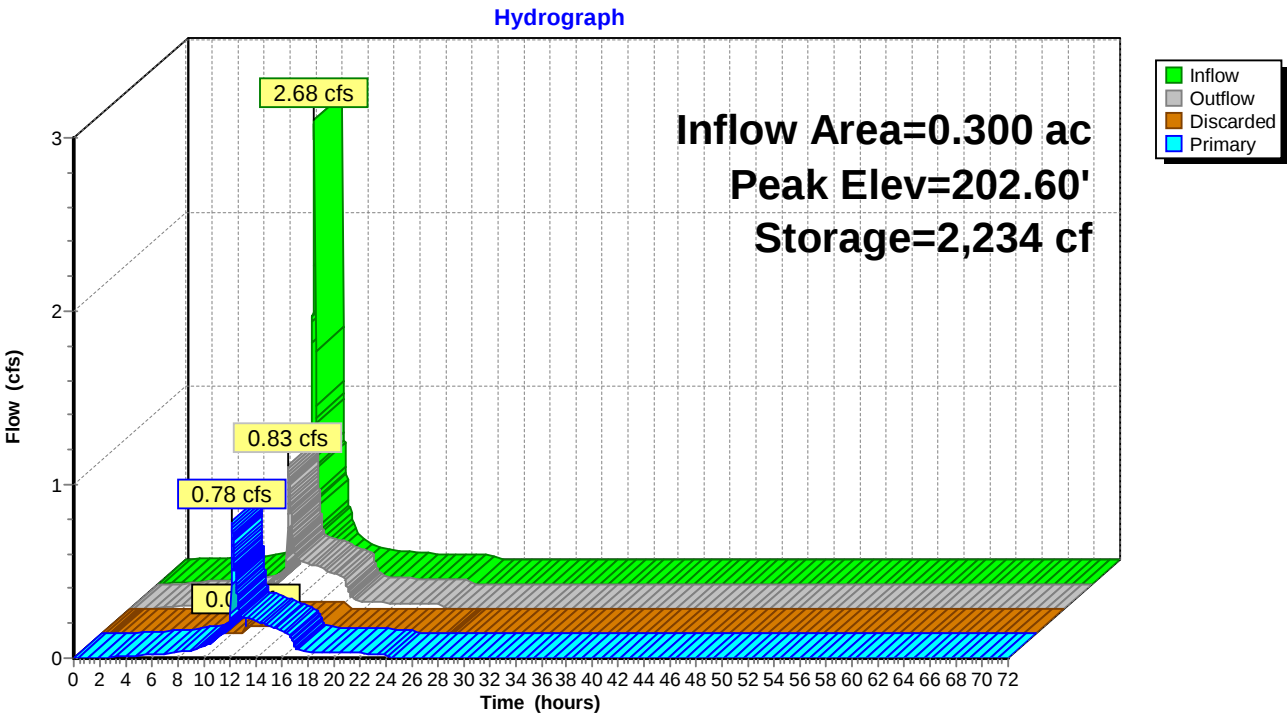
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Pond PP2: Porous Pavement Area #2



Post-Development (Drain Time)

NOAA 24-hr C 100-year Rainfall=8.15"

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Hydrograph for Pond PP2: Porous Pavement Area #2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	200.00	0.00	0.00	0.00
2.00	0.01	19	200.14	0.00	0.00	0.00
4.00	0.02	44	200.34	0.02	0.00	0.01
6.00	0.02	47	200.36	0.02	0.00	0.02
8.00	0.04	53	200.40	0.04	0.00	0.03
10.00	0.08	73	200.54	0.07	0.00	0.07
12.00	1.57	1,210	201.82	0.24	0.04	0.20
14.00	0.11	1,562	202.09	0.26	0.04	0.22
16.00	0.06	455	201.24	0.20	0.04	0.15
18.00	0.04	53	200.41	0.04	0.00	0.04
20.00	0.03	51	200.39	0.03	0.00	0.03
22.00	0.03	50	200.38	0.03	0.00	0.03
24.00	0.03	49	200.38	0.03	0.00	0.02
26.00	0.00	14	200.11	0.00	0.00	0.00
28.00	0.00	0	200.00	0.00	0.00	0.00
30.00	0.00	0	200.00	0.00	0.00	0.00
32.00	0.00	0	200.00	0.00	0.00	0.00
34.00	0.00	0	200.00	0.00	0.00	0.00
36.00	0.00	0	200.00	0.00	0.00	0.00
38.00	0.00	0	200.00	0.00	0.00	0.00
40.00	0.00	0	200.00	0.00	0.00	0.00
42.00	0.00	0	200.00	0.00	0.00	0.00
44.00	0.00	0	200.00	0.00	0.00	0.00
46.00	0.00	0	200.00	0.00	0.00	0.00
48.00	0.00	0	200.00	0.00	0.00	0.00
50.00	0.00	0	200.00	0.00	0.00	0.00
52.00	0.00	0	200.00	0.00	0.00	0.00
54.00	0.00	0	200.00	0.00	0.00	0.00
56.00	0.00	0	200.00	0.00	0.00	0.00
58.00	0.00	0	200.00	0.00	0.00	0.00
60.00	0.00	0	200.00	0.00	0.00	0.00
62.00	0.00	0	200.00	0.00	0.00	0.00
64.00	0.00	0	200.00	0.00	0.00	0.00
66.00	0.00	0	200.00	0.00	0.00	0.00
68.00	0.00	0	200.00	0.00	0.00	0.00
70.00	0.00	0	200.00	0.00	0.00	0.00
72.00	0.00	0	200.00	0.00	0.00	0.00

APPENDIX G

EMERGENCY SPILLWAY CALCULATIONS

Post-Development (Emergency Spillway)

NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Pond BB1: Bio Basin #1

Inflow Area = 2.400 ac, 65.00% Impervious, Inflow Depth = 7.16" for 100-year event
 Inflow = 21.83 cfs @ 12.09 hrs, Volume= 1.432 af
 Outflow = 21.83 cfs @ 12.10 hrs, Volume= 1.432 af, Atten= 0%, Lag= 0.4 min
 Secondary = 21.83 cfs @ 12.10 hrs, Volume= 1.432 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Starting Elev= 203.95' Surf.Area= 7,845 sf Storage= 30,988 cf
 Peak Elev= 204.19' @ 12.10 hrs Surf.Area= 7,845 sf Storage= 32,852 cf (1,864 cf above start)

Plug-Flow detention time= 262.3 min calculated for 0.721 af (50% of inflow)
 Center-of-Mass det. time= 2.6 min (757.4 - 754.8)

Volume	Invert	Avail.Storage	Storage Description
#1	200.00'	39,225 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
200.00	7,845	0	0
201.00	7,845	7,845	7,845
202.00	7,845	7,845	15,690
203.00	7,845	7,845	23,535
204.00	7,845	7,845	31,380
205.00	7,845	7,845	39,225

Device	Routing	Invert	Outlet Devices
#1	Secondary	203.95'	75.0' 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

Secondary OutFlow Max=21.64 cfs @ 12.10 hrs HW=204.19' (Free Discharge)
 ↑1=Broad-Crested Rectangular Weir (Weir Controls 21.64 cfs @ 1.22 fps)

Post-Development (Emergency Spillway)

Prepared by {enter your company name here}

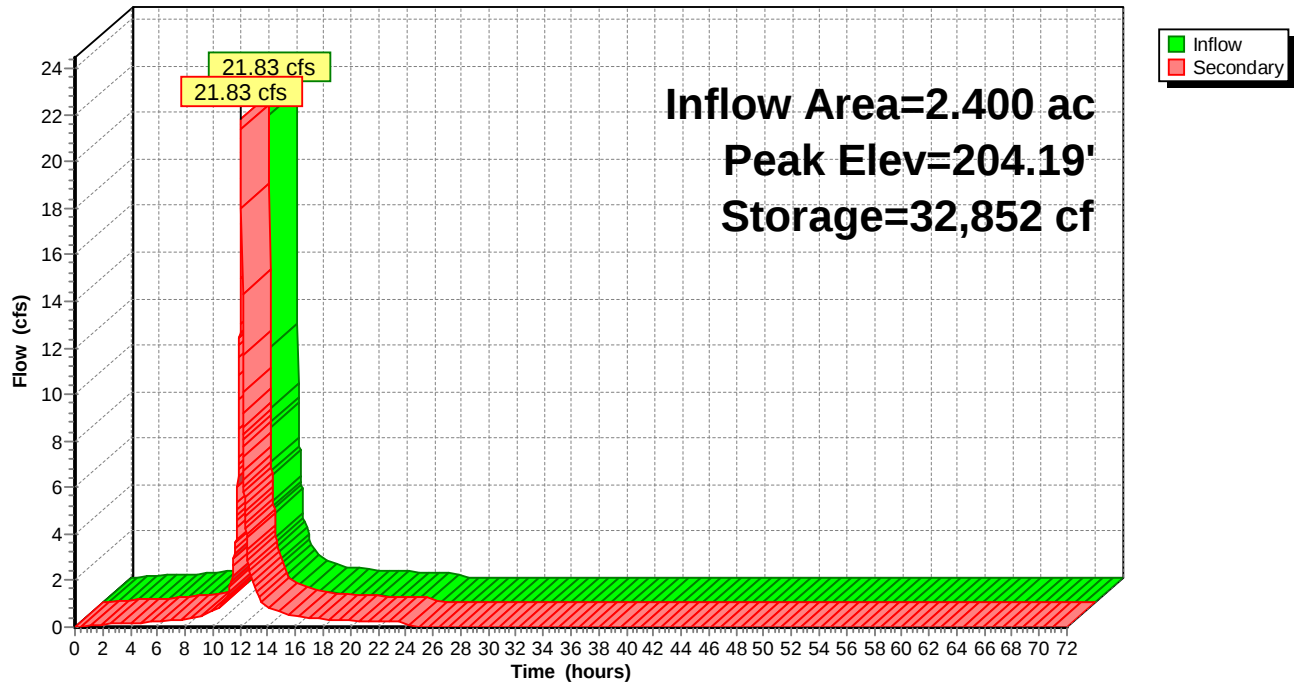
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Pond BB1: Bio Basin #1

