



Franklin Industrial

Jim Black Road and McClain Drive
Franklin, Indiana

Drainage Report

Prepared For:
The Peterson Company
7132 Zionsville Road
Indianapolis, IN 46268

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1.0. Project Summary

Project Name:	Franklin Industrial
Location:	Jim Black Road and McClain Drive, Franklin, Johnson County, Indiana
Type:	Drainage Report
Reviewing Agency:	City of Franklin
Detention Policy:	City of Franklin
Water Quality:	City of Franklin
Storm Sewer Modeling:	Rational Method

Design:

Water Quality:	Wet Detention Basin
Receiving Body:	The proposed detention basin outlet structure will convey stormwater to an existing culvert in the public right of way to the northeast of the site.

2.0. Introduction

Kimley-Horn and Associates, Inc. has been retained by The Peterson Company, LLC to prepare construction documents and provide civil engineering services for the proposed Franklin Industrial Building (Project). The Project includes the development of approximately 36 acres at the northwest corner of Jim Black Road and McClain Drive in Franklin, Indiana. The project includes the construction of an approximately 539,668 SF industrial building with associated drives and parking. The project also includes three entrances off McClain Drive and one off Jim Black Road. 35' half right of way will be dedicated to the City for Jim Black Road. Utility services will be brought from existing infrastructure to the east of the site along Jim Black Road. Stormwater detention and quality measures will be provided in the form of a wet detention pond at the north of the site.

This Drainage Report focuses on the existing and proposed conditions onsite and provides supporting calculations for storm sewer, detention basin, and stormwater quality best management practice (BMP) sizing based on the *City of Franklin Stormwater Management Ordinance*.

3.0. Existing Conditions

The existing site is currently undeveloped and is used for agricultural purposes. The adjacent property to the north, east and south are similar in nature. The property to the west is an existing industrial building. The site generally drains in one direction. The majority of the site drains to the northeast corner of the property into an existing 48" culvert under Jim Black Road. A significant offsite drainage area to the west currently drains through the site. Refer to **Appendix D** for the Existing Drainage Map.

Aerial Photograph

An aerial photograph of the Project Site has been included in **Appendix A** for reference.

FEMA

The Project Site is located on the Flood Insurance Rate Map number 18081C0232D dated 8/2/2007 and resides within Zone "X", indicating it lies outside of the 500-year flood limits. See **Appendix B** for the FEMA FIRMette.

Soil Characteristics

The Natural Resources Conservation Service (NRCS) Web Soil Survey of Johnson County, Indiana, indicates Brookston silty clay loam and Crosby silt loam on site. A soil map can be found in **Appendix C**.

4.0. Proposed Conditions

General Storm Routing & Provided Detention

The proposed building and associated parking lot and access drives will be constructed on the 36+/- acre property. A wet detention pond will be designed to provide adequate detention for the developed site. In addition, an extended dry detention basin (EDDB) is proposed to convey the west half of the proposed site along with the required offsite runoff coming in from the west connecting to the wet pond. The proposed wet detention pond will be located to the north of the site and the EDDB along the west property line. The ultimate outfall point for the pond will be located to the east of the pond. The outfall will route discharge from the pond to the existing storm infrastructure in the public right of way of Jim Black Road. Proposed storm sewers have been designed to collect surface and roof runoff and route it to the pond. Refer to **Appendix E** for the Proposed Drainage Map.

Proposed Hydrology

The software package HydroCAD was used to size the proposed wet detention pond and EDDB for the project. HydroCAD utilizes areas, runoff curve numbers, times of concentration and rainfall data to calculate runoff hydrographs. Per the *City of Franklin Stormwater Management Ordinance*, the storm water detention designs shall outlet storm water at a 2-year pre-development rainfall event rate for a 10-year post-development storm and shall outlet at a 10-year pre-development rainfall event rate for a 100-year post-development storm. Based on the existing drainage pattern, the allowable release rates from the proposed detention basin are 15.19 cfs and 31.71 cfs for the 10-year and 100-year storms respectively. The existing 48" culvert has sufficient capacity to handle the flow therefore the allowable release rates will not be reduced. The proposed detention wet pond for this project has been sized to provide rate control for 35.86 acres of the project site while being oversized to handle an additional 24.64 acres of offsite drainage from the west. The remaining area (1.84 AC) from the existing basin (37.70 AC) are roadway and dedicated ROW areas where it will drain directly to the discharge point and bypass the pond. A composite curve number of 87 was calculated for both on-site basins and 91 for the offsite basin. The normal pool of the wet pond was set to ensure positive drainage to the outfall invert at the existing storm structure. The release rate from the pond will be controlled by two orifices. The invert of the first

orifice will be set at the normal pool elevation of 725.85 and have a 12" diameter. The invert of the second orifice will be set at the normal pool elevation of 727.25 and have a 30"Wx36"H rectangle. The extended dry detention basin (EDDB) will provide intermediate rate control while conveying the site as well as offsite runoff. The table below summarizes the water surface elevations and release rates for the pond. Refer to **Appendix F** for detailed HydroCAD calculations.

Pond	10-YR Release Rate (cfs)	100-YR Release Rate (cfs)	100-YR Water Surface Elevation	T/Berm
Allowable	15.19	31.71		
Wet Pond (Without Offsite)	3.51	9.18	727.92	730.35
Wet Pond (With Offsite)	10.90	27.18	729.14	730.35
EDDB with offsite	122.26	213.50	729.31	

The emergency overflow weir was designed using 1.25 times the maximum flow into the pond. As seen in **Appendix F** of this report, the peak flow into the pond is 286.32 CFS resulting in the design flow rate for the overflow weir to be 357.9 cfs. A 71-ft wide trapezoidal weir and 12" height was modeled with a 4:1 side slope on both sides. The spillway is designed to be set at the 100 YR HWL elevation of 729.14. The resulting maximum overflow elevation is 730.14. The top of bank is set at 730.35 in order to provide the minimum required two feet of freeboard above the 100 YR HWL elevation (without offsite flow). All building foundations are set to a minimum 2.0-ft above the overflow elevation. Weir calculations can be found shown in **Appendix F**.

Proposed Hydraulics

The proposed storm sewer conveyance system was designed to meet the City requirements using HydraFlow Storm Sewer Extensions, Version 2020. The HGL of the 10-yr storm was kept below the proposed rim elevations of each structure. Rainfall intensities and 'c' values were taken from the *City of Franklin Stormwater Management Ordinance* were inputted into the model. The storm sewers were designed to maintain a minimum full flow velocity of 2.5 ft/s.

A Storm Sewer Drainage Area Map has been provided in **Appendix E** and the output solution from the Hydraflow Analysis and inlet capacity calculations are provided in **Appendix G**.

Submerged System & Flood Route

Due to the size of the site with significant topography limitations, this project proposes submerged storm sewer systems where the crown of the outfall pipe for each set of storm sewers will be placed at or lower than the pond's normal pool elevation. This is done to minimize impacts and disruptions during freeze-thaw periods. Due to the large size of the ponds with significant storage volume capacities, effects of backwater will be too great to neglect as if the system were not submerged. As a result, a sophisticated model using Storm and Sanitary Analysis (SSA) is necessary to model and check both the storm sewers and ponds working in tandem while designing flood routes using resulting overflow and breakaway

elevations. Inputs were mirrored to the individual models for sizing detention ponds and storm sewers as presented in the sections above. The hydrodynamic routing method is used in this model. Per the software's user manual, hydrodynamic routing is the most sophisticated routing method, and solves the complete one-dimensional Saint Venant flow equations to produce the most theoretically accurate results. This method accounts for channel storage, backwater pressurized flow and is the method of choice for systems subjected to significant backwater effects due to downstream flow restrictions.

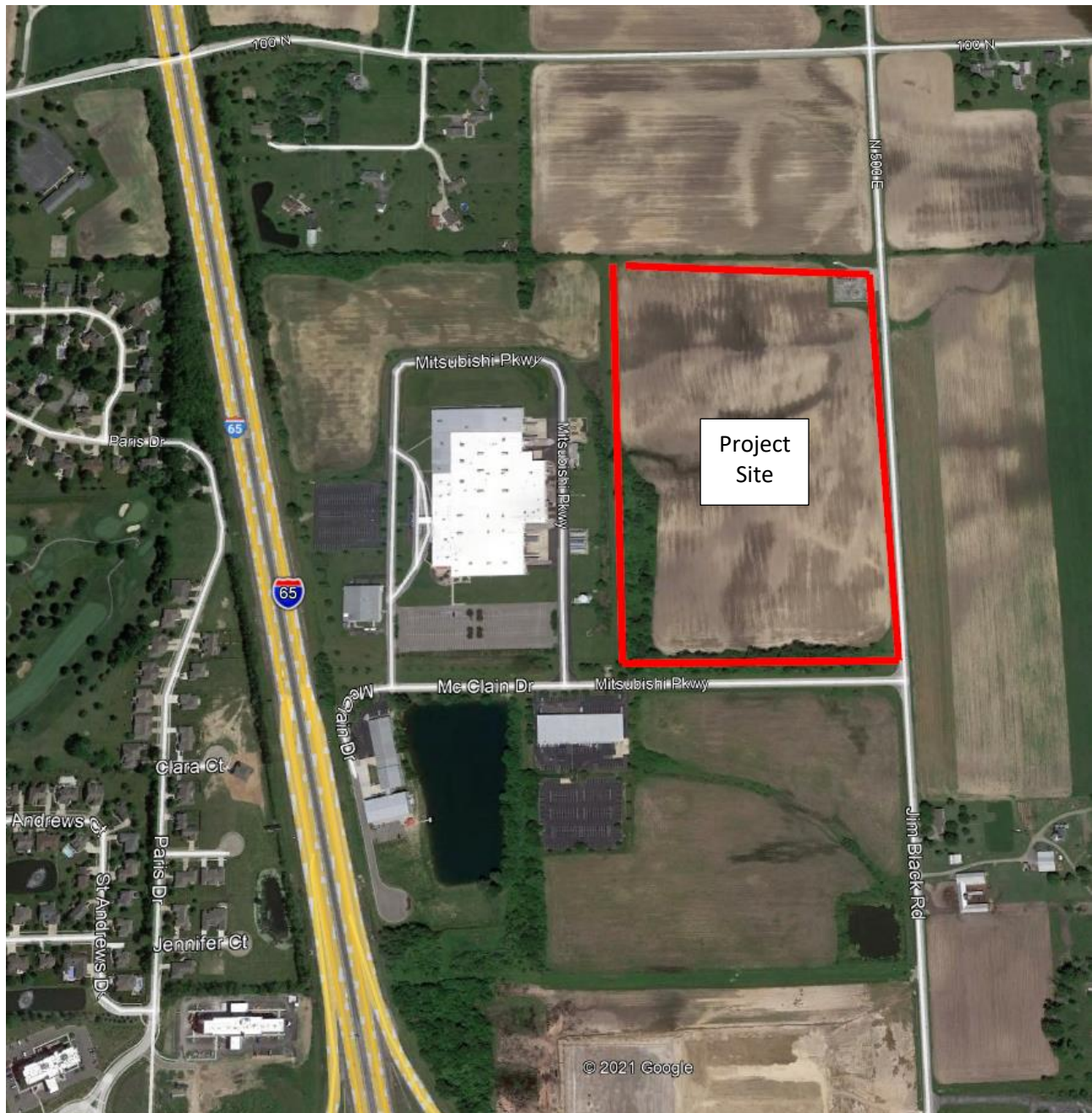
As shown in **Appendix H** of this report, the calculations prove that the storm sewer system as presented are properly sized and adequate to serve in a submerged state. This model concludes that, as expected, the submerged pipes are shown as surcharged, the resulting 100-year peak flow rates are less than the design capacity while the resulting water depth in the truck docks are less than 7 inches. This indicates that the storm sewer system is sized for 100 year, therefore it is oversized. While this was intentional, it is a measure of redundancy to ensure ease of flow to the pond in the event of accumulated sediment and/or debris. Turnouts and curb cuts should be installed in accordance with the construction plans and the flood route exhibit provided in Appendix H.

Stormwater Quality

Stormwater quality treatment for the project site will be accomplished by routing onsite flow through the proposed detention pond. According to the City of Franklin Subdivisions Standards, "The developer shall be required to provide a water quality detention system that is designed to detain, for over 24 hours after peak run-off from a 24-hour storm, at least 20% of the run-off from either a 1-1/4 inch storm or ½ inch of direct runoff, whichever is greater." With this condition, it is required that the pond have a water quality design volume of 13,017 cubic-feet. It was determined that the provided stormwater quality volume is 49,702 cubic-feet. Refer to **Appendix I** for detailed calculations.

5.0 Appendices

Appendix A: Aerial Photograph

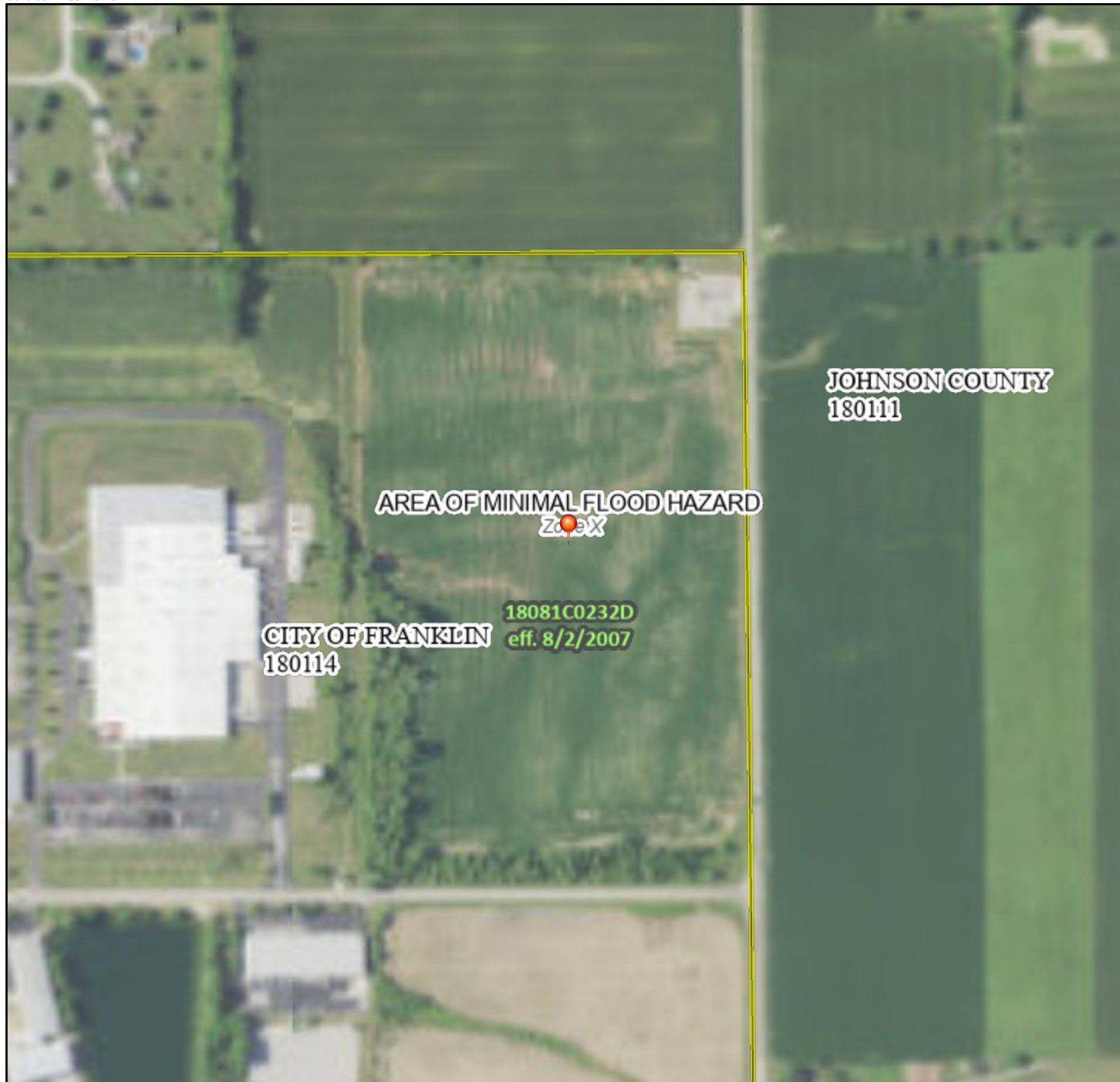


Appendix B: FEMA Flood Insurance Rate Map

National Flood Hazard Layer FIRMette



86°0'53"W 39°29'45"N



0 250 500 1,000 1,500 2,000 Feet 1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

86°0'15"W 39°29'17"N

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
OTHER FEATURES		Levee, Dike, or Floodwall
		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
OTHER FEATURES		17.5
		Coastal Transect
OTHER FEATURES		Base Flood Elevation Line (BFE)
		Limit of Study
OTHER FEATURES		Jurisdiction Boundary
		Coastal Transect Baseline
OTHER FEATURES		Profile Baseline
		Hydrographic Feature
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

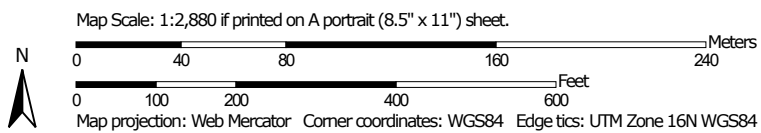
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **7/27/2021 at 10:16 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Appendix C: Soil Map

Soil Map—Johnson County, Indiana



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

7/27/2021
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MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Johnson County, Indiana

Survey Area Data: Version 28, Jun 4, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

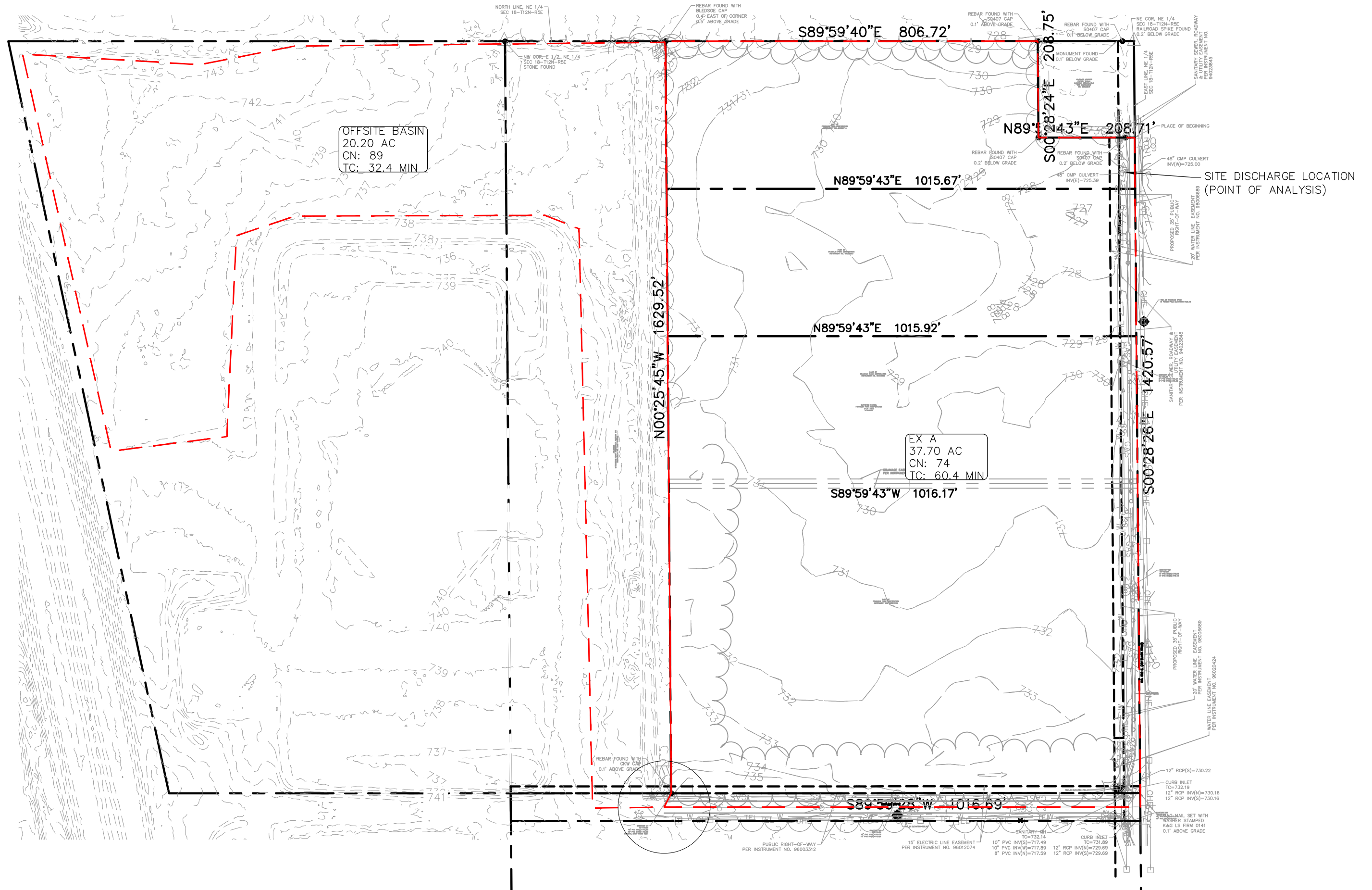
Date(s) aerial images were photographed: Oct 17, 2019—Oct 20, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Br	Brookston silty clay loam, 0 to 2 percent slopes	19.8	52.7%
CrA	Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes	15.2	40.7%
Wh	Whitaker silt loam, 0 to 2 percent slopes	2.5	6.6%
Totals for Area of Interest		37.5	100.0%

Appendix D: Existing Conditions Map



Appendix F: Detention Basin Calculations

Franklin Industrial Detention Pond

Prepared by Kimley-Horn

HydroCAD® 10.10-5a s/n 09843 © 2020 HydroCAD Software Solutions LLC

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR, 1-HR	Type II 24-hr		Scale	1.00	1	1.39	2
2	2-YR, 12-HR	Type II 24-hr		Scale	12.00	1	2.44	2
3	2-YR, 2-HR	Type II 24-hr		Scale	2.00	1	1.63	2
4	2-YR, 24-HR	Type II 24-hr		Default	24.00	1	2.91	2
5	2-YR, 3-HR	Type II 24-hr		Scale	3.00	1	1.42	2
6	2-YR, 6-HR	Type II 24-hr		Scale	6.00	1	1.69	2
7	10-YR, 1-HR	Type II 24-hr		Scale	1.00	1	2.02	2
8	10-YR, 12-HR	Type II 24-hr		Scale	12.00	1	3.53	2
9	10-YR, 2-HR	Type II 24-hr		Scale	2.00	1	2.38	2
10	10-YR, 24-HR	Type II 24-hr		Default	24.00	1	4.07	2
11	10-YR, 3-HR	Type II 24-hr		Scale	3.00	1	2.53	2
12	10-YR, 6-HR	Type II 24-hr		Scale	6.00	1	3.03	2
13	100-YR, 1-HR	Type II 24-hr		Scale	1.00	1	3.01	2
14	100-YR, 12-HR	Type II 24-hr		Scale	12.00	1	5.36	2
15	100-YR, 2-HR	Type II 24-hr		Scale	2.00	1	3.65	2
16	100-YR, 24-HR	Type II 24-hr		Default	24.00	1	5.87	2
17	100-YR, 3-HR	Type II 24-hr		Scale	3.00	1	3.94	2
18	100-YR, 6-HR	Type II 24-hr		Scale	6.00	1	4.76	2

Summary for Subcatchment 11S: Ex Site

Runoff = 4.26 cfs @ 1.41 hrs, Volume= 0.353 af, Depth= 0.11"

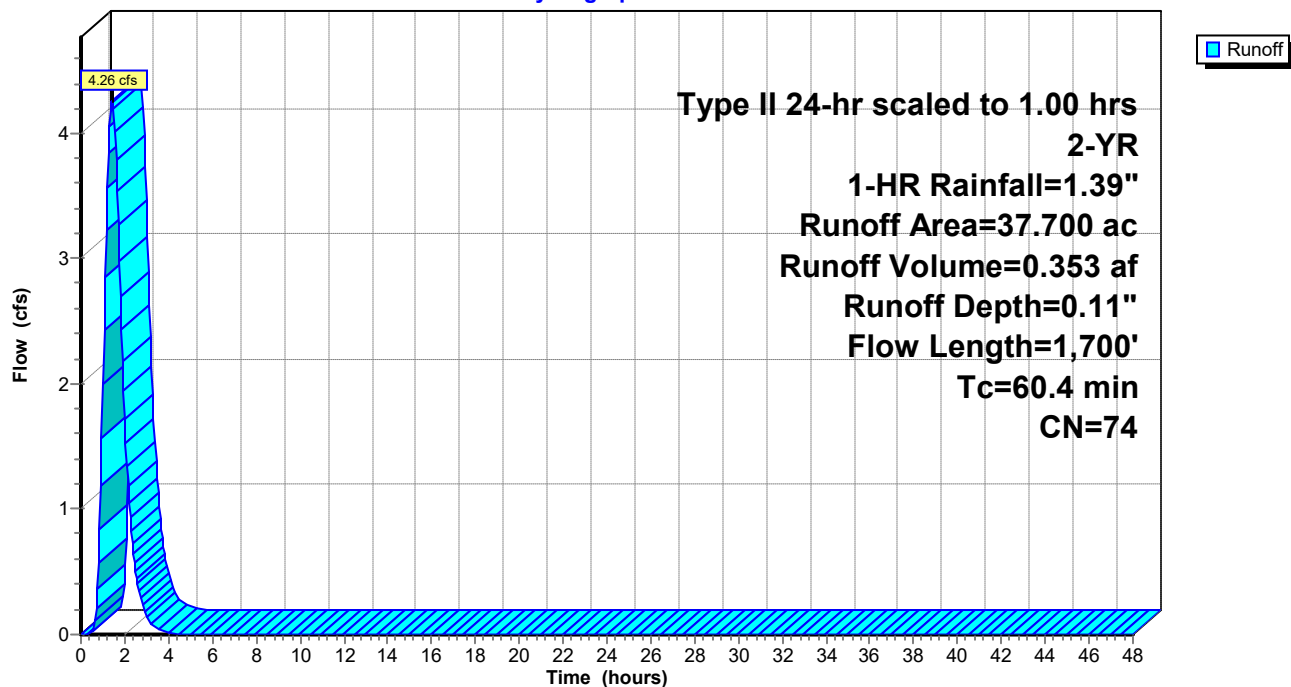
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 1.00 hrs 2-YR, 1-HR Rainfall=1.39"

Area (ac)	CN	Description
37.700	74	Pasture/grassland/range, Good, HSG C
37.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0100	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.91"
53.9	1,600	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
60.4	1,700	Total			

Subcatchment 11S: Ex Site

Hydrograph



Summary for Subcatchment 11S: Ex Site

Runoff = 11.43 cfs @ 6.80 hrs, Volume= 1.806 af, Depth= 0.57"

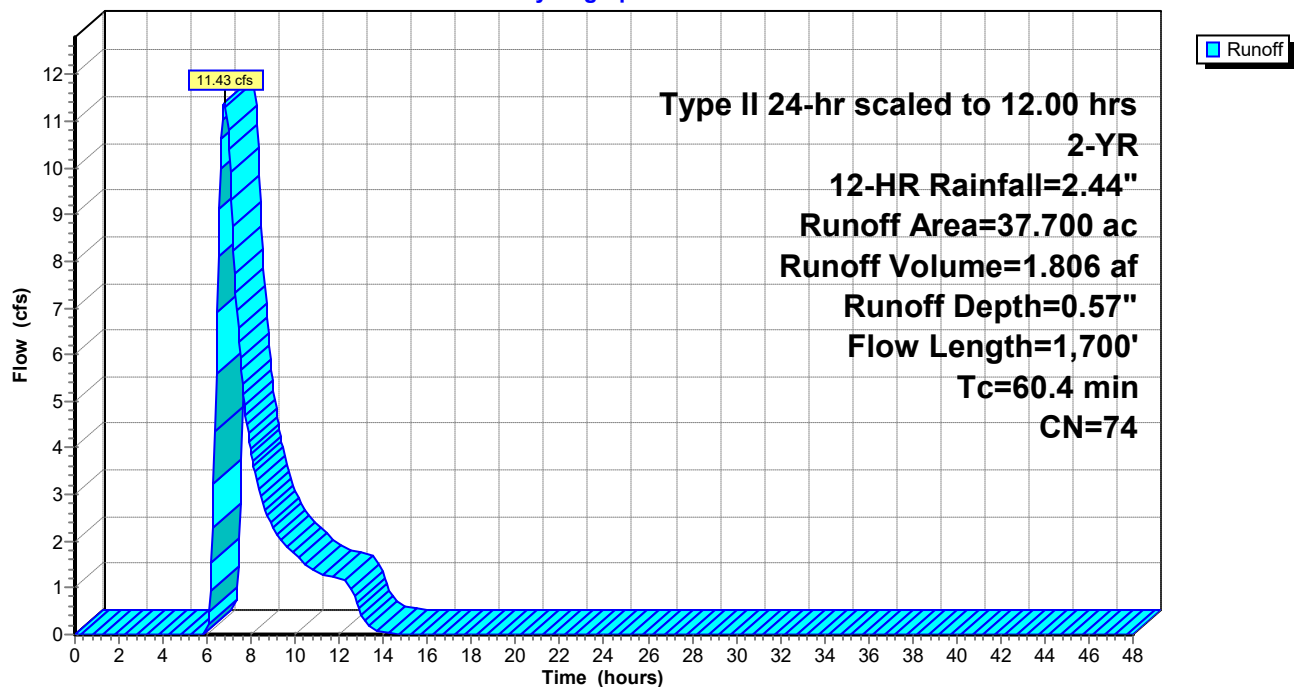
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 12.00 hrs 2-YR, 12-HR Rainfall=2.44"

Area (ac)	CN	Description
37.700	74	Pasture/grassland/range, Good, HSG C
37.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0100	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.91"
53.9	1,600	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
60.4	1,700	Total			

Subcatchment 11S: Ex Site

Hydrograph



Summary for Subcatchment 11S: Ex Site

Runoff = 5.97 cfs @ 1.97 hrs, Volume= 0.608 af, Depth= 0.19"

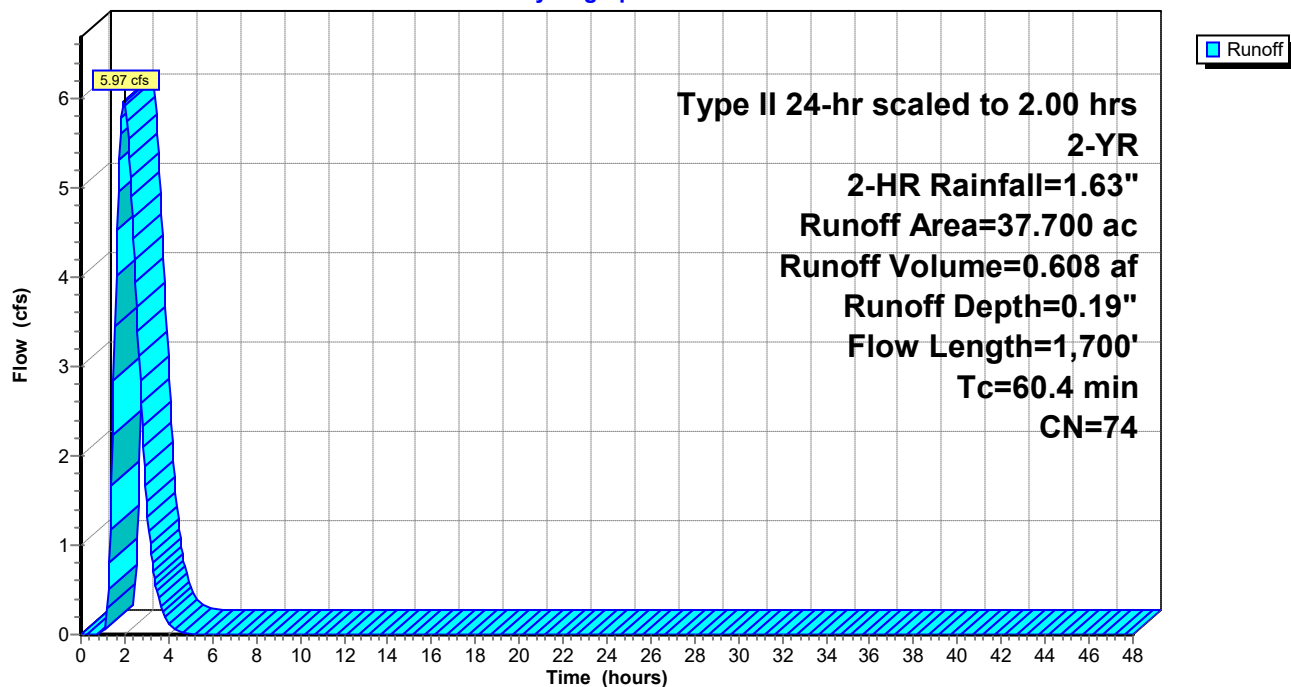
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 2.00 hrs 2-YR, 2-HR Rainfall=1.63"

Area (ac)	CN	Description
37.700	74	Pasture/grassland/range, Good, HSG C
37.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0100	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.91"
53.9	1,600	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
60.4	1,700	Total			

Subcatchment 11S: Ex Site

Hydrograph



Franklin Industrial Detention Pond

Prepared by Kimley-Horn

HydroCAD® 10.10-5a s/n 09843 © 2020 HydroCAD Software Solutions LLC

Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

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Summary for Subcatchment 11S: Ex Site

Runoff = 15.19 cfs @ 12.69 hrs, Volume= 2.676 af, Depth= 0.85"

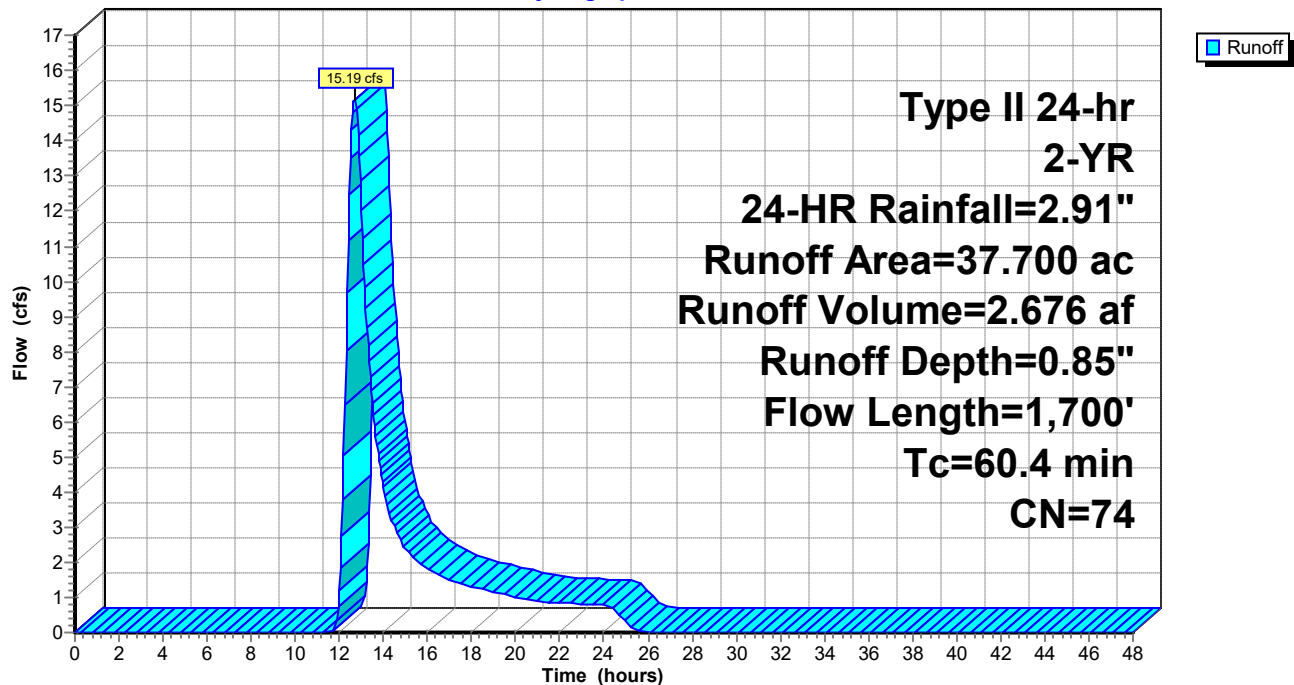
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

Area (ac)	CN	Description
37.700	74	Pasture/grassland/range, Good, HSG C
37.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0100	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.91"
53.9	1,600	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
60.4	1,700	Total			

Subcatchment 11S: Ex Site

Hydrograph



Summary for Subcatchment 11S: Ex Site

Runoff = 3.10 cfs @ 2.53 hrs, Volume= 0.382 af, Depth= 0.12"

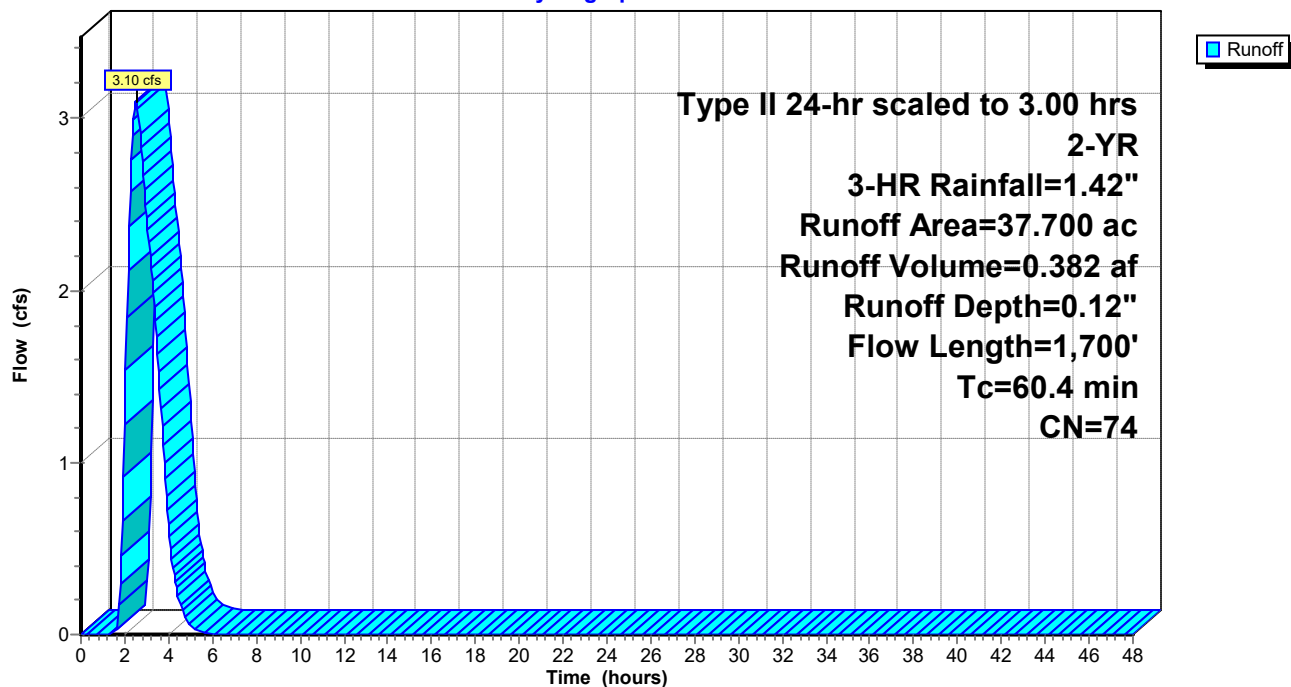
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 3.00 hrs 2-YR, 3-HR Rainfall=1.42"

Area (ac)	CN	Description
37.700	74	Pasture/grassland/range, Good, HSG C
37.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0100	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.91"
53.9	1,600	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
60.4	1,700	Total			

Subcatchment 11S: Ex Site

Hydrograph



Summary for Subcatchment 11S: Ex Site

Runoff = 4.46 cfs @ 3.94 hrs, Volume= 0.680 af, Depth= 0.22"

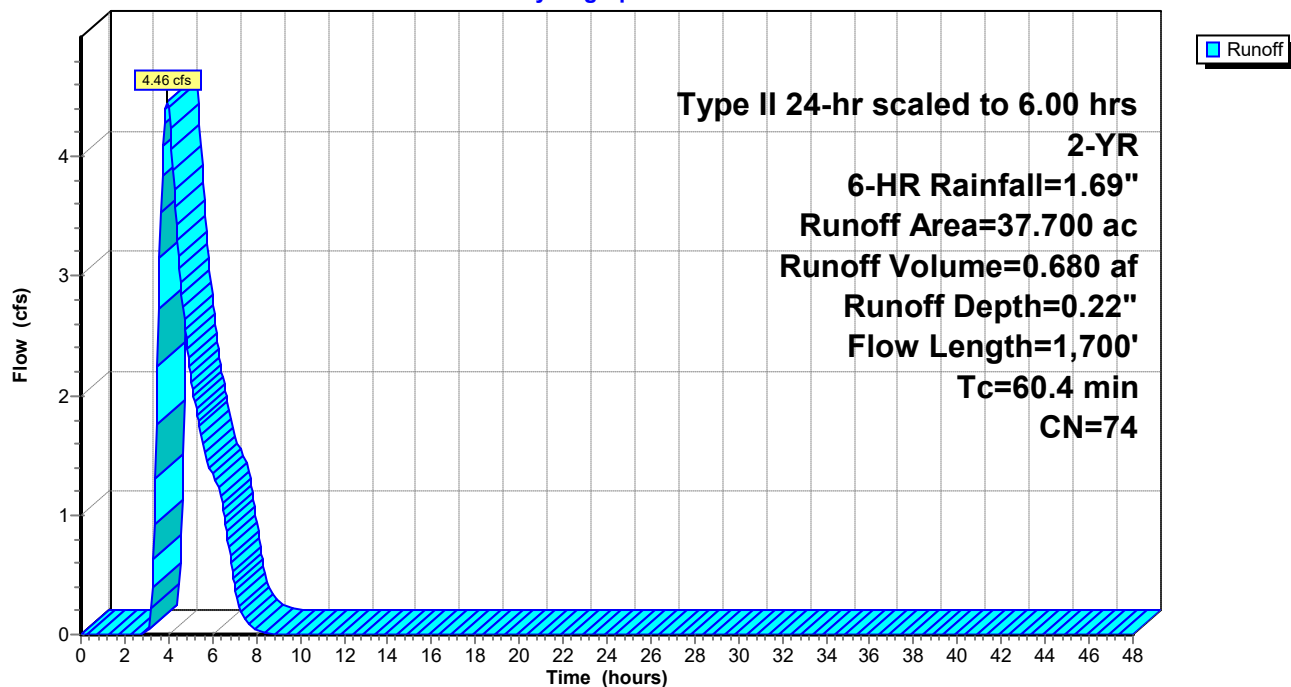
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 6.00 hrs 2-YR, 6-HR Rainfall=1.69"

Area (ac)	CN	Description
37.700	74	Pasture/grassland/range, Good, HSG C
37.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0100	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.91"
53.9	1,600	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
60.4	1,700	Total			

Subcatchment 11S: Ex Site

Hydrograph



Summary for Subcatchment 11S: Ex Site

Runoff = 13.60 cfs @ 1.37 hrs, Volume= 1.129 af, Depth= 0.36"

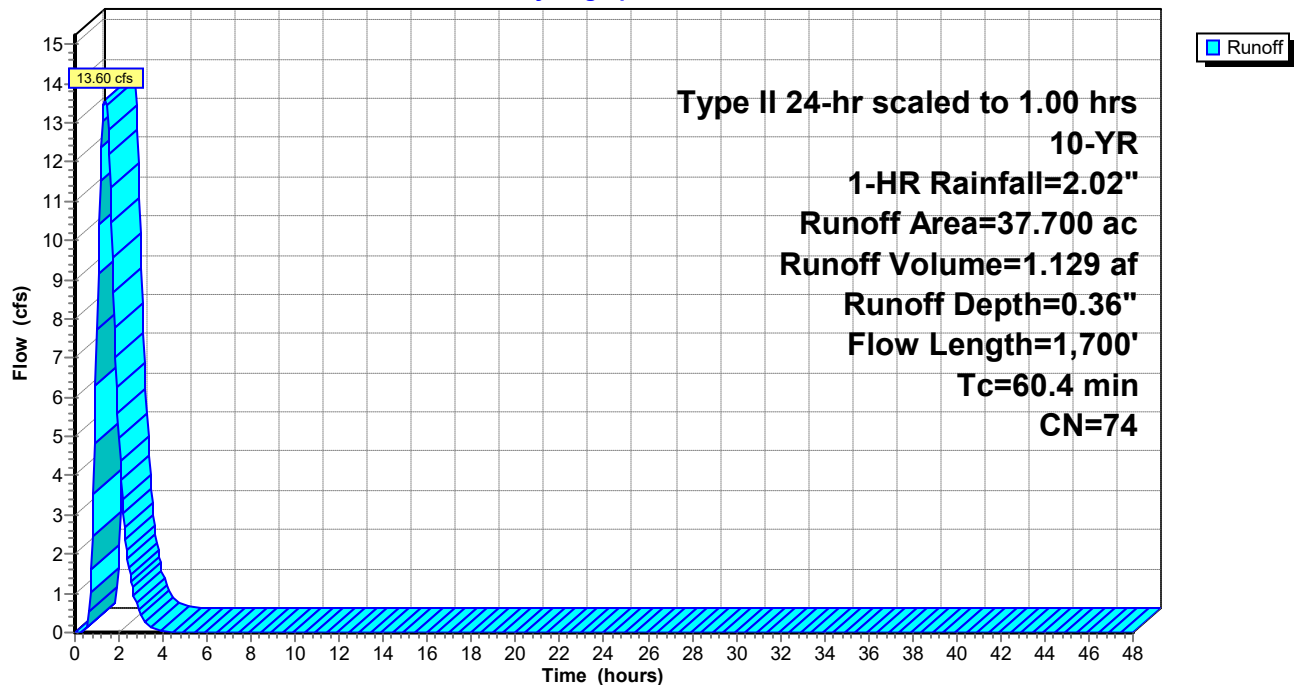
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 1.00 hrs 10-YR, 1-HR Rainfall=2.02"

Area (ac)	CN	Description
37.700	74	Pasture/grassland/range, Good, HSG C
37.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0100	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.91"
53.9	1,600	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
60.4	1,700	Total			

Subcatchment 11S: Ex Site

Hydrograph



Summary for Subcatchment 11S: Ex Site

Runoff = 28.02 cfs @ 6.76 hrs, Volume= 3.961 af, Depth= 1.26"

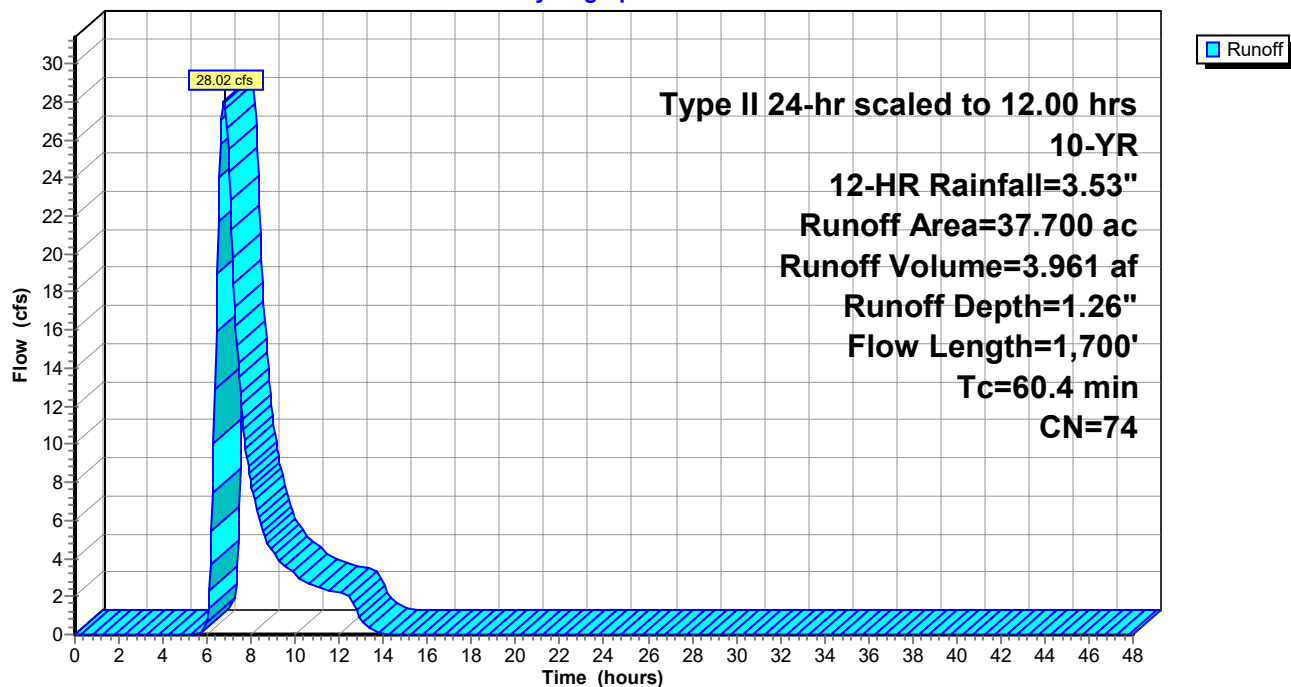
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 12.00 hrs 10-YR, 12-HR Rainfall=3.53"

Area (ac)	CN	Description
37.700	74	Pasture/grassland/range, Good, HSG C
37.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0100	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.91"
53.9	1,600	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
60.4	1,700	Total			

Subcatchment 11S: Ex Site

Hydrograph



Summary for Subcatchment 11S: Ex Site

Runoff = 17.55 cfs @ 1.89 hrs, Volume= 1.703 af, Depth= 0.54"

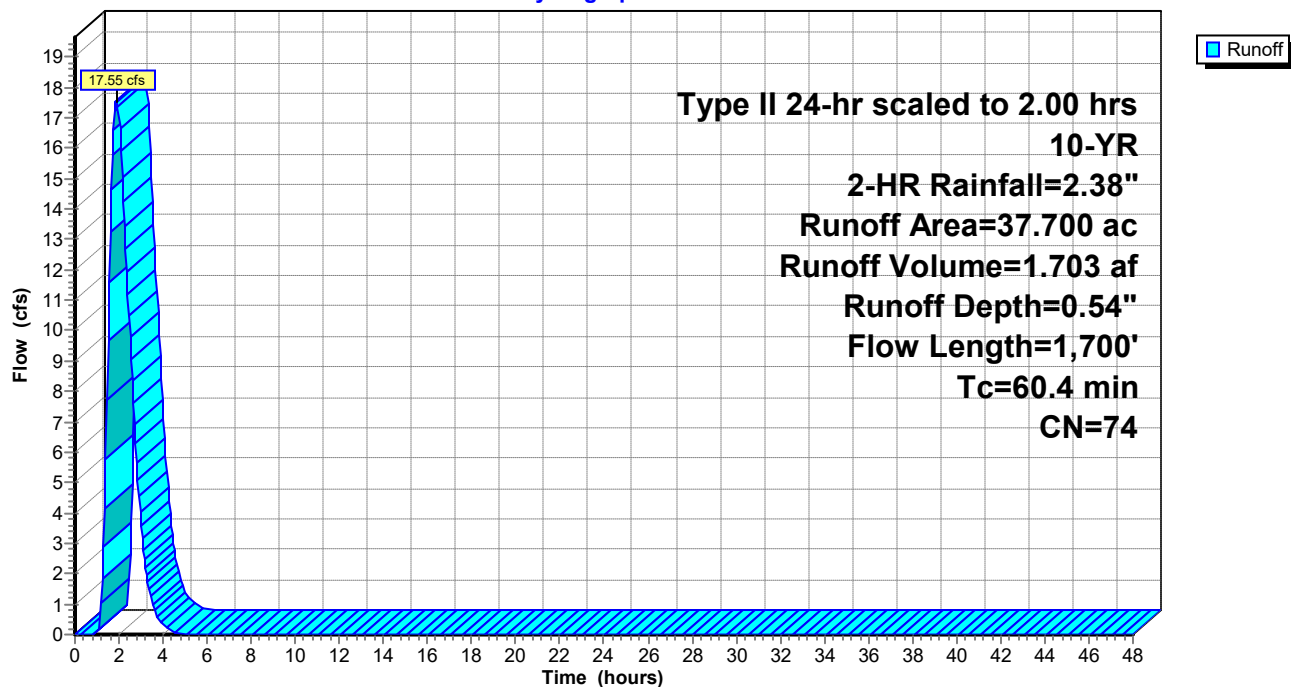
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 2.00 hrs 10-YR, 2-HR Rainfall=2.38"

Area (ac)	CN	Description
37.700	74	Pasture/grassland/range, Good, HSG C
37.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0100	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.91"
53.9	1,600	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
60.4	1,700	Total			

Subcatchment 11S: Ex Site

Hydrograph



Franklin Industrial Detention Pond

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Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

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Summary for Subcatchment 11S: Ex Site

Runoff = 31.71 cfs @ 12.66 hrs, Volume= 5.177 af, Depth= 1.65"

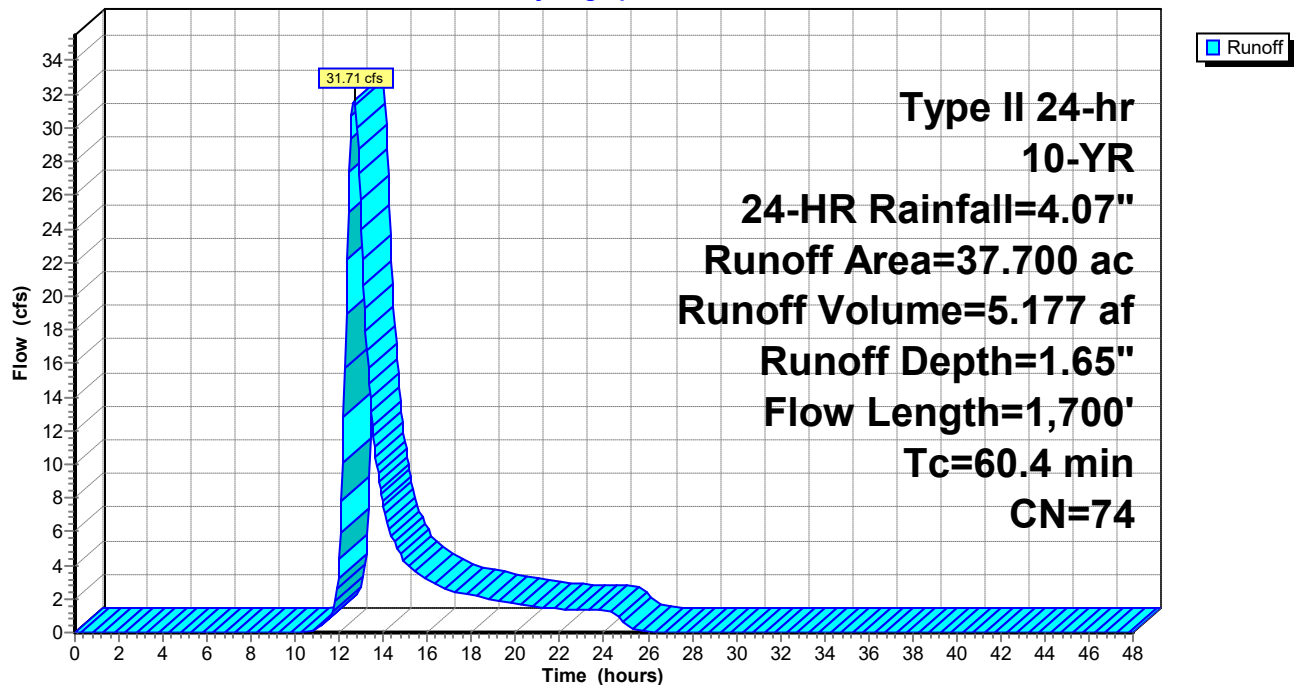
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

Area (ac)	CN	Description
37.700	74	Pasture/grassland/range, Good, HSG C
37.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0100	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.91"
53.9	1,600	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
60.4	1,700	Total			

Subcatchment 11S: Ex Site

Hydrograph



Summary for Subcatchment 11S: Ex Site

Runoff = 18.39 cfs @ 2.37 hrs, Volume= 1.964 af, Depth= 0.63"

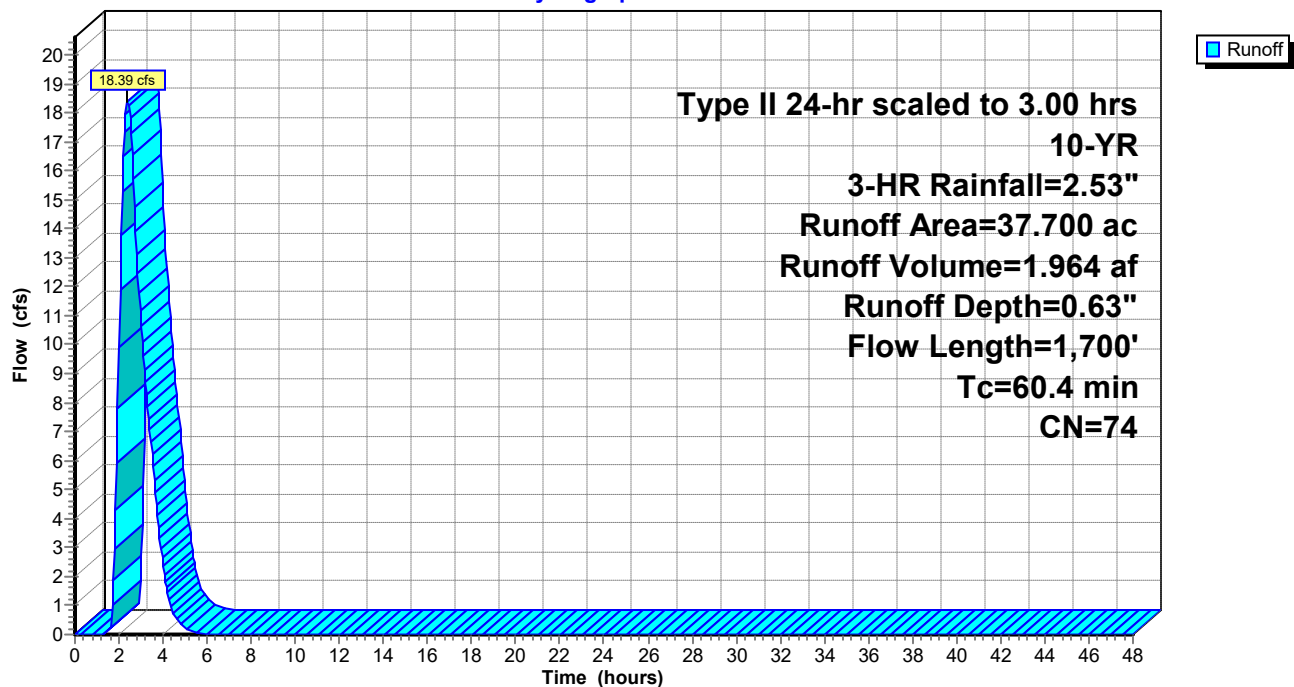
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 3.00 hrs 10-YR, 3-HR Rainfall=2.53"

Area (ac)	CN	Description
37.700	74	Pasture/grassland/range, Good, HSG C
37.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0100	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.91"
53.9	1,600	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
60.4	1,700	Total			

Subcatchment 11S: Ex Site

Hydrograph



Summary for Subcatchment 11S: Ex Site

Runoff = 23.49 cfs @ 3.83 hrs, Volume= 2.913 af, Depth= 0.93"

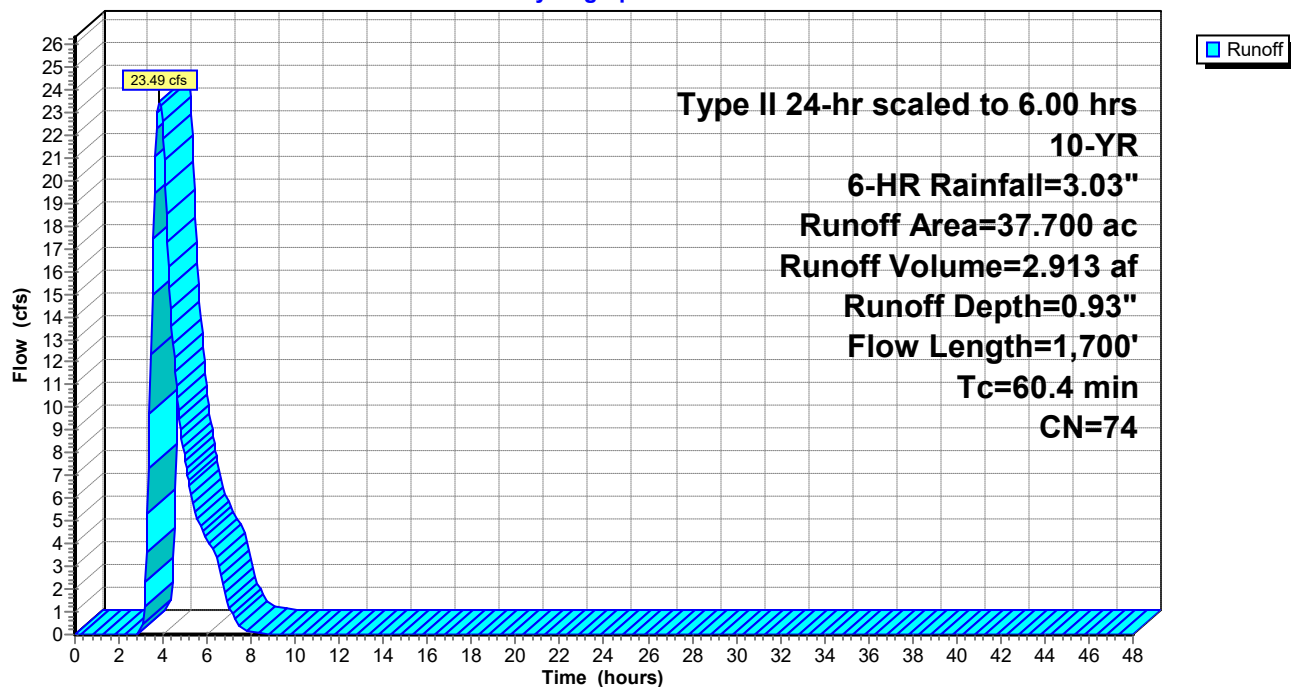
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 6.00 hrs 10-YR, 6-HR Rainfall=3.03"

Area (ac)	CN	Description
37.700	74	Pasture/grassland/range, Good, HSG C
37.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0100	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.91"
53.9	1,600	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
60.4	1,700	Total			

Subcatchment 11S: Ex Site

Hydrograph



Summary for Subcatchment 11S: Ex Site

Runoff = 34.99 cfs @ 1.32 hrs, Volume= 2.873 af, Depth= 0.91"

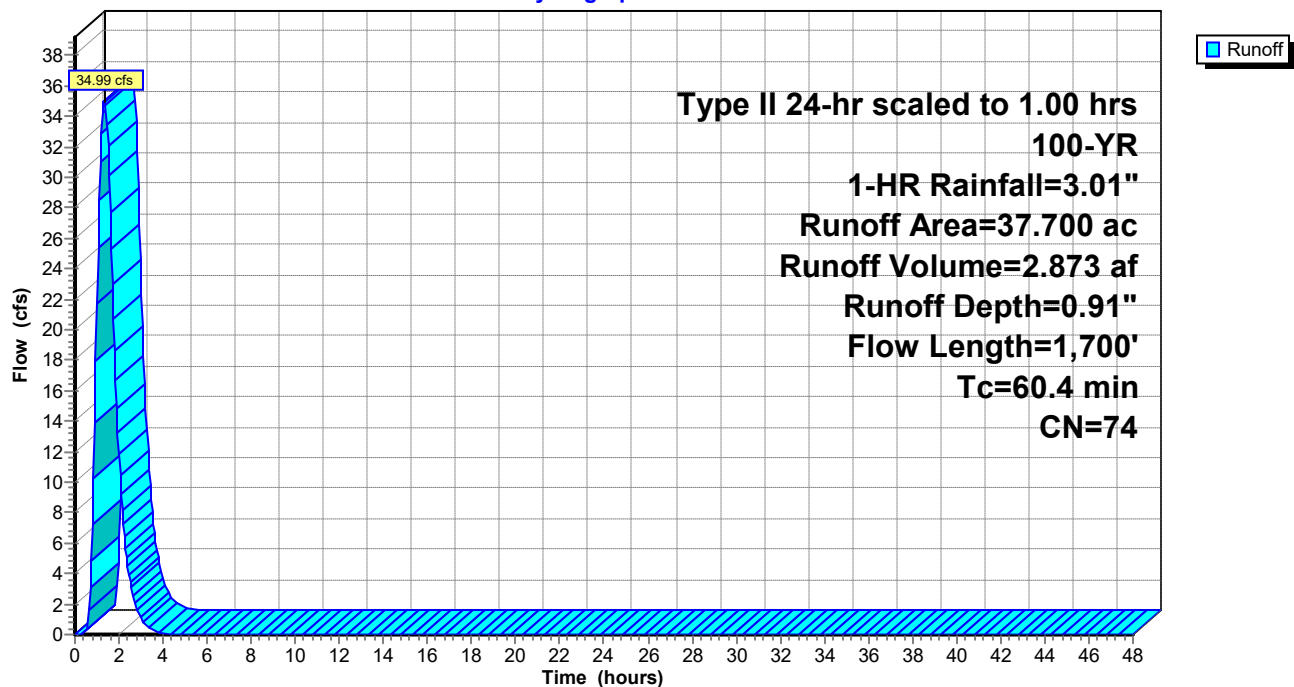
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 1.00 hrs 100-YR, 1-HR Rainfall=3.01"

Area (ac)	CN	Description
37.700	74	Pasture/grassland/range, Good, HSG C
37.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0100	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.91"
53.9	1,600	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
60.4	1,700	Total			

Subcatchment 11S: Ex Site

Hydrograph



Summary for Subcatchment 11S: Ex Site

Runoff = 62.19 cfs @ 6.74 hrs, Volume= 8.340 af, Depth= 2.65"

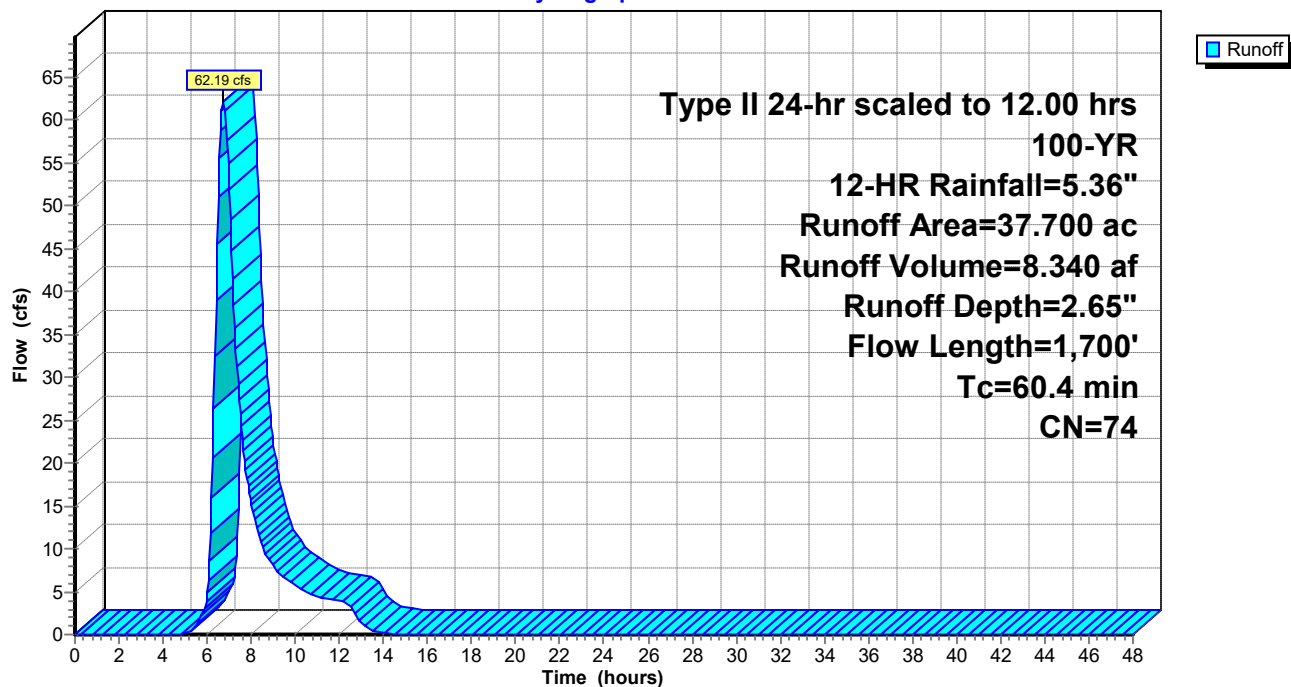
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 12.00 hrs 100-YR, 12-HR Rainfall=5.36"

Area (ac)	CN	Description
37.700	74	Pasture/grassland/range, Good, HSG C
37.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0100	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.91"
53.9	1,600	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
60.4	1,700	Total			

Subcatchment 11S: Ex Site

Hydrograph



Summary for Subcatchment 11S: Ex Site

Runoff = 45.39 cfs @ 1.84 hrs, Volume= 4.224 af, Depth= 1.34"

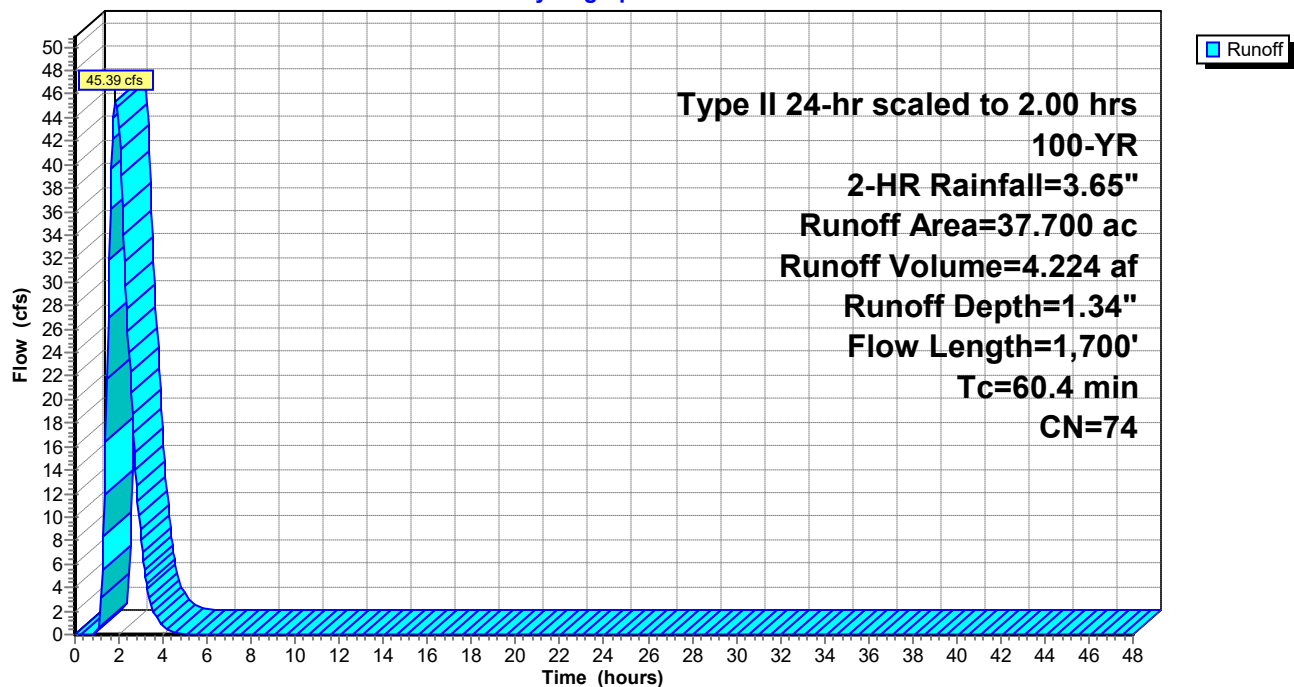
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 2.00 hrs 100-YR, 2-HR Rainfall=3.65"

Area (ac)	CN	Description
37.700	74	Pasture/grassland/range, Good, HSG C
37.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0100	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.91"
53.9	1,600	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
60.4	1,700	Total			

Subcatchment 11S: Ex Site

Hydrograph



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Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

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Summary for Subcatchment 11S: Ex Site

Runoff = 61.16 cfs @ 12.64 hrs, Volume= 9.663 af, Depth= 3.08"

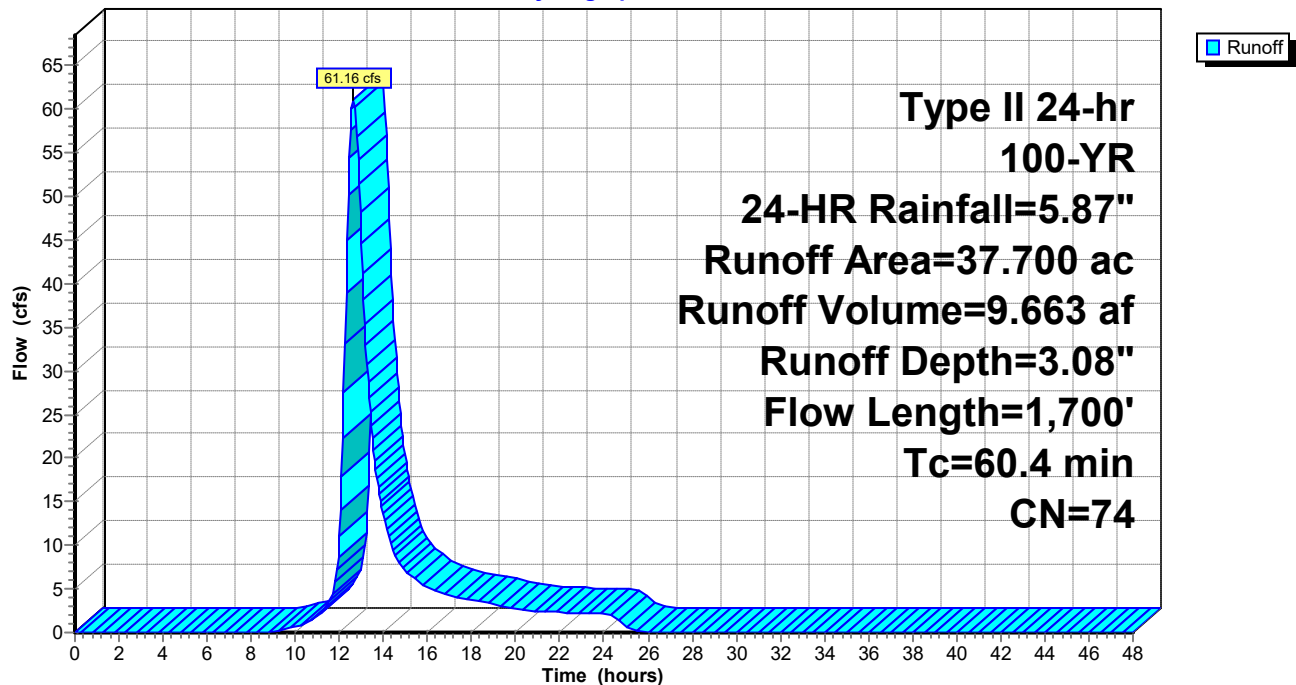
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

Area (ac)	CN	Description
37.700	74	Pasture/grassland/range, Good, HSG C
37.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0100	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.91"
53.9	1,600	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
60.4	1,700	Total			

Subcatchment 11S: Ex Site

Hydrograph



Summary for Subcatchment 11S: Ex Site

Runoff = 48.12 cfs @ 2.35 hrs, Volume= 4.877 af, Depth= 1.55"

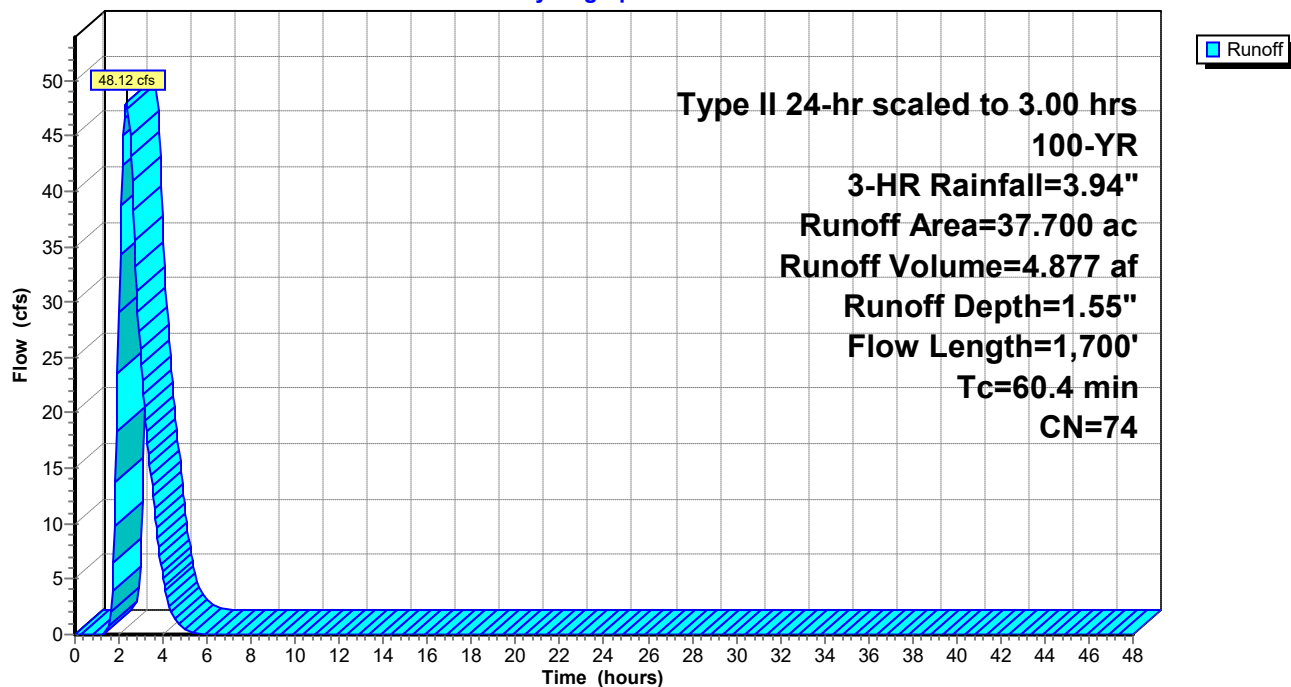
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 3.00 hrs 100-YR, 3-HR Rainfall=3.94"

Area (ac)	CN	Description
37.700	74	Pasture/grassland/range, Good, HSG C
37.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0100	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.91"
53.9	1,600	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
60.4	1,700	Total			

Subcatchment 11S: Ex Site

Hydrograph



Summary for Subcatchment 11S: Ex Site

Runoff = 58.75 cfs @ 3.80 hrs, Volume= 6.831 af, Depth= 2.17"

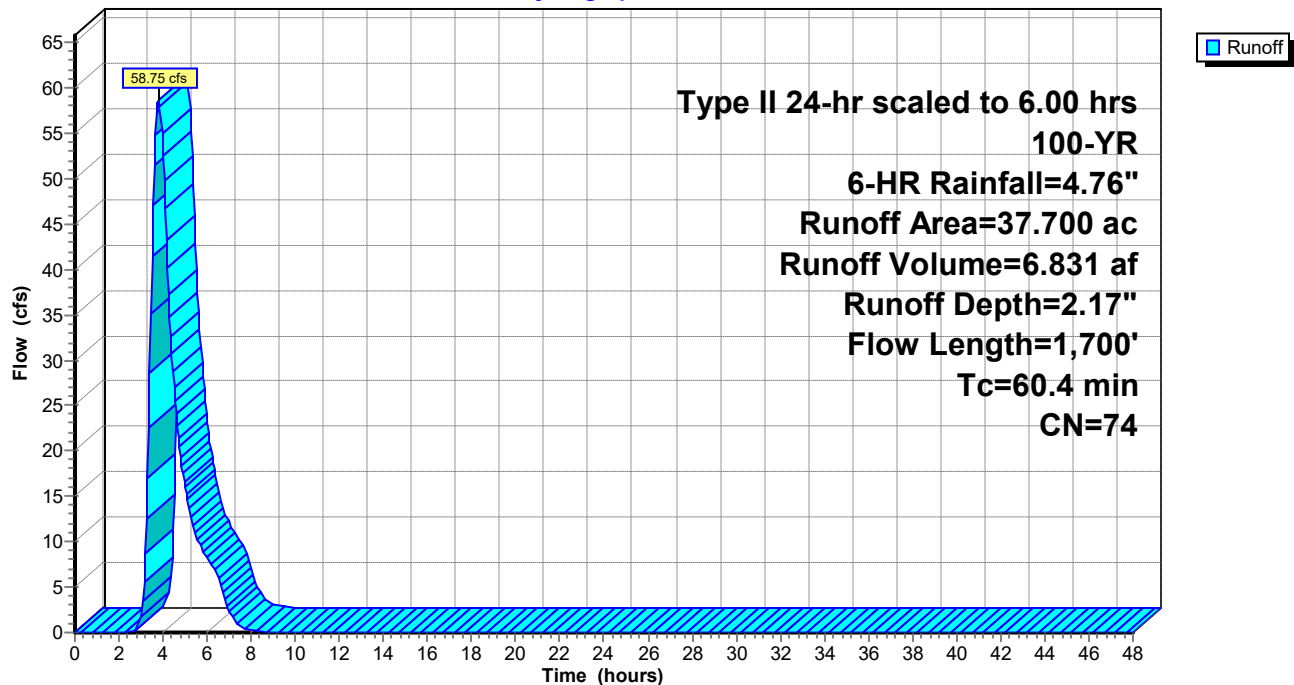
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 6.00 hrs 100-YR, 6-HR Rainfall=4.76"

Area (ac)	CN	Description
37.700	74	Pasture/grassland/range, Good, HSG C
37.700		100.00% Pervious Area

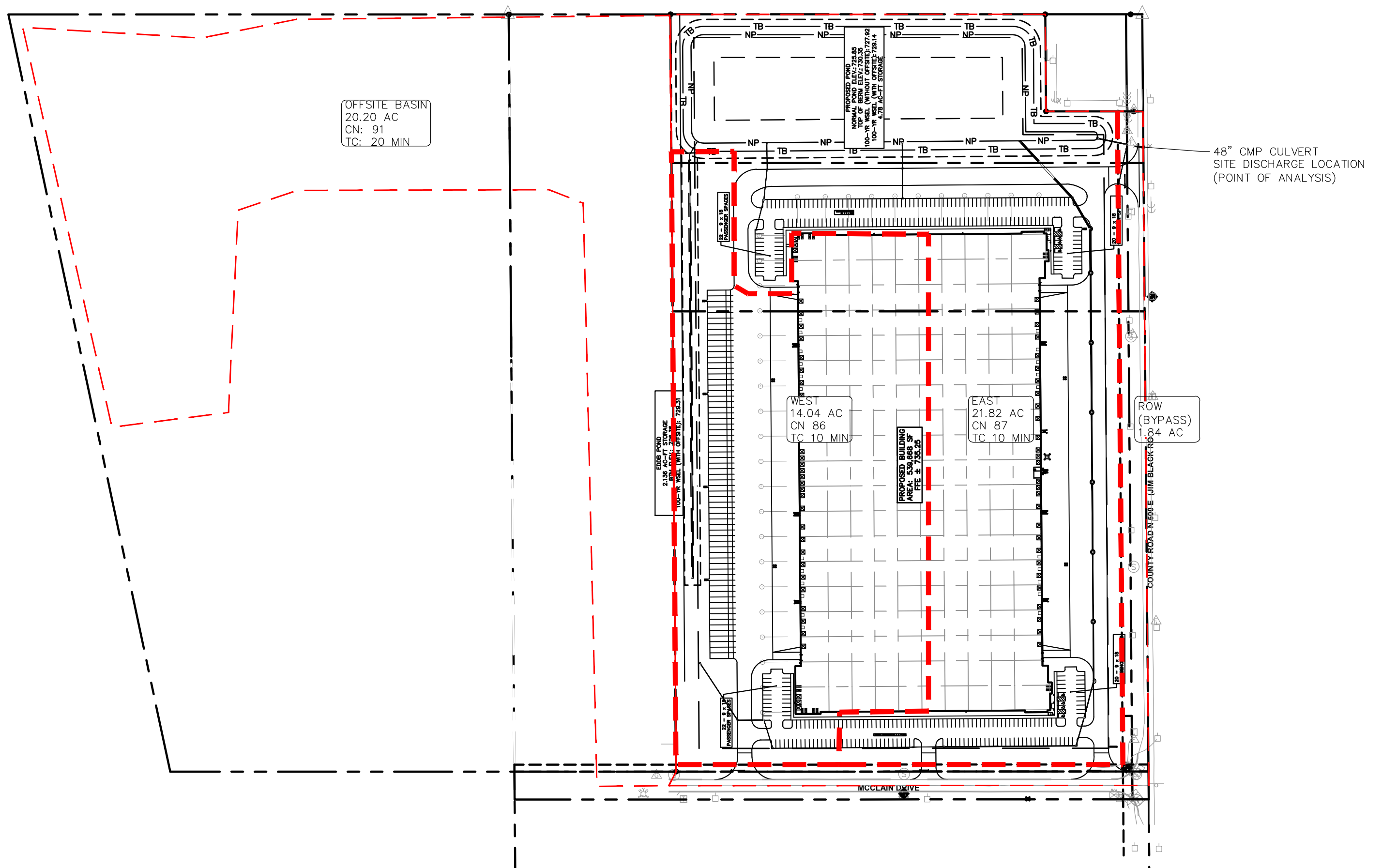
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0100	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.91"
53.9	1,600	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
60.4	1,700	Total			

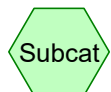
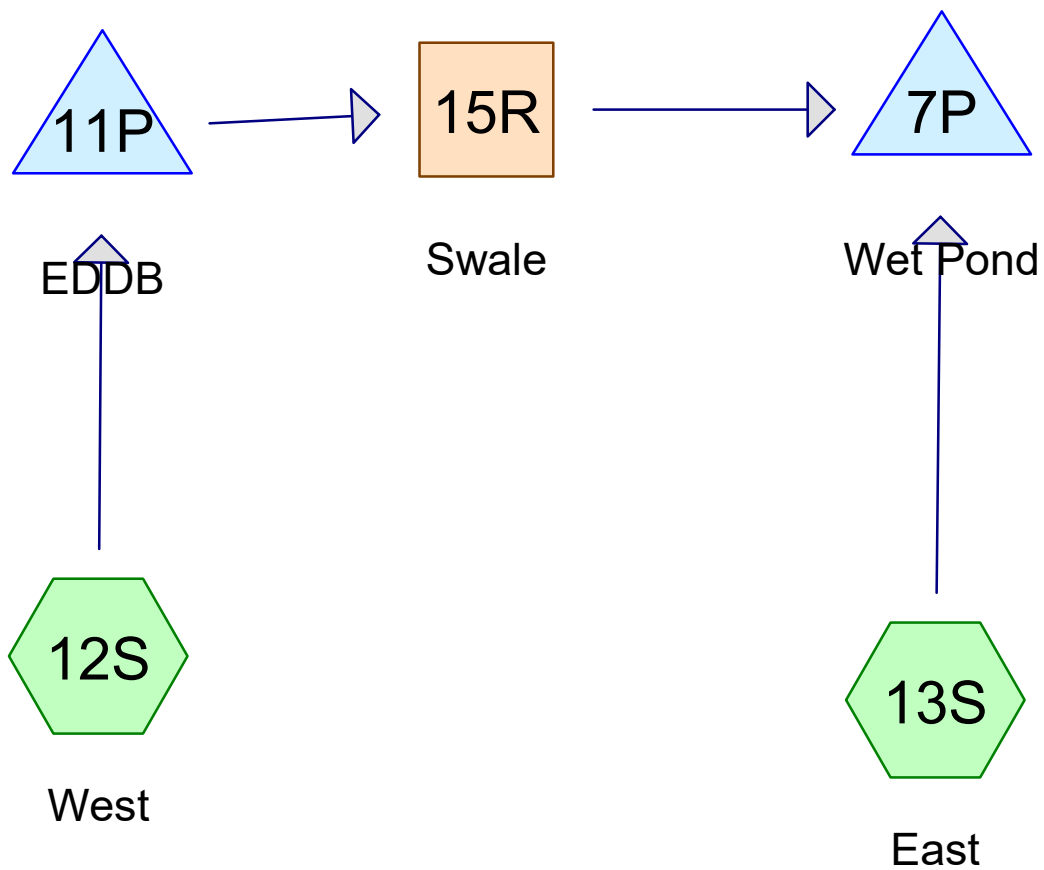
Subcatchment 11S: Ex Site

Hydrograph



Appendix E: Proposed Drainage Map

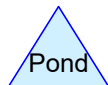




Subcat



Reach



Pond



Link

Routing Diagram for Franklin Industrial Detention Pond
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Franklin Industrial Detention Pond

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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1SWQ, 24-HR	Type II 24-hr		Default	24.00	1	1.25	2
2	2-YR, 1-HR	Type II 24-hr		Scale	1.00	1	1.39	2
3	2-YR, 12-HR	Type II 24-hr		Scale	12.00	1	2.44	2
4	2-YR, 2-HR	Type II 24-hr		Scale	2.00	1	1.63	2
5	2-YR, 24-HR	Type II 24-hr		Default	24.00	1	2.91	2
6	2-YR, 3-HR	Type II 24-hr		Scale	3.00	1	1.42	2
7	2-YR, 6-HR	Type II 24-hr		Scale	6.00	1	1.69	2
8	10-YR, 1-HR	Type II 24-hr		Scale	1.00	1	2.02	2
9	10-YR, 12-HR	Type II 24-hr		Scale	12.00	1	3.53	2
10	10-YR, 2-HR	Type II 24-hr		Scale	2.00	1	2.38	2
11	10-YR, 24-HR	Type II 24-hr		Default	24.00	1	4.07	2
12	10-YR, 3-HR	Type II 24-hr		Scale	3.00	1	2.53	2
13	10-YR, 6-HR	Type II 24-hr		Scale	6.00	1	3.03	2
14	100-YR, 1-HR	Type II 24-hr		Scale	1.00	1	3.01	2
15	100-YR, 12-HR	Type II 24-hr		Scale	12.00	1	5.36	2
16	100-YR, 2-HR	Type II 24-hr		Scale	2.00	1	3.65	2
17	100-YR, 24-HR	Type II 24-hr		Default	24.00	1	5.87	2
18	100-YR, 3-HR	Type II 24-hr		Scale	3.00	1	3.94	2
19	100-YR, 6-HR	Type II 24-hr		Scale	6.00	1	4.76	2

Franklin Industrial Detention Pond

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
22.688	90	(12S, 13S)
9.312	74	>75% Grass cover, Good, HSG C (12S, 13S)
3.860	98	Water Surface, HSG C (13S)
35.860	87	TOTAL AREA

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
13.172	HSG C	12S, 13S
0.000	HSG D	
22.688	Other	12S, 13S
35.860		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	22.688	22.688		12S, 13S
0.000	0.000	9.312	0.000	0.000	9.312	>75% Grass cover, Good	12S, 13S
0.000	0.000	3.860	0.000	0.000	3.860	Water Surface	13S
0.000	0.000	13.172	0.000	22.688	35.860	TOTAL AREA	

Franklin Industrial Detention Pond*Type II 24-hr 1SWQ, 24-HR Rainfall=1.25"*

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West

Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=0.33"
Tc=10.0 min CN=86 Runoff=6.74 cfs 0.392 af

Subcatchment 13S: East

Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=0.37"
Tc=10.0 min CN=87 Runoff=11.77 cfs 0.673 af

Reach 15R: Swale

Avg. Flow Depth=0.34' Max Vel=2.91 fps Inflow=4.90 cfs 0.392 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=4.78 cfs 0.392 af

Pond 7P: Wet Pond

Peak Elev=726.08' Storage=0.888 af Inflow=15.30 cfs 1.064 af
Outflow=0.22 cfs 0.470 af

Pond 11P: EDDB

Peak Elev=727.34' Storage=2,493 cf Inflow=6.74 cfs 0.392 af
Outflow=4.90 cfs 0.392 af

Total Runoff Area = 35.860 ac Runoff Volume = 1.064 af Average Runoff Depth = 0.36"
89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Franklin Industrial Detention Pond

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Type II 24-hr 1SWQ, 24-HR Rainfall=1.25"

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Summary for Subcatchment 12S: West

Runoff = 6.74 cfs @ 12.03 hrs, Volume= 0.392 af, Depth= 0.33"

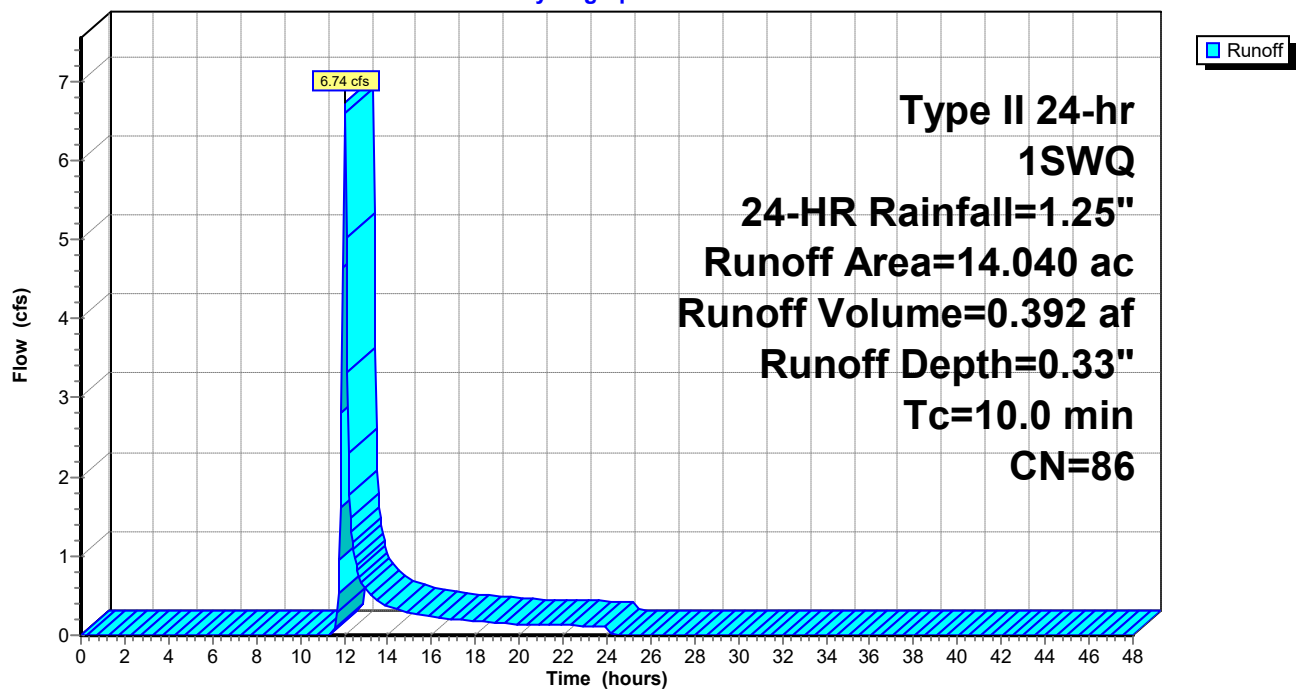
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1SWQ, 24-HR Rainfall=1.25"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Franklin Industrial Detention Pond

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Type II 24-hr 1SWQ, 24-HR Rainfall=1.25"

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Summary for Subcatchment 13S: East

Runoff = 11.77 cfs @ 12.03 hrs, Volume= 0.673 af, Depth= 0.37"

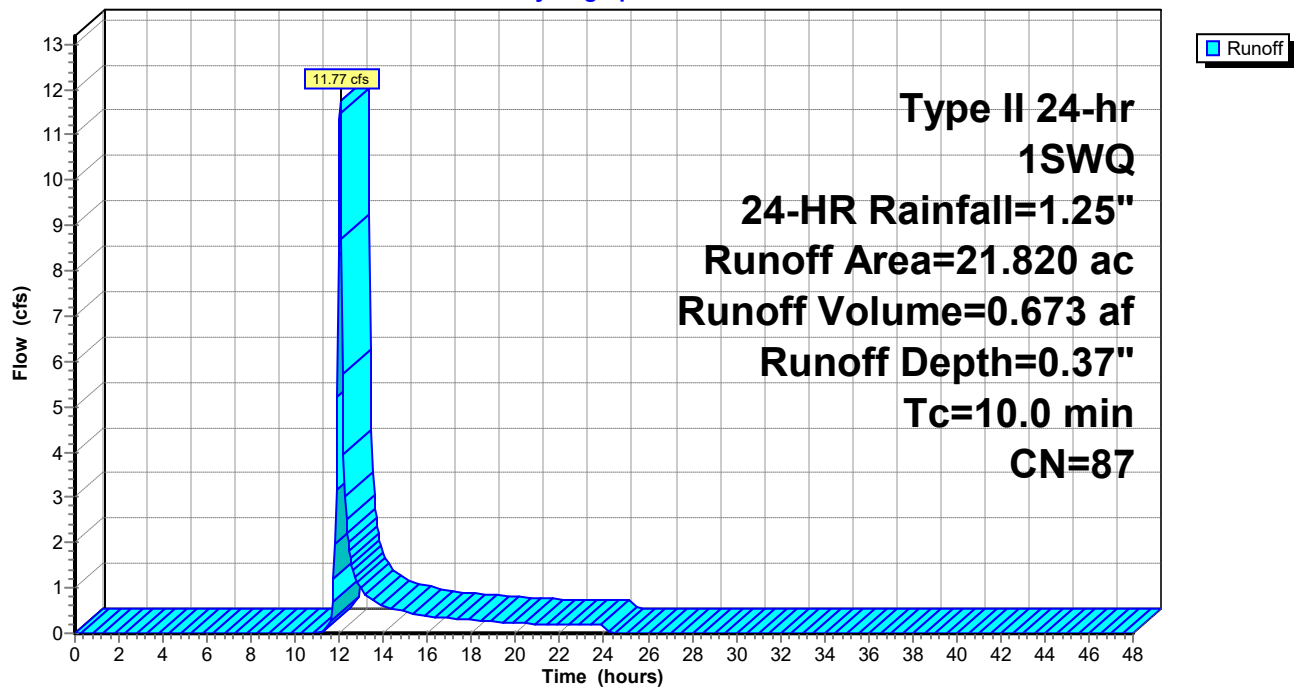
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1SWQ, 24-HR Rainfall=1.25"

	Area (ac)	CN	Description
*	12.423	90	
	5.537	74	>75% Grass cover, Good, HSG C
	3.860	98	Water Surface, HSG C
	21.820	87	Weighted Average
	17.960		82.31% Pervious Area
	3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



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Type II 24-hr 1SWQ, 24-HR Rainfall=1.25"

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Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 0.33" for 1SWQ, 24-HR event
Inflow = 4.90 cfs @ 12.11 hrs, Volume= 0.392 af
Outflow = 4.78 cfs @ 12.13 hrs, Volume= 0.392 af, Atten= 2%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.91 fps, Min. Travel Time= 0.6 min

Avg. Velocity= 0.95 fps, Avg. Travel Time= 1.9 min

Peak Storage= 185 cf @ 12.12 hrs

Average Depth at Peak Storage= 0.34' , Surface Width= 6.01'

Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight

Side Slope Z-value= 3.0 '/' Top Width= 22.00'

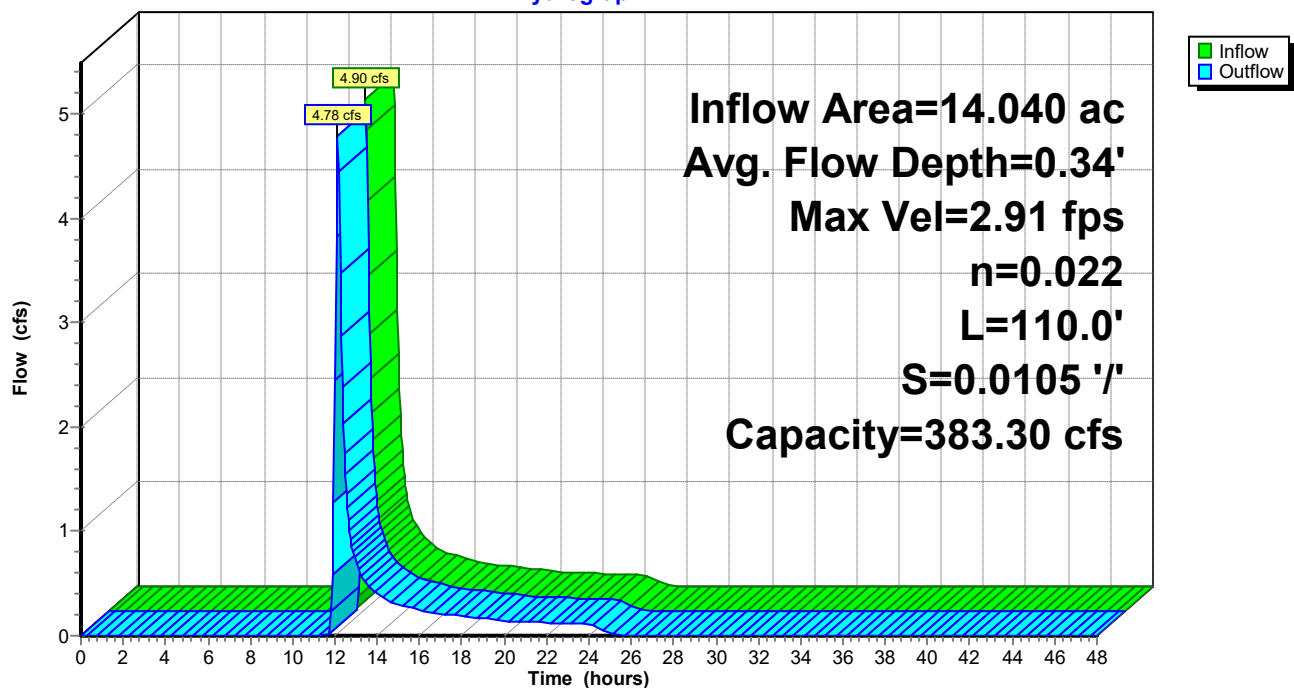
Length= 110.0' Slope= 0.0105 '/'

Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 1SWQ, 24-HR Rainfall=1.25"

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Summary for Pond 7P: Wet Pond

[62] Hint: Exceeded Reach 15R OUTLET depth by 0.22' @ 25.75 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 0.36" for 1SWQ, 24-HR event
 Inflow = 15.30 cfs @ 12.05 hrs, Volume= 1.064 af
 Outflow = 0.22 cfs @ 24.13 hrs, Volume= 0.470 af, Atten= 99%, Lag= 725.1 min
 Primary = 0.22 cfs @ 24.13 hrs, Volume= 0.470 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 726.08' @ 24.13 hrs Surf.Area= 3.910 ac Storage= 0.888 af

Plug-Flow detention time= 1,008.8 min calculated for 0.470 af (44% of inflow)
 Center-of-Mass det. time= 858.1 min (1,735.5 - 877.4)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.22 cfs @ 24.13 hrs HW=726.08' (Free Discharge)

1=Orifice/Grate (Orifice Controls 0.22 cfs @ 1.63 fps)

2=Orifice/Grate (Controls 0.00 cfs)

Franklin Industrial Detention Pond

Prepared by Kimley-Horn

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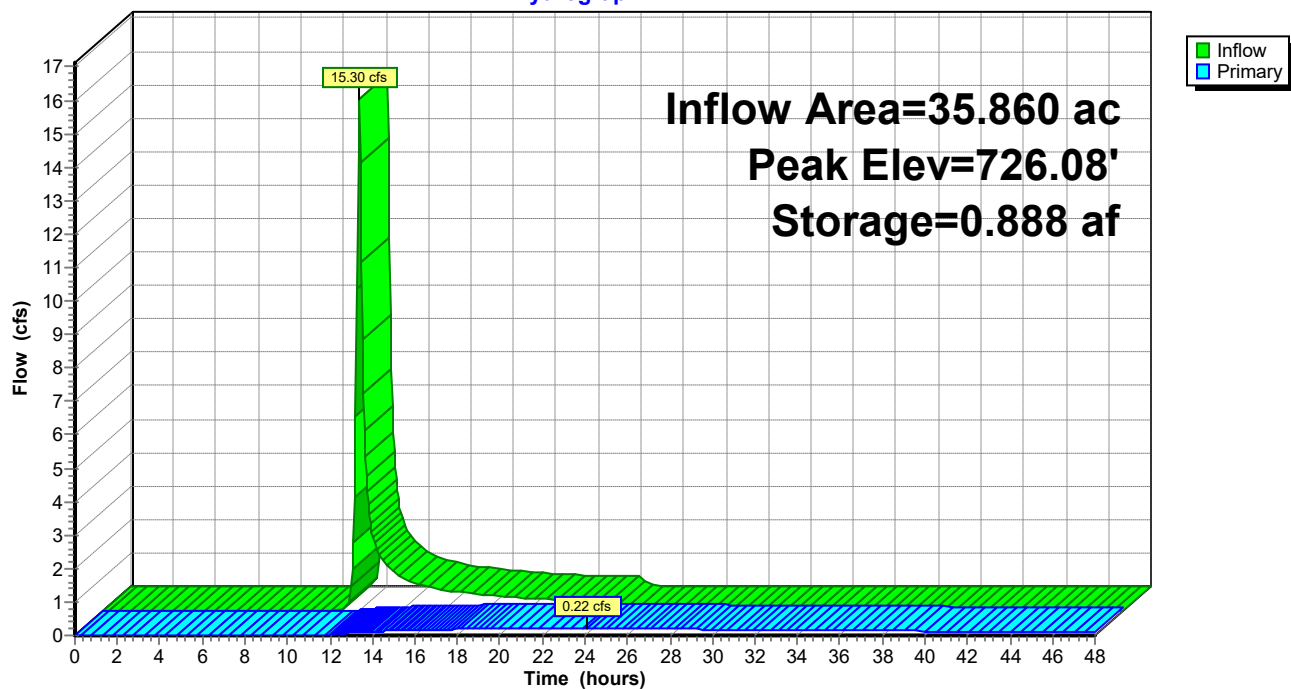
Type II 24-hr 1SWQ, 24-HR Rainfall=1.25"

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Pond 7P: Wet Pond

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 1SWQ, 24-HR Rainfall=1.25"

Prepared by Kimley-Horn

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Summary for Pond 11P: EDDB

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 0.33" for 1SWQ, 24-HR event
 Inflow = 6.74 cfs @ 12.03 hrs, Volume= 0.392 af
 Outflow = 4.90 cfs @ 12.11 hrs, Volume= 0.392 af, Atten= 27%, Lag= 4.8 min
 Primary = 4.90 cfs @ 12.11 hrs, Volume= 0.392 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.34' @ 12.11 hrs Surf.Area= 9,472 sf Storage= 2,493 cf

Plug-Flow detention time= 17.1 min calculated for 0.391 af (100% of inflow)
 Center-of-Mass det. time= 17.2 min (891.4 - 874.2)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=4.83 cfs @ 12.11 hrs HW=727.33' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 4.83 cfs @ 2.90 fps)

Franklin Industrial Detention Pond

Prepared by Kimley-Horn

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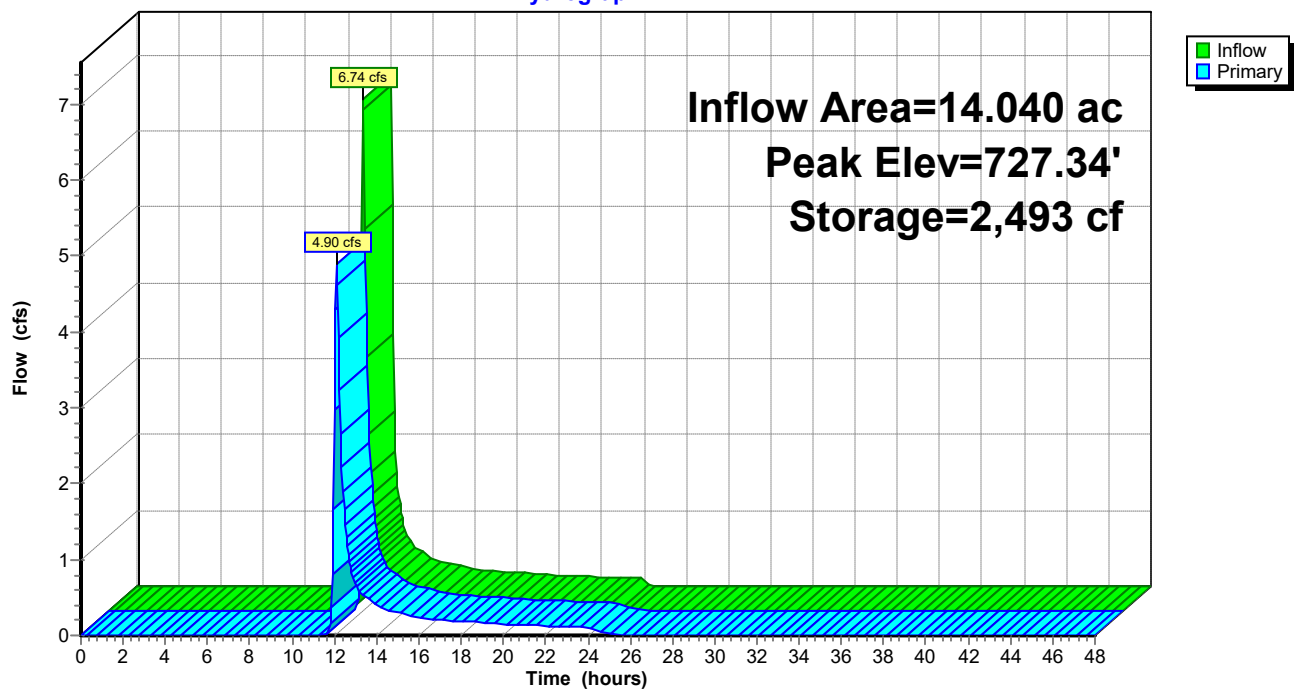
Type II 24-hr 1SWQ, 24-HR Rainfall=1.25"

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Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Pond *Type II 24-hr scaled to 1.00 hrs 2-YR, 1-HR Rainfall=1.39"*

Prepared by Kimley-Horn

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

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

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

Subcatchment 12S: West

Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=0.42"

Tc=10.0 min CN=86 Runoff=23.20 cfs 0.492 af

Subcatchment 13S: East

Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=0.46"

Tc=10.0 min CN=87 Runoff=40.06 cfs 0.837 af

Reach 15R: Swale

Avg. Flow Depth=0.65' Max Vel=4.16 fps Inflow=16.13 cfs 0.492 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=15.61 cfs 0.492 af

Pond 7P: Wet Pond

Peak Elev=726.18' Storage=1.294 af Inflow=50.10 cfs 1.330 af

Outflow=0.45 cfs 0.791 af

Pond 11P: EDDB

Peak Elev=727.65' Storage=6,036 cf Inflow=23.20 cfs 0.492 af

Outflow=16.13 cfs 0.492 af

Total Runoff Area = 35.860 ac Runoff Volume = 1.330 af Average Runoff Depth = 0.44"

89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Summary for Subcatchment 12S: West

Runoff = 23.20 cfs @ 0.65 hrs, Volume= 0.492 af, Depth= 0.42"

