AECOM

Submitted to
Southern Indiana
Gas & Electric Company
dba Vectren Power
Supply, Inc. (SIGECO)
One Vectren Square
Evansville, IN 47702

Submitted by
AECOM
9400 Amberglen Boulevard
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October 13, 2016

CCR Certification:
Initial Inflow Design Flood Control System Plan
§257.82

for the

East Ash Pond

at the

F.B. Culley Generating Station

Revision 0

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Executive Summary

This Coal Combustion Residuals (CCR) Initial Inflow Design Flood Control System Plan (Inflow Flood Control Plan) for the East Ash Pond at the Southern Indiana Gas & Electric Company, dba Vectren Power Supply, Inc. F.B. Culley Generating Station has been prepared in accordance with the requirements specified in the USEPA CCR Rule under 40 Code of Federal Regulations CFR §257.82 (a). These regulations require that the specified documentation, assessments and plans for an existing CCR surface impoundment be prepared by October 17, 2016.

This Inflow Flood Control Plan meets the regulatory requirements as summarized in **Table ES-1.**

Table ES-1 – Certification Summary

Report Section	CCR Rule Reference	Requirement Summary	Requirement Met?	Comments
Initial Inflow Design Flood Control System Plan				
4.1	§257.82 (a)(1)	*Adequately manage flow into the CCR unit during and following the peak discharge of the inflow design flood*	Yes	CCR unit has the storage capacity to handle the inflow design flood
4.2	§257.82 (a)(2)	*Adequately manage flow from the CCR unit to collect and control the peak discharge resulting from the inflow design flood*	Yes	The pond has adequate capacity to contain 1,000-year 24-hour storm with or without operational outlet pumps.
4.3	§257.82 (a)(3)	*Required Inflow design flood for Significant Hazard Potential Impoundment*	Yes	Inflow design flood utilized was the 1,000-year event
4.4	§257.82 (b)	*Discharge handled in accordance with* §257.3 – 3	Yes	CCR unit discharges in accordance with the existing NPDES permit

The East Ash Pond is considered to be a significant hazard potential CCR surface impoundment, therefore per §257.82 (a)(3), the inflow design flood is the 1,000-year flood. In accordance with the requirements of §257.82 (a)(3), an Inflow Flood Control Plan was developed for the East Ash Pond. This was accomplished by evaluating the effects of a 24-hour duration design storm for the 1,000-year Inflow Design Flood (IDF) to evaluate the East

Ash Pond's ability to collect and control the 1,000-year IDF of 10.2 inches, under existing operational and maintenance procedures. Under these conditions there are several interconnected and non-connected pools within the East Ash Pond. These pools are being utilized for treatment and removal of CCR material in the pond. The only outlet from the pond is a pump station, which the interconnected pools are tied to. This outlet does not allow for free flow discharge if the pump station was to malfunction or lose power. To simulate the worst case scenario, the analysis was completed with no pumps running in the East Ash Pond as if there was a malfunction or power outage at the pump station. Therefore, the East Ash Pond would be required to collect and store the 1,000-year IDF. The results for the East Ash Pond indicate that the CCR unit has sufficient storage capacity and outlet structures to adequately manage inflows and collect and control outflows during peak discharge conditions created by the 1,000-year IDF.

1 Introduction

1.1 Purpose of This Report

The purpose of the Initial Inflow Design Flood Control System Plan (Inflow Flood Control Plan) is to document that the requirements specified in 40 code of Federal Regulations (CFR) §257.82 have been met to support the certification required under each of the applicable regulatory provisions for the F.B. Culley Generating Station (Culley) East Ash Pond. The East Ash Pond is an existing coal combustion residuals (CCR) surface impoundment as defined by 40 CFR §257.53. The CCR Rule requires that the, Inflow Flood Control Plan for an existing CCR surface impoundment be prepared by October 17, 2016.

The East Ash Pond has been evaluated to determine whether the inflow design flood control system requirements are met. The following table summarizes the documentation required within the CCR Rule and the sections that specifically respond to those requirements of this plan.

Table 1-1 – CCR Rule Cross Reference Table

Report Section	Title	CCR Rule Reference
4.1	Inflow Analysis	§257.82 (a)(1)
4.2	Outflow Analysis	§257.82 (a)(2)
4.3	Inflow Design Flood	§257.82 (a)(3)
4.4	Discharge handled in accordance with *§257.3 – 3*	§257.82 (b)

Analyses completed for the hydrologic and hydraulic assessments of the East Ash Pond are described in this report. Data and analyses results in the following sections are based on spillway design information shown on design drawings, topographic surveys, information about operational and maintenance procedures provided by Southern Indiana Gas & Electric Company, dba Vectren Power Supply, Inc. (SIGECO), and limited field measurements collected by AECOM. The analysis approach and results of the hydrologic and hydraulic analyses presented in the following sections were used by AECOM to confirm that the East Ash Pond meets the hydrologic and hydraulic capacity requirements of the rules referenced above for CCR surface impoundments.

1.2 Brief Description of Impoundment

The Culley station is located in Warrick County, Indiana, southeast of Newburgh, Indiana, and is owned and operated by SIGECO. The station is located along the north bank of the Ohio River and the west bank of the Little Pigeon Creek along the southeast portion of the site. The Culley station consists of two CCR surface impoundments, identified as the West Pond and East Ash Pond. The East Pond is actively receiving CCR materials. The East Ash Pond is located directly east of the station and is approximately 10 acres in size.

The East Ash Pond was commissioned in or around 1971 and operates as an unlined CCR impoundment. Earthen embankments were constructed along the south and east sides of the impoundment. Structural fill used for the original construction of the Culley station in the 1950's borders the impoundment to the west side, and west end of the north side. The east embankment intersects a natural hillside on the east end of the north side of the impoundment. The embankment is approximately 1,200 feet long, 30 feet high, and has 2.4 to 1 (horizontal to vertical) exterior side slopes covered with grassy vegetation. Interior side slopes varied from 2.5 to 1 (horizontal to vertical) to 2 to 1 (horizontal to vertical) for the upper and lower portion of the embankment, respectively. The embankment crest elevation varies from 392.67 feet[1] to 396.42 feet and has a crest width of approximately 15 feet. The surface area of the impoundment is approximately 9.8 acres. Within the pond, there are several small pools that are being utilized for treatment and separation of CCR material within the pond as part of an ongoing construction project. The ponding water has a surface area of approximately 2.56 acres and has normal operating level of 387 feet.

A site Location Map showing the area surrounding the station is in **Figure 1** of **Appendix A**. **Figure 2** in **Appendix A** presents the F.B. Culley Generating Station Site Map.

1.2.1 Inflow from Plant Operations and Stormwater Runoff

Bottom ash and flue gas desulfurization (FGD) blowdown material were previously sluiced from the plant into the eastern side of the impoundment at a rate of approximately 0.42 cubic feet per second (cfs). The water was discharged from the impoundment via pumping station through a permitted National Pollutant Discharge Elimination System (NPDES) outfall, identified as Internal Outfall 201, at a rate of 0.42 cfs. Due to operational changes at the station, there is no current inflow into the East Ash Pond from plant operations.

In addition to rain that falls directly into the impoundment, there are upstream areas that contribute runoff to the impoundment. The grassy areas to the north drain directly to the East Ash Pond through ditches and culverts. The rest of the site areas, including the plant area, coal pile, and grassy areas to the northwest of the site drain to the inactive West Ash Pond where collected stormwater in the pond is pumped to the West Ash Pond pump station and is discharge to the Ohio River through the permitted outfall. The total drainage area to the East Ash Pond impoundment is approximately 25.8 acres.

1.2.2 Outlet Structures

Water discharges from the impoundment through a pump station located at the west side of the East Ash Pond. The pond pump station consists of two CP 3170 LT 3~603 model 5,400 gpm submersible pumps manufactured by Flygt. The 10" pump discharge connects to a manhole on an 84 inch pipe that discharges to an underground discharge tunnel, which collects stormwater and other process water from throughout the Culley station and then discharges to the Ohio River through NPDES permitted Outfall 001.

[1] Unless otherwise noted, all elevations in this report are in the NAVD88 datum.

2 Hydrologic Analysis

2.1 Design Storm

The East Ash Pond has been categorized as a Significant hazard potential CCR impoundment, which requires that the inflow design flood is the 1,000-year return frequency design storm event. The full analysis for this classification determination is included in the *CCR Certification: Initial Hazard Potential Classification for the East Ash Pond at the F.B. Culley Generating Station*.

2.2 Rainfall Data

The rainfall information used in the analysis was based on the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 2, Version 3 which provides rainfall data for storm events with average recurrence intervals ranging from 1 to 1,000 years and durations ranging from 5 minutes to 60 days. The design storm rainfall depth, obtained from the NOAA website, is 10.2 inches for the 24-hour, 1,000-year storm. The Indiana Huff, Third Quartile rainfall distribution was used by AECOM and is appropriate to use for storms up to the 1,000-year, 24-hour flood at the project site.

2.3 Runoff Computations

The drainage areas for the East Ash Pond were estimated using a computer-aided design (CAD) analysis of aerial survey conducted in 2011 and topographic ground surveys completed in 2015 by Three I Design and a drone topographic survey completed in 2016 by Lochmueller Group. The grassy areas to the north drain directly to the East Ash Pond. The total drainage area to the East Ash Pond is approximately 25.8 acres. See **Appendix A** for the Drainage Area Maps.

Runoff was calculated using the SCS Curve Number Method, where curve numbers (CN) were assigned to each subcatchment based on the type of land cover and soil type present. Using the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey, the soil type of the site was selected as hydrologic soil group B. CN values for the land cover were selected from the CN Table available in HydroCAD. This data was obtained from the SCS NRCS Technical Release-55 (TR-55) publication. Ash, Industrial Areas, Water Surface, 50-75% grass cover, and >75% grass covers that are located on site were estimated to have CN values of 88, 88, 98, 69 and 61 respectively. A composite CN was calculated for each subcatchment area by summing the products of each CN multiplied by its percentage of the total area.

The time of concentration is commonly defined as the time required for runoff to travel from the most hydrologically distant point to the point of collection. Calculations for the time of concentration for each sub-watershed were performed in HydroCAD and are included in **Appendix B**.

Stormwater runoff from the 1,000-year event into the impoundment has a peak inflow of 13.31 cfs and total inflow volume of 11.627 acre-feet. Refer to **Appendix B** for HydroCAD results.

3 Hydraulic Analyses

3.1 Process Flows

Process water containing bottom ash is currently pumped from the plant into the East Ash Pond at rate of 0.42 cubic feet per second (cfs) or 0.27 million gallons per day (MGD).

3.2 Storage Capacity

The storage volumes for the East Ash Pond were evaluated using a computer-aided design (CAD) analysis to estimate the volume of the pond under the conditions present. A survey was performed on September 29, 2016 to verify the available volume within the East Ash Pond after ash removal operations. The volume of storage was calculated by estimating the incremental storage volume present for each 1 foot elevation within the updated topographic surface supplied by SIGECO representatives. The incremental storage volume was then used to calculate a cumulative storage volume and was input into HydroCAD. The volume of storage provided by the interconnected construction pools within the East Ash Pond from normal pool elevation of 387 feet to the top of embankment elevation of 392.67 feet is approximately 30.37 acre-feet. This volume was determined with the assumption that the pools within the East Ash Pond basin are connected through culverts, allowing storm volumes to be shared by the connected pools. Refer to **Appendix B** for further storage volumes details.

3.3 Discharge Analysis

A hydraulic model was created in HydroCAD 10.00 to assess the capacity of the pond to store and convey the storm flows. HydroCAD has the capability to evaluate each pond within the network, to respond to variable tailwater, pumping rates, permit flow loops, and reversing flows. HydroCAD routing calculations reevaluate the pond systems' discharge capability at each time increment, making the program an efficient and dynamic tool for this evaluation.

The analyzed scenario assumes the starting water surface elevation of the interconnected construction pools within the East Ash Pond is 387 feet. For the purposes of this analysis, the East Ash Pond was analyzed as if neither pump within its pump station was operational. This represents a worst case scenario. As such, the East Ash Pond must store the design storm. Therefore, the facility does not cause a discharge of pollutants into waters of the United States that is in violation of the requirements of the NPDES under section 402 of the Clean Water Act.

4 Results

The hydrologic and hydraulic conditions of the East Ash Pond were modeled with the peak discharge of the 1,000-year storm event.

Regulatory Citation: 40 CFR §257.82 (a); The owner or operator of an existing or new CCR surface impoundment or any lateral expansion of a CCR of a CCR surface impoundment must design, construct, operate, and maintain an inflow design flood control system as specified in paragraphs (a)(1) and (2) of this section.

4.1 Inflow Analysis

Regulatory Citation: 40 CFR §257.82 (a);

- *(1) The inflow design flood control system must adequately manage flow into the CCR unit during and following the peak discharge of the inflows design flood specified in paragraph (3).*

Background and Assessment

The East Ash Pond collects runoff from only a small area of the Culley station site and this runoff drains to the pond through sheet flow, overland ditching, and culverts located on the northwest side of the pond. These runoff volumes, in addition to the rainfall falling within the pond itself, produce the total inflow to the East Ash Pond. Using the HydroCAD model, the total inflow was stored within the East Ash Pond to evaluate the resulting peak water surface elevation.

Table 4-1 summarizes the maximum water surface elevation of the construction pools within the East Ash Pond prior to and after the inflow design flood.

Table 4-1 - Summary of Hydrologic and Hydraulic Analysis
1,000-Year, 24-Hour Storm

CCR Unit	Beginning WSE[1] (feet)	Peak WSE (feet)	Top of Dam Elevation (feet)	Freeboard Above Peak WSE (feet)
East Ash Pond	387	391.01	392.67	1.66

Notes:
[1] WSE = Water Surface Elevation

Conclusion and Recommendation

As there is adequate storage within the East Ash Pond to manage the inflow design flood, there is no anticipated overtopping of the East Ash Pond embankment, which meets the requirements in §257.82 (a)(1).

4.2 Outflow Analysis

Regulatory Citation: 40 CFR §257.82 (a);

- *(2) The inflow design flood control system must adequately manage flow from the CCR unit to collect and control the peak discharge resulting from the inflow design flood specified in paragraph (3) of this section.*

Background and Assessment

The East Ash Pond currently collects stormwater from a small area of the site including the grass areas to the north routed through a series of ditches and culverts, as well as any rainfall that falls directly within the perimeter embankments. The rain falling within the pond and the stormwater runoff directly draining to the pond, combine to produce the total inflow to the East Ash Pond. Using the HydroCAD model, the total inflow was stored within the East Ash Pond to estimate the peak water surface elevation during the design storm when the Ohio River is experiencing a 100-year flood.

Table 4-2 summarizes the peak flowrates and velocities through each of the outlet devices.

Table 4-2 - Summary of Outlet Devices
1,000-Year, 24-Hour Storm

Outlet Device	Type and Size	Invert Elevation (feet)	Peak Flowrate (cfs)	Velocity at Peak Flowrate (fps)
Pump Station - Outlet	2 pump – 5400 GPM; CP 3170 LT 3~ 603	386.00	N/A	N/A
Top of Berm Lowest Elevation	Weir	392.67	0.00	0.00

Conclusion and Recommendation

In the case where the East Ash Pond pump station is not operational, AECOM recommends the Culley station provide pumping capacity equal to the existing lift station pumps by means of providing supplemental pumps or bringing the existing lift station pumps online within 48-hours.

As the East Ash Pond can store the design storm from the plant without utilizing its pump station and without the peak water surface elevation overtopping the East Ash Pond embankment, the pond meets the requirements in §257.82 (a)(2).

4.3 Inflow Design Flood

Regulatory Citation: 40 CFR §257.82 (a);

- *(3) The inflow design flood is:*
    - *(i) For a high hazard potential CCR surface impoundment, as determined under §257.73(a)(2), the probable maximum flood;*
    - *(ii) For a significant hazard potential CCR surface impoundment, as determined under §257.73(a)(2), the 1,000-year flood;*
    - *(iii) For a low hazard potential CCR surface impoundment, as determined under §257.73(a)(2), the 100-year flood; or*

- *(iv) For an incised CCR surface impoundment, the 25-year flood.*

Background and Assessment

The calculations for the inflow design flood are based on the hazard potential given to the impoundment. The different classifications of the impoundment hazard potential are high, significant, and low.

Conclusion and Recommendation

As the impoundment was given a significant hazard potential, the 1,000 year design storm was utilized in the analysis, which meets the requirements in §257.82 (a)(3).

4.4 Discharge

Regulatory Citation: 40 CFR §257.82 (b); Discharge from the CCR unit must be handled in accordance with the surface water requirements under: §257.3 – 3.

Background and Assessment

The East Ash Pond was modeled without a working pump station to simulate a worst case scenario. As such, there is no discharge from the pond in this model scenario. However, during normal operating conditions the discharge from the East Ash Pond pump station is conveyed through a 10” pipe that connects to a manhole on an 84” pipe and discharges to an underground discharge tunnel, which also collects discharge water from the cooling water system and various other clean discharge water sources located throughout the power plant. The underground discharge tunnel runs by the basement of Unit 2 within the power plant and discharges directly to the Ohio River through NPDES Permitting Outfall 001. The Ohio River was modeled at the FEMA 100 year flood elevation of 383.5’. The discharge must meet the requirements of the NDPES under section 402 of the Clean Water Act to meet the CCR rule.

Conclusion and Recommendation

No modifications are necessary or recommended to this unit for compliance with the CCR Rule.

Runoff discharges from the site through a permitted NPDES outfall. As per the current NPDES permit, all discharged water is tested for pollutants to meet the minimum regulatory requirements of the permit, and thereby meets the requirements in §257.82 (b).

5 Conclusions

The Inflow Flood Control Plan of the East Ash Pond adequately manages flow into the CCR unit during and following the peak discharge of the 1,000-year frequency storm event inflow design flood. The inflow design flood control system of the East Ash Pond adequately manages flow from the CCR unit to collect and control the peak discharge resulting from the 1,000-year frequency storm event inflow design flood. Therefore, the East Ash Pond meets the requirements for certification.

In the case where the East Ash Pond pump station is not operational, AECOM recommended that the Culley Generating Station provide pumping capacity equal to the existing lift station pumps by means of providing supplemental pumps or bringing the existing lift station pumps online within 48-hours.

The contents of this report, specifically **Sections 1** through **4**, represent the Initial Inflow Design Flood Control System Plan for this site.

6 Certification

This Certification Statement documents that the East Ash Pond at the F.B. Culley Generating Station meets the Initial Inflow Design Flood Control System Plan requirements specified in 40 CFR §257.82. The East Ash Pond is an existing CCR surface impoundment as defined by 40 CFR §257.53. The CCR Rule requires that the Initial Inflow Design Flood Control System Plan for an existing CCR surface impoundment be prepared by October 17, 2016.

CCR Unit: Southern Indiana Gas & Electric Company; F.B. Culley Generating Station; East Ash Pond

I, John Priebe, being a Registered Professional Engineer in good standing in the State of Indiana, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above referenced CCR Unit, that the Initial Inflow Design Flood Control System Plan dated October 13, 2016 meets the requirements of 40 CFR § 257.82.

JOHN D. PRIEBE

Printed Name

10/13/16

Date

7 Limitations

Background information, design basis, and other data which AECOM has used in preparing this report have been furnished to AECOM by SIGECO. AECOM has relied on this information as furnished, and is not responsible for the accuracy of this information. Our recommendations are based on available information from previous and current investigations. These recommendations may be updated as future investigations are performed.

The conclusions presented in this report are intended only for the purpose, site location, and project indicated. The recommendations presented in this report should not be used for other projects or purposes. Conclusions or recommendations made from these data by others are their responsibility. The conclusions and recommendations are based on AECOM's understanding of current plant operations, maintenance, stormwater handling, and ash handling procedures at the station, as provided by SIGECO. Changes in any of these operations or procedures may invalidate the findings in this report until AECOM has had the opportunity to review the findings, and revise the report if necessary.

This hydrologic and hydraulic analysis was performed in accordance with the standard of care commonly used as state-of-practice in our profession. Specifically, our services have been performed in accordance with accepted principles and practices of the engineering profession. The conclusions presented in this report are professional opinions based on the indicated project criteria and data available at the time this report was prepared. Our services were provided in a manner consistent with the level of care and skill ordinarily exercised by other professional consultants under similar circumstances. No other representation is intended.

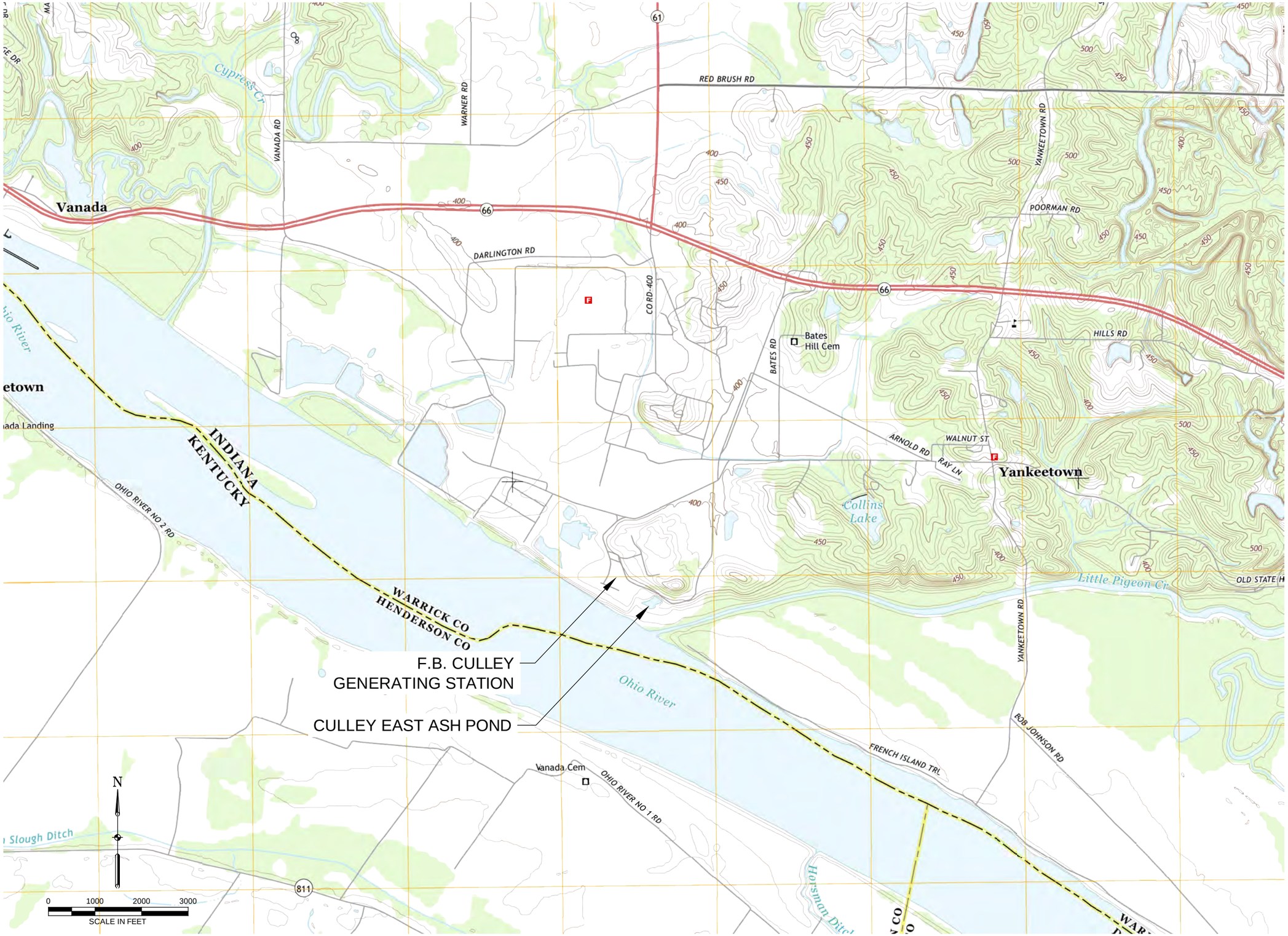
While the CCR unit adequately manages the inflow design flood, SIGECO must perform routine maintenance on the CCR unit to continually manage flood events without failure. The pump station should be cleared of debris that could block or damage the device. The interconnected construction pools within the East Ash Pond should maintain a water surface elevation at or below 387 feet. Pipes, intake structures, and pumps should be monitored and repaired if deterioration or deformation occurs. All grass lined slopes should be examined for erosion and repaired if damaged. Rip rap lined channels should be inspected for stones that have shifted or bare spots that have formed. Replace rip rap as needed. Additionally, in the case where the East Ash Pond pump station is not working, SIGECO shall provide pumping capacity equal to the existing lift station pumps by means of providing supplemental pumps or bringing the existing lift station pumps online within 48-hours.

Appendix A
Figures

Figure 1 – Location Map

Figure 2 – Site Map

Figure 3 – Drainage Area Map



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F.B. CULLEY
GENERATING STATION
NEWBURGH, IN

CCR CERTIFICATION
EAST ASH POND

ISSUED FOR CERTIFICATION

ISSUED FOR BIDDING	DATE	BY
ISSUED FOR CONSTRUCTION	DATE	BY

REVISIONS

NO.	DESCRIPTION	DATE
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AECOM PROJECT NO:	60442676
DRAWN BY:	MJC
DESIGNED BY:	MJC
CHECKED BY:	TLE
DATE CREATED:	8/18/2016
PLOT DATE:	4/22/2016
SCALE:	AS SHOWN
ACAD VER:	2014

SHEET TITLE

LOCATION MAP

FIGURE 1

AECOM
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F.B. CULLEY GENERATING STATION
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SHEET TITLE

SITE MAP

FIGURE 2

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F.B. CULLEY GENERATING STATION
NEWBURGH, IN

CCR CERTIFICATION
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AECOM PROJECT NO:	60442676
DRAWN BY:	MJC
DESIGNED BY:	MJC
CHECKED BY:	TLE
DATE CREATED:	8/24/2016
PLOT DATE:	4/22/2016
SCALE:	AS SHOWN
ACAD VER:	2014

SHEET TITLE

DRAINAGE AREA MAP

FIGURE 3

Appendix B
Hydrologic and Hydraulic Calculations

NOAA Precipitation Data

Soils Data

Water Balance

HydroCAD Output

NOAA Precipitation Data

NOAA Atlas 14, Volume 2, Version 3
Location name: Newburgh, Indiana, US*
Latitude: 37.9163°, Longitude: -87.3369°
Elevation: 394 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.382** (0.347-0.418)	**0.450** (0.411-0.494)	**0.530** (0.483-0.581)	**0.595** (0.541-0.652)	**0.677** (0.612-0.740)	**0.742** (0.668-0.810)	**0.802** (0.718-0.875)	**0.868** (0.774-0.948)	**0.953** (0.843-1.04)	**1.02** (0.896-1.12)
10-min	**0.596** (0.542-0.653)	**0.706** (0.644-0.775)	**0.831** (0.758-0.911)	**0.925** (0.840-1.01)	**1.04** (0.945-1.14)	**1.14** (1.02-1.24)	**1.22** (1.10-1.33)	**1.31** (1.17-1.44)	**1.43** (1.26-1.56)	**1.51** (1.33-1.65)
15-min	**0.734** (0.668-0.805)	**0.870** (0.793-0.954)	**1.03** (0.937-1.13)	**1.15** (1.04-1.26)	**1.30** (1.18-1.42)	**1.41** (1.27-1.54)	**1.53** (1.37-1.67)	**1.64** (1.46-1.79)	**1.78** (1.58-1.95)	**1.89** (1.66-2.07)
30-min	**0.981** (0.892-1.07)	**1.17** (1.07-1.29)	**1.42** (1.29-1.56)	**1.61** (1.46-1.76)	**1.86** (1.68-2.03)	**2.05** (1.84-2.24)	**2.24** (2.00-2.44)	**2.43** (2.17-2.66)	**2.69** (2.38-2.94)	**2.89** (2.54-3.16)
60-min	**1.20** (1.09-1.32)	**1.45** (1.32-1.59)	**1.79** (1.63-1.96)	**2.06** (1.87-2.26)	**2.42** (2.19-2.65)	**2.72** (2.45-2.97)	**3.02** (2.70-3.29)	**3.33** (2.96-3.63)	**3.75** (3.32-4.10)	**4.09** (3.60-4.48)
2-hr	**1.45** (1.32-1.59)	**1.75** (1.60-1.92)	**2.19** (1.99-2.40)	**2.54** (2.30-2.77)	**3.01** (2.72-3.28)	**3.39** (3.06-3.70)	**3.79** (3.39-4.13)	**4.20** (3.74-4.58)	**4.77** (4.21-5.20)	**5.22** (4.57-5.70)
3-hr	**1.56** (1.42-1.71)	**1.88** (1.71-2.07)	**2.35** (2.13-2.58)	**2.73** (2.47-2.99)	**3.26** (2.94-3.57)	**3.69** (3.31-4.04)	**4.15** (3.70-4.53)	**4.62** (4.10-5.04)	**5.29** (4.64-5.78)	**5.83** (5.07-6.38)
6-hr	**1.91** (1.74-2.10)	**2.30** (2.10-2.54)	**2.87** (2.61-3.15)	**3.34** (3.02-3.66)	**3.99** (3.60-4.37)	**4.53** (4.06-4.95)	**5.10** (4.55-5.57)	**5.71** (5.06-6.22)	**6.56** (5.74-7.16)	**7.25** (6.30-7.92)
12-hr	**2.27** (2.07-2.50)	**2.74** (2.50-3.01)	**3.40** (3.09-3.73)	**3.94** (3.57-4.32)	**4.70** (4.24-5.14)	**5.32** (4.78-5.81)	**5.97** (5.34-6.52)	**6.66** (5.92-7.28)	**7.63** (6.72-8.34)	**8.42** (7.34-9.21)
24-hr	**2.72** (2.54-2.92)	**3.28** (3.05-3.52)	**4.08** (3.80-4.38)	**4.73** (4.39-5.08)	**5.65** (5.22-6.07)	**6.41** (5.89-6.88)	**7.20** (6.58-7.74)	**8.04** (7.29-8.66)	**9.21** (8.26-9.98)	**10.2** (9.03-11.0)
2-day	**3.25** (3.02-3.50)	**3.91** (3.63-4.21)	**4.87** (4.52-5.24)	**5.66** (5.23-6.09)	**6.80** (6.25-7.32)	**7.75** (7.09-8.36)	**8.76** (7.95-9.47)	**9.85** (8.87-10.7)	**11.4** (10.1-12.5)	**12.7** (11.2-13.9)
3-day	**3.47** (3.23-3.73)	**4.16** (3.87-4.48)	**5.17** (4.81-5.57)	**6.01** (5.57-6.47)	**7.23** (6.66-7.79)	**8.25** (7.57-8.90)	**9.34** (8.51-10.1)	**10.5** (9.51-11.4)	**12.2** (10.9-13.4)	**13.6** (12.0-15.0)
4-day	**3.68** (3.44-3.97)	**4.41** (4.11-4.76)	**5.47** (5.10-5.90)	**6.36** (5.91-6.86)	**7.66** (7.08-8.26)	**8.75** (8.05-9.45)	**9.93** (9.06-10.7)	**11.2** (10.1-12.2)	**13.0** (11.7-14.3)	**14.6** (12.9-16.0)
7-day	**4.29** (3.99-4.63)	**5.14** (4.78-5.55)	**6.38** (5.92-6.89)	**7.42** (6.86-8.02)	**8.94** (8.22-9.67)	**10.2** (9.35-11.1)	**11.6** (10.6-12.6)	**13.2** (11.8-14.3)	**15.4** (13.6-16.9)	**17.2** (15.1-19.0)
10-day	**4.84** (4.50-5.25)	**5.79** (5.39-6.29)	**7.17** (6.66-7.78)	**8.32** (7.70-9.02)	**10.0** (9.21-10.8)	**11.4** (10.4-12.4)	**12.9** (11.7-14.1)	**14.6** (13.1-15.9)	**16.9** (15.0-18.6)	**18.9** (16.6-20.9)
20-day	**6.66** (6.27-7.11)	**7.91** (7.44-8.43)	**9.50** (8.92-10.1)	**10.8** (10.1-11.5)	**12.6** (11.7-13.4)	**14.0** (13.0-14.9)	**15.4** (14.3-16.5)	**16.9** (15.6-18.2)	**19.0** (17.3-20.5)	**20.6** (18.6-22.4)
30-day	**8.21** (7.75-8.70)	**9.70** (9.16-10.3)	**11.5** (10.8-12.1)	**12.9** (12.1-13.6)	**14.8** (13.9-15.7)	**16.3** (15.3-17.3)	**17.9** (16.6-19.0)	**19.4** (18.0-20.7)	**21.6** (19.8-23.1)	**23.2** (21.1-25.0)
45-day	**10.3** (9.79-10.9)	**12.1** (11.5-12.8)	**14.2** (13.4-14.9)	**15.8** (14.9-16.6)	**17.9** (16.9-18.9)	**19.6** (18.4-20.7)	**21.2** (19.9-22.4)	**22.9** (21.3-24.3)	**25.1** (23.2-26.7)	**26.7** (24.6-28.6)
60-day	**12.3** (11.7-12.9)	**14.5** (13.7-15.2)	**16.8** (15.9-17.7)	**18.5** (17.6-19.5)	**20.9** (19.7-22.0)	**22.6** (21.3-23.9)	**24.3** (22.9-25.7)	**26.0** (24.3-27.5)	**28.1** (26.2-29.9)	**29.7** (27.5-31.7)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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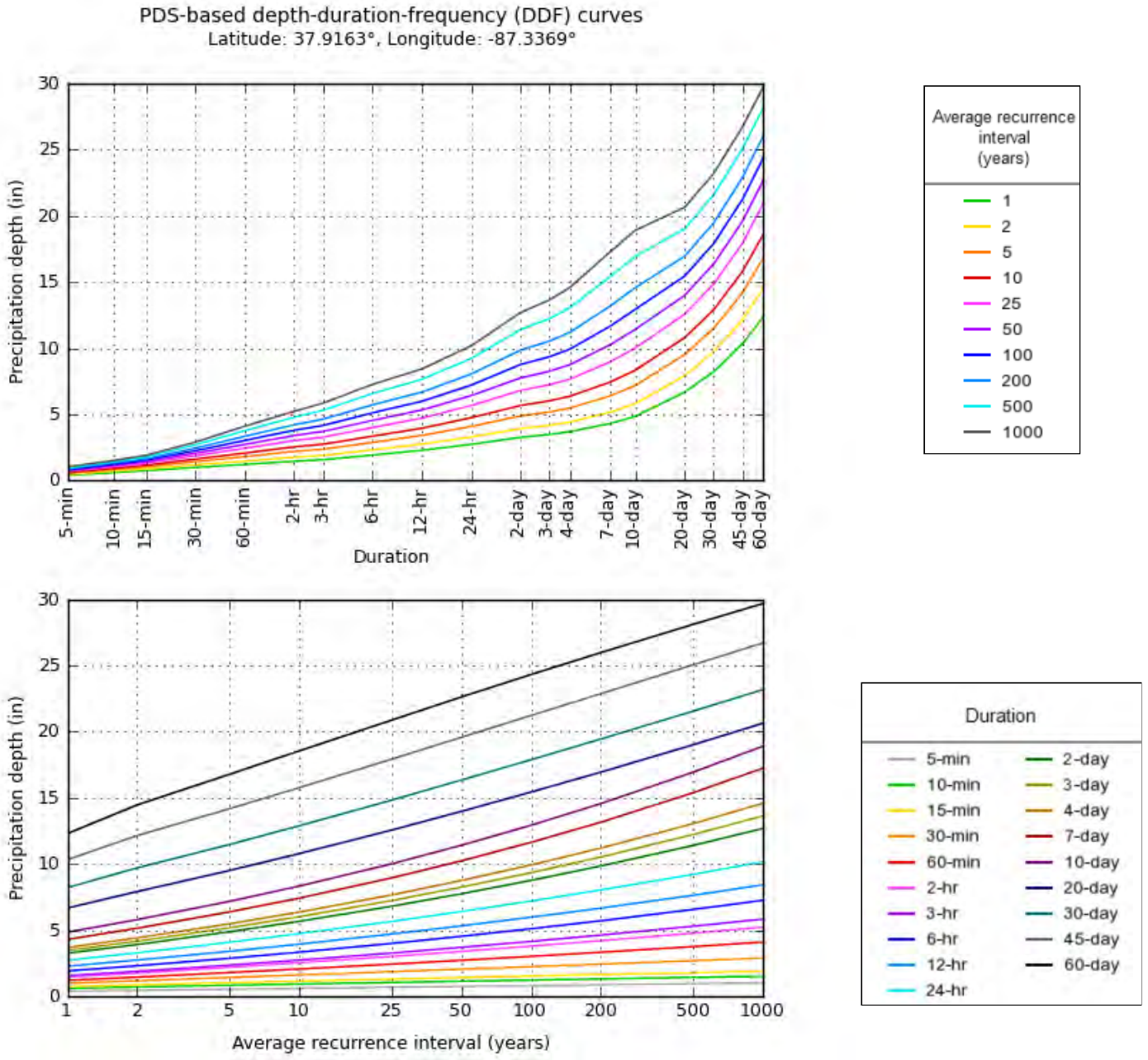
PF graphical



NOAA Atlas 14, Volume 2, Version 3

Created (GMT): Fri Aug 5 19:42:56 2016

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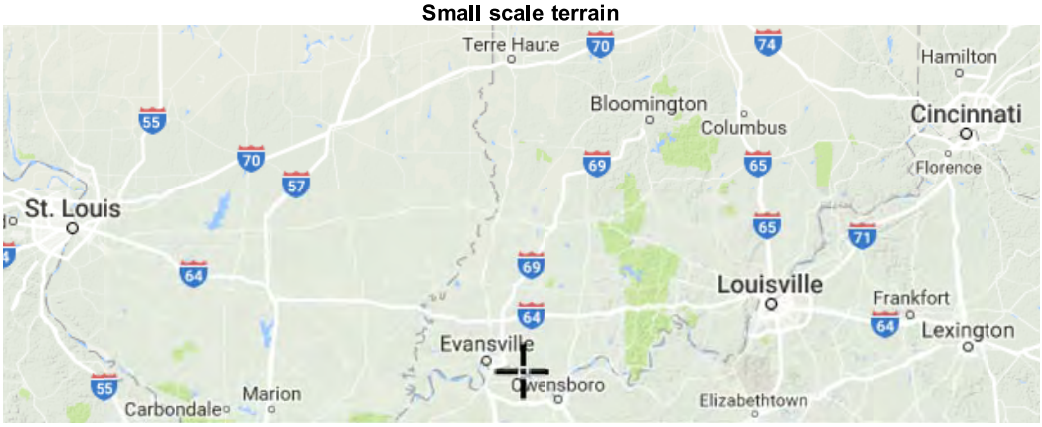
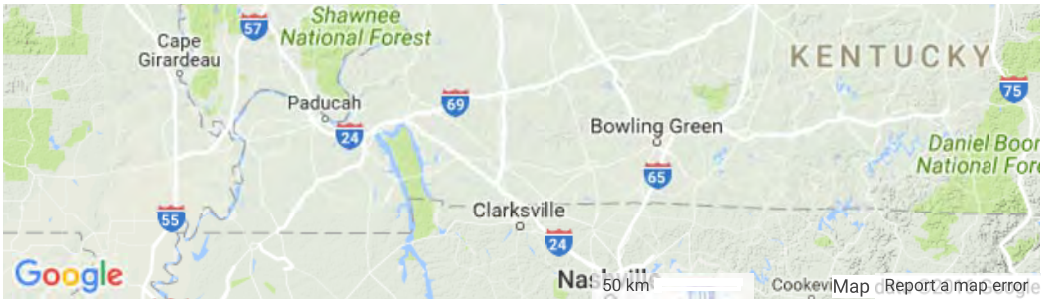
Maps & aerials

Small scale terrain

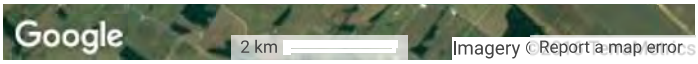




Large scale terrain

Large scale map

Large scale aerial



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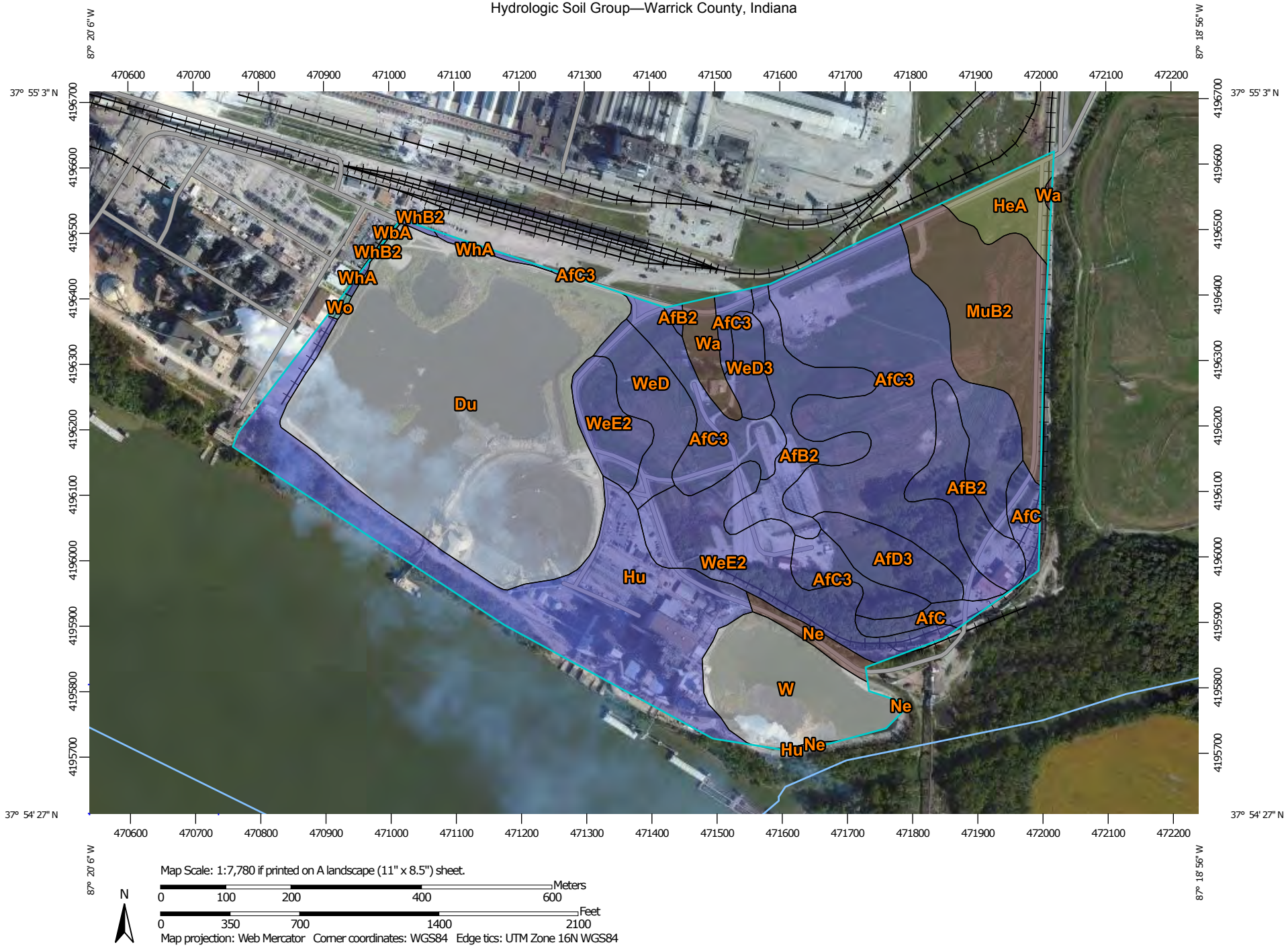
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Soils Data

Hydrologic Soil Group—Warrick County, Indiana



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

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: http://websoilsurvey.nrcs.usda.gov
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: Warrick County, Indiana
Survey Area Data: Version 18, Sep 11, 2015

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

Date(s) aerial images were photographed: Oct 3, 2011—Oct 4, 2011

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.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Warrick County, Indiana (IN173)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
AfB2	Alford silt loam, 2 to 6 percent slopes, eroded	B	11.4	6.6%
AfC	Alford silt loam, 6 to 12 percent slopes	B	3.1	1.8%
AfC3	Alford silt loam, 6 to 12 percent slopes, severely eroded	B	35.2	20.3%
AfD3	Alford silt loam, 12 to 18 percent slopes, severely eroded	B	3.7	2.1%
Du	Dumps, mine		46.4	26.8%
HeA	Henshaw silt loam, 0 to 2 percent slopes, rarely flooded	C/D	3.5	2.0%
Hu	Huntington silt loam, frequently flooded	B	23.6	13.6%
MuB2	Muren silt loam, 2 to 6 percent slopes, eroded	B/D	11.4	6.6%
Ne	Newark silty clay loam, frequently flooded	B/D	1.4	0.8%
W	Water		9.9	5.7%
Wa	Wakeland silt loam, frequently flooded	B/D	2.1	1.2%
WbA	Weinbach silt loam, 0 to 2 percent slopes	C/D	0.0	0.0%
WeD	Wellston silt loam, 12 to 18 percent slopes	B	4.9	2.8%
WeD3	Wellston silt loam, 12 to 18 percent slopes, severely eroded	B	2.1	1.2%
WeE2	Wellston silt loam, 18 to 25 percent slopes, eroded	B	13.9	8.0%
WhA	Wheeling silt loam, 0 to 2 percent slopes	B	0.5	0.3%
WhB2	Wheeling silt loam, 2 to 6 percent slopes, eroded	B	0.1	0.1%
Wo	Woodmere silty clay loam, occasionally flooded	C	0.2	0.1%
Totals for Area of Interest			**173.3**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Water Balance

SOUTHERN INDIANA GAS & ELECTRIC COMPANY
P.B. CULLEY STATION

UNIT #3
BOILER MAKE-UP:
STEAMATE NA2060
CORTROL OS5607
OPTISPERSE 3100
OPTISPERSE 2100
HYPERSPERSE

UNITS 2 & 3
FGD SYSTEM

POLYFLOC
POLYMER 1125

0.654738 MGD

CLARIFIED
RIVER WATER
SYSTEM

0.9784 MGD

PIPE SPOOL
INSTALLED
DURING AIR
HEATER
WASH ONLY

0.001578 MGD

UNIT #3
AIR HEATER WASH

0.001578 MGD
1 x PER YEAR

(2) PARALLEL LINES

0.39969 MGD

FGD WASTE

0.000 MGD

UNIT #3
FLY ASH

0.000 MGD

(WET FLY ASH SYSTEM IS ONLY USED, IF
DRY FLY ASH SYSTEM IS UNAVAILABLE)

WASTE WATER
MERCURY
TREATMENT SYSTEM

METCLEAR MR2405
FERRIC CHLORIDE
KLARAID PC1190
SODIUM HYDROXIDE

NPDES OUTFALL 301:
LAT 37° 54' 31.3210" N
LON 87° 19' 17.1033" W
ELEV. 389.00

0.13271 MGD

UNIT #3
PYRITE SYSTEM

0.13271 MGD

0.1884 MGD

UNIT #3
BOTTOM ASH

0.1884 MGD

0.0951 MGD

0.03541 MGD

0.1383 MGD

0.072848 MGD

UNIT #3
BOILER MAKE-UP

0.072848 MGD

UNIT #3
BOILER SEAL
TROUGH OVERFLOW

0.001 MGD

0.001 MGD

0.1726 MGD

UNIT #3
BOILER SUMP
PUMPS

0.1726 MGD

0.000 MGD

UNIT #3
SCR & ECONOMIZER
HOPPERS

0.000 MGD

0.000 MGD

(WET FLY ASH SYSTEM IS ONLY USED, IF
DRY FLY ASH SYSTEM IS UNAVAILABLE)

EAST
(UNIT #3)
ASH POND

0.0260 MGD

EVAPORATION

0.0876 MGD

UNIT #3
FLOOR DRAINS

0.7178 MGD

0.7906 MGD

WEST YARD
SUMP PUMP

0.02416 MGD

0.012246 MGD

UNIT #3
OIL TRAP TANK

0.012246 MGD

(2) LINES

NPDES OUTFALL 201:
LAT 37° 54' 34.4944" N
LON 87° 19' 27.5914" W
ELEV. 397.330

1.6279 MGD

0.0000 MGD

NPDES
SITE 201

UNIT #3
FLOOR AND
EQUIPMENT DRAINS
FOR OIL

N.C.
VALVE

N.O.
VALVE

0.127898 MGD

CONDENSATE
STORAGE

0.127898 MGD

0.054813 MGD

REVERSE OSMOSIS
REJECT

0.054813 MGD

0.046041 MGD

WATER TREATMENT
FILTER & SOFTENER
BACKWASH

0.046041 MGD

0.22875 MGD

POTABLE WATER
PRE-TREATMENT
SYSTEM

0.500 MGD

WATER
WELLS

0.004624 MGD

SANITARY
WASTEWATER
TREATMENT

0.004624 MGD

NPDES SITE 004

TO OHIO RIVER
VIA DISCHARGE PIPE

NPDES OUTFALL 004:
LAT 37° 54' 38.3630" N
LON 87° 19' 35.0892" W

YARD AND
AREA RUNOFF

0.022095 MGD

WEST
YARD SUMP

0.022095 MGD

COAL PILE
RUNOFF

0.03352 MGD

(3) LINES

PIPE SPOOL
INSTALLED
DURING AIR
HEATER
WASH ONLY

0.001578 MGD

UNIT #2
AIR HEATER WASH

0.001578 MGD
1 x PER YEAR

0.0663 MGD

UNIT #2
PYRITE SYSTEM

0.0663 MGD

0.072 MGD

UNIT #2
BOTTOM ASH

0.072 MGD

0.1383 MGD

N.C.
VALVE

UNIT #2
BOILER MAKE-UP:
STEAMATE NA2060
CORTROL OS5607
OPTISPERSE 3100
OPTISPERSE 2100
HYPERSPERSE

0.000 MGD

UNIT #2
FLY ASH

0.000 MGD

DRY FLY ASH
SYSTEM ONLY

0.055 MGD

UNIT #2
BOILER MAKE-UP

0.055 MGD

N.O.
VALVE

0.0755 MGD

UNIT #1 & UNIT #2
BASEMENT SUMPS

0.0876 MGD

N.C.
VALVE

0.012 MGD

UNIT #2
FLOOR DRAINS

WEST
(UNIT #2)
ASH POND

0.0833 MGD

EVAPORATION

0.0000 MGD

NPDES
SITE 101

NPDES OUTFALL 101:
LAT 37° 54' 44.3603" N
LON 87° 19' 50.8124" W
INV. ELEV. 389.486

N.O.
VALVE

N.C.
VALVE

NPDES SITE 001

TO OHIO RIVER
VIA DISCHARGE PIPE

271.5 MGD

NPDES OUTFALL 001:
LAT 37° 54' 35.2947" N
LON 87° 19' 37.9869" W
INV. ELEV. 341.587

N.C.
VALVE

N.C.
VALVE

97.2728 MGD

UNIT #2
CONDENSER

0.0016 MGD

UNIT #2
CLOSED CYCLE
COOLING SYSTEM

0.0016 MGD

CORRSHIELD
NT402

0.0032 MGD

UNIT #3
CLOSED CYCLE
COOLING SYSTEM

0.0032 MGD

172.5584 MGD

UNIT #3
CONDENSER

UNIT #2 INLET
(FROM OHIO RIVER)

HOUSE SERVICE WATER INLET

HOUSE SERVICE WATER HEADER

UNIT #2 CIRCULATING WATER

DIESEL
FIRE PUMP

SPECTRUS OX 1201 &
SCALETROL PDC 9325

UNIT #3 INLET
(FROM OHIO RIVER)

UNIT #3 CIRCULATING WATER

UNIT #1 INLET
(FROM OHIO RIVER)

HOUSE SERVICE WATER INLET

CIRCULATING WATER (UNIT #1 REMOVED)

NOTE:

1. BLANKING PLATES ARE USED TO DIVERT FLOW FROM ONE ASH POND TO THE OTHER POND.

N.O. VALVE – NORMALLY OPEN VALVE
N.C. VALVE – NORMALLY CLOSED VALVE

* THIS FLOW PATH REQUIRED ONLY WHEN ASH POND DISCHARGE DOES NOT MEET REQUIRED FLOW RATE TO ASH SLUICE SYSTEMS.