Hydrograph



Post-Development (Emergency Spillway)

NOAA 24-hr C 100-year Rainfall=8.15"

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Hydrograph for Pond BB1: Bio Basin #1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Secondary (cfs)
0.00	0.00	30,988	203.95	0.00
2.00	0.10	31,006	203.95	0.10
4.00	0.16	31,017	203.95	0.16
6.00	0.20	31,026	203.95	0.20
8.00	0.35	31,053	203.96	0.35
10.00	0.69	31,115	203.97	0.68
12.00	12.89	32,293	204.12	12.76
14.00	0.85	31,149	203.97	0.86
16.00	0.47	31,076	203.96	0.47
18.00	0.32	31,048	203.96	0.32
20.00	0.27	31,039	203.96	0.27
22.00	0.24	31,032	203.96	0.24
24.00	0.25	31,032	203.96	0.24
26.00	0.00	30,988	203.95	0.00
28.00	0.00	30,988	203.95	0.00
30.00	0.00	30,988	203.95	0.00
32.00	0.00	30,988	203.95	0.00
34.00	0.00	30,988	203.95	0.00
36.00	0.00	30,988	203.95	0.00
38.00	0.00	30,988	203.95	0.00
40.00	0.00	30,988	203.95	0.00
42.00	0.00	30,988	203.95	0.00
44.00	0.00	30,988	203.95	0.00
46.00	0.00	30,988	203.95	0.00
48.00	0.00	30,988	203.95	0.00
50.00	0.00	30,988	203.95	0.00
52.00	0.00	30,988	203.95	0.00
54.00	0.00	30,988	203.95	0.00
56.00	0.00	30,988	203.95	0.00
58.00	0.00	30,988	203.95	0.00
60.00	0.00	30,988	203.95	0.00
62.00	0.00	30,988	203.95	0.00
64.00	0.00	30,988	203.95	0.00
66.00	0.00	30,988	203.95	0.00
68.00	0.00	30,988	203.95	0.00
70.00	0.00	30,988	203.95	0.00
72.00	0.00	30,988	203.95	0.00



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 Poseyville, Indiana 47633
 Tel. 800.772.2040
 >Fax 812.867.0247
 www.nagreen.com
 ECMDS v7.0

SPILLWAY ANALYSIS

> > > Bioretention Basin #1 Spillway

Name Bioretention Basin #1
 Spillway
 Discharge 21.83
 Peak Flow Period 12
 Channel Slope 0.3333
 Channel Bottom Width 75
 Low Flow Liner
 Retardence Class C 6-12 in
 Vegetation Type Mix (Sod and Bunch)
 Vegetation Density Good 65-79%
 Soil Type Silt Loam (SM)

Unreinforced Vegetation - Class C - Mix (Sod & Bunch) - Good 65-79%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	21.83 cfs	3.87 ft/s	0.07 ft	0.039	4 lbs/ft ²	1.56 lbs/ft ²	2.57	STABLE	--
Underlying Substrate	Straight	21.83 cfs	3.87 ft/s	0.07 ft	0.039	2.03 lbs/ft ²	1.55 lbs/ft ²	1.31	STABLE	--



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ANALYSIS COMPUTATIONS

> > > [View Computation](#)

Project Parameters	
Discharge:	21.83
Peak Flow Period:	12
Left Side Slope (ZL):	0
Right Side Slope (ZR):	0
Bottom Width:	75
Spillway Slope:	0.3333
Bend Coefficient (Kb):	1
Retardance Class (A - E):	C 6-12 in
Vegetation Type:	Mix (Sod and Bunch)
Vegetation Density:	Good 65-79%
Soil Type:	Silt Loam (SM)
Channel Lining Options	
Protection Type	Permanent

Basic Relationships
$A = \text{Cross sectional area, ft}^2 \text{ (m}^2\text{)} = (B * D) + (Z_L / 2 * D^2) + (Z_R / 2 * D^2)$
Where:
B = Base width of channel, ft (m)
D = Flow depth, ft (m)
Z _L = Left side bank slope (H : 1 V)
Z _R = Right side bank slope (H : 1 V)
$P = \text{Wetted perimeter, ft (m)} = B + Z_L * D + Z_R * D$
$R = \text{Hydraulic radius, ft (m)} = A / P$
$V = \text{Flow velocity, ft/s (m/s)} = Q / A$
Where:
Q = Channel discharge, cfs (cms)
$\text{Tau}_a \text{ Average bed shear stress, psf (Pa)} = 62.4 * R * S_0$
Where:
S ₀ = Gradient of channel, ft/ft (m/m)
$\text{Tau}_0 = \text{Maximum bed shear stress, psf (Pa)} = 62.4 * D * S_0$

Unvegetated Conditions Computations:
$n = \text{Manning's } n = a * \text{Tau}_a^b$
and (iteratively solved)
$n = 1.486 / Q * A * R^{(2/3)} S_0^{0.5}$
Where:
n = Manning's n
a = Product specific coefficient from performance testing
b = Product specific coefficient from performance testing
$SF_P = \text{Product factor of safety} = \text{Tau}_r / \text{Tau}_0$

Where:
τ_{UT} = Permissible shear stress from testing, psf (Pa)
τ_{UP} = In place permissible shear, psf (Pa) = $\tau_{UT} / \alpha * (\tau_{US} + \alpha / 4.3)$
Where:
α = unit conversion constant, 0.14 English, 6.5 Metric
τ_{US} = Permissible shear stress of soil
SFL = Factor of safety of installed liner = τ_{UP} / τ_{UA}

Vegetated Computations:
n = Manning's $n = \alpha * C_n * \tau_{UA}^{-0.4}$
<u>and (iteratively solved)</u>
$n = 1.486 / Q * A * R(2/3) S_0^{0.5}$
Where:
α = Unit conversion constant, 0.213 English, 1.0 Metric
C_n = Vegetation retardance coefficient
SFP = Product factor of safety = τ_{UTV} / τ_{UA}
Where:
τ_{UTV} = Permissible shear stress from testing, psf (Pa)
τ_{UP} = In place permissible shear, psf (Pa) = $\tau_{US} / (1 - C_{FTRM}) * (n / n_s)^2$
Where:
C_{FTRM} = Coefficient of TRM performance derived from testing τ_{US} = Permissible shear stress of soil
n_s = Manning's of soil bed if left unprotected
SFL = Factor of safety of installed liner = τ_{UP} / τ_{UA}

Unreinforced Vegetation - Class C - Mix (Sod & Bunch) - Good 65-79%

Phase	Mannings N	Predicted flow depth (D)	Cross sectional area (A)	Wetted perimeter (P)	Hydraulic radius (R)	Flow velocity (V)	Froude number (FR)	Calculated Shear Stress	SFP/SFL
Unreinforced Vegetation	0.039	0.07 ft	5.62 ft ²	75.21 ft	0.07 ft	3.87 ft/s	2.58	1.56 lbs/ft ²	2.57 (SFL)
Underlying Substrate	0.039	0.07 ft	5.62 ft ²	75.21 ft	0.07 ft	3.87 ft/s	2.58	1.55 lbs/ft ²	1.31 (SFL)

Post-Development (Emergency Spillway)

NOAA 24-hr C 100-year Rainfall=8.15"

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Summary for Pond BB2: Bio Basin #2

Inflow Area = 1.690 ac, 55.62% Impervious, Inflow Depth = 6.96" for 100-year event
 Inflow = 15.16 cfs @ 12.10 hrs, Volume= 0.980 af
 Outflow = 14.44 cfs @ 12.10 hrs, Volume= 0.980 af, Atten= 5%, Lag= 0.1 min
 Secondary = 14.44 cfs @ 12.10 hrs, Volume= 0.980 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Starting Elev= 204.15' Surf.Area= 11,485 sf Storage= 25,968 cf

Peak Elev= 204.39' @ 12.10 hrs Surf.Area= 11,485 sf Storage= 28,683 cf (2,715 cf above start)

Plug-Flow detention time= 333.1 min calculated for 0.384 af (39% of inflow)

Center-of-Mass det. time= 5.7 min (765.9 - 760.3)

Volume	Invert	Avail.Storage	Storage Description
#1	201.00'	47,215 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
201.00	3,785	0	0
202.00	5,125	4,455	4,455
203.00	11,485	8,305	12,760
204.00	11,485	11,485	24,245
205.00	11,485	11,485	35,730
206.00	11,485	11,485	47,215

Device	Routing	Invert	Outlet Devices
#1	Secondary	204.15'	50.0' 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

Secondary OutFlow Max=14.36 cfs @ 12.10 hrs HW=204.39' (Free Discharge)↑**1=Broad-Crested Rectangular Weir** (Weir Controls 14.36 cfs @ 1.22 fps)

Post-Development (Emergency Spillway)