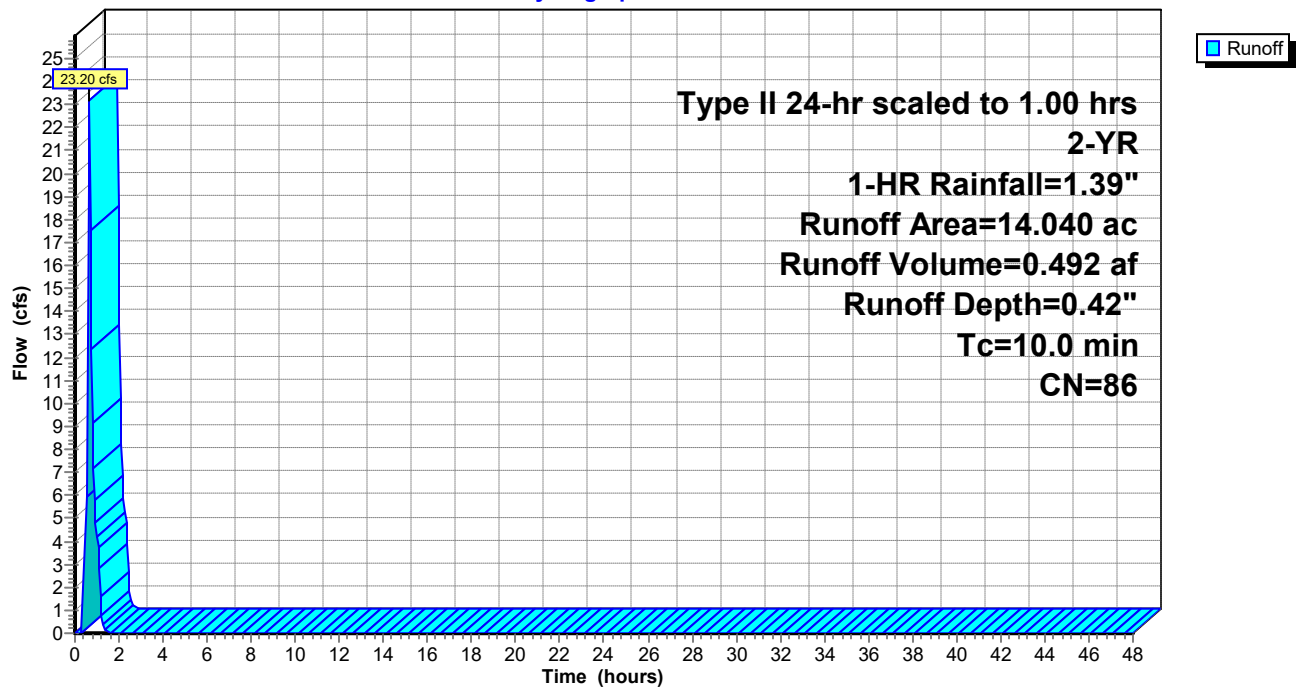
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 1.00 hrs 2-YR, 1-HR Rainfall=1.39"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 40.06 cfs @ 0.64 hrs, Volume= 0.837 af, Depth= 0.46"

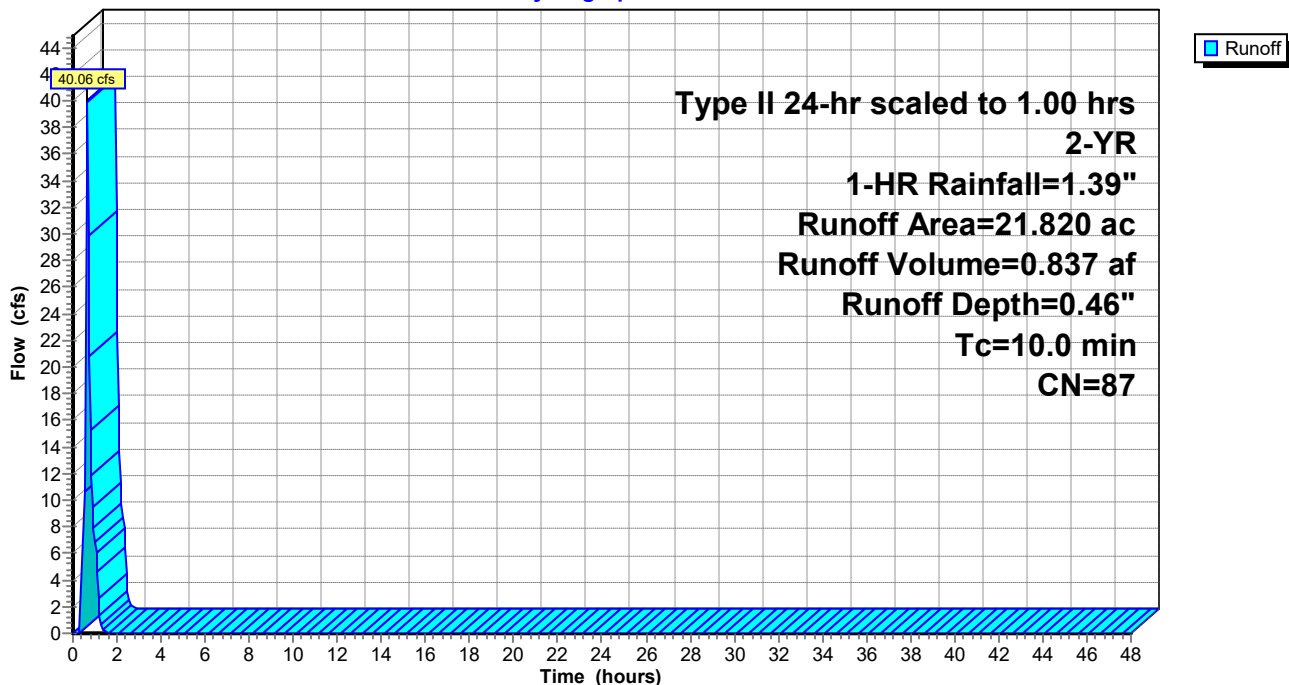
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 1.00 hrs 2-YR, 1-HR Rainfall=1.39"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 0.42" for 2-YR, 1-HR event
 Inflow = 16.13 cfs @ 0.72 hrs, Volume= 0.492 af
 Outflow = 15.61 cfs @ 0.74 hrs, Volume= 0.492 af, Atten= 3%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.16 fps, Min. Travel Time= 0.4 min
 Avg. Velocity= 1.05 fps, Avg. Travel Time= 1.7 min

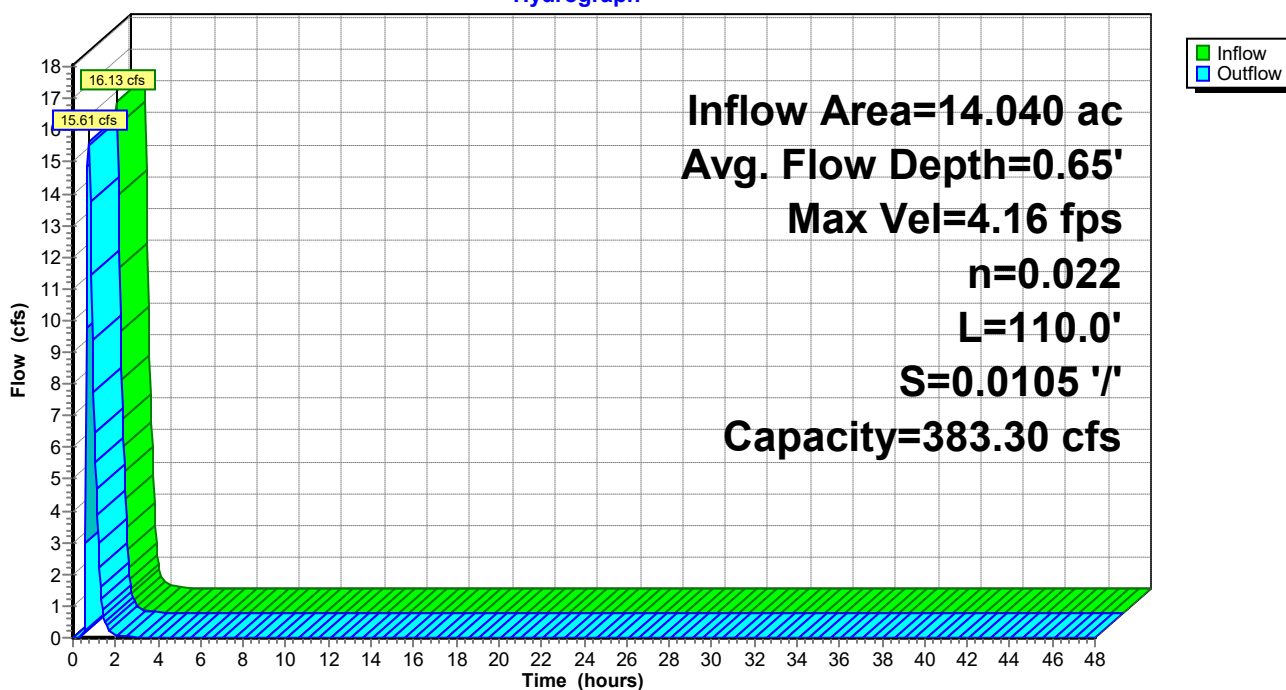
Peak Storage= 423 cf @ 0.72 hrs
 Average Depth at Peak Storage= 0.65' , Surface Width= 7.89'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[62] Hint: Exceeded Reach 15R OUTLET depth by 0.32' @ 3.05 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 0.44" for 2-YR, 1-HR event
 Inflow = 50.10 cfs @ 0.66 hrs, Volume= 1.330 af
 Outflow = 0.45 cfs @ 1.53 hrs, Volume= 0.791 af, Atten= 99%, Lag= 52.2 min
 Primary = 0.45 cfs @ 1.53 hrs, Volume= 0.791 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 726.18' @ 1.53 hrs Surf.Area= 3.931 ac Storage= 1.294 af

Plug-Flow detention time= 1,032.0 min calculated for 0.790 af (59% of inflow)
 Center-of-Mass det. time= 1,026.0 min (1,074.3 - 48.3)

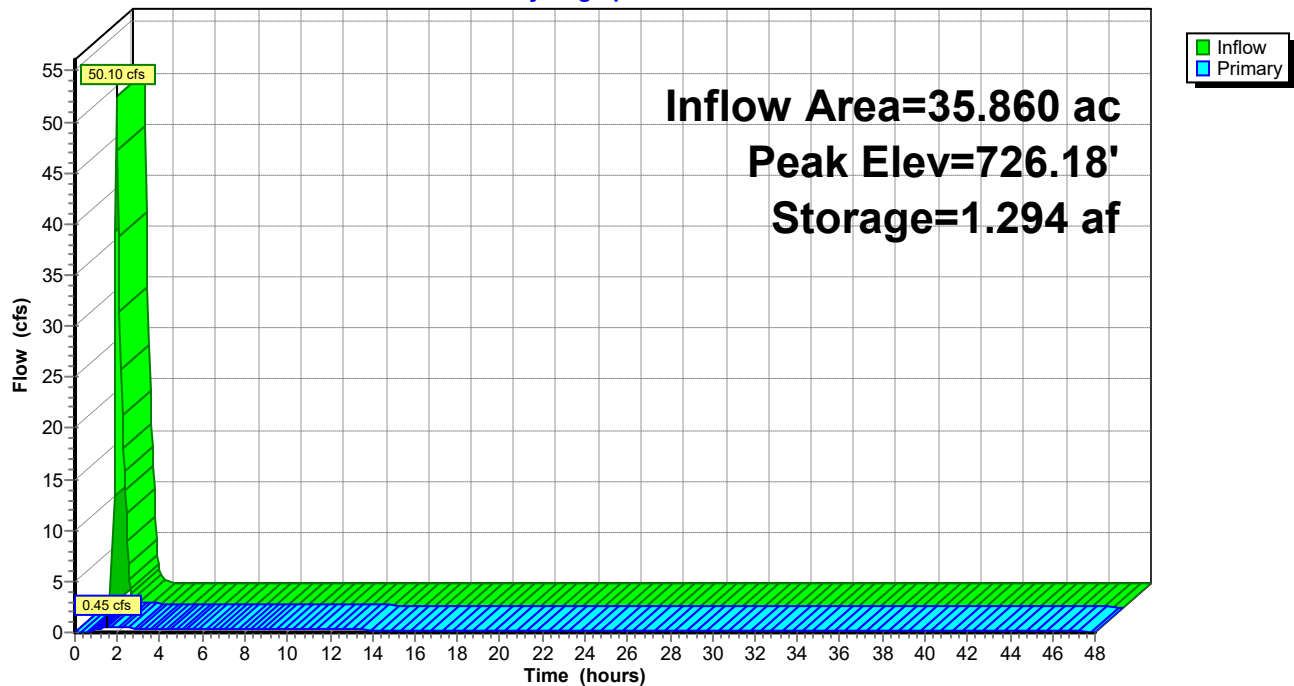
Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.45 cfs @ 1.53 hrs HW=726.18' (Free Discharge)
 1=Orifice/Grate (Orifice Controls 0.45 cfs @ 1.96 fps)
 2=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 0.42" for 2-YR, 1-HR event
 Inflow = 23.20 cfs @ 0.65 hrs, Volume= 0.492 af
 Outflow = 16.13 cfs @ 0.72 hrs, Volume= 0.492 af, Atten= 30%, Lag= 4.5 min
 Primary = 16.13 cfs @ 0.72 hrs, Volume= 0.492 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.65' @ 0.72 hrs Surf.Area= 13,264 sf Storage= 6,036 cf

Plug-Flow detention time= 7.8 min calculated for 0.492 af (100% of inflow)
 Center-of-Mass det. time= 8.0 min (53.0 - 45.1)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

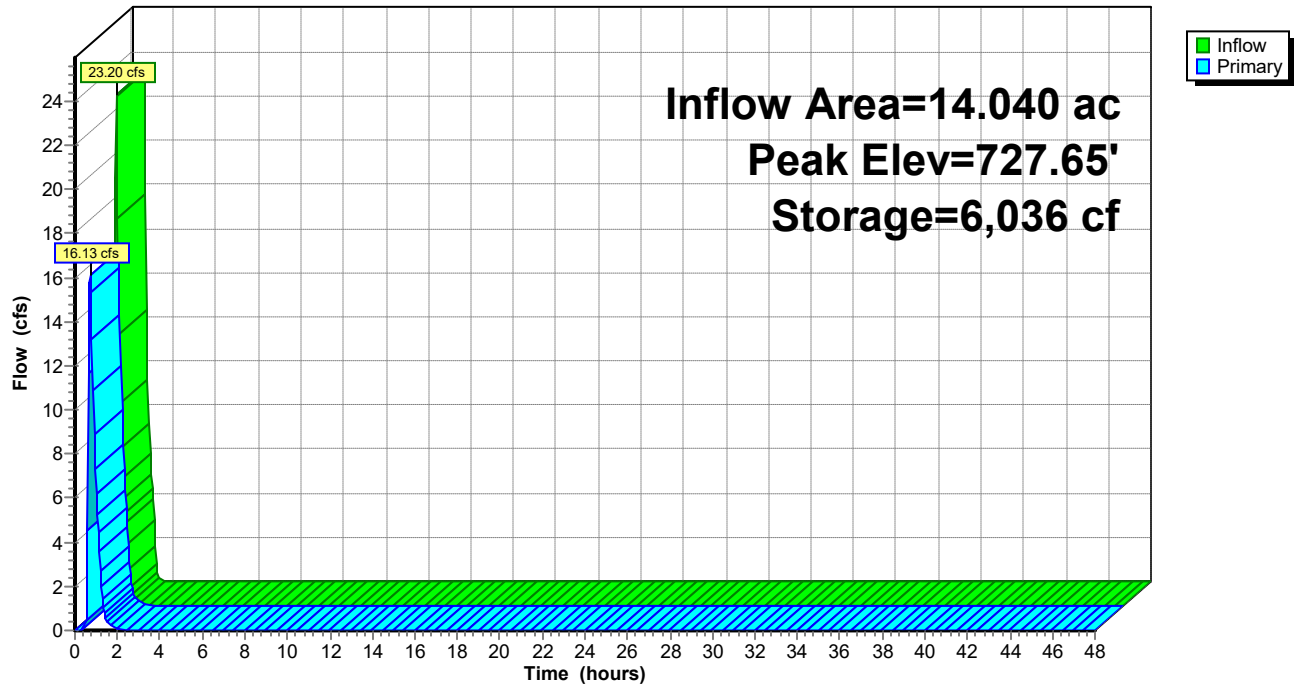
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=15.59 cfs @ 0.72 hrs HW=727.63' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 15.59 cfs @ 4.16 fps)

Pond 11P: Eddb

Hydrograph



Total Runoff Area = 35.860 ac Runoff Volume = 3.691 af Average Runoff Depth = 1.24"
89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Summary for Subcatchment 12S: West

Runoff = 36.34 cfs @ 6.07 hrs, Volume= 1.398 af, Depth= 1.19"

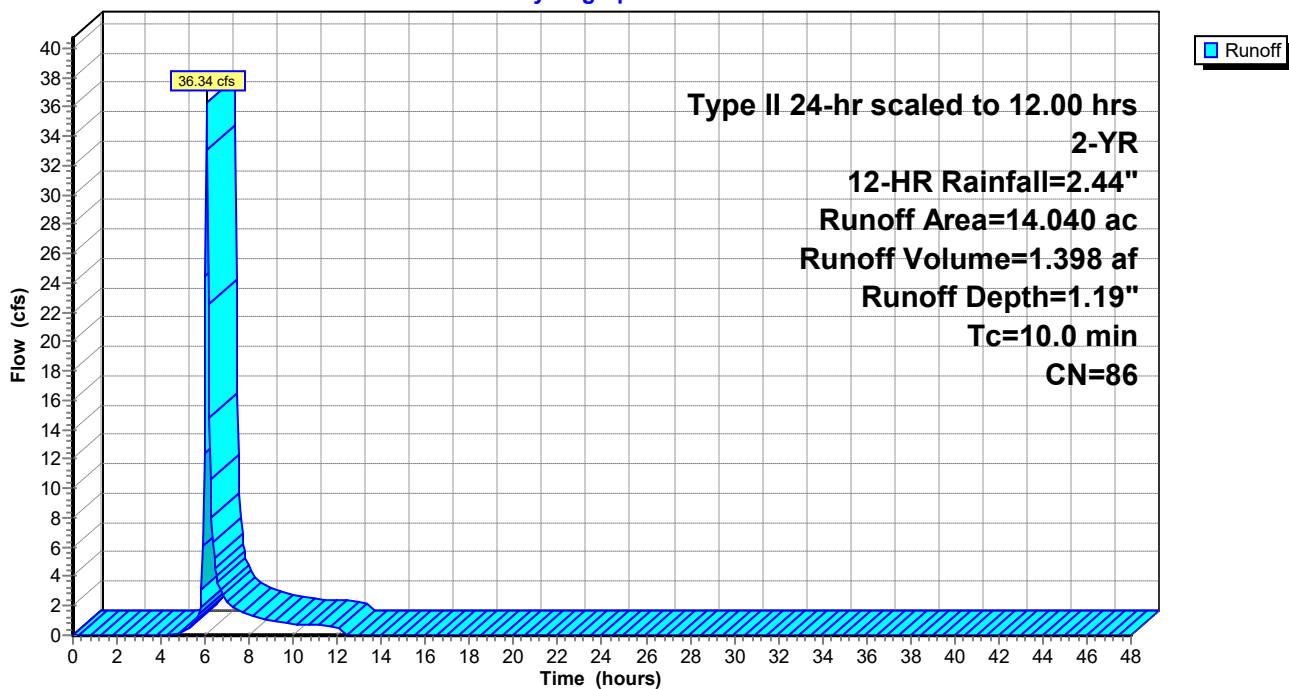
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 12.00 hrs 2-YR, 12-HR Rainfall=2.44"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 59.78 cfs @ 6.06 hrs, Volume= 2.293 af, Depth= 1.26"

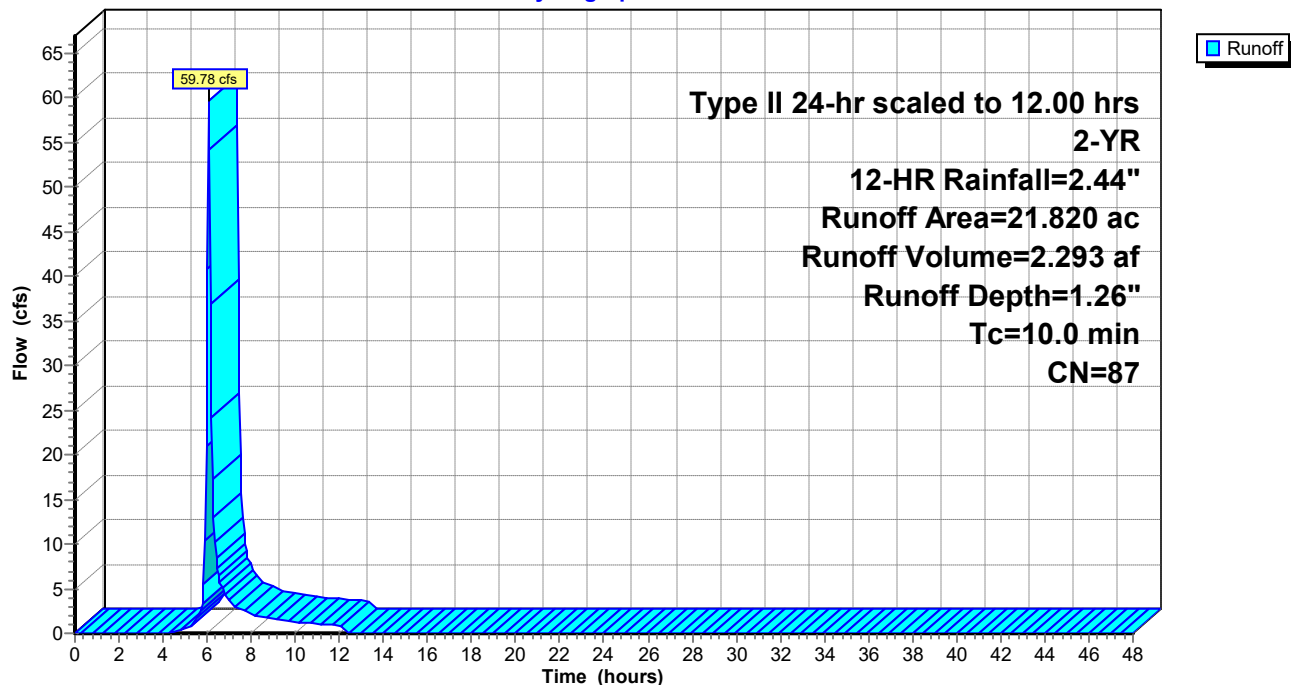
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 12.00 hrs 2-YR, 12-HR Rainfall=2.44"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 1.19" for 2-YR, 12-HR event
 Inflow = 28.09 cfs @ 6.13 hrs, Volume= 1.398 af
 Outflow = 27.83 cfs @ 6.14 hrs, Volume= 1.398 af, Atten= 1%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.91 fps, Min. Travel Time= 0.4 min
 Avg. Velocity= 1.39 fps, Avg. Travel Time= 1.3 min

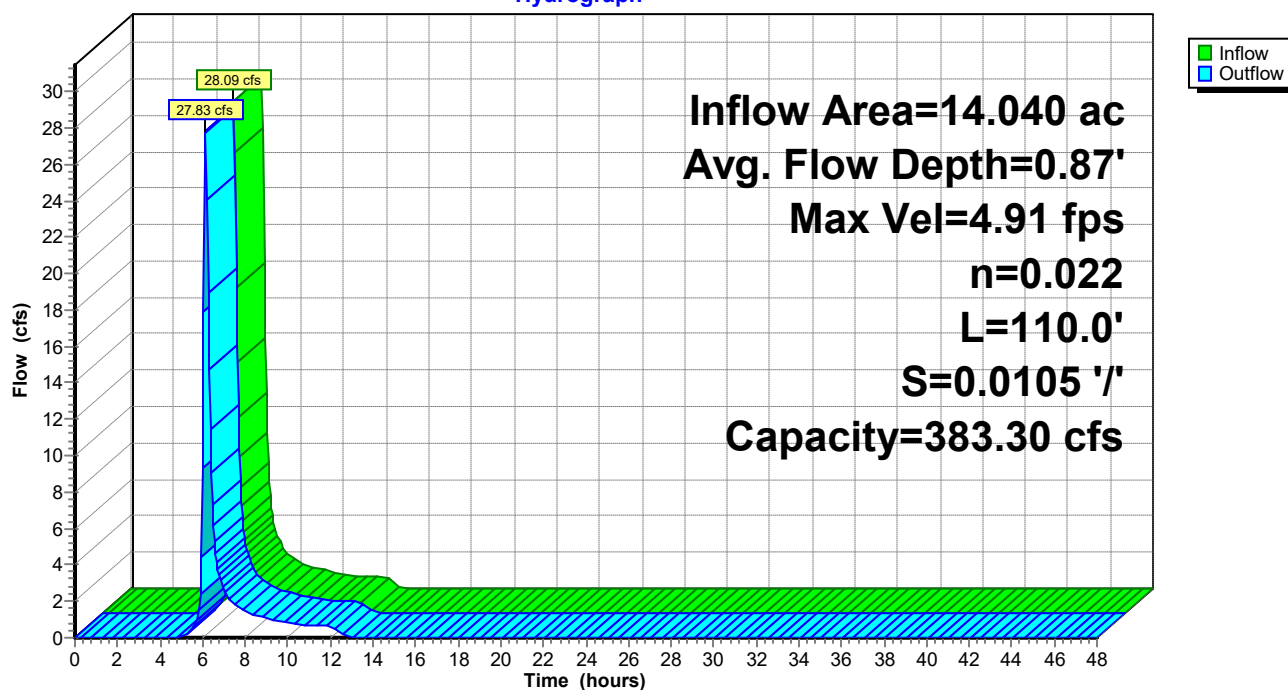
Peak Storage= 628 cf @ 6.13 hrs
 Average Depth at Peak Storage= 0.87' , Surface Width= 9.20'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[62] Hint: Exceeded Reach 15R OUTLET depth by 0.68' @ 13.00 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 1.24" for 2-YR, 12-HR event
 Inflow = 81.06 cfs @ 6.08 hrs, Volume= 3.691 af
 Outflow = 1.79 cfs @ 10.81 hrs, Volume= 2.795 af, Atten= 98%, Lag= 283.3 min
 Primary = 1.79 cfs @ 10.81 hrs, Volume= 2.795 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 726.58' @ 10.81 hrs Surf.Area= 4.012 ac Storage= 2.875 af

Plug-Flow detention time= 808.7 min calculated for 2.792 af (76% of inflow)
 Center-of-Mass det. time= 762.5 min (1,187.6 - 425.1)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

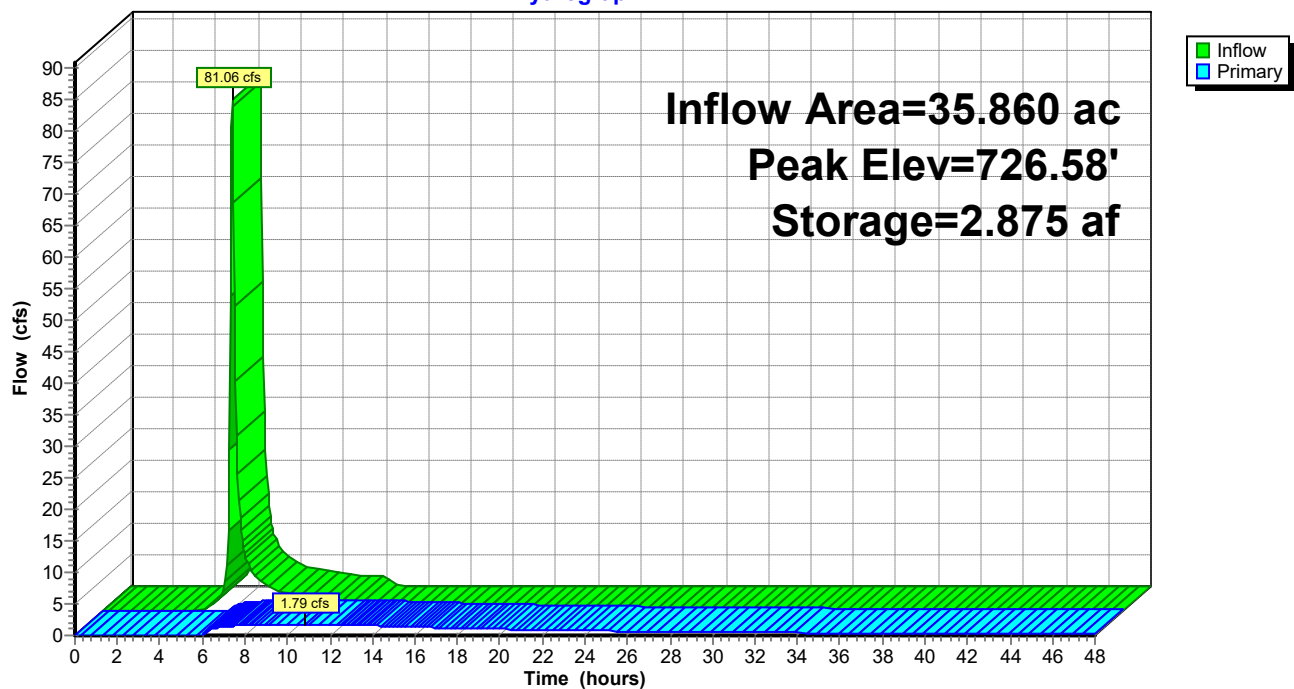
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.79 cfs @ 10.81 hrs HW=726.58' (Free Discharge)

1=Orifice/Grate (Orifice Controls 1.79 cfs @ 2.91 fps)
 2=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 1.19" for 2-YR, 12-HR event
 Inflow = 36.34 cfs @ 6.07 hrs, Volume= 1.398 af
 Outflow = 28.09 cfs @ 6.13 hrs, Volume= 1.398 af, Atten= 23%, Lag= 3.7 min
 Primary = 28.09 cfs @ 6.13 hrs, Volume= 1.398 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.87' @ 6.13 hrs Surf.Area= 15,918 sf Storage= 9,218 cf

Plug-Flow detention time= 9.3 min calculated for 1.396 af (100% of inflow)
 Center-of-Mass det. time= 9.4 min (431.7 - 422.3)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

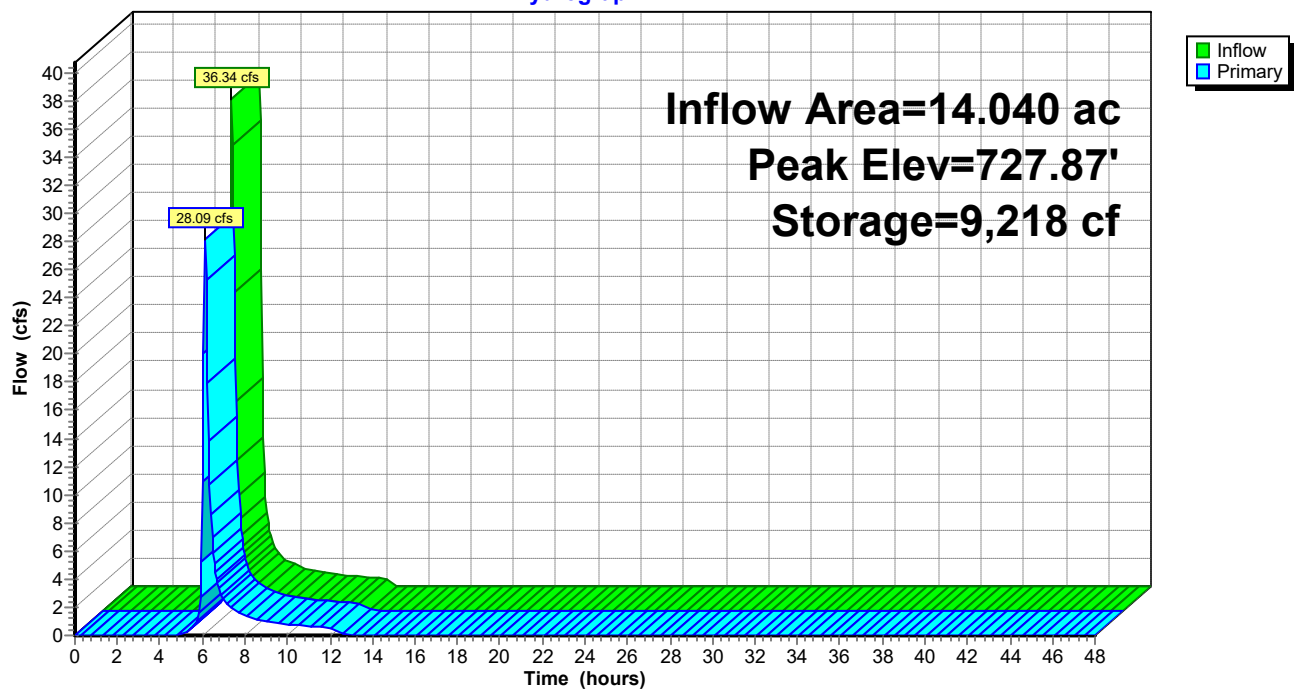
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=27.48 cfs @ 6.13 hrs HW=727.86' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 27.48 cfs @ 4.90 fps)

Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Pond *Type II 24-hr scaled to 2.00 hrs 2-YR, 2-HR Rainfall=1.63"*

Prepared by Kimley-Horn

Printed 9/9/2021

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

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

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

Subcatchment 12S: West

Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=0.58"

Tc=10.0 min CN=86 Runoff=27.48 cfs 0.679 af

Subcatchment 13S: East

Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=0.63"

Tc=10.0 min CN=87 Runoff=48.27 cfs 1.140 af

Reach 15R: Swale

Avg. Flow Depth=0.72' Max Vel=4.45 fps Inflow=19.61 cfs 0.679 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=19.38 cfs 0.679 af

Pond 7P: Wet Pond

Peak Elev=726.30' Storage=1.747 af Inflow=59.84 cfs 1.819 af

Outflow=0.77 cfs 1.199 af

Pond 11P: EDDB

Peak Elev=727.72' Storage=6,992 cf Inflow=27.48 cfs 0.679 af

Outflow=19.61 cfs 0.679 af

Total Runoff Area = 35.860 ac Runoff Volume = 1.819 af Average Runoff Depth = 0.61"

89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Summary for Subcatchment 12S: West

Runoff = 27.48 cfs @ 1.13 hrs, Volume= 0.679 af, Depth= 0.58"

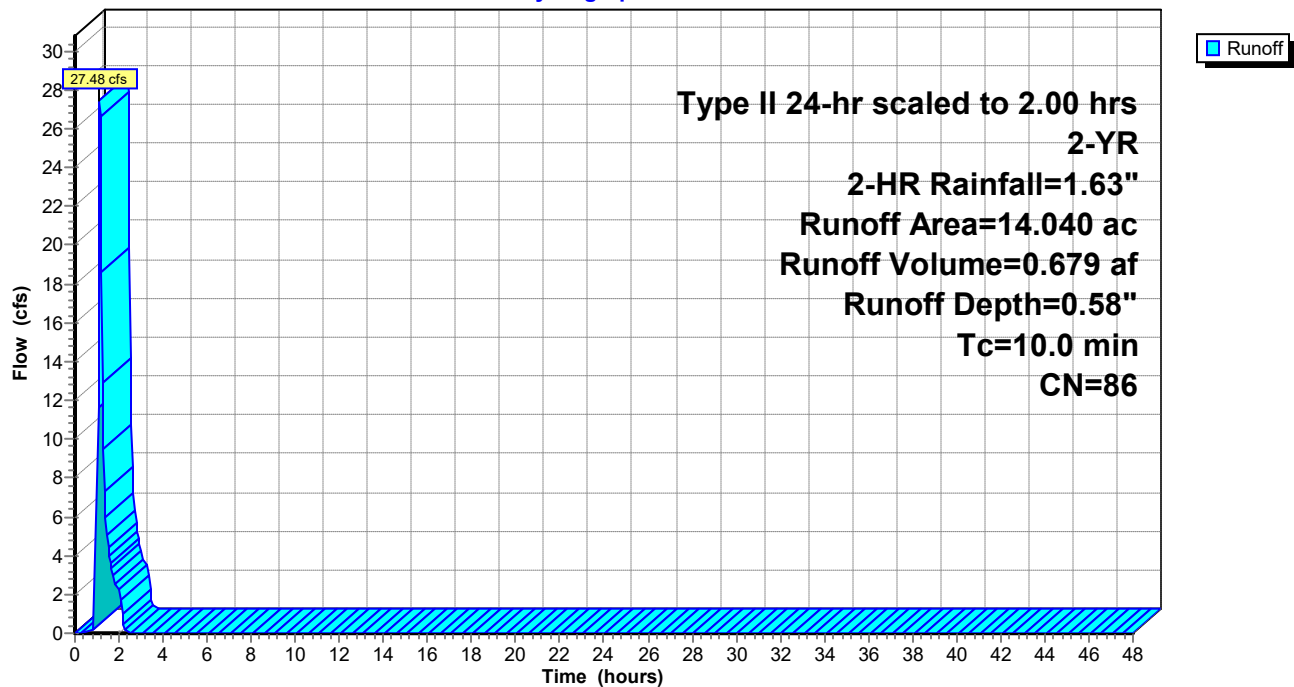
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 2.00 hrs 2-YR, 2-HR Rainfall=1.63"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 48.27 cfs @ 1.12 hrs, Volume= 1.140 af, Depth= 0.63"

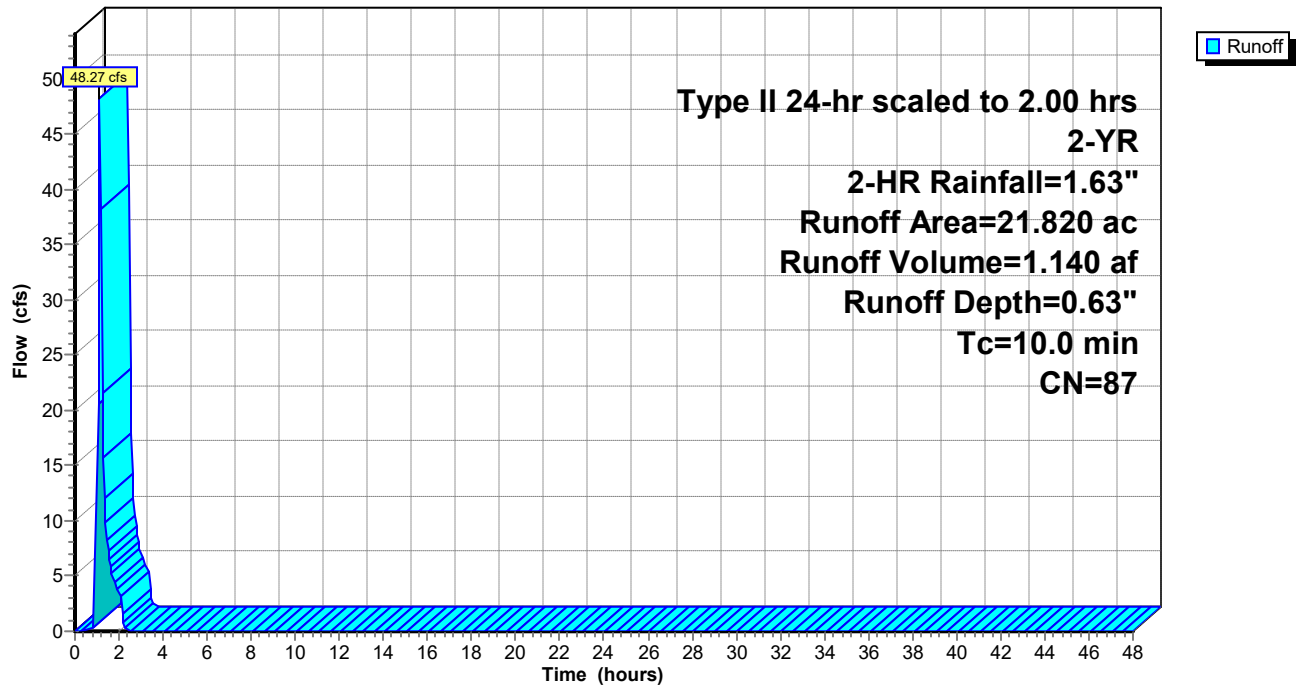
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 2.00 hrs 2-YR, 2-HR Rainfall=1.63"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 0.58" for 2-YR, 2-HR event
 Inflow = 19.61 cfs @ 1.21 hrs, Volume= 0.679 af
 Outflow = 19.38 cfs @ 1.22 hrs, Volume= 0.679 af, Atten= 1%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.45 fps, Min. Travel Time= 0.4 min
 Avg. Velocity= 1.16 fps, Avg. Travel Time= 1.6 min

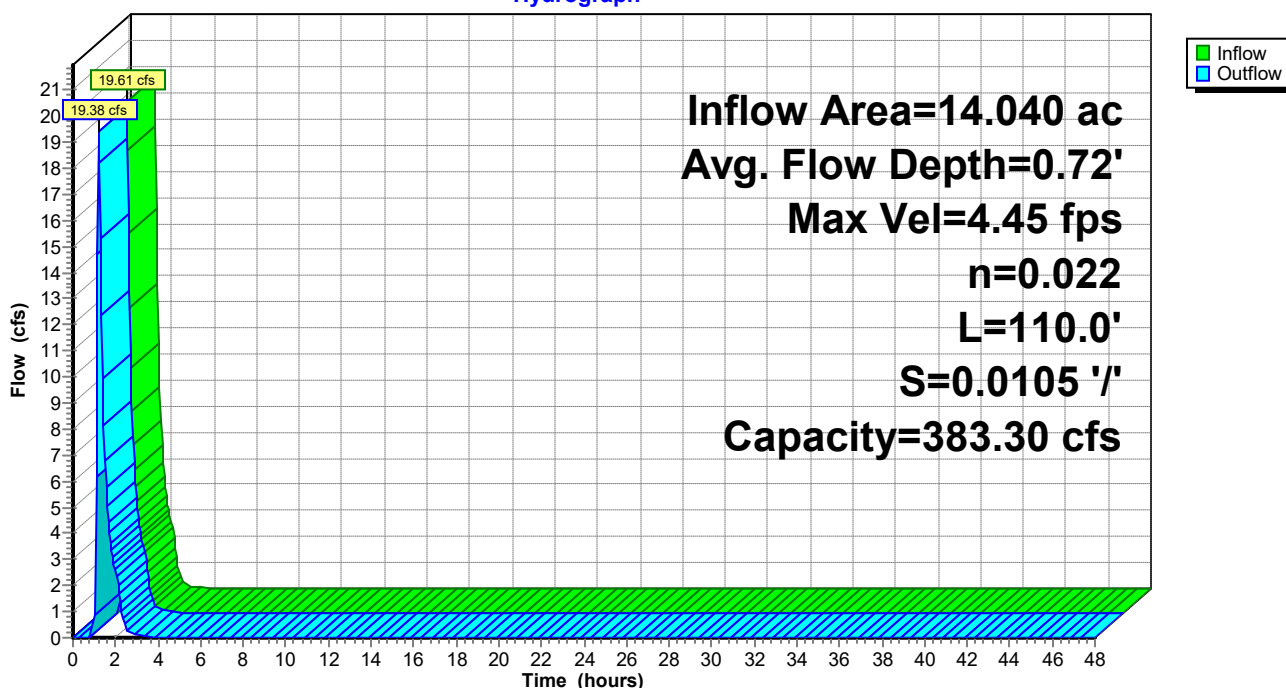
Peak Storage= 487 cf @ 1.21 hrs
 Average Depth at Peak Storage= 0.72' , Surface Width= 8.31'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 ' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 ' / '
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[62] Hint: Exceeded Reach 15R OUTLET depth by 0.42' @ 3.65 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 0.61" for 2-YR, 2-HR event
 Inflow = 59.84 cfs @ 1.15 hrs, Volume= 1.819 af
 Outflow = 0.77 cfs @ 2.37 hrs, Volume= 1.199 af, Atten= 99%, Lag= 73.2 min
 Primary = 0.77 cfs @ 2.37 hrs, Volume= 1.199 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 726.30' @ 2.37 hrs Surf.Area= 3.954 ac Storage= 1.747 af

Plug-Flow detention time= 961.4 min calculated for 1.199 af (66% of inflow)
 Center-of-Mass det. time= 950.2 min (1,033.1 - 82.9)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

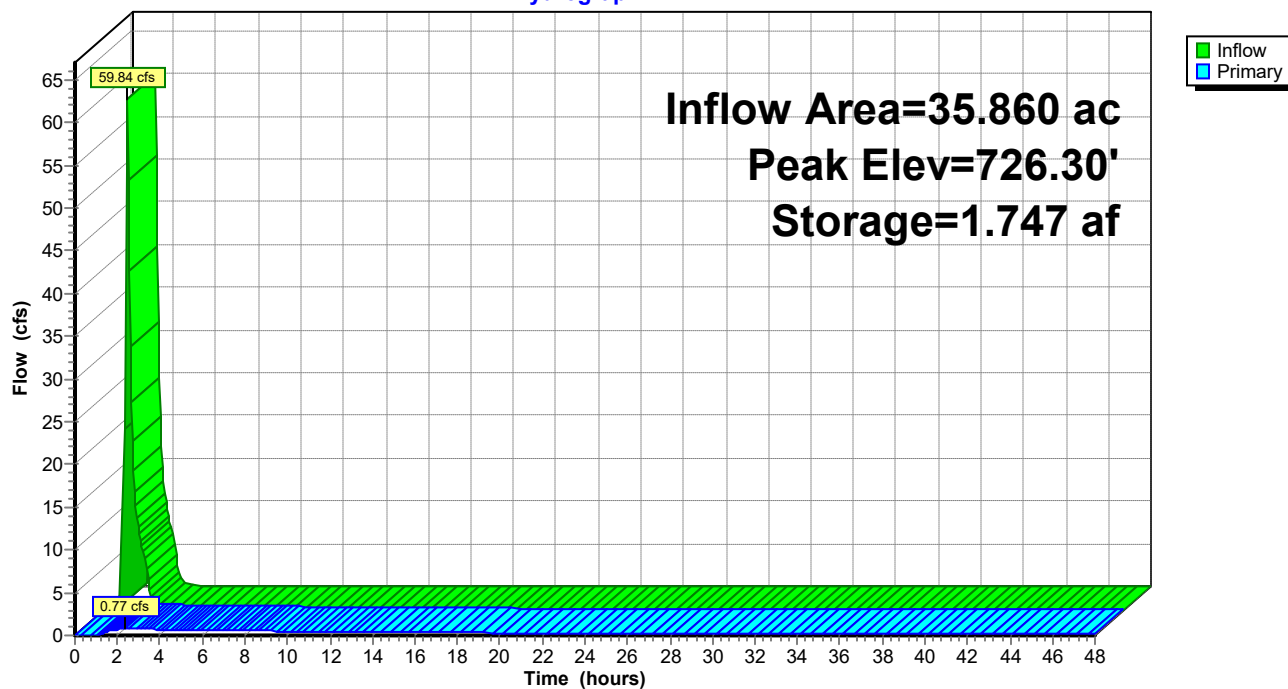
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.77 cfs @ 2.37 hrs HW=726.30' (Free Discharge)

1=Orifice/Grate (Orifice Controls 0.77 cfs @ 2.28 fps)
 2=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 0.58" for 2-YR, 2-HR event
 Inflow = 27.48 cfs @ 1.13 hrs, Volume= 0.679 af
 Outflow = 19.61 cfs @ 1.21 hrs, Volume= 0.679 af, Atten= 29%, Lag= 4.7 min
 Primary = 19.61 cfs @ 1.21 hrs, Volume= 0.679 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.72' @ 1.21 hrs Surf.Area= 14,114 sf Storage= 6,992 cf

Plug-Flow detention time= 7.8 min calculated for 0.678 af (100% of inflow)
 Center-of-Mass det. time= 7.9 min (87.8 - 79.9)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

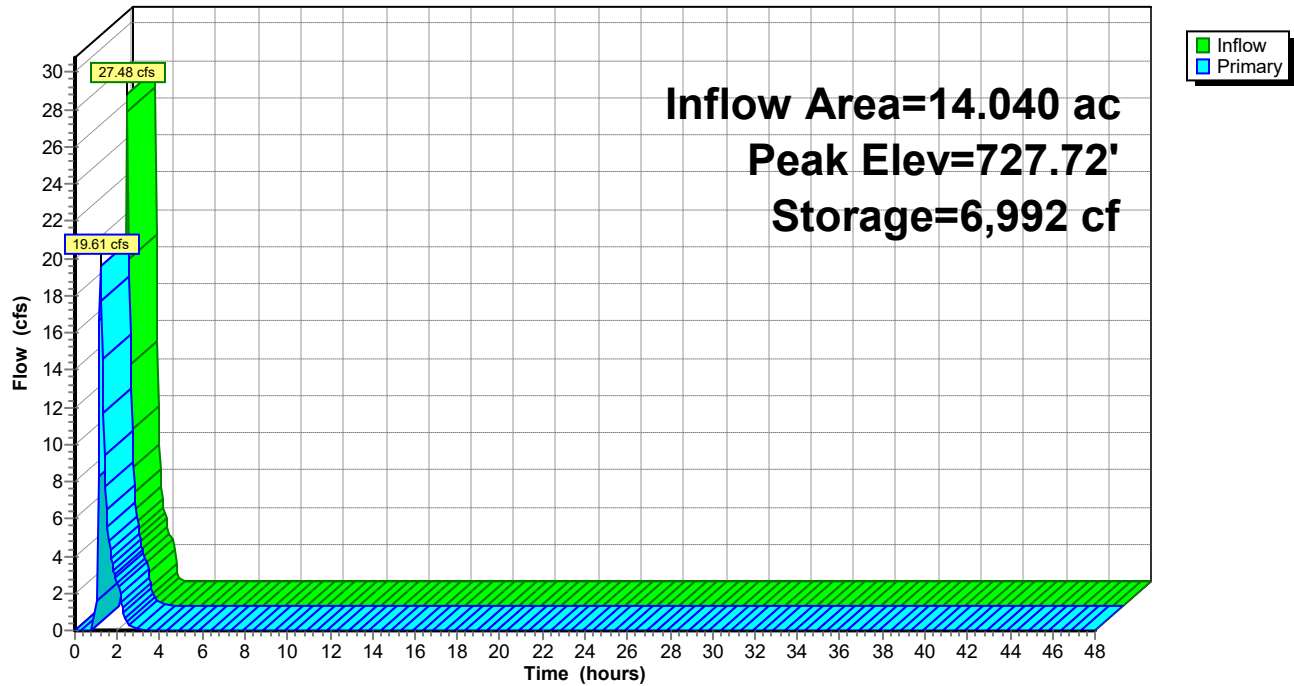
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=19.37 cfs @ 1.21 hrs HW=727.71' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 19.37 cfs @ 4.43 fps)

Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West

Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=1.59"
Tc=10.0 min CN=86 Runoff=33.66 cfs 1.855 af

Subcatchment 13S: East

Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=1.66"
Tc=10.0 min CN=87 Runoff=54.67 cfs 3.020 af

Reach 15R: Swale

Avg. Flow Depth=0.87' Max Vel=4.93 fps Inflow=28.69 cfs 1.855 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=28.34 cfs 1.855 af

Pond 7P: Wet Pond

Peak Elev=726.68' Storage=3.294 af Inflow=79.73 cfs 4.875 af
Outflow=2.18 cfs 3.690 af

Pond 11P: EDDB

Peak Elev=727.87' Storage=9,371 cf Inflow=33.66 cfs 1.855 af
Outflow=28.69 cfs 1.855 af

Total Runoff Area = 35.860 ac Runoff Volume = 4.875 af Average Runoff Depth = 1.63"
89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Franklin Industrial Detention Pond

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Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

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Summary for Subcatchment 12S: West

Runoff = 33.66 cfs @ 12.02 hrs, Volume= 1.855 af, Depth= 1.59"

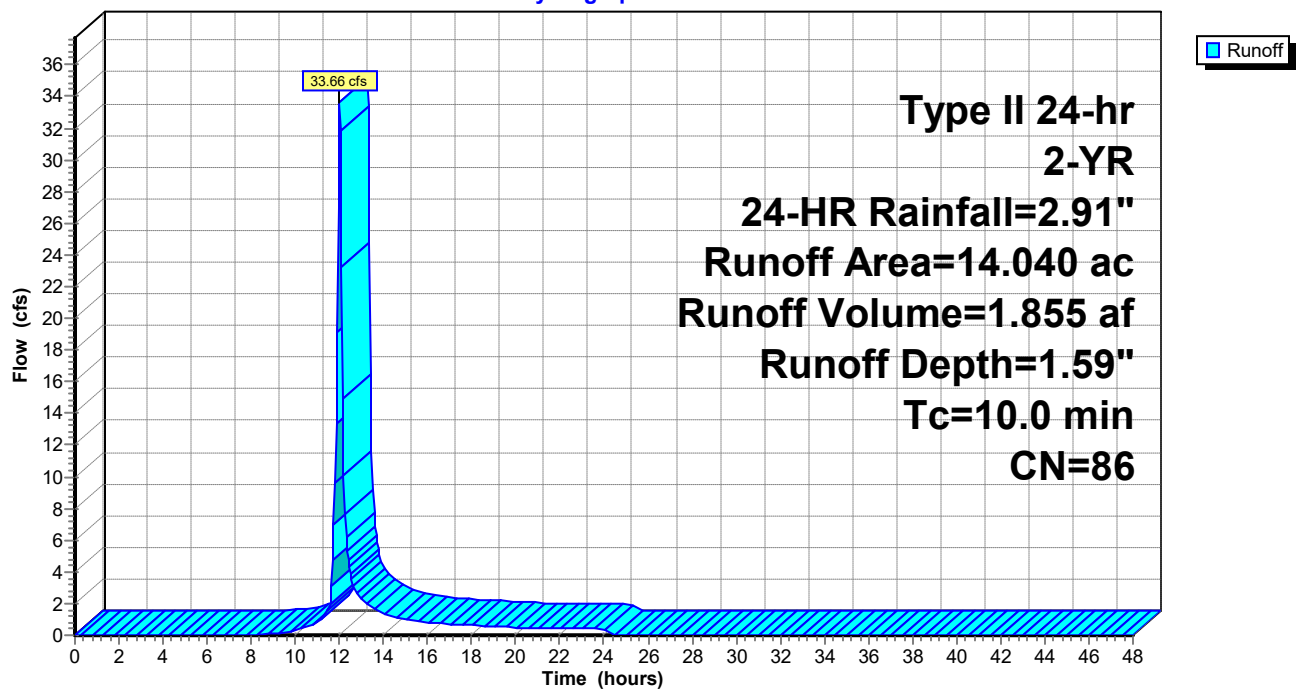
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Franklin Industrial Detention Pond

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Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

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Summary for Subcatchment 13S: East

Runoff = 54.67 cfs @ 12.01 hrs, Volume= 3.020 af, Depth= 1.66"

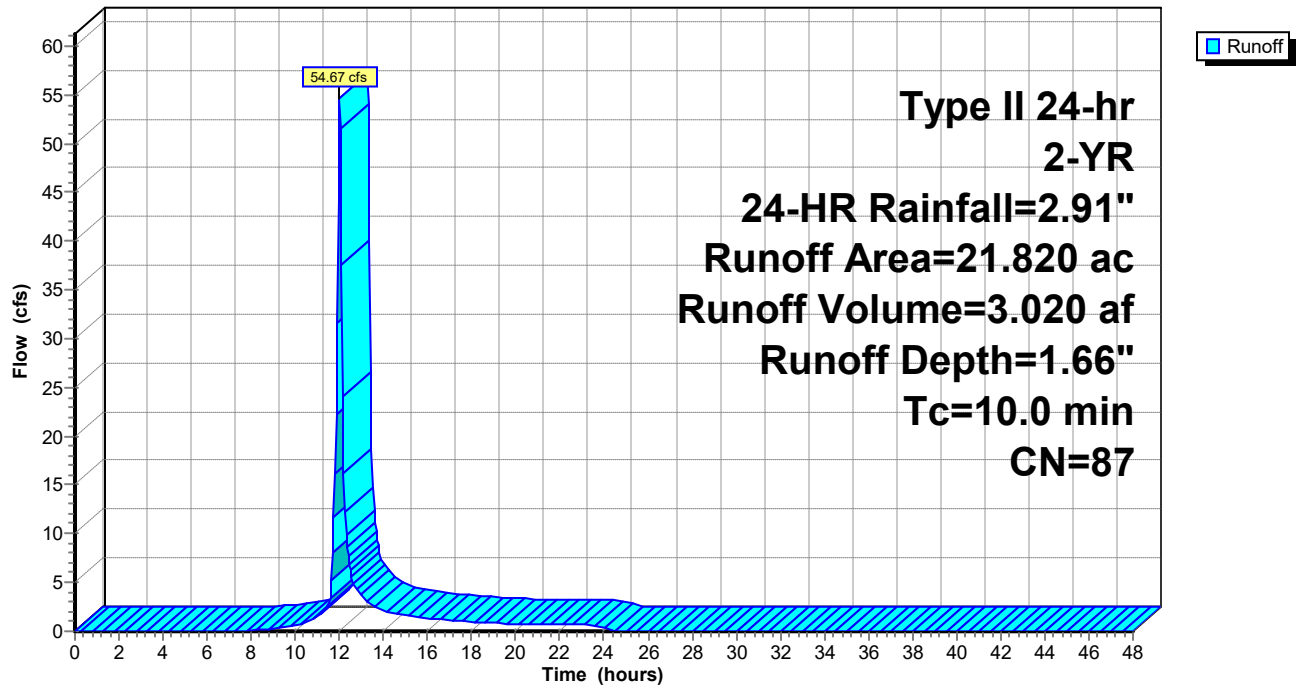
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Franklin Industrial Detention Pond

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Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

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Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 1.59" for 2-YR, 24-HR event
Inflow = 28.69 cfs @ 12.07 hrs, Volume= 1.855 af
Outflow = 28.34 cfs @ 12.08 hrs, Volume= 1.855 af, Atten= 1%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.93 fps, Min. Travel Time= 0.4 min

Avg. Velocity= 1.34 fps, Avg. Travel Time= 1.4 min

Peak Storage= 636 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.87' , Surface Width= 9.24'

Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight

Side Slope Z-value= 3.0 ' / ' Top Width= 22.00'

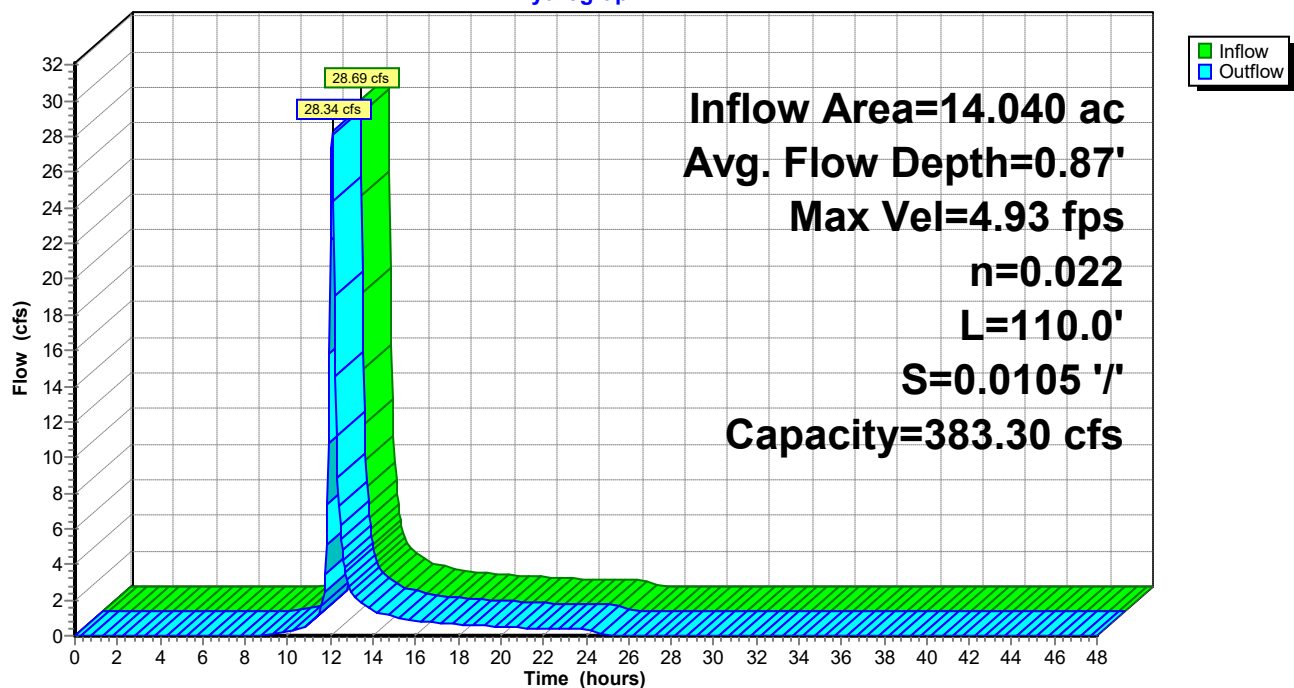
Length= 110.0' Slope= 0.0105 ' / '

Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

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Summary for Pond 7P: Wet Pond

[62] Hint: Exceeded Reach 15R OUTLET depth by 0.72' @ 17.35 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 1.63" for 2-YR, 24-HR event
 Inflow = 79.73 cfs @ 12.03 hrs, Volume= 4.875 af
 Outflow = 2.18 cfs @ 15.96 hrs, Volume= 3.690 af, Atten= 97%, Lag= 235.4 min
 Primary = 2.18 cfs @ 15.96 hrs, Volume= 3.690 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 726.68' @ 15.96 hrs Surf.Area= 4.033 ac Storage= 3.294 af

Plug-Flow detention time= 756.9 min calculated for 3.687 af (76% of inflow)
 Center-of-Mass det. time= 664.7 min (1,494.1 - 829.4)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.18 cfs @ 15.96 hrs HW=726.68' (Free Discharge)

1=Orifice/Grate (Orifice Controls 2.18 cfs @ 3.11 fps)

2=Orifice/Grate (Controls 0.00 cfs)

Franklin Industrial Detention Pond

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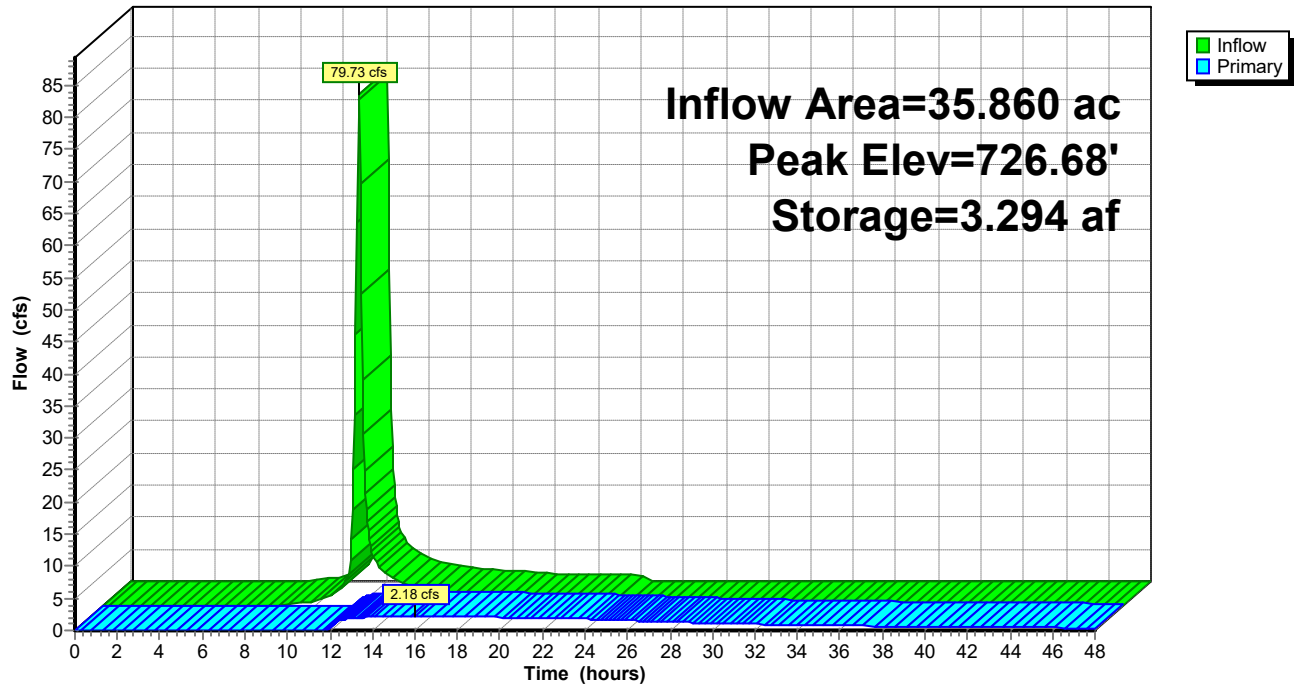
Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

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Pond 7P: Wet Pond

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

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Summary for Pond 11P: EDDB

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 1.59" for 2-YR, 24-HR event
 Inflow = 33.66 cfs @ 12.02 hrs, Volume= 1.855 af
 Outflow = 28.69 cfs @ 12.07 hrs, Volume= 1.855 af, Atten= 15%, Lag= 3.4 min
 Primary = 28.69 cfs @ 12.07 hrs, Volume= 1.855 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.87' @ 12.07 hrs Surf.Area= 16,035 sf Storage= 9,371 cf

Plug-Flow detention time= 10.4 min calculated for 1.853 af (100% of inflow)
 Center-of-Mass det. time= 10.5 min (837.8 - 827.3)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=28.07 cfs @ 12.07 hrs HW=727.86' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 28.07 cfs @ 4.92 fps)

Franklin Industrial Detention Pond

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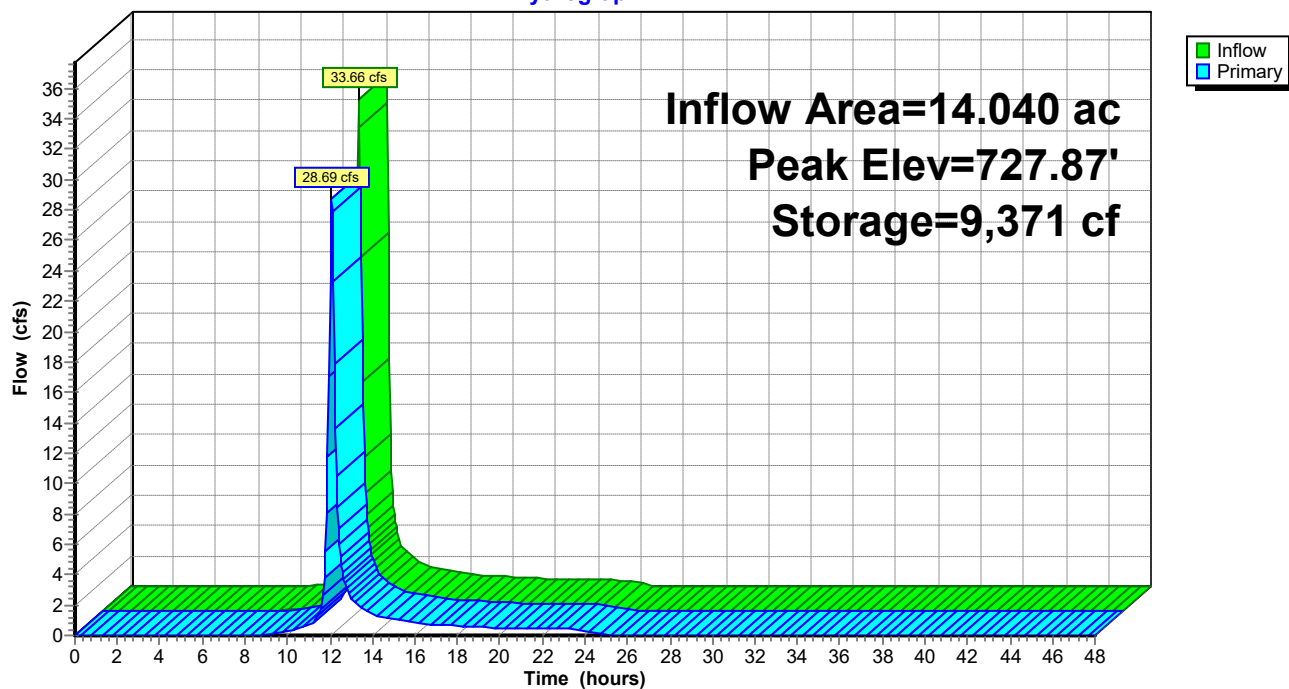
Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

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Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Pond *Type II 24-hr scaled to 3.00 hrs 2-YR, 3-HR Rainfall=1.42"*

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

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

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

Subcatchment 12S: West

Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=0.44"

Tc=10.0 min CN=86 Runoff=18.82 cfs 0.515 af

Subcatchment 13S: East

Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=0.48"

Tc=10.0 min CN=87 Runoff=32.70 cfs 0.874 af

Reach 15R: Swale

Avg. Flow Depth=0.57' Max Vel=3.90 fps Inflow=12.60 cfs 0.515 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=12.44 cfs 0.515 af

Pond 7P: Wet Pond

Peak Elev=726.19' Storage=1.329 af Inflow=39.31 cfs 1.389 af

Outflow=0.47 cfs 0.829 af

Pond 11P: EDDB

Peak Elev=727.57' Storage=5,001 cf Inflow=18.82 cfs 0.515 af

Outflow=12.60 cfs 0.515 af

Total Runoff Area = 35.860 ac Runoff Volume = 1.389 af Average Runoff Depth = 0.46"
89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Summary for Subcatchment 12S: West

Runoff = 18.82 cfs @ 1.62 hrs, Volume= 0.515 af, Depth= 0.44"

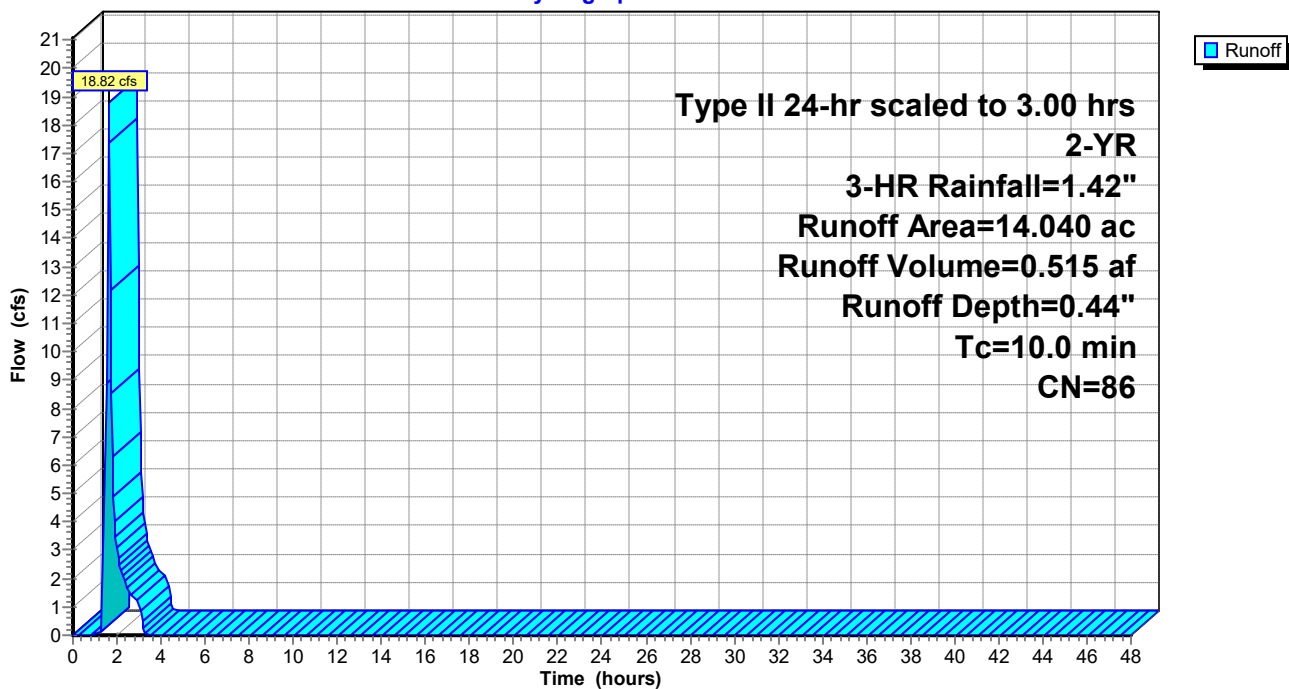
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 3.00 hrs 2-YR, 3-HR Rainfall=1.42"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 32.70 cfs @ 1.62 hrs, Volume= 0.874 af, Depth= 0.48"

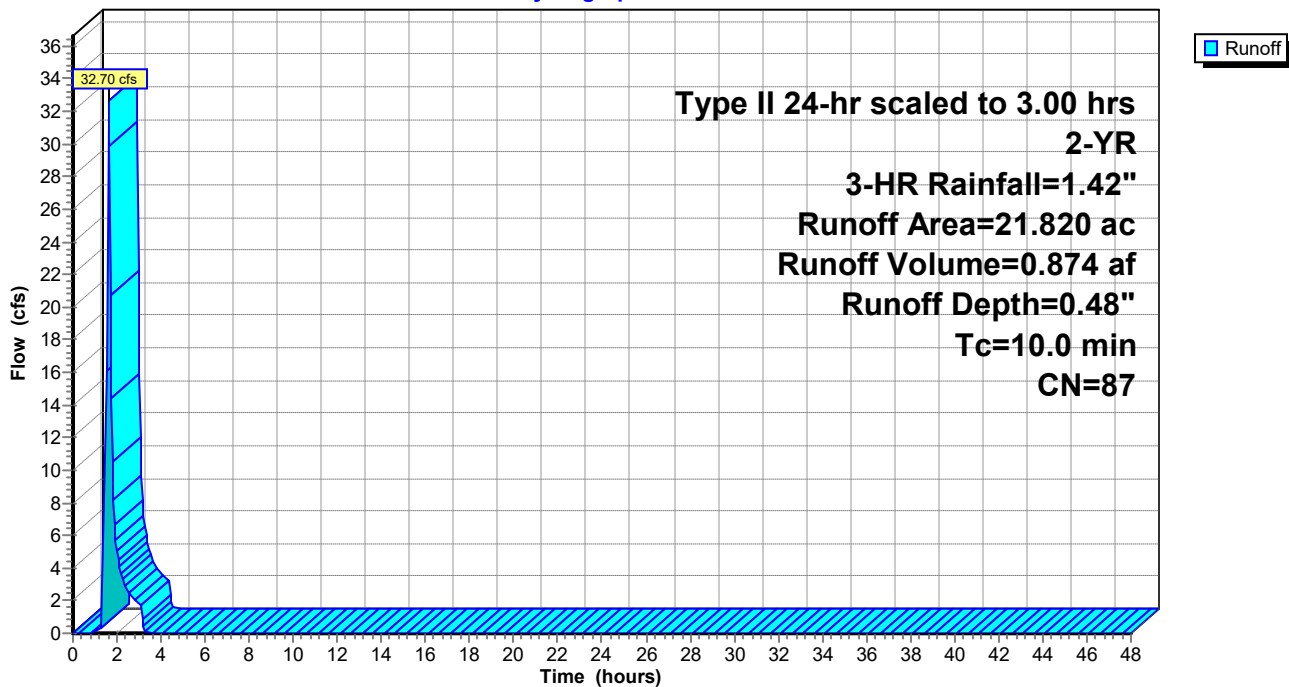
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 3.00 hrs 2-YR, 3-HR Rainfall=1.42"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 0.44" for 2-YR, 3-HR event
 Inflow = 12.60 cfs @ 1.71 hrs, Volume= 0.515 af
 Outflow = 12.44 cfs @ 1.72 hrs, Volume= 0.515 af, Atten= 1%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 3.90 fps, Min. Travel Time= 0.5 min
 Avg. Velocity = 1.15 fps, Avg. Travel Time= 1.6 min

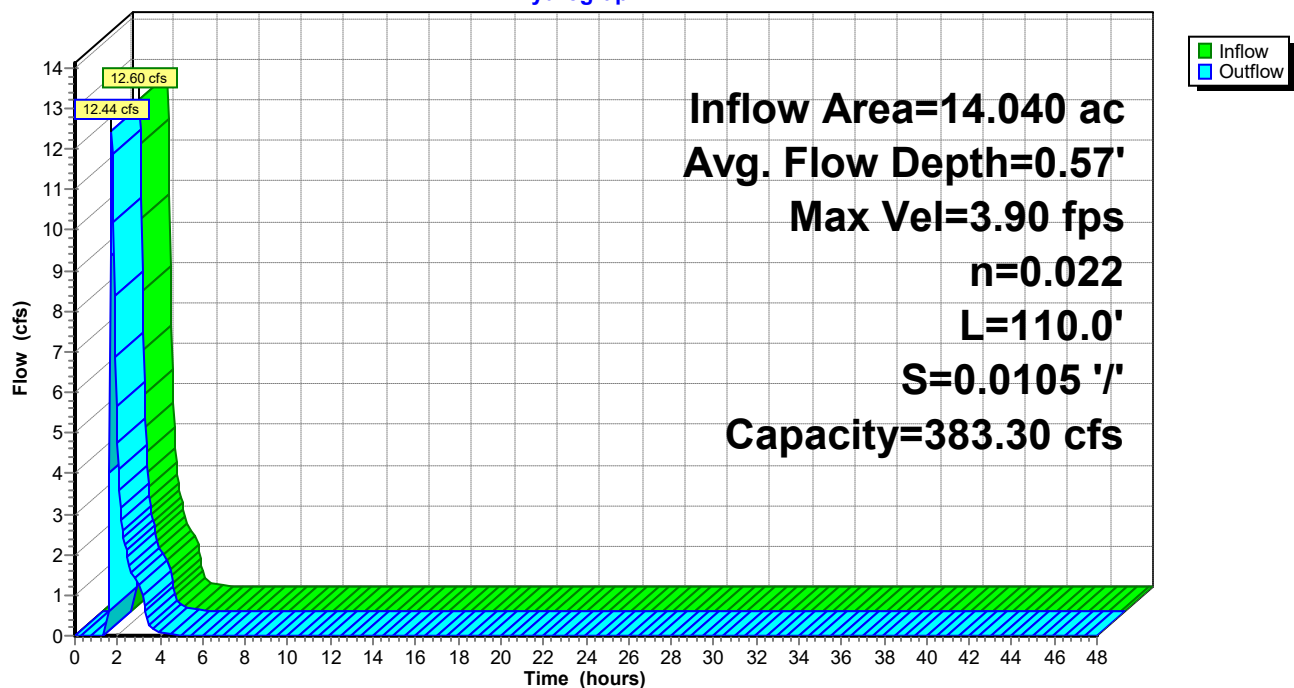
Peak Storage= 356 cf @ 1.71 hrs
 Average Depth at Peak Storage= 0.57' , Surface Width= 7.40'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[62] Hint: Exceeded Reach 15R OUTLET depth by 0.32' @ 4.85 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 0.46" for 2-YR, 3-HR event
 Inflow = 39.31 cfs @ 1.64 hrs, Volume= 1.389 af
 Outflow = 0.47 cfs @ 3.37 hrs, Volume= 0.829 af, Atten= 99%, Lag= 103.6 min
 Primary = 0.47 cfs @ 3.37 hrs, Volume= 0.829 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 726.19' @ 3.37 hrs Surf.Area= 3.932 ac Storage= 1.329 af

Plug-Flow detention time= 1,020.5 min calculated for 0.829 af (60% of inflow)
 Center-of-Mass det. time= 1,002.5 min (1,122.2 - 119.7)

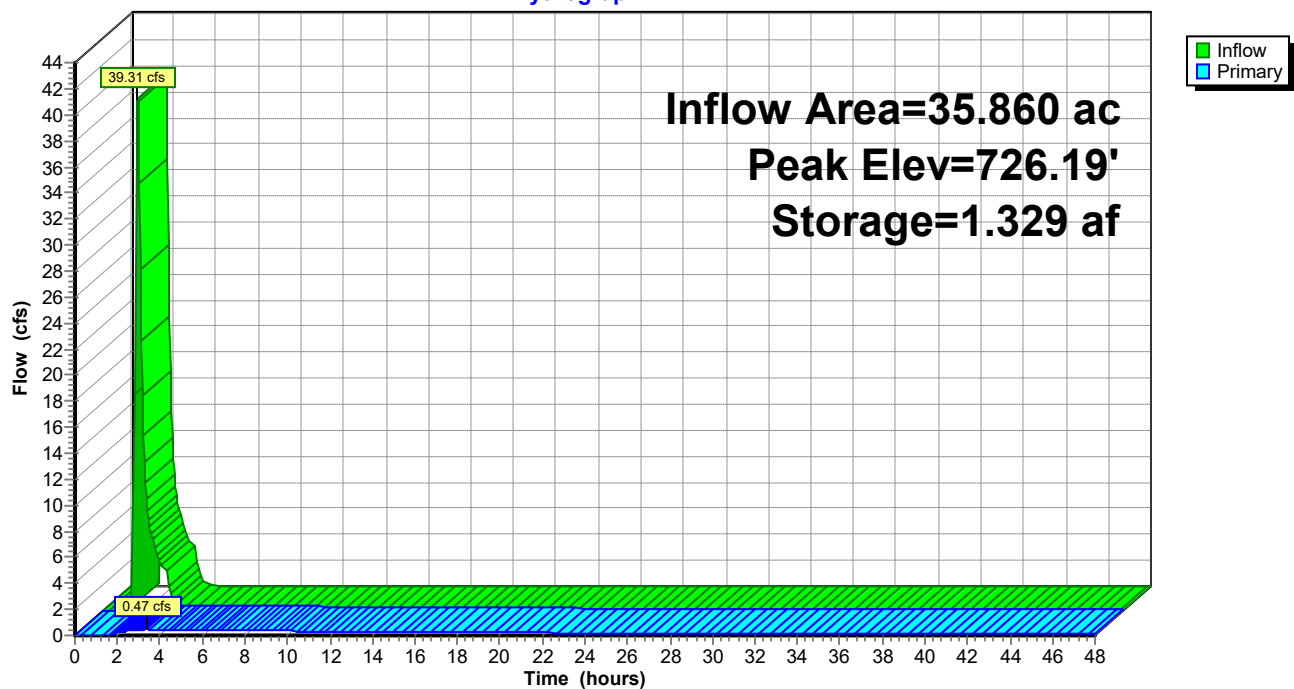
Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.47 cfs @ 3.37 hrs HW=726.19' (Free Discharge)
 1=Orifice/Grate (Orifice Controls 0.47 cfs @ 1.99 fps)
 2=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 0.44" for 2-YR, 3-HR event
 Inflow = 18.82 cfs @ 1.62 hrs, Volume= 0.515 af
 Outflow = 12.60 cfs @ 1.71 hrs, Volume= 0.515 af, Atten= 33%, Lag= 5.1 min
 Primary = 12.60 cfs @ 1.71 hrs, Volume= 0.515 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.57' @ 1.71 hrs Surf.Area= 12,279 sf Storage= 5,001 cf

Plug-Flow detention time= 9.7 min calculated for 0.515 af (100% of inflow)
 Center-of-Mass det. time= 9.3 min (125.5 - 116.3)

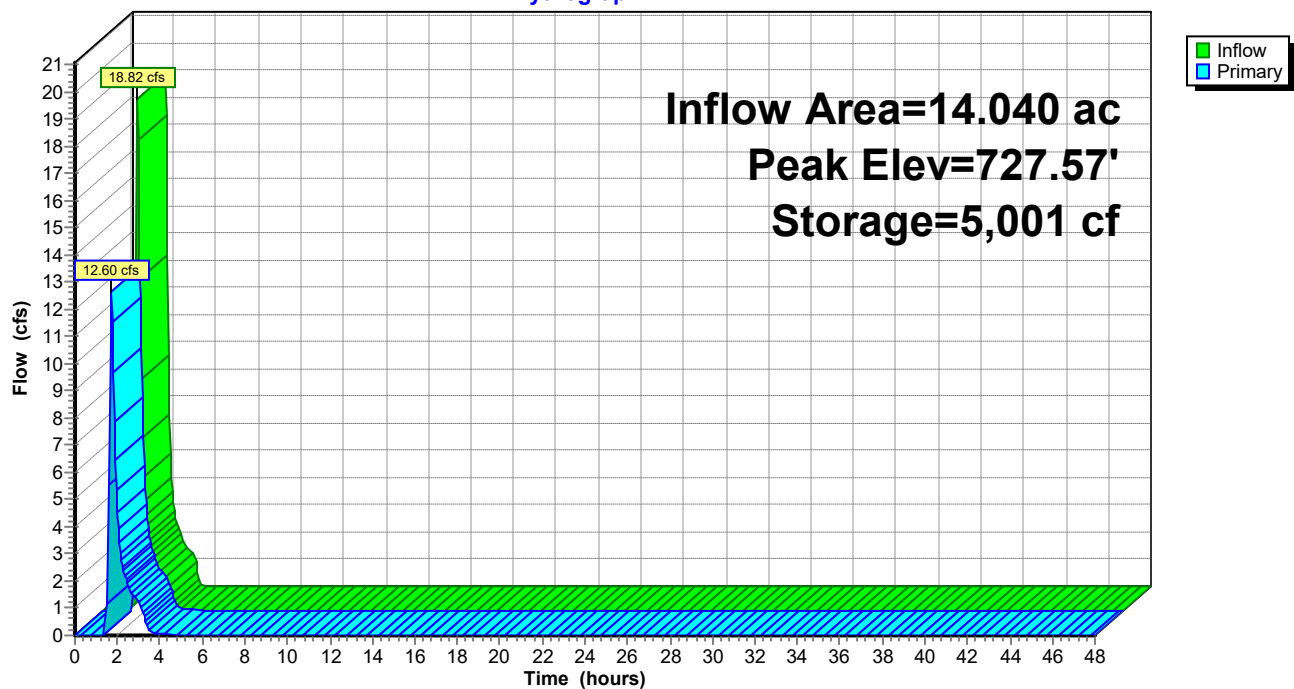
Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=12.42 cfs @ 1.71 hrs HW=727.56' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 12.42 cfs @ 3.89 fps)

Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Pond *Type II 24-hr scaled to 6.00 hrs 2-YR, 6-HR Rainfall=1.69"*

Prepared by Kimley-Horn

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=0.62"
Tc=10.0 min CN=86 Runoff=23.20 cfs 0.728 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=0.67"
Tc=10.0 min CN=87 Runoff=39.38 cfs 1.220 af

Reach 15R: Swale Avg. Flow Depth=0.65' Max Vel=4.19 fps Inflow=16.39 cfs 0.728 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=15.93 cfs 0.728 af

Pond 7P: Wet Pond Peak Elev=726.30' Storage=1.779 af Inflow=50.13 cfs 1.947 af
Outflow=0.80 cfs 1.284 af

Pond 11P: EDDB Peak Elev=727.65' Storage=6,113 cf Inflow=23.20 cfs 0.728 af
Outflow=16.39 cfs 0.728 af

Total Runoff Area = 35.860 ac Runoff Volume = 1.947 af Average Runoff Depth = 0.65"
89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Summary for Subcatchment 12S: West

Runoff = 23.20 cfs @ 3.10 hrs, Volume= 0.728 af, Depth= 0.62"

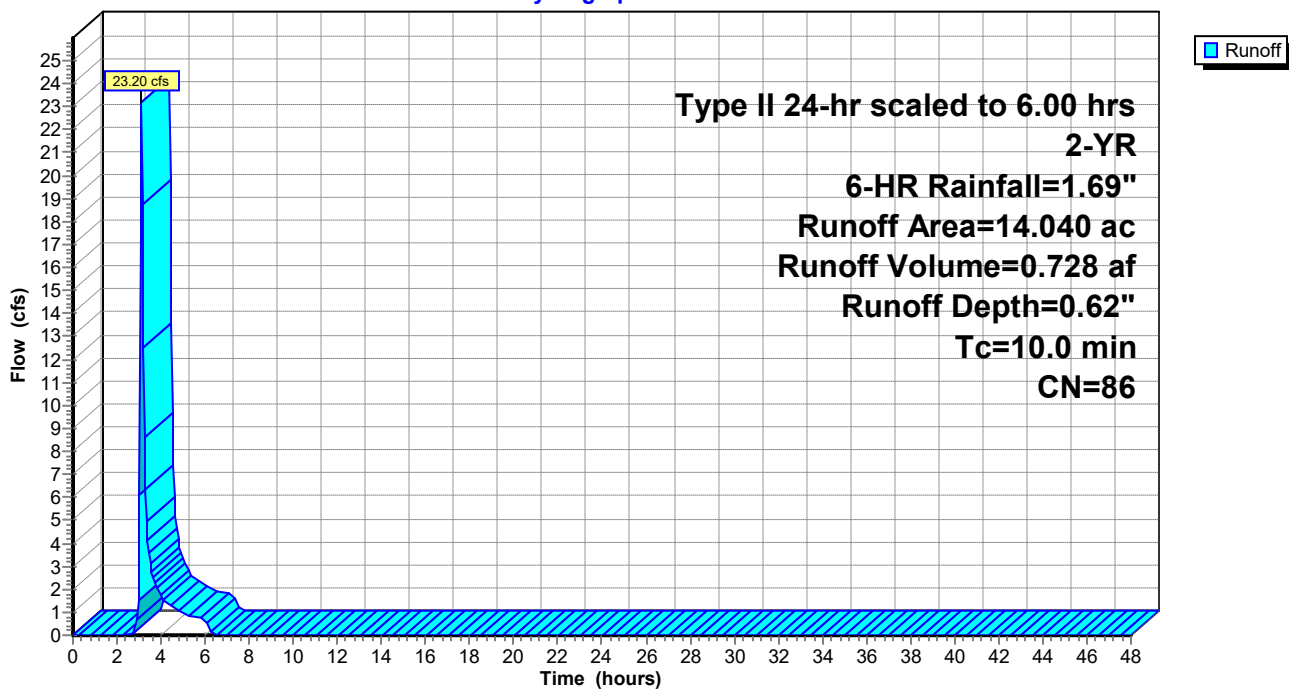
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 6.00 hrs 2-YR, 6-HR Rainfall=1.69"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 39.38 cfs @ 3.10 hrs, Volume= 1.220 af, Depth= 0.67"

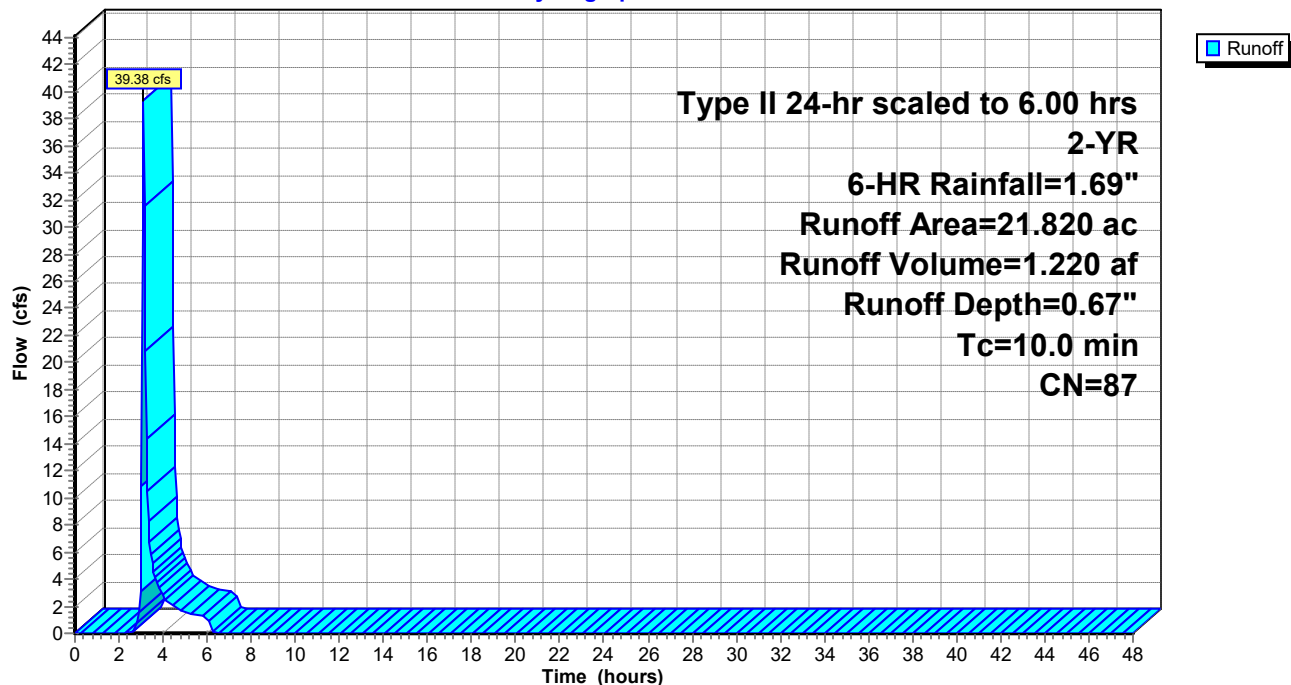
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 6.00 hrs 2-YR, 6-HR Rainfall=1.69"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



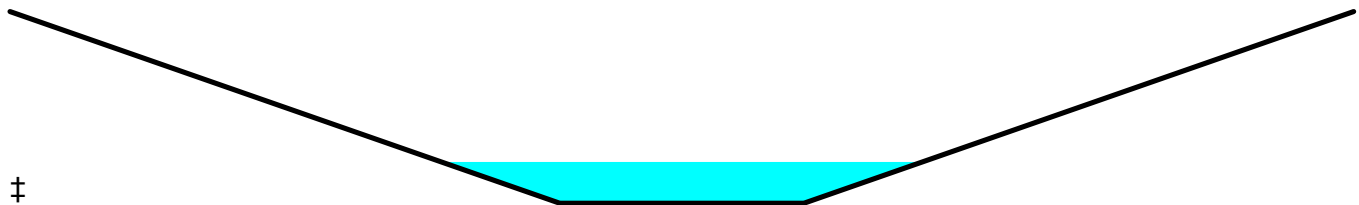
Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 0.62" for 2-YR, 6-HR event
 Inflow = 16.39 cfs @ 3.17 hrs, Volume= 0.728 af
 Outflow = 15.93 cfs @ 3.19 hrs, Volume= 0.728 af, Atten= 3%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.19 fps, Min. Travel Time= 0.4 min
 Avg. Velocity= 1.25 fps, Avg. Travel Time= 1.5 min

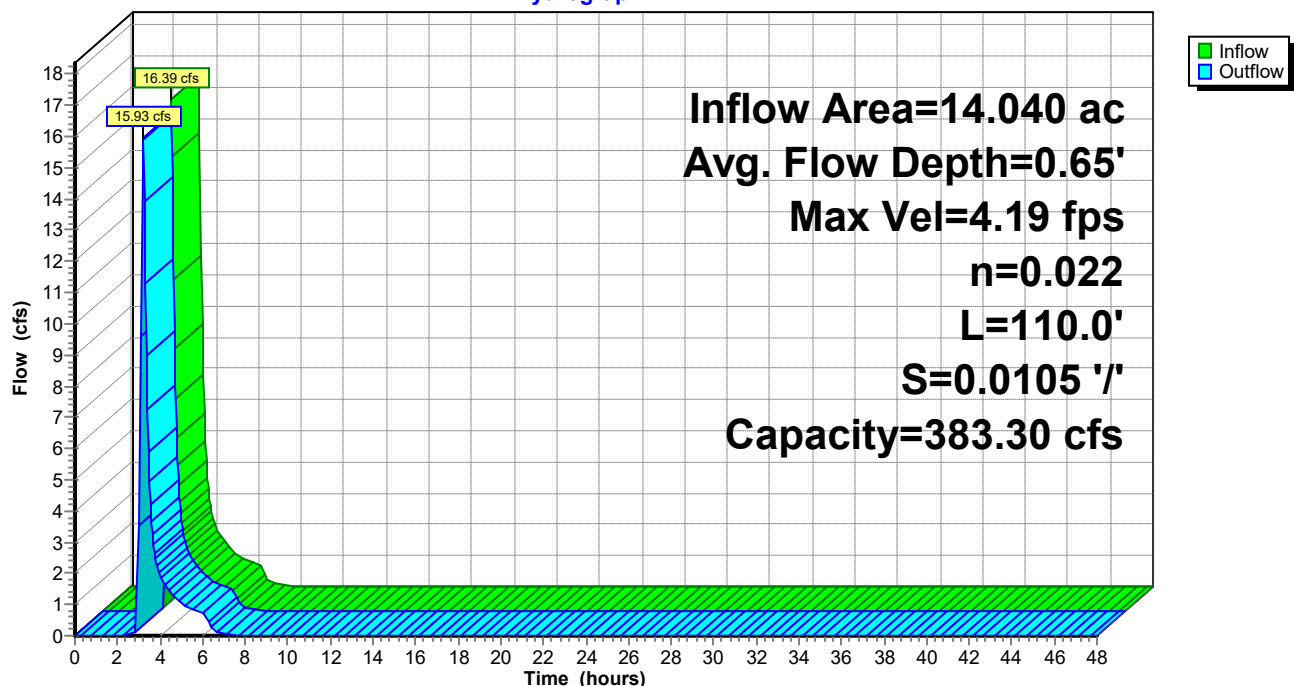
Peak Storage= 422 cf @ 3.18 hrs
 Average Depth at Peak Storage= 0.65' , Surface Width= 7.88'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 ' ' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 ' '
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[62] Hint: Exceeded Reach 15R OUTLET depth by 0.43' @ 7.45 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 0.65" for 2-YR, 6-HR event
 Inflow = 50.13 cfs @ 3.12 hrs, Volume= 1.947 af
 Outflow = 0.80 cfs @ 6.22 hrs, Volume= 1.284 af, Atten= 98%, Lag= 185.9 min
 Primary = 0.80 cfs @ 6.22 hrs, Volume= 1.284 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 726.30' @ 6.22 hrs Surf.Area= 3.956 ac Storage= 1.779 af

Plug-Flow detention time= 939.9 min calculated for 1.283 af (66% of inflow)
 Center-of-Mass det. time= 911.3 min (1,135.2 - 223.8)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

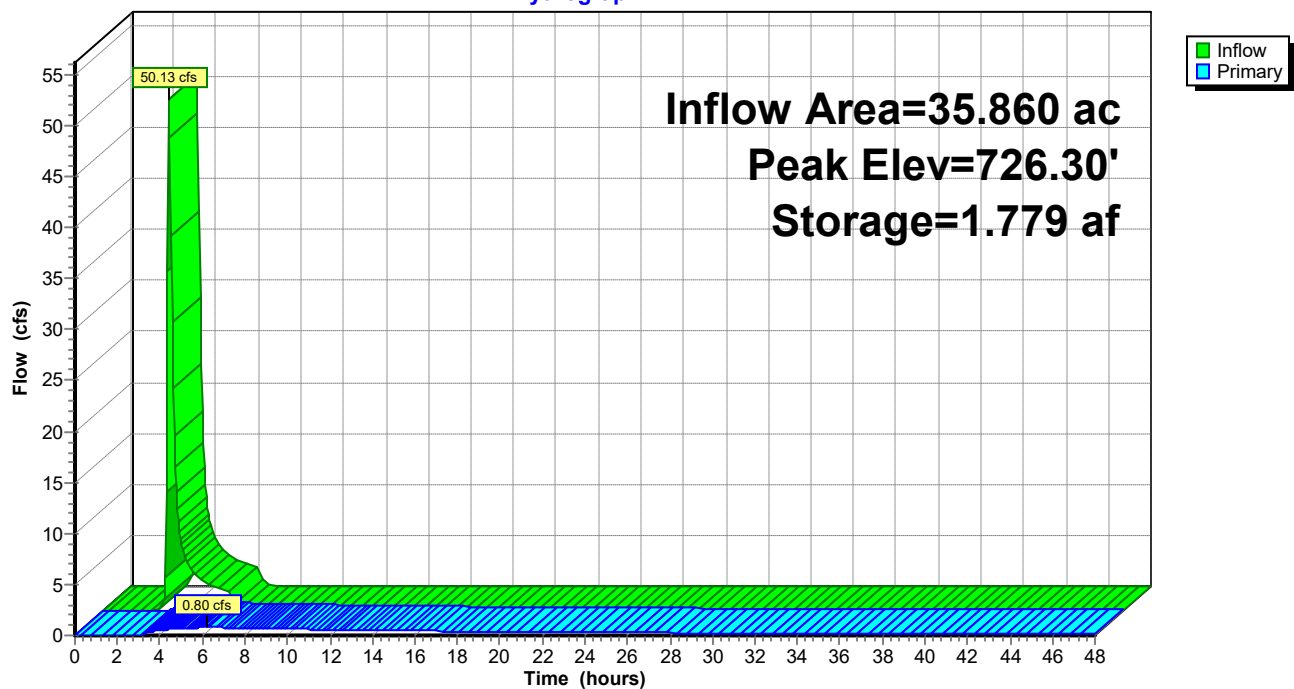
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.80 cfs @ 6.22 hrs HW=726.30' (Free Discharge)

↑ **1=Orifice/Grate** (Orifice Controls 0.80 cfs @ 2.30 fps)
 — **2=Orifice/Grate** (Controls 0.00 cfs)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 0.62" for 2-YR, 6-HR event
 Inflow = 23.20 cfs @ 3.10 hrs, Volume= 0.728 af
 Outflow = 16.39 cfs @ 3.17 hrs, Volume= 0.728 af, Atten= 29%, Lag= 4.2 min
 Primary = 16.39 cfs @ 3.17 hrs, Volume= 0.728 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 727.65' @ 3.17 hrs Surf.Area= 13,335 sf Storage= 6,113 cf

Plug-Flow detention time= 9.5 min calculated for 0.727 af (100% of inflow)

Center-of-Mass det. time= 9.6 min (230.2 - 220.6)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

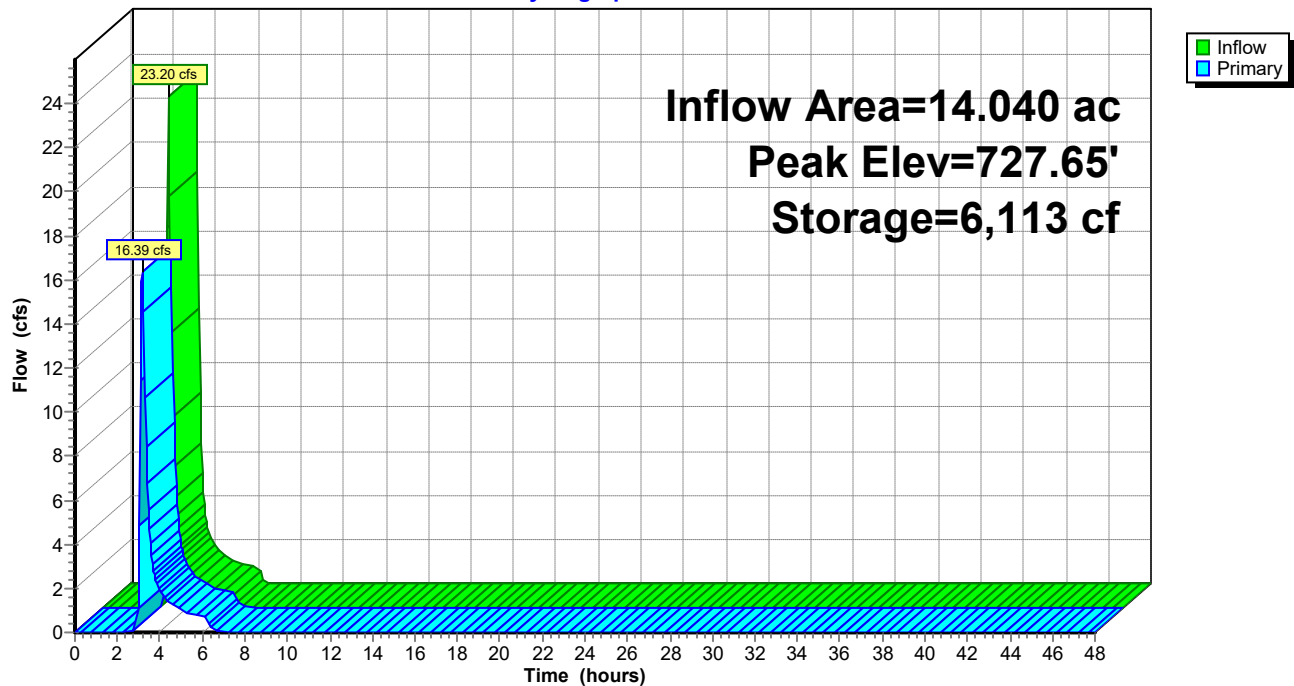
Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=15.81 cfs @ 3.17 hrs HW=727.64' (Free Discharge)

↑ **1=Channel/Reach** (Channel Controls 15.81 cfs @ 4.18 fps)

Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Pond Type II 24-hr scaled to 1.00 hrs 10-YR, 1-HR Rainfall=2.02"

Prepared by Kimley-Horn

Printed 9/9/2021

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=0.86"
Tc=10.0 min CN=86 Runoff=50.15 cfs 1.011 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=0.92"
Tc=10.0 min CN=87 Runoff=83.70 cfs 1.675 af

Reach 15R: Swale Avg. Flow Depth=1.00' Max Vel=5.32 fps Inflow=37.22 cfs 1.011 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=36.77 cfs 1.011 af

Pond 7P: Wet Pond Peak Elev=726.51' Storage=2.591 af Inflow=110.26 cfs 2.686 af
Outflow=1.52 cfs 1.979 af

Pond 11P: EDDB Peak Elev=728.00' Storage=11,455 cf Inflow=50.15 cfs 1.011 af
Outflow=37.22 cfs 1.011 af

Total Runoff Area = 35.860 ac Runoff Volume = 2.686 af Average Runoff Depth = 0.90"
89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Summary for Subcatchment 12S: West

Runoff = 50.15 cfs @ 0.64 hrs, Volume= 1.011 af, Depth= 0.86"

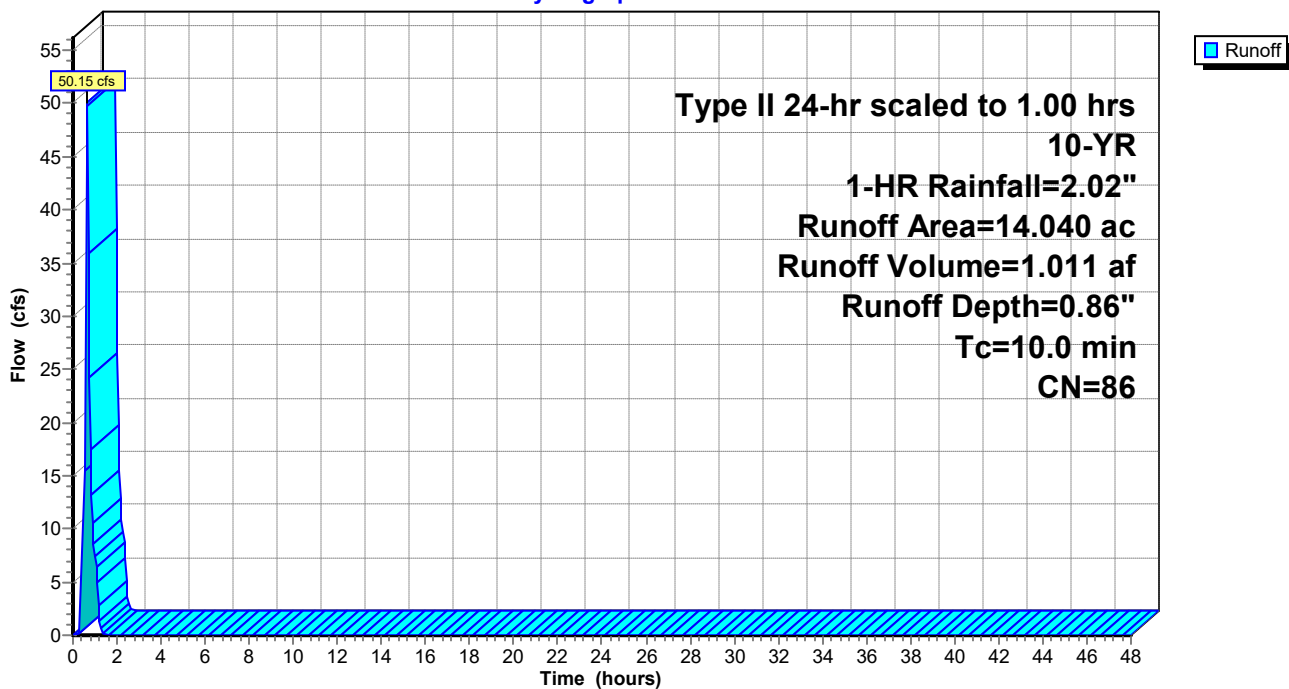
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 1.00 hrs 10-YR, 1-HR Rainfall=2.02"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 83.70 cfs @ 0.64 hrs, Volume= 1.675 af, Depth= 0.92"

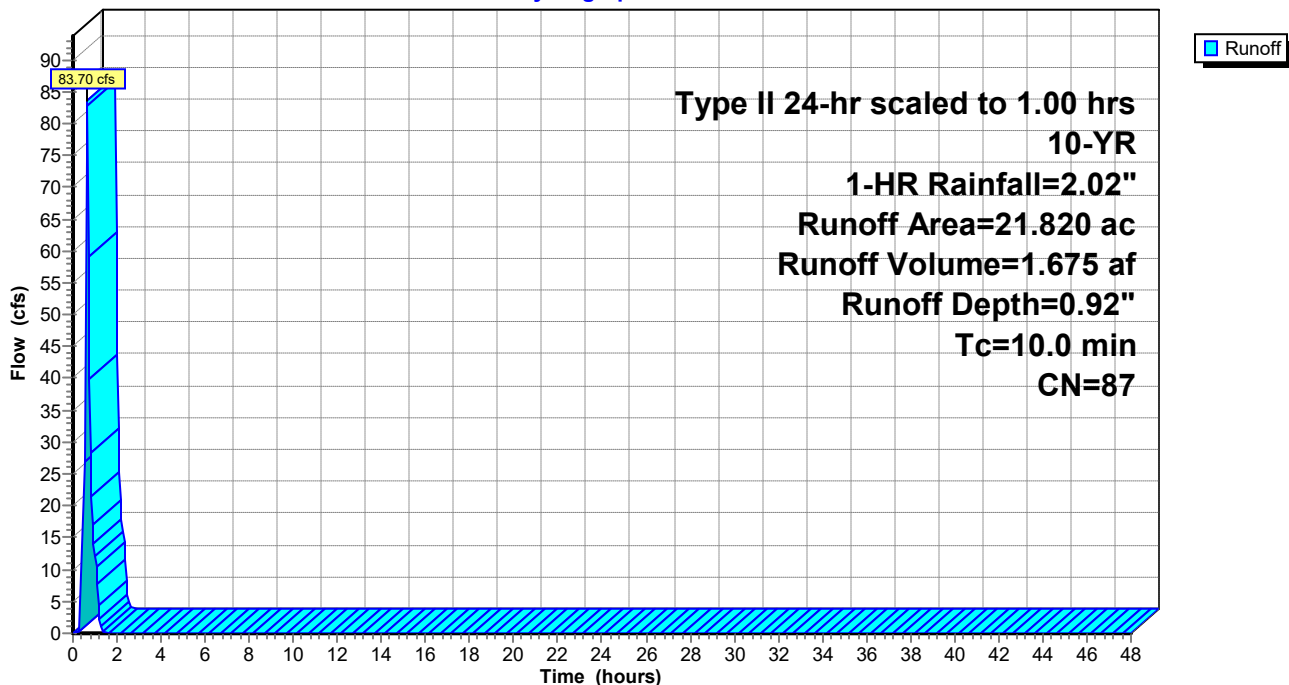
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 1.00 hrs 10-YR, 1-HR Rainfall=2.02"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 0.86" for 10-YR, 1-HR event
 Inflow = 37.22 cfs @ 0.71 hrs, Volume= 1.011 af
 Outflow = 36.77 cfs @ 0.72 hrs, Volume= 1.011 af, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.32 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 1.16 fps, Avg. Travel Time= 1.6 min

