PRELIMINARY DRAINAGE REPORT
OLSEN-CHANDLER RANCH
SPECIFIC PLAN AND VESTING TENTATIVE TRACT MAP

Prepared for

Olsen 212, LLC

Submitted by

WALLACE GROUP

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CERTIFICATION

Preparation of this report included efforts by the following persons:
In accordance with the provisions of Section 6700 of the Business and Professions Code of the State of California, this report was prepared by or under the direction of the following Civil Engineer, licensed in the State of California:

ENGINEER IN RESPONSIBLE CHARGE:

01/31/2019

Debra Tumler, PE C55205 Date
Senior Civil Engineer

Byron J. Glenn, PE C51519 Date
Senior Civil Engineer
Project Manager

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INTRODUCTION

The purpose of this report is to present a Preliminary Master Drainage Study for the Olsen-Chandler Ranch Specific Plan and corresponding Vesting Tentative Tract Maps (VTTM). This Specific Plan (SP) consists of two distinct large parcels known as Olsen Ranch and South Chandler Ranch. Because the two properties do not share a common boundary, a Vesting Tentative Map will be required for each property. This Preliminary Drainage Report addresses the existing and proposed drainage patterns for both parcels.

The SP will also include the existing Our Town subdivision as well as APN 009-798-003 commonly known as the Centex Parcel (currently owned by the Fuentez Family Trust), APN 009-798-001 and 002, APN 009-796-002 and 003. This Drainage Report analyzes stormwater runoff impacting the entire SP area and provides drainage solutions within the SP to regulate stormwater runoff discharges from adversely impacting the City's existing storm drain infrastructure. The SP is located in the southeastern corner of the City of Paso Robles and encompasses an area of approximately 355 acres and drains from the east and the northeast westward toward the Salinas River (Figure 1).

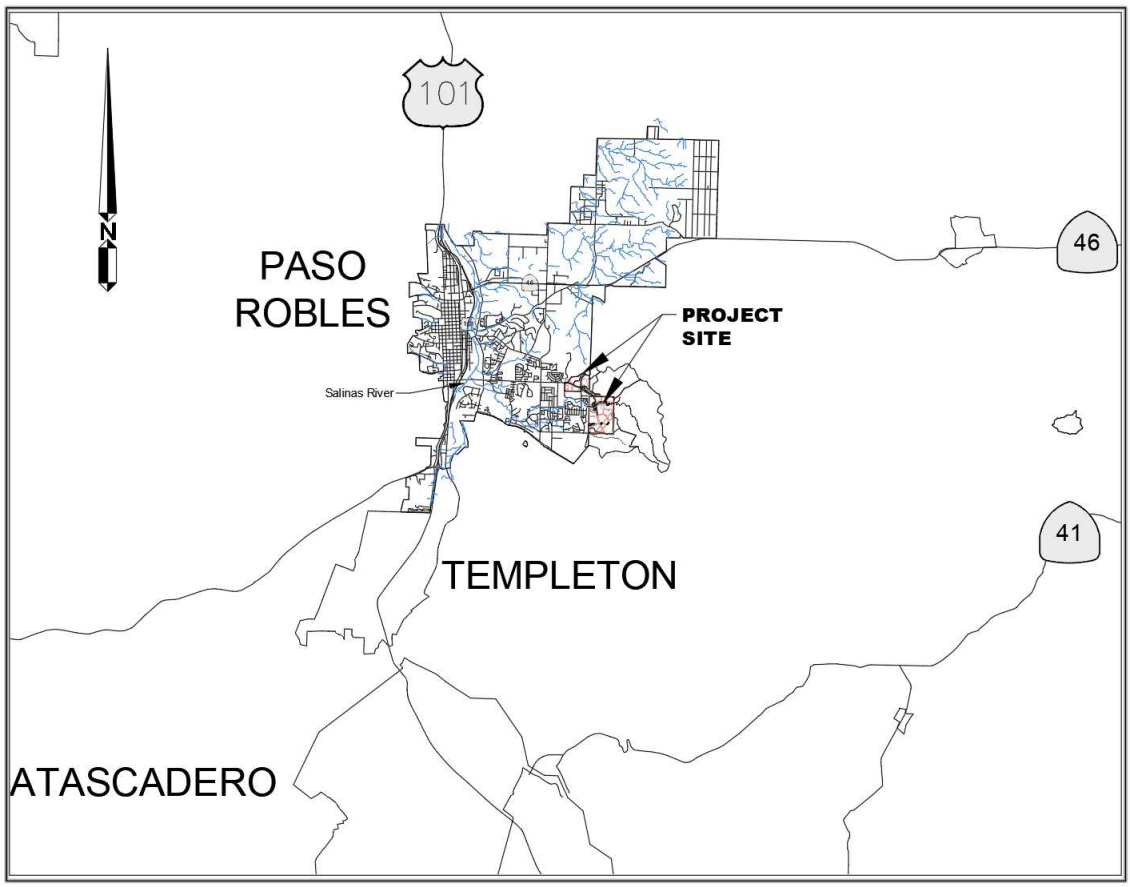


Figure 1 – Vicinity Map

Olsen Ranch is located north of Meadowlark Road, west of Hanson Road, south of Linne Road and east of existing residential subdivisions. The project's primary access is at Linne Road, Meadowlark Road and Airport Road. The property has been occupied by residential structures

and ancillary structures for many years. The property is bounded to the north by Vineyards, the Our Town subdivision to the northwest and existing residential subdivisions to the west. Figure 2 shows the location of the Olsen-Chandler Ranch Development.

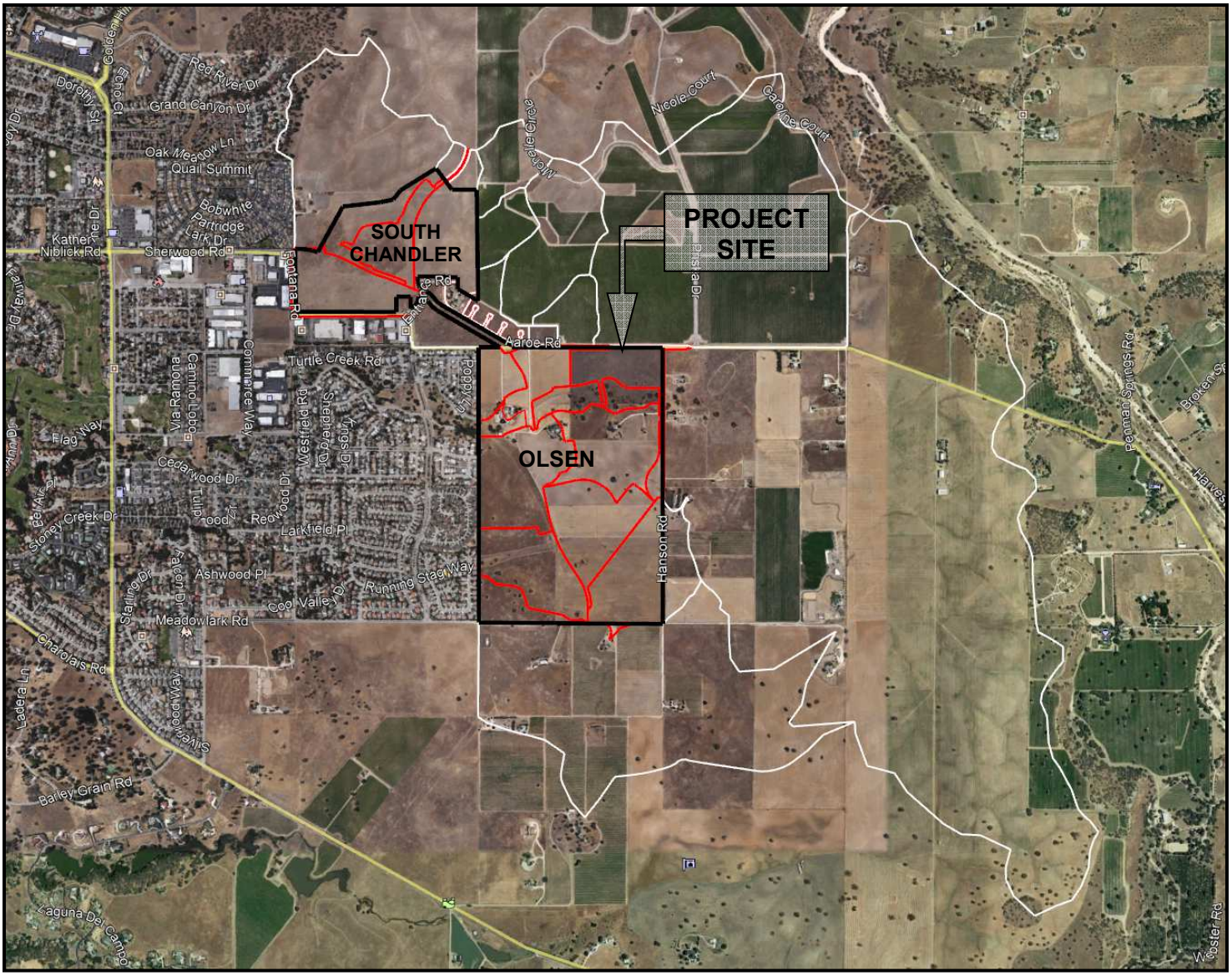


Figure 2 – Project Location Map

South Chandler Ranch is located east of Fontana Road, north of Linne Road and northwest of the Linne Road / Airport Road intersection. The project's primary access will be from Linne Road, the extension of Sherwood Road to the east, and the extension of Airport Road to the north. The property is bounded to the north by undeveloped land, to the east by Vineyard and to the south by an existing industrial development. The Our Town subdivision lies to the southeast.

EXISTING SITE CONDITIONS

The Olsen Parcel consists of approximately 242.5 acres on rolling hills with a wide flatter plain along the northern quarter of the property. The topography varies and follows the hilly terrain along the southern two thirds of the site then flattens out in grade along its northern boundary. Vegetation on Olsen Ranch currently consists of scattered oak tree clusters and annual grasses. A natural drainage known as Un-Named Creek #1 in the San Luis Obispo County Flood Insurance

Study (FIS) is located at the foot of the hilly terrain and the broad plain exists northward to Linne Road. A large PG&E electrical easement crosses the southeast portion of the site from the southwest to the northeast.

The South Chandler Parcel consists of approximately 83.7 acres and currently consists of undeveloped land with annual grass coverage. The topography of South Chandler Ranch is relatively mild along the southern portion then increases in grade from the site's midpoint to its northern boundary.

SOIL SURVEY

The project's **Preliminary Geotechnical Interpretive Report** was prepared by Earth Strata Geotechnical Services, Inc, November 20, 2018, Project No. 182139-10A. This report describes the local geology, faulting and presents findings from soil borings and excavated test pits. The soils on the site are primarily Quaternary Alluvium (Qal) and Quaternary Paso Robles Formation (QTp). The Qal soils reach a maximum depth of approximately 14-feet. These deposits consist predominately of fine to coarse grained silty sand, sandy silt, sandy clay and occasionally poorly graded sand with varying amount of clay and silt.

The QTp is bedrock and is generally encountered below the top soil and alluvium materials. This soil group consists of fine to coarse grained sandstone with varying amount of silt and clay, sandy siltstone, claystone, and breccia.

The presence of the hard bedrock material outlined above may inhibit potential infiltration of stormwater runoff. The Preliminary Geotechnical Interpretive Report showed that 40 of the 47 borings showed the Quaternary Paso Robles Formation (QTp) at a depth less than 10 feet.

The various soil types and their descriptions are further described by the NCRS (formerly USDA) SCS Soil Survey of SLO County CA Paso Robles Area 1983. These soils are the Arbuckle-Positas Complex (Unit 102), Arbuckle-Ysidro Complex (Unit 106), Cropley Clay (Unit 133), Nacemiento-Los Osos Complex (Unit 179), Rincon Clay Loam (Unit 187) and San Ysidro Loam (Unit 197).

The Arbuckle-Positas Complex consists of 40% Arbuckle fine sandy loam is very deep and well drained and has a moderately slow permeability. The Arbuckle soils are suitable for building sites. Moderate shrink/swell potential and low strength are limitations for dwellings and buildings but can be overcome if proper design and installation procedures are used. The complex also consists of 30% Positas coarse sandy loam. This soil is very deep and well drained and formed in alluvium derived from mixed rocks and has very slow permeability. The surface runoff is medium, and erosion hazard is moderate. The Positas soils have a high shrink/swell potential therefore creating severe limitations to building construction. The hydrologic soil group is B.

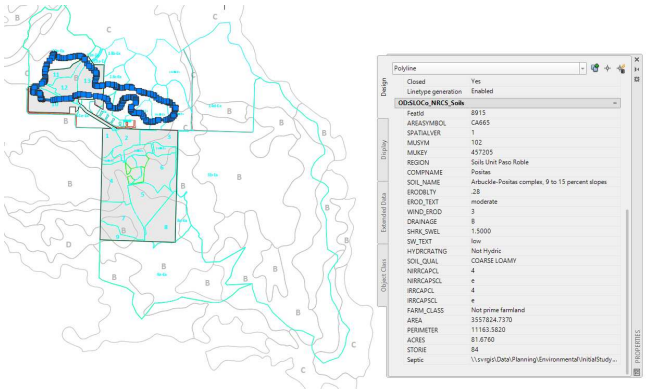


Figure 3 - NRCS Soils GIS Data

The Arbuckle-San Ysidro Complex consists of 40% Arbuckle fine sandy loam, 20% San Yisidro loam and 15% Greenfield fine sandy loam. The Arbuckle is very deep and well drained. The San

Ysidro is also very deep and moderately well drained with very slow permeability. Runoff is medium and the hazard of erosion is moderate. The San Ysidro has a high shrink swell potential creating severe limitations for building sites, roads and foundations. These structures need to be designed to prevent damage caused by shrinking and swelling of sub soil. The hydrologic soil group is B.

The Cropley Clay, located on 2-9% slopes, is a very deep gently to moderately sloping well drained soil formed in alluvium derived from sedimentary rock. The soil has slow permeability and the hazard of erosion is moderate. The shrink swell potential is high therefore the soil has severe limitations for building sites. The hydrologic soil group is D.

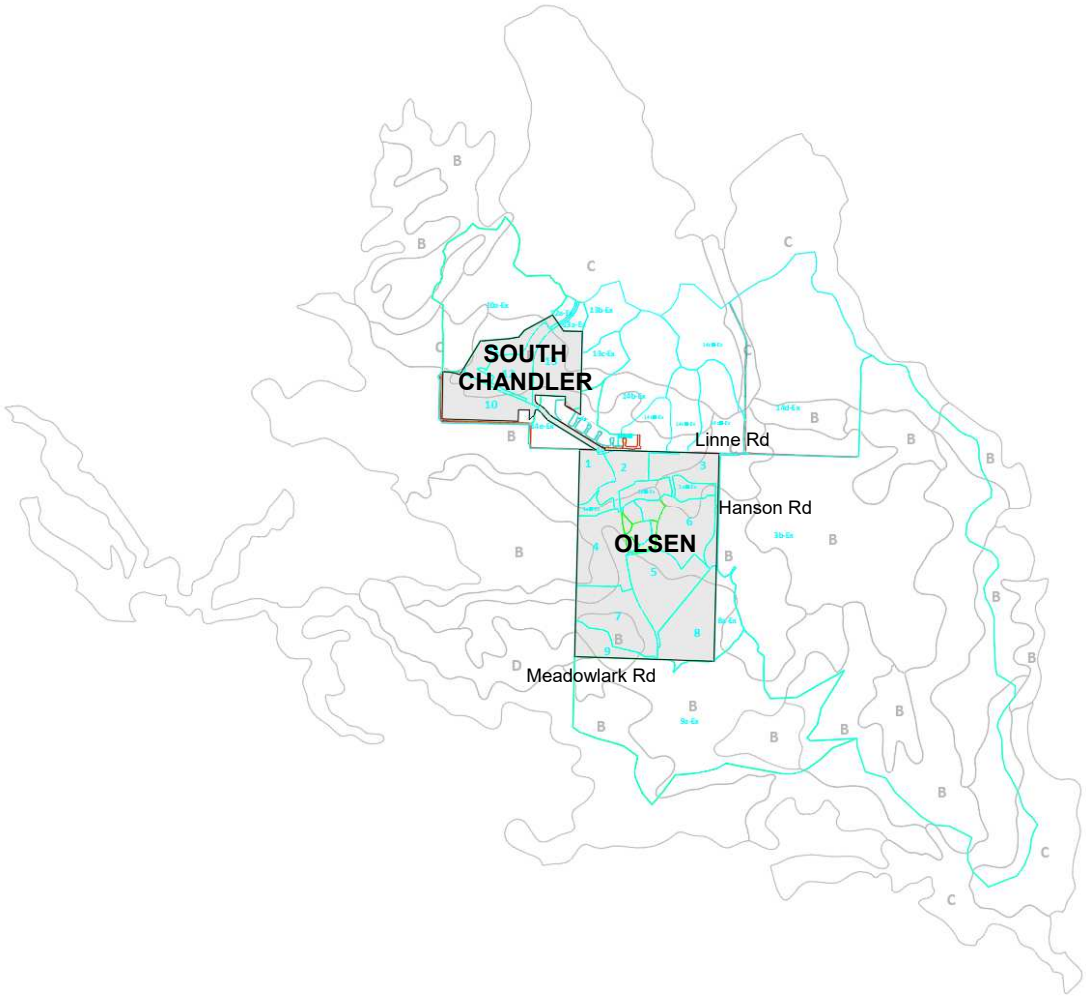


Figure 4 - Natural Resources Conservation Service (NRCS) Soil Drainage Ratings

The Nacimiento-Los Osos complex is located on 9 to 30% slopes moderately steep soils on hills. The complex consists of 30% Nacimiento silty clay loam and 20% Los Osos clay loam with the remaining 50% of the complex is made up of variable loamy soils. The Nacimiento soils exhibit moderately slow permeability and the Los Osos soils have slow permeability therefore surface runoff is rapid and the hazard of erosion is high. The complex exhibits a high shrink swell potential. The hydrologic soil group is C.

The Rincon Clay Loam is located on 0-1% slopes is a very deep and well-drained soil. It formed in alluvium from sedimentary rocks and is located on alluvial fans. The soil has slow permeability with high water capacity so surface runoff is slow with low erosion hazard. The soil exhibits a high shrink swell potential creating severe limitations for building sites. The hydrologic soil group is C.

The San Ysidro Loam is located on 0 – 2% slopes and is very deep and moderately well drained soil that formed in alluvium derived from mixed rocks. This soil has very slow permeability. Runoff is slow and erosion is slight, however the soil has a high shrink swell potential. The hydrologic soils group is B. The NRCS Soils Map is included as Figure 5. A copy of the NRCS soils hydrologic index is provided in Appendix.

Figure 5 - NRCS Soils Survey Map & Data

PROPOSED SITE CONDITIONS

The proposed development will divide the South Chandler Ranch and Olsen Ranch into 23 planning areas, with each planning area being defined as a specific use with a specific density. At the time of development, the South Chandler parcel will be bisected in a north-south direction by Airport Road and an east-west direction by Sherwood Road. Chandler Ranch is divided into 7 Planning Areas (1-7). Planning Areas 1 and 2 are proposed to be a high residential development consisting of 60 apartment units on 2.93 acres and 108 townhome units on 6.42 acres. Planning Area 3 is proposed to be a medium density residential development consisting of 48, 40-ft x 80-ft lots on 5.9 acres. The multi-family and small lot units are located on the flatter portion of

parcel south of the proposed Sherwood Road extension where natural slopes range from 1.0 to 1.5%.

Planning Areas 4 and 5 will consist of 173 units single-family residential units ranging in size from 5,500 to 7,700 square foot lots on a total of approximately 56.23 acres. The large lots are located north of Sherwood Road on terrain with an average slope between 3.0 and 6.0%. Airport Road is proposed to be extended northward between Planning areas 4 and 5. It is anticipated that small retaining walls will be required along the side yards of these units located on streets greater than 3.0%. The Project summary for the individual parcels which make up the SP is outlined below within Figure 6.

Planning Area 6 is located at the southwest corner of Planning Area 4 and consists of a small farmers market commercial area located on approximately 0.47 acres. Planning Area 7 is located at the northwest corner of Planning Area 3 and will consist of a small private recreation center on approximately 0.61 acres. Planning Areas 8, 9 and 10 are outside of this proposed development but are included in the overall SP. Planning Areas 8 and 9 are currently undeveloped, however Planning Area 10 is the approved Our Town development.

Figure 6 - Proposed Land Use Map

Olsen Ranch consists of Planning Areas 11 through 23 and is bisected in a north-south direction by Sherwood Road. An existing drainage way known as Turtle Creek (Un-named Creek #1 per the FIS) flows through the northern half of the site from Hanson Road to the western boundary. Proposed land uses will consist of a variety of residential units from apartments and townhomes to single-family residential units ranging in size from 3,200 to 7,700 square foot lots.

Planning Area 11 and 12 are proposed to be a medium density residential development consisting of 97, 40-ft x 80-ft lots on 16.2 acres. These planning areas are separated by the proposed Sherwood Road alignment. Planning Area 13 is also proposed to be a medium density residential development, but the product is a cluster development consisting of 129 units on 15 acres. The small lot residential units are located on the flatter portion of the parcel north of Turtle Creek and south of Linne Road, where natural slopes range from 0.5 to 1.5%. Planning Areas 11 through 13 lie north of Planning Area 14 which is the natural open space area containing Turtle Creek. Planning Area 14 consists of approximately 22 acres.

Planning Areas 15 and 17 through 20 and 23 are proposed to be low density residential lots consisting of 413 single-family residential units ranging in size from 5,500 to 7,700 square foot lots on a total of approximately 129 acres located south of Turtle Creek on rolling terrain with an average slope between 1 and 12%. Sherwood Road provides access and utilities to these planning areas. It is anticipated that small retaining walls will be required along the rear and side yards of these units.

Planning Area 16 is a proposed private recreational facility located on approximately 20.88 acres. Planning Area 21 lies within the PG&E easement and will be programmed for use as a community park. Planning Area 22 will also be a planned community park.

The proposed land plan was developed utilizing the natural terrain's existing contouring to minimize the grading of existing knolls to the maximum extent possible while maintaining design standards for roadway horizontal and vertical alignments and preliminary design of the individual single-family lots. Preliminary earthwork calculations combining both the South Chandler and Olsen Parcels reveal that approximately one million yards of earth will be moved.

The overall cut ranges from a few inches to about 22.5 feet on the Chandler parcel with a maximum fill of 24 feet. The average fill across the site is approximately 1.7 feet. The overall cut ranges from a few inches to about 24 feet on the Olsen parcel with a maximum fill of 20 feet. The average cut across the site is approximately 1.4 feet.

Stormwater runoff will be intercepted by conventional onsite storm drain systems and discharged into detention ponds for each proposed development parcel within Chandler Ranch and Olsen Ranch. Peak stormwater runoff will be controlled with the use of detention basins prior to discharge into the City's system. Runoff from storm events greater than the 95th percentile will be detained back to historic levels to help ensure the existing City storm drain infrastructure is not adversely impacted and maintains its current function as it does today. The storm drain system will be designed to convey the 25-year storm event. Runoff from the 95th percentile storm event will be discharged into stormwater management facilities and retained for infiltration.

Stormwater quality control will be managed per the requirements outlined within the Central Coast Regional Water Quality Control Board's (RWQCB) Resolution R3-2012-0032 and the City of Paso Robles Engineering Design Standards. The goal of the RWQCB is to treat stormwater at its

source in the hope to infiltrate the 95th percentile rainfall event. Bio-retention swales and pervious pavers are proposed throughout the residential developments to help capture and treat the 95th percentile event. The 2-year and the 10-year storm events are required to be detained back to historic levels. In addition to the RWQCB post construction requirements for stormwater management, the detention basins will be sized to detain up to the 100-year storm event back to historic levels for flood control.

WATERSHED DESCRIPTION

Watershed Description

The Olsen Chandler Specific Plan lies within three major watersheds that confluence approximately 1.4 miles west of Olsen Ranch, ultimately discharging into the Salinas River. These include the Northern, Central and Southern Watersheds. The Northern Watershed encompasses approximately 537 acres including South Chandler Ranch. The Central Watershed encompasses approximately 863 acres including the northern two thirds of Olsen Ranch. The Southern Watershed encompasses approximately 109 acres and includes the lower third of Olsen Ranch, as denoted by the grey shaded area (Figure 7).