** NORMAL DISCHARGE 0.000 MGD – EMERGENCY USE ONLY.

VECTREN POWER SUPPLY
F. B. CULLEY GENERATING STATION
NEWBURGH, INDIANA

VECTREN

REV.	DATE	BY	ITEM
0	10 11 11	JI	ISSUED FOR RECORD
1	5 10 12	JI	ADDED ASH POND EVAPORATION LOSSES PER VECTREN
2	8 4 14	JI	ADDED MERCURY TREATMENT SYSTEM
3	2 1 16	JI	UPDATED PER VECTREN RED-LINES
4	5 10 16	JI	UPDATED PER VECTREN RED-LINES

THREE i DESIGN
ENGINEERING + ARCHITECTURE
2425 W. INDIANA ST., EVANSVILLE, IN 47712
www.THREEIDESIGN.COM (812) 423-6800
THREE i DESIGN JOB NUMBER: 07354A

PLANT WATER BALANCE
WITH GE BETZ TREATMENT

DRAWN BY: J.M.R.	DATE: 10-11-11	SHEET NO:
CKD. BY: J.M.R.	SCALE: NONE	
DRAWING NO: F-3025.3		

Culley East Existing Conditions Process Flows - Valid Through November 2016

Current	MGD		CFS
Unit 2 Bottom Ash	0.072		0.111455
Unit 2 Pyrite	0.0663		0.102632
Unit 2 Air Heater Wash	0.001578	1x per year	0.002443
FGD Waste	0.0951		0.147214
Carified River Water	0.03541		0.054814
	0.270388		**0.418557**

Other Supporting Documentation

CP 3170 LT 3~ 603 (Discontinued)

Performance curve

Pump

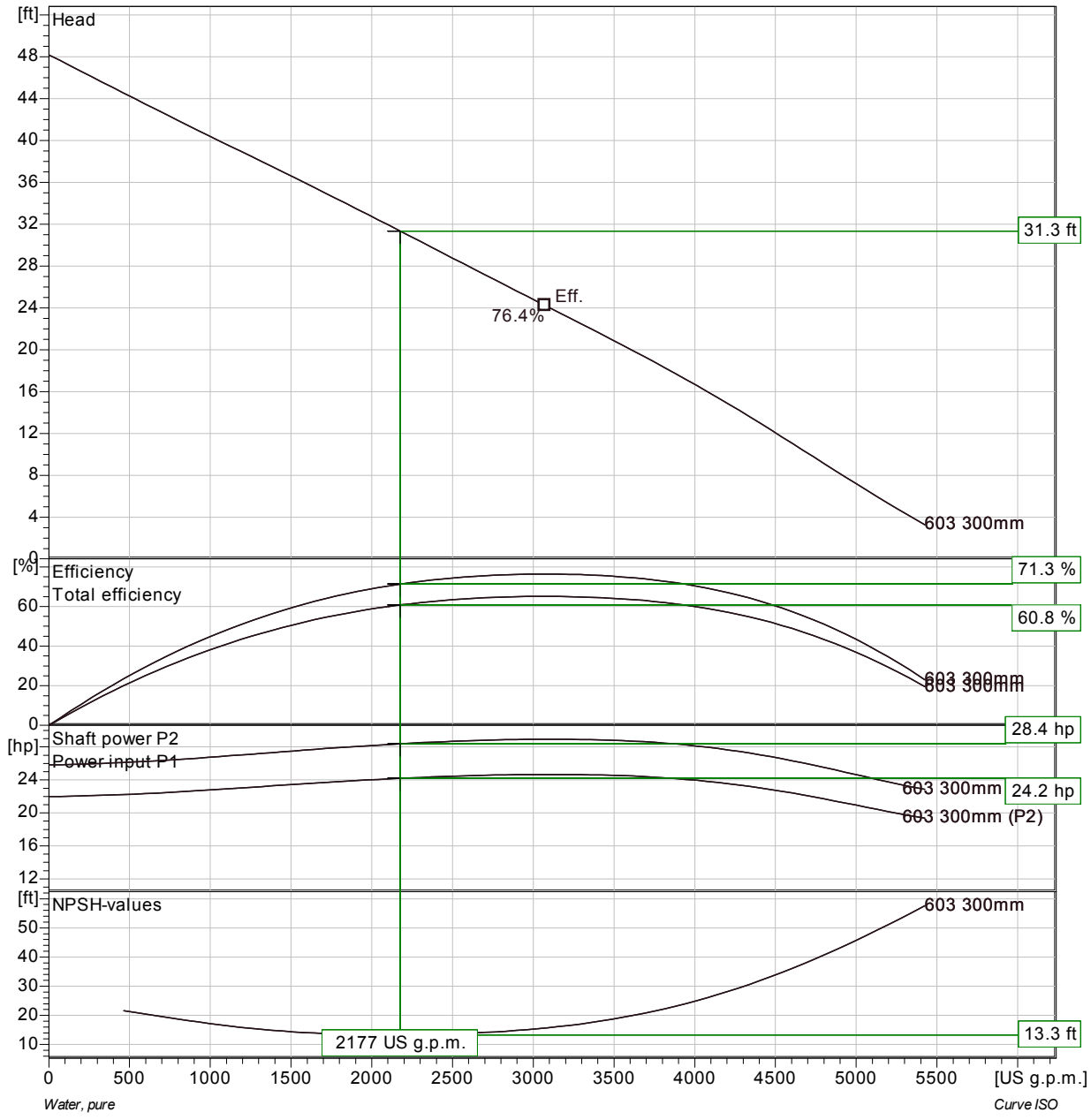
Discharge Flange Diameter	9 13/16 inch
Inlet diameter	250 mm
Impeller diameter	$11^{13}/_{16}$"
Number of blades	2
Throughlet diameter	4 inch

Motor

Motor #	C3170.180 27-20-6AA-W 25hp
Stator variant	37
Frequency	60 Hz
Rated voltage	460 V
Number of poles	6
Phases	3~
Rated power	25 hp
Rated current	34 A
Starting current	219 A
Rated speed	1170 rpm

Power factor	
1/1 Load	0.81
3/4 Load	0.75
1/2 Load	0.64

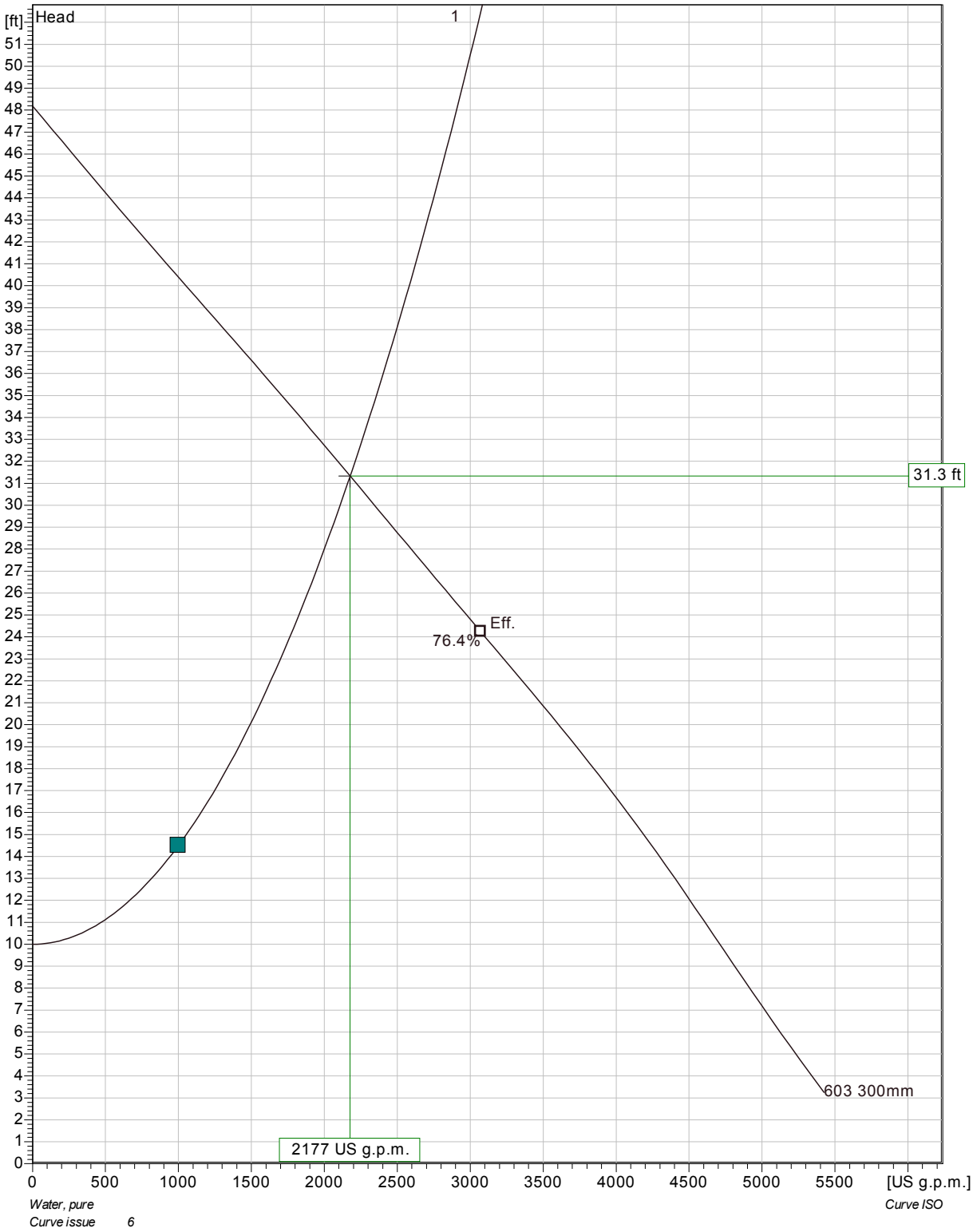
Efficiency	
1/1 Load	85.0 %
3/4 Load	84.5 %
1/2 Load	81.5 %



Project	Project ID	Created by	Created on	Last update
			2015-08-14	

CP 3170 LT 3~ 603 (Discontinued)

Duty Analysis



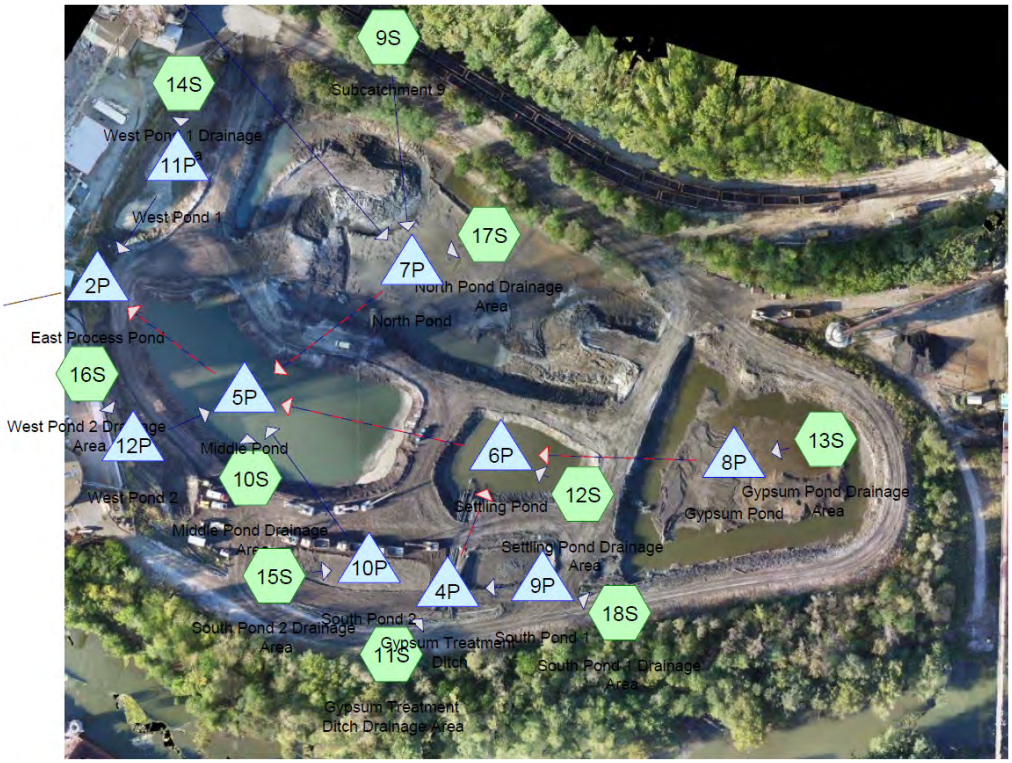
Pumps running /System	Individual pump			Total					
	Flow	Head	Shaft power	Flow	Head	Shaft power	Pump eff.	Specific energy	NPSHre
1	2180 US g.p.m.	31.3 ft	24.2 hp	2180 US g.p.m.	31.3 ft	24.2 hp	71.3 %	162 kWh/US MG	13.3 ft

Project	Project ID	Created by	Created on	Last update
			2015-08-14	

HydroCAD Output Report

The East Ash Pond was constructed using structural fill on the west side and west end of the north side of the impoundment. The east embankment intersects a natural hillside on the east end of the north side of the impoundment. The embankment is approximately 1,200 feet long, 30 feet high, and has 2.4 to 1 (horizontal to vertical) exterior side slopes covered with grassy vegetation. Interior side slopes varied from 2.5 to 1 (horizontal to vertical) to 2 to 1 (horizontal to vertical) for the upper and lower portion of the embankment, respectively. The embankment crest elevation varies from 392.67 feet[1] to 396.42 feet and has a crest width of approximately 15 feet. The surface area of the impoundment is approximately 9.8 acres. Within the pond, there are several small pools that are being utilized for treatment and separation of CCR material within the pond as part of an ongoing construction project.

The diagram below depicts the pool conditions within the Culley East Pond as the HydroCAD model was setup and analyzed for the certification. The interconnected pools include ponds 4P, 5P, 6P, 7P, and 8P. These 5 pools are connected with culverts ranging in size from 12 inch to 24 inch in diameter. The culverts are used to equalize the water surface elevations within the ponds during rainfall events and to prevent overtopping of the pools. In addition to the culverts connecting the pools, the North Pond (7P) is equipped with manual pumps that discharge to the Middle Pond (5P) to keep the North Pond (7P) mostly dry. The remaining pools (ponds 9P, 10P, 11P, and 12P) are isolated pools with structural connections to the other pools. Additionally pond 2P represents the East Ash Pond pump station wet well. The interconnected pools are connected to the pump station wet well by a 24" culvert discharging from the Middle Pond. If any of the pools in the East Ash Pond were to overtop, overflow would flow primarily toward the Middle Pond (5P) and ultimately remain within the East Ash Pond impoundment area.



[1] unless otherwise noted, all elevations in this report are in the NAVD88 datum

The subcatchments for each pool were measured using a computer-aided design (CAD) analysis A to calculate the area of drainage to each pool based on the most recent topographic survey provided by SIGECO. The runoff computations were completed the SCS Curve Number Method, where curve numbers (CN) were assigned to each subcatchment based on the type of land cover and soil type present. Using the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey, the soil type of the site was selected as hydrologic soil group B. CN values for the land cover were selected from the CN Table available in HydroCAD. As all of the subcatchments except 9S are within the East Ash Pond, a CN value of 98 was specified as 'water surface'. This provides the most conservative runoff values for these pools.

The storage capacity for each pool was evaluated using CAD to estimate the volume of the pools under the conditions presented in the latest topographic survey dated September 26, 2016. The volume of storage was calculated by estimating the incremental storage volume present for each 1 foot elevation within the updated topographic surface supplied by SIGECO representatives. The incremental storage volume was then used to calculate a cumulative storage volume and was input into HydroCAD. Only the volumes provided by the interconnected pools were used to calculate the total storage available within the East Ash Pond from normal pool elevation of 387 feet to the top of embankment elevation of 392.67 feet. This volume was determined with the assumption that the interconnected pools will be maintained with an operating water surface elevation at or below 387 feet.

A hydraulic model was created in HydroCAD 10.00 to assess the capacity of the pools to store and convey the storm flows. HydroCAD has the capability to evaluate each pool within the network, to respond to variable tailwater, pumping rates, permit flow loops, and reversing flows. HydroCAD routing calculations reevaluate the pools' systems discharge capability at each time increment, making the program an efficient and dynamic tool for this evaluation.

The interconnected pools are connected to the East Ash Pond pump station by a 24 inch culvert draining from the Middle Pond (5P). For the purposes of this analysis, the East Ash Pond was analyzed as if neither pump within the pump station was operational. This represents a worst case scenario. As such, the pools within the East Ash Pond must store the design storm. The detailed output from the HydroCAD model is presented in the following pages.

Routing Diagram for Culley East Construction Configuration for Certification_rev387WSE_all ponds_nopumps_rev

Prepared by AECOM Corporation, Printed 10/7/2016

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.000	61	>75% Grass cover, Good, HSG B (2S)
32.318	69	50-75% Grass cover, Fair, HSG B (3S, 4S, 6S, 9S)
31.715	88	Urban industrial, 72% imp, HSG B (1S, 2S, 8S)
34.787	98	Water Surface, HSG B (7S, 10S, 11S, 13S, 14S, 15S, 16S, 17S, 18S)
0.760	98	Water Surface, HSG C (12S)
104.580	**84**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
103.820	HSG B	1S, 2S, 3S, 4S, 6S, 7S, 8S, 9S, 10S, 11S, 13S, 14S, 15S, 16S, 17S, 18S
0.760	HSG C	12S
0.000	HSG D	
0.000	Other	
104.580		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	32.318	0.000	0.000	0.000	32.318	50-75% Grass cover, Fair	3S, 4S, 6S, 9S
0.000	5.000	0.000	0.000	0.000	5.000	>75% Grass cover, Good	2S
0.000	31.715	0.000	0.000	0.000	31.715	Urban industrial, 72% imp	1S, 2S, 8S
0.000	34.787	0.760	0.000	0.000	35.547	Water Surface	7S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 18S
0.000	**103.820**	**0.760**	**0.000**	**0.000**	**104.580**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	4P	390.00	388.50	70.0	0.0214	0.013	12.0	0.0	0.0
2	5P	389.00	388.50	80.0	0.0063	0.013	24.0	0.0	0.0
3	6P	386.91	387.01	60.0	-0.0017	0.013	24.0	0.0	0.0
4	6P	386.89	386.99	60.0	-0.0017	0.013	24.0	0.0	0.0
5	7P	388.36	388.57	40.0	-0.0052	0.013	15.0	0.0	0.0
6	8P	388.47	388.10	60.0	0.0062	0.013	15.0	0.0	0.0

Notes Listing (all nodes)

Line#	Node Number	Notes
1	1S	Acre number found using LIDAR data from 2012 and measuring areas in AutoCAD. CN used for class B soils and urban industrial was 88.
2		Time of concentration data was determined using LIDAR data from 2012 and measuring lengths in AutoCAD.
3		To complete time of concentration, a method of sheet flow, shallow flow, or channel flow is needed. These are estimated using LIDAR data. Other things that are needed include a surface description, length of flow, manning's number, land slope, and P2 are needed. The program then computes a Tc.
4	2S	Acre number found using LIDAR data from 2012 and measuring areas in AutoCAD. CN used for grass cover over 75% for class B soils is 61 and a CN of 88 was used for urban industrial. Each CN was used for half of the site.
5		Time of concentration data was determined using LIDAR data from 2012 and measuring lengths in AutoCAD.
6		To complete time of concentration, a method of sheet flow, shallow flow, or channel flow is needed. These are estimated using LIDAR data. Other things that are needed include a surface description, length of flow, manning's number, land slope, and P2 are needed. The program then computes a Tc.
7	3S	Acre number found using LIDAR data from 2012 and measuring areas in AutoCAD. CN used for grass cover between 50-75% for class B soils of 69 was used.
8		Time of concentration data was determined using LIDAR data from 2012 and measuring lengths in AutoCAD.
9		To complete time of concentration, a method of sheet flow, shallow flow, or channel flow is needed. These are estimated using LIDAR data. Other things that are needed include a surface description, length of flow, manning's number, land slope, and P2 are needed. The program then computes a Tc.
10	4S	Acre number found using LIDAR data from 2012 and measuring areas in AutoCAD. CN for class B soils and water surface was 98.
11		Time of concentration data was determined using LIDAR data from 2012 and measuring lengths in AutoCAD.
12		To complete time of concentration, a method of sheet flow, shallow flow, or channel flow is needed. These are estimated using LIDAR data. Other things that are needed include a surface description, length of flow, manning's number, land slope, and P2 are needed. The program then computes a Tc.
13	9S	Acre number found using LIDAR data from 2012 and measuring areas in AutoCAD. CN used for class B soils and grass 50 - 75% was used .
14		Time of concentration data was determined using LIDAR data from 2012 and measuring lengths in AutoCAD.
15		To complete time of concentration, a method of sheet flow, shallow flow, or channel flow is needed. These are estimated using LIDAR data. Other things that are needed include a surface description, length of flow, manning's number, land slope, and P2 are needed. The program then computes a Tc.
16	1P	Culley West Pond is mostly dewatered. Any stormwater runoff draining to the Culley West Pond is pumped via trash pumps into the pump station where it is discharged to the underground tunnel and out to the Ohio River through the NPDES permitted outfall.

Notes Listing (all nodes) (continued)

Line#	Node Number	Notes
17		For the purpose of this analysis the assumption is that the lift station is out of order and no pumps are running.
18	2P	Pump curve modeled off of the given pumps for Culley East pump curves. Two Flyght pumps, CP 3170 LT 3~ 603.
19		Base flow directed to the East Pond includes: Unit 2 & 3 Bottom Ash, Unit 2 & 3 Pyrite, Unit 2 & 3 Heater Wash, Unit 3 Boiler Sumps, Unit 3 Oil Trap, FGD Waste and Clarified River Water. The total of these was given by the water balance as 0.78 MGD, converted equates to 1.204 cfs.
20		Vectren has maintained operating WSE of 387'.
21		For the purpose of this analysis the assumption is that the lift station is out of order and no pumps are running. This simulates the worst case scenario at the pond for the certifying design storm.
22	3P	Arbitrary storage entered for the Ohio River, begins at elevation of 383.5, the 100 year flood elevation.
23	6P	Process flow Unit 2 = 0.22cfs
24	8P	Process Flow FGD Waste and Clarified River Water = 0.20cfs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1 Runoff Area=15.790 ac 72.00% Impervious Runoff Depth=8.73"
Flow Length=1,384' Slope=0.0070 '/' Tc=27.6 min CN=88 Runoff=13.51 cfs 11.485 af

Subcatchment2S: Subcatchment2 Runoff Area=10.000 ac 36.00% Impervious Runoff Depth=7.06"
Flow Length=1,269' Tc=15.6 min CN=75 Runoff=7.64 cfs 5.886 af

Subcatchment3S: Subcatchment3 Runoff Area=12.330 ac 0.00% Impervious Runoff Depth=6.27"
Flow Length=1,083' Tc=17.9 min CN=69 Runoff=8.76 cfs 6.444 af

Subcatchment4S: Subcatchment4 Runoff Area=11.270 ac 0.00% Impervious Runoff Depth=6.27"
Flow Length=479' Slope=0.0140 '/' Tc=4.5 min CN=69 Runoff=8.03 cfs 5.890 af

Subcatchment6S: Subcatchment6 Runoff Area=3.818 ac 0.00% Impervious Runoff Depth=6.27"
Flow Length=501' Tc=9.4 min CN=69 Runoff=2.72 cfs 1.996 af

Subcatchment7S: Subcatchment7 Runoff Area=24.624 ac 100.00% Impervious Runoff Depth=9.96"
Tc=0.0 min CN=98 Runoff=22.17 cfs 20.436 af

Subcatchment8S: Subcatchment8 Runoff Area=10.925 ac 72.00% Impervious Runoff Depth=8.73"
Flow Length=470' Slope=0.0060 '/' Tc=5.0 min CN=88 Runoff=9.36 cfs 7.946 af

Subcatchment9S: Subcatchment9 Runoff Area=4.900 ac 0.00% Impervious Runoff Depth=6.27"
Flow Length=282' Tc=6.8 min CN=69 Runoff=3.49 cfs 2.561 af

Subcatchment10S: Middle Pond Drainage Runoff Area=1.320 ac 100.00% Impervious Runoff Depth=9.96"
Tc=0.0 min CN=98 Runoff=1.19 cfs 1.096 af

Subcatchment11S: Gypsum Treatment Runoff Area=0.600 ac 100.00% Impervious Runoff Depth=9.96"
Tc=0.0 min CN=98 Runoff=0.54 cfs 0.498 af

Subcatchment12S: Settling Pond Runoff Area=0.760 ac 100.00% Impervious Runoff Depth=9.96"
Tc=0.0 min CN=98 Runoff=0.68 cfs 0.631 af

Subcatchment13S: Gypsum Pond Runoff Area=2.170 ac 100.00% Impervious Runoff Depth=9.96"
Tc=0.0 min CN=98 Runoff=1.95 cfs 1.801 af

Subcatchment14S: West Pond 1 Drainage Runoff Area=0.636 ac 100.00% Impervious Runoff Depth=9.96"
Tc=0.0 min CN=98 Runoff=0.57 cfs 0.528 af

Subcatchment15S: South Pond 2 Runoff Area=0.500 ac 100.00% Impervious Runoff Depth=9.96"
Tc=0.0 min CN=98 Runoff=0.45 cfs 0.415 af

Subcatchment16S: West Pond 2 Drainage Runoff Area=1.020 ac 100.00% Impervious Runoff Depth=9.96"
Tc=0.0 min CN=98 Runoff=0.92 cfs 0.847 af

Subcatchment17S: North Pond Drainage Runoff Area=3.790 ac 100.00% Impervious Runoff Depth=9.96"
Tc=0.0 min CN=98 Runoff=3.41 cfs 3.145 af

Subcatchment 18S: South Pond 1 Runoff Area=0.127 ac 100.00% Impervious Runoff Depth=9.96"
Tc=0.0 min CN=98 Runoff=0.11 cfs 0.105 af

Reach 1R: Ditch 1 Avg. Flow Depth=0.92' Max Vel=3.01 fps Inflow=7.64 cfs 5.886 af
n=0.030 L=780.0' S=0.0112 '/' Capacity=110.14 cfs Outflow=7.63 cfs 5.886 af

Reach 2R: Ditch 2 Avg. Flow Depth=1.01' Max Vel=3.72 fps Inflow=11.48 cfs 8.440 af
n=0.030 L=450.0' S=0.0149 '/' Capacity=127.15 cfs Outflow=11.47 cfs 8.440 af

Pond 1P: Culley West Pond Peak Elev=388.19' Storage=62.133 af Inflow=65.42 cfs 62.134 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 2P: East Process Pond Peak Elev=391.55' Storage=0.256 af Inflow=4.28 cfs 0.256 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 3P: Ohio River Peak Elev=383.50' Storage=0.000 af Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 4P: Gypsum Treatment Ditch Peak Elev=390.42' Storage=0.024 af Inflow=0.54 cfs 0.498 af
Primary=0.53 cfs 0.486 af Secondary=0.00 cfs 0.000 af Outflow=0.53 cfs 0.486 af

Pond 5P: Middle Pond Peak Elev=391.01' Storage=8.625 af Inflow=10.39 cfs 4.881 af
Primary=4.28 cfs 0.256 af Secondary=0.00 cfs 0.000 af Outflow=4.28 cfs 0.256 af

Pond 6P: Settling Pond Peak Elev=391.01' Storage=1.455 af Inflow=1.43 cfs 1.990 af
Primary=0.80 cfs 0.589 af Secondary=0.23 cfs 0.105 af Outflow=0.80 cfs 0.695 af

Pond 7P: North Pond Peak Elev=390.90' Storage=15.894 af Inflow=14.39 cfs 11.593 af
Primary=4.76 cfs 1.430 af Secondary=5.87 cfs 1.420 af Outflow=9.30 cfs 2.851 af

Pond 8P: Gypsum Pond Peak Elev=389.08' Storage=4.384 af Inflow=2.15 cfs 2.594 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 9P: South Pond 1 Peak Elev=392.45' Storage=0.131 af Inflow=0.11 cfs 0.105 af
Outflow=0.00 cfs 0.000 af

Pond 10P: South Pond 2 Peak Elev=394.36' Storage=0.697 af Inflow=0.45 cfs 0.415 af
Outflow=0.44 cfs 0.195 af

Pond 11P: West Pond 1 Peak Elev=386.85' Storage=0.528 af Inflow=0.57 cfs 0.528 af
Outflow=0.00 cfs 0.000 af

Pond 12P: West Pond 2 Peak Elev=391.63' Storage=0.809 af Inflow=0.92 cfs 0.847 af
Outflow=0.25 cfs 0.044 af

Total Runoff Area = 104.580 ac Runoff Volume = 71.711 af Average Runoff Depth = 8.23"
44.17% Pervious = 46.198 ac 55.83% Impervious = 58.382 ac

Summary for Subcatchment 1S: Subcatchment 1

Acre number found using LIDAR data from 2012 and measuring areas in AutoCAD. CN used for class B soils and urban industrial was 88.

Time of concentration data was determined using LIDAR data from 2012 and measuring lengths in AutoCAD.

To complete time of concentration, a method of sheet flow, shallow flow, or channel flow is needed. These are estimated using LIDAR data. Other things that are needed include a surface description, length of flow, manning's number, land slope, and P2 are needed. The program then computes a Tc.

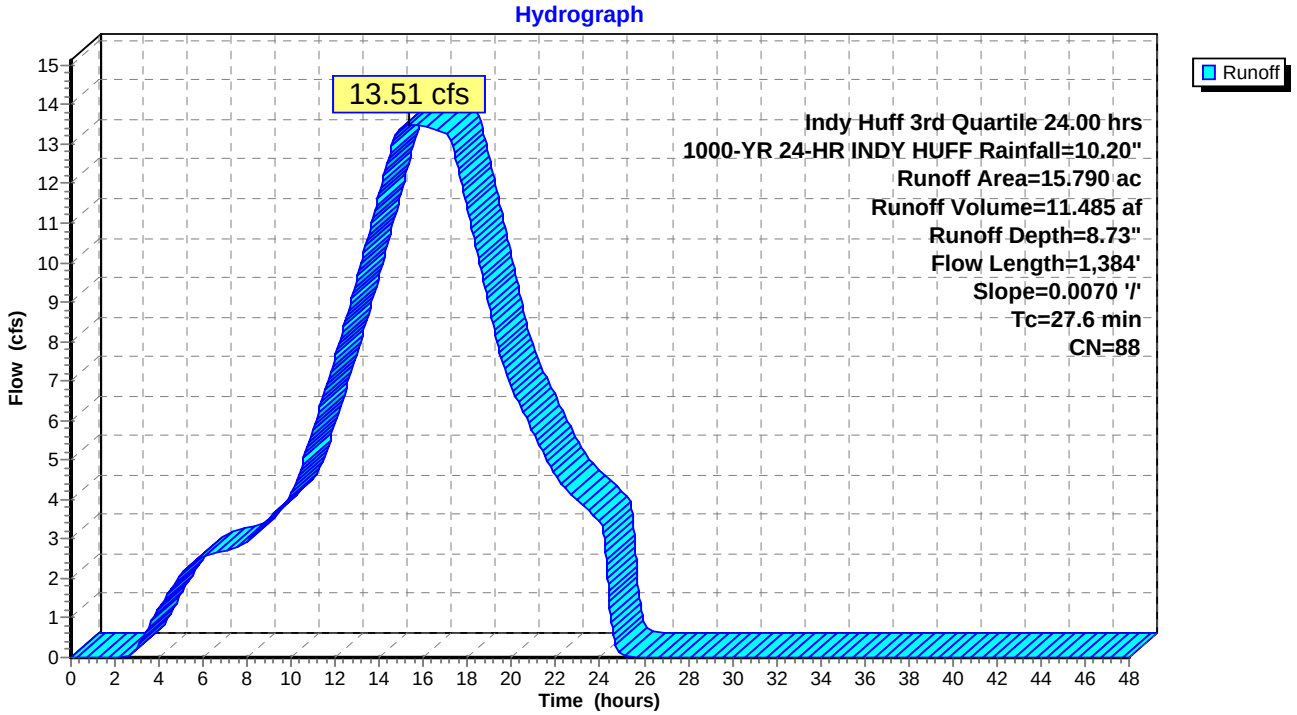
Runoff = 13.51 cfs @ 15.30 hrs, Volume= 11.485 af, Depth= 8.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 3rd Quartile 24.00 hrs 1000-YR 24-HR INDY HUFF Rainfall=10.20"

Area (ac)	CN	Description
15.790	88	Urban industrial, 72% imp, HSG B
4.421		28.00% Pervious Area
11.369		72.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.6	1,384	0.0070	0.84		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps

Subcatchment 1S: Subcatchment 1



Hydrograph for Subcatchment 1S: Subcatchment 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.05	0.00	0.00
1.50	0.11	0.00	0.00
2.00	0.19	0.00	0.00
2.50	0.30	0.00	0.00
3.00	0.42	0.01	0.25
3.50	0.54	0.04	0.76
4.00	0.66	0.09	1.25
4.50	0.80	0.15	1.69
5.00	0.93	0.22	2.10
5.50	1.07	0.29	2.37
6.00	1.20	0.37	2.54
6.50	1.32	0.46	2.64
7.00	1.45	0.54	2.71
7.50	1.57	0.63	2.76
8.00	1.70	0.73	2.97
8.50	1.83	0.83	3.24
9.00	1.98	0.95	3.52
9.50	2.13	1.07	3.80
10.00	2.29	1.20	4.15
10.50	2.49	1.37	4.92
11.00	2.71	1.56	5.80
11.50	2.96	1.78	6.72
12.00	3.24	2.03	7.65
12.50	3.55	2.31	8.61
13.00	3.89	2.63	9.65
13.50	4.27	2.98	10.70
14.00	4.67	3.36	11.77
14.50	5.11	3.77	12.84
15.00	5.55	4.20	**13.47**
15.50	5.99	4.62	**13.49**
16.00	6.43	5.04	13.44
16.50	6.86	5.46	13.37
17.00	7.29	5.88	13.30
17.50	7.68	6.26	12.56
18.00	8.03	6.60	11.36
18.50	8.34	6.90	10.10
19.00	8.61	7.17	8.83
19.50	8.84	7.39	7.59
20.00	9.05	7.60	6.82
20.50	9.25	7.79	6.25
21.00	9.42	7.96	5.68
21.50	9.58	8.12	5.11
22.00	9.72	8.26	4.58
22.50	9.85	8.39	4.25
23.00	9.98	8.51	3.98
23.50	10.09	8.62	3.71
24.00	**10.20**	**8.73**	3.45
24.50	10.20	8.73	0.94
25.00	10.20	8.73	0.06
25.50	10.20	8.73	0.00
26.00	10.20	8.73	0.00
26.50	10.20	8.73	0.00
27.00	10.20	8.73	0.00
27.50	10.20	8.73	0.00
28.00	10.20	8.73	0.00
28.50	10.20	8.73	0.00
29.00	10.20	8.73	0.00
29.50	10.20	8.73	0.00
30.00	10.20	8.73	0.00
30.50	10.20	8.73	0.00
31.00	10.20	8.73	0.00
31.50	10.20	8.73	0.00
32.00	10.20	8.73	0.00
32.50	10.20	8.73	0.00
33.00	10.20	8.73	0.00
33.50	10.20	8.73	0.00
34.00	10.20	8.73	0.00
34.50	10.20	8.73	0.00
35.00	10.20	8.73	0.00
35.50	10.20	8.73	0.00
36.00	10.20	8.73	0.00
36.50	10.20	8.73	0.00
37.00	10.20	8.73	0.00
37.50	10.20	8.73	0.00
38.00	10.20	8.73	0.00
38.50	10.20	8.73	0.00
39.00	10.20	8.73	0.00
39.50	10.20	8.73	0.00
40.00	10.20	8.73	0.00
40.50	10.20	8.73	0.00
41.00	10.20	8.73	0.00
41.50	10.20	8.73	0.00
42.00	10.20	8.73	0.00
42.50	10.20	8.73	0.00
43.00	10.20	8.73	0.00
43.50	10.20	8.73	0.00
44.00	10.20	8.73	0.00
44.50	10.20	8.73	0.00
45.00	10.20	8.73	0.00
45.50	10.20	8.73	0.00
46.00	10.20	8.73	0.00
46.50	10.20	8.73	0.00
47.00	10.20	8.73	0.00
47.50	10.20	8.73	0.00
48.00	10.20	8.73	0.00

Summary for Subcatchment 2S: Subcatchment 2

Acre number found using LIDAR data from 2012 and measuring areas in AutoCAD. CN used for grass cover over 75% for class B soils is 61 and a CN of 88 was used for urban industrial. Each CN was used for half of the site.

Time of concentration data was determined using LIDAR data from 2012 and measuring lengths in AutoCAD.

To complete time of concentration, a method of sheet flow, shallow flow, or channel flow is needed. These are estimated using LIDAR data. Other things that are needed include a surface description, length of flow, manning's number, land slope, and P2 are needed. The program then computes a Tc.

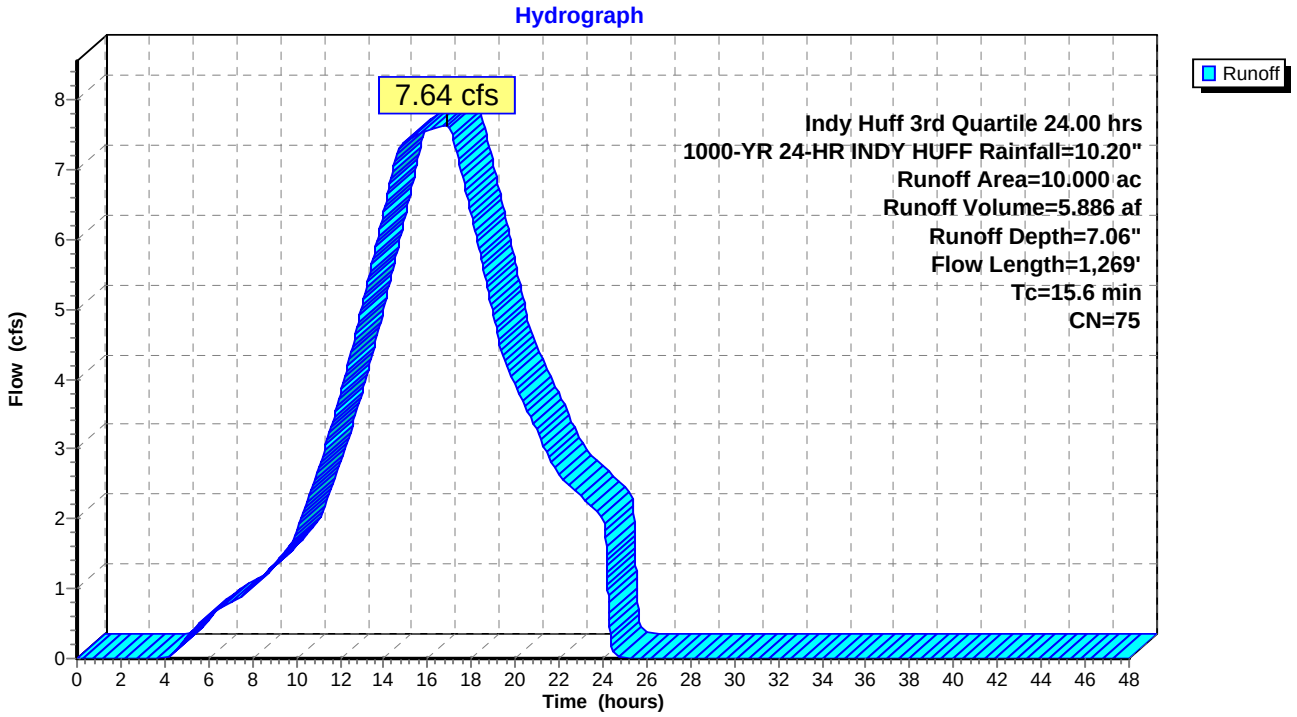
Runoff = 7.64 cfs @ 16.90 hrs, Volume= 5.886 af, Depth= 7.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 3rd Quartile 24.00 hrs 1000-YR 24-HR INDY HUFF Rainfall=10.20"

Area (ac)	CN	Description
5.000	61	>75% Grass cover, Good, HSG B
5.000	88	Urban industrial, 72% imp, HSG B
10.000	75	Weighted Average
6.400		64.00% Pervious Area
3.600		36.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	104	0.0379	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.28"
5.4	600	0.0083	1.85		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	565	0.0619	3.73		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
15.6	1,269	Total			

Subcatchment 2S: Subcatchment 2



Hydrograph for Subcatchment 2S: Subcatchment 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.05	0.00	0.00
1.50	0.11	0.00	0.00
2.00	0.19	0.00	0.00
2.50	0.30	0.00	0.00
3.00	0.42	0.00	0.00
3.50	0.54	0.00	0.00
4.00	0.66	0.00	0.00
4.50	0.80	0.00	0.10
5.00	0.93	0.02	0.30
5.50	1.07	0.04	0.47
6.00	1.20	0.07	0.60
6.50	1.32	0.11	0.72
7.00	1.45	0.15	0.80
7.50	1.57	0.19	0.89
8.00	1.70	0.24	1.03
8.50	1.83	0.30	1.19
9.00	1.98	0.37	1.36
9.50	2.13	0.44	1.53
10.00	2.29	0.53	1.78
10.50	2.49	0.64	2.21
11.00	2.71	0.78	2.70
11.50	2.96	0.93	3.22
12.00	3.24	1.12	3.77
12.50	3.55	1.34	4.38
13.00	3.89	1.59	5.03
13.50	4.27	1.87	5.72
14.00	4.67	2.19	6.41
14.50	5.11	2.54	7.12
15.00	5.55	2.91	7.41
15.50	5.99	3.28	7.50
16.00	6.43	3.65	7.57
16.50	6.86	4.03	**7.61**
17.00	7.29	4.41	**7.61**
17.50	7.68	4.76	7.04
18.00	8.03	5.07	6.35
18.50	8.34	5.35	5.65
19.00	8.61	5.60	4.92
19.50	8.84	5.81	4.26
20.00	9.05	6.00	3.91
20.50	9.25	6.18	3.58
21.00	9.42	6.34	3.25
21.50	9.58	6.49	2.92
22.00	9.72	6.62	2.64
22.50	9.85	6.74	2.48
23.00	9.98	6.86	2.32
23.50	10.09	6.96	2.16
24.00	**10.20**	**7.06**	2.01
24.50	10.20	7.06	0.07
25.00	10.20	7.06	0.00
25.50	10.20	7.06	0.00
26.00	10.20	7.06	0.00
26.50	10.20	7.06	0.00
27.00	10.20	7.06	0.00
27.50	10.20	7.06	0.00
28.00	10.20	7.06	0.00
28.50	10.20	7.06	0.00
29.00	10.20	7.06	0.00
29.50	10.20	7.06	0.00
30.00	10.20	7.06	0.00
30.50	10.20	7.06	0.00
31.00	10.20	7.06	0.00
31.50	10.20	7.06	0.00
32.00	10.20	7.06	0.00
32.50	10.20	7.06	0.00
33.00	10.20	7.06	0.00
33.50	10.20	7.06	0.00
34.00	10.20	7.06	0.00
34.50	10.20	7.06	0.00
35.00	10.20	7.06	0.00
35.50	10.20	7.06	0.00
36.00	10.20	7.06	0.00
36.50	10.20	7.06	0.00
37.00	10.20	7.06	0.00
37.50	10.20	7.06	0.00
38.00	10.20	7.06	0.00
38.50	10.20	7.06	0.00
39.00	10.20	7.06	0.00
39.50	10.20	7.06	0.00
40.00	10.20	7.06	0.00
40.50	10.20	7.06	0.00
41.00	10.20	7.06	0.00
41.50	10.20	7.06	0.00
42.00	10.20	7.06	0.00
42.50	10.20	7.06	0.00
43.00	10.20	7.06	0.00
43.50	10.20	7.06	0.00
44.00	10.20	7.06	0.00
44.50	10.20	7.06	0.00
45.00	10.20	7.06	0.00
45.50	10.20	7.06	0.00
46.00	10.20	7.06	0.00
46.50	10.20	7.06	0.00
47.00	10.20	7.06	0.00
47.50	10.20	7.06	0.00
48.00	10.20	7.06	0.00

Summary for Subcatchment 3S: Subcatchment 3

Acre number found using LIDAR data from 2012 and measuring areas in AutoCAD. CN used for grass cover between 50-75% for class B soils of 69 was used.

Time of concentration data was determined using LIDAR data from 2012 and measuring lengths in AutoCAD.

To complete time of concentration, a method of sheet flow, shallow flow, or channel flow is needed. These are estimated using LIDAR data. Other things that are needed include a surface description, length of flow, manning's number, land slope, and P2 are needed. The program then computes a Tc.