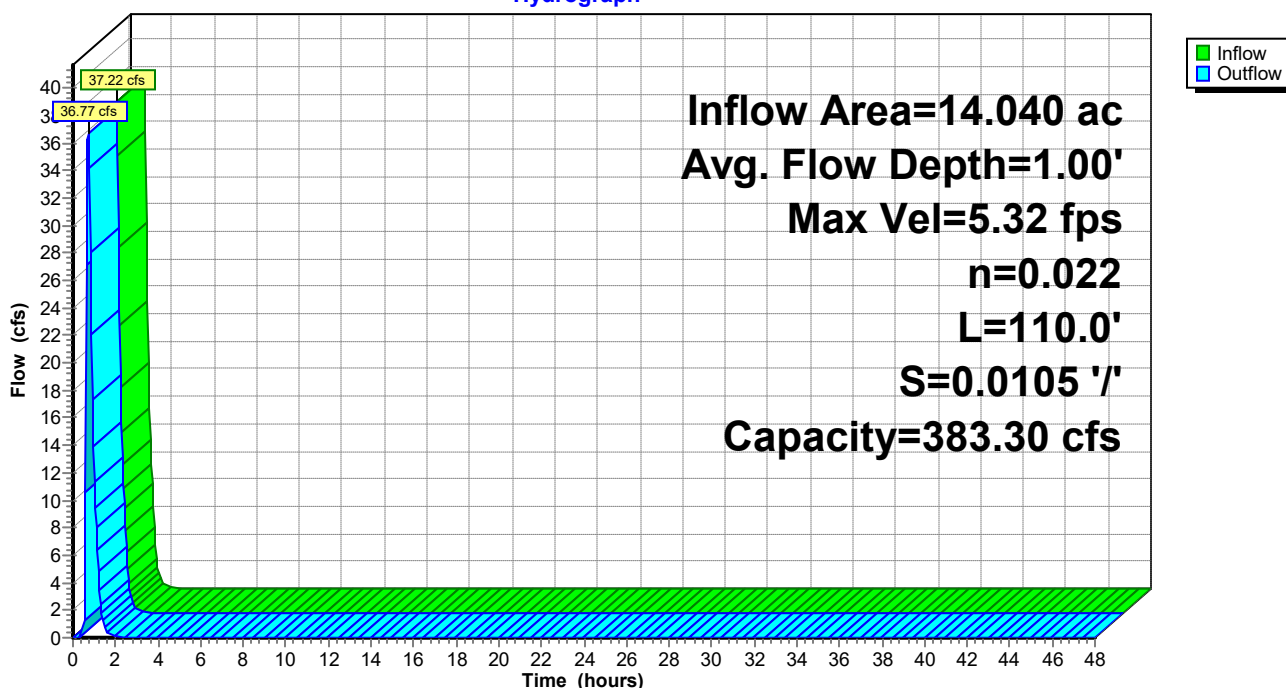
Peak Storage= 771 cf @ 0.71 hrs
 Average Depth at Peak Storage= 1.00' , Surface Width= 10.01'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[62] Hint: Exceeded Reach 15R OUTLET depth by 0.62' @ 2.40 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 0.90" for 10-YR, 1-HR event
 Inflow = 110.26 cfs @ 0.66 hrs, Volume= 2.686 af
 Outflow = 1.52 cfs @ 1.39 hrs, Volume= 1.979 af, Atten= 99%, Lag= 44.0 min
 Primary = 1.52 cfs @ 1.39 hrs, Volume= 1.979 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 726.51' @ 1.39 hrs Surf.Area= 3.997 ac Storage= 2.591 af

Plug-Flow detention time= 877.3 min calculated for 1.979 af (74% of inflow)
 Center-of-Mass det. time= 871.8 min (918.6 - 46.8)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

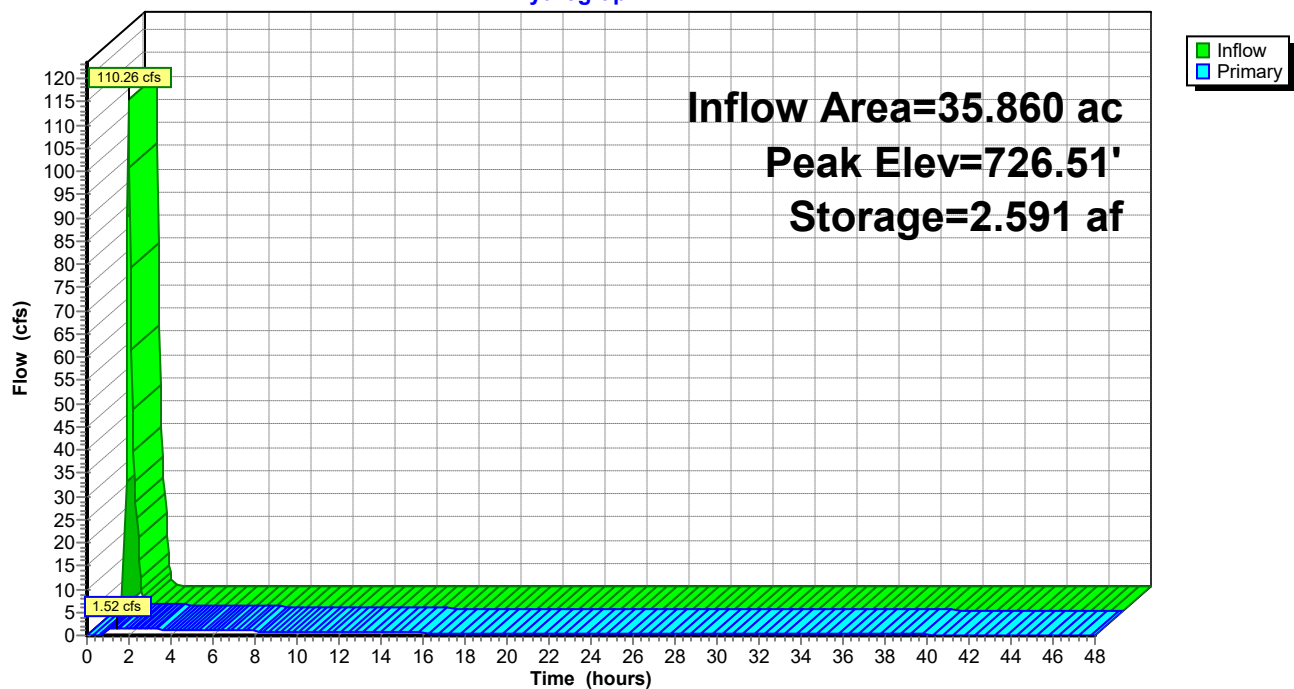
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.52 cfs @ 1.39 hrs HW=726.51' (Free Discharge)

1=Orifice/Grate (Orifice Controls 1.52 cfs @ 2.76 fps)
 2=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 0.86" for 10-YR, 1-HR event
 Inflow = 50.15 cfs @ 0.64 hrs, Volume= 1.011 af
 Outflow = 37.22 cfs @ 0.71 hrs, Volume= 1.011 af, Atten= 26%, Lag= 4.1 min
 Primary = 37.22 cfs @ 0.71 hrs, Volume= 1.011 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.00' @ 0.71 hrs Surf.Area= 17,545 sf Storage= 11,455 cf

Plug-Flow detention time= 6.3 min calculated for 1.010 af (100% of inflow)
 Center-of-Mass det. time= 6.4 min (50.6 - 44.2)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

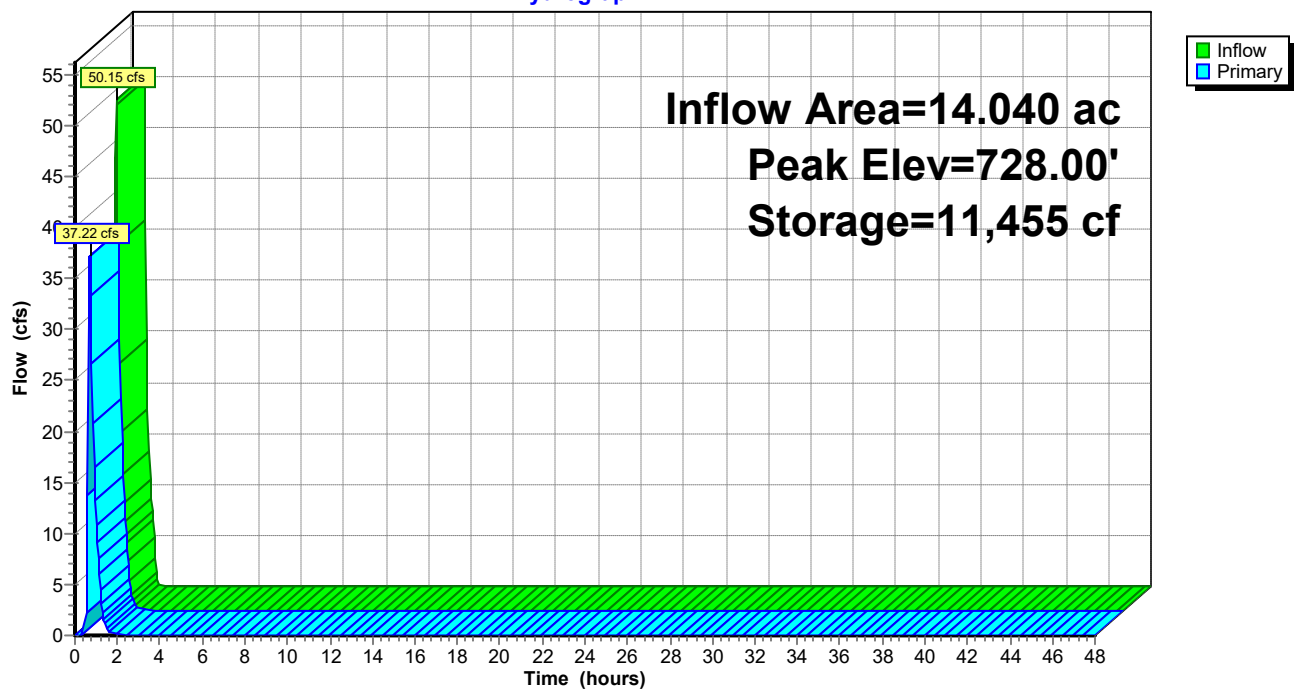
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=36.60 cfs @ 0.71 hrs HW=727.99' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 36.60 cfs @ 5.30 fps)

Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Po *Type II 24-hr scaled to 12.00 hrs 10-YR, 12-HR Rainfall=3.53"*

Prepared by Kimley-Horn

Printed 9/9/2021

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

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

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

Subcatchment 12S: West

Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=2.12"
Tc=10.0 min CN=86 Runoff=64.87 cfs 2.486 af

Subcatchment 13S: East

Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=2.21"
Tc=10.0 min CN=87 Runoff=104.67 cfs 4.017 af

Reach 15R: Swale

Avg. Flow Depth=1.19' Max Vel=5.82 fps Inflow=52.84 cfs 2.486 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=51.62 cfs 2.486 af

Pond 7P: Wet Pond

Peak Elev=727.10' Storage=4.994 af Inflow=146.29 cfs 6.504 af
Outflow=3.28 cfs 5.383 af

Pond 11P: EDDB

Peak Elev=728.19' Storage=15,074 cf Inflow=64.87 cfs 2.486 af
Outflow=52.84 cfs 2.486 af

Total Runoff Area = 35.860 ac Runoff Volume = 6.504 af Average Runoff Depth = 2.18"
89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Summary for Subcatchment 12S: West

Runoff = 64.87 cfs @ 6.06 hrs, Volume= 2.486 af, Depth= 2.12"

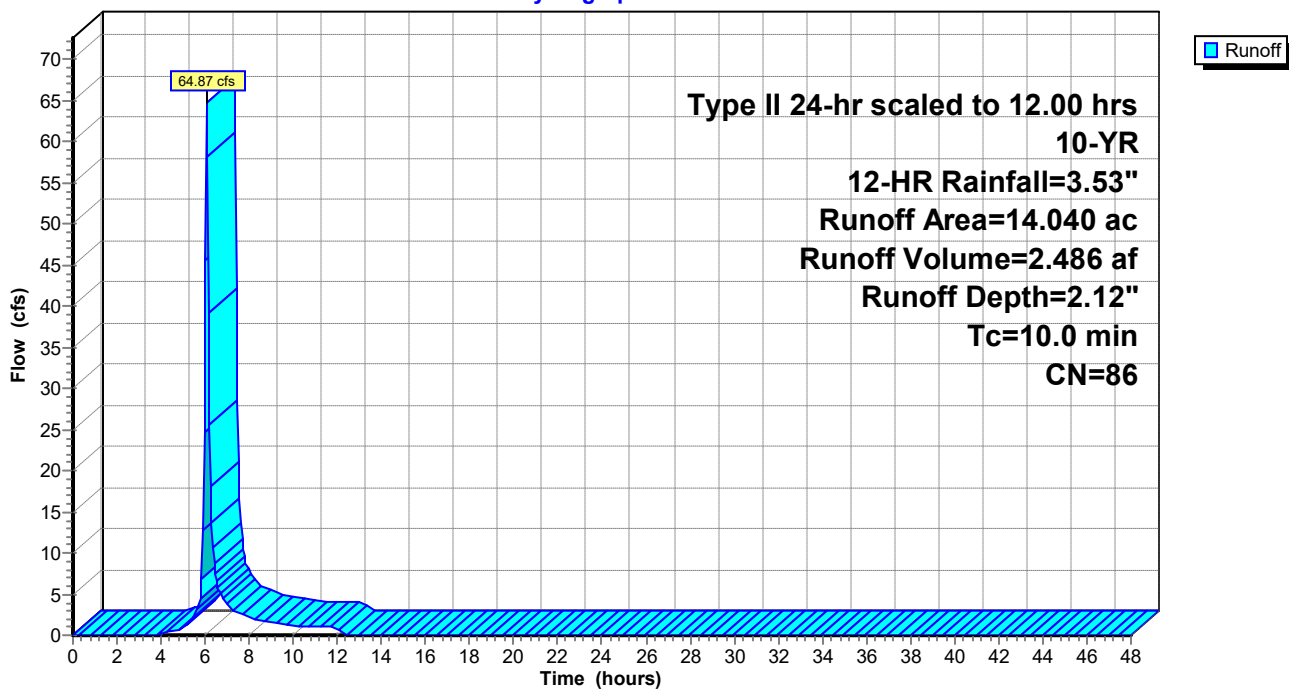
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 12.00 hrs 10-YR, 12-HR Rainfall=3.53"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 104.67 cfs @ 6.06 hrs, Volume= 4.017 af, Depth= 2.21"

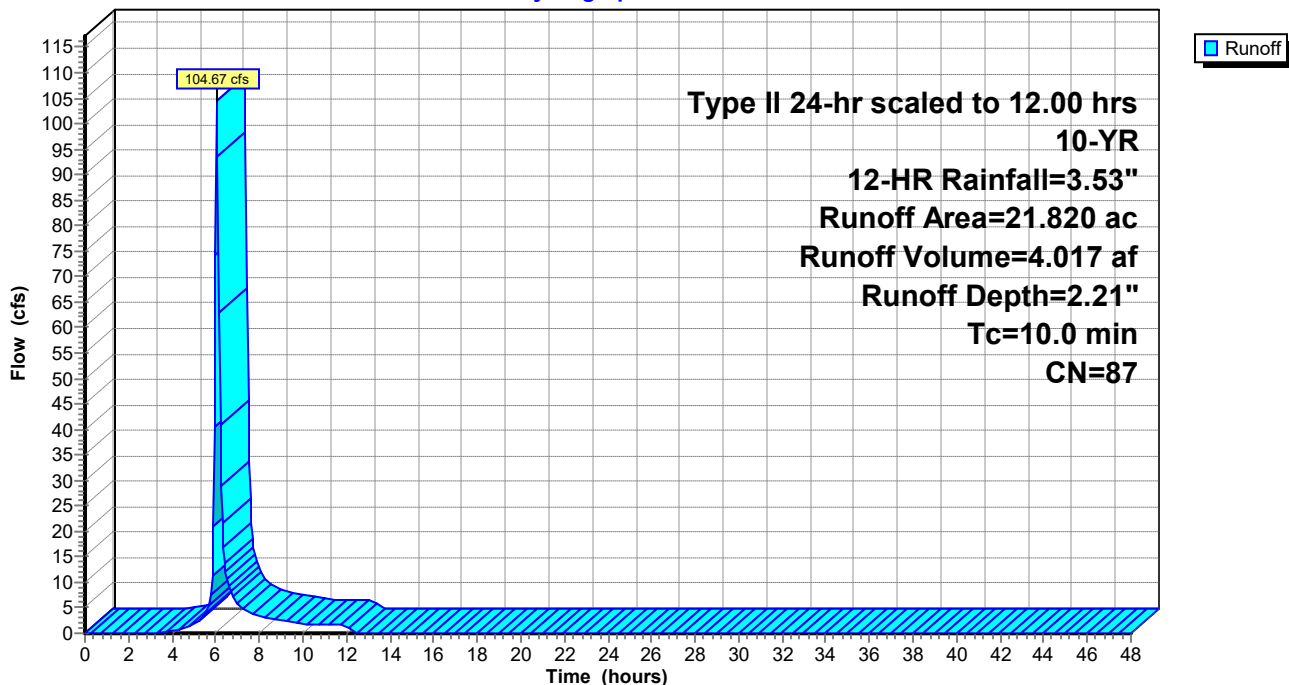
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 12.00 hrs 10-YR, 12-HR Rainfall=3.53"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 2.12" for 10-YR, 12-HR event
 Inflow = 52.84 cfs @ 6.12 hrs, Volume= 2.486 af
 Outflow = 51.62 cfs @ 6.13 hrs, Volume= 2.486 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.82 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.59 fps, Avg. Travel Time= 1.2 min

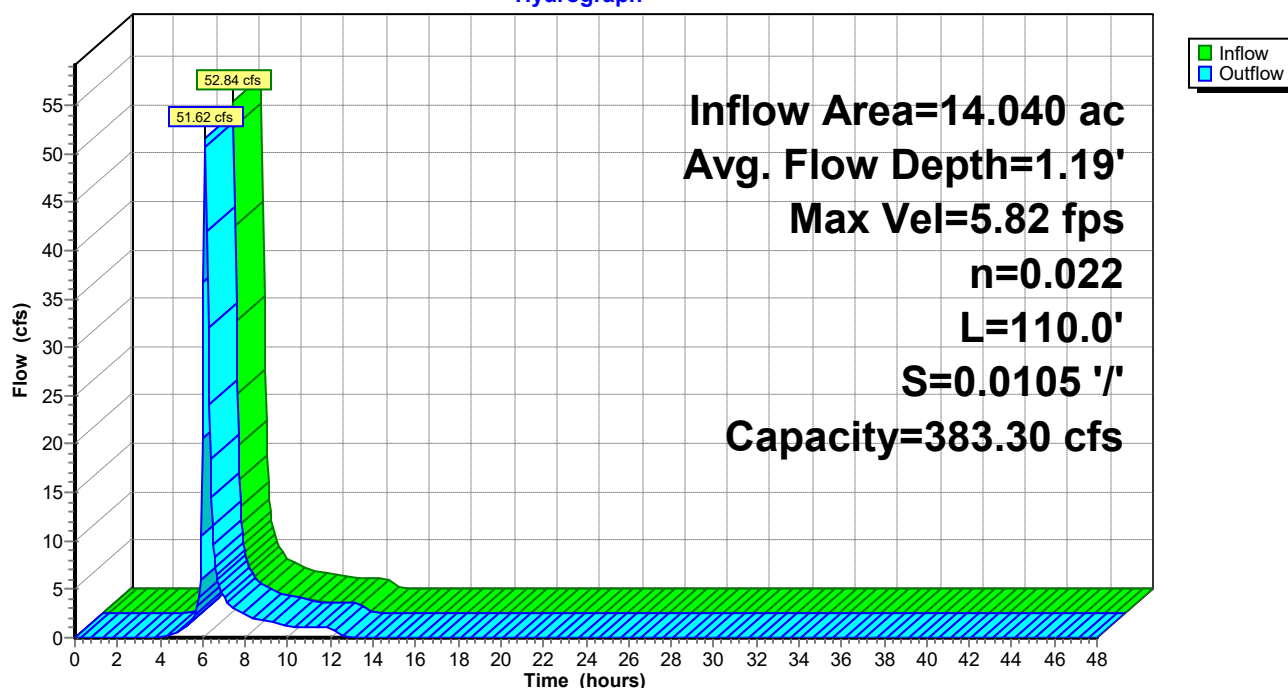
Peak Storage= 992 cf @ 6.12 hrs
 Average Depth at Peak Storage= 1.19' , Surface Width= 11.15'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 0.01' @ 12.70 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 2.18" for 10-YR, 12-HR event
 Inflow = 146.29 cfs @ 6.08 hrs, Volume= 6.504 af
 Outflow = 3.28 cfs @ 9.91 hrs, Volume= 5.383 af, Atten= 98%, Lag= 230.0 min
 Primary = 3.28 cfs @ 9.91 hrs, Volume= 5.383 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.10' @ 9.91 hrs Surf.Area= 4.118 ac Storage= 4.994 af

Plug-Flow detention time= 778.7 min calculated for 5.383 af (83% of inflow)
 Center-of-Mass det. time= 740.7 min (1,157.1 - 416.4)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

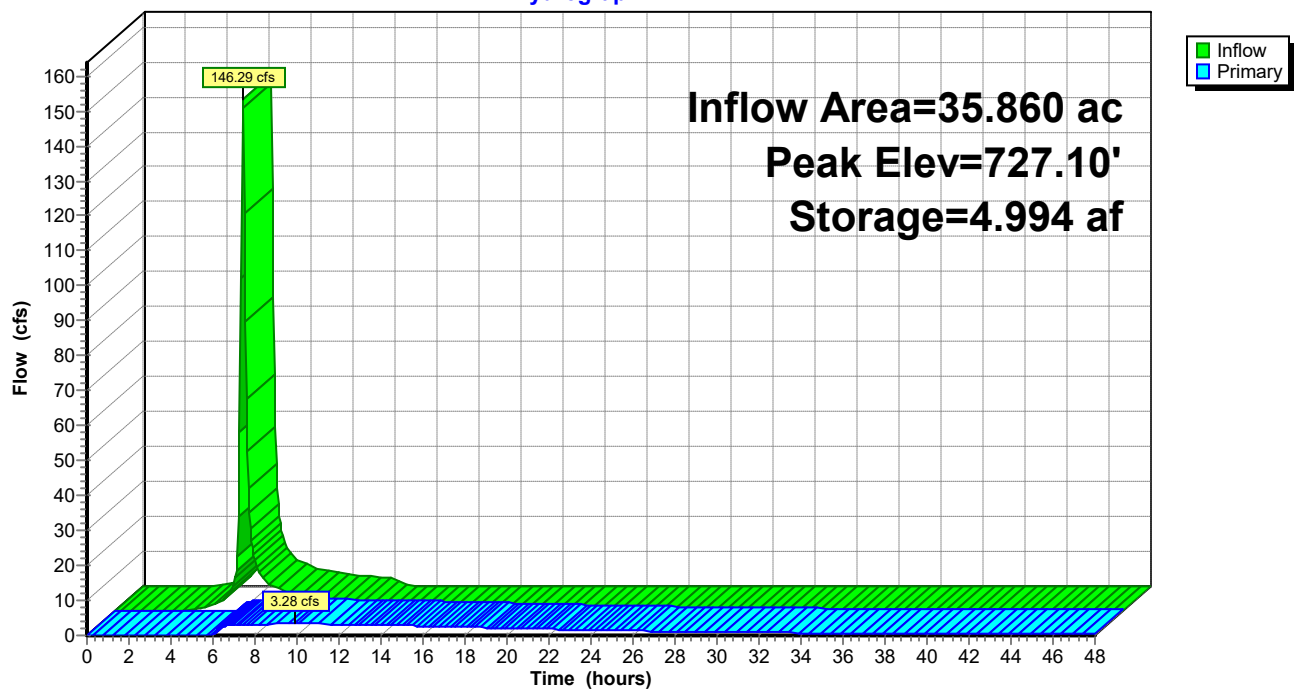
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.28 cfs @ 9.91 hrs HW=727.10' (Free Discharge)

1=Orifice/Grate (Orifice Controls 3.28 cfs @ 4.17 fps)
 2=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: Eddb

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 2.12" for 10-YR, 12-HR event
 Inflow = 64.87 cfs @ 6.06 hrs, Volume= 2.486 af
 Outflow = 52.84 cfs @ 6.12 hrs, Volume= 2.486 af, Atten= 19%, Lag= 3.3 min
 Primary = 52.84 cfs @ 6.12 hrs, Volume= 2.486 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.19' @ 6.12 hrs Surf.Area= 20,009 sf Storage= 15,074 cf

Plug-Flow detention time= 8.0 min calculated for 2.484 af (100% of inflow)
 Center-of-Mass det. time= 8.0 min (422.2 - 414.1)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

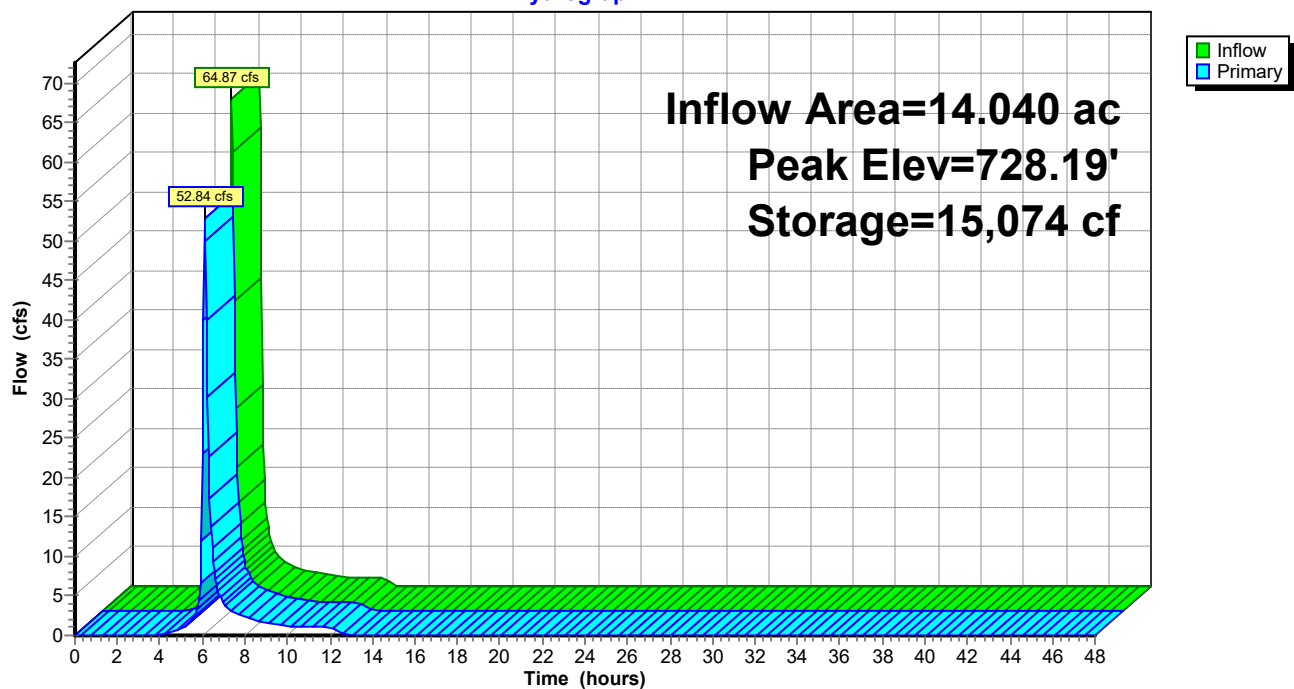
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=51.24 cfs @ 6.12 hrs HW=728.17' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 51.24 cfs @ 5.81 fps)

Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Pon *Type II 24-hr scaled to 2.00 hrs 10-YR, 2-HR Rainfall=2.38"*

Prepared by Kimley-Horn

Printed 9/9/2021

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

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

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

Subcatchment 12S: West

Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=1.15"

Tc=10.0 min CN=86 Runoff=58.95 cfs 1.341 af

Subcatchment 13S: East

Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=1.21"

Tc=10.0 min CN=87 Runoff=97.49 cfs 2.203 af

Reach 15R: Swale

Avg. Flow Depth=1.08' Max Vel=5.56 fps Inflow=43.25 cfs 1.341 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=42.92 cfs 1.341 af

Pond 7P: Wet Pond

Peak Elev=726.70' Storage=3.348 af Inflow=126.53 cfs 3.544 af

Outflow=2.23 cfs 2.760 af

Pond 11P: EDDB

Peak Elev=728.08' Storage=12,876 cf Inflow=58.95 cfs 1.341 af

Outflow=43.25 cfs 1.341 af

Total Runoff Area = 35.860 ac Runoff Volume = 3.544 af Average Runoff Depth = 1.19"

89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Summary for Subcatchment 12S: West

Runoff = 58.95 cfs @ 1.12 hrs, Volume= 1.341 af, Depth= 1.15"

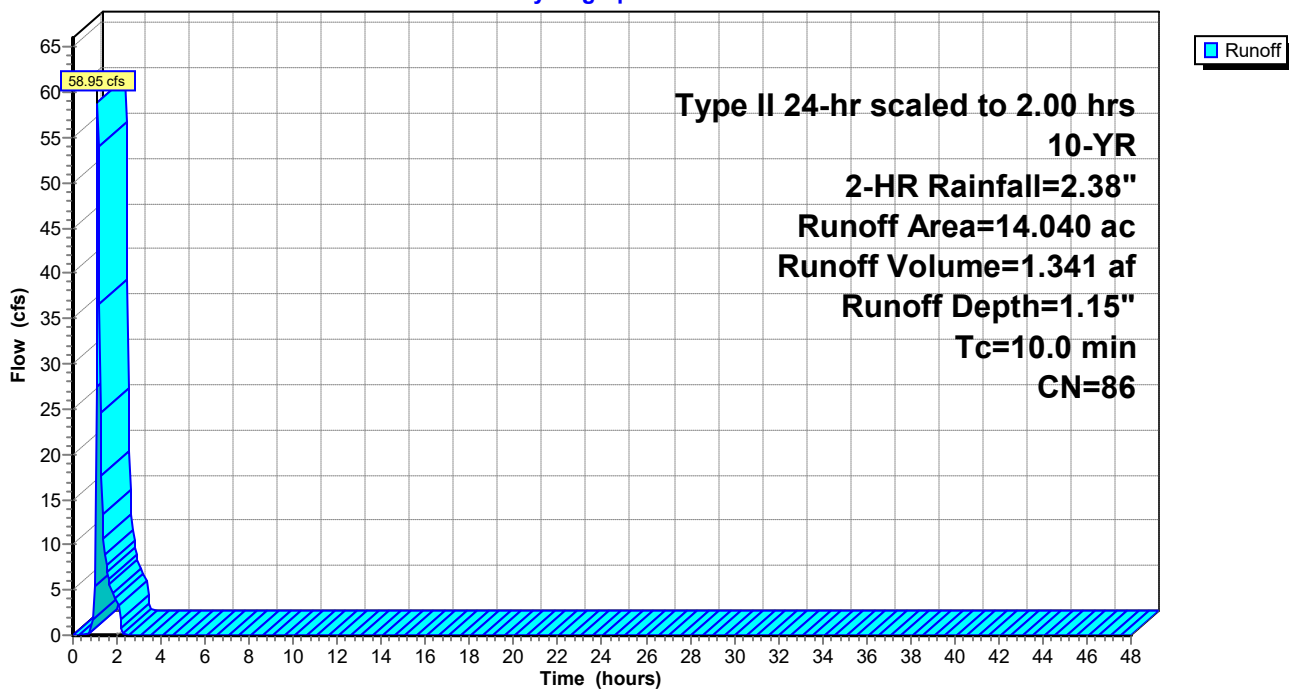
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 2.00 hrs 10-YR, 2-HR Rainfall=2.38"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 97.49 cfs @ 1.12 hrs, Volume= 2.203 af, Depth= 1.21"

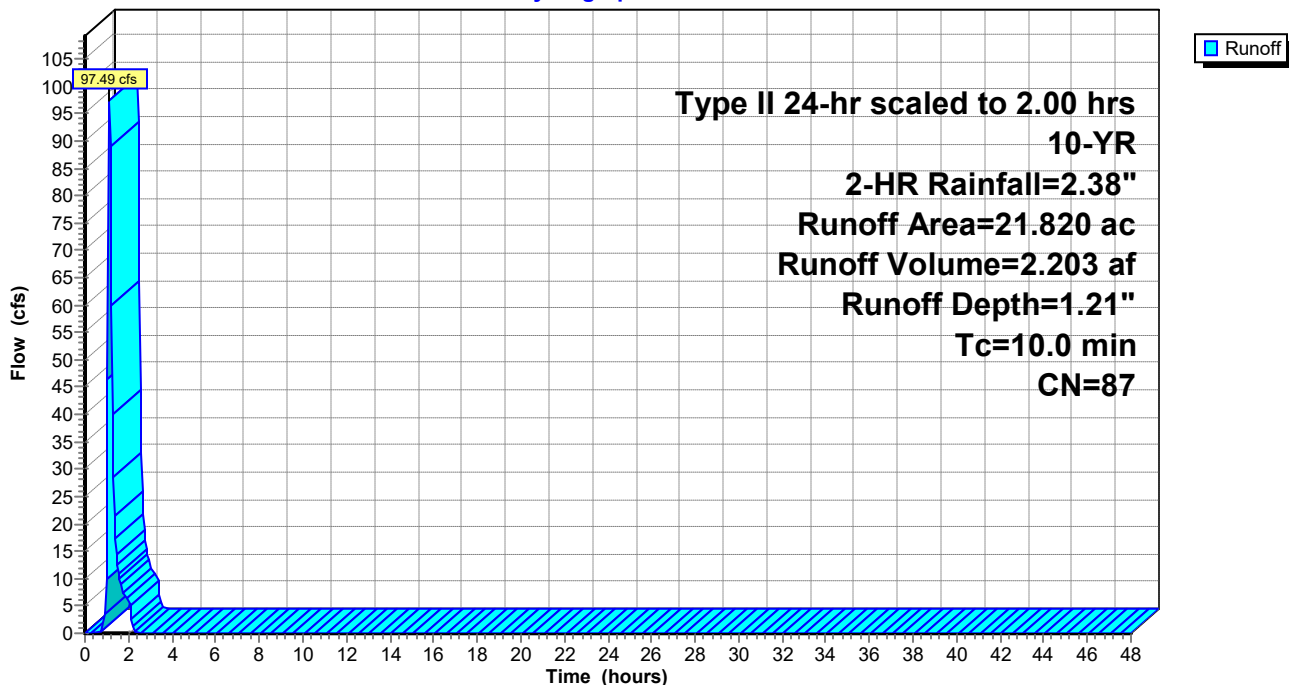
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 2.00 hrs 10-YR, 2-HR Rainfall=2.38"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 1.15" for 10-YR, 2-HR event
 Inflow = 43.25 cfs @ 1.19 hrs, Volume= 1.341 af
 Outflow = 42.92 cfs @ 1.20 hrs, Volume= 1.341 af, Atten= 1%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.56 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.30 fps, Avg. Travel Time= 1.4 min

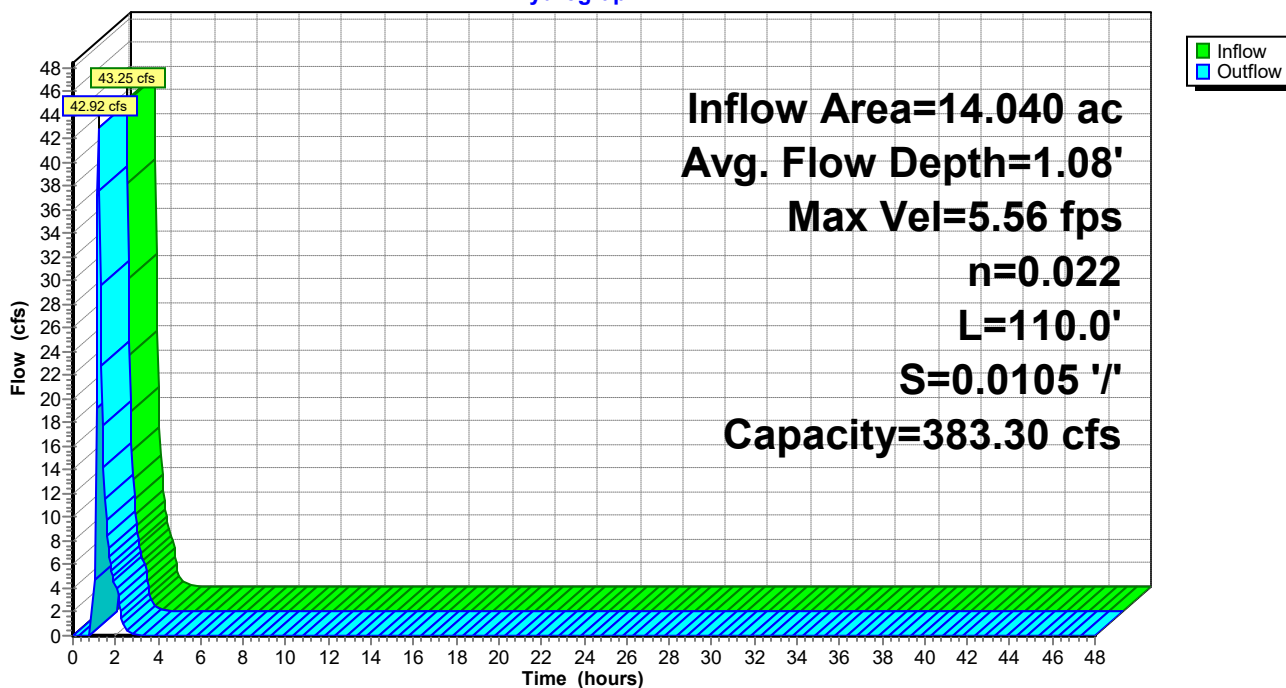
Peak Storage= 860 cf @ 1.19 hrs
 Average Depth at Peak Storage= 1.08' , Surface Width= 10.48'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[62] Hint: Exceeded Reach 15R OUTLET depth by 0.79' @ 2.95 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 1.19" for 10-YR, 2-HR event
 Inflow = 126.53 cfs @ 1.14 hrs, Volume= 3.544 af
 Outflow = 2.23 cfs @ 2.28 hrs, Volume= 2.760 af, Atten= 98%, Lag= 67.9 min
 Primary = 2.23 cfs @ 2.28 hrs, Volume= 2.760 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 726.70' @ 2.28 hrs Surf.Area= 4.036 ac Storage= 3.348 af

Plug-Flow detention time= 824.1 min calculated for 2.760 af (78% of inflow)
 Center-of-Mass det. time= 815.9 min (896.7 - 80.8)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

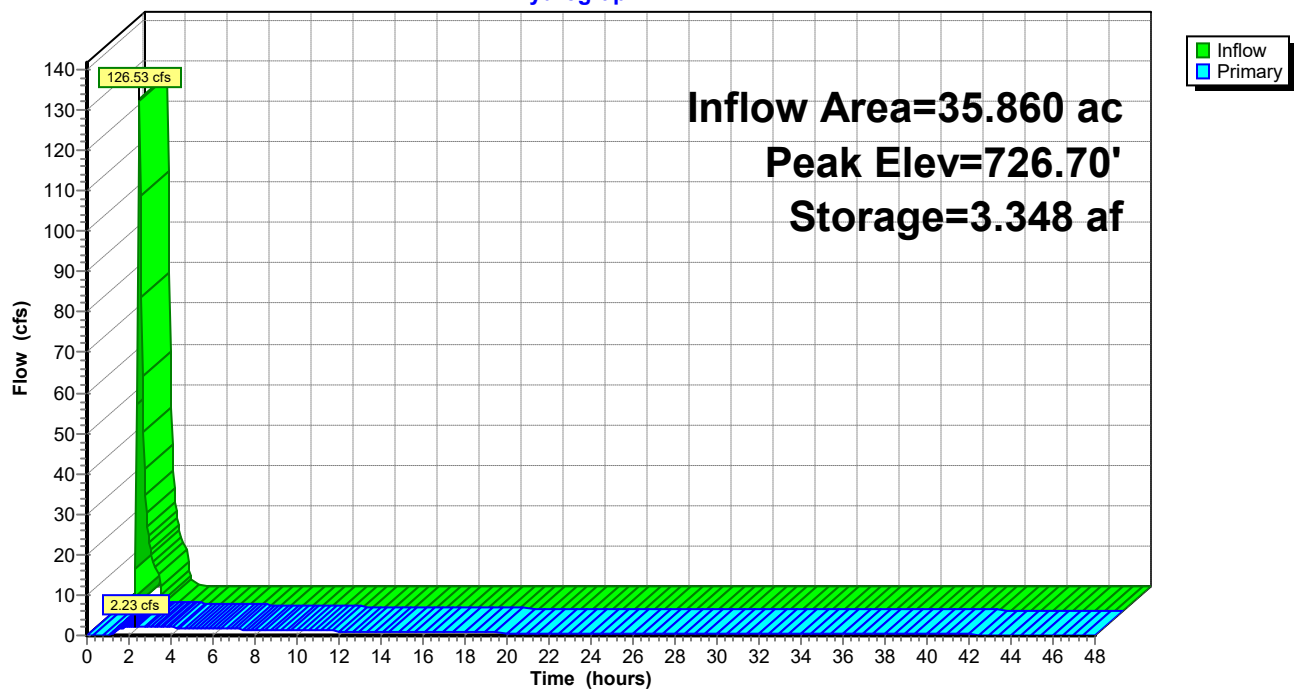
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.23 cfs @ 2.28 hrs HW=726.70' (Free Discharge)

1=Orifice/Grate (Orifice Controls 2.23 cfs @ 3.13 fps)
 2=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 1.15" for 10-YR, 2-HR event
 Inflow = 58.95 cfs @ 1.12 hrs, Volume= 1.341 af
 Outflow = 43.25 cfs @ 1.19 hrs, Volume= 1.341 af, Atten= 27%, Lag= 4.1 min
 Primary = 43.25 cfs @ 1.19 hrs, Volume= 1.341 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.08' @ 1.19 hrs Surf.Area= 18,551 sf Storage= 12,876 cf

Plug-Flow detention time= 6.9 min calculated for 1.341 af (100% of inflow)
 Center-of-Mass det. time= 6.5 min (84.7 - 78.2)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

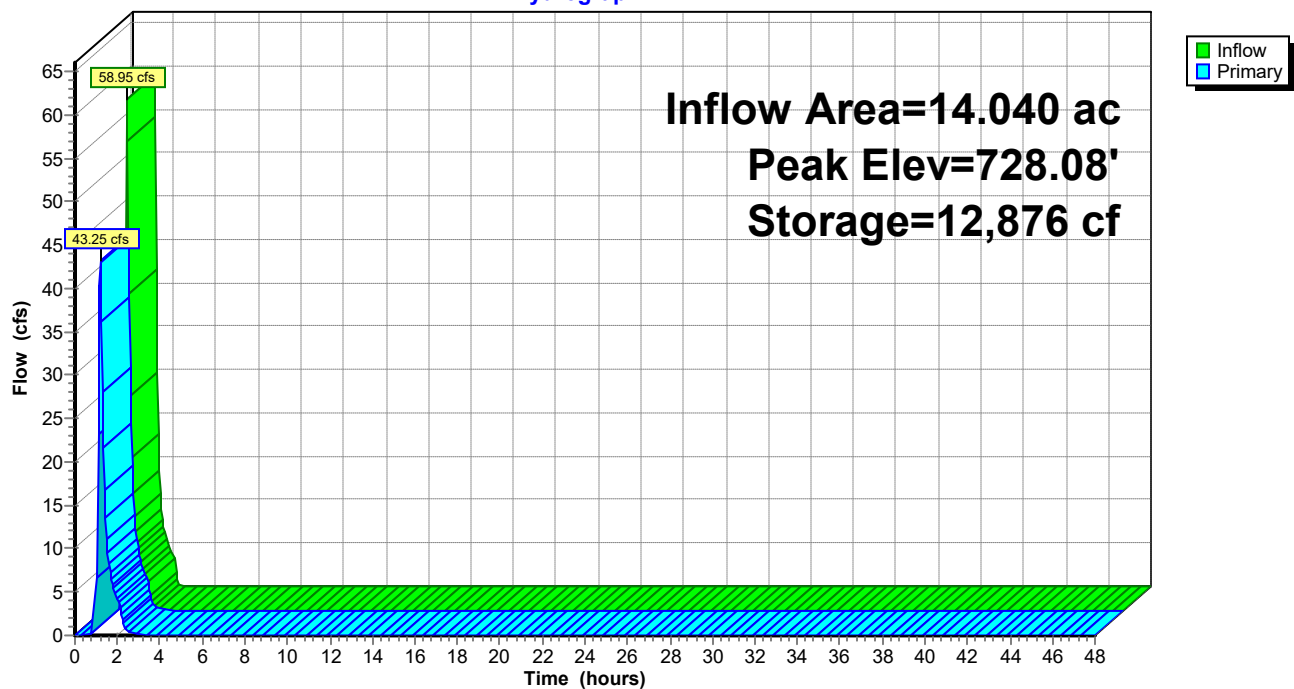
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=42.44 cfs @ 1.19 hrs HW=728.07' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 42.44 cfs @ 5.52 fps)

Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

Prepared by Kimley-Horn

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=2.61"
Tc=10.0 min CN=86 Runoff=54.70 cfs 3.053 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=2.70"
Tc=10.0 min CN=87 Runoff=87.57 cfs 4.911 af

Reach 15R: Swale Avg. Flow Depth=1.13' Max Vel=5.69 fps Inflow=47.85 cfs 3.053 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=47.32 cfs 3.053 af

Pond 7P: Wet Pond Peak Elev=727.21' Storage=5.454 af Inflow=130.29 cfs 7.965 af
Outflow=3.51 cfs 6.438 af

Pond 11P: EDDB Peak Elev=728.13' Storage=13,934 cf Inflow=54.70 cfs 3.053 af
Outflow=47.85 cfs 3.053 af

Total Runoff Area = 35.860 ac Runoff Volume = 7.965 af Average Runoff Depth = 2.67"
89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Franklin Industrial Detention Pond

Prepared by Kimley-Horn

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Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

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Summary for Subcatchment 12S: West

Runoff = 54.70 cfs @ 12.01 hrs, Volume= 3.053 af, Depth= 2.61"

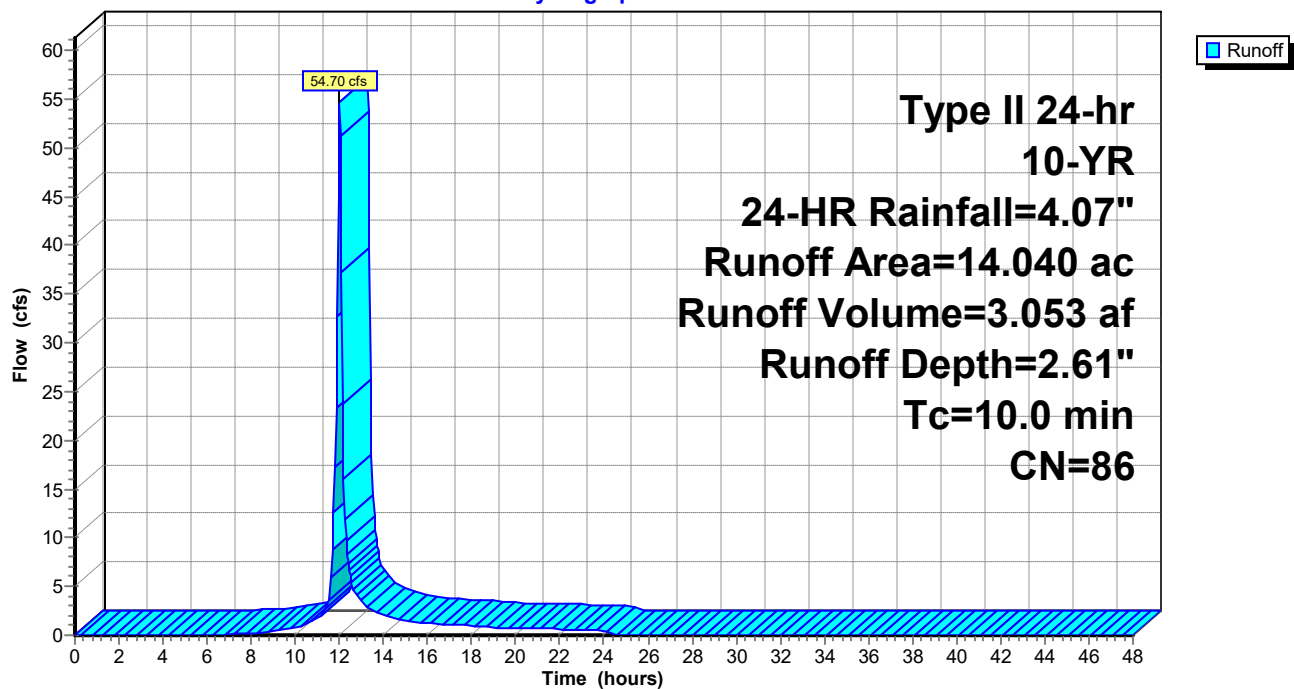
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

	Area (ac)	CN	Description
*	10.265	90	
	3.775	74	>75% Grass cover, Good, HSG C
	14.040	86	Weighted Average
	14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Franklin Industrial Detention Pond

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Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

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Summary for Subcatchment 13S: East

Runoff = 87.57 cfs @ 12.01 hrs, Volume= 4.911 af, Depth= 2.70"

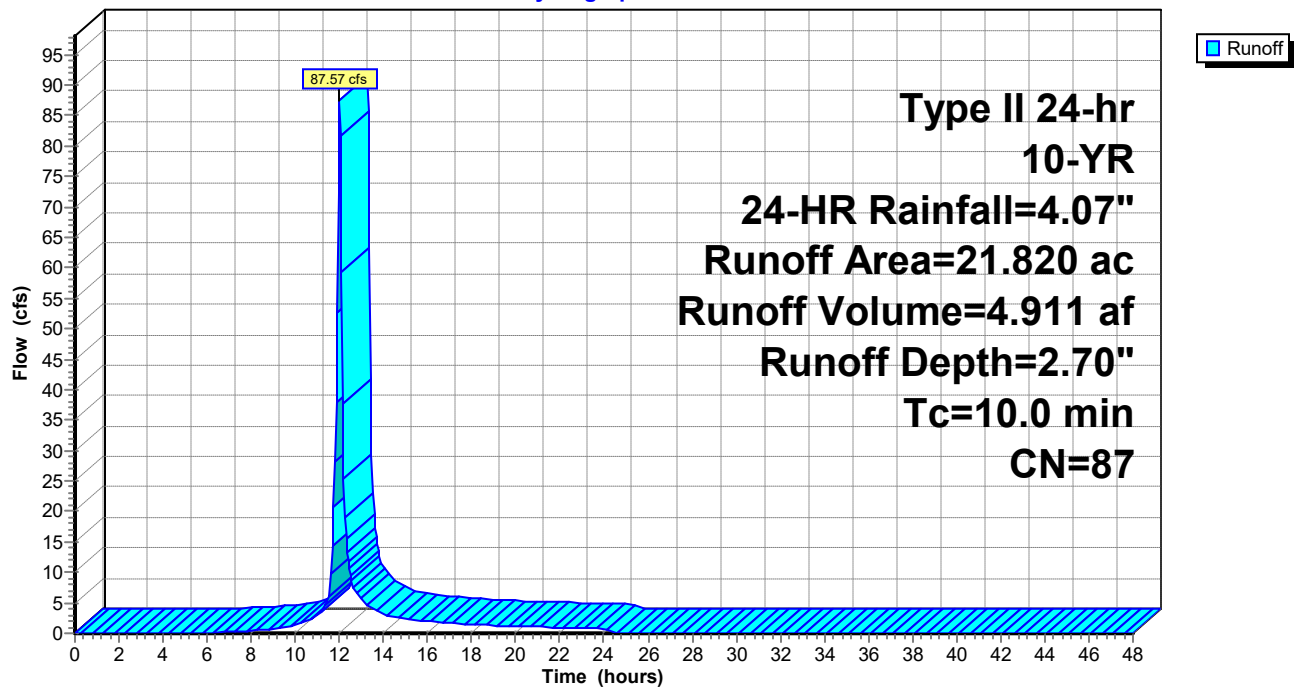
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Franklin Industrial Detention Pond

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Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

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Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 2.61" for 10-YR, 24-HR event
Inflow = 47.85 cfs @ 12.06 hrs, Volume= 3.053 af
Outflow = 47.32 cfs @ 12.07 hrs, Volume= 3.053 af, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.69 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 1.52 fps, Avg. Travel Time= 1.2 min

Peak Storage= 922 cf @ 12.07 hrs

Average Depth at Peak Storage= 1.13' , Surface Width= 10.80'

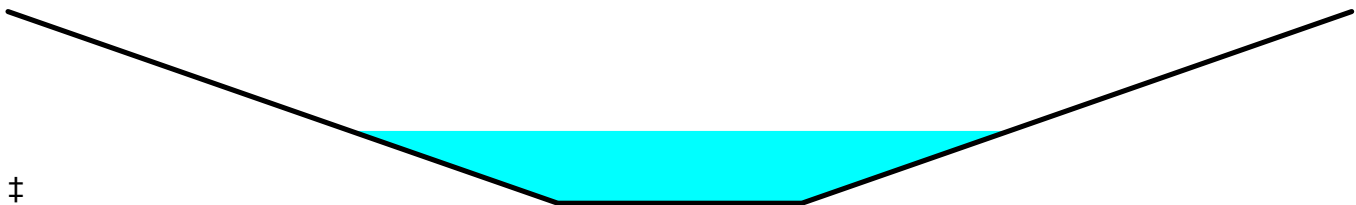
Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight

Side Slope Z-value= 3.0 ' / ' Top Width= 22.00'

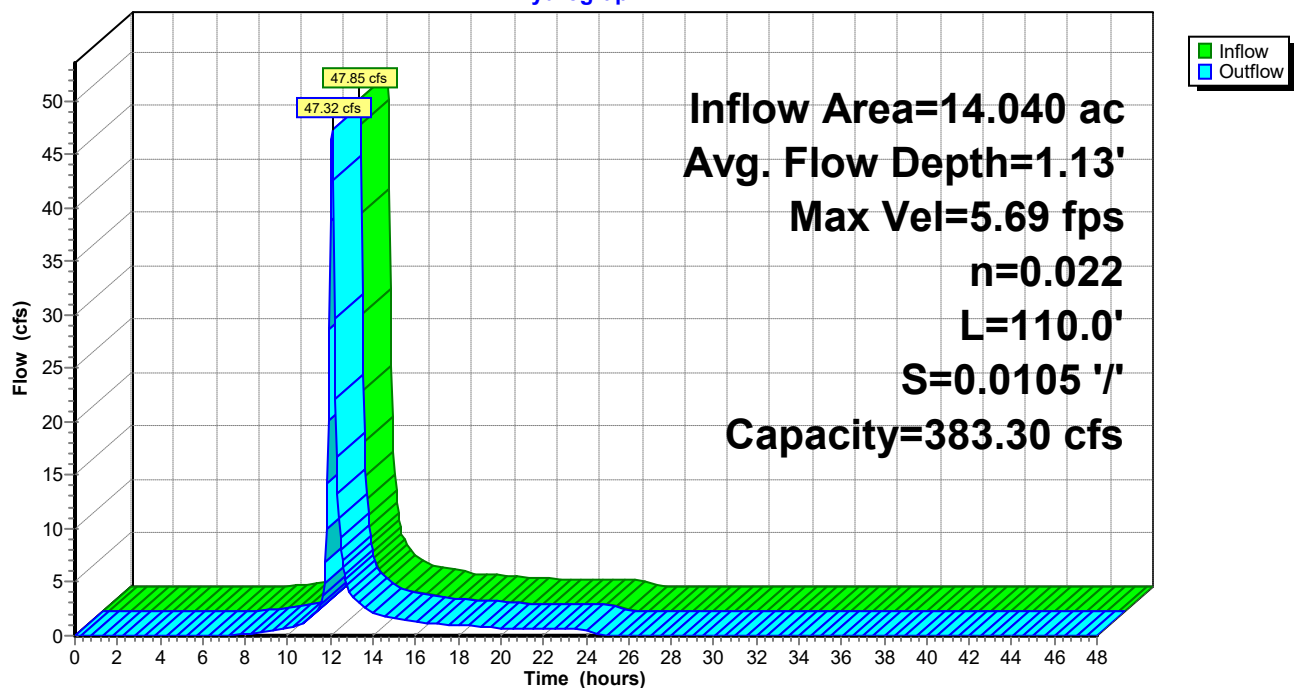
Length= 110.0' Slope= 0.0105 ' / '

Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

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Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 0.06' @ 16.55 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 2.67" for 10-YR, 24-HR event
 Inflow = 130.29 cfs @ 12.03 hrs, Volume= 7.965 af
 Outflow = 3.51 cfs @ 15.69 hrs, Volume= 6.438 af, Atten= 97%, Lag= 219.6 min
 Primary = 3.51 cfs @ 15.69 hrs, Volume= 6.438 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.21' @ 15.69 hrs Surf.Area= 4.141 ac Storage= 5.454 af

Plug-Flow detention time= 770.4 min calculated for 6.438 af (81% of inflow)
 Center-of-Mass det. time= 690.2 min (1,505.1 - 814.9)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.51 cfs @ 15.69 hrs HW=727.21' (Free Discharge)

1=Orifice/Grate (Orifice Controls 3.51 cfs @ 4.47 fps)

2=Orifice/Grate (Controls 0.00 cfs)

Franklin Industrial Detention Pond

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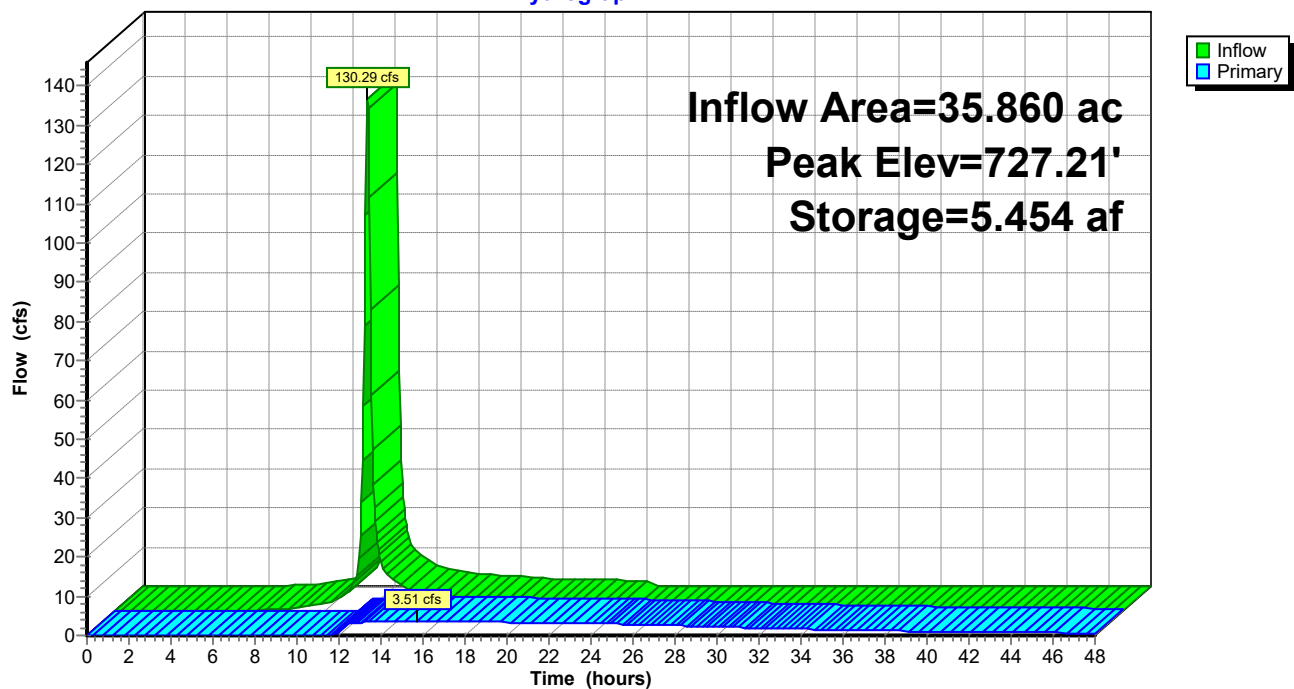
Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

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Pond 7P: Wet Pond

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

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Summary for Pond 11P: EDDB

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 2.61" for 10-YR, 24-HR event
 Inflow = 54.70 cfs @ 12.01 hrs, Volume= 3.053 af
 Outflow = 47.85 cfs @ 12.06 hrs, Volume= 3.053 af, Atten= 13%, Lag= 3.1 min
 Primary = 47.85 cfs @ 12.06 hrs, Volume= 3.053 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.13' @ 12.06 hrs Surf.Area= 19,267 sf Storage= 13,934 cf

Plug-Flow detention time= 9.1 min calculated for 3.050 af (100% of inflow)
 Center-of-Mass det. time= 9.2 min (822.3 - 813.1)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=46.98 cfs @ 12.06 hrs HW=728.12' (Free Discharge)
 ↑ **1=Channel/Reach** (Channel Controls 46.98 cfs @ 5.68 fps)

Franklin Industrial Detention Pond

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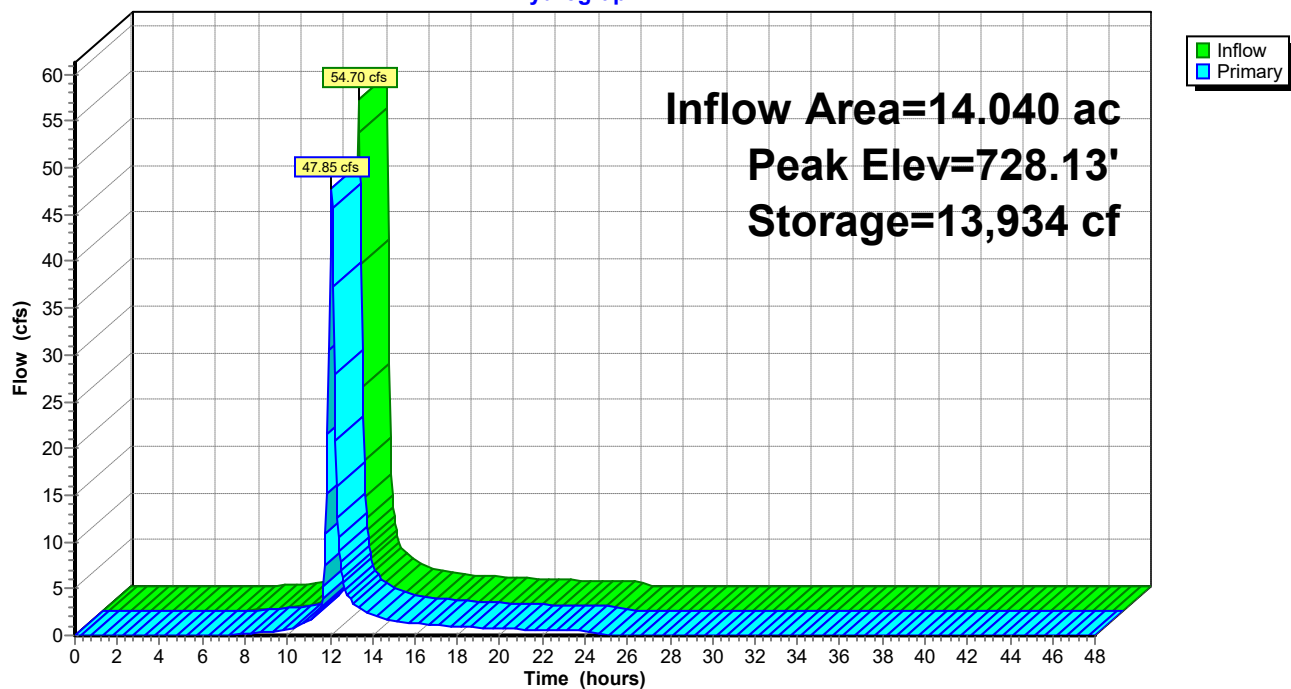
Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

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Pond 11P: EDDB

Hydrograph



Franklin Industrial Detention Pond Type II 24-hr scaled to 3.00 hrs 10-YR, 3-HR Rainfall=2.53"

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

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

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

Subcatchment 12S: West

Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=1.27"

Tc=10.0 min CN=86 Runoff=59.51 cfs 1.484 af

Subcatchment 13S: East

Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=1.34"

Tc=10.0 min CN=87 Runoff=97.95 cfs 2.430 af

Reach 15R: Swale

Avg. Flow Depth=1.09' Max Vel=5.56 fps Inflow=43.92 cfs 1.484 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=43.53 cfs 1.484 af

Pond 7P: Wet Pond

Peak Elev=726.76' Storage=3.619 af Inflow=127.35 cfs 3.913 af

Outflow=2.45 cfs 3.095 af

Pond 11P: EDDB

Peak Elev=728.09' Storage=13,038 cf Inflow=59.51 cfs 1.484 af

Outflow=43.92 cfs 1.484 af

Total Runoff Area = 35.860 ac Runoff Volume = 3.913 af Average Runoff Depth = 1.31"

89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Summary for Subcatchment 12S: West

Runoff = 59.51 cfs @ 1.62 hrs, Volume= 1.484 af, Depth= 1.27"

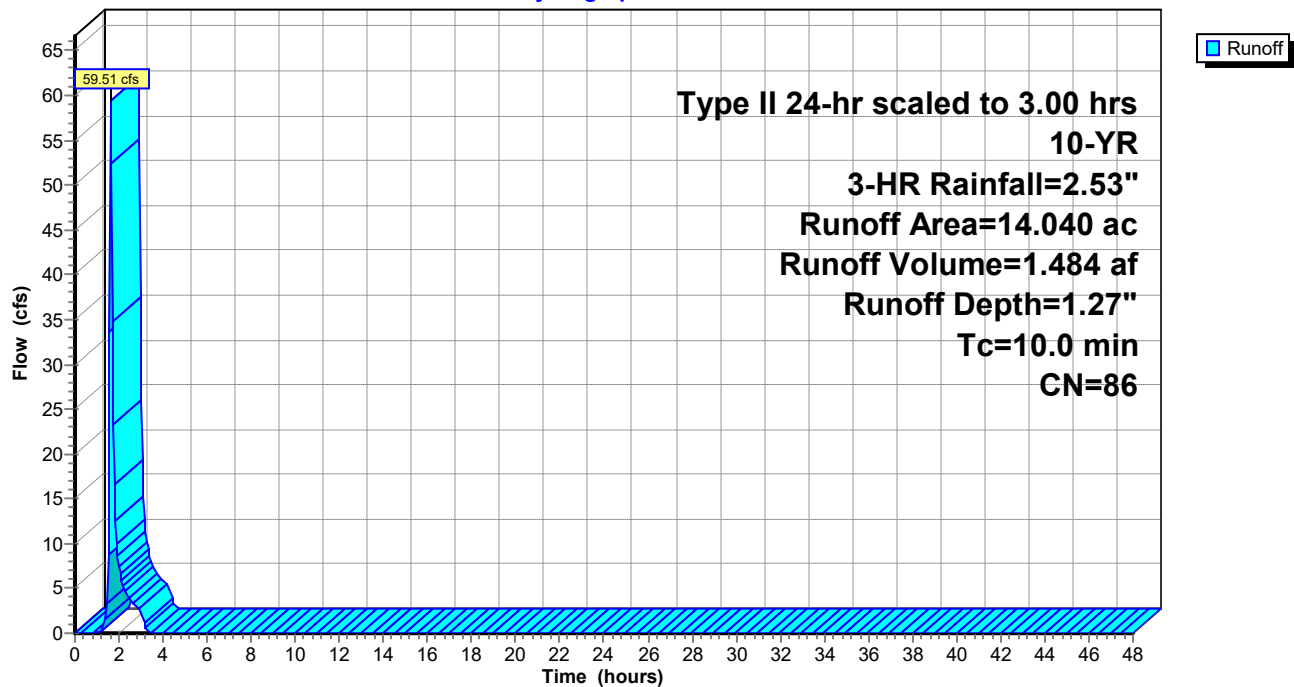
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr scaled to 3.00 hrs 10-YR, 3-HR Rainfall=2.53"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 97.95 cfs @ 1.62 hrs, Volume= 2.430 af, Depth= 1.34"

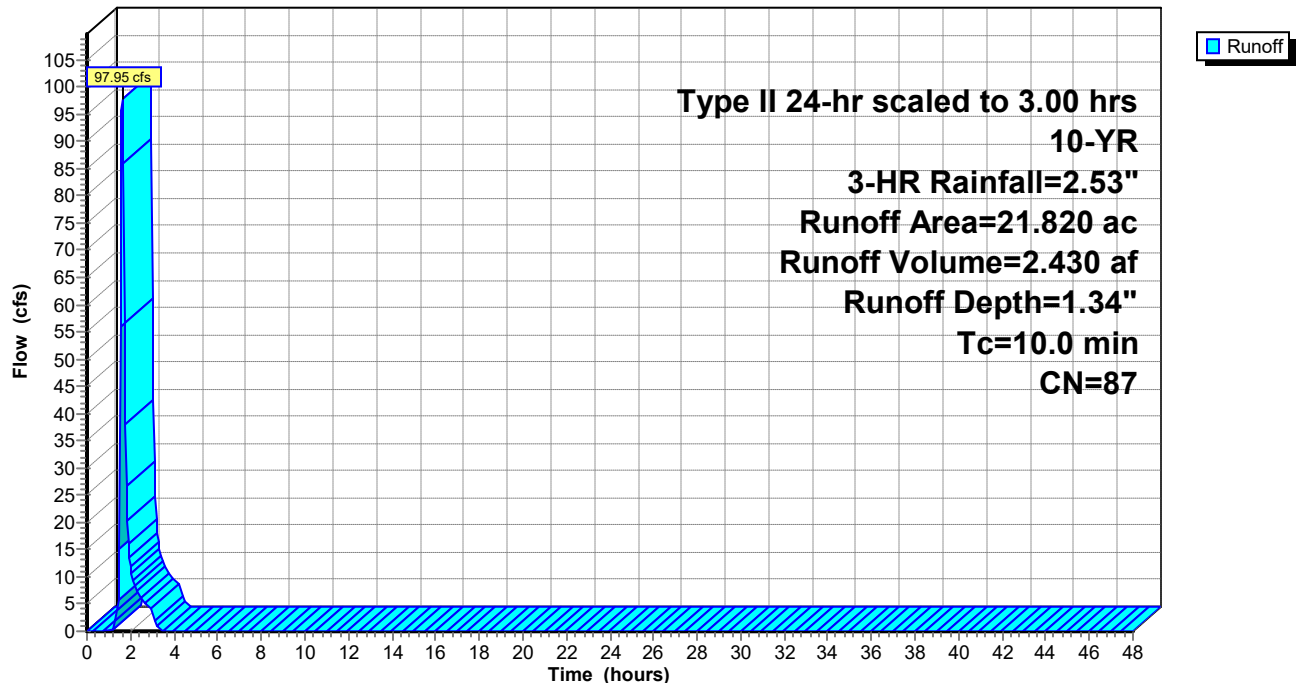
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 3.00 hrs 10-YR, 3-HR Rainfall=2.53"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 1.27" for 10-YR, 3-HR event
 Inflow = 43.92 cfs @ 1.68 hrs, Volume= 1.484 af
 Outflow = 43.53 cfs @ 1.69 hrs, Volume= 1.484 af, Atten= 1%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.56 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.38 fps, Avg. Travel Time= 1.3 min

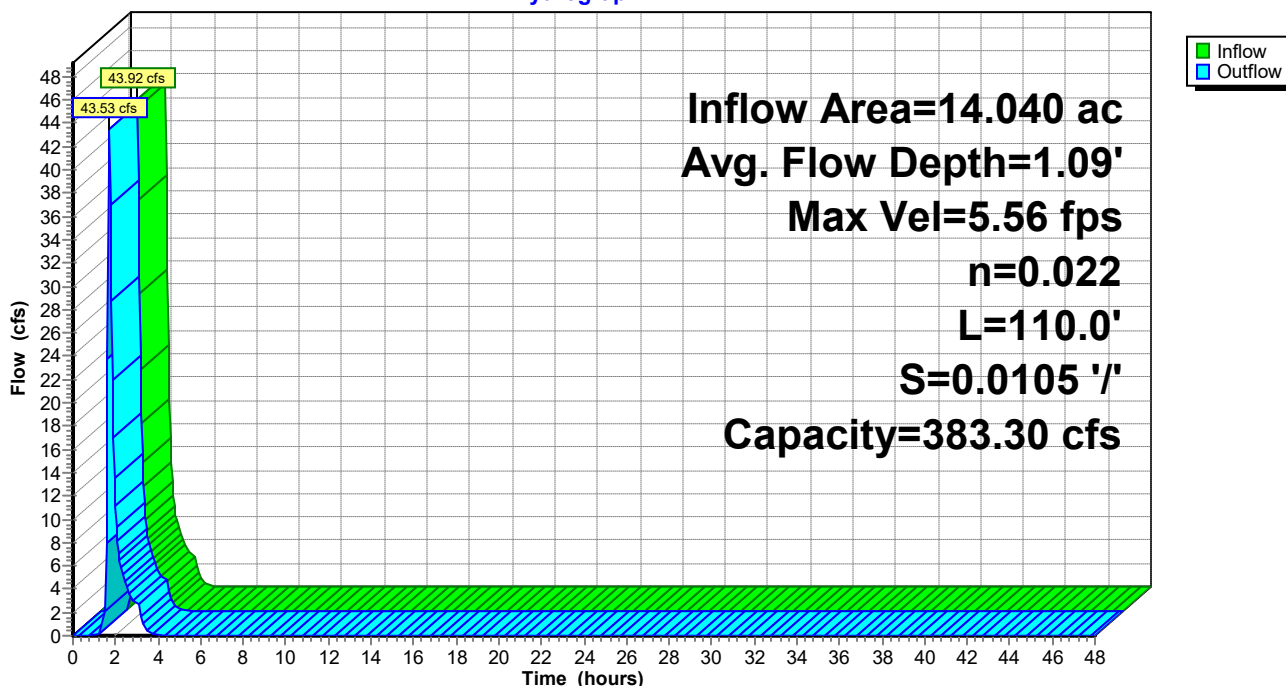
Peak Storage= 869 cf @ 1.68 hrs
 Average Depth at Peak Storage= 1.09' , Surface Width= 10.53'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 ' ' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 ' '
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[62] Hint: Exceeded Reach 15R OUTLET depth by 0.86' @ 3.90 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 1.31" for 10-YR, 3-HR event
 Inflow = 127.35 cfs @ 1.64 hrs, Volume= 3.913 af
 Outflow = 2.45 cfs @ 3.22 hrs, Volume= 3.095 af, Atten= 98%, Lag= 95.3 min
 Primary = 2.45 cfs @ 3.22 hrs, Volume= 3.095 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 726.76' @ 3.22 hrs Surf.Area= 4.049 ac Storage= 3.619 af

Plug-Flow detention time= 806.3 min calculated for 3.092 af (79% of inflow)
 Center-of-Mass det. time= 796.9 min (911.8 - 114.9)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

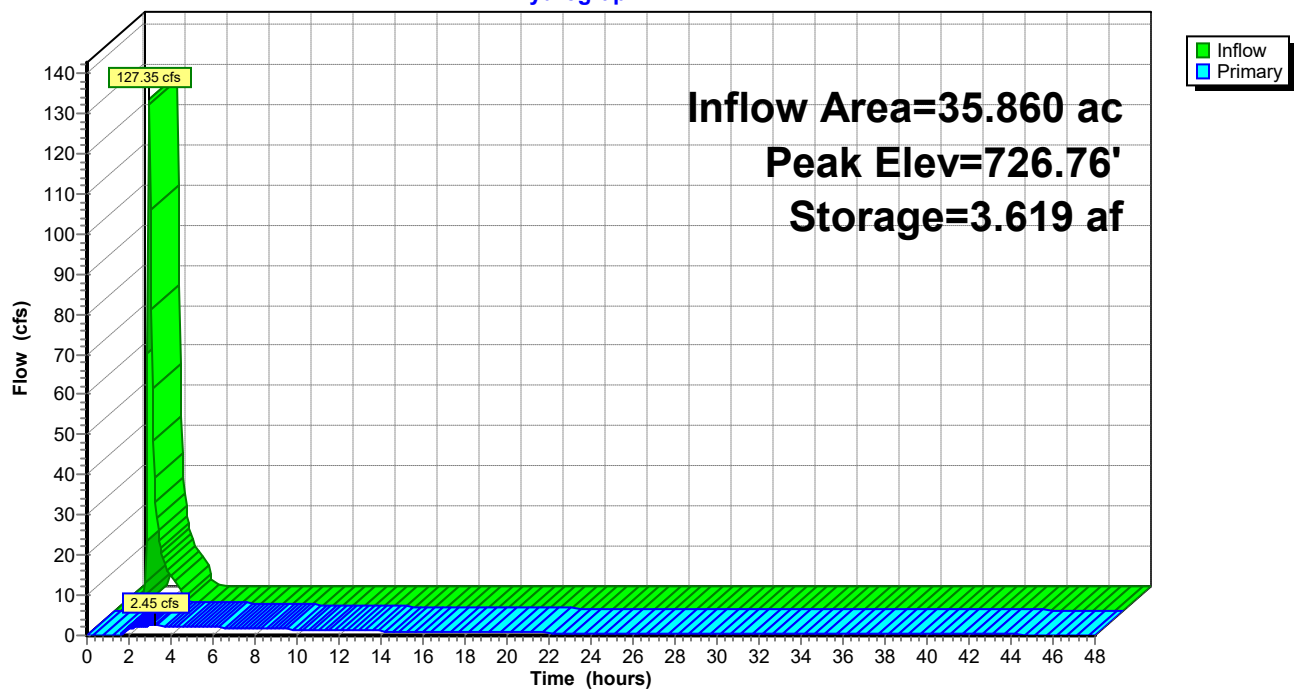
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.45 cfs @ 3.22 hrs HW=726.76' (Free Discharge)

1=Orifice/Grate (Orifice Controls 2.45 cfs @ 3.26 fps)
 2=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 1.27" for 10-YR, 3-HR event
 Inflow = 59.51 cfs @ 1.62 hrs, Volume= 1.484 af
 Outflow = 43.92 cfs @ 1.68 hrs, Volume= 1.484 af, Atten= 26%, Lag= 3.8 min
 Primary = 43.92 cfs @ 1.68 hrs, Volume= 1.484 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.09' @ 1.68 hrs Surf.Area= 18,663 sf Storage= 13,038 cf

Plug-Flow detention time= 6.7 min calculated for 1.482 af (100% of inflow)
 Center-of-Mass det. time= 6.8 min (119.1 - 112.3)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

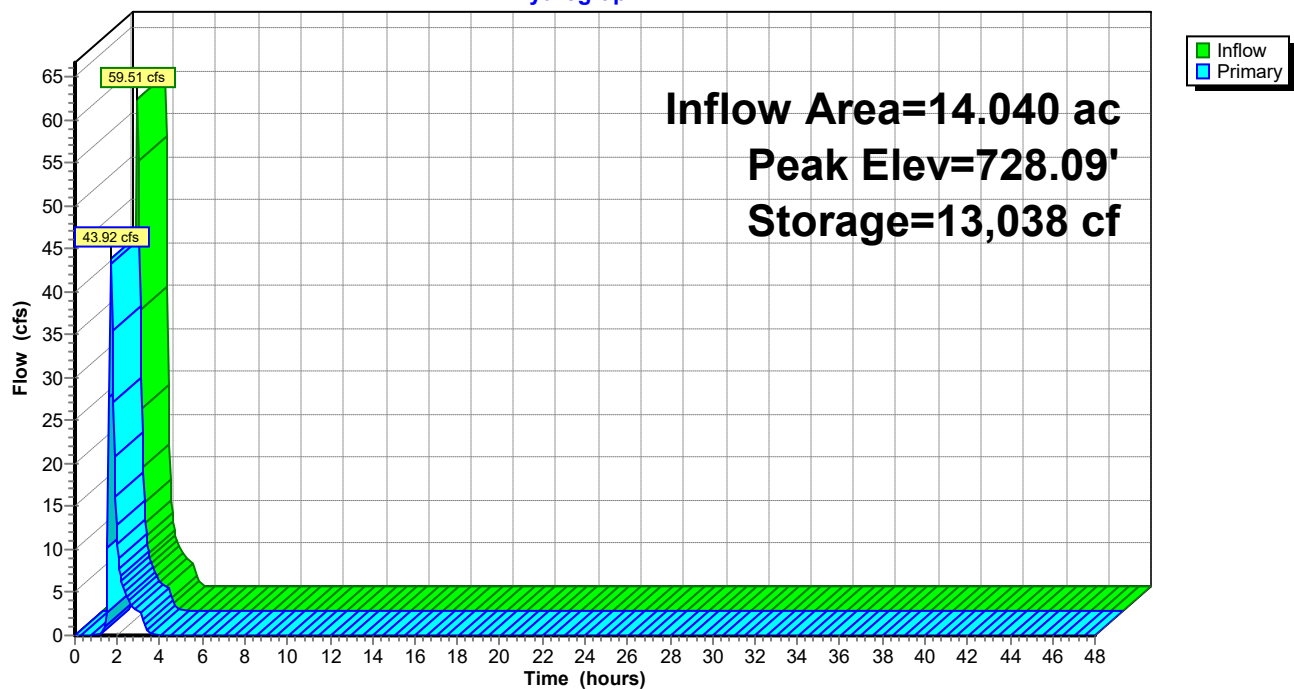
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=42.89 cfs @ 1.68 hrs HW=728.07' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 42.89 cfs @ 5.54 fps)

Pond 11P: EDDB

Hydrograph



Franklin Industrial Detention Pond Type II 24-hr scaled to 6.00 hrs 10-YR, 6-HR Rainfall=3.03"

Prepared by Kimley-Horn

Printed 9/9/2021

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

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

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

Subcatchment 12S: West

Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=1.69"
Tc=10.0 min CN=86 Runoff=65.87 cfs 1.975 af

Subcatchment 13S: East

Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=1.77"
Tc=10.0 min CN=87 Runoff=107.15 cfs 3.210 af

Reach 15R: Swale

Avg. Flow Depth=1.18' Max Vel=5.81 fps Inflow=51.42 cfs 1.975 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=50.75 cfs 1.975 af

Pond 7P: Wet Pond

Peak Elev=726.98' Storage=4.477 af Inflow=147.21 cfs 5.185 af
Outflow=2.99 cfs 4.247 af

Pond 11P: EDDB

Peak Elev=728.17' Storage=14,739 cf Inflow=65.87 cfs 1.975 af
Outflow=51.42 cfs 1.975 af

Total Runoff Area = 35.860 ac Runoff Volume = 5.185 af Average Runoff Depth = 1.74"
89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Summary for Subcatchment 12S: West

Runoff = 65.87 cfs @ 3.10 hrs, Volume= 1.975 af, Depth= 1.69"

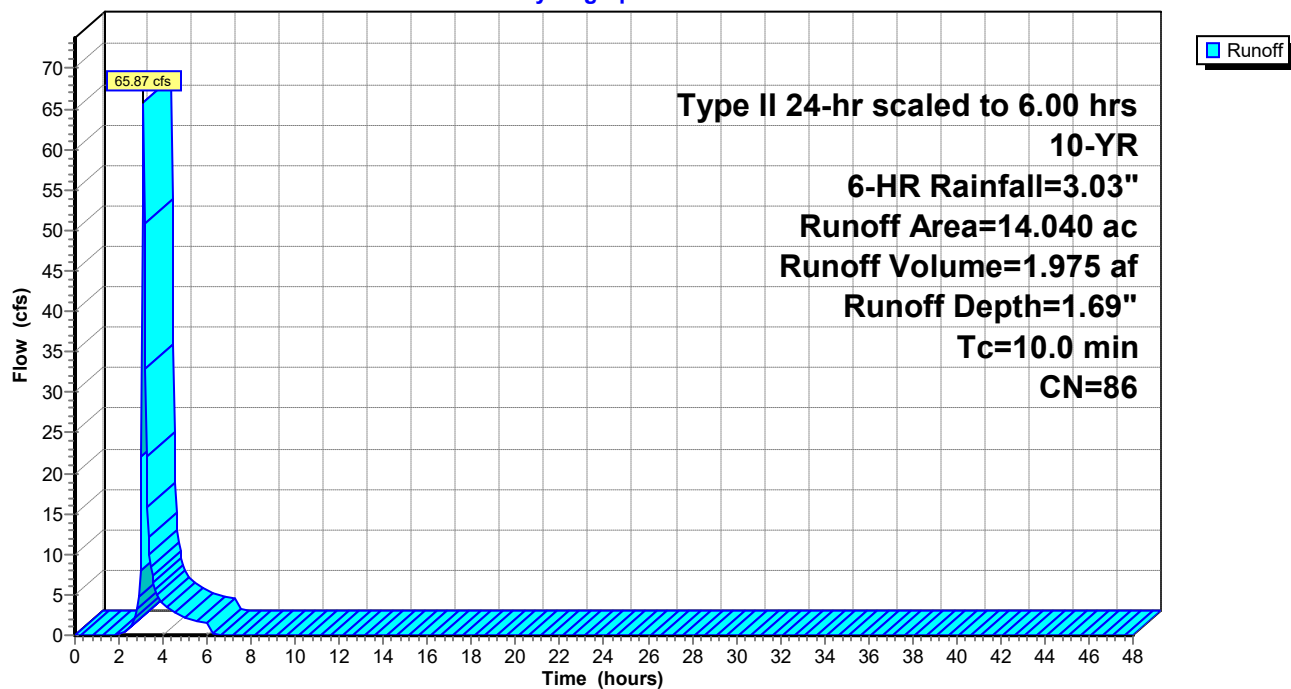
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 6.00 hrs 10-YR, 6-HR Rainfall=3.03"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 107.15 cfs @ 3.10 hrs, Volume= 3.210 af, Depth= 1.77"

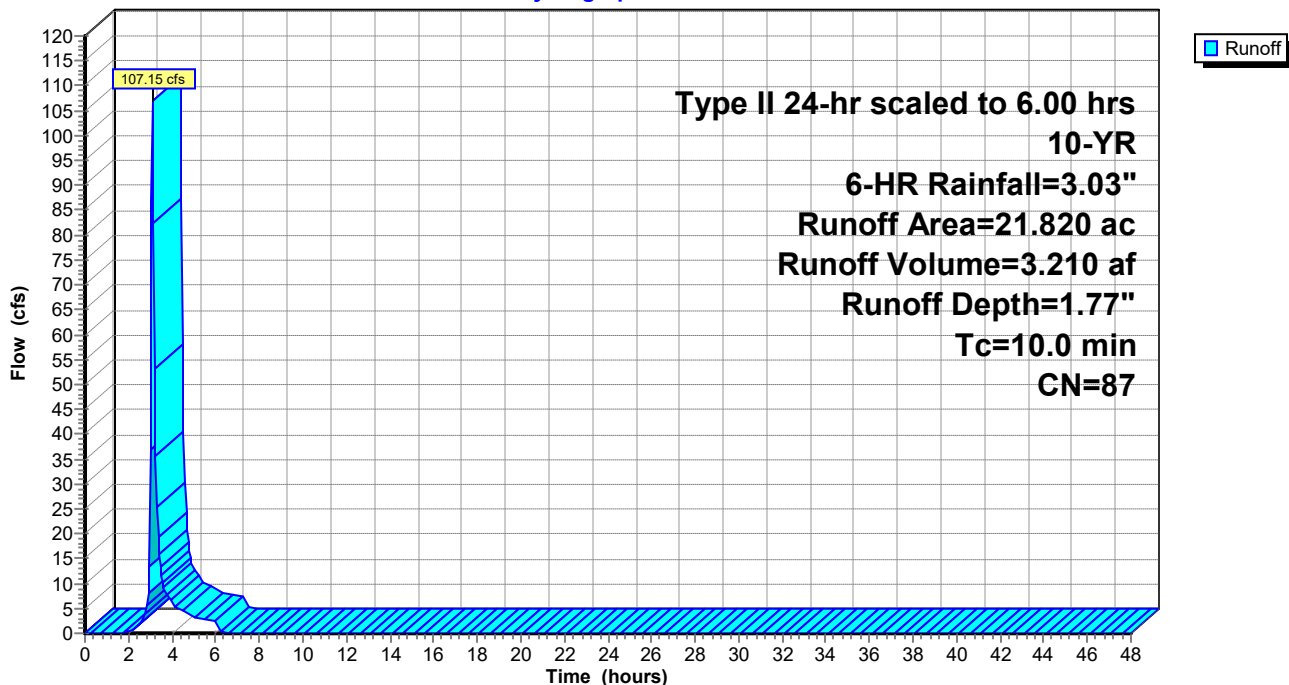
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 6.00 hrs 10-YR, 6-HR Rainfall=3.03"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 1.69" for 10-YR, 6-HR event
 Inflow = 51.42 cfs @ 3.16 hrs, Volume= 1.975 af
 Outflow = 50.75 cfs @ 3.17 hrs, Volume= 1.975 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.81 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.53 fps, Avg. Travel Time= 1.2 min

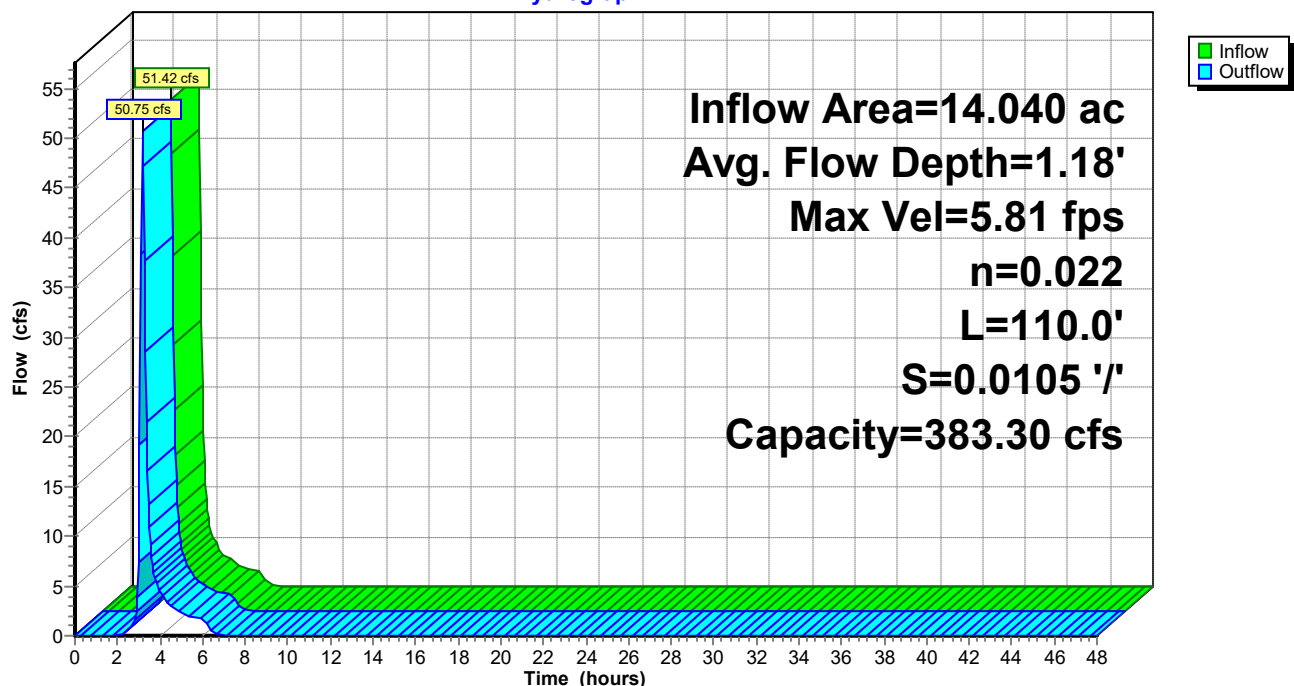
Peak Storage= 974 cf @ 3.16 hrs
 Average Depth at Peak Storage= 1.18' , Surface Width= 11.06'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[62] Hint: Exceeded Reach 15R OUTLET depth by 1.06' @ 6.80 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 1.74" for 10-YR, 6-HR event
 Inflow = 147.21 cfs @ 3.11 hrs, Volume= 5.185 af
 Outflow = 2.99 cfs @ 6.13 hrs, Volume= 4.247 af, Atten= 98%, Lag= 181.2 min
 Primary = 2.99 cfs @ 6.13 hrs, Volume= 4.247 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 726.98' @ 6.13 hrs Surf.Area= 4.092 ac Storage= 4.477 af

Plug-Flow detention time= 784.0 min calculated for 4.247 af (82% of inflow)
 Center-of-Mass det. time= 764.0 min (979.8 - 215.8)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

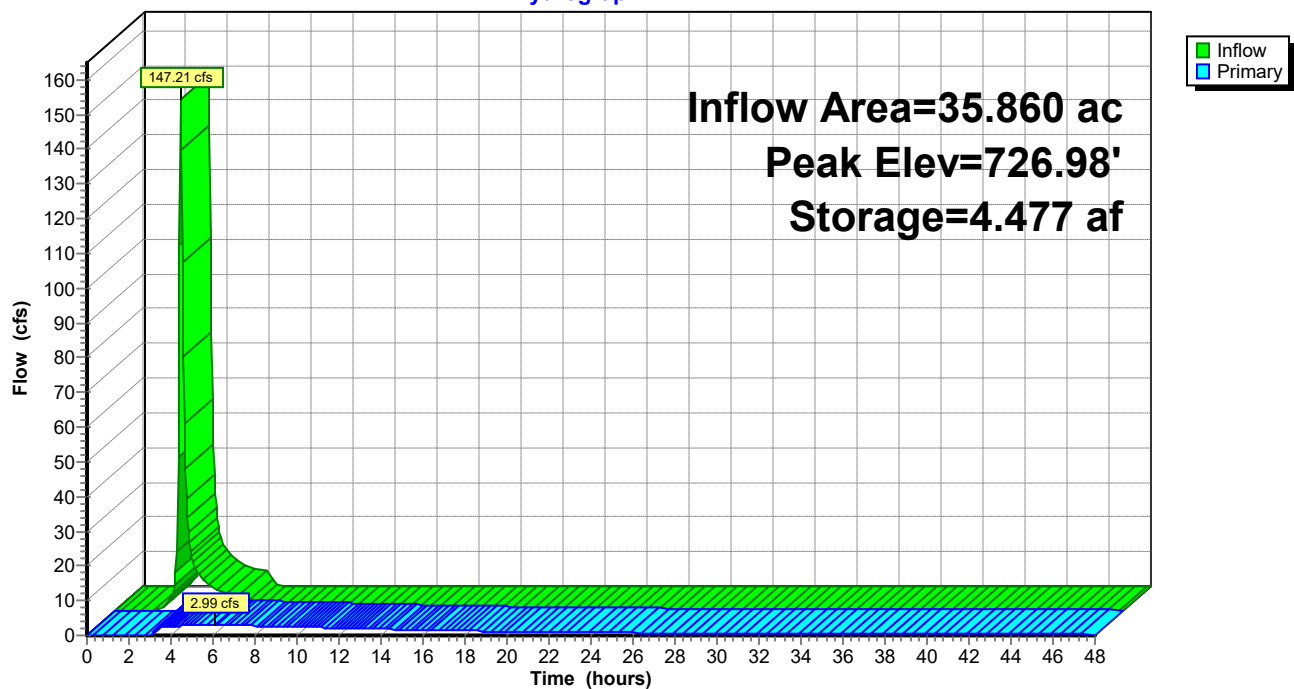
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.99 cfs @ 6.13 hrs HW=726.98' (Free Discharge)

1=Orifice/Grate (Orifice Controls 2.99 cfs @ 3.81 fps)
 2=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 1.69" for 10-YR, 6-HR event
 Inflow = 65.87 cfs @ 3.10 hrs, Volume= 1.975 af
 Outflow = 51.42 cfs @ 3.16 hrs, Volume= 1.975 af, Atten= 22%, Lag= 3.5 min
 Primary = 51.42 cfs @ 3.16 hrs, Volume= 1.975 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.17' @ 3.16 hrs Surf.Area= 19,794 sf Storage= 14,739 cf

Plug-Flow detention time= 7.6 min calculated for 1.975 af (100% of inflow)
 Center-of-Mass det. time= 7.2 min (220.6 - 213.3)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

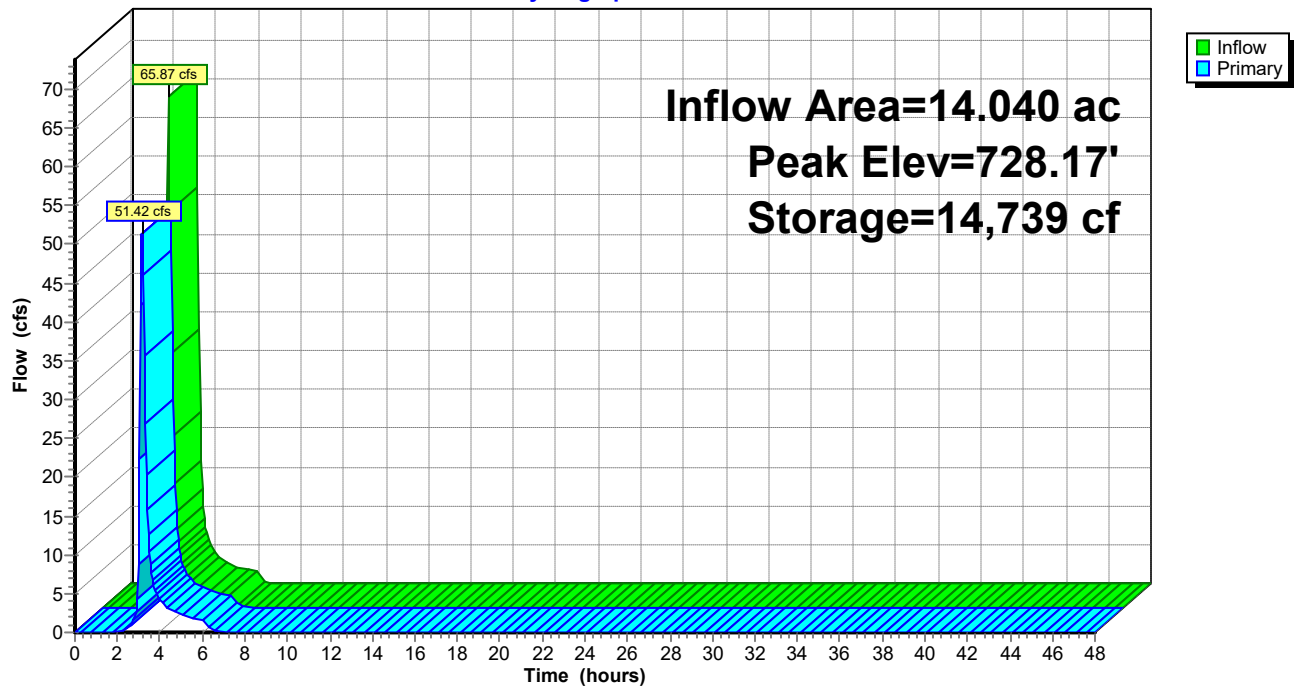
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=50.57 cfs @ 3.16 hrs HW=728.16' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 50.57 cfs @ 5.79 fps)

Pond 11P: Eddb

Hydrograph



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

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

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

Subcatchment 12S: West

Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=1.67"

Tc=10.0 min CN=86 Runoff=99.30 cfs 1.955 af

Subcatchment 13S: East

Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=1.75"

Tc=10.0 min CN=87 Runoff=161.79 cfs 3.178 af

Reach 15R: Swale

Avg. Flow Depth=1.44' Max Vel=6.50 fps Inflow=77.45 cfs 1.955 af

n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=76.87 cfs 1.955 af

Pond 7P: Wet Pond

Peak Elev=727.09' Storage=4.934 af Inflow=222.59 cfs 5.133 af

Outflow=3.25 cfs 4.253 af

Pond 11P: EDDDB

Peak Elev=728.44' Storage=20,341 cf Inflow=99.30 cfs 1.955 af

Outflow=77.45 cfs 1.955 af

Total Runoff Area = 35.860 ac Runoff Volume = 5.133 af Average Runoff Depth = 1.72"

89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Summary for Subcatchment 12S: West

Runoff = 99.30 cfs @ 0.63 hrs, Volume= 1.955 af, Depth= 1.67"

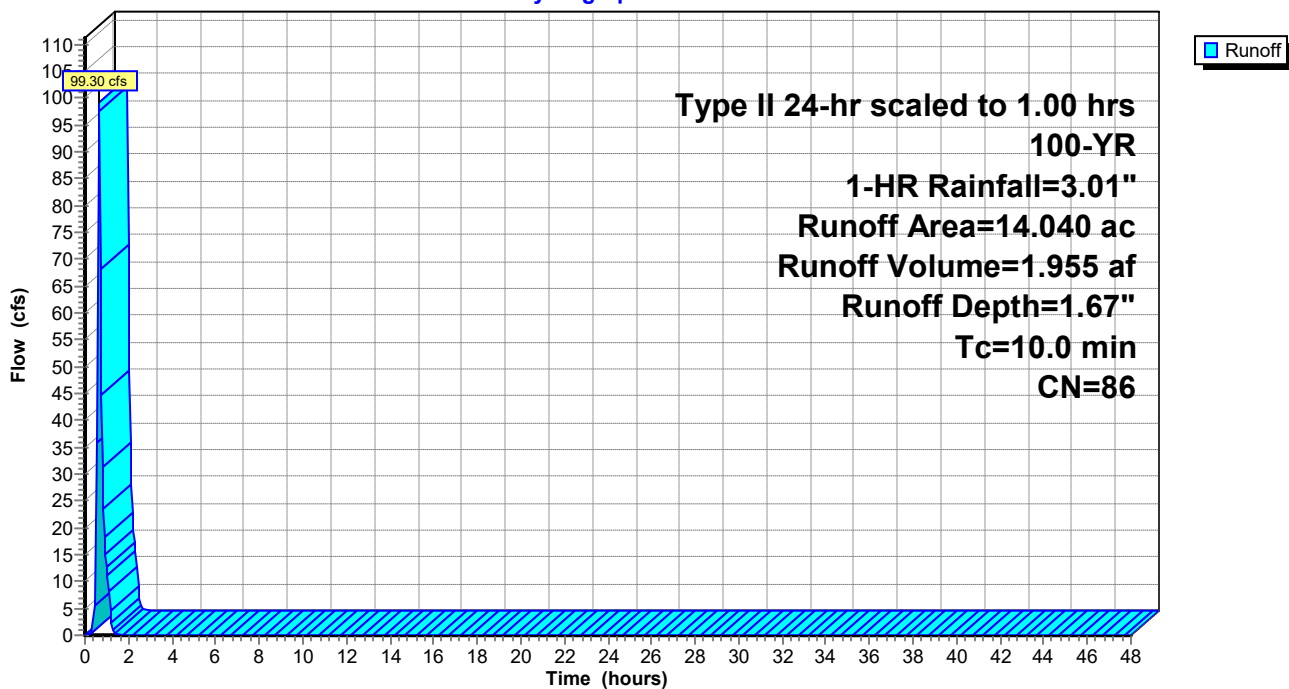
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 1.00 hrs 100-YR, 1-HR Rainfall=3.01"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 161.79 cfs @ 0.63 hrs, Volume= 3.178 af, Depth= 1.75"

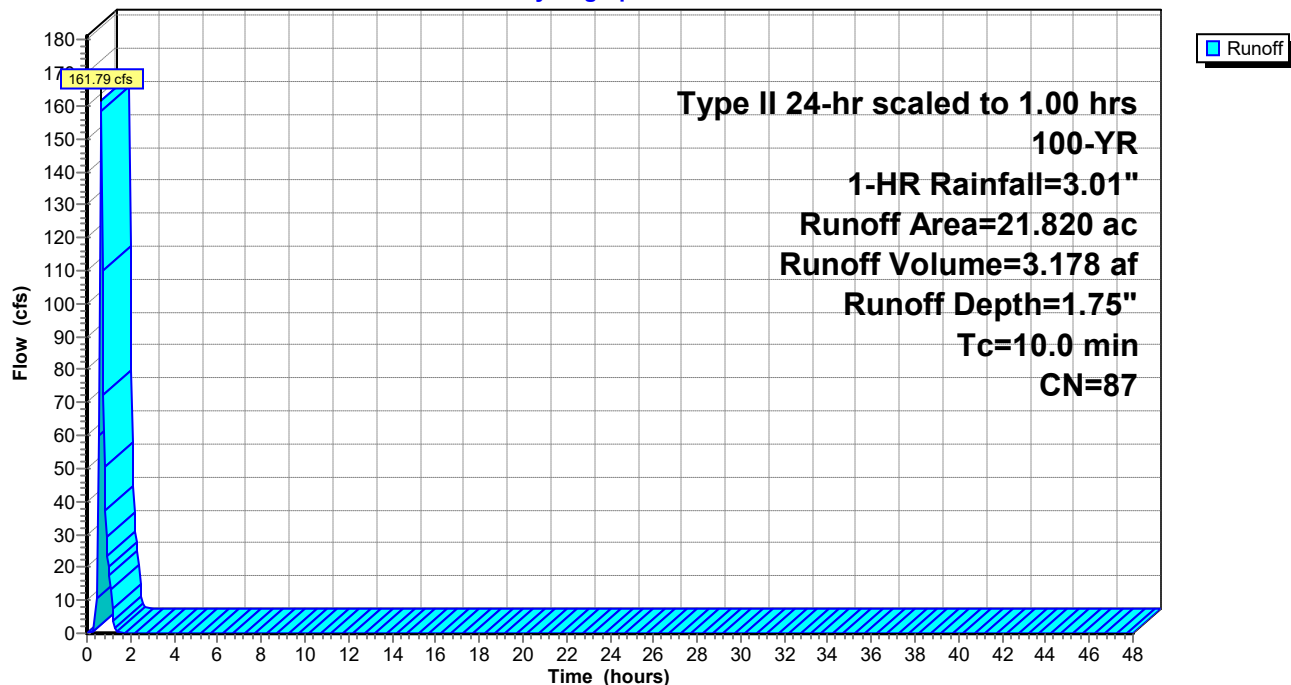
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 1.00 hrs 100-YR, 1-HR Rainfall=3.01"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 1.67" for 100-YR, 1-HR event
 Inflow = 77.45 cfs @ 0.69 hrs, Volume= 1.955 af
 Outflow = 76.87 cfs @ 0.70 hrs, Volume= 1.955 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 6.50 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.27 fps, Avg. Travel Time= 1.4 min

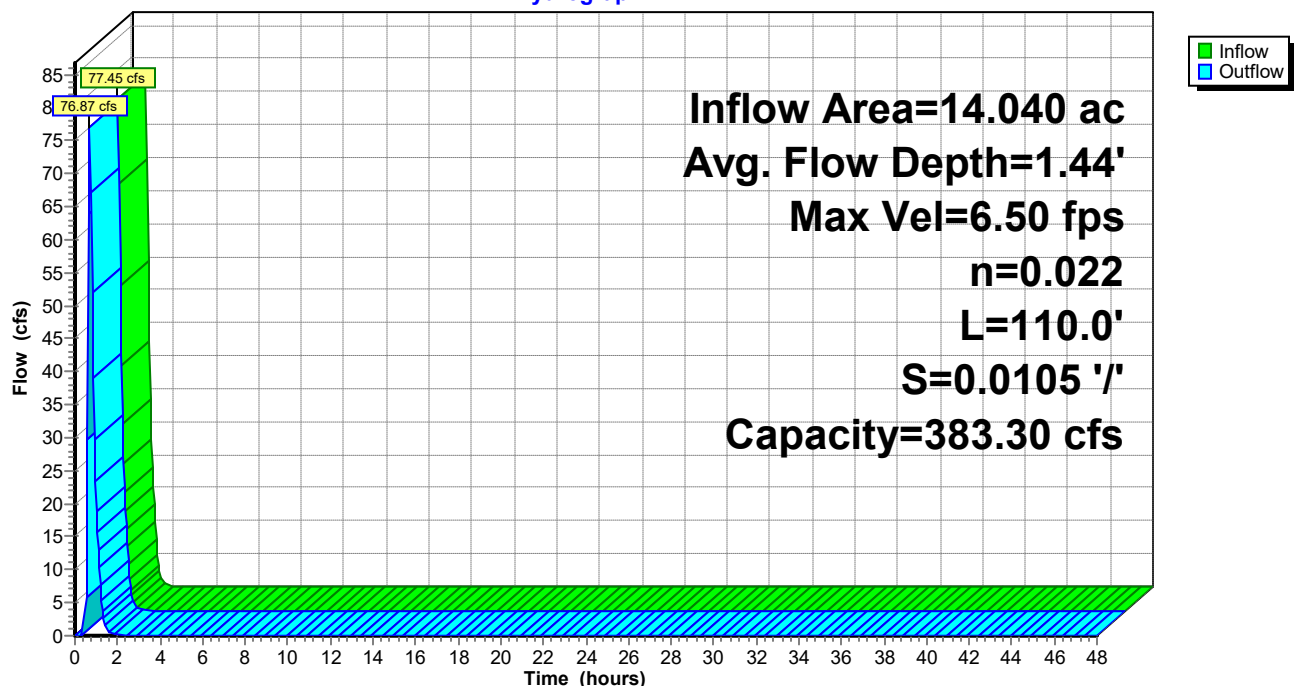
Peak Storage= 1,316 cf @ 0.70 hrs
 Average Depth at Peak Storage= 1.44' , Surface Width= 12.63'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 0.02' @ 2.00 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 1.72" for 100-YR, 1-HR event
 Inflow = 222.59 cfs @ 0.65 hrs, Volume= 5.133 af
 Outflow = 3.25 cfs @ 1.34 hrs, Volume= 4.253 af, Atten= 99%, Lag= 41.4 min
 Primary = 3.25 cfs @ 1.34 hrs, Volume= 4.253 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.09' @ 1.34 hrs Surf.Area= 4.115 ac Storage= 4.934 af

Plug-Flow detention time= 791.6 min calculated for 4.248 af (83% of inflow)
 Center-of-Mass det. time= 789.8 min (835.4 - 45.6)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

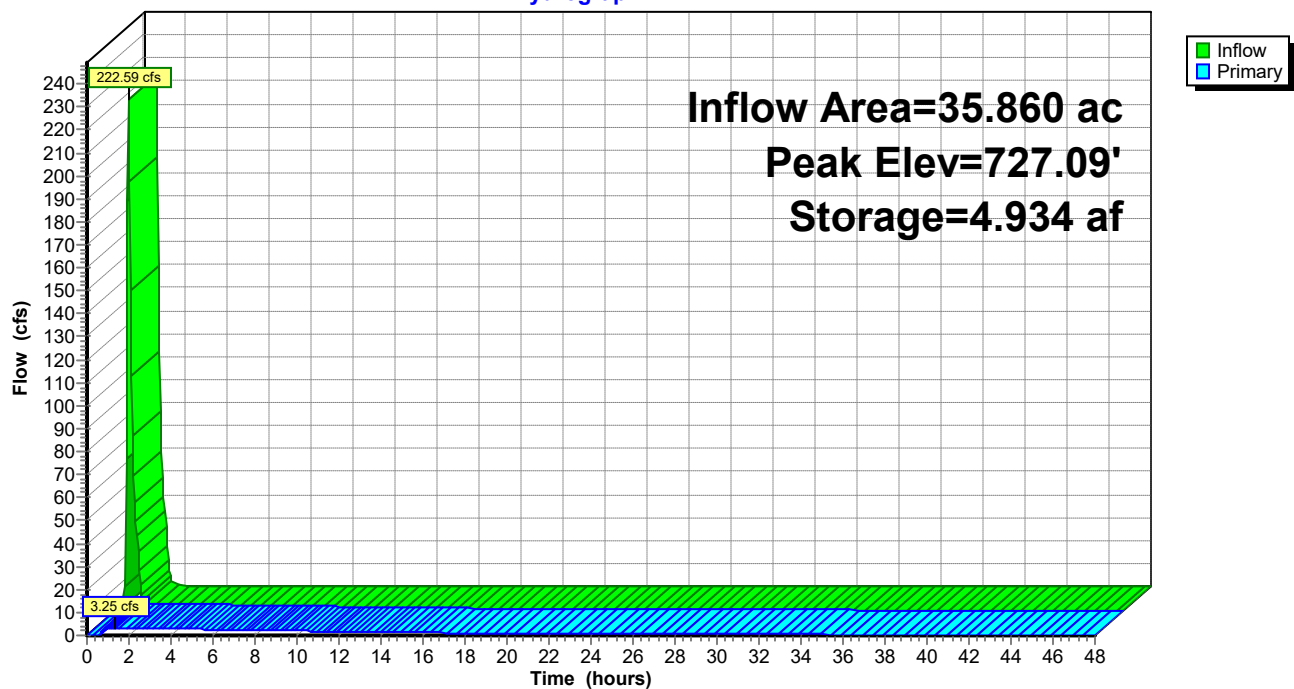
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.25 cfs @ 1.34 hrs HW=727.09' (Free Discharge)

↑ **1=Orifice/Grate** (Orifice Controls 3.25 cfs @ 4.13 fps)
 — **2=Orifice/Grate** (Controls 0.00 cfs)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 1.67" for 100-YR, 1-HR event
 Inflow = 99.30 cfs @ 0.63 hrs, Volume= 1.955 af
 Outflow = 77.45 cfs @ 0.69 hrs, Volume= 1.955 af, Atten= 22%, Lag= 3.6 min
 Primary = 77.45 cfs @ 0.69 hrs, Volume= 1.955 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.44' @ 0.69 hrs Surf.Area= 23,132 sf Storage= 20,341 cf

Plug-Flow detention time= 5.3 min calculated for 1.953 af (100% of inflow)
 Center-of-Mass det. time= 5.4 min (48.8 - 43.4)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