Prepared by {enter your company name here}

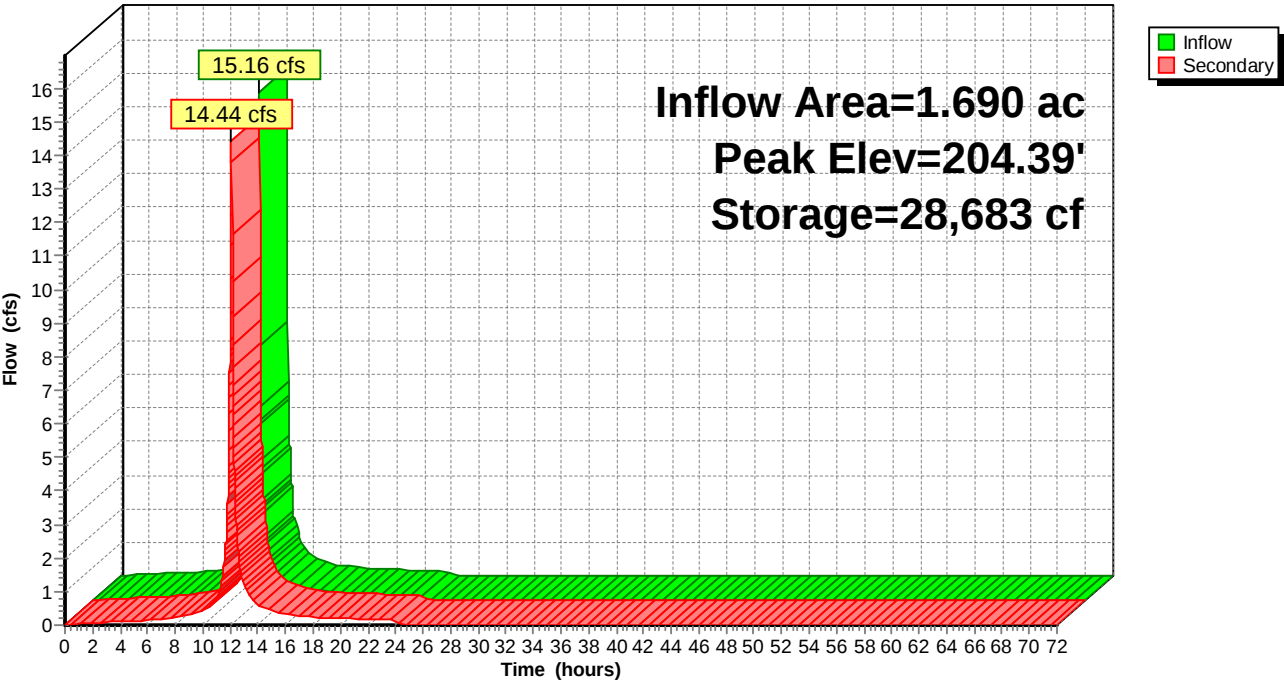
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NOAA 24-hr C 100-year Rainfall=8.15"

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Pond BB2: Bio Basin #2

Hydrograph



Post-Development (Emergency Spillway)

NOAA 24-hr C 100-year Rainfall=8.15"

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Hydrograph for Pond BB2: Bio Basin #2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Secondary (cfs)
0.00	0.00	25,968	204.15	0.00
2.00	0.06	25,992	204.15	0.06
4.00	0.09	26,006	204.15	0.09
6.00	0.13	26,019	204.15	0.12
8.00	0.22	26,058	204.16	0.22
10.00	0.46	26,149	204.17	0.44
12.00	8.91	27,837	204.31	8.23
14.00	0.59	26,221	204.17	0.61
16.00	0.33	26,105	204.16	0.33
18.00	0.22	26,061	204.16	0.23
20.00	0.19	26,047	204.16	0.19
22.00	0.16	26,036	204.16	0.17
24.00	0.17	26,033	204.16	0.16
26.00	0.00	25,968	204.15	0.00
28.00	0.00	25,968	204.15	0.00
30.00	0.00	25,968	204.15	0.00
32.00	0.00	25,968	204.15	0.00
34.00	0.00	25,968	204.15	0.00
36.00	0.00	25,968	204.15	0.00
38.00	0.00	25,968	204.15	0.00
40.00	0.00	25,968	204.15	0.00
42.00	0.00	25,968	204.15	0.00
44.00	0.00	25,968	204.15	0.00
46.00	0.00	25,968	204.15	0.00
48.00	0.00	25,968	204.15	0.00
50.00	0.00	25,968	204.15	0.00
52.00	0.00	25,968	204.15	0.00
54.00	0.00	25,968	204.15	0.00
56.00	0.00	25,968	204.15	0.00
58.00	0.00	25,968	204.15	0.00
60.00	0.00	25,968	204.15	0.00
62.00	0.00	25,968	204.15	0.00
64.00	0.00	25,968	204.15	0.00
66.00	0.00	25,968	204.15	0.00
68.00	0.00	25,968	204.15	0.00
70.00	0.00	25,968	204.15	0.00
72.00	0.00	25,968	204.15	0.00



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SPILLWAY ANALYSIS

> > > Bioretention Basin #2 Spillway

Name Bioretention Basin #2
 Spillway
 Discharge 14.44
 Peak Flow Period 12
 Channel Slope 0.3333
 Channel Bottom Width 50
 Low Flow Liner
 Retardence Class C 6-12 in
 Vegetation Type Mix (Sod and Bunch)
 Vegetation Density Good 65-79%
 Soil Type Silt Loam (SM)

Unreinforced Vegetation - Class C - Mix (Sod & Bunch) - Good 65-79%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	14.44 cfs	3.86 ft/s	0.07 ft	0.039	4 lbs/ft ²	1.55 lbs/ft ²	2.58	STABLE	--
Underlying Substrate	Straight	14.44 cfs	3.86 ft/s	0.07 ft	0.039	2.03 lbs/ft ²	1.55 lbs/ft ²	1.31	STABLE	--



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ANALYSIS COMPUTATIONS

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Project Parameters	
Discharge:	14.44
Peak Flow Period:	12
Left Side Slope (ZL):	0
Right Side Slope (ZR):	0
Bottom Width:	50
Spillway Slope:	0.3333
Bend Coefficient (Kb):	1
Retardance Class (A - E):	C 6-12 in
Vegetation Type:	Mix (Sod and Bunch)
Vegetation Density:	Good 65-79%
Soil Type:	Silt Loam (SM)
Channel Lining Options	
Protection Type	Permanent

Basic Relationships
$A = \text{Cross sectional area, ft}^2 \text{ (m}^2\text{)} = (B * D) + (Z_L / 2 * D^2) + (Z_R / 2 * D^2)$
Where:
B = Base width of channel, ft (m)
D = Flow depth, ft (m)
Z _L = Left side bank slope (H : 1 V)
Z _R = Right side bank slope (H : 1 V)
$P = \text{Wetted perimeter, ft (m)} = B + Z_L * D + Z_R * D$
$R = \text{Hydraulic radius, ft (m)} = A / P$
$V = \text{Flow velocity, ft/s (m/s)} = Q / A$
Where:
Q = Channel discharge, cfs (cms)
$\text{Tau}_a \text{ Average bed shear stress, psf (Pa)} = 62.4 * R * S_0$
Where:
S ₀ = Gradient of channel, ft/ft (m/m)
$\text{Tau}_0 = \text{Maximum bed shear stress, psf (Pa)} = 62.4 * D * S_0$

Unvegetated Conditions Computations:
$n = \text{Manning's } n = a * \text{Tau}_a^b$
and (iteratively solved)
$n = 1.486 / Q * A * R^{(2/3)} S_0^{0.5}$
Where:
n = Manning's n
a = Product specific coefficient from performance testing
b = Product specific coefficient from performance testing
$SF_P = \text{Product factor of safety} = \text{Tau}_r / \text{Tau}_0$

Where:
τ_{UT} = Permissible shear stress from testing, psf (Pa)
τ_{UP} = In place permissible shear, psf (Pa) = $\tau_{UT} / \alpha * (\tau_{US} + \alpha / 4.3)$
Where:
α = unit conversion constant, 0.14 English, 6.5 Metric
τ_{US} = Permissible shear stress of soil
SFL = Factor of safety of installed liner = τ_{UP} / τ_{UA}

Vegetated Computations:
n = Manning's $n = \alpha * C_n * \tau_{UA}^{-0.4}$
<u>and (iteratively solved)</u>
$n = 1.486 / Q * A * R(2/3) S_0^{0.5}$
Where:
α = Unit conversion constant, 0.213 English, 1.0 Metric
C_n = Vegetation retardance coefficient
SFP = Product factor of safety = τ_{UTV} / τ_{UA}
Where:
τ_{UTV} = Permissible shear stress from testing, psf (Pa)
τ_{UP} = In place permissible shear, psf (Pa) = $\tau_{US} / (1 - C_{FTRM}) * (n / n_s)^2$
Where:
C_{FTRM} = Coefficient of TRM performance derived from testing τ_{US} = Permissible shear stress of soil
n_s = Manning's of soil bed if left unprotected
SFL = Factor of safety of installed liner = τ_{UP} / τ_{UA}