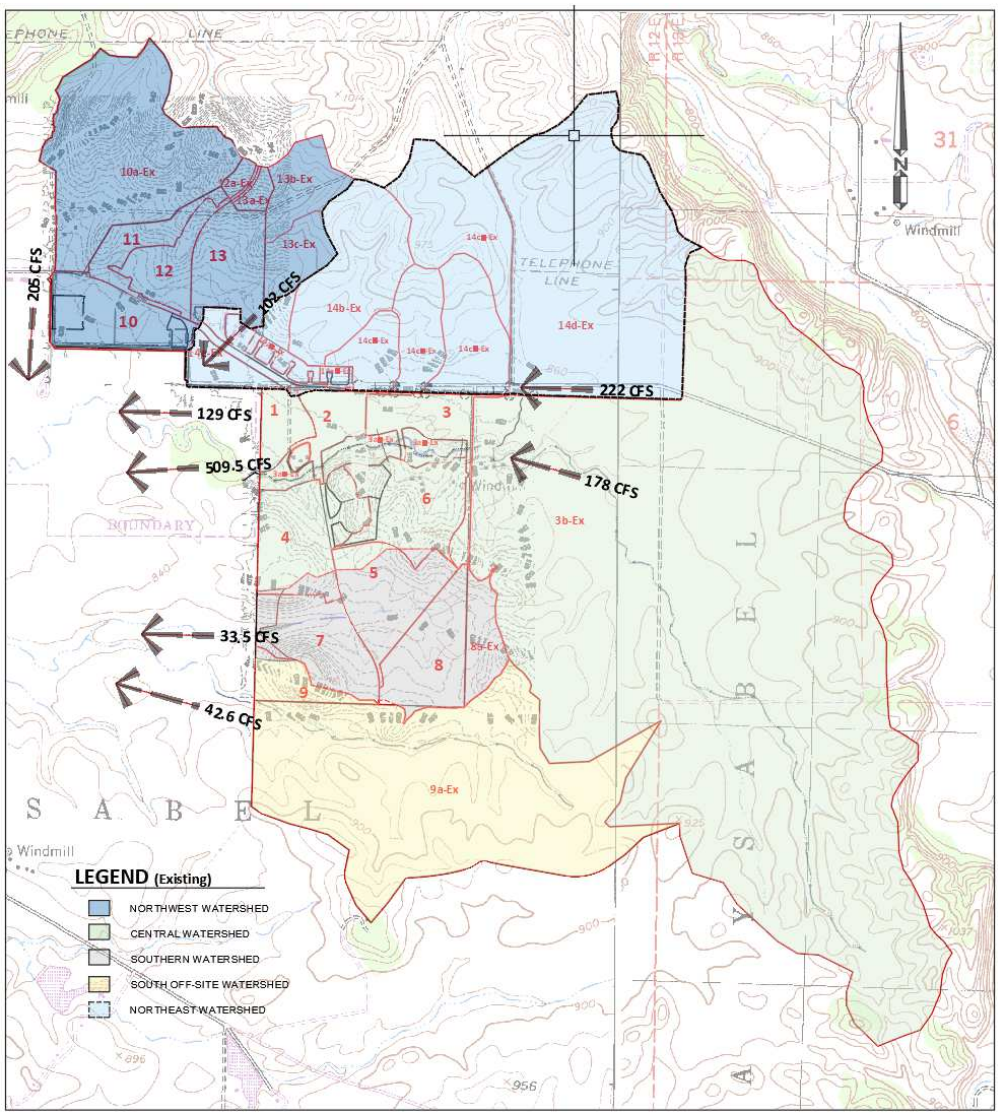


Figure 7 - Olsen Property Existing Drainage Areas

The Northern Watershed is divided into the Easterly and Westerly Sub-watersheds. The Easterly Sub-watershed consists of the Gran Cielo Vineyard development, the Our Town development and undeveloped property east of Airport Road. According to the Drainage Study prepared for the Gran Cielo development entitled "**Tract No. 2526 Grading and Drainage Report Summary**", prepared by Vaughan Surveys, Inc, August 2003;

> *"Existing stormwater runoff currently flows along and over Linne Road to other properties south of Linne Road. The basin is designed to preserve existing flow patterns within the watershed in accordance with County Section 11-351.1500"*.

Stormwater runoff generated within the Easterly Sub-watershed of the Northern Watershed will, therefore, overtop Linne Road and flow into the Central Watershed as it has historically from major storm events. The report shows that stormwater runoff within the Gran Cielo development sheet flows overland and is routed through onsite roadways and culverts along Priska Drive (Gran Cielo entry) to Linne Road. Flows are then intercepted by small rectangular detention areas along the northern side of Linne Road. The report references the ability of these detention areas to detain up to the 50-year storm event,

> *"The Linne Road Basin is designed to retain the Q50 volumes…."*.

Six, 30-inch corrugate metal pipes (CMP) are located underneath Priska Drive to convey flows to the west and into a series of retention structures. Stormwater runoff along Linne Road appears to split with a large percentage of the flow spilling over the Linne Road centerline and to the south for all storm events, following historic drainage paths to Un-Named Creek No. 1 along the northern portion of Olsen Ranch.

Runoff from the vineyard areas upstream of Our Town development sheet flows to the deteriorating roadway (Aaroe Road) located within the Our Town development with a curb and gutter section capable of conveying flows northwest to a low point. Flows impacting this low point are conveyed across the Centex Parcel in a relatively flat undefined channel to the intersection of Linne Road and Airport Road. A small amount of flow from the Gran Cielo development is conveyed to the west within a small ditch along Linne Road where it is combined with stormwater runoff from Our Town and upstream watersheds at the intersection of Airport Road and Linne Road. These combined flows are then discharged through a culvert and into an existing earthen channel behind the Sherwood Industrial Park. The earthen channel is approximately 24 feet wide at the top, 5-feet deep and has a 2:1 side slope.

The Westerly Sub-watershed consists of the South Chandler Ranch property. Stormwater runoff from this sub-watershed sheet flows to roadside ditches along Fontana Road and Linne Road and join at the roadway intersection. Stormwater runoff is then conveyed underground to an open channel located approximately 300 feet south of the Linne Road and Fontana Road intersection, where this runoff confluences with flows from the Easterly Sub-watershed.

The Central Watershed encompasses approximately 864 acres including the northern portion of Olsen Ranch. Stormwater runoff from this area is conveyed across the Olsen parcel through the Un-Named Creek No. 1 to the western boundary, south of Parkview Drive. The creek then enters a defined channel known as Turtle Creek where flows are conveyed to the west. Flows from the Central Watershed then combine with flows from the Northern Watershed within the earth lined channel located west of Turtle Creek Road and Brookhill Drive (Figure 8).

The Southern Watershed consists of 109 acres and encompasses the southern portion of Olsen Ranch. Runoff from this watershed currently flows into a man-made stock pond where flows from small rain events are retained. A storm drain system within Running Stag Way has been extended to the Olsen Ranch boundary to intercept storm flows and convey them to the west.

A fourth watershed exists south of the Olsen parcel that appears to discharge flows within Meadowlark Road at the southwest corner of the Olsen Parcel. The drainage area within Olsen Ranch contributing runoff to this point is approximately 11.4 acres. This small onsite basin contributes flow to the larger 212 acre watershed south of the project site. According to the City, the proposed Beechwood Specific Plan area south of Meadowlark Road will mitigate for this offsite flow and reduce any flooding potential at this location.

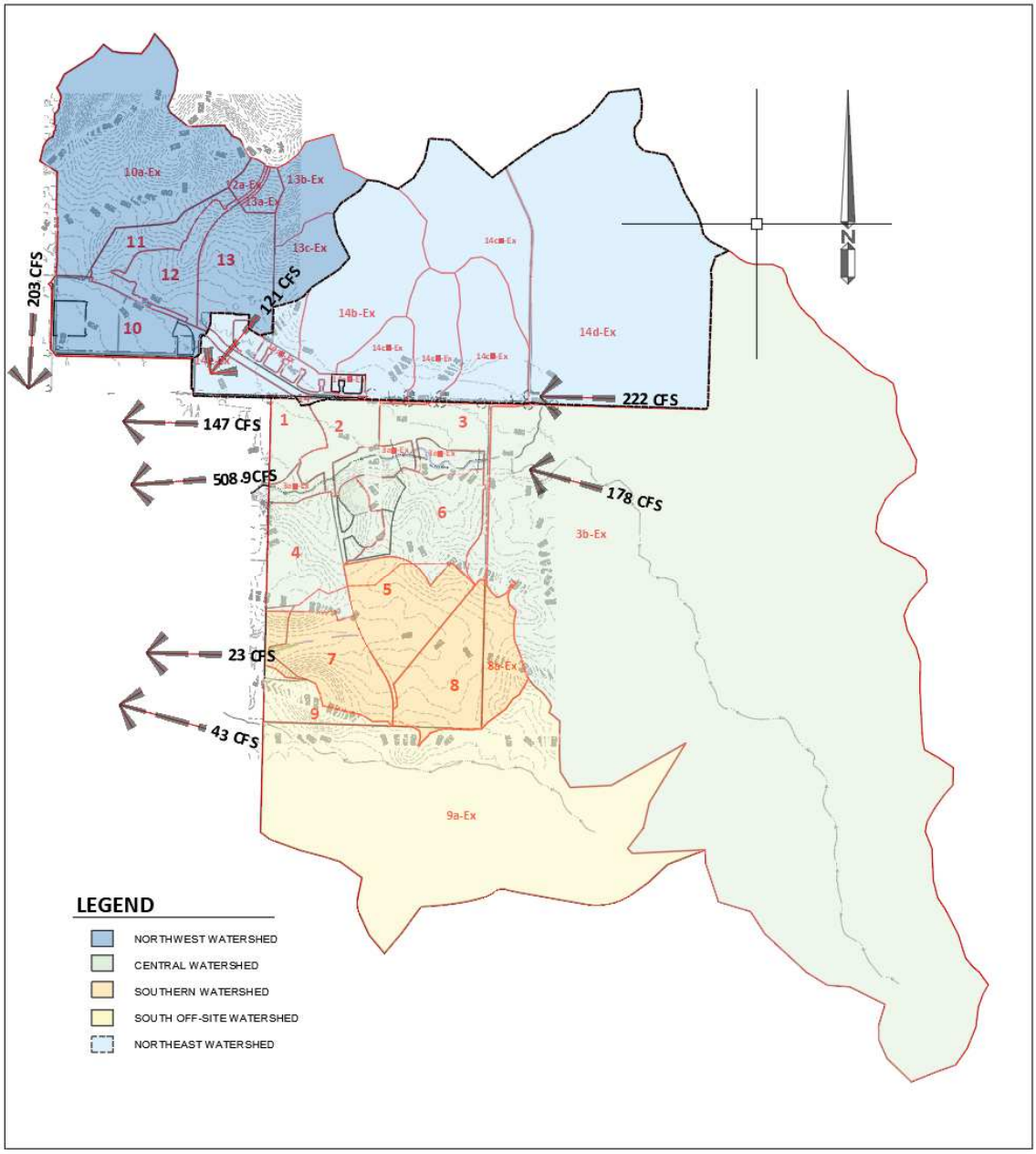


Figure 8 - Watershed Description

Existing Watershed Descriptions

There are 34 existing Drainage Management Areas (DMA), as shown in Figures 7 & 8. Table 1 provides a summary of each DMA location, size and type of existing ground coverage.

Table 1 - Watershed Description

DMA	Location	Area	Coverage
1	Northwest Corner of Olsen parcel	11.24	Grasses, non-grazed
2	North side of Olsen parcel west of Sherwood	14.64	Grasses, non-grazed
3	North side of Olsen parcel east of Sherwood	21.50	Grasses, non-grazed
3a(1)-Ex	Undeveloped Creek Area	4.16	Grasses, non-grazed
3a(2)-Ex	Undeveloped Creek Area	7.90	Grasses, non-grazed
3a(3)-Ex	Undeveloped Creek Area	6.00	Grasses, non-grazed
3b-Ex	Off-site Run-on flowing to easterly property boundary at Hansen Road	757.08	Grasses, non-grazed
4	West central portion of Olsen parcel south of Creek	38.71	Grasses, non-grazed
5	South central portion of Olsen parcel NW of Transmission Line Easement	32.70	Grasses, non-grazed
6	East central portion of Olsen parcel south of Creek	34.04	Grasses, non-grazed
7	Southwestern portion of Olsen parcel south of DMA 4	31.37	Grasses, non-grazed
8	Southeast corner of Olsen parcel	30.49	Grasses, non-grazed
8a-Ex	Off-site Run-on	14.20	Grasses, non-grazed
9	Southwest corner of Olsen parcel	11.45	Grasses, non-grazed
9a-Ex	Off-site property flowing west to Existing Meadowbrook Road	212.02	Grasses, non-grazed
10	Southern portion of South Chandler parcel north of Linne Road	30.69	Grasses, non-grazed
10a-Ex	Existing Ranch Land with Barn & Residence	94.11	Grasses, non-grazed
11	Northwester portion of South Chandler parcel, north of DMA 10	14.46	Grasses, non-grazed
12	Central South Chandler parcel southeast east of DMA 11	17.57	Grasses, non-grazed
12a-Ex		2.63	Grasses, non-grazed
13	Northeast South Chandler east of DMA 11	27.74	Grasses, non-grazed
13a-Ex		3.51	Grasses, non-grazed
13b-Ex	Tract 2526 – Estates Vineyard	18.46	Crop, Vineyard rows w/ grass
13c-Ex	Tract 2526 – Estates Vineyard	14.41	Crop, Vineyard rows w/ grass
14	Sherwood Road	8.67	Grasses, non-grazed
14a(1)-Ex	Our Town	13.08	High Density SFR
14a(2)-Ex	Our Town	2.44	High Density SFR
14b-Ex	Tract 2526 – Estates Vineyard	50.21	Crop, Vineyard rows w/ grass
14c-Ex	Tract 2526 – Estates Vineyard	43.68	Crop, Vineyard rows w/ grass
14c(1)-Ex	Tract 2526 – Estates Vineyard	30.21	Crop, Vineyard rows w/ grass
14c(2)-Ex	Tract 2526 – Estates Vineyard	19.69	Crop, Vineyard rows w/ grass
14c(3)-Ex	Tract 2526 – Estates Vineyard	13.78	Crop, Vineyard rows w/ grass
14d-Ex	Tract 2526 – Estates Vineyard	166.74	Crop, Vineyard rows w/ grass
14e-Ex	Tract 2526 – Estates Vineyard	10.89	Crop, Vineyard rows w/ grass

Proposed On-Site Drainage Basin Descriptions

There are 14 on-site drainage basins (Figures 7 and 8). Table 2 provides a summary of each sub-catchment location, area and land use.

Table 2 - Proposed Onsite Watershed Descriptions

DMA	Location	Area (ac)	Land Use
1	Northwest Corner of Olsen parcel	11.9	Medium Density Residential
2	North side of Olsen parcel east of DMA 1	15.8	Medium Density Residential
3	North side of Olsen parcel east of DMA 2	23.4	Medium Density Residential
4	West central portion of Olsen parcel south of DMA 1	29.1	Low Density Residential
5	South central portion of Olsen parcel east of southern end of DMA 4	32.7	Low Density Residential
6	East central portion of Olsen parcel south of DMA 3	33.9	Low Density Residential
7	Southwestern portion of Olsen parcel south of DMA 4	31.3	Low Density Residential
8	Southeast corner of Olsen parcel	29.8	Low Density Residential
9	Southwest corner of Olsen parcel	11.4	Low Density Residential
10	Southern portion of South Chandler parcel north of Linne Road	31.2	Medium Density Residential High Density Residential Neighborhood Commercial
11	Northwester portion of South Chandler parcel, north of DMA 10	16.7	Low Density Residential
12	Central South Chandler parcel southeast east of DMA 11	15.5	Low Density Residential
13	Northeast South Chandler east of DMA 11	27.5	Low Density Residential
14	Sherwood Road Right-of-Way	15.2	Medium Density Residential

FLOOD HAZARD

The portion of the Un-Named Creek No. 1 located at the western edge of Olsen Ranch is within a FEMA Flood Hazard Zone A as shown on the **Flood Insurance Rate Map (FIRM) Panel No. 06079C0607G**, effective date November 16, 2012 (Figure 5). **The Flood Insurance Study (FIS) for San Luis Obispo County** including Unnamed Creek No. 1 (Turtle Creek) was revalidated in 2017.

The proposed land plan proposes lots that will be impacted by this current mapped flood zone, therefore modification of the Zone A area will be required. An application for a Letter of Map Revision (LOMR) will be submitted to FEMA to modify the creek's current flood zone for the existing non-development condition. Upon FEMA approval of this LOMR a Conditional Letter of Map Revision (CLOMR) will be submitted to FEMA which outlines the proposed land plan and development grading. Once the CLOMR has been accepted by FEMA and the grading completed and certified, a second LOMR will be submitted to FEMA for the final map revision.

Figure 9 - FEMA Floodplain Map

HYDROLOGIC METHODOLOGY AND CRITERIA

The hydrologic analysis utilized the **The HydroCAD Stormwater Modeling System, Version 10,** computer program to determine the runoff from the 95th percentile, 2-, 10-, 25-, 50- and 100-year storm events. **HydroCAD** is a computer aided design program for modeling the hydrology and hydraulics of stormwater runoff. It is based largely on techniques developed by the NRCS TR-55 program and combined with other hydrologic and hydraulic calculations. For a given rainfall event, these techniques are used to generate hydrographs throughout the contributing watersheds. **HydroCAD** has the ability to route these hydrographs to specific design points where multiple hydrographs can be combined to estimate total flow rate. **HydroCAD** is designed to handle time varying flows as required for bio-retention/detention basin design and utilizes rating curves with information input by the user to determine outflow, flow volumes and total water surface elevation within any retention/detention basin structure.

The program uses the SCS loss rate method by assuming infiltration properties of a sub-area represented by the runoff curve number (CN). The CN values assumed for this report are outlined below. The minimum time of concentration was calculated using methods within TR-55.

Hydrologic Analysis

The following parameters were used in the **HydroCAD** model:

- Runoff Method: SCS TR-55
- Storm Distribution: NRCS Type 1, 24-hour with the NRCS Unit Hydrograph
- 24-hour Storm Depths: City of Paso Robles Engineering Standards; Intensity-Duration-Frequency (IDF) Curves. Table 1 summarizes the precipitation values used for each design storm event.
- Curve Numbers (CN) were applied for impervious and pervious (undeveloped) areas per the NRCS, with Antecedent Moisture Condition (AMC) of 2.
- Time of Concentration (Tc): Calculated per NCRS TR-55 procedures.

TABLE 3 - PRECIPITATION VALUES

24-Hour Duration

Design Storm (year)	Precipitation (inches)
95th	**1.40**
2	**2.33**
10	**3.60**
25	**4.20**
50	**4.60**
100	**5.10**

As stated above the precipitation values used for this study were based on the IDF curves within the City of Paso Robles Engineering Standards. These values are slightly less than the NOAA 14 Atlas Point Precipitation Frequency Estimates within the study area. The IDF curves were utilized to maintain consistency with the City's storm drain facility design and other drainage studies completed within the City.

Table 4 outlines the individual subarea hydrologic parameters

TABLE 4 - INDIVIDUAL DRAINAGE MANAGEMENT AREA HYDROLOGIC PARAMETERS

DMA	Total Area (ac)	Existing Tc (min)	Proposed Tc (min)	Existing Weighted CN	Proposed Weighted CN
1	11.24	10	10	58	81
2	14.64	11.5	15.8	58	81
3	21.50	16.9	16.9	63	92
3a(1)-Ex	4.16	10	15.7	58	58
3a(2)-Ex	7.90	10	20.7	61	61
3a(3)-Ex	6.00	10	25.7	69	69
3b-Ex	757.08	45.5	45.5	60	60
4	38.71	14.2	14.2	59	84
5	32.70	21.2	21.2	58	72
6	34.04	20.1	20.1	60	84
7	31.37	23.2	23.2	58	73
8	30.49	28.8	28.8	58	82
8a-Ex	14.20	16.5	16.5	58	58
9	11.45	22.3	22.3	62	68
9a-Ex	212.02	51.3	51.3	58	58
10	30.69	22.6	22.6	60	84
10a-Ex	94.11	11	11	67	67
11	14.46	11.1	11.1	59	82
12	17.57	10	10	59	82
12a-Ex	2.63	10	10	71	71
13	27.74	10	10	61	83
13a-Ex	3.51	10	10	71	71
13b-Ex	18.46	10	10	82	82
13c-Ex	14.41	10	10	80	80
14	8.67	10	10	79	91
14a(1)-Ex	13.08	10	10	81	81
14a(2)-Ex	2.44	10	10	89	89
14b-Ex	50.21	13.4	13.4	79	79
14c(0)-Ex	43.68	24.5	24.5	82	82
14c(1)-Ex	30.21	13.6	13.6	81	81
14c(2)-Ex	19.69	13.2	13.2	77	77
14c(3)-Ex	13.78	12.6	12.6	75	75
14d-Ex	166.74	19.4	19.4	80	80
14e-Ex	10.89	10	10	61	61

Peak Flow Calculations

Results of the **HydroCAD** model are summarized in Tables 5. A more detailed **HydroCAD** report for the existing conditions is included in Appendix H. See Appendix for schematic diagram of Existing Conditions Model node type, number and naming information.