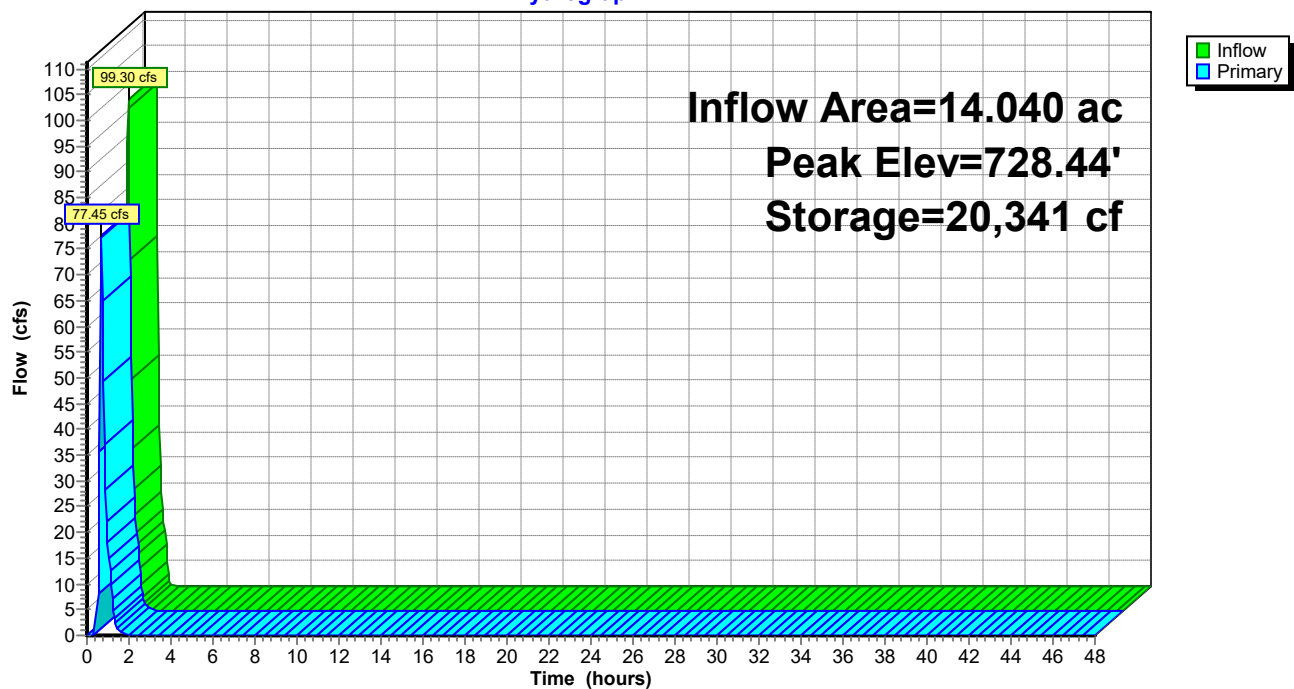
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=76.45 cfs @ 0.69 hrs HW=728.43' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 76.45 cfs @ 6.47 fps)

Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention P Type II 24-hr scaled to 12.00 hrs 100-YR, 12-HR Rainfall=5.36"

Prepared by Kimley-Horn

Printed 9/9/2021

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

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

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

Subcatchment 12S: West

Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=3.80"

Tc=10.0 min CN=86 Runoff=114.63 cfs 4.451 af

Subcatchment 13S: East

Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=3.91"

Tc=10.0 min CN=87 Runoff=182.23 cfs 7.105 af

Reach 15R: Swale

Avg. Flow Depth=1.60' Max Vel=6.86 fps Inflow=96.50 cfs 4.451 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=95.24 cfs 4.451 af

Pond 7P: Wet Pond

Peak Elev=727.90' Storage=8.346 af Inflow=261.06 cfs 11.556 af

Outflow=8.91 cfs 10.187 af

Pond 11P: EDDB

Peak Elev=728.60' Storage=24,218 cf Inflow=114.63 cfs 4.451 af

Outflow=96.50 cfs 4.451 af

Total Runoff Area = 35.860 ac Runoff Volume = 11.556 af Average Runoff Depth = 3.87"
89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Summary for Subcatchment 12S: West

Runoff = 114.63 cfs @ 6.06 hrs, Volume= 4.451 af, Depth= 3.80"

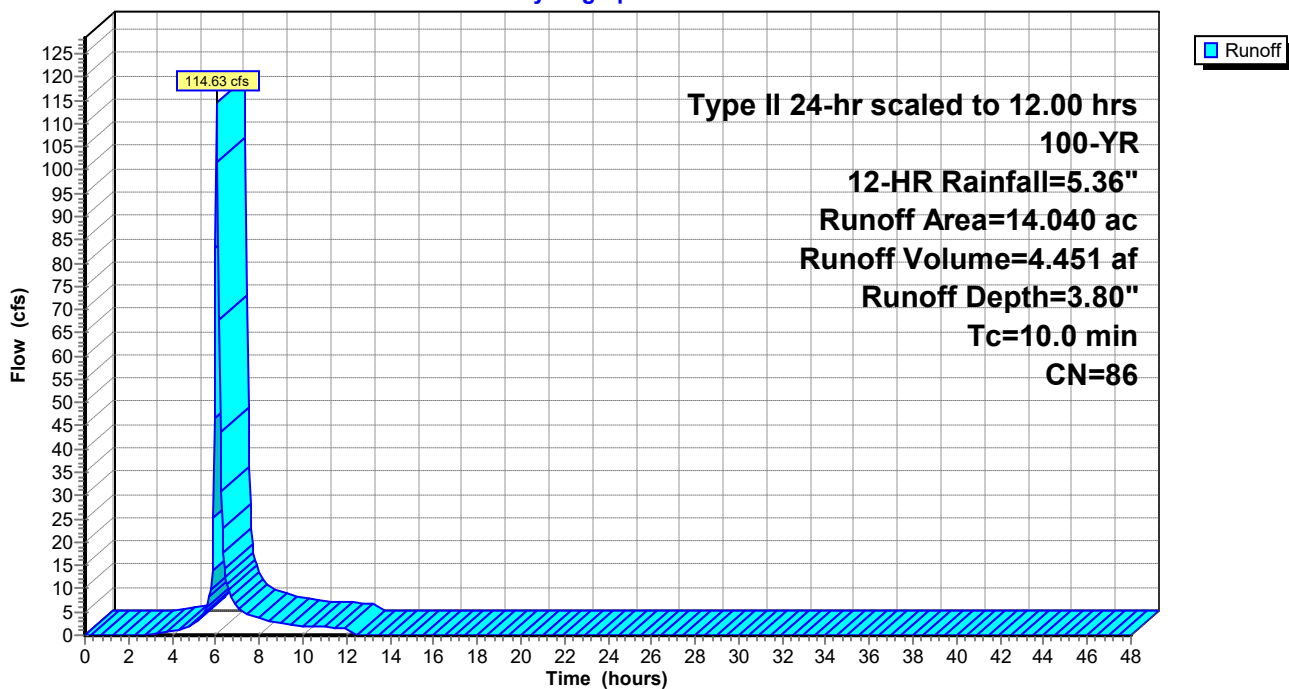
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 12.00 hrs 100-YR, 12-HR Rainfall=5.36"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 182.23 cfs @ 6.06 hrs, Volume= 7.105 af, Depth= 3.91"

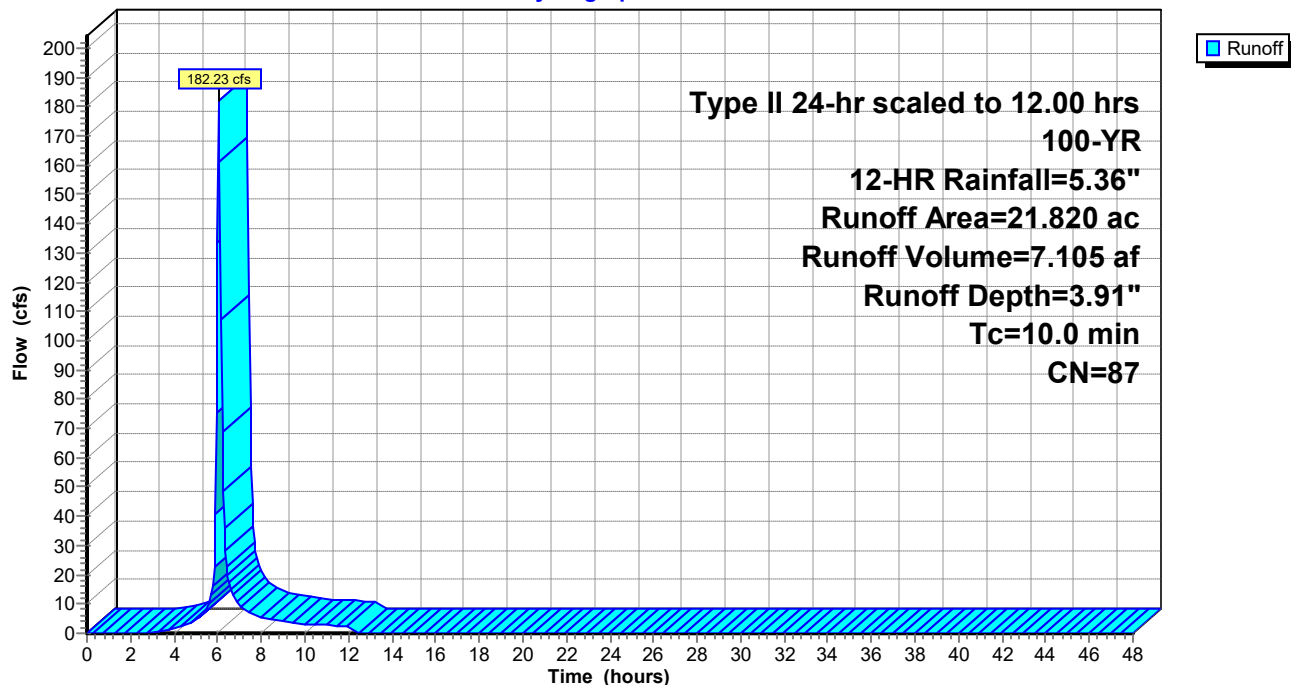
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 12.00 hrs 100-YR, 12-HR Rainfall=5.36"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 3.80" for 100-YR, 12-HR event
 Inflow = 96.50 cfs @ 6.11 hrs, Volume= 4.451 af
 Outflow = 95.24 cfs @ 6.12 hrs, Volume= 4.451 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 6.86 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.84 fps, Avg. Travel Time= 1.0 min

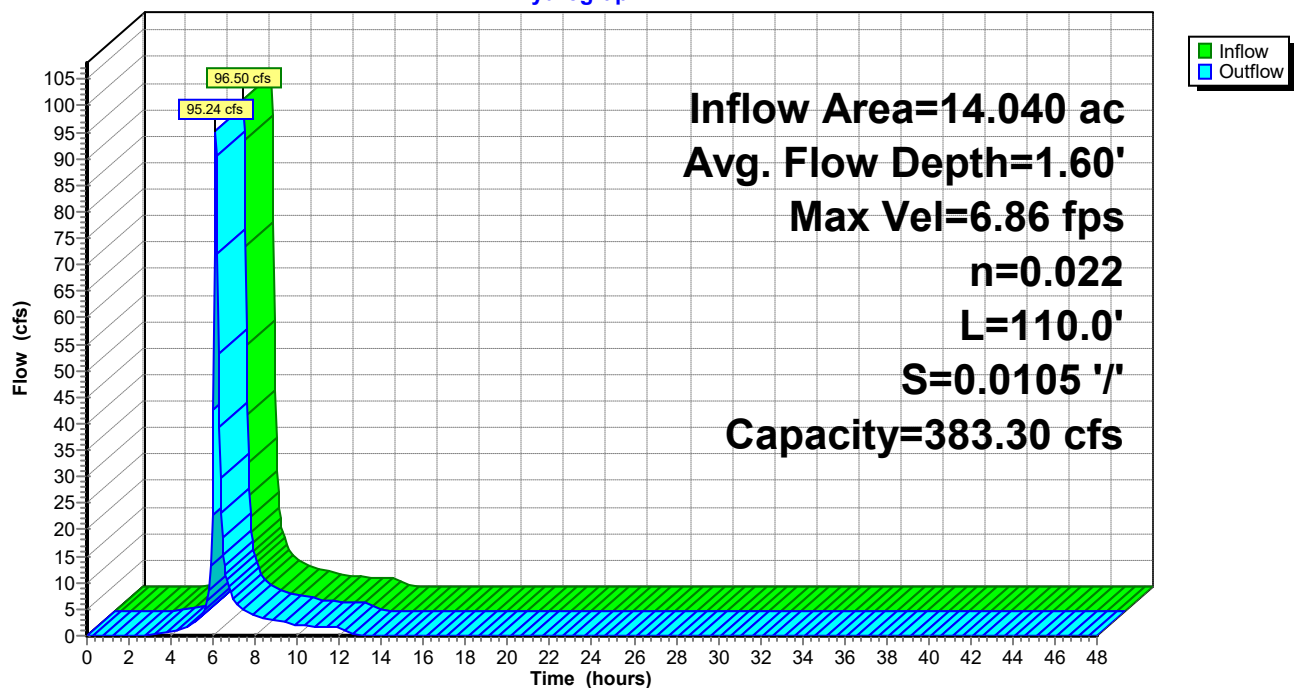
Peak Storage= 1,542 cf @ 6.11 hrs
 Average Depth at Peak Storage= 1.60' , Surface Width= 13.58'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 0.64' @ 8.95 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 3.87" for 100-YR, 12-HR event
 Inflow = 261.06 cfs @ 6.08 hrs, Volume= 11.556 af
 Outflow = 8.91 cfs @ 8.08 hrs, Volume= 10.187 af, Atten= 97%, Lag= 120.5 min
 Primary = 8.91 cfs @ 8.08 hrs, Volume= 10.187 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.90' @ 8.08 hrs Surf.Area= 4.281 ac Storage= 8.346 af

Plug-Flow detention time= 684.1 min calculated for 10.177 af (88% of inflow)
 Center-of-Mass det. time= 656.6 min (1,064.5 - 407.9)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

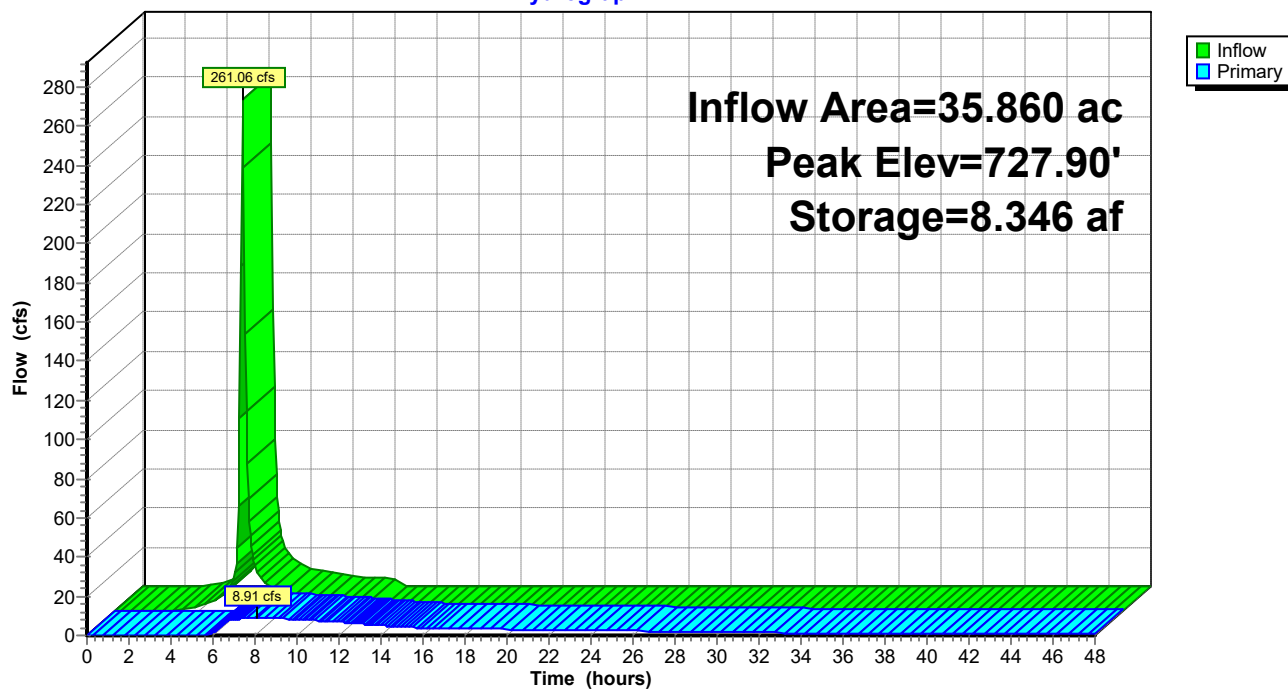
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.91 cfs @ 8.08 hrs HW=727.90' (Free Discharge)

1=Orifice/Grate (Orifice Controls 4.71 cfs @ 5.99 fps)
 2=Orifice/Grate (Orifice Controls 4.20 cfs @ 2.59 fps)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 3.80" for 100-YR, 12-HR event
 Inflow = 114.63 cfs @ 6.06 hrs, Volume= 4.451 af
 Outflow = 96.50 cfs @ 6.11 hrs, Volume= 4.451 af, Atten= 16%, Lag= 3.0 min
 Primary = 96.50 cfs @ 6.11 hrs, Volume= 4.451 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.60' @ 6.11 hrs Surf.Area= 25,184 sf Storage= 24,218 cf

Plug-Flow detention time= 6.9 min calculated for 4.446 af (100% of inflow)
 Center-of-Mass det. time= 7.0 min (412.8 - 405.8)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

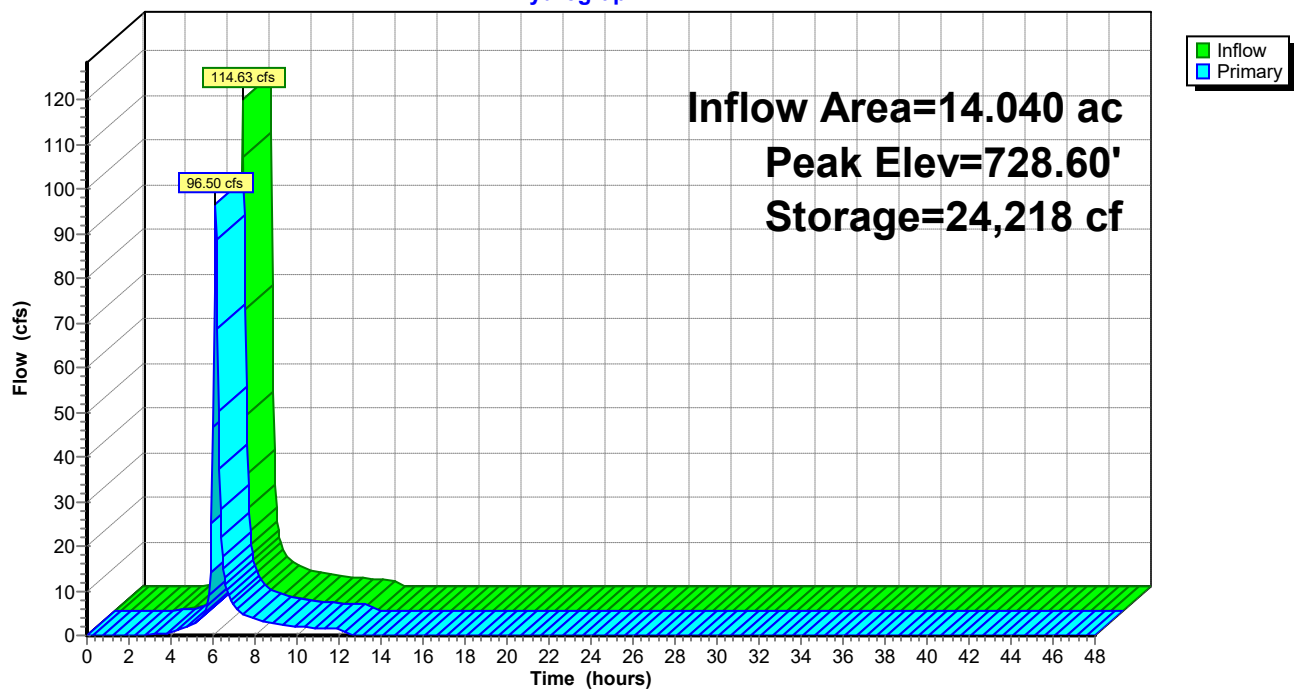
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=94.20 cfs @ 6.11 hrs HW=728.58' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 94.20 cfs @ 6.84 fps)

Pond 11P: Eddb

Hydrograph



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=2.23"
Tc=10.0 min CN=86 Runoff=117.23 cfs 2.611 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=2.32"
Tc=10.0 min CN=87 Runoff=189.44 cfs 4.214 af

Reach 15R: Swale Avg. Flow Depth=1.55' Max Vel=6.73 fps Inflow=91.84 cfs 2.611 af
n=0.022 L=110.0' S=0.0105 '"/ Capacity=383.30 cfs Outflow=89.26 cfs 2.611 af

Pond 7P: Wet Pond Peak Elev=727.45' Storage=6.428 af Inflow=255.42 cfs 6.825 af
Outflow=4.66 cfs 5.829 af

Pond 11P: EDDB Peak Elev=728.56' Storage=23,387 cf Inflow=117.23 cfs 2.611 af
Outflow=91.84 cfs 2.611 af

Total Runoff Area = 35.860 ac Runoff Volume = 6.825 af Average Runoff Depth = 2.28"
89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Summary for Subcatchment 12S: West

Runoff = 117.23 cfs @ 1.12 hrs, Volume= 2.611 af, Depth= 2.23"

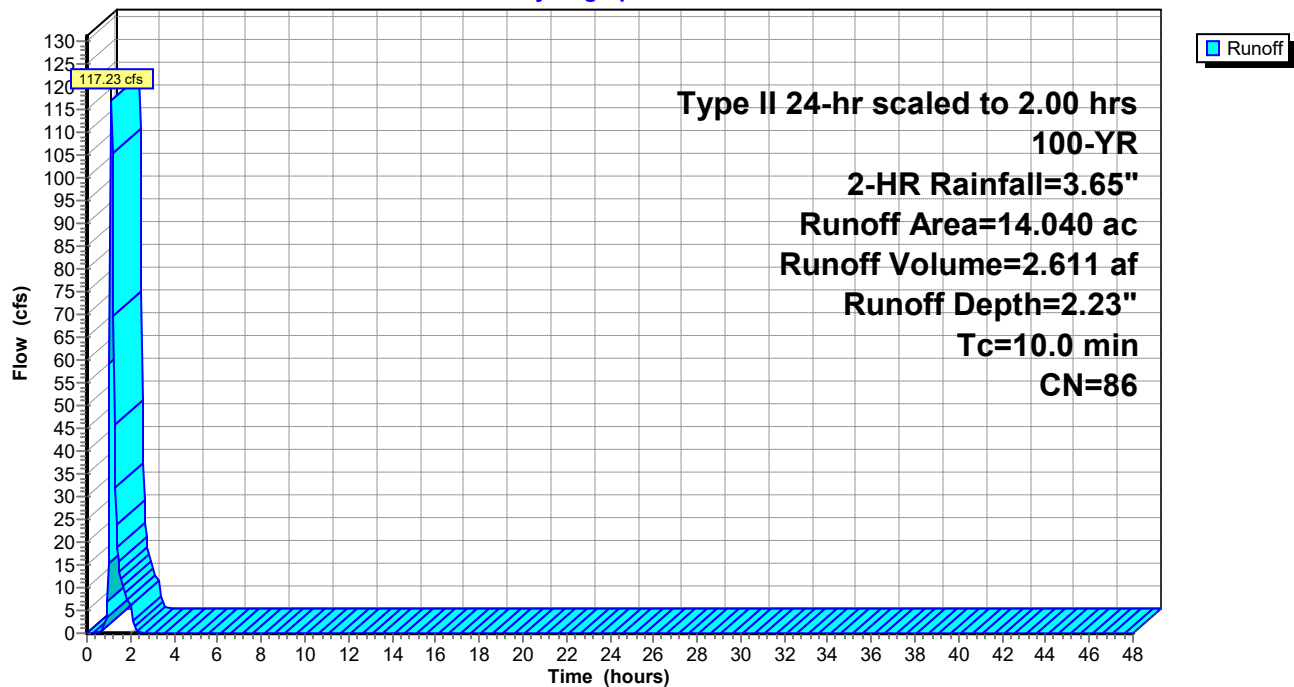
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 2.00 hrs 100-YR, 2-HR Rainfall=3.65"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 189.44 cfs @ 1.12 hrs, Volume= 4.214 af, Depth= 2.32"

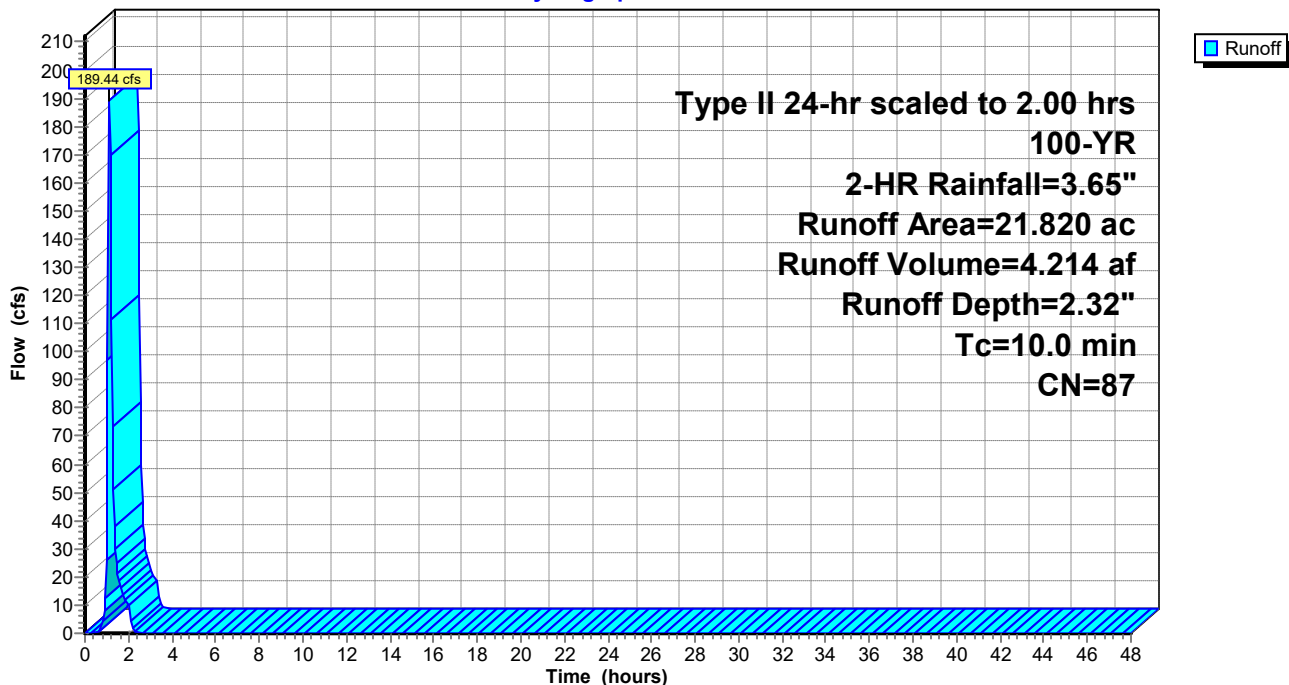
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 2.00 hrs 100-YR, 2-HR Rainfall=3.65"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 2.23" for 100-YR, 2-HR event
 Inflow = 91.84 cfs @ 1.17 hrs, Volume= 2.611 af
 Outflow = 89.26 cfs @ 1.19 hrs, Volume= 2.611 af, Atten= 3%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 6.73 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.46 fps, Avg. Travel Time= 1.3 min

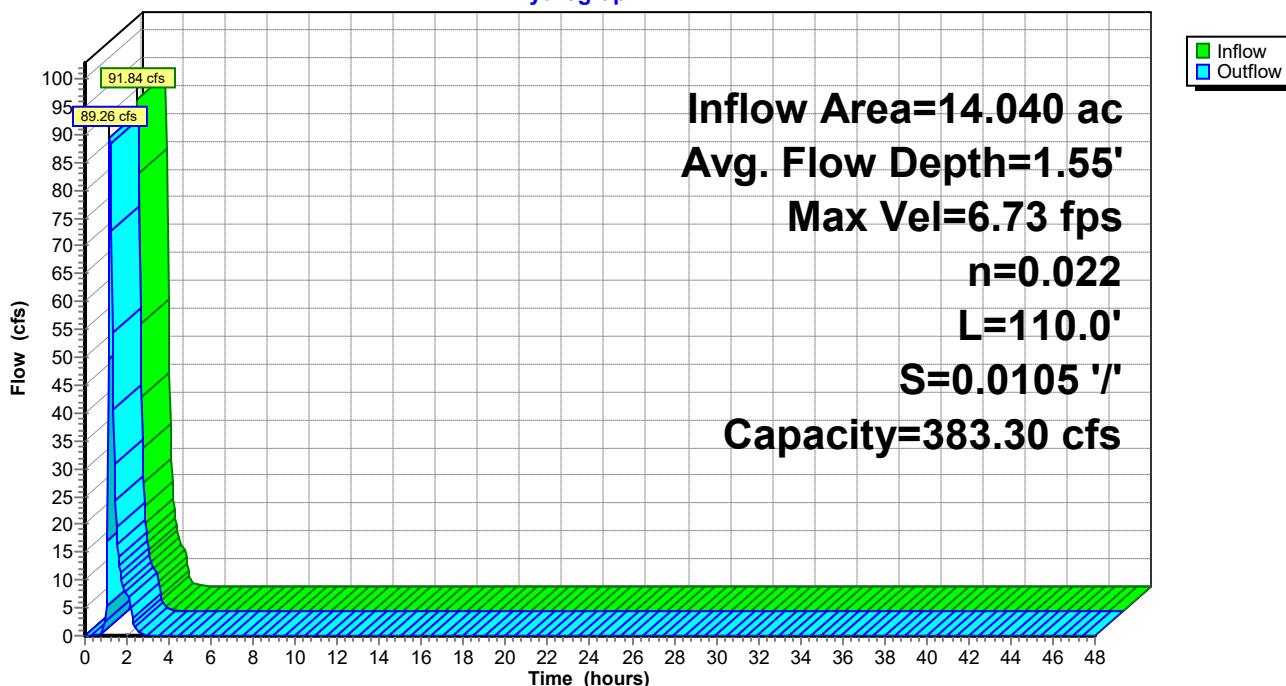
Peak Storage= 1,469 cf @ 1.18 hrs
 Average Depth at Peak Storage= 1.55' , Surface Width= 13.28'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 ' ' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 ' '
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 0.36' @ 2.85 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 2.28" for 100-YR, 2-HR event
 Inflow = 255.42 cfs @ 1.14 hrs, Volume= 6.825 af
 Outflow = 4.66 cfs @ 2.24 hrs, Volume= 5.829 af, Atten= 98%, Lag= 66.3 min
 Primary = 4.66 cfs @ 2.24 hrs, Volume= 5.829 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.45' @ 2.24 hrs Surf.Area= 4.188 ac Storage= 6.428 af

Plug-Flow detention time= 790.4 min calculated for 5.823 af (85% of inflow)
 Center-of-Mass det. time= 786.5 min (865.2 - 78.8)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

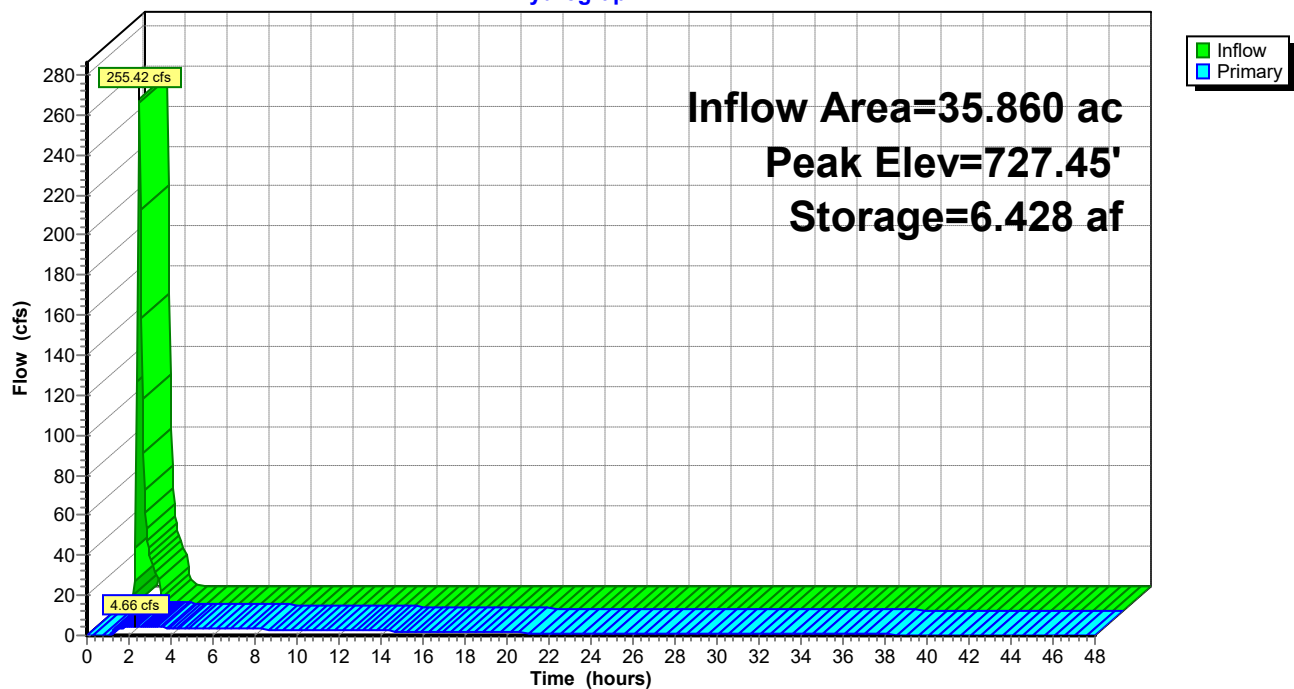
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.66 cfs @ 2.24 hrs HW=727.45' (Free Discharge)

1=Orifice/Grate (Orifice Controls 3.96 cfs @ 5.04 fps)
 2=Orifice/Grate (Orifice Controls 0.70 cfs @ 1.42 fps)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 2.23" for 100-YR, 2-HR event
 Inflow = 117.23 cfs @ 1.12 hrs, Volume= 2.611 af
 Outflow = 91.84 cfs @ 1.17 hrs, Volume= 2.611 af, Atten= 22%, Lag= 3.3 min
 Primary = 91.84 cfs @ 1.17 hrs, Volume= 2.611 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.56' @ 1.17 hrs Surf.Area= 24,758 sf Storage= 23,387 cf

Plug-Flow detention time= 5.9 min calculated for 2.611 af (100% of inflow)
 Center-of-Mass det. time= 5.5 min (82.1 - 76.6)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

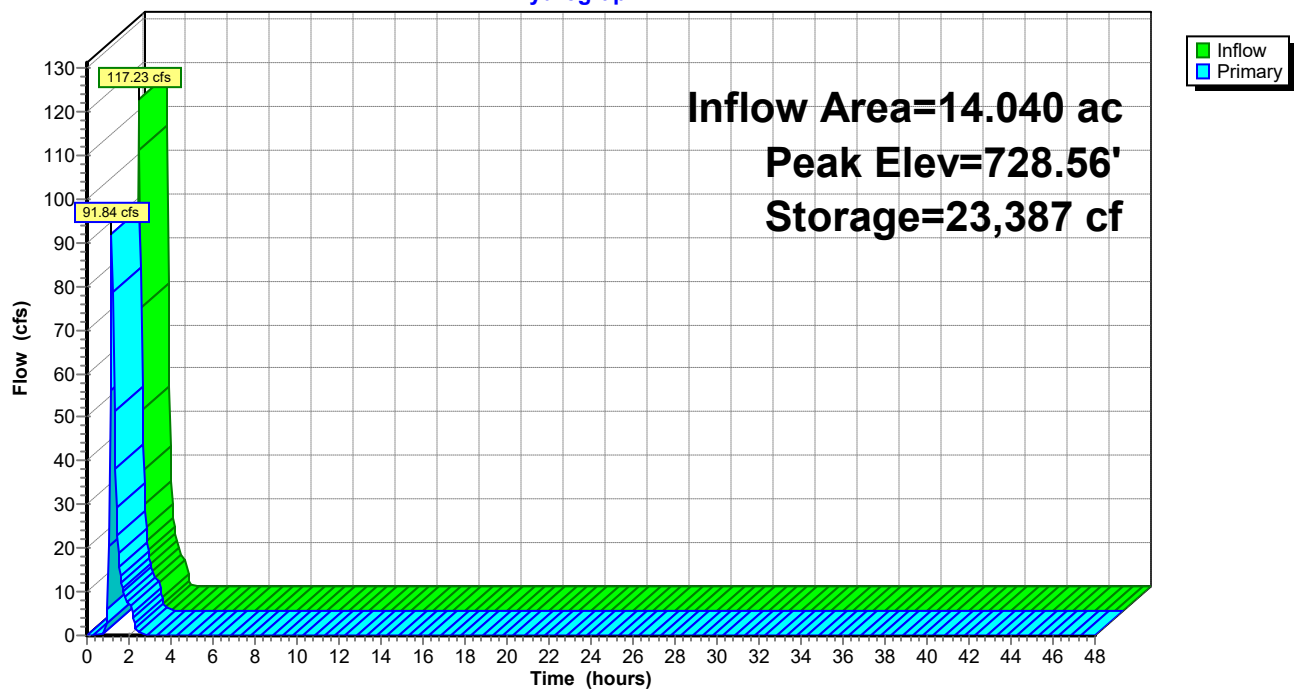
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=87.85 cfs @ 1.17 hrs HW=728.53' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 87.85 cfs @ 6.71 fps)

Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

Prepared by Kimley-Horn

Printed 9/9/2021

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=4.29"
Tc=10.0 min CN=86 Runoff=87.86 cfs 5.015 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=4.39"
Tc=10.0 min CN=87 Runoff=139.14 cfs 7.988 af

Reach 15R: Swale Avg. Flow Depth=1.44' Max Vel=6.51 fps Inflow=78.44 cfs 5.015 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=77.67 cfs 5.015 af

Pond 7P: Wet Pond Peak Elev=727.92' Storage=8.447 af Inflow=210.31 cfs 13.002 af
Outflow=9.18 cfs 11.150 af

Pond 11P: EDDB Peak Elev=728.44' Storage=20,546 cf Inflow=87.86 cfs 5.015 af
Outflow=78.44 cfs 5.015 af

Total Runoff Area = 35.860 ac Runoff Volume = 13.002 af Average Runoff Depth = 4.35"
89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Franklin Industrial Detention Pond

Prepared by Kimley-Horn

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Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

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Summary for Subcatchment 12S: West

Runoff = 87.86 cfs @ 12.01 hrs, Volume= 5.015 af, Depth= 4.29"

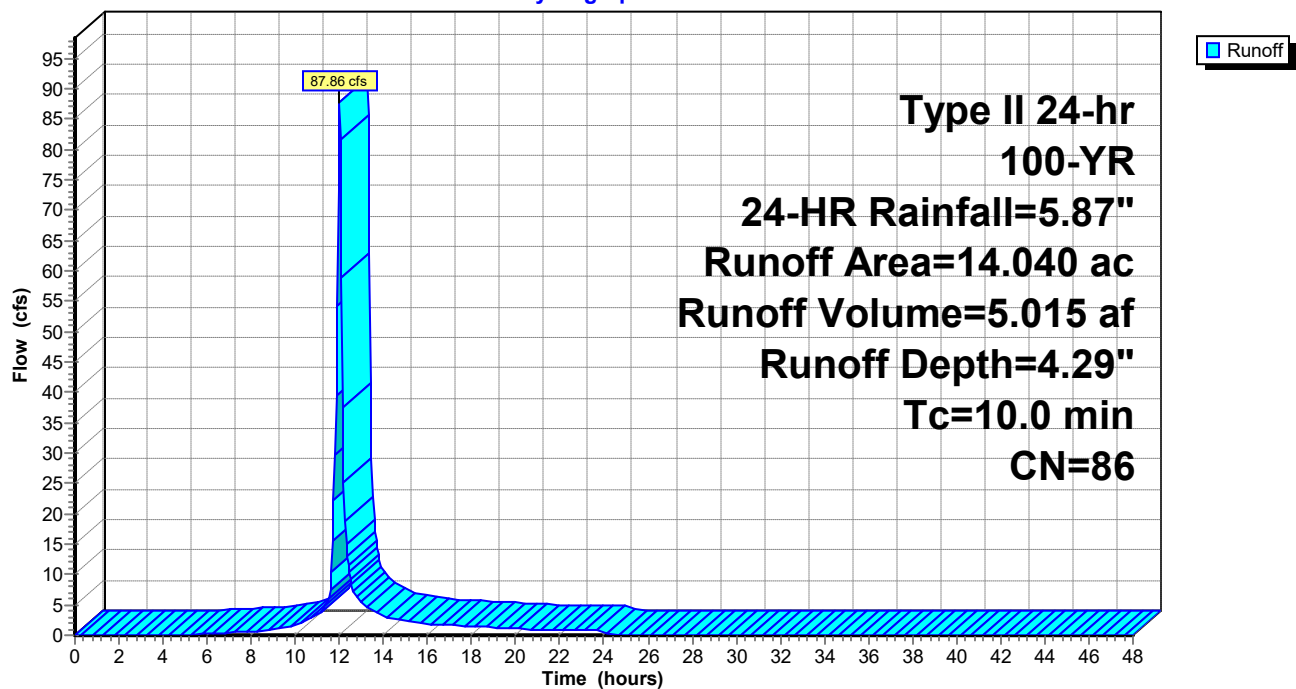
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Franklin Industrial Detention Pond

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Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

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Summary for Subcatchment 13S: East

Runoff = 139.14 cfs @ 12.01 hrs, Volume= 7.988 af, Depth= 4.39"

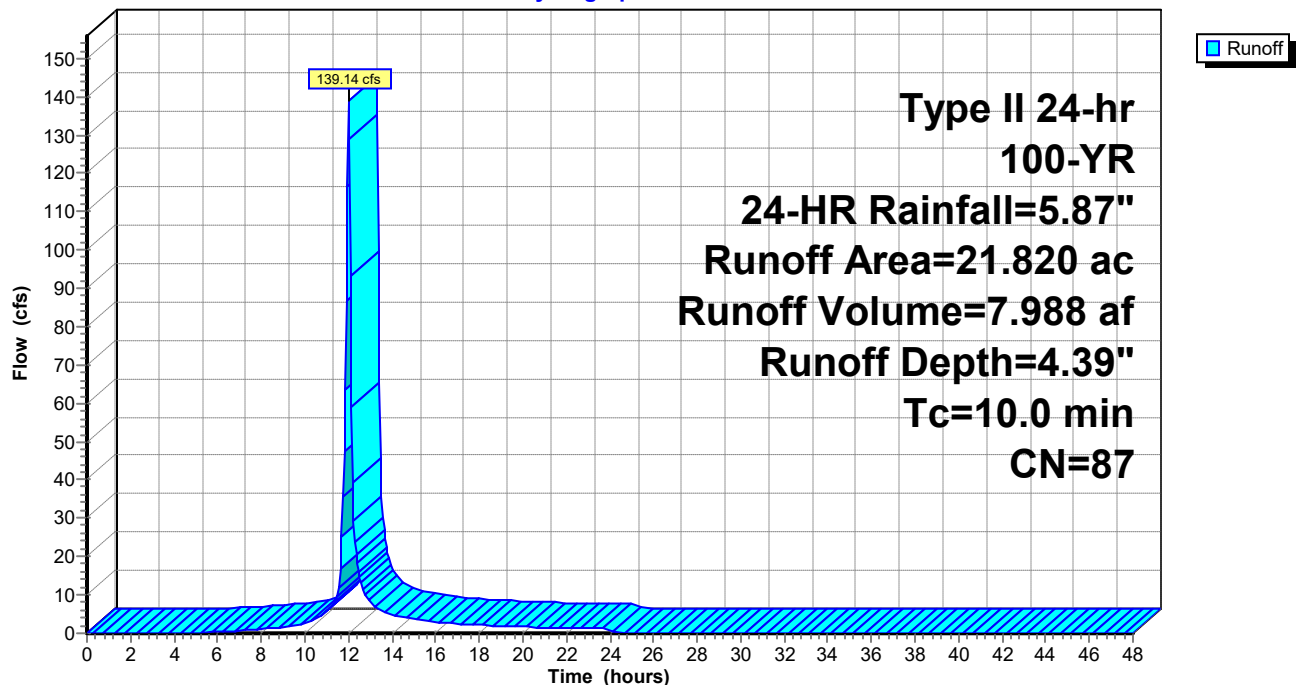
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Franklin Industrial Detention Pond

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Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

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Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 4.29" for 100-YR, 24-HR event
Inflow = 78.44 cfs @ 12.06 hrs, Volume= 5.015 af
Outflow = 77.67 cfs @ 12.07 hrs, Volume= 5.015 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.51 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.73 fps, Avg. Travel Time= 1.1 min

Peak Storage= 1,323 cf @ 12.06 hrs

Average Depth at Peak Storage= 1.44' , Surface Width= 12.66'

Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight

Side Slope Z-value= 3.0 '/' Top Width= 22.00'

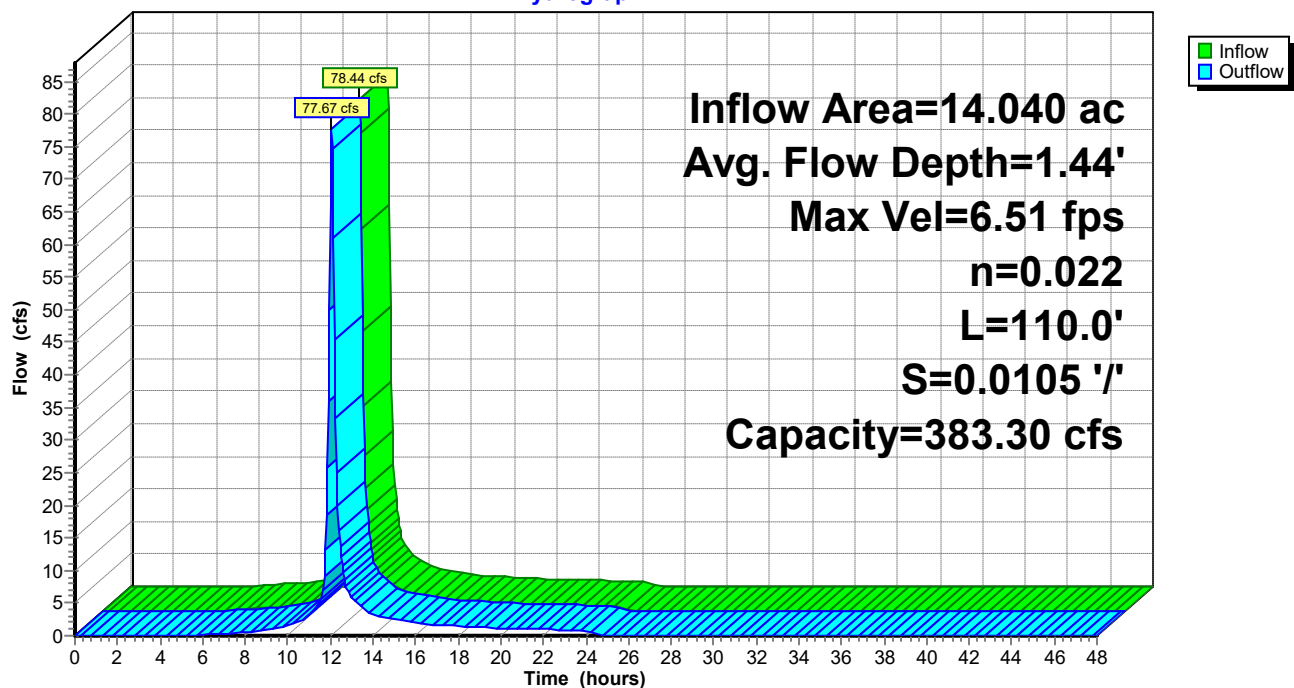
Length= 110.0' Slope= 0.0105 '/'

Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

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Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 0.66' @ 14.35 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 4.35" for 100-YR, 24-HR event
 Inflow = 210.31 cfs @ 12.03 hrs, Volume= 13.002 af
 Outflow = 9.18 cfs @ 13.74 hrs, Volume= 11.150 af, Atten= 96%, Lag= 103.1 min
 Primary = 9.18 cfs @ 13.74 hrs, Volume= 11.150 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.92' @ 13.74 hrs Surf.Area= 4.285 ac Storage= 8.447 af

Plug-Flow detention time= 669.2 min calculated for 11.138 af (86% of inflow)
 Center-of-Mass det. time= 604.4 min (1,405.0 - 800.6)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.18 cfs @ 13.74 hrs HW=727.92' (Free Discharge)

1=Orifice/Grate (Orifice Controls 4.74 cfs @ 6.04 fps)
 2=Orifice/Grate (Orifice Controls 4.43 cfs @ 2.63 fps)

Franklin Industrial Detention Pond

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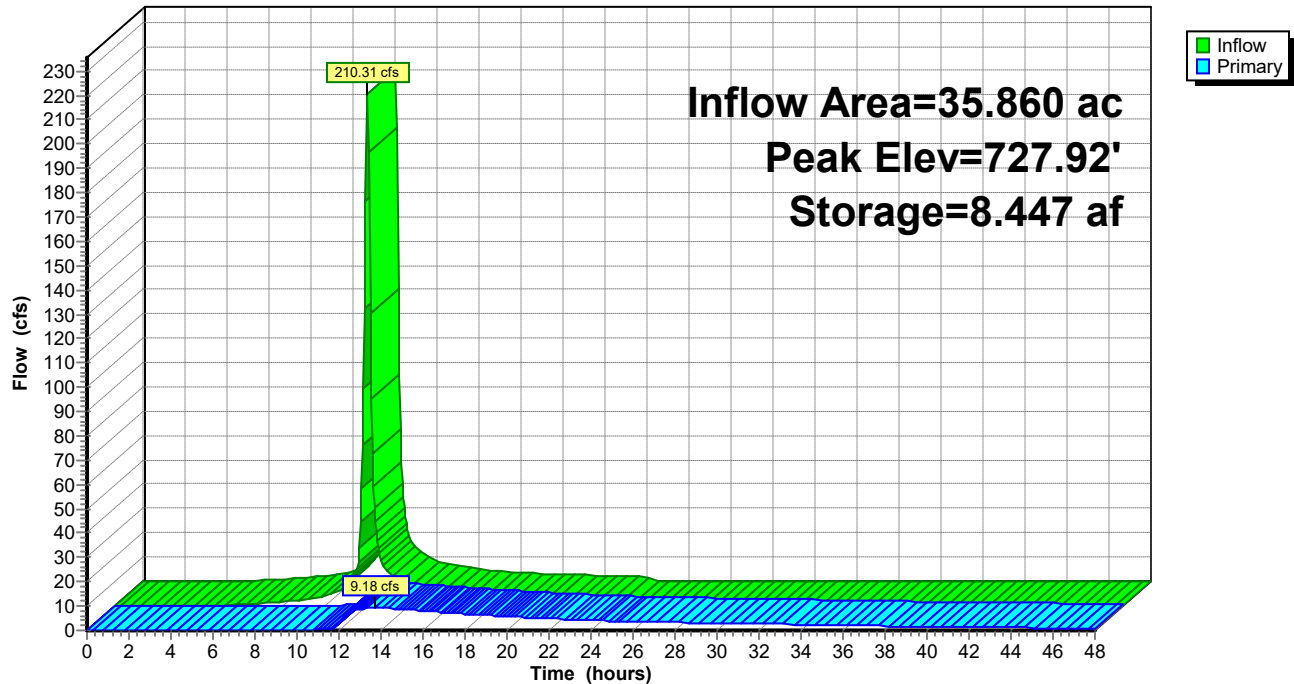
Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

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Pond 7P: Wet Pond

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

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Summary for Pond 11P: EDDB

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 4.29" for 100-YR, 24-HR event
 Inflow = 87.86 cfs @ 12.01 hrs, Volume= 5.015 af
 Outflow = 78.44 cfs @ 12.06 hrs, Volume= 5.015 af, Atten= 11%, Lag= 2.9 min
 Primary = 78.44 cfs @ 12.06 hrs, Volume= 5.015 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.44' @ 12.06 hrs Surf.Area= 23,245 sf Storage= 20,546 cf

Plug-Flow detention time= 8.0 min calculated for 5.009 af (100% of inflow)
 Center-of-Mass det. time= 8.1 min (807.1 - 799.1)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=77.46 cfs @ 12.06 hrs HW=728.44' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 77.46 cfs @ 6.49 fps)

Franklin Industrial Detention Pond

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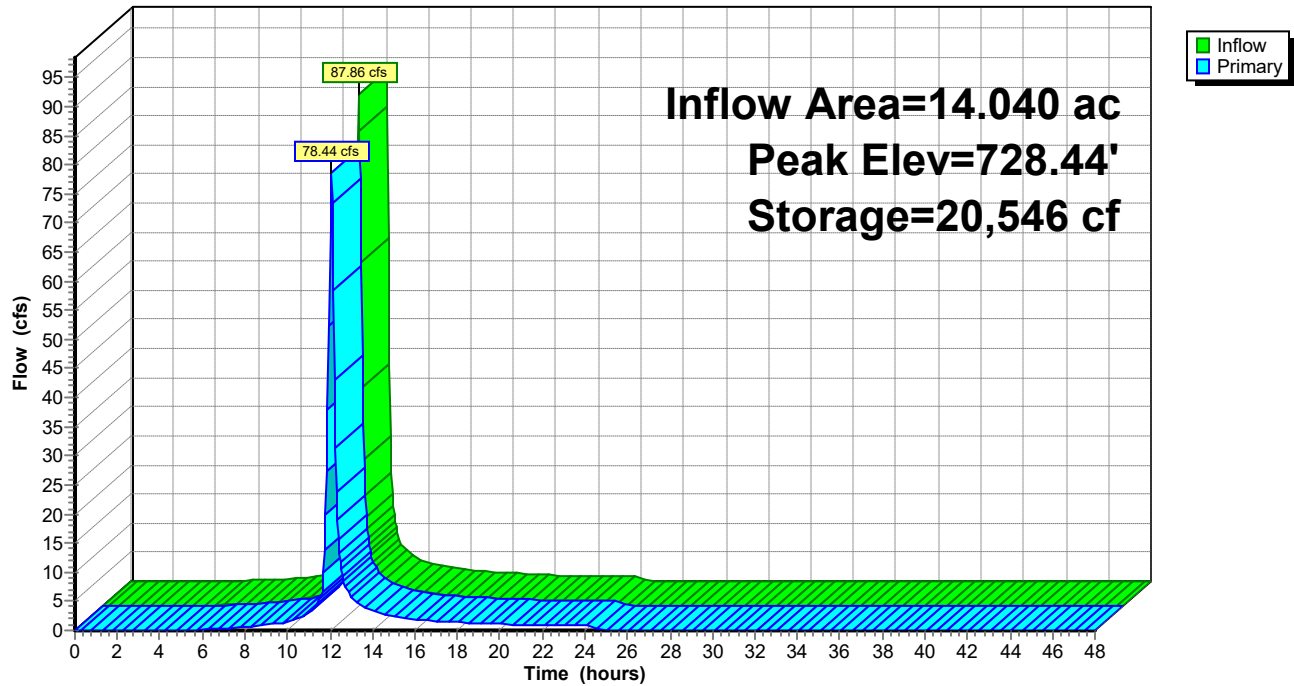
Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

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Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Po *Type II 24-hr scaled to 3.00 hrs 100-YR, 3-HR Rainfall=3.94"*

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

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

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

Subcatchment 12S: West

Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=2.49"

Tc=10.0 min CN=86 Runoff=118.60 cfs 2.916 af

Subcatchment 13S: East

Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=2.58"

Tc=10.0 min CN=87 Runoff=190.94 cfs 4.694 af

Reach 15R: Swale

Avg. Flow Depth=1.58' Max Vel=6.78 fps Inflow=93.85 cfs 2.916 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=90.76 cfs 2.916 af

Pond 7P: Wet Pond

Peak Elev=727.58' Storage=6.969 af Inflow=257.72 cfs 7.610 af

Outflow=5.68 cfs 6.561 af

Pond 11P: EDDB

Peak Elev=728.58' Storage=23,736 cf Inflow=118.60 cfs 2.916 af

Outflow=93.85 cfs 2.916 af

Total Runoff Area = 35.860 ac Runoff Volume = 7.610 af Average Runoff Depth = 2.55"

89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Summary for Subcatchment 12S: West

Runoff = 118.60 cfs @ 1.61 hrs, Volume= 2.916 af, Depth= 2.49"

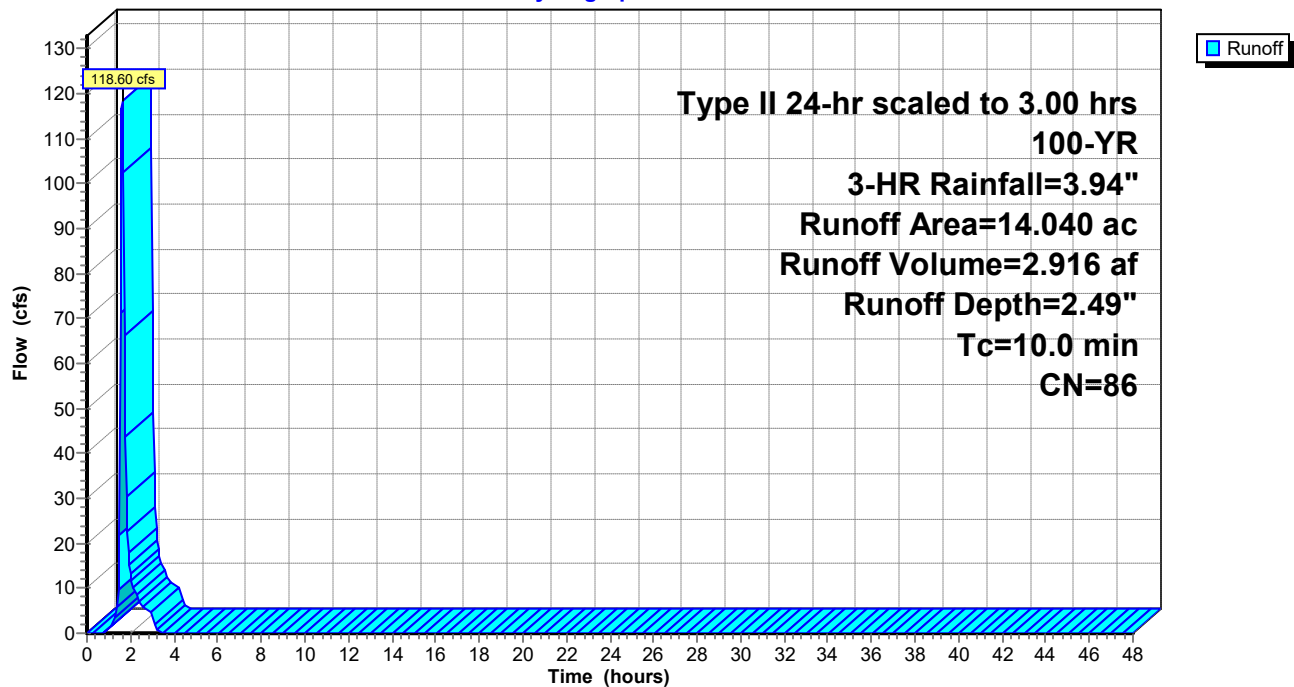
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 3.00 hrs 100-YR, 3-HR Rainfall=3.94"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 190.94 cfs @ 1.61 hrs, Volume= 4.694 af, Depth= 2.58"

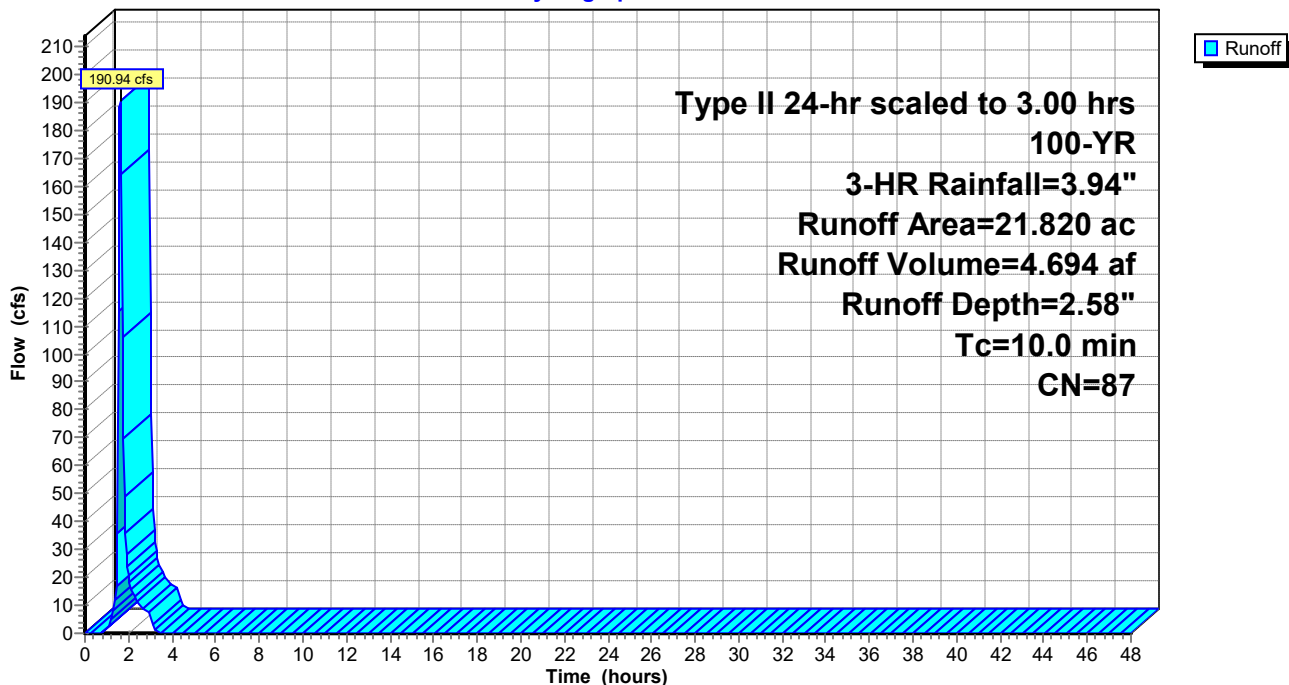
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 3.00 hrs 100-YR, 3-HR Rainfall=3.94"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 2.49" for 100-YR, 3-HR event
 Inflow = 93.85 cfs @ 1.67 hrs, Volume= 2.916 af
 Outflow = 90.76 cfs @ 1.68 hrs, Volume= 2.916 af, Atten= 3%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 6.78 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.58 fps, Avg. Travel Time= 1.2 min

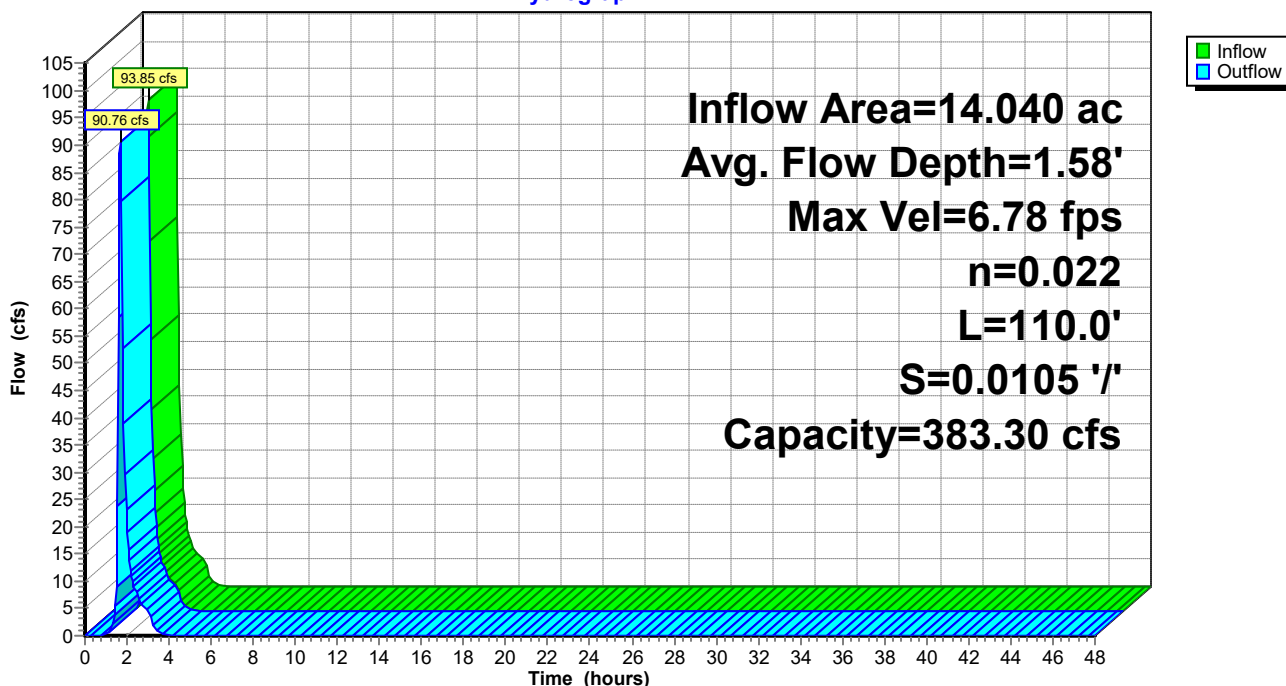
Peak Storage= 1,513 cf @ 1.67 hrs
 Average Depth at Peak Storage= 1.58' , Surface Width= 13.47'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 0.48' @ 3.80 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 2.55" for 100-YR, 3-HR event
 Inflow = 257.72 cfs @ 1.63 hrs, Volume= 7.610 af
 Outflow = 5.68 cfs @ 3.18 hrs, Volume= 6.561 af, Atten= 98%, Lag= 93.1 min
 Primary = 5.68 cfs @ 3.18 hrs, Volume= 6.561 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.58' @ 3.18 hrs Surf.Area= 4.215 ac Storage= 6.969 af

Plug-Flow detention time= 779.1 min calculated for 6.561 af (86% of inflow)
 Center-of-Mass det. time= 770.7 min (882.8 - 112.1)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

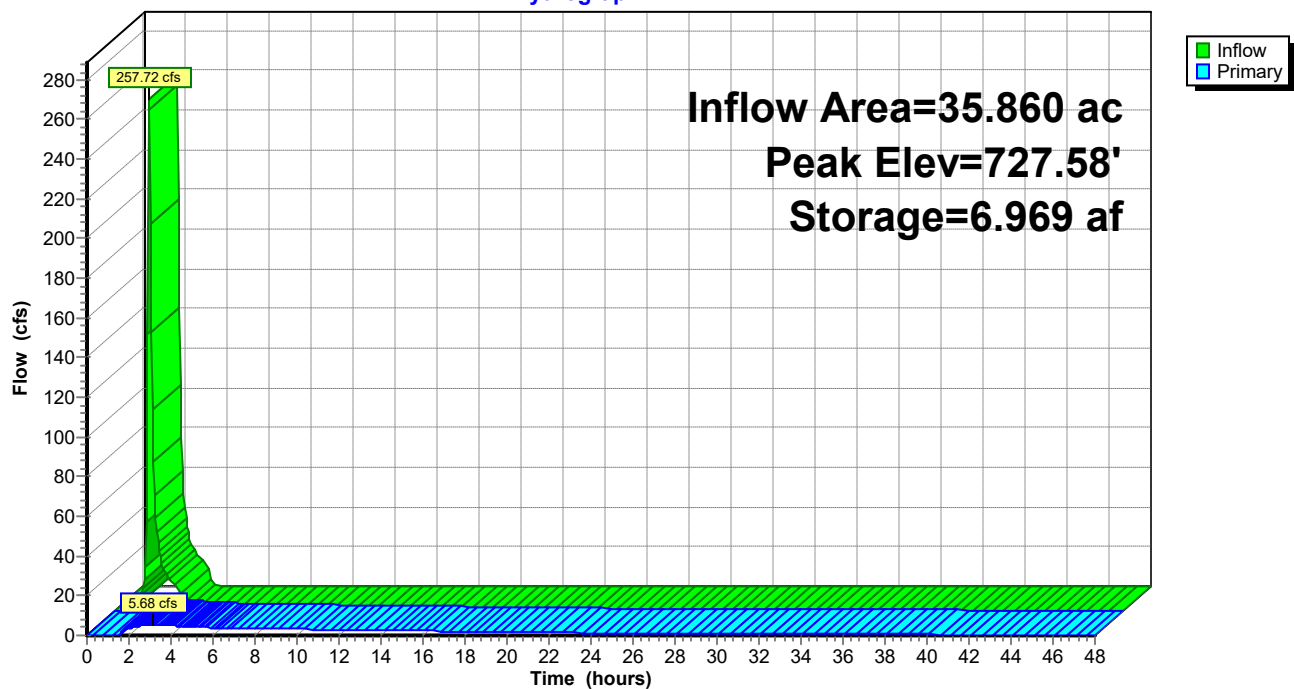
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.67 cfs @ 3.18 hrs HW=727.58' (Free Discharge)

↑ **1=Orifice/Grate** (Orifice Controls 4.19 cfs @ 5.33 fps)
 — **2=Orifice/Grate** (Orifice Controls 1.49 cfs @ 1.83 fps)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 2.49" for 100-YR, 3-HR event
 Inflow = 118.60 cfs @ 1.61 hrs, Volume= 2.916 af
 Outflow = 93.85 cfs @ 1.67 hrs, Volume= 2.916 af, Atten= 21%, Lag= 3.3 min
 Primary = 93.85 cfs @ 1.67 hrs, Volume= 2.916 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.58' @ 1.67 hrs Surf.Area= 24,938 sf Storage= 23,736 cf

Plug-Flow detention time= 6.1 min calculated for 2.916 af (100% of inflow)
 Center-of-Mass det. time= 5.7 min (115.7 - 109.9)

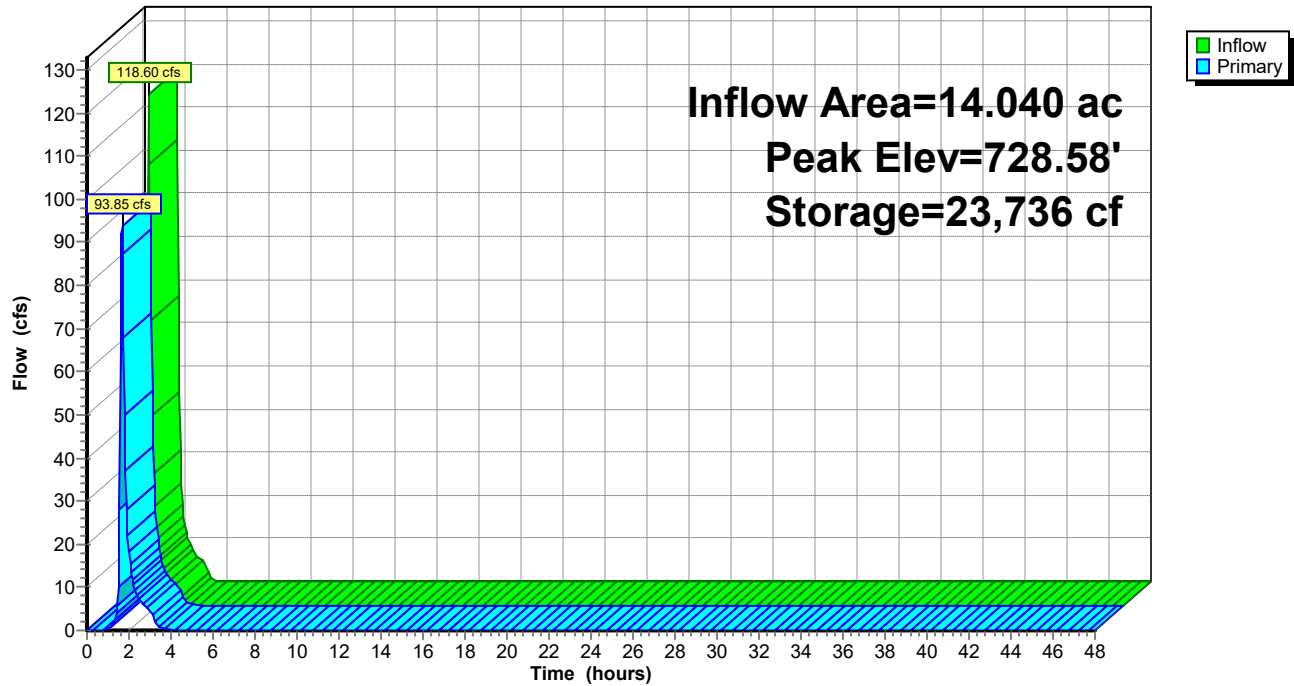
Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=90.22 cfs @ 1.67 hrs HW=728.55' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 90.22 cfs @ 6.76 fps)

Pond 11P: EDDB

Hydrograph



Franklin Industrial Detention Po *Type II 24-hr scaled to 6.00 hrs 100-YR, 6-HR Rainfall=4.76"*

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

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

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

Subcatchment 12S: West

Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=3.24"

Tc=10.0 min CN=86 Runoff=126.11 cfs 3.795 af

Subcatchment 13S: East

Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=3.34"

Tc=10.0 min CN=87 Runoff=201.38 cfs 6.077 af

Reach 15R: Swale

Avg. Flow Depth=1.64' Max Vel=7.00 fps Inflow=102.55 cfs 3.795 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=101.59 cfs 3.795 af

Pond 7P: Wet Pond

Peak Elev=727.83' Storage=8.046 af Inflow=286.32 cfs 9.872 af

Outflow=8.14 cfs 8.689 af

Pond 11P: EDDB

Peak Elev=728.64' Storage=25,392 cf Inflow=126.11 cfs 3.795 af

Outflow=102.55 cfs 3.795 af

Total Runoff Area = 35.860 ac Runoff Volume = 9.872 af Average Runoff Depth = 3.30"

89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Summary for Subcatchment 12S: West

Runoff = 126.11 cfs @ 3.10 hrs, Volume= 3.795 af, Depth= 3.24"

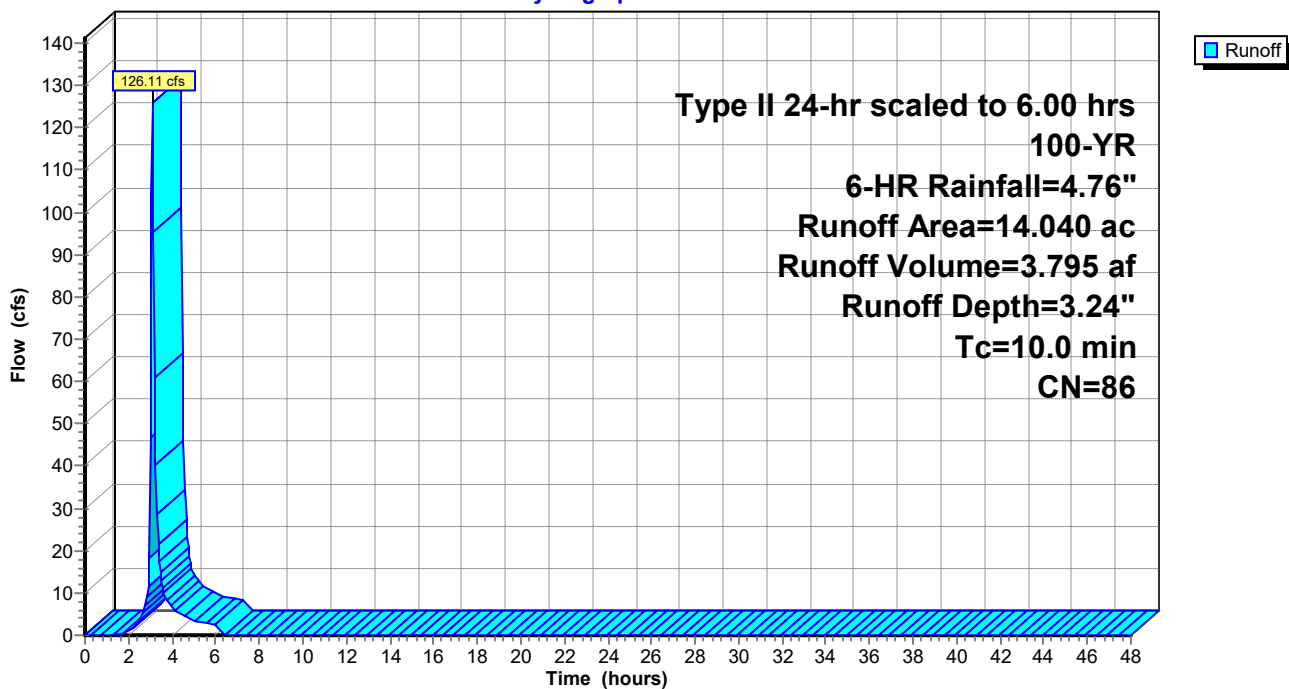
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 6.00 hrs 100-YR, 6-HR Rainfall=4.76"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 201.38 cfs @ 3.10 hrs, Volume= 6.077 af, Depth= 3.34"

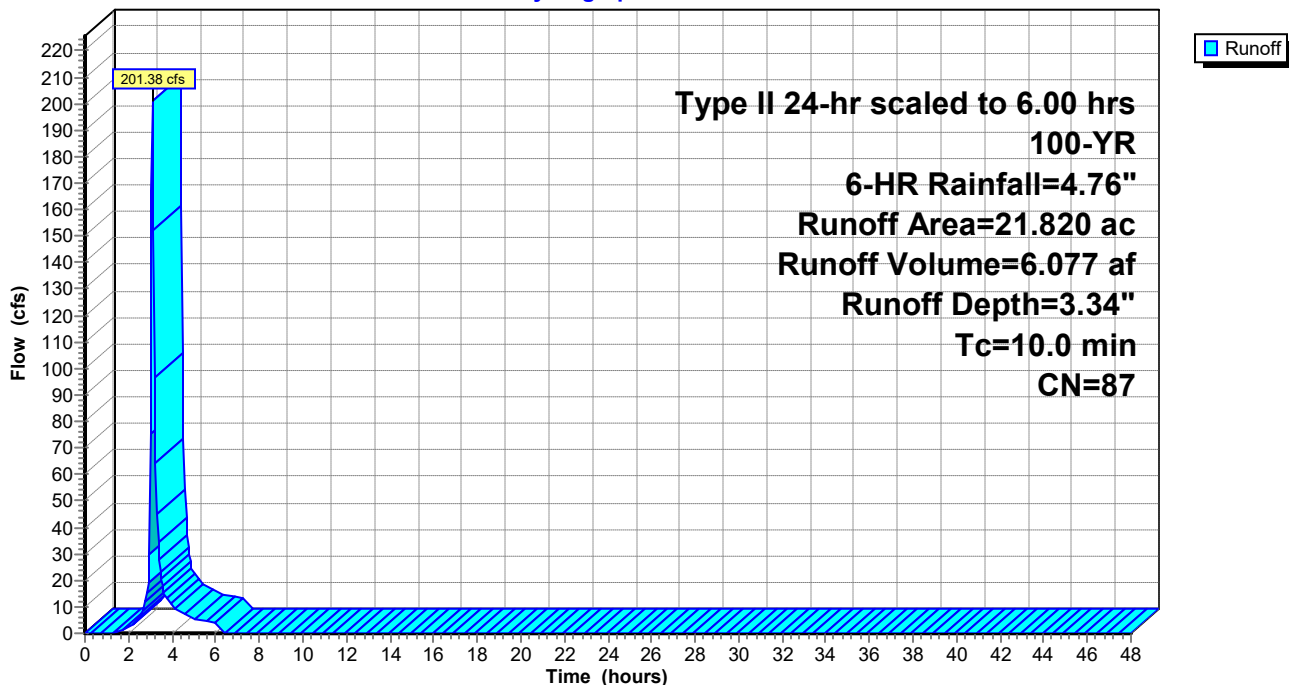
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 6.00 hrs 100-YR, 6-HR Rainfall=4.76"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 3.24" for 100-YR, 6-HR event
 Inflow = 102.55 cfs @ 3.15 hrs, Volume= 3.795 af
 Outflow = 101.59 cfs @ 3.16 hrs, Volume= 3.795 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 7.00 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.79 fps, Avg. Travel Time= 1.0 min

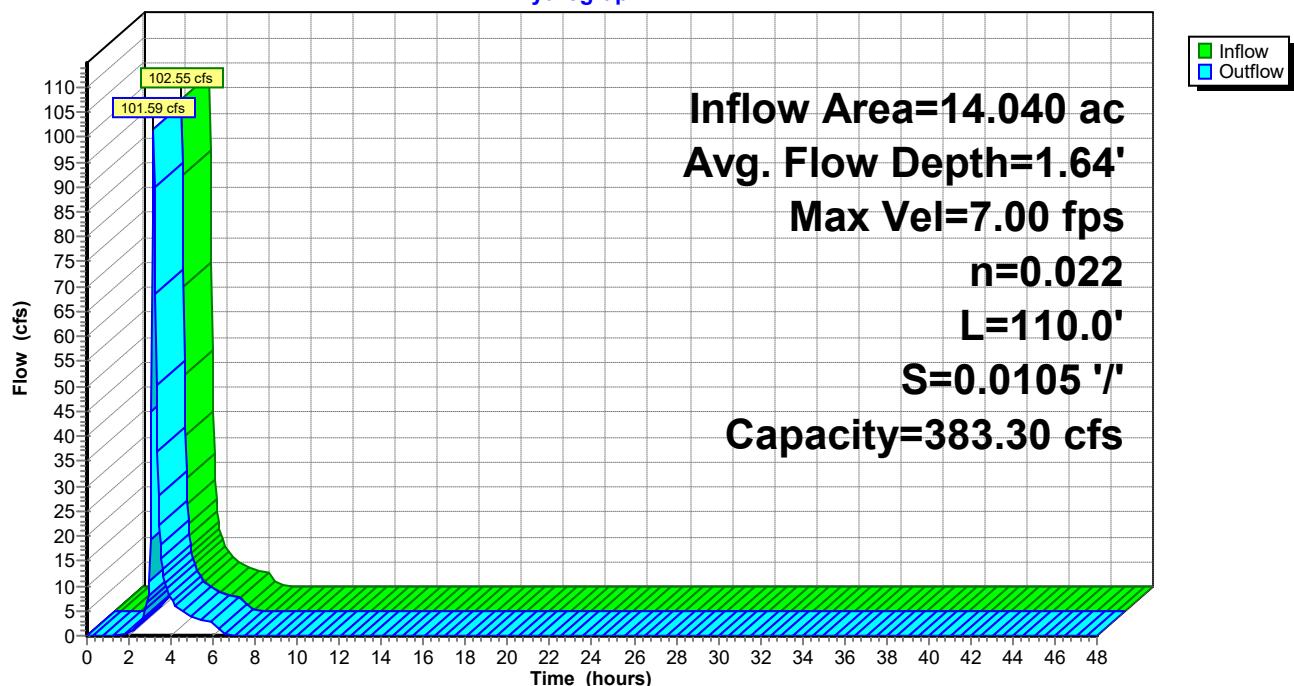
Peak Storage= 1,616 cf @ 3.15 hrs
 Average Depth at Peak Storage= 1.64' , Surface Width= 13.87'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 0.70' @ 6.60 hrs

Inflow Area = 35.860 ac, 10.76% Impervious, Inflow Depth = 3.30" for 100-YR, 6-HR event
 Inflow = 286.32 cfs @ 3.11 hrs, Volume= 9.872 af
 Outflow = 8.14 cfs @ 5.38 hrs, Volume= 8.689 af, Atten= 97%, Lag= 136.1 min
 Primary = 8.14 cfs @ 5.38 hrs, Volume= 8.689 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.83' @ 5.38 hrs Surf.Area= 4.266 ac Storage= 8.046 af

Plug-Flow detention time= 720.4 min calculated for 8.689 af (88% of inflow)
 Center-of-Mass det. time= 705.5 min (916.3 - 210.8)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

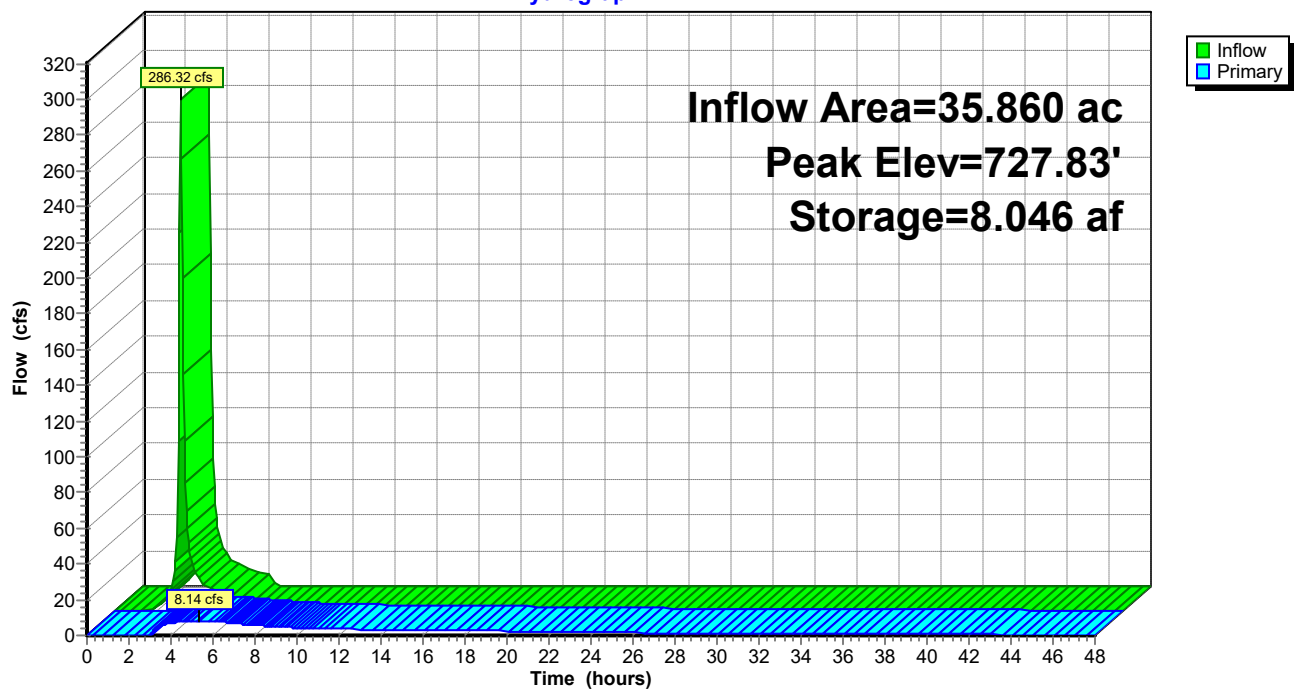
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.14 cfs @ 5.38 hrs HW=727.83' (Free Discharge)

↑ **1=Orifice/Grate** (Orifice Controls 4.60 cfs @ 5.86 fps)
 — **2=Orifice/Grate** (Orifice Controls 3.54 cfs @ 2.44 fps)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: Eddb

Inflow Area = 14.040 ac, 0.00% Impervious, Inflow Depth = 3.24" for 100-YR, 6-HR event
 Inflow = 126.11 cfs @ 3.10 hrs, Volume= 3.795 af
 Outflow = 102.55 cfs @ 3.15 hrs, Volume= 3.795 af, Atten= 19%, Lag= 3.2 min
 Primary = 102.55 cfs @ 3.15 hrs, Volume= 3.795 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.64' @ 3.15 hrs Surf.Area= 25,773 sf Storage= 25,392 cf

Plug-Flow detention time= 6.1 min calculated for 3.791 af (100% of inflow)
 Center-of-Mass det. time= 6.2 min (214.9 - 208.7)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

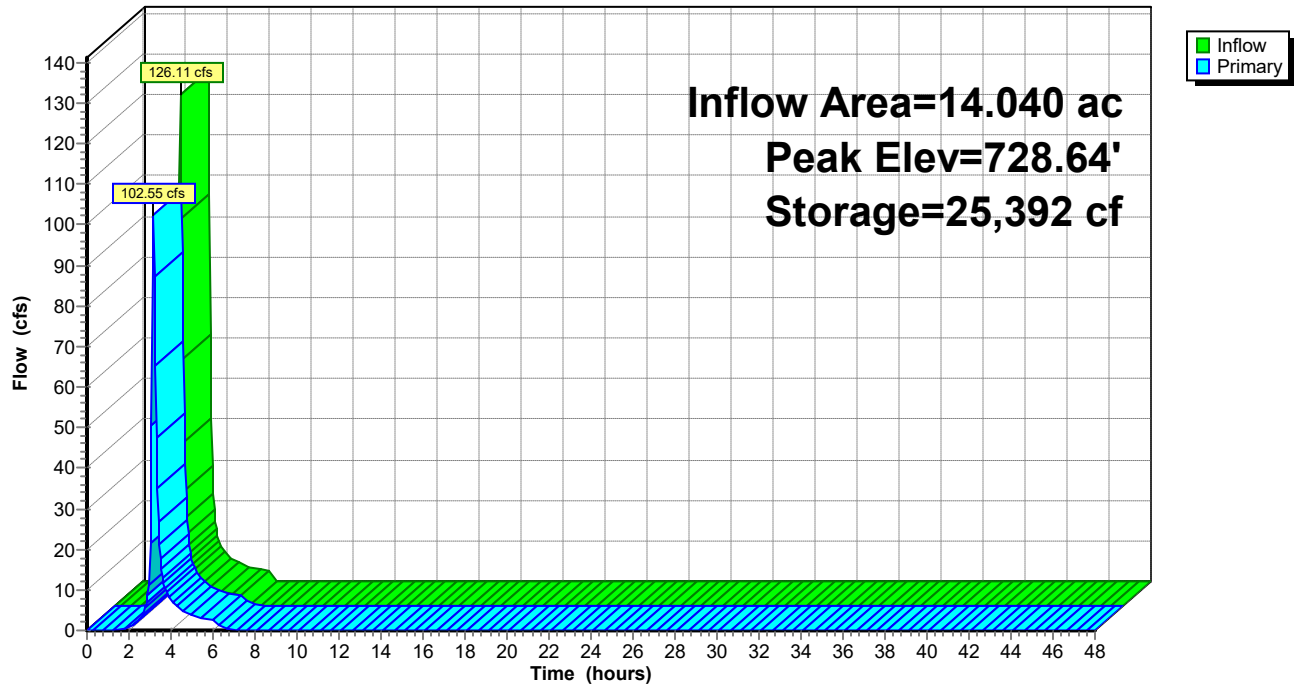
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

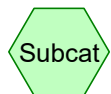
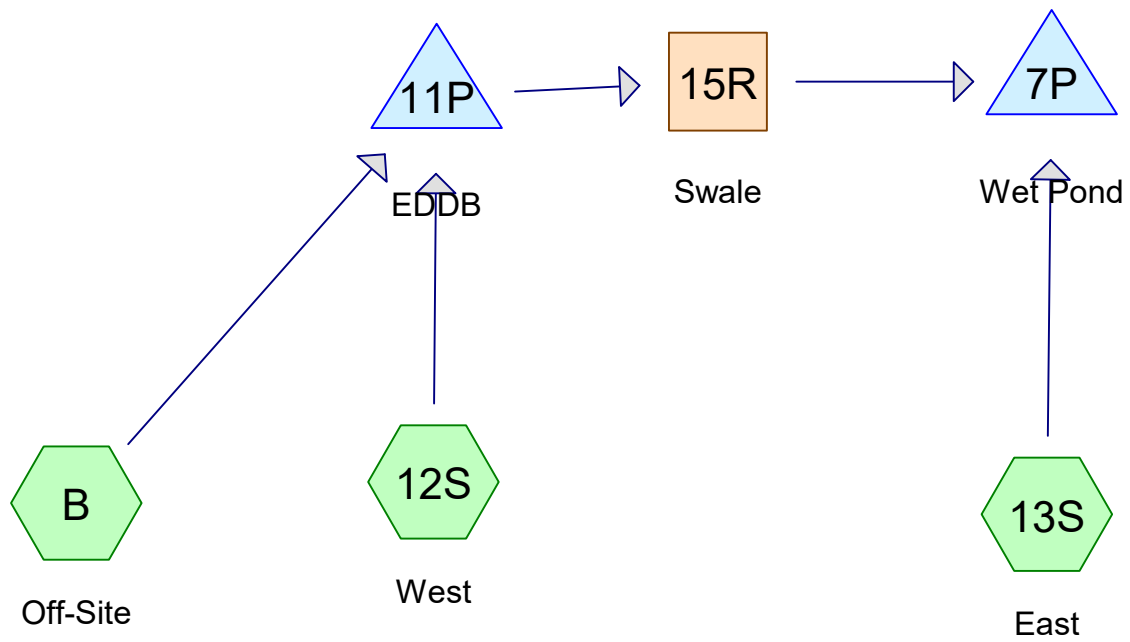
Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=102.11 cfs @ 3.15 hrs HW=728.64' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 102.11 cfs @ 6.99 fps)

Pond 11P: Eddb

Hydrograph

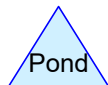




Subcat



Reach



Pond



Link

Routing Diagram for Franklin Industrial Detention Pond
Prepared by Kimley-Horn, Printed 9/9/2021
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Franklin Industrial Detention Pond

Prepared by Kimley-Horn

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR, 1-HR	Type II 24-hr		Scale	1.00	1	1.39	2
2	2-YR, 12-HR	Type II 24-hr		Scale	12.00	1	2.44	2
3	2-YR, 2-HR	Type II 24-hr		Scale	2.00	1	1.63	2
4	2-YR, 24-HR	Type II 24-hr		Default	24.00	1	2.91	2
5	2-YR, 3-HR	Type II 24-hr		Scale	3.00	1	1.42	2
6	2-YR, 6-HR	Type II 24-hr		Scale	6.00	1	1.69	2
7	10-YR, 1-HR	Type II 24-hr		Scale	1.00	1	2.02	2
8	10-YR, 12-HR	Type II 24-hr		Scale	12.00	1	3.53	2
9	10-YR, 2-HR	Type II 24-hr		Scale	2.00	1	2.38	2
10	10-YR, 24-HR	Type II 24-hr		Default	24.00	1	4.07	2
11	10-YR, 3-HR	Type II 24-hr		Scale	3.00	1	2.53	2
12	10-YR, 6-HR	Type II 24-hr		Scale	6.00	1	3.03	2
13	100-YR, 1-HR	Type II 24-hr		Scale	1.00	1	3.01	2
14	100-YR, 12-HR	Type II 24-hr		Scale	12.00	1	5.36	2
15	100-YR, 2-HR	Type II 24-hr		Scale	2.00	1	3.65	2
16	100-YR, 24-HR	Type II 24-hr		Default	24.00	1	5.87	2
17	100-YR, 3-HR	Type II 24-hr		Scale	3.00	1	3.94	2
18	100-YR, 6-HR	Type II 24-hr		Scale	6.00	1	4.76	2

Franklin Industrial Detention Pond

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
22.688	90	(12S, 13S)
9.312	74	>75% Grass cover, Good, HSG C (12S, 13S)
24.640	91	Urban industrial, 72% imp, HSG C (B)
3.860	98	Water Surface, HSG C (13S)
60.500	88	TOTAL AREA

Franklin Industrial Detention Pond

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
37.812	HSG C	12S, 13S, B
0.000	HSG D	
22.688	Other	12S, 13S
60.500		TOTAL AREA

Franklin Industrial Detention Pond

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	22.688	22.688		12S, 13S
0.000	0.000	9.312	0.000	0.000	9.312	>75% Grass cover, Good	12S, 13S
0.000	0.000	24.640	0.000	0.000	24.640	Urban industrial, 72% imp	B
0.000	0.000	3.860	0.000	0.000	3.860	Water Surface	13S
0.000	0.000	37.812	0.000	22.688	60.500	TOTAL AREA	

Franklin Industrial Detention Pond *Type II 24-hr scaled to 1.00 hrs 2-YR, 1-HR Rainfall=1.39"*

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=0.42"
Tc=10.0 min CN=86 Runoff=23.20 cfs 0.492 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=0.46"
Tc=10.0 min CN=87 Runoff=40.06 cfs 0.837 af

Subcatchment B: Off-Site Runoff Area=24.640 ac 72.00% Impervious Runoff Depth=0.65"
Tc=20.0 min CN=91 Runoff=40.27 cfs 1.338 af

Reach 15R: Swale Avg. Flow Depth=1.13' Max Vel=5.69 fps Inflow=47.79 cfs 1.830 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=47.58 cfs 1.830 af

Pond 7P: Wet Pond Peak Elev=726.50' Storage=2.554 af Inflow=63.12 cfs 2.668 af
Outflow=1.48 cfs 1.960 af

Pond 11P: EDDB Peak Elev=728.13' Storage=13,916 cf Inflow=52.10 cfs 1.830 af
Outflow=47.79 cfs 1.830 af

Total Runoff Area = 60.500 ac Runoff Volume = 2.668 af Average Runoff Depth = 0.53"
64.30% Pervious = 38.899 ac 35.70% Impervious = 21.601 ac

Summary for Subcatchment 12S: West

Runoff = 23.20 cfs @ 0.65 hrs, Volume= 0.492 af, Depth= 0.42"

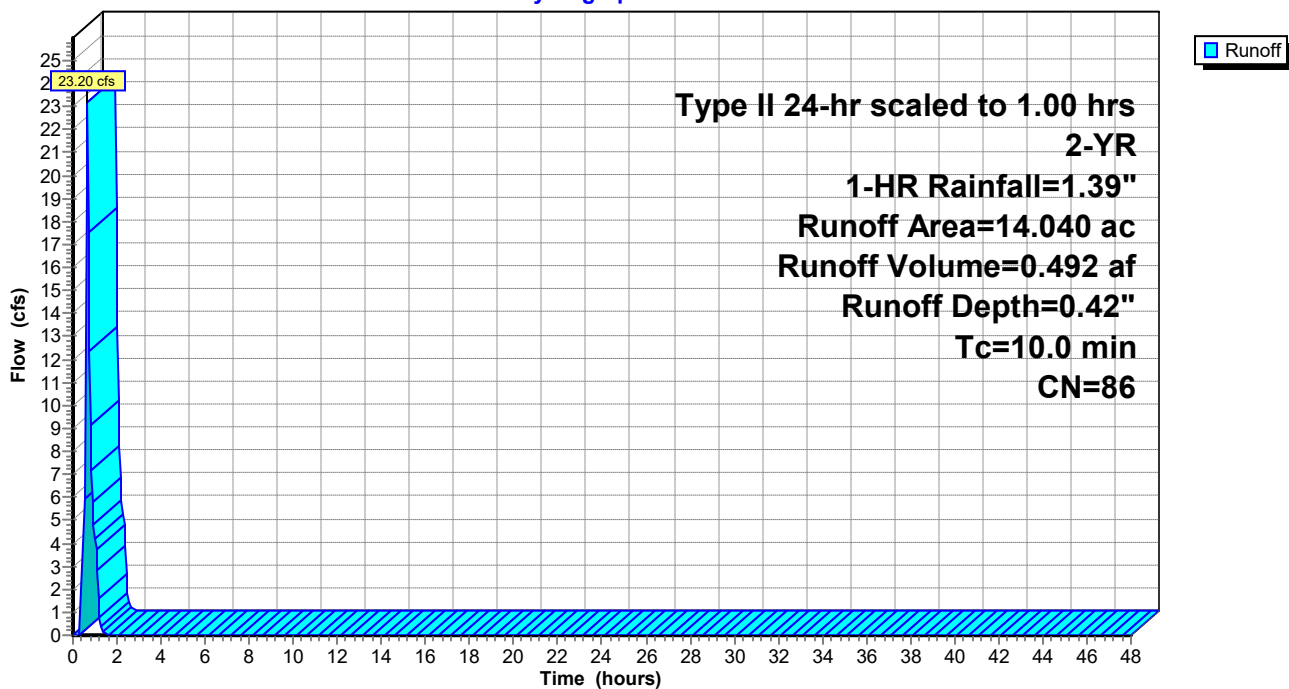
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 1.00 hrs 2-YR, 1-HR Rainfall=1.39"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 40.06 cfs @ 0.64 hrs, Volume= 0.837 af, Depth= 0.46"

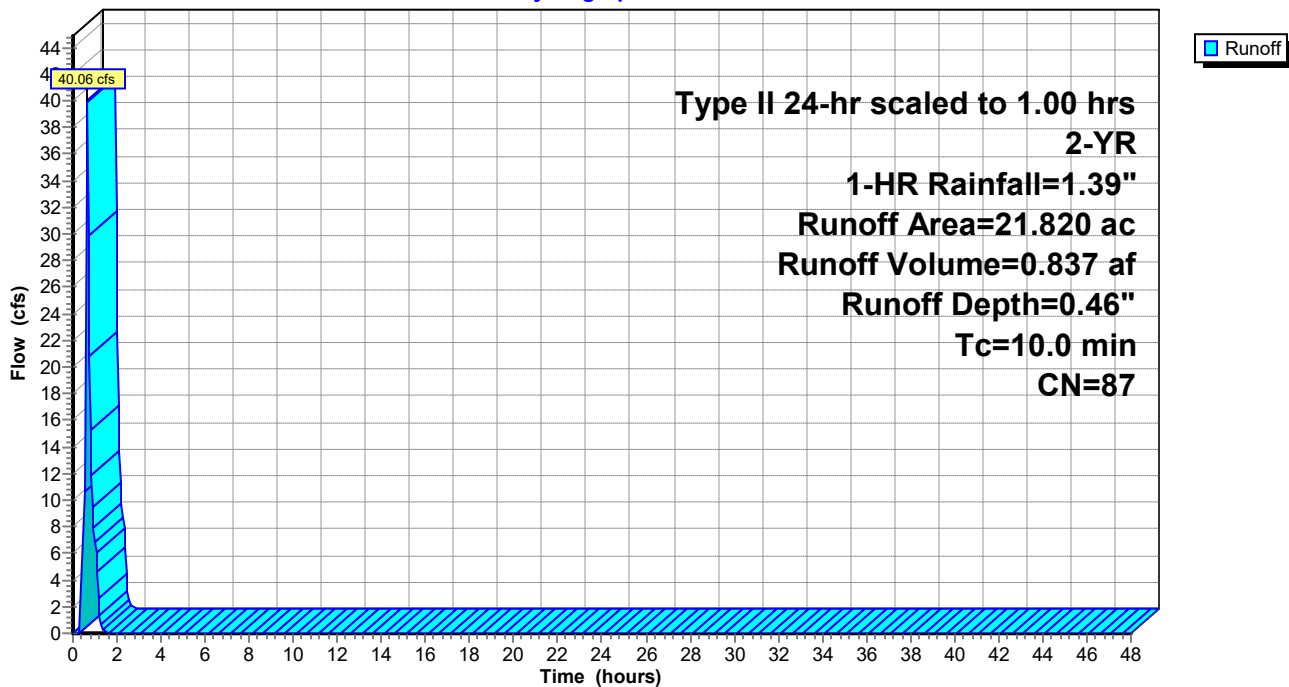
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 1.00 hrs 2-YR, 1-HR Rainfall=1.39"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Subcatchment B: Off-Site

Runoff = 40.27 cfs @ 0.78 hrs, Volume= 1.338 af, Depth= 0.65"

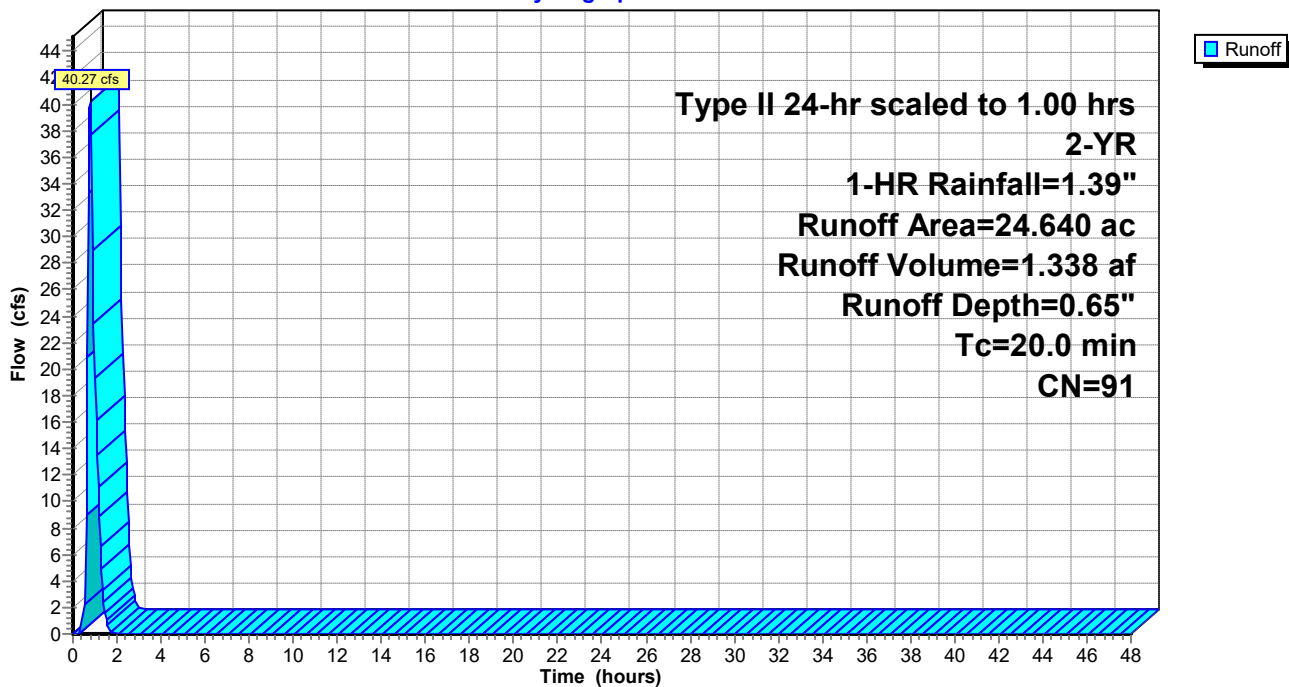
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 1.00 hrs 2-YR, 1-HR Rainfall=1.39"

Area (ac)	CN	Description
24.640	91	Urban industrial, 72% imp, HSG C
6.899		28.00% Pervious Area
17.741		72.00% Impervious Area

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

Subcatchment B: Off-Site

Hydrograph



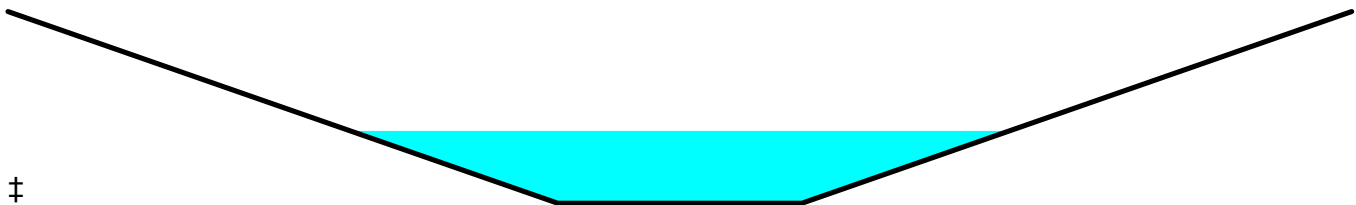
Summary for Reach 15R: Swale

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 0.57" for 2-YR, 1-HR event
 Inflow = 47.79 cfs @ 0.81 hrs, Volume= 1.830 af
 Outflow = 47.58 cfs @ 0.82 hrs, Volume= 1.830 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.69 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.33 fps, Avg. Travel Time= 1.4 min

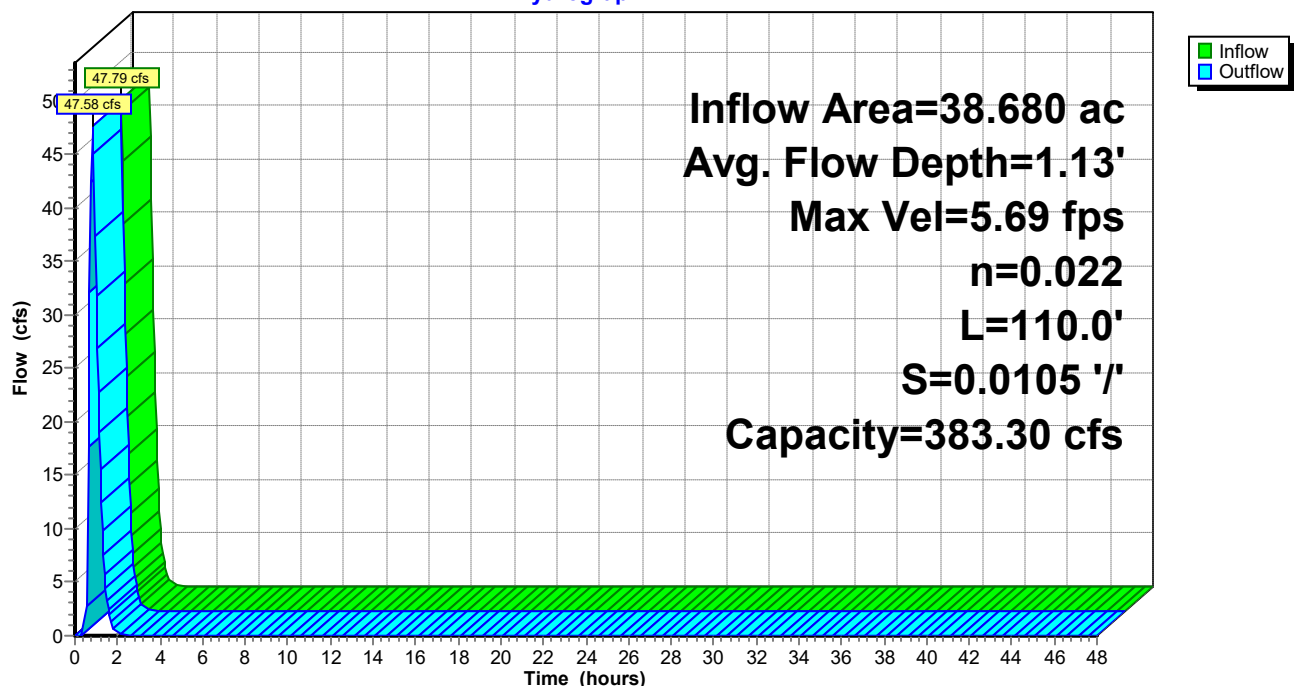
Peak Storage= 922 cf @ 0.82 hrs
 Average Depth at Peak Storage= 1.13' , Surface Width= 10.80'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[62] Hint: Exceeded Reach 15R OUTLET depth by 0.61' @ 2.75 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 0.53" for 2-YR, 1-HR event
 Inflow = 63.12 cfs @ 0.76 hrs, Volume= 2.668 af
 Outflow = 1.48 cfs @ 1.65 hrs, Volume= 1.960 af, Atten= 98%, Lag= 53.7 min
 Primary = 1.48 cfs @ 1.65 hrs, Volume= 1.960 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 726.50' @ 1.65 hrs Surf.Area= 3.995 ac Storage= 2.554 af

Plug-Flow detention time= 879.9 min calculated for 1.960 af (73% of inflow)
 Center-of-Mass det. time= 873.0 min (926.7 - 53.6)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