Unreinforced Vegetation - Class C - Mix (Sod & Bunch) - Good 65-79%

Phase	Mannings N	Predicted flow depth (D)	Cross sectional area (A)	Wetted perimeter (P)	Hydraulic radius (R)	Flow velocity (V)	Froude number (FR)	Calculated Shear Stress	SFP/SFL
Unreinforced Vegetation	0.039	0.07 ft	3.74 ft ²	50.21 ft	0.07 ft	3.86 ft/s	2.57	1.55 lbs/ft ²	2.58 (SFL)
Underlying Substrate	0.039	0.07 ft	3.74 ft ²	50.21 ft	0.07 ft	3.86 ft/s	2.57	1.55 lbs/ft ²	1.31 (SFL)

APPENDIX H
STORM SEWER CHART

Line No.	Inlet ID	DnStm Ln No	Drng Area	Total Area	Runoff Coeff	i Sys	Q Capt	Line Size	Line Length	Invert Up	Invert Dn	Line Slope	Flow Rate	Capac Full	Vel Ave	Vel Up	Vel Dn	Cover Up	Cover Dn	n-val Pipe	Tc
			(ac)	(ac)	(C)	(in/hr)	(cfs)	(in)	(ft)	(ft)	(ft)	(%)	(cfs)	(cfs)	(ft/s)	(ft/s)	(ft/s)	(ft)	(ft)		(min)
26	CB-1G 'B'	Outfall	0.39	0.39	0.85	7.89	2.62	18	90.822	200.45	200.00	0.50	2.62	7.39	3.58	3.85	3.30	1.70	-1.50	0.013	1.0
25	OCS-1H	18	0.00	0.00	0.00	0.00	4.54	24	74.543	197.20	196.82	0.51	4.54	16.15	3.45	4.23	2.66	4.70	3.16	0.013	1.0
24	OCS-1A	23	0.00	0.00	0.00	0.00	1.47	24	66.424	198.18	197.85	0.50	1.47	15.94	3.08	3.08	3.08	3.92	3.63	0.013	1.0
23	MH-2A	20	0.00	0.00	0.00	0.00	....	24	99.570	197.85	197.35	0.50	1.47	16.03	2.43	3.08	1.78	3.63	4.42	0.013	3.4
22	CB-1B 'B'	21	0.30	0.30	0.77	7.89	1.82	15	87.876	200.23	199.79	0.50	1.82	4.57	3.00	3.60	2.41	1.76	3.47	0.013	1.0
21	MH-2B	20	0.00	0.30	0.00	7.89	....	15	132.587	199.79	199.13	0.50	1.82	4.56	3.51	3.52	3.50	3.47	3.39	0.013	2.0
20	MH-2.1A	19	0.00	0.30	0.00	7.23	....	24	24.012	197.35	197.23	0.50	3.14	15.99	3.36	3.80	2.93	4.42	3.54	0.013	6.9
19	CB-3A 'B'	18	0.22	0.52	0.91	7.12	1.58	24	81.222	197.23	196.82	0.50	4.54	16.07	3.44	4.23	2.66	3.54	3.16	0.013	7.3
18	MH-4A	Outfall	0.00	0.52	0.00	6.86	....	24	153.513	196.82	196.00	0.53	8.97	16.53	5.10	5.25	4.95	3.16	-2.00	0.013	8.2
17	CB-1D 'Y'	16	0.02	0.02	0.75	7.89	0.12	15	55.459	202.54	202.26	0.50	0.12	4.97	1.27	1.70	0.83	1.31	1.60	0.012	1.0
16	CB-2D 'Y'	15	0.06	0.08	0.59	6.26	0.28	15	63.702	202.26	201.94	0.50	0.32	4.96	1.34	2.20	0.47	1.60	2.93	0.012	10.6
15	CB-3D 'Y'	14	0.21	0.29	0.81	5.60	1.34	15	62.965	201.94	201.63	0.49	1.23	4.53	2.84	3.19	2.49	2.93	3.01	0.013	13.9
14	CB-4D 'B'	8	0.34	0.63	0.91	5.47	2.44	18	153.158	201.38	200.61	0.50	2.90	7.45	3.95	3.95	3.95	3.01	2.31	0.013	14.6
13	CB-1E 'Y'	12	0.03	0.03	0.67	7.89	0.16	15	64.833	202.83	202.51	0.49	0.16	4.91	0.56	0.84	0.29	2.96	2.95	0.012	1.0
12	CB-2E 'A'	11	0.32	0.35	0.93	6.55	2.35	15	84.251	202.51	202.09	0.50	2.08	4.94	3.71	3.78	3.65	2.95	1.87	0.012	9.4
11	CB-2.1E 'Y'	10	0.04	0.39	0.63	6.38	0.00	15	80.416	202.09	201.68	0.51	2.19	5.00	3.80	3.84	3.75	1.87	1.13	0.012	10.0
10	CB-3E 'Y'	9	0.03	0.42	0.67	6.24	0.16	15	131.018	201.68	201.03	0.50	2.26	4.93	3.26	3.88	2.64	1.13	0.55	0.012	10.7
9	MH-4E	8	0.00	0.42	0.00	6.03	....	15	37.260	201.03	200.86	0.46	2.19	4.36	3.55	3.55	3.56	0.55	2.31	0.013	11.6
8	CB-5D 'B'	Outfall	0.34	1.39	0.86	5.29	2.31	24	22.084	200.11	200.00	0.50	6.27	15.96	3.88	4.67	3.09	2.31	-2.00	0.013	15.7
7	CB-1F 'B'	Outfall	0.40	0.40	0.80	7.89	2.53	15	17.000	203.08	203.00	0.47	2.53	4.43	3.59	3.66	3.51	1.40	-1.25	0.013	1.0
6	CB-7C 'B'	2	0.10	0.10	0.85	7.89	0.67	15	88.501	204.16	203.72	0.50	0.67	4.55	1.24	1.72	0.76	2.37	1.64	0.013	1.0
5	CB-1C 'A'	4	0.02	0.02	0.75	7.89	0.12	15	17.000	203.99	203.96	0.18	0.12	2.71	0.13	0.13	0.13	2.09	1.44	0.013	1.0
4	CB-2C 'B'	3	0.22	0.24	0.79	7.89	1.37	15	120.474	203.96	203.72	0.20	1.49	2.88	1.54	1.68	1.39	1.44	1.87	0.013	3.9

Project File: 2023-11-22 Pipe Calcs.stm

Number of lines: 26

Date: 11/21/2023

NOTES: Intensity = 84.74 / (Inlet time + 12.30) ^ 0.83 -- Return period = 25 Yrs. ; ** Critical depth

Line No.	Inlet ID	DnStm Ln No	Drng Area (ac)	Total Area (ac)	Runoff Coeff (C)	i Sys (in/hr)	Q Capt (cfs)	Line Size (in)	Line Length (ft)	Invert Up (ft)	Invert Dn (ft)	Line Slope (%)	Flow Rate (cfs)	Capac Full (cfs)	Vel Ave (ft/s)	Vel Up (ft/s)	Vel Dn (ft/s)	Cover Up (ft)	Cover Dn (ft)	n-val Pipe	Tc (min)
3	CB-3C 'A'	2	0.06	0.30	0.59	7.68	0.28	15	165.255	203.72	203.39	0.20	1.72	2.89	1.58	1.71	1.44	1.87	1.97	0.013	5.6
2	CB-4C 'A'	1	0.20	0.60	0.87	7.06	1.37	18	164.188	203.39	203.06	0.20	3.41	4.71	2.55	2.70	2.41	1.72	0.97	0.013	7.5
1	CB-5C 'A'	Outfall	0.27	0.87	0.83	6.70	1.77	24	34.870	203.06	202.99	0.20	4.74	10.13	2.87	2.91	2.84	0.47	-2.00	0.013	8.8

Project File: 2023-11-22 Pipe Calcs.stm

Number of lines: 26

Date: 11/21/2023

NOTES: Intensity = 84.74 / (Inlet time + 12.30) ^ 0.83 -- Return period = 25 Yrs. ; ** Critical depth