TABLE 5 – EXISTING PEAK FLOW SUMMARY

EXISTING CONDITIONS								
HydroCAD Node Type	DMA or HC Node Number	Drainage Management Area (DMA) or Node Name	95th PERCENTILE STORM	2 YEAR STORM	10 YEAR STORM	25 YEAR STORM	50 YEAR STORM	100 YEAR STORM
Subcat	1	Subcat 1	0.0	0.1	1.0	2.5	3.8	5.6
Subcat	2	Subcat 2	0.0	0.1	1.1	3.0	4.6	6.8
Subcat	3	Subcat 3	0.0	0.4	3.7	6.9	9.3	12.6
Subcat	3a{(1)}-Ex	Subcat 3a{(1)}-Ex	0.0	0.0	0.4	0.9	1.4	2.1
Subcat	3a{(2)}-Ex	Subcat 3a{(2)}-Ex	0.0	0.1	1.3	2.7	3.7	5.2
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex	0.0	0.4	2.8	4.2	5.3	6.6
Subcat	3b-Ex	Subcat 3b-Ex	0.2	8.3	47.4	90.8	126.7	178.4
Subcat	4	Subcat 4	0.3	0.6	3.5	8.0	11.8	17.2
Subcat	5	Subcat 5	0.0	0.3	2.0	4.5	7.0	10.6
Subcat	6	Subcat 6	0.0	0.4	3.0	6.7	9.7	14.0
Subcat	7	Subcat 7	0.0	0.3	1.9	4.1	6.3	9.6
Subcat	8	Subcat 8	0.0	0.3	1.7	3.5	5.2	8.0
Subcat	8a-Ex	Subcat 8a-Ex	0.0	0.1	0.9	2.3	3.6	5.4
Subcat	9	Subcat 9	0.0	0.2	1.4	2.7	3.8	5.2
Subcat	9a-Ex	Subcat 9a-Ex	0.0	1.9	9.8	18.6	26.7	38.6
Subcat	10	Subcat 10	0.6	1.0	3.4	6.5	9.0	12.5
Subcat	10a-Ex	Subcat 10a-Ex	0.3	3.4	34.6	54.9	69.7	89.2
Subcat	11	Subcat 11	0.0	0.1	1.5	3.6	5.2	7.6
Subcat	12	Subcat 12	0.0	0.2	1.9	4.6	6.7	9.7
Subcat	12a-Ex	Subcat 12a-Ex	0.0	0.3	1.5	2.1	2.6	3.2
Subcat	13	Subcat 13	0.0	0.3	4.7	9.5	13.1	18.2
Subcat	13a-Ex	Subcat 13a-Ex	0.0	0.4	1.9	2.8	3.5	4.3
Subcat	13b-Ex	Subcat 13b-Ex	1.9	8.6	20.2	26.2	30.3	35.5
Subcat	13c-Ex	Subcat 13c-Ex	0.9	5.6	14.2	18.8	21.9	25.8
Subcat	14	Subcat 14	3.2	5.5	9.0	11.0	12.5	14.4
Subcat	14a{(1)}-Ex	Subcat 14a{(1)}-Ex	0.0	0.2	3.5	6.2	8.1	10.7
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex	0.5	0.9	1.5	2.0	2.4	2.9
Subcat	14b-Ex	Subcat 14b-Ex	2.0	15.5	41.4	55.2	64.7	76.8
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex	2.8	13.1	31.2	40.6	47.1	55.3
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex	2.4	11.6	28.0	36.5	42.4	49.9
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex	0.4	4.9	14.5	19.7	23.4	28.0
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex	0.2	2.7	9.2	12.7	15.2	18.4
Subcat	14d-Ex	Subcat 14d-Ex	7.7	47.4	121.8	160.9	188.0	222.4
Subcat	14e-Ex	Subcat 14e-Ex	0.5	0.8	2.1	3.7	5.1	6.9
Reach	6R	Reach 1c	0.3	8.5	58.8	125.7	180.5	257.3
Reach	7R	Reach 1b	3.6	52.5	201.9	304.3	383.9	492.1
Reach	8R	Reach 1a	3.6	51.4	204.9	312.4	395.8	509.5
Reach	17R	Reach 1d	0.0	0.0	19.7	45.0	64.3	90.3
Reach	18R	Linne Road Grassed Chl	4.7	11.0	17.8	20.6	22.4	24.6
Pond	17P	Gran Cielo Dwy	7.6	46.4	121.4	160.6	187.6	222.1
Pond	18P	GC-CkD1	9.3	65.6	146.0	174.6	192.8	215.1
Pond	19P	GC-CkD2	8.6	48.2	95.1	112.0	122.9	136.1
Pond	20P	GC-CkD3	8.5	41.3	70.8	81.9	89.2	98.1
Link	3a (1,2+3)	Comb Un-dev Ck Flow	3.6	51.4	204.9	312.4	395.8	509.5
Link	5L	Outlet To Tract #1632 Ex. 36" SD	0.0	1.0	6.4	14.2	22.1	33.5
Link	6L	To Existing Meadowlark Road	0.0	2.0	10.5	20.6	29.5	42.6
Link	7L	DMA 13	2.8	14.6	40.9	57.1	68.7	83.7
Link	8L	DMA 8	0.0	0.4	2.6	5.7	8.8	13.3
Link	9L	DMA 12	0.0	0.3	3.4	6.7	9.3	12.9
Link	10L	To Linne Road Channel	4.9	12.1	18.6	21.4	23.3	25.7
Link	11L	To Fontana Road SD	3.4	18.9	83.4	128.4	161.4	205.4
Link	15L	Sherwood/Niblick LP Xing	5.0	20.9	53.8	72.3	85.2	101.9
Link	16L	Airport & Linne Road SD	6.2	23.2	69.0	92.3	108.4	129.2
Link	19L	14c(0+1)-Ex	5.2	24.5	59.1	77.0	89.3	104.9
Link	22L	Linne Rd Overtopping Ex.Flow #2and#3	3.7	38.1	84.5	102.2	113.6	127.8
Link	23L	Linne Rd Overtop #1	0.0	19.5	60.7	76.6	86.9	99.6

The City of Paso Robles Drainage criteria states that for all storm events the post construction peak flows are to be equal to or less than the pre-project (existing) condition. Table 6 outlines the developed peak flow rates after detention, demonstrating that after stormwater detention, peak flows are reduced for all storm frequencies. Peak flow hydrographs results can be found in Appendix I.

TABLE 6 – PROPOSED PEAK FLOW SUMMARY

PROPOSED CONDITIONS								
HydroCAD Node Type	HydroCAD Node Number	Subcatchment/DMA, Reach, Pond or Link Name	95th PERCENTILE STORM	2 YEAR STORM	10 YEAR STORM	25 YEAR STORM	50 YEAR STORM	100 YEAR STORM
Subcat	1	Subcat 1	4.7	8.1	13.1	15.9	17.9	20.5
Subcat	2	Subcat 2	5.0	8.8	14.2	17.2	19.3	22.1
Subcat	3	Subcat 3	9.9	17.3	28.4	33.8	37.4	42.0
Subcat	3a{(1)}-Ex	Subcat 3a(1)-Ex	0.0	0.0	0.4	0.9	1.4	2.1
Subcat	3a{(2)}-Ex	Subcat 3a(2)-Ex	0.0	0.1	1.3	2.7	3.7	5.2
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex	0.0	0.4	2.8	4.2	5.3	6.6
Subcat	3b-Ex	Subcat 3b-Ex	0.2	8.3	47.4	90.8	126.7	178.4
Subcat	4	Subcat 4	13.3	23.5	41.4	50.9	57.4	65.8
Subcat	5	Subcat 5	5.1	8.9	16.3	21.4	25.0	29.9
Subcat	6	Subcat 6	9.5	17.0	30.6	37.8	42.8	49.1
Subcat	7	Subcat 7	5.1	9.0	16.1	20.8	24.2	28.7
Subcat	8	Subcat 8	6.9	12.2	21.4	26.4	29.9	34.4
Subcat	8a-Ex	Subcat 8a-Ex	0.0	0.1	0.9	2.3	3.6	5.4
Subcat	9	Subcat 9	1.0	1.7	3.9	5.5	6.7	8.2
Subcat	9a-Ex	Subcat 9a-Ex	0.0	1.9	9.8	18.6	26.7	38.6
Subcat	10	Subcat 10	9.5	16.5	27.2	32.9	36.9	42.0
Subcat	10a-Ex	Subcat 10a-Ex	0.3	3.4	34.7	55.1	69.9	89.5
Subcat	11	Subcat 11	5.2	9.1	16.4	20.3	22.9	26.3
Subcat	12	Subcat 12	6.4	11.1	20.0	24.8	28.1	32.4
Subcat	12a-Ex	Subcat 12a-Ex	0.0	0.3	1.5	2.1	2.6	3.2
Subcat	13	Subcat 13	10.1	18.2	33.4	41.3	46.7	53.7
Subcat	13a-Ex	Subcat 13a-Ex	0.0	0.4	1.9	2.8	3.5	4.3
Subcat	13b-Ex	Subcat 13b-Ex	1.9	8.6	20.3	26.3	30.4	35.6
Subcat	13c-Ex	Subcat 13c-Ex	0.9	5.6	14.3	18.8	21.9	25.9
Subcat	14	Subcat 14	4.2	7.9	13.6	16.3	18.2	20.5
Subcat	14a{(1)}-Ex	Subcat 14a(1)-Ex	3.8	7.2	14.3	18.0	20.5	23.8
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex	1.3	2.3	3.7	4.4	4.9	5.5
Subcat	14b-Ex	Subcat 14b-Ex	2.0	15.5	41.5	55.3	64.8	77.0
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex	2.8	13.1	31.3	40.7	47.2	55.4
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex	2.4	11.6	28.1	36.6	42.5	50.0
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex	0.4	5.0	14.6	19.9	23.5	28.2
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex	0.2	2.8	9.2	12.7	15.2	18.5
Subcat	14d-Ex	Subcat 14d-Ex	7.7	47.5	122.1	161.3	188.4	223.0
Subcat	14e-Ex	Subcat 14e-Ex	0.5	0.8	2.1	3.8	5.1	6.9
Reach	6R	Un-named Creek 1c	0.2	8.3	56.1	120.8	173.7	248.0
Reach	7R	Creek XS 1b	11.1	62.7	193.1	281.4	347.3	434.5
Reach	8R	Creek 1b	11.1	62.2	192.8	280.9	346.7	434.0

TABLE 6 – PROPOSED PEAK FLOW SUMMARY (Continued)

HydroCAD Node Type	HydroCAD Node Number	Subcatchment/DMA, Reach, Pond or Link Name	95th PERCENTILE STORM	2 YEAR STORM	10 YEAR STORM	25 YEAR STORM	50 YEAR STORM	100 YEAR STORM
Reach	17R	Reach 1d	0.0	0.0	19.7	45.1	64.4	90.4
Reach	Ex Chl	RCP Dbl Arch 59x36 Outlet	12.5	70.0	136.2	149.0	156.0	163.5
Pond	1P	SD Inlet with Bypass SD	0.3	3.4	35.5	57.9	73.3	93.8
Pond	2P	60" SD MH	4.1	8.3	13.7	16.3	18.0	20.2
Pond	15P	SD System 42" HDPE	0.0	0.0	17.0	37.0	51.1	68.7
Pond	16P	Dbl Conc. Arch Culvert (37x23)	1.3	2.6	10.8	15.3	17.7	20.8
Pond	17P	Gran Cielo Dwy	7.6	46.4	121.7	161.0	188.1	222.7
Pond	18P	GC-CkD1	12.5	70.4	149.2	175.3	192.5	213.5
Pond	19P	GC-CkD2	0.3	1.5	19.7	40.0	53.6	70.7
Pond	20P	GC-CkD3	0.5	2.2	25.5	44.0	54.4	66.3
Pond	B1	Basin 1	0.9	3.9	14.8	30.3	36.6	43.9
Pond	B10	Basin 10	0.7	1.5	4.5	7.4	10.6	15.1
Pond	B11	Basin 11	0.2	1.0	3.7	5.5	7.8	10.5
Pond	B12	Basin 12	0.3	0.7	2.5	3.2	4.0	5.6
Pond	B13	Basin 13	1.2	5.0	35.0	62.5	84.6	108.6
Pond	B4	Basin 4	1.3	3.0	15.2	20.1	24.2	34.7
Pond	B5	Basin 5	0.5	1.3	4.7	7.5	9.7	12.7
Pond	B6	Basin 6	1.0	5.2	16.2	23.8	28.0	32.4
Pond	B7	Basin 7	0.8	2.0	8.1	13.1	17.5	24.2
Pond	B8	Basin 8	0.7	1.5	6.4	13.0	18.2	25.2
Pond	B9	Basin 9	0.5	1.0	2.5	3.6	4.3	5.1
Pond	Ex SD	Tract #1632 Ex. 36" SD Outlet	0.0	1.0	7.0	11.9	16.2	22.9
Pond	MC Q	SD System	8.6	17.2	28.2	33.6	37.2	41.8
Pond	SD	42" HDPE SD	0.5	1.9	10.1	19.6	26.8	36.4
Link	1L	DS Tailwater	0.0	1.0	7.0	11.9	16.2	22.9
Link	6L	To Existing Meadowlark Road	0.5	2.1	11.6	22.1	31.0	43.7
Link	10L	To Linne Road Channel	1.3	2.6	10.8	15.3	17.7	20.8
Link	11L	To Fontana Road SD	1.2	7.8	60.9	111.6	154.0	203.2
Link	15L	Sherwood/Niblick LP Xing	9.8	30.6	69.2	89.4	103.3	121.2
Link	16L	Airport & Linne Road SD	11.6	34.0	79.5	106.3	124.5	147.3
Link	22L	Linne Rd Ex Bypass Flow	0.0	0.0	17.0	37.0	51.1	68.7
Link	Ck Qa	100 Yr WSE in Creek (a)	11.2	63.7	217.1	327.1	403.9	508.9
Link	Ck Qb	100 Yr WSE in Creek (b)	0.8	4.9	15.8	23.4	27.6	32.0

See Appendix I for schematic diagram of Proposed Conditions HydroCAD Model node type, number and naming information. The appendix contains hydrograph results of each sub-catchment, reach, pond and link combining flows referenced above. A more detailed review of how the flows split and are carried downstream can be found in Table 11 of Appendix I.

HYDRAULIC METHODOLOGY AND CRITERIA

Detention Basin Outlet Design

The hydraulic analysis of the detention basin was calculated within the **HydroCAD Stormwater Modeling System, Version 10,** computer program during the pond routing sub-routine. The program utilized the general orifice and weir equations to determine the quantity of outflow from the basin based on available head.

Basin Volume Analysis

The **HydroCAD** model performed a continuous flow routing of the proposed 13 detention basins required to mitigate the proposed development peak flow rates back to historic levels at the property boundary per the City of Paso Robles Drainage Design guidelines. Table 7 summarizes the proposed detention basin characteristics that result in a reduced outflow at five key downstream discharge locations.

TABLE 7 – PRELIMINARY DETENTION BASIN SUMMARY

100 Year Storm Detention Route
Proposed Conditions

Detention Pond Number	Detention Pond Name	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Outflow Total Peak (cfs)	Outflow Total Peak Time (hours)	Peak Elevation (feet)	Peak Storage (acre-feet)	Top Elevation (feet)	Top Storage (acre-feet)
B1	Basin 1	5.1	143.08	47.388	43.86	10.61	838.35	7.075	839.35	8.595
B4	Basin 4	5.1	65.77	38.712	34.66	10.29	840.12	3.32	842.5	5.149
B5	Basin 5	5.1	29.91	32.696	12.7	10.72	848.15	1.797	852	4.099
B6	Basin 6	5.1	49.06	34.039	32.41	10.28	851.88	2.255	854.4	3.598
B7	Basin 7	5.1	53.39	108.754	24.18	11.97	843.21	5.229	847	11.849
B8	Basin 8	5.1	39.82	44.689	25.2	10.48	857.85	2.582	859	3.387
B9	Basin 9	5.1	8.24	11.446	5.1	10.45	849.37	0.219	853	1.119
B10	Basin 10	5.1	42.03	30.685	15.14	10.82	818.33	3.554	820	5.425
B11	Basin 11	5.1	26.34	14.461	10.51	10.34	834.16	1.37	836	2.037
B12	Basin 12	5.1	35.58	20.201	5.64	11.06	838.7	2.202	841	3.803
B13	Basin 13	5.1	119.46	64.115	108.58	10.01	844.19	3.165	846	4.267

TABLE 8 - BASIN PEAK FLOW RATE COMPARISON BETWEEN PRE- AND POST DEVELOPMENT

Design Point	Location/Node Name	Storm Event Peak Flow (cfs)					
		10-YR EXISTING	10-YR PROPOSED	25-YR EXISTING	25-YR PROPOSED	100-YR EXISITNG	100-YR PROPOSED
B*	Airport & Linne Rd SD	69	79.5	92	106.3	129	147.3
C	Comb Un-dev Ck Flow/ Ck Qa	205	217.1	312	327.1	510	508.9
D	Outlet to Tract #1632 Ex. 36"SD	6	7.0	14	11.9	34	22.9
E	To Existing Meadowlark Road	11	11.6	21	22.1	43	43.7
K	To Fontana Road SD	83	60.9	128	111.6	205	203.2

* Note: Modeling developed to show actual existing Our Town conditions and future "Proposed" buildout has a flow increase.

Comparison of Previous Drainage Reports

During the preparation of this report, several existing drainage reports and hydrology models were reviewed for comparison of watershed delineation and routing, hydrologic parameters and total runoff. These reports include the following:

- **City of Paso Robles Master Drainage Plan**, prepared by WRC, 2006.
- **Flood Insurance Study for San Luis Obispo County, Un-named Creek (Turtle Creek)**, 1979.
- **Tract No. 2526 Grading and Drainage Report Summary**, prepared by Vaughan Surveys, Inc, August 2003
- **Sherwood Industrial Park Drainage Analysis**, prepared by Boyle Engineering, April 2005.

The overall hydrologic comparison is outlined in Table 5.

TABLE 9 - COMPARISON WITH PREVIOUS DRAINAGE REPORTS

HYDROLOGY STUDY	PREPARED BY	DATE	Q100	BASIN AREA	Q/AC	HYDROLOGY METHOD	CURVE NUMBER	Tc	PRECIPITATION	STORM DURATION	AGENCY STANDARDS
			cfs	ac	cfs/ac			min	inches	hours	
At Our Town											
Gran Cielo Winery	Vaughan	2003	151	260.8	0.58	Rational Method	0.35 (Rational runoff coefficient)	24	2.4 "/hr	10	SLO County
Olsen Chandler Specific Plan	Wallace	2018	66	259.4	1.85	HydroCAD, SCS Unit Hydrograph	80	25.2	5.1	24	City of Paso Robles
At Turtle Creek											
Sherwood Industrial Park	Boyle	2005	254	1316	0.19	HydroCAD	75	256.4	5.1	24	City of Paso Robles
Turtle Creek FIS		1979	410	1280	0.32	HEC-1, 2 hr storm pattern for 24 hour duration/ log pearson Type III distribution	basin parameters based on reconstruction of 1969 Salinas River flood event			24	FEMA
Olsen Chandler Specific Plan	Wallace	2018	464	870.5	0.68	HydroCAD, SCs Unit Hydrograph	60	45.5	5.1	24	City of Paso Robles

Differences in the stormwater runoff rates between studies were noted and may be attributed to differences in the hydrograph time steps, differences in storm durations, determination of cure number (CN), calculation of the time of concentration (Tc) as well as the hydrologic method used to estimate peak flows. It was difficult to compare this study to the Master Drainage Plan since the hydrologic models nor watershed maps were available for review. The comparison with the Sherwood Industrial Park study showed a 50% increase in flow rates at a common design point. The large difference in flow may be attributed to the long Tc value of the Central Watershed (254 min compared to 45.5min).

The results of the this **HydroCAD** model appear to be in-line with the FIS adopted flowrate within Un-Named Creek No. 1 upstream of Turtle Creek. The FIS utilized the Us Army Corp of Engineers HEC-1 computer model. This study was completed using the NRCS TR-55 method and utilized current design requirements and parameters for the hydrologic analysis. Although flow rates may be higher than the FIS analysis, we are comfortable with the results of both models and they compare relatively well.

STORMWATER MANAGEMENT REQUIREMENTS

The California Regional Quality Control Board (CRWQCB) prepared new water quality design standards per **Resolution No. R#-2013-0032 "Post-Construction Stormwater Management Requirements for Development Projects in the Central Coast Region, Attachment 1",** adopted March 2014. This Resolution outlines stormwater management requirements for development projects in the Central Coast Region and defines four post-construction requirements to help maintain water quality and the hydrologic health of the watershed. These requirements are based on the projects type, size and regional location. The proposed development lies within Watershed Management Zone (WMZ) 1.

These four post construction requirements include the following for regulated projects:

1. Site Design and Runoff Reduction
2. Water Quality Treatment
3. Runoff Retention
4. Peak Flow Management

A Preliminary Stormwater Control Plan has been prepared under separate cover, in accordance with the Post-Construction Requirements. This SWCP is conceptual in nature and provides general guidelines to potential water quality techniques and design solutions. As each planning Area submits development plans for construction permitting, a final SWCP that details the exact methods of stormwater quality control as well as final design recommendations for stormwater conveyance and detention will be required.

Erosion and Sediment Control

The proposed project will disturb more than one acre, and therefore a Storm Water Pollution Prevention Plan (SWPPP) is required per the State General Construction Permit. As each Planning Area submits development plans for construction permitting, an Erosion and Sediment Control Plan will be required. Graded areas should be re-vegetated with an erosion control seed mix to provide long term protection from erosion. All inlet facilities should be protected with fiber rolls and all drainage outlets will be protected with a rip rap energy dissipator.

CONCLUSION AND RECOMMENDATIONS

Summary

The proposed South Chandler-Olsen Ranch Specific Plan covers an area of approximately 355 acres in the City of Paso Robles, California. The proposed development will result in the construction of approximately 1,028 residential units. Roadway and utility infrastructure will be constructed to support the development. The overall drainage area from the SP impacting the existing City infrastructure is approximately 2.8 square miles. Stormwater runoff from the project area will be conveyed to four distinct areas.

The Northern Easterly Sub-watershed discharges historic flow rates to Linne Road, where flows overtop the roadway and flow into Un-Named Creek No. 1 through the Central Watershed. For the proposed developed condition, stormwater runoff will be intercepted by storm drain systems prior to flows overtopping Linne Road and will be conveyed to Un-Named Creek No. 1 (Turtle Creek). The Central Watershed will discharge flows at historic levels into Turtle Creek along the western boundary of Olsen Ranch.

A small amount of flow from the Easterly Sub-watershed will combine with flows from the Northern Westerly Sub-watershed and discharge at the intersections of Linne Road and Airport Road and Linne Road and Fontana Road.

The Southern Watershed will discharge runoff into the detention basin formed from the existing stock pond near the southwest corner of Olsen Ranch. Detained flows will enter the City's storm drain system within Running Stag Way. All three major watersheds will confluence approximately 1.4 miles downstream ultimately discharging into the Salinas River.

The proposed drainage conveyance system will consist of water quality control features, storm inlets and storm drains and detention basins. Proposed developed flows will be detained to historic levels for the 2- through the 100-year event before discharging into Turtle Creek or offsite into the City's stormwater conveyance system.

A hydraulic analysis will be performed on the Un-Named Creek No. 1 to ensure water surface elevations at the project's boundary are not above current conditions. This model will also define the proposed creek crossings as defined in the SP Land Plan. The hydraulic analysis will be submitted under a separate cover.