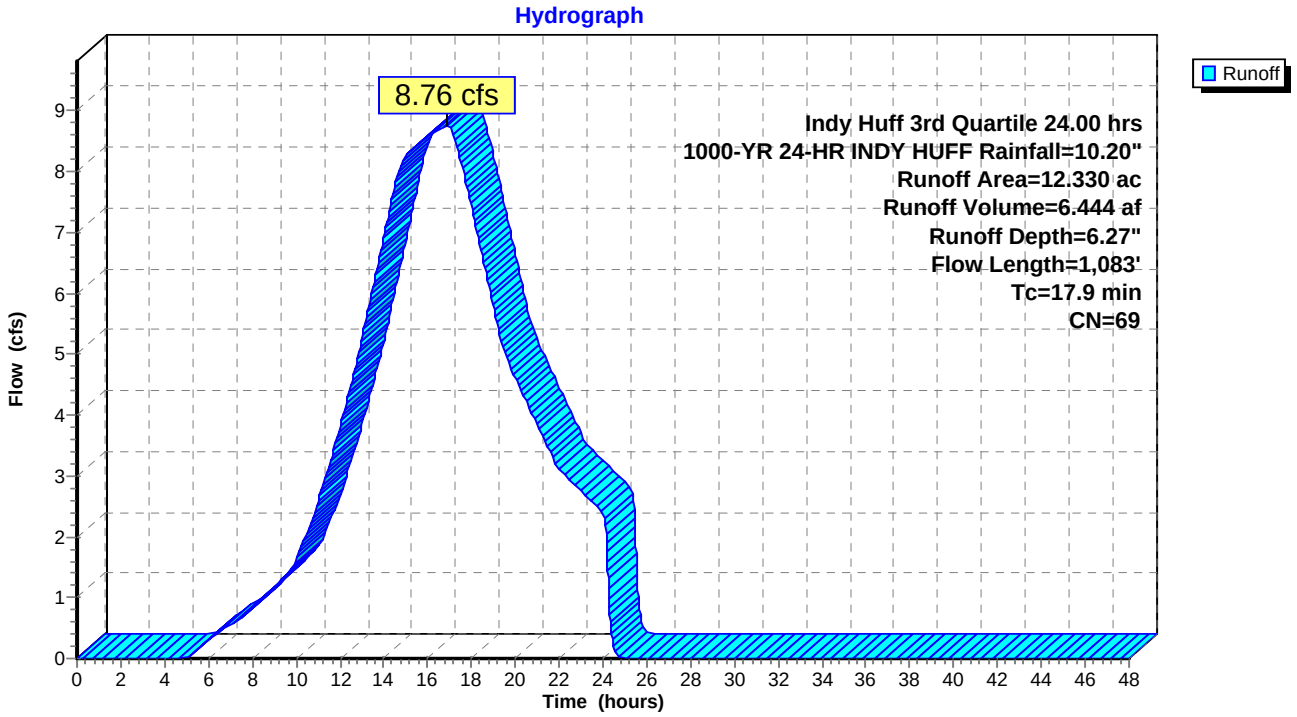
Runoff = 8.76 cfs @ 16.93 hrs, Volume= 6.444 af, Depth= 6.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 3rd Quartile 24.00 hrs 1000-YR 24-HR INDY HUFF Rainfall=10.20"

Area (ac)	CN	Description
12.330	69	50-75% Grass cover, Fair, HSG B
12.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	802	0.0370	2.89		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.3	281	0.0711	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.28"
17.9	1,083	Total			

Subcatchment 3S: Subcatchment 3



Hydrograph for Subcatchment 3S: Subcatchment 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.05	0.00	0.00
1.50	0.11	0.00	0.00
2.00	0.19	0.00	0.00
2.50	0.30	0.00	0.00
3.00	0.42	0.00	0.00
3.50	0.54	0.00	0.00
4.00	0.66	0.00	0.00
4.50	0.80	0.00	0.00
5.00	0.93	0.00	0.00
5.50	1.07	0.01	0.14
6.00	1.20	0.02	0.30
6.50	1.32	0.04	0.44
7.00	1.45	0.06	0.56
7.50	1.57	0.09	0.67
8.00	1.70	0.12	0.82
8.50	1.83	0.16	0.99
9.00	1.98	0.21	1.17
9.50	2.13	0.26	1.36
10.00	2.29	0.33	1.63
10.50	2.49	0.41	2.07
11.00	2.71	0.52	2.59
11.50	2.96	0.65	3.16
12.00	3.24	0.80	3.79
12.50	3.55	0.98	4.49
13.00	3.89	1.20	5.26
13.50	4.27	1.44	6.07
14.00	4.67	1.72	6.91
14.50	5.11	2.04	7.79
15.00	5.55	2.37	8.23
15.50	5.99	2.71	8.43
16.00	6.43	3.05	8.57
16.50	6.86	3.40	**8.69**
17.00	7.29	3.75	**8.75**
17.50	7.68	4.08	8.17
18.00	8.03	4.38	7.43
18.50	8.34	4.64	6.62
19.00	8.61	4.87	5.80
19.50	8.84	5.07	5.02
20.00	9.05	5.26	4.61
20.50	9.25	5.43	4.23
21.00	9.42	5.58	3.84
21.50	9.58	5.72	3.46
22.00	9.72	5.85	3.12
22.50	9.85	5.96	2.94
23.00	9.98	6.07	2.75
23.50	10.09	6.18	2.57
24.00	**10.20**	**6.27**	2.38
24.50	10.20	6.27	0.15
25.00	10.20	6.27	0.00
25.50	10.20	6.27	0.00
26.00	10.20	6.27	0.00
26.50	10.20	6.27	0.00
27.00	10.20	6.27	0.00
27.50	10.20	6.27	0.00
28.00	10.20	6.27	0.00
28.50	10.20	6.27	0.00
29.00	10.20	6.27	0.00
29.50	10.20	6.27	0.00
30.00	10.20	6.27	0.00
30.50	10.20	6.27	0.00
31.00	10.20	6.27	0.00
31.50	10.20	6.27	0.00
32.00	10.20	6.27	0.00
32.50	10.20	6.27	0.00
33.00	10.20	6.27	0.00
33.50	10.20	6.27	0.00
34.00	10.20	6.27	0.00
34.50	10.20	6.27	0.00
35.00	10.20	6.27	0.00
35.50	10.20	6.27	0.00
36.00	10.20	6.27	0.00
36.50	10.20	6.27	0.00
37.00	10.20	6.27	0.00
37.50	10.20	6.27	0.00
38.00	10.20	6.27	0.00
38.50	10.20	6.27	0.00
39.00	10.20	6.27	0.00
39.50	10.20	6.27	0.00
40.00	10.20	6.27	0.00
40.50	10.20	6.27	0.00
41.00	10.20	6.27	0.00
41.50	10.20	6.27	0.00
42.00	10.20	6.27	0.00
42.50	10.20	6.27	0.00
43.00	10.20	6.27	0.00
43.50	10.20	6.27	0.00
44.00	10.20	6.27	0.00
44.50	10.20	6.27	0.00
45.00	10.20	6.27	0.00
45.50	10.20	6.27	0.00
46.00	10.20	6.27	0.00
46.50	10.20	6.27	0.00
47.00	10.20	6.27	0.00
47.50	10.20	6.27	0.00
48.00	10.20	6.27	0.00

Summary for Subcatchment 4S: Subcatchment 4

Acre number found using LIDAR data from 2012 and measuring areas in AutoCAD. CN for class B soils and water surface was 98.

Time of concentration data was determined using LIDAR data from 2012 and measuring lengths in AutoCAD.

To complete time of concentration, a method of sheet flow, shallow flow, or channel flow is needed. These are estimated using LIDAR data. Other things that are needed include a surface description, length of flow, manning's number, land slope, and P2 are needed. The program then computes a Tc.

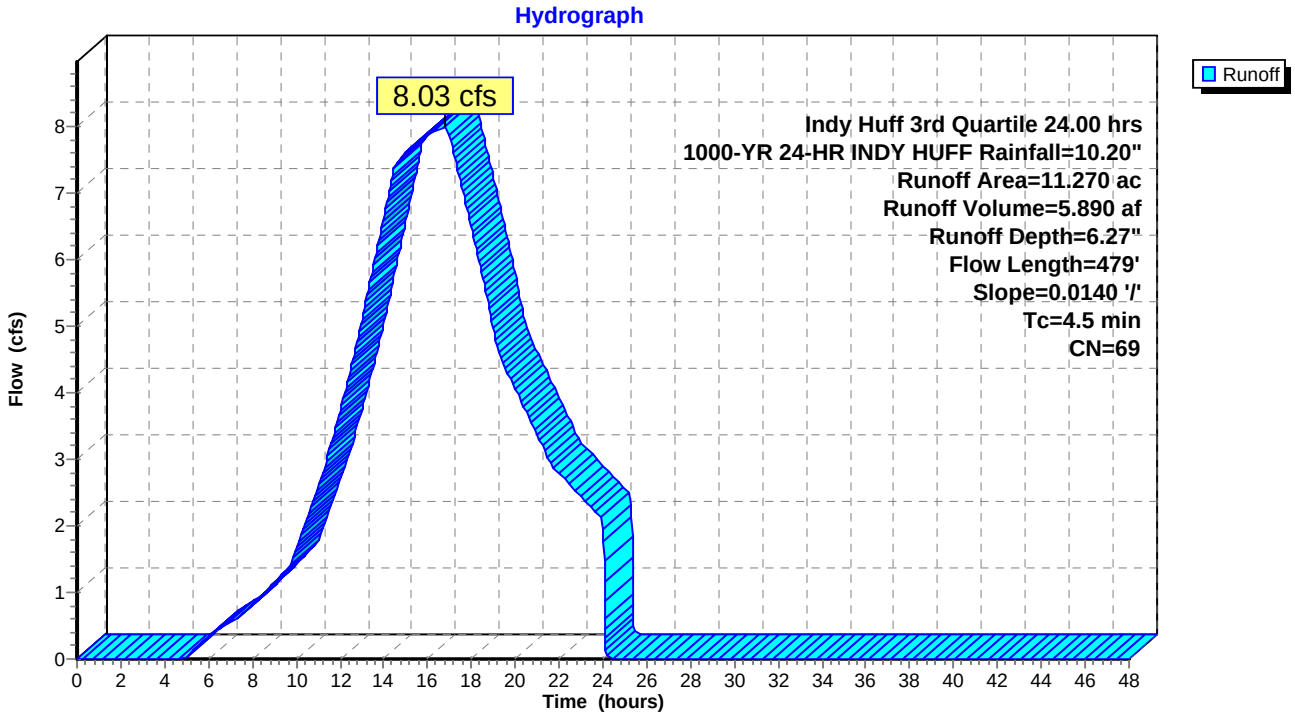
Runoff = 8.03 cfs @ 16.83 hrs, Volume= 5.890 af, Depth= 6.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 3rd Quartile 24.00 hrs 1000-YR 24-HR INDY HUFF Rainfall=10.20"

Area (ac)	CN	Description
11.270	69	50-75% Grass cover, Fair, HSG B
11.270		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	479	0.0140	1.77		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps

Subcatchment 4S: Subcatchment 4



Hydrograph for Subcatchment 4S: Subcatchment 4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.05	0.00	0.00
1.50	0.11	0.00	0.00
2.00	0.19	0.00	0.00
2.50	0.30	0.00	0.00
3.00	0.42	0.00	0.00
3.50	0.54	0.00	0.00
4.00	0.66	0.00	0.00
4.50	0.80	0.00	0.00
5.00	0.93	0.00	0.02
5.50	1.07	0.01	0.19
6.00	1.20	0.02	0.33
6.50	1.32	0.04	0.45
7.00	1.45	0.06	0.55
7.50	1.57	0.09	0.67
8.00	1.70	0.12	0.81
8.50	1.83	0.16	0.97
9.00	1.98	0.21	1.14
9.50	2.13	0.26	1.32
10.00	2.29	0.33	1.64
10.50	2.49	0.41	2.08
11.00	2.71	0.52	2.58
11.50	2.96	0.65	3.12
12.00	3.24	0.80	3.72
12.50	3.55	0.98	4.39
13.00	3.89	1.20	5.11
13.50	4.27	1.44	5.86
14.00	4.67	1.72	6.64
14.50	5.11	2.04	7.41
15.00	5.55	2.37	7.61
15.50	5.99	2.71	7.76
16.00	6.43	3.05	7.88
16.50	6.86	3.40	**7.98**
17.00	7.29	3.75	**7.86**
17.50	7.68	4.08	7.20
18.00	8.03	4.38	6.49
18.50	8.34	4.64	5.75
19.00	8.61	4.87	4.98
19.50	8.84	5.07	4.41
20.00	9.05	5.26	4.07
20.50	9.25	5.43	3.72
21.00	9.42	5.58	3.37
21.50	9.58	5.72	3.01
22.00	9.72	5.85	2.78
22.50	9.85	5.96	2.61
23.00	9.98	6.07	2.45
23.50	10.09	6.18	2.28
24.00	**10.20**	**6.27**	2.11
24.50	10.20	6.27	0.00
25.00	10.20	6.27	0.00
25.50	10.20	6.27	0.00
26.00	10.20	6.27	0.00
26.50	10.20	6.27	0.00
27.00	10.20	6.27	0.00
27.50	10.20	6.27	0.00
28.00	10.20	6.27	0.00
28.50	10.20	6.27	0.00
29.00	10.20	6.27	0.00
29.50	10.20	6.27	0.00
30.00	10.20	6.27	0.00
30.50	10.20	6.27	0.00
31.00	10.20	6.27	0.00
31.50	10.20	6.27	0.00
32.00	10.20	6.27	0.00
32.50	10.20	6.27	0.00
33.00	10.20	6.27	0.00
33.50	10.20	6.27	0.00
34.00	10.20	6.27	0.00
34.50	10.20	6.27	0.00
35.00	10.20	6.27	0.00
35.50	10.20	6.27	0.00
36.00	10.20	6.27	0.00
36.50	10.20	6.27	0.00
37.00	10.20	6.27	0.00
37.50	10.20	6.27	0.00
38.00	10.20	6.27	0.00
38.50	10.20	6.27	0.00
39.00	10.20	6.27	0.00
39.50	10.20	6.27	0.00
40.00	10.20	6.27	0.00
40.50	10.20	6.27	0.00
41.00	10.20	6.27	0.00
41.50	10.20	6.27	0.00
42.00	10.20	6.27	0.00
42.50	10.20	6.27	0.00
43.00	10.20	6.27	0.00
43.50	10.20	6.27	0.00
44.00	10.20	6.27	0.00
44.50	10.20	6.27	0.00
45.00	10.20	6.27	0.00
45.50	10.20	6.27	0.00
46.00	10.20	6.27	0.00
46.50	10.20	6.27	0.00
47.00	10.20	6.27	0.00
47.50	10.20	6.27	0.00
48.00	10.20	6.27	0.00

Summary for Subcatchment 6S: Subcatchment 6

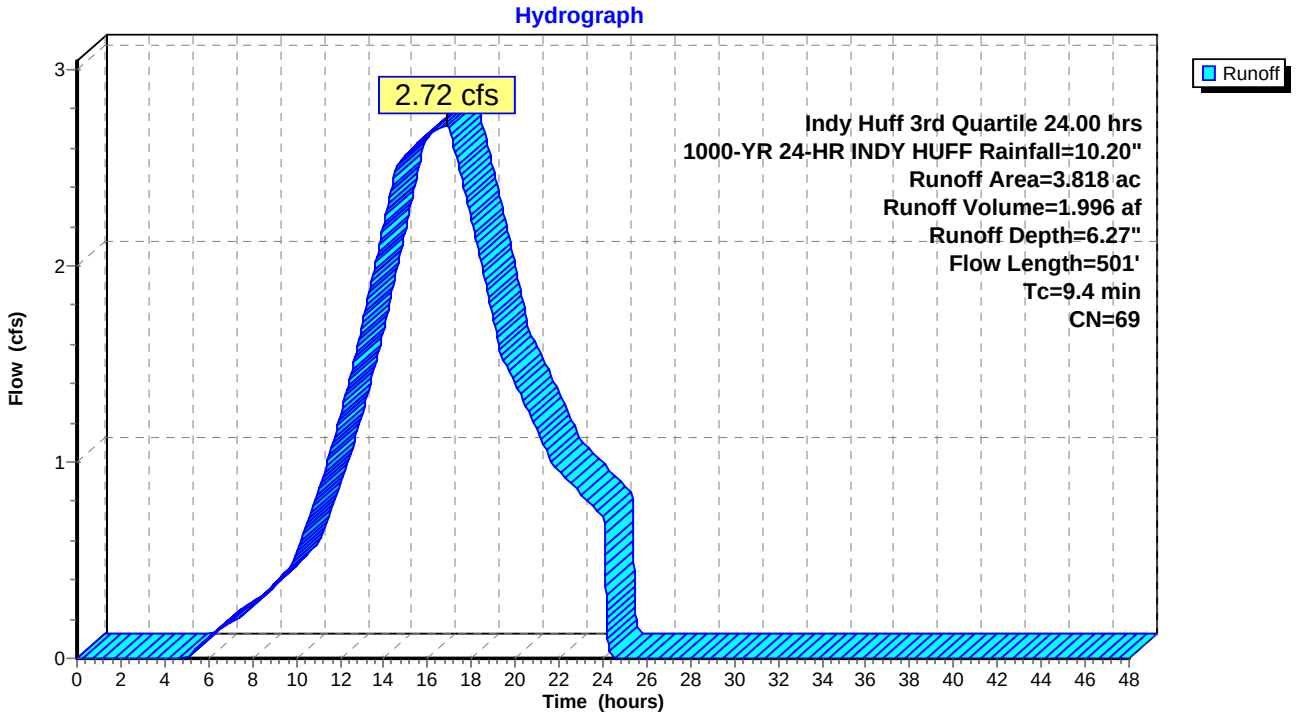
Runoff = 2.72 cfs @ 16.87 hrs, Volume= 1.996 af, Depth= 6.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 3rd Quartile 24.00 hrs 1000-YR 24-HR INDY HUFF Rainfall=10.20"

Area (ac)	CN	Description
3.818	69	50-75% Grass cover, Fair, HSG B
3.818		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	150	0.0670	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.28"
1.1	351	0.1225	5.25		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.4	501	Total			

Subcatchment 6S: Subcatchment 6



Hydrograph for Subcatchment 6S: Subcatchment 6

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.05	0.00	0.00
1.50	0.11	0.00	0.00
2.00	0.19	0.00	0.00
2.50	0.30	0.00	0.00
3.00	0.42	0.00	0.00
3.50	0.54	0.00	0.00
4.00	0.66	0.00	0.00
4.50	0.80	0.00	0.00
5.00	0.93	0.00	0.00
5.50	1.07	0.01	0.06
6.00	1.20	0.02	0.11
6.50	1.32	0.04	0.15
7.00	1.45	0.06	0.18
7.50	1.57	0.09	0.22
8.00	1.70	0.12	0.27
8.50	1.83	0.16	0.32
9.00	1.98	0.21	0.38
9.50	2.13	0.26	0.44
10.00	2.29	0.33	0.54
10.50	2.49	0.41	0.68
11.00	2.71	0.52	0.85
11.50	2.96	0.65	1.03
12.00	3.24	0.80	1.23
12.50	3.55	0.98	1.45
13.00	3.89	1.20	1.69
13.50	4.27	1.44	1.95
14.00	4.67	1.72	2.21
14.50	5.11	2.04	2.48
15.00	5.55	2.37	2.57
15.50	5.99	2.71	2.62
16.00	6.43	3.05	2.66
16.50	6.86	3.40	**2.70**
17.00	7.29	3.75	**2.69**
17.50	7.68	4.08	2.47
18.00	8.03	4.38	2.23
18.50	8.34	4.64	1.99
19.00	8.61	4.87	1.73
19.50	8.84	5.07	1.51
20.00	9.05	5.26	1.40
20.50	9.25	5.43	1.28
21.00	9.42	5.58	1.16
21.50	9.58	5.72	1.04
22.00	9.72	5.85	0.95
22.50	9.85	5.96	0.89
23.00	9.98	6.07	0.84
23.50	10.09	6.18	0.78
24.00	**10.20**	**6.27**	0.72
24.50	10.20	6.27	0.00
25.00	10.20	6.27	0.00
25.50	10.20	6.27	0.00
26.00	10.20	6.27	0.00
26.50	10.20	6.27	0.00
27.00	10.20	6.27	0.00
27.50	10.20	6.27	0.00
28.00	10.20	6.27	0.00
28.50	10.20	6.27	0.00
29.00	10.20	6.27	0.00
29.50	10.20	6.27	0.00
30.00	10.20	6.27	0.00
30.50	10.20	6.27	0.00
31.00	10.20	6.27	0.00
31.50	10.20	6.27	0.00
32.00	10.20	6.27	0.00
32.50	10.20	6.27	0.00
33.00	10.20	6.27	0.00
33.50	10.20	6.27	0.00
34.00	10.20	6.27	0.00
34.50	10.20	6.27	0.00
35.00	10.20	6.27	0.00
35.50	10.20	6.27	0.00
36.00	10.20	6.27	0.00
36.50	10.20	6.27	0.00
37.00	10.20	6.27	0.00
37.50	10.20	6.27	0.00
38.00	10.20	6.27	0.00
38.50	10.20	6.27	0.00
39.00	10.20	6.27	0.00
39.50	10.20	6.27	0.00
40.00	10.20	6.27	0.00
40.50	10.20	6.27	0.00
41.00	10.20	6.27	0.00
41.50	10.20	6.27	0.00
42.00	10.20	6.27	0.00
42.50	10.20	6.27	0.00
43.00	10.20	6.27	0.00
43.50	10.20	6.27	0.00
44.00	10.20	6.27	0.00
44.50	10.20	6.27	0.00
45.00	10.20	6.27	0.00
45.50	10.20	6.27	0.00
46.00	10.20	6.27	0.00
46.50	10.20	6.27	0.00
47.00	10.20	6.27	0.00
47.50	10.20	6.27	0.00
48.00	10.20	6.27	0.00

Summary for Subcatchment 7S: Subcatchment 7

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

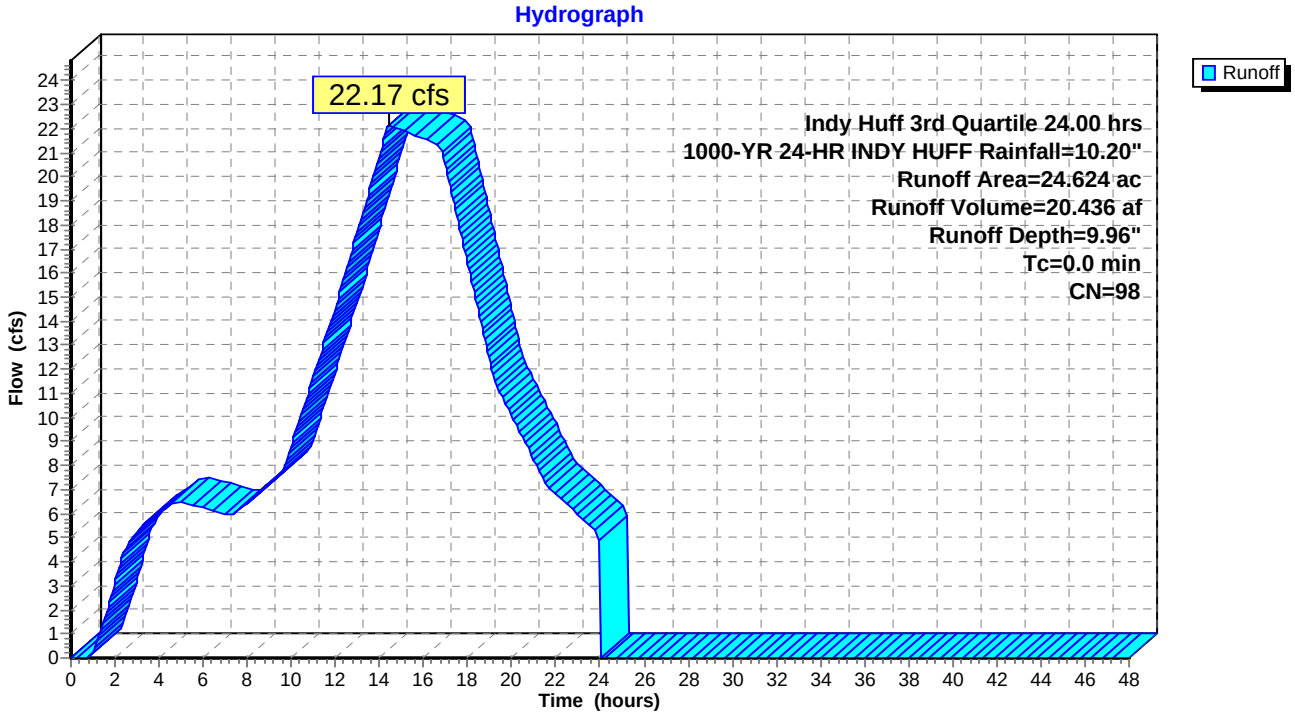
Runoff = 22.17 cfs @ 14.41 hrs, Volume= 20.436 af, Depth= 9.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 3rd Quartile 24.00 hrs 1000-YR 24-HR INDY HUFF Rainfall=10.20"

Area (ac)	CN	Description
24.624	98	Water Surface, HSG B
24.624		100.00% Impervious Area

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

Subcatchment 7S: Subcatchment 7



Hydrograph for Subcatchment 7S: Subcatchment 7

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.05	0.00	0.15
1.50	0.11	0.02	1.53
2.00	0.19	0.06	3.16
2.50	0.30	0.14	4.61
3.00	0.42	0.24	5.22
3.50	0.54	0.35	5.67
4.00	0.66	0.47	6.04
4.50	0.80	0.60	6.36
5.00	0.93	0.73	6.49
5.50	1.07	0.86	6.37
6.00	1.20	0.98	6.23
6.50	1.32	1.11	6.08
7.00	1.45	1.23	5.93
7.50	1.57	1.35	6.09
8.00	1.70	1.47	6.48
8.50	1.83	1.61	6.86
9.00	1.98	1.75	7.24
9.50	2.13	1.90	7.62
10.00	2.29	2.06	8.84
10.50	2.49	2.26	10.28
11.00	2.71	2.48	11.71
11.50	2.96	2.73	13.14
12.00	3.24	3.01	14.58
12.50	3.55	3.32	16.16
13.00	3.89	3.66	17.74
13.50	4.27	4.03	19.33
14.00	4.67	4.44	**20.91**
14.50	5.11	4.87	**22.14**
15.00	5.55	5.32	21.95
15.50	5.99	5.76	21.76
16.00	6.43	6.19	21.58
16.50	6.86	6.63	21.39
17.00	7.29	7.05	20.46
17.50	7.68	7.44	18.42
18.00	8.03	7.79	16.39
18.50	8.34	8.10	14.35
19.00	8.61	8.37	12.32
19.50	8.84	8.60	10.96
20.00	9.05	8.81	10.05
20.50	9.25	9.01	9.14
21.00	9.42	9.18	8.23
21.50	9.58	9.34	7.32
22.00	9.72	9.48	6.80
22.50	9.85	9.61	6.37
23.00	9.98	9.74	5.94
23.50	10.09	9.85	5.52
24.00	**10.20**	**9.96**	2.55
24.50	10.20	9.96	0.00
25.00	10.20	9.96	0.00
25.50	10.20	9.96	0.00
26.00	10.20	9.96	0.00
26.50	10.20	9.96	0.00
27.00	10.20	9.96	0.00
27.50	10.20	9.96	0.00
28.00	10.20	9.96	0.00
28.50	10.20	9.96	0.00
29.00	10.20	9.96	0.00
29.50	10.20	9.96	0.00
30.00	10.20	9.96	0.00
30.50	10.20	9.96	0.00
31.00	10.20	9.96	0.00
31.50	10.20	9.96	0.00
32.00	10.20	9.96	0.00
32.50	10.20	9.96	0.00
33.00	10.20	9.96	0.00
33.50	10.20	9.96	0.00
34.00	10.20	9.96	0.00
34.50	10.20	9.96	0.00
35.00	10.20	9.96	0.00
35.50	10.20	9.96	0.00
36.00	10.20	9.96	0.00
36.50	10.20	9.96	0.00
37.00	10.20	9.96	0.00
37.50	10.20	9.96	0.00
38.00	10.20	9.96	0.00
38.50	10.20	9.96	0.00
39.00	10.20	9.96	0.00
39.50	10.20	9.96	0.00
40.00	10.20	9.96	0.00
40.50	10.20	9.96	0.00
41.00	10.20	9.96	0.00
41.50	10.20	9.96	0.00
42.00	10.20	9.96	0.00
42.50	10.20	9.96	0.00
43.00	10.20	9.96	0.00
43.50	10.20	9.96	0.00
44.00	10.20	9.96	0.00
44.50	10.20	9.96	0.00
45.00	10.20	9.96	0.00
45.50	10.20	9.96	0.00
46.00	10.20	9.96	0.00
46.50	10.20	9.96	0.00
47.00	10.20	9.96	0.00
47.50	10.20	9.96	0.00
48.00	10.20	9.96	0.00

Summary for Subcatchment 8S: Subcatchment 8

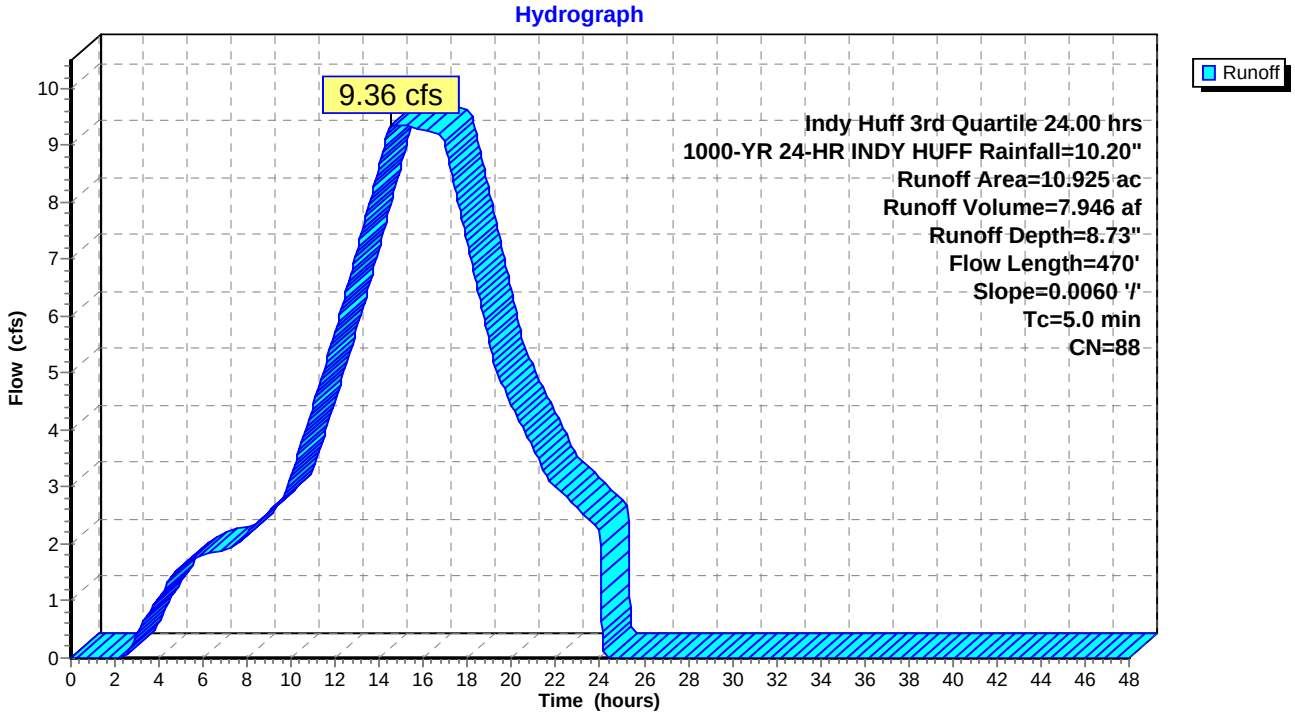
Runoff = 9.36 cfs @ 14.56 hrs, Volume= 7.946 af, Depth= 8.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 3rd Quartile 24.00 hrs 1000-YR 24-HR INDY HUFF Rainfall=10.20"

Area (ac)	CN	Description
10.925	88	Urban industrial, 72% imp, HSG B
3.059		28.00% Pervious Area
7.866		72.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	470	0.0060	1.57		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment 8S: Subcatchment 8



Hydrograph for Subcatchment 8S: Subcatchment 8

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.05	0.00	0.00
1.50	0.11	0.00	0.00
2.00	0.19	0.00	0.00
2.50	0.30	0.00	0.03
3.00	0.42	0.01	0.42
3.50	0.54	0.04	0.77
4.00	0.66	0.09	1.09
4.50	0.80	0.15	1.37
5.00	0.93	0.22	1.61
5.50	1.07	0.29	1.73
6.00	1.20	0.37	1.81
6.50	1.32	0.46	1.87
7.00	1.45	0.54	1.90
7.50	1.57	0.63	1.99
8.00	1.70	0.73	2.18
8.50	1.83	0.83	2.38
9.00	1.98	0.95	2.57
9.50	2.13	1.07	2.77
10.00	2.29	1.20	3.22
10.50	2.49	1.37	3.82
11.00	2.71	1.56	4.45
11.50	2.96	1.78	5.09
12.00	3.24	2.03	5.75
12.50	3.55	2.31	6.46
13.00	3.89	2.63	7.19
13.50	4.27	2.98	7.92
14.00	4.67	3.36	8.66
14.50	5.11	3.77	**9.35**
15.00	5.55	4.20	**9.34**
15.50	5.99	4.62	9.31
16.00	6.43	5.04	9.27
16.50	6.86	5.46	9.22
17.00	7.29	5.88	8.97
17.50	7.68	6.26	8.12
18.00	8.03	6.60	7.25
18.50	8.34	6.90	6.37
19.00	8.61	7.17	5.50
19.50	8.84	7.39	4.83
20.00	9.05	7.60	4.44
20.50	9.25	7.79	4.05
21.00	9.42	7.96	3.65
21.50	9.58	8.12	3.26
22.00	9.72	8.26	3.00
22.50	9.85	8.39	2.81
23.00	9.98	8.51	2.63
23.50	10.09	8.62	2.44
24.00	**10.20**	**8.73**	2.25
24.50	10.20	8.73	0.00
25.00	10.20	8.73	0.00
25.50	10.20	8.73	0.00
26.00	10.20	8.73	0.00
26.50	10.20	8.73	0.00
27.00	10.20	8.73	0.00
27.50	10.20	8.73	0.00
28.00	10.20	8.73	0.00
28.50	10.20	8.73	0.00
29.00	10.20	8.73	0.00
29.50	10.20	8.73	0.00
30.00	10.20	8.73	0.00
30.50	10.20	8.73	0.00
31.00	10.20	8.73	0.00
31.50	10.20	8.73	0.00
32.00	10.20	8.73	0.00
32.50	10.20	8.73	0.00
33.00	10.20	8.73	0.00
33.50	10.20	8.73	0.00
34.00	10.20	8.73	0.00
34.50	10.20	8.73	0.00
35.00	10.20	8.73	0.00
35.50	10.20	8.73	0.00
36.00	10.20	8.73	0.00
36.50	10.20	8.73	0.00
37.00	10.20	8.73	0.00
37.50	10.20	8.73	0.00
38.00	10.20	8.73	0.00
38.50	10.20	8.73	0.00
39.00	10.20	8.73	0.00
39.50	10.20	8.73	0.00
40.00	10.20	8.73	0.00
40.50	10.20	8.73	0.00
41.00	10.20	8.73	0.00
41.50	10.20	8.73	0.00
42.00	10.20	8.73	0.00
42.50	10.20	8.73	0.00
43.00	10.20	8.73	0.00
43.50	10.20	8.73	0.00
44.00	10.20	8.73	0.00
44.50	10.20	8.73	0.00
45.00	10.20	8.73	0.00
45.50	10.20	8.73	0.00
46.00	10.20	8.73	0.00
46.50	10.20	8.73	0.00
47.00	10.20	8.73	0.00
47.50	10.20	8.73	0.00
48.00	10.20	8.73	0.00

Summary for Subcatchment 9S: Subcatchment 9

Acre number found using LIDAR data from 2012 and measuring areas in AutoCAD. CN used for class B soils and grass 50 - 75% was used .

Time of concentration data was determined using LIDAR data from 2012 and measuring lengths in AutoCAD.

To complete time of concentration, a method of sheet flow, shallow flow, or channel flow is needed. These are estimated using LIDAR data. Other things that are needed include a surface description, length of flow, manning's number, land slope, and P2 are needed. The program then computes a Tc.

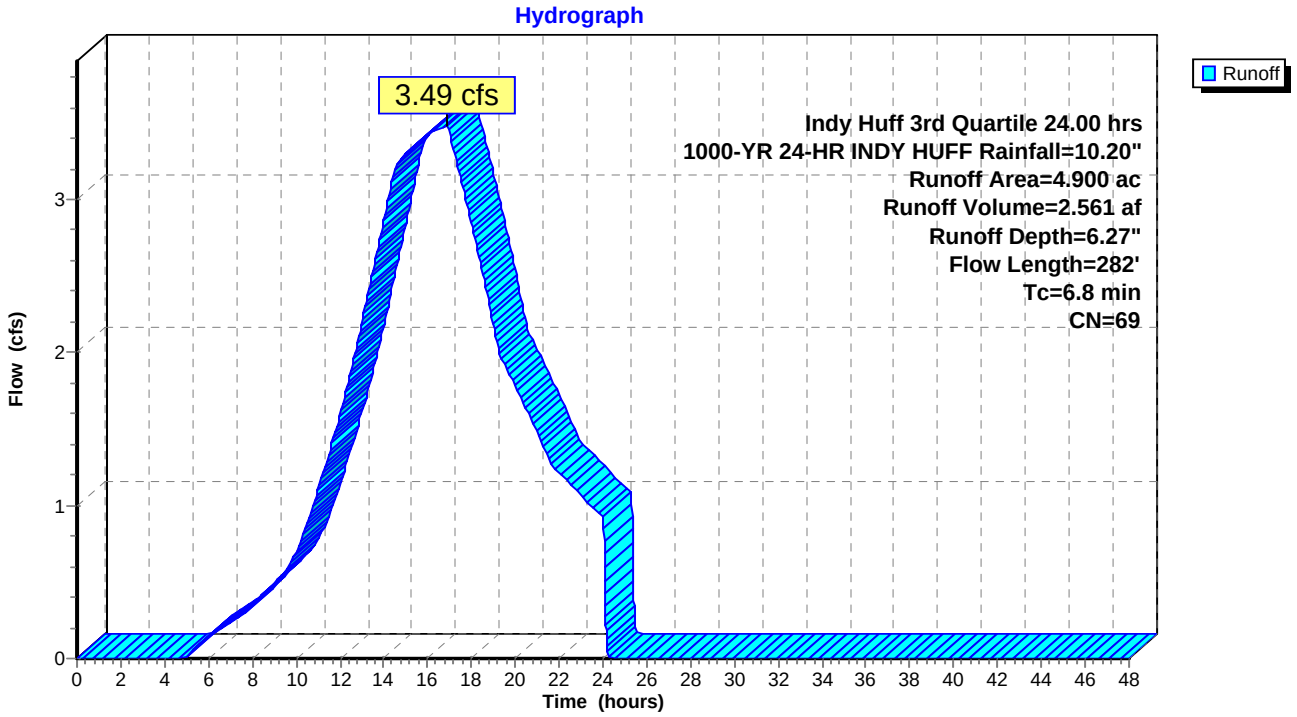
Runoff = 3.49 cfs @ 16.84 hrs, Volume= 2.561 af, Depth= 6.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 3rd Quartile 24.00 hrs 1000-YR 24-HR INDY HUFF Rainfall=10.20"

Area (ac)	CN	Description
4.900	69	50-75% Grass cover, Fair, HSG B
4.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	127	0.2360	0.33		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.28"
0.4	155	0.1900	6.54		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
6.8	282	Total			

Subcatchment 9S: Subcatchment 9



Hydrograph for Subcatchment 9S: Subcatchment 9

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.05	0.00	0.00
1.50	0.11	0.00	0.00
2.00	0.19	0.00	0.00
2.50	0.30	0.00	0.00
3.00	0.42	0.00	0.00
3.50	0.54	0.00	0.00
4.00	0.66	0.00	0.00
4.50	0.80	0.00	0.00
5.00	0.93	0.00	0.01
5.50	1.07	0.01	0.08
6.00	1.20	0.02	0.14
6.50	1.32	0.04	0.19
7.00	1.45	0.06	0.24
7.50	1.57	0.09	0.29
8.00	1.70	0.12	0.35
8.50	1.83	0.16	0.42
9.00	1.98	0.21	0.49
9.50	2.13	0.26	0.57
10.00	2.29	0.33	0.70
10.50	2.49	0.41	0.89
11.00	2.71	0.52	1.10
11.50	2.96	0.65	1.34
12.00	3.24	0.80	1.60
12.50	3.55	0.98	1.89
13.00	3.89	1.20	2.20
13.50	4.27	1.44	2.53
14.00	4.67	1.72	2.86
14.50	5.11	2.04	3.21
15.00	5.55	2.37	3.30
15.50	5.99	2.71	3.37
16.00	6.43	3.05	3.42
16.50	6.86	3.40	**3.47**
17.00	7.29	3.75	**3.44**
17.50	7.68	4.08	3.15
18.00	8.03	4.38	2.84
18.50	8.34	4.64	2.52
19.00	8.61	4.87	2.19
19.50	8.84	5.07	1.93
20.00	9.05	5.26	1.78
20.50	9.25	5.43	1.63
21.00	9.42	5.58	1.48
21.50	9.58	5.72	1.32
22.00	9.72	5.85	1.21
22.50	9.85	5.96	1.14
23.00	9.98	6.07	1.07
23.50	10.09	6.18	1.00
24.00	**10.20**	**6.27**	0.92
24.50	10.20	6.27	0.00
25.00	10.20	6.27	0.00
25.50	10.20	6.27	0.00
26.00	10.20	6.27	0.00
26.50	10.20	6.27	0.00
27.00	10.20	6.27	0.00
27.50	10.20	6.27	0.00
28.00	10.20	6.27	0.00
28.50	10.20	6.27	0.00
29.00	10.20	6.27	0.00
29.50	10.20	6.27	0.00
30.00	10.20	6.27	0.00
30.50	10.20	6.27	0.00
31.00	10.20	6.27	0.00
31.50	10.20	6.27	0.00
32.00	10.20	6.27	0.00
32.50	10.20	6.27	0.00
33.00	10.20	6.27	0.00
33.50	10.20	6.27	0.00
34.00	10.20	6.27	0.00
34.50	10.20	6.27	0.00
35.00	10.20	6.27	0.00
35.50	10.20	6.27	0.00
36.00	10.20	6.27	0.00
36.50	10.20	6.27	0.00
37.00	10.20	6.27	0.00
37.50	10.20	6.27	0.00
38.00	10.20	6.27	0.00
38.50	10.20	6.27	0.00
39.00	10.20	6.27	0.00
39.50	10.20	6.27	0.00
40.00	10.20	6.27	0.00
40.50	10.20	6.27	0.00
41.00	10.20	6.27	0.00
41.50	10.20	6.27	0.00
42.00	10.20	6.27	0.00
42.50	10.20	6.27	0.00
43.00	10.20	6.27	0.00
43.50	10.20	6.27	0.00
44.00	10.20	6.27	0.00
44.50	10.20	6.27	0.00
45.00	10.20	6.27	0.00
45.50	10.20	6.27	0.00
46.00	10.20	6.27	0.00
46.50	10.20	6.27	0.00
47.00	10.20	6.27	0.00
47.50	10.20	6.27	0.00
48.00	10.20	6.27	0.00

Summary for Subcatchment 10S: Middle Pond Drainage Area

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

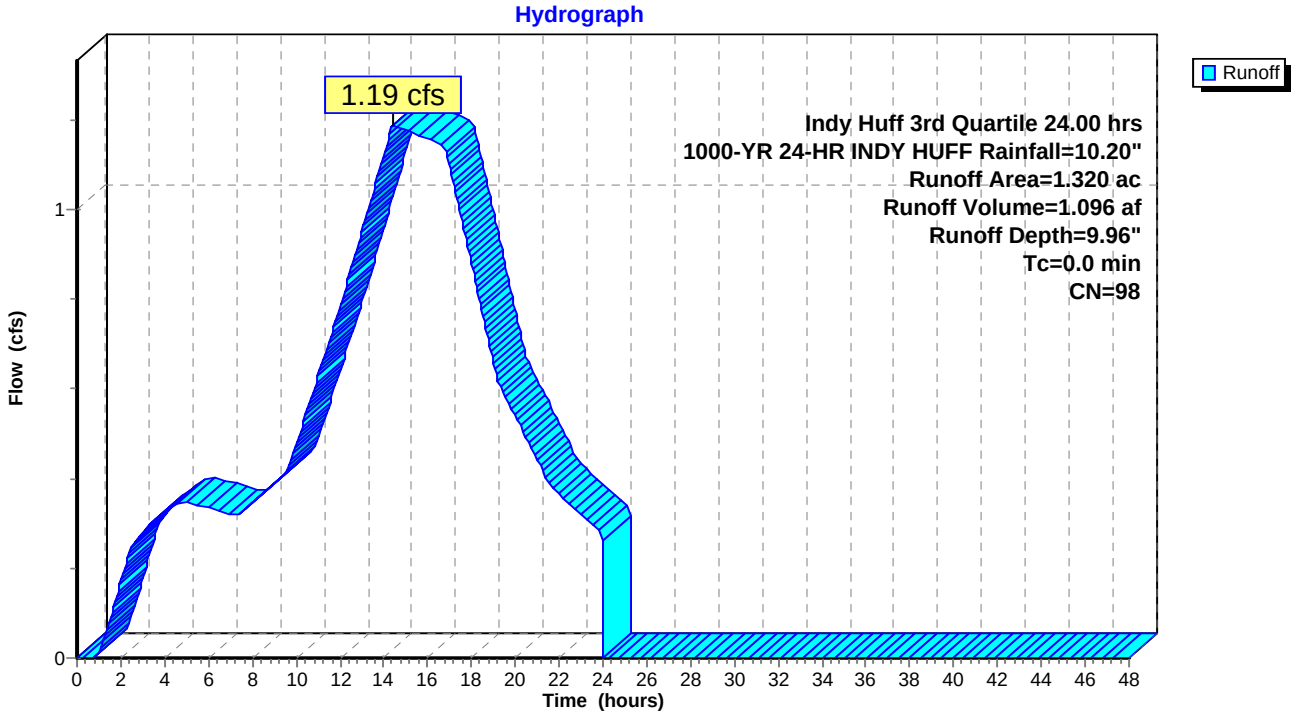
Runoff = 1.19 cfs @ 14.41 hrs, Volume= 1.096 af, Depth= 9.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 3rd Quartile 24.00 hrs 1000-YR 24-HR INDY HUFF Rainfall=10.20"

Area (ac)	CN	Description
1.320	98	Water Surface, HSG B
1.320		100.00% Impervious Area

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

Subcatchment 10S: Middle Pond Drainage Area



Hydrograph for Subcatchment 10S: Middle Pond Drainage Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.05	0.00	0.01
1.50	0.11	0.02	0.08
2.00	0.19	0.06	0.17
2.50	0.30	0.14	0.25
3.00	0.42	0.24	0.28
3.50	0.54	0.35	0.30
4.00	0.66	0.47	0.32
4.50	0.80	0.60	0.34
5.00	0.93	0.73	0.35
5.50	1.07	0.86	0.34
6.00	1.20	0.98	0.33
6.50	1.32	1.11	0.33
7.00	1.45	1.23	0.32
7.50	1.57	1.35	0.33
8.00	1.70	1.47	0.35
8.50	1.83	1.61	0.37
9.00	1.98	1.75	0.39
9.50	2.13	1.90	0.41
10.00	2.29	2.06	0.47
10.50	2.49	2.26	0.55
11.00	2.71	2.48	0.63
11.50	2.96	2.73	0.70
12.00	3.24	3.01	0.78
12.50	3.55	3.32	0.87
13.00	3.89	3.66	0.95
13.50	4.27	4.03	1.04
14.00	4.67	4.44	**1.12**
14.50	5.11	4.87	**1.19**
15.00	5.55	5.32	1.18
15.50	5.99	5.76	1.17
16.00	6.43	6.19	1.16
16.50	6.86	6.63	1.15
17.00	7.29	7.05	1.10
17.50	7.68	7.44	0.99
18.00	8.03	7.79	0.88
18.50	8.34	8.10	0.77
19.00	8.61	8.37	0.66
19.50	8.84	8.60	0.59
20.00	9.05	8.81	0.54
20.50	9.25	9.01	0.49
21.00	9.42	9.18	0.44
21.50	9.58	9.34	0.39
22.00	9.72	9.48	0.36
22.50	9.85	9.61	0.34
23.00	9.98	9.74	0.32
23.50	10.09	9.85	0.30
24.00	**10.20**	**9.96**	0.14
24.50	10.20	9.96	0.00
25.00	10.20	9.96	0.00
25.50	10.20	9.96	0.00
26.00	10.20	9.96	0.00
26.50	10.20	9.96	0.00
27.00	10.20	9.96	0.00
27.50	10.20	9.96	0.00
28.00	10.20	9.96	0.00
28.50	10.20	9.96	0.00
29.00	10.20	9.96	0.00
29.50	10.20	9.96	0.00
30.00	10.20	9.96	0.00
30.50	10.20	9.96	0.00
31.00	10.20	9.96	0.00
31.50	10.20	9.96	0.00
32.00	10.20	9.96	0.00
32.50	10.20	9.96	0.00
33.00	10.20	9.96	0.00
33.50	10.20	9.96	0.00
34.00	10.20	9.96	0.00
34.50	10.20	9.96	0.00
35.00	10.20	9.96	0.00
35.50	10.20	9.96	0.00
36.00	10.20	9.96	0.00
36.50	10.20	9.96	0.00
37.00	10.20	9.96	0.00
37.50	10.20	9.96	0.00
38.00	10.20	9.96	0.00
38.50	10.20	9.96	0.00
39.00	10.20	9.96	0.00
39.50	10.20	9.96	0.00
40.00	10.20	9.96	0.00
40.50	10.20	9.96	0.00
41.00	10.20	9.96	0.00
41.50	10.20	9.96	0.00
42.00	10.20	9.96	0.00
42.50	10.20	9.96	0.00
43.00	10.20	9.96	0.00
43.50	10.20	9.96	0.00
44.00	10.20	9.96	0.00
44.50	10.20	9.96	0.00
45.00	10.20	9.96	0.00
45.50	10.20	9.96	0.00
46.00	10.20	9.96	0.00
46.50	10.20	9.96	0.00
47.00	10.20	9.96	0.00
47.50	10.20	9.96	0.00
48.00	10.20	9.96	0.00