Line No.	Inlet ID	DnStm Ln No	Drng Area	Total Area	Runoff Coeff	i Sys	Q Capt	Line Size	Line Length	Invert Up	Invert Dn	Line Slope	Flow Rate	Capac Full	Vel Ave	Vel Up	Vel Dn	Cover Up	Cover Dn	n-val Pipe	Tc
			(ac)	(ac)	(C)	(in/hr)	(cfs)	(in)	(ft)	(ft)	(ft)	(%)	(cfs)	(cfs)	(ft/s)	(ft/s)	(ft/s)	(ft)	(ft)		(min)
26	CB-1G 'B'	Outfall	0.39	0.39	0.85	9.83	3.26	18	90.822	200.45	200.00	0.50	3.26	7.39	4.05	3.99	4.11	1.70	-1.50	0.013	1.0
25	OCS-1H	18	0.00	0.00	0.00	0.00	4.54	24	74.543	197.20	196.82	0.51	4.54	16.15	3.37	4.23	2.51	4.70	3.16	0.013	1.0
24	OCS-1A	23	0.00	0.00	0.00	0.00	1.47	24	66.424	198.18	197.85	0.50	1.47	15.94	3.08	3.08	3.08	3.92	3.63	0.013	1.0
23	MH-2A	20	0.00	0.00	0.00	0.00	....	24	99.570	197.85	197.35	0.50	1.47	16.03	2.35	3.08	1.61	3.63	4.42	0.013	3.4
22	CB-1B 'B'	21	0.30	0.30	0.77	9.83	2.27	15	87.876	200.23	199.79	0.50	2.27	4.57	3.23	3.86	2.60	1.76	3.47	0.013	1.0
21	MH-2B	20	0.00	0.30	0.00	9.83	....	15	132.587	199.79	199.13	0.50	2.27	4.56	3.71	3.71	3.71	3.47	3.39	0.013	1.8
20	MH-2.1A	19	0.00	0.30	0.00	9.20	....	24	24.012	197.35	197.23	0.50	3.60	15.99	3.46	3.95	2.97	4.42	3.54	0.013	6.9
19	CB-3A 'B'	18	0.22	0.52	0.91	9.10	1.97	24	81.222	197.23	196.82	0.50	5.39	16.07	3.72	4.46	2.98	3.54	3.16	0.013	7.2
18	MH-4A	Outfall	0.00	0.52	0.00	8.88	....	24	153.513	196.82	196.00	0.53	9.84	16.53	5.43	5.43	5.44	3.16	-2.00	0.013	8.0
17	CB-1D 'Y'	16	0.02	0.02	0.75	9.83	0.15	15	55.459	202.54	202.26	0.50	0.15	4.97	1.31	1.81	0.81	1.31	1.60	0.012	1.0
16	CB-2D 'Y'	15	0.06	0.08	0.59	8.69	0.35	15	63.702	202.26	201.94	0.50	0.44	4.96	1.46	2.41	0.52	1.60	2.93	0.012	8.7
15	CB-3D 'Y'	14	0.21	0.29	0.81	8.04	1.67	15	62.965	201.94	201.63	0.49	1.77	4.53	3.03	3.57	2.49	2.93	3.01	0.013	11.3
14	CB-4D 'B'	8	0.34	0.63	0.91	7.91	3.04	18	153.158	201.38	200.61	0.50	4.19	7.45	3.60	4.46	2.74	3.01	2.31	0.013	11.9
13	CB-1E 'Y'	12	0.03	0.03	0.67	9.83	0.20	15	64.833	202.83	202.51	0.49	0.20	4.91	1.09	1.95	0.23	2.96	2.95	0.012	1.0
12	CB-2E 'A'	11	0.32	0.35	0.93	8.97	2.93	15	84.251	202.51	202.09	0.50	2.85	4.94	3.53	4.17	2.89	2.95	1.87	0.012	7.7
11	CB-2.1E 'Y'	10	0.04	0.39	0.63	8.81	0.00	15	80.416	202.09	201.68	0.51	3.02	5.00	2.99	3.43	2.55	1.87	1.13	0.012	8.3
10	CB-3E 'Y'	9	0.03	0.42	0.67	8.68	0.20	15	131.018	201.68	201.03	0.50	3.15	4.93	3.60	4.33	2.88	1.13	0.55	0.012	8.7
9	MH-4E	8	0.00	0.42	0.00	8.48	....	15	37.260	201.03	200.86	0.46	3.08	4.36	3.22	3.40	3.04	0.55	2.31	0.013	9.5
8	CB-5D 'B'	Outfall	0.34	1.39	0.86	7.73	2.87	24	22.084	200.11	200.00	0.50	9.16	15.96	4.72	4.93	4.52	2.31	-2.00	0.013	12.8
7	CB-1F 'B'	Outfall	0.40	0.40	0.80	9.83	3.15	15	17.000	203.08	203.00	0.47	3.15	4.43	4.11	3.88	4.35	1.40	-1.25	0.013	1.0
6	CB-7C 'B'	2	0.10	0.10	0.85	9.83	0.84	15	88.501	204.16	203.72	0.50	0.84	4.55	1.00	1.26	0.74	2.37	1.64	0.013	1.0
5	CB-1C 'A'	4	0.02	0.02	0.75	9.83	0.15	15	17.000	203.99	203.96	0.18	0.15	2.71	0.12	0.12	0.12	2.09	1.44	0.013	1.0
4	CB-2C 'B'	3	0.22	0.24	0.79	9.83	1.71	15	120.474	203.96	203.72	0.20	1.86	2.88	1.53	1.55	1.51	1.44	1.87	0.013	3.4

Project File: 2023-11-22 Pipe Calcs.stm

Number of lines: 26

Date: 11/21/2023

NOTES: Intensity = 124.57 / (Inlet time + 17.60) ^ 0.81 -- Return period = 100 Yrs. ; ** Critical depth

Line No.	Inlet ID	DnStm Ln No	Drng Area (ac)	Total Area (ac)	Runoff Coeff (C)	i Sys (in/hr)	Q Capt (cfs)	Line Size (in)	Line Length (ft)	Invert Up (ft)	Invert Dn (ft)	Line Slope (%)	Flow Rate (cfs)	Capac Full (cfs)	Vel Ave (ft/s)	Vel Up (ft/s)	Vel Dn (ft/s)	Cover Up (ft)	Cover Dn (ft)	n-val Pipe	Tc (min)
3	CB-3C 'A'	2	0.06	0.30	0.59	9.83	0.35	15	165.255	203.72	203.39	0.20	2.20	2.89	1.80	1.80	1.80	1.87	1.97	0.013	4.7
2	CB-4C 'A'	1	0.20	0.60	0.87	9.42	1.71	18	164.188	203.39	203.06	0.20	4.55	4.71	2.94	2.97	2.92	1.72	0.97	0.013	6.2
1	CB-5C 'A'	Outfall	0.27	0.87	0.83	9.10	2.20	24	34.870	203.06	202.99	0.20	6.44	10.13	3.76	3.67	3.85	0.47	-2.00	0.013	7.2

Project File: 2023-11-22 Pipe Calcs.stm

Number of lines: 26

Date: 11/21/2023

NOTES: Intensity = 124.57 / (Inlet time + 17.60) ^ 0.81 -- Return period = 100 Yrs. ; ** Critical depth

APPENDIX I

OUTLET PROTECTION CALCULATION

JOB NAME: 2500 Pennington Road

JOB NUMBER: APR-2203

CALCULATED: BHS

DATE: 11/22/2023

OUTLET ID: Gabion Wall-5A

Rip-Rap Design

Scour Hole

Q (cfs)	W (in)	H (in)	TW	W _o (ft)	H (ft)	D _o Multiplier	W (Total)	L	D ₅₀ (in)	
9.84	24	24	0.4	2	2	1	16.0	18.0	2.0	-----
9.84	24	24	0.4	2	2	0.5	10	12	3.1	THIS ONE

Rip Rap Apron

	Q (cfs)	W (in)	H (in)	TW	W _o (ft)	H (ft)	3W _o	W (Total)	L _a	D ₅₀ (in)	
TW < 0.5D _o	9.84	24	24	0.4	2	2	6.0	26.3	20.3	4.0	THIS ONE
TW > 0.5D _o	9.84	24	24	0.4	2	2	6.0	10.2	10.4	4.0	-----

JOB NAME: 2500 Pennington Road

JOB NUMBER: APR-2203

CALCULATED: BHS

DATE: 11/22/2023

OUTLET ID: HW-6C

Rip-Rap Design

Scour Hole

Q (cfs)	W (in)	H (in)	TW	W _o (ft)	H (ft)	D _o Multiplier	W (Total)	L	D ₅₀ (in)	
6.44	24	24	0.4	2	2	1	16.0	18.0	1.2	-----
6.44	24	24	0.4	2	2	0.5	10	12	1.8	THIS ONE

Rip Rap Apron

	Q (cfs)	W (in)	H (in)	TW	W _o (ft)	H (ft)	3W _o	W (Total)	L _a	D ₅₀ (in)	
TW < 0.5D _o	6.44	24	24	0.4	2	2	6.0	24.1	18.1	2.3	THIS ONE
TW > 0.5D _o	6.44	24	24	0.4	2	2	6.0	8.7	6.8	2.3	-----

JOB NAME: 2500 Pennington Road

JOB NUMBER: APR-2203

CALCULATED: BHS

DATE: 11/22/2023

OUTLET ID: HW-6D

Rip-Rap Design

Scour Hole

Q (cfs)	W (in)	H (in)	TW	W _o (ft)	H (ft)	D _o Multiplier	W (Total)	L	D ₅₀ (in)	
9.16	24	24	0.4	2	2	1	16.0	18.0	1.9	-----
9.16	24	24	0.4	2	2	0.5	10	12	2.8	THIS ONE

Rip Rap Apron

	Q (cfs)	W (in)	H (in)	TW	W _o (ft)	H (ft)	3W _o	W (Total)	L _a	D ₅₀ (in)	
TW < 0.5D _o	9.16	24	24	0.4	2	2	6.0	25.8	19.8	3.6	THIS ONE
TW > 0.5D _o	9.16	24	24	0.4	2	2	6.0	9.9	9.7	3.6	-----

JOB NAME: 2500 Pennington Road

JOB NUMBER: APR-2203

CALCULATED: BHS

DATE: 11/22/2023

OUTLET ID: HW-2F

Rip-Rap Design

Scour Hole

Q (cfs)	W (in)	H (in)	TW	W _o (ft)	H (ft)	D _o Multiplier	W (Total)	L	D ₅₀ (in)	
3.15	15	15	0.25	1.25	1.25	1	10.0	11.3	1.3	-----
3.15	15	15	0.25	1.25	1.25	0.5	6.25	7.5	2.1	THIS ONE

Rip Rap Apron

	Q (cfs)	W (in)	H (in)	TW	W _o (ft)	H (ft)	3W _o	W (Total)	L _a	D ₅₀ (in)	
TW < 0.5D _o	3.15	15	15	0.25	1.25	1.25	3.8	16.6	12.8	2.6	THIS ONE
TW > 0.5D _o	3.15	15	15	0.25	1.25	1.25	3.8	6.5	6.8	2.6	-----