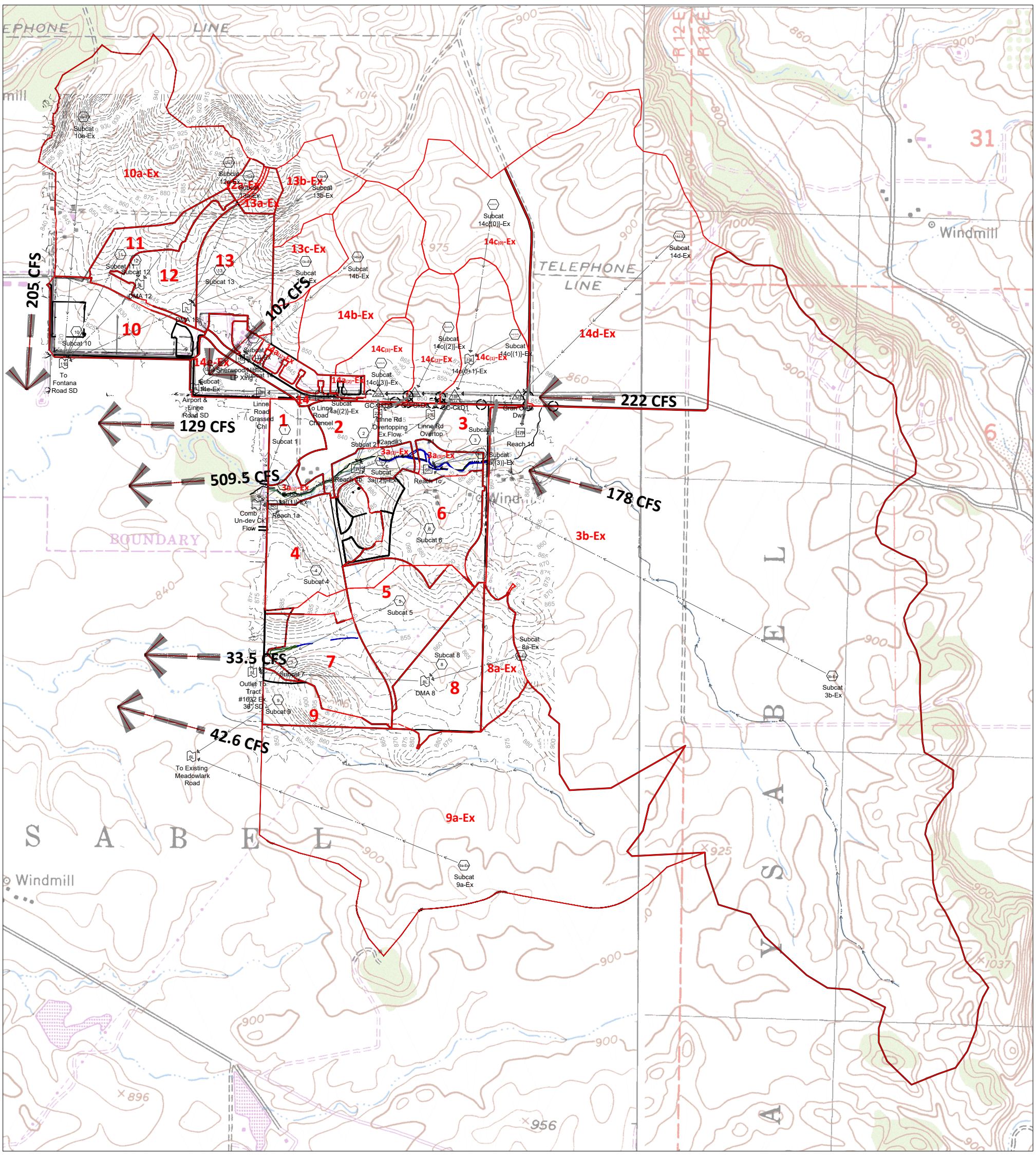
APPENDICES

A. Existing & Proposed Watershed Mapping
B. Flood Insurance Rate Map with 100-Year Flood Boundary
C. Soils Survey Map & Soils Index
D. City of Paso Robles Rainfall Data
E. Runoff Curve Number Data
F. Time of Concentration Calculations
G. 2, 5, 10, 50 & 100-Year Storm Event Peak Flow Summary for Existing and Proposed Conditions
H. Existing Hydrograph Analysis
I. Proposed Hydrograph Modeling with Detention Basin Sizing

Appendix A

Existing & Proposed Watershed Mapping

OLSEN-CHANDLER RANCH PROJECTS
EXISTING CONDITIONS HYDROLOGY MAPPING
100 Year Storm Event
Exhibit 1



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1465.01
1/28/2019

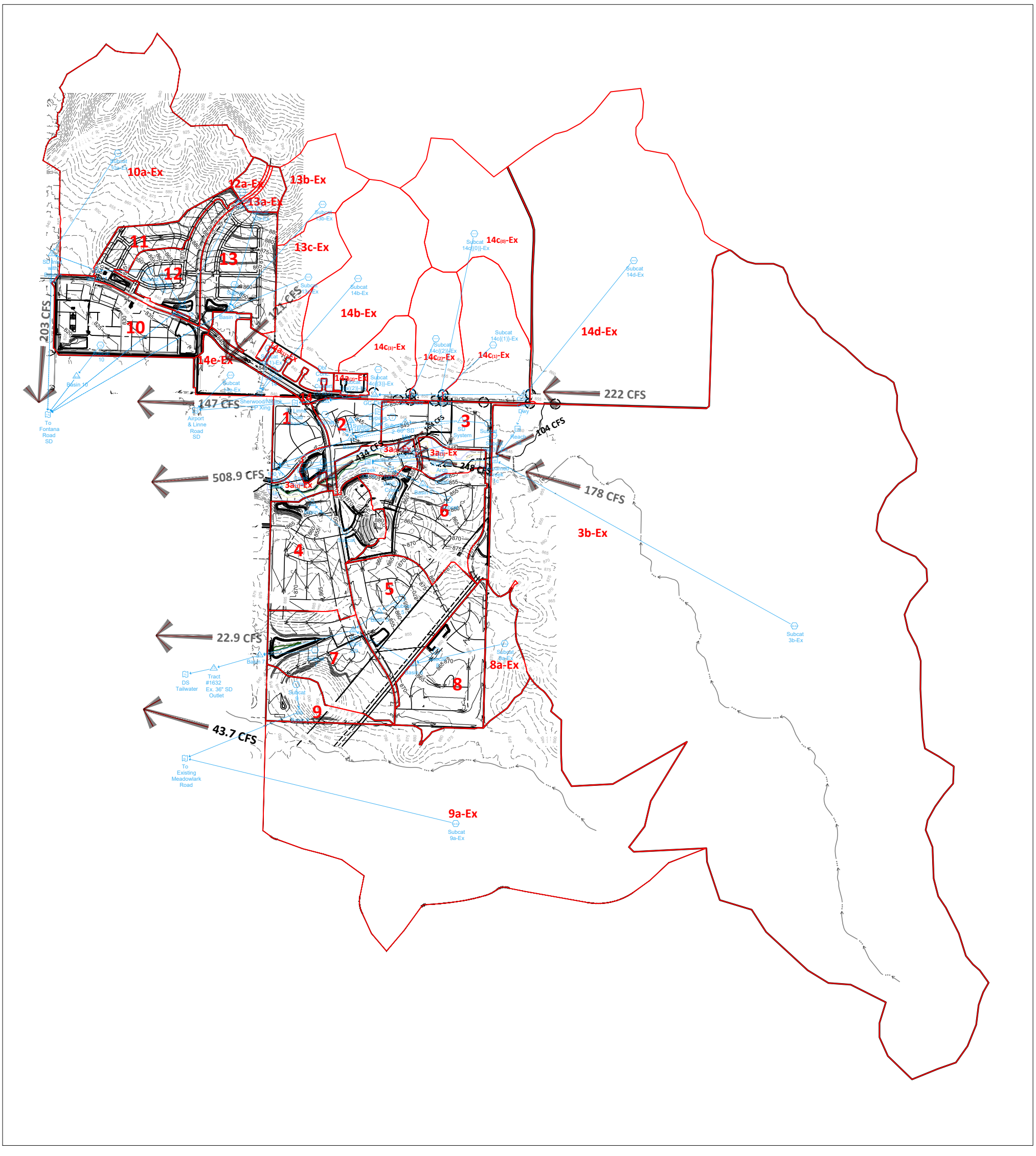
GRAPHIC SCALE

0 600 1200 2400

(IN FEET)

1 IN = 1200 FT

OLSEN-CHANDLER RANCH PROJECTS
PROPOSED CONDITIONS HYDROLOGY MODEL
100 Year Storm Event
Exhibit 2



WALLACE GROUP®

GRAPHIC SCALE

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(IN FEET)

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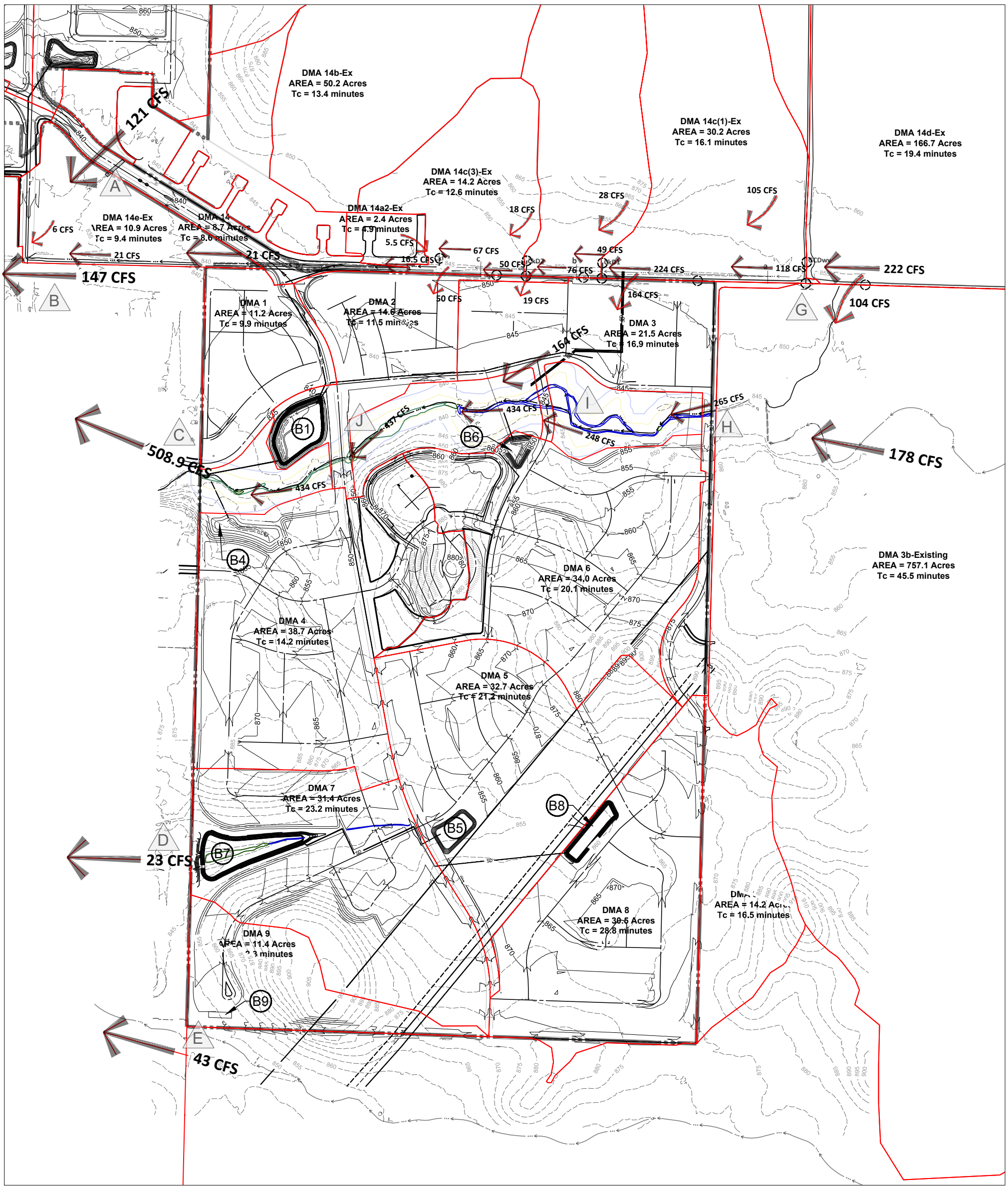
OLSEN RANCH PROJECT
PROPOSED CONDITIONS HYDROLOGY MODEL
100 Year Storm Event
Exhibit 3



Development Status	Node Type	Detention Pond Number	Detention Pond Name	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Outflow Total Peak (cfs)	Outflow Total Peak Time (hours)	Peak Elevation (feet)	Peak Storage (acre-feet)	Top Elevation (feet)
Existing North of Linne Road	Pond	17P	Gran Cielo Dwy	5.1	222.96	166.738	222.66	9.99	855.19	0.289	856.14
	Pond	18P	GC-CkD1	5.1	223.8	240.622	213.46	10.03	850.03	0.483	852
	Pond	19P	GC-CkD2	5.1	76.4	260.311	70.68	10.07	849.41	0.624	850
	Pond	20P	GC-CkD3	5.1	67.1	274.094	66.32	10.08	845.96	0.361	846.5
Proposed on Olsen Property	Pond	B1	Basin 1	5.1	143.08	47.388	43.86	10.61	838.35	7.075	839.35
	Pond	B4	Basin 4	5.1	65.77	38.712	34.66	10.29	840.12	3.32	842.5
	Pond	B5	Basin 5	5.1	29.91	32.696	12.7	10.72	848.15	1.797	852
	Pond	B6	Basin 6	5.1	49.06	34.039	32.41	10.28	851.88	2.255	854.4
	Pond	B7	Basin 7	5.1	53.39	108.754	24.18	11.97	843.21	5.229	847
	Pond	B8	Basin 8	5.1	39.82	44.689	25.2	10.48	857.85	2.582	859
	Pond	B9	Basin 9	5.1	8.24	11.446	5.1	10.45	849.37	0.219	853

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LEGEND

- A — COMBINED FLOW POINT OF INTEREST
- B7 — DETENTION BASIN IDENTIFICATION
- CFS — 100 YEAR - 24 HOUR PEAK FLOW

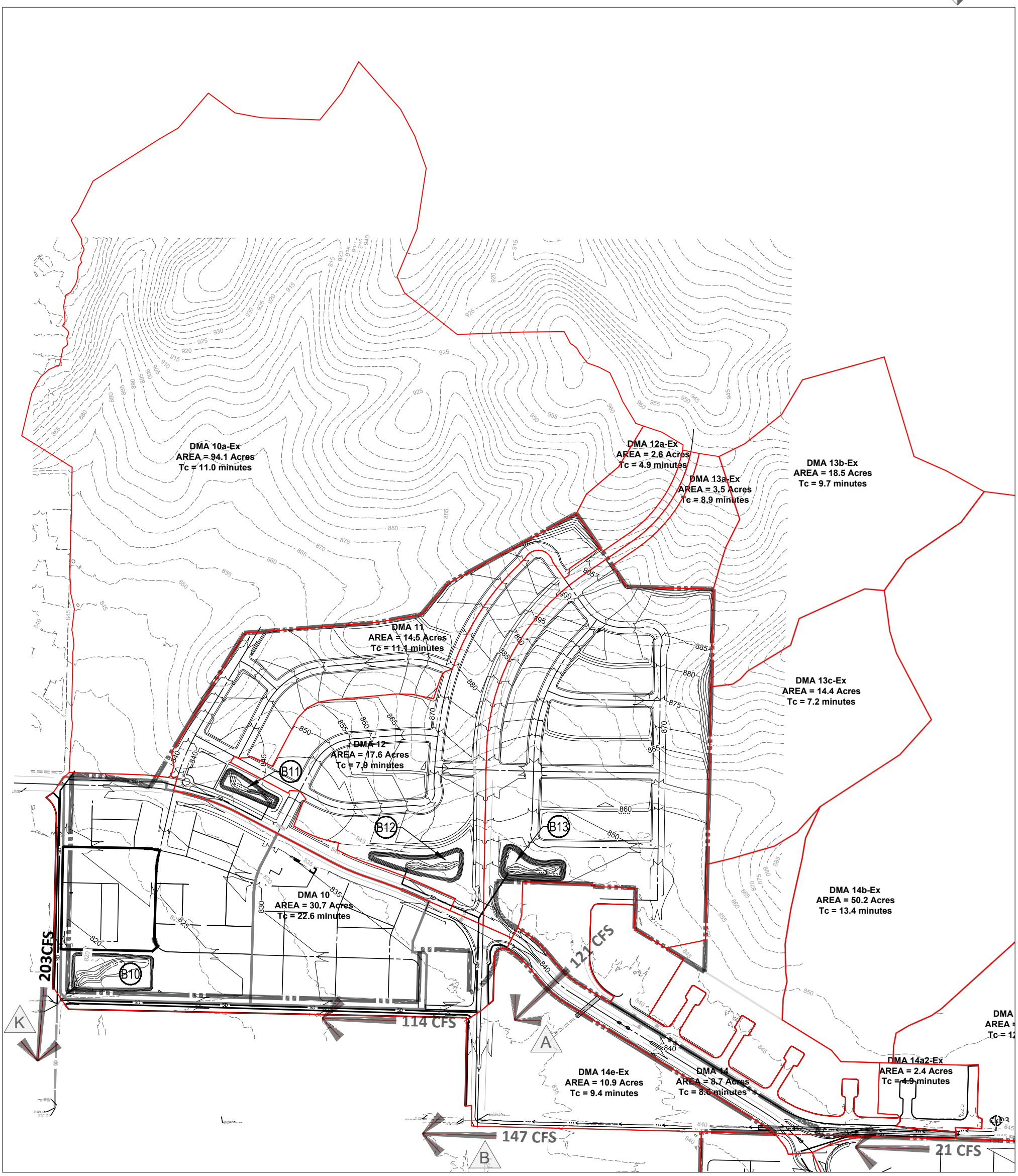
GRAPHIC SCALE

0 250 500 1000

(IN FEET)

1 IN = 500 FT

CHANDLER RANCH PROJECT
PROPOSED CONDITIONS HYDROLOGY MODEL
100 Year Storm Event
Exhibit 4



Detention Pond Number	Detention Pond Name	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Outflow Total Peak (cfs)	Outflow Total Peak Time (hours)	Peak Elevation (feet)	Peak Storage (acre-feet)	Top Elevation (feet)	Top Storage (acre-feet)
B10	Basin 10	5.1	42.03	30.685	15.14	10.82	818.33	3.554	820	5.425
B11	Basin 11	5.1	26.34	14.461	10.51	10.34	834.16	1.37	836	2.037
B12	Basin 12	5.1	35.58	20.201	5.64	11.06	838.7	2.202	841	3.803
B13	Basin 13	5.1	119.46	64.115	108.58	10.01	844.19	3.165	846	4.267

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1/31/2019

LEGEND

A — COMBINED FLOW POINT OF INTEREST

B7 — DETENTION BASIN IDENTIFICATION

CFS — 100 YEAR - 24 HOUR PEAK FLOW

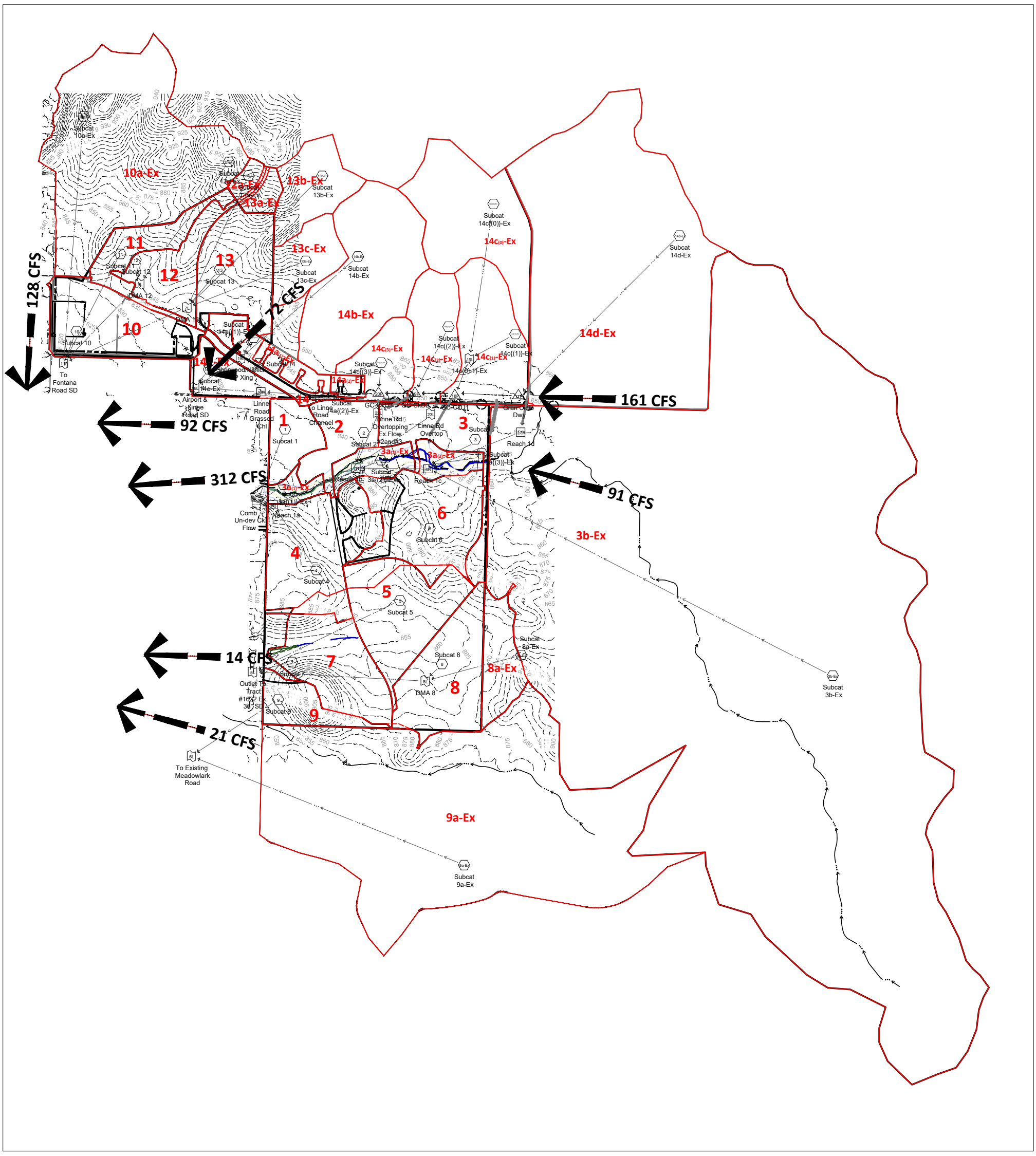
GRAPHIC SCALE

0 200 400 800

(IN FEET)

1 IN = 400 FT

OLSEN-CHANDLER RANCH PROJECTS
EXISTING CONDITIONS HYDROLOGY MAPPING
25 Year Storm Event
Exhibit 5



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1465.01
1/28/2019

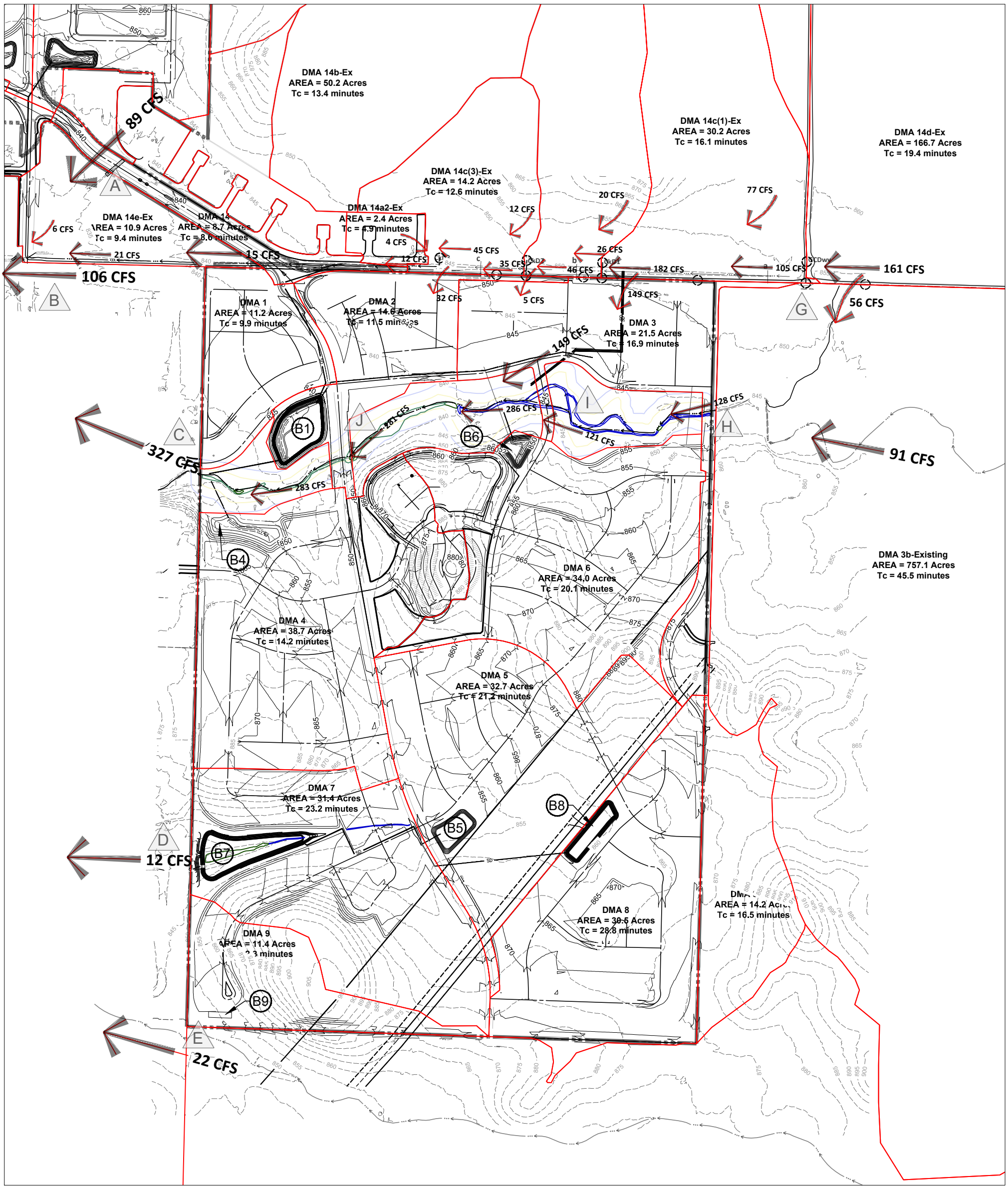
GRAPHIC SCALE

0 600 1200 2400

(IN FEET)

1 IN = 1200 FT

OLSEN RANCH PROJECT
PROPOSED CONDITIONS HYDROLOGY MODEL
25 Year Storm Event
Exhibit 6