Summary for Subcatchment 11S: Gypsum Treatment Ditch Drainage Area

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

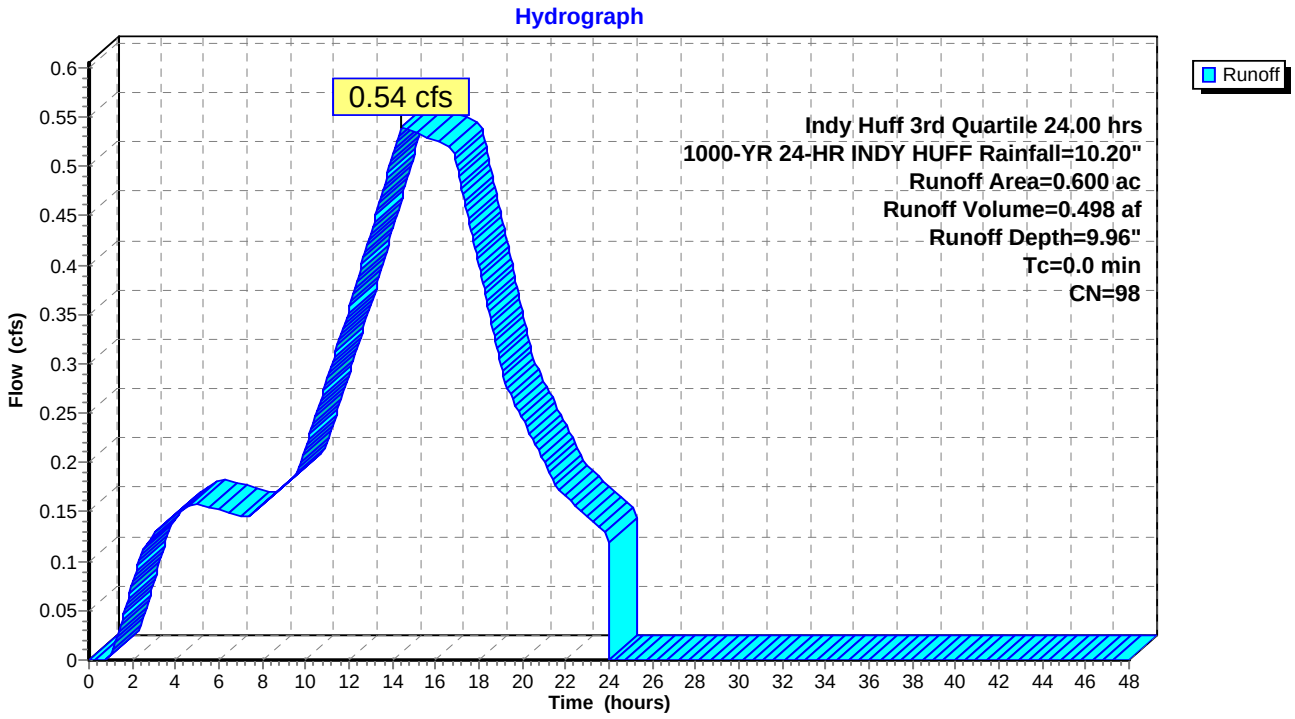
Runoff = 0.54 cfs @ 14.41 hrs, Volume= 0.498 af, Depth= 9.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 3rd Quartile 24.00 hrs 1000-YR 24-HR INDY HUFF Rainfall=10.20"

Area (ac)	CN	Description
0.600	98	Water Surface, HSG B
0.600		100.00% Impervious Area

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

Subcatchment 11S: Gypsum Treatment Ditch Drainage Area



Hydrograph for Subcatchment 11S: Gypsum Treatment Ditch Drainage Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.05	0.00	0.00
1.50	0.11	0.02	0.04
2.00	0.19	0.06	0.08
2.50	0.30	0.14	0.11
3.00	0.42	0.24	0.13
3.50	0.54	0.35	0.14
4.00	0.66	0.47	0.15
4.50	0.80	0.60	0.15
5.00	0.93	0.73	0.16
5.50	1.07	0.86	0.16
6.00	1.20	0.98	0.15
6.50	1.32	1.11	0.15
7.00	1.45	1.23	0.14
7.50	1.57	1.35	0.15
8.00	1.70	1.47	0.16
8.50	1.83	1.61	0.17
9.00	1.98	1.75	0.18
9.50	2.13	1.90	0.19
10.00	2.29	2.06	0.22
10.50	2.49	2.26	0.25
11.00	2.71	2.48	0.29
11.50	2.96	2.73	0.32
12.00	3.24	3.01	0.36
12.50	3.55	3.32	0.39
13.00	3.89	3.66	0.43
13.50	4.27	4.03	0.47
14.00	4.67	4.44	**0.51**
14.50	5.11	4.87	**0.54**
15.00	5.55	5.32	0.53
15.50	5.99	5.76	0.53
16.00	6.43	6.19	0.53
16.50	6.86	6.63	0.52
17.00	7.29	7.05	0.50
17.50	7.68	7.44	0.45
18.00	8.03	7.79	0.40
18.50	8.34	8.10	0.35
19.00	8.61	8.37	0.30
19.50	8.84	8.60	0.27
20.00	9.05	8.81	0.24
20.50	9.25	9.01	0.22
21.00	9.42	9.18	0.20
21.50	9.58	9.34	0.18
22.00	9.72	9.48	0.17
22.50	9.85	9.61	0.16
23.00	9.98	9.74	0.14
23.50	10.09	9.85	0.13
24.00	**10.20**	**9.96**	0.06
24.50	10.20	9.96	0.00
25.00	10.20	9.96	0.00
25.50	10.20	9.96	0.00
26.00	10.20	9.96	0.00
26.50	10.20	9.96	0.00
27.00	10.20	9.96	0.00
27.50	10.20	9.96	0.00
28.00	10.20	9.96	0.00
28.50	10.20	9.96	0.00
29.00	10.20	9.96	0.00
29.50	10.20	9.96	0.00
30.00	10.20	9.96	0.00
30.50	10.20	9.96	0.00
31.00	10.20	9.96	0.00
31.50	10.20	9.96	0.00
32.00	10.20	9.96	0.00
32.50	10.20	9.96	0.00
33.00	10.20	9.96	0.00
33.50	10.20	9.96	0.00
34.00	10.20	9.96	0.00
34.50	10.20	9.96	0.00
35.00	10.20	9.96	0.00
35.50	10.20	9.96	0.00
36.00	10.20	9.96	0.00
36.50	10.20	9.96	0.00
37.00	10.20	9.96	0.00
37.50	10.20	9.96	0.00
38.00	10.20	9.96	0.00
38.50	10.20	9.96	0.00
39.00	10.20	9.96	0.00
39.50	10.20	9.96	0.00
40.00	10.20	9.96	0.00
40.50	10.20	9.96	0.00
41.00	10.20	9.96	0.00
41.50	10.20	9.96	0.00
42.00	10.20	9.96	0.00
42.50	10.20	9.96	0.00
43.00	10.20	9.96	0.00
43.50	10.20	9.96	0.00
44.00	10.20	9.96	0.00
44.50	10.20	9.96	0.00
45.00	10.20	9.96	0.00
45.50	10.20	9.96	0.00
46.00	10.20	9.96	0.00
46.50	10.20	9.96	0.00
47.00	10.20	9.96	0.00
47.50	10.20	9.96	0.00
48.00	10.20	9.96	0.00

Summary for Subcatchment 12S: Settling Pond Drainage Area

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

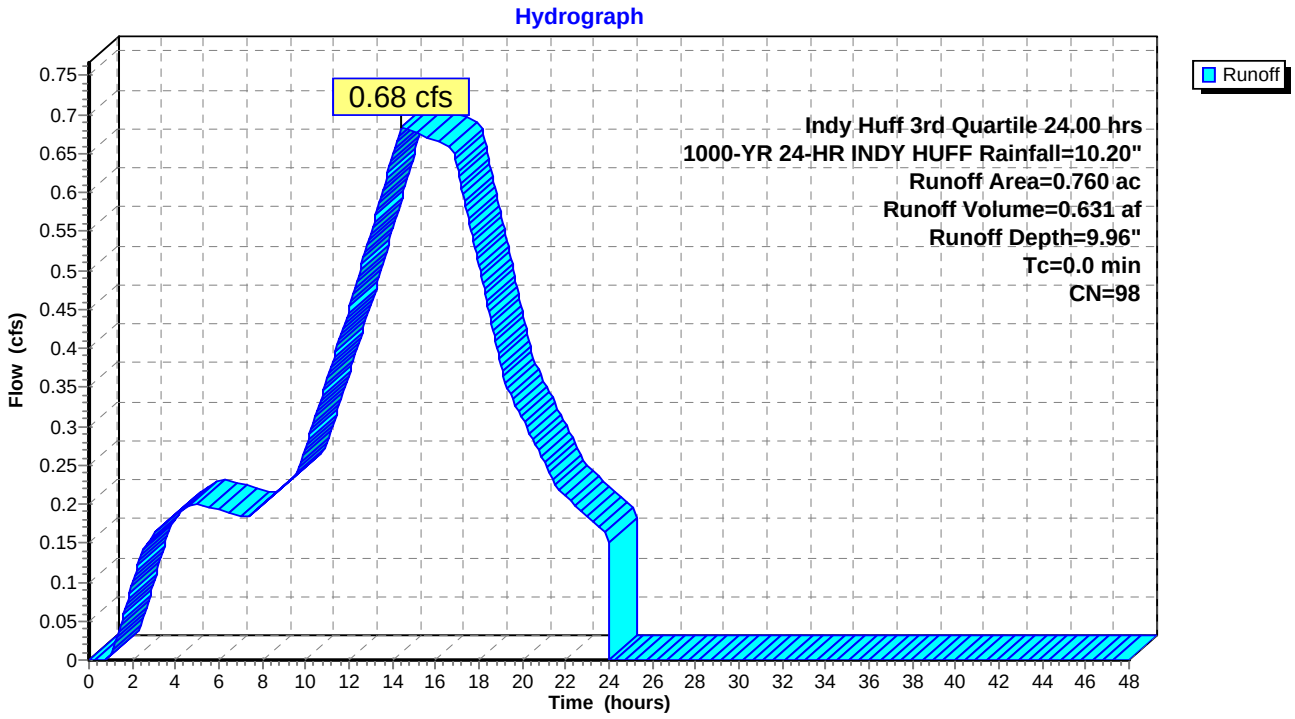
Runoff = 0.68 cfs @ 14.41 hrs, Volume= 0.631 af, Depth= 9.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 3rd Quartile 24.00 hrs 1000-YR 24-HR INDY HUFF Rainfall=10.20"

Area (ac)	CN	Description
0.760	98	Water Surface, HSG C
0.760		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry, 0**

Subcatchment 12S: Settling Pond Drainage Area



Hydrograph for Subcatchment 12S: Settling Pond Drainage Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.05	0.00	0.00
1.50	0.11	0.02	0.05
2.00	0.19	0.06	0.10
2.50	0.30	0.14	0.14
3.00	0.42	0.24	0.16
3.50	0.54	0.35	0.17
4.00	0.66	0.47	0.19
4.50	0.80	0.60	0.20
5.00	0.93	0.73	0.20
5.50	1.07	0.86	0.20
6.00	1.20	0.98	0.19
6.50	1.32	1.11	0.19
7.00	1.45	1.23	0.18
7.50	1.57	1.35	0.19
8.00	1.70	1.47	0.20
8.50	1.83	1.61	0.21
9.00	1.98	1.75	0.22
9.50	2.13	1.90	0.24
10.00	2.29	2.06	0.27
10.50	2.49	2.26	0.32
11.00	2.71	2.48	0.36
11.50	2.96	2.73	0.41
12.00	3.24	3.01	0.45
12.50	3.55	3.32	0.50
13.00	3.89	3.66	0.55
13.50	4.27	4.03	0.60
14.00	4.67	4.44	**0.65**
14.50	5.11	4.87	**0.68**
15.00	5.55	5.32	0.68
15.50	5.99	5.76	0.67
16.00	6.43	6.19	0.67
16.50	6.86	6.63	0.66
17.00	7.29	7.05	0.63
17.50	7.68	7.44	0.57
18.00	8.03	7.79	0.51
18.50	8.34	8.10	0.44
19.00	8.61	8.37	0.38
19.50	8.84	8.60	0.34
20.00	9.05	8.81	0.31
20.50	9.25	9.01	0.28
21.00	9.42	9.18	0.25
21.50	9.58	9.34	0.23
22.00	9.72	9.48	0.21
22.50	9.85	9.61	0.20
23.00	9.98	9.74	0.18
23.50	10.09	9.85	0.17
24.00	**10.20**	**9.96**	0.08
24.50	10.20	9.96	0.00
25.00	10.20	9.96	0.00
25.50	10.20	9.96	0.00
26.00	10.20	9.96	0.00
26.50	10.20	9.96	0.00
27.00	10.20	9.96	0.00
27.50	10.20	9.96	0.00
28.00	10.20	9.96	0.00
28.50	10.20	9.96	0.00
29.00	10.20	9.96	0.00
29.50	10.20	9.96	0.00
30.00	10.20	9.96	0.00
30.50	10.20	9.96	0.00
31.00	10.20	9.96	0.00
31.50	10.20	9.96	0.00
32.00	10.20	9.96	0.00
32.50	10.20	9.96	0.00
33.00	10.20	9.96	0.00
33.50	10.20	9.96	0.00
34.00	10.20	9.96	0.00
34.50	10.20	9.96	0.00
35.00	10.20	9.96	0.00
35.50	10.20	9.96	0.00
36.00	10.20	9.96	0.00
36.50	10.20	9.96	0.00
37.00	10.20	9.96	0.00
37.50	10.20	9.96	0.00
38.00	10.20	9.96	0.00
38.50	10.20	9.96	0.00
39.00	10.20	9.96	0.00
39.50	10.20	9.96	0.00
40.00	10.20	9.96	0.00
40.50	10.20	9.96	0.00
41.00	10.20	9.96	0.00
41.50	10.20	9.96	0.00
42.00	10.20	9.96	0.00
42.50	10.20	9.96	0.00
43.00	10.20	9.96	0.00
43.50	10.20	9.96	0.00
44.00	10.20	9.96	0.00
44.50	10.20	9.96	0.00
45.00	10.20	9.96	0.00
45.50	10.20	9.96	0.00
46.00	10.20	9.96	0.00
46.50	10.20	9.96	0.00
47.00	10.20	9.96	0.00
47.50	10.20	9.96	0.00
48.00	10.20	9.96	0.00

Summary for Subcatchment 13S: Gypsum Pond Drainage Area

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

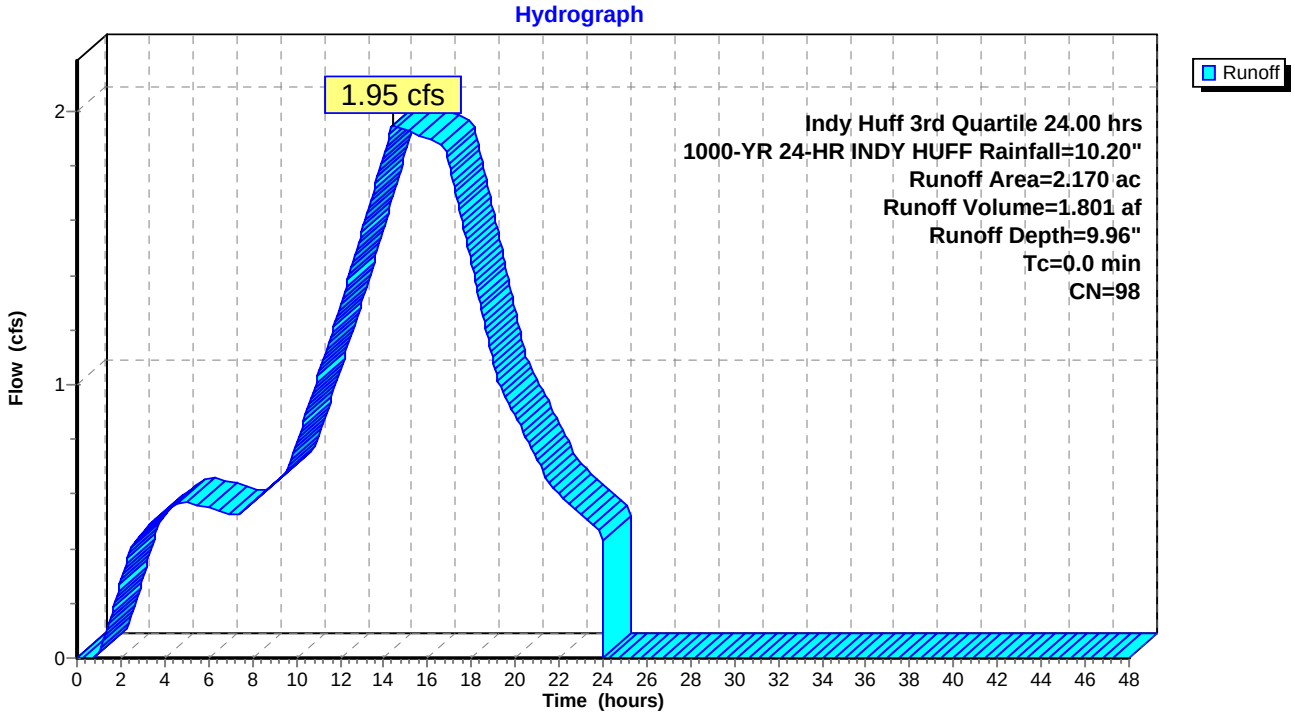
Runoff = 1.95 cfs @ 14.41 hrs, Volume= 1.801 af, Depth= 9.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 3rd Quartile 24.00 hrs 1000-YR 24-HR INDY HUFF Rainfall=10.20"

Area (ac)	CN	Description
2.170	98	Water Surface, HSG B
2.170		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry, 0**

Subcatchment 13S: Gypsum Pond Drainage Area



Hydrograph for Subcatchment 13S: Gypsum Pond Drainage Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.05	0.00	0.01
1.50	0.11	0.02	0.13
2.00	0.19	0.06	0.28
2.50	0.30	0.14	0.41
3.00	0.42	0.24	0.46
3.50	0.54	0.35	0.50
4.00	0.66	0.47	0.53
4.50	0.80	0.60	0.56
5.00	0.93	0.73	0.57
5.50	1.07	0.86	0.56
6.00	1.20	0.98	0.55
6.50	1.32	1.11	0.54
7.00	1.45	1.23	0.52
7.50	1.57	1.35	0.54
8.00	1.70	1.47	0.57
8.50	1.83	1.61	0.60
9.00	1.98	1.75	0.64
9.50	2.13	1.90	0.67
10.00	2.29	2.06	0.78
10.50	2.49	2.26	0.91
11.00	2.71	2.48	1.03
11.50	2.96	2.73	1.16
12.00	3.24	3.01	1.28
12.50	3.55	3.32	1.42
13.00	3.89	3.66	1.56
13.50	4.27	4.03	1.70
14.00	4.67	4.44	**1.84**
14.50	5.11	4.87	**1.95**
15.00	5.55	5.32	1.93
15.50	5.99	5.76	1.92
16.00	6.43	6.19	1.90
16.50	6.86	6.63	1.88
17.00	7.29	7.05	1.80
17.50	7.68	7.44	1.62
18.00	8.03	7.79	1.44
18.50	8.34	8.10	1.26
19.00	8.61	8.37	1.09
19.50	8.84	8.60	0.97
20.00	9.05	8.81	0.89
20.50	9.25	9.01	0.81
21.00	9.42	9.18	0.73
21.50	9.58	9.34	0.65
22.00	9.72	9.48	0.60
22.50	9.85	9.61	0.56
23.00	9.98	9.74	0.52
23.50	10.09	9.85	0.49
24.00	**10.20**	**9.96**	0.22
24.50	10.20	9.96	0.00
25.00	10.20	9.96	0.00
25.50	10.20	9.96	0.00
26.00	10.20	9.96	0.00
26.50	10.20	9.96	0.00
27.00	10.20	9.96	0.00
27.50	10.20	9.96	0.00
28.00	10.20	9.96	0.00
28.50	10.20	9.96	0.00
29.00	10.20	9.96	0.00
29.50	10.20	9.96	0.00
30.00	10.20	9.96	0.00
30.50	10.20	9.96	0.00
31.00	10.20	9.96	0.00
31.50	10.20	9.96	0.00
32.00	10.20	9.96	0.00
32.50	10.20	9.96	0.00
33.00	10.20	9.96	0.00
33.50	10.20	9.96	0.00
34.00	10.20	9.96	0.00
34.50	10.20	9.96	0.00
35.00	10.20	9.96	0.00
35.50	10.20	9.96	0.00
36.00	10.20	9.96	0.00
36.50	10.20	9.96	0.00
37.00	10.20	9.96	0.00
37.50	10.20	9.96	0.00
38.00	10.20	9.96	0.00
38.50	10.20	9.96	0.00
39.00	10.20	9.96	0.00
39.50	10.20	9.96	0.00
40.00	10.20	9.96	0.00
40.50	10.20	9.96	0.00
41.00	10.20	9.96	0.00
41.50	10.20	9.96	0.00
42.00	10.20	9.96	0.00
42.50	10.20	9.96	0.00
43.00	10.20	9.96	0.00
43.50	10.20	9.96	0.00
44.00	10.20	9.96	0.00
44.50	10.20	9.96	0.00
45.00	10.20	9.96	0.00
45.50	10.20	9.96	0.00
46.00	10.20	9.96	0.00
46.50	10.20	9.96	0.00
47.00	10.20	9.96	0.00
47.50	10.20	9.96	0.00
48.00	10.20	9.96	0.00

Summary for Subcatchment 14S: West Pond 1 Drainage Area

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

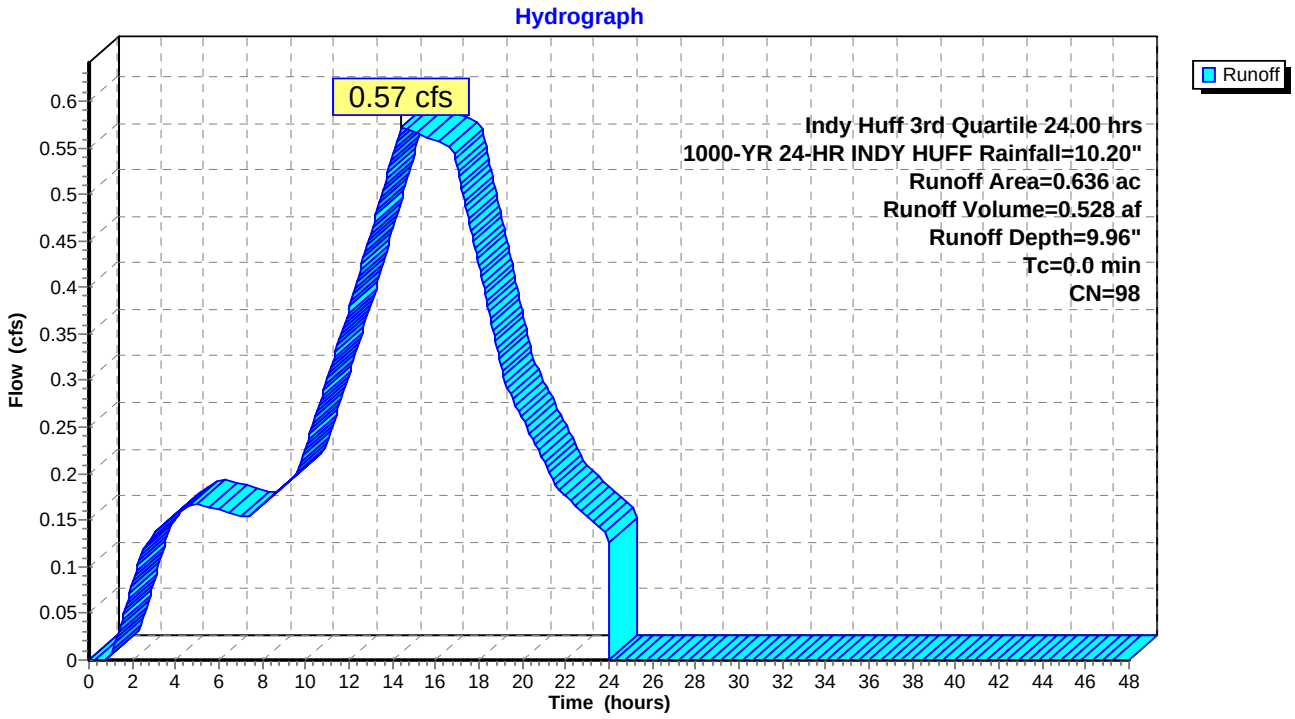
Runoff = 0.57 cfs @ 14.41 hrs, Volume= 0.528 af, Depth= 9.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 3rd Quartile 24.00 hrs 1000-YR 24-HR INDY HUFF Rainfall=10.20"

Area (ac)	CN	Description
0.636	98	Water Surface, HSG B
0.636		100.00% Impervious Area

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

Subcatchment 14S: West Pond 1 Drainage Area



Hydrograph for Subcatchment 14S: West Pond 1 Drainage Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.05	0.00	0.00
1.50	0.11	0.02	0.04
2.00	0.19	0.06	0.08
2.50	0.30	0.14	0.12
3.00	0.42	0.24	0.13
3.50	0.54	0.35	0.15
4.00	0.66	0.47	0.16
4.50	0.80	0.60	0.16
5.00	0.93	0.73	0.17
5.50	1.07	0.86	0.16
6.00	1.20	0.98	0.16
6.50	1.32	1.11	0.16
7.00	1.45	1.23	0.15
7.50	1.57	1.35	0.16
8.00	1.70	1.47	0.17
8.50	1.83	1.61	0.18
9.00	1.98	1.75	0.19
9.50	2.13	1.90	0.20
10.00	2.29	2.06	0.23
10.50	2.49	2.26	0.27
11.00	2.71	2.48	0.30
11.50	2.96	2.73	0.34
12.00	3.24	3.01	0.38
12.50	3.55	3.32	0.42
13.00	3.89	3.66	0.46
13.50	4.27	4.03	0.50
14.00	4.67	4.44	**0.54**
14.50	5.11	4.87	**0.57**
15.00	5.55	5.32	0.57
15.50	5.99	5.76	0.56
16.00	6.43	6.19	0.56
16.50	6.86	6.63	0.55
17.00	7.29	7.05	0.53
17.50	7.68	7.44	0.48
18.00	8.03	7.79	0.42
18.50	8.34	8.10	0.37
19.00	8.61	8.37	0.32
19.50	8.84	8.60	0.28
20.00	9.05	8.81	0.26
20.50	9.25	9.01	0.24
21.00	9.42	9.18	0.21
21.50	9.58	9.34	0.19
22.00	9.72	9.48	0.18
22.50	9.85	9.61	0.16
23.00	9.98	9.74	0.15
23.50	10.09	9.85	0.14
24.00	**10.20**	**9.96**	0.07
24.50	10.20	9.96	0.00
25.00	10.20	9.96	0.00
25.50	10.20	9.96	0.00
26.00	10.20	9.96	0.00
26.50	10.20	9.96	0.00
27.00	10.20	9.96	0.00
27.50	10.20	9.96	0.00
28.00	10.20	9.96	0.00
28.50	10.20	9.96	0.00
29.00	10.20	9.96	0.00
29.50	10.20	9.96	0.00
30.00	10.20	9.96	0.00
30.50	10.20	9.96	0.00
31.00	10.20	9.96	0.00
31.50	10.20	9.96	0.00
32.00	10.20	9.96	0.00
32.50	10.20	9.96	0.00
33.00	10.20	9.96	0.00
33.50	10.20	9.96	0.00
34.00	10.20	9.96	0.00
34.50	10.20	9.96	0.00
35.00	10.20	9.96	0.00
35.50	10.20	9.96	0.00
36.00	10.20	9.96	0.00
36.50	10.20	9.96	0.00
37.00	10.20	9.96	0.00
37.50	10.20	9.96	0.00
38.00	10.20	9.96	0.00
38.50	10.20	9.96	0.00
39.00	10.20	9.96	0.00
39.50	10.20	9.96	0.00
40.00	10.20	9.96	0.00
40.50	10.20	9.96	0.00
41.00	10.20	9.96	0.00
41.50	10.20	9.96	0.00
42.00	10.20	9.96	0.00
42.50	10.20	9.96	0.00
43.00	10.20	9.96	0.00
43.50	10.20	9.96	0.00
44.00	10.20	9.96	0.00
44.50	10.20	9.96	0.00
45.00	10.20	9.96	0.00
45.50	10.20	9.96	0.00
46.00	10.20	9.96	0.00
46.50	10.20	9.96	0.00
47.00	10.20	9.96	0.00
47.50	10.20	9.96	0.00
48.00	10.20	9.96	0.00

Summary for Subcatchment 15S: South Pond 2 Drainage Area

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

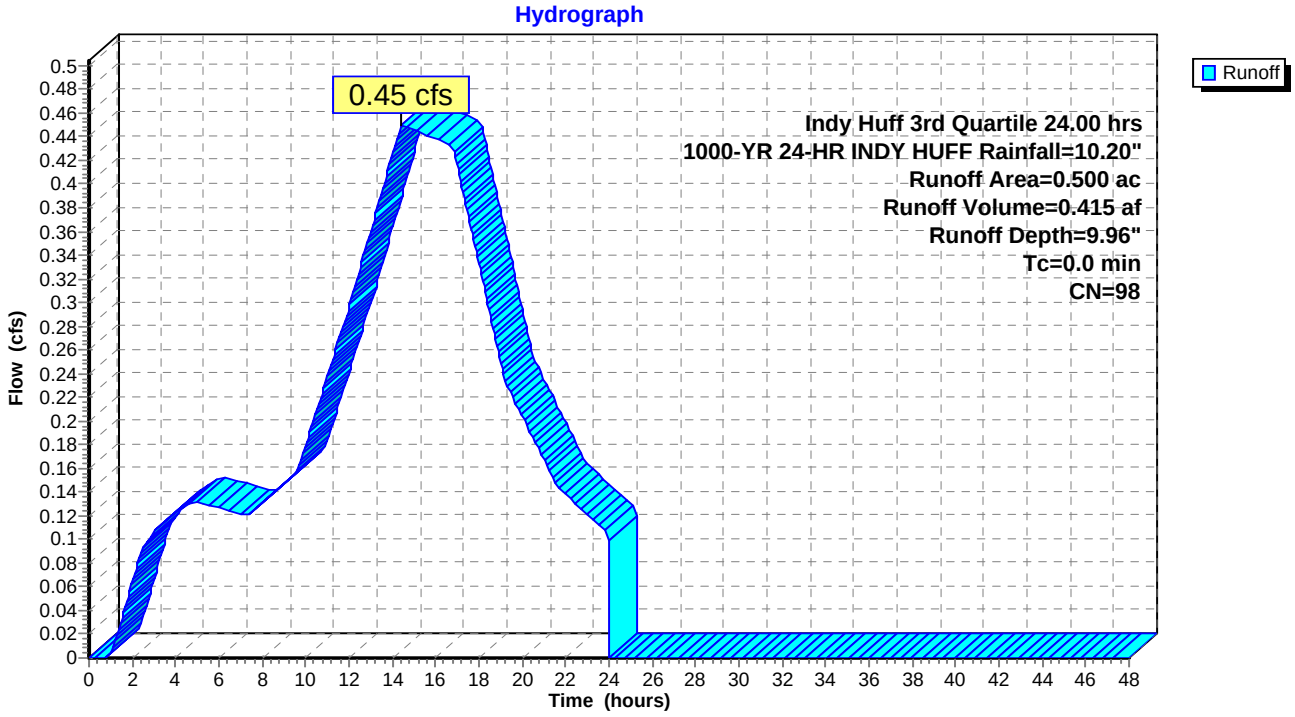
Runoff = 0.45 cfs @ 14.41 hrs, Volume= 0.415 af, Depth= 9.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 3rd Quartile 24.00 hrs 1000-YR 24-HR INDY HUFF Rainfall=10.20"

Area (ac)	CN	Description
0.500	98	Water Surface, HSG B
0.500		100.00% Impervious Area

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

Subcatchment 15S: South Pond 2 Drainage Area



Hydrograph for Subcatchment 15S: South Pond 2 Drainage Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.05	0.00	0.00
1.50	0.11	0.02	0.03
2.00	0.19	0.06	0.06
2.50	0.30	0.14	0.09
3.00	0.42	0.24	0.11
3.50	0.54	0.35	0.12
4.00	0.66	0.47	0.12
4.50	0.80	0.60	0.13
5.00	0.93	0.73	0.13
5.50	1.07	0.86	0.13
6.00	1.20	0.98	0.13
6.50	1.32	1.11	0.12
7.00	1.45	1.23	0.12
7.50	1.57	1.35	0.12
8.00	1.70	1.47	0.13
8.50	1.83	1.61	0.14
9.00	1.98	1.75	0.15
9.50	2.13	1.90	0.15
10.00	2.29	2.06	0.18
10.50	2.49	2.26	0.21
11.00	2.71	2.48	0.24
11.50	2.96	2.73	0.27
12.00	3.24	3.01	0.30
12.50	3.55	3.32	0.33
13.00	3.89	3.66	0.36
13.50	4.27	4.03	0.39
14.00	4.67	4.44	**0.42**
14.50	5.11	4.87	**0.45**
15.00	5.55	5.32	0.45
15.50	5.99	5.76	0.44
16.00	6.43	6.19	0.44
16.50	6.86	6.63	0.43
17.00	7.29	7.05	0.42
17.50	7.68	7.44	0.37
18.00	8.03	7.79	0.33
18.50	8.34	8.10	0.29
19.00	8.61	8.37	0.25
19.50	8.84	8.60	0.22
20.00	9.05	8.81	0.20
20.50	9.25	9.01	0.19
21.00	9.42	9.18	0.17
21.50	9.58	9.34	0.15
22.00	9.72	9.48	0.14
22.50	9.85	9.61	0.13
23.00	9.98	9.74	0.12
23.50	10.09	9.85	0.11
24.00	**10.20**	**9.96**	0.05
24.50	10.20	9.96	0.00
25.00	10.20	9.96	0.00
25.50	10.20	9.96	0.00
26.00	10.20	9.96	0.00
26.50	10.20	9.96	0.00
27.00	10.20	9.96	0.00
27.50	10.20	9.96	0.00
28.00	10.20	9.96	0.00
28.50	10.20	9.96	0.00
29.00	10.20	9.96	0.00
29.50	10.20	9.96	0.00
30.00	10.20	9.96	0.00
30.50	10.20	9.96	0.00
31.00	10.20	9.96	0.00
31.50	10.20	9.96	0.00
32.00	10.20	9.96	0.00
32.50	10.20	9.96	0.00
33.00	10.20	9.96	0.00
33.50	10.20	9.96	0.00
34.00	10.20	9.96	0.00
34.50	10.20	9.96	0.00
35.00	10.20	9.96	0.00
35.50	10.20	9.96	0.00
36.00	10.20	9.96	0.00
36.50	10.20	9.96	0.00
37.00	10.20	9.96	0.00
37.50	10.20	9.96	0.00
38.00	10.20	9.96	0.00
38.50	10.20	9.96	0.00
39.00	10.20	9.96	0.00
39.50	10.20	9.96	0.00
40.00	10.20	9.96	0.00
40.50	10.20	9.96	0.00
41.00	10.20	9.96	0.00
41.50	10.20	9.96	0.00
42.00	10.20	9.96	0.00
42.50	10.20	9.96	0.00
43.00	10.20	9.96	0.00
43.50	10.20	9.96	0.00
44.00	10.20	9.96	0.00
44.50	10.20	9.96	0.00
45.00	10.20	9.96	0.00
45.50	10.20	9.96	0.00
46.00	10.20	9.96	0.00
46.50	10.20	9.96	0.00
47.00	10.20	9.96	0.00
47.50	10.20	9.96	0.00
48.00	10.20	9.96	0.00

Summary for Subcatchment 16S: West Pond 2 Drainage Area

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

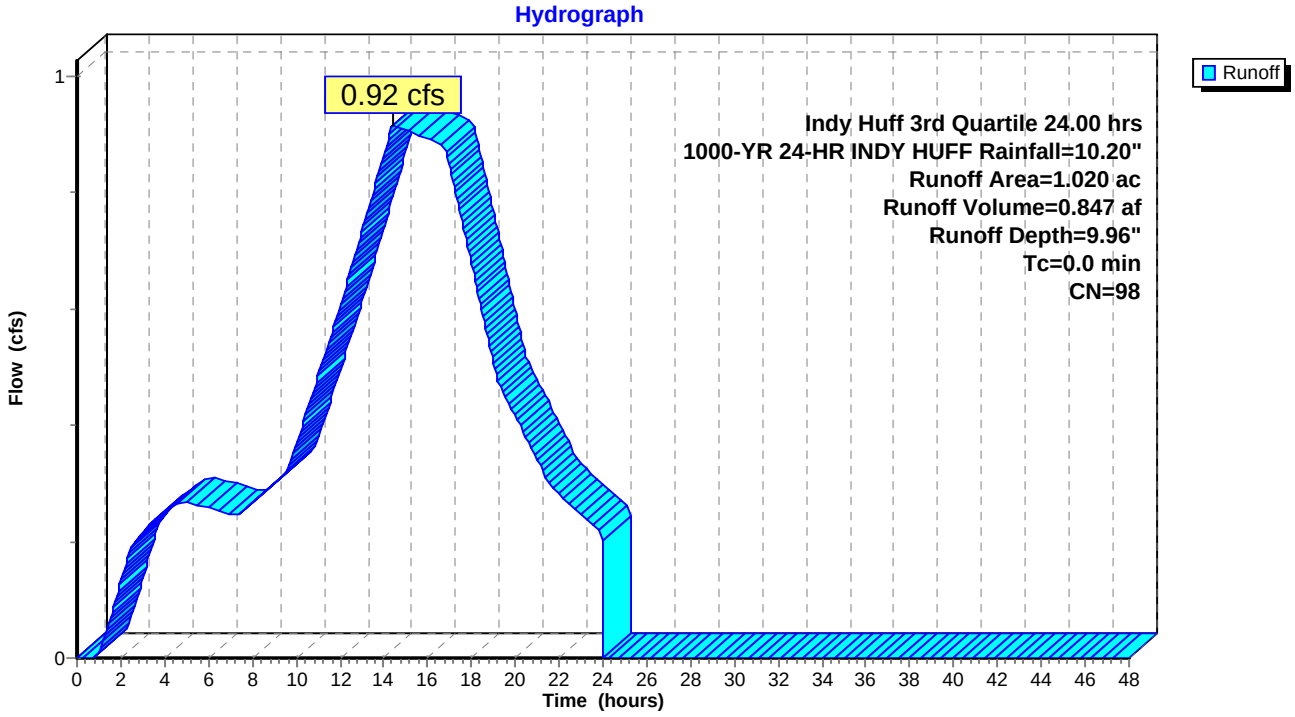
Runoff = 0.92 cfs @ 14.41 hrs, Volume= 0.847 af, Depth= 9.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 3rd Quartile 24.00 hrs 1000-YR 24-HR INDY HUFF Rainfall=10.20"

Area (ac)	CN	Description
1.020	98	Water Surface, HSG B
1.020		100.00% Impervious Area

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

Subcatchment 16S: West Pond 2 Drainage Area



Hydrograph for Subcatchment 16S: West Pond 2 Drainage Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.05	0.00	0.01
1.50	0.11	0.02	0.06
2.00	0.19	0.06	0.13
2.50	0.30	0.14	0.19
3.00	0.42	0.24	0.22
3.50	0.54	0.35	0.23
4.00	0.66	0.47	0.25
4.50	0.80	0.60	0.26
5.00	0.93	0.73	0.27
5.50	1.07	0.86	0.26
6.00	1.20	0.98	0.26
6.50	1.32	1.11	0.25
7.00	1.45	1.23	0.25
7.50	1.57	1.35	0.25
8.00	1.70	1.47	0.27
8.50	1.83	1.61	0.28
9.00	1.98	1.75	0.30
9.50	2.13	1.90	0.32
10.00	2.29	2.06	0.37
10.50	2.49	2.26	0.43
11.00	2.71	2.48	0.49
11.50	2.96	2.73	0.54
12.00	3.24	3.01	0.60
12.50	3.55	3.32	0.67
13.00	3.89	3.66	0.74
13.50	4.27	4.03	0.80
14.00	4.67	4.44	**0.87**
14.50	5.11	4.87	**0.92**
15.00	5.55	5.32	0.91
15.50	5.99	5.76	0.90
16.00	6.43	6.19	0.89
16.50	6.86	6.63	0.89
17.00	7.29	7.05	0.85
17.50	7.68	7.44	0.76
18.00	8.03	7.79	0.68
18.50	8.34	8.10	0.59
19.00	8.61	8.37	0.51
19.50	8.84	8.60	0.45
20.00	9.05	8.81	0.42
20.50	9.25	9.01	0.38
21.00	9.42	9.18	0.34
21.50	9.58	9.34	0.30
22.00	9.72	9.48	0.28
22.50	9.85	9.61	0.26
23.00	9.98	9.74	0.25
23.50	10.09	9.85	0.23
24.00	**10.20**	**9.96**	0.11
24.50	10.20	9.96	0.00
25.00	10.20	9.96	0.00
25.50	10.20	9.96	0.00
26.00	10.20	9.96	0.00
26.50	10.20	9.96	0.00
27.00	10.20	9.96	0.00
27.50	10.20	9.96	0.00
28.00	10.20	9.96	0.00
28.50	10.20	9.96	0.00
29.00	10.20	9.96	0.00
29.50	10.20	9.96	0.00
30.00	10.20	9.96	0.00
30.50	10.20	9.96	0.00
31.00	10.20	9.96	0.00
31.50	10.20	9.96	0.00
32.00	10.20	9.96	0.00
32.50	10.20	9.96	0.00
33.00	10.20	9.96	0.00
33.50	10.20	9.96	0.00
34.00	10.20	9.96	0.00
34.50	10.20	9.96	0.00
35.00	10.20	9.96	0.00
35.50	10.20	9.96	0.00
36.00	10.20	9.96	0.00
36.50	10.20	9.96	0.00
37.00	10.20	9.96	0.00
37.50	10.20	9.96	0.00
38.00	10.20	9.96	0.00
38.50	10.20	9.96	0.00
39.00	10.20	9.96	0.00
39.50	10.20	9.96	0.00
40.00	10.20	9.96	0.00
40.50	10.20	9.96	0.00
41.00	10.20	9.96	0.00
41.50	10.20	9.96	0.00
42.00	10.20	9.96	0.00
42.50	10.20	9.96	0.00
43.00	10.20	9.96	0.00
43.50	10.20	9.96	0.00
44.00	10.20	9.96	0.00
44.50	10.20	9.96	0.00
45.00	10.20	9.96	0.00
45.50	10.20	9.96	0.00
46.00	10.20	9.96	0.00
46.50	10.20	9.96	0.00
47.00	10.20	9.96	0.00
47.50	10.20	9.96	0.00
48.00	10.20	9.96	0.00

Summary for Subcatchment 17S: North Pond Drainage Area

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

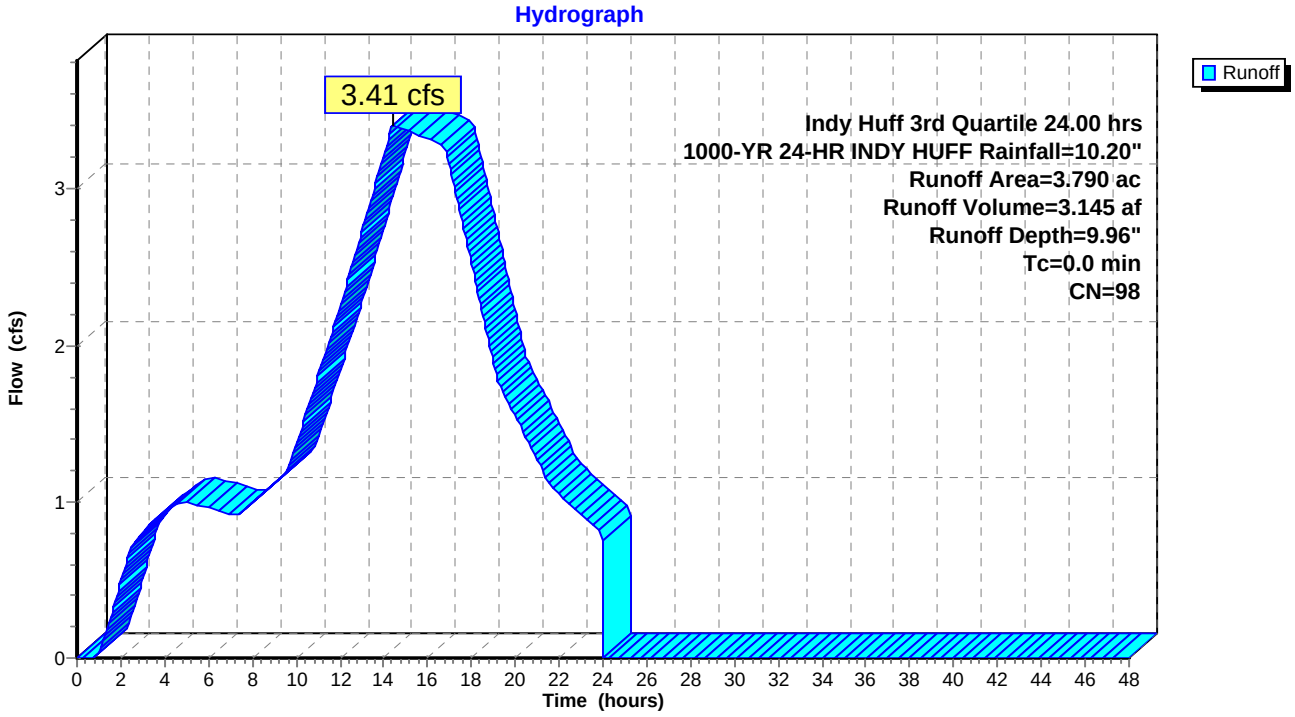
Runoff = 3.41 cfs @ 14.41 hrs, Volume= 3.145 af, Depth= 9.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 3rd Quartile 24.00 hrs 1000-YR 24-HR INDY HUFF Rainfall=10.20"

Area (ac)	CN	Description
3.790	98	Water Surface, HSG B
3.790		100.00% Impervious Area