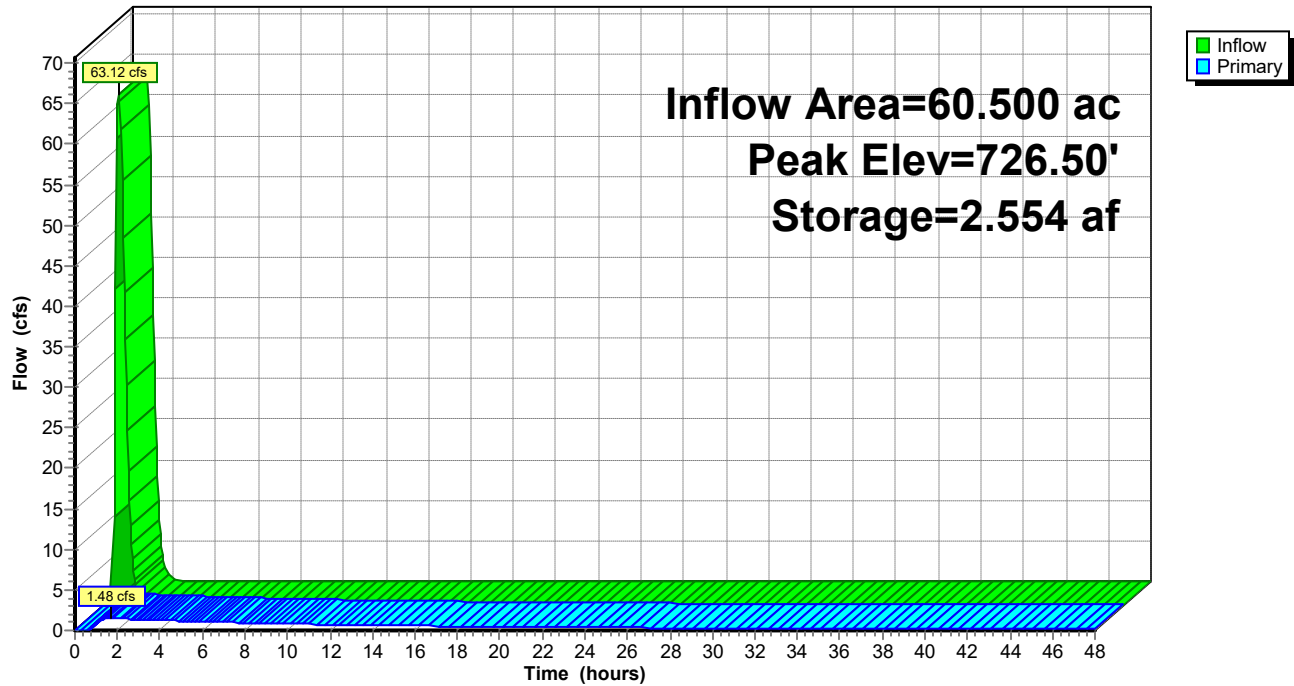
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.48 cfs @ 1.65 hrs HW=726.50' (Free Discharge)

1=Orifice/Grate (Orifice Controls 1.48 cfs @ 2.75 fps)
 2=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 0.57" for 2-YR, 1-HR event
 Inflow = 52.10 cfs @ 0.74 hrs, Volume= 1.830 af
 Outflow = 47.79 cfs @ 0.81 hrs, Volume= 1.830 af, Atten= 8%, Lag= 4.5 min
 Primary = 47.79 cfs @ 0.81 hrs, Volume= 1.830 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.13' @ 0.81 hrs Surf.Area= 19,255 sf Storage= 13,916 cf

Plug-Flow detention time= 5.7 min calculated for 1.828 af (100% of inflow)
 Center-of-Mass det. time= 5.8 min (56.9 - 51.1)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

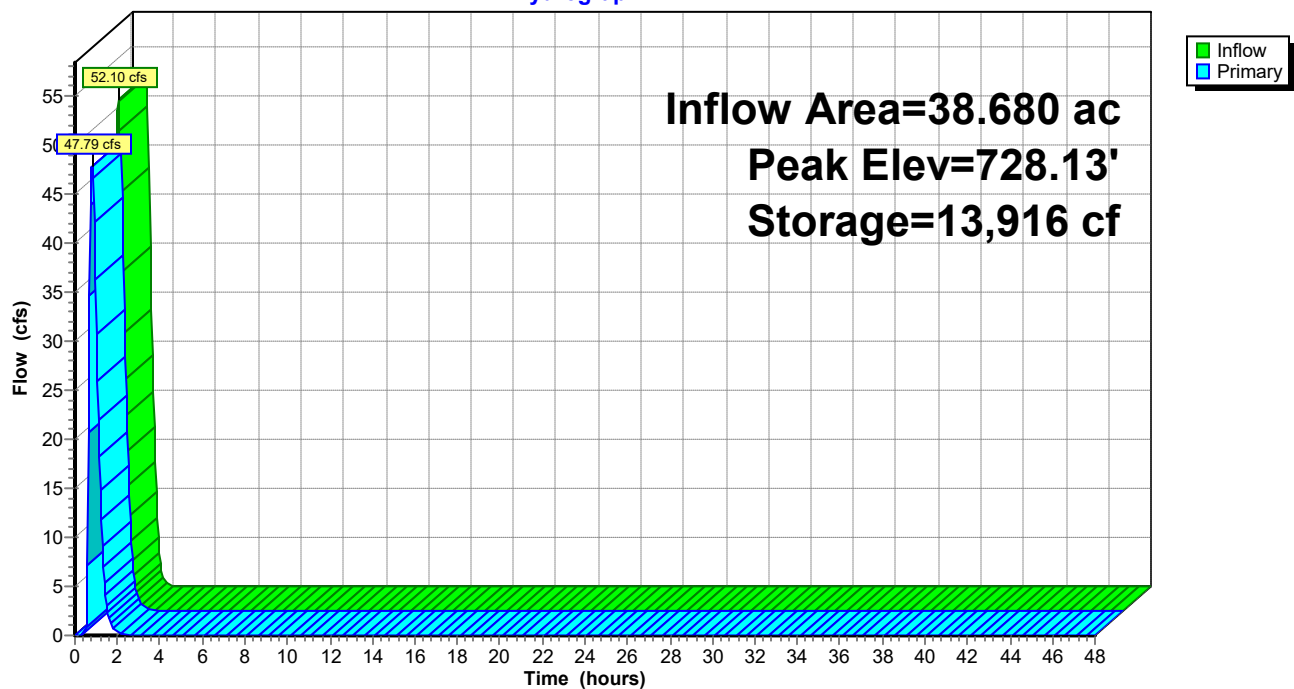
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=47.30 cfs @ 0.81 hrs HW=728.13' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 47.30 cfs @ 5.69 fps)

Pond 11P: Eddb

Hydrograph



64.30% Pervious = 38.899 ac 35.70% Impervious = 21.601 ac

Summary for Subcatchment 12S: West

Runoff = 36.34 cfs @ 6.07 hrs, Volume= 1.398 af, Depth= 1.19"

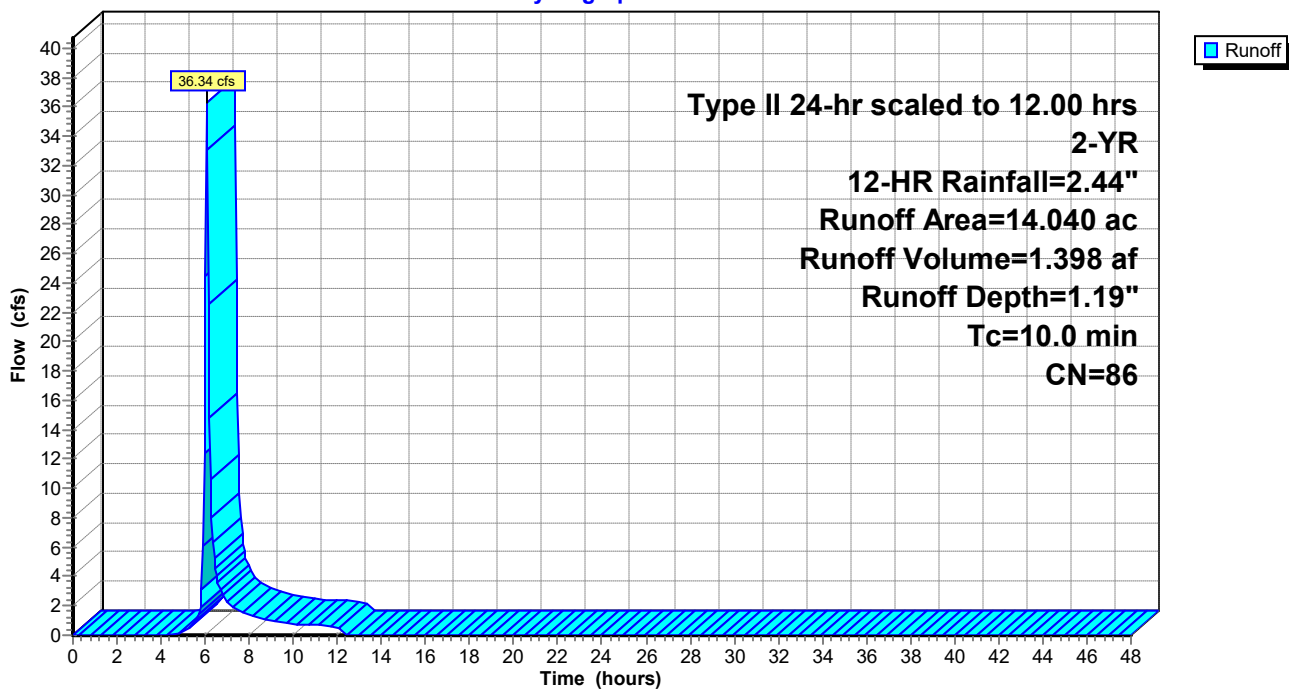
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 12.00 hrs 2-YR, 12-HR Rainfall=2.44"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 59.78 cfs @ 6.06 hrs, Volume= 2.293 af, Depth= 1.26"

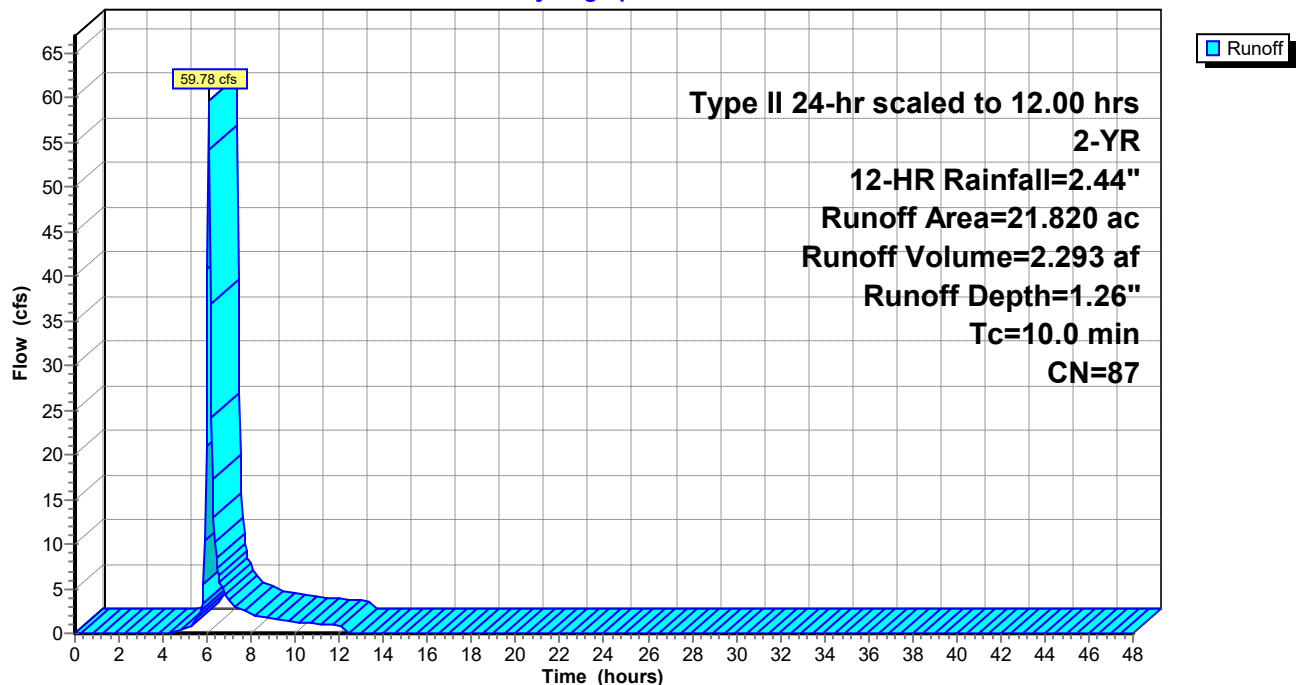
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 12.00 hrs 2-YR, 12-HR Rainfall=2.44"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Subcatchment B: Off-Site

Runoff = 54.35 cfs @ 6.18 hrs, Volume= 3.195 af, Depth= 1.56"

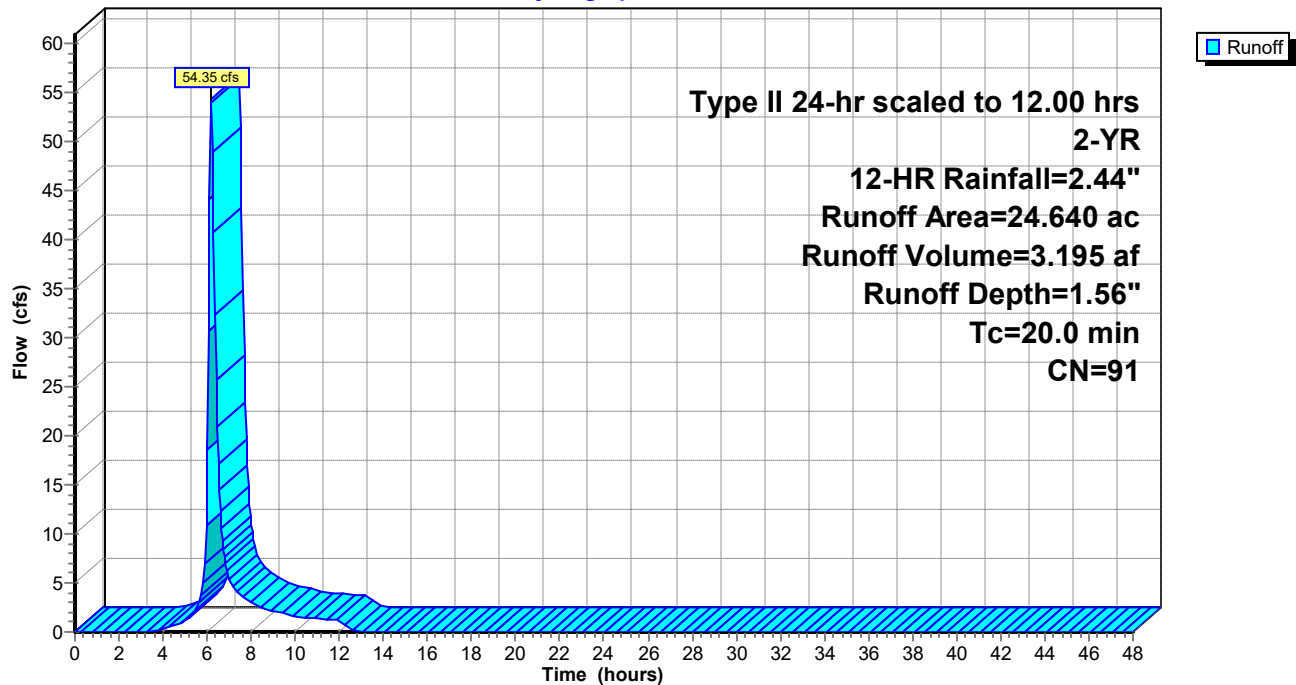
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 12.00 hrs 2-YR, 12-HR Rainfall=2.44"

Area (ac)	CN	Description
24.640	91	Urban industrial, 72% imp, HSG C
6.899		28.00% Pervious Area
17.741		72.00% Impervious Area

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

Subcatchment B: Off-Site

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 1.42" for 2-YR, 12-HR event
 Inflow = 70.91 cfs @ 6.19 hrs, Volume= 4.593 af
 Outflow = 70.68 cfs @ 6.20 hrs, Volume= 4.593 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 6.34 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.86 fps, Avg. Travel Time= 1.0 min

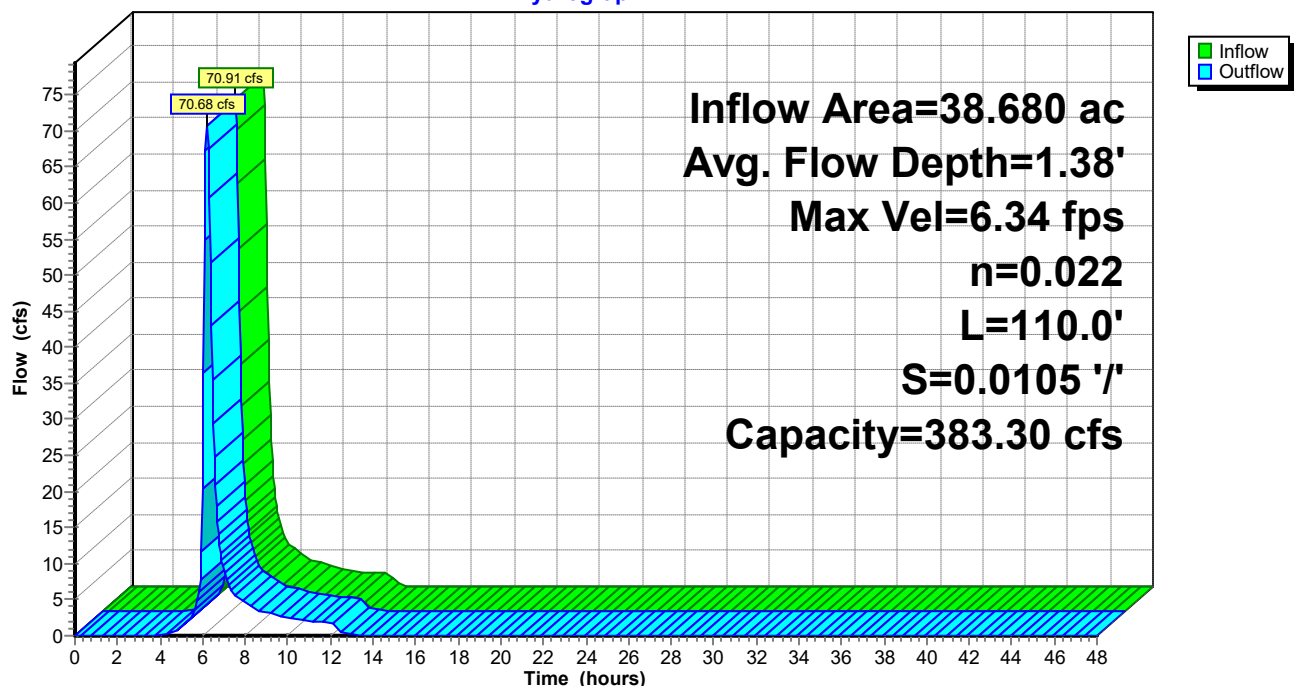
Peak Storage= 1,230 cf @ 6.20 hrs
 Average Depth at Peak Storage= 1.38' , Surface Width= 12.26'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 0.08' @ 12.95 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 1.37" for 2-YR, 12-HR event
 Inflow = 109.54 cfs @ 6.11 hrs, Volume= 6.886 af
 Outflow = 3.43 cfs @ 10.22 hrs, Volume= 5.728 af, Atten= 97%, Lag= 246.3 min
 Primary = 3.43 cfs @ 10.22 hrs, Volume= 5.728 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.17' @ 10.22 hrs Surf.Area= 4.132 ac Storage= 5.279 af

Plug-Flow detention time= 779.7 min calculated for 5.722 af (83% of inflow)
 Center-of-Mass det. time= 743.5 min (1,169.5 - 426.0)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

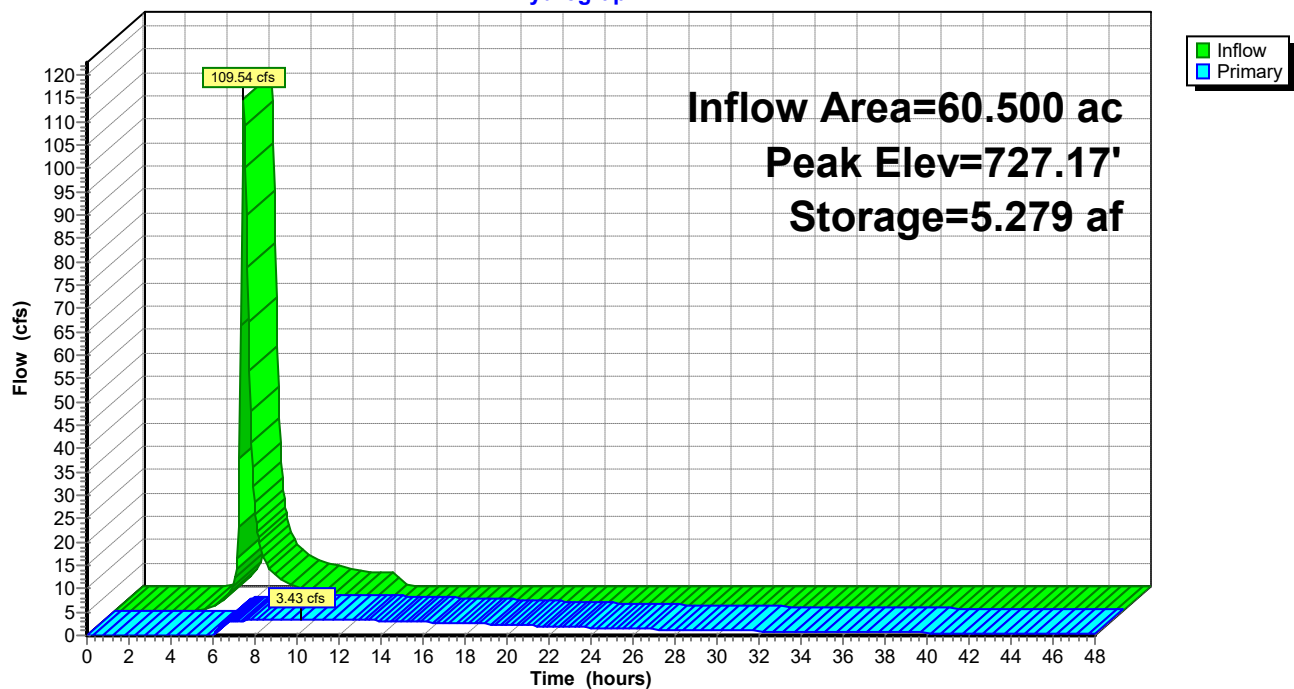
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.43 cfs @ 10.22 hrs HW=727.17' (Free Discharge)

1=Orifice/Grate (Orifice Controls 3.43 cfs @ 4.36 fps)
 2=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 1.42" for 2-YR, 12-HR event
 Inflow = 78.07 cfs @ 6.12 hrs, Volume= 4.593 af
 Outflow = 70.91 cfs @ 6.19 hrs, Volume= 4.593 af, Atten= 9%, Lag= 4.4 min
 Primary = 70.91 cfs @ 6.19 hrs, Volume= 4.593 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.38' @ 6.19 hrs Surf.Area= 22,361 sf Storage= 18,971 cf

Plug-Flow detention time= 6.8 min calculated for 4.588 af (100% of inflow)
 Center-of-Mass det. time= 6.9 min (428.1 - 421.2)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

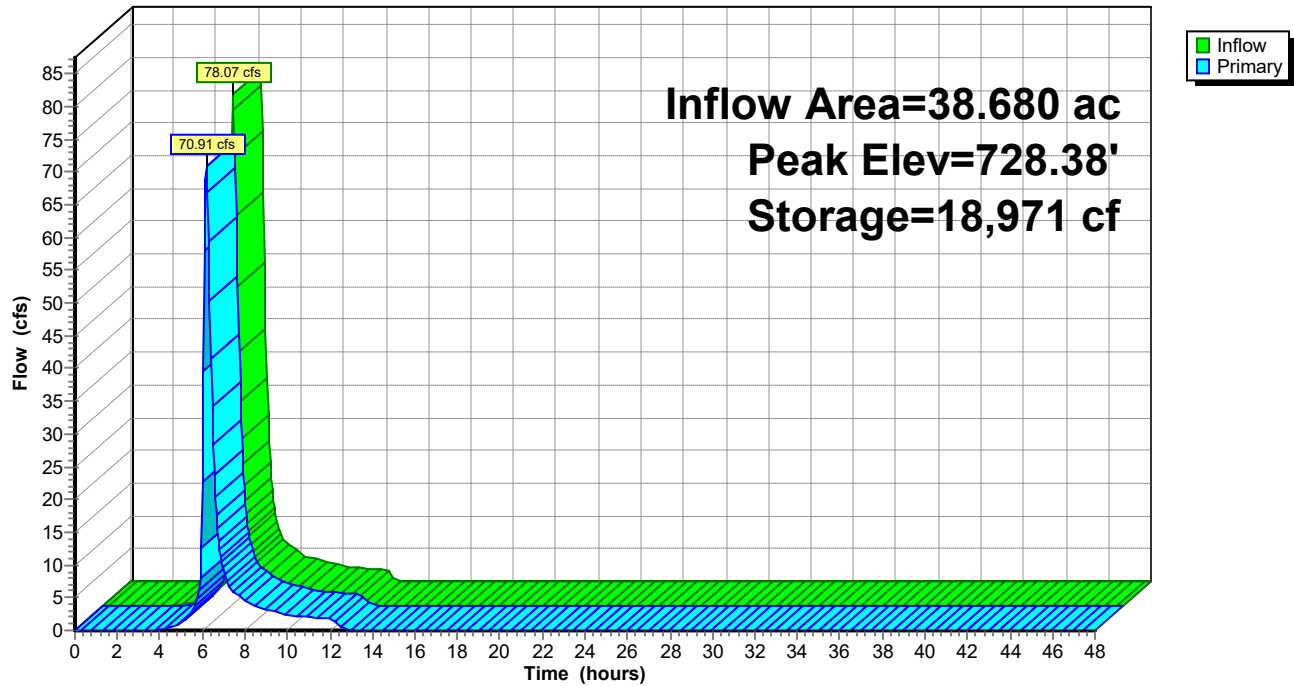
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=70.49 cfs @ 6.19 hrs HW=728.37' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 70.49 cfs @ 6.33 fps)

Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Pond *Type II 24-hr scaled to 2.00 hrs 2-YR, 2-HR Rainfall=1.63"*

Prepared by Kimley-Horn

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=0.58"
Tc=10.0 min CN=86 Runoff=27.48 cfs 0.679 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=0.63"
Tc=10.0 min CN=87 Runoff=48.27 cfs 1.140 af

Subcatchment B: Off-Site Runoff Area=24.640 ac 72.00% Impervious Runoff Depth=0.85"
Tc=20.0 min CN=91 Runoff=45.76 cfs 1.740 af

Reach 15R: Swale Avg. Flow Depth=1.21' Max Vel=5.92 fps Inflow=54.85 cfs 2.418 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=54.64 cfs 2.418 af

Pond 7P: Wet Pond Peak Elev=726.70' Storage=3.345 af Inflow=74.59 cfs 3.559 af
Outflow=2.22 cfs 2.772 af

Pond 11P: EDDB Peak Elev=728.21' Storage=15,501 cf Inflow=59.77 cfs 2.418 af
Outflow=54.85 cfs 2.418 af

Total Runoff Area = 60.500 ac Runoff Volume = 3.559 af Average Runoff Depth = 0.71"
64.30% Pervious = 38.899 ac 35.70% Impervious = 21.601 ac

Summary for Subcatchment 12S: West

Runoff = 27.48 cfs @ 1.13 hrs, Volume= 0.679 af, Depth= 0.58"

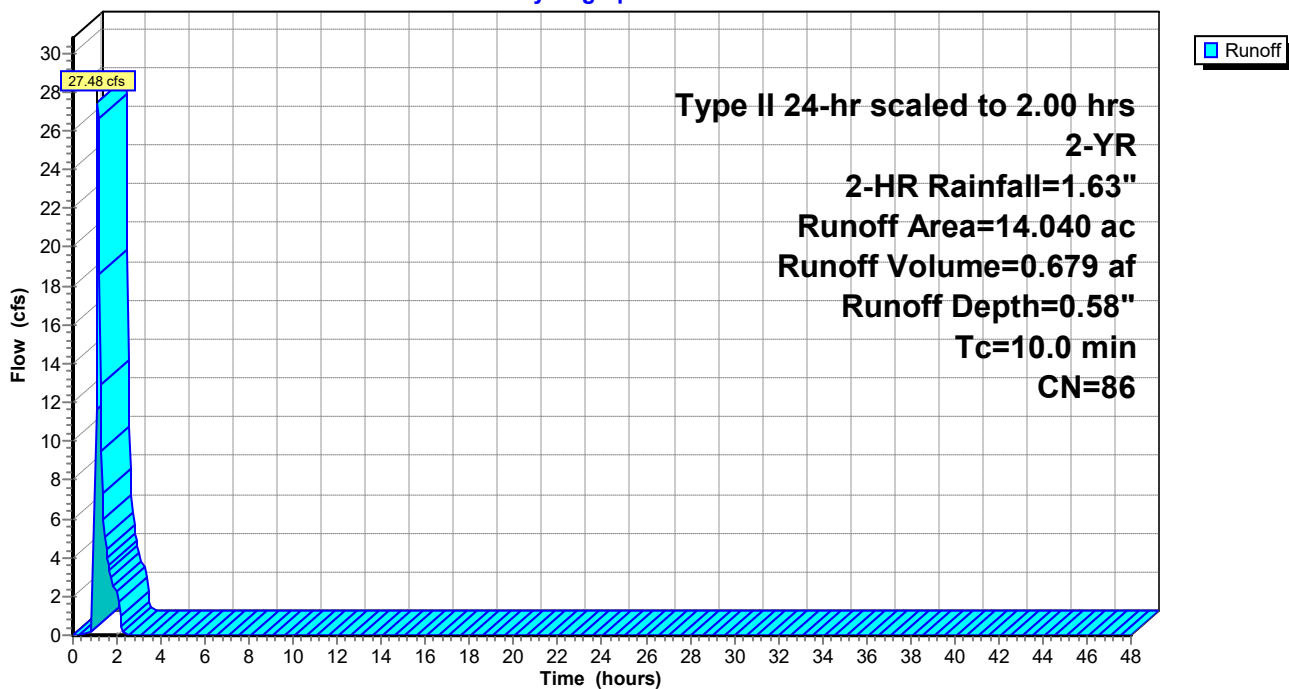
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 2.00 hrs 2-YR, 2-HR Rainfall=1.63"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 48.27 cfs @ 1.12 hrs, Volume= 1.140 af, Depth= 0.63"

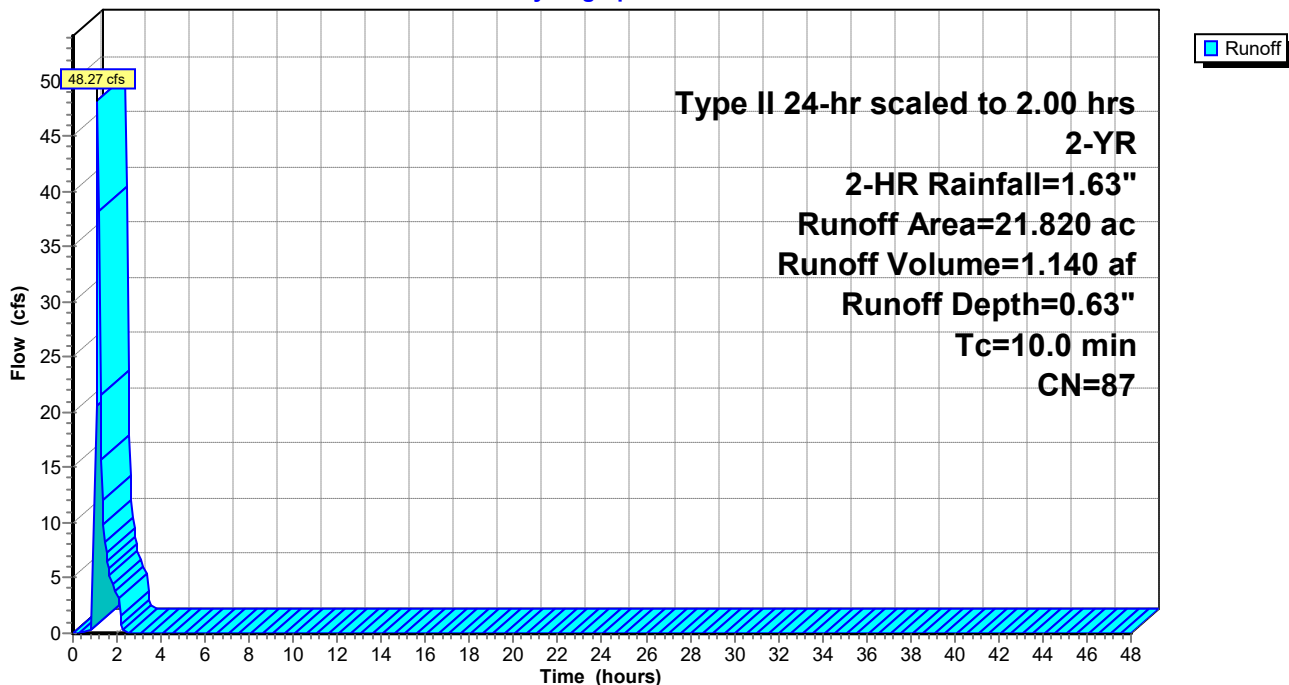
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 2.00 hrs 2-YR, 2-HR Rainfall=1.63"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Subcatchment B: Off-Site

Runoff = 45.76 cfs @ 1.26 hrs, Volume= 1.740 af, Depth= 0.85"

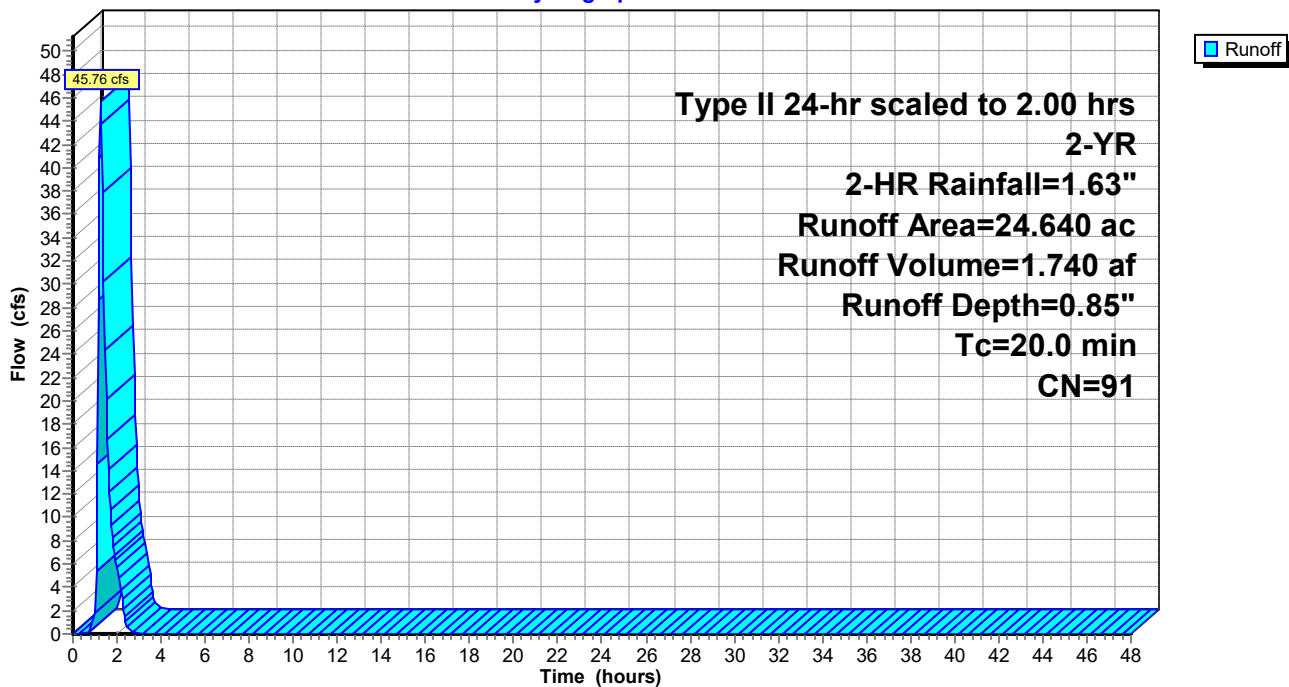
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 2.00 hrs 2-YR, 2-HR Rainfall=1.63"

Area (ac)	CN	Description
24.640	91	Urban industrial, 72% imp, HSG C
6.899		28.00% Pervious Area
17.741		72.00% Impervious Area

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

Subcatchment B: Off-Site

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 0.75" for 2-YR, 2-HR event
 Inflow = 54.85 cfs @ 1.29 hrs, Volume= 2.418 af
 Outflow = 54.64 cfs @ 1.30 hrs, Volume= 2.418 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.92 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.48 fps, Avg. Travel Time= 1.2 min

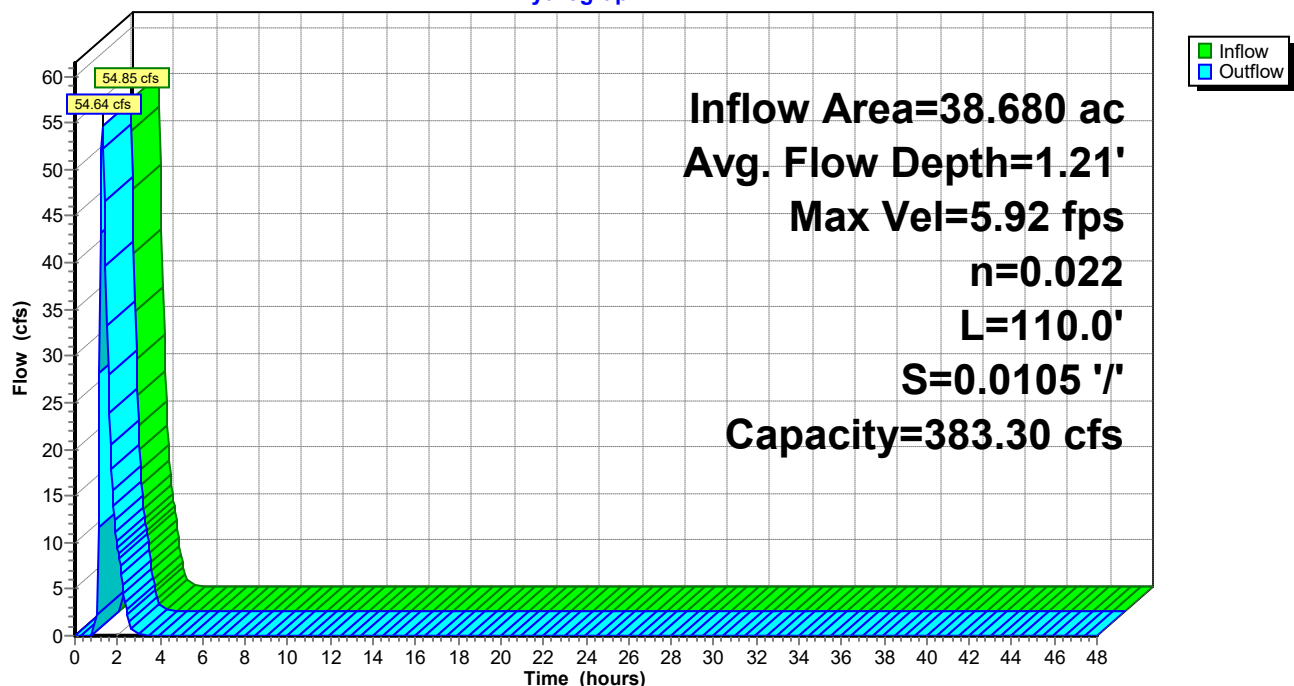
Peak Storage= 1,019 cf @ 1.29 hrs
 Average Depth at Peak Storage= 1.21' , Surface Width= 11.28'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 ' / ' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 ' / '
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[62] Hint: Exceeded Reach 15R OUTLET depth by 0.79' @ 3.25 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 0.71" for 2-YR, 2-HR event
 Inflow = 74.59 cfs @ 1.20 hrs, Volume= 3.559 af
 Outflow = 2.22 cfs @ 2.45 hrs, Volume= 2.772 af, Atten= 97%, Lag= 74.9 min
 Primary = 2.22 cfs @ 2.45 hrs, Volume= 2.772 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 726.70' @ 2.45 hrs Surf.Area= 4.036 ac Storage= 3.345 af

Plug-Flow detention time= 823.8 min calculated for 2.772 af (78% of inflow)
 Center-of-Mass det. time= 814.9 min (902.6 - 87.7)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

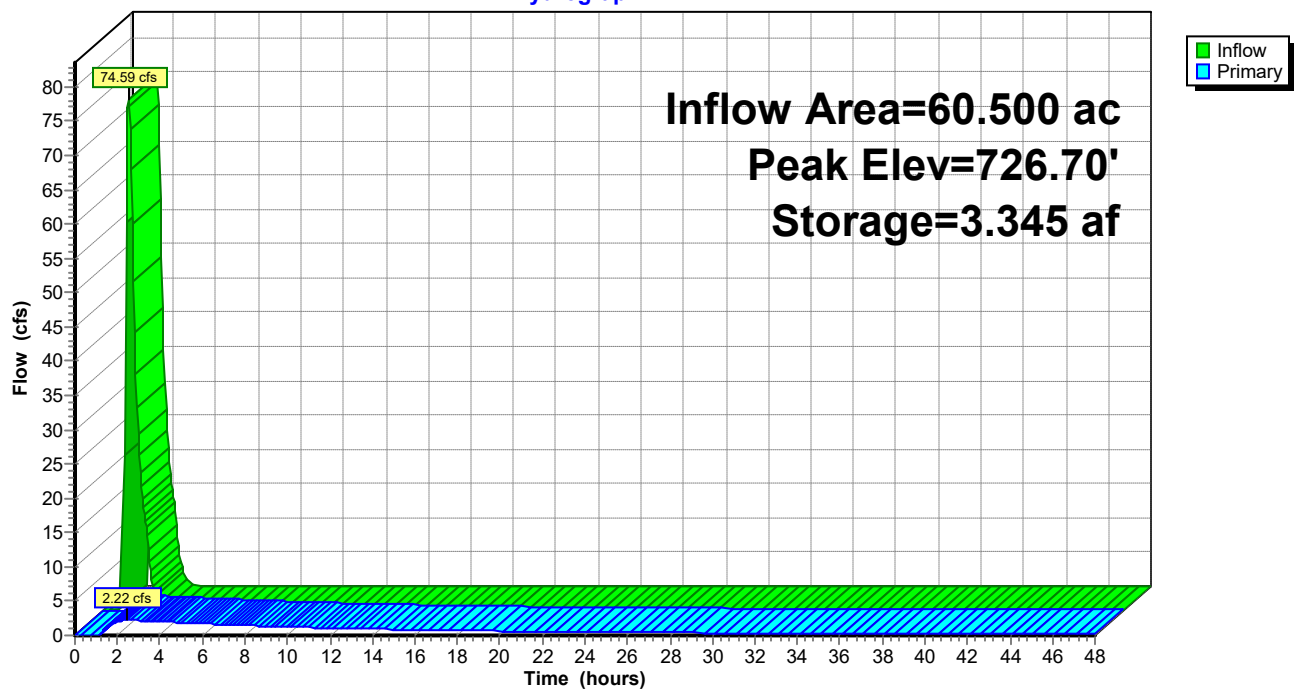
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.22 cfs @ 2.45 hrs HW=726.70' (Free Discharge)

1=Orifice/Grate (Orifice Controls 2.22 cfs @ 3.13 fps)
 2=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 0.75" for 2-YR, 2-HR event
 Inflow = 59.77 cfs @ 1.22 hrs, Volume= 2.418 af
 Outflow = 54.85 cfs @ 1.29 hrs, Volume= 2.418 af, Atten= 8%, Lag= 4.5 min
 Primary = 54.85 cfs @ 1.29 hrs, Volume= 2.418 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.21' @ 1.29 hrs Surf.Area= 20,280 sf Storage= 15,501 cf

Plug-Flow detention time= 5.7 min calculated for 2.416 af (100% of inflow)
 Center-of-Mass det. time= 5.8 min (90.9 - 85.1)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

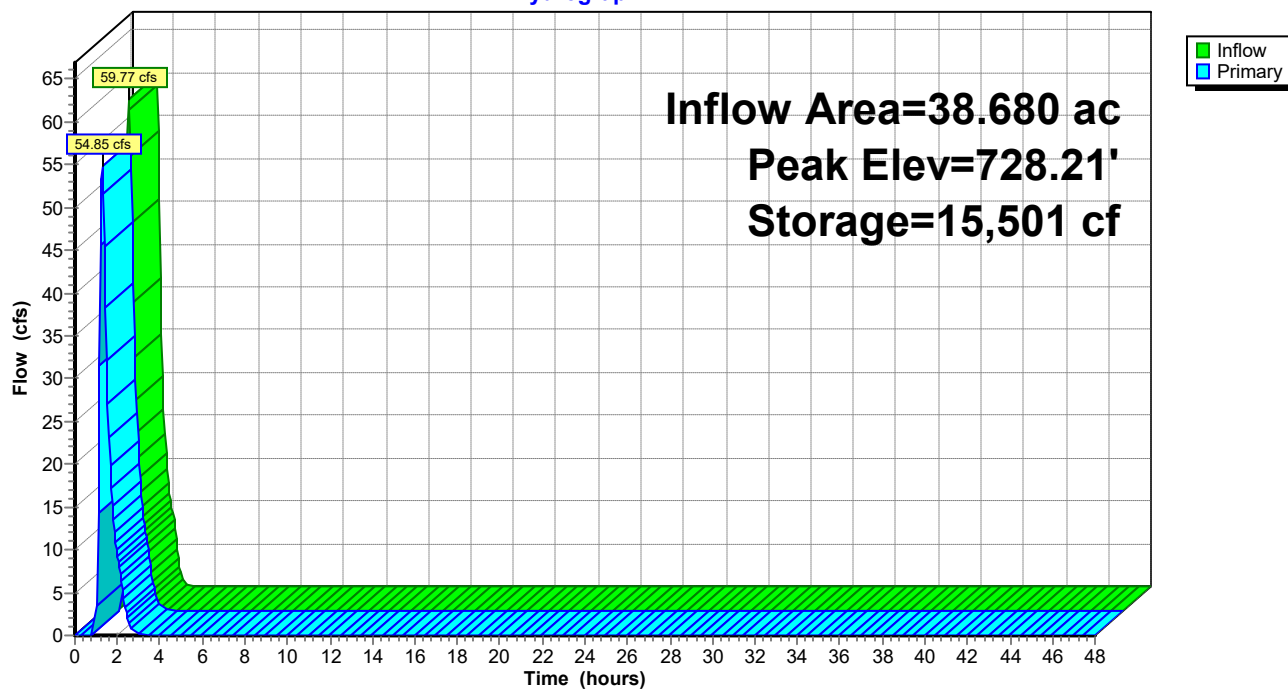
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=54.49 cfs @ 1.29 hrs HW=728.21' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 54.49 cfs @ 5.91 fps)

Pond 11P: EDDB

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

Prepared by Kimley-Horn

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West	Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=1.59" Tc=10.0 min CN=86 Runoff=33.66 cfs 1.855 af
Subcatchment 13S: East	Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=1.66" Tc=10.0 min CN=87 Runoff=54.67 cfs 3.020 af
Subcatchment B: Off-Site	Runoff Area=24.640 ac 72.00% Impervious Runoff Depth=1.99" Tc=20.0 min CN=91 Runoff=53.67 cfs 4.081 af
Reach 15R: Swale	Avg. Flow Depth=1.40' Max Vel=6.39 fps Inflow=73.66 cfs 5.936 af n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=73.07 cfs 5.936 af
Pond 7P: Wet Pond	Peak Elev=727.36' Storage=6.067 af Inflow=115.33 cfs 8.956 af Outflow=4.10 cfs 7.305 af
Pond 11P: EDDB	Peak Elev=728.40' Storage=19,553 cf Inflow=79.55 cfs 5.936 af Outflow=73.66 cfs 5.936 af

Total Runoff Area = 60.500 ac Runoff Volume = 8.956 af Average Runoff Depth = 1.78"
64.30% Pervious = 38.899 ac 35.70% Impervious = 21.601 ac

Franklin Industrial Detention Pond

Prepared by Kimley-Horn

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Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

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Summary for Subcatchment 12S: West

Runoff = 33.66 cfs @ 12.02 hrs, Volume= 1.855 af, Depth= 1.59"

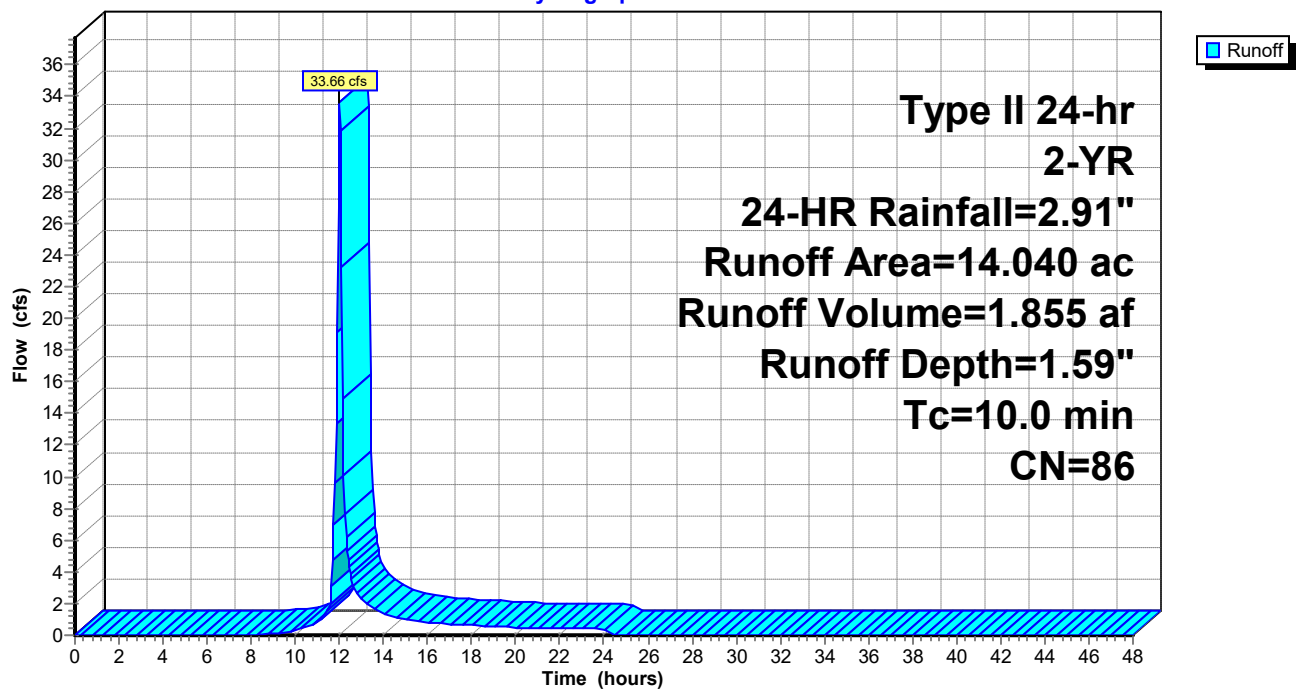
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Franklin Industrial Detention Pond

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Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

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Summary for Subcatchment 13S: East

Runoff = 54.67 cfs @ 12.01 hrs, Volume= 3.020 af, Depth= 1.66"

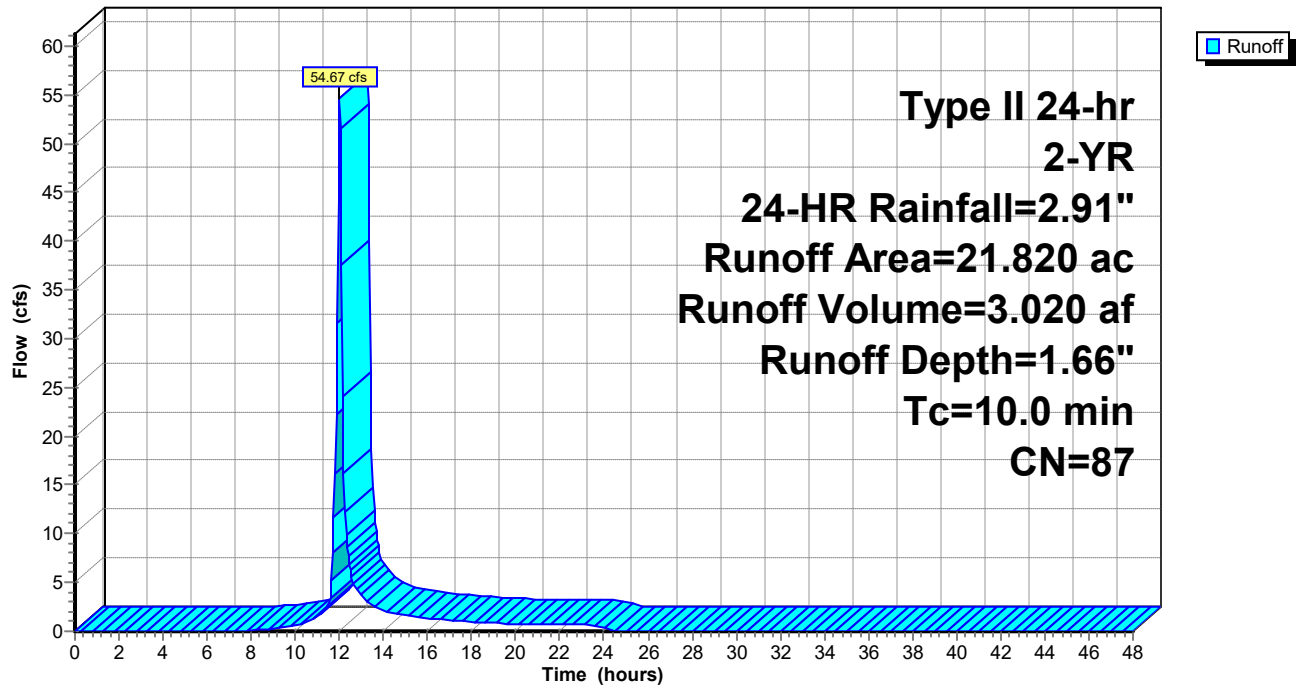
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Franklin Industrial Detention Pond

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Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

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Summary for Subcatchment B: Off-Site

Runoff = 53.67 cfs @ 12.12 hrs, Volume= 4.081 af, Depth= 1.99"

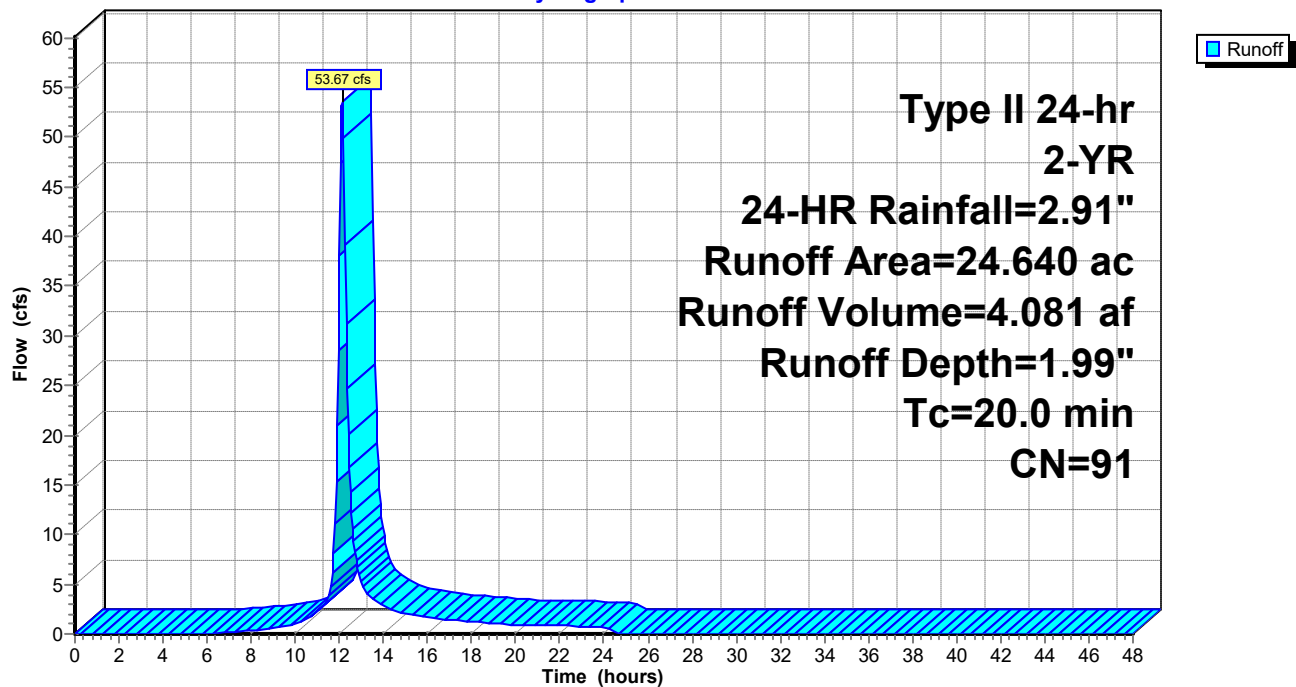
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

Area (ac)	CN	Description
24.640	91	Urban industrial, 72% imp, HSG C
6.899		28.00% Pervious Area
17.741		72.00% Impervious Area

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

Subcatchment B: Off-Site

Hydrograph



Franklin Industrial Detention Pond

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Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

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Summary for Reach 15R: Swale

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 1.84" for 2-YR, 24-HR event
Inflow = 73.66 cfs @ 12.12 hrs, Volume= 5.936 af
Outflow = 73.07 cfs @ 12.13 hrs, Volume= 5.936 af, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.39 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.83 fps, Avg. Travel Time= 1.0 min

Peak Storage= 1,265 cf @ 12.12 hrs

Average Depth at Peak Storage= 1.40' , Surface Width= 12.41'

Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight

Side Slope Z-value= 3.0 '/' Top Width= 22.00'

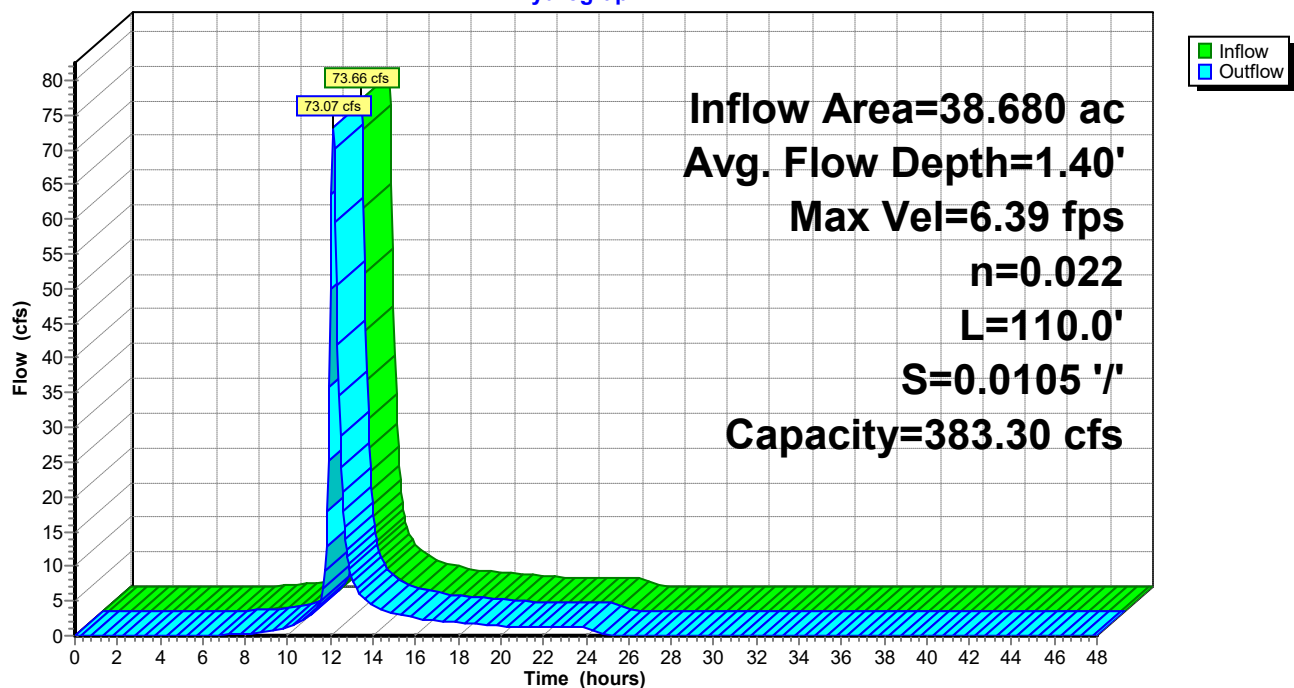
Length= 110.0' Slope= 0.0105 '/'

Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

Prepared by Kimley-Horn

Printed 9/9/2021

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Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 0.14' @ 16.80 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 1.78" for 2-YR, 24-HR event
 Inflow = 115.33 cfs @ 12.06 hrs, Volume= 8.956 af
 Outflow = 4.10 cfs @ 15.77 hrs, Volume= 7.305 af, Atten= 96%, Lag= 222.6 min
 Primary = 4.10 cfs @ 15.77 hrs, Volume= 7.305 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.36' @ 15.77 hrs Surf.Area= 4.171 ac Storage= 6.067 af

Plug-Flow detention time= 771.0 min calculated for 7.305 af (82% of inflow)
 Center-of-Mass det. time= 691.8 min (1,518.3 - 826.5)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.10 cfs @ 15.77 hrs HW=727.36' (Free Discharge)

1=Orifice/Grate (Orifice Controls 3.80 cfs @ 4.84 fps)

2=Orifice/Grate (Orifice Controls 0.29 cfs @ 1.07 fps)

Franklin Industrial Detention Pond

Prepared by Kimley-Horn

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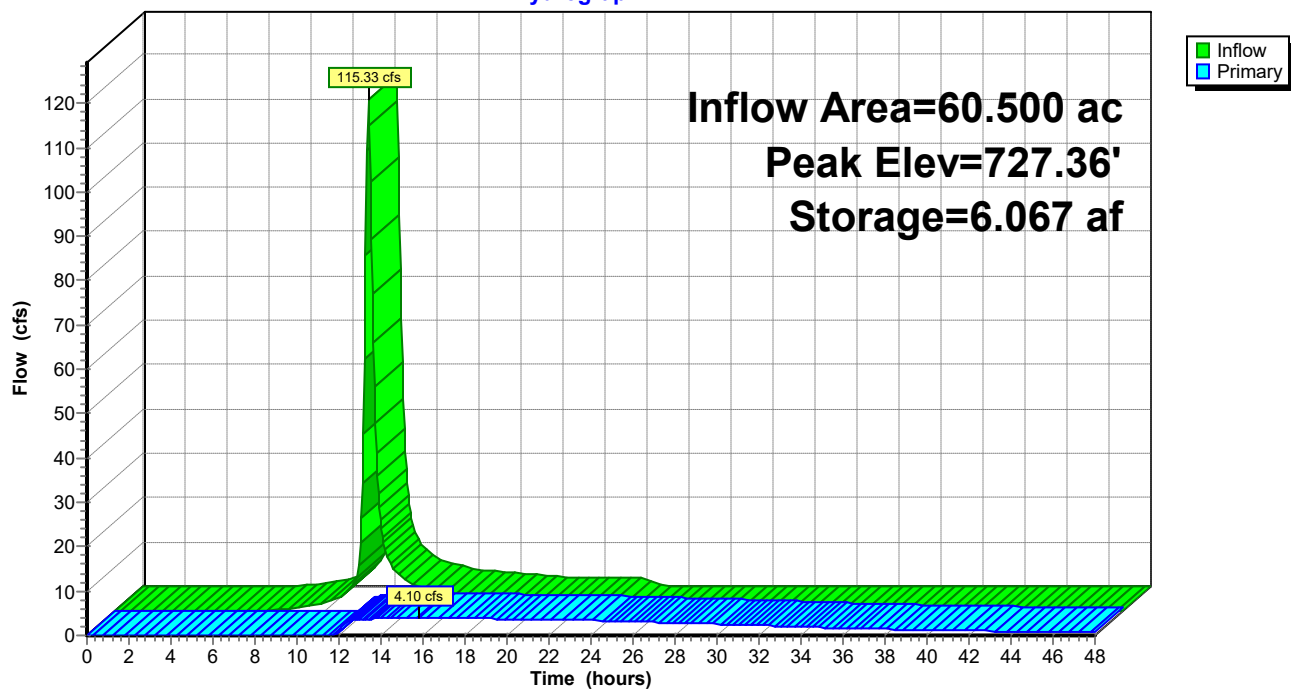
Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

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Pond 7P: Wet Pond

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

Prepared by Kimley-Horn

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Summary for Pond 11P: EDDB

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 1.84" for 2-YR, 24-HR event
 Inflow = 79.55 cfs @ 12.06 hrs, Volume= 5.936 af
 Outflow = 73.66 cfs @ 12.12 hrs, Volume= 5.936 af, Atten= 7%, Lag= 3.6 min
 Primary = 73.66 cfs @ 12.12 hrs, Volume= 5.936 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.40' @ 12.12 hrs Surf.Area= 22,692 sf Storage= 19,553 cf

Plug-Flow detention time= 8.0 min calculated for 5.936 af (100% of inflow)
 Center-of-Mass det. time= 7.6 min (827.2 - 819.5)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=72.70 cfs @ 12.12 hrs HW=728.39' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 72.70 cfs @ 6.39 fps)

Franklin Industrial Detention Pond

Prepared by Kimley-Horn

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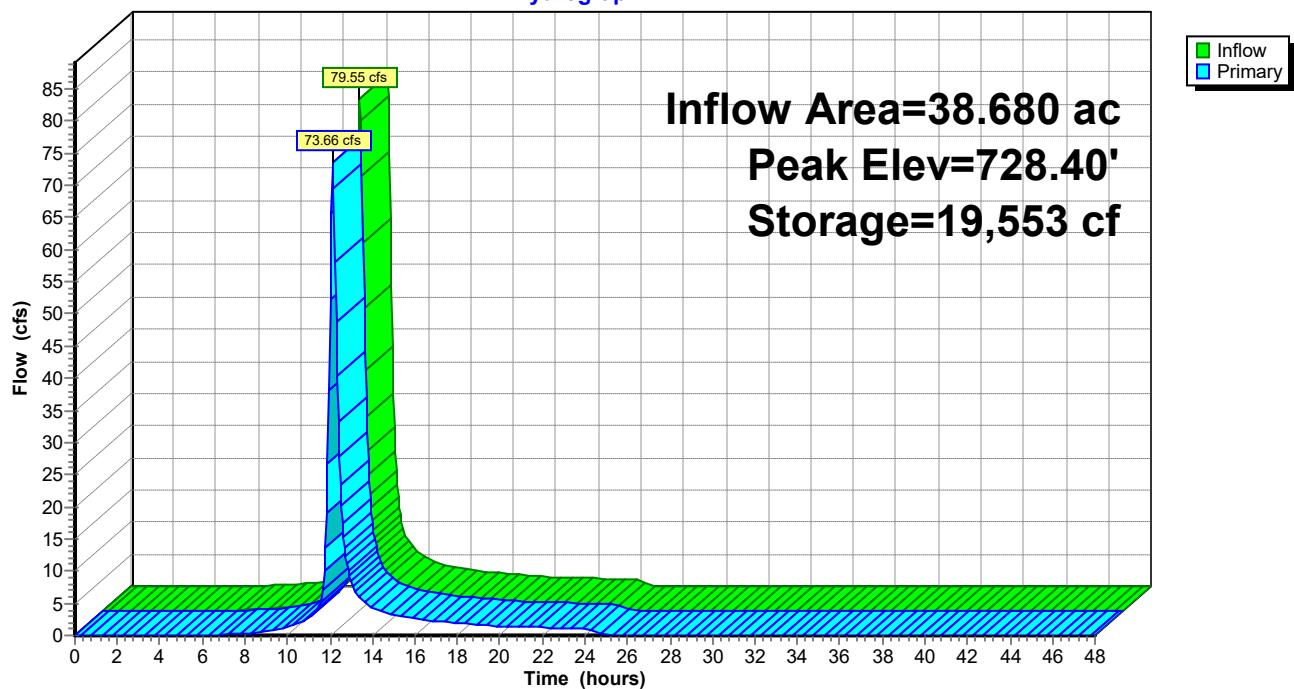
Type II 24-hr 2-YR, 24-HR Rainfall=2.91"

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Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Pond *Type II 24-hr scaled to 3.00 hrs 2-YR, 3-HR Rainfall=1.42"*

Prepared by Kimley-Horn

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=0.44"
Tc=10.0 min CN=86 Runoff=18.82 cfs 0.515 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=0.48"
Tc=10.0 min CN=87 Runoff=32.70 cfs 0.874 af

Subcatchment B: Off-Site Runoff Area=24.640 ac 72.00% Impervious Runoff Depth=0.68"
Tc=20.0 min CN=91 Runoff=32.99 cfs 1.387 af

Reach 15R: Swale Avg. Flow Depth=1.02' Max Vel=5.38 fps Inflow=38.71 cfs 1.902 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=38.54 cfs 1.902 af

Pond 7P: Wet Pond Peak Elev=726.51' Storage=2.587 af Inflow=51.38 cfs 2.776 af
Outflow=1.51 cfs 2.043 af

Pond 11P: EDDB Peak Elev=728.02' Storage=11,807 cf Inflow=42.78 cfs 1.902 af
Outflow=38.71 cfs 1.902 af

Total Runoff Area = 60.500 ac Runoff Volume = 2.776 af Average Runoff Depth = 0.55"
64.30% Pervious = 38.899 ac 35.70% Impervious = 21.601 ac

Summary for Subcatchment 12S: West

Runoff = 18.82 cfs @ 1.62 hrs, Volume= 0.515 af, Depth= 0.44"

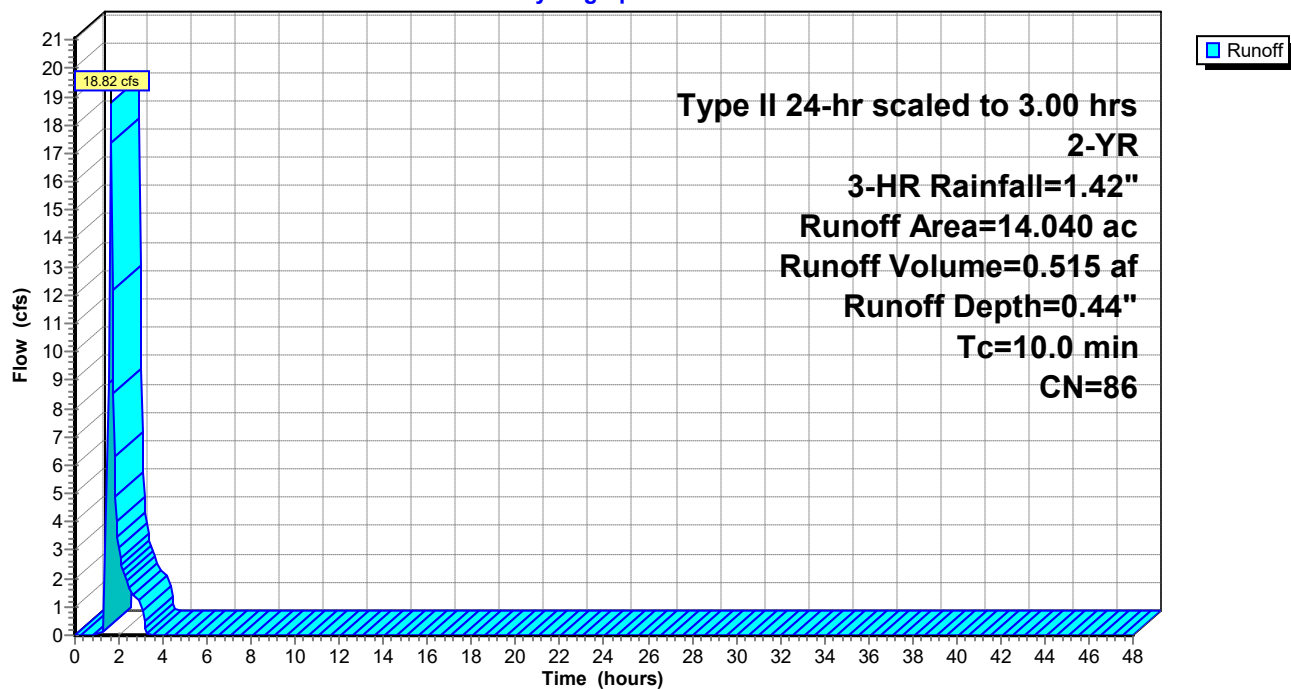
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 3.00 hrs 2-YR, 3-HR Rainfall=1.42"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 32.70 cfs @ 1.62 hrs, Volume= 0.874 af, Depth= 0.48"

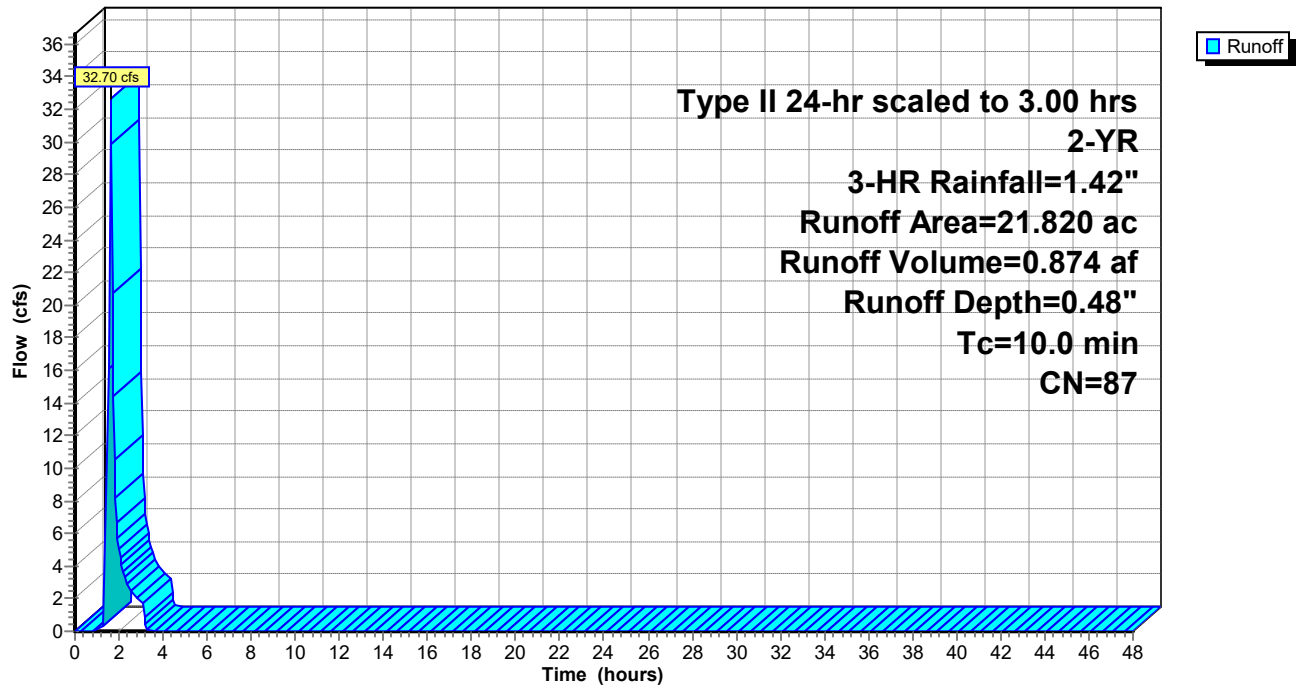
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 3.00 hrs 2-YR, 3-HR Rainfall=1.42"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Subcatchment B: Off-Site

Runoff = 32.99 cfs @ 1.75 hrs, Volume= 1.387 af, Depth= 0.68"

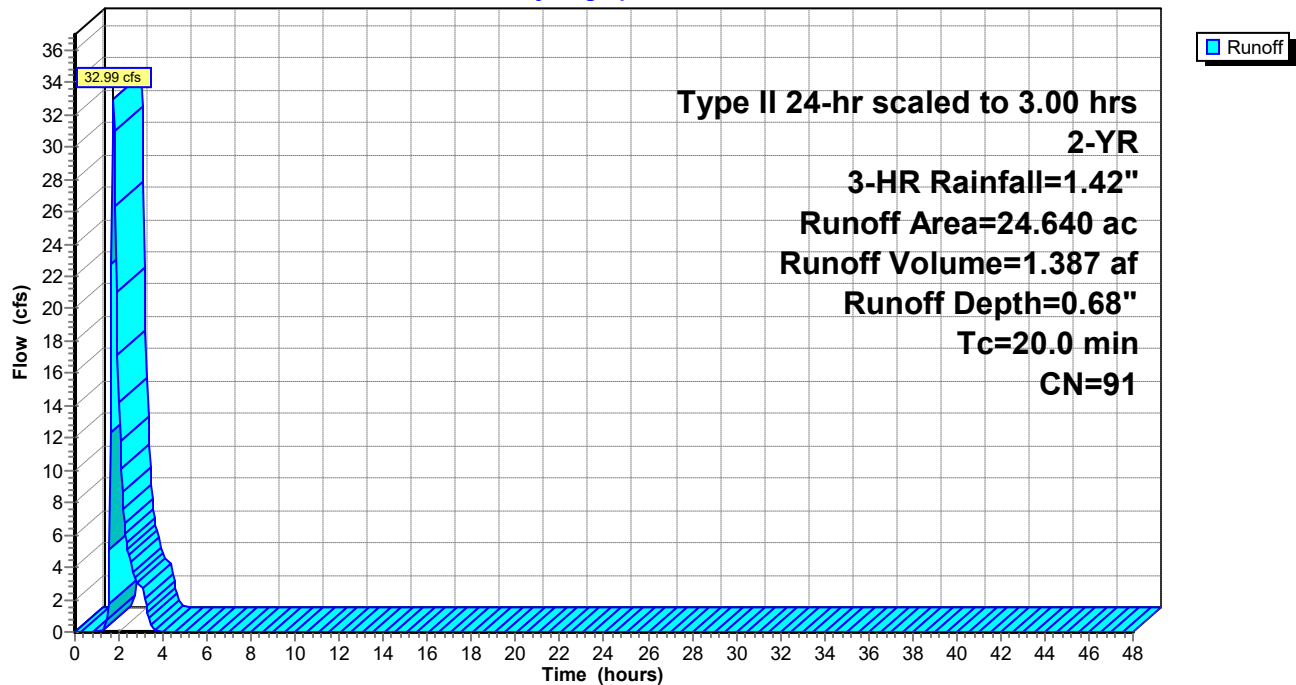
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 3.00 hrs 2-YR, 3-HR Rainfall=1.42"

Area (ac)	CN	Description
24.640	91	Urban industrial, 72% imp, HSG C
6.899		28.00% Pervious Area
17.741		72.00% Impervious Area

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

Subcatchment B: Off-Site

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 0.59" for 2-YR, 3-HR event
 Inflow = 38.71 cfs @ 1.79 hrs, Volume= 1.902 af
 Outflow = 38.54 cfs @ 1.80 hrs, Volume= 1.902 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.38 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.47 fps, Avg. Travel Time= 1.2 min

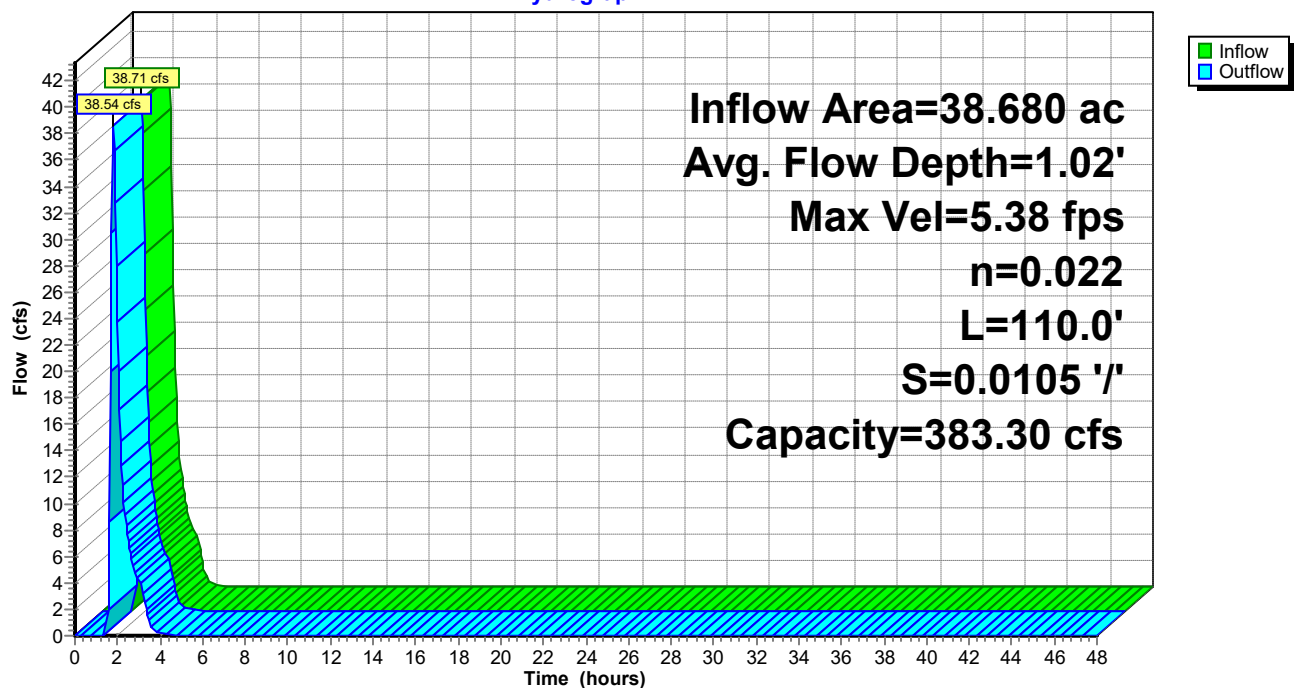
Peak Storage= 791 cf @ 1.79 hrs
 Average Depth at Peak Storage= 1.02' , Surface Width= 10.11'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[62] Hint: Exceeded Reach 15R OUTLET depth by 0.62' @ 4.55 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 0.55" for 2-YR, 3-HR event
 Inflow = 51.38 cfs @ 1.72 hrs, Volume= 2.776 af
 Outflow = 1.51 cfs @ 3.42 hrs, Volume= 2.043 af, Atten= 97%, Lag= 102.0 min
 Primary = 1.51 cfs @ 3.42 hrs, Volume= 2.043 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 726.51' @ 3.42 hrs Surf.Area= 3.997 ac Storage= 2.587 af

Plug-Flow detention time= 869.2 min calculated for 2.043 af (74% of inflow)
 Center-of-Mass det. time= 855.1 min (979.1 - 124.0)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

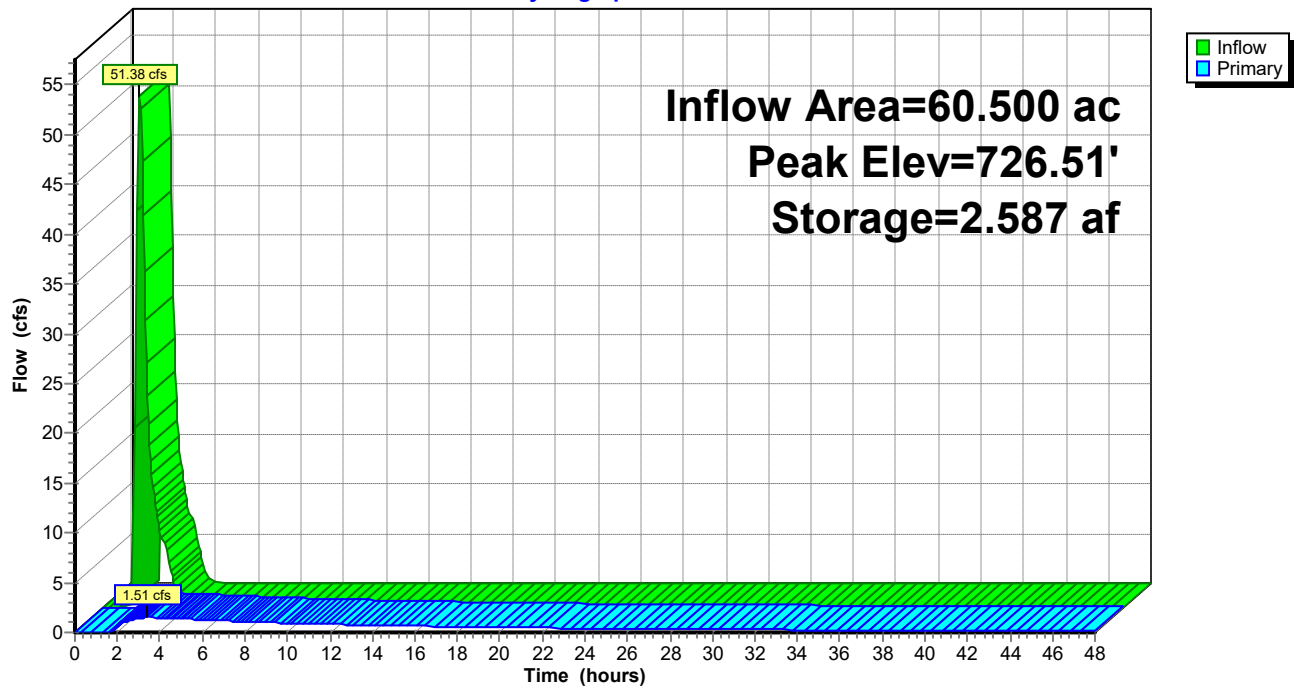
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.51 cfs @ 3.42 hrs HW=726.51' (Free Discharge)

1=Orifice/Grate (Orifice Controls 1.51 cfs @ 2.76 fps)
 2=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 0.59" for 2-YR, 3-HR event
 Inflow = 42.78 cfs @ 1.71 hrs, Volume= 1.902 af
 Outflow = 38.71 cfs @ 1.79 hrs, Volume= 1.902 af, Atten= 10%, Lag= 4.8 min
 Primary = 38.71 cfs @ 1.79 hrs, Volume= 1.902 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.02' @ 1.79 hrs Surf.Area= 17,799 sf Storage= 11,807 cf

Plug-Flow detention time= 6.9 min calculated for 1.902 af (100% of inflow)
 Center-of-Mass det. time= 6.5 min (127.1 - 120.5)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

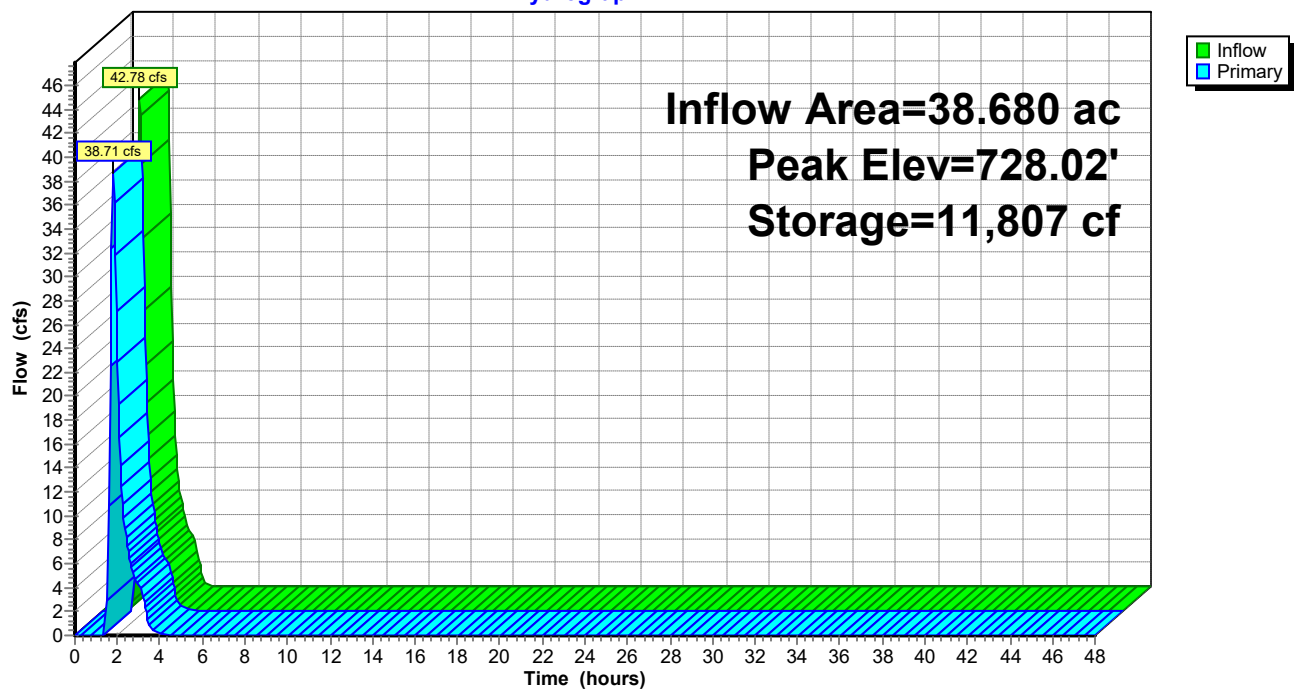
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=38.42 cfs @ 1.79 hrs HW=728.01' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 38.42 cfs @ 5.37 fps)

Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Pond *Type II 24-hr scaled to 6.00 hrs 2-YR, 6-HR Rainfall=1.69"*

Prepared by Kimley-Horn

Printed 9/9/2021

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=0.62"
Tc=10.0 min CN=86 Runoff=23.20 cfs 0.728 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=0.67"
Tc=10.0 min CN=87 Runoff=39.38 cfs 1.220 af

Subcatchment B: Off-Site Runoff Area=24.640 ac 72.00% Impervious Runoff Depth=0.90"
Tc=20.0 min CN=91 Runoff=37.69 cfs 1.843 af

Reach 15R: Swale Avg. Flow Depth=1.11' Max Vel=5.64 fps Inflow=45.84 cfs 2.571 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=45.66 cfs 2.571 af

Pond 7P: Wet Pond Peak Elev=726.69' Storage=3.300 af Inflow=65.30 cfs 3.790 af
Outflow=2.18 cfs 2.949 af

Pond 11P: EDDB Peak Elev=728.11' Storage=13,469 cf Inflow=50.73 cfs 2.571 af
Outflow=45.84 cfs 2.571 af

Total Runoff Area = 60.500 ac Runoff Volume = 3.790 af Average Runoff Depth = 0.75"
64.30% Pervious = 38.899 ac 35.70% Impervious = 21.601 ac

Summary for Subcatchment 12S: West

Runoff = 23.20 cfs @ 3.10 hrs, Volume= 0.728 af, Depth= 0.62"

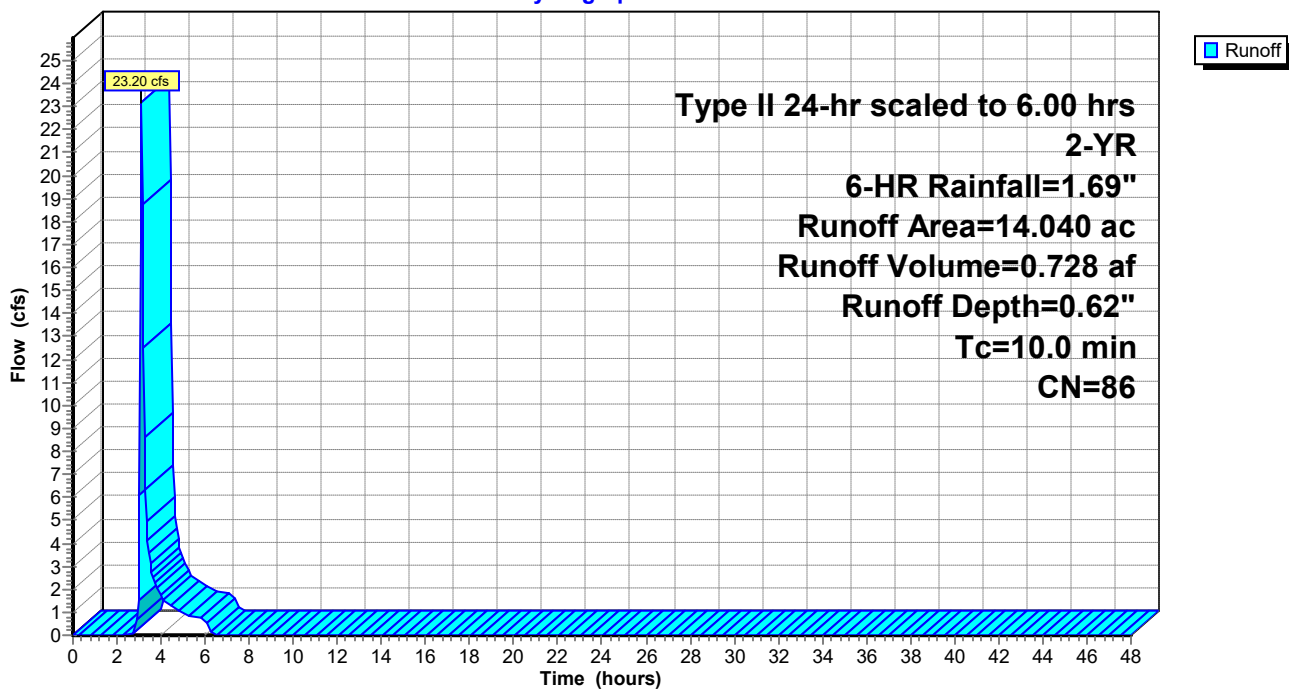
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 6.00 hrs 2-YR, 6-HR Rainfall=1.69"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 39.38 cfs @ 3.10 hrs, Volume= 1.220 af, Depth= 0.67"

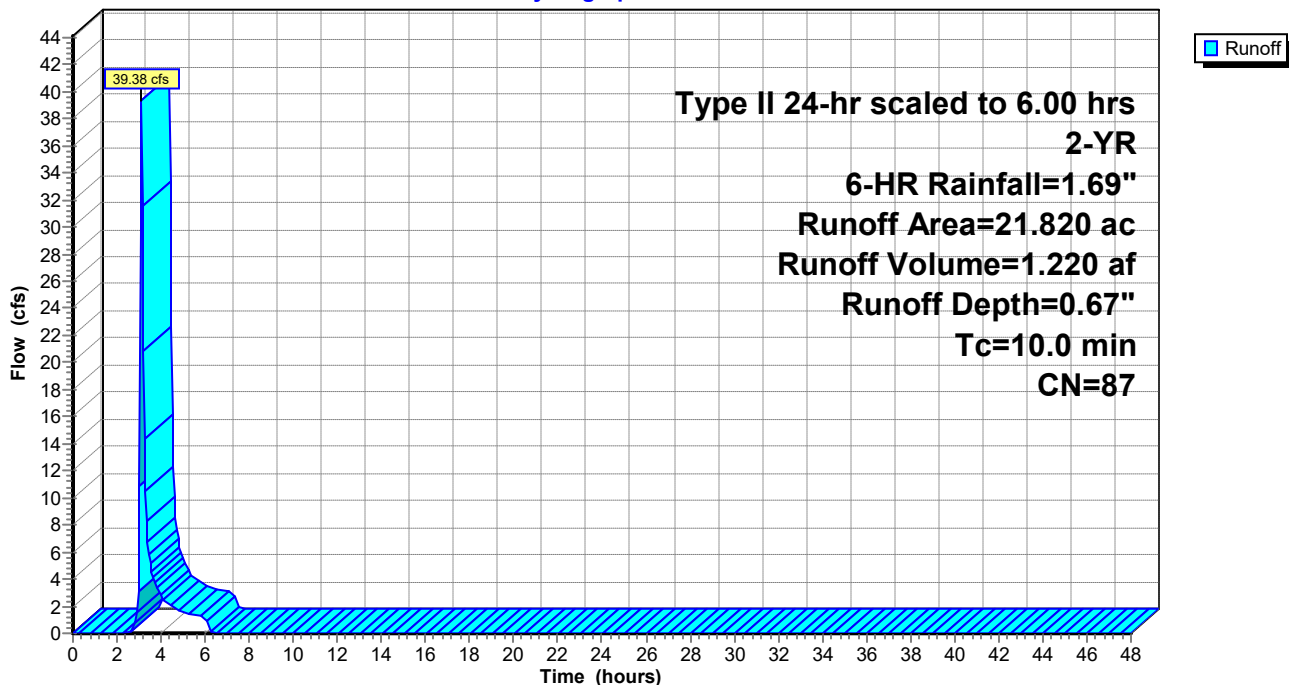
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 6.00 hrs 2-YR, 6-HR Rainfall=1.69"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Subcatchment B: Off-Site

Runoff = 37.69 cfs @ 3.22 hrs, Volume= 1.843 af, Depth= 0.90"

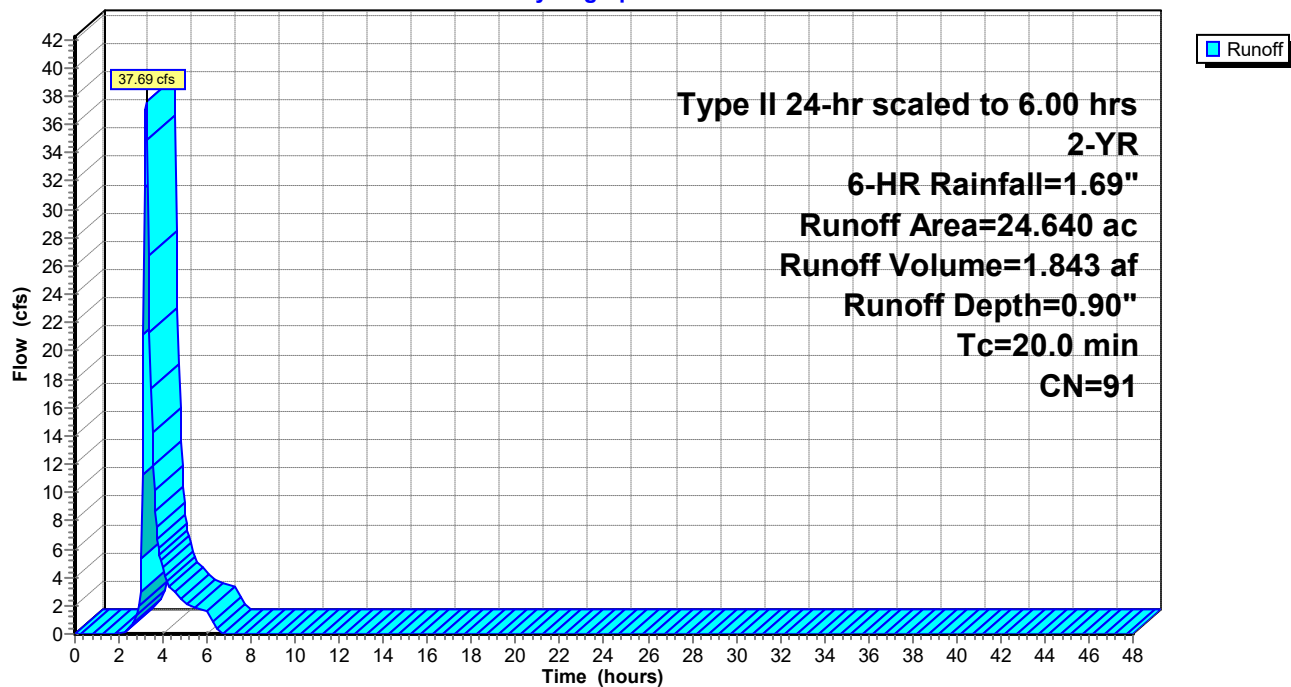
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 6.00 hrs 2-YR, 6-HR Rainfall=1.69"

Area (ac)	CN	Description
24.640	91	Urban industrial, 72% imp, HSG C
6.899		28.00% Pervious Area
17.741		72.00% Impervious Area

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

Subcatchment B: Off-Site

Hydrograph



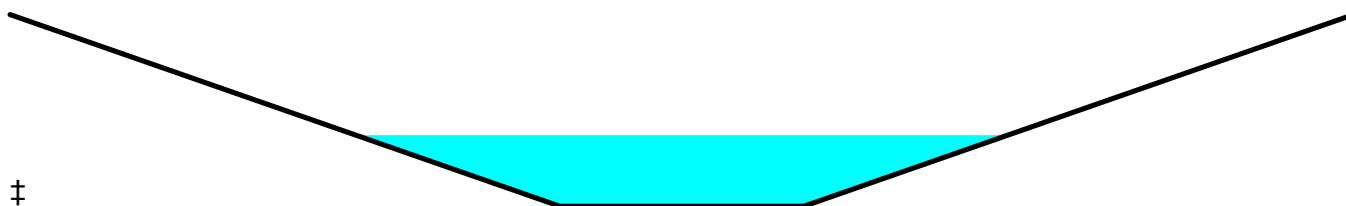
Summary for Reach 15R: Swale

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 0.80" for 2-YR, 6-HR event
 Inflow = 45.84 cfs @ 3.25 hrs, Volume= 2.571 af
 Outflow = 45.66 cfs @ 3.26 hrs, Volume= 2.571 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.64 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.65 fps, Avg. Travel Time= 1.1 min

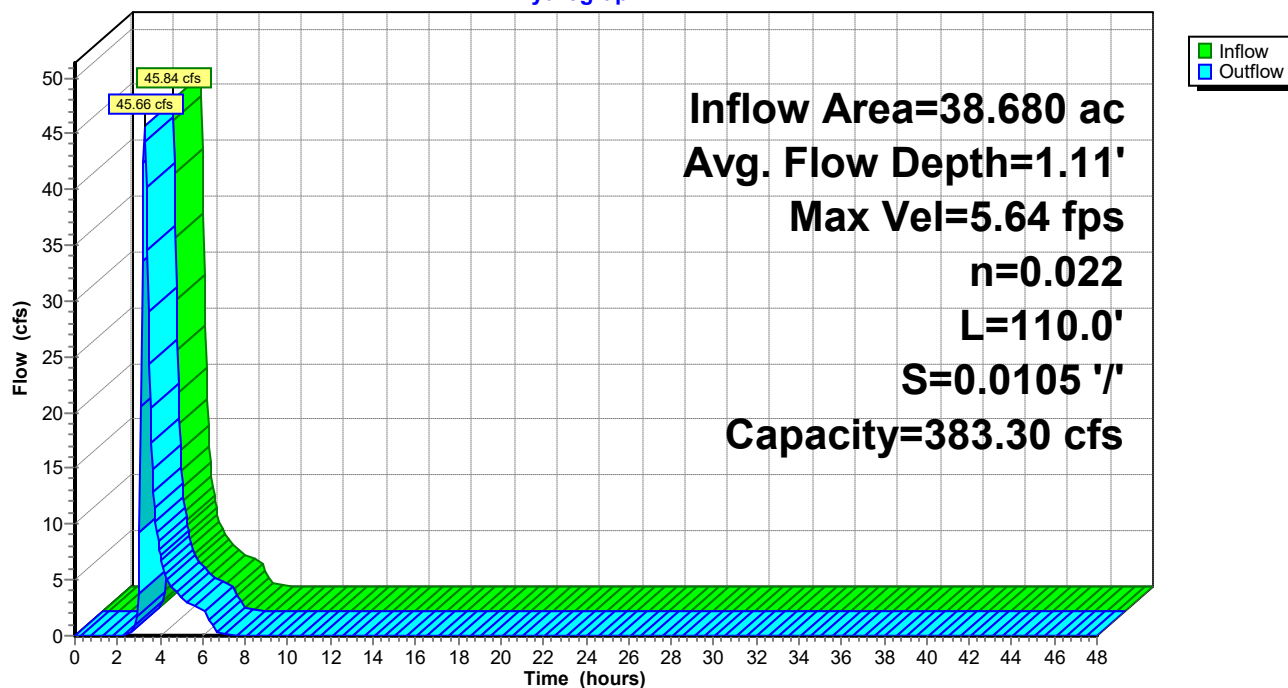
Peak Storage= 894 cf @ 3.26 hrs
 Average Depth at Peak Storage= 1.11', Surface Width= 10.66'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[62] Hint: Exceeded Reach 15R OUTLET depth by 0.78' @ 7.10 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 0.75" for 2-YR, 6-HR event
 Inflow = 65.30 cfs @ 3.16 hrs, Volume= 3.790 af
 Outflow = 2.18 cfs @ 6.22 hrs, Volume= 2.949 af, Atten= 97%, Lag= 183.6 min
 Primary = 2.18 cfs @ 6.22 hrs, Volume= 2.949 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 726.69' @ 6.22 hrs Surf.Area= 4.033 ac Storage= 3.300 af

Plug-Flow detention time= 808.5 min calculated for 2.946 af (78% of inflow)
 Center-of-Mass det. time= 786.8 min (1,013.6 - 226.8)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

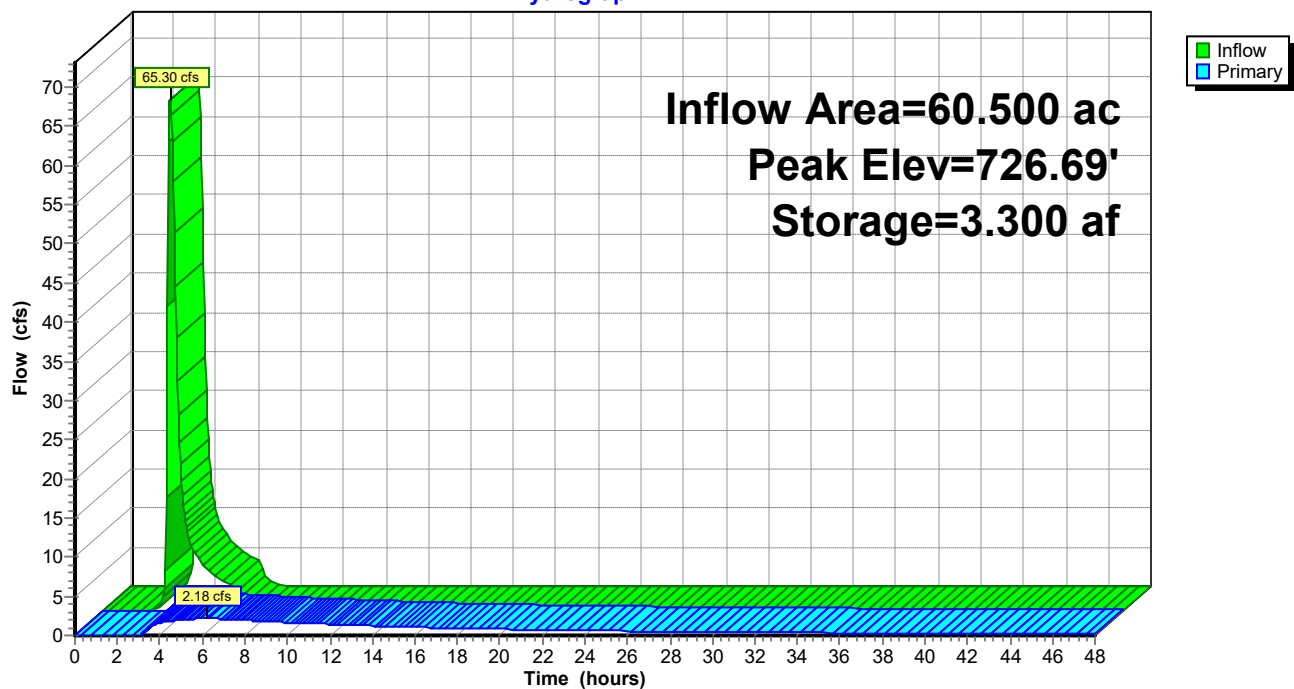
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.18 cfs @ 6.22 hrs HW=726.69' (Free Discharge)

1=Orifice/Grate (Orifice Controls 2.18 cfs @ 3.11 fps)
 2=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 0.80" for 2-YR, 6-HR event
 Inflow = 50.73 cfs @ 3.17 hrs, Volume= 2.571 af
 Outflow = 45.84 cfs @ 3.25 hrs, Volume= 2.571 af, Atten= 10%, Lag= 4.9 min
 Primary = 45.84 cfs @ 3.25 hrs, Volume= 2.571 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.11' @ 3.25 hrs Surf.Area= 18,956 sf Storage= 13,469 cf

Plug-Flow detention time= 7.3 min calculated for 2.571 af (100% of inflow)
 Center-of-Mass det. time= 6.8 min (229.6 - 222.7)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

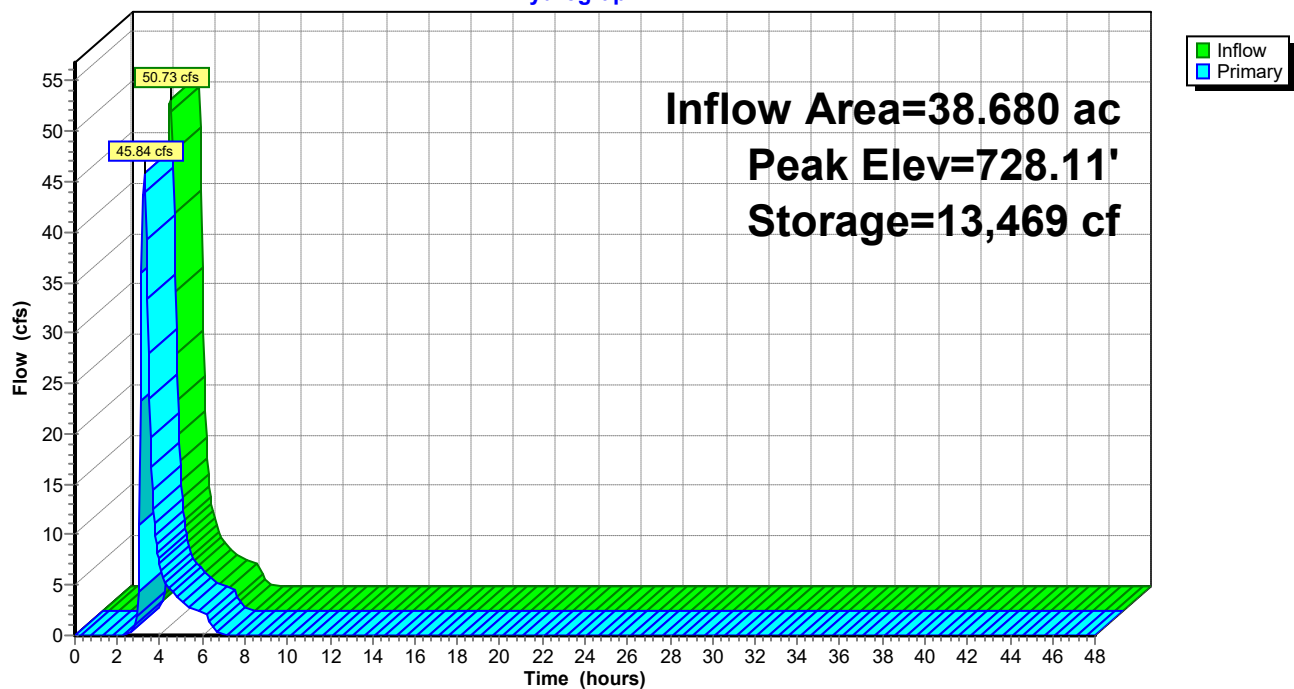
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=45.78 cfs @ 3.25 hrs HW=728.11' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 45.78 cfs @ 5.64 fps)

Pond 11P: EDDB

Hydrograph



Franklin Industrial Detention Pond Type II 24-hr scaled to 1.00 hrs 10-YR, 1-HR Rainfall=2.02"

Prepared by Kimley-Horn

Printed 9/9/2021

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

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

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

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=0.86"
Tc=10.0 min CN=86 Runoff=50.15 cfs 1.011 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=0.92"
Tc=10.0 min CN=87 Runoff=83.70 cfs 1.675 af

Subcatchment B: Off-Site Runoff Area=24.640 ac 72.00% Impervious Runoff Depth=1.18"
Tc=20.0 min CN=91 Runoff=74.55 cfs 2.425 af

Reach 15R: Swale Avg. Flow Depth=1.57' Max Vel=6.81 fps Inflow=92.73 cfs 3.436 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=92.43 cfs 3.436 af

Pond 7P: Wet Pond Peak Elev=727.07' Storage=4.868 af Inflow=132.77 cfs 5.112 af
Outflow=3.21 cfs 4.231 af

Pond 11P: EDDB Peak Elev=728.57' Storage=23,450 cf Inflow=99.84 cfs 3.436 af
Outflow=92.73 cfs 3.436 af

Total Runoff Area = 60.500 ac Runoff Volume = 5.112 af Average Runoff Depth = 1.01"
64.30% Pervious = 38.899 ac 35.70% Impervious = 21.601 ac

Summary for Subcatchment 12S: West

Runoff = 50.15 cfs @ 0.64 hrs, Volume= 1.011 af, Depth= 0.86"