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1/31/2019

LEGEND

- A — COMBINED FLOW POINT OF INTEREST
- B7 — DETENTION BASIN IDENTIFICATION
- CFS — 25 YEAR - 24 HOUR PEAK FLOW

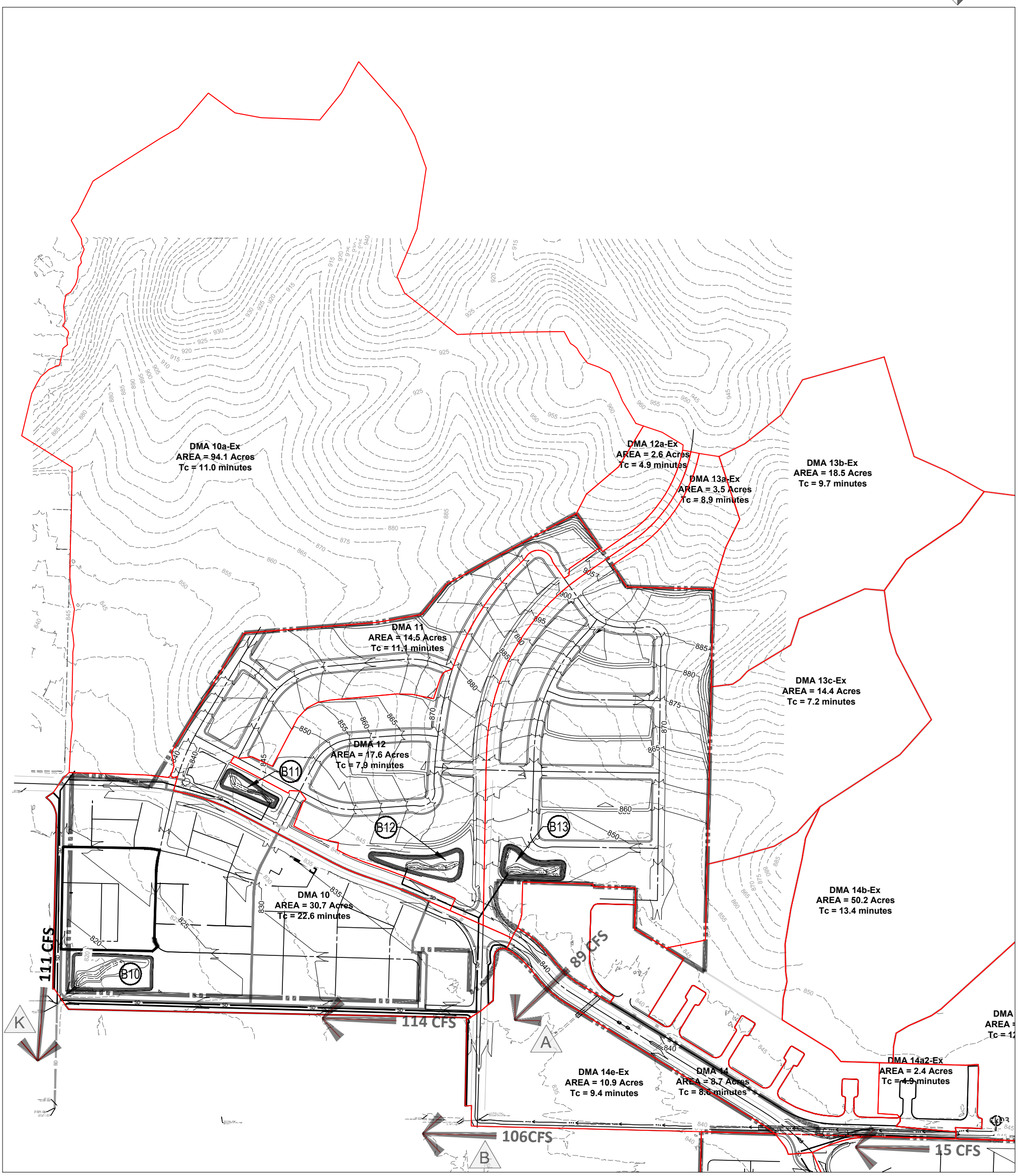
GRAPHIC SCALE

0 250 500 1000

(IN FEET)

1 IN = 500 FT

CHANDLER RANCH PROJECT
PROPOSED CONDITIONS HYDROLOGY MODEL
25 Year Storm Event
Exhibit 7



WALLACE GROUP®
1465.01
1/31/2019

LEGEND

- A — COMBINED FLOW POINT OF INTEREST
- B7 — DETENTION BASIN IDENTIFICATION
- CFS — 25 YEAR - 24 HOUR PEAK FLOW

GRAPHIC SCALE

0 200 400 800

(IN FEET)

1 IN = 400 FT

INSERT SLEEVE
FOR FULL SIZE
PLANS

Appendix B

Flood Insurance Rate Map with 100-Year Flood Boundary

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) Zone 10. The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency under its National Agriculture Imagery Program (NAIP). This imagery was flown in 2010 and was produced with a 1-meter ground sample distance.

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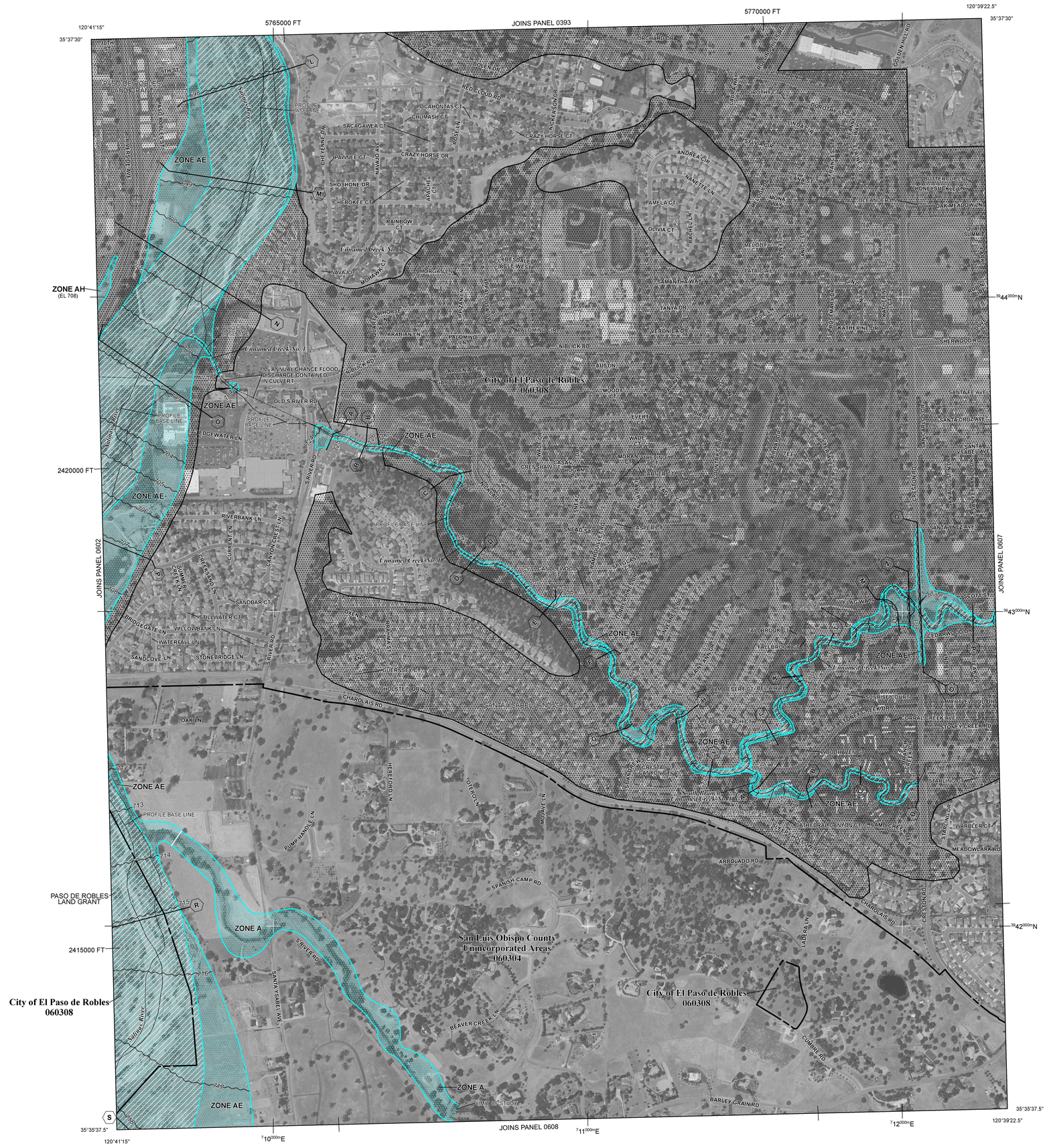

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
23 - - - - 23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
$^{42}75^{000m}$E	1000-meter Universal Transverse Mercator grid values, zone 10
6000000 FT	5000-foot grid ticks: California State Plane coordinate system, Zone V (FIPSZONE = 405), Lambert projection
DX5510$_X$	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
November 16, 2012 - to update corporate limits, to incorporate previously issued Letters of Map Revision, and to reflect updated topographic information.

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MAP SCALE 1" = 500'

250 0 250 500 750 1,000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0606G

FIRM

FLOOD INSURANCE RATE MAP

SAN LUIS OBISPO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 606 OF 2050

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO DE ROBLES, CITY OF	060308	0606	G
SAN LUIS OBISPO COUNTY	060304	0606	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06079C0606G

MAP REVISED
NOVEMBER 16, 2012

Federal Emergency Management Agency

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LEGEND

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• M1.5	River Mile

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250 0 250 500 750 1,000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0607G

FIRM

FLOOD INSURANCE RATE MAP

SAN LUIS OBISPO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 607 OF 2050

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO DE ROBLES, CITY OF	060308	0607	G
SAN LUIS OBISPO COUNTY	060304	0607	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER
06079C0607G**

**MAP REVISED
NOVEMBER 16, 2012**

Federal Emergency Management Agency

Table 10: Summary of Discharges, continued

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Unnamed Creek No. 1	At confluence with Salinas River	5.7	190	*	910	1,180	*	1,650
Unnamed Creek No. 1	At River Road	5.0	120	*	730	960	*	1,350
Unnamed Creek No. 1	At confluence of South Branch Unnamed Creek No. 1	3.3	100	*	510	670	*	930
Unnamed Creek No. 1	Approximately ~~15.7~~ 4.3 miles upstream of Salinas River confluence miles Upstream of Creston Road	2.0	30	*	300	410	*	580
Unnamed Creek No. 3	At River Road	1.0	70	*	270	330	*	460
Willow Creek	At Mouth	3.3	490	*	1,500	2,200	*	4,800
Yerba Buena Creek	At Union Pacific Railroad	4.4	1,040	*	2,150	2,570	*	3,310
Yerba Buena Creek	Approximately 3,000 feet upstream of Encina Avenue	3.5	830	*	1,720	2,050	*	*

*Not calculated for this Flood Risk Project

[1]Channel flow only; does not include overflow from channel

[2]Reduced or constant flow values due to capacity restriction

[3]Data not available

[4]Decrease in discharge due to overbank storage

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,850	37	206	4.6	724.8	724.8	725.8	1.0
B	2,205	46	255	3.7	725.9	725.9	726.5	0.6
C	3,285	30	100	9.6	740.8	740.8	740.8	0.0
D	4,375	50	190	5.1	751.0	751.0	751.0	0.0
E	5,334	40	230	4.2	756.0	756.0	756.1	0.1
F	6,401	35	130	7.4	758.9	758.9	759.8	0.9
G	7,418	45	160	6.0	763.1	763.1	763.9	0.8
H	8,308	50	170	5.6	767.3	767.3	767.8	0.5
I	9,048	65	190	5.1	771.1	771.1	771.2	0.1
J	10,038	30	150	4.5	775.5	775.5	775.7	0.2
K	10,968	65	230	2.9	779.7	779.7	779.7	0.0
L	11,728	50	170	3.9	785.6	785.6	785.6	0.0
M	12,753	35	80	8.4	791.1	791.1	791.1	0.0
N	13,198	30	130	5.2	796.2	796.2	796.5	0.3
O	13,353	85	260	2.5	801.1	801.1	801.8	0.7
P	14,190	75	230	2.3	801.2	801.2	802.1	0.9
Q	15,005	75	140	3.7	804.2	804.2	804.3	0.1
R	15,725	40	140	3.7	807.0	807.0	807.1	0.1
S	16,370	80	310	1.7	808.0	808.0	808.2	0.2
T	16,700	60	270	1.8	811.0	811.0	811.3	0.3
U	17,736	50	210	2.3	811.2	811.2	811.5	0.3
V	18,750	20	80	5.8	815.9	815.9	816.8	0.9
W	19,445	30	120	3.9	820.0	820.0	820.4	0.4
X	20,641	30	80	5.8	823.7	823.7	823.9	0.2
Y	21,466	35	60	7.3	828.4	828.4	828.4	0.0
Z	22,271	30	110	4.0	831.3	831.3	832.0	0.7

[1]Feet above confluence with Salinas River

TABLE 24

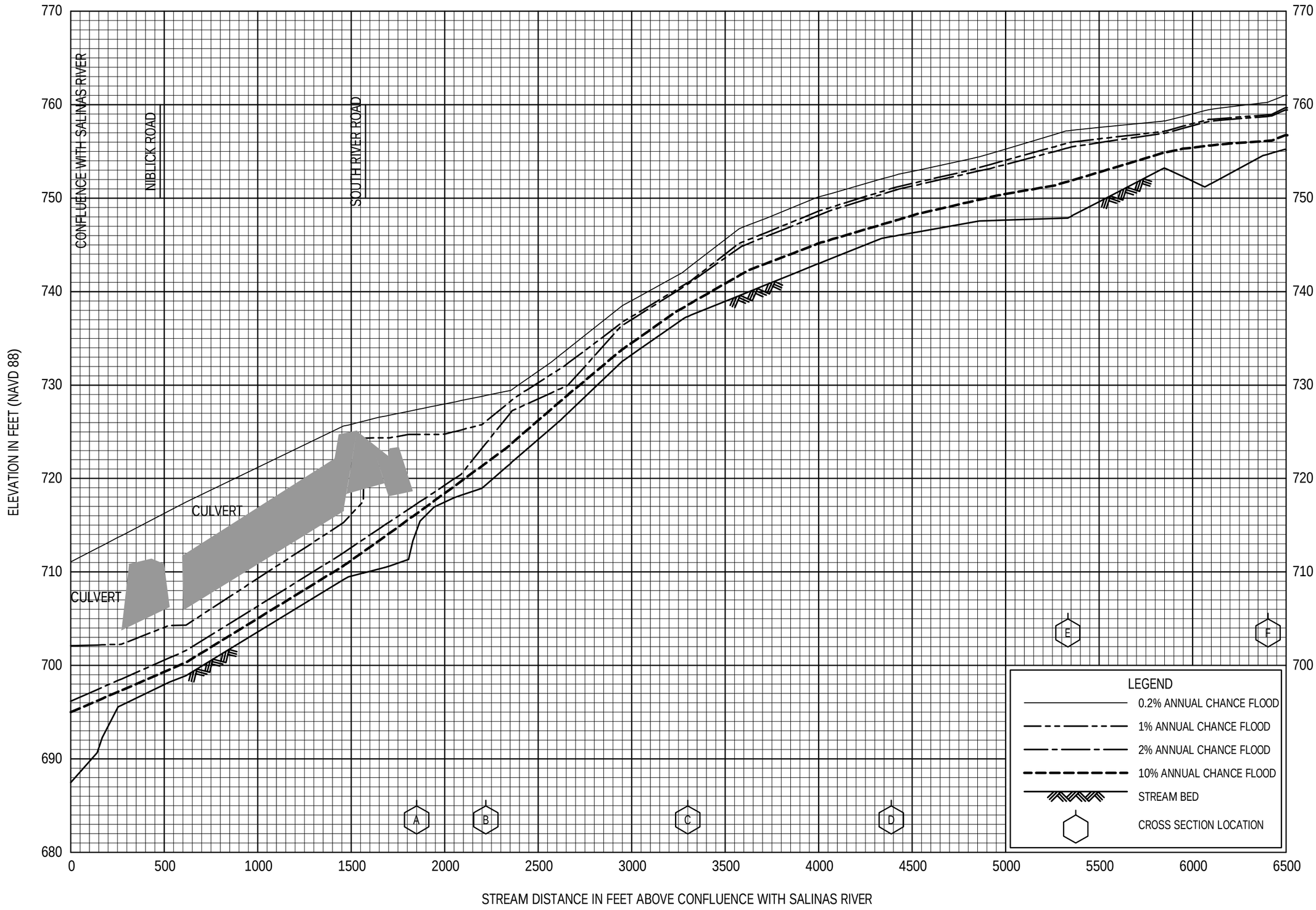
FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN LUIS OBISPO COUNTY, CALIFORNIA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: UNNAMED CREEK NO. 1



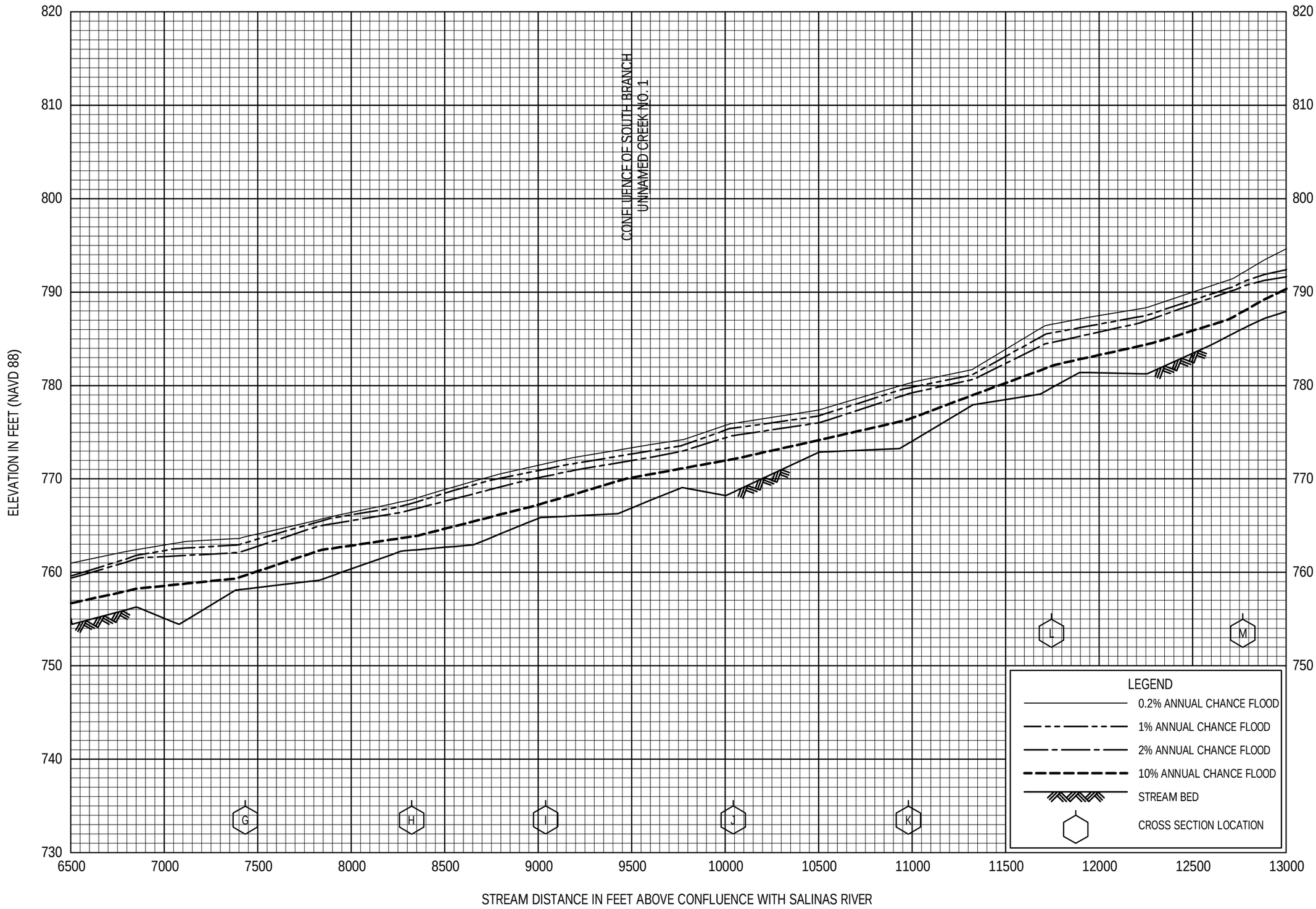
FLOOD PROFILES

UNNAMED CREEK NO. 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN LUIS OBISPO COUNTY, CA

AND INCORPORATED AREAS



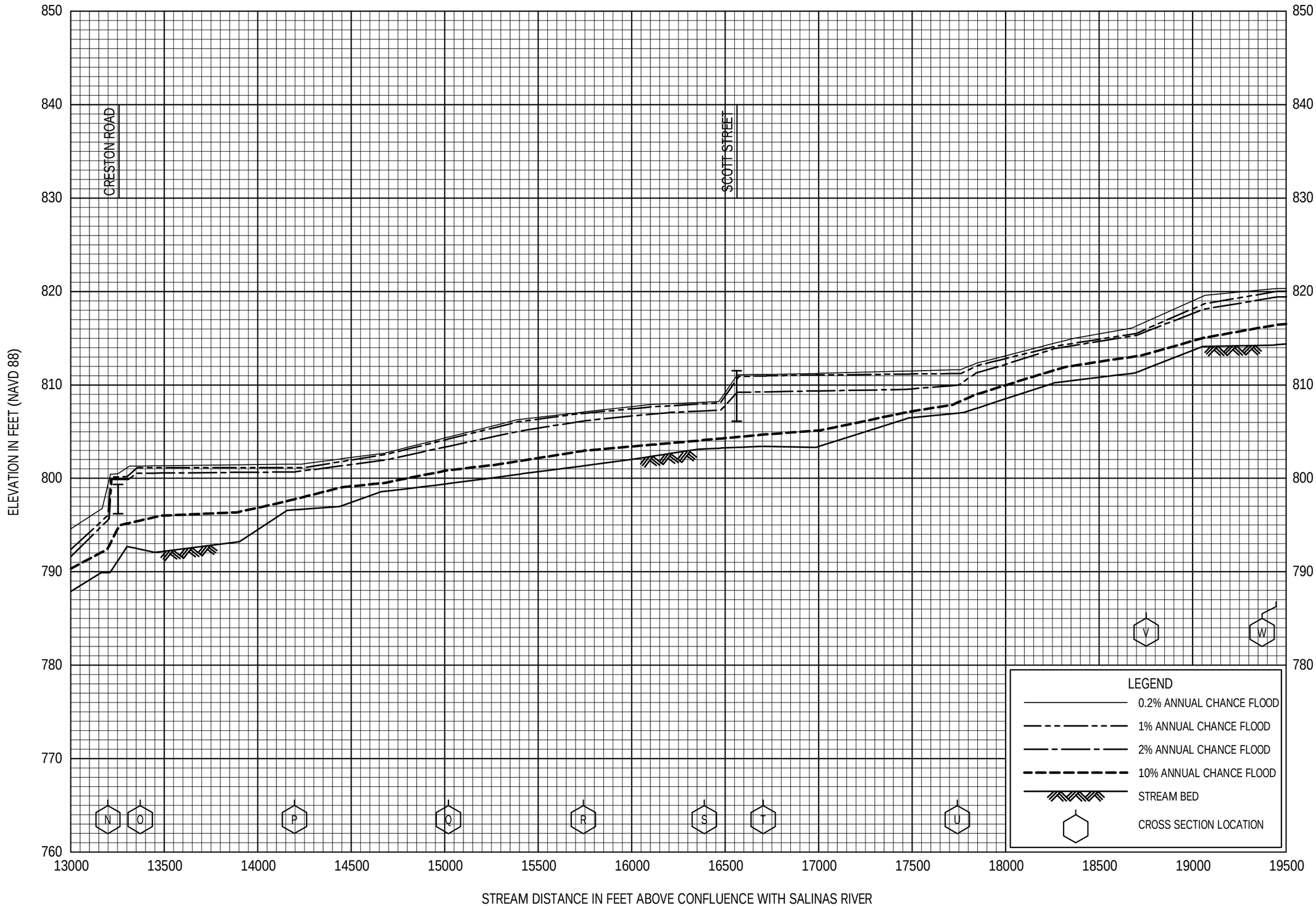
FLOOD PROFILES

UNNAMED CREEK NO. 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN LUIS OBISPO COUNTY, CA