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

Subcatchment 17S: North Pond Drainage Area



Hydrograph for Subcatchment 17S: North Pond Drainage Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.05	0.00	0.02
1.50	0.11	0.02	0.24
2.00	0.19	0.06	0.49
2.50	0.30	0.14	0.71
3.00	0.42	0.24	0.80
3.50	0.54	0.35	0.87
4.00	0.66	0.47	0.93
4.50	0.80	0.60	0.98
5.00	0.93	0.73	1.00
5.50	1.07	0.86	0.98
6.00	1.20	0.98	0.96
6.50	1.32	1.11	0.94
7.00	1.45	1.23	0.91
7.50	1.57	1.35	0.94
8.00	1.70	1.47	1.00
8.50	1.83	1.61	1.06
9.00	1.98	1.75	1.11
9.50	2.13	1.90	1.17
10.00	2.29	2.06	1.36
10.50	2.49	2.26	1.58
11.00	2.71	2.48	1.80
11.50	2.96	2.73	2.02
12.00	3.24	3.01	2.24
12.50	3.55	3.32	2.49
13.00	3.89	3.66	2.73
13.50	4.27	4.03	2.97
14.00	4.67	4.44	**3.22**
14.50	5.11	4.87	**3.41**
15.00	5.55	5.32	3.38
15.50	5.99	5.76	3.35
16.00	6.43	6.19	3.32
16.50	6.86	6.63	3.29
17.00	7.29	7.05	3.15
17.50	7.68	7.44	2.84
18.00	8.03	7.79	2.52
18.50	8.34	8.10	2.21
19.00	8.61	8.37	1.90
19.50	8.84	8.60	1.69
20.00	9.05	8.81	1.55
20.50	9.25	9.01	1.41
21.00	9.42	9.18	1.27
21.50	9.58	9.34	1.13
22.00	9.72	9.48	1.05
22.50	9.85	9.61	0.98
23.00	9.98	9.74	0.91
23.50	10.09	9.85	0.85
24.00	**10.20**	**9.96**	0.39
24.50	10.20	9.96	0.00
25.00	10.20	9.96	0.00
25.50	10.20	9.96	0.00
26.00	10.20	9.96	0.00
26.50	10.20	9.96	0.00
27.00	10.20	9.96	0.00
27.50	10.20	9.96	0.00
28.00	10.20	9.96	0.00
28.50	10.20	9.96	0.00
29.00	10.20	9.96	0.00
29.50	10.20	9.96	0.00
30.00	10.20	9.96	0.00
30.50	10.20	9.96	0.00
31.00	10.20	9.96	0.00
31.50	10.20	9.96	0.00
32.00	10.20	9.96	0.00
32.50	10.20	9.96	0.00
33.00	10.20	9.96	0.00
33.50	10.20	9.96	0.00
34.00	10.20	9.96	0.00
34.50	10.20	9.96	0.00
35.00	10.20	9.96	0.00
35.50	10.20	9.96	0.00
36.00	10.20	9.96	0.00
36.50	10.20	9.96	0.00
37.00	10.20	9.96	0.00
37.50	10.20	9.96	0.00
38.00	10.20	9.96	0.00
38.50	10.20	9.96	0.00
39.00	10.20	9.96	0.00
39.50	10.20	9.96	0.00
40.00	10.20	9.96	0.00
40.50	10.20	9.96	0.00
41.00	10.20	9.96	0.00
41.50	10.20	9.96	0.00
42.00	10.20	9.96	0.00
42.50	10.20	9.96	0.00
43.00	10.20	9.96	0.00
43.50	10.20	9.96	0.00
44.00	10.20	9.96	0.00
44.50	10.20	9.96	0.00
45.00	10.20	9.96	0.00
45.50	10.20	9.96	0.00
46.00	10.20	9.96	0.00
46.50	10.20	9.96	0.00
47.00	10.20	9.96	0.00
47.50	10.20	9.96	0.00
48.00	10.20	9.96	0.00

Summary for Subcatchment 18S: South Pond 1 Drainage Area

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

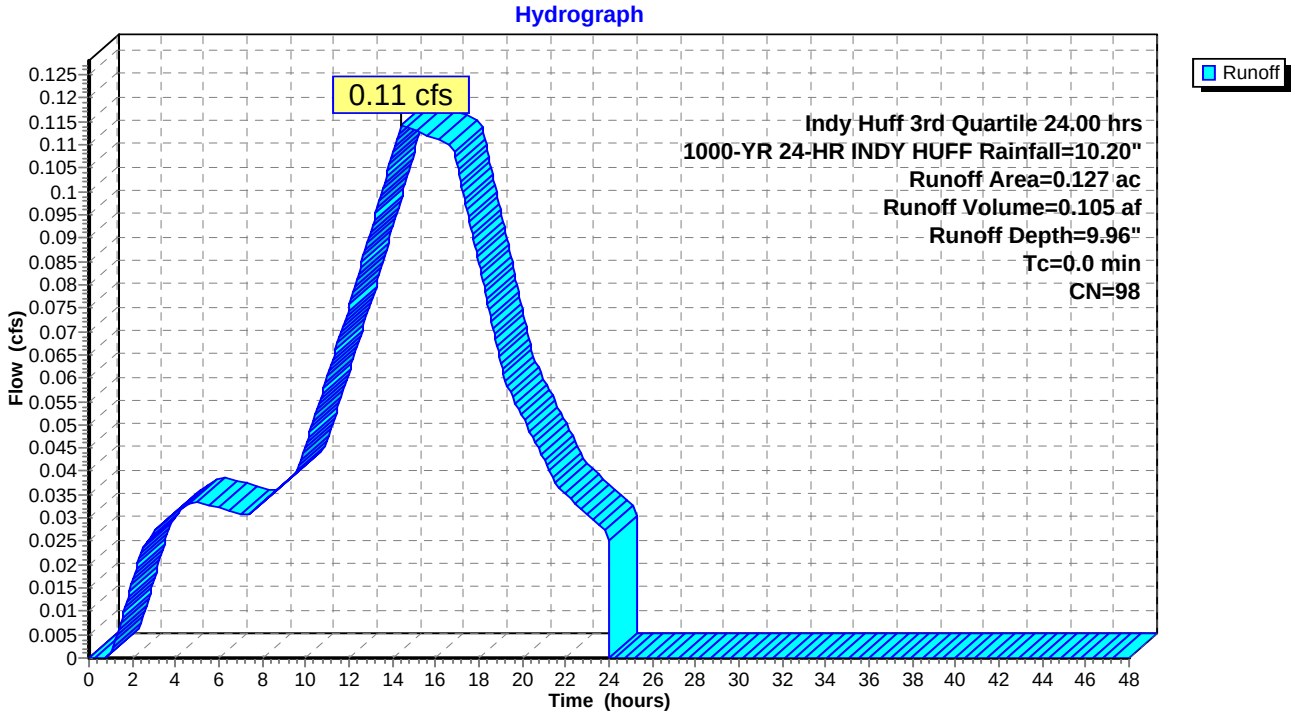
Runoff = 0.11 cfs @ 14.41 hrs, Volume= 0.105 af, Depth= 9.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 3rd Quartile 24.00 hrs 1000-YR 24-HR INDY HUFF Rainfall=10.20"

Area (ac)	CN	Description
0.127	98	Water Surface, HSG B
0.127		100.00% Impervious Area

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

Subcatchment 18S: South Pond 1 Drainage Area



Hydrograph for Subcatchment 18S: South Pond 1 Drainage Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.05	0.00	0.00
1.50	0.11	0.02	0.01
2.00	0.19	0.06	0.02
2.50	0.30	0.14	0.02
3.00	0.42	0.24	0.03
3.50	0.54	0.35	0.03
4.00	0.66	0.47	0.03
4.50	0.80	0.60	0.03
5.00	0.93	0.73	0.03
5.50	1.07	0.86	0.03
6.00	1.20	0.98	0.03
6.50	1.32	1.11	0.03
7.00	1.45	1.23	0.03
7.50	1.57	1.35	0.03
8.00	1.70	1.47	0.03
8.50	1.83	1.61	0.04
9.00	1.98	1.75	0.04
9.50	2.13	1.90	0.04
10.00	2.29	2.06	0.05
10.50	2.49	2.26	0.05
11.00	2.71	2.48	0.06
11.50	2.96	2.73	0.07
12.00	3.24	3.01	0.08
12.50	3.55	3.32	0.08
13.00	3.89	3.66	0.09
13.50	4.27	4.03	0.10
14.00	4.67	4.44	**0.11**
14.50	5.11	4.87	**0.11**
15.00	5.55	5.32	0.11
15.50	5.99	5.76	0.11
16.00	6.43	6.19	0.11
16.50	6.86	6.63	0.11
17.00	7.29	7.05	0.11
17.50	7.68	7.44	0.10
18.00	8.03	7.79	0.08
18.50	8.34	8.10	0.07
19.00	8.61	8.37	0.06
19.50	8.84	8.60	0.06
20.00	9.05	8.81	0.05
20.50	9.25	9.01	0.05
21.00	9.42	9.18	0.04
21.50	9.58	9.34	0.04
22.00	9.72	9.48	0.04
22.50	9.85	9.61	0.03
23.00	9.98	9.74	0.03
23.50	10.09	9.85	0.03
24.00	**10.20**	**9.96**	0.01
24.50	10.20	9.96	0.00
25.00	10.20	9.96	0.00
25.50	10.20	9.96	0.00
26.00	10.20	9.96	0.00
26.50	10.20	9.96	0.00
27.00	10.20	9.96	0.00
27.50	10.20	9.96	0.00
28.00	10.20	9.96	0.00
28.50	10.20	9.96	0.00
29.00	10.20	9.96	0.00
29.50	10.20	9.96	0.00
30.00	10.20	9.96	0.00
30.50	10.20	9.96	0.00
31.00	10.20	9.96	0.00
31.50	10.20	9.96	0.00
32.00	10.20	9.96	0.00
32.50	10.20	9.96	0.00
33.00	10.20	9.96	0.00
33.50	10.20	9.96	0.00
34.00	10.20	9.96	0.00
34.50	10.20	9.96	0.00
35.00	10.20	9.96	0.00
35.50	10.20	9.96	0.00
36.00	10.20	9.96	0.00
36.50	10.20	9.96	0.00
37.00	10.20	9.96	0.00
37.50	10.20	9.96	0.00
38.00	10.20	9.96	0.00
38.50	10.20	9.96	0.00
39.00	10.20	9.96	0.00
39.50	10.20	9.96	0.00
40.00	10.20	9.96	0.00
40.50	10.20	9.96	0.00
41.00	10.20	9.96	0.00
41.50	10.20	9.96	0.00
42.00	10.20	9.96	0.00
42.50	10.20	9.96	0.00
43.00	10.20	9.96	0.00
43.50	10.20	9.96	0.00
44.00	10.20	9.96	0.00
44.50	10.20	9.96	0.00
45.00	10.20	9.96	0.00
45.50	10.20	9.96	0.00
46.00	10.20	9.96	0.00
46.50	10.20	9.96	0.00
47.00	10.20	9.96	0.00
47.50	10.20	9.96	0.00
48.00	10.20	9.96	0.00

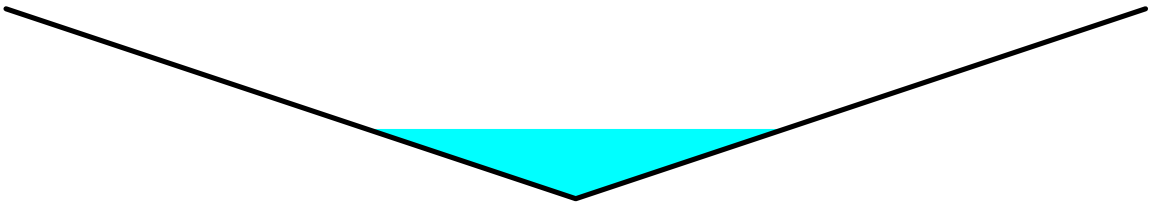
Summary for Reach 1R: Ditch 1

Inflow Area = 10.000 ac, 36.00% Impervious, Inflow Depth = 7.06" for 1000-YR 24-HR INDY HUFF event
Inflow = 7.64 cfs @ 16.90 hrs, Volume= 5.886 af
Outflow = 7.63 cfs @ 16.91 hrs, Volume= 5.886 af, Atten= 0%, Lag= 0.6 min

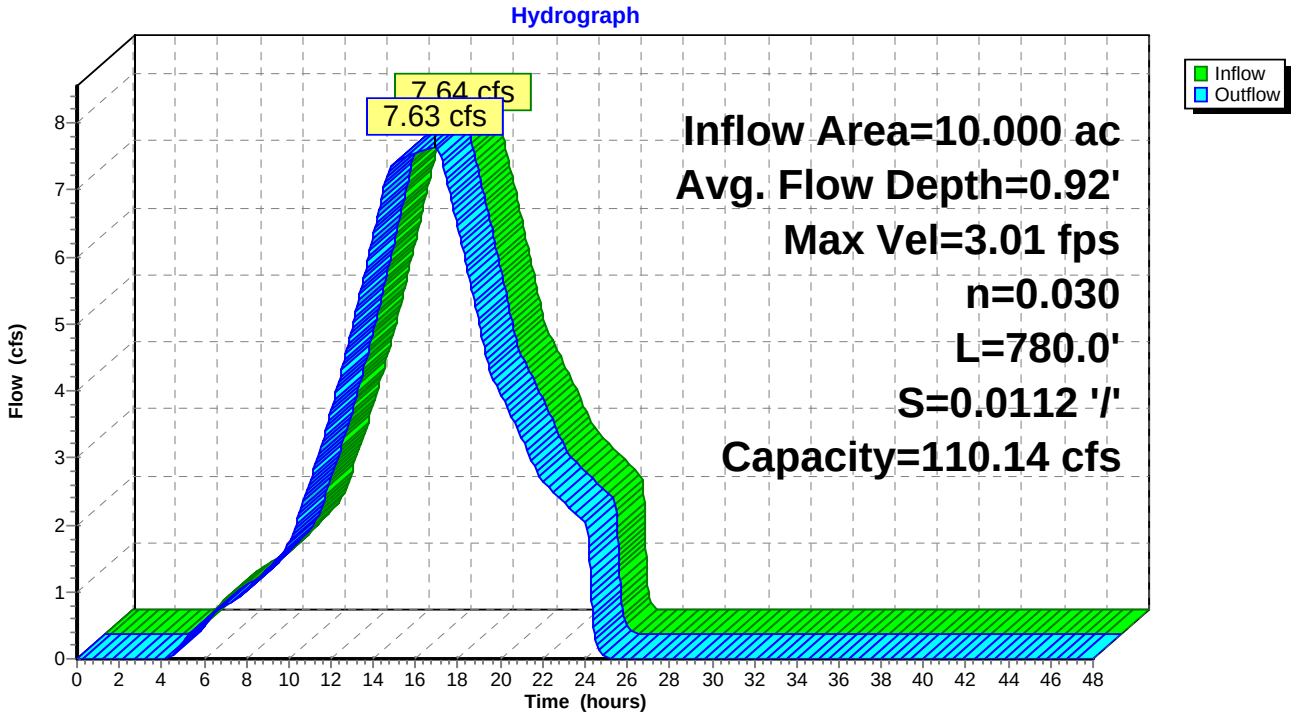
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.01 fps, Min. Travel Time= 4.3 min
Avg. Velocity = 1.99 fps, Avg. Travel Time= 6.5 min

Peak Storage= 1,975 cf @ 16.91 hrs
Average Depth at Peak Storage= 0.92'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 110.14 cfs

0.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 780.0' Slope= 0.0112 '/'
Inlet Invert= 400.20', Outlet Invert= 391.46'



Reach 1R: Ditch 1



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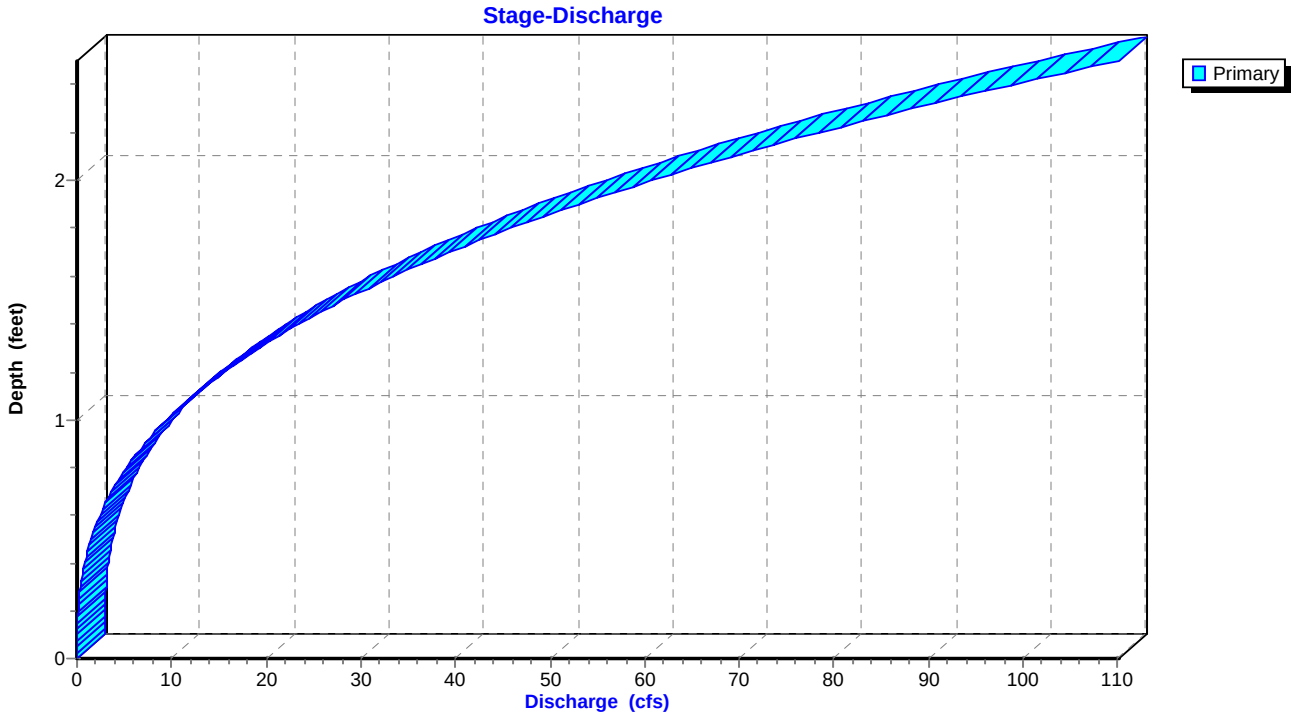
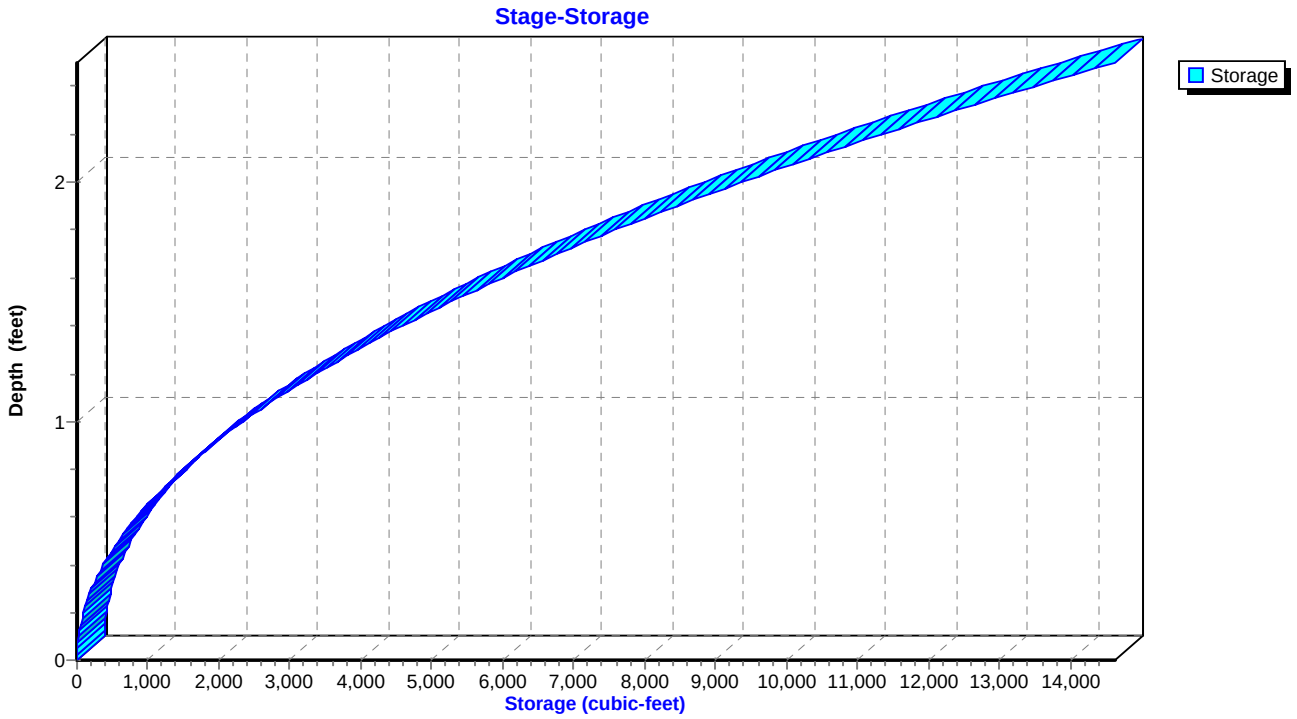


Reach 1R: Ditch 1



Hydrograph for Reach 1R: Ditch 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	0.00	0	400.20	0.00
1.00	0.00	0	400.20	0.00
2.00	0.00	0	400.20	0.00
3.00	0.00	0	400.20	0.00
4.00	0.00	0	400.20	0.00
5.00	0.30	151	400.45	0.25
6.00	0.60	285	400.55	0.58
7.00	0.80	359	400.59	0.79
8.00	1.03	432	400.63	1.01
9.00	1.36	532	400.68	1.33
10.00	1.78	647	400.73	1.72
11.00	2.70	887	400.82	2.63
12.00	3.77	1,147	400.90	3.70
13.00	5.03	1,428	400.98	4.95
14.00	6.41	1,717	401.06	6.33
15.00	7.41	1,929	401.11	7.39
16.00	**7.57**	**1,961**	**401.12**	**7.56**
17.00	**7.61**	**1,974**	**401.12**	**7.62**
18.00	6.35	1,737	401.06	6.43
19.00	4.92	1,440	400.98	5.01
20.00	3.91	1,206	400.92	3.95
21.00	3.25	1,052	400.87	3.30
22.00	2.64	898	400.82	2.67
23.00	2.32	815	400.79	2.35
24.00	2.01	731	400.76	2.03
25.00	0.00	23	400.30	0.02
26.00	0.00	2	400.23	0.00
27.00	0.00	1	400.21	0.00
28.00	0.00	0	400.20	0.00
29.00	0.00	0	400.20	0.00
30.00	0.00	0	400.20	0.00
31.00	0.00	0	400.20	0.00
32.00	0.00	0	400.20	0.00
33.00	0.00	0	400.20	0.00
34.00	0.00	0	400.20	0.00
35.00	0.00	0	400.20	0.00
36.00	0.00	0	400.20	0.00
37.00	0.00	0	400.20	0.00
38.00	0.00	0	400.20	0.00
39.00	0.00	0	400.20	0.00
40.00	0.00	0	400.20	0.00
41.00	0.00	0	400.20	0.00
42.00	0.00	0	400.20	0.00
43.00	0.00	0	400.20	0.00
44.00	0.00	0	400.20	0.00
45.00	0.00	0	400.20	0.00
46.00	0.00	0	400.20	0.00
47.00	0.00	0	400.20	0.00
48.00	0.00	0	400.20	0.00

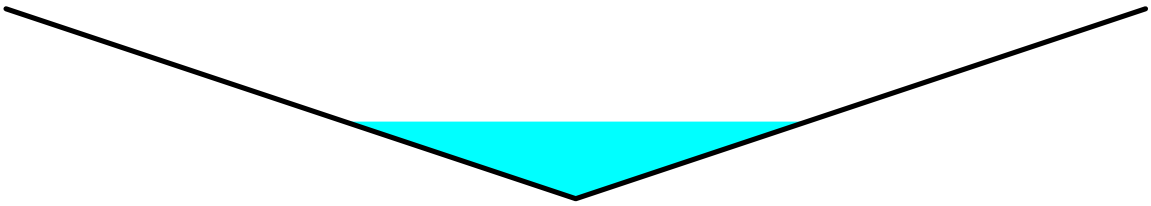
Summary for Reach 2R: Ditch 2

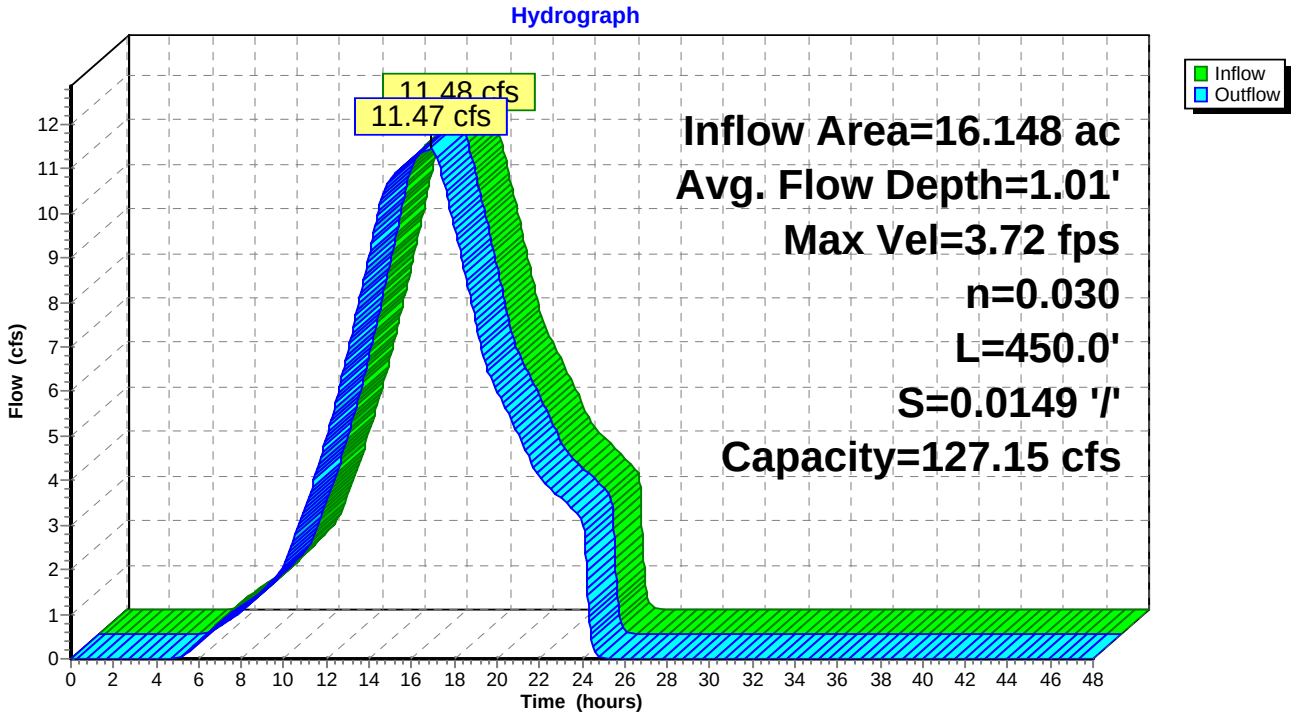
Inflow Area = 16.148 ac, 0.00% Impervious, Inflow Depth = 6.27" for 1000-YR 24-HR INDY HUFF event
Inflow = 11.48 cfs @ 16.89 hrs, Volume= 8.440 af
Outflow = 11.47 cfs @ 16.93 hrs, Volume= 8.440 af, Atten= 0%, Lag= 2.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.72 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 2.60 fps, Avg. Travel Time= 2.9 min

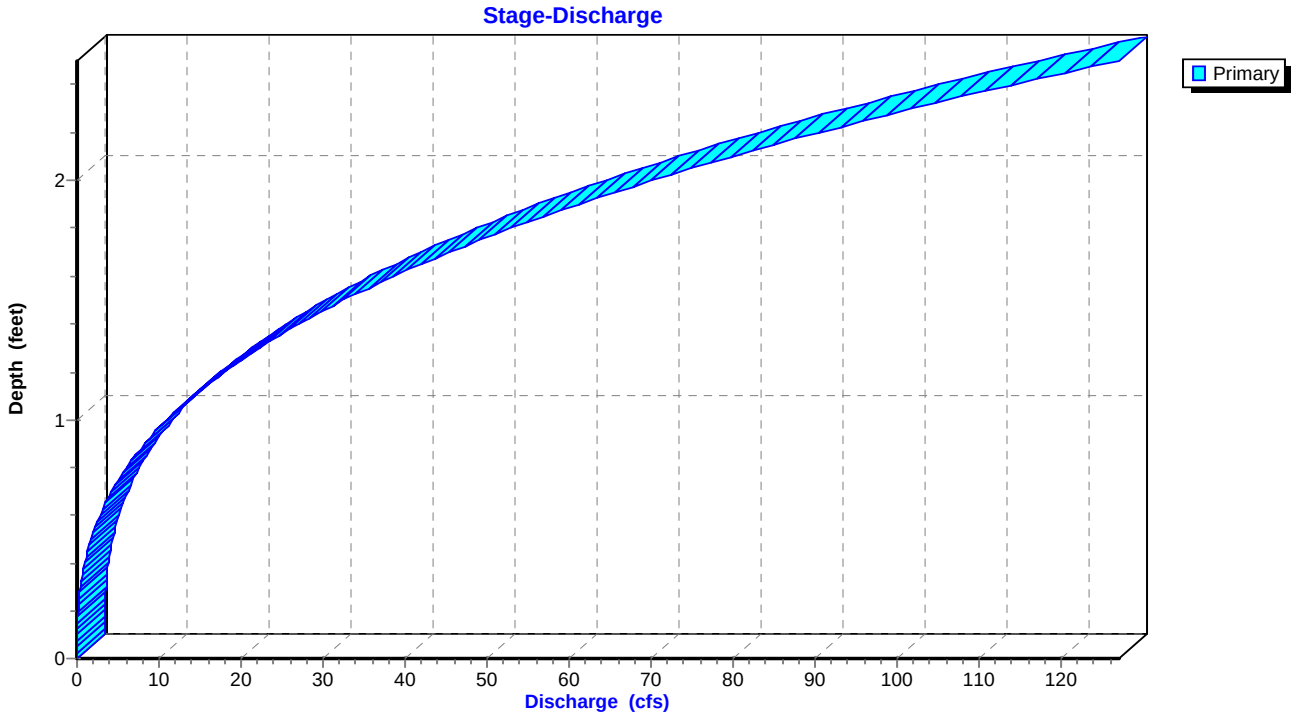
Peak Storage= 1,389 cf @ 16.93 hrs
Average Depth at Peak Storage= 1.01'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 127.15 cfs

0.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 450.0' Slope= 0.0149 '/'
Inlet Invert= 398.00', Outlet Invert= 391.28'

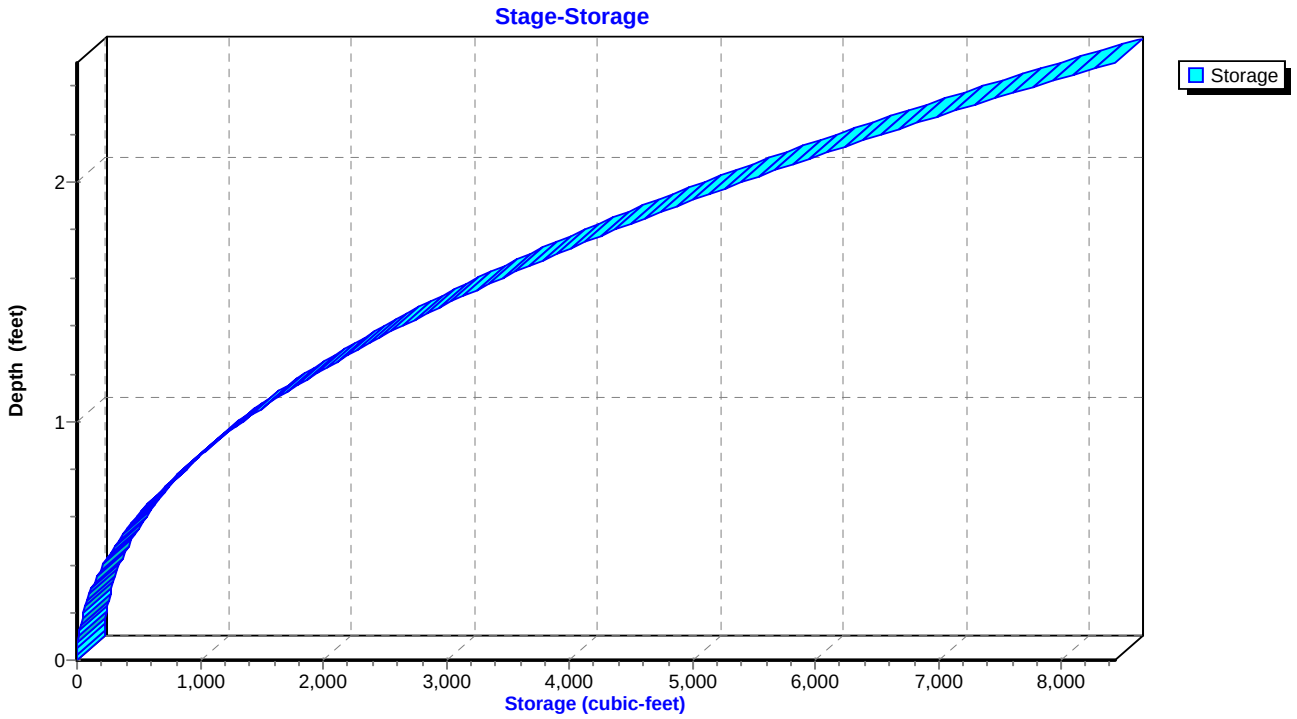




Reach 2R: Ditch 2



Reach 2R: Ditch 2



Hydrograph for Reach 2R: Ditch 2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	0.00	0	398.00	0.00
1.00	0.00	0	398.00	0.00
2.00	0.00	0	398.00	0.00
3.00	0.00	0	398.00	0.00
4.00	0.00	0	398.00	0.00
5.00	0.00	0	398.01	0.00
6.00	0.41	109	398.28	0.38
7.00	0.74	176	398.36	0.73
8.00	1.09	235	398.42	1.07
9.00	1.55	307	398.48	1.53
10.00	2.16	392	398.54	2.12
11.00	3.44	556	398.64	3.39
12.00	5.02	741	398.74	4.97
13.00	6.95	948	398.84	6.89
14.00	9.12	1,164	398.93	9.06
15.00	10.80	1,326	398.99	10.79
16.00	**11.24**	**1,367**	**399.01**	**11.23**
17.00	**11.45**	**1,387**	**399.01**	**11.45**
18.00	9.66	1,226	398.95	9.71
19.00	7.53	1,019	398.87	7.59
20.00	6.00	858	398.80	6.03
21.00	5.00	749	398.74	5.04
22.00	4.07	641	398.69	4.09
23.00	3.59	583	398.66	3.61
24.00	3.10	523	398.62	3.12
25.00	0.00	7	398.07	0.01
26.00	0.00	0	398.01	0.00
27.00	0.00	0	398.00	0.00
28.00	0.00	0	398.00	0.00
29.00	0.00	0	398.00	0.00
30.00	0.00	0	398.00	0.00
31.00	0.00	0	398.00	0.00
32.00	0.00	0	398.00	0.00
33.00	0.00	0	398.00	0.00
34.00	0.00	0	398.00	0.00
35.00	0.00	0	398.00	0.00
36.00	0.00	0	398.00	0.00
37.00	0.00	0	398.00	0.00
38.00	0.00	0	398.00	0.00
39.00	0.00	0	398.00	0.00
40.00	0.00	0	398.00	0.00
41.00	0.00	0	398.00	0.00
42.00	0.00	0	398.00	0.00
43.00	0.00	0	398.00	0.00
44.00	0.00	0	398.00	0.00
45.00	0.00	0	398.00	0.00
46.00	0.00	0	398.00	0.00
47.00	0.00	0	398.00	0.00
48.00	0.00	0	398.00	0.00

Summary for Pond 1P: Culley West Pond

Culley West Pond is mostly dewatered. Any stormwater runoff draining to the Culley West Pond is pumped via trash pumps into the pump station where it is discharged to the underground tunnel and out to the Ohio River through the NPDES permitted outfall.

For the purpose of this analysis the assumption is that the lift station is out of order and no pumps are running.

Inflow Area = 78.757 ac, 55.69% Impervious, Inflow Depth > 9.47" for 1000-YR 24-HR INDY HUFF event
Inflow = 65.42 cfs @ 15.98 hrs, Volume= 62.134 af, Incl. 2.00 cfs Base Flow
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 388.19' @ 48.00 hrs Surf.Area= 23.298 ac Storage= 62.133 af

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	385.40'	221.589 af	**Custom Stage Data (Irregular)** Listed below (Recalc)

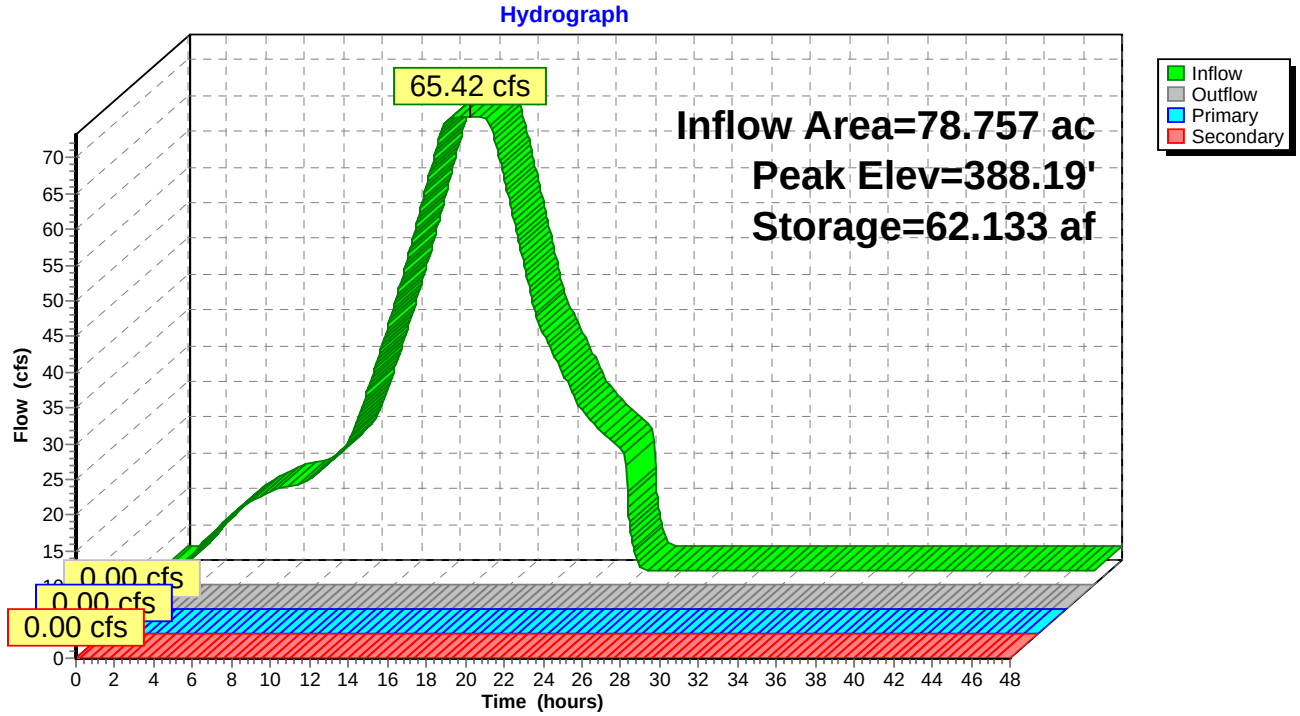
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
385.40	21.310	6,108.0	0.000	0.000	21.310
390.00	24.640	7,040.0	105.592	105.592	43.707
392.00	29.560	7,301.0	54.125	159.718	50.553
394.01	32.020	7,400.0	61.871	221.589	53.233

Device	Routing	Invert	Outlet Devices
#1	Primary	385.50'	**10" Pump X 0.00** Discharges@387.00' Turns Off@385.41' 12.0" Diam. x 2,300.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 120.6 800.8 1,514.3 2,318.7 3,086.9 3,714.0 4,273.0 Head (feet)= 47.78 42.92 37.58 31.01 24.77 19.34 13.87 -Loss (feet)= 0.12 3.87 12.58 27.69 47.03 66.24 85.88 =Lift (feet)= 47.66 39.05 25.00 3.32 -22.26 -46.90 -72.01
#2	Primary	385.50'	**6" Pump X 0.00** Discharges@387.00' Turns Off@385.41' 12.0" Diam. x 2,300.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 0.0 500.0 800.0 1,200.0 1,400.0 1,600.0 1,800.0 Head (feet)= 64.00 48.00 36.00 28.00 20.00 16.00 6.00 -Loss (feet)= 0.00 1.62 3.86 8.18 10.88 13.93 17.32 =Lift (feet)= 64.00 46.38 32.14 19.82 9.12 2.07 -11.32
#3	Secondary	394.00'	**10.0' long Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

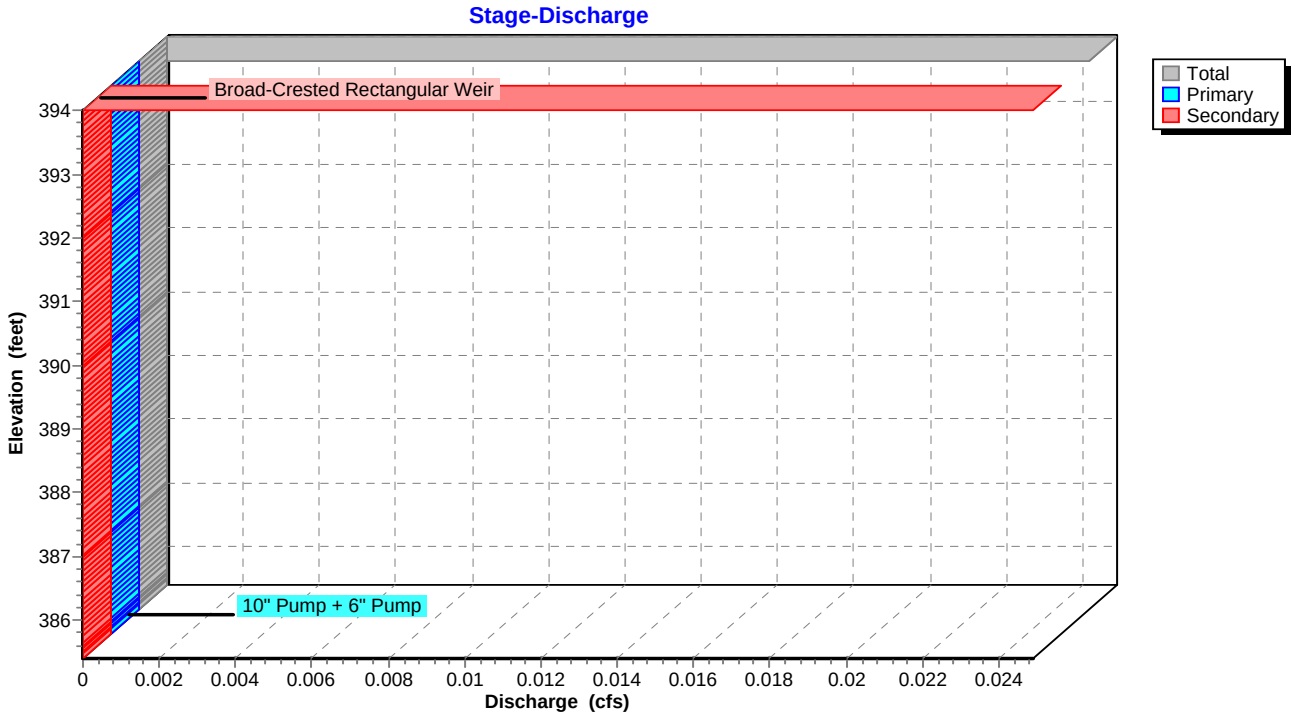
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=385.40' TW=383.50' (Dynamic Tailwater)
└─**1=10" Pump** (Controls 0.00 cfs)
└─**2=6" Pump** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=385.40' TW=383.50' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

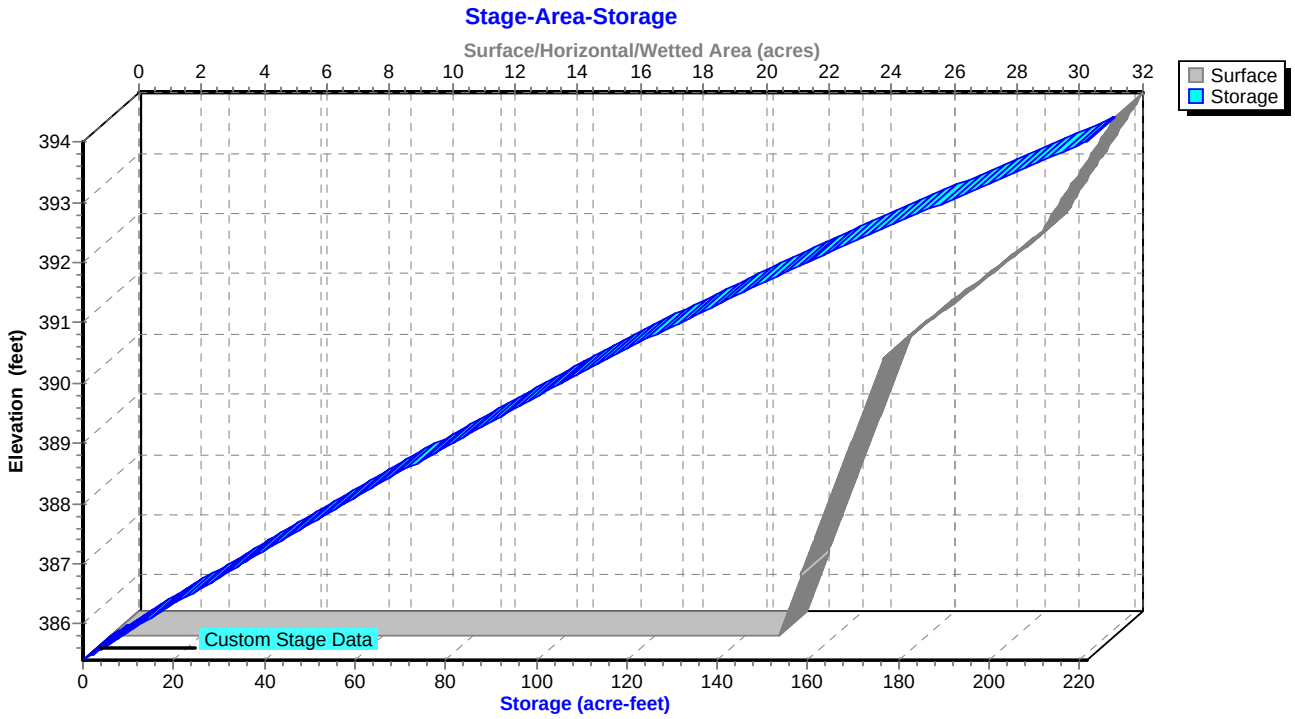
Pond 1P: Culley West Pond



Pond 1P: Culley West Pond



Pond 1P: Culley West Pond



Hydrograph for Pond 1P: Culley West Pond

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	2.00	0.001	385.40	**0.00**	**0.00**	**0.00**
1.00	2.15	0.167	385.41	0.00	0.00	0.00
2.00	5.16	0.462	385.42	0.00	0.00	0.00
3.00	7.89	1.007	385.45	0.00	0.00	0.00
4.00	10.37	1.766	385.48	0.00	0.00	0.00
5.00	12.22	2.707	385.53	0.00	0.00	0.00
6.00	13.30	3.764	385.58	0.00	0.00	0.00
7.00	13.82	4.889	385.63	0.00	0.00	0.00
8.00	15.51	6.084	385.68	0.00	0.00	0.00
9.00	18.01	7.468	385.75	0.00	0.00	0.00
10.00	21.98	9.084	385.82	0.00	0.00	0.00
11.00	29.92	11.220	385.92	0.00	0.00	0.00
12.00	38.66	14.050	386.05	0.00	0.00	0.00
13.00	48.58	17.648	386.22	0.00	0.00	0.00
14.00	59.04	22.093	386.42	0.00	0.00	0.00
15.00	**65.16**	27.316	386.66	0.00	0.00	0.00
16.00	**65.40**	32.716	386.90	0.00	0.00	0.00
17.00	64.05	38.107	387.14	0.00	0.00	0.00
18.00	53.19	42.974	387.35	0.00	0.00	0.00
19.00	41.22	46.877	387.52	0.00	0.00	0.00
20.00	33.42	49.908	387.66	0.00	0.00	0.00
21.00	27.97	52.444	387.77	0.00	0.00	0.00
22.00	23.25	54.540	387.86	0.00	0.00	0.00
23.00	20.60	56.351	387.94	0.00	0.00	0.00
24.00	15.47	57.946	388.01	0.00	0.00	0.00
25.00	2.07	58.330	388.02	0.00	0.00	0.00
26.00	2.00	58.496	388.03	0.00	0.00	0.00
27.00	2.00	58.662	388.04	0.00	0.00	0.00
28.00	2.00	58.827	388.04	0.00	0.00	0.00
29.00	2.00	58.992	388.05	0.00	0.00	0.00
30.00	2.00	59.157	388.06	0.00	0.00	0.00
31.00	2.00	59.323	388.07	0.00	0.00	0.00
32.00	2.00	59.488	388.07	0.00	0.00	0.00
33.00	2.00	59.653	388.08	0.00	0.00	0.00
34.00	2.00	59.819	388.09	0.00	0.00	0.00
35.00	2.00	59.984	388.09	0.00	0.00	0.00
36.00	2.00	60.149	388.10	0.00	0.00	0.00
37.00	2.00	60.315	388.11	0.00	0.00	0.00
38.00	2.00	60.480	388.12	0.00	0.00	0.00
39.00	2.00	60.645	388.12	0.00	0.00	0.00
40.00	2.00	60.810	388.13	0.00	0.00	0.00
41.00	2.00	60.976	388.14	0.00	0.00	0.00
42.00	2.00	61.141	388.14	0.00	0.00	0.00
43.00	2.00	61.306	388.15	0.00	0.00	0.00
44.00	2.00	61.472	388.16	0.00	0.00	0.00
45.00	2.00	61.637	388.17	0.00	0.00	0.00
46.00	2.00	61.802	388.17	0.00	0.00	0.00
47.00	2.00	61.967	388.18	0.00	0.00	0.00
48.00	2.00	**62.133**	**388.19**	0.00	0.00	0.00

Summary for Pond 2P: East Process Pond

Pump curve modeled off of the given pumps for Culley East pump curves. Two Flyght pumps, CP 3170 LT 3~ 603.