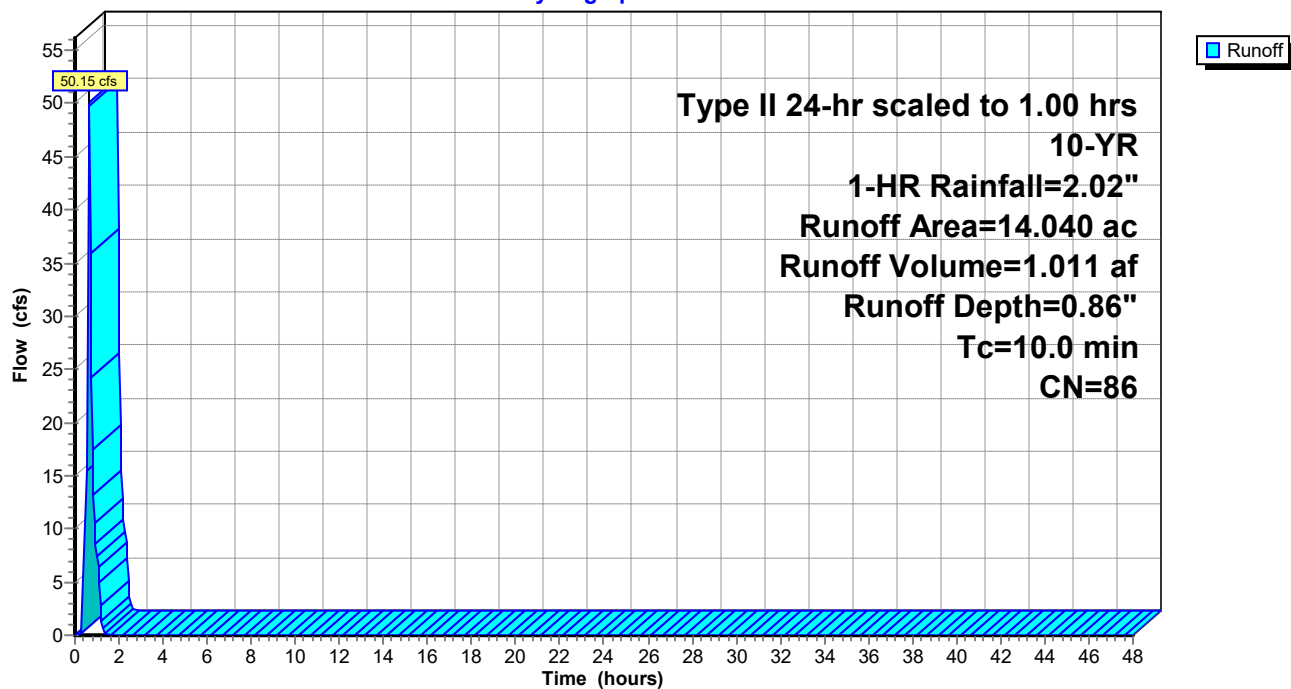
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 1.00 hrs 10-YR, 1-HR Rainfall=2.02"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 83.70 cfs @ 0.64 hrs, Volume= 1.675 af, Depth= 0.92"

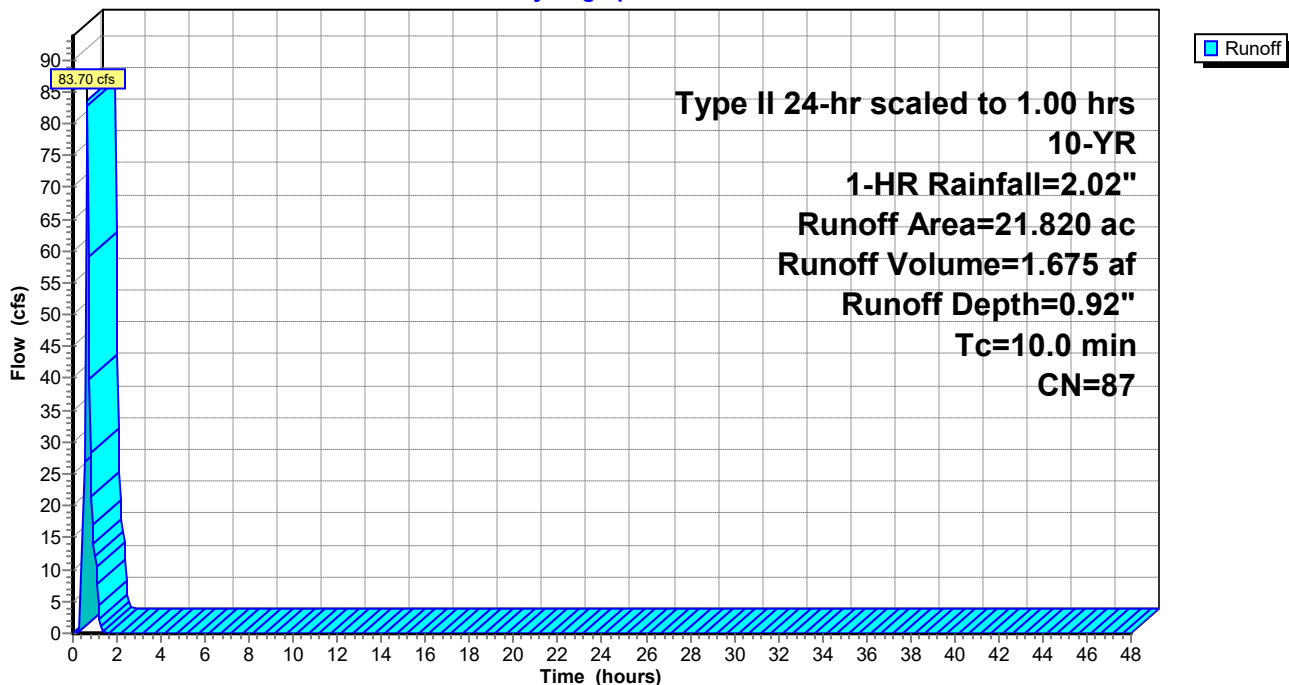
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 1.00 hrs 10-YR, 1-HR Rainfall=2.02"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Subcatchment B: Off-Site

Runoff = 74.55 cfs @ 0.77 hrs, Volume= 2.425 af, Depth= 1.18"

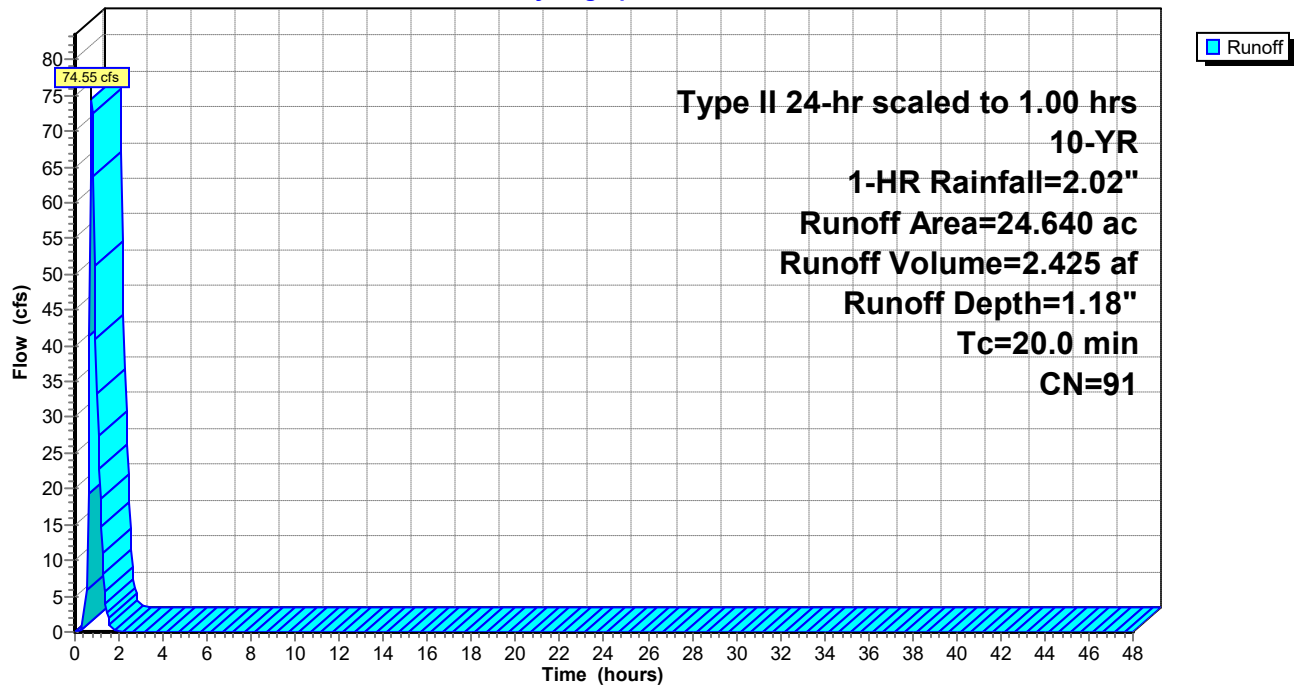
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr scaled to 1.00 hrs 10-YR, 1-HR Rainfall=2.02"

Area (ac)	CN	Description
24.640	91	Urban industrial, 72% imp, HSG C
6.899		28.00% Pervious Area
17.741		72.00% Impervious Area

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

Subcatchment B: Off-Site

Hydrograph



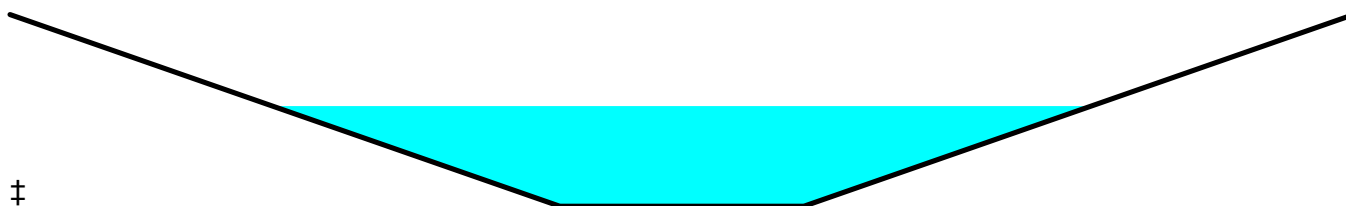
Summary for Reach 15R: Swale

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 1.07" for 10-YR, 1-HR event
 Inflow = 92.73 cfs @ 0.79 hrs, Volume= 3.436 af
 Outflow = 92.43 cfs @ 0.80 hrs, Volume= 3.436 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 6.81 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.47 fps, Avg. Travel Time= 1.3 min

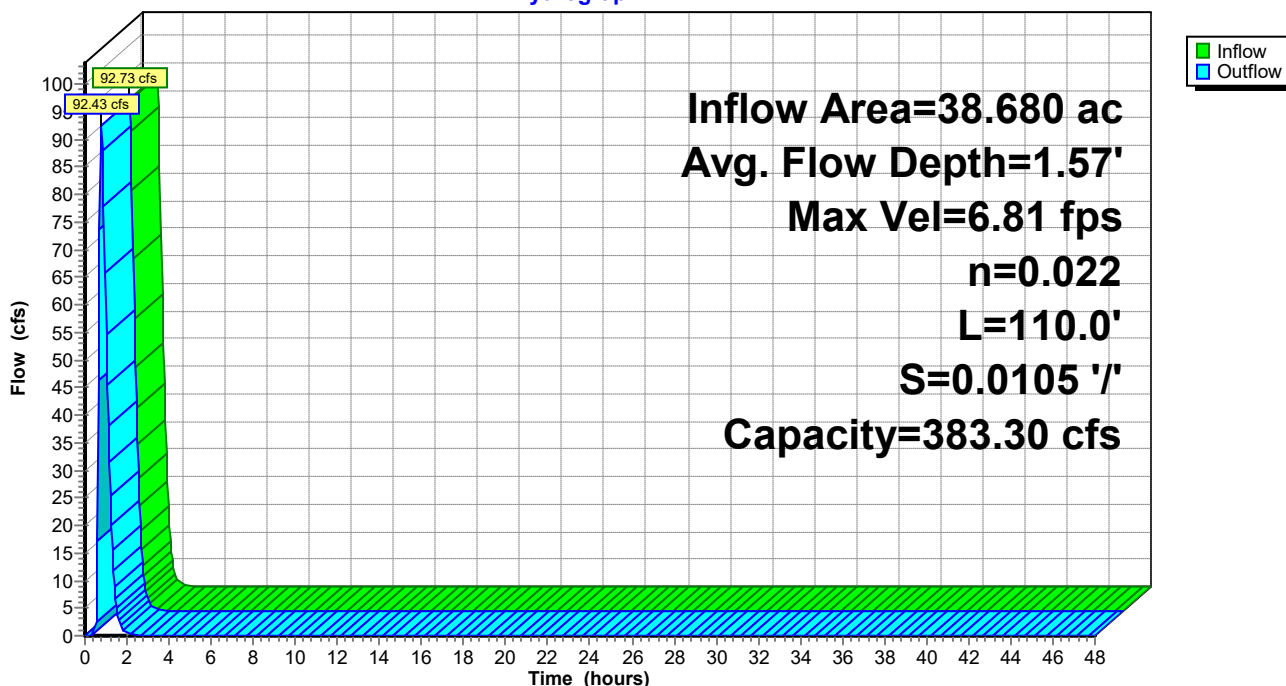
Peak Storage= 1,498 cf @ 0.79 hrs
 Average Depth at Peak Storage= 1.57' , Surface Width= 13.39'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[62] Hint: Exceeded Reach 15R OUTLET depth by 1.15' @ 2.35 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 1.01" for 10-YR, 1-HR event
 Inflow = 132.77 cfs @ 0.70 hrs, Volume= 5.112 af
 Outflow = 3.21 cfs @ 1.58 hrs, Volume= 4.231 af, Atten= 98%, Lag= 52.9 min
 Primary = 3.21 cfs @ 1.58 hrs, Volume= 4.231 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.07' @ 1.58 hrs Surf.Area= 4.112 ac Storage= 4.868 af

Plug-Flow detention time= 792.0 min calculated for 4.226 af (83% of inflow)
 Center-of-Mass det. time= 789.3 min (841.2 - 51.9)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

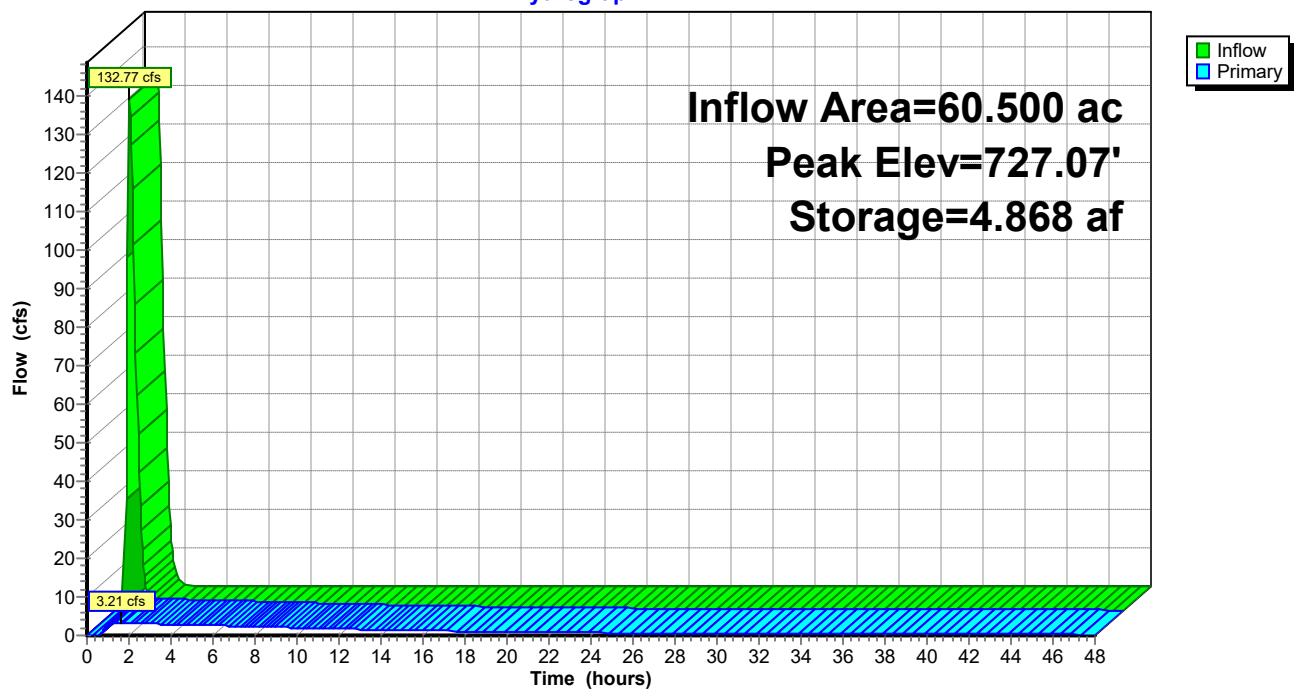
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.21 cfs @ 1.58 hrs HW=727.07' (Free Discharge)

1=Orifice/Grate (Orifice Controls 3.21 cfs @ 4.09 fps)
 2=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: Eddb

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 1.07" for 10-YR, 1-HR event
 Inflow = 99.84 cfs @ 0.72 hrs, Volume= 3.436 af
 Outflow = 92.73 cfs @ 0.79 hrs, Volume= 3.436 af, Atten= 7%, Lag= 4.3 min
 Primary = 92.73 cfs @ 0.79 hrs, Volume= 3.436 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.57' @ 0.79 hrs Surf.Area= 24,791 sf Storage= 23,450 cf

Plug-Flow detention time= 4.9 min calculated for 3.433 af (100% of inflow)
 Center-of-Mass det. time= 5.0 min (55.1 - 50.1)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

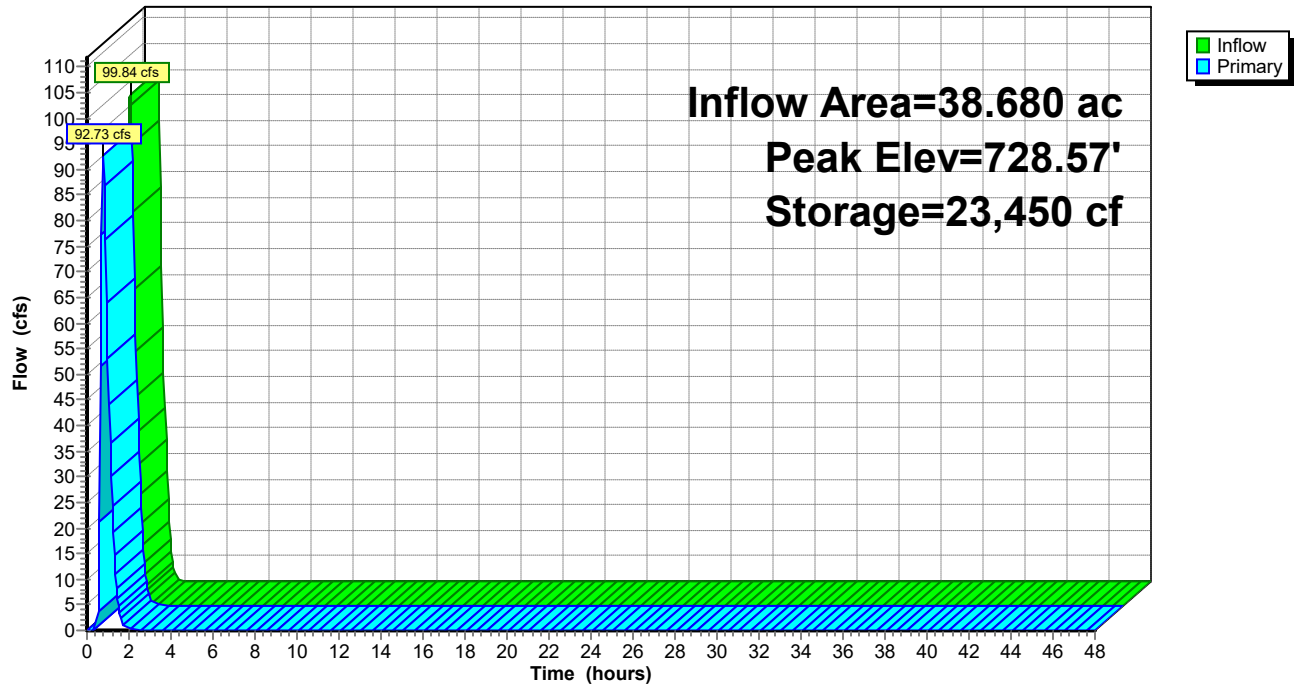
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=92.05 cfs @ 0.79 hrs HW=728.56' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 92.05 cfs @ 6.80 fps)

Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Po *Type II 24-hr scaled to 12.00 hrs 10-YR, 12-HR Rainfall=3.53"*

Prepared by Kimley-Horn

Printed 9/9/2021

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

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

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

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=2.12"
Tc=10.0 min CN=86 Runoff=64.87 cfs 2.486 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=2.21"
Tc=10.0 min CN=87 Runoff=104.67 cfs 4.017 af

Subcatchment B: Off-Site Runoff Area=24.640 ac 72.00% Impervious Runoff Depth=2.57"
Tc=20.0 min CN=91 Runoff=88.95 cfs 5.276 af

Reach 15R: Swale Avg. Flow Depth=1.78' Max Vel=7.30 fps Inflow=122.26 cfs 7.762 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=121.01 cfs 7.762 af

Pond 7P: Wet Pond Peak Elev=727.92' Storage=8.432 af Inflow=194.88 cfs 11.780 af
Outflow=9.14 cfs 10.398 af

Pond 11P: EDDB Peak Elev=728.79' Storage=29,206 cf Inflow=132.37 cfs 7.762 af
Outflow=122.26 cfs 7.762 af

Total Runoff Area = 60.500 ac Runoff Volume = 11.780 af Average Runoff Depth = 2.34"
64.30% Pervious = 38.899 ac 35.70% Impervious = 21.601 ac

Summary for Subcatchment 12S: West

Runoff = 64.87 cfs @ 6.06 hrs, Volume= 2.486 af, Depth= 2.12"

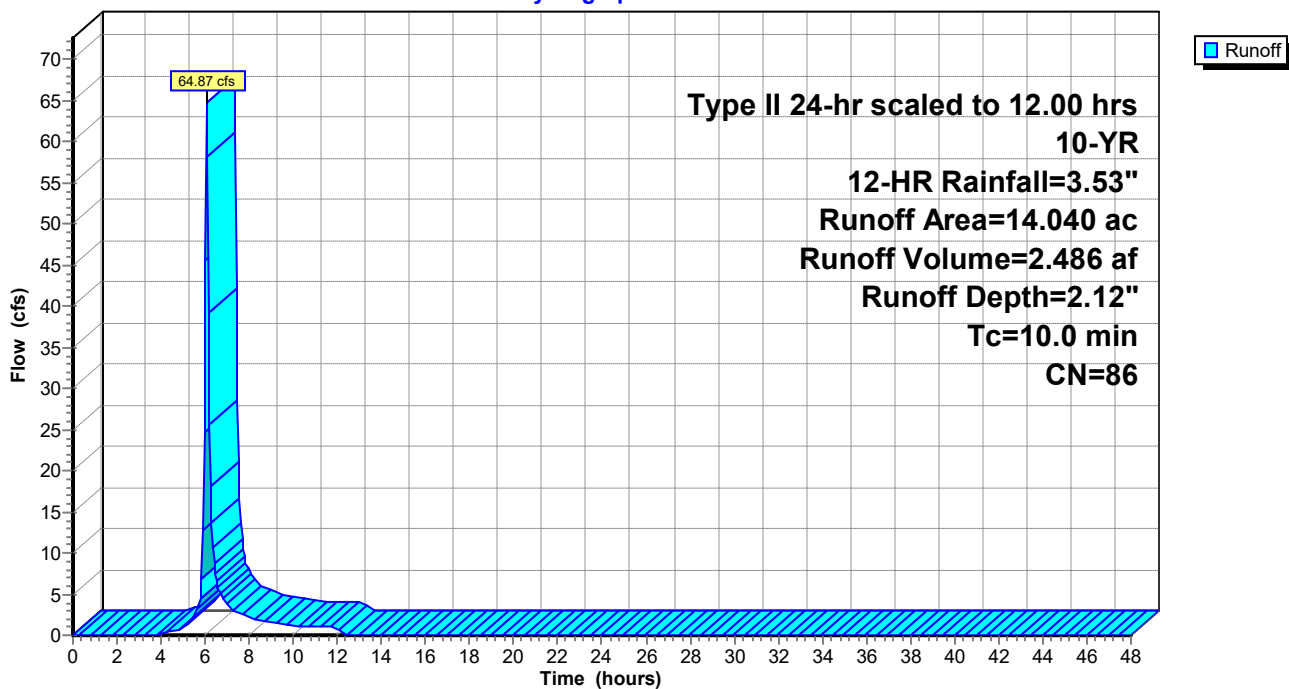
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 12.00 hrs 10-YR, 12-HR Rainfall=3.53"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 104.67 cfs @ 6.06 hrs, Volume= 4.017 af, Depth= 2.21"

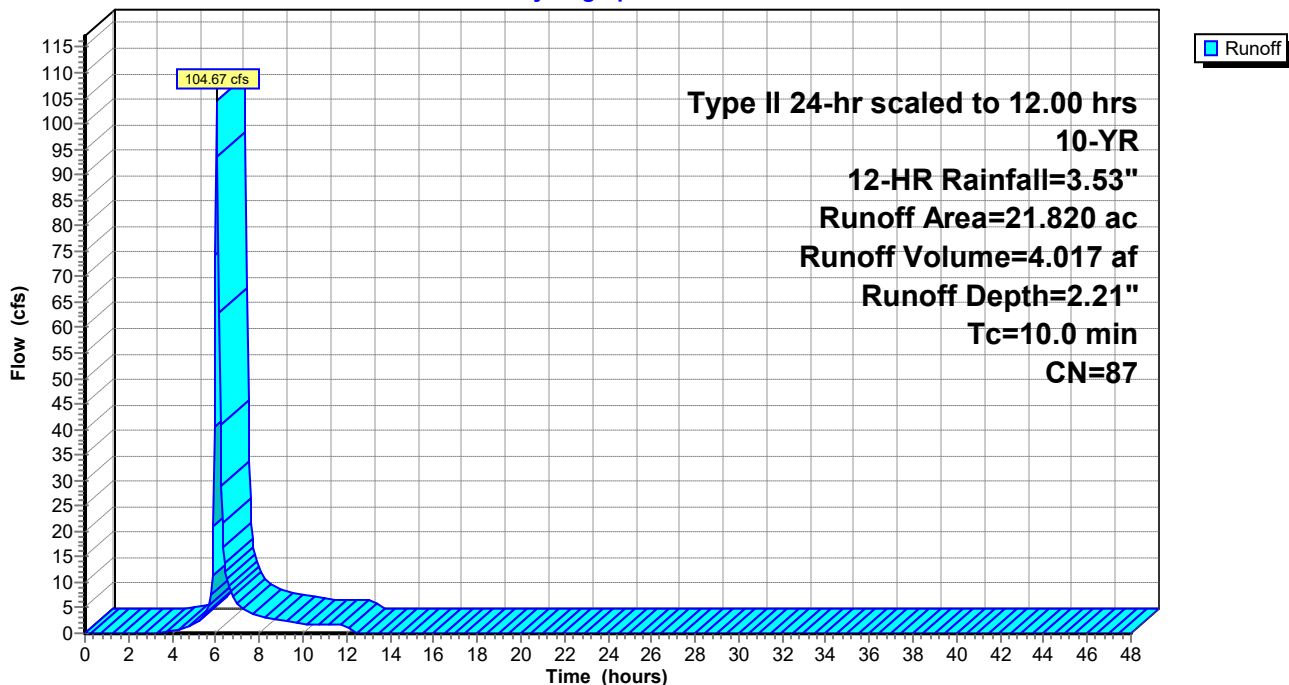
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 12.00 hrs 10-YR, 12-HR Rainfall=3.53"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Subcatchment B: Off-Site

Runoff = 88.95 cfs @ 6.18 hrs, Volume= 5.276 af, Depth= 2.57"

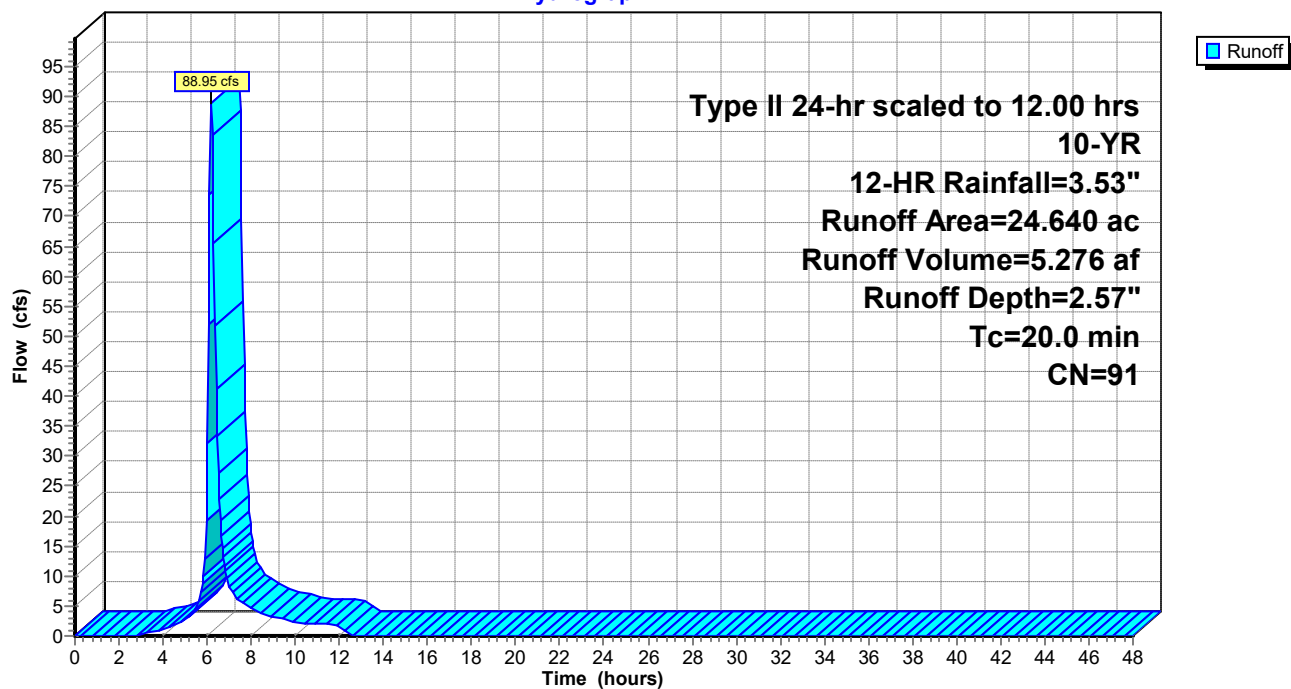
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr scaled to 12.00 hrs 10-YR, 12-HR Rainfall=3.53"

Area (ac)	CN	Description
24.640	91	Urban industrial, 72% imp, HSG C
6.899		28.00% Pervious Area
17.741		72.00% Impervious Area

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

Subcatchment B: Off-Site

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 2.41" for 10-YR, 12-HR event
Inflow = 122.26 cfs @ 6.17 hrs, Volume= 7.762 af
Outflow = 121.01 cfs @ 6.18 hrs, Volume= 7.762 af, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 7.30 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 2.13 fps, Avg. Travel Time= 0.9 min

Peak Storage= 1,828 cf @ 6.18 hrs

Average Depth at Peak Storage= 1.78' , Surface Width= 14.68'

Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight

Side Slope Z-value= 3.0 '/' Top Width= 22.00'

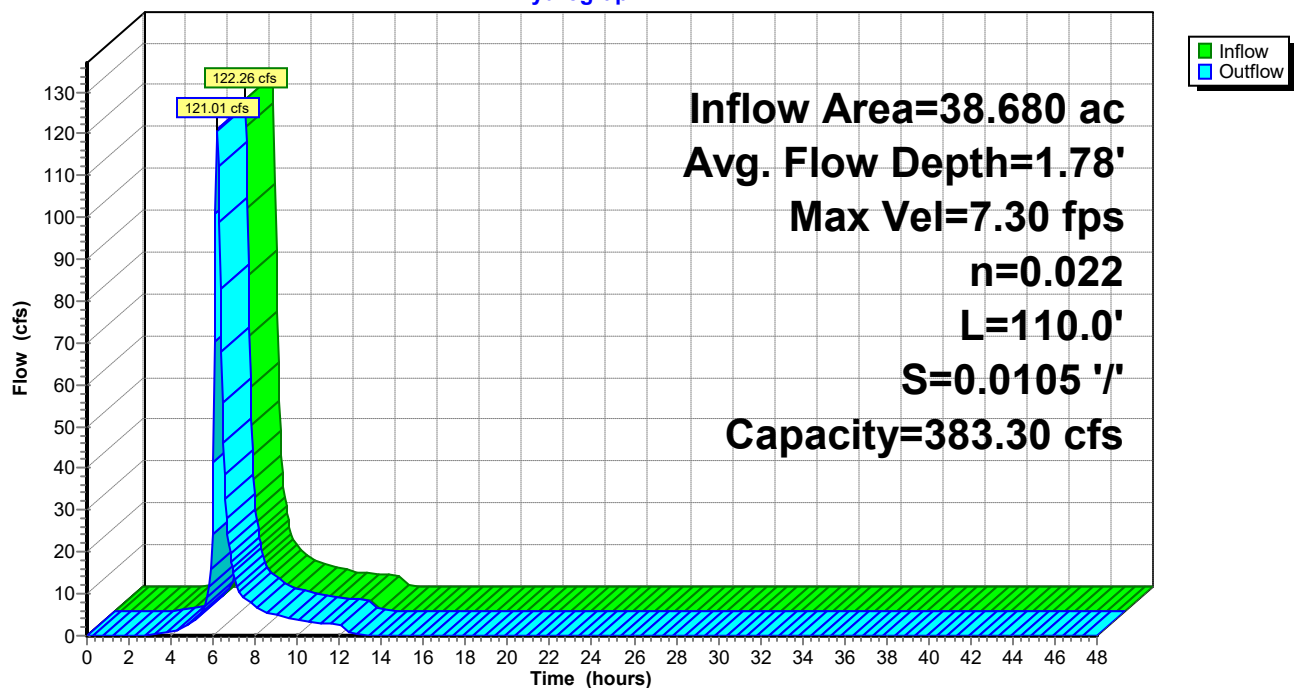
Length= 110.0' Slope= 0.0105 '/'

Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 0.61' @ 12.80 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 2.34" for 10-YR, 12-HR event
 Inflow = 194.88 cfs @ 6.11 hrs, Volume= 11.780 af
 Outflow = 9.14 cfs @ 8.29 hrs, Volume= 10.398 af, Atten= 95%, Lag= 131.3 min
 Primary = 9.14 cfs @ 8.29 hrs, Volume= 10.398 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.92' @ 8.29 hrs Surf.Area= 4.285 ac Storage= 8.432 af

Plug-Flow detention time= 679.3 min calculated for 10.398 af (88% of inflow)
 Center-of-Mass det. time= 650.1 min (1,067.9 - 417.8)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

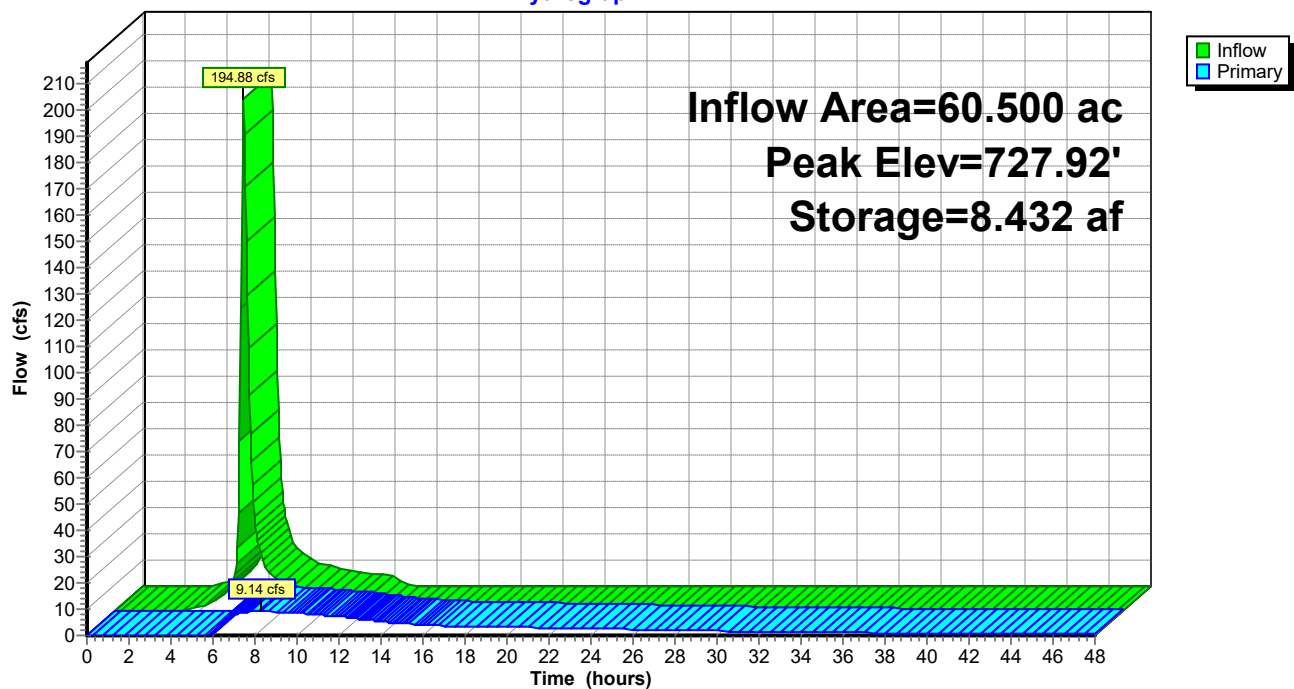
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.14 cfs @ 8.29 hrs HW=727.92' (Free Discharge)

1=Orifice/Grate (Orifice Controls 4.74 cfs @ 6.03 fps)
 2=Orifice/Grate (Orifice Controls 4.40 cfs @ 2.63 fps)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 2.41" for 10-YR, 12-HR event
 Inflow = 132.37 cfs @ 6.11 hrs, Volume= 7.762 af
 Outflow = 122.26 cfs @ 6.17 hrs, Volume= 7.762 af, Atten= 8%, Lag= 3.7 min
 Primary = 122.26 cfs @ 6.17 hrs, Volume= 7.762 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.79' @ 6.17 hrs Surf.Area= 27,601 sf Storage= 29,206 cf

Plug-Flow detention time= 6.0 min calculated for 7.754 af (100% of inflow)
 Center-of-Mass det. time= 6.1 min (419.9 - 413.8)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

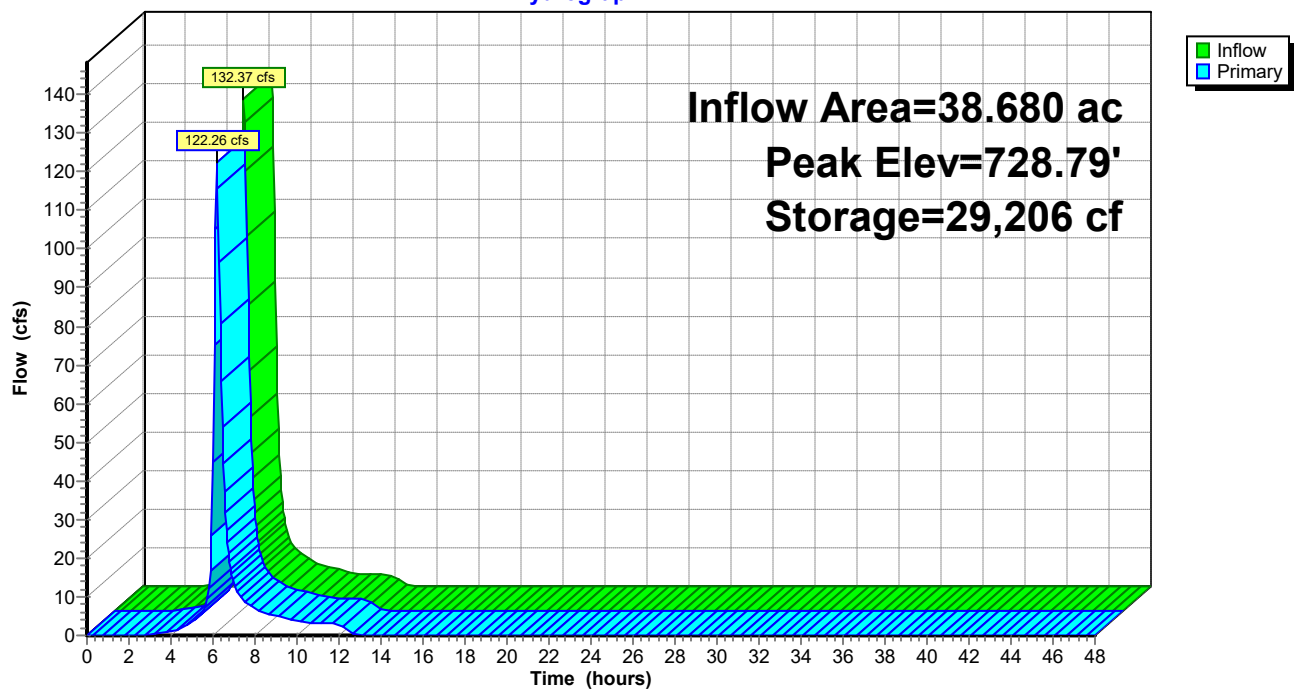
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=120.34 cfs @ 6.17 hrs HW=728.77' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 120.34 cfs @ 7.29 fps)

Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Pond Type II 24-hr scaled to 2.00 hrs 10-YR, 2-HR Rainfall=2.38"

Prepared by Kimley-Horn

Printed 9/9/2021

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

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

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

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=1.15"
Tc=10.0 min CN=86 Runoff=58.95 cfs 1.341 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=1.21"
Tc=10.0 min CN=87 Runoff=97.49 cfs 2.203 af

Subcatchment B: Off-Site Runoff Area=24.640 ac 72.00% Impervious Runoff Depth=1.50"
Tc=20.0 min CN=91 Runoff=82.11 cfs 3.083 af

Reach 15R: Swale Avg. Flow Depth=1.66' Max Vel=7.02 fps Inflow=104.51 cfs 4.424 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=104.16 cfs 4.424 af

Pond 7P: Wet Pond Peak Elev=727.40' Storage=6.213 af Inflow=158.72 cfs 6.627 af
Outflow=4.31 cfs 5.639 af

Pond 11P: EDDB Peak Elev=728.66' Storage=25,782 cf Inflow=111.58 cfs 4.424 af
Outflow=104.51 cfs 4.424 af

Total Runoff Area = 60.500 ac Runoff Volume = 6.627 af Average Runoff Depth = 1.31"
64.30% Pervious = 38.899 ac 35.70% Impervious = 21.601 ac

Summary for Subcatchment 12S: West

Runoff = 58.95 cfs @ 1.12 hrs, Volume= 1.341 af, Depth= 1.15"

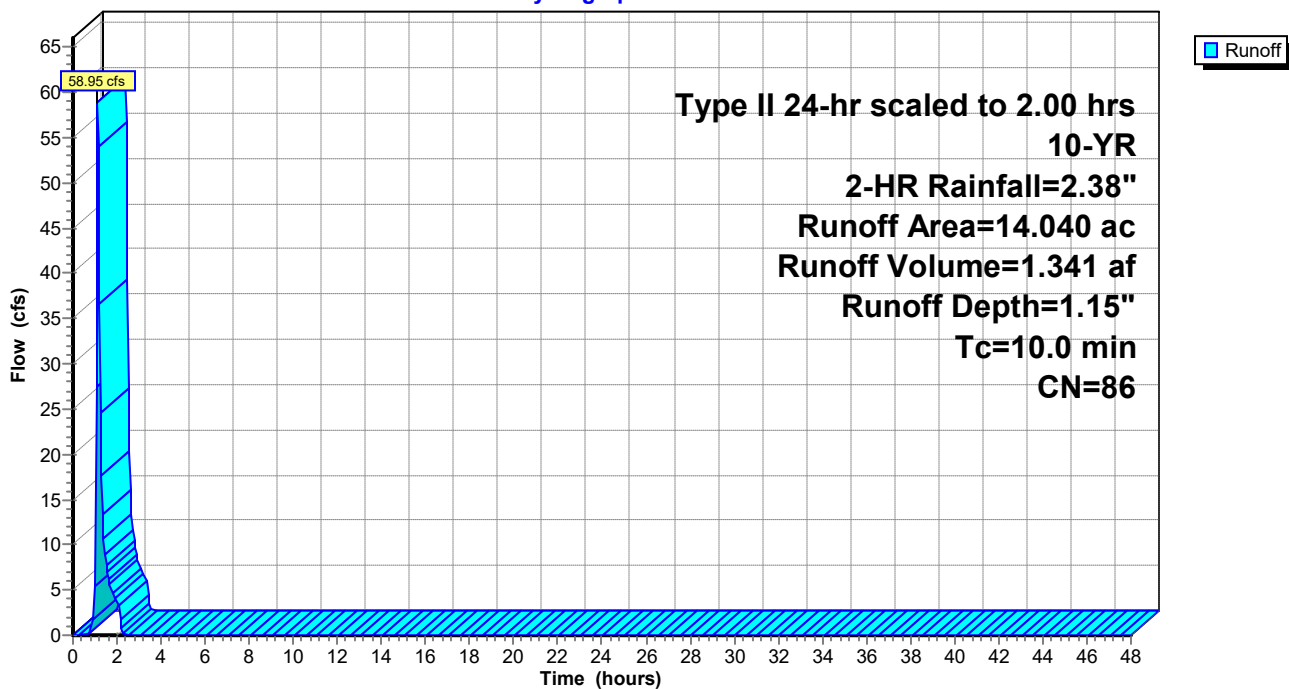
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 2.00 hrs 10-YR, 2-HR Rainfall=2.38"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 97.49 cfs @ 1.12 hrs, Volume= 2.203 af, Depth= 1.21"

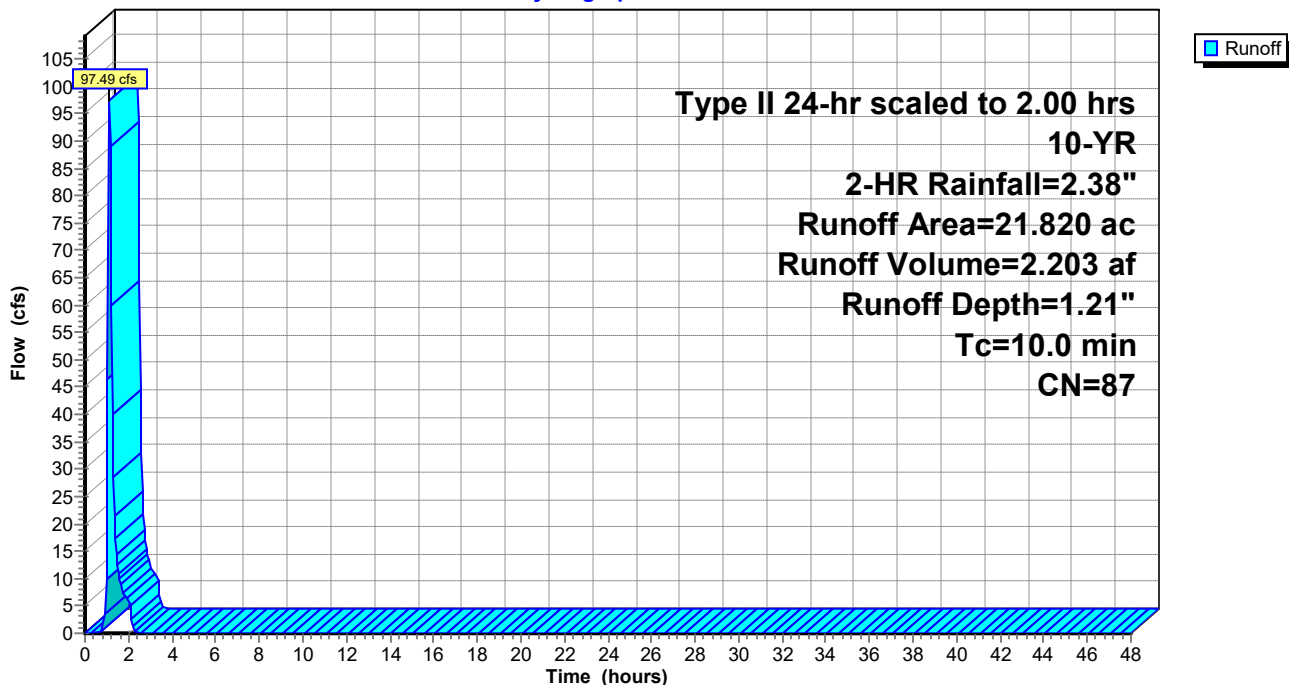
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 2.00 hrs 10-YR, 2-HR Rainfall=2.38"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Subcatchment B: Off-Site

Runoff = 82.11 cfs @ 1.26 hrs, Volume= 3.083 af, Depth= 1.50"

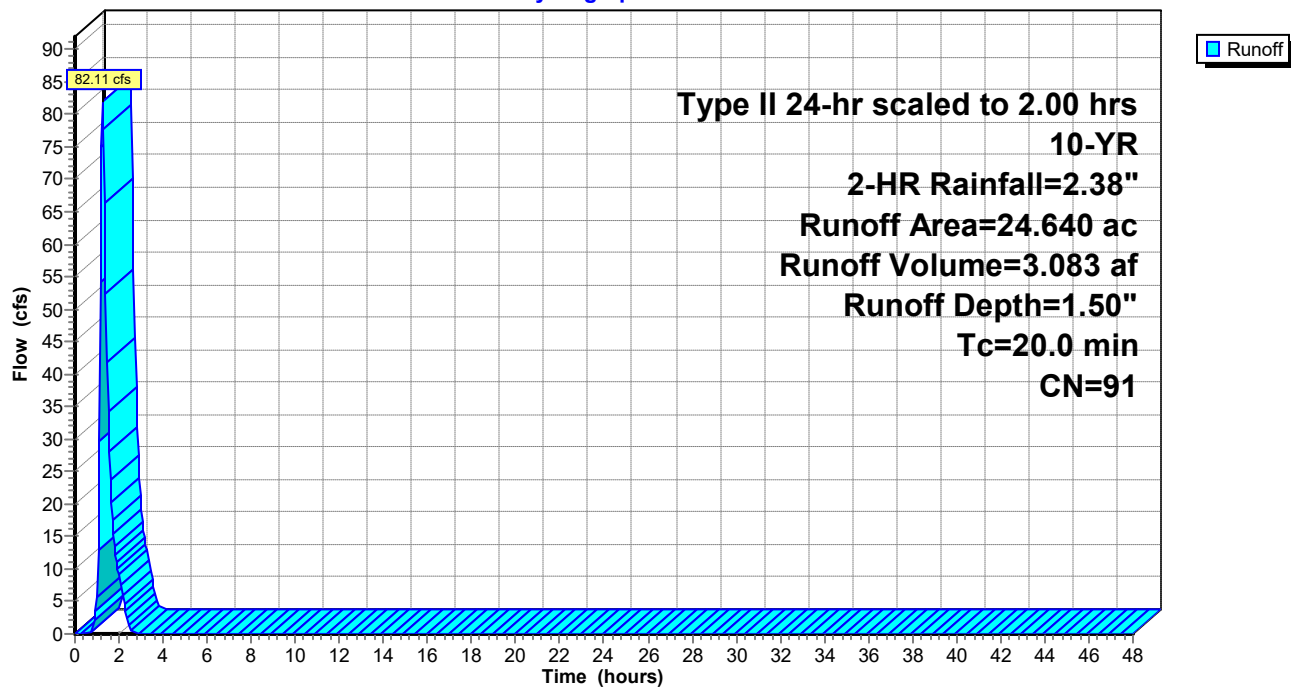
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 2.00 hrs 10-YR, 2-HR Rainfall=2.38"

Area (ac)	CN	Description
24.640	91	Urban industrial, 72% imp, HSG C
6.899		28.00% Pervious Area
17.741		72.00% Impervious Area

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

Subcatchment B: Off-Site

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 1.37" for 10-YR, 2-HR event
 Inflow = 104.51 cfs @ 1.27 hrs, Volume= 4.424 af
 Outflow = 104.16 cfs @ 1.27 hrs, Volume= 4.424 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 7.02 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.65 fps, Avg. Travel Time= 1.1 min

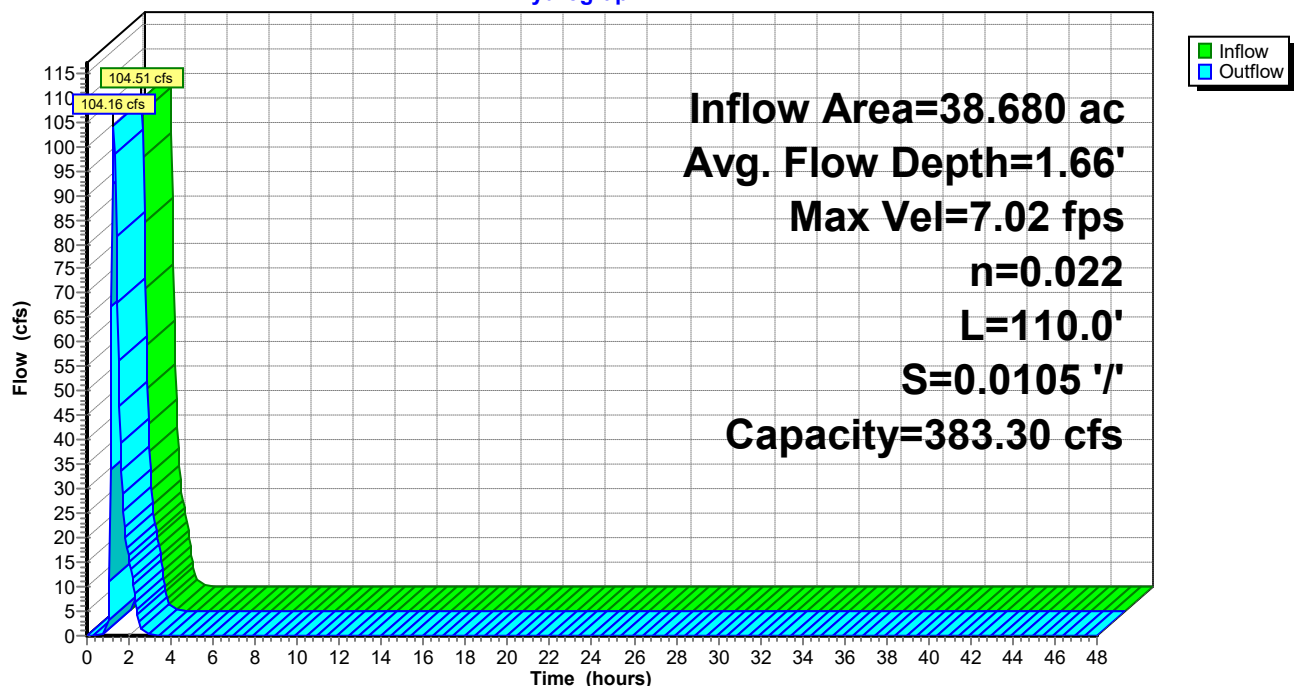
Peak Storage= 1,636 cf @ 1.27 hrs
 Average Depth at Peak Storage= 1.66' , Surface Width= 13.95'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 0.31' @ 3.20 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 1.31" for 10-YR, 2-HR event
 Inflow = 158.72 cfs @ 1.17 hrs, Volume= 6.627 af
 Outflow = 4.31 cfs @ 2.40 hrs, Volume= 5.639 af, Atten= 97%, Lag= 73.9 min
 Primary = 4.31 cfs @ 2.40 hrs, Volume= 5.639 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.40' @ 2.40 hrs Surf.Area= 4.178 ac Storage= 6.213 af

Plug-Flow detention time= 792.4 min calculated for 5.633 af (85% of inflow)
 Center-of-Mass det. time= 787.9 min (873.3 - 85.4)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

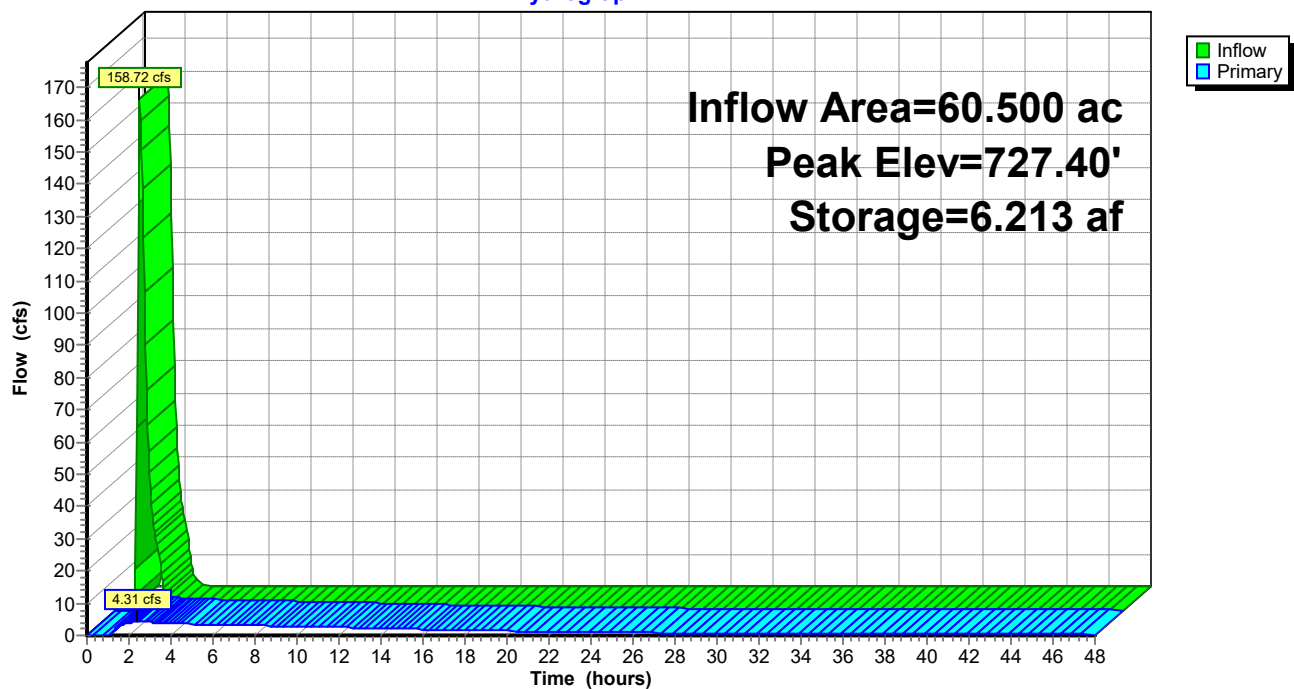
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.31 cfs @ 2.40 hrs HW=727.40' (Free Discharge)

1=Orifice/Grate (Orifice Controls 3.87 cfs @ 4.92 fps)
 2=Orifice/Grate (Orifice Controls 0.44 cfs @ 1.22 fps)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 1.37" for 10-YR, 2-HR event
 Inflow = 111.58 cfs @ 1.19 hrs, Volume= 4.424 af
 Outflow = 104.51 cfs @ 1.27 hrs, Volume= 4.424 af, Atten= 6%, Lag= 4.3 min
 Primary = 104.51 cfs @ 1.27 hrs, Volume= 4.424 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.66' @ 1.27 hrs Surf.Area= 25,966 sf Storage= 25,782 cf

Plug-Flow detention time= 5.4 min calculated for 4.424 af (100% of inflow)
 Center-of-Mass det. time= 5.0 min (88.5 - 83.5)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

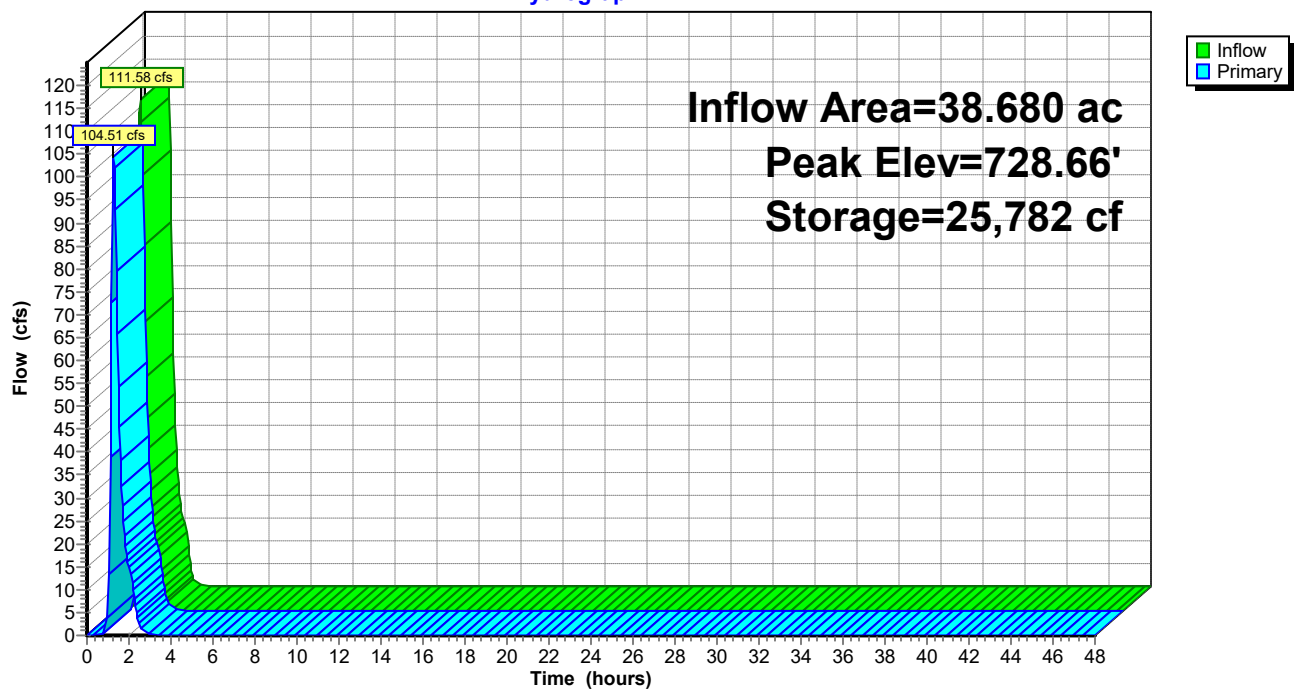
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=103.37 cfs @ 1.27 hrs HW=728.65' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 103.37 cfs @ 7.01 fps)

Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Pond*Type II 24-hr 10-YR, 24-HR Rainfall=4.07"*

Prepared by Kimley-Horn

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West	Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=2.61" Tc=10.0 min CN=86 Runoff=54.70 cfs 3.053 af
Subcatchment 13S: East	Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=2.70" Tc=10.0 min CN=87 Runoff=87.57 cfs 4.911 af
Subcatchment B: Off-Site	Runoff Area=24.640 ac 72.00% Impervious Runoff Depth=3.08" Tc=20.0 min CN=91 Runoff=81.91 cfs 6.333 af
Reach 15R: Swale	Avg. Flow Depth=1.75' Max Vel=7.22 fps Inflow=116.55 cfs 9.387 af n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=116.06 cfs 9.387 af
Pond 7P: Wet Pond	Peak Elev=728.07' Storage=9.071 af Inflow=186.12 cfs 14.298 af Outflow=10.90 cfs 12.384 af
Pond 11P: EDDB	Peak Elev=728.75' Storage=28,106 cf Inflow=124.56 cfs 9.387 af Outflow=116.55 cfs 9.387 af

Total Runoff Area = 60.500 ac Runoff Volume = 14.298 af Average Runoff Depth = 2.84"
64.30% Pervious = 38.899 ac 35.70% Impervious = 21.601 ac

Franklin Industrial Detention Pond

Prepared by Kimley-Horn

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Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

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Summary for Subcatchment 12S: West

Runoff = 54.70 cfs @ 12.01 hrs, Volume= 3.053 af, Depth= 2.61"

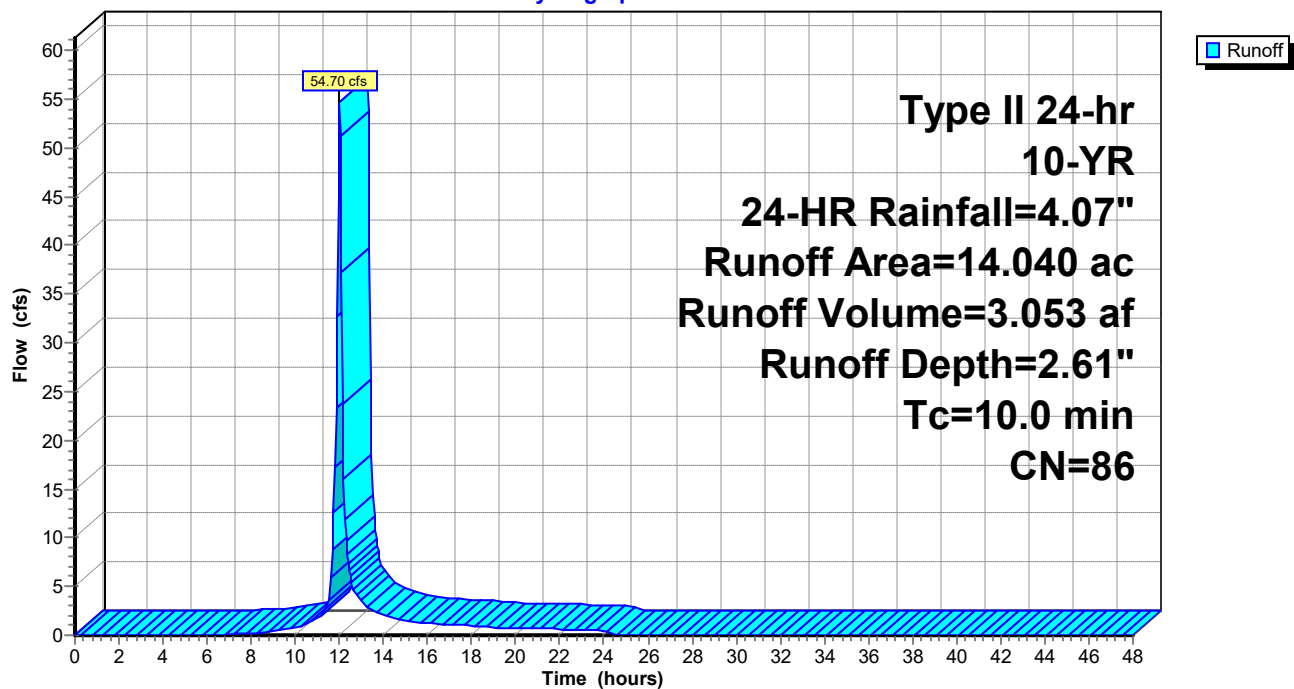
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Franklin Industrial Detention Pond

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Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

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Summary for Subcatchment 13S: East

Runoff = 87.57 cfs @ 12.01 hrs, Volume= 4.911 af, Depth= 2.70"

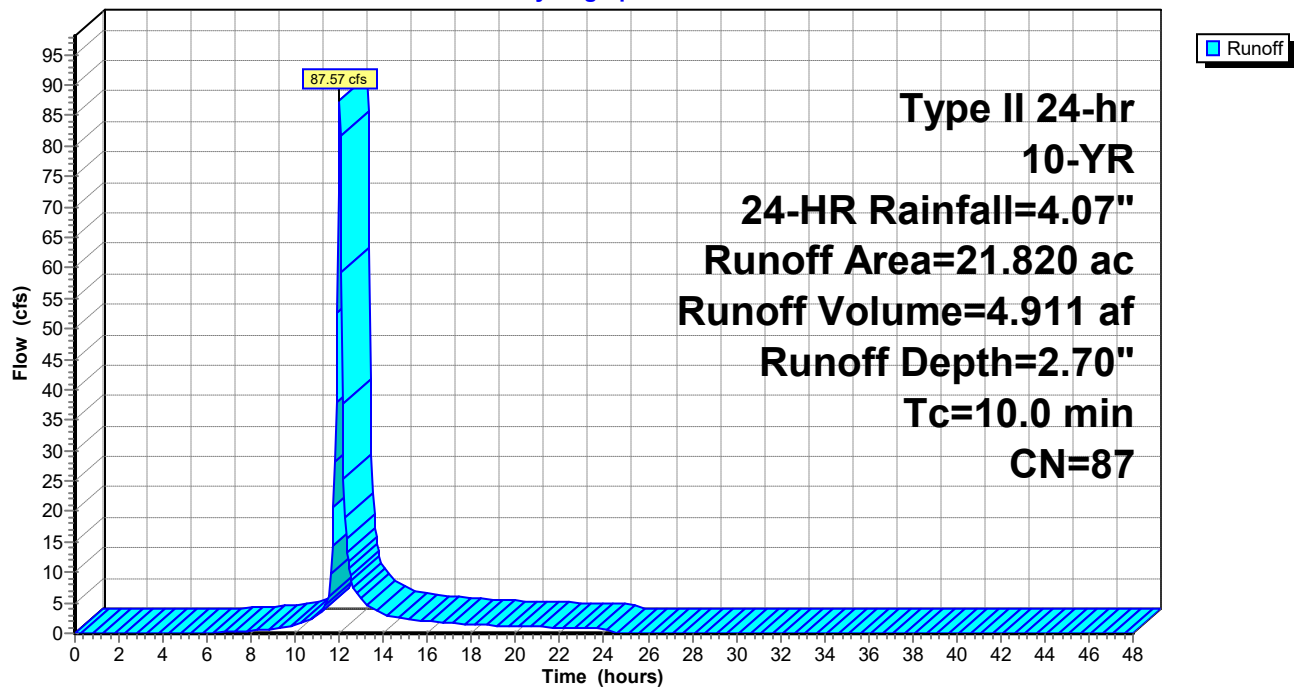
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

	Area (ac)	CN	Description
*	12.423	90	
	5.537	74	>75% Grass cover, Good, HSG C
	3.860	98	Water Surface, HSG C
	21.820	87	Weighted Average
	17.960		82.31% Pervious Area
	3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



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Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

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Summary for Subcatchment B: Off-Site

Runoff = 81.91 cfs @ 12.12 hrs, Volume= 6.333 af, Depth= 3.08"

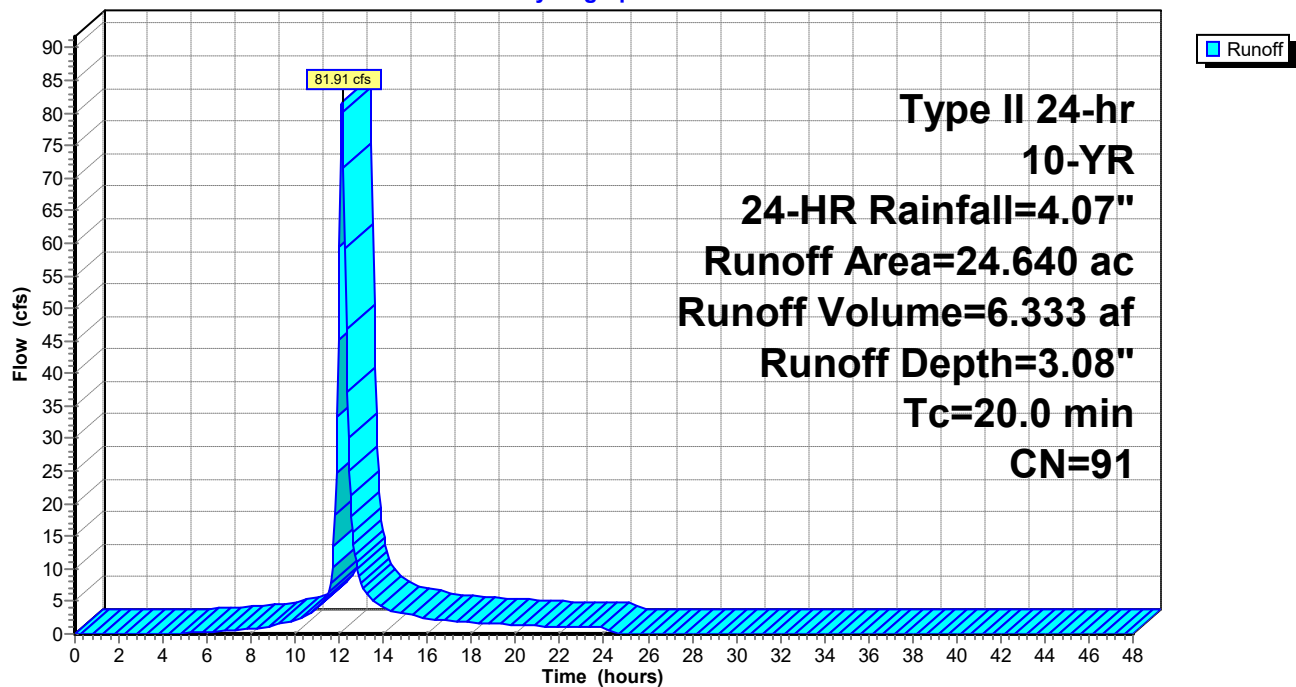
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

Area (ac)	CN	Description
24.640	91	Urban industrial, 72% imp, HSG C
6.899		28.00% Pervious Area
17.741		72.00% Impervious Area

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

Subcatchment B: Off-Site

Hydrograph



Franklin Industrial Detention Pond

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Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

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Summary for Reach 15R: Swale

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 2.91" for 10-YR, 24-HR event
Inflow = 116.55 cfs @ 12.11 hrs, Volume= 9.387 af
Outflow = 116.06 cfs @ 12.12 hrs, Volume= 9.387 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 7.22 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 2.07 fps, Avg. Travel Time= 0.9 min

Peak Storage= 1,773 cf @ 12.11 hrs

Average Depth at Peak Storage= 1.75' , Surface Width= 14.47'

Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight

Side Slope Z-value= 3.0 '/' Top Width= 22.00'

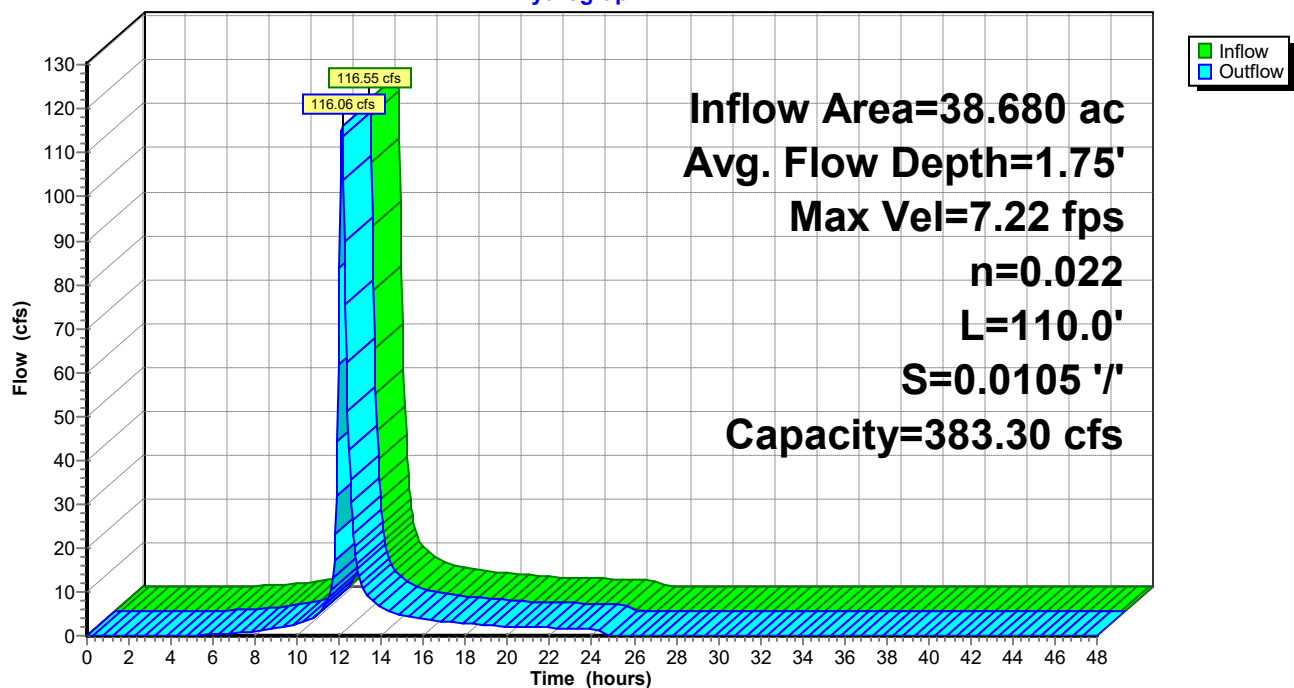
Length= 110.0' Slope= 0.0105 '/'

Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

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Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 0.70' @ 14.50 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 2.84" for 10-YR, 24-HR event
 Inflow = 186.12 cfs @ 12.05 hrs, Volume= 14.298 af
 Outflow = 10.90 cfs @ 13.75 hrs, Volume= 12.384 af, Atten= 94%, Lag= 101.8 min
 Primary = 10.90 cfs @ 13.75 hrs, Volume= 12.384 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.07' @ 13.75 hrs Surf.Area= 4.315 ac Storage= 9.071 af

Plug-Flow detention time= 637.5 min calculated for 12.371 af (87% of inflow)
 Center-of-Mass det. time= 575.2 min (1,387.9 - 812.7)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.90 cfs @ 13.75 hrs HW=728.07' (Free Discharge)

↑ **1=Orifice/Grate** (Orifice Controls 4.96 cfs @ 6.31 fps)
 — **2=Orifice/Grate** (Orifice Controls 5.94 cfs @ 2.90 fps)

Franklin Industrial Detention Pond

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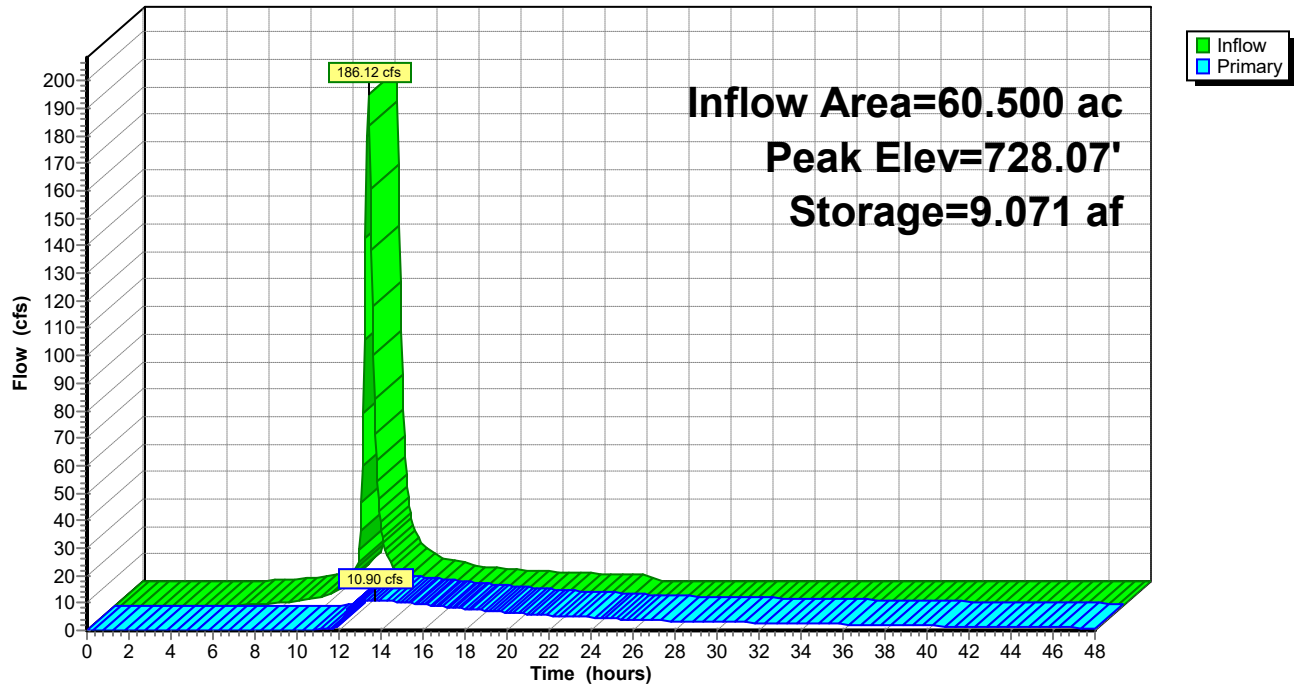
Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

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Pond 7P: Wet Pond

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

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Summary for Pond 11P: EDDB

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 2.91" for 10-YR, 24-HR event
 Inflow = 124.56 cfs @ 12.06 hrs, Volume= 9.387 af
 Outflow = 116.55 cfs @ 12.11 hrs, Volume= 9.387 af, Atten= 6%, Lag= 3.3 min
 Primary = 116.55 cfs @ 12.11 hrs, Volume= 9.387 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.75' @ 12.11 hrs Surf.Area= 27,087 sf Storage= 28,106 cf

Plug-Flow detention time= 6.8 min calculated for 9.377 af (100% of inflow)
 Center-of-Mass det. time= 6.9 min (813.5 - 806.7)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=115.42 cfs @ 12.11 hrs HW=728.74' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 115.42 cfs @ 7.21 fps)

Franklin Industrial Detention Pond

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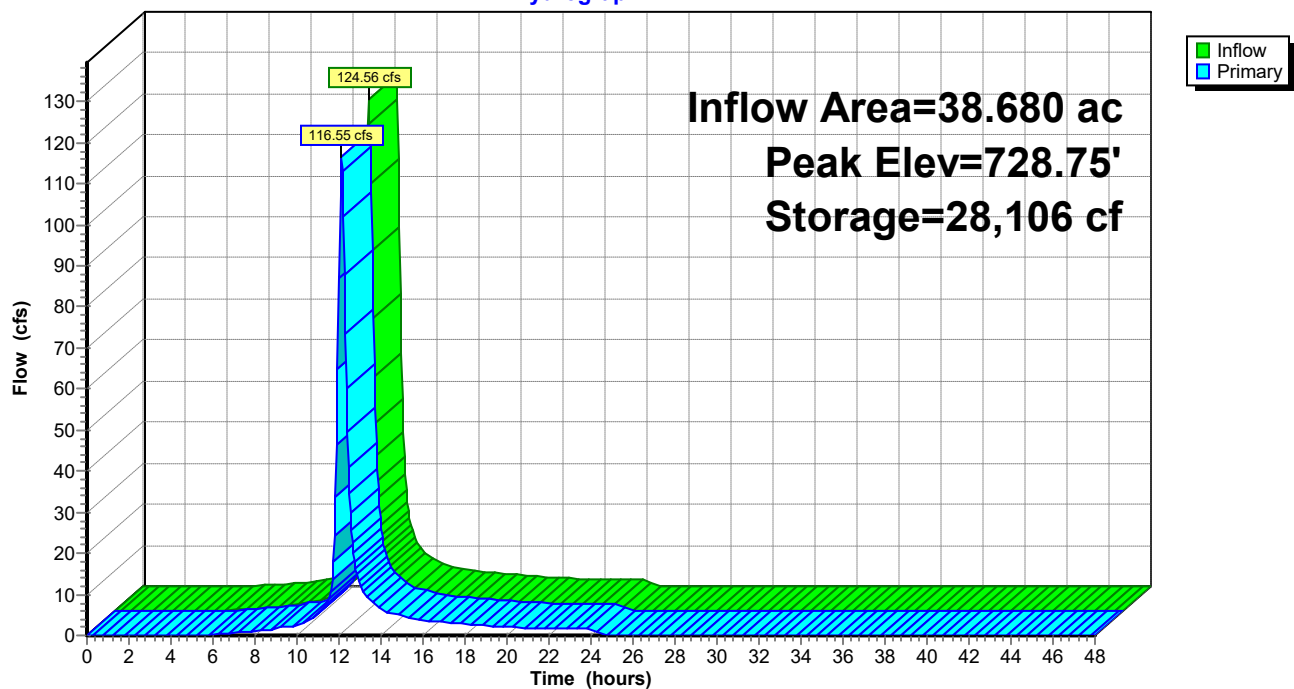
Type II 24-hr 10-YR, 24-HR Rainfall=4.07"

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Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Pond Type II 24-hr scaled to 3.00 hrs 10-YR, 3-HR Rainfall=2.53"

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

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

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

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=1.27"
Tc=10.0 min CN=86 Runoff=59.51 cfs 1.484 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=1.34"
Tc=10.0 min CN=87 Runoff=97.95 cfs 2.430 af

Subcatchment B: Off-Site Runoff Area=24.640 ac 72.00% Impervious Runoff Depth=1.64"
Tc=20.0 min CN=91 Runoff=81.76 cfs 3.363 af

Reach 15R: Swale Avg. Flow Depth=1.67' Max Vel=7.05 fps Inflow=105.64 cfs 4.846 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=105.33 cfs 4.846 af

Pond 7P: Wet Pond Peak Elev=727.50' Storage=6.662 af Inflow=162.63 cfs 7.276 af
Outflow=5.08 cfs 6.239 af

Pond 11P: EDDB Peak Elev=728.67' Storage=25,997 cf Inflow=114.93 cfs 4.846 af
Outflow=105.64 cfs 4.846 af

Total Runoff Area = 60.500 ac Runoff Volume = 7.276 af Average Runoff Depth = 1.44"
64.30% Pervious = 38.899 ac 35.70% Impervious = 21.601 ac

Summary for Subcatchment 12S: West

Runoff = 59.51 cfs @ 1.62 hrs, Volume= 1.484 af, Depth= 1.27"

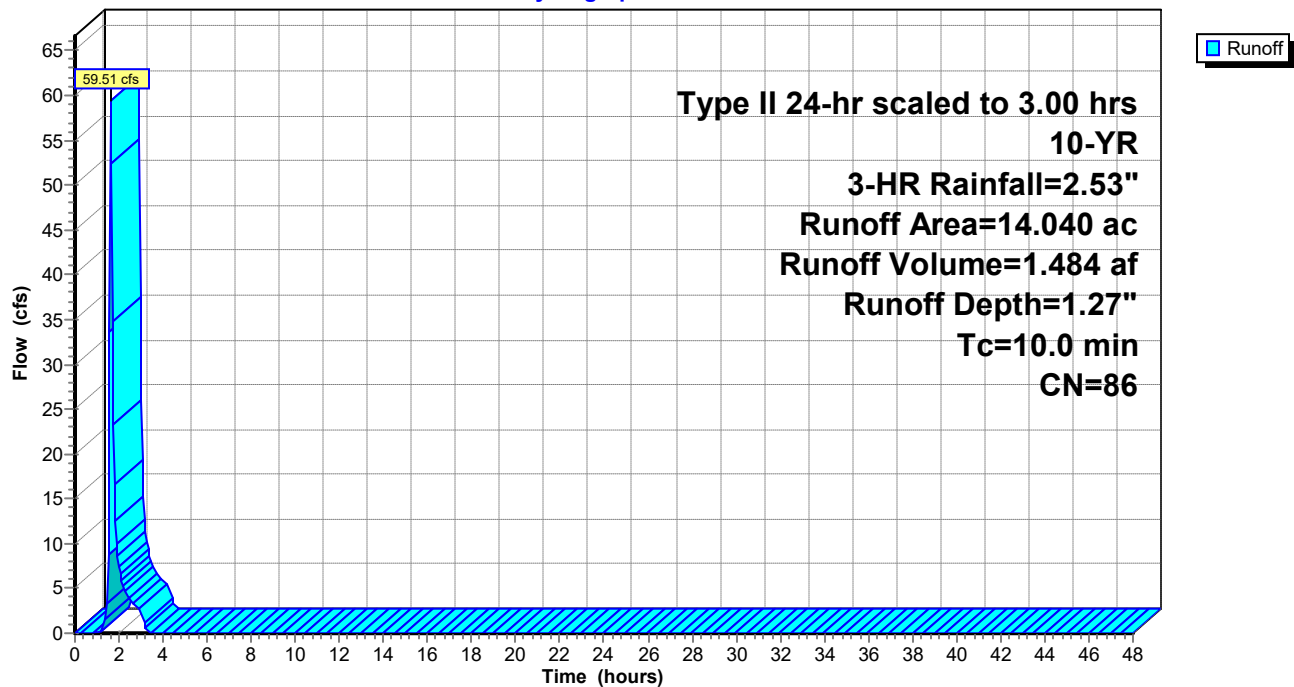
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 3.00 hrs 10-YR, 3-HR Rainfall=2.53"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 97.95 cfs @ 1.62 hrs, Volume= 2.430 af, Depth= 1.34"

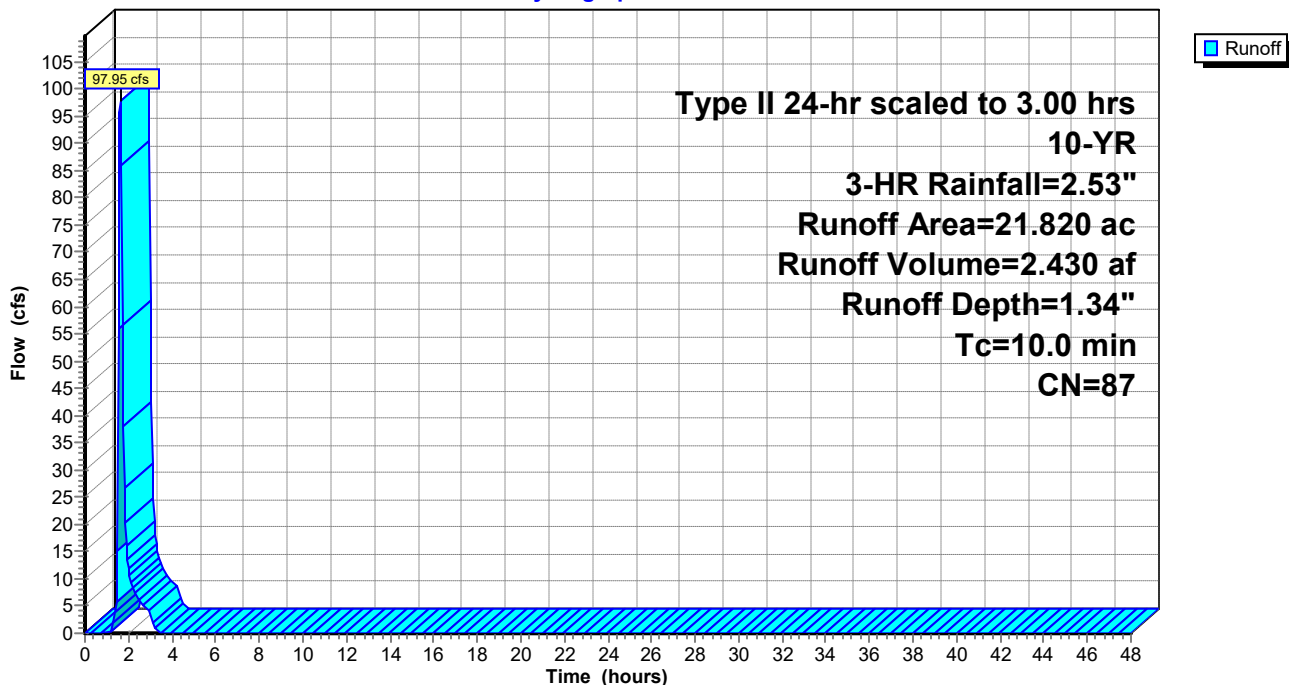
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 3.00 hrs 10-YR, 3-HR Rainfall=2.53"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Subcatchment B: Off-Site

Runoff = 81.76 cfs @ 1.74 hrs, Volume= 3.363 af, Depth= 1.64"

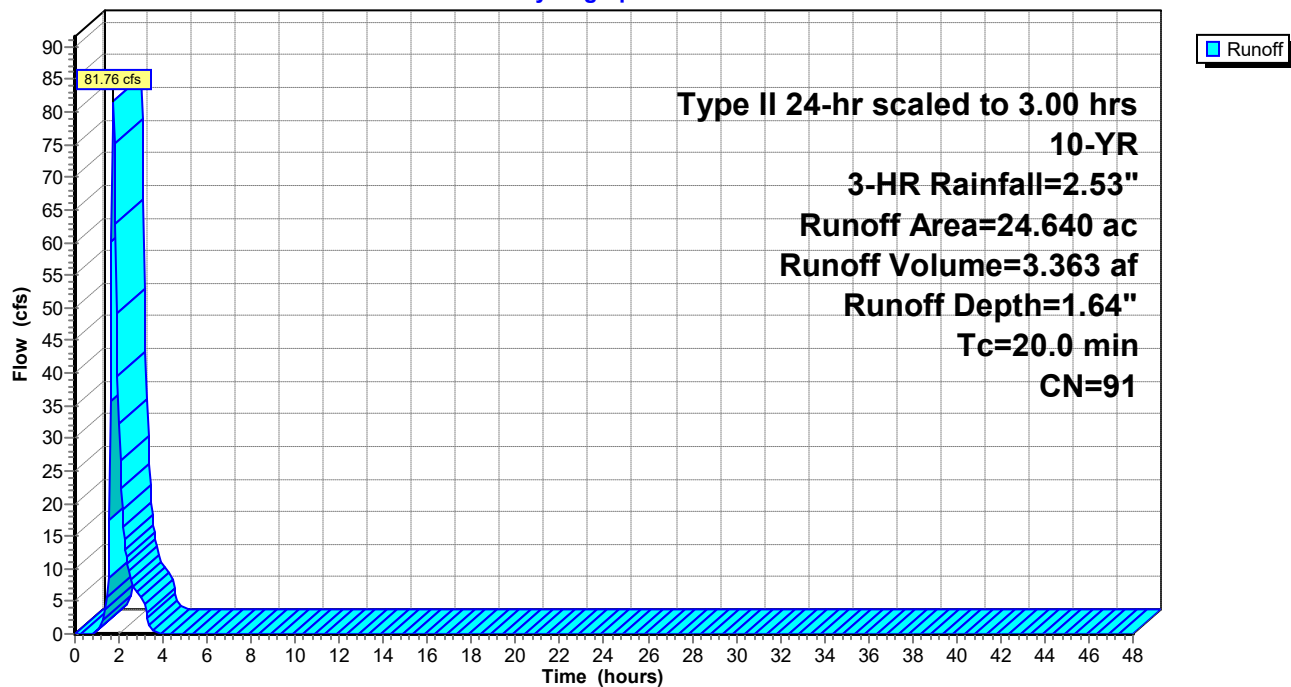
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 3.00 hrs 10-YR, 3-HR Rainfall=2.53"

Area (ac)	CN	Description
24.640	91	Urban industrial, 72% imp, HSG C
6.899		28.00% Pervious Area
17.741		72.00% Impervious Area

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

Subcatchment B: Off-Site

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 1.50" for 10-YR, 3-HR event
 Inflow = 105.64 cfs @ 1.75 hrs, Volume= 4.846 af
 Outflow = 105.33 cfs @ 1.76 hrs, Volume= 4.846 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 7.05 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.77 fps, Avg. Travel Time= 1.0 min

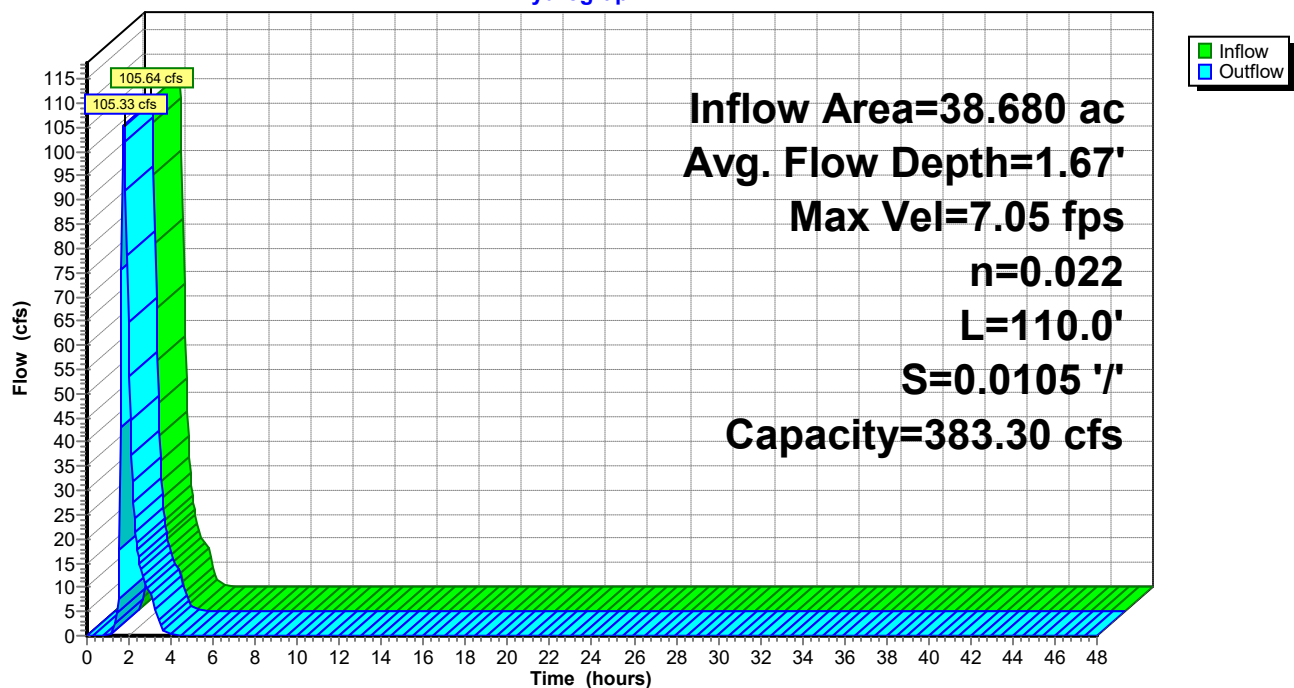
Peak Storage= 1,649 cf @ 1.76 hrs
 Average Depth at Peak Storage= 1.67' , Surface Width= 14.00'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 0.40' @ 4.10 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 1.44" for 10-YR, 3-HR event
 Inflow = 162.63 cfs @ 1.66 hrs, Volume= 7.276 af
 Outflow = 5.08 cfs @ 3.30 hrs, Volume= 6.239 af, Atten= 97%, Lag= 98.1 min
 Primary = 5.08 cfs @ 3.30 hrs, Volume= 6.239 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.50' @ 3.30 hrs Surf.Area= 4.200 ac Storage= 6.662 af

Plug-Flow detention time= 786.0 min calculated for 6.239 af (86% of inflow)
 Center-of-Mass det. time= 777.1 min (896.2 - 119.1)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

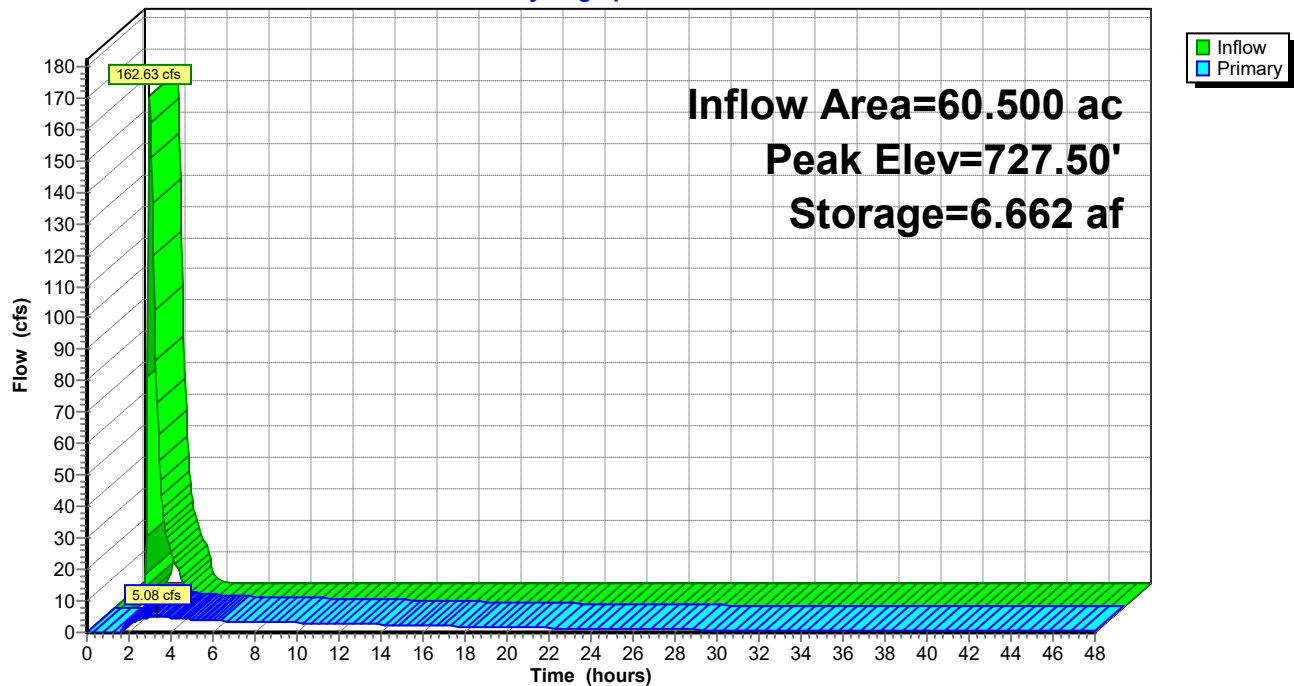
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.08 cfs @ 3.30 hrs HW=727.50' (Free Discharge)

↑ **1=Orifice/Grate** (Orifice Controls 4.06 cfs @ 5.17 fps)
 ↓ **2=Orifice/Grate** (Orifice Controls 1.02 cfs @ 1.61 fps)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: Eddb

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 1.50" for 10-YR, 3-HR event
 Inflow = 114.93 cfs @ 1.67 hrs, Volume= 4.846 af
 Outflow = 105.64 cfs @ 1.75 hrs, Volume= 4.846 af, Atten= 8%, Lag= 4.6 min
 Primary = 105.64 cfs @ 1.75 hrs, Volume= 4.846 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.67' @ 1.75 hrs Surf.Area= 26,072 sf Storage= 25,997 cf

Plug-Flow detention time= 5.1 min calculated for 4.841 af (100% of inflow)
 Center-of-Mass det. time= 5.2 min (122.1 - 116.9)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

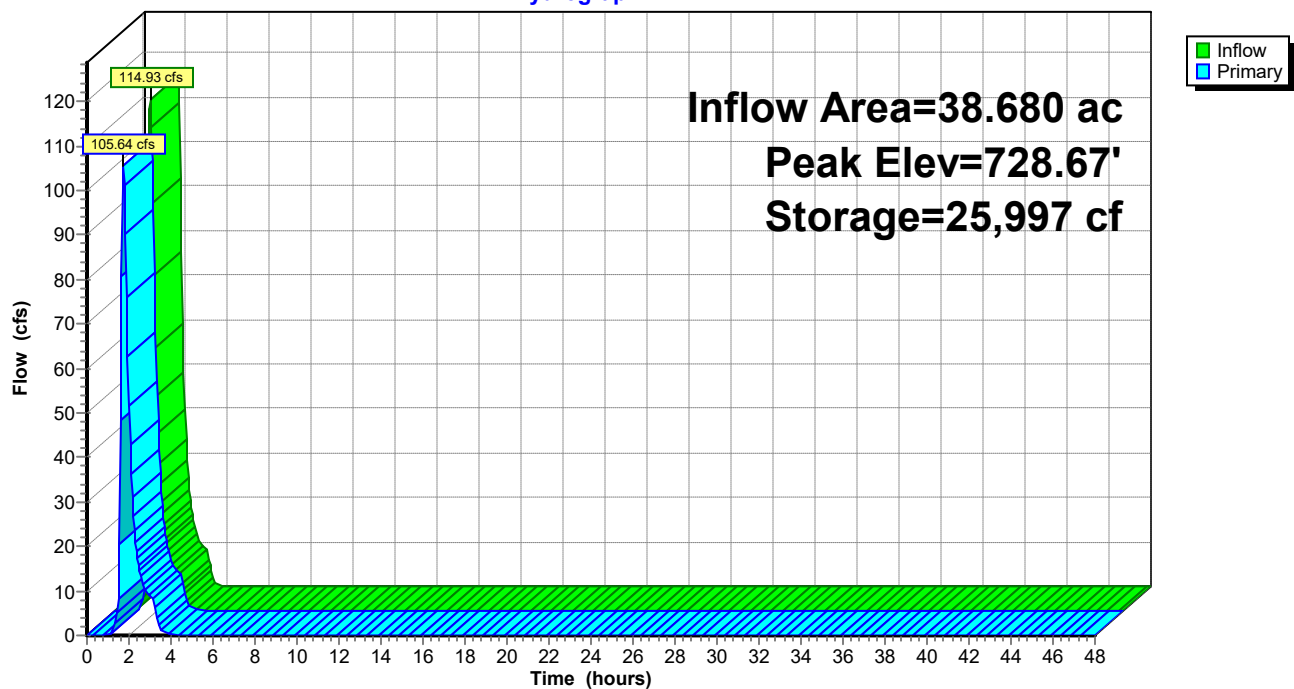
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=105.45 cfs @ 1.75 hrs HW=728.66' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 105.45 cfs @ 7.05 fps)

Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Pond Type II 24-hr scaled to 6.00 hrs 10-YR, 6-HR Rainfall=3.03"

Prepared by Kimley-Horn

Printed 9/9/2021

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

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

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

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=1.69"
Tc=10.0 min CN=86 Runoff=65.87 cfs 1.975 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=1.77"
Tc=10.0 min CN=87 Runoff=107.15 cfs 3.210 af

Subcatchment B: Off-Site Runoff Area=24.640 ac 72.00% Impervious Runoff Depth=2.10"
Tc=20.0 min CN=91 Runoff=88.77 cfs 4.310 af

Reach 15R: Swale Avg. Flow Depth=1.76' Max Vel=7.24 fps Inflow=118.28 cfs 6.285 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=117.14 cfs 6.285 af

Pond 7P: Wet Pond Peak Elev=727.77' Storage=7.812 af Inflow=184.49 cfs 9.495 af
Outflow=7.56 cfs 8.319 af

Pond 11P: EDDB Peak Elev=728.76' Storage=28,440 cf Inflow=127.53 cfs 6.285 af
Outflow=118.28 cfs 6.285 af

Total Runoff Area = 60.500 ac Runoff Volume = 9.495 af Average Runoff Depth = 1.88"
64.30% Pervious = 38.899 ac 35.70% Impervious = 21.601 ac

Summary for Subcatchment 12S: West

Runoff = 65.87 cfs @ 3.10 hrs, Volume= 1.975 af, Depth= 1.69"

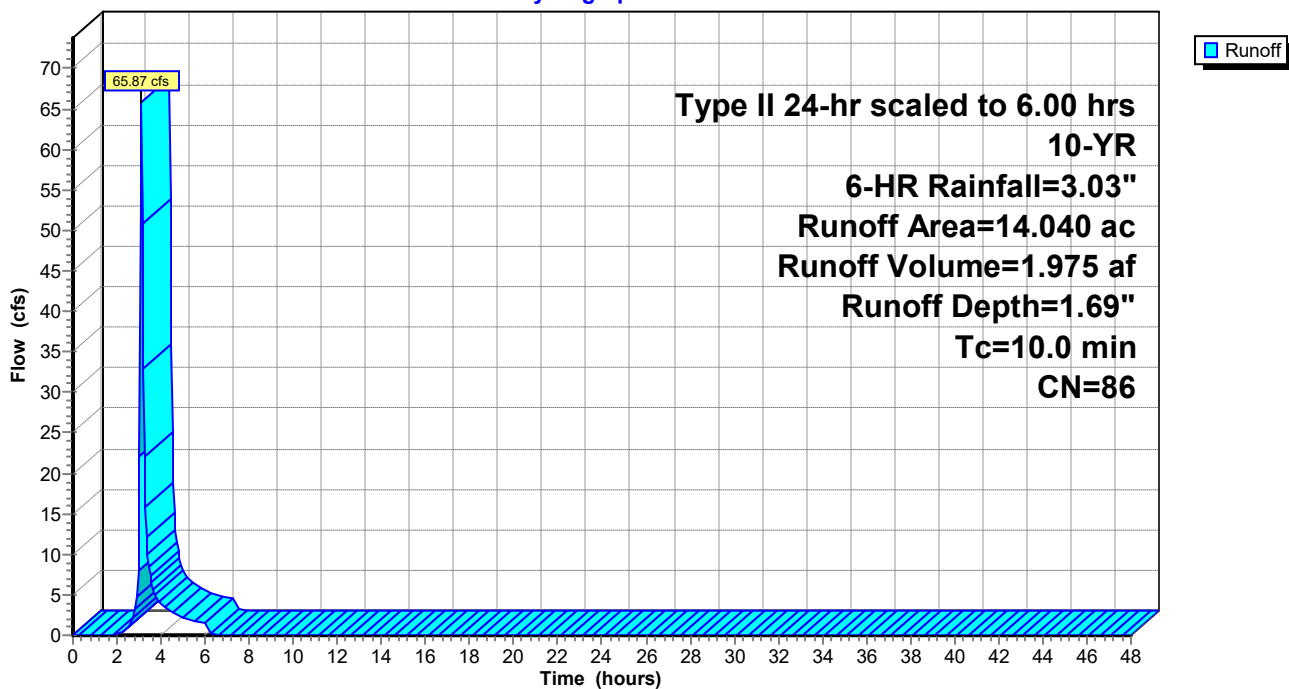
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 6.00 hrs 10-YR, 6-HR Rainfall=3.03"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 107.15 cfs @ 3.10 hrs, Volume= 3.210 af, Depth= 1.77"

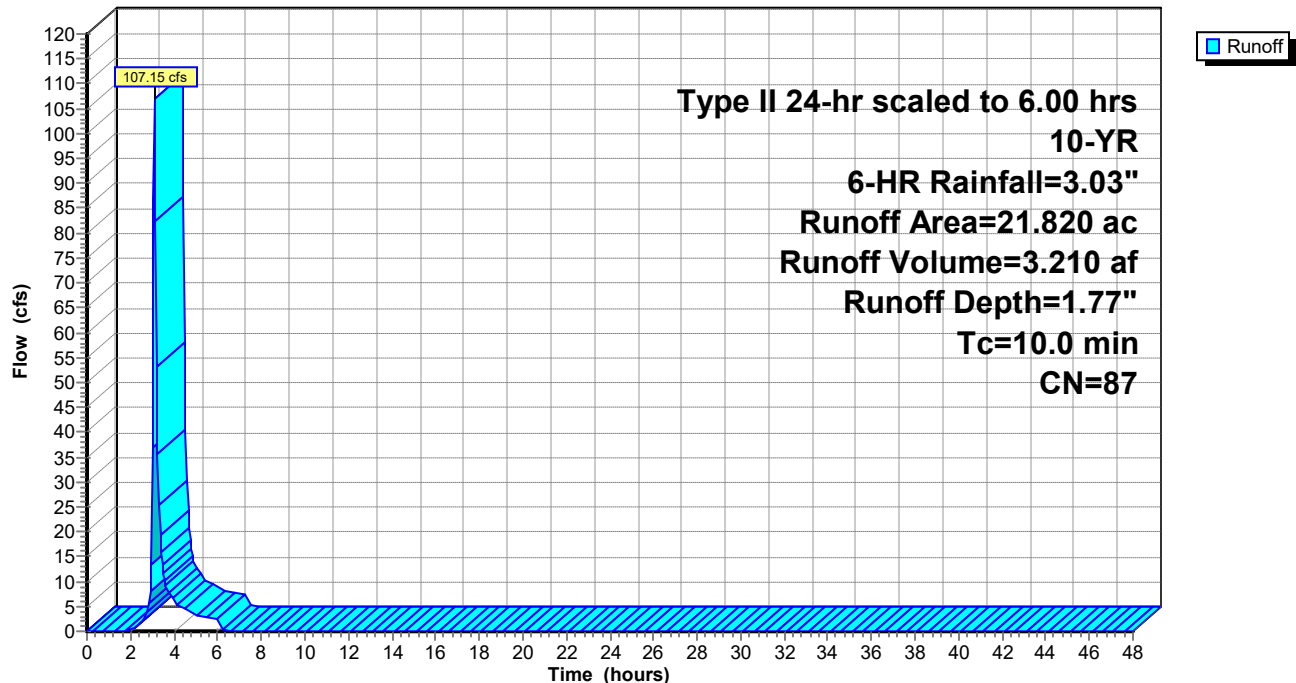
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 6.00 hrs 10-YR, 6-HR Rainfall=3.03"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Subcatchment B: Off-Site