JOB NAME: 2500 Pennington Road

JOB NUMBER: APR-2203

CALCULATED: BHS

DATE: 11/22/2023

OUTLET ID: HW-2G

Rip-Rap Design

Scour Hole

Q (cfs)	W (in)	H (in)	TW	W _o (ft)	H (ft)	D _o Multiplier	W (Total)	L	D ₅₀ (in)	
3.26	18	18	1.81	1.5	1.5	1	12.0	13.5	0.2	-----
3.26	18	18	1.81	1.5	1.5	0.5	7.5	9	0.2	THIS ONE

Rip Rap Apron

	Q (cfs)	W (in)	H (in)	TW	W _o (ft)	H (ft)	3W _o	W (Total)	L _a	D ₅₀ (in)	
TW < 0.5D _o	3.26	18	18	1.81	1.5	1.5	4.5	18.2	13.7	0.3	-----
TW > 0.5D _o	3.26	18	18	1.81	1.5	1.5	4.5	6.6	5.3	0.3	THIS ONE

APPENDIX J

BASIN SUMMARY SHEET

New Jersey Department of Agriculture
Hydrologic Modeling Database – Data Entry Form

Project Site Details

Chpt. 251 Application Number:

Start Date (if known): 09/01/23

Street Address: 2500 Pennington Road

County: Mercer

Municipality: Hopewell

Block: 78

Lot: 17

NJDEP Anderson Landuse Code (4 digits):

Landuse description: Multi-family residential

Site Centroid Location (NJ State Plane Feet): ¹

Northing: 535,832 Easting: 413,142

Project Contact Details

Applicant: American Properties, LLC

Address: 517 Route 1 South, Suite 2100 Iselin, NJ 08830

Phone: 732-283-9700

Email: gkanter@americanproperties.net

Post Construction Operation & Maintenance:²

Party Name: American Properties, LLC

Address: 517 Route 1 South, Suite 2100 Iselin, NJ 08830

Phone: 732-283-9700

Email: gkanter@americanproperties.net

Party type:

New Jersey Department of Agriculture
Hydrologic Modeling Database – Data Entry Form

Basin Details:³

Basin Centroid (NJ State Plane Feet):⁴

Northing: 536,044

Easting: 413,185

Basin Type: Bioretention

Construction: Surface

Status phase:⁵ Design ☒ As-built ☐

Dam Height (ft) N/A

top width (ft) N/A

Dam Classification: N/A

Drainage Area(s) to Basin [note- include any bypass areas]⁶

Drainage Area Name	Drainage Area (acres)	Post-Development CN#	Percent Impervious	Time of Concentration (min)
DA-1A	2.40	92	65%	1

Basin Outlet Structure(s)⁷

ID: OCS-1H

End of Pipe Location:⁸ Northing: 536,047

Easting: 413,312

Discharge Type ⁹ (weir, orifice, etc)	Dimensions (diameter, length)	Elevation (USGS)	Discharge ¹⁰ Coefficient	Equation Used ¹¹
Orifice	4.5" DIAM	200.81	-	$Q=CA(2gh)^{0.5}$
Orifice	3.5"H x 19.5"W	201.81	-	$Q=CA(2gh)^{0.5}$

New Jersey Department of Agriculture
Hydrologic Modeling Database – Data Entry Form

Basin Outlet Structure(s)

ID.

End of Pipe Location: Northing:

Easting:

Discharge Type (weir, orifice, etc)	Dimensions (diameter, length)	Elevation (USGS)	Discharge Coefficient	Equation Used

Basin Stage-Discharge Rating Table¹²

Elevation (USGS Feet)	Storage (Acre-Ft)	Total Outlet Structure Discharge (cfs)
200.00	0.00	0.00
200.50	0.090	0.00
201.00	0.180	0.08
201.50	0.270	0.38
202.00	0.360	0.96
202.50	0.450	2.33
203.00	0.540	3.08
203.50	0.630	3.68
203.94	0.710	4.48

New Jersey Department of Agriculture
Hydrologic Modeling Database – Data Entry Form

Basin Details:³

Basin Centroid (NJ State Plane Feet):⁴

Northing: 535,721

Easting: 413,332

Basin Type: Bioretention

Construction: Surface

Status phase:⁵ Design ☒ As-built ☐

Dam Height (ft) N/A

top width (ft) N/A

Dam Classification: N/A

Drainage Area(s) to Basin [note- include any bypass areas]⁶

Drainage Area Name	Drainage Area (acres)	Post-Development CN#	Percent Impervious	Time of Concentration (min)
DA-1B	1.69	90	56%	1

Basin Outlet Structure(s)⁷

ID: OCS-1A

End of Pipe Location:⁸ Northing: 535,794

Easting: 413,341

Discharge Type ⁹ (weir, orifice, etc)	Dimensions (diameter, length)	Elevation (USGS)	Discharge ¹⁰ Coefficient	Equation Used ¹¹
Orifice	2.5" DIAM	201.91	-	$Q=CA(2gh)^{0.5}$
Orifice	3"H x 7"W	202.78	-	$Q=CA(2gh)^{0.5}$

New Jersey Department of Agriculture
Hydrologic Modeling Database – Data Entry Form

Basin Outlet Structure(s)

ID.

End of Pipe Location: Northing:

Easting:

Discharge Type (weir, orifice, etc)	Dimensions (diameter, length)	Elevation (USGS)	Discharge Coefficient	Equation Used

Basin Stage-Discharge Rating Table¹²

Elevation (USGS Feet)	Storage (Acre-Ft)	Total Outlet Structure Discharge (cfs)
201.00	0.00	0.00
201.50	0.047	0.00
202.00	0.102	0.01
202.50	0.179	0.11
203.00	0.293	0.36
203.50	0.425	0.74
204.00	0.557	0.97
204.14	0.594	1.38

New Jersey Department of Agriculture

Hydrologic Modeling Database – Data Entry Form

NJDEP BMP Water Quality Structures¹³

Type (rain garden, green roof, seepage pit etc)	Size	Size Units (cu ft, sq ft etc)	Northing (SPF)	Easting (SPF)
Pervious Pavement	2,437	sq. ft.	535,919	413,330
Pervious Pavement	3,275	sq. ft.	535,860	413,225

Explanatory Notes-

¹ Approximate location of center of site, coordinates in state plane feet

² Indicate who will be responsible for permanent operation and maintenance

³ Additional Basin Detail Pages can be used for more than one basin in a project.

⁴ Approximate location of center of basin, coordinates in state plane feet

⁵ Indicate “design” for basins not yet constructed

⁶ Drainage areas which are modified by construction, but not directed to the basin should still be listed and described

⁷ “Outlet structure” means the control box, outlet headwall, FES etc. This does not refer to an individual control on the structure such as a weir or orifice. There are two tables for more than one outlet structure

⁸ Approximate location of terminal discharge end of basin outfall, coordinates in state plane feet

⁹ Indicate the type of outlet – weir, orifice, hydro brake, etc.

¹⁰ Discharge Coefficient specific to the type of outlet control i.e., 0.6 for circular orifice

¹¹ List the discharge equation for each outlet (weir, orifice etc) used

¹² For basins with dead storage below the primary outlet, indicate 0 cfs discharge until the lowest outlet is reached. Routing table should begin at the lowest basin elevation.

¹³ Describe NJDEP BMP Manual water quality devices such as seepage pits, rain gardens etc. Size is appropriate for device – cubic feet, square feet or linear feet. Location of device using state plane feet coordinates.

APPENDIX K

SOIL LOGS

 TEST PIT LOCATION



TEST PIT LOCATION PLAN
FOR
HERITAGE AT HOPEWELL

TOWNSHIP OF HOPEWELL MERCER COUNTY NEW JERSEY			
DATE: NOVEMBER 2022	DESIGNED BY: —	SCALE: APPROX. 1"=40'	PROJECT NUMBER: 18808.001
DRAWN BY: MTM	CHECKED BY: JMT	FIELD BOOK —	DRAWING NO.: 2



TEST PIT LOG

HERITAGE AT HOPEWELL
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY (FPA JOB NO. 18808.001)

TEST PIT NO.: BMP-1
DATE: 11/9/2022

GROUND ELEV.: +202'±
DEPTH OF WATER: Dry
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: Not Observed

DEPTH	DESCRIPTION
0 – 8"	Dark Brown SILT & CLAY , some ⁺ cmf ⁺ Sand, trace f Gravel, w/ few roots.
8 – 18"	Red-Brown SILT & CLAY , some mf Sand, some ⁻ cmf ⁺ Gravel. (S-1)
18 – 45"	Red-Brown CLAY & SILT , some ⁺ cmf ⁺ Gravel, little mf ⁺ Sand. (S-2) (completely weathered shale)
45 – 78"	Red-Brown highly weathered, fractured SHALE .

END OF TEST PIT @ 7.1' (Excavator Refusal)

NOTES:

SOILS ENGINEER: J. Tierney, PE

CONTRACTOR: Rizzo & Son Excavating

TEST PIT OBSERVER: D. Rohmeyer, PE

EXCAVATOR: Komatsu PC138

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.