Base flow directed to the East Pond includes: Unit 2 & 3 Bottom Ash, Unit 2 & 3 Pyrite, Unit 2 & 3 Heater Wash, Unit 3 Boiler Sumps, Unit 3 Oil Trap, FGD Waste and Clarified River Water. The total of these was given by the water balance as 0.78 MGD, converted equates to 1.204 cfs.

Vectren has maintained operating WSE of 387'.

For the purpose of this analysis the assumption is that the lift station is out of order and no pumps are running. This simulates the worst case scenario at the pond for the certifying design storm.

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[80] Warning: Exceeded Pond 5P by 1.53' @ 19.28 hrs (14.75 cfs 23.230 af)

Inflow Area = 25.823 ac, 56.24% Impervious, Inflow Depth = 0.12" for 1000-YR 24-HR INDY HUFF event
Inflow = 4.28 cfs @ 19.27 hrs, Volume= 0.256 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 391.55' @ 19.28 hrs Surf.Area= 0.000 ac Storage= 0.256 af

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	382.00'	0.258 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
382.00	0.000
387.00	0.250
388.00	0.251
389.00	0.252
390.00	0.253
391.00	0.254
391.40	0.255
391.67	0.256
392.40	0.257
392.68	0.258

Device	Routing	Invert	Outlet Devices
#1	Device 2	386.50'	**12.0' long x 1.2' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.66 2.69 2.71 2.78 2.89 2.99 3.09 3.20 3.21 3.19 3.30 3.32
#2	Primary	387.00'	**Dewatering Pump #1 X 0.00**

Discharges@390.15' Turns Off@386.98'
10.0" Diam. x 500.0' Long Discharge, Hazen-Williams C= 130
Flow (gpm)= 0.0 2,177.0 4,500.0 5,400.0
Head (feet)= 48.00 31.30 12.00 4.00
-Loss (feet)= 0.00 13.01 49.94 69.99
=Lift (feet)= 48.00 18.29 -37.94 -65.99

#3 Secondary 388.00' **Dewatering Pump #2 X 0.00**
Discharges@390.15' Turns Off@387.01'
10.0" Diam. x 500.0' Long Discharge, Hazen-Williams C= 130
Flow (gpm)= 0.0 2,177.0 4,500.0 5,400.0
Head (feet)= 48.00 31.30 12.00 4.00
-Loss (feet)= 0.00 13.01 49.94 69.99
=Lift (feet)= 48.00 18.29 -37.94 -65.99

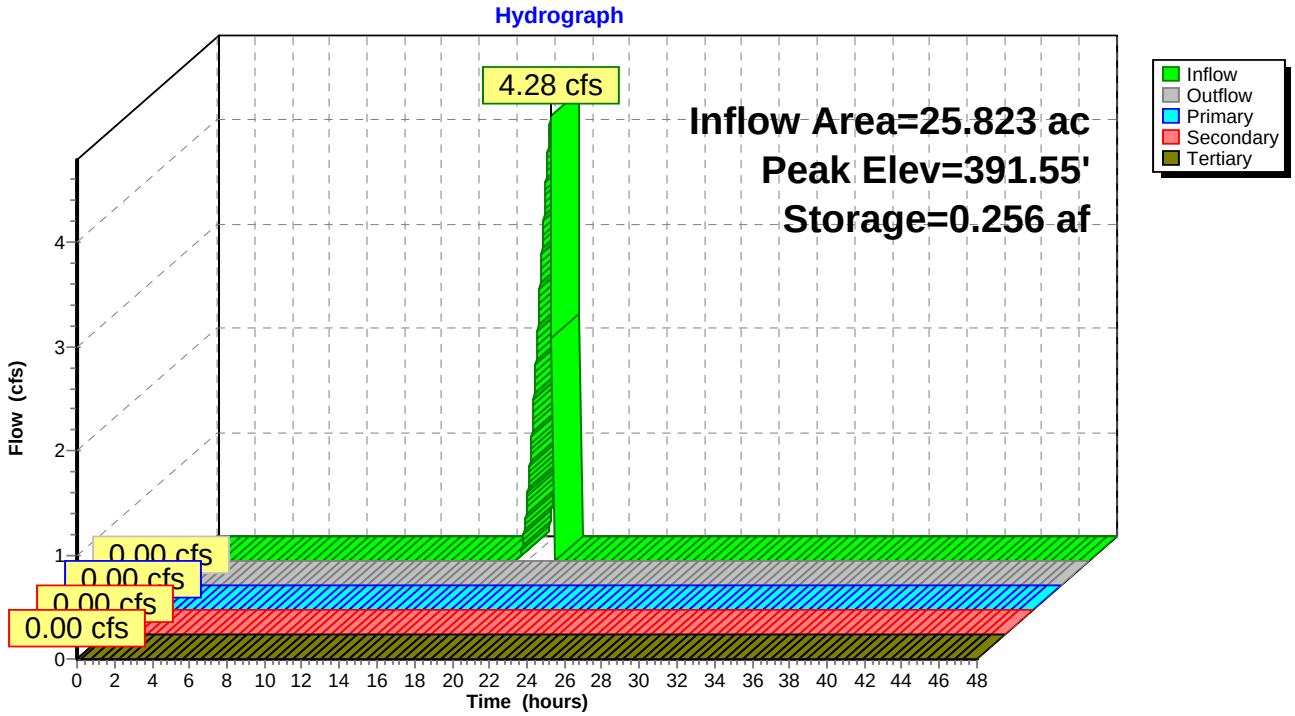
#4 Tertiary 392.67' **10.0' long Broad-Crested Rectangular Weir**
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=382.00' TW=383.50' (Dynamic Tailwater)
└**2=Dewatering Pump #1** (Controls 0.00 cfs)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

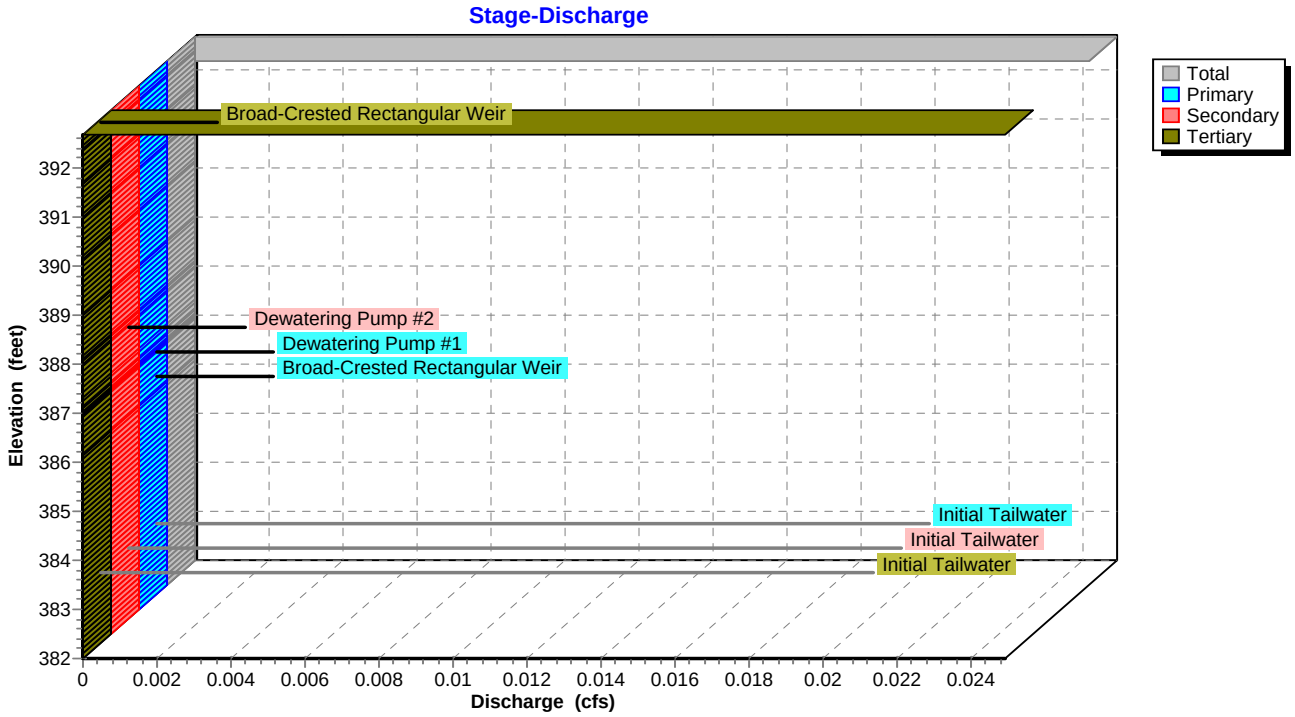
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=382.00' TW=383.50' (Dynamic Tailwater)
└**3=Dewatering Pump #2** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=382.00' TW=383.50' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

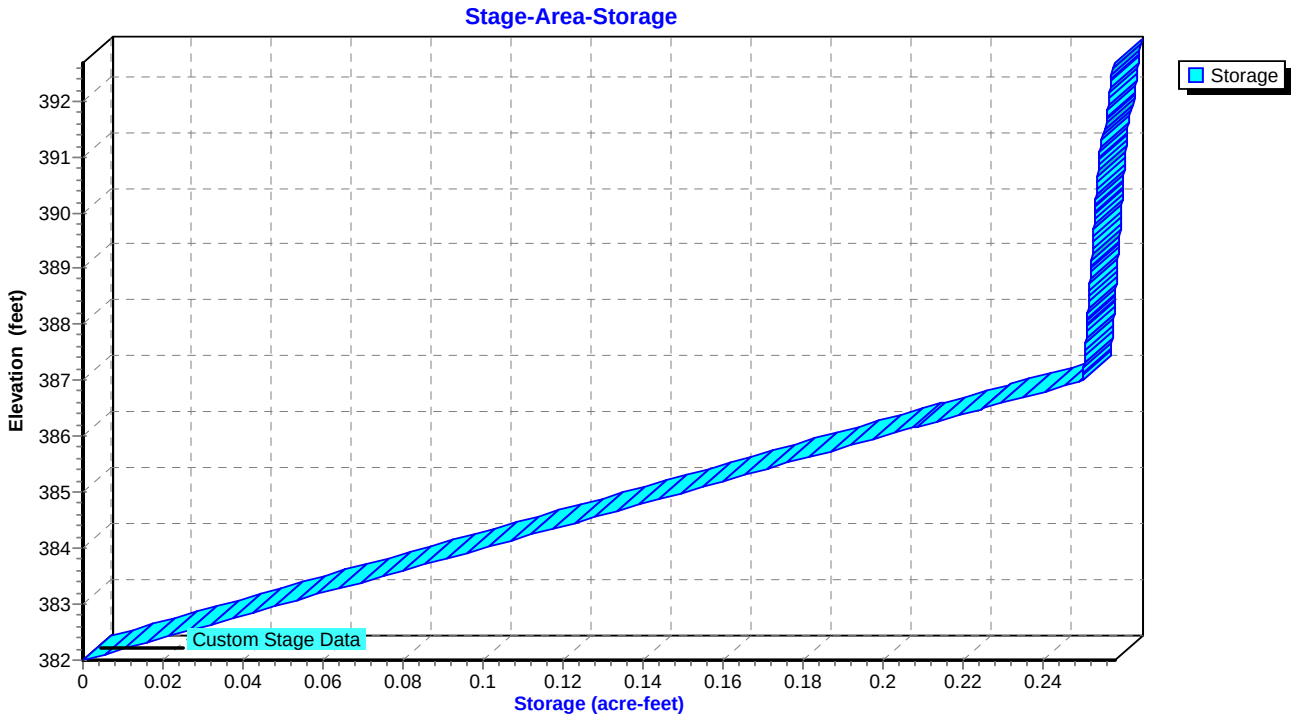
Pond 2P: East Process Pond



Pond 2P: East Process Pond



Pond 2P: East Process Pond



Hydrograph for Pond 2P: East Process Pond

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
0.00	0.00	0.000	382.00	**0.00**	**0.00**	**0.00**	**0.00**
1.00	0.00	0.000	382.00	0.00	0.00	0.00	0.00
2.00	0.00	0.000	382.00	0.00	0.00	0.00	0.00
3.00	0.00	0.000	382.00	0.00	0.00	0.00	0.00
4.00	0.00	0.000	382.00	0.00	0.00	0.00	0.00
5.00	0.00	0.000	382.00	0.00	0.00	0.00	0.00
6.00	0.00	0.000	382.00	0.00	0.00	0.00	0.00
7.00	0.00	0.000	382.00	0.00	0.00	0.00	0.00
8.00	0.00	0.000	382.00	0.00	0.00	0.00	0.00
9.00	0.00	0.000	382.00	0.00	0.00	0.00	0.00
10.00	0.00	0.000	382.00	0.00	0.00	0.00	0.00
11.00	0.00	0.000	382.00	0.00	0.00	0.00	0.00
12.00	0.00	0.000	382.00	0.00	0.00	0.00	0.00
13.00	0.00	0.000	382.00	0.00	0.00	0.00	0.00
14.00	0.00	0.000	382.00	0.00	0.00	0.00	0.00
15.00	0.00	0.000	382.00	0.00	0.00	0.00	0.00
16.00	0.00	0.000	382.00	0.00	0.00	0.00	0.00
17.00	0.00	0.000	382.00	0.00	0.00	0.00	0.00
18.00	0.50	0.007	382.13	0.00	0.00	0.00	0.00
19.00	**3.53**	**0.166**	**385.33**	0.00	0.00	0.00	0.00
20.00	**0.00**	**0.256**	**391.55**	0.00	0.00	0.00	0.00
21.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
22.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
23.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
24.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
25.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
26.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
27.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
28.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
29.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
30.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
31.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
32.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
33.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
34.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
35.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
36.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
37.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
38.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
39.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
40.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
41.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
42.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
43.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
44.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
45.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
46.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
47.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00
48.00	0.00	0.256	391.55	0.00	0.00	0.00	0.00

Summary for Pond 3P: Ohio River

Arbitrary storage entered for the Ohio River, begins at elevation of 383.5, the 100 year flood elevation.

Inflow Area = 104.580 ac, 55.83% Impervious, Inflow Depth = 0.00" for 1000-YR 24-HR INDY HUFF event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 383.50' @ 0.00 hrs Surf.Area= 1,000.000 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

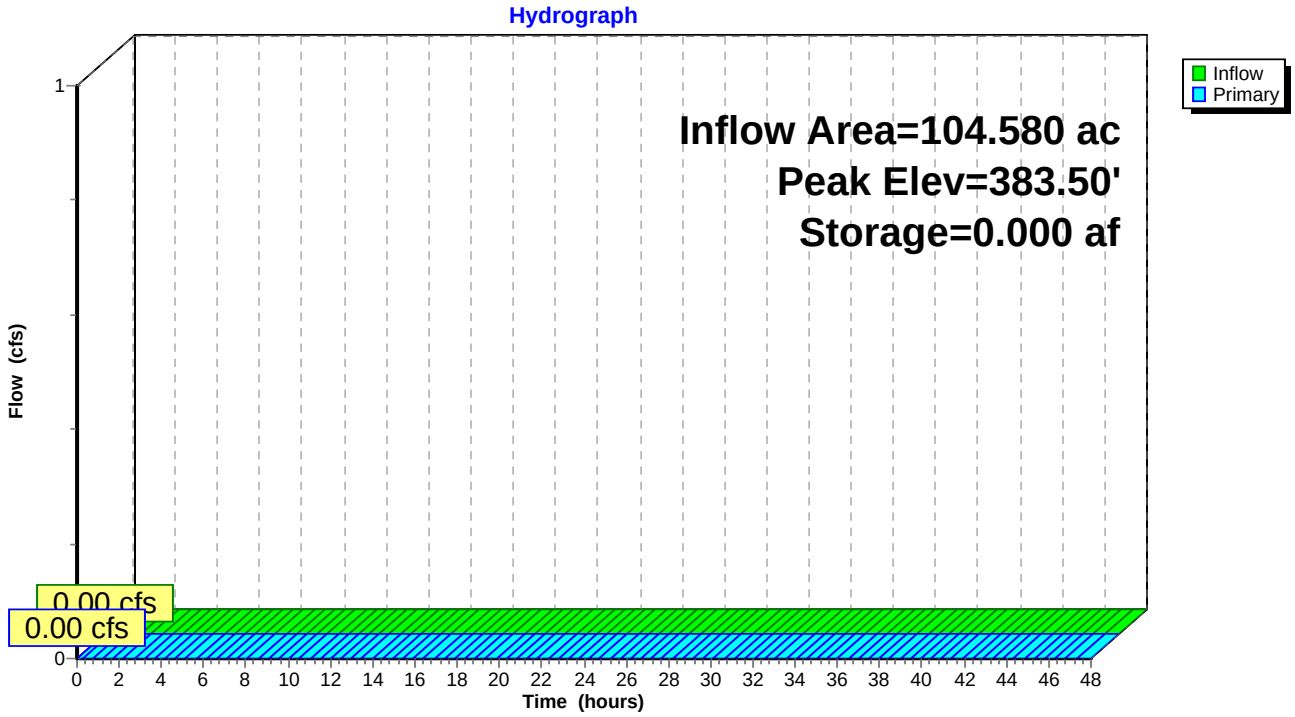
Volume	Invert	Avail.Storage	Storage Description
#1	383.50'	3,250.000 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
383.50	1,000.000	0.000	0.000
384.00	2,000.000	750.000	750.000
385.00	3,000.000	2,500.000	3,250.000

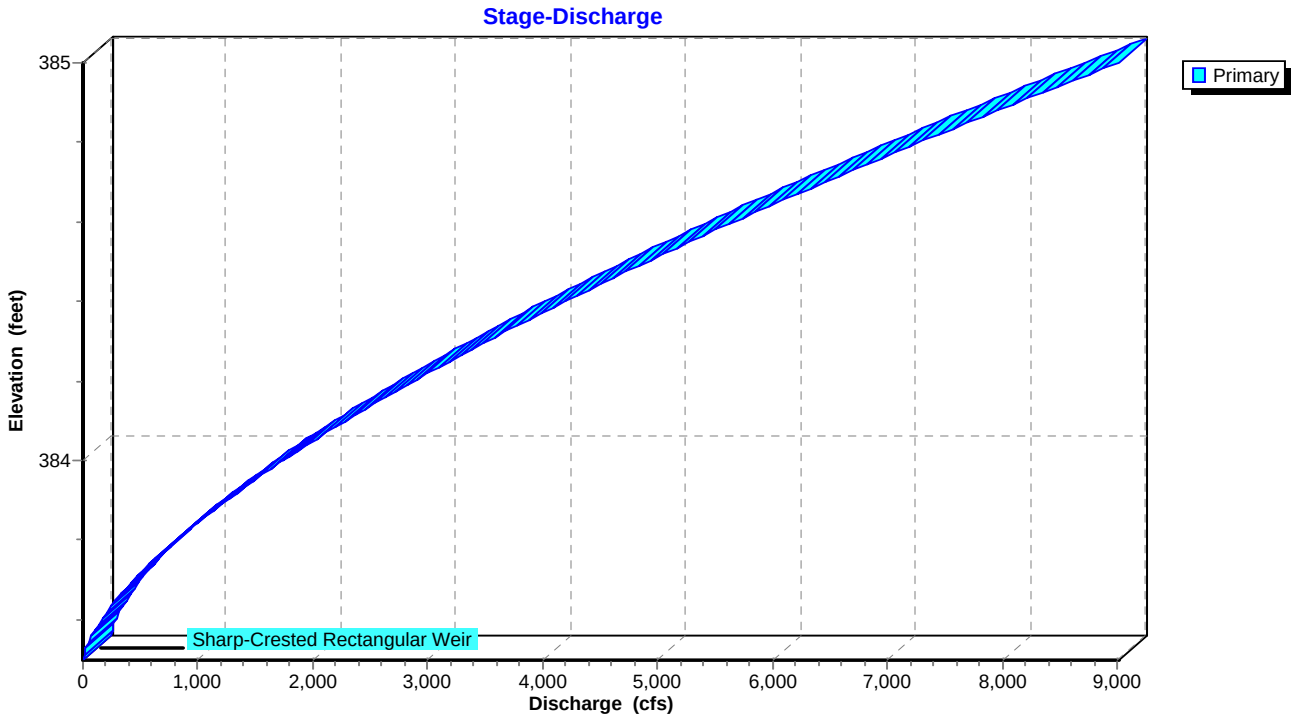
Device	Routing	Invert	Outlet Devices
#1	Primary	383.50'	**1,500.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=383.50' (Free Discharge)
1=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

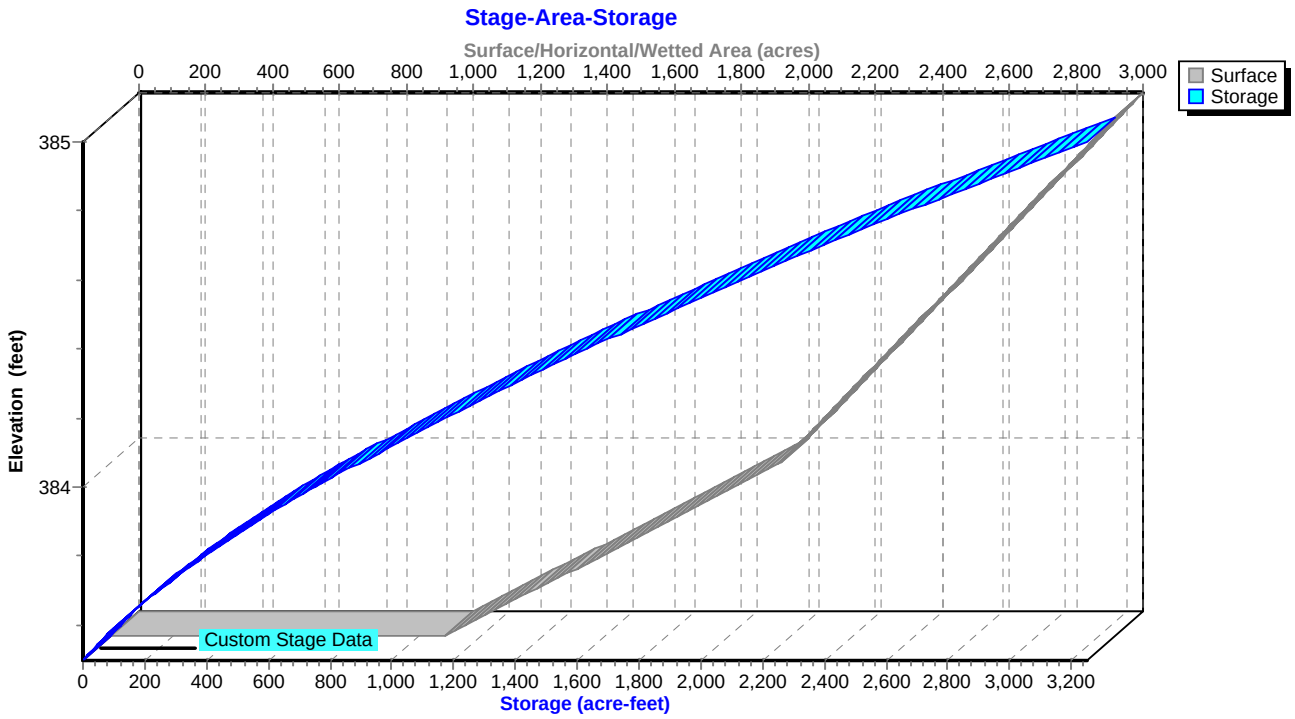
Pond 3P: Ohio River



Pond 3P: Ohio River



Pond 3P: Ohio River



Hydrograph for Pond 3P: Ohio River

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	**0.00**	**383.50**	**0.00**
0.50	0.00	383.50	0.00
1.00	0.00	383.50	0.00
1.50	0.00	383.50	0.00
2.00	0.00	383.50	0.00
2.50	0.00	383.50	0.00
3.00	0.00	383.50	0.00
3.50	0.00	383.50	0.00
4.00	0.00	383.50	0.00
4.50	0.00	383.50	0.00
5.00	0.00	383.50	0.00
5.50	0.00	383.50	0.00
6.00	0.00	383.50	0.00
6.50	0.00	383.50	0.00
7.00	0.00	383.50	0.00
7.50	0.00	383.50	0.00
8.00	0.00	383.50	0.00
8.50	0.00	383.50	0.00
9.00	0.00	383.50	0.00
9.50	0.00	383.50	0.00
10.00	0.00	383.50	0.00
10.50	0.00	383.50	0.00
11.00	0.00	383.50	0.00
11.50	0.00	383.50	0.00
12.00	0.00	383.50	0.00
12.50	0.00	383.50	0.00
13.00	0.00	383.50	0.00
13.50	0.00	383.50	0.00
14.00	0.00	383.50	0.00
14.50	0.00	383.50	0.00
15.00	0.00	383.50	0.00
15.50	0.00	383.50	0.00
16.00	0.00	383.50	0.00
16.50	0.00	383.50	0.00
17.00	0.00	383.50	0.00
17.50	0.00	383.50	0.00
18.00	0.00	383.50	0.00
18.50	0.00	383.50	0.00
19.00	0.00	383.50	0.00
19.50	0.00	383.50	0.00
20.00	0.00	383.50	0.00
20.50	0.00	383.50	0.00
21.00	0.00	383.50	0.00
21.50	0.00	383.50	0.00
22.00	0.00	383.50	0.00
22.50	0.00	383.50	0.00
23.00	0.00	383.50	0.00
23.50	0.00	383.50	0.00
24.00	0.00	383.50	0.00
24.50	0.00	383.50	0.00
25.00	0.00	383.50	0.00
25.50	0.00	383.50	0.00
26.00	0.00	383.50	0.00
26.50	0.00	383.50	0.00
27.00	0.00	383.50	0.00
27.50	0.00	383.50	0.00
28.00	0.00	383.50	0.00
28.50	0.00	383.50	0.00
29.00	0.00	383.50	0.00
29.50	0.00	383.50	0.00
30.00	0.00	383.50	0.00
30.50	0.00	383.50	0.00
31.00	0.00	383.50	0.00
31.50	0.00	383.50	0.00
32.00	0.00	383.50	0.00
32.50	0.00	383.50	0.00
33.00	0.00	383.50	0.00
33.50	0.00	383.50	0.00
34.00	0.00	383.50	0.00
34.50	0.00	383.50	0.00
35.00	0.00	383.50	0.00
35.50	0.00	383.50	0.00
36.00	0.00	383.50	0.00
36.50	0.00	383.50	0.00
37.00	0.00	383.50	0.00
37.50	0.00	383.50	0.00
38.00	0.00	383.50	0.00
38.50	0.00	383.50	0.00
39.00	0.00	383.50	0.00
39.50	0.00	383.50	0.00
40.00	0.00	383.50	0.00
40.50	0.00	383.50	0.00
41.00	0.00	383.50	0.00
41.50	0.00	383.50	0.00
42.00	0.00	383.50	0.00
42.50	0.00	383.50	0.00
43.00	0.00	383.50	0.00
43.50	0.00	383.50	0.00
44.00	0.00	383.50	0.00
44.50	0.00	383.50	0.00
45.00	0.00	383.50	0.00
45.50	0.00	383.50	0.00
46.00	0.00	383.50	0.00
46.50	0.00	383.50	0.00
47.00	0.00	383.50	0.00
47.50	0.00	383.50	0.00
48.00	0.00	383.50	0.00

Summary for Pond 4P: Gypsum Treatment Ditch

Inflow Area = 0.727 ac,100.00% Impervious, Inflow Depth = 8.22" for 1000-YR 24-HR INDY HUFF event
Inflow = 0.54 cfs @ 14.41 hrs, Volume= 0.498 af
Outflow = 0.53 cfs @ 15.11 hrs, Volume= 0.486 af, Atten= 1%, Lag= 41.9 min
Primary = 0.53 cfs @ 15.11 hrs, Volume= 0.486 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 390.42' @ 15.11 hrs Surf.Area= 0.060 ac Storage= 0.024 af

Plug-Flow detention time= 42.2 min calculated for 0.486 af (98% of inflow)
Center-of-Mass det. time= 28.4 min (869.1 - 840.7)

Volume	Invert	Avail.Storage	Storage Description
#1	390.00'	0.372 af	**Custom Stage Data (Irregular)** Listed below (Recalc)

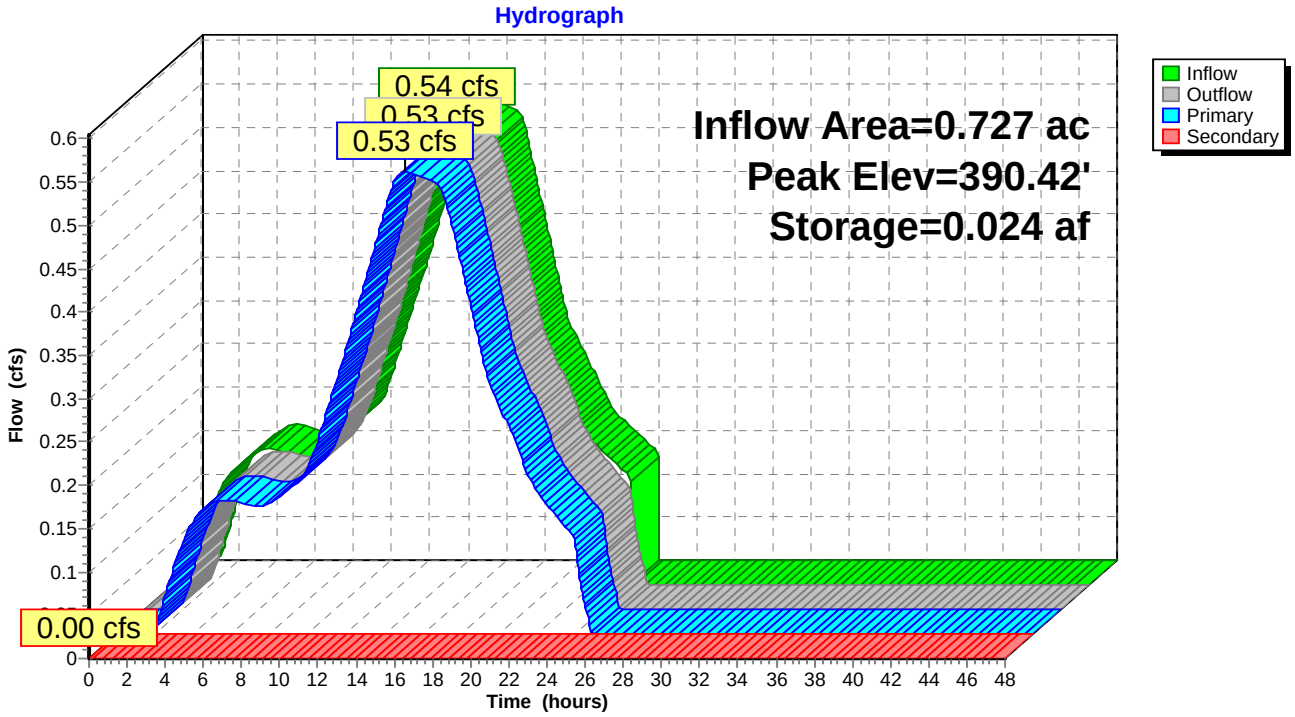
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
390.00	0.054	650.0	0.000	0.000	0.054
392.00	0.086	695.4	0.139	0.139	0.170
394.00	0.150	759.5	0.233	0.372	0.343

Device	Routing	Invert	Outlet Devices
#1	Primary	390.00'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 390.00' / 388.50' S= 0.0214 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	392.67'	**10.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

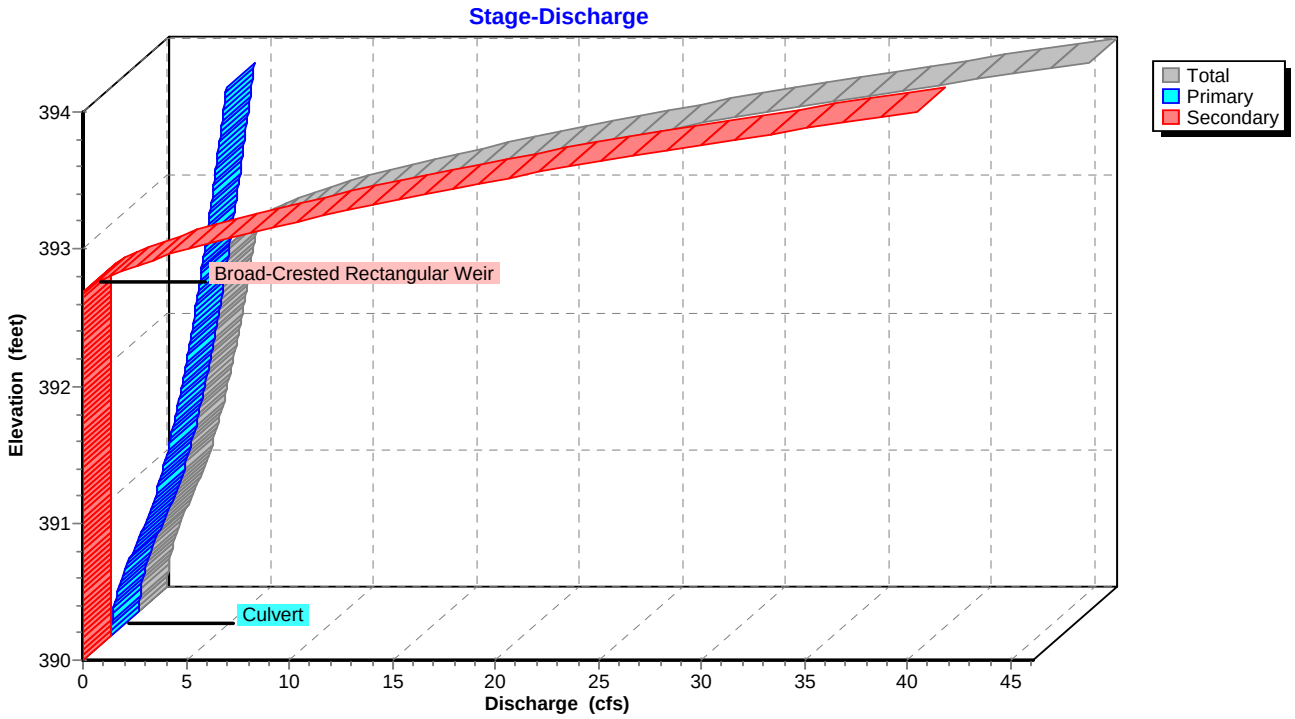
Primary OutFlow Max=0.53 cfs @ 15.11 hrs HW=390.42' TW=388.12' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.53 cfs @ 1.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=390.00' TW=387.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

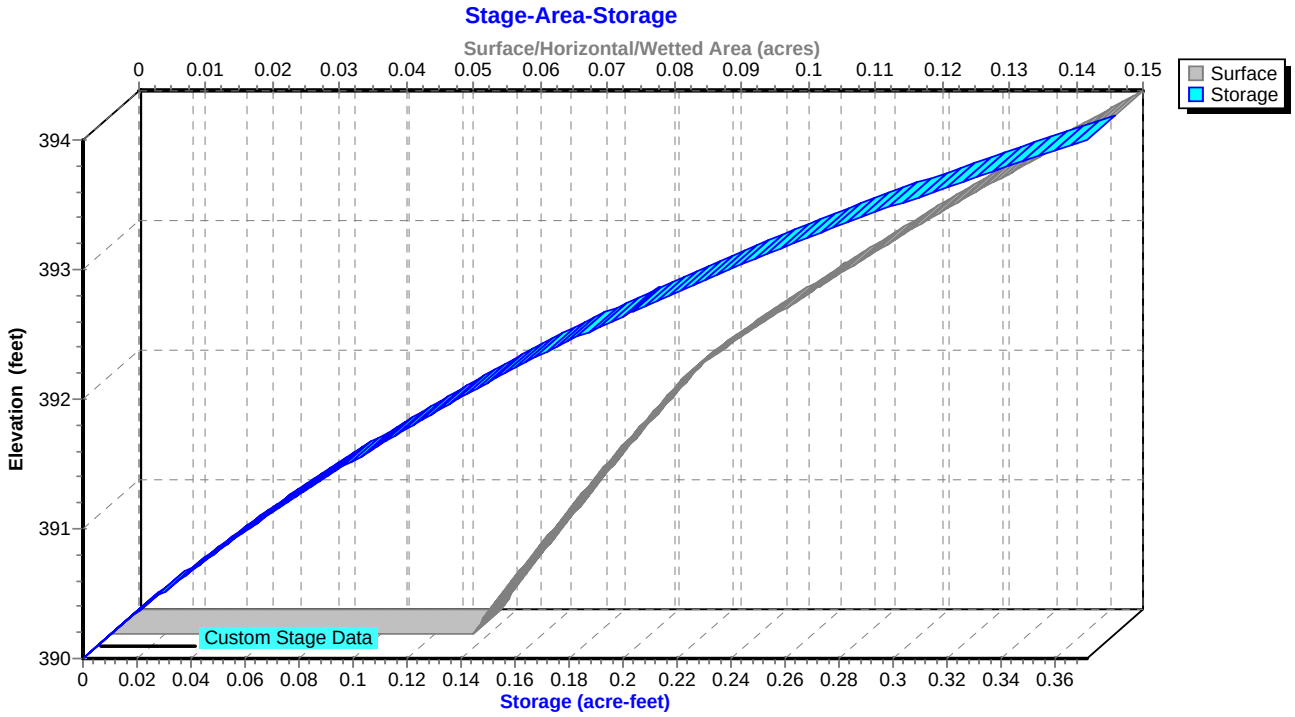
Pond 4P: Gypsum Treatment Ditch



Pond 4P: Gypsum Treatment Ditch



Pond 4P: Gypsum Treatment Ditch



Hydrograph for Pond 4P: Gypsum Treatment Ditch

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	390.00	0.00	0.00	**0.00**
1.00	0.00	0.000	390.00	0.00	0.00	0.00
2.00	0.08	0.003	390.05	0.01	0.01	0.00
3.00	0.13	0.008	390.15	0.08	0.08	0.00
4.00	0.15	0.011	390.20	0.13	0.13	0.00
5.00	0.16	0.012	390.21	0.15	0.15	0.00
6.00	0.15	0.012	390.21	0.15	0.15	0.00
7.00	0.14	0.012	390.21	0.15	0.15	0.00
8.00	0.16	0.012	390.21	0.15	0.15	0.00
9.00	0.18	0.012	390.22	0.17	0.17	0.00
10.00	0.22	0.013	390.24	0.19	0.19	0.00
11.00	0.29	0.016	390.28	0.26	0.26	0.00
12.00	0.36	0.018	390.32	0.33	0.33	0.00
13.00	0.43	0.020	390.36	0.41	0.41	0.00
14.00	**0.51**	0.022	390.39	0.48	0.48	0.00
15.00	**0.53**	**0.024**	**390.42**	**0.53**	**0.53**	0.00
16.00	0.53	**0.024**	**390.41**	**0.53**	**0.53**	0.00
17.00	0.50	0.023	390.41	0.51	0.51	0.00
18.00	0.40	0.021	390.37	0.43	0.43	0.00
19.00	0.30	0.018	390.32	0.34	0.34	0.00
20.00	0.24	0.016	390.28	0.26	0.26	0.00
21.00	0.20	0.014	390.26	0.22	0.22	0.00
22.00	0.17	0.014	390.25	0.16	0.16	0.00
23.00	0.14	0.014	390.26	0.14	0.14	0.00
24.00	0.06	0.015	390.27	0.11	0.11	0.00
25.00	0.00	0.012	390.21	0.00	0.00	0.00
26.00	0.00	0.012	390.21	0.00	0.00	0.00
27.00	0.00	0.012	390.21	0.00	0.00	0.00
28.00	0.00	0.012	390.21	0.00	0.00	0.00
29.00	0.00	0.012	390.21	0.00	0.00	0.00
30.00	0.00	0.012	390.21	0.00	0.00	0.00
31.00	0.00	0.012	390.21	0.00	0.00	0.00
32.00	0.00	0.012	390.21	0.00	0.00	0.00
33.00	0.00	0.012	390.21	0.00	0.00	0.00
34.00	0.00	0.012	390.21	0.00	0.00	0.00
35.00	0.00	0.012	390.21	0.00	0.00	0.00
36.00	0.00	0.012	390.21	0.00	0.00	0.00
37.00	0.00	0.012	390.21	0.00	0.00	0.00
38.00	0.00	0.012	390.21	0.00	0.00	0.00
39.00	0.00	0.012	390.21	0.00	0.00	0.00
40.00	0.00	0.012	390.21	0.00	0.00	0.00
41.00	0.00	0.012	390.21	0.00	0.00	0.00
42.00	0.00	0.012	390.21	0.00	0.00	0.00
43.00	0.00	0.012	390.21	0.00	0.00	0.00
44.00	0.00	0.012	390.21	0.00	0.00	0.00
45.00	0.00	0.012	390.21	0.00	0.00	0.00
46.00	0.00	0.012	390.21	0.00	0.00	0.00
47.00	0.00	0.012	390.21	0.00	0.00	0.00
48.00	0.00	0.012	390.21	0.00	0.00	0.00

Summary for Pond 5P: Middle Pond

[80] Warning: Exceeded Pond 6P by 0.80' @ 20.05 hrs (21.34 cfs 26.820 af)
[80] Warning: Exceeded Pond 6P by 0.76' @ 21.53 hrs (0.00 cfs 10.767 af)
[80] Warning: Exceeded Pond 7P by 0.11' @ 47.99 hrs (1.58 cfs 1.139 af)
[80] Warning: Exceeded Pond 7P by 0.11' @ 47.99 hrs (23.80 cfs 18.992 af)

Inflow Area = 25.187 ac, 55.14% Impervious, Inflow Depth > 2.33" for 1000-YR 24-HR INDY HUFF event
Inflow = 10.39 cfs @ 18.37 hrs, Volume= 4.881 af
Outflow = 4.28 cfs @ 19.27 hrs, Volume= 0.256 af, Atten= 59%, Lag= 54.2 min
Primary = 4.28 cfs @ 19.27 hrs, Volume= 0.256 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Starting Elev= 387.00' Surf.Area= 0.000 ac Storage= 4.000 af
Peak Elev= 391.01' @ 48.00 hrs Surf.Area= 0.000 ac Storage= 8.625 af (4.625 af above start)

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= 95.1 min (1,127.6 - 1,032.4)

Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	10.700 af	**Custom Stage Data** Listed below

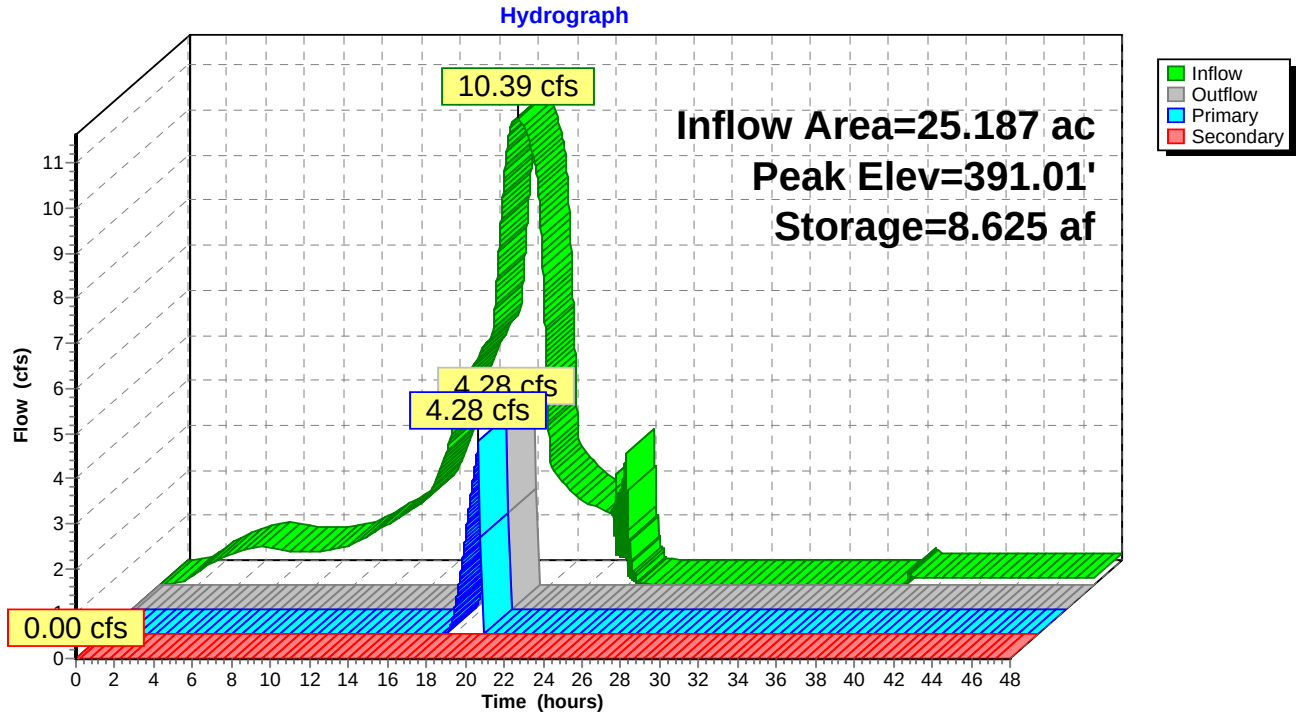
Elevation (feet)	Cum.Store (acre-feet)
384.00	0.000
387.00	4.000
388.00	5.090
389.00	6.230
390.00	7.400
391.00	8.610
391.67	9.440
392.67	10.700

Device	Routing	Invert	Outlet Devices
#1	Primary	389.00'	**24.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 389.00' / 388.50' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	391.67'	**20.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

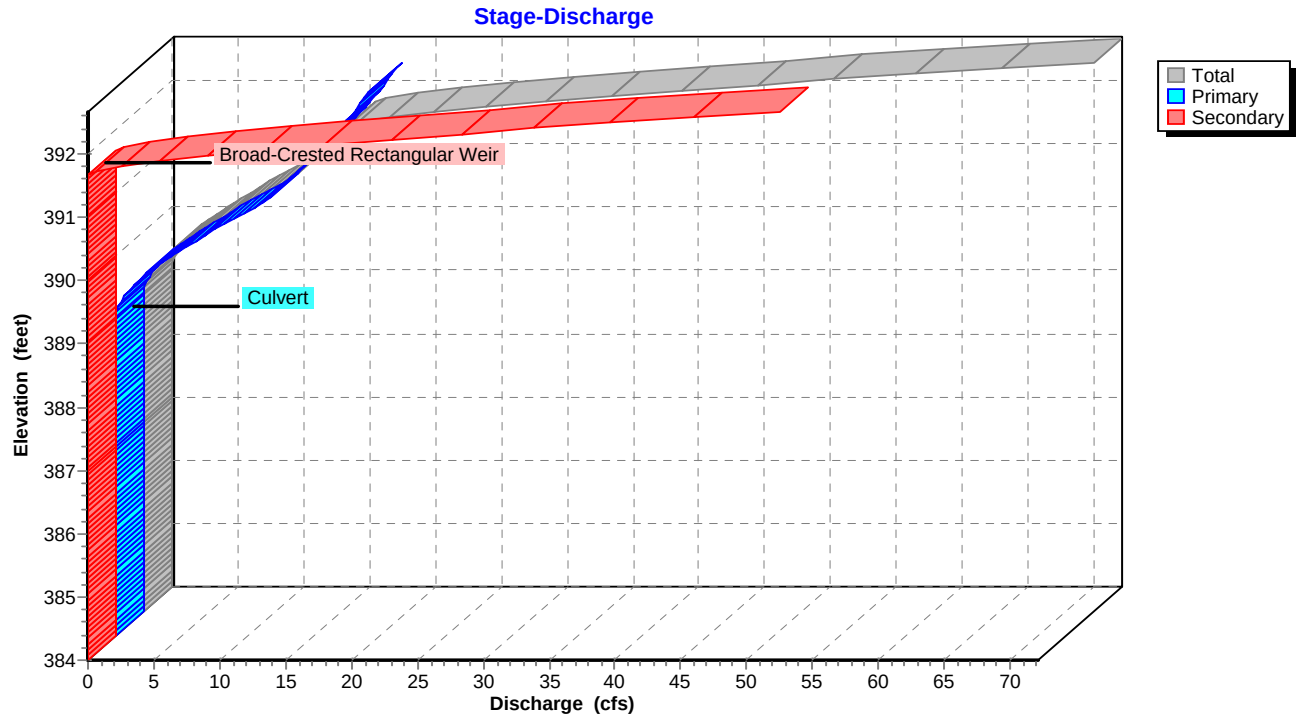
Primary OutFlow Max=0.00 cfs @ 19.27 hrs HW=390.01' TW=390.77' (Dynamic Tailwater)
└**1=Culvert** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=387.00' TW=382.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