Runoff = 88.77 cfs @ 3.22 hrs, Volume= 4.310 af, Depth= 2.10"

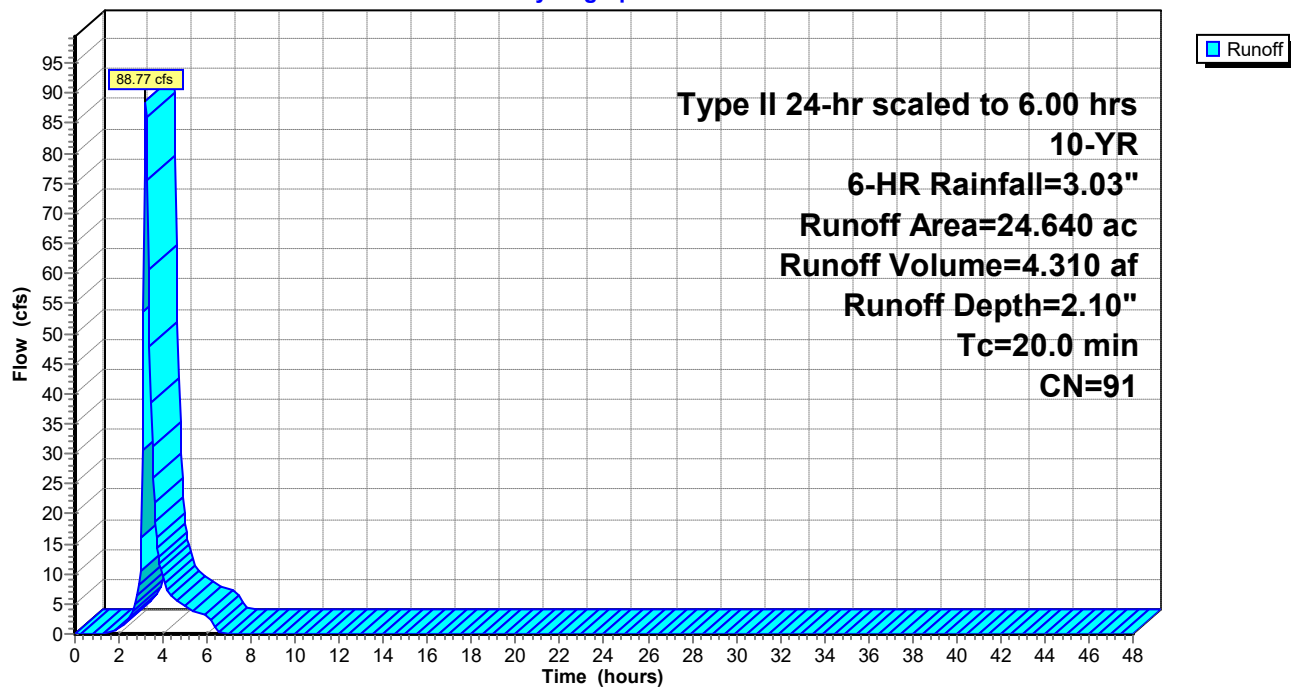
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr scaled to 6.00 hrs 10-YR, 6-HR Rainfall=3.03"

Area (ac)	CN	Description
24.640	91	Urban industrial, 72% imp, HSG C
6.899		28.00% Pervious Area
17.741		72.00% Impervious Area

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

Subcatchment B: Off-Site

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 1.95" for 10-YR, 6-HR event
 Inflow = 118.28 cfs @ 3.22 hrs, Volume= 6.285 af
 Outflow = 117.14 cfs @ 3.23 hrs, Volume= 6.285 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 7.24 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 2.02 fps, Avg. Travel Time= 0.9 min

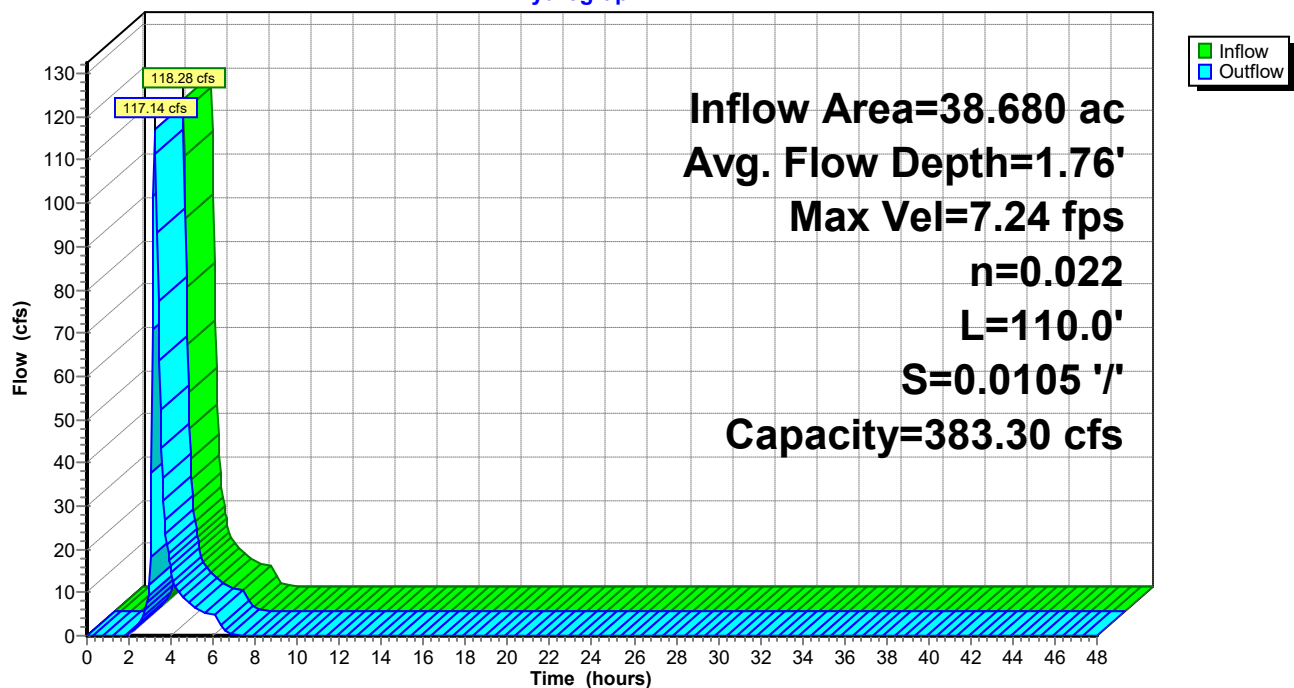
Peak Storage= 1,793 cf @ 3.22 hrs
 Average Depth at Peak Storage= 1.76' , Surface Width= 14.55'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 0.64' @ 6.85 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 1.88" for 10-YR, 6-HR event
 Inflow = 184.49 cfs @ 3.14 hrs, Volume= 9.495 af
 Outflow = 7.56 cfs @ 6.03 hrs, Volume= 8.319 af, Atten= 96%, Lag= 173.2 min
 Primary = 7.56 cfs @ 6.03 hrs, Volume= 8.319 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 727.77' @ 6.03 hrs Surf.Area= 4.255 ac Storage= 7.812 af

Plug-Flow detention time= 729.9 min calculated for 8.310 af (88% of inflow)
 Center-of-Mass det. time= 716.5 min (935.5 - 219.0)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

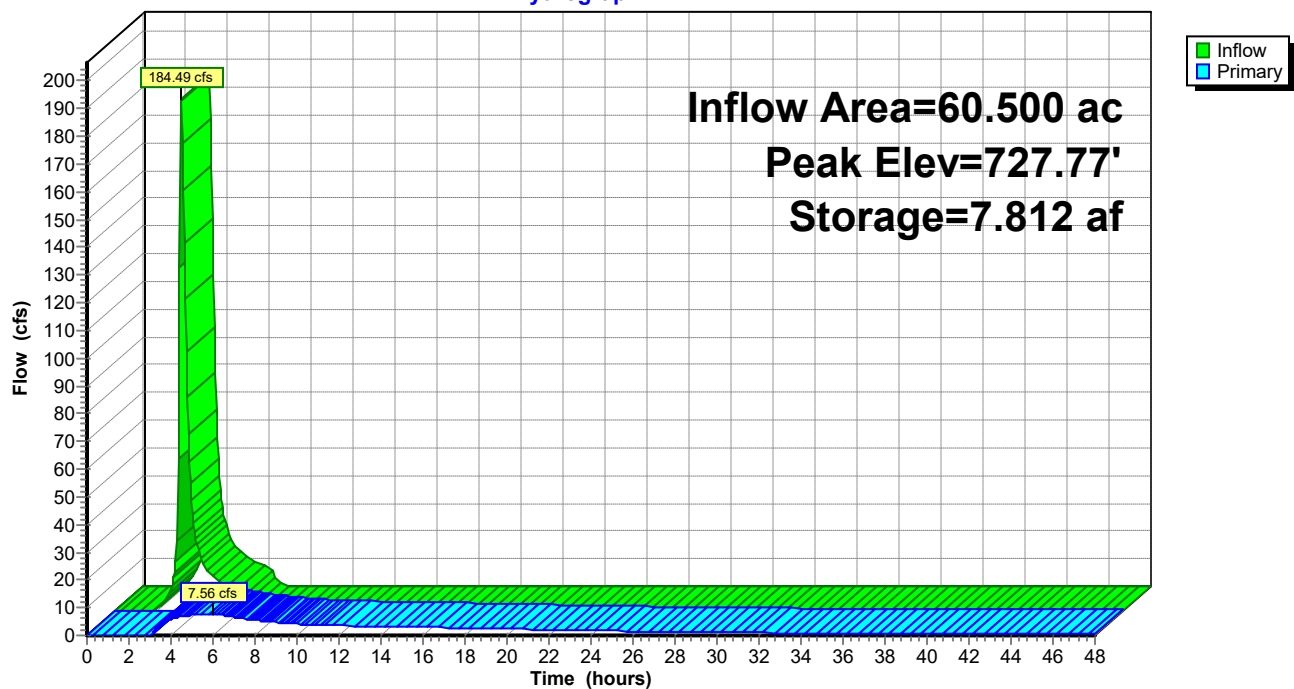
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.56 cfs @ 6.03 hrs HW=727.77' (Free Discharge)

1=Orifice/Grate (Orifice Controls 4.51 cfs @ 5.75 fps)
 2=Orifice/Grate (Orifice Controls 3.05 cfs @ 2.32 fps)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 1.95" for 10-YR, 6-HR event
 Inflow = 127.53 cfs @ 3.15 hrs, Volume= 6.285 af
 Outflow = 118.28 cfs @ 3.22 hrs, Volume= 6.285 af, Atten= 7%, Lag= 4.0 min
 Primary = 118.28 cfs @ 3.22 hrs, Volume= 6.285 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.76' @ 3.22 hrs Surf.Area= 27,244 sf Storage= 28,440 cf

Plug-Flow detention time= 5.5 min calculated for 6.279 af (100% of inflow)
 Center-of-Mass det. time= 5.5 min (221.7 - 216.2)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

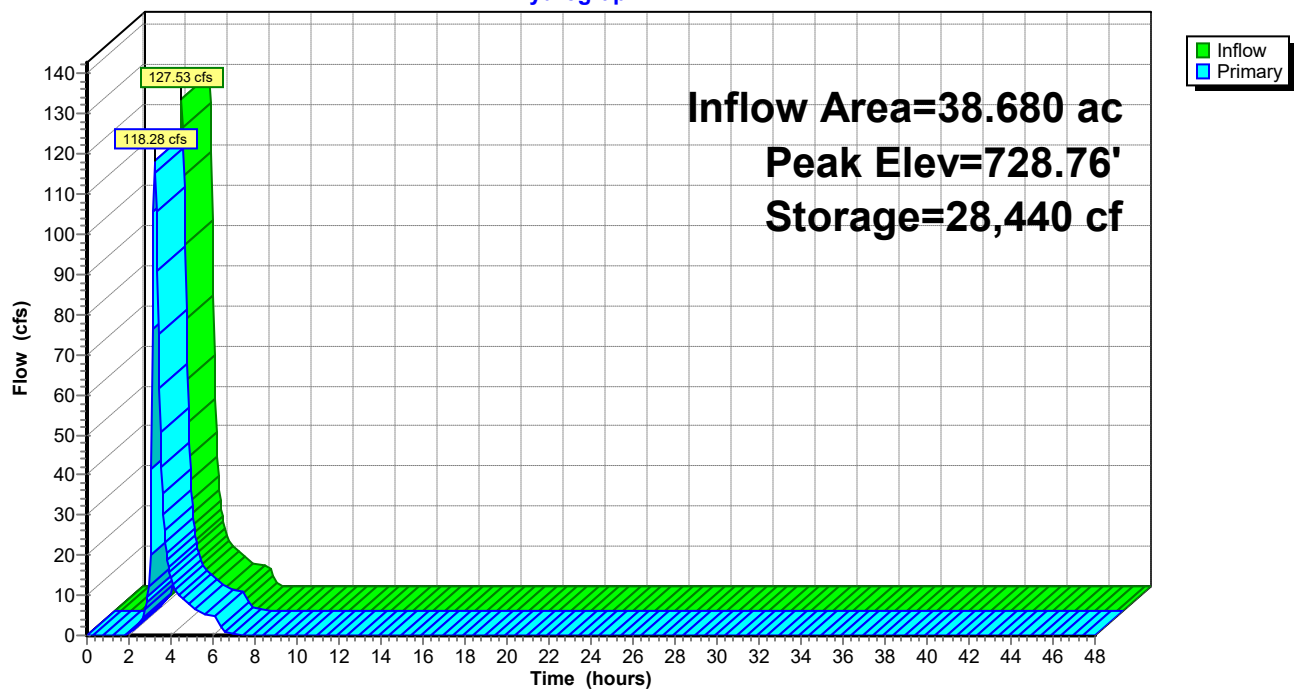
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=116.68 cfs @ 3.22 hrs HW=728.75' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 116.68 cfs @ 7.23 fps)

Pond 11P: Eddb

Hydrograph



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West	Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=1.67" Tc=10.0 min CN=86 Runoff=99.30 cfs 1.955 af
Subcatchment 13S: East	Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=1.75" Tc=10.0 min CN=87 Runoff=161.79 cfs 3.178 af
Subcatchment B: Off-Site	Runoff Area=24.640 ac 72.00% Impervious Runoff Depth=2.08" Tc=20.0 min CN=91 Runoff=131.93 cfs 4.272 af
Reach 15R: Swale	Avg. Flow Depth=2.09' Max Vel=7.99 fps Inflow=172.37 cfs 6.227 af n=0.022 L=110.0' S=0.0105 '/ Capacity=383.30 cfs Outflow=171.97 cfs 6.227 af
Pond 7P: Wet Pond	Peak Elev=728.01' Storage=8.811 af Inflow=272.44 cfs 9.405 af Outflow=10.17 cfs 8.324 af
Pond 11P: EDDB	Peak Elev=729.09' Storage=38,554 cf Inflow=183.13 cfs 6.227 af Outflow=172.37 cfs 6.227 af

Total Runoff Area = 60.500 ac Runoff Volume = 9.405 af Average Runoff Depth = 1.87"
64.30% Pervious = 38.899 ac 35.70% Impervious = 21.601 ac

Summary for Subcatchment 12S: West

Runoff = 99.30 cfs @ 0.63 hrs, Volume= 1.955 af, Depth= 1.67"

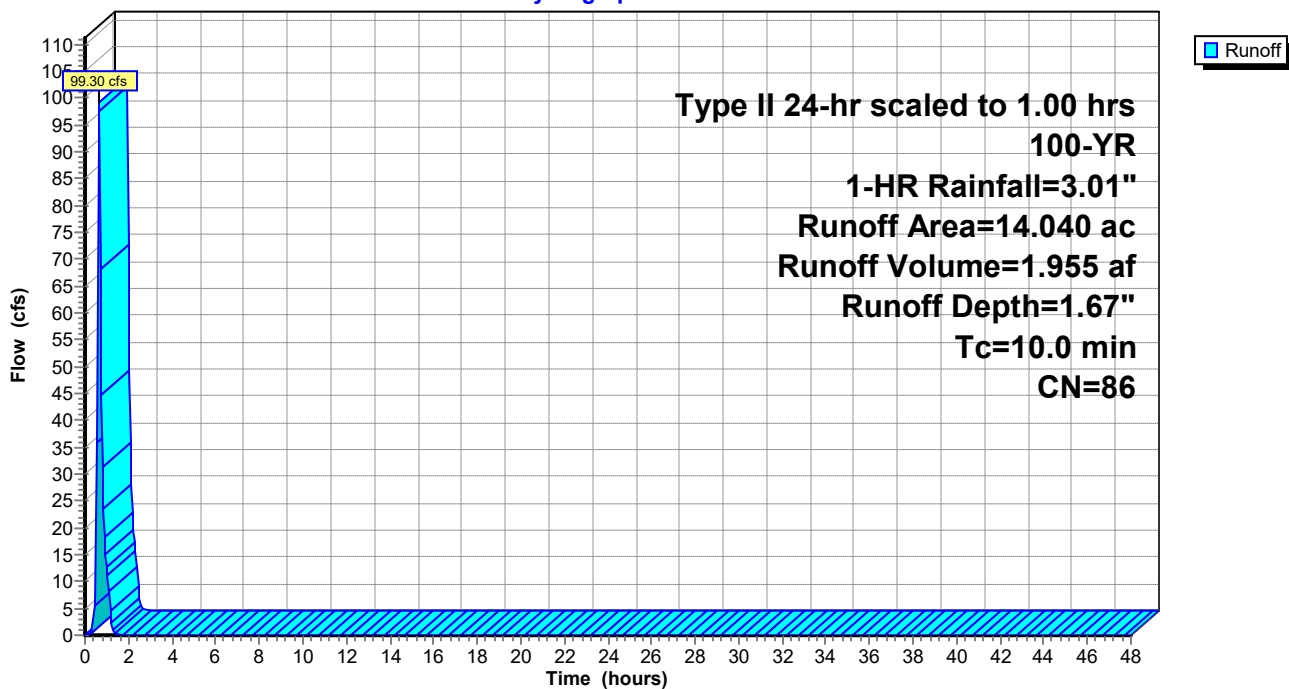
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 1.00 hrs 100-YR, 1-HR Rainfall=3.01"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 161.79 cfs @ 0.63 hrs, Volume= 3.178 af, Depth= 1.75"

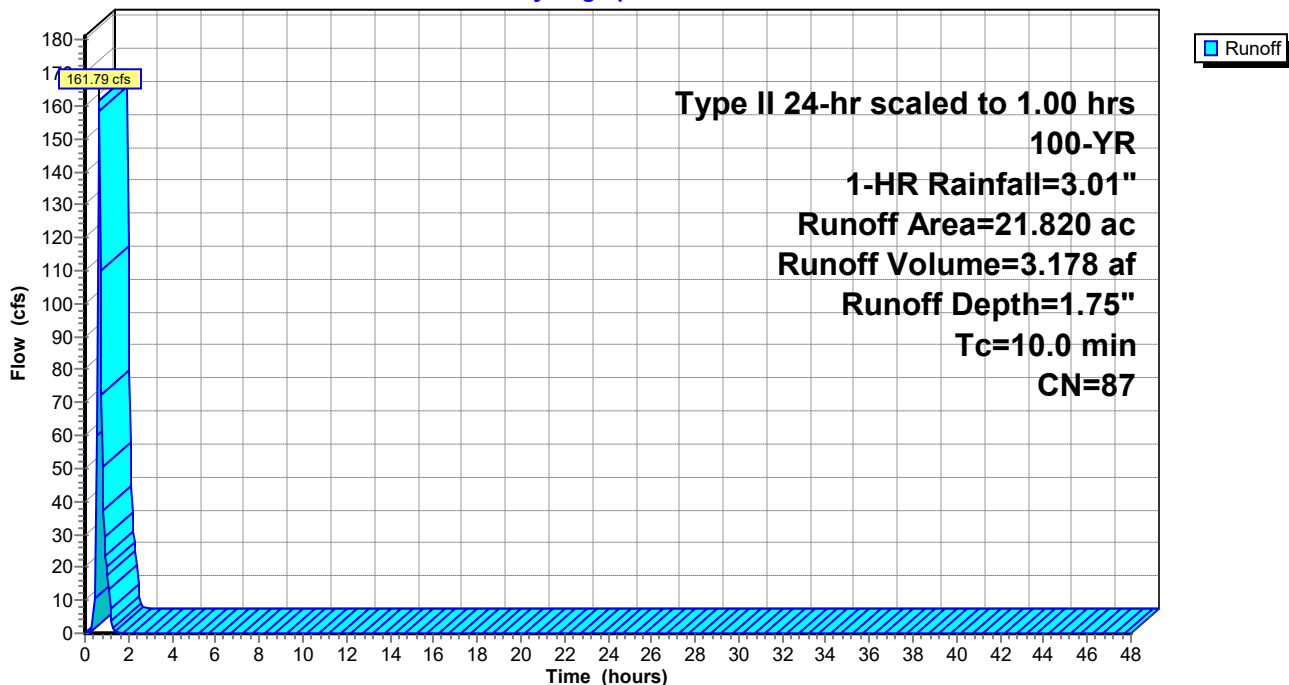
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 1.00 hrs 100-YR, 1-HR Rainfall=3.01"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Subcatchment B: Off-Site

Runoff = 131.93 cfs @ 0.77 hrs, Volume= 4.272 af, Depth= 2.08"

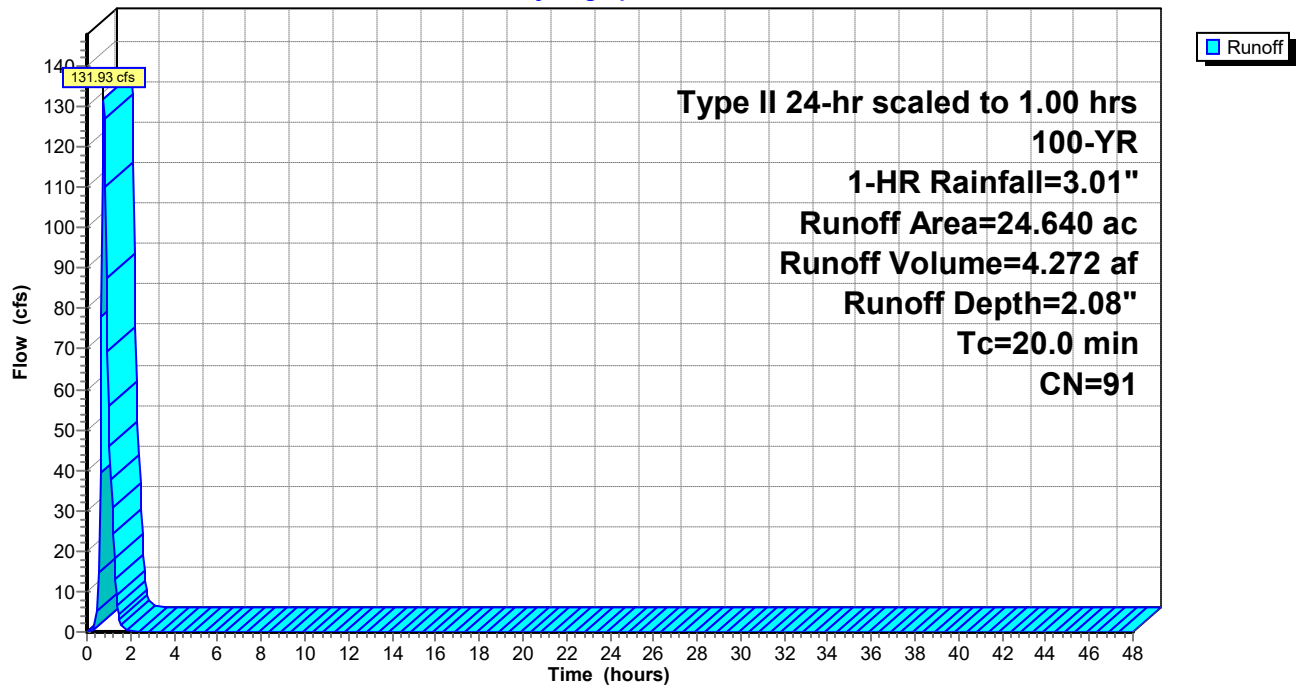
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 1.00 hrs 100-YR, 1-HR Rainfall=3.01"

Area (ac)	CN	Description
24.640	91	Urban industrial, 72% imp, HSG C
6.899		28.00% Pervious Area
17.741		72.00% Impervious Area

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

Subcatchment B: Off-Site

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 1.93" for 100-YR, 1-HR event
 Inflow = 172.37 cfs @ 0.77 hrs, Volume= 6.227 af
 Outflow = 171.97 cfs @ 0.77 hrs, Volume= 6.227 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 7.99 fps, Min. Travel Time= 0.2 min
 Avg. Velocity= 1.63 fps, Avg. Travel Time= 1.1 min

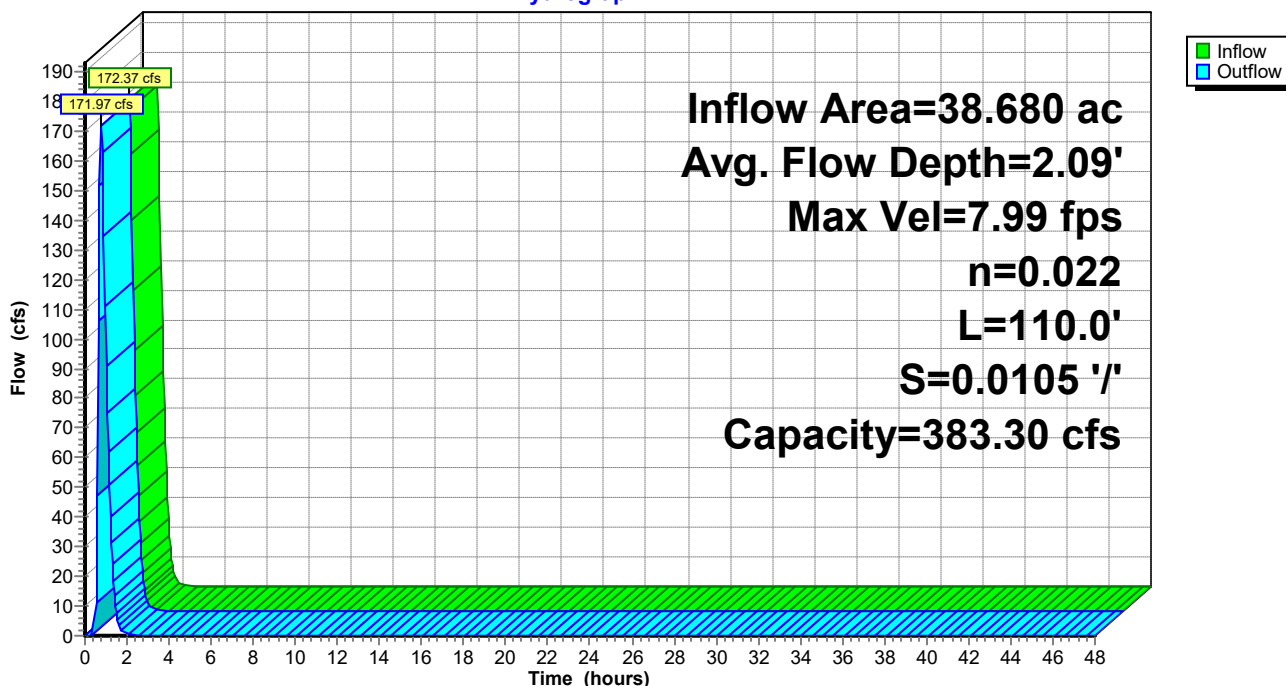
Peak Storage= 2,369 cf @ 0.77 hrs
 Average Depth at Peak Storage= 2.09' , Surface Width= 16.57'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 0.86' @ 2.10 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 1.87" for 100-YR, 1-HR event
 Inflow = 272.44 cfs @ 0.67 hrs, Volume= 9.405 af
 Outflow = 10.17 cfs @ 1.45 hrs, Volume= 8.324 af, Atten= 96%, Lag= 46.8 min
 Primary = 10.17 cfs @ 1.45 hrs, Volume= 8.324 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.01' @ 1.45 hrs Surf.Area= 4.303 ac Storage= 8.811 af

Plug-Flow detention time= 721.1 min calculated for 8.316 af (88% of inflow)
 Center-of-Mass det. time= 719.8 min (770.2 - 50.4)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

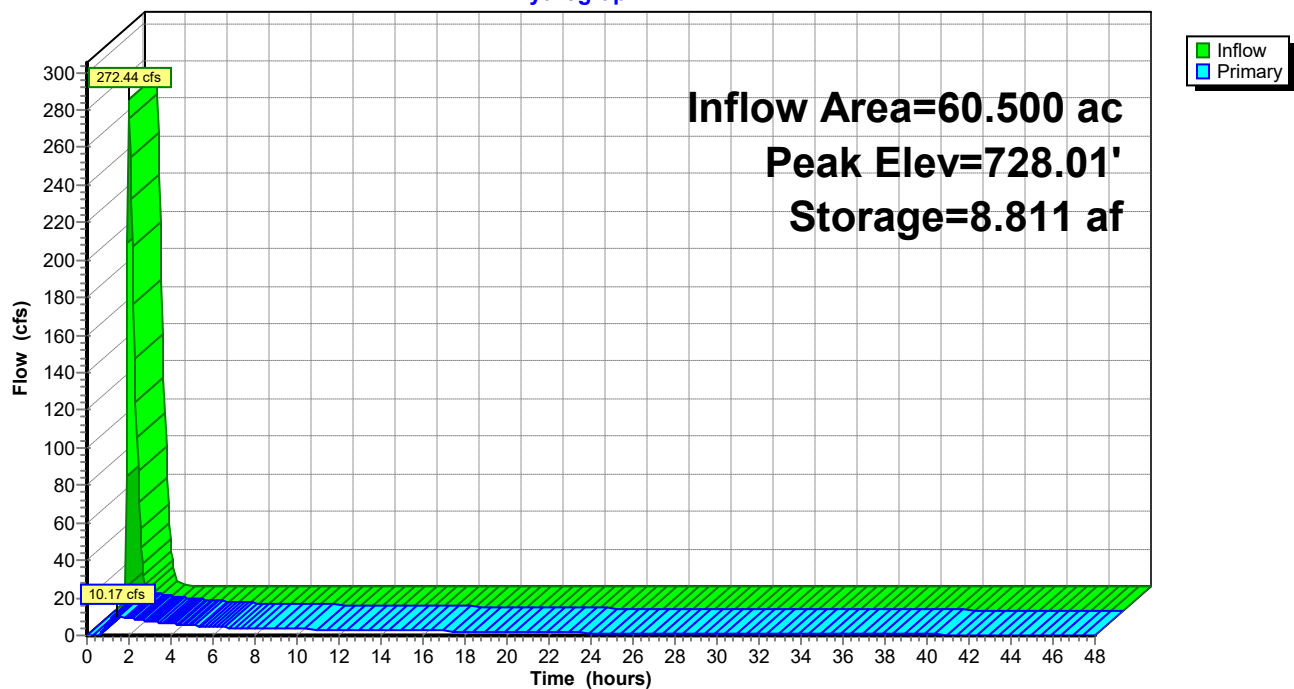
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.17 cfs @ 1.45 hrs HW=728.01' (Free Discharge)

↑ **1=Orifice/Grate** (Orifice Controls 4.87 cfs @ 6.20 fps)
 — **2=Orifice/Grate** (Orifice Controls 5.30 cfs @ 2.79 fps)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 1.93" for 100-YR, 1-HR event
 Inflow = 183.13 cfs @ 0.70 hrs, Volume= 6.227 af
 Outflow = 172.37 cfs @ 0.77 hrs, Volume= 6.227 af, Atten= 6%, Lag= 4.0 min
 Primary = 172.37 cfs @ 0.77 hrs, Volume= 6.227 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 729.09' @ 0.77 hrs Surf.Area= 36,232 sf Storage= 38,554 cf

Plug-Flow detention time= 4.7 min calculated for 6.227 af (100% of inflow)
 Center-of-Mass det. time= 4.3 min (53.6 - 49.3)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

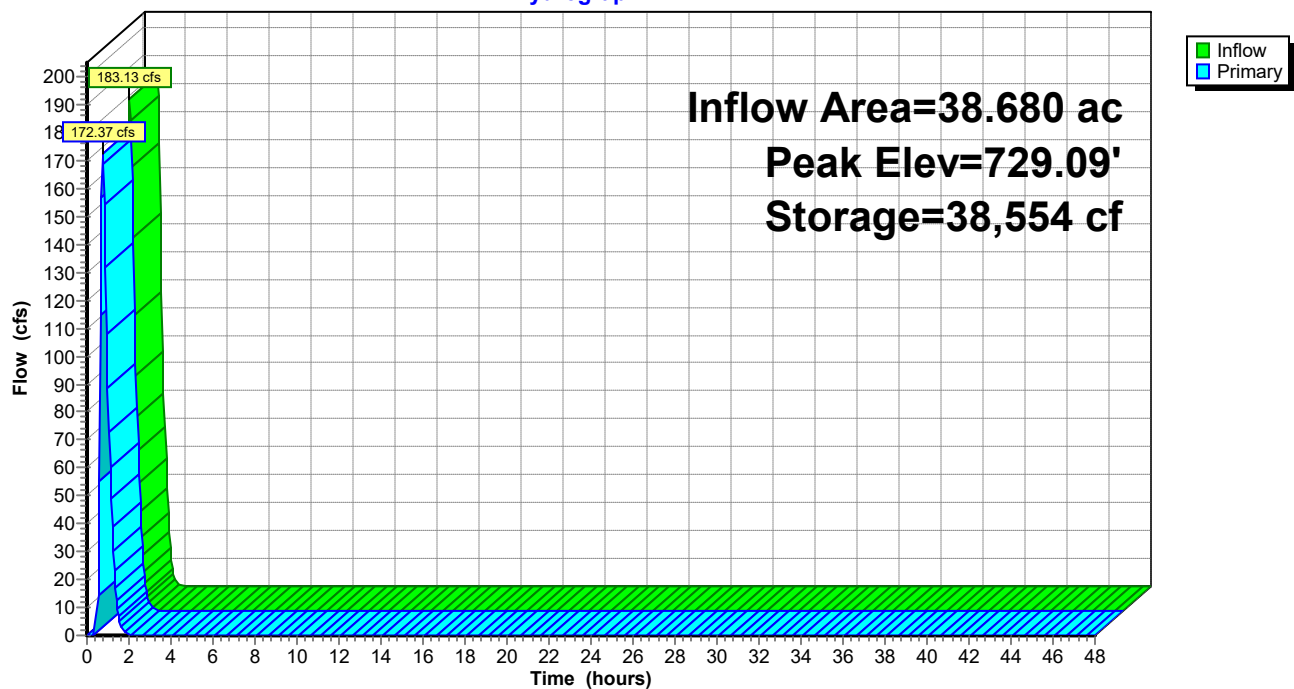
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=170.43 cfs @ 0.77 hrs HW=729.08' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 170.43 cfs @ 7.98 fps)

Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention P Type II 24-hr scaled to 12.00 hrs 100-YR, 12-HR Rainfall=5.36"

Prepared by Kimley-Horn

Printed 9/9/2021

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

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

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

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=3.80"
Tc=10.0 min CN=86 Runoff=114.63 cfs 4.451 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=3.91"
Tc=10.0 min CN=87 Runoff=182.23 cfs 7.105 af

Subcatchment B: Off-Site Runoff Area=24.640 ac 72.00% Impervious Runoff Depth=4.33"
Tc=20.0 min CN=91 Runoff=147.14 cfs 8.895 af

Reach 15R: Swale Avg. Flow Depth=2.27' Max Vel=8.37 fps Inflow=206.35 cfs 13.346 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=204.86 cfs 13.346 af

Pond 7P: Wet Pond Peak Elev=729.09' Storage=13.580 af Inflow=342.19 cfs 20.452 af
Outflow=26.27 cfs 18.939 af

Pond 11P: EDDB Peak Elev=729.27' Storage=46,085 cf Inflow=225.27 cfs 13.346 af
Outflow=206.35 cfs 13.346 af

Total Runoff Area = 60.500 ac Runoff Volume = 20.452 af Average Runoff Depth = 4.06"
64.30% Pervious = 38.899 ac 35.70% Impervious = 21.601 ac

Summary for Subcatchment 12S: West

Runoff = 114.63 cfs @ 6.06 hrs, Volume= 4.451 af, Depth= 3.80"

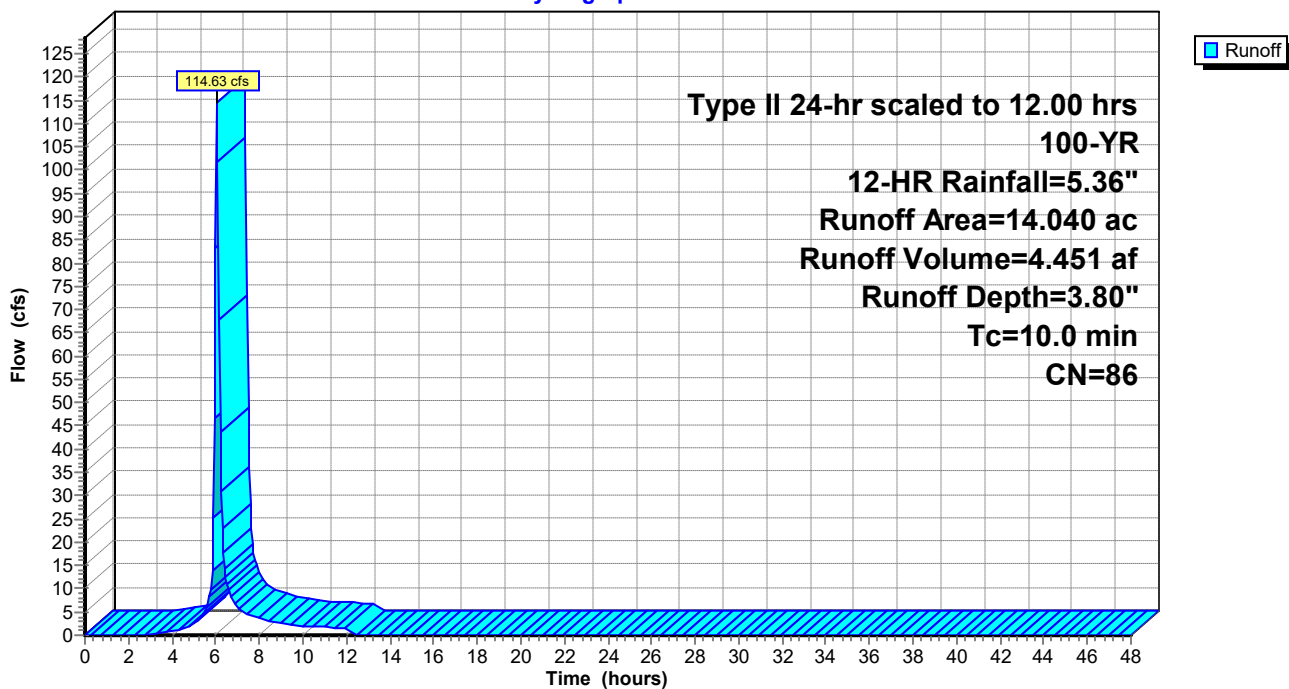
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 12.00 hrs 100-YR, 12-HR Rainfall=5.36"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 182.23 cfs @ 6.06 hrs, Volume= 7.105 af, Depth= 3.91"

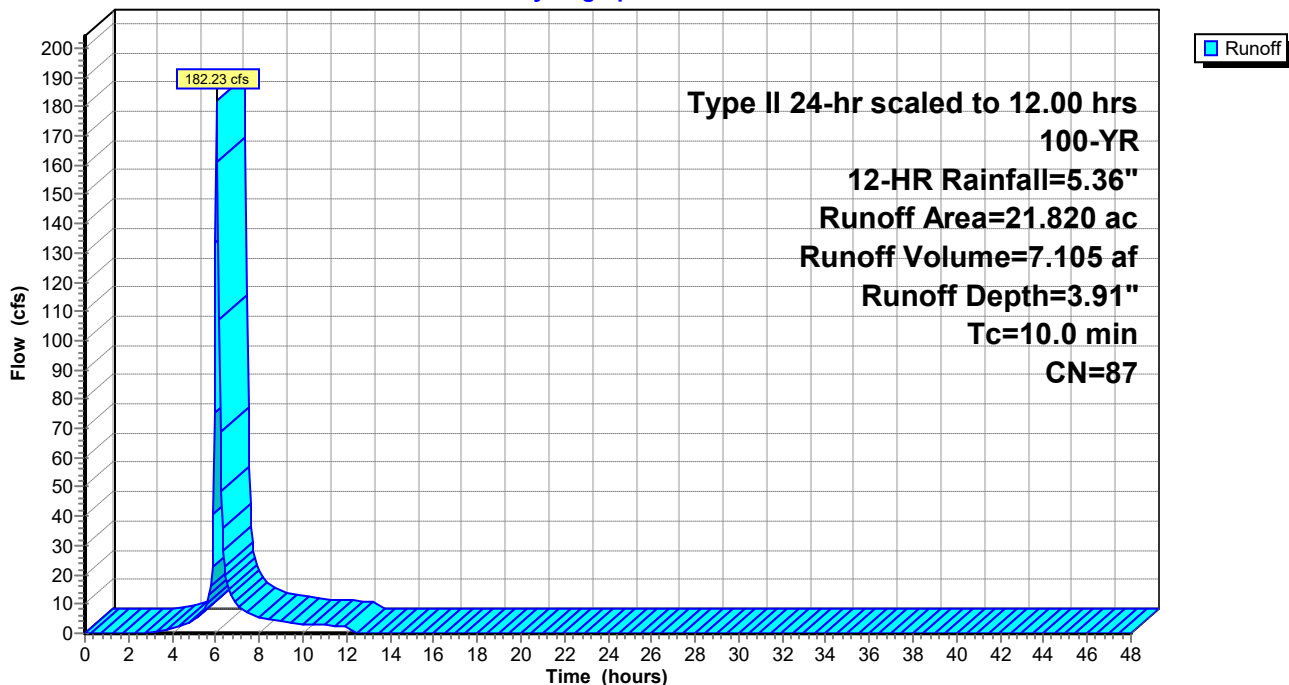
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 12.00 hrs 100-YR, 12-HR Rainfall=5.36"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Subcatchment B: Off-Site

Runoff = 147.14 cfs @ 6.18 hrs, Volume= 8.895 af, Depth= 4.33"

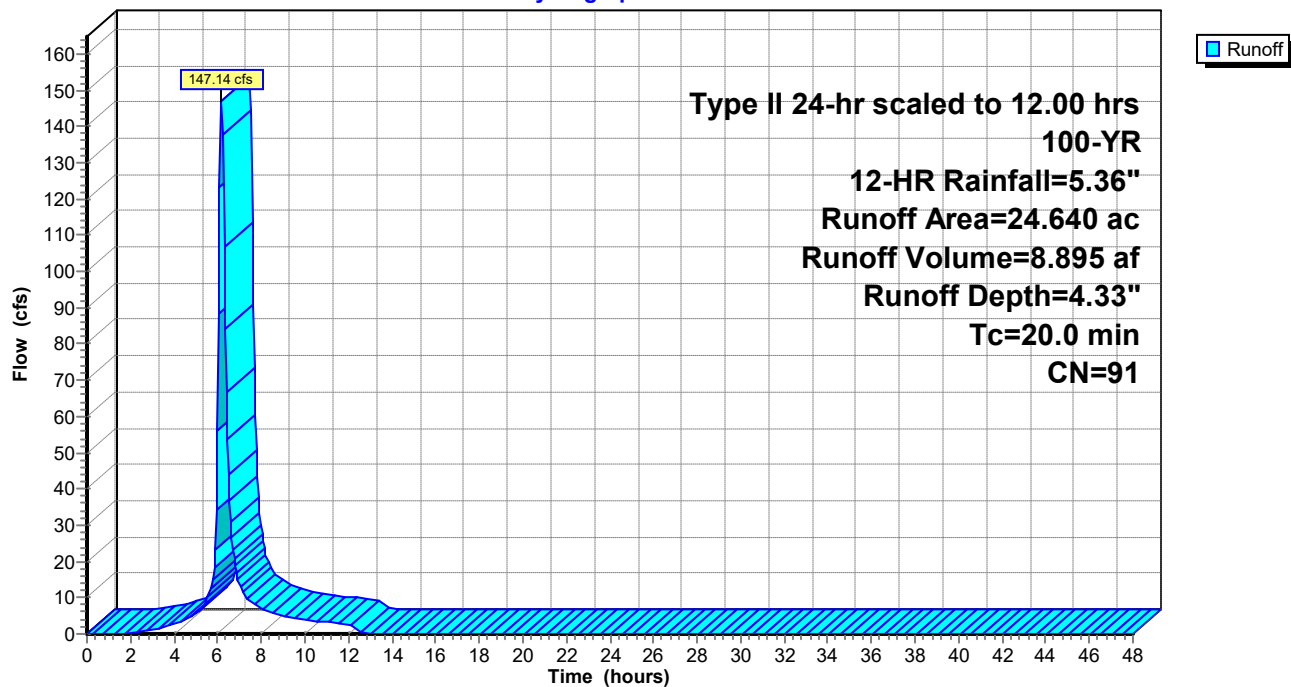
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 12.00 hrs 100-YR, 12-HR Rainfall=5.36"

Area (ac)	CN	Description
24.640	91	Urban industrial, 72% imp, HSG C
6.899		28.00% Pervious Area
17.741		72.00% Impervious Area

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

Subcatchment B: Off-Site

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 4.14" for 100-YR, 12-HR event
 Inflow = 206.35 cfs @ 6.17 hrs, Volume= 13.346 af
 Outflow = 204.86 cfs @ 6.18 hrs, Volume= 13.346 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 8.37 fps, Min. Travel Time= 0.2 min
 Avg. Velocity= 2.47 fps, Avg. Travel Time= 0.7 min

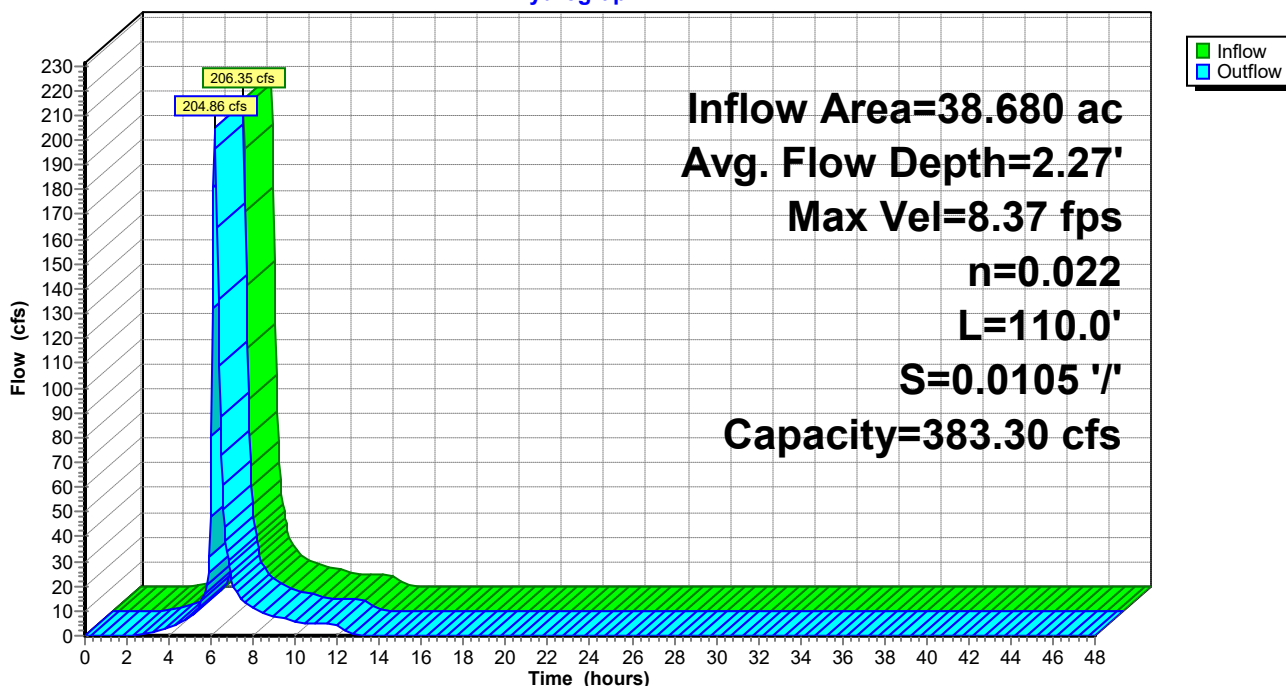
Peak Storage= 2,708 cf @ 6.17 hrs
 Average Depth at Peak Storage= 2.27' , Surface Width= 17.65'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 1.48' @ 7.90 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 4.06" for 100-YR, 12-HR event
 Inflow = 342.19 cfs @ 6.10 hrs, Volume= 20.452 af
 Outflow = 26.27 cfs @ 7.16 hrs, Volume= 18.939 af, Atten= 92%, Lag= 63.9 min
 Primary = 26.27 cfs @ 7.16 hrs, Volume= 18.939 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 729.09' @ 7.16 hrs Surf.Area= 4.523 ac Storage= 13.580 af

Plug-Flow detention time= 507.7 min calculated for 18.919 af (93% of inflow)
 Center-of-Mass det. time= 489.2 min (898.6 - 409.5)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

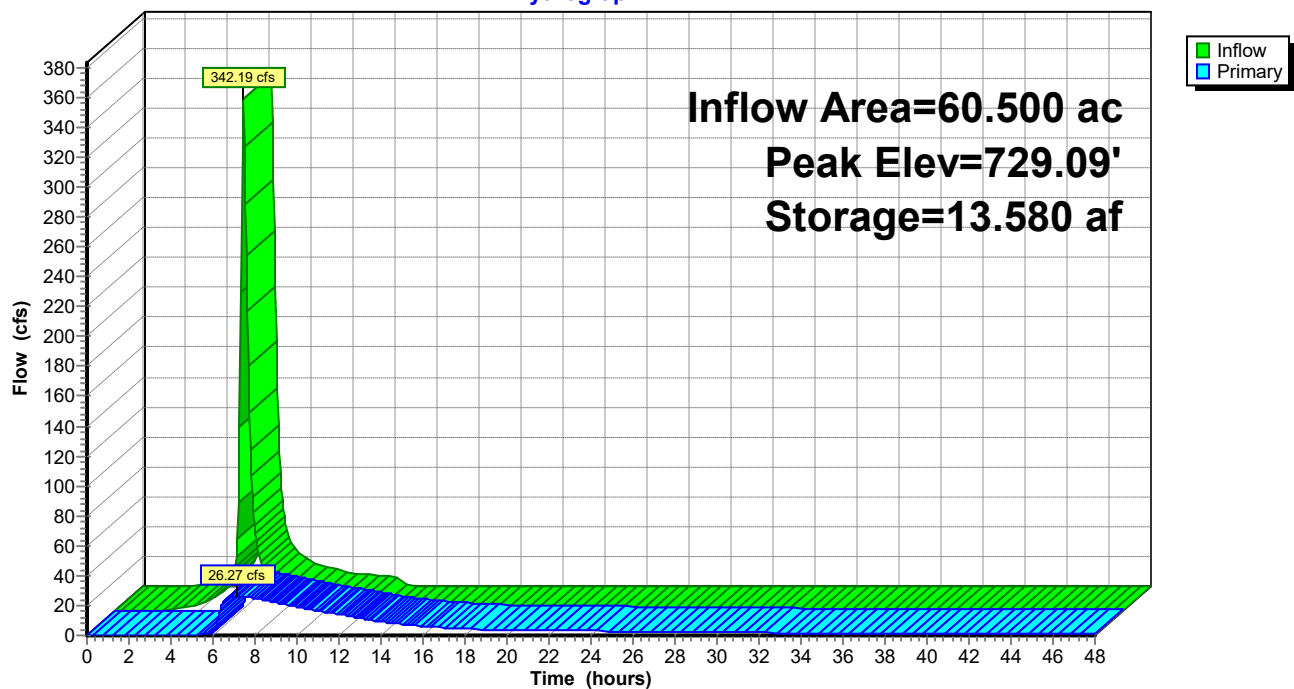
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=26.26 cfs @ 7.16 hrs HW=729.09' (Free Discharge)

↑ **1=Orifice/Grate** (Orifice Controls 6.26 cfs @ 7.97 fps)
 ↓ **2=Orifice/Grate** (Orifice Controls 20.01 cfs @ 4.35 fps)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: Eddb

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 4.14" for 100-YR, 12-HR event
 Inflow = 225.27 cfs @ 6.11 hrs, Volume= 13.346 af
 Outflow = 206.35 cfs @ 6.17 hrs, Volume= 13.346 af, Atten= 8%, Lag= 3.7 min
 Primary = 206.35 cfs @ 6.17 hrs, Volume= 13.346 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 729.27' @ 6.17 hrs Surf.Area= 47,506 sf Storage= 46,085 cf

Plug-Flow detention time= 5.8 min calculated for 13.346 af (100% of inflow)
 Center-of-Mass det. time= 5.4 min (411.6 - 406.2)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

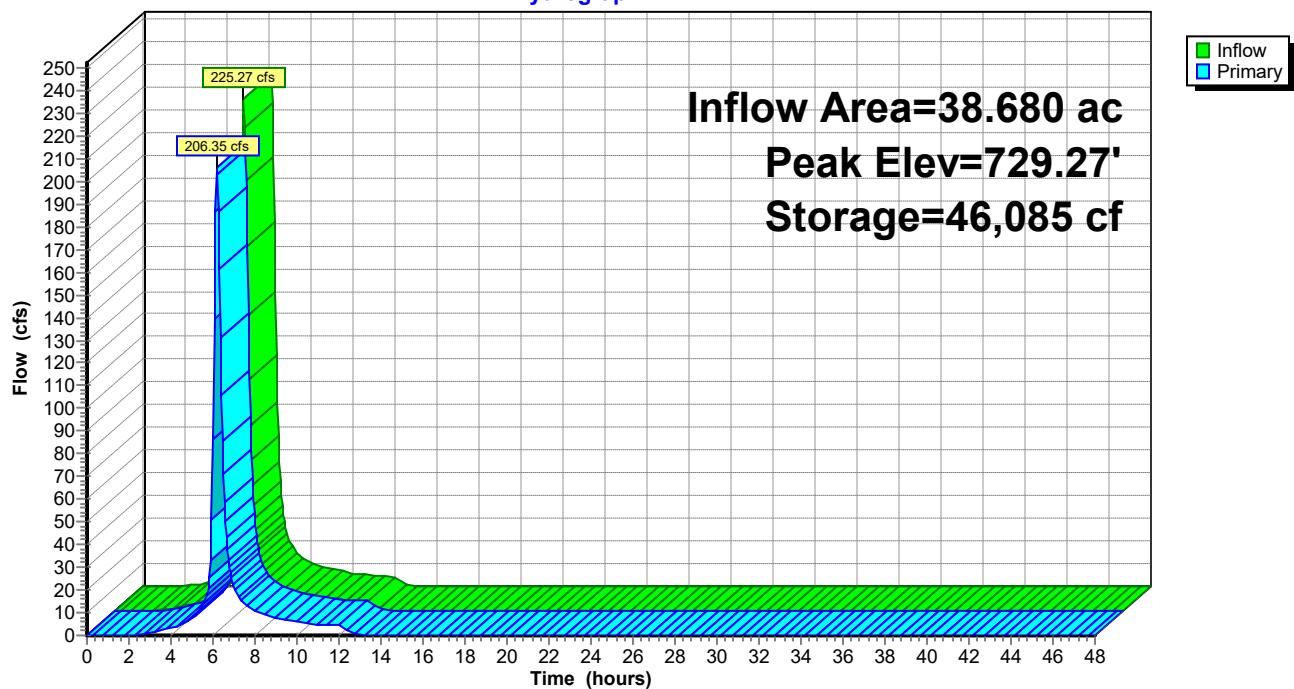
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=203.91 cfs @ 6.17 hrs HW=729.26' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 203.91 cfs @ 8.36 fps)

Pond 11P: Eddb

Hydrograph



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=2.23"
Tc=10.0 min CN=86 Runoff=117.23 cfs 2.611 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=2.32"
Tc=10.0 min CN=87 Runoff=189.44 cfs 4.214 af

Subcatchment B: Off-Site Runoff Area=24.640 ac 72.00% Impervious Runoff Depth=2.68"
Tc=20.0 min CN=91 Runoff=146.51 cfs 5.510 af

Reach 15R: Swale Avg. Flow Depth=2.21' Max Vel=8.25 fps Inflow=193.63 cfs 8.121 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=193.09 cfs 8.121 af

Pond 7P: Wet Pond Peak Elev=728.51' Storage=11.016 af Inflow=317.96 cfs 12.335 af
Outflow=16.97 cfs 11.175 af

Pond 11P: EDDB Peak Elev=729.21' Storage=43,112 cf Inflow=210.66 cfs 8.121 af
Outflow=193.63 cfs 8.121 af

Total Runoff Area = 60.500 ac Runoff Volume = 12.335 af Average Runoff Depth = 2.45"
64.30% Pervious = 38.899 ac 35.70% Impervious = 21.601 ac

Summary for Subcatchment 12S: West

Runoff = 117.23 cfs @ 1.12 hrs, Volume= 2.611 af, Depth= 2.23"

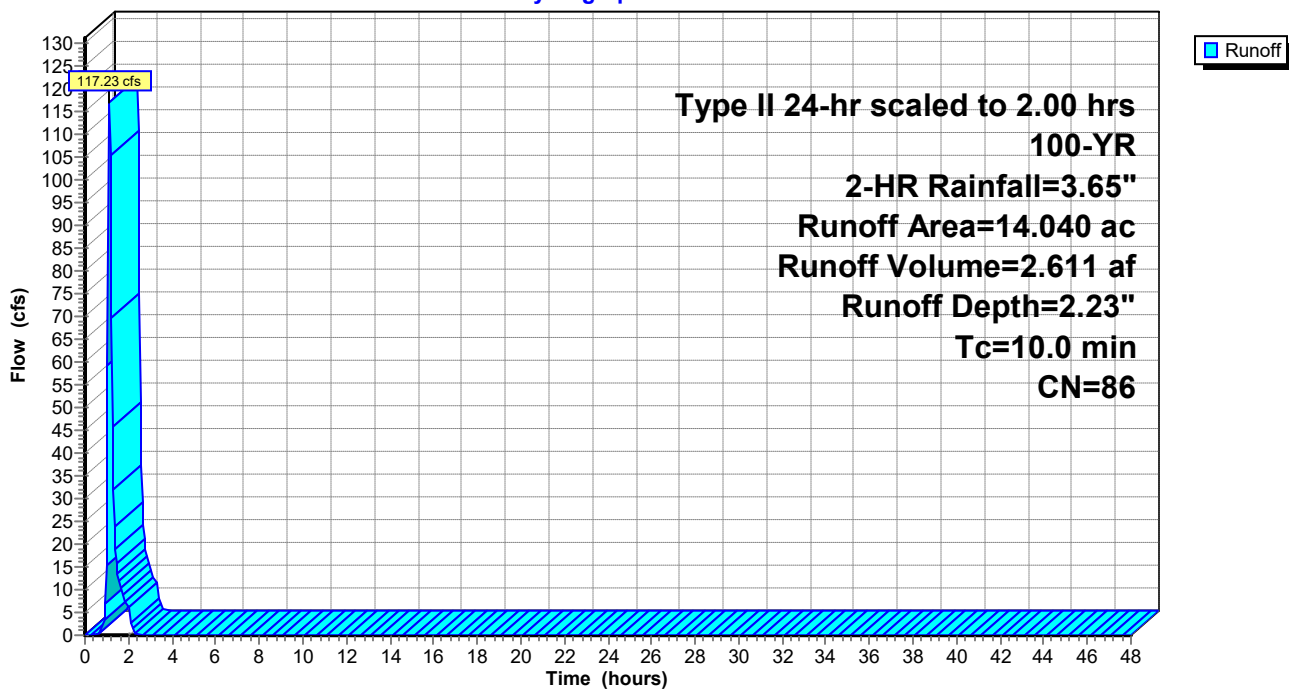
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 2.00 hrs 100-YR, 2-HR Rainfall=3.65"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 189.44 cfs @ 1.12 hrs, Volume= 4.214 af, Depth= 2.32"

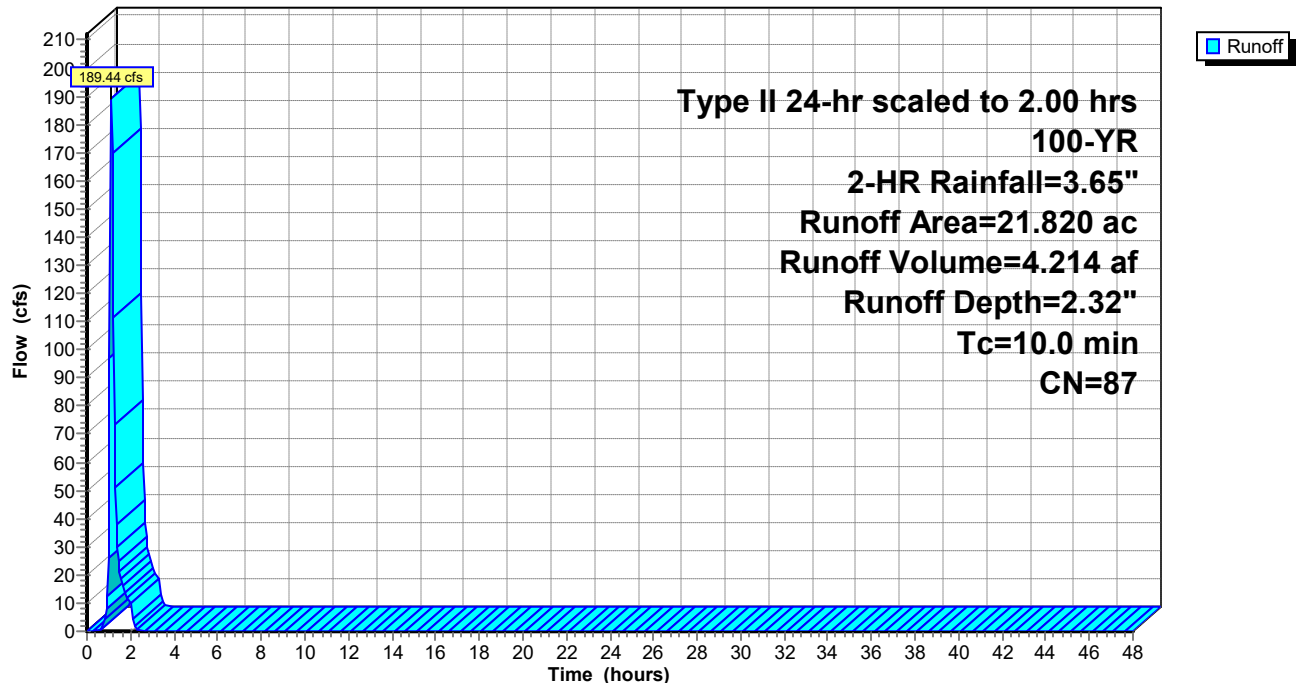
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 2.00 hrs 100-YR, 2-HR Rainfall=3.65"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Subcatchment B: Off-Site

Runoff = 146.51 cfs @ 1.25 hrs, Volume= 5.510 af, Depth= 2.68"

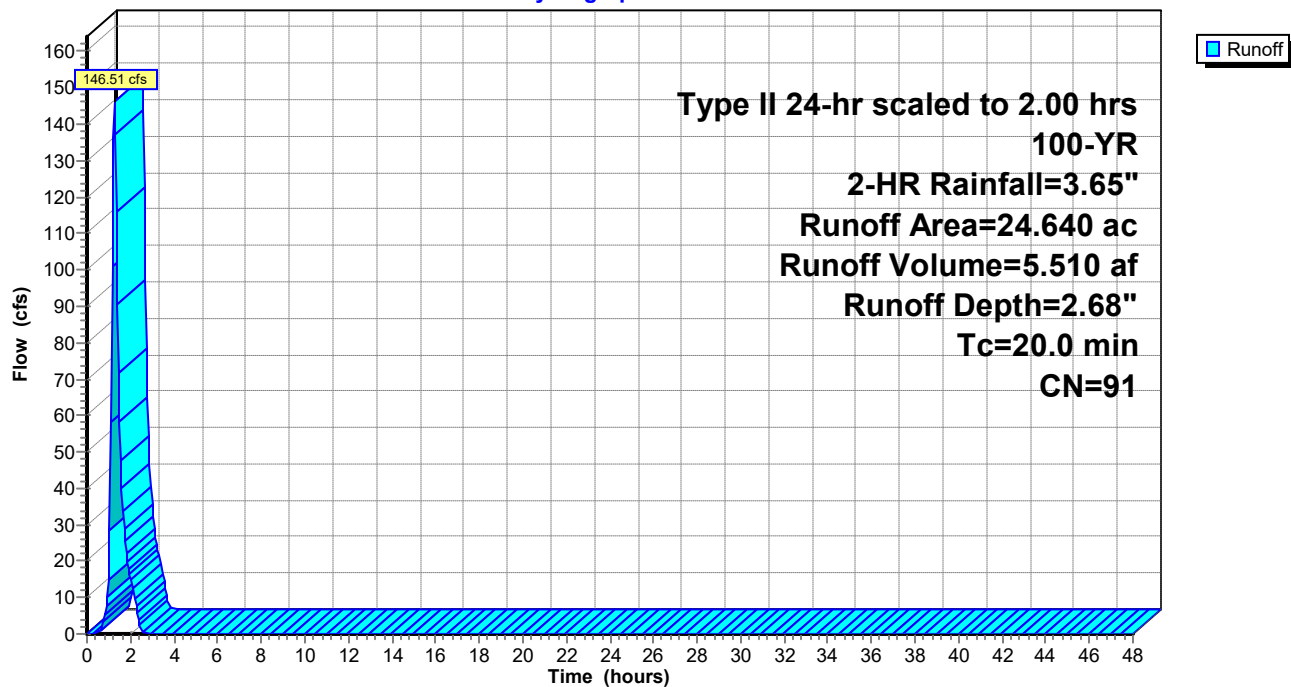
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 2.00 hrs 100-YR, 2-HR Rainfall=3.65"

Area (ac)	CN	Description
24.640	91	Urban industrial, 72% imp, HSG C
6.899		28.00% Pervious Area
17.741		72.00% Impervious Area

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

Subcatchment B: Off-Site

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 2.52" for 100-YR, 2-HR event
 Inflow = 193.63 cfs @ 1.25 hrs, Volume= 8.121 af
 Outflow = 193.09 cfs @ 1.26 hrs, Volume= 8.121 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 8.25 fps, Min. Travel Time= 0.2 min
 Avg. Velocity= 1.87 fps, Avg. Travel Time= 1.0 min

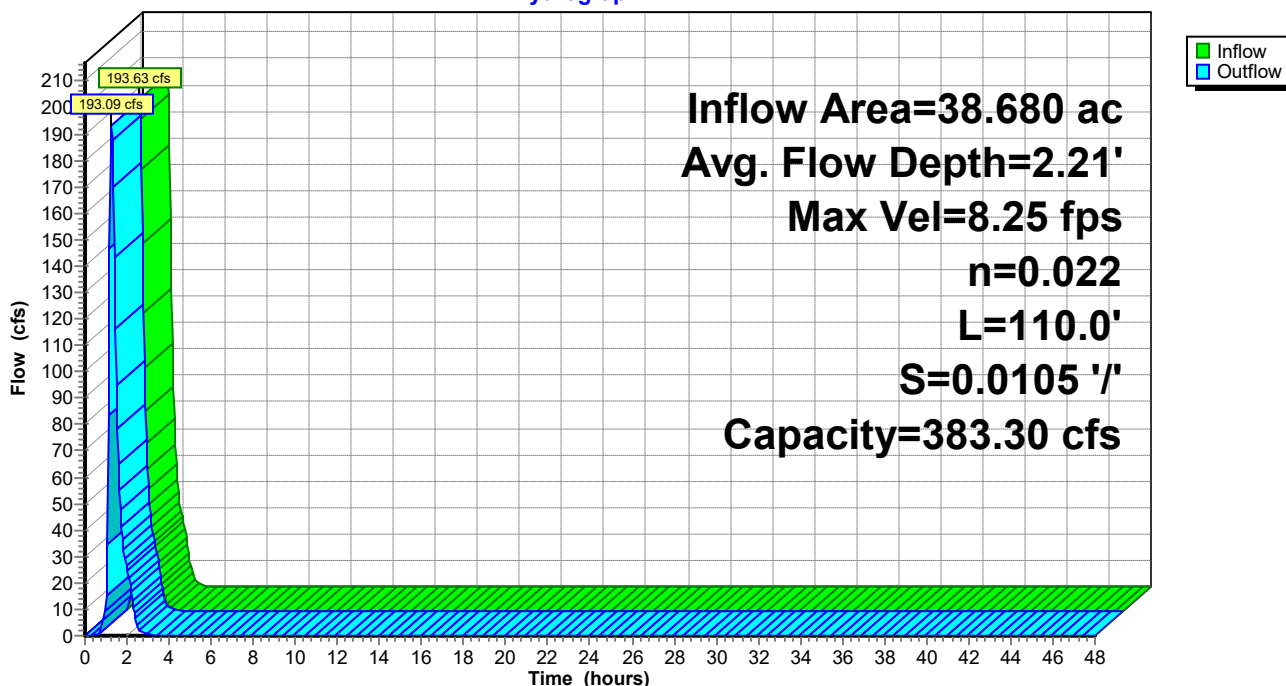
Peak Storage= 2,580 cf @ 1.25 hrs
 Average Depth at Peak Storage= 2.21' , Surface Width= 17.25'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 1.28' @ 2.85 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 2.45" for 100-YR, 2-HR event
 Inflow = 317.96 cfs @ 1.16 hrs, Volume= 12.335 af
 Outflow = 16.97 cfs @ 2.22 hrs, Volume= 11.175 af, Atten= 95%, Lag= 63.6 min
 Primary = 16.97 cfs @ 2.22 hrs, Volume= 11.175 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.51' @ 2.22 hrs Surf.Area= 4.406 ac Storage= 11.016 af

Plug-Flow detention time= 639.6 min calculated for 11.175 af (91% of inflow)
 Center-of-Mass det. time= 635.1 min (718.3 - 83.2)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

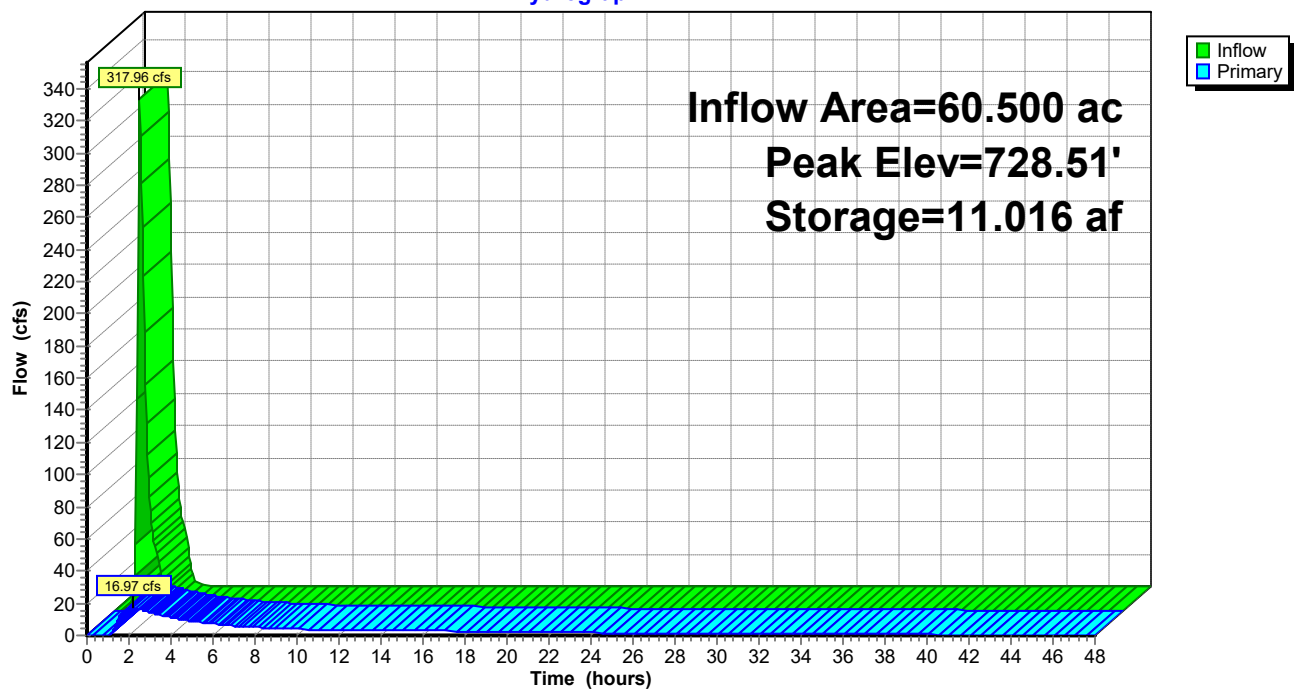
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.96 cfs @ 2.22 hrs HW=728.51' (Free Discharge)

↑ **1=Orifice/Grate** (Orifice Controls 5.56 cfs @ 7.08 fps)
 — **2=Orifice/Grate** (Orifice Controls 11.40 cfs @ 3.61 fps)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 2.52" for 100-YR, 2-HR event
 Inflow = 210.66 cfs @ 1.17 hrs, Volume= 8.121 af
 Outflow = 193.63 cfs @ 1.25 hrs, Volume= 8.121 af, Atten= 8%, Lag= 4.6 min
 Primary = 193.63 cfs @ 1.25 hrs, Volume= 8.121 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 729.21' @ 1.25 hrs Surf.Area= 43,407 sf Storage= 43,112 cf

Plug-Flow detention time= 4.4 min calculated for 8.113 af (100% of inflow)
 Center-of-Mass det. time= 4.4 min (86.3 - 81.9)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

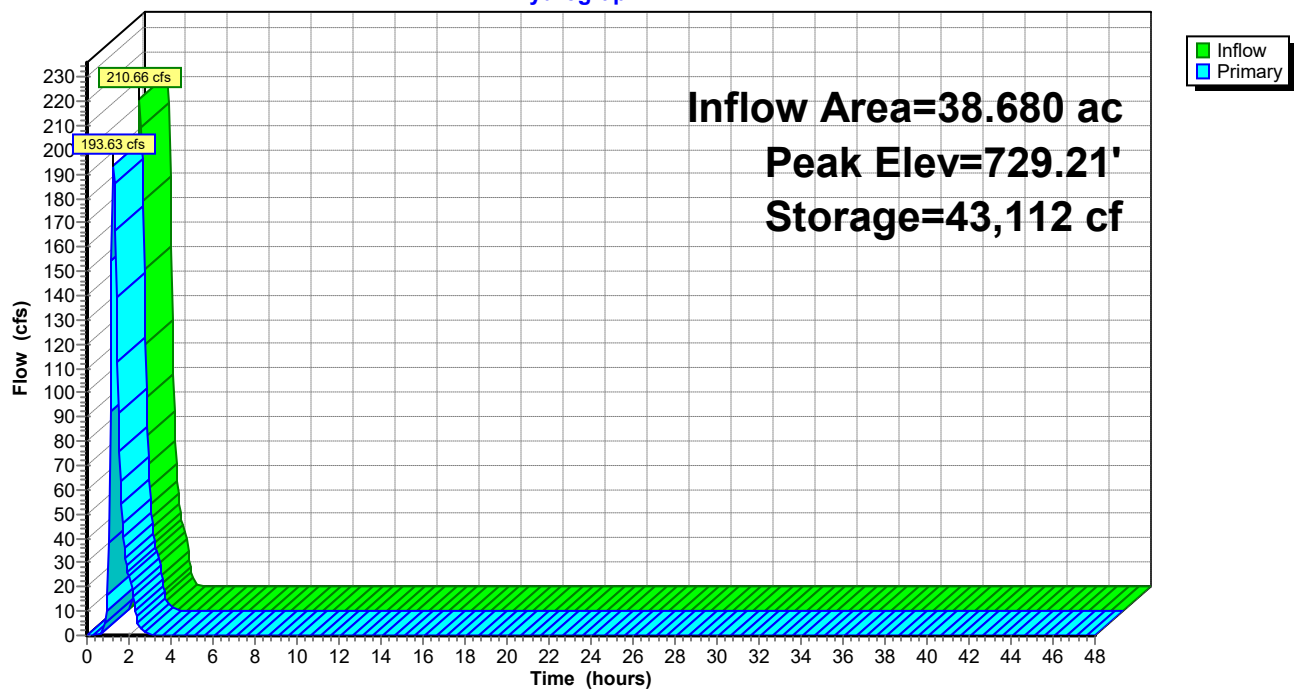
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=193.53 cfs @ 1.25 hrs HW=729.21' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 193.53 cfs @ 8.25 fps)

Pond 11P: Eddb

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

Prepared by Kimley-Horn

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=4.29"
Tc=10.0 min CN=86 Runoff=87.86 cfs 5.015 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=4.39"
Tc=10.0 min CN=87 Runoff=139.14 cfs 7.988 af

Subcatchment B: Off-Site Runoff Area=24.640 ac 72.00% Impervious Runoff Depth=4.83"
Tc=20.0 min CN=91 Runoff=125.47 cfs 9.918 af

Reach 15R: Swale Avg. Flow Depth=2.15' Max Vel=8.12 fps Inflow=182.33 cfs 14.932 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=181.83 cfs 14.932 af

Pond 7P: Wet Pond Peak Elev=729.14' Storage=13.816 af Inflow=297.25 cfs 22.920 af
Outflow=27.18 cfs 20.822 af

Pond 11P: EDDB Peak Elev=729.15' Storage=40,622 cf Inflow=194.64 cfs 14.932 af
Outflow=182.33 cfs 14.932 af

Total Runoff Area = 60.500 ac Runoff Volume = 22.920 af Average Runoff Depth = 4.55"
64.30% Pervious = 38.899 ac 35.70% Impervious = 21.601 ac

Franklin Industrial Detention Pond

Prepared by Kimley-Horn

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Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

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Summary for Subcatchment 12S: West

Runoff = 87.86 cfs @ 12.01 hrs, Volume= 5.015 af, Depth= 4.29"

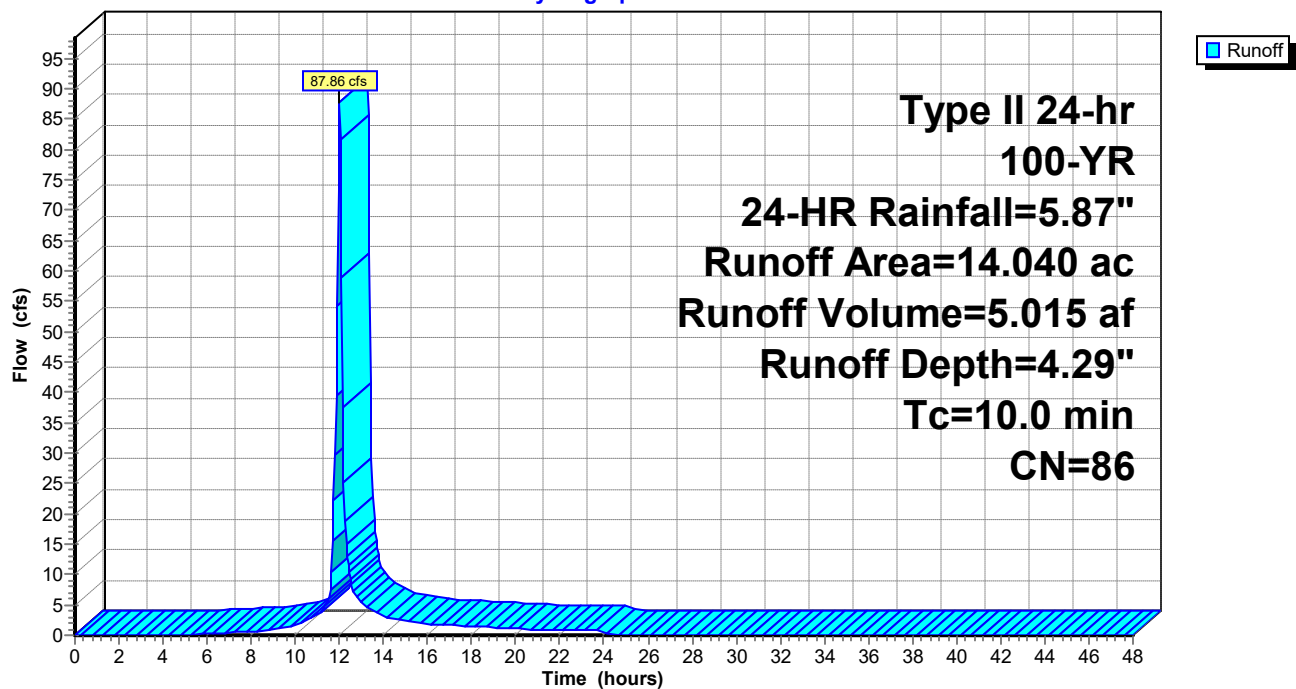
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Franklin Industrial Detention Pond

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Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

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Summary for Subcatchment 13S: East

Runoff = 139.14 cfs @ 12.01 hrs, Volume= 7.988 af, Depth= 4.39"

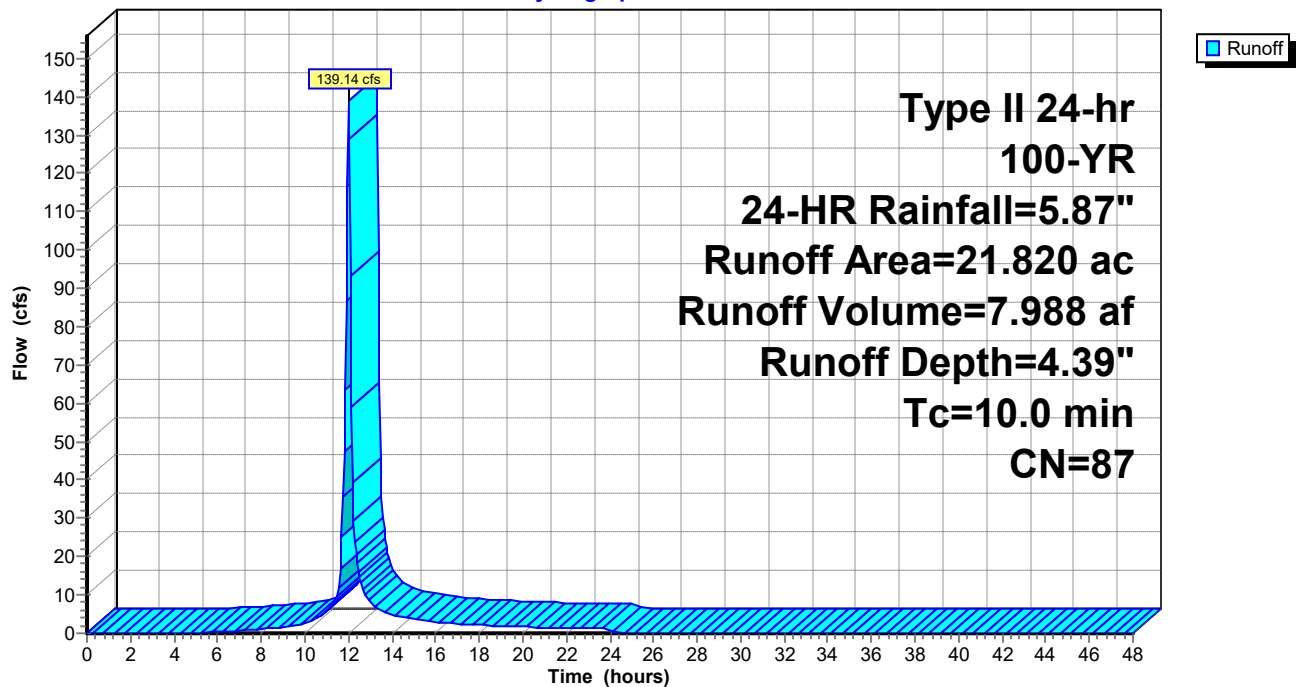
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Franklin Industrial Detention Pond

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Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

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Summary for Subcatchment B: Off-Site

Runoff = 125.47 cfs @ 12.12 hrs, Volume= 9.918 af, Depth= 4.83"

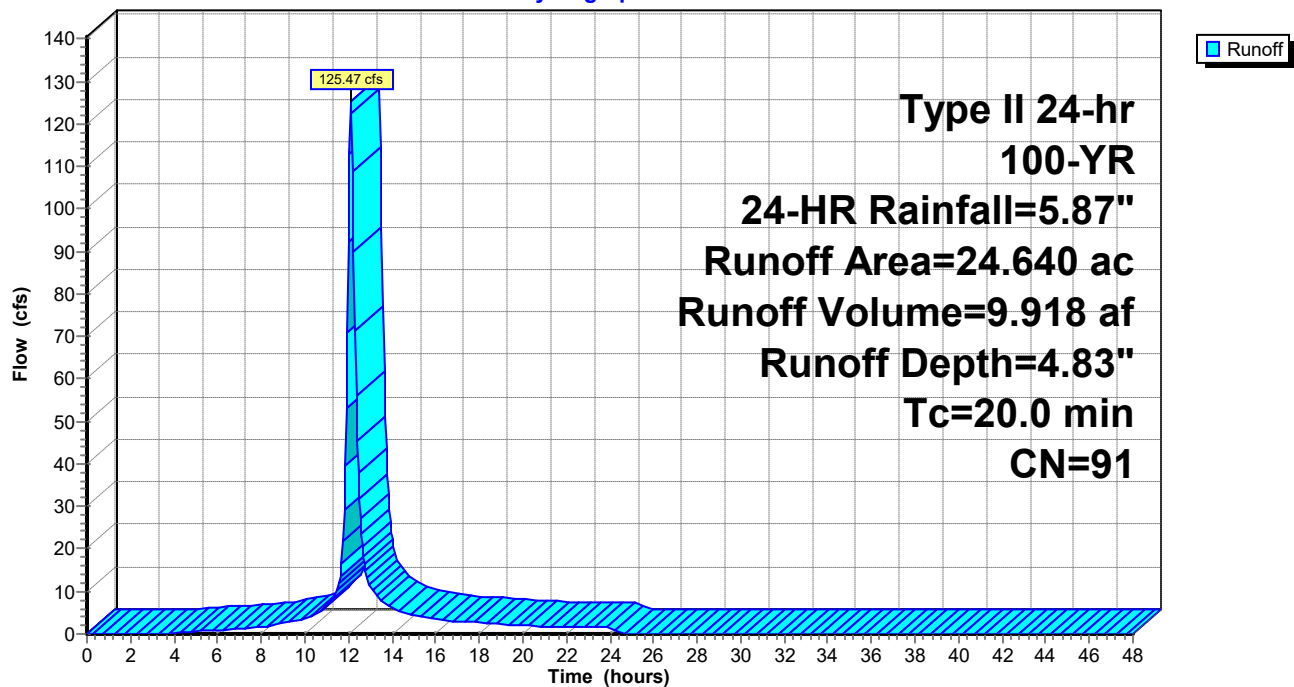
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

Area (ac)	CN	Description
24.640	91	Urban industrial, 72% imp, HSG C
6.899		28.00% Pervious Area
17.741		72.00% Impervious Area

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

Subcatchment B: Off-Site

Hydrograph



Franklin Industrial Detention Pond

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Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

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Summary for Reach 15R: Swale

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 4.63" for 100-YR, 24-HR event
Inflow = 182.33 cfs @ 12.11 hrs, Volume= 14.932 af
Outflow = 181.83 cfs @ 12.11 hrs, Volume= 14.932 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 8.12 fps, Min. Travel Time= 0.2 min

Avg. Velocity= 2.36 fps, Avg. Travel Time= 0.8 min

Peak Storage= 2,470 cf @ 12.11 hrs

Average Depth at Peak Storage= 2.15' , Surface Width= 16.89'

Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight

Side Slope Z-value= 3.0 '/' Top Width= 22.00'

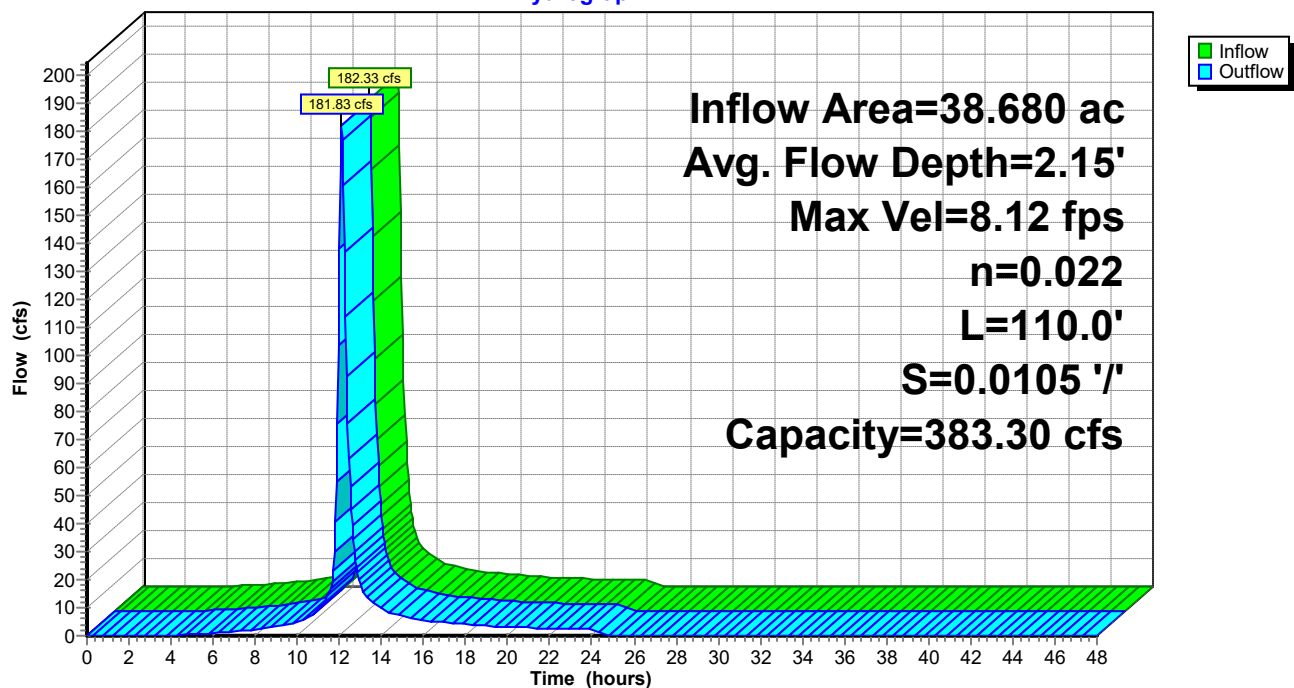
Length= 110.0' Slope= 0.0105 '/'

Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

Prepared by Kimley-Horn

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Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 1.54' @ 13.60 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 4.55" for 100-YR, 24-HR event
 Inflow = 297.25 cfs @ 12.05 hrs, Volume= 22.920 af
 Outflow = 27.18 cfs @ 12.98 hrs, Volume= 20.822 af, Atten= 91%, Lag= 55.9 min
 Primary = 27.18 cfs @ 12.98 hrs, Volume= 20.822 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 729.14' @ 12.98 hrs Surf.Area= 4.534 ac Storage= 13.816 af

Plug-Flow detention time= 500.2 min calculated for 20.801 af (91% of inflow)
 Center-of-Mass det. time= 453.4 min (1,252.5 - 799.1)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=27.18 cfs @ 12.98 hrs HW=729.14' (Free Discharge)

1=Orifice/Grate (Orifice Controls 6.32 cfs @ 8.04 fps)
 2=Orifice/Grate (Orifice Controls 20.86 cfs @ 4.41 fps)

Franklin Industrial Detention Pond

Prepared by Kimley-Horn

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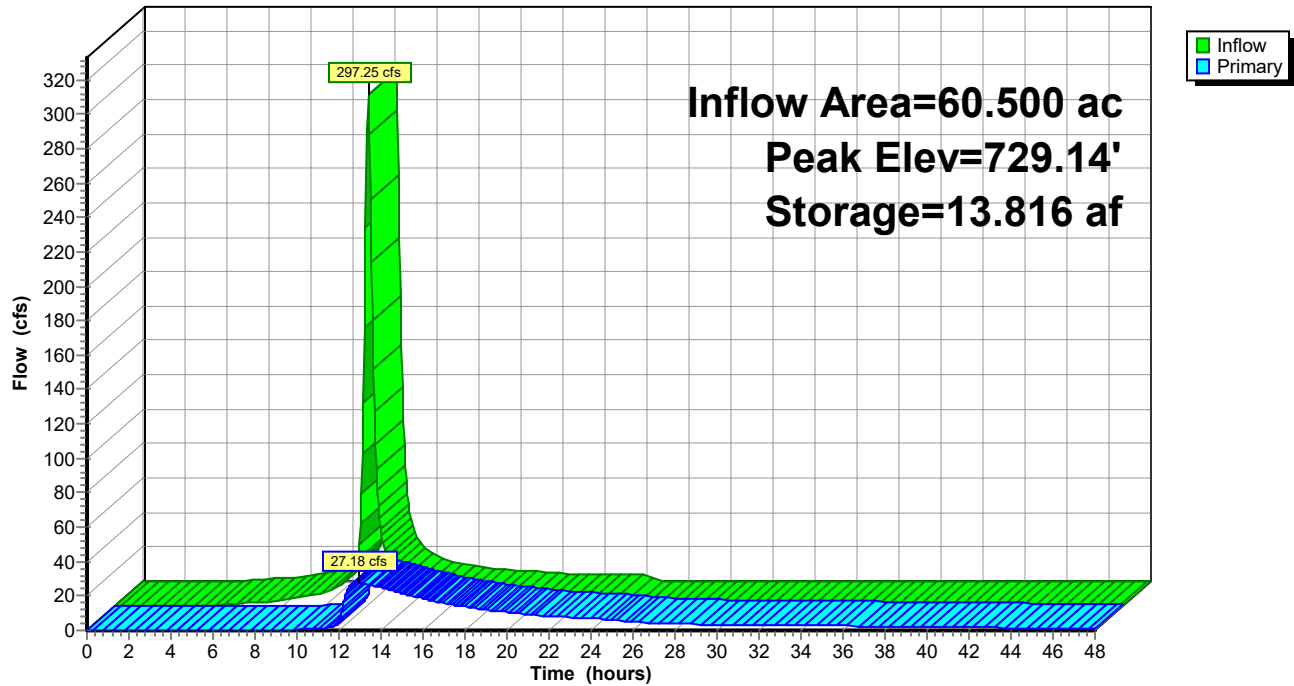
Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

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Pond 7P: Wet Pond

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

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Summary for Pond 11P: EDDB

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 4.63" for 100-YR, 24-HR event
 Inflow = 194.64 cfs @ 12.05 hrs, Volume= 14.932 af
 Outflow = 182.33 cfs @ 12.11 hrs, Volume= 14.932 af, Atten= 6%, Lag= 3.2 min
 Primary = 182.33 cfs @ 12.11 hrs, Volume= 14.932 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 729.15' @ 12.11 hrs Surf.Area= 39,649 sf Storage= 40,622 cf

Plug-Flow detention time= 6.5 min calculated for 14.932 af (100% of inflow)
 Center-of-Mass det. time= 6.2 min (800.1 - 793.9)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=181.39 cfs @ 12.11 hrs HW=729.14' (Free Discharge)
 ↑ **1=Channel/Reach** (Channel Controls 181.39 cfs @ 8.11 fps)

Franklin Industrial Detention Pond

Prepared by Kimley-Horn

HydroCAD® 10.10-5a s/n 09843 © 2020 HydroCAD Software Solutions LLC

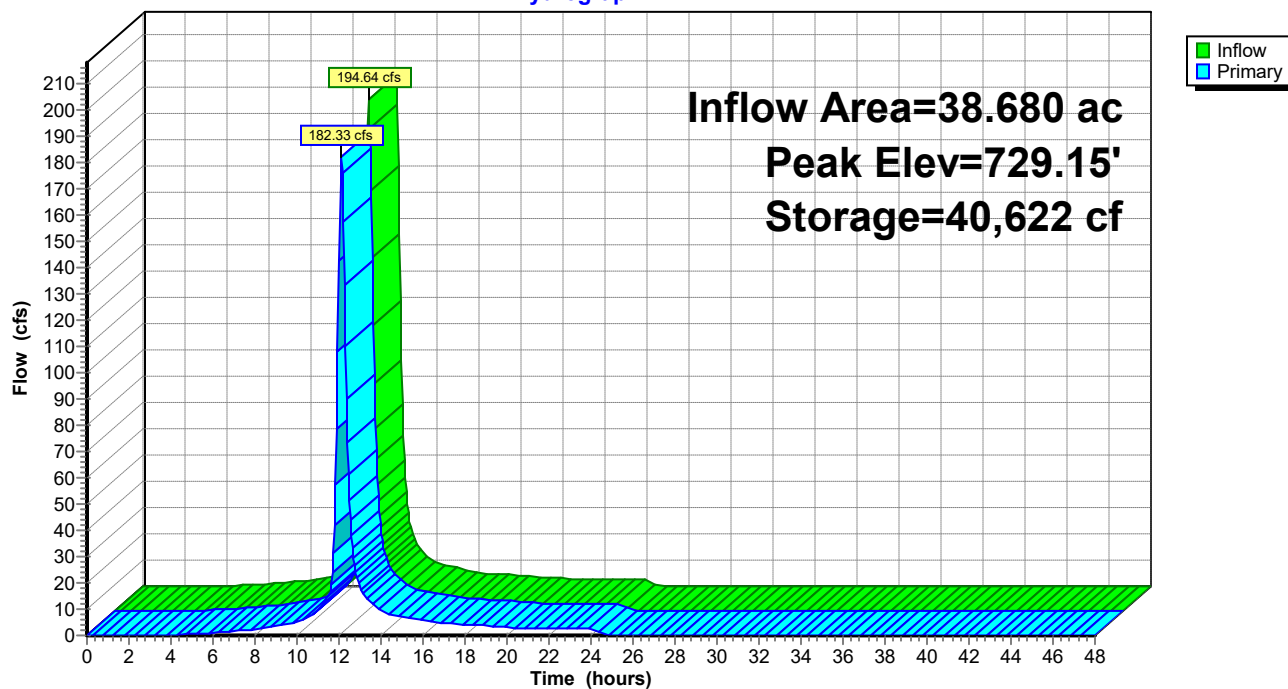
Type II 24-hr 100-YR, 24-HR Rainfall=5.87"

Printed 9/9/2021

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Pond 11P: Eddb

Hydrograph



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=2.49"
Tc=10.0 min CN=86 Runoff=118.60 cfs 2.916 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=2.58"
Tc=10.0 min CN=87 Runoff=190.94 cfs 4.694 af

Subcatchment B: Off-Site Runoff Area=24.640 ac 72.00% Impervious Runoff Depth=2.96"
Tc=20.0 min CN=91 Runoff=146.97 cfs 6.078 af

Reach 15R: Swale Avg. Flow Depth=2.23' Max Vel=8.28 fps Inflow=197.05 cfs 8.993 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=196.36 cfs 8.993 af

Pond 7P: Wet Pond Peak Elev=728.64' Storage=11.582 af Inflow=324.91 cfs 13.688 af
Outflow=18.91 cfs 12.487 af

Pond 11P: EDDB Peak Elev=729.23' Storage=43,898 cf Inflow=215.64 cfs 8.993 af
Outflow=197.05 cfs 8.993 af

Total Runoff Area = 60.500 ac Runoff Volume = 13.688 af Average Runoff Depth = 2.71"
64.30% Pervious = 38.899 ac 35.70% Impervious = 21.601 ac

Summary for Subcatchment 12S: West

Runoff = 118.60 cfs @ 1.61 hrs, Volume= 2.916 af, Depth= 2.49"

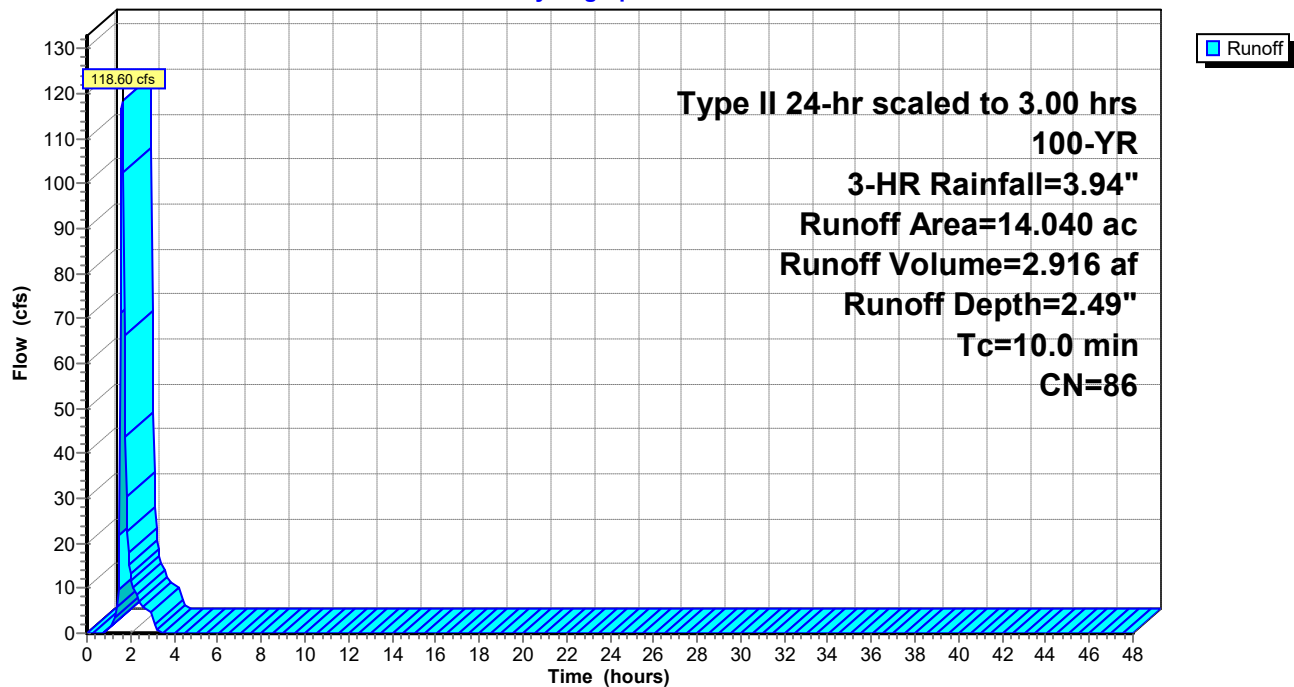
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 3.00 hrs 100-YR, 3-HR Rainfall=3.94"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 190.94 cfs @ 1.61 hrs, Volume= 4.694 af, Depth= 2.58"

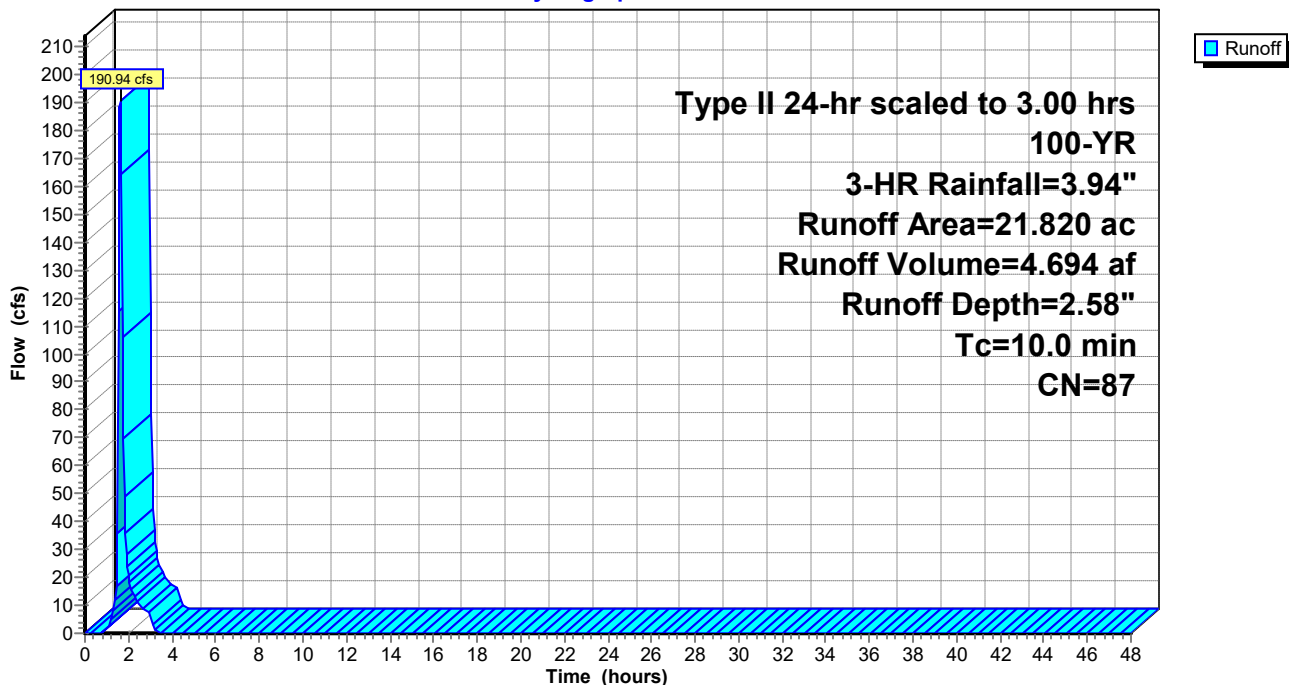
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 3.00 hrs 100-YR, 3-HR Rainfall=3.94"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Subcatchment B: Off-Site

Runoff = 146.97 cfs @ 1.74 hrs, Volume= 6.078 af, Depth= 2.96"

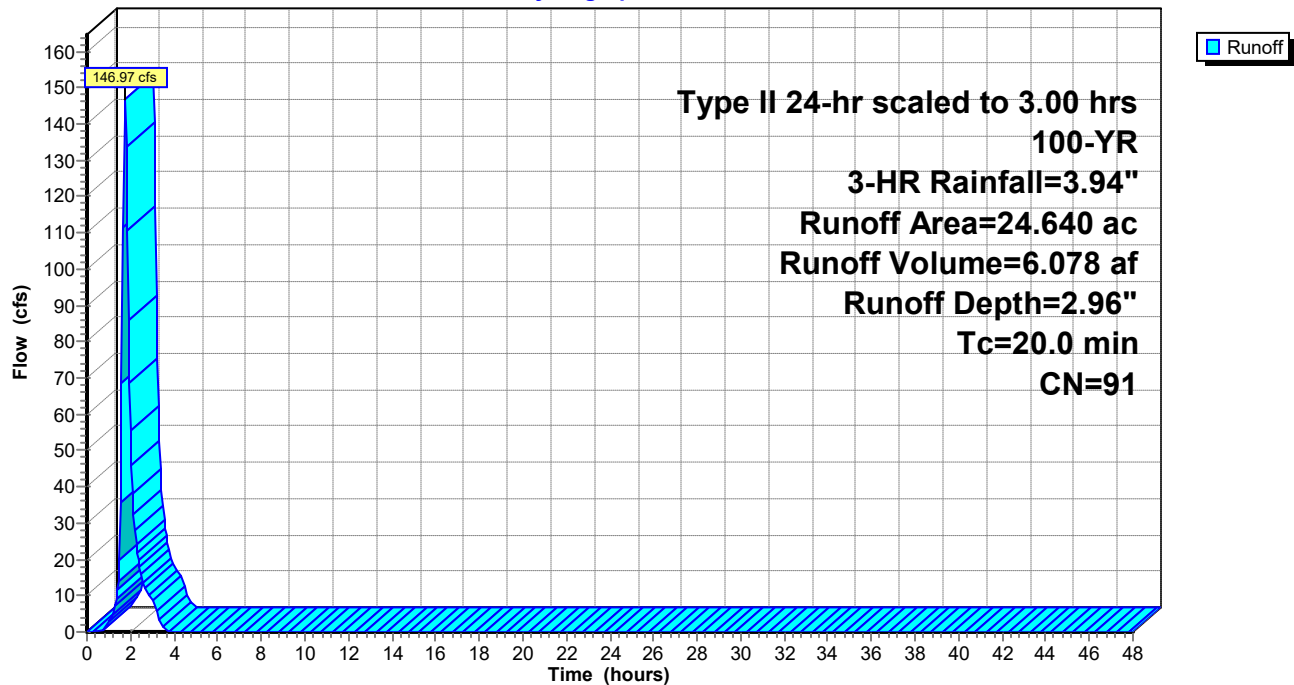
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 3.00 hrs 100-YR, 3-HR Rainfall=3.94"

Area (ac)	CN	Description
24.640	91	Urban industrial, 72% imp, HSG C
6.899		28.00% Pervious Area
17.741		72.00% Impervious Area

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

Subcatchment B: Off-Site

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 2.79" for 100-YR, 3-HR event
 Inflow = 197.05 cfs @ 1.74 hrs, Volume= 8.993 af
 Outflow = 196.36 cfs @ 1.74 hrs, Volume= 8.993 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 8.28 fps, Min. Travel Time= 0.2 min
 Avg. Velocity= 2.04 fps, Avg. Travel Time= 0.9 min

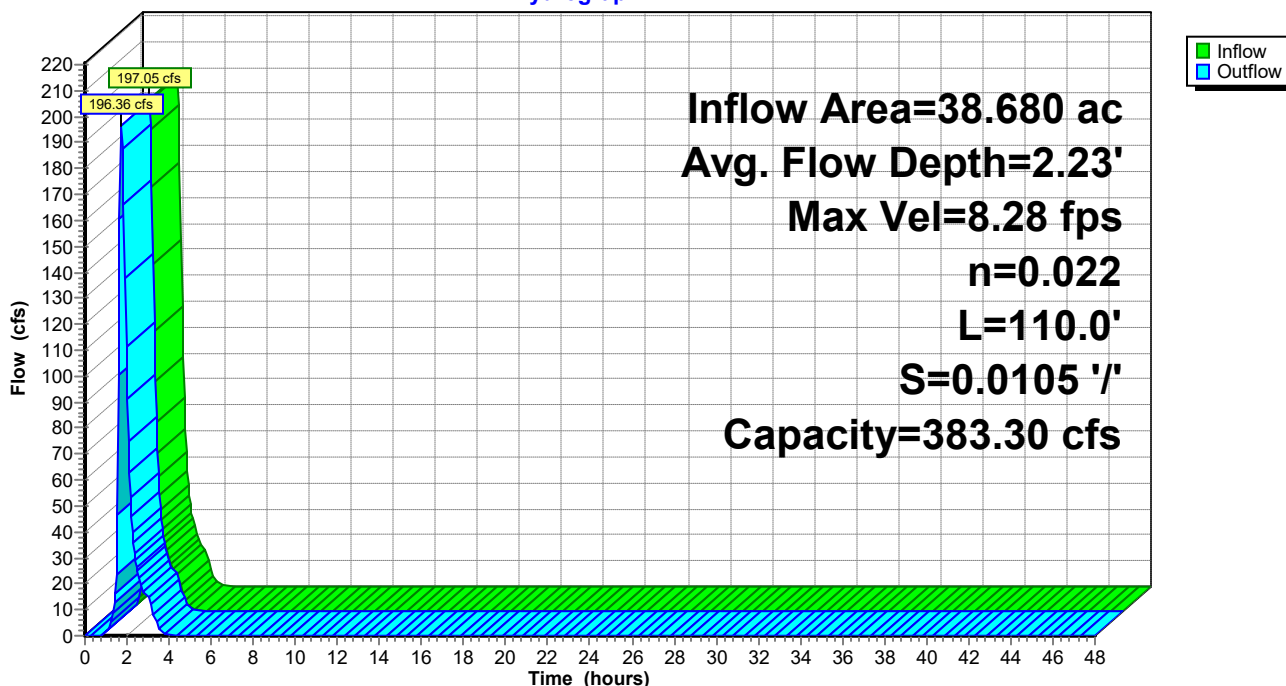
Peak Storage= 2,613 cf @ 1.74 hrs
 Average Depth at Peak Storage= 2.23' , Surface Width= 17.35'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 1.39' @ 3.75 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 2.71" for 100-YR, 3-HR event
 Inflow = 324.91 cfs @ 1.65 hrs, Volume= 13.688 af
 Outflow = 18.91 cfs @ 3.10 hrs, Volume= 12.487 af, Atten= 94%, Lag= 86.7 min
 Primary = 18.91 cfs @ 3.10 hrs, Volume= 12.487 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.64' @ 3.10 hrs Surf.Area= 4.432 ac Storage= 11.582 af