AND INCORPORATED AREAS



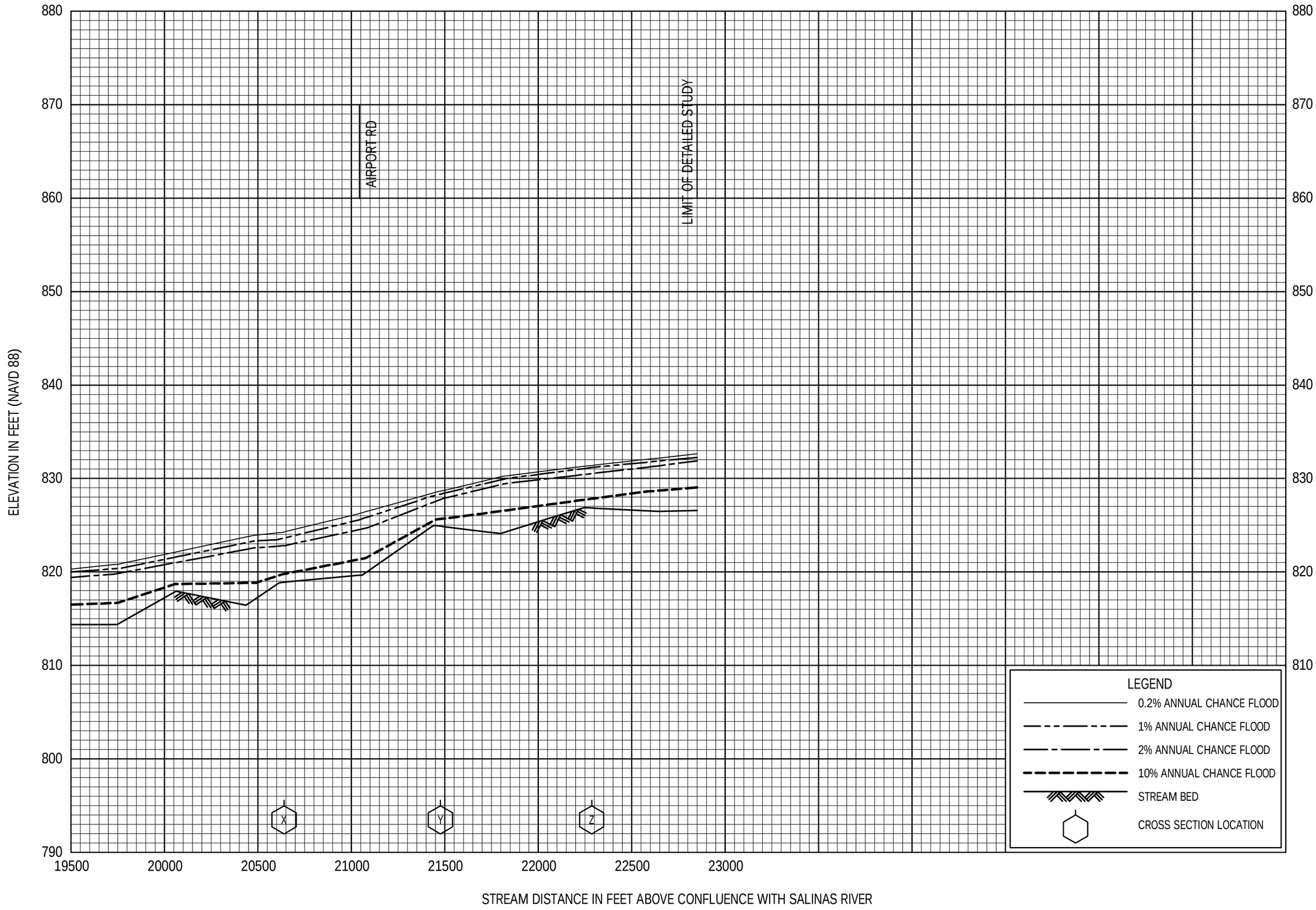
FLOOD PROFILES

UNNAMED CREEK NO. 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN LUIS OBISPO COUNTY, CA

AND INCORPORATED AREAS



FLOOD PROFILES

UNNAMED CREEK NO. 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN LUIS OBISPO COUNTY, CA

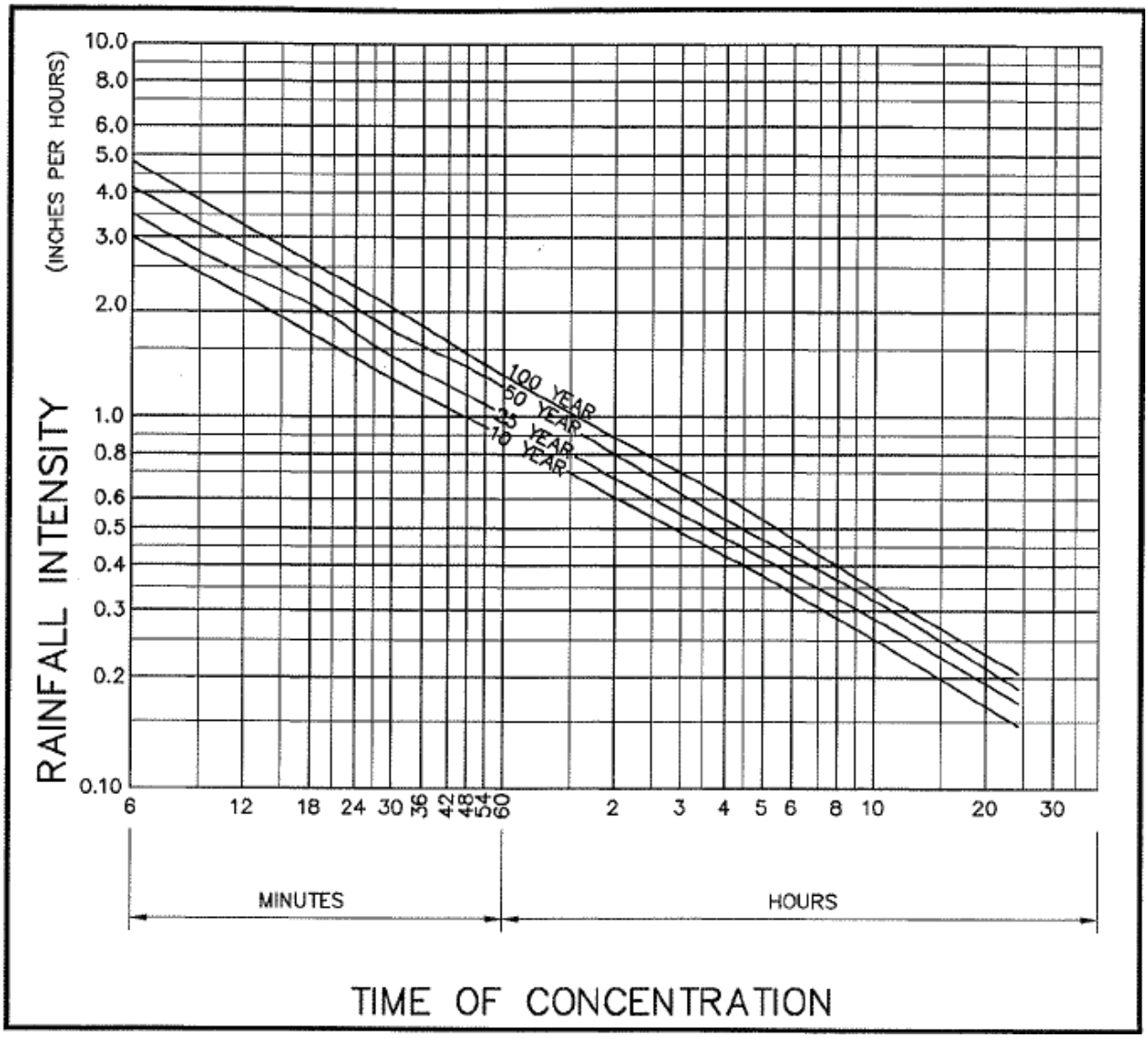
AND INCORPORATED AREAS

Appendix C

Soils Survey Map & Soils Index

Appendix D

City of Paso Robles Rainfall Data


RAINFALL INTENSITY
(INCHES PER HOURS)
10.0
8.0
6.0
5.0
4.0
3.0
2.0
1.0
0.8
0.6
0.5
0.4
0.3
0.2
0.10
100 YEAR
50 YEAR
25 YEAR
10 YEAR
6
12
18
24
30
36
42
48
54
60
2
3
4
5
6
8
10
20
30
MINUTES
HOURS
TIME OF CONCENTRATION

2. Closed Conduits

Design considerations for closed conduits are as follows:

- Pipe friction losses determined by Manning's equation.
- Entrance and exit losses.
- Tail-water impacts.
- Entrance control headwater.

For each length of pipe, the hydraulic grade line (hgl) at the pipe entrance and exit shall be determined assuming both inlet control and outlet control. The more restrictive shall control. The storm drain system shall be designed to meet the following conditions:

1. The hydraulic grade line shall be a minimum of 0.50 feet below the elevation of inlet grates and manhole covers of all structures for a design storm of 25 years. Said gradient shall be shown on the profile for storm drain systems.
2. Minimum pipe diameter allowable on any public storm drain shall be 18 inches.
3. Storm drain systems shall be designed for the 25-year storm. In a sump condition a secondary overland flow shall be included such that during the 100-year storm, all buildings or first floor elevations shall be at least one foot (1') above the 100-year storm.
4. Street capacity shall be defined as the 10-year storm confined between the crown of the street and the top of curb. Where the street capacity is exceeded at either the curb or the crown, a storm drain or other approved facility shall be provided to convey the excess flows. In all cases, the 100-year storm shall be contained within the right-of-way.

Cross culvert design shall be determined on the basis of a twenty-five year storm with no head. The hydraulic entrance condition shall be such that the 25-year discharge will have the specified freeboard in the upstream channel or waterway and that the 100-year discharge will be contained within the banks of the upstream waterway or drainage easement. The entrance to the closed conduit minor waterway may be submerged provided that the above criteria are satisfied. The invert elevation of the closed conduit entrance shall not be set lower than the natural flowline of the waterway or open channel flowing into it.

3. Open Channels

Open channels shall be designed based on Manning's equation. The impacts of culverts, bridges or other structures affecting the hydraulic performance of the channel shall be considered as appropriate.

The City Engineer may require more complete analysis if he/she determines conditions merit a more thorough study. This additional analysis may include determination of the water surface profile, analysis of critical sections, and analysis of erosion and/or sedimentation.

Maximum velocity for channels flowing full shall be limited to preclude erosion. Freeboard of at least one foot based on 25-year volumes shall be provided for all channels. Lining treatments shall extend to the full height of freeboard. The 100-year discharge shall be contained within the banks or within the easement established for the channel. For natural waterways, the design flow may be allowed in the natural overflow area.

4. Retention Basins

Storm water retention for flood control purposes shall be applied as determined by the design engineer; typically where downstream conditions are constrained and properties are threatened or have been flooded in conditions existing prior to upstream development. Criteria for the design of retention basins may be reviewed on a case by case basis. Typically, the volume of storage for flood control purposes is based upon the post-development 100-year, 24-hour storm event.

5. Detention Basins

A detention basin is defined as a holding facility where the rate of flow from the basin is limited to that rate historically occurring prior to development. The volume of storage of a detention basin shall be determined by theoretically matching the historical hydrograph of flows leaving the previously undeveloped land under consideration.

6. Storm Drain Alignment Criteria

Storm drain lines shall be parallel with street centerlines to the extent practical and typically twelve feet southerly or easterly of the centerline **(Standard Detail U-1)**.

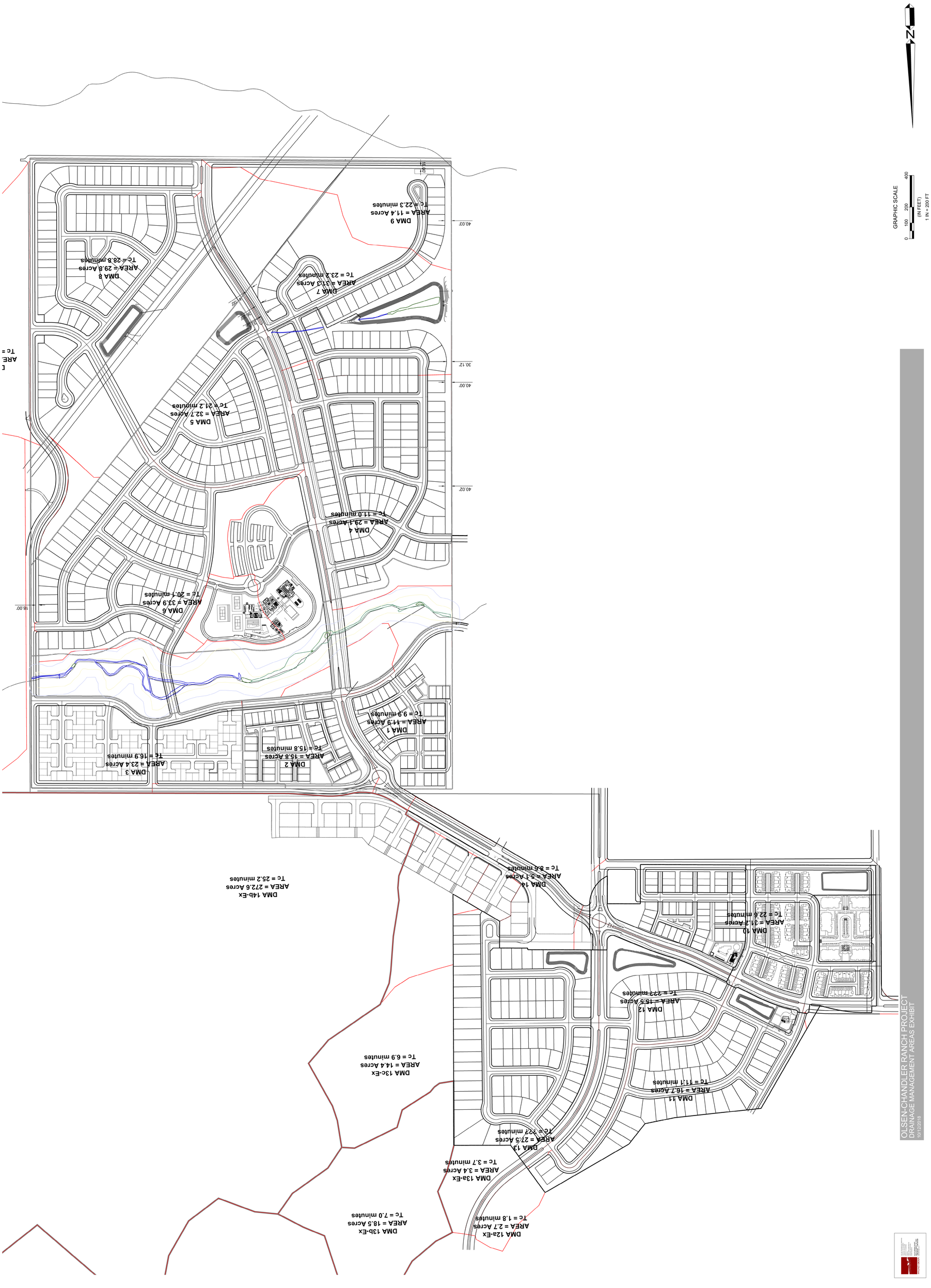
Appendix E

Runoff Curve Number Data

OLSEN-CHANDLER PROJECT

CURVE NUMBER (CN) DATA

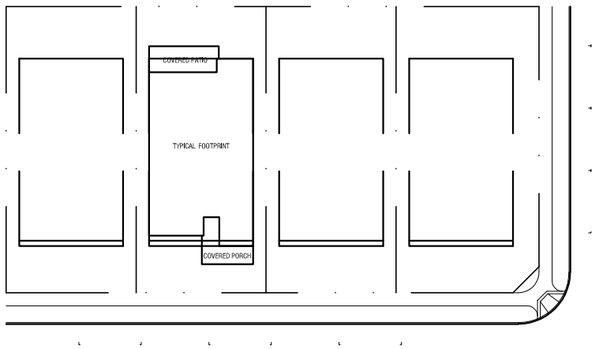
Density Type	Units/Acre	Avg SF	Avg Area Lot Coverage Calcs	% Impervious	Impervious Area, SF	Std Slab Area, SF	CN # vs Soil Type A	B	C	D
Urban Commercial/Apts				85%			89	92	94	95
Urban Industrial/MF				72%			81	88	91	93
Motor Court SF	16 DU	2723	2256	80%	2187	1245	86	91	93	94
Small Lot SF (40x80s)	12 DU	3630	3200	54%	1967	1418	71	81	87	90
1/8 Acre or less (Townhomes)	8 DU	5445		65%	3539		77	85	90	92
Residential SF	6 DU	7260	6600	58%	4226	3065	73	82	88	90
1/4 Acre Lots	4 DU	10890		38%	4138		61	75	83	87


N
GRAPHIC SCALE
0 100 200 400
(IN FEET)
1 IN = 200 FT
DMA 12a-Ex
AREA = 2.7 Acres
Tc = 1.8 minutes
DMA 13b-Ex
AREA = 18.5 Acres
Tc = 7.0 minutes
DMA 13a-Ex
AREA = 3.4 Acres
Tc = 3.7 minutes
DMA 13
AREA = 27.5 Acres
Tc = ??? minutes
DMA 11
AREA = 16.7 Acres
Tc = 11.1 minutes
DMA 13c-Ex
AREA = 14.4 Acres
Tc = 6.9 minutes
DMA 12
AREA = 16.5 Acres
Tc = 22.7 minutes
DMA 10
AREA = 31.2 Acres
Tc = 22.6 minutes
DMA 14b-Ex
AREA = 272.6 Acres
Tc = 25.2 minutes
DMA 14
AREA = 5.1 Acres
Tc = 8.6 minutes
DMA 1
AREA = 11.9 Acres
Tc = 9.9 minutes
DMA 2
AREA = 16.8 Acres
Tc = 15.8 minutes
DMA 3
AREA = 23.4 Acres
Tc = 16.9 minutes
DMA 6
AREA = 33.9 Acres
Tc = 20.1 minutes
DMA 4
AREA = 29.1 Acres
Tc = 11.0 minutes
DMA 5
AREA = 32.7 Acres
Tc = 21.2 minutes
DMA 8
AREA = 29.8 Acres
Tc = 28.8 minutes
DMA 7
AREA = 31.3 Acres
Tc = 23.2 minutes
DMA 9
AREA = 11.4 Acres
Tc = 22.3 minutes
OLSEN-CHANDLER RANCH PROJECT
DRAINAGE MANAGEMENT AREAS EXHIBIT
10/12/2018

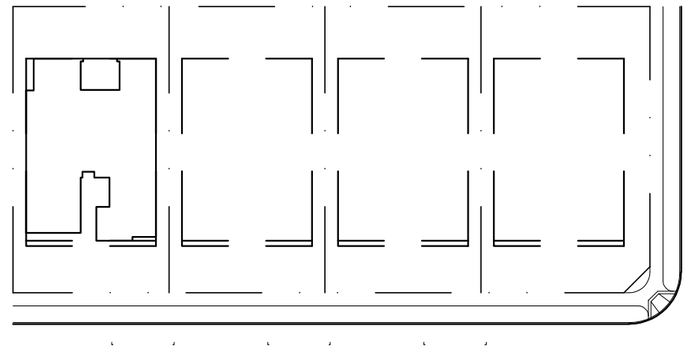
OLSEN-CHANDLER PROJECT

LOT COVERAGE CALCULATIONS

Development Type	# Units	Lot Area, SF	FP Area SF	Patio Area SF	Dwy Area SF	Total Impervious SF	% Impervious	
SFR 50x110	1	5500	2596	471	352	3419	62%	
SFR 60x110	1	6600	2996	360	368	3724	56%	
SFR 70x110	1	7700	3604	392	320	4316	56%	
		6600	3065			3820	58%	Average % Imp
						58%		
Small Lot SF 40x80	1	3200	1418	268	48	1734	54%	
Motorcourt SF	2	2546	1421	83	506	2010	79%	
	2	2025	1109	54	506	1669	82%	
	2	2196	1207	35	506	1748	80%	
		2256	1245					
		16334	SF				80%	Average % Imp
		0.37	Ac					
		21.5	# of Courts					
		129	# of Units					
		8.06	Total Acres					
		16	DU					



50x110s



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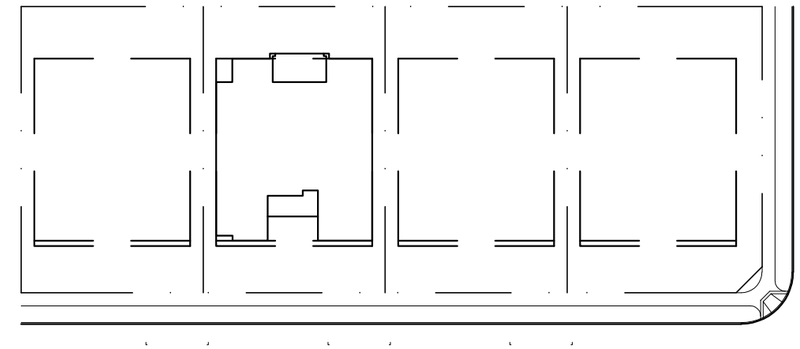

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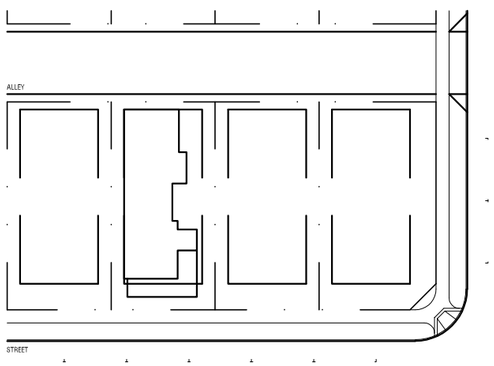

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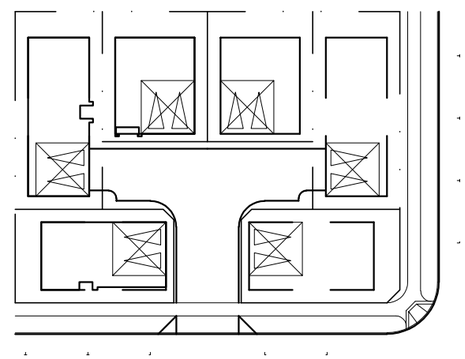
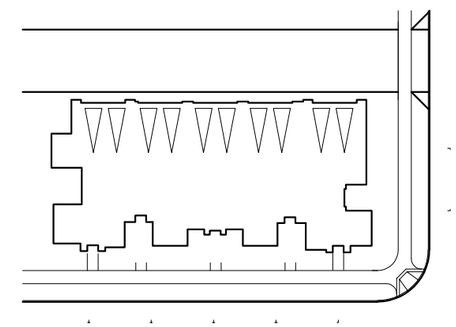


Motorcourts



Townhomes

OLSEN-CHANDLER PROJECT

CALCULATING CN VALUES FROM EXISTING PERCENT IMPERVIOUS

Percent Impervious	Soil A	Soil B	Soil C	Soil D
0	39	61	74	80
5	42	63	75	81
10	45	65	76	82
15	48	67	78	83
20	51	68	79	84
25	54	70	80	85
30	57	72	81	85
35	60	74	82	86
38	61	75	83	87
40	63	76	84	87
45	66	78	85	88
50	69	80	86	89
54	71	81	87	90
55	71	81	87	90
58	73	82	88	90
60	74	83	88	91
65	77	85	90	92
70	80	87	91	93
72	81	88	91	93
75	83	89	92	94
80	86	91	93	94
85	89	92	94	95
90	92	94	96	96
95	95	96	97	97
100	98	98	98	98

$CN_{0\%}$	A	B	C	D
Open space (lawns, parks, golf courses, cemeteries, etc.)				
Good condition (grass cover > 75%)[2]	39	61	74	80

Calculating Custom CN Values from percent impervious cover values

$$CN_{n\%}=CN_{0\%}+(n\%/100)*(98-CN_{0\%})$$

Meadow, cont. grass, non-grazed[1]	30	58	71	78

1 Meadow value not used as $CN_{0\%}$ for NRCS values

2 Adjustment made to Open space (lawns, parks, golf courses, cemeteries, etc.) NRCS Table2-2a

Table 2-2a Runoff curve numbers for urban areas [1/]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2/]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3/]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98

Table 2-2a Runoff curve numbers for urban areas [1]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

1 Average runoff condition, and $I_a = 0.2S$.

2 The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

3 CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

4 Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

5 Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Appendix F

Time of Concentration Calculations

Flow Type

Specifies the flow segment type. The SCS flow types are available if the Time of Concentration method for the flow path is set to TR-55.