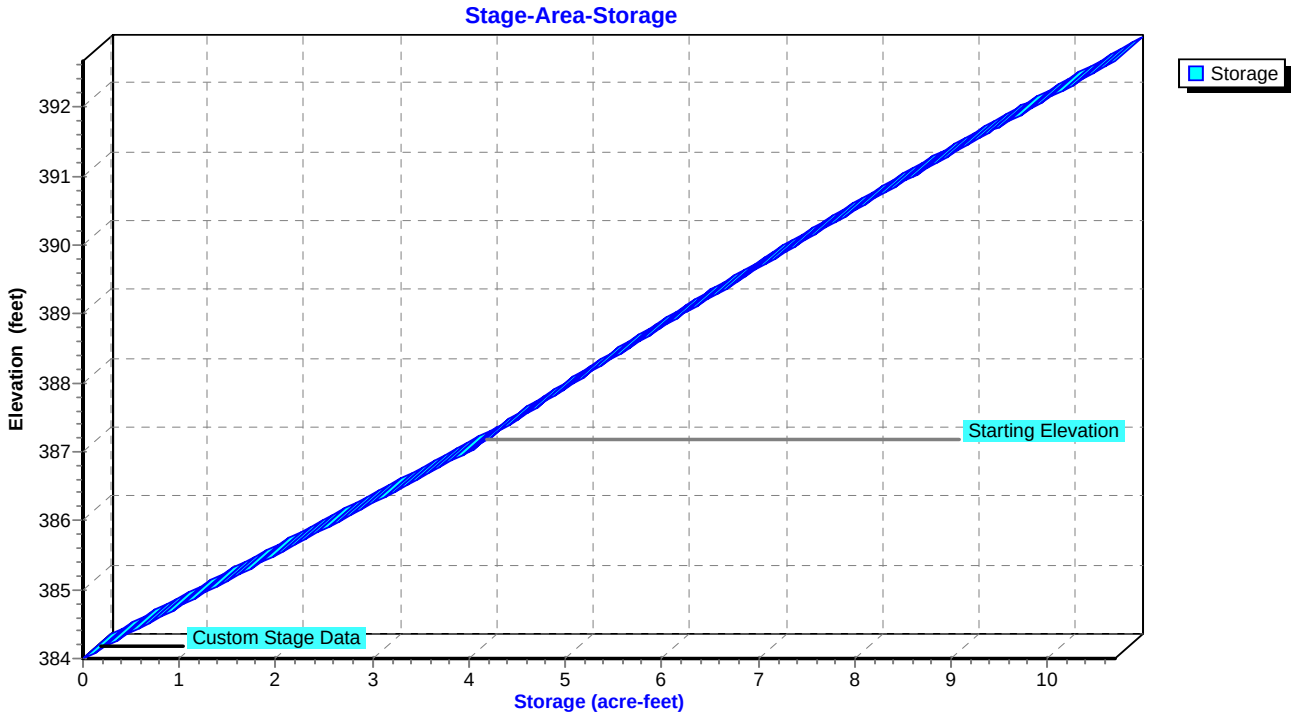
Pond 5P: Middle Pond



Pond 5P: Middle Pond



Pond 5P: Middle Pond



Hydrograph for Pond 5P: Middle Pond

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	4.000	387.00	0.00	0.00	**0.00**
1.00	0.04	4.001	387.00	0.00	0.00	0.00
2.00	0.30	4.015	387.01	0.00	0.00	0.00
3.00	0.55	4.051	387.05	0.00	0.00	0.00
4.00	0.72	4.104	387.10	0.00	0.00	0.00
5.00	0.85	4.170	387.16	0.00	0.00	0.00
6.00	0.79	4.237	387.22	0.00	0.00	0.00
7.00	0.73	4.300	387.28	0.00	0.00	0.00
8.00	0.75	4.361	387.33	0.00	0.00	0.00
9.00	0.80	4.425	387.39	0.00	0.00	0.00
10.00	0.92	4.494	387.45	0.00	0.00	0.00
11.00	1.16	4.580	387.53	0.00	0.00	0.00
12.00	1.41	4.687	387.63	0.00	0.00	0.00
13.00	1.68	4.814	387.75	0.00	0.00	0.00
14.00	2.15	4.968	387.89	0.00	0.00	0.00
15.00	3.41	5.193	388.09	0.00	0.00	0.00
16.00	4.74	5.539	388.39	0.00	0.00	0.00
17.00	5.49	5.965	388.77	0.00	0.00	0.00
18.00	**10.11**	6.606	389.32	0.50	0.50	0.00
19.00	**9.81**	7.291	389.91	**3.53**	**3.53**	0.00
20.00	3.31	7.837	390.36	**0.00**	**0.00**	0.00
21.00	2.16	8.038	390.53	0.00	0.00	0.00
22.00	1.78	8.198	390.66	0.00	0.00	0.00
23.00	1.63	8.340	390.78	0.00	0.00	0.00
24.00	2.76	8.465	390.88	0.00	0.00	0.00
25.00	0.02	8.488	390.90	0.00	0.00	0.00
26.00	0.01	8.489	390.90	0.00	0.00	0.00
27.00	0.00	8.489	390.90	0.00	0.00	0.00
28.00	0.00	8.489	390.90	0.00	0.00	0.00
29.00	0.00	8.489	390.90	0.00	0.00	0.00
30.00	0.00	8.490	390.90	0.00	0.00	0.00
31.00	0.00	8.490	390.90	0.00	0.00	0.00
32.00	0.00	8.490	390.90	0.00	0.00	0.00
33.00	0.00	8.490	390.90	0.00	0.00	0.00
34.00	0.00	8.490	390.90	0.00	0.00	0.00
35.00	0.00	8.490	390.90	0.00	0.00	0.00
36.00	0.00	8.491	390.90	0.00	0.00	0.00
37.00	0.00	8.491	390.90	0.00	0.00	0.00
38.00	0.00	8.491	390.90	0.00	0.00	0.00
39.00	0.17	8.499	390.91	0.00	0.00	0.00
40.00	0.17	8.513	390.92	0.00	0.00	0.00
41.00	0.17	8.528	390.93	0.00	0.00	0.00
42.00	0.17	8.542	390.94	0.00	0.00	0.00
43.00	0.17	8.556	390.96	0.00	0.00	0.00
44.00	0.17	8.570	390.97	0.00	0.00	0.00
45.00	0.17	8.584	390.98	0.00	0.00	0.00
46.00	0.17	8.598	390.99	0.00	0.00	0.00
47.00	0.16	8.612	391.00	0.00	0.00	0.00
48.00	0.16	**8.625**	**391.01**	0.00	0.00	0.00

Summary for Pond 6P: Settling Pond

Process flow Unit 2 = 0.22cfs

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[87] Warning: Oscillations may require Finer Routing or smaller dt
[80] Warning: Exceeded Pond 4P by 0.80' @ 47.99 hrs (2.14 cfs 2.499 af)
[80] Warning: Exceeded Pond 8P by 1.94' @ 38.42 hrs (6.27 cfs 13.503 af)

Inflow Area = 3.657 ac,100.00% Impervious, Inflow Depth > 6.53" for 1000-YR 24-HR INDY HUFF event
Inflow = 1.43 cfs @ 14.85 hrs, Volume= 1.990 af, Incl. 0.22 cfs Base Flow
Outflow = 0.80 cfs @ 13.83 hrs, Volume= 0.695 af, Atten= 44%, Lag= 0.0 min
Primary = 0.80 cfs @ 13.83 hrs, Volume= 0.589 af
Secondary = 0.23 cfs @ 38.42 hrs, Volume= 0.105 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Starting Elev= 387.00' Surf.Area= 0.000 ac Storage= 0.160 af
Peak Elev= 391.01' @ 48.00 hrs Surf.Area= 0.000 ac Storage= 1.455 af (1.295 af above start)

Plug-Flow detention time= 754.9 min calculated for 0.534 af (27% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	2.220 af	**Custom Stage Data** Listed below

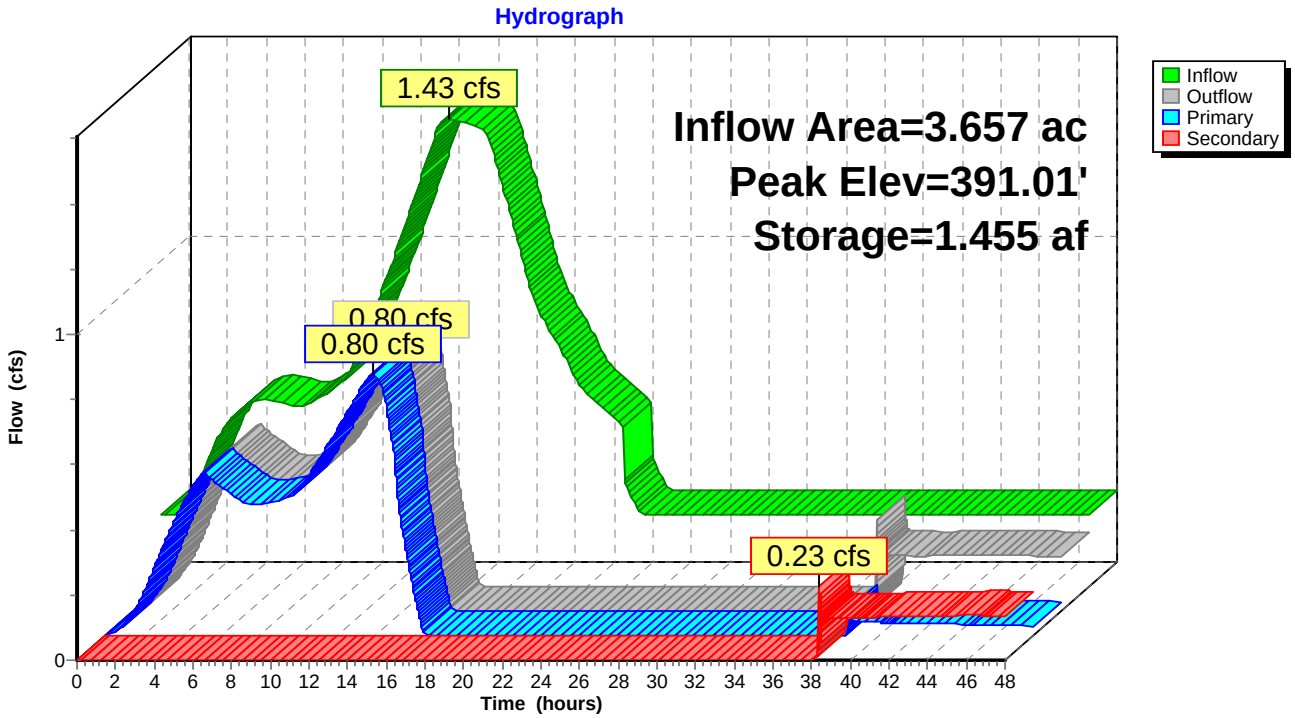
Elevation (feet)	Cum.Store (acre-feet)
384.00	0.000
387.00	0.160
388.00	0.450
389.00	0.760
390.00	1.090
391.00	1.450
391.67	1.730
392.67	2.220

Device	Routing	Invert	Outlet Devices
#1	Primary	387.01'	**24.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 386.91' / 387.01' S= -0.0017 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	386.99'	**24.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 386.89' / 386.99' S= -0.0017 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#3	Secondary	390.60'	**20.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

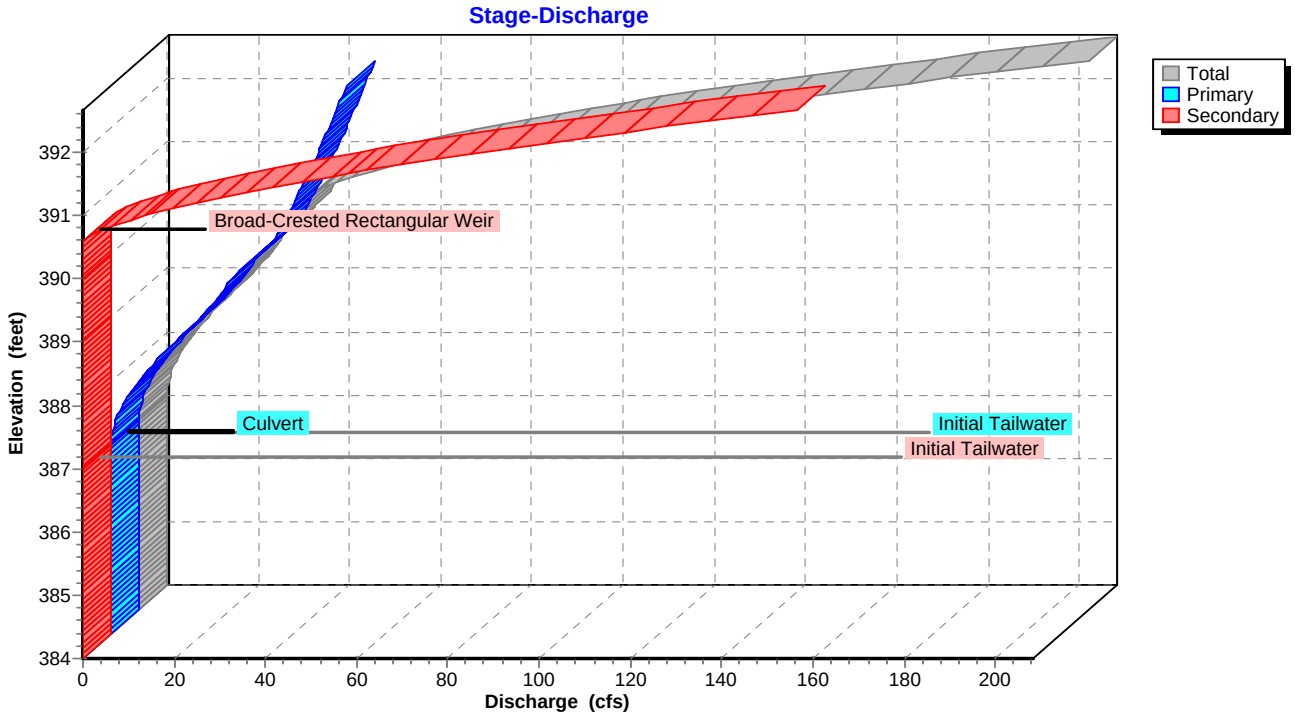
Primary OutFlow Max=0.71 cfs @ 13.83 hrs HW=387.87' TW=387.86' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.35 cfs @ 0.34 fps)
└─**2=Culvert** (Outlet Controls 0.36 cfs @ 0.34 fps)

Secondary OutFlow Max=0.00 cfs @ 38.42 hrs HW=390.90' TW=390.90' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

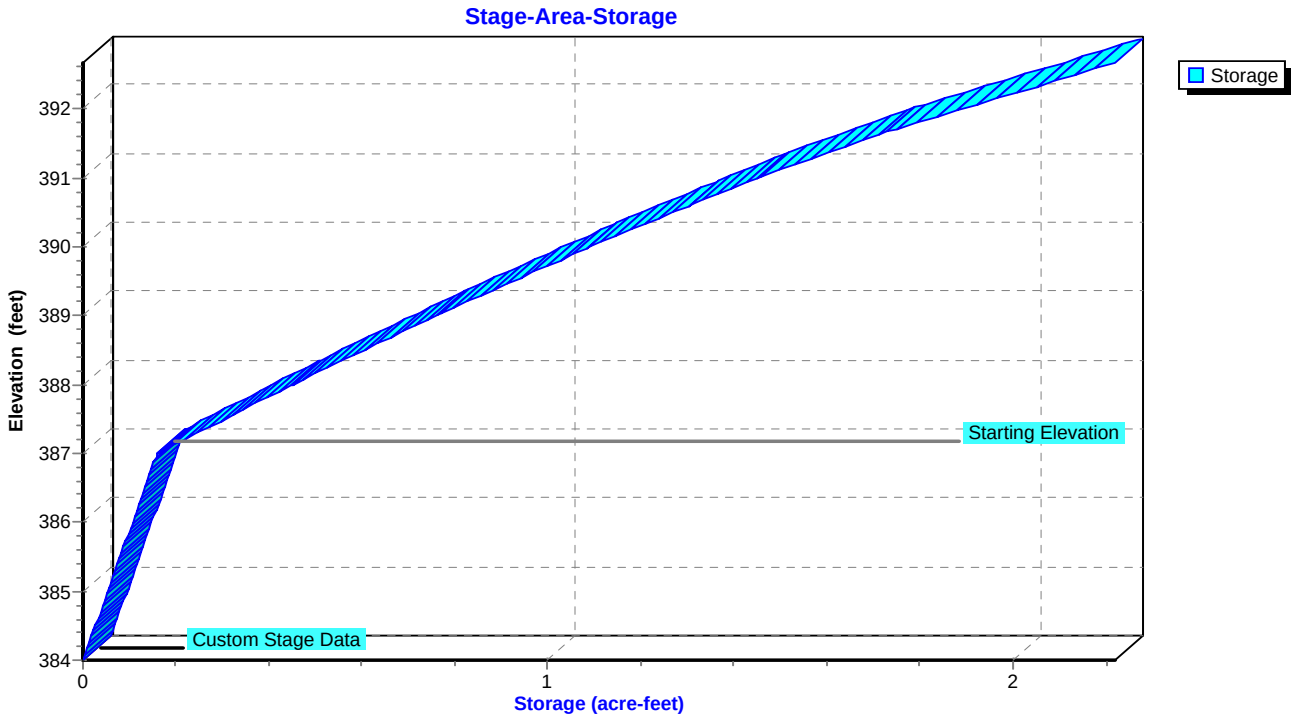
Pond 6P: Settling Pond



Pond 6P: Settling Pond



Pond 6P: Settling Pond



Hydrograph for Pond 6P: Settling Pond

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.22	0.160	387.00	0.00	0.00	0.00
1.00	0.22	0.177	387.06	0.04	0.04	0.00
2.00	0.33	0.193	387.11	0.13	0.13	0.00
3.00	0.46	0.209	387.17	0.27	0.27	0.00
4.00	0.54	0.223	387.22	0.40	0.40	0.00
5.00	0.57	0.232	387.25	0.50	0.50	0.00
6.00	0.57	0.239	387.27	0.46	0.46	0.00
7.00	0.55	0.249	387.31	0.42	0.42	0.00
8.00	0.57	0.262	387.35	0.40	0.40	0.00
9.00	0.61	0.277	387.40	0.41	0.41	0.00
10.00	0.69	0.295	387.47	0.45	0.45	0.00
11.00	0.84	0.317	387.54	0.53	0.53	0.00
12.00	1.00	0.345	387.64	0.63	0.63	0.00
13.00	1.17	0.379	387.75	**0.73**	**0.73**	0.00
14.00	**1.35**	0.419	387.89	**0.80**	**0.80**	0.00
15.00	**1.43**	0.478	388.09	0.53	0.53	0.00
16.00	1.41	0.571	388.39	0.13	0.13	0.00
17.00	1.37	0.684	388.76	0.00	0.00	0.00
18.00	1.16	0.789	389.09	0.00	0.00	0.00
19.00	0.94	0.875	389.35	0.00	0.00	0.00
20.00	0.79	0.946	389.56	0.00	0.00	0.00
21.00	0.69	1.007	389.75	0.00	0.00	0.00
22.00	0.59	1.060	389.91	0.00	0.00	0.00
23.00	0.54	1.107	390.05	0.00	0.00	0.00
24.00	0.41	1.149	390.16	0.00	0.00	0.00
25.00	0.22	1.171	390.22	0.00	0.00	0.00
26.00	0.22	1.189	390.27	0.00	0.00	0.00
27.00	0.22	1.207	390.33	0.00	0.00	0.00
28.00	0.22	1.225	390.38	0.00	0.00	0.00
29.00	0.22	1.243	390.43	0.00	0.00	0.00
30.00	0.22	1.262	390.48	0.00	0.00	0.00
31.00	0.22	1.280	390.53	0.00	0.00	0.00
32.00	0.22	1.298	390.58	0.00	0.00	0.00
33.00	0.22	1.316	390.63	0.00	0.00	0.00
34.00	0.22	1.334	390.68	0.00	0.00	0.00
35.00	0.22	1.353	390.73	0.00	0.00	0.00
36.00	0.22	1.371	390.78	0.00	0.00	0.00
37.00	0.22	1.389	390.83	0.00	0.00	0.00
38.00	0.22	1.407	390.88	0.00	0.00	**0.00**
39.00	0.22	1.417	390.91	0.17	0.04	**0.13**
40.00	0.22	1.421	390.92	0.17	0.04	0.13
41.00	0.22	1.425	390.93	0.17	0.04	0.13
42.00	0.22	1.430	390.94	0.17	0.04	0.13
43.00	0.22	1.434	390.95	0.17	0.04	0.13
44.00	0.22	1.438	390.97	0.17	0.03	0.13
45.00	0.22	1.442	390.98	0.17	0.03	0.14
46.00	0.22	1.446	390.99	0.17	0.03	0.14
47.00	0.22	1.450	391.00	0.16	0.03	0.13
48.00	0.22	**1.455**	**391.01**	0.16	0.03	0.14

Summary for Pond 7P: North Pond

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 18.690 ac, 39.54% Impervious, Inflow Depth = 7.44" for 1000-YR 24-HR INDY HUFF event
Inflow = 14.39 cfs @ 16.78 hrs, Volume= 11.593 af
Outflow = 9.30 cfs @ 18.45 hrs, Volume= 2.851 af, Atten= 35%, Lag= 100.3 min
Primary = 4.76 cfs @ 17.87 hrs, Volume= 1.430 af
Secondary = 5.87 cfs @ 19.15 hrs, Volume= 1.420 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Starting Elev= 387.00' Surf.Area= 0.000 ac Storage= 7.150 af
Peak Elev= 390.90' @ 25.78 hrs Surf.Area= 0.000 ac Storage= 15.894 af (8.744 af above start)

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= 176.5 min (1,110.8 - 934.3)

Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	20.760 af	**Custom Stage Data** Listed below

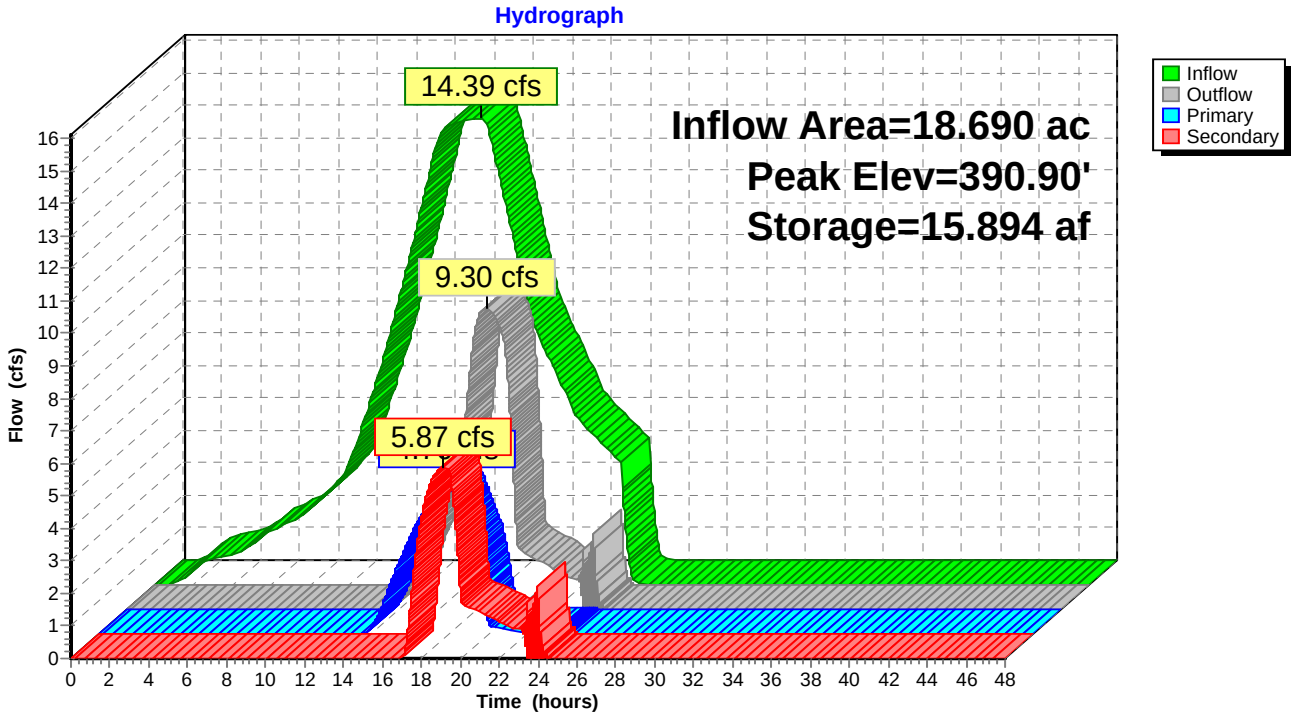
Elevation (feet)	Cum.Store (acre-feet)
384.00	0.000
387.00	7.150
388.00	9.130
389.00	11.270
390.00	13.620
391.00	16.150
391.67	17.930
392.67	20.760

Device	Routing	Invert	Outlet Devices
#1	Primary	388.57'	**15.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 388.36' / 388.57' S= -0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Secondary	390.10'	**20.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

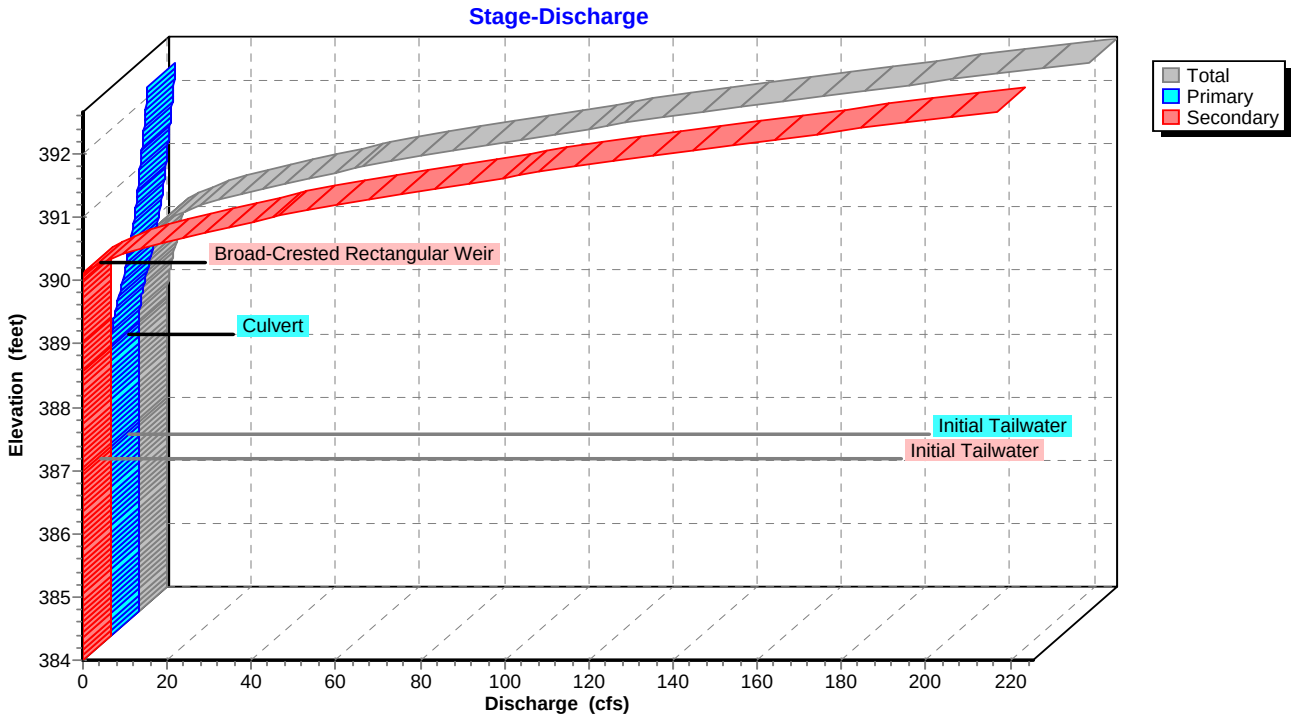
Primary OutFlow Max=4.75 cfs @ 17.87 hrs HW=390.27' TW=389.23' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.75 cfs @ 3.87 fps)

Secondary OutFlow Max=5.87 cfs @ 19.15 hrs HW=390.33' TW=389.97' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 5.87 cfs @ 1.28 fps)

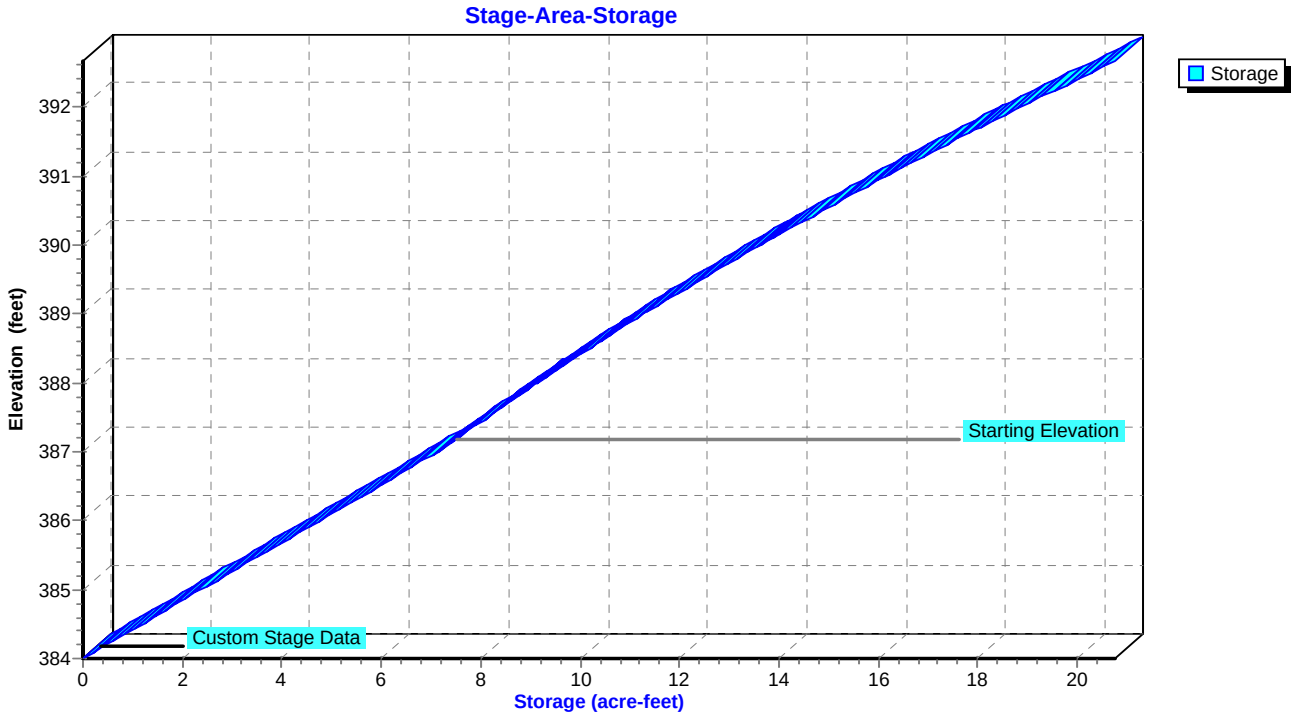
Pond 7P: North Pond



Pond 7P: North Pond



Pond 7P: North Pond



Hydrograph for Pond 7P: North Pond

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	7.150	387.00	0.00	0.00	0.00
1.00	0.02	7.150	387.00	0.00	0.00	0.00
2.00	0.49	7.170	387.01	0.00	0.00	0.00
3.00	0.80	7.227	387.04	0.00	0.00	0.00
4.00	0.93	7.299	387.08	0.00	0.00	0.00
5.00	1.25	7.385	387.12	0.00	0.00	0.00
6.00	1.68	7.508	387.18	0.00	0.00	0.00
7.00	1.94	7.658	387.26	0.00	0.00	0.00
8.00	2.35	7.833	387.34	0.00	0.00	0.00
9.00	2.93	8.051	387.45	0.00	0.00	0.00
10.00	3.79	8.322	387.59	0.00	0.00	0.00
11.00	5.53	8.705	387.79	0.00	0.00	0.00
12.00	7.54	9.243	388.05	0.00	0.00	0.00
13.00	9.88	9.961	388.39	0.00	0.00	0.00
14.00	12.41	10.878	388.82	0.23	0.23	0.00
15.00	14.08	11.922	389.28	1.60	1.60	0.00
16.00	**14.31**	12.905	389.70	3.02	3.02	0.00
17.00	**14.21**	13.797	390.07	3.97	**3.97**	0.00
18.00	11.79	14.343	390.29	**8.89**	**4.60**	4.30
19.00	9.10	14.450	390.33	**8.89**	3.04	**5.85**
20.00	7.28	14.546	390.37	2.57	0.40	**2.17**
21.00	6.04	14.952	390.53	1.54	0.12	1.43
22.00	4.93	15.287	390.66	1.20	0.06	1.15
23.00	4.33	15.584	390.78	0.94	0.03	0.91
24.00	3.34	15.845	390.88	2.30	0.09	2.21
25.00	0.02	**15.894**	**390.90**	0.00	0.00	0.00
26.00	0.00	**15.894**	**390.90**	0.00	0.00	0.00
27.00	0.00	15.894	390.90	0.00	0.00	0.00
28.00	0.00	15.894	390.90	0.00	0.00	0.00
29.00	0.00	15.894	390.90	0.00	0.00	0.00
30.00	0.00	15.894	390.90	0.00	0.00	0.00
31.00	0.00	15.893	390.90	0.00	0.00	0.00
32.00	0.00	15.893	390.90	0.00	0.00	0.00
33.00	0.00	15.893	390.90	0.00	0.00	0.00
34.00	0.00	15.893	390.90	0.00	0.00	0.00
35.00	0.00	15.893	390.90	0.00	0.00	0.00
36.00	0.00	15.893	390.90	0.00	0.00	0.00
37.00	0.00	15.893	390.90	0.00	0.00	0.00
38.00	0.00	15.892	390.90	0.00	0.00	0.00
39.00	0.00	15.892	390.90	0.00	0.00	0.00
40.00	0.00	15.892	390.90	0.00	0.00	0.00
41.00	0.00	15.892	390.90	0.00	0.00	0.00
42.00	0.00	15.892	390.90	0.00	0.00	0.00
43.00	0.00	15.892	390.90	0.00	0.00	0.00
44.00	0.00	15.892	390.90	0.00	0.00	0.00
45.00	0.00	15.892	390.90	0.00	0.00	0.00
46.00	0.00	15.892	390.90	0.00	0.00	0.00
47.00	0.00	15.892	390.90	0.00	0.00	0.00
48.00	0.00	15.892	390.90	0.00	0.00	0.00

Summary for Pond 8P: Gypsum Pond

Process Flow FGD Waste and Clarified River Water = 0.20cfs

Inflow Area = 2.170 ac,100.00% Impervious, Inflow Depth > 14.35" for 1000-YR 24-HR INDY HUFF event
Inflow = 2.15 cfs @ 14.41 hrs, Volume= 2.594 af, Incl. 0.20 cfs Base Flow
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Starting Elev= 387.00' Surf.Area= 0.000 ac Storage= 1.790 af
Peak Elev= 389.08' @ 48.00 hrs Surf.Area= 0.000 ac Storage= 4.384 af (2.594 af above start)

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	386.00'	9.590 af	**Custom Stage Data** Listed below

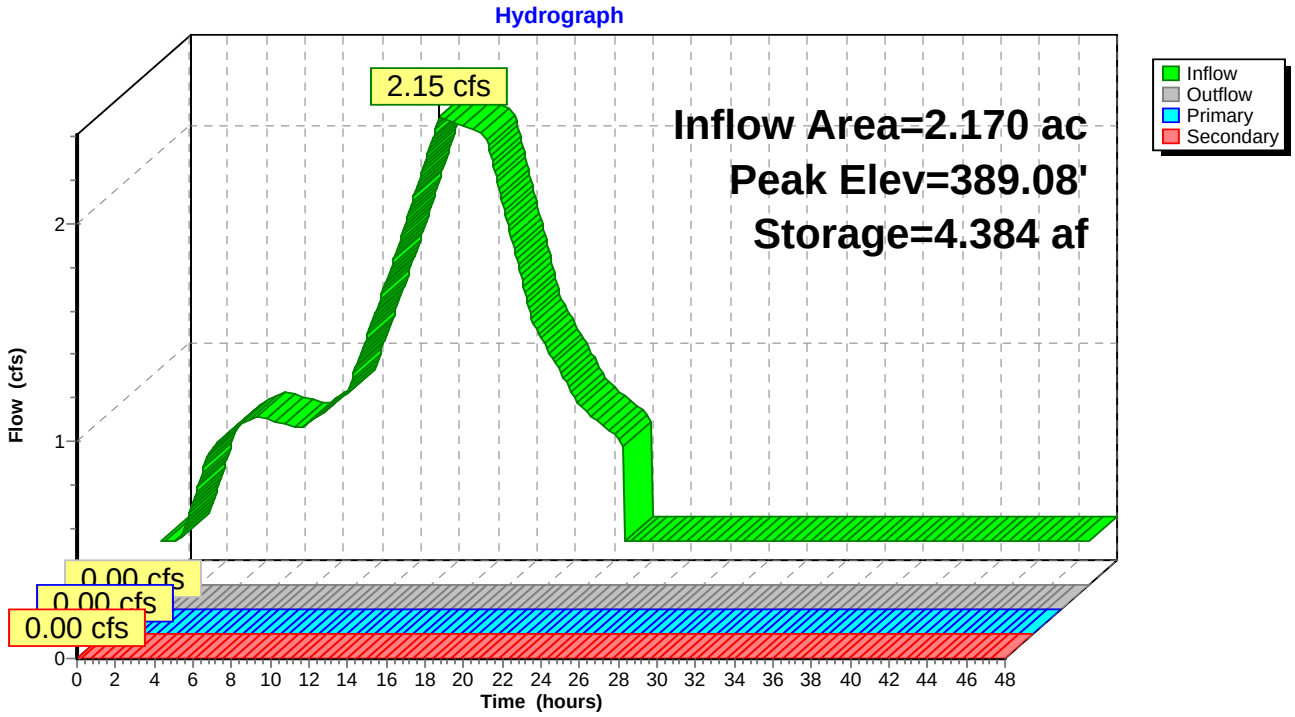
Elevation (feet)	Cum.Store (acre-feet)
386.00	0.000
387.00	1.790
388.00	2.970
389.00	4.280
390.00	5.660
391.00	7.080
391.67	8.070
392.67	9.590

Device	Routing	Invert	Outlet Devices
#1	Primary	388.47'	**15.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 388.47' / 388.10' S= 0.0062 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Secondary	392.40'	**20.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

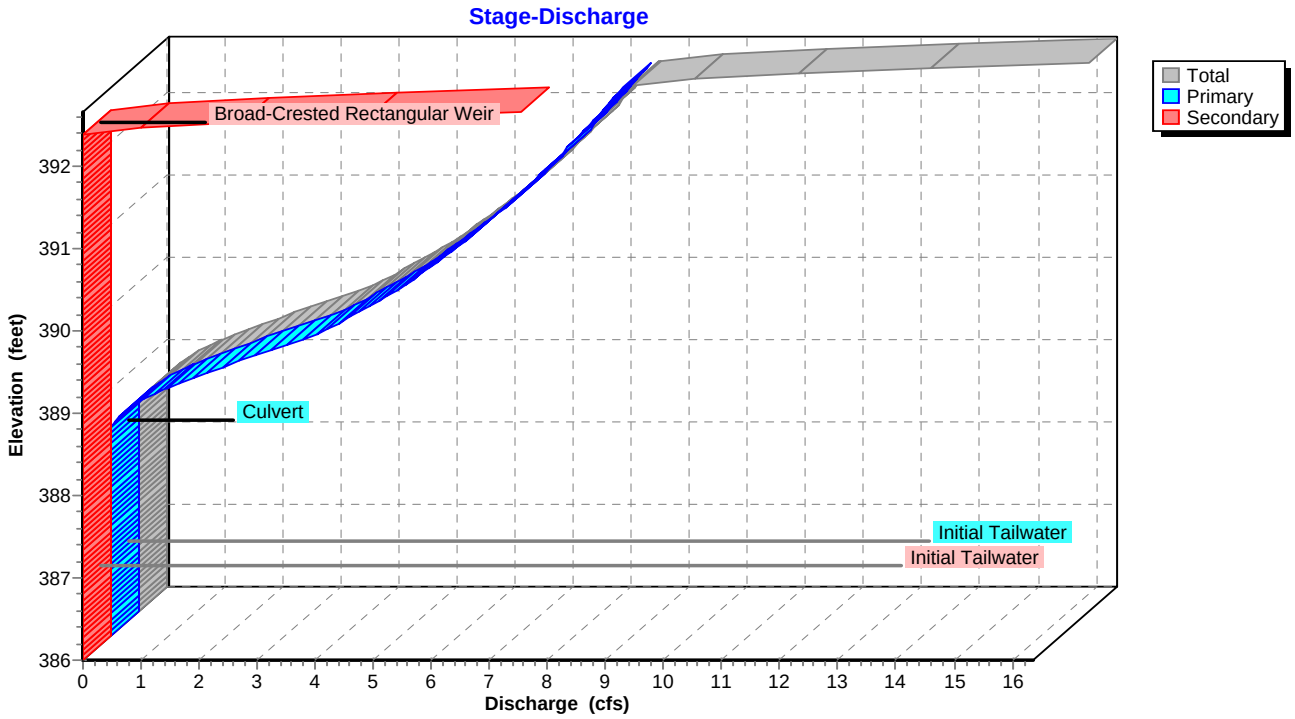
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=387.00' TW=387.00' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=387.00' TW=387.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

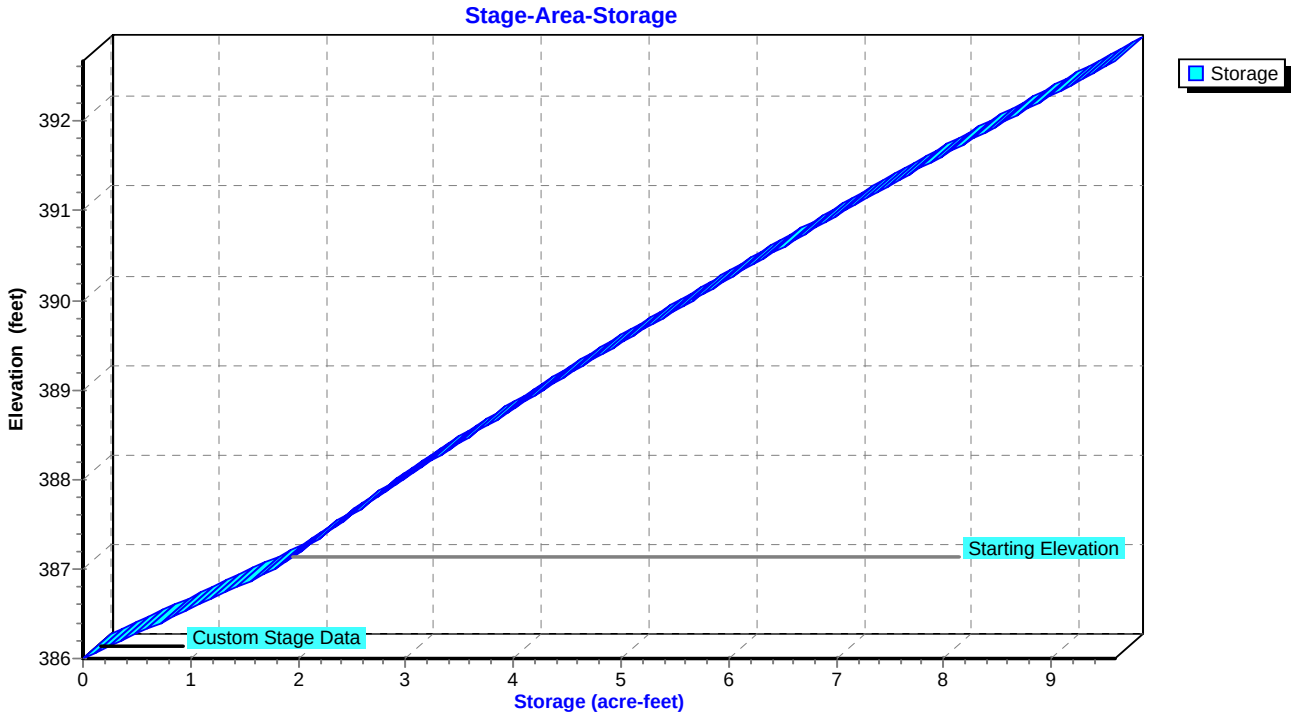
Pond 8P: Gypsum Pond



Pond 8P: Gypsum Pond



Pond 8P: Gypsum Pond



Hydrograph for Pond 8P: Gypsum Pond

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.20	1.790	387.00	**0.00**	**0.00**	**0.00**
1.00	0.21	1.807	387.01	0.00	0.00	0.00
2.00	0.48	1.835	387.04	0.00	0.00	0.00
3.00	0.66	1.884	387.08	0.00	0.00	0.00
4.00	0.73	1.941	387.13	0.00	0.00	0.00
5.00	0.77	2.004	387.18	0.00	0.00	0.00
6.00	0.75	2.067	387.23	0.00	0.00	0.00
7.00	0.72	2.128	387.29	0.00	0.00	0.00
8.00	0.77	2.189	387.34	0.00	0.00	0.00
9.00	0.84	2.255	387.39	0.00	0.00	0.00
10.00	0.98	2.329	387.46	0.00	0.00	0.00
11.00	1.23	2.420	387.53	0.00	0.00	0.00
12.00	1.48	2.532	387.63	0.00	0.00	0.00
13.00	1.76	2.666	387.74	0.00	0.00	0.00
14.00	**2.04**	2.824	387.88	0.00	0.00	0.00
15.00	**2.13**	2.999	388.02	0.00	0.00	0.00
16.00	2.10	3.174	388.16	0.00	0.00	0.00
17.00	2.00	3.346	388.29	0.00	0.00	0.00
18.00	1.64	3.497	388.40	0.00	0.00	0.00
19.00	1.29	3.618	388.49	0.00	0.00	0.00
20.00	1.09	3.715	388.57	0.00	0.00	0.00
21.00	0.93	3.798	388.63	0.00	0.00	0.00
22.00	0.80	3.868	388.69	0.00	0.00	0.00
23.00	0.72	3.931	388.73	0.00	0.00	0.00
24.00	0.42	3.988	388.78	0.00	0.00	0.00
25.00	0.20	4.004	388.79	0.00	0.00	0.00
26.00	0.20	4.021	388.80	0.00	0.00	0.00
27.00	0.20	4.037	388.81	0.00	0.00	0.00
28.00	0.20	4.054	388.83	0.00	0.00	0.00
29.00	0.20	4.070	388.84	0.00	0.00	0.00
30.00	0.20	4.087	388.85	0.00	0.00	0.00
31.00	0.20	4.103	388.87	0.00	0.00	0.00
32.00	0.20	4.120	388.88	0.00	0.00	0.00
33.00	0.20	4.136	388.89	0.00	0.00	0.00
34.00	0.20	4.153	388.90	0.00	0.00	0.00
35.00	0.20	4.170	388.92	0.00	0.00	0.00
36.00	0.20	4.186	388.93	0.00	0.00	0.00
37.00	0.20	4.203	388.94	0.00	0.00	0.00
38.00	0.20	4.219	388.95	0.00	0.00	0.00
39.00	0.20	4.236	388.97	0.00	0.00	0.00
40.00	0.20	4.252	388.98	0.00	0.00	0.00
41.00	0.20	4.269	388.99	0.00	0.00	0.00
42.00	0.20	4.285	389.00	0.00	0.00	0.00
43.00	0.20	4.302	389.02	0.00	0.00	0.00
44.00	0.20	4.318	389.03	0.00	0.00	0.00
45.00	0.20	4.335	389.04	0.00	0.00	0.00
46.00	0.20	4.351	389.05	0.00	0.00	0.00
47.00	0.20	4.368	389.06	0.00	0.00	0.00
48.00	0.20	**4.384**	**389.08**	0.00	0.00	0.00

Summary for Pond 9P: South Pond 1

Inflow Area = 0.127 ac,100.00% Impervious, Inflow Depth = 9.96" for 1000-YR 24-HR INDY HUFF event
Inflow = 0.11 cfs @ 14.41 hrs, Volume= 0.105 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Starting Elev= 391.00' Surf.Area= 0.000 ac Storage= 0.026 af
Peak Elev= 392.45' @ 24.01 hrs Surf.Area= 0.000 ac Storage= 0.131 af (0.105 af above start)