Plug-Flow detention time= 608.5 min calculated for 12.487 af (91% of inflow)
 Center-of-Mass det. time= 602.4 min (718.6 - 116.2)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

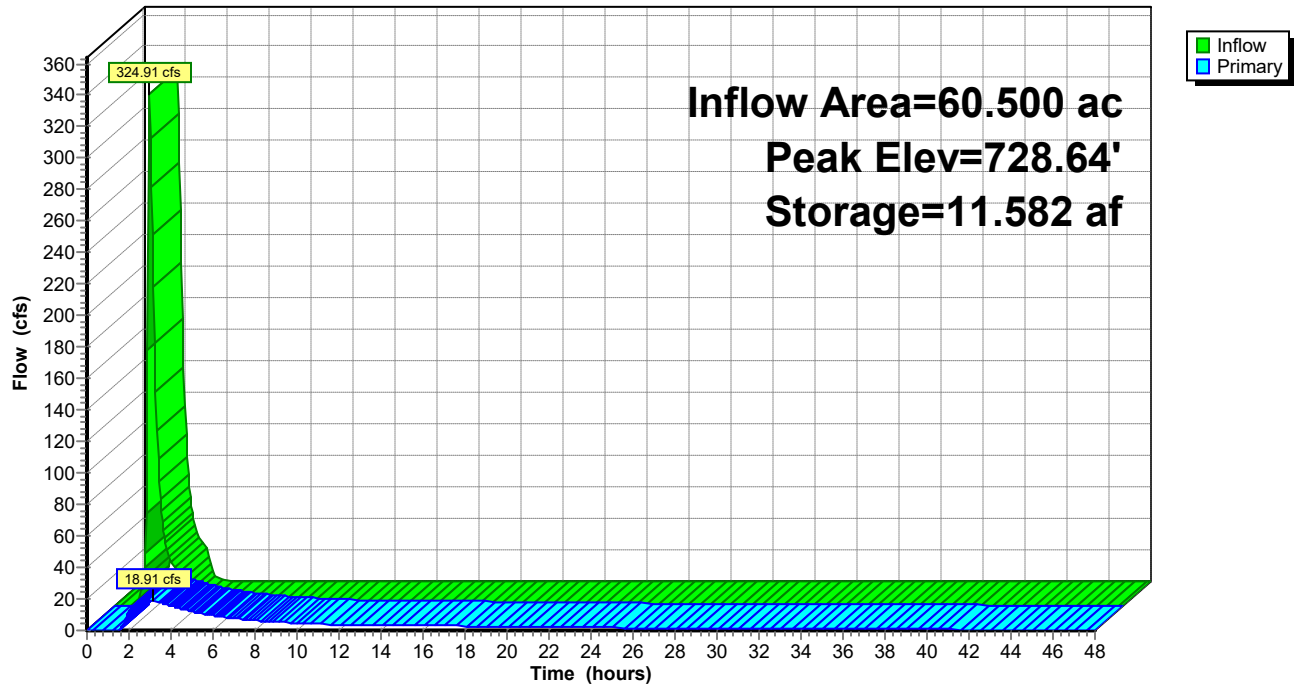
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=18.91 cfs @ 3.10 hrs HW=728.64' (Free Discharge)

↑ **1=Orifice/Grate** (Orifice Controls 5.73 cfs @ 7.29 fps)
 — **2=Orifice/Grate** (Orifice Controls 13.19 cfs @ 3.79 fps)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: EDDB

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 2.79" for 100-YR, 3-HR event
 Inflow = 215.64 cfs @ 1.67 hrs, Volume= 8.993 af
 Outflow = 197.05 cfs @ 1.74 hrs, Volume= 8.993 af, Atten= 9%, Lag= 4.2 min
 Primary = 197.05 cfs @ 1.74 hrs, Volume= 8.993 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 729.23' @ 1.74 hrs Surf.Area= 44,527 sf Storage= 43,898 cf

Plug-Flow detention time= 5.0 min calculated for 8.993 af (100% of inflow)
 Center-of-Mass det. time= 4.6 min (119.2 - 114.6)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

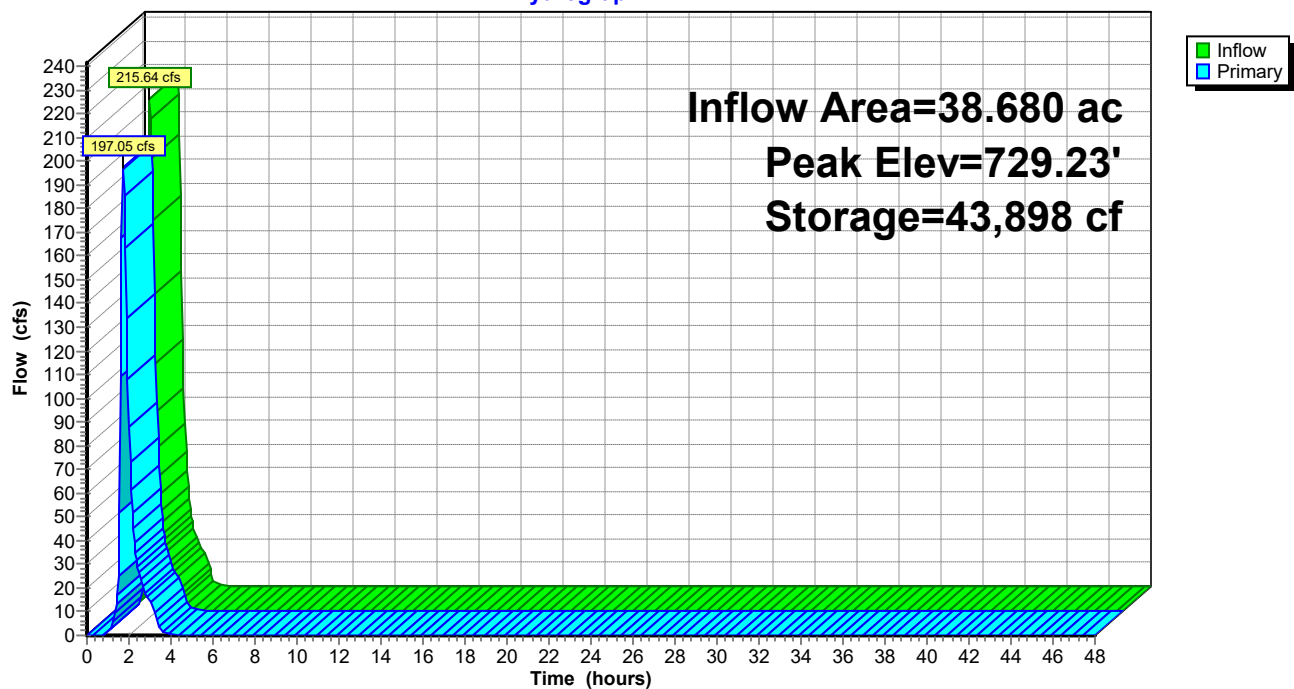
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=195.63 cfs @ 1.74 hrs HW=729.22' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 195.63 cfs @ 8.27 fps)

Pond 11P: Eddb

Hydrograph



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=3.24"
Tc=10.0 min CN=86 Runoff=126.11 cfs 3.795 af

Subcatchment 13S: East Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=3.34"
Tc=10.0 min CN=87 Runoff=201.38 cfs 6.077 af

Subcatchment B: Off-Site Runoff Area=24.640 ac 72.00% Impervious Runoff Depth=3.75"
Tc=20.0 min CN=91 Runoff=156.38 cfs 7.699 af

Reach 15R: Swale Avg. Flow Depth=2.31' Max Vel=8.45 fps Inflow=213.50 cfs 11.494 af
n=0.022 L=110.0' S=0.0105 '/' Capacity=383.30 cfs Outflow=212.88 cfs 11.494 af

Pond 7P: Wet Pond

Peak Elev=728.96'	Storage=13.009 af	Inflow=359.92 cfs	17.570 af
		Outflow=24.09 cfs	16.256 af

Pond 11P: EDDB Peak Elev=729.31' Storage=47,803 cf Inflow=232.68 cfs 11.494 af
Outflow=213.50 cfs 11.494 af

Total Runoff Area = 60.500 ac Runoff Volume = 17.570 af Average Runoff Depth = 3.49"
64.30% Pervious = 38.899 ac 35.70% Impervious = 21.601 ac

Summary for Subcatchment 12S: West

Runoff = 126.11 cfs @ 3.10 hrs, Volume= 3.795 af, Depth= 3.24"

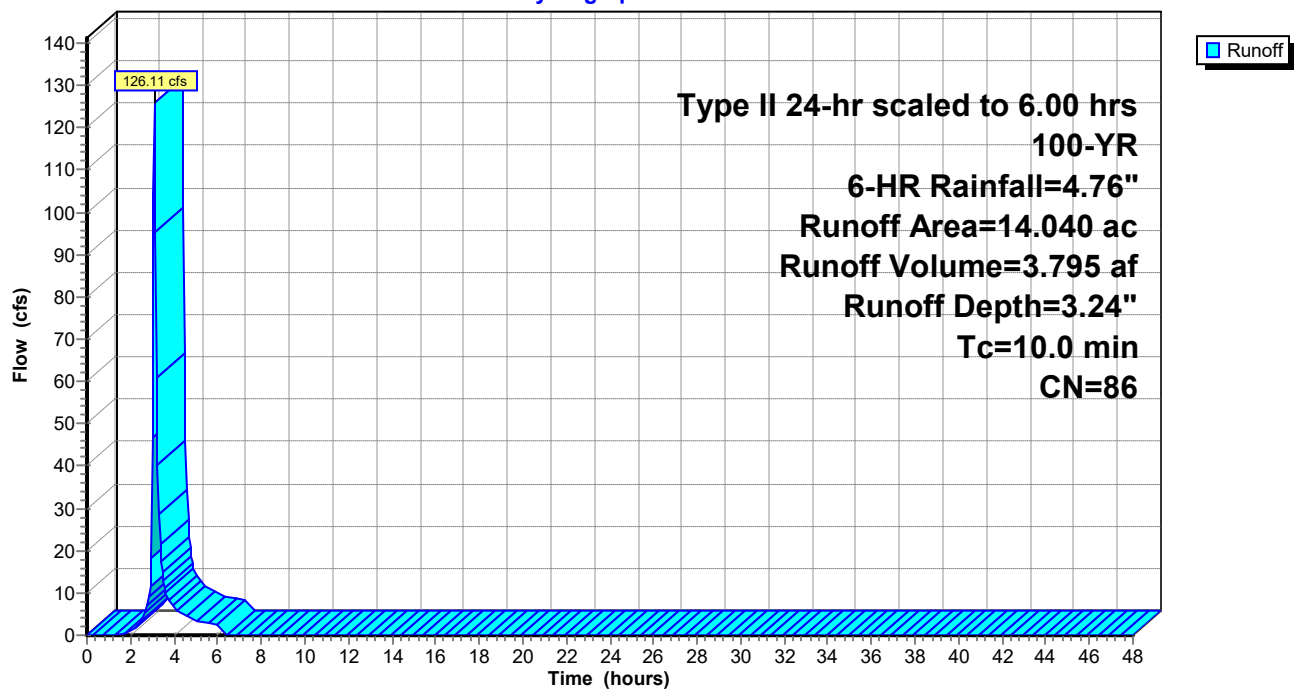
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 6.00 hrs 100-YR, 6-HR Rainfall=4.76"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Summary for Subcatchment 13S: East

Runoff = 201.38 cfs @ 3.10 hrs, Volume= 6.077 af, Depth= 3.34"

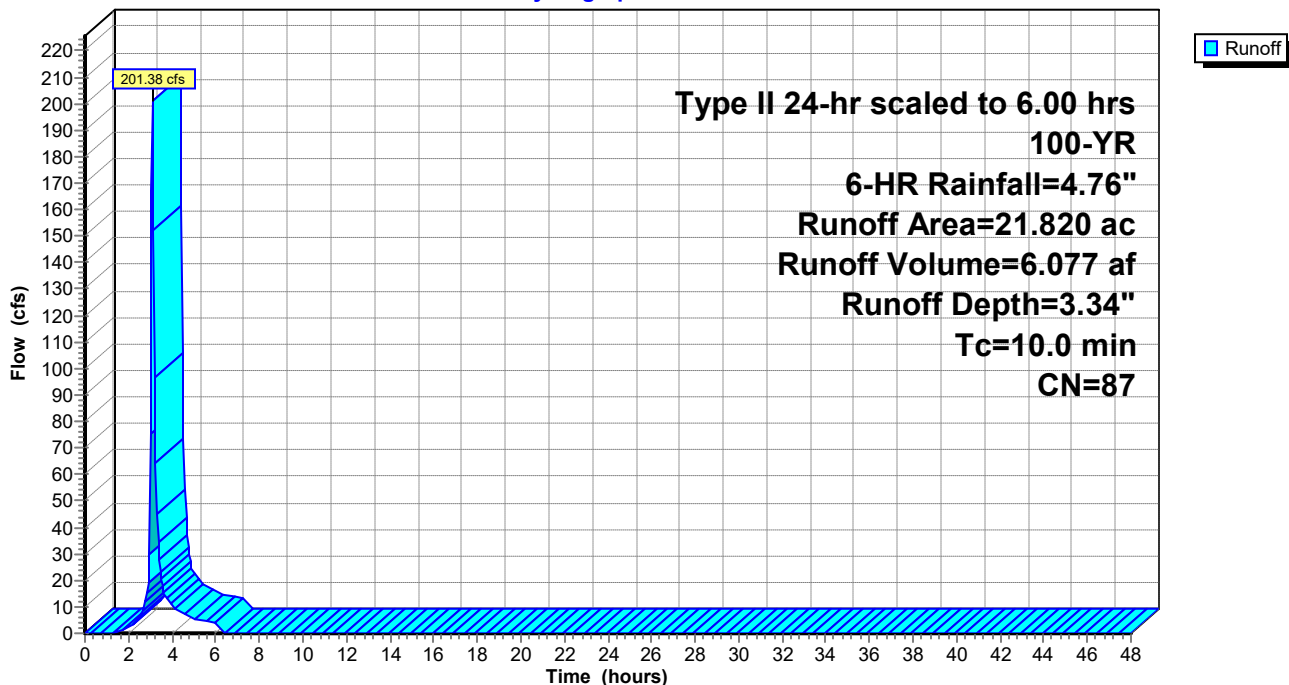
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 6.00 hrs 100-YR, 6-HR Rainfall=4.76"

Area (ac)	CN	Description
* 12.423	90	
5.537	74	>75% Grass cover, Good, HSG C
3.860	98	Water Surface, HSG C
21.820	87	Weighted Average
17.960		82.31% Pervious Area
3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Summary for Subcatchment B: Off-Site

Runoff = 156.38 cfs @ 3.22 hrs, Volume= 7.699 af, Depth= 3.75"

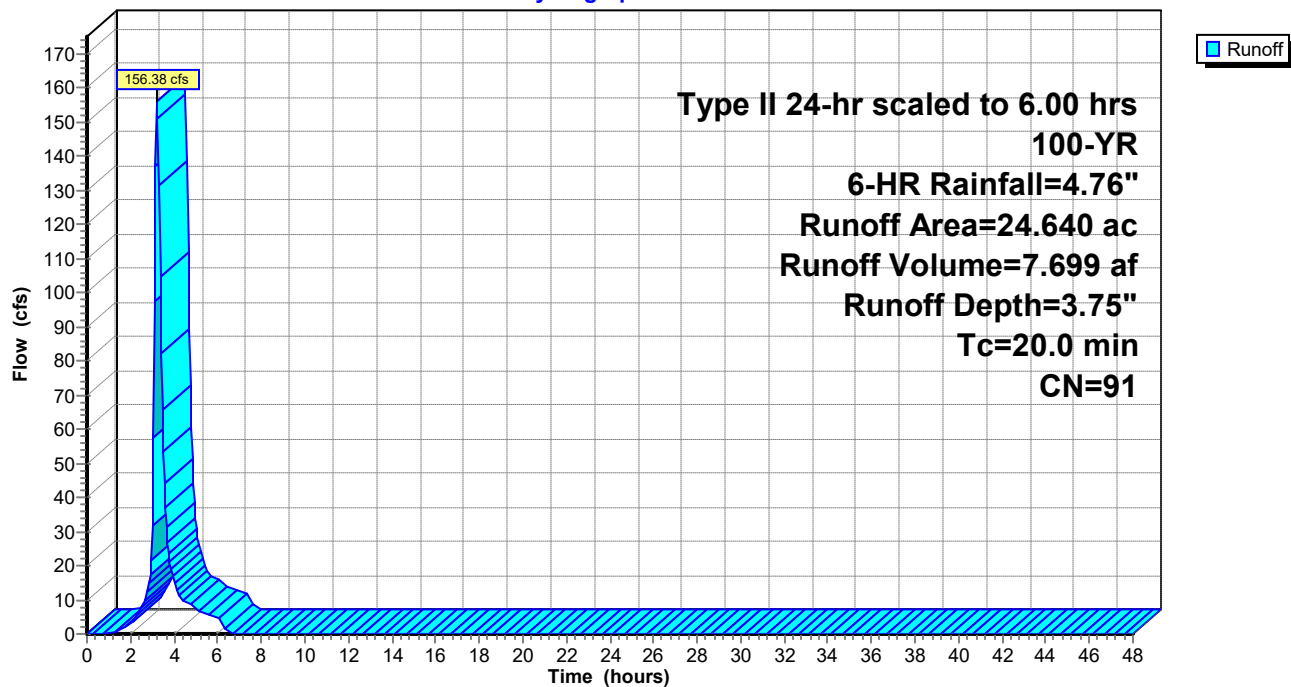
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr scaled to 6.00 hrs 100-YR, 6-HR Rainfall=4.76"

Area (ac)	CN	Description
24.640	91	Urban industrial, 72% imp, HSG C
6.899		28.00% Pervious Area
17.741		72.00% Impervious Area

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

Subcatchment B: Off-Site

Hydrograph



Summary for Reach 15R: Swale

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 3.57" for 100-YR, 6-HR event
 Inflow = 213.50 cfs @ 3.21 hrs, Volume= 11.494 af
 Outflow = 212.88 cfs @ 3.22 hrs, Volume= 11.494 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Max. Velocity= 8.45 fps, Min. Travel Time= 0.2 min
 Avg. Velocity= 2.35 fps, Avg. Travel Time= 0.8 min

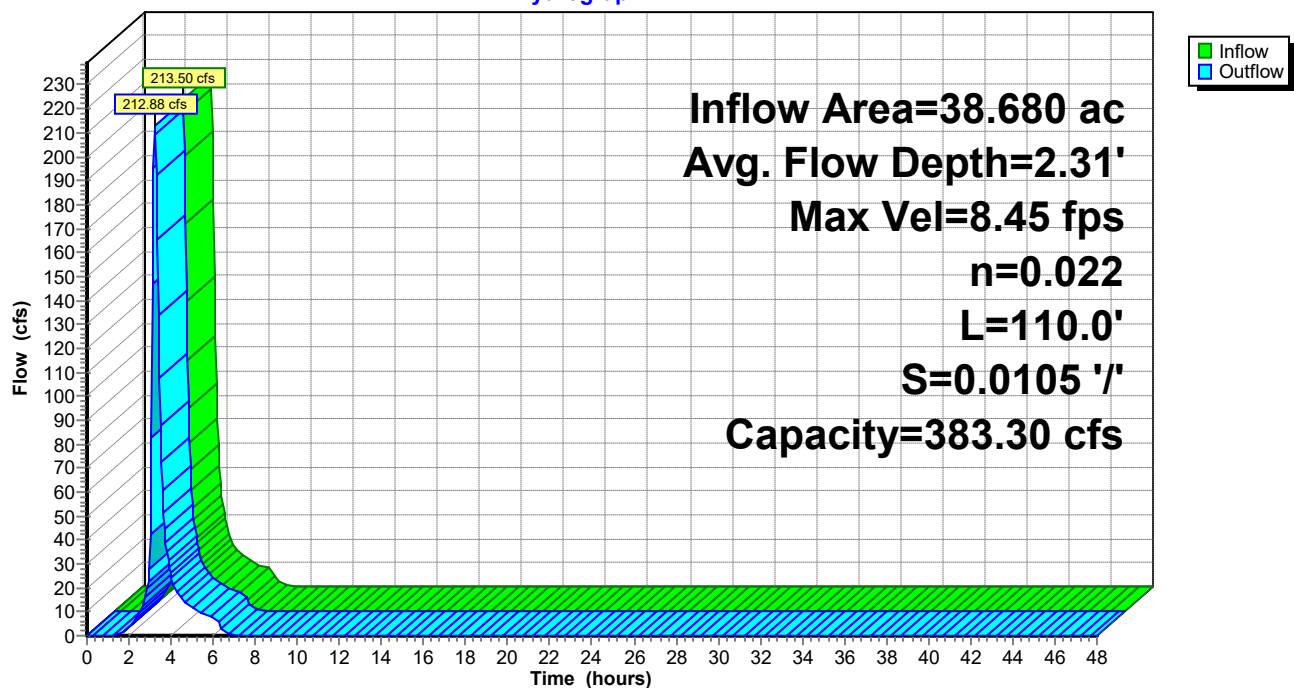
Peak Storage= 2,774 cf @ 3.21 hrs
 Average Depth at Peak Storage= 2.31', Surface Width= 17.85'
 Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 383.30 cfs

4.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 22.00'
 Length= 110.0' Slope= 0.0105 '/'
 Inlet Invert= 727.00', Outlet Invert= 725.85'



Reach 15R: Swale

Hydrograph



Summary for Pond 7P: Wet Pond

[63] Warning: Exceeded Reach 15R INLET depth by 1.48' @ 6.65 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 3.49" for 100-YR, 6-HR event
 Inflow = 359.92 cfs @ 3.12 hrs, Volume= 17.570 af
 Outflow = 24.09 cfs @ 4.41 hrs, Volume= 16.256 af, Atten= 93%, Lag= 77.3 min
 Primary = 24.09 cfs @ 4.41 hrs, Volume= 16.256 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 728.96' @ 4.41 hrs Surf.Area= 4.497 ac Storage= 13.009 af

Plug-Flow detention time= 537.0 min calculated for 16.239 af (92% of inflow)
 Center-of-Mass det. time= 528.7 min (742.8 - 214.1)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

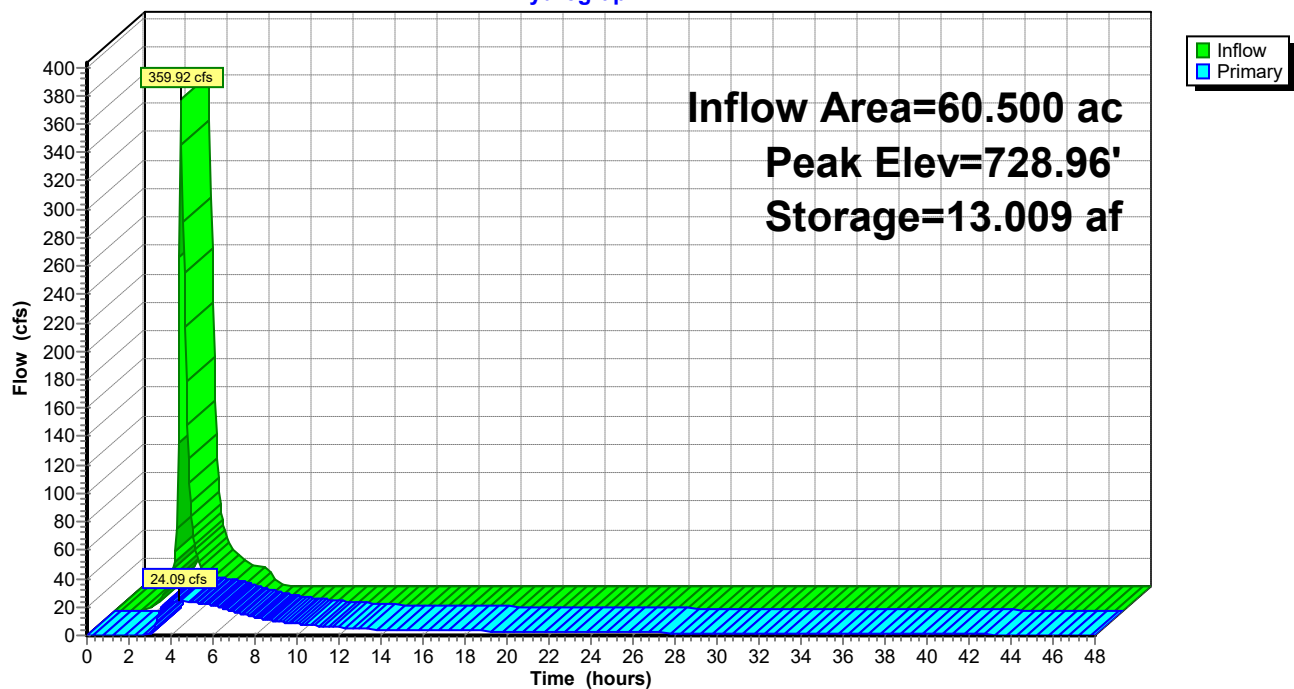
Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=24.09 cfs @ 4.41 hrs HW=728.96' (Free Discharge)

↑ **1=Orifice/Grate** (Orifice Controls 6.11 cfs @ 7.78 fps)
 ↓ **2=Orifice/Grate** (Orifice Controls 17.98 cfs @ 4.20 fps)

Pond 7P: Wet Pond

Hydrograph



Summary for Pond 11P: Eddb

Inflow Area = 38.680 ac, 45.87% Impervious, Inflow Depth = 3.57" for 100-YR, 6-HR event
 Inflow = 232.68 cfs @ 3.14 hrs, Volume= 11.494 af
 Outflow = 213.50 cfs @ 3.21 hrs, Volume= 11.494 af, Atten= 8%, Lag= 4.1 min
 Primary = 213.50 cfs @ 3.21 hrs, Volume= 11.494 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 729.31' @ 3.21 hrs Surf.Area= 49,720 sf Storage= 47,803 cf

Plug-Flow detention time= 4.9 min calculated for 11.482 af (100% of inflow)
 Center-of-Mass det. time= 4.9 min (216.8 - 211.9)

Volume	Invert	Avail.Storage	Storage Description
#1	727.00'	97,113 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

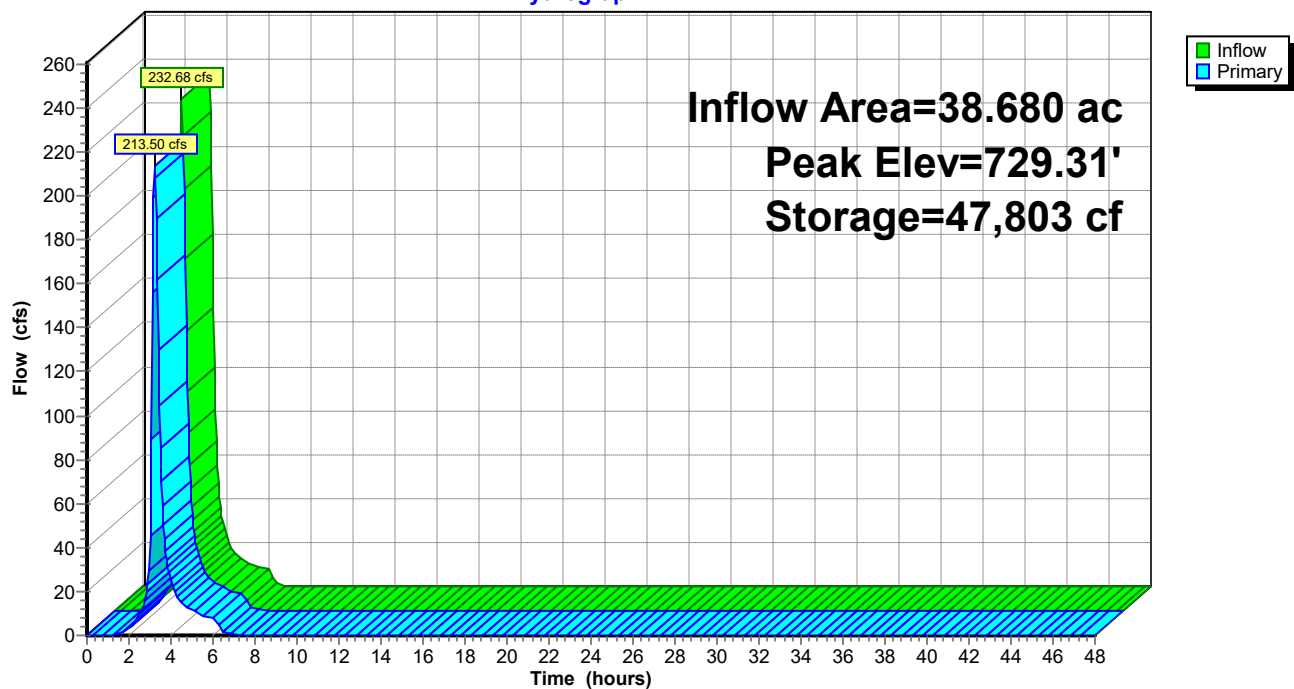
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.00	5,391	0	0
728.00	17,559	11,475	11,475
729.00	30,347	23,953	35,428
730.00	93,023	61,685	97,113

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	Channel/Reach using Reach 15R: Swale

Primary OutFlow Max=211.85 cfs @ 3.21 hrs HW=729.30' (Free Discharge)
 ↑1=Channel/Reach (Channel Controls 211.85 cfs @ 8.45 fps)

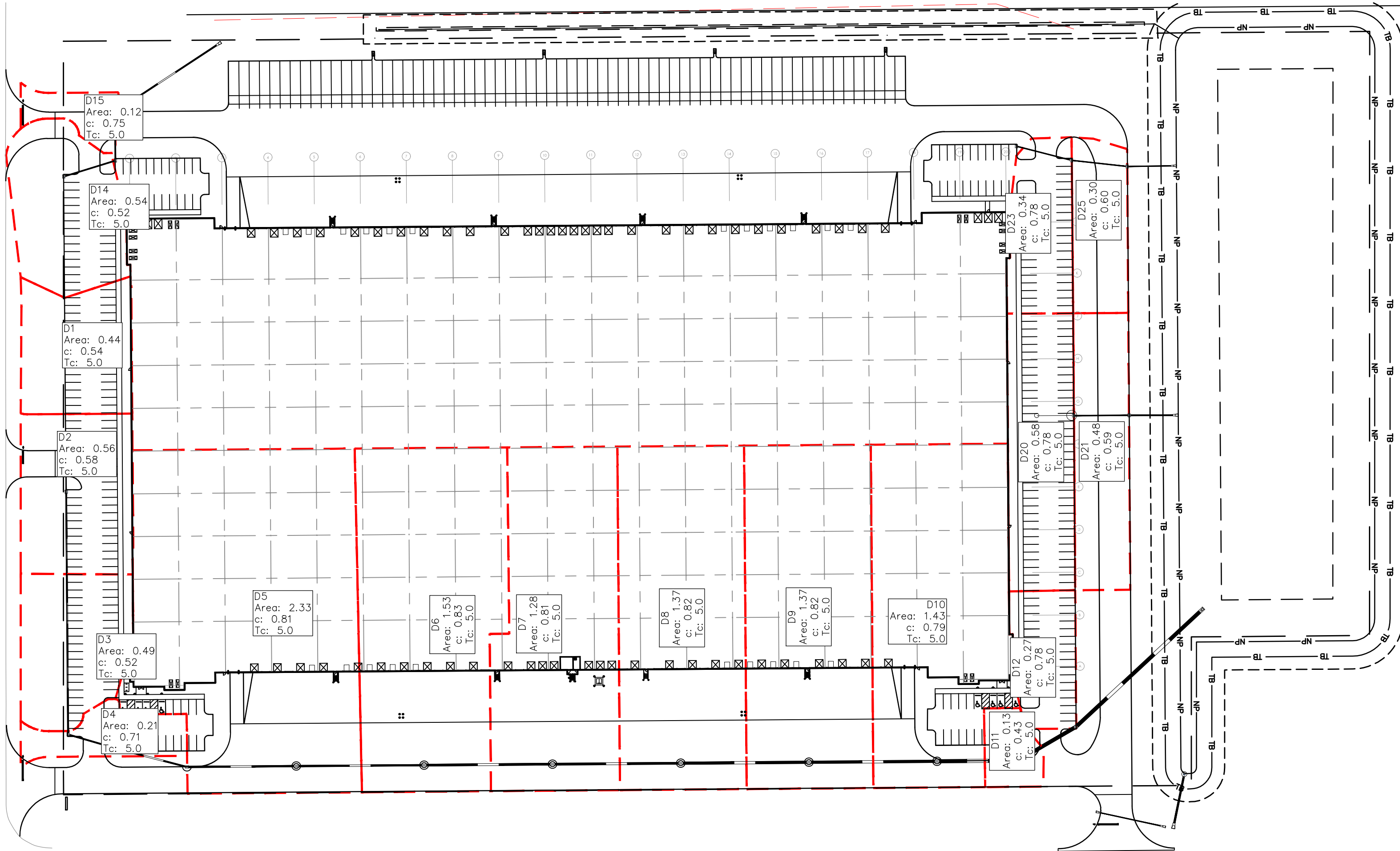
Pond 11P: Eddb

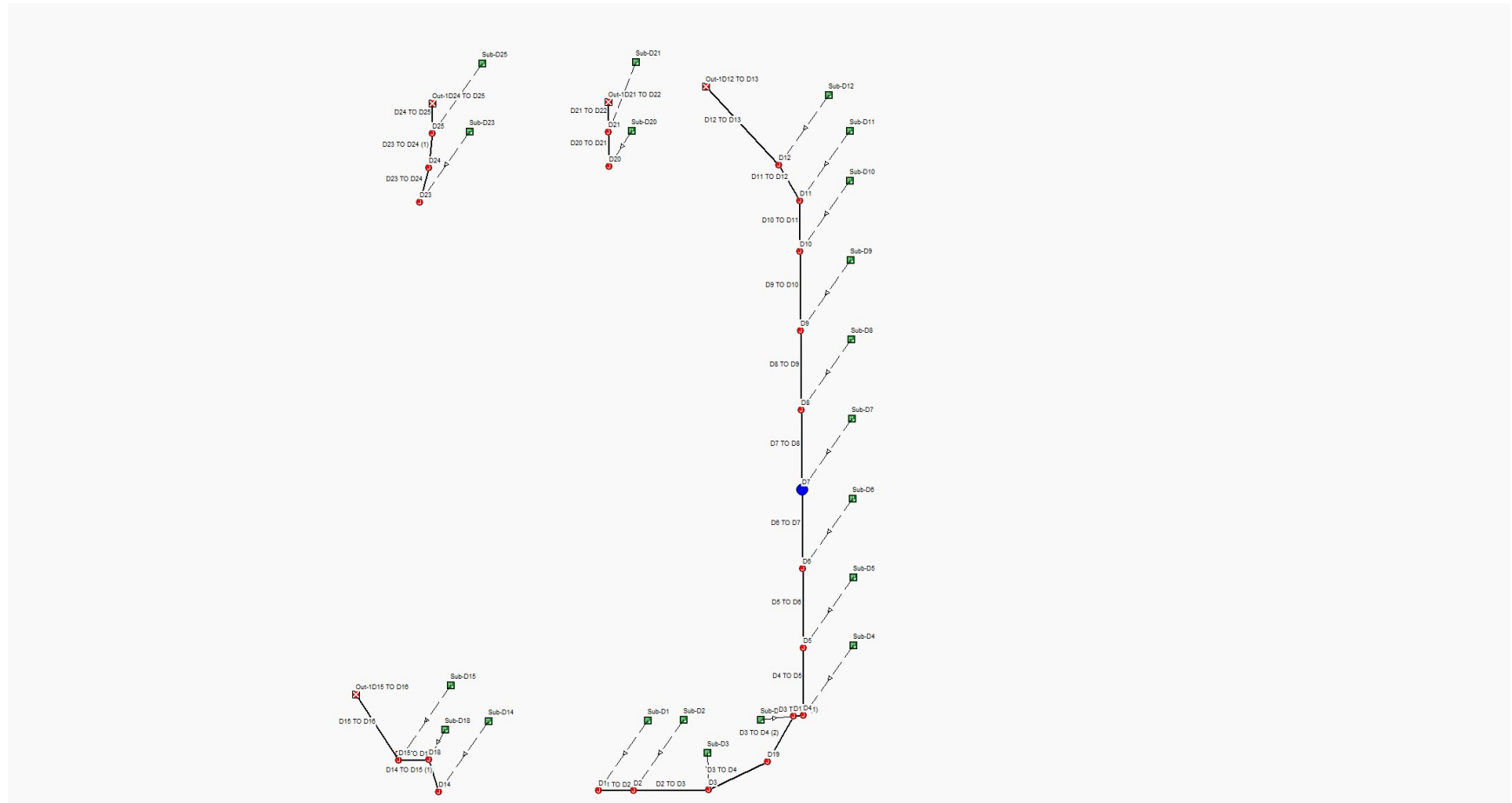
Hydrograph



Appendix G: Storm Sewer Design Calculations

MCCLAIN DRIVE





Project Description

File Name Franklin_storm sewer sizing_9-9-2021.SPF

Project Options

Flow Units CFS
Elevation Type Elevation
Hydrology Method Rational
Time of Concentration (TOC) Method User-Defined
Link Routing Method Kinematic Wave
Enable Overflow Ponding at Nodes YES
Skip Steady State Analysis Time Periods NO

Analysis Options

Start Analysis On Sep 09, 2021 00:00:00
End Analysis On Sep 10, 2021 00:00:00
Start Reporting On Sep 09, 2021 00:00:00
Antecedent Dry Days 0 days
Runoff (Dry Weather) Time Step 0 01:00:00 days hh:mm:ss
Runoff (Wet Weather) Time Step 0 00:05:00 days hh:mm:ss
Reporting Time Step 0 00:05:00 days hh:mm:ss
Routing Time Step 30 seconds

Number of Elements

Qty
Rain Gages 0
Subbasins..... 20
Nodes..... 26
 Junctions 22
 Outfalls 4
 Flow Diversions 0
 Inlets 0
 Storage Nodes 0
Links..... 22
 Channels 0
 Pipes 22
 Pumps 0
 Orifices 0
 Weirs 0
 Outlets 0
Pollutants 0
Land Uses 0

Rainfall Details

Return Period..... 10 year(s)

Subbasin Summary

SN	Subbasin ID	Area	Weighted Runoff Coefficient	Total Rainfall	Total Runoff	Total Runoff Volume	Peak Runoff	Time of Concentration
		(ac)		(in)	(in)	(ac-in)	(cfs)	(days hh:mm:ss)
1	Sub-D1	0.44	0.5400	0.60	0.32	0.14	1.72	0 00:05:00
2	Sub-D10	1.43	0.7900	0.60	0.48	0.68	8.15	0 00:05:00
3	Sub-D11	0.13	0.4300	0.60	0.26	0.03	0.39	0 00:05:00
4	Sub-D12	0.27	0.7800	0.60	0.47	0.13	1.51	0 00:05:00
5	Sub-D14	0.54	0.5200	0.60	0.31	0.17	2.02	0 00:05:00
6	Sub-D15	0.12	0.7500	0.60	0.45	0.06	0.67	0 00:05:00
7	Sub-D17	0.16	0.7000	0.60	0.42	0.07	0.81	0 00:05:00
8	Sub-D18	0.16	0.7000	0.60	0.42	0.07	0.81	0 00:05:00
9	Sub-D2	0.56	0.5800	0.60	0.35	0.20	2.36	0 00:05:00
10	Sub-D20	0.58	0.7800	0.60	0.47	0.27	3.25	0 00:05:00
11	Sub-D21	0.48	0.5900	0.60	0.35	0.17	2.04	0 00:05:00
12	Sub-D23	0.34	0.7800	0.60	0.47	0.16	1.90	0 00:05:00
13	Sub-D25	0.30	0.6000	0.60	0.36	0.11	1.29	0 00:05:00
14	Sub-D3	0.49	0.5200	0.60	0.31	0.15	1.83	0 00:05:00
15	Sub-D4	0.21	0.7100	0.60	0.43	0.09	1.06	0 00:05:00
16	Sub-D5	2.33	0.8100	0.60	0.49	1.13	13.58	0 00:05:00
17	Sub-D6	1.53	0.8300	0.60	0.50	0.76	9.17	0 00:05:00
18	Sub-D7	1.28	0.8100	0.60	0.49	0.62	7.49	0 00:05:00
19	Sub-D8	1.37	0.8200	0.60	0.49	0.67	8.09	0 00:05:00
20	Sub-D9	1.37	0.8200	0.60	0.49	0.67	8.09	0 00:05:00

Node Summary

SN	Element ID	Element Type	Invert Elevation	Ground/Rim (Max) Elevation	Initial Water Elevation	Surcharge Elevation	Ponded Area	Peak Inflow	Max HGL Elevation Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
			(ft)	(ft)	(ft)	(ft)	(ft²)	(cfs)	(ft)	(ft)	(ft)	(days hh:mm)	(ac-in)	(min)
1	D1	Junction	728.76	732.28	728.76	732.28	0.00	1.72	729.34	0.00	2.94	0 00:00	0.00	0.00
2	D10	Junction	722.13	729.63	722.13	729.63	0.00	50.40	725.09	0.00	4.54	0 00:00	0.00	0.00
3	D11	Junction	722.03	731.84	722.03	731.84	0.00	50.62	724.71	0.00	7.13	0 00:00	0.00	0.00
4	D12	Junction	721.95	733.07	721.95	733.07	0.00	51.60	724.67	0.00	8.40	0 00:00	0.00	0.00
5	D14	Junction	730.19	732.41	730.19	732.41	0.00	2.01	730.96	0.00	1.44	0 00:00	0.00	0.00
6	D15	Junction	729.88	733.07	729.88	733.07	0.00	3.32	730.94	0.00	2.13	0 00:00	0.00	0.00
7	D17	Junction	725.80	733.70	725.80	733.70	0.00	6.20	726.81	0.00	6.88	0 00:00	0.00	0.00
8	D18	Junction	730.08	732.67	730.08	732.67	0.00	2.74	731.06	0.00	1.62	0 00:00	0.00	0.00
9	D19	Junction	726.49	735.41	726.49	735.41	0.00	5.57	727.51	0.00	7.91	0 00:00	0.00	0.00
10	D2	Junction	728.27	733.04	728.27	733.04	0.00	4.00	729.12	0.00	3.92	0 00:00	0.00	0.00
11	D20	Junction	728.76	733.05	728.76	733.05	0.00	3.25	729.24	0.00	3.81	0 00:00	0.00	0.00
12	D21	Junction	726.79	730.50	726.79	730.50	0.00	5.24	727.60	0.00	2.90	0 00:00	0.00	0.00
13	D23	Junction	728.63	732.03	728.63	732.03	0.00	1.90	729.11	0.00	2.92	0 00:00	0.00	0.00
14	D24	Junction	727.76	733.06	727.76	733.06	0.00	1.87	728.24	0.00	4.82	0 00:00	0.00	0.00
15	D25	Junction	726.79	731.06	726.79	731.06	0.00	3.07	727.60	0.00	3.46	0 00:00	0.00	0.00
16	D3	Junction	727.33	733.02	727.33	733.02	0.00	5.62	728.27	0.00	4.75	0 00:00	0.00	0.00
17	D4	Junction	725.59	732.49	725.59	732.49	0.00	7.07	726.67	0.00	5.82	0 00:00	0.00	0.00
18	D5	Junction	724.21	729.65	724.21	729.65	0.00	19.58	725.83	0.00	3.82	0 00:00	0.00	0.00
19	D6	Junction	723.51	729.65	723.51	729.65	0.00	27.78	725.80	0.00	3.85	0 00:00	0.00	0.00
20	D7	Junction	723.21	729.65	723.21	729.65	0.00	33.94	729.65	0.00	0.00	0 00:05	0.08	2.00
21	D8	Junction	722.81	729.66	722.81	729.66	0.00	38.41	725.81	0.00	3.84	0 00:00	0.00	0.00
22	D9	Junction	722.49	729.66	722.49	729.66	0.00	44.62	725.33	0.00	4.33	0 00:00	0.00	0.00
23	Out-1D12 TO D13	Outfall	721.75					51.46	724.46					
24	Out-1D15 TO D16	Outfall	729.21					3.26	729.92					
25	Out-1D21 TO D22	Outfall	726.35					5.21	727.16					
26	Out-1D24 TO D25	Outfall	726.35					3.06	727.16					

Link Summary

SN Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Reported Surcharged Condition (min)
1 D1 TO D2	Pipe	D1	D2	67.08	728.76	728.37	0.5900	12.000	0.0130	1.69	2.74	0.61	5.28	0.56	0.57	0.00 Calculated
2 D10 TO D11	Pipe	D10	D11	95.06	722.13	722.03	0.1000	48.000	0.0130	50.34	64.24	0.78	5.71	2.67	0.67	0.00 Calculated
3 D11 TO D12	Pipe	D11	D12	78.34	722.03	721.95	0.1000	48.000	0.0130	50.60	64.24	0.79	5.70	2.67	0.67	0.00 Calculated
4 D12 TO D13	Pipe	D12	Out-1D12 TO D13	204.08	721.95	721.75	0.1000	48.000	0.0130	51.46	64.24	0.80	5.79	2.70	0.67	0.00 Calculated
5 D14 TO D15	Pipe	D18	D15	56.88	730.08	729.98	0.1900	15.000	0.0130	2.71	2.89	0.94	2.73	0.96	0.77	0.00 Calculated
6 D14 TO D15 (1)	Pipe	D14	D18	63.16	730.19	730.08	0.1700	15.000	0.0130	1.96	2.89	0.68	3.91	0.75	0.60	0.00 Calculated
7 D15 TO D16	Pipe	D15	Out-1D15 TO D16	148.43	729.88	729.21	0.4500	18.000	0.0130	3.26	7.05	0.46	4.01	0.71	0.48	0.00 Calculated
8 D2 TO D3	Pipe	D2	D3	141.44	728.27	727.43	0.5900	15.000	0.0130	3.92	4.97	0.79	4.61	0.83	0.67	0.00 Calculated
9 D20 TO D21	Pipe	D20	D21	64.98	728.76	727.03	2.6600	15.000	0.0130	3.22	10.54	0.31	8.97	0.47	0.38	0.00 Calculated
10 D21 TO D22	Pipe	D21	Out-1D21 TO D22	57.70	726.79	726.35	0.7600	18.000	0.0130	5.21	9.16	0.57	5.38	0.81	0.54	0.00 Calculated
11 D23 TO D24	Pipe	D23	D24	66.70	728.63	727.76	1.3000	12.000	0.0130	1.87	4.07	0.46	6.72	0.47	0.48	0.00 Calculated
12 D23 TO D24 (1)	Pipe	D24	D25	65.45	727.76	726.89	1.3400	12.000	0.0130	1.85	4.12	0.45	5.15	0.47	0.47	0.00 Calculated
13 D24 TO D25	Pipe	D25	Out-1D24 TO D25	57.68	726.79	726.35	0.7500	12.000	0.0130	3.06	3.09	0.99	4.57	0.81	0.81	0.00 Calculated
14 D3 TO D4	Pipe	D3	D19	124.20	727.33	726.59	0.5900	18.000	0.0130	5.57	8.09	0.69	5.01	0.91	0.61	0.00 Calculated
15 D3 TO D4 (1)	Pipe	D17	D4	19.04	725.80	725.69	0.5900	18.000	0.0130	6.20	8.09	0.77	5.05	0.98	0.66	0.00 Calculated
16 D3 TO D4 (2)	Pipe	D19	D17	99.35	726.49	725.90	0.5900	18.000	0.0130	5.55	8.09	0.69	4.99	0.91	0.61	0.00 Calculated
17 D4 TO D5	Pipe	D4	D5	127.95	725.59	724.31	1.0000	24.000	0.0130	7.06	22.62	0.31	6.42	0.77	0.38	0.00 Calculated
18 D5 TO D6	Pipe	D5	D6	149.77	724.21	723.61	0.4000	30.000	0.0130	19.24	25.94	0.74	5.83	1.60	0.64	0.00 Calculated
19 D6 TO D7	Pipe	D6	D7	150.35	723.51	723.21	0.2000	36.000	0.0130	27.42	29.83	0.92	4.89	2.26	0.75	0.00 Calculated
20 D7 TO D8	Pipe	D7	D8	150.09	723.21	722.91	0.2000	36.000	0.0130	32.27	29.83	1.08	5.08	2.84	0.95	0.00 > CAPACITY
21 D8 TO D9	Pipe	D8	D9	150.00	722.81	722.59	0.1500	42.000	0.0130	38.25	44.99	0.85	5.38	2.48	0.71	0.00 Calculated
22 D9 TO D10	Pipe	D9	D10	150.01	722.49	722.26	0.1500	42.000	0.0130	44.40	44.99	0.99	5.50	2.82	0.81	0.00 Calculated

Junction Input

SN	Element ID	Invert Elevation	Ground/Rim (Max) Elevation	Ground/Rim (Max) Offset	Initial Water Elevation	Initial Water Depth	Surcharge Elevation	Surcharge Depth	Ponded Area	Minimum Pipe Cover
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft²)	(in)
1	D1	728.76	732.28	3.51	728.76	0.00	732.28	0.00	0.00	30.17
2	D10	722.13	729.63	7.50	722.13	0.00	729.63	0.00	0.00	42.03
3	D11	722.03	731.84	9.81	722.03	0.00	731.84	0.00	0.00	69.68
4	D12	721.95	733.07	11.12	721.95	0.00	733.07	0.00	0.00	85.39
5	D14	730.19	732.41	2.21	730.19	0.00	732.41	0.00	0.00	11.57
6	D15	729.88	733.07	3.19	729.88	0.00	733.07	0.00	0.00	20.33
7	D17	725.80	733.70	7.90	725.80	0.00	733.70	0.00	0.00	75.54
8	D18	730.08	732.67	2.59	730.08	0.00	732.67	0.00	0.00	16.07
9	D19	726.49	735.41	8.92	726.49	0.00	735.41	0.00	0.00	87.88
10	D2	728.27	733.04	4.77	728.27	0.00	733.04	0.00	0.00	42.22
11	D20	728.76	733.05	4.29	728.76	0.00	733.05	0.00	0.00	36.48
12	D21	726.79	730.50	3.71	726.79	0.00	730.50	0.00	0.00	26.58
13	D23	728.63	732.03	3.40	728.63	0.00	732.03	0.00	0.00	28.82
14	D24	727.76	733.06	5.30	727.76	0.00	733.06	0.00	0.00	51.59
15	D25	726.79	731.06	4.28	726.79	0.00	731.06	0.00	0.00	38.11
16	D3	727.33	733.02	5.69	727.33	0.00	733.02	0.00	0.00	50.30
17	D4	725.59	732.49	6.90	725.59	0.00	732.49	0.00	0.00	58.81
18	D5	724.21	729.65	5.44	724.21	0.00	729.65	0.00	0.00	35.32
19	D6	723.51	729.65	6.14	723.51	0.00	729.65	0.00	0.00	37.68
20	D7	723.21	729.65	6.44	723.21	0.00	729.65	0.00	0.00	41.33
21	D8	722.81	729.66	6.85	722.81	0.00	729.66	0.00	0.00	40.15
22	D9	722.49	729.66	7.17	722.49	0.00	729.66	0.00	0.00	42.85

Junction Results

SN	Element ID	Peak Inflow	Peak Lateral Inflow	Max HGL Elevation Attained	Max HGL Depth Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Average HGL Elevation Attained	Average HGL Depth Attained	Time of Max HGL Occurrence	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
		(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(days hh:mm)	(days hh:mm)	(ac-in)	(min)
1	D1	1.72	1.72	729.34	0.58	0.00	2.94	728.77	0.01	0 00:05	0 00:00	0.00	0.00
2	D10	50.40	8.15	725.09	2.96	0.00	4.54	722.28	0.15	0 00:06	0 00:00	0.00	0.00
3	D11	50.62	0.39	724.71	2.68	0.00	7.13	722.05	0.02	0 00:06	0 00:00	0.00	0.00
4	D12	51.60	1.51	724.67	2.72	0.00	8.40	721.97	0.02	0 00:06	0 00:00	0.00	0.00
5	D14	2.01	2.01	730.96	0.77	0.00	1.44	730.20	0.01	0 00:05	0 00:00	0.00	0.00
6	D15	3.32	0.67	730.94	1.06	0.00	2.13	729.98	0.10	0 00:05	0 00:00	0.00	0.00
7	D17	6.20	0.81	726.81	1.01	0.00	6.88	725.91	0.11	0 00:06	0 00:00	0.00	0.00
8	D18	2.74	0.81	731.06	0.98	0.00	1.62	730.09	0.01	0 00:05	0 00:00	0.00	0.00
9	D19	5.57	0.00	727.51	1.02	0.00	7.91	726.60	0.11	0 00:05	0 00:00	0.00	0.00
10	D2	4.00	2.36	729.12	0.85	0.00	3.92	728.37	0.10	0 00:05	0 00:00	0.00	0.00
11	D20	3.25	3.25	729.24	0.48	0.00	3.81	728.76	0.00	0 00:05	0 00:00	0.00	0.00
12	D21	5.24	2.04	727.60	0.81	0.00	2.90	727.03	0.24	0 00:05	0 00:00	0.00	0.00
13	D23	1.90	1.90	729.11	0.48	0.00	2.92	728.63	0.00	0 00:05	0 00:00	0.00	0.00
14	D24	1.87	0.00	728.24	0.48	0.00	4.82	727.76	0.00	0 00:05	0 00:00	0.00	0.00
15	D25	3.07	1.29	727.60	0.81	0.00	3.46	726.89	0.10	0 00:05	0 00:00	0.00	0.00
16	D3	5.62	1.83	728.27	0.94	0.00	4.75	727.43	0.10	0 00:05	0 00:00	0.00	0.00
17	D4	7.07	1.06	726.67	1.08	0.00	5.82	725.69	0.10	0 00:06	0 00:00	0.00	0.00
18	D5	19.58	13.58	725.83	1.62	0.00	3.82	724.32	0.11	0 00:05	0 00:00	0.00	0.00
19	D6	27.78	9.17	725.80	2.29	0.00	3.85	723.62	0.11	0 00:05	0 00:00	0.00	0.00
20	D7	33.94	7.49	729.65	6.44	0.00	0.00	723.23	0.02	0 00:04	0 00:05	0.08	2.00
21	D8	38.41	8.09	725.81	3.00	0.00	3.84	722.92	0.11	0 00:06	0 00:00	0.00	0.00
22	D9	44.62	8.09	725.33	2.84	0.00	4.33	722.60	0.11	0 00:06	0 00:00	0.00	0.00

Pipe Input

SN	Element ID	Length	Inlet Invert Elevation	Inlet Invert Offset	Outlet Invert Elevation	Outlet Invert Offset	Total Drop	Average Slope	Pipe Shape	Pipe Diameter or Height	Pipe Width	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow	Flap Gate
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(%)		(in)	(in)						(cfs)
1	D1 TO D2	67.08	728.76	0.00	728.37	0.10	0.40	0.5900	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No
2	D10 TO D11	95.06	722.13	0.00	722.03	0.00	0.10	0.1000	CIRCULAR	48.000	48.000	0.0130	0.5000	0.5000	0.0000	0.00	No
3	D11 TO D12	78.34	722.03	0.00	721.95	0.00	0.08	0.1000	CIRCULAR	48.000	48.000	0.0130	0.5000	0.5000	0.0000	0.00	No
4	D12 TO D13	204.08	721.95	0.00	721.75	0.00	0.20	0.1000	CIRCULAR	48.000	48.000	0.0130	0.5000	0.5000	0.0000	0.00	No
5	D14 TO D15	56.88	730.08	0.00	729.98	0.10	0.11	0.1900	CIRCULAR	15.000	15.000	0.0130	0.5000	0.5000	0.0000	0.00	No
6	D14 TO D15 (1)	63.16	730.19	0.00	730.08	0.00	0.11	0.1700	CIRCULAR	15.000	15.000	0.0130	0.5000	0.5000	0.0000	0.00	No
7	D15 TO D16	148.43	729.88	0.00	729.21	0.00	0.67	0.4500	CIRCULAR	18.000	18.000	0.0130	0.5000	0.5000	0.0000	0.00	No
8	D2 TO D3	141.44	728.27	0.00	727.43	0.10	0.84	0.5900	CIRCULAR	15.000	15.000	0.0130	0.5000	0.5000	0.0000	0.00	No
9	D20 TO D21	64.98	728.76	0.00	727.03	0.25	1.73	2.6600	CIRCULAR	15.000	15.000	0.0130	0.5000	0.5000	0.0000	0.00	No
10	D21 TO D22	57.70	726.79	0.00	726.35	0.00	0.44	0.7600	CIRCULAR	18.000	18.000	0.0130	0.5000	0.5000	0.0000	0.00	No
11	D23 TO D24	66.70	728.63	0.00	727.76	0.00	0.87	1.3000	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No
12	D23 TO D24 (1)	65.45	727.76	0.00	726.89	0.10	0.88	1.3400	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No
13	D24 TO D25	57.68	726.79	0.00	726.35	0.00	0.44	0.7500	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No
14	D3 TO D4	124.20	727.33	0.00	726.59	0.10	0.74	0.5900	CIRCULAR	18.000	18.000	0.0130	0.5000	0.5000	0.0000	0.00	No
15	D3 TO D4 (1)	19.04	725.80	0.00	725.69	0.10	0.11	0.5900	CIRCULAR	18.000	18.000	0.0130	0.5000	0.5000	0.0000	0.00	No
16	D3 TO D4 (2)	99.35	726.49	0.00	725.90	0.10	0.59	0.5900	CIRCULAR	18.000	18.000	0.0130	0.5000	0.5000	0.0000	0.00	No
17	D4 TO D5	127.95	725.59	0.00	724.31	0.10	1.28	1.0000	CIRCULAR	24.000	24.000	0.0130	0.5000	0.5000	0.0000	0.00	No
18	D5 TO D6	149.77	724.21	0.00	723.61	0.10	0.60	0.4000	CIRCULAR	30.000	30.000	0.0130	0.5000	0.5000	0.0000	0.00	No
19	D6 TO D7	150.35	723.51	0.00	723.21	0.00	0.30	0.2000	CIRCULAR	36.000	36.000	0.0130	0.5000	0.5000	0.0000	0.00	No
20	D7 TO D8	150.09	723.21	0.00	722.91	0.10	0.30	0.2000	CIRCULAR	36.000	36.000	0.0130	0.5000	0.5000	0.0000	0.00	No
21	D8 TO D9	150.00	722.81	0.00	722.59	0.10	0.23	0.1500	CIRCULAR	42.000	42.000	0.0130	0.5000	0.5000	0.0000	0.00	No
22	D9 TO D10	150.01	722.49	0.00	722.26	0.13	0.23	0.1500	CIRCULAR	42.000	42.000	0.0130	0.5000	0.5000	0.0000	0.00	No

Pipe Results

SN Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Number	Reported Condition
	(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)		
1 D1 TO D2	1.69	0 00:05	2.74	0.61	5.28	0.21	0.56	0.57	0.00		Calculated
2 D10 TO D11	50.34	0 00:06	64.24	0.78	5.71	0.28	2.67	0.67	0.00		Calculated
3 D11 TO D12	50.60	0 00:06	64.24	0.79	5.70	0.23	2.67	0.67	0.00		Calculated
4 D12 TO D13	51.46	0 00:07	64.24	0.80	5.79	0.59	2.70	0.67	0.00		Calculated
5 D14 TO D15	2.71	0 00:05	2.89	0.94	2.73	0.35	0.96	0.77	0.00		Calculated
6 D14 TO D15 (1)	1.96	0 00:05	2.89	0.68	3.91	0.27	0.75	0.60	0.00		Calculated
7 D15 TO D16	3.26	0 00:06	7.05	0.46	4.01	0.62	0.71	0.48	0.00		Calculated
8 D2 TO D3	3.92	0 00:05	4.97	0.79	4.61	0.51	0.83	0.67	0.00		Calculated
9 D20 TO D21	3.22	0 00:05	10.54	0.31	8.97	0.12	0.47	0.38	0.00		Calculated
10 D21 TO D22	5.21	0 00:05	9.16	0.57	5.38	0.18	0.81	0.54	0.00		Calculated
11 D23 TO D24	1.87	0 00:05	4.07	0.46	6.72	0.17	0.47	0.48	0.00		Calculated
12 D23 TO D24 (1)	1.85	0 00:05	4.12	0.45	5.15	0.21	0.47	0.47	0.00		Calculated
13 D24 TO D25	3.06	0 00:05	3.09	0.99	4.57	0.21	0.81	0.81	0.00		Calculated
14 D3 TO D4	5.57	0 00:05	8.09	0.69	5.01	0.41	0.91	0.61	0.00		Calculated
15 D3 TO D4 (1)	6.20	0 00:06	8.09	0.77	5.05	0.06	0.98	0.66	0.00		Calculated
16 D3 TO D4 (2)	5.55	0 00:06	8.09	0.69	4.99	0.33	0.91	0.61	0.00		Calculated
17 D4 TO D5	7.06	0 00:06	22.62	0.31	6.42	0.33	0.77	0.38	0.00		Calculated
18 D5 TO D6	19.24	0 00:05	25.94	0.74	5.83	0.43	1.60	0.64	0.00		Calculated
19 D6 TO D7	27.42	0 00:05	29.83	0.92	4.89	0.51	2.26	0.75	0.00		Calculated
20 D7 TO D8	32.27	0 00:07	29.83	1.08	5.08	0.49	2.84	0.95	0.00		> CAPACITY
21 D8 TO D9	38.25	0 00:06	44.99	0.85	5.38	0.46	2.48	0.71	0.00		Calculated
22 D9 TO D10	44.40	0 00:06	44.99	0.99	5.50	0.45	2.82	0.81	0.00		Calculated

Appendix H: Submerged Sewer Analysis

Project Description

File Name Franklin_Submerged Analysis.SPF

Project Options

Flow Units CFS
 Elevation Type Elevation
 Hydrology Method Rational
 Time of Concentration (TOC) Method User-Defined
 Link Routing Method Hydrodynamic
 Enable Overflow Ponding at Nodes YES
 Skip Steady State Analysis Time Periods NO

Analysis Options

Start Analysis On Sep 09, 2021 00:00:00
 End Analysis On Sep 10, 2021 00:00:00
 Start Reporting On Sep 09, 2021 00:00:00
 Antecedent Dry Days 0 days
 Runoff (Dry Weather) Time Step 0 01:00:00 days hh:mm:ss
 Runoff (Wet Weather) Time Step 0 00:05:00 days hh:mm:ss
 Reporting Time Step 0 00:05:00 days hh:mm:ss
 Routing Time Step 30 seconds

Number of Elements

	Qty
Rain Gages	0
Subbasins.....	14
Nodes.....	18
<i>Junctions</i>	14
<i>Outfalls</i>	1
<i>Flow Diversions</i>	0
<i>Inlets</i>	0
<i>Storage Nodes</i>	3
Links.....	27
<i>Channels</i>	11
<i>Pipes</i>	14
<i>Pumps</i>	0
<i>Orifices</i>	2
<i>Weirs</i>	0
<i>Outlets</i>	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period..... 100 year(s)

Subbasin Summary

SN Subbasin ID	Area	Weighted Runoff Coefficient	Total Rainfall	Total Runoff	Total Runoff Volume	Peak Runoff	Time of Concentration
	(ac)		(in)	(in)	(ac-in)	(cfs)	(days hh:mm:ss)
1 Sub-D1	0.44	0.5400	0.83	0.45	0.20	2.38	0 00:05:00
2 Sub-D10	1.43	0.7900	0.83	0.66	0.94	11.31	0 00:05:00
3 Sub-D11	0.13	0.4300	0.83	0.36	0.05	0.55	0 00:05:00
4 Sub-D12	0.27	0.7800	0.83	0.65	0.17	2.09	0 00:05:00
5 Sub-D17	0.16	0.7000	0.83	0.58	0.09	1.12	0 00:05:00
6 Sub-D2	0.56	0.5800	0.83	0.48	0.27	3.27	0 00:05:00
7 Sub-D3	0.49	0.5200	0.83	0.43	0.21	2.54	0 00:05:00
8 Sub-D4	0.21	0.7100	0.83	0.59	0.12	1.47	0 00:05:00
9 Sub-D5	2.33	0.8100	0.83	0.68	1.57	18.84	0 00:05:00
10 Sub-D6	1.53	0.8300	0.83	0.69	1.06	12.72	0 00:05:00
11 Sub-D7	1.28	0.8100	0.83	0.68	0.87	10.38	0 00:05:00
12 Sub-D8	1.37	0.8200	0.83	0.68	0.93	11.22	0 00:05:00
13 Sub-D9	1.37	0.8200	0.83	0.68	0.93	11.22	0 00:05:00
14 Sub-FromEDDB	34.24	0.7500	0.83	0.63	21.40	256.80	0 00:05:00

Node Summary

SN Element ID	Element Type	Invert Elevation	Ground/Rim (Max) Elevation	Initial Water Elevation	Surcharge Elevation	Ponded Area	Peak Inflow	Max HGL Elevation Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
		(ft)	(ft)	(ft)	(ft)	(ft²)	(cfs)	(ft)	(ft)	(ft)	(days hh:mm)	(ac-in)	(min)
1 D1	Junction	729.60	733.37	729.60	733.37	0.00	2.38	732.60	0.00	1.77	0 00:00	0.00	0.00
2 D10	Junction	722.13	729.63	725.85	729.63	0.00	63.36	728.43	0.00	2.22	0 00:00	0.00	0.00
3 D11	Junction	722.03	731.84	725.85	731.84	0.00	67.92	727.85	0.00	3.99	0 00:00	0.00	0.00
4 D12	Junction	721.95	733.07	725.85	733.07	0.00	69.84	727.21	0.00	5.86	0 00:00	0.00	0.00
5 D17	Junction	727.48	734.34	727.48	734.34	0.00	6.46	730.87	0.00	3.47	0 00:00	0.00	0.00
6 D2	Junction	729.16	733.36	729.16	733.36	0.00	4.86	732.39	0.00	1.97	0 00:00	0.00	0.00
7 D3	Junction	727.90	733.37	727.90	733.37	0.00	5.96	731.21	0.00	3.15	0 00:00	0.00	0.00
8 D4	Junction	725.59	732.49	725.85	732.49	0.00	7.46	730.36	0.00	2.13	0 00:00	0.00	0.00
9 D5	Junction	724.21	729.65	725.85	729.65	0.00	20.10	730.34	0.00	0.31	0 00:00	0.00	0.00
10 D6	Junction	723.51	729.65	725.85	729.65	0.00	27.59	730.22	0.00	0.43	0 00:00	0.00	0.00
11 D7	Junction	723.21	729.65	725.85	729.65	0.00	35.08	730.08	0.00	0.57	0 00:00	0.00	0.00
12 D8	Junction	722.81	729.66	725.85	729.66	0.00	44.17	729.67	0.00	0.98	0 00:00	0.00	0.00
13 D9	Junction	722.49	729.66	725.85	729.66	0.00	51.89	729.19	0.00	1.46	0 00:00	0.00	0.00
14 Jun-01	Junction	825.85	830.35	825.85	0.00	0.00	0.00	825.85	0.00	14.40	0 00:00	0.00	0.00
15 Out-01	Outfall	0.00					0.00	0.00					
16 East Lot	Storage Node	729.65	831.00	729.65		0.00	16.25	730.09				0.00	0.00
17 Out-1D12 TO D13	Storage Node	715.85	730.35	725.85		0.00	314.20	726.45				0.00	0.00
18 Stor-South Lot	Storage Node	733.37	735.36	733.37		0.00	0.00	733.37				0.00	0.00

Link Summary

SN Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/ Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Flow Depth/ Total Depth Ratio	Total Time Reported (min)	Surcharged Condition
1 D1 TO D2	Pipe	D1	D2	67.08	729.60	729.26	0.5000	12.000	0.0130	1.85	2.52	0.73	2.67	1.00	1.00	5.00	SURCHARGED
2 D10 TO D11	Pipe	D10	D11	95.06	722.13	722.03	0.1000	48.000	0.0130	63.16	64.24	0.98	5.03	4.00	1.00	1438.00	SURCHARGED
3 D11 TO D12	Pipe	D11	D12	78.34	722.03	721.95	0.1000	48.000	0.0130	68.22	64.24	1.06	5.43	4.00	1.00	1439.00	SURCHARGED
4 D12 TO D13	Pipe	D12	Out-1D12 TO D13	204.08	721.95	721.75	0.1000	48.000	0.0130	69.85	64.24	1.09	5.56	4.00	1.00	1439.00	SURCHARGED
5 D2 TO D3	Pipe	D2		283.92	729.16	728.02	0.4000	15.000	0.0130	3.91	4.09	0.96	3.43	1.25	1.00	5.00	SURCHARGED
6 D3 TO D4	Pipe	D3	D17	62.95	727.90	727.58	0.5000	18.000	0.0130	6.23	7.43	0.84	3.53	1.50	1.00	5.00	SURCHARGED
7 D3 TO D4 (1)	Pipe	D17	D4	81.14	727.48	727.08	0.5000	18.000	0.0130	6.78	7.43	0.91	4.50	1.50	1.00	6.00	SURCHARGED
8 D4 TO D5	Pipe	D4	D5	127.95	725.59	724.31	1.0000	24.000	0.0130	9.29	22.62	0.41	2.96	2.00	1.00	8.00	SURCHARGED
9 D5 TO D6	Pipe	D5	D6	149.77	724.21	723.61	0.4000	30.000	0.0130	15.95	25.94	0.61	3.25	2.50	1.00	10.00	SURCHARGED
10 D6 TO D7	Pipe	D6	D7	150.35	723.51	723.21	0.2000	36.000	0.0130	23.87	29.83	0.80	3.38	3.00	1.00	23.00	SURCHARGED
11 D7 TO D8	Pipe	D7	D8	150.09	723.21	722.91	0.2000	36.000	0.0130	31.06	29.83	1.04	4.39	3.00	1.00	1437.00	SURCHARGED
12 D8 TO D9	Pipe	D8	D9	150.00	722.81	722.59	0.1500	42.000	0.0130	40.77	44.99	0.91	4.24	3.50	1.00	1435.00	SURCHARGED
13 D9 TO D10	Pipe	D9	D10	150.01	722.49	722.26	0.1500	42.000	0.0130	49.75	44.99	1.11	5.17	3.50	1.00	1439.00	SURCHARGED
14 Link-01	Pipe	Jun-01	Out-01	55.76	825.85	824.00	3.3200	24.000	0.0130	0.00	41.21	0.00	0.00	0.00	0.00	0.00	Calculated
15 Link-02	Channel	Stor-South Lot	D1	1.00	733.47	733.37	10.0000	12.000	0.0130	0.00	110.34	0.00	0.00	0.00	0.00	0.00	
16 Link-03	Channel	Stor-South Lot	D2	1.00	733.47	733.37	10.0000	12.000	0.0130	0.00	110.34	0.00	0.00	0.00	0.00	0.00	
17 Link-04	Channel	Stor-South Lot	D3	1.00	733.47	733.37	10.0000	12.000	0.0130	0.00	110.34	0.00	0.00	0.00	0.00	0.00	
18 Link-05	Channel	East Lot	D4	1.00	729.75	729.65	10.0000	12.000	0.0130	6.47	110.34	0.06	3.59	0.52	0.52	0.00	
19 Link-06	Channel	East Lot	D5	1.00	729.75	729.65	10.0000	12.000	0.0130	6.42	110.34	0.06	3.79	0.51	0.51	0.00	
20 Link-07	Channel	East Lot	D6	1.00	729.75	729.65	10.0000	12.000	0.0130	3.73	110.34	0.03	3.57	0.45	0.45	0.00	
21 Link-08	Channel	East Lot	D7	1.00	729.75	729.65	10.0000	12.000	0.0130	3.37	110.34	0.03	4.27	0.38	0.38	0.00	
22 Link-09	Channel	East Lot	D8	1.00	729.75	729.65	10.0000	12.000	0.0130	4.38	110.34	0.04	4.75	0.23	0.23	0.00	
23 Link-10	Channel	East Lot	D9	1.00	729.75	729.65	10.0000	12.000	0.0320	0.99	7.06	0.14	3.49	0.28	0.28	0.00	
24 Link-11	Channel	East Lot	D10	1.00	729.75	729.65	10.0000	12.000	0.0130	4.38	110.34	0.04	4.75	0.23	0.23	0.00	
25 Link-12	Channel	East Lot	D11	1.00	729.75	729.65	10.0000	12.000	0.0130	4.38	110.34	0.04	4.75	0.23	0.23	0.00	
26 Orifice-01	Orifice	Out-1D12 TO D13	Jun-01		715.85	825.85		12.000		0.00							
27 Orifice-02	Orifice	Out-1D12 TO D13	Jun-01		715.85	825.85		36.000		0.00							

Junction Input

SN	Element ID	Invert Elevation	Ground/Rim (Max) Elevation	Ground/Rim (Max) Offset	Initial Water Elevation	Initial Water Depth	Surcharge Elevation	Surcharge Depth	Ponded Area	Minimum Pipe Cover
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft²)	(in)
1	D1	729.60	733.37	3.77	729.60	0.00	733.37	0.00	0.00	33.27
2	D10	722.13	729.63	7.50	725.85	3.72	729.63	0.00	0.00	42.03
3	D11	722.03	731.84	9.81	725.85	3.82	731.84	0.00	0.00	69.68
4	D12	721.95	733.07	11.12	725.85	3.90	733.07	0.00	0.00	85.39
5	D17	727.48	734.34	6.85	727.48	0.00	734.34	0.00	0.00	63.06
6	D2	729.16	733.36	4.20	729.16	0.00	733.36	0.00	0.00	35.45
7	D3	727.90	733.37	5.47	727.90	0.00	733.37	0.00	0.00	47.62
8	D4	725.59	732.49	6.90	725.85	0.26	732.49	0.00	0.00	46.94
9	D5	724.21	729.65	5.44	725.85	1.64	729.65	0.00	0.00	35.32
10	D6	723.51	729.65	6.14	725.85	2.34	729.65	0.00	0.00	37.68
11	D7	723.21	729.65	6.44	725.85	2.64	729.65	0.00	0.00	41.33
12	D8	722.81	729.66	6.85	725.85	3.04	729.66	0.00	0.00	40.15
13	D9	722.49	729.66	7.17	725.85	3.36	729.66	0.00	0.00	42.85
14	Jun-01	825.85	830.35	4.50	825.85	0.00	0.00	-830.35	0.00	0.00

Junction Results

SN	Element ID	Peak Inflow	Peak Lateral Inflow	Max HGL Elevation Attained	Max HGL Depth Attained	Max Surge Depth Attained	Min Freeboard Attained	Average HGL Elevation Attained	Average HGL Depth Attained	Time of Max HGL Occurrence	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
		(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(days hh:mm)	(days hh:mm)	(ac-in)	(min)
1	D1	2.38	2.38	732.60	3.00	0.00	1.77	729.61	0.01	0 00:06	0 00:00	0.00	0.00
2	D10	63.36	11.29	728.43	6.30	0.00	2.22	726.46	4.33	0 00:06	0 00:00	0.00	0.00
3	D11	67.92	0.54	727.85	5.82	0.00	3.99	726.46	4.43	0 00:06	0 00:00	0.00	0.00
4	D12	69.84	2.09	727.21	5.26	0.00	5.86	726.45	4.50	0 00:06	0 00:00	0.00	0.00
5	D17	6.46	1.12	730.87	3.39	0.00	3.47	727.51	0.03	0 00:06	0 00:00	0.00	0.00
6	D2	4.86	3.27	732.39	3.23	0.00	1.97	729.18	0.02	0 00:06	0 00:00	0.00	0.00
7	D3	5.96	2.53	731.21	3.31	0.00	3.15	727.92	0.02	0 00:06	0 00:00	0.00	0.00
8	D4	7.46	1.46	730.36	4.77	0.00	2.13	726.47	0.88	0 00:06	0 00:00	0.00	0.00
9	D5	20.10	18.80	730.34	6.13	0.00	0.31	726.47	2.26	0 00:05	0 00:00	0.00	0.00
10	D6	27.59	12.69	730.22	6.71	0.00	0.43	726.47	2.96	0 00:06	0 00:00	0.00	0.00
11	D7	35.08	10.37	730.08	6.87	0.00	0.57	726.47	3.26	0 00:06	0 00:00	0.00	0.00
12	D8	44.17	11.21	729.67	6.86	0.00	0.98	726.47	3.66	0 00:06	0 00:00	0.00	0.00
13	D9	51.89	11.20	729.19	6.70	0.00	1.46	726.46	3.97	0 00:06	0 00:00	0.00	0.00
14	Jun-01	0.00	0.00	825.85	0.00	0.00	14.40	825.85	0.00	0 00:00	0 00:00	0.00	0.00

Channel Input

SN	Element ID	Length	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Shape	Height (ft)	Width (ft)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow (cfs)	Flap Gate
1	Link-02	1.00	733.47	0.10	733.37	3.77	0.10	10.0000	Rectangular	1.000	4.000	0.0130	0.5000	0.5000	0.0000	0.00	No
2	Link-03	1.00	733.47	0.10	733.37	4.21	0.10	10.0000	Rectangular	1.000	4.000	0.0130	0.5000	0.5000	0.0000	0.00	No
3	Link-04	1.00	733.47	0.10	733.37	5.47	0.10	10.0000	Rectangular	1.000	4.000	0.0130	0.5000	0.5000	0.0000	0.00	No
4	Link-05	1.00	729.75	0.10	729.65	4.06	0.10	10.0000	Rectangular	1.000	4.000	0.0130	0.5000	0.5000	0.0000	0.00	No
5	Link-06	1.00	729.75	0.10	729.65	5.44	0.10	10.0000	Rectangular	1.000	4.000	0.0130	0.5000	0.5000	0.0000	0.00	No
6	Link-07	1.00	729.75	0.10	729.65	6.14	0.10	10.0000	Rectangular	1.000	4.000	0.0130	0.5000	0.5000	0.0000	0.00	No
7	Link-08	1.00	729.75	0.10	729.65	6.44	0.10	10.0000	Rectangular	1.000	4.000	0.0130	0.5000	0.5000	0.0000	0.00	No
8	Link-09	1.00	729.75	0.10	729.65	6.84	0.10	10.0000	Rectangular	1.000	4.000	0.0130	0.5000	0.5000	0.0000	0.00	No
9	Link-10	1.00	729.75	0.10	729.65	7.16	0.10	10.0000	Rectangular	1.000	1.000	0.0320	0.5000	0.5000	0.0000	0.00	No
10	Link-11	1.00	729.75	0.10	729.65	7.52	0.10	10.0000	Rectangular	1.000	4.000	0.0130	0.5000	0.5000	0.0000	0.00	No
11	Link-12	1.00	729.75	0.10	729.65	7.62	0.10	10.0000	Rectangular	1.000	4.000	0.0130	0.5000	0.5000	0.0000	0.00	No

Channel Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Number	Reported Condition
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)		
1	Link-02	0.00	0 00:00	110.34	0.00	0.00		0.00	0.00	0.00		
2	Link-03	0.00	0 00:00	110.34	0.00	0.00		0.00	0.00	0.00		
3	Link-04	0.00	0 00:00	110.34	0.00	0.00		0.00	0.00	0.00		
4	Link-05	6.47	0 00:06	110.34	0.06	3.59	0.00	0.52	0.52	0.00		
5	Link-06	6.42	0 00:05	110.34	0.06	3.79	0.00	0.51	0.51	0.00		
6	Link-07	3.73	0 00:06	110.34	0.03	3.57	0.00	0.45	0.45	0.00		
7	Link-08	3.37	0 00:07	110.34	0.03	4.27	0.00	0.38	0.38	0.00		
8	Link-09	4.38	0 00:06	110.34	0.04	4.75	0.00	0.23	0.23	0.00		
9	Link-10	0.99	0 00:06	7.06	0.14	3.49	0.00	0.28	0.28	0.00		
10	Link-11	4.38	0 00:06	110.34	0.04	4.75	0.00	0.23	0.23	0.00		
11	Link-12	4.38	0 00:06	110.34	0.04	4.75	0.00	0.23	0.23	0.00		

Pipe Input

SN Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow (cfs)	Flap Gate	No. of Barrels
1 D1 TO D2	67.08	729.60	0.00	729.26	0.10	0.34	0.5000	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
2 D10 TO D11	95.06	722.13	0.00	722.03	0.00	0.10	0.1000	CIRCULAR	48.000	48.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
3 D11 TO D12	78.34	722.03	0.00	721.95	0.00	0.08	0.1000	CIRCULAR	48.000	48.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
4 D12 TO D13	204.08	721.95	0.00	721.75	5.90	0.20	0.1000	CIRCULAR	48.000	48.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
5 D2 TO D3	283.92	729.16	0.00	728.02	0.13	1.14	0.4000	CIRCULAR	15.000	15.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
6 D3 TO D4	62.95	727.90	0.00	727.58	0.10	0.31	0.5000	CIRCULAR	18.000	18.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
7 D3 TO D4 (1)	81.14	727.48	0.00	727.08	1.49	0.41	0.5000	CIRCULAR	18.000	18.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
8 D4 TO D5	127.95	725.59	0.00	724.31	0.10	1.28	1.0000	CIRCULAR	24.000	24.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
9 D5 TO D6	149.77	724.21	0.00	723.61	0.10	0.60	0.4000	CIRCULAR	30.000	30.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
10 D6 TO D7	150.35	723.51	0.00	723.21	0.00	0.30	0.2000	CIRCULAR	36.000	36.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
11 D7 TO D8	150.09	723.21	0.00	722.91	0.10	0.30	0.2000	CIRCULAR	36.000	36.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
12 D8 TO D9	150.00	722.81	0.00	722.59	0.10	0.23	0.1500	CIRCULAR	42.000	42.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
13 D9 TO D10	150.01	722.49	0.00	722.26	0.13	0.23	0.1500	CIRCULAR	42.000	42.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
14 Link-01	55.76	825.85	0.00	824.00	824.00	1.85	3.3200	CIRCULAR	24.000	24.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1

Pipe Results

SN Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Number	Reported Condition
	(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)		
1 D1 TO D2	1.85	0 00:04	2.52	0.73	2.67	0.42	1.00	1.00	5.00		SURCHARGED
2 D10 TO D11	63.16	0 00:06	64.24	0.98	5.03	0.31	4.00	1.00	1438.00		SURCHARGED
3 D11 TO D12	68.22	0 00:06	64.24	1.06	5.43	0.24	4.00	1.00	1439.00		SURCHARGED
4 D12 TO D13	69.85	0 00:06	64.24	1.09	5.56	0.61	4.00	1.00	1439.00		SURCHARGED
5 D2 TO D3	3.91	0 00:04	4.09	0.96	3.43	1.38	1.25	1.00	5.00		SURCHARGED
6 D3 TO D4	6.23	0 00:09	7.43	0.84	3.53	0.30	1.50	1.00	5.00		SURCHARGED
7 D3 TO D4 (1)	6.78	0 00:09	7.43	0.91	4.50	0.30	1.50	1.00	6.00		SURCHARGED
8 D4 TO D5	9.29	0 00:09	22.62	0.41	2.96	0.72	2.00	1.00	8.00		SURCHARGED
9 D5 TO D6	15.95	0 00:09	25.94	0.61	3.25	0.77	2.50	1.00	10.00		SURCHARGED
10 D6 TO D7	23.87	0 00:04	29.83	0.80	3.38	0.74	3.00	1.00	23.00		SURCHARGED
11 D7 TO D8	31.06	0 00:05	29.83	1.04	4.39	0.57	3.00	1.00	1437.00		SURCHARGED
12 D8 TO D9	40.77	0 00:05	44.99	0.91	4.24	0.59	3.50	1.00	1435.00		SURCHARGED
13 D9 TO D10	49.75	0 00:05	44.99	1.11	5.17	0.48	3.50	1.00	1439.00		SURCHARGED
14 Link-01	0.00	0 00:00	41.21	0.00	0.00		0.00	0.00	0.00		Calculated

Storage Nodes

Storage Node : East Lot

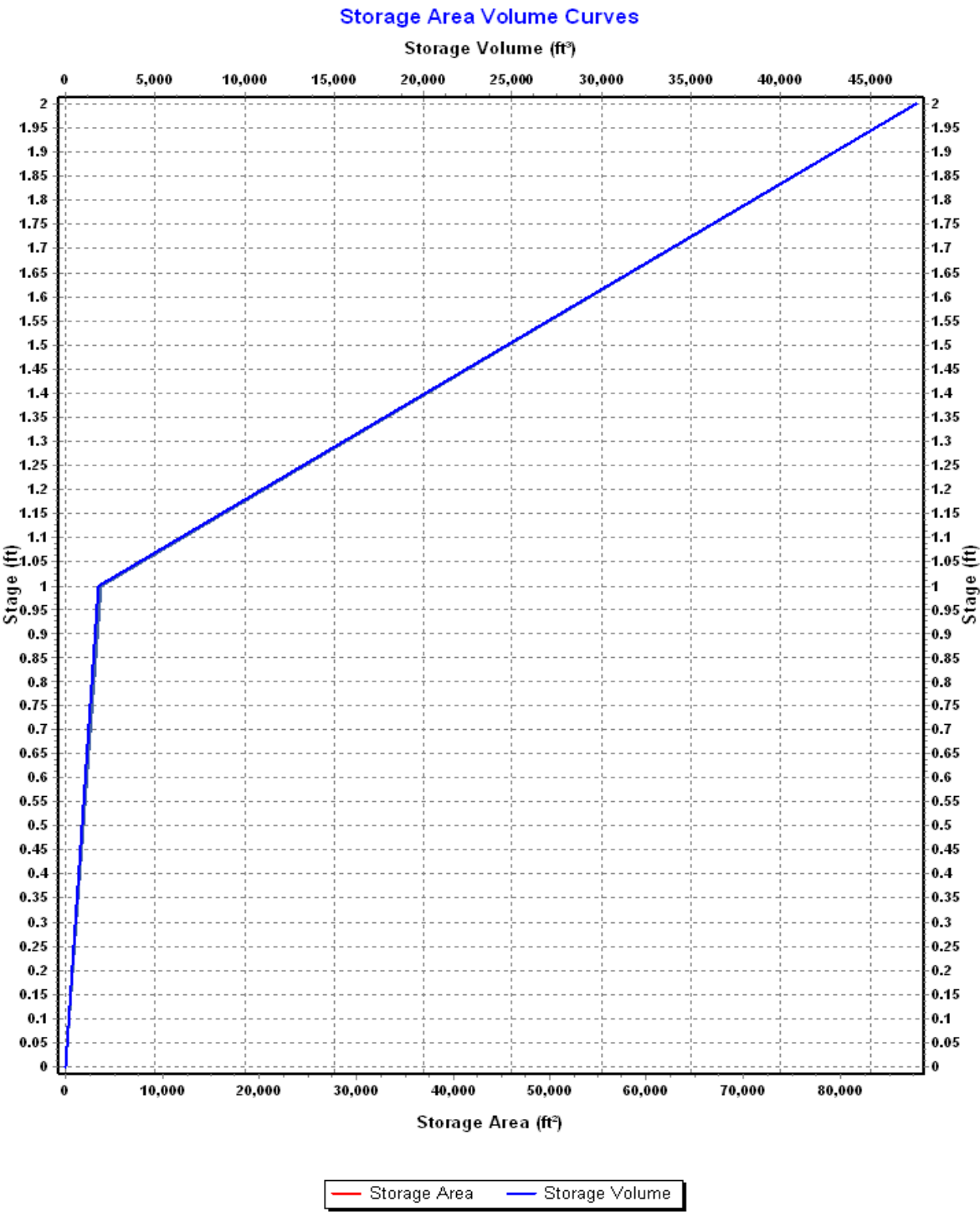
Input Data

Invert Elevation (ft)	729.65
Max (Rim) Elevation (ft)	831.00
Max (Rim) Offset (ft)	101.35
Initial Water Elevation (ft)	729.65
Initial Water Depth (ft)	0.00
Ponded Area (ft²)	0.00
Evaporation Loss	0.00

Storage Area Volume Curves

Storage Curve : East Lot

Stage	Storage Area	Storage Volume
(ft)	(ft²)	(ft³)
0	0	0.000
1	3661.8	1830.90
2	87792	47557.80



Storage Node : East Lot (continued)

Output Summary Results

Peak Inflow (cfs)	16.25
Peak Lateral Inflow (cfs)	0.00
Peak Outflow (cfs)	16.35
Peak Exfiltration Flow Rate (cfm)	0.00
Max HGL Elevation Attained (ft)	730.09
Max HGL Depth Attained (ft)	0.44
Average HGL Elevation Attained (ft)	729.75
Average HGL Depth Attained (ft)	0.1
Time of Max HGL Occurrence (days hh:mm)	0 00:06
Total Exfiltration Volume (1000-ft³)	0.000
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00

Storage Node : Out-1D12 TO D13

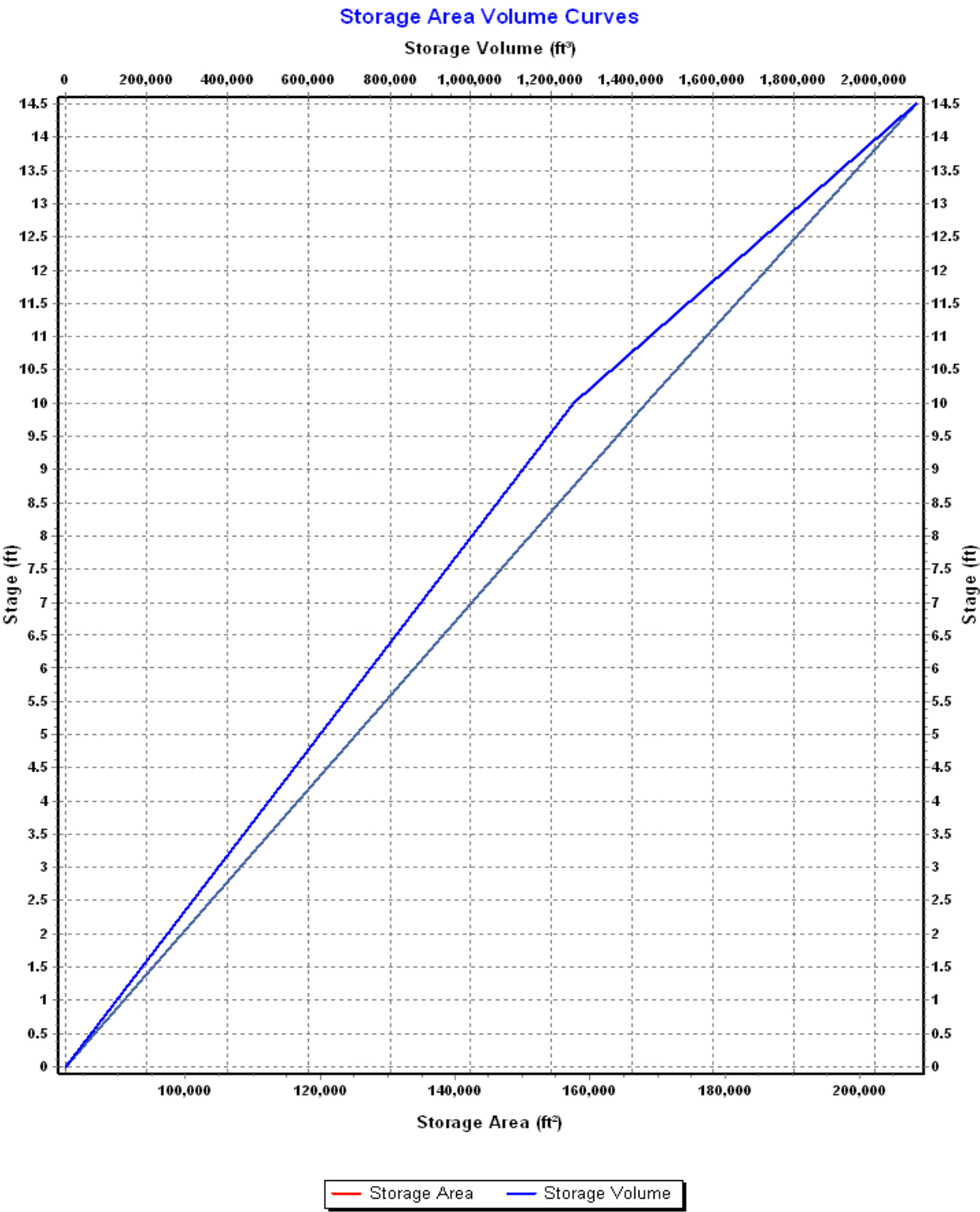
Input Data

Invert Elevation (ft)	715.85
Max (Rim) Elevation (ft)	730.35
Max (Rim) Offset (ft)	14.50
Initial Water Elevation (ft)	725.85
Initial Water Depth (ft)	10.00
Ponded Area (ft²)	0.00
Evaporation Loss	0.00

Storage Area Volume Curves

Storage Curve : Wet Pond

Stage	Storage Area	Storage Volume
(ft)	(ft²)	(ft³)
0	82400	0.000
10	168272	1253360.00
14.5	208217	2100460.25



Storage Node : Out-1D12 TO D13 (continued)**Outflow Orifices**

SN	Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1	Orifice-01	Side	CIRCULAR	No	12.00			725.85	0.61
2	Orifice-02	Side	Rectangular	No		36.00	30.00	727.25	0.63

Output Summary Results

Peak Inflow (cfs)	314.20
Peak Lateral Inflow (cfs)	256.37
Peak Outflow (cfs)	9.16
Peak Exfiltration Flow Rate (cfm)	0.00
Max HGL Elevation Attained (ft)	726.45
Max HGL Depth Attained (ft)	10.6
Average HGL Elevation Attained (ft)	726.45
Average HGL Depth Attained (ft)	10.6
Time of Max HGL Occurrence (days hh:mm)	0 00:12
Total Exfiltration Volume (1000-ft ³)	0.000
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00

Storage Node : Stor-South Lot

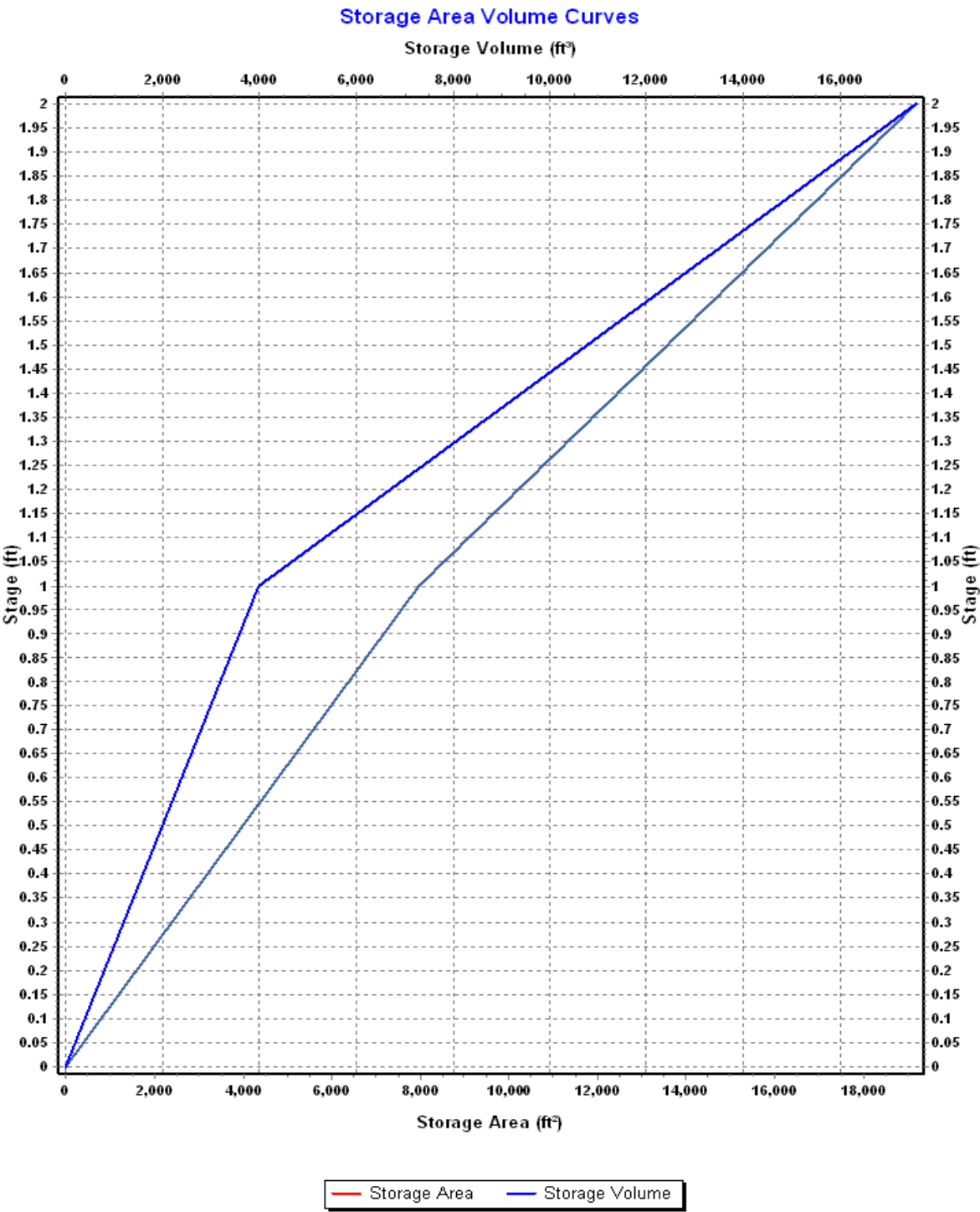
Input Data

Invert Elevation (ft)	733.37
Max (Rim) Elevation (ft)	735.36
Max (Rim) Offset (ft)	1.99
Initial Water Elevation (ft)	733.37
Initial Water Depth (ft)	0.00
Ponded Area (ft²)	0.00
Evaporation Loss	0.00

Storage Area Volume Curves

Storage Curve : South Lot

Stage (ft)	Storage Area (ft²)	Storage Volume (ft³)
0	0	0.000
1	7972	3986.00
2	19178	17561.00



Storage Node : Stor-South Lot (continued)

Output Summary Results

Peak Inflow (cfs)	0.00
Peak Lateral Inflow (cfs)	0.00
Peak Outflow (cfs)	0.00
Peak Exfiltration Flow Rate (cfm)	0.00
Max HGL Elevation Attained (ft)	733.37
Max HGL Depth Attained (ft)	0
Average HGL Elevation Attained (ft)	733.37
Average HGL Depth Attained (ft)	0
Time of Max HGL Occurrence (days hh:mm)	0 00:00
Total Exfiltration Volume (1000-ft³)	0.000
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00

Appendix I: Stormwater Quality Calculations

Water Quality Summary*

Total Onsite Developed Area = 35.86 AC

Volume from 1.25-inch, 24-HR storm (See Appendix E) = 48,177 CF

20% of that value = 9,635 CF

0.5-inches of direct runoff: $V = (35.86 \text{ AC}) * (43,560 \text{ SF}) * (0.5\text{-in}) * (1/12\text{-inch}) = 65,086 \text{ CF}$

20% of that value = 13,017 CF (Greater of two)

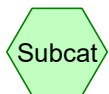
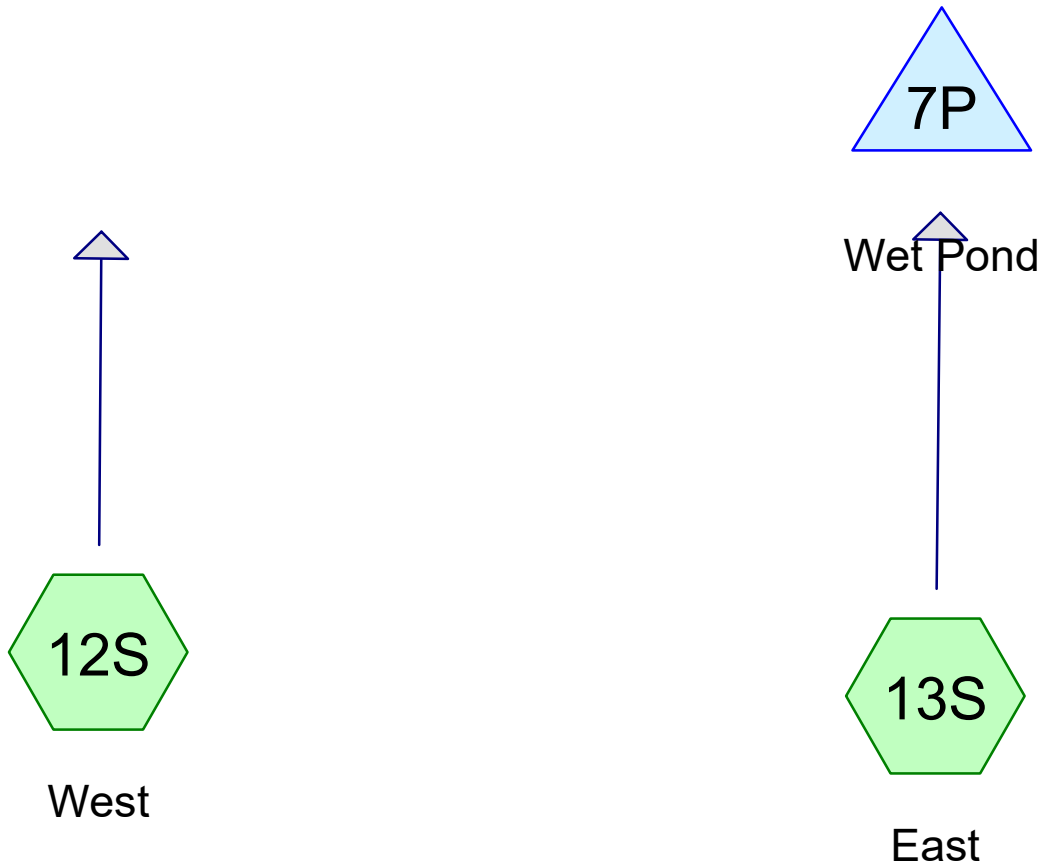
Water Quality Design Volume = 13,017 CF

Time of Peak Runoff = 12 Hours

24-HR after Peak Runoff = Hour 36 of simulation

Volume Stored at Hour 37 (See Appendix F) = 49,702 CF

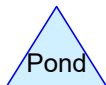
The proposed site meets the water quality requirement.



Subcat



Reach



Pond



Link

Routing Diagram for Franklin Industrial Detention Pond
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Franklin Industrial Detention Pond

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1SWQ, 24-HR	Type II 24-hr		Default	24.00	1	1.25	2

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
22.688	90	(12S, 13S)
9.312	74	>75% Grass cover, Good, HSG C (12S, 13S)
3.860	98	Water Surface, HSG C (13S)
35.860	87	TOTAL AREA

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
13.172	HSG C	12S, 13S
0.000	HSG D	
22.688	Other	12S, 13S
35.860		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	22.688	22.688		12S, 13S
0.000	0.000	9.312	0.000	0.000	9.312	>75% Grass cover, Good	12S, 13S
0.000	0.000	3.860	0.000	0.000	3.860	Water Surface	13S
0.000	0.000	13.172	0.000	22.688	35.860	TOTAL AREA	

Franklin Industrial Detention Pond

Type II 24-hr 1SWQ, 24-HR Rainfall=1.25"

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: West

Runoff Area=14.040 ac 0.00% Impervious Runoff Depth=0.33"
Tc=10.0 min CN=86 Runoff=6.74 cfs 0.392 af

Subcatchment 13S: East

Runoff Area=21.820 ac 17.69% Impervious Runoff Depth=0.37"
Tc=10.0 min CN=87 Runoff=11.77 cfs 0.673 af

Pond 7P: Wet Pond

Peak Elev=726.26' Storage=1.599 af Inflow=23.80 cfs 2.178 af
Outflow=0.66 cfs 1.317 af

Total Runoff Area = 35.860 ac Runoff Volume = 1.064 af Average Runoff Depth = 0.36"
89.24% Pervious = 32.000 ac 10.76% Impervious = 3.860 ac

Franklin Industrial Detention Pond

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Type II 24-hr 1SWQ, 24-HR Rainfall=1.25"

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Summary for Subcatchment 12S: West

Runoff = 6.74 cfs @ 12.03 hrs, Volume= 0.392 af, Depth= 0.33"

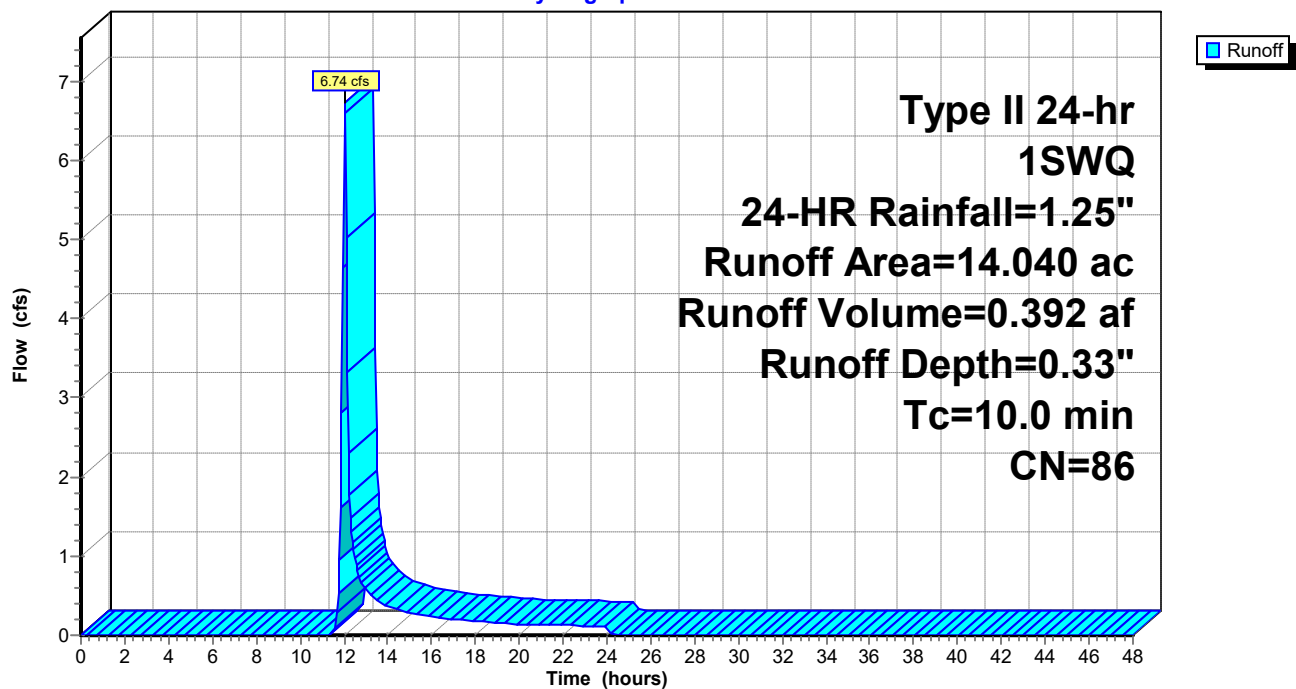
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1SWQ, 24-HR Rainfall=1.25"

Area (ac)	CN	Description
* 10.265	90	
3.775	74	>75% Grass cover, Good, HSG C
14.040	86	Weighted Average
14.040		100.00% Pervious Area

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

Subcatchment 12S: West

Hydrograph



Franklin Industrial Detention Pond

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Type II 24-hr 1SWQ, 24-HR Rainfall=1.25"

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Summary for Subcatchment 13S: East

Runoff = 11.77 cfs @ 12.03 hrs, Volume= 0.673 af, Depth= 0.37"

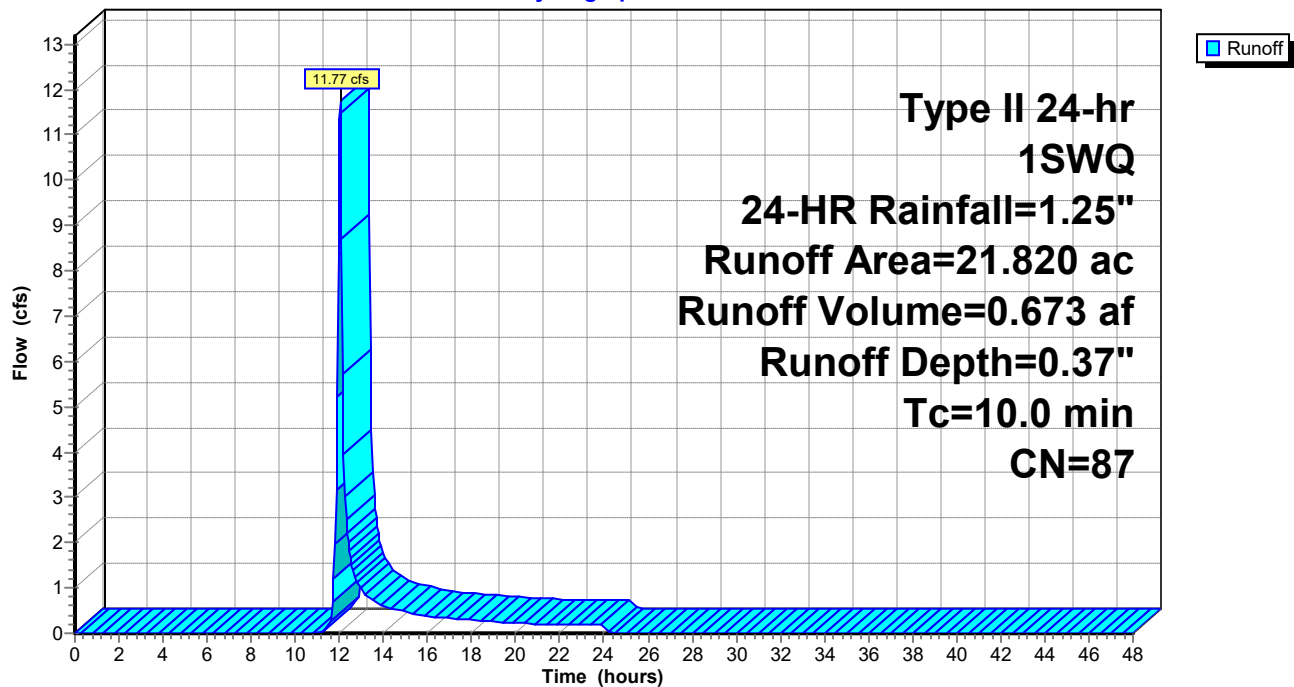
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1SWQ, 24-HR Rainfall=1.25"

	Area (ac)	CN	Description
*	12.423	90	
	5.537	74	>75% Grass cover, Good, HSG C
	3.860	98	Water Surface, HSG C
	21.820	87	Weighted Average
	17.960		82.31% Pervious Area
	3.860		17.69% Impervious Area

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

Subcatchment 13S: East

Hydrograph



Franklin Industrial Detention Pond

Type II 24-hr 1SWQ, 24-HR Rainfall=1.25"

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Summary for Pond 7P: Wet Pond

[62] Hint: Exceeded Reach 15R OUTLET depth by 0.38' @ 25.60 hrs

Inflow Area = 60.500 ac, 35.70% Impervious, Inflow Depth = 0.43" for 1SWQ, 24-HR event
 Inflow = 23.80 cfs @ 12.09 hrs, Volume= 2.178 af
 Outflow = 0.66 cfs @ 20.43 hrs, Volume= 1.317 af, Atten= 97%, Lag= 500.4 min
 Primary = 0.66 cfs @ 20.43 hrs, Volume= 1.317 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 726.26' @ 20.43 hrs Surf.Area= 3.946 ac Storage= 1.599 af

Plug-Flow detention time= 889.7 min calculated for 1.317 af (60% of inflow)
 Center-of-Mass det. time= 761.1 min (1,631.2 - 870.1)

Volume	Invert	Avail.Storage	Storage Description
#1	725.85'	19.447 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
725.85	3.863	0.000	0.000
730.35	4.780	19.447	19.447

Device	Routing	Invert	Outlet Devices
#1	Primary	725.85'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	727.25'	30.0" W x 36.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.66 cfs @ 20.43 hrs HW=726.26' (Free Discharge)

1=Orifice/Grate (Orifice Controls 0.66 cfs @ 2.18 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Franklin Industrial Detention Pond

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Type II 24-hr 1SWQ, 24-HR Rainfall=1.25"

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Pond 7P: Wet Pond

Hydrograph