- SCS Sheet Flow:

  Sheet flow is a very shallow flow over plane surfaces. It is the first component of Tc and starts at the

  length of sheet flow rarely exceeds a few hundred feet. The maximum length of sheet flow is 300 ft. Data used to compute the sheet flow are the length of flow, the slope, the 2-year 24-hour rainfall amount, and the ground roughness as measured by Manning's n.

- SCS Shallow Flow:

  Shallow concentrated flow type normally occurs after a maximum of 300 feet of sheet flow. The average velocity of shallow concentrated flow is determined by watershed slope and channel material (paved or unpaved). Typical areas where shallow flow occurs are in swales between houses and the gutter section of a roadway.

- SCS Channel Flow:

  Channel flow type begins where surveyed channel cross section information has been obtained, where channels are visible on aerial photographs, or where streams are indicated on USGS quadrangle sheets.

- User-Defined: Available if the Time of Concentration method for the flow path is set to User-Defined.

OLSEN-CHANDLER Tc CALCULATION

DMA ID	Segment	Flow Type	Length	Slope	2-yr 24-hr rainfall	Surface Type	Manning's Roughness	Cross-sectional Area	Wetted Perimeter	Velocity	Time	Time, hr	Time, minutes
	1	SCS Sheet Flow	379.910'	3.59%	3.600"		0.025				0.084 hr	0.084	5.04
3a-Ex	2	SCS Shallow Concentrated Flow	1087.215'	3.59%		Short Grass Pasture					0.228 hr	0.228	13.68
	3	SCS Channel Flow	3250.662'	0.50%			0.03	86.80 Sq. Ft.	112.400'	2 mi/h	0.305 hr	0.305	18.3
												0.617	37.02
	1	SCS Sheet Flow	305.342'	16.24%	3.600"		0.02				0.032 hr	0.032	1.92
3b-Ex	2	SCS Shallow Concentrated Flow	591.384'	5.48%		Short Grass Pasture					0.100 hr	0.100	6
	3	SCS Channel Flow	10279.669'	0.77%			0.035	36.00 Sq. Ft.	26.500'	3 mi/h	0.625 hr	0.625	37.5
												0.757	45.42
	1	SCS Sheet Flow	455.191'	5.49%	3.600"		0.03				0.095 hr	0.095	5.7
7b-Ex	2	SCS Shallow Concentrated Flow	1271.308'	1.57%		Unpaved					0.175 hr	0.175	10.5
	3	SCS Channel Flow	1795.434'	0.76%			0.035	22.00 Sq. Ft.	27.000'	2 mi/h	0.154 hr	0.154	9.24
												0.424	25.44
	1	SCS Shallow Concentrated Flow	304.263'	3.40%		Short Grass Pasture					0.065 hr	0.065	3.9
8a-Ex	2	SCS Shallow Concentrated Flow	905.175'	2.96%		Short Grass Pasture					0.209 hr	0.209	12.54
												0.274	16.44
	1	SCS Sheet Flow	315.440'	7.29%	3.600"		0.025				0.055 hr	0.055	3.3
9a-Ex	2	SCS Shallow Concentrated Flow	1160.772'	0.34%		Grassed Waterway					0.369 hr	0.369	22.14
	3	SCS Channel Flow	4908.918'	0.59%			0.02	60.00 Sq. Ft.	145.700'	2 mi/h	0.431 hr	0.431	25.86
												0.855	51.3
	1	SCS Sheet Flow	303.777'	10.74%	3.600"		0.03				0.053 hr	0.053	3.18
10a-Ex	2	SCS Shallow Concentrated Flow	325.219'	10.74%		Grassed Waterway					0.018 hr	0.018	1.08
	3	SCS Channel Flow	2627.001'	3.95%			0.025	20.00 Sq. Ft.	48.600'	4 mi/h	0.111 hr	0.111	6.66
												0.182	10.92
	1	SCS Sheet Flow	266.460'	6.70%	3.600"		0.025				0.050 hr	0.050	3
12a-Ex	2	SCS Shallow Concentrated Flow	279.715'	12.18%		Short Grass Pasture					0.032 hr	0.032	1.92
												0.082	4.92
	1	SCS Sheet Flow	290.998'	9.39%	3.600"		0.025				0.046 hr	0.046	2.76
13a-Ex	2	SCS Shallow Concentrated Flow	222.096'	12.95%		Short Grass Pasture					0.024 hr	0.024	1.44
	3	SCS Channel Flow	387.610'	0.46%			0.03	4.00 Sq. Ft.	15.000'	1 mi/h	0.077 hr	0.077	4.62
												0.147	8.82
	1	SCS Sheet Flow	375.335'	2.20%	3.600"		0.025				0.102 hr	0.102	6.12
13b-Ex	2	SCS Shallow Concentrated Flow	577.495'	12.90%		Grassed Waterway					0.030 hr	0.030	1.8
	3	SCS Channel Flow	845.156'	15.07%			0.03	8.00 Sq. Ft.	30.000'	5 mi/h	0.029 hr	0.029	1.74
												0.161	9.66
	1	SCS Sheet Flow	305.027'	6.28%	3.600"		0.03				0.066 hr	0.066	3.96
14a(1)-Ex	2	SCS Shallow Concentrated Flow	578.291'	4.52%		Unpaved					0.047 hr	0.047	2.82
	3	SCS Channel Flow	691.285'	0.82%			0.016	2.90 Sq. Ft.	5.000'	4 mi/h	0.033 hr	0.033	1.98
												0.146	8.76
14a(2)-Ex	1	SCS Sheet Flow	135.194'	2.11%	3.600"		0.015				0.030 hr	0.030	1.8
	2	SCS Shallow Concentrated Flow	336.187'	0.81%		Paved					0.051 hr	0.051	3.06
												0.081	4.86
	1	SCS Sheet Flow	287.412'	8.70%	3.600"		0.02				0.040 hr	0.040	2.4
14b-Ex	2	SCS Shallow Concentrated Flow	493.578'	10.72%		Unpaved					0.026 hr	0.026	1.56
	3	SCS Channel Flow	1977.740'	2.85%			0.03	8.00 Sq. Ft.	30.000'	2 mi/h	0.158 hr	0.158	9.48
												0.224	13.44
	1	SCS Sheet Flow	304.403'	9.86%	3.600"		0.03				0.055 hr	0.055	3.3
14c(0)-Ex	2	SCS Shallow Concentrated Flow	1119.934'	5.02%		Short Grass Pasture					0.198 hr	0.198	11.88
	3	SCS Channel Flow	2028.461'	0.93%			0.025	2.34 Sq. Ft.	4.640'	2 mi/h	0.155 hr	0.155	9.3
												0.408	24.48
	1	SCS Sheet Flow	241.012'	16.60%	3.600"		0.02				0.027 hr	0.027	1.62
14c(1)-Ex	2	SCS Shallow Concentrated Flow	897.291'	7.05%		Grassed Waterway					0.063 hr	0.063	3.78
	3	SCS Channel Flow	1694.208'	1.65%			0.03	4.00 Sq. Ft.	15.000'	2 mi/h	0.178 hr	0.178	10.68
												0.268	16.08
	1	SCS Sheet Flow	259.134'	1.54%	3.600"		0.03				0.101 hr	0.101	6.06
14c(2)-Ex	2	SCS Shallow Concentrated Flow	815.596'	10.10%		Short Grass Pasture					0.102 hr	0.102	6.12
	3	SCS Channel Flow	1042.846'	3.83%			0.027	88.30 Sq. Ft.	46.300'	11 mi/h	0.017 hr	0.017	1.02
												0.220	13.2
	1	SCS Sheet Flow	278.005'	8.00%	3.600"		0.02				0.040 hr	0.040	2.4
14c(3)-Ex	2	SCS Shallow Concentrated Flow	1205.666'	2.75%		Unpaved					0.125 hr	0.125	7.5
	3	SCS Channel Flow	336.894'	0.72%			0.025	4.00 Sq. Ft.	15.000'	1 mi/h	0.045 hr	0.045	2.7
												0.210	12.6
	1	SCS Sheet Flow	470.419'	13.60%	3.600"		0.025				0.059 hr	0.059	3.54
14d-Ex	2	SCS Shallow Concentrated Flow	935.646'	6.28%		Short Grass Pasture					0.148 hr	0.148	8.88
	3	SCS Channel Flow	2130.948'	2.64%			0.03	2.34 Sq. Ft.	4.640'	3 mi/h	0.116 hr	0.116	6.96
												0.323	19.38
14e-Ex	1	SCS Channel Flow	1189.288'	0.88%			0.028	40.00 Sq. Ft.	145.700'	1 mi/h	0.157 hr	0.157	9.42
1	1	SCS Shallow Concentrated Flow	1183.734'	0.95%		Paved					0.166 hr	0.166	9.96
	1	SCS Shallow Concentrated Flow	795.039'	0.88%		Paved					0.116 hr	0.116	6.96
2	2	SCS Channel Flow	912.824'	0.44%			0.015	4.00 Sq. Ft.	15.000'	2 mi/h	0.093 hr	0.093	5.58
												0.375	22.5
	1	SCS Sheet Flow	321.610'	0.23%	3.600"		0.02				0.185 hr	0.185	11.1
3	2	SCS Shallow Concentrated Flow	501.122'	0.92%		Paved					0.071 hr	0.071	4.26
	3	SCS Channel Flow	730.069'	0.75%			0.012	4.90 Sq. Ft.	7.850'	5 mi/h	0.026 hr	0.026	1.56
												0.282	16.92
	1	SCS Sheet Flow	466.871'	3.25%	3.600"		0.03				0.120 hr	0.120	7.2
4	2	SCS Shallow Concentrated Flow	776.281'	3.06%		Paved					0.061 hr	0.061	3.66
	3	SCS Channel Flow	834.377'	1.82%			0.015	0.80 Sq. Ft.	4.670'	3 mi/h	0.056 hr	0.056	3.36
												0.237	14.22
	1	SCS Sheet Flow	246.682'	7.44%	3.600"		0.035				0.059 hr	0.059	3.54
5	2	SCS Shallow Concentrated Flow	835.195'	3.14%		Short Grass Pasture					0.187 hr	0.187	11.22
	3	SCS Channel Flow	668.373'	0.70%			0.03	4.00 Sq. Ft.	15.000'	1 mi/h	0.108 hr	0.108	6.48
												0.354	21.24
	1	SCS Sheet Flow	183.509'	0.45%	3.600"		0.03				0.125 hr	0.125	7.5
6	2	SCS Shallow Concentrated Flow	1182.531'	2.45%		Paved					0.103 hr	0.103	6.18
	3	SCS Channel Flow	878.606'	1.70%			0.035	4.00 Sq. Ft.	15.000'	2 mi/h	0.106 hr	0.106	6.36
												0.334	20.04
	1	SCS Sheet Flow	300.583'	7.79%	3.600"		0.03				0.059 hr	0.059	3.54
7	2	SCS Shallow Concentrated Flow	461.020'	4.57%		Paved					0.029 hr	0.029	1.74
	3	SCS Channel Flow	2085.262'	0.89%			0.03	4.00 Sq. Ft.	15.000'	1 mi/h	0.298 hr	0.298	17.88
												0.386	23.16

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	1 SCS Sheet Flow	294.522'	0.34%	3.600"		0.03				0.205 hr	0.205	12.3
8	2 SCS Shallow Concentrated Flow	773.900'	1.00%		Grassed Waterway					0.143 hr	0.143	8.58
	3 SCS Channel Flow	1144.617'	1.41%			0.015	0.80 Sq. Ft.	8.670'	2 mi/h	0.132 hr	0.132	7.92
											0.480	28.8
	1 SCS Sheet Flow	301.643'	0.50%	2.330"		0.03				0.222 hr	0.222	13.32
9	2 SCS Shallow Concentrated Flow	662.324'	3.50%		Short Grass Pasture					0.140 hr	0.140	8.4
	3 SCS Channel Flow	414.746'	1.60%			0.035	4.00 Sq. Ft.	15.000'	2 mi/h	0.052 hr	0.052	3.12
											0.414	24.84
	1 SCS Shallow Concentrated Flow	2120.314'	0.94%		Unpaved					0.377 hr	0.377	22.62
10												
	1 SCS Sheet Flow	149.214'	1.77%	3.600"		0.02				0.044 hr	0.044	2.64
11	2 SCS Shallow Concentrated Flow	1819.927'	3.20%		Paved					0.139 hr	0.139	8.34
	3 SCS Channel Flow	141.018'	8.75%			0.012	2.98 Sq. Ft.	5.000'	18 mi/h	0.002 hr	0.002	0.12
											0.185	11.1
	1 SCS Shallow Concentrated Flow	1646.005'	5.90%		Paved					0.093 hr	0.093	5.58
12	2 SCS Channel Flow	1393.252'	2.03%			0.015	2.90 Sq. Ft.	5.000'	7 mi/h	0.039 hr	0.039	2.34
											0.132	7.92
	1 SCS Sheet Flow	238.459'	6.43%	3.600"		0.02				0.039 hr	0.039	2.34
13	2 SCS Shallow Concentrated Flow	865.755'	3.92%		Paved					0.060 hr	0.060	3.6
	3 SCS Channel Flow	657.308'	1.98%			0.015	4.00 Sq. Ft.	15.000'	4 mi/h	0.032 hr	0.032	1.92
											0.131	7.86
	1 SCS Shallow Concentrated Flow	877.862'	0.70%		Paved					0.143 hr	0.143	8.58
14												

Appendix G

2, 5, 10, 50 & 100-Year Storm Event Peak Flow Summary
for Existing and Proposed Conditions

Existing Conditions

TABLE 5 - Peak Flow Summary

EXISTING CONDITIONS								
HydroCAD Node Type	DMA or HC Node Number	Drainage Management Area (DMA) or Node Name	95th PERCENTILE STORM	2 YEAR STORM	10 YEAR STORM	25 YEAR STORM	50 YEAR STORM	100 YEAR STORM
Subcat	1	Subcat 1	0.0	0.1	1.0	2.5	3.8	5.6
Subcat	2	Subcat 2	0.0	0.1	1.1	3.0	4.6	6.8
Subcat	3	Subcat 3	0.0	0.4	3.7	6.9	9.3	12.6
Subcat	3a{(1)}-Ex	Subcat 3a{(1)}-Ex	0.0	0.0	0.4	0.9	1.4	2.1
Subcat	3a{(2)}-Ex	Subcat 3a{(2)}-Ex	0.0	0.1	1.3	2.7	3.7	5.2
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex	0.0	0.4	2.8	4.2	5.3	6.6
Subcat	3b-Ex	Subcat 3b-Ex	0.2	8.3	47.4	90.8	126.7	178.4
Subcat	4	Subcat 4	0.3	0.6	3.5	8.0	11.8	17.2
Subcat	5	Subcat 5	0.0	0.3	2.0	4.5	7.0	10.6
Subcat	6	Subcat 6	0.0	0.4	3.0	6.7	9.7	14.0
Subcat	7	Subcat 7	0.0	0.3	1.9	4.1	6.3	9.6
Subcat	8	Subcat 8	0.0	0.3	1.7	3.5	5.2	8.0
Subcat	8a-Ex	Subcat 8a-Ex	0.0	0.1	0.9	2.3	3.6	5.4
Subcat	9	Subcat 9	0.0	0.2	1.4	2.7	3.8	5.2
Subcat	9a-Ex	Subcat 9a-Ex	0.0	1.9	9.8	18.6	26.7	38.6
Subcat	10	Subcat 10	0.6	1.0	3.4	6.5	9.0	12.5
Subcat	10a-Ex	Subcat 10a-Ex	0.3	3.4	34.6	54.9	69.7	89.2
Subcat	11	Subcat 11	0.0	0.1	1.5	3.6	5.2	7.6
Subcat	12	Subcat 12	0.0	0.2	1.9	4.6	6.7	9.7
Subcat	12a-Ex	Subcat 12a-Ex	0.0	0.3	1.5	2.1	2.6	3.2
Subcat	13	Subcat 13	0.0	0.3	4.7	9.5	13.1	18.2
Subcat	13a-Ex	Subcat 13a-Ex	0.0	0.4	1.9	2.8	3.5	4.3
Subcat	13b-Ex	Subcat 13b-Ex	1.9	8.6	20.2	26.2	30.3	35.5
Subcat	13c-Ex	Subcat 13c-Ex	0.9	5.6	14.2	18.8	21.9	25.8
Subcat	14	Subcat 14	3.2	5.5	9.0	11.0	12.5	14.4
Subcat	14a{(1)}-Ex	Subcat 14a{(1)}-Ex	0.0	0.2	3.5	6.2	8.1	10.7
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex	0.5	0.9	1.5	2.0	2.4	2.9
Subcat	14b-Ex	Subcat 14b-Ex	2.0	15.5	41.4	55.2	64.7	76.8
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex	2.8	13.1	31.2	40.6	47.1	55.3
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex	2.4	11.6	28.0	36.5	42.4	49.9
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex	0.4	4.9	14.5	19.7	23.4	28.0
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex	0.2	2.7	9.2	12.7	15.2	18.4
Subcat	14d-Ex	Subcat 14d-Ex	7.7	47.4	121.8	160.9	188.0	222.4
Subcat	14e-Ex	Subcat 14e-Ex	0.5	0.8	2.1	3.7	5.1	6.9
Reach	6R	Reach 1c	0.3	8.5	58.8	125.7	180.5	257.3
Reach	7R	Reach 1b	3.6	52.5	201.9	304.3	383.9	492.1
Reach	8R	Reach 1a	3.6	51.4	204.9	312.4	395.8	509.5
Reach	17R	Reach 1d	0.0	0.0	19.7	45.0	64.3	90.3
Reach	18R	Linne Road Grassed Chl	4.7	11.0	17.8	20.6	22.4	24.6
Pond	17P	Gran Cielo Dwy	7.6	46.4	121.4	160.6	187.6	222.1
Pond	18P	GC-CkD1	9.3	65.6	146.0	174.6	192.8	215.1
Pond	19P	GC-CkD2	8.6	48.2	95.1	112.0	122.9	136.1
Pond	20P	GC-CkD3	8.5	41.3	70.8	81.9	89.2	98.1
Link	3a (1,2+3)	Comb Un-dev Ck Flow	3.6	51.4	204.9	312.4	395.8	509.5
Link	5L	Outlet To Tract #1632 Ex. 36" SD	0.0	1.0	6.4	14.2	22.1	33.5
Link	6L	To Existing Meadowlark Road	0.0	2.0	10.5	20.6	29.5	42.6
Link	7L	DMA 13	2.8	14.6	40.9	57.1	68.7	83.7
Link	8L	DMA 8	0.0	0.4	2.6	5.7	8.8	13.3
Link	9L	DMA 12	0.0	0.3	3.4	6.7	9.3	12.9
Link	10L	To Linne Road Channel	4.9	12.1	18.6	21.4	23.3	25.7
Link	11L	To Fontana Road SD	3.4	18.9	83.4	128.4	161.4	205.4
Link	15L	Sherwood/Niblick LP Xing	5.0	20.9	53.8	72.3	85.2	101.9
Link	16L	Airport & Linne Road SD	6.2	23.2	69.0	92.3	108.4	129.2
Link	19L	14c(0+1)-Ex	5.2	24.5	59.1	77.0	89.3	104.9
Link	22L	Linne Rd Overtopping Ex.Flow #2and#3	3.7	38.1	84.5	102.2	113.6	127.8
Link	23L	Linne Rd Overtop #1	0.0	19.5	60.7	76.6	86.9	99.6