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no outflow)

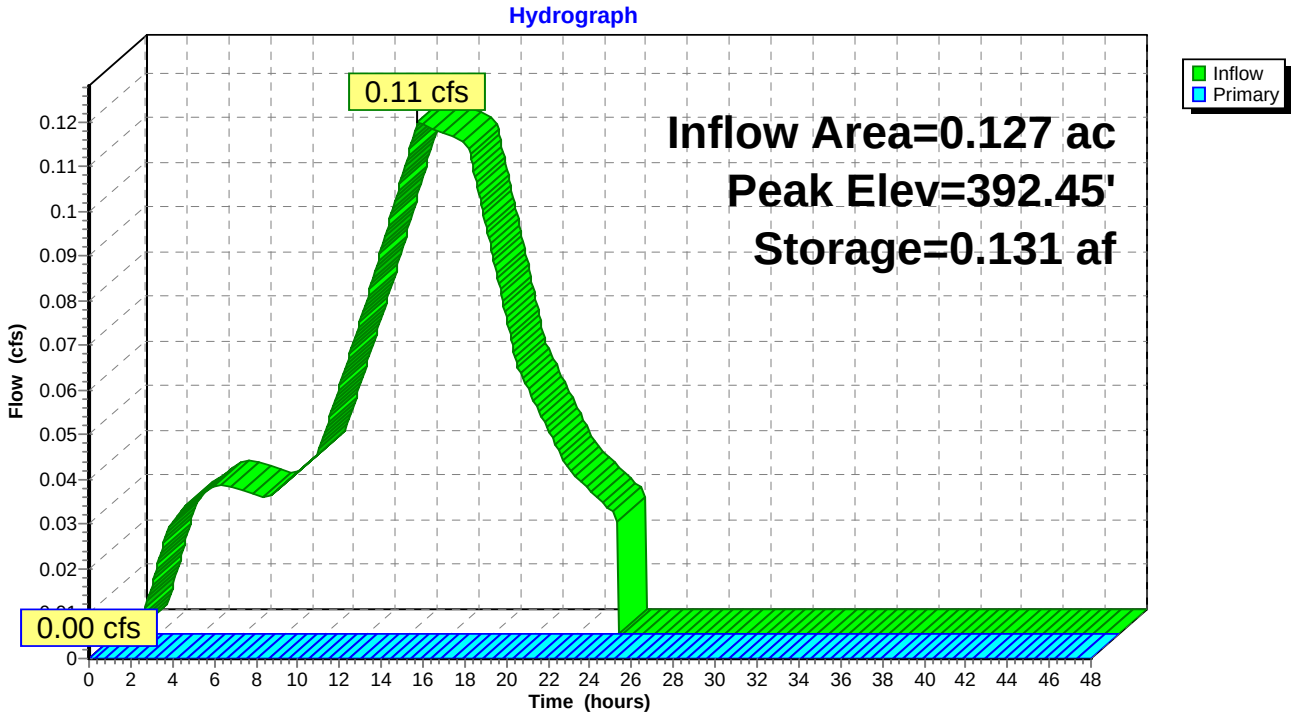
Volume	Invert	Avail.Storage	Storage Description
#1	387.00'	0.150 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
387.00	0.000
390.00	0.002
391.00	0.026
391.67	0.067
392.67	0.150

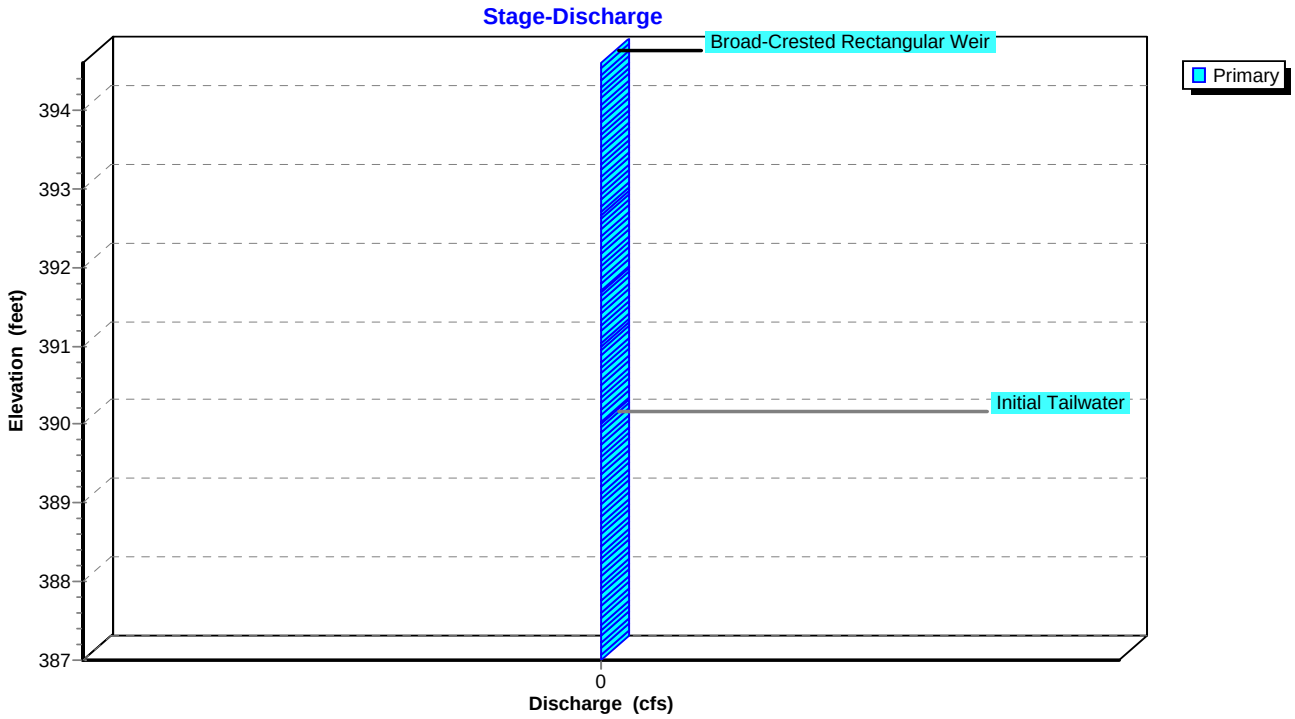
Device	Routing	Invert	Outlet Devices
#1	Primary	394.60'	**10.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=391.00' TW=390.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

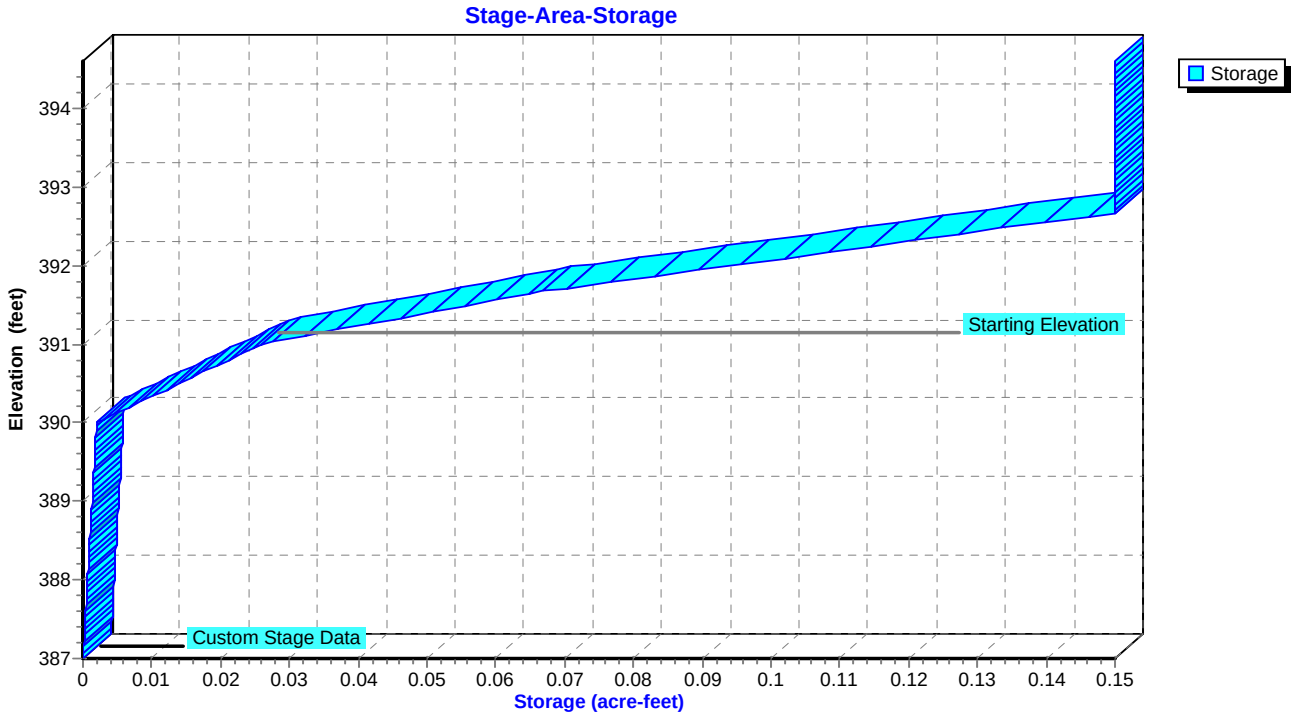
Pond 9P: South Pond 1



Pond 9P: South Pond 1



Pond 9P: South Pond 1



Hydrograph for Pond 9P: South Pond 1

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.026	391.00	**0.00**
1.00	0.00	0.026	391.00	0.00
2.00	0.02	0.027	391.01	0.00
3.00	0.03	0.029	391.04	0.00
4.00	0.03	0.031	391.08	0.00
5.00	0.03	0.034	391.13	0.00
6.00	0.03	0.036	391.17	0.00
7.00	0.03	0.039	391.21	0.00
8.00	0.03	0.042	391.25	0.00
9.00	0.04	0.045	391.30	0.00
10.00	0.05	0.048	391.36	0.00
11.00	0.06	0.052	391.43	0.00
12.00	0.08	0.058	391.52	0.00
13.00	0.09	0.065	391.63	0.00
14.00	**0.11**	0.073	391.74	0.00
15.00	**0.11**	0.082	391.85	0.00
16.00	0.11	0.092	391.97	0.00
17.00	0.11	0.101	392.08	0.00
18.00	0.08	0.108	392.17	0.00
19.00	0.06	0.115	392.24	0.00
20.00	0.05	0.119	392.30	0.00
21.00	0.04	0.123	392.35	0.00
22.00	0.04	0.126	392.38	0.00
23.00	0.03	0.129	392.42	0.00
24.00	0.01	**0.131**	**392.45**	0.00
25.00	0.00	**0.131**	**392.45**	0.00
26.00	0.00	0.131	392.45	0.00
27.00	0.00	0.131	392.45	0.00
28.00	0.00	0.131	392.45	0.00
29.00	0.00	0.131	392.45	0.00
30.00	0.00	0.131	392.45	0.00
31.00	0.00	0.131	392.45	0.00
32.00	0.00	0.131	392.45	0.00
33.00	0.00	0.131	392.45	0.00
34.00	0.00	0.131	392.45	0.00
35.00	0.00	0.131	392.45	0.00
36.00	0.00	0.131	392.45	0.00
37.00	0.00	0.131	392.45	0.00
38.00	0.00	0.131	392.45	0.00
39.00	0.00	0.131	392.45	0.00
40.00	0.00	0.131	392.45	0.00
41.00	0.00	0.131	392.45	0.00
42.00	0.00	0.131	392.45	0.00
43.00	0.00	0.131	392.45	0.00
44.00	0.00	0.131	392.45	0.00
45.00	0.00	0.131	392.45	0.00
46.00	0.00	0.131	392.45	0.00
47.00	0.00	0.131	392.45	0.00
48.00	0.00	0.131	392.45	0.00

Summary for Pond 10P: South Pond 2

Inflow Area = 0.500 ac,100.00% Impervious, Inflow Depth = 9.96" for 1000-YR 24-HR INDY HUFF event
Inflow = 0.45 cfs @ 14.41 hrs, Volume= 0.415 af
Outflow = 0.44 cfs @ 15.59 hrs, Volume= 0.195 af, Atten= 2%, Lag= 70.7 min
Primary = 0.44 cfs @ 15.59 hrs, Volume= 0.195 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Starting Elev= 393.00' Surf.Area= 0.000 ac Storage= 0.473 af
Peak Elev= 394.36' @ 15.59 hrs Surf.Area= 0.000 ac Storage= 0.697 af (0.224 af above start)

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= 264.6 min (1,105.3 - 840.7)

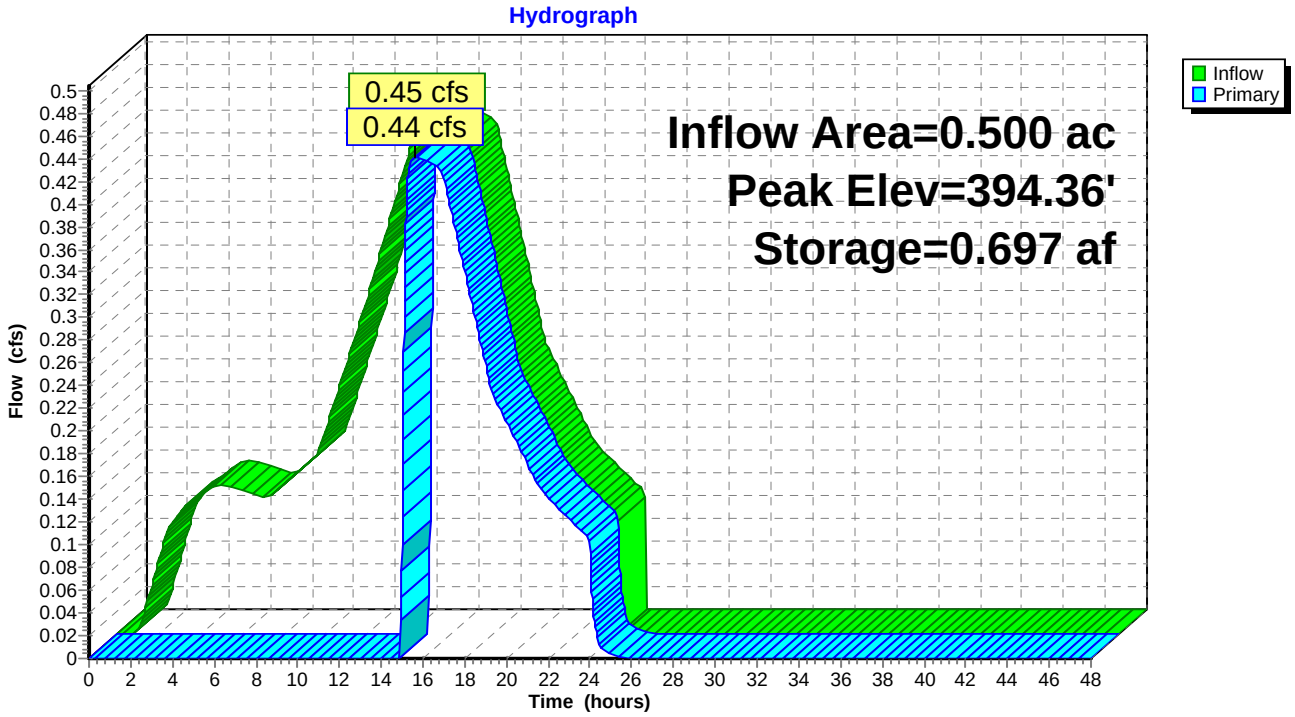
Volume	Invert	Avail.Storage	Storage Description
#1	387.00'	0.700 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
387.00	0.000
391.00	0.019
391.67	0.120
392.67	0.370
393.00	0.473
394.00	0.670
394.40	0.700

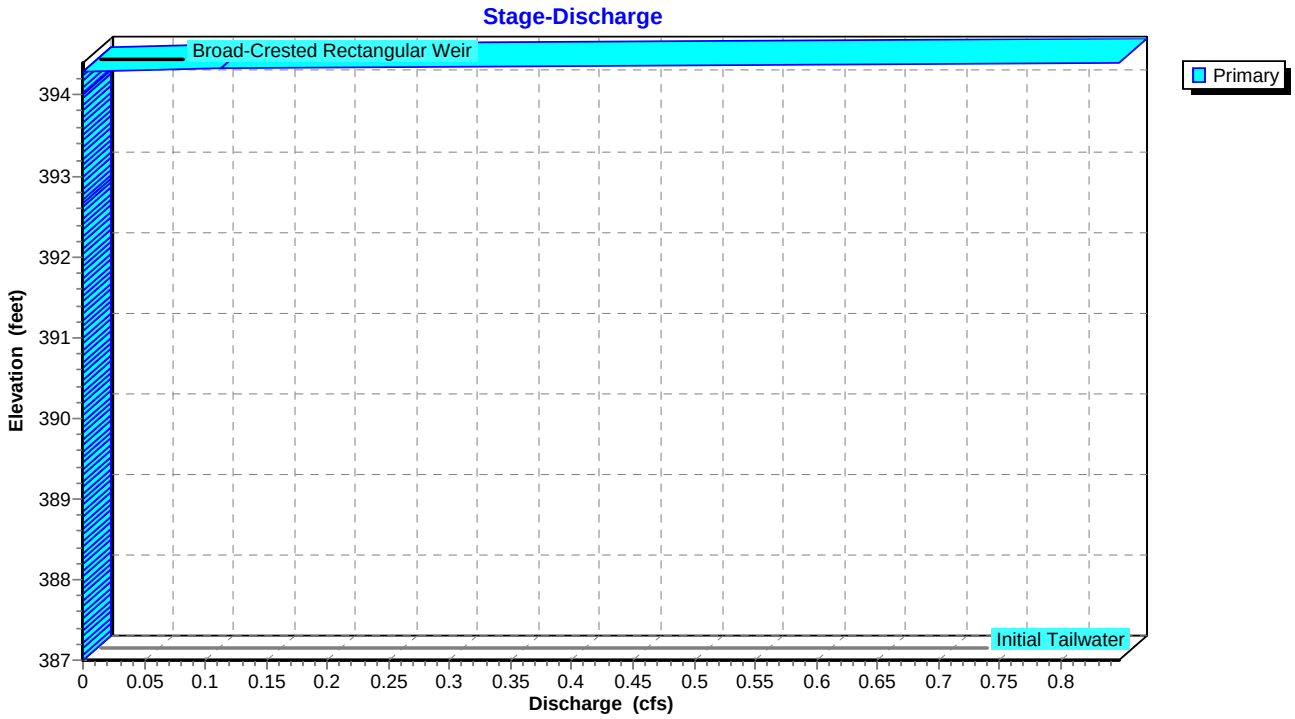
Device	Routing	Invert	Outlet Devices
#1	Primary	394.30'	**10.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.44 cfs @ 15.59 hrs HW=394.36' TW=388.26' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.44 cfs @ 0.68 fps)

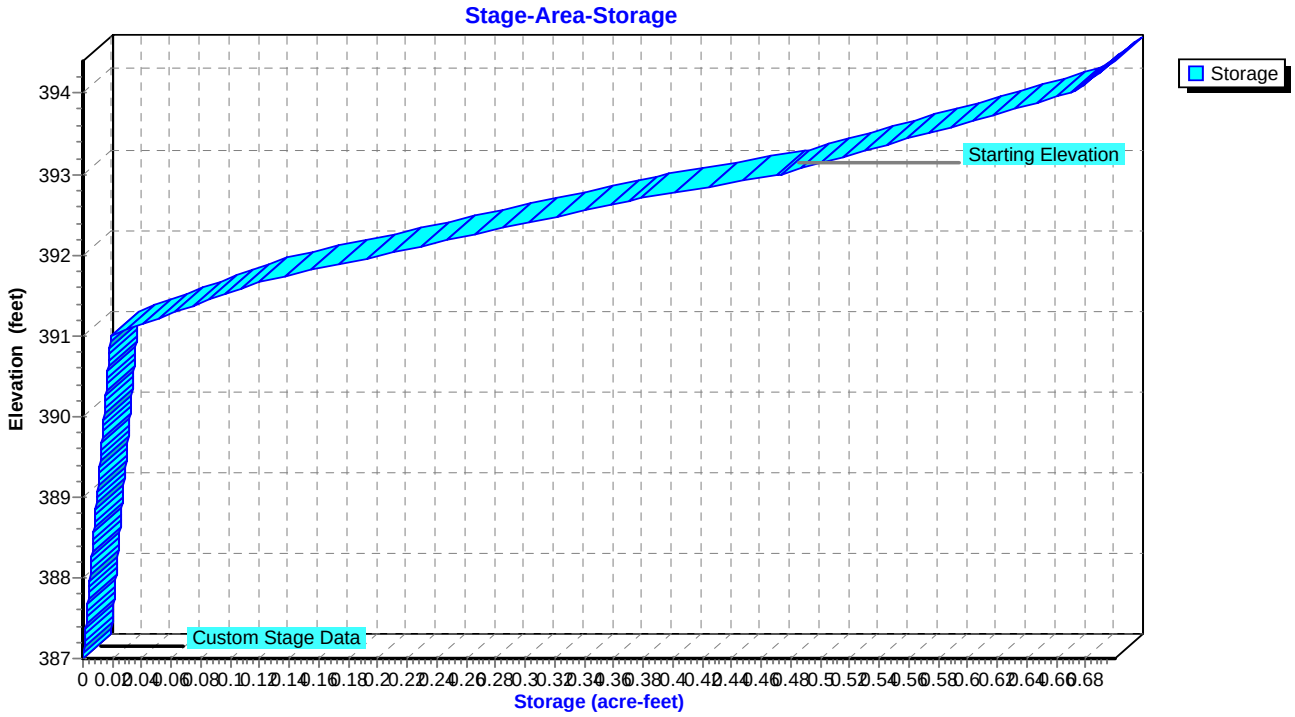
Pond 10P: South Pond 2



Pond 10P: South Pond 2



Pond 10P: South Pond 2



Hydrograph for Pond 10P: South Pond 2

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.473	393.00	0.00
1.00	0.00	0.473	393.00	0.00
2.00	0.06	0.476	393.01	0.00
3.00	0.11	0.483	393.05	0.00
4.00	0.12	0.493	393.10	0.00
5.00	0.13	0.503	393.15	0.00
6.00	0.13	0.514	393.21	0.00
7.00	0.12	0.524	393.26	0.00
8.00	0.13	0.534	393.31	0.00
9.00	0.15	0.546	393.37	0.00
10.00	0.18	0.559	393.44	0.00
11.00	0.24	0.576	393.52	0.00
12.00	0.30	0.598	393.64	0.00
13.00	0.36	0.625	393.77	0.00
14.00	**0.42**	0.658	393.94	0.00
15.00	**0.45**	**0.694**	**394.32**	**0.10**
16.00	0.44	**0.697**	**394.36**	**0.44**
17.00	0.42	0.697	394.36	0.42
18.00	0.33	0.697	394.35	0.34
19.00	0.25	0.696	394.35	0.26
20.00	0.20	0.695	394.34	0.21
21.00	0.17	0.695	394.33	0.17
22.00	0.14	0.695	394.33	0.14
23.00	0.12	0.695	394.33	0.12
24.00	0.05	0.694	394.32	0.10
25.00	0.00	0.693	394.30	0.00
26.00	0.00	0.693	394.30	0.00
27.00	0.00	0.693	394.30	0.00
28.00	0.00	0.693	394.30	0.00
29.00	0.00	0.693	394.30	0.00
30.00	0.00	0.693	394.30	0.00
31.00	0.00	0.693	394.30	0.00
32.00	0.00	0.693	394.30	0.00
33.00	0.00	0.693	394.30	0.00
34.00	0.00	0.693	394.30	0.00
35.00	0.00	0.693	394.30	0.00
36.00	0.00	0.693	394.30	0.00
37.00	0.00	0.693	394.30	0.00
38.00	0.00	0.693	394.30	0.00
39.00	0.00	0.693	394.30	0.00
40.00	0.00	0.693	394.30	0.00
41.00	0.00	0.693	394.30	0.00
42.00	0.00	0.693	394.30	0.00
43.00	0.00	0.693	394.30	0.00
44.00	0.00	0.693	394.30	0.00
45.00	0.00	0.693	394.30	0.00
46.00	0.00	0.693	394.30	0.00
47.00	0.00	0.693	394.30	0.00
48.00	0.00	0.693	394.30	0.00

Summary for Pond 11P: West Pond 1

Inflow Area = 0.636 ac,100.00% Impervious, Inflow Depth = 9.96" for 1000-YR 24-HR INDY HUFF event
Inflow = 0.57 cfs @ 14.41 hrs, Volume= 0.528 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 386.85' @ 24.01 hrs Surf.Area= 0.000 ac Storage= 0.528 af

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no outflow)

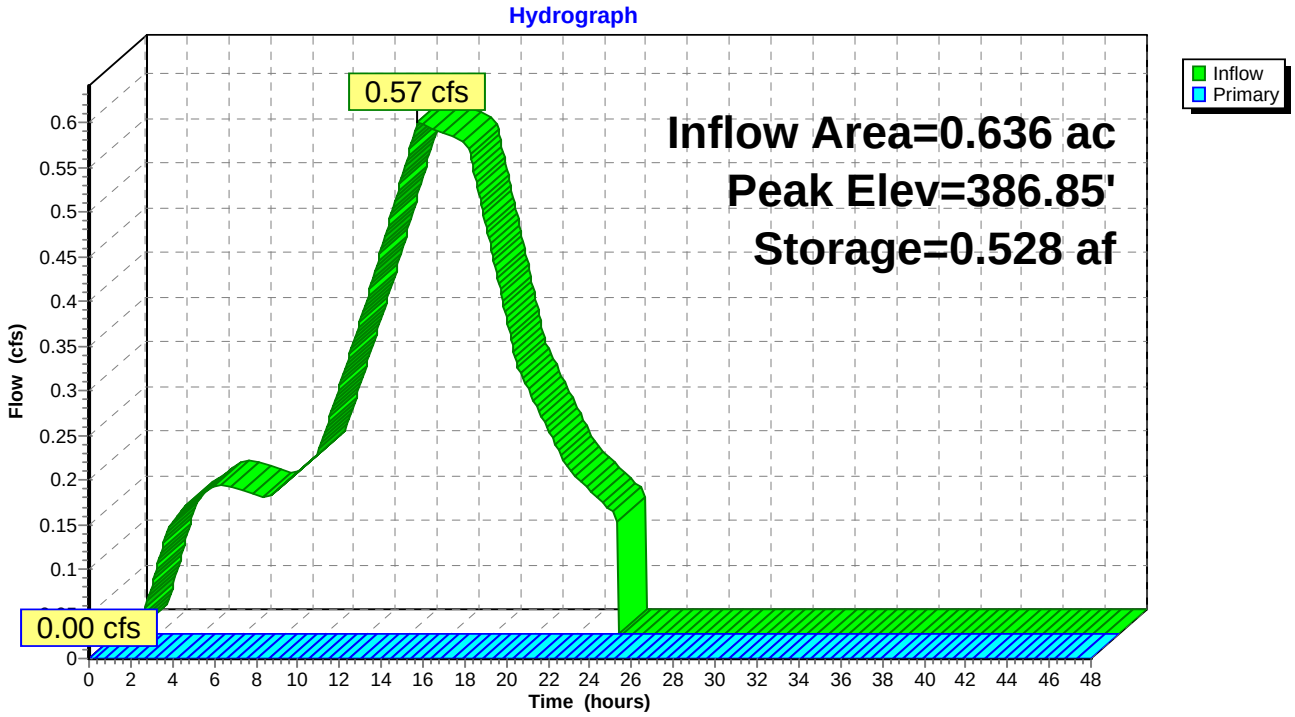
Volume	Invert	Avail.Storage	Storage Description
#1	386.00'	2.450 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
386.00	0.000
387.00	0.620
388.00	0.900
389.00	1.200
390.00	1.520
391.00	1.850
391.67	2.090
392.67	2.450

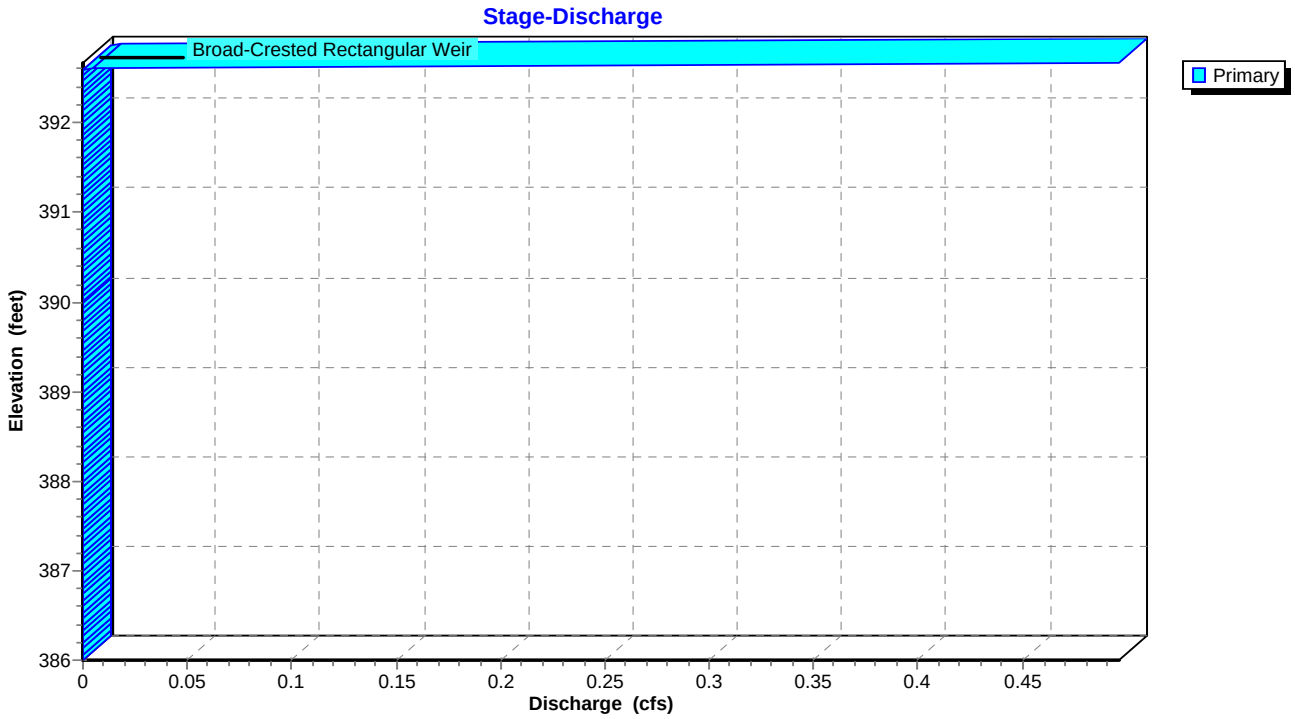
Device	Routing	Invert	Outlet Devices
#1	Primary	392.60'	**10.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=386.00' TW=382.00' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

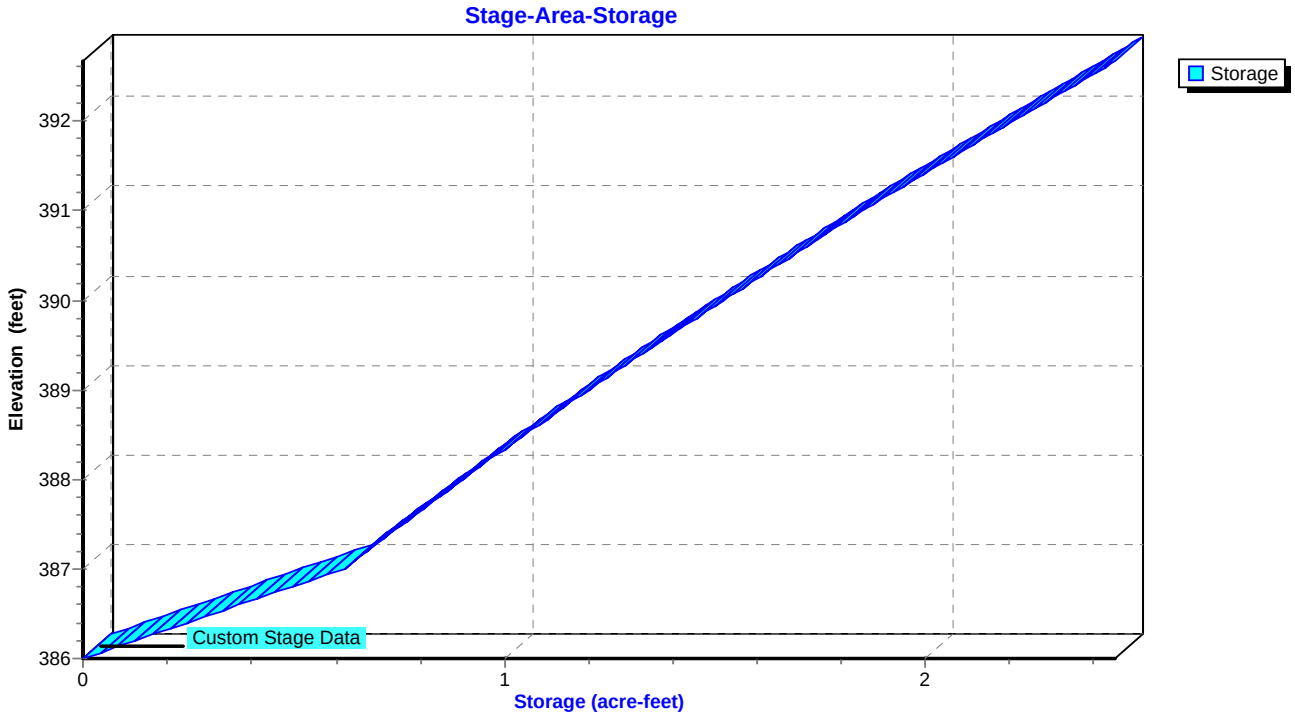
Pond 11P: West Pond 1



Pond 11P: West Pond 1



Pond 11P: West Pond 1



Hydrograph for Pond 11P: West Pond 1

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	386.00	**0.00**
1.00	0.00	0.000	386.00	0.00
2.00	0.08	0.003	386.01	0.00
3.00	0.13	0.013	386.02	0.00
4.00	0.16	0.025	386.04	0.00
5.00	0.17	0.038	386.06	0.00
6.00	0.16	0.052	386.08	0.00
7.00	0.15	0.065	386.10	0.00
8.00	0.17	0.078	386.13	0.00
9.00	0.19	0.093	386.15	0.00
10.00	0.23	0.109	386.18	0.00
11.00	0.30	0.131	386.21	0.00
12.00	0.38	0.159	386.26	0.00
13.00	0.46	0.194	386.31	0.00
14.00	**0.54**	0.235	386.38	0.00
15.00	**0.57**	0.282	386.45	0.00
16.00	0.56	0.328	386.53	0.00
17.00	0.53	0.374	386.60	0.00
18.00	0.42	0.413	386.67	0.00
19.00	0.32	0.444	386.72	0.00
20.00	0.26	0.467	386.75	0.00
21.00	0.21	0.487	386.78	0.00
22.00	0.18	0.502	386.81	0.00
23.00	0.15	0.516	386.83	0.00
24.00	0.07	**0.528**	**386.85**	0.00
25.00	0.00	**0.528**	**386.85**	0.00
26.00	0.00	0.528	386.85	0.00
27.00	0.00	0.528	386.85	0.00
28.00	0.00	0.528	386.85	0.00
29.00	0.00	0.528	386.85	0.00
30.00	0.00	0.528	386.85	0.00
31.00	0.00	0.528	386.85	0.00
32.00	0.00	0.528	386.85	0.00
33.00	0.00	0.528	386.85	0.00
34.00	0.00	0.528	386.85	0.00
35.00	0.00	0.528	386.85	0.00
36.00	0.00	0.528	386.85	0.00
37.00	0.00	0.528	386.85	0.00
38.00	0.00	0.528	386.85	0.00
39.00	0.00	0.528	386.85	0.00
40.00	0.00	0.528	386.85	0.00
41.00	0.00	0.528	386.85	0.00
42.00	0.00	0.528	386.85	0.00
43.00	0.00	0.528	386.85	0.00
44.00	0.00	0.528	386.85	0.00
45.00	0.00	0.528	386.85	0.00
46.00	0.00	0.528	386.85	0.00
47.00	0.00	0.528	386.85	0.00
48.00	0.00	0.528	386.85	0.00

Summary for Pond 12P: West Pond 2

Inflow Area = 1.020 ac,100.00% Impervious, Inflow Depth = 9.96" for 1000-YR 24-HR INDY HUFF event
Inflow = 0.92 cfs @ 14.41 hrs, Volume= 0.847 af
Outflow = 0.25 cfs @ 22.80 hrs, Volume= 0.044 af, Atten= 72%, Lag= 503.6 min
Primary = 0.25 cfs @ 22.80 hrs, Volume= 0.044 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 391.63' @ 22.80 hrs Surf.Area= 0.000 ac Storage= 0.809 af

Plug-Flow detention time= 1,215.4 min calculated for 0.044 af (5% of inflow)
Center-of-Mass det. time= 555.5 min (1,396.2 - 840.7)

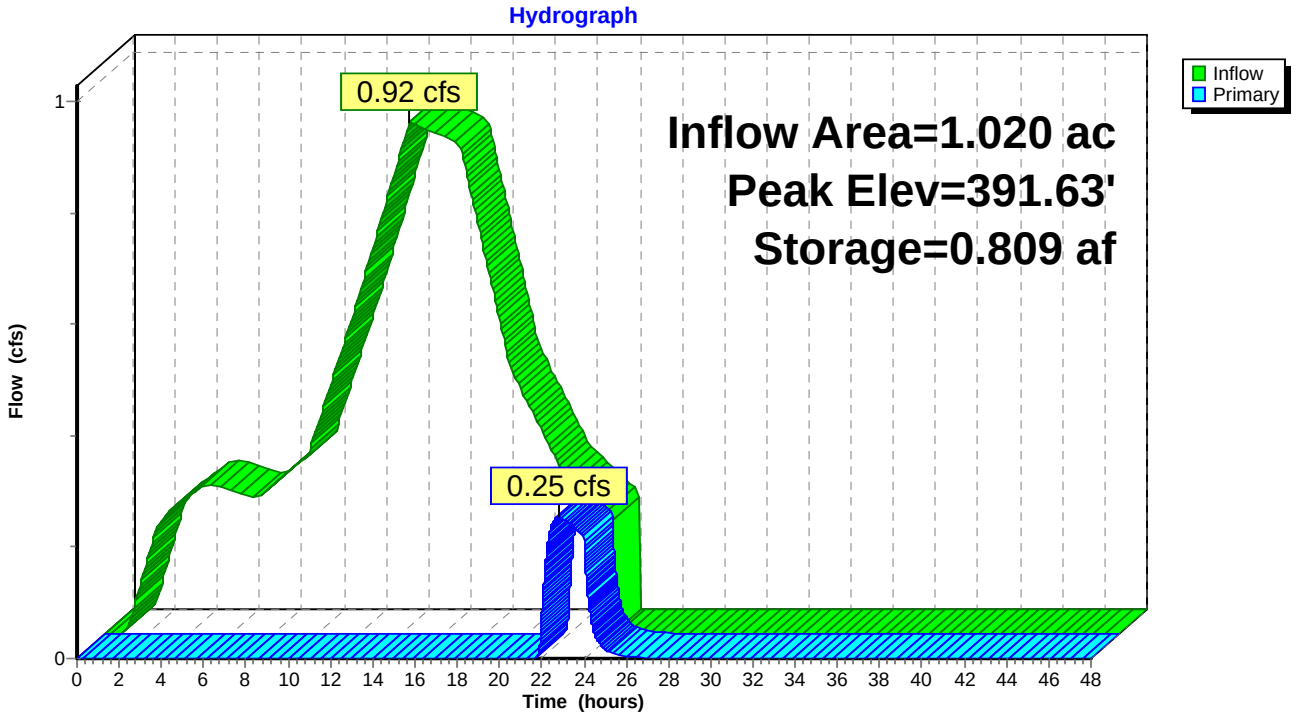
Volume	Invert	Avail.Storage	Storage Description
#1	386.00'	1.150 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
386.00	0.000
387.00	0.140
388.00	0.230
389.00	0.340
390.00	0.480
391.00	0.650
391.67	0.820
392.67	1.150

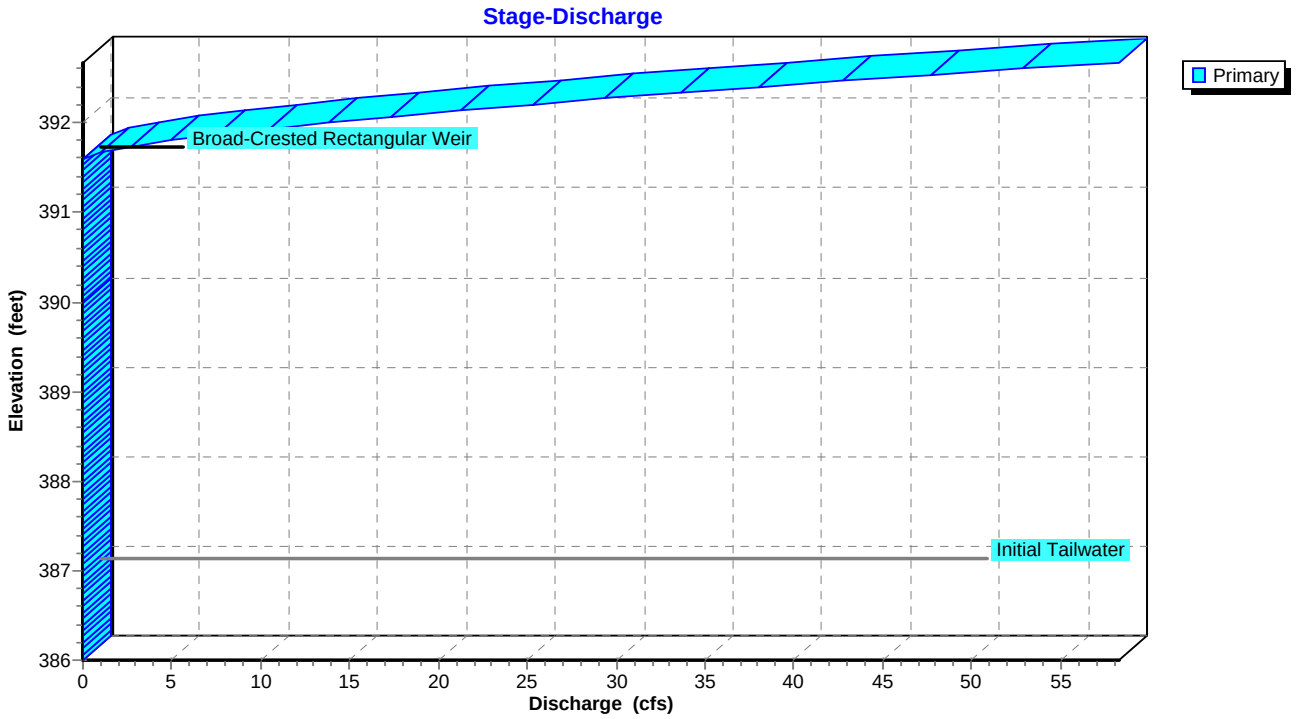
Device	Routing	Invert	Outlet Devices
#1	Primary	391.60'	**20.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.25 cfs @ 22.80 hrs HW=391.63' TW=390.75' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 0.25 cfs @ 0.45 fps)

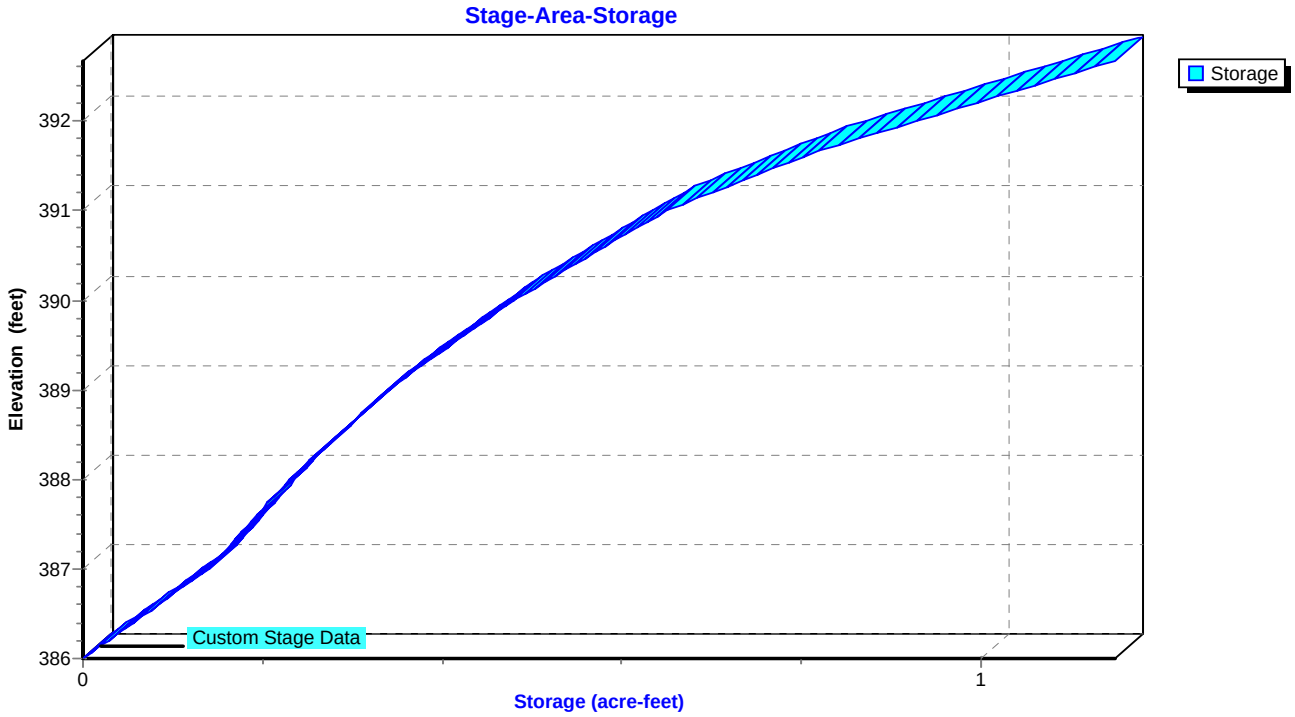
Pond 12P: West Pond 2



Pond 12P: West Pond 2



Pond 12P: West Pond 2



Hydrograph for Pond 12P: West Pond 2

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	386.00	0.00
1.00	0.01	0.000	386.00	0.00
2.00	0.13	0.005	386.04	0.00
3.00	0.22	0.021	386.15	0.00
4.00	0.25	0.040	386.29	0.00
5.00	0.27	0.062	386.44	0.00
6.00	0.26	0.083	386.60	0.00
7.00	0.25	0.104	386.74	0.00
8.00	0.27	0.125	386.89	0.00
9.00	0.30	0.149	387.10	0.00
10.00	0.37	0.175	387.39	0.00
11.00	0.49	0.211	387.78	0.00
12.00	0.60	0.256	388.23	0.00
13.00	0.74	0.311	388.74	0.00
14.00	**0.87**	0.377	389.26	0.00
15.00	**0.91**	0.452	389.80	0.00
16.00	0.89	0.526	390.27	0.00
17.00	0.85	0.599	390.70	0.00
18.00	0.68	0.662	391.05	0.00
19.00	0.51	0.712	391.24	0.00
20.00	0.42	0.749	391.39	0.00
21.00	0.34	0.781	391.51	0.00
22.00	0.28	**0.805**	**391.61**	**0.08**
23.00	0.25	**0.809**	**391.63**	**0.25**
24.00	0.11	0.809	391.63	0.22
25.00	0.00	0.803	391.60	0.02
26.00	0.00	0.803	391.60	0.00
27.00	0.00	0.802	391.60	0.00
28.00	0.00	0.802	391.60	0.00
29.00	0.00	0.802	391.60	0.00
30.00	0.00	0.802	391.60	0.00
31.00	0.00	0.802	391.60	0.00
32.00	0.00	0.802	391.60	0.00
33.00	0.00	0.802	391.60	0.00
34.00	0.00	0.802	391.60	0.00
35.00	0.00	0.802	391.60	0.00
36.00	0.00	0.802	391.60	0.00
37.00	0.00	0.802	391.60	0.00
38.00	0.00	0.802	391.60	0.00
39.00	0.00	0.802	391.60	0.00
40.00	0.00	0.802	391.60	0.00
41.00	0.00	0.802	391.60	0.00
42.00	0.00	0.802	391.60	0.00
43.00	0.00	0.802	391.60	0.00
44.00	0.00	0.802	391.60	0.00
45.00	0.00	0.802	391.60	0.00
46.00	0.00	0.802	391.60	0.00
47.00	0.00	0.802	391.60	0.00
48.00	0.00	0.802	391.60	0.00

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About AECOM

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