TEST PIT LOG

HERITAGE AT HOPEWELL
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY (FPA JOB NO. 18808.001)

TEST PIT NO.: BMP-2
DATE: 11/9/2022

GROUND ELEV.: +201.5'±
DEPTH OF WATER: Dry
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: Not Observed

DEPTH	DESCRIPTION
0 – 5"	Brown SILT & CLAY , some f Sand, w/ many roots.
5 – 26"	Red-Brown CLAY & SILT , little+ cmf+ Sand, little- f Gravel. (S-1)
26 – 48"	Red-Brown & Grey SILT & CLAY , and cm+f Gravel, little+ cmf Sand. (S-2) (completely weathered shale)
48 – 98"	Red-Brown highly weathered, fractured SHALE .

END OF TEST PIT @ 8.2' (Excavator Refusal)

NOTES:

SOILS ENGINEER: J. Tierney, PE

CONTRACTOR: Rizzo & Son Excavating

TEST PIT OBSERVER: D. Rohmeyer, PE

EXCAVATOR: Komatsu PC138

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.



TEST PIT LOG

HERITAGE AT HOPEWELL
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY (FPA JOB NO. 18808.001)

TEST PIT NO.: BMP-3
DATE: 11/9/2022

GROUND ELEV.: +201.5'±
DEPTH OF WATER: 6.9'±*
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: 6.9'±*

DEPTH	DESCRIPTION
0 – 8"	Dark Brown Clayey SILT , and cmf ⁺ Sand, w/ few roots.
8 – 37"	Brown SILT & CLAY , some ⁺ cmf ⁺ Sand, little ⁻ f Gravel. (S-1)
37 – 74"	Red-Brown SILT & CLAY , some ⁻ mf ⁺ Sand, little ⁺ mf Gravel. (S-2) (completely weathered shale)
74 – 99"	Red-Brown & Grey highly weathered, fractured SHALE .

END OF TEST PIT @ 8.3' (Excavator Refusal)

NOTES: *Perched groundwater encountered @ 83".

SOILS ENGINEER: J. Tierney, PE

CONTRACTOR: Rizzo & Son Excavating

TEST PIT OBSERVER: D. Rohmeyer, PE

EXCAVATOR: Komatsu PC138

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.



TEST PIT LOG

HERITAGE AT HOPEWELL
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY (FPA JOB NO. 18808.001)

TEST PIT NO.: BMP-4
DATE: 11/9/2022

GROUND ELEV.: +202.5'±
DEPTH OF WATER: Dry
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: Not Observed

DEPTH	DESCRIPTION
0 – 8"	Dark Brown SILT & CLAY , little ⁺ mf Sand, w/ many roots.
8 – 36"	Red-Brown SILT & CLAY , little ⁻ f Sand, trace ⁺ f Gravel. (S-1)
36 – 42"	Dark Red-Brown & Grey CLAY & SILT , little mf Sand.
42 – 62"	Grey SILT & CLAY , and ⁻ mf ⁺ Gravel, little mf Sand. (S-2) (completely weathered shale)
62 – 97"	Grey highly weathered, fractured SHALE .

END OF TEST PIT @ 8.1' (Excavator Refusal)

NOTES:

SOILS ENGINEER: J. Tierney, PE

CONTRACTOR: Rizzo & Son Excavating

TEST PIT OBSERVER: D. Rohmeyer, PE

EXCAVATOR: Komatsu PC138

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.



TEST PIT LOG

HERITAGE AT HOPEWELL
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY (FPA JOB NO. 18808.001)

TEST PIT NO.: BMP-5
DATE: 11/9/2022

GROUND ELEV.: +204'±
DEPTH OF WATER: 9'±*
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: 9'±*

DEPTH	DESCRIPTION
0 – 4"	Dark Brown CLAY & SILT , some cmf ⁺ Sand, w/ many roots.
4 – 18"	Brown SILT & CLAY , little mf ⁺ Sand. (S-1)
18 – 36"	Red-Brown CLAY & SILT , trace ⁺ f Sand, trace ⁺ f Gravel. (S-2)
36 – 90"	Dark Red-Brown CLAY & SILT , some ⁺ c ⁺ mf Sand, little ⁺ mf Gravel. (S-3) (completely weathered shale)
90 – 112"	Red-Brown highly weathered, fractured SHALE .

END OF TEST PIT @ 9.3' (Excavator Refusal)

NOTES: *Perched groundwater encountered @ 108".

SOILS ENGINEER: J. Tierney, PE

CONTRACTOR: Rizzo & Son Excavating

TEST PIT OBSERVER: D. Rohmeyer, PE

EXCAVATOR: Komatsu PC138

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.



TEST PIT LOG

HERITAGE AT HOPEWELL
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY (FPA JOB NO. 18808.001)

TEST PIT NO.: BMP-6
DATE: 11/9/2022

GROUND ELEV.: +205.5'±
DEPTH OF WATER: Dry
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: Not Observed

DEPTH	DESCRIPTION
0 – 5"	Dark Brown Clayey SILT , some+ mf+ Sand, w/ many roots.
5 – 30"	Brown CLAY & SILT , little+ mf Sand, little- f Gravel. (S-1)
30 – 65"	Red-Brown SILT & CLAY , some+ m+f Gravel, little+ cmf Sand. (S-2) (completely weathered shale)
65 – 81"	Red-Brown highly weathered, fractured SHALE .

END OF TEST PIT @ 6.8' (Excavator Refusal)

NOTES:

SOILS ENGINEER: J. Tierney, PE

CONTRACTOR: Rizzo & Son Excavating

TEST PIT OBSERVER: D. Rohmeyer, PE

EXCAVATOR: Komatsu PC138

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.



TEST PIT LOG

HERITAGE AT HOPEWELL
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY (FPA JOB NO. 18808.001)

TEST PIT NO.: BMP-7
DATE: 11/9/2022

GROUND ELEV.: +207'±
DEPTH OF WATER: Dry
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: Not Observed

DEPTH	DESCRIPTION
0 – 4"	Dark Brown Clayey SILT , some ⁻ mf Sand, trace f Gravel, w/ many roots.
4 – 30"	Red-Brown SILT & CLAY , some ⁺ mf ⁺ Sand, little ⁺ cmf ⁺ Gravel. (S-1)
30 – 42"	Dark Red-Brown SILT & CLAY , some cmf Gravel, little cmf ⁺ Sand. (S-2) (completely weathered shale)
42 – 79"	Red-Brown & Grey highly weathered, fractured SHALE .

END OF TEST PIT @ 6.6' (Excavator Refusal)

NOTES:

SOILS ENGINEER: J. Tierney, PE

CONTRACTOR: Rizzo & Son Excavating

TEST PIT OBSERVER: D. Rohmeyer, PE

EXCAVATOR: Komatsu PC138

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.



TEST PIT LOG

HERITAGE AT HOPEWELL
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY (FPA JOB NO. 18808.001)

TEST PIT NO.: BMP-8
DATE: 11/9/2022

GROUND ELEV.: +207.5'±
DEPTH OF WATER: Dry
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: Not Observed

DEPTH	DESCRIPTION
0 – 6"	Dark Brown SILT & CLAY , little ⁺ mf Sand, trace mf Gravel, w/ many roots.
6 – 26"	Brown CLAY & SILT , little mf ⁺ Sand, little ⁻ f Gravel. (S-1)
26 – 56"	Grey-Brown SILT & CLAY , some ⁺ m ⁺ f Gravel, little ⁻ cmf Sand. (S-2) (completely weathered shale)
56 – 64"	Grey & Red-Brown cmf ⁺ GRAVEL , little ⁺ Clay & Silt, little c ⁺ mf Sand. (S-3) (completely to highly weathered shale)
64 – 76"	Grey & Red-Brown highly weathered, fractured SHALE .

END OF TEST PIT @ 6.3' (Excavator Refusal)

NOTES:

SOILS ENGINEER: J. Tierney, PE

CONTRACTOR: Rizzo & Son Excavating

TEST PIT OBSERVER: D. Rohmeyer, PE

EXCAVATOR: Komatsu PC138

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.



TEST PIT LOG

HERITAGE AT HOPEWELL
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY (FPA JOB NO. 18808.001)

TEST PIT NO.: BMP-9
DATE: 11/9/2022

GROUND ELEV.: +205.5'±
DEPTH OF WATER: Dry
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: Not Observed

DEPTH	DESCRIPTION
0 – 6"	Dark Brown Clayey SILT , some+ mf+ Sand, trace f Gravel, w/ few roots.
6 – 27"	Brown SILT & CLAY , little+ mf+ Sand, trace f Gravel. (S-1)
27 – 46"	Red-Brown CLAY & SILT , some+ cmf+ Gravel, little+ cmf Sand. (S-2) (completely weathered shale)
46 – 68"	Red-Brown highly weathered, fractured SHALE .

END OF TEST PIT @ 5.7' (Excavator Refusal)

NOTES:

SOILS ENGINEER: J. Tierney, PE

CONTRACTOR: Rizzo & Son Excavating

TEST PIT OBSERVER: D. Rohmeyer, PE

EXCAVATOR: Komatsu PC138

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.



TEST PIT LOG

HERITAGE AT HOPEWELL
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY (FPA JOB NO. 18808.001)

TEST PIT NO.: BMP-10
DATE: 11/9/2022

GROUND ELEV.: +206.5'±
DEPTH OF WATER: 5.8'±*
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: 5.8'±*

DEPTH	DESCRIPTION
0 – 4"	Dark Brown SILT & CLAY , some mf ⁺ Sand, w/ few roots.
4 – 20"	Brown CLAY & SILT , little ⁺ mf ⁺ Sand, trace f Gravel. (S-1)
20 – 37"	Red-Brown CLAY & SILT , trace ⁺ mf Sand. (S-2)
37 – 52"	Red-Brown SILT & CLAY , some cm ⁺ f Gravel, little ⁺ c ⁺ mf Sand. (S-3) (completely weathered shale)
52 – 74"	Red-Brown highly weathered, fractured SHALE .

END OF TEST PIT @ 6.2' (Excavator Refusal)

NOTES: *Perched groundwater encountered @ 70".

SOILS ENGINEER: J. Tierney, PE

CONTRACTOR: Rizzo & Son Excavating

TEST PIT OBSERVER: D. Rohmeyer, PE

EXCAVATOR: Komatsu PC138

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.



TEST PIT LOG

HERITAGE AT HOPEWELL
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY (FPA JOB NO. 18808.001)

TEST PIT NO.: BMP-11
DATE: 11/9/2022

GROUND ELEV.: +206'±
DEPTH OF WATER: 8'±*
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: Not Observed

DEPTH	DESCRIPTION
0 – 10"	Dark Brown SILT & CLAY , and cmf+ Sand, w/ many roots.
10 – 36"	Light Brown Clayey SILT , and mf+ Sand. (S-1)
36 – 67"	Red-Brown SILT & CLAY , little mf Gravel, little mf+ Sand. (S-2)
67 – 98"	Red-Brown mf GRAVEL , some Silt & Clay, little cmf+ Sand. (S-3) (completely weathered shale)
98 – 129"	Red-Brown highly weathered, fractured SHALE .

END OF TEST PIT @ 10.8' (Excavator Refusal)

NOTES: *Perched groundwater encountered @ 96".

SOILS ENGINEER: J. Tierney, PE

CONTRACTOR: Rizzo & Son Excavating

TEST PIT OBSERVER: D. Rohmeyer, PE

EXCAVATOR: Komatsu PC138

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.



TEST PIT LOG

HERITAGE AT HOPEWELL
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY (FPA JOB NO. 18808.001)

TEST PIT NO.: BMP-12
DATE: 11/9/2022

GROUND ELEV.: +205.5'±
DEPTH OF WATER: Dry
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: Not Observed

DEPTH	DESCRIPTION
0 – 12"	Dark Brown Clayey SILT , some ⁺ mf ⁺ Sand.
12 – 47"	Light Brown & Grey SILT & CLAY , and f Sand, trace ⁺ f Gravel. (S-1)
47 – 65"	Red-Brown CLAY & SILT , some ⁻ mf Gravel, little ⁺ cmf ⁺ Sand. (S-2)
65 – 86"	Red-Brown mf GRAVEL , some ⁻ Clay & Silt, little ⁺ cmf Sand. (S-3) (completely weathered shale)
86 – 132"	Red-Brown highly weathered, fractured SHALE .

END OF TEST PIT @ 11' (Excavator Refusal)

NOTES:

SOILS ENGINEER: J. Tierney, PE

CONTRACTOR: Rizzo & Son Excavating

TEST PIT OBSERVER: D. Rohmeyer, PE

EXCAVATOR: Komatsu PC138

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.



TEST PIT LOG

HERITAGE AT HOPEWELL
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY (FPA JOB NO. 18808.001)

TEST PIT NO.: BMP-13
DATE: 11/9/2022

GROUND ELEV.: +205'±
DEPTH OF WATER: 6.3'±*
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: 6.3'±*

DEPTH	DESCRIPTION
0 – 9"	Dark Brown SILT & CLAY , and mf ⁺ Sand, w/ few roots.
9 – 21"	Light Brown & Grey CLAY & SILT , little mf ⁺ Sand. (S-1)
21 – 48"	Grey & Red-Brown SILT & CLAY , some mf Sand, trace f Gravel. (S-2)
48 – 78"	Red-Brown & Grey CLAY & SILT , some mf Gravel, little cmf Sand. (S-3) (completely weathered shale)
78 – 96"	Red-Brown highly weathered, fractured SHALE .

END OF TEST PIT @ 8' (Excavator Refusal)

NOTES: *Significant perched groundwater encountered @ 75".

SOILS ENGINEER: J. Tierney, PE

CONTRACTOR: Rizzo & Son Excavating

TEST PIT OBSERVER: D. Rohmeyer, PE

EXCAVATOR: Komatsu PC138

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.



TEST PIT LOG

HERITAGE AT HOPEWELL
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY (FPA JOB NO. 18808.001)

TEST PIT NO.: BMP-14
DATE: 11/9/2022

GROUND ELEV.: +205'±
DEPTH OF WATER: 6'±*
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: 6'±*

DEPTH	DESCRIPTION
0 – 7"	Dark Brown Clayey SILT , some ⁺ mf ⁺ Sand, w/ few roots.
7 – 24"	Dark Brown SILT & CLAY , some ⁺ mf Sand, little ⁻ mf ⁺ Gravel. (S-1)
24 – 37"	Brown SILT & CLAY , little ⁻ mf ⁺ Sand, trace ⁺ f Gravel. (S-2)
37 – 70"	Red-Brown & Grey-Brown cm ⁺ f GRAVEL , some ⁺ Clay & Silt, little ⁺ c ⁺ mf Sand. (S-3) (completely weathered shale)
70 – 86"	Red-Brown highly weathered, fractured SHALE .

END OF TEST PIT @ 7.2' (Excavator Refusal)

NOTES: *Significant perched groundwater encountered @ 72".

SOILS ENGINEER: J. Tierney, PE

CONTRACTOR: Rizzo & Son Excavating

TEST PIT OBSERVER: D. Rohmeyer, PE

EXCAVATOR: Komatsu PC138

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.



TEST PIT LOG

HERITAGE AT HOPEWELL
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY (FPA JOB NO. 18808.001)

TEST PIT NO.: BMP-15
DATE: 11/9/2022

GROUND ELEV.: +206'±
DEPTH OF WATER: Dry
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: Not Observed

DEPTH	DESCRIPTION
0 – 5"	Dark Brown Clayey SILT , little mf ⁺ Sand, w/ few roots.
5 – 12"	Brown & Red-Brown SILT & CLAY , some mf ⁺ Sand, trace ⁺ f Gravel. (S-1)

END OF TEST PIT @ 1'*

NOTES: *Test pit not advanced due to potential utility conflict.

SOILS ENGINEER: J. Tierney, PE

CONTRACTOR: Rizzo & Son Excavating

TEST PIT OBSERVER: D. Rohmeyer, PE

EXCAVATOR: Komatsu PC138

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.



TEST PIT LOG

HERITAGE AT HOPEWELL
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY (FPA JOB NO. 18808.001)

TEST PIT NO.: BMP-16
DATE: 11/9/2022

GROUND ELEV.: +203.5'±
DEPTH OF WATER: 5.2'±*
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: 5.2'±*

DEPTH	DESCRIPTION
0 – 8"	Brown CLAY & SILT , little mf+ Sand, trace f Gravel, w/ few roots.
8 – 24"	Red-Brown SILT & CLAY , little+ mf+ Sand, trace+ f Gravel. (S-1)
24 – 58"	Red-Brown SILT & CLAY , some cmf+ Gravel, little cmf+ Sand. (S-2) (completely weathered shale)
58 – 105"	Red-Brown highly weathered, fractured SHALE .

END OF TEST PIT @ 8.8' (Excavator Refusal)

NOTES: *Perched groundwater encountered @ 62".

SOILS ENGINEER: J. Tierney, PE

CONTRACTOR: Rizzo & Son Excavating

TEST PIT OBSERVER: D. Rohmeyer, PE

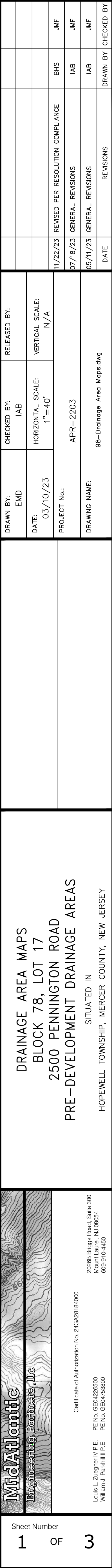
EXCAVATOR: Komatsu PC138

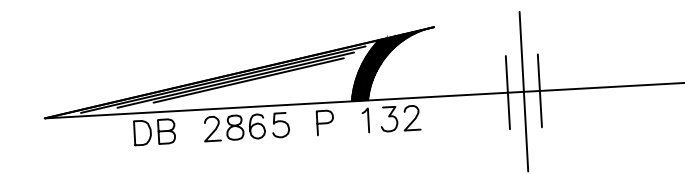
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APPENDIX L
DRAINAGE AREA MAPS





DB 2865 P 132

MidAtlantic
Engineering Networks, Inc.

Certificate of Authorization No. 24528184000

20088 Budge Road, Suite 300
Rockville, MD 20854
609.910.4450

Licensee: Zencovy P.E.
PE No. 00042920
Licensee: Pappell P.E.
PE No. 000413900

Sheet Number
2 OF 3

File Name: G:\American Properties\JOBS\APR-2203 - Hopewell Township\DWG\98-Drainage Area Maps.dwg
Plot time: Nov 22, 2023 - 12:52pm



DRAWN BY: EMD	CHECKED BY: IAB	RELEASED BY:
DATE: 03/10/23	HORIZONTAL SCALE: 1"=40'	VERTICAL SCALE: N/A
PROJECT NO.: APR-2203		
DRAWING NAME: 98-Drainage Area Mapping		

SITUATED IN
HOPEWELL TOWNSHIP, MERCER COUNTY, NEW JERSEY