TABLE 10 - HYDROGRAPH ANALYSIS

EXISTING CONDITIONS RESULTS

Type	Number	Name	Event	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Imperv. Inflow Area (%)	Discarded Outflow Peak (cfs)	Primary Routing	Primary Outflow Peak (cfs)	Secondary Routing	Secondary Outflow Peak (cfs)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)
Subcat	1	Subcat 1	_95th Percentile Storm	1.4	0	0	0	0	8R	0		0		0	0	0	0	0
Subcat	2	Subcat 2		1.4	0	0	0	0	8R	0		0		0	0	0	0	0
Subcat	3	Subcat 3		1.4	0	0	0	0	7R	0.03		0		0	0	0	0	0
Subcat	3a{(1)}-Ex	Subcat 3a{(1)}-Ex		1.4	0	0	0	0	8R	0		0		0	0	0	0	0
Subcat	3a{(2)}-Ex	Subcat 3a{(2)}-Ex		1.4	0	0	0	0	7R	0.01		0		0	0	0	0	0
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex		1.4	0	0	0	0	6R	0.03		0		0	0	0	0	0
Subcat	3b-Ex	Subcat 3b-Ex		1.4	0	0	0	0	6R	0.23		0		0	0	0	0	0
Subcat	4	Subcat 4		1.4	0	0	0	0	8R	0.34		0		0	0	0	0	0
Subcat	5	Subcat 5		1.4	0	0	0	0	5L	0		0		0	0	0	0	0
Subcat	6	Subcat 6		1.4	0	0	0	0	7R	0.01		0		0	0	0	0	0
Subcat	7	Subcat 7		1.4	0	0	0	0	5L	0		0		0	0	0	0	0
Subcat	8	Subcat 8		1.4	0	0	0	0	8L	0		0		0	0	0	0	0
Subcat	8a-Ex	Subcat 8a-Ex		1.4	0	0	0	0	8L	0		0		0	0	0	0	0
Subcat	9	Subcat 9		1.4	0	0	0	0	6L	0.01		0		0	0	0	0	0
Subcat	9a-Ex	Subcat 9a-Ex		1.4	0	0	0	0	6L	0		0		0	0	0	0	0
Subcat	10	Subcat 10		1.4	0	0	0	0	11L	0.59		0		0	0	0	0	0
Subcat	10a-Ex	Subcat 10a-Ex		1.4	0	0	0	0	11L	0.33		0		0	0	0	0	0
Subcat	11	Subcat 11		1.4	0	0	0	0	11L	0		0		0	0	0	0	0
Subcat	12	Subcat 12		1.4	0	0	0	0	9L	0		0		0	0	0	0	0
Subcat	12a-Ex	Subcat 12a-Ex		1.4	0	0	0	0	9L	0.02		0		0	0	0	0	0
Subcat	13	Subcat 13		1.4	0	0	0	0	7L	0.02		0		0	0	0	0	0
Subcat	13a-Ex	Subcat 13a-Ex		1.4	0	0	0	0	7L	0.02		0		0	0	0	0	0
Subcat	13b-Ex	Subcat 13b-Ex		1.4	0	0	0	0	7L	1.92		0		0	0	0	0	0
Subcat	13c-Ex	Subcat 13c-Ex		1.4	0	0	0	0	7L	0.92		0		0	0	0	0	0
Subcat	14	Subcat 14		1.4	0	0	0	0	15L	3.17		0		0	0	0	0	0
Subcat	14a{(1)}-Ex	Subcat 14a{(1)}-Ex		1.4	0	0	0	0	15L	0.02		0		0	0	0	0	0
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex		1.4	0	0	0	0	10L	0.52		0		0	0	0	0	0
Subcat	14b-Ex	Subcat 14b-Ex		1.4	0	0	0	0	15L	1.96		0		0	0	0	0	0
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex		1.4	0	0	0	0	19L	2.81		0		0	0	0	0	0
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex		1.4	0	0	0	0	19L	2.36		0		0	0	0	0	0
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex		1.4	0	0	0	0	19P	0.4		0		0	0	0	0	0
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex		1.4	0	0	0	0	20P	0.16		0		0	0	0	0	0
Subcat	14d-Ex	Subcat 14d-Ex		1.4	0	0	0	0	17P	7.7		0		0	0	0	0	0
Subcat	14e-Ex	Subcat 14e-Ex		1.4	0	0	0	0	16L	0.47		0		0	0	0	0	0
Reach	6R	Reach 1c		1.4	0.25	763.083	0	0	7R	0.25		0		0	0	841.44	24.01	0.001
Reach	7R	Reach 1b		1.4	3.74	826.518	0	0	8R	3.59		0		0	0	838.89	11.22	0.023
Reach	8R	Reach 1a		1.4	3.65	895.282	0.06	0	3a (1,2+3)	3.57		0		0	0	833.09	11.31	0.021
Reach	17R	Reach 1d		1.4	0	0	0	0	6R	0		0		0	0	853.6	0.1	0
Reach	18R	Linne Road Grassed Chl		1.4	4.87	276.531	1.18	0	16L	4.68		0		0	0	841.78	11.4	0.056
Pond	17P	Gran Cielo Dwy		1.4	7.7	166.738	0.91	0	18P	7.55	18P	0	17R	0	7.55	853.35	10.09	0.023
Pond	18P	GC-CkD1		1.4	12.48	240.622	1.05	0	19P	1.06	19P	8.26	23L	0	9.26	849.96	10.61	0.455
Pond	19P	GC-CkD2		1.4	9.62	260.311	0.97	0	20P	1.07	20P	7.56	22L	0	8.63	848.44	10.94	0.286
Pond	20P	GC-CkD3		1.4	8.78	274.094	0.92	0	10L	3.44	10L	1.35	22L	3.74	8.54	845.35	11.09	0.183
Link	3a (1,2+3)	Comb Un-dev Ck Flow		1.4	3.57	895.282	0.06	0		3.57		0		0	0	0	0.1	0
Link	5L	Outlet To Tract #1632 Ex. 36" SD		1.4	0	108.759	0	0		0		0		0	0	0	0.1	0
Link	6L	To Existing Meadowlark Road		1.4	0.01	223.467	0	0		0.01		0		0	0	0	0.1	0
Link	7L	DMA 13		1.4	2.83	64.115	0	0	11L	2.83		0		0	0	0	0.1	0
Link	8L	DMA 8		1.4	0	44.689	0	0	5L	0		0		0	0	0	0.1	0
Link	9L	DMA 12		1.4	0.02	20.201	0	0	11L	0.02		0		0	0	0	0.1	0
Link	10L	To Linne Road Channel		1.4	4.87	276.531	1.18	0	18R	4.87		0		0	0	0	0.1	0
Link	11L	To Fontana Road SD		1.4	3.42	223.567	0.53	0		3.42		0		0	0	0	0.1	0
Link	15L	Sherwood/Niblick LP Xing		1.4	5.01	71.958	6.18	0	16L	5.01		0		0	0	0	0.1	0
Link	16L	Airport & Linne Road SD		1.4	6.2	359.38	2.33	0		6.2		0		0	0	0	0.1	0
Link	19L	14c(0+1)-Ex		1.4	5.17	73.884	1.37	0	18P	5.17		0		0	0	0	0.1	0
Link	22L	Linne Rd Overtopping Ex.Flow #2ar		1.4	3.74	0	0	0	7R	3.74		0		0	0	0	0.1	0
Link	23L	Linne Rd Overtop #1		1.4	0	0	0	0	7R	0		0		0	0	0	0.1	0

TABLE 10 - HYDROGRAPH ANALYSIS

EXISTING CONDITIONS RESULTS

Type	Number	Name	Event	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Imperv. Inflow Area (%)	Discarded Outflow Peak (cfs)	Primary Routing	Primary Outflow Peak (cfs)	Secondary Routing	Secondary Outflow Peak (cfs)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)
Subcat	1	Subcat 1	1 Year	1.61	0	0	0	0	8R	0.01		0		0	0	0	0	0
Subcat	2	Subcat 2		1.61	0	0	0	0	8R	0.01		0		0	0	0	0	0
Subcat	3	Subcat 3		1.61	0	0	0	0	7R	0.08		0		0	0	0	0	0
Subcat	3a{(1)}-Ex	Subcat 3a{(1)}-Ex		1.61	0	0	0	0	8R	0		0		0	0	0	0	0
Subcat	3a{(2)}-Ex	Subcat 3a{(2)}-Ex		1.61	0	0	0	0	7R	0.02		0		0	0	0	0	0
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex		1.61	0	0	0	0	6R	0.05		0		0	0	0	0	0
Subcat	3b-Ex	Subcat 3b-Ex		1.61	0	0	0	0	6R	1.34		0		0	0	0	0	0
Subcat	4	Subcat 4		1.61	0	0	0	0	8R	0.4		0		0	0	0	0	0
Subcat	5	Subcat 5		1.61	0	0	0	0	5L	0.03		0		0	0	0	0	0
Subcat	6	Subcat 6		1.61	0	0	0	0	7R	0.06		0		0	0	0	0	0
Subcat	7	Subcat 7		1.61	0	0	0	0	5L	0.03		0		0	0	0	0	0
Subcat	8	Subcat 8		1.61	0	0	0	0	8L	0.03		0		0	0	0	0	0
Subcat	8a-Ex	Subcat 8a-Ex		1.61	0	0	0	0	8L	0.01		0		0	0	0	0	0
Subcat	9	Subcat 9		1.61	0	0	0	0	6L	0.03		0		0	0	0	0	0
Subcat	9a-Ex	Subcat 9a-Ex		1.61	0	0	0	0	6L	0.19		0		0	0	0	0	0
Subcat	10	Subcat 10		1.61	0	0	0	0	11L	0.69		0		0	0	0	0	0
Subcat	10a-Ex	Subcat 10a-Ex		1.61	0	0	0	0	11L	0.6		0		0	0	0	0	0
Subcat	11	Subcat 11		1.61	0	0	0	0	11L	0.02		0		0	0	0	0	0
Subcat	12	Subcat 12		1.61	0	0	0	0	9L	0.02		0		0	0	0	0	0
Subcat	12a-Ex	Subcat 12a-Ex		1.61	0	0	0	0	9L	0.03		0		0	0	0	0	0
Subcat	13	Subcat 13		1.61	0	0	0	0	7L	0.06		0		0	0	0	0	0
Subcat	13a-Ex	Subcat 13a-Ex		1.61	0	0	0	0	7L	0.04		0		0	0	0	0	0
Subcat	13b-Ex	Subcat 13b-Ex		1.61	0	0	0	0	7L	3.2		0		0	0	0	0	0
Subcat	13c-Ex	Subcat 13c-Ex		1.61	0	0	0	0	7L	1.77		0		0	0	0	0	0
Subcat	14	Subcat 14		1.61	0	0	0	0	15L	3.7		0		0	0	0	0	0
Subcat	14a{(1)}-Ex	Subcat 14a{(1)}-Ex		1.61	0	0	0	0	15L	0.05		0		0	0	0	0	0
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex		1.61	0	0	0	0	10L	0.61		0		0	0	0	0	0
Subcat	14b-Ex	Subcat 14b-Ex		1.61	0	0	0	0	15L	4.28		0		0	0	0	0	0
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex		1.61	0	0	0	0	19L	4.73		0		0	0	0	0	0
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex		1.61	0	0	0	0	19L	4.08		0		0	0	0	0	0
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex		1.61	0	0	0	0	19P	1.02		0		0	0	0	0	0
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex		1.61	0	0	0	0	20P	0.38		0		0	0	0	0	0
Subcat	14d-Ex	Subcat 14d-Ex		1.61	0	0	0	0	17P	14.7		0		0	0	0	0	0
Subcat	14e-Ex	Subcat 14e-Ex		1.61	0	0	0	0	16L	0.55		0		0	0	0	0	0
Reach	6R	Reach 1c		1.61	1.38	763.083	0	0	7R	1.38		0		0	0	841.48	22.71	0.006
Reach	7R	Reach 1b		1.61	10.23	826.518	0	0	8R	9.7		0		0	0	839.01	10.76	0.062
Reach	8R	Reach 1a		1.61	9.8	895.282	0.06	0	3a (1,2+3)	9.49		0		0	0	833.25	10.86	0.056
Reach	17R	Reach 1d		1.61	0	0	0	0	6R	0		0		0	0	853.6	0.1	0
Reach	18R	Linne Road Grassed Chl		1.61	6.79	276.531	1.18	0	16L	6.35		0		0	0	841.85	10.93	0.076
Pond	17P	Gran Cielo Dwy		1.61	14.7	166.738	0.91	0	18P	14.34	18P	0	17R	0	14.34	853.55	10.05	0.04
Pond	18P	GC-CkD1		1.61	22.87	240.622	1.05	0	19P	1.11	19P	16.28	23L	0.54	17.78	850.2	10.38	0.551
Pond	19P	GC-CkD2		1.61	18.04	260.311	0.97	0	20P	1.14	20P	15.5	22L	0	16.64	848.7	10.57	0.353
Pond	20P	GC-CkD3		1.61	16.97	274.094	0.92	0	10L	4.14	10L	2.53	22L	9.96	16.63	845.49	10.66	0.218
Link	3a (1,2+3)	Comb Un-dev Ck Flow		1.61	9.49	895.282	0.06	0		9.49		0		0	0	0	0.1	0
Link	5L	Outlet To Tract #1632 Ex. 36" SD		1.61	0.1	108.759	0	0		0.1		0		0	0	0	0.1	0
Link	6L	To Existing Meadowlark Road		1.61	0.22	223.467	0	0		0.22		0		0	0	0	0.1	0
Link	7L	DMA 13		1.61	4.97	64.115	0	0	11L	4.97		0		0	0	0	0.1	0
Link	8L	DMA 8		1.61	0.04	44.689	0	0	5L	0.04		0		0	0	0	0.1	0
Link	9L	DMA 12		1.61	0.04	20.201	0	0	11L	0.04		0		0	0	0	0.1	0
Link	10L	To Linne Road Channel		1.61	6.79	276.531	1.18	0	18R	6.79		0		0	0	0	0.1	0
Link	11L	To Fontana Road SD		1.61	5.66	223.567	0.53	0		5.66		0		0	0	0	0.1	0
Link	15L	Sherwood/Niblick LP Xing		1.61	7.86	71.958	6.18	0	16L	7.86		0		0	0	0	0.1	0
Link	16L	Airport & Linne Road SD		1.61	8.9	359.38	2.33	0		8.9		0		0	0	0	0.1	0
Link	19L	14c(0+1)-Ex		1.61	8.8	73.884	1.37	0	18P	8.8		0		0	0	0	0.1	0
Link	22L	Linne Rd Overtopping Ex.Flow #2ar		1.61	9.96	0	0	0	7R	9.96		0		0	0	0	0.1	0
Link	23L	Linne Rd Overtop #1		1.61	0.54	0	0	0	7R	0.54		0		0	0	0	0.1	0

TABLE 10 - HYDROGRAPH ANALYSIS

EXISTING CONDITIONS RESULTS

Type	Number	Name	Event	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Imperv. Inflow Area (%)	Discarded Outflow Peak (cfs)	Primary Routing	Primary Outflow Peak (cfs)	Secondary Routing	Secondary Outflow Peak (cfs)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)
Subcat	1	Subcat 1	2 Year	2.33	0	0	0	0	8R	0.1		0		0	0	0	0	0
Subcat	2	Subcat 2		2.33	0	0	0	0	8R	0.13		0		0	0	0	0	0
Subcat	3	Subcat 3		2.33	0	0	0	0	7R	0.35		0		0	0	0	0	0
Subcat	3a{(1)}-Ex	Subcat 3a{(1)}-Ex		2.33	0	0	0	0	8R	0.04		0		0	0	0	0	0
Subcat	3a{(2)}-Ex	Subcat 3a{(2)}-Ex		2.33	0	0	0	0	7R	0.1		0		0	0	0	0	0
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex		2.33	0	0	0	0	6R	0.43		0		0	0	0	0	0
Subcat	3b-Ex	Subcat 3b-Ex		2.33	0	0	0	0	6R	8.34		0		0	0	0	0	0
Subcat	4	Subcat 4		2.33	0	0	0	0	8R	0.6		0		0	0	0	0	0
Subcat	5	Subcat 5		2.33	0	0	0	0	5L	0.29		0		0	0	0	0	0
Subcat	6	Subcat 6		2.33	0	0	0	0	7R	0.38		0		0	0	0	0	0
Subcat	7	Subcat 7		2.33	0	0	0	0	5L	0.28		0		0	0	0	0	0
Subcat	8	Subcat 8		2.33	0	0	0	0	8L	0.27		0		0	0	0	0	0
Subcat	8a-Ex	Subcat 8a-Ex		2.33	0	0	0	0	8L	0.13		0		0	0	0	0	0
Subcat	9	Subcat 9		2.33	0	0	0	0	6L	0.16		0		0	0	0	0	0
Subcat	9a-Ex	Subcat 9a-Ex		2.33	0	0	0	0	6L	1.86		0		0	0	0	0	0
Subcat	10	Subcat 10		2.33	0	0	0	0	11L	1.03		0		0	0	0	0	0
Subcat	10a-Ex	Subcat 10a-Ex		2.33	0	0	0	0	11L	3.41		0		0	0	0	0	0
Subcat	11	Subcat 11		2.33	0	0	0	0	11L	0.14		0		0	0	0	0	0
Subcat	12	Subcat 12		2.33	0	0	0	0	9L	0.17		0		0	0	0	0	0
Subcat	12a-Ex	Subcat 12a-Ex		2.33	0	0	0	0	9L	0.3		0		0	0	0	0	0
Subcat	13	Subcat 13		2.33	0	0	0	0	7L	0.34		0		0	0	0	0	0
Subcat	13a-Ex	Subcat 13a-Ex		2.33	0	0	0	0	7L	0.4		0		0	0	0	0	0
Subcat	13b-Ex	Subcat 13b-Ex		2.33	0	0	0	0	7L	8.6		0		0	0	0	0	0
Subcat	13c-Ex	Subcat 13c-Ex		2.33	0	0	0	0	7L	5.61		0		0	0	0	0	0
Subcat	14	Subcat 14		2.33	0	0	0	0	15L	5.51		0		0	0	0	0	0
Subcat	14a{(1)}-Ex	Subcat 14a{(1)}-Ex		2.33	0	0	0	0	15L	0.24		0		0	0	0	0	0
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex		2.33	0	0	0	0	10L	0.9		0		0	0	0	0	0
Subcat	14b-Ex	Subcat 14b-Ex		2.33	0	0	0	0	15L	15.48		0		0	0	0	0	0
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex		2.33	0	0	0	0	19L	13.05		0		0	0	0	0	0
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex		2.33	0	0	0	0	19L	11.56		0		0	0	0	0	0
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex		2.33	0	0	0	0	19P	4.92		0		0	0	0	0	0
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex		2.33	0	0	0	0	20P	2.74		0		0	0	0	0	0
Subcat	14d-Ex	Subcat 14d-Ex		2.33	0	0	0	0	17P	47.37		0		0	0	0	0	0
Subcat	14e-Ex	Subcat 14e-Ex		2.33	0	0	0	0	16L	0.82		0		0	0	0	0	0
Reach	6R	Reach 1c		2.33	8.47	763.083	0	0	7R	8.47		0		0	0	841.75	18.15	0.038
Reach	7R	Reach 1b		2.33	56.49	826.518	0	0	8R	52.52		0		0	0	839.83	10.28	0.336
Reach	8R	Reach 1a		2.33	52.83	895.282	0.06	0	3a (1,2+3)	51.36		0		0	0	834.2	10.35	0.289
Reach	17R	Reach 1d		2.33	0	0	0	0	6R	0		0		0	0	853.6	0.1	0
Reach	18R	Linne Road Grassed Chl		2.33	12.12	276.531	1.18	0	16L	11.03		0		0	0	842.04	10.47	0.133
Pond	17P	Gran Cielo Dwy		2.33	47.37	166.738	0.91	0	18P	46.35	18P	0	17R	0	46.35	854.16	10.03	0.113
Pond	18P	GC-CkD1		2.33	70.33	240.622	1.05	0	19P	1.14	19P	45.19	23L	19.48	65.63	850.77	10.09	0.827
Pond	19P	GC-CkD2		2.33	50.3	260.311	0.97	0	20P	1.26	20P	38.35	22L	8.61	48.22	849.2	10.17	0.519
Pond	20P	GC-CkD3		2.33	41.64	274.094	0.92	0	10L	5.5	10L	6.18	22L	29.57	41.26	845.77	10.22	0.296
Link	3a (1,2+3)	Comb Un-dev Ck Flow		2.33	51.36	895.282	0.06	0		51.36		0		0	0	0	0.1	0
Link	5L	Outlet To Tract #1632 Ex. 36" SD		2.33	0.96	108.759	0	0		0.96		0		0	0	0	0.1	0
Link	6L	To Existing Meadowlark Road		2.33	2.01	223.467	0	0		2.01		0		0	0	0	0.1	0
Link	7L	DMA 13		2.33	14.61	64.115	0	0	11L	14.61		0		0	0	0	0.1	0
Link	8L	DMA 8		2.33	0.39	44.689	0	0	5L	0.39		0		0	0	0	0.1	0
Link	9L	DMA 12		2.33	0.3	20.201	0	0	11L	0.3		0		0	0	0	0.1	0
Link	10L	To Linne Road Channel		2.33	12.12	276.531	1.18	0	18R	12.12		0		0	0	0	0.1	0
Link	11L	To Fontana Road SD		2.33	18.93	223.567	0.53	0		18.93		0		0	0	0	0.1	0
Link	15L	Sherwood/Niblick LP Xing		2.33	20.94	71.958	6.18	0	16L	20.94		0		0	0	0	0.1	0
Link	16L	Airport & Linne Road SD		2.33	23.19	359.38	2.33	0		23.19		0		0	0	0	0.1	0
Link	19L	14c(0+1)-Ex		2.33	24.54	73.884	1.37	0	18P	24.54		0		0	0	0	0.1	0
Link	22L	Linne Rd Overtopping Ex.Flow #2ar		2.33	38.07	0	0	0	7R	38.07		0		0	0	0	0.1	0
Link	23L	Linne Rd Overtop #1		2.33	19.48	0	0	0	7R	19.48		0		0	0	0	0.1	0

TABLE 10 - HYDROGRAPH ANALYSIS

EXISTING CONDITIONS RESULTS

Type	Number	Name	Event	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Imperv. Inflow Area (%)	Discarded Outflow Peak (cfs)	Primary Routing	Primary Outflow Peak (cfs)	Secondary Routing	Secondary Outflow Peak (cfs)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)
Subcat	1	Subcat 1		3.27	0	0	0	0	8R	0.45		0		0	0	0	0	0
Subcat	2	Subcat 2		3.27	0	0	0	0	8R	0.58		0		0	0	0	0	0
Subcat	3	Subcat 3		3.27	0	0	0	0	7R	2.25		0		0	0	0	0	0
Subcat	3a{(1)}-Ex	Subcat 3a{(1)}-Ex		3.27	0	0	0	0	8R	0.17		0		0	0	0	0	0
Subcat	3a{(2)}-Ex	Subcat 3a{(2)}-Ex		3.27	0	0	0	0	7R	0.73		0		0	0	0	0	0
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex		3.27	0	0	0	0	6R	2.08		0		0	0	0	0	0
Subcat	3b-Ex	Subcat 3b-Ex		3.27	0	0	0	0	6R	31.08		0		0	0	0	0	0
Subcat	4	Subcat 4		3.27	0	0	0	0	8R	1.83		0		0	0	0	0	0
Subcat	5	Subcat 5		3.27	0	0	0	0	5L	1.13		0		0	0	0	0	0
Subcat	6	Subcat 6		3.27	0	0	0	0	7R	1.8		0		0	0	0	0	0
Subcat	7	Subcat 7		3.27	0	0	0	0	5L	1.07		0		0	0	0	0	0
Subcat	8	Subcat 8		3.27	0	0	0	0	8L	1.02		0		0	0	0	0	0
Subcat	8a-Ex	Subcat 8a-Ex		3.27	0	0	0	0	8L	0.52		0		0	0	0	0	0
Subcat	9	Subcat 9		3.27	0	0	0	0	6L	0.84		0		0	0	0	0	0
Subcat	9a-Ex	Subcat 9a-Ex		3.27	0	0	0	0	6L	6.78		0		0	0	0	0	0
Subcat	10	Subcat 10		3.27	0	0	0	0	11L	2.25		0		0	0	0	0	0
Subcat	10a-Ex	Subcat 10a-Ex		3.27	0	0	0	0	11L	24.53		0		0	0	0	0	0
Subcat	11	Subcat 11		3.27	0	0	0	0	11L	0.71		0		0	0	0	0	0
Subcat	12	Subcat 12		3.27	0	0	0	0	9L	0.88		0		0	0	0	0	0
Subcat	12a-Ex	Subcat 12a-Ex		3.27	0	0	0	0	9L	1.11		0		0	0	0	0	0
Subcat	13	Subcat 13		3.27	0	0	0	0	7L	2.57		0		0	0	0	0	0
Subcat	13a-Ex	Subcat 13a-Ex		3.27	0	0	0	0	7L	1.48		0		0	0	0	0	0
Subcat	13b-Ex	Subcat 13b-Ex		3.27	0	0	0	0	7L	17.05		0		0	0	0	0	0
Subcat	13c-Ex	Subcat 13c-Ex		3.27	0	0	0	0	7L	11.85		0		0	0	0	0	0
Subcat	14	Subcat 14		3.27	0	0	0	0	15L	7.94		0		0	0	0	0	0
Subcat	14a{(1)}-Ex	Subcat 14a{(1)}-Ex		3.27	0	0	0	0	15L	2.28		0		0	0	0	0	0
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex		3.27	0	0	0	0	10L	1.32		0		0	0	0	0	0
Subcat	14b-Ex	Subcat 14b-Ex	5 Year	3.27	0	0	0	0	15L	34.16		0		0	0	0	0	0
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex		3.27	0	0	0	0	19L	26.22		0		0	0	0	0	0
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex		3.27	0	0	0	0	19L	23.46		0		0	0	0	0	0
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex		3.27	0	0	0	0	19P	11.81		0		0	0	0	0	0
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex		3.27	0	0	0	0	20P	7.32		0		0	0	0	0	0
Subcat	14d-Ex	Subcat 14d-Ex		3.27	0	0	0	0	17P	101.03		0		0	0	0	0	0
Subcat	14e-Ex	Subcat 14e-Ex		3.27	0	0	0	0	16L	1.44		0		0	0	0	0	0
Reach	6R	Reach 1c		3.27	31.59	763.083	0	0	7R	31.58		0		0	0	842.61	11.57	0.141
Reach	7R	Reach 1b		3.27	155.47	826.518	0	0	8R	152.43		0		0	0	840.14	10.2	0.785
Reach	8R	Reach 1a		3.27	155.36	895.282	0.06	0	3a (1,2+3)	153.38		0		0	0	834.41	10.25	0.678
Reach	17R	Reach 1d		3.27	14.92	0	0	0	6R	8.61		0		0	0	853.93	10.11	0.103
Reach	18R	Linne Road Grassed Chl		3.27	17.06	276.531	1.18	0	16L	16.31		0		0	0	842.17	10.24	0.183
Pond	17P	Gran Cielo Dwy		3.27	101.03	166.738	0.91	0	18P	85.76	18P	0	17R	14.92	100.69	854.74	10	0.205
Pond	18P	GC-CkD1		3.27	135.17	240.622	1.05	0	19P	1.05	19P	76.55	23L	51.56	129.11	851.28	10.06	1.103
Pond	19P	GC-CkD2		3.27	88.09	260.311	0.97	0	20P	1.33	20P	57.64	22L	26.25	85.22	849.52	10.12	0.693
Pond	20P	GC-CkD3		3.27	64.69	274.094	0.92	0	10L	6.32	10L	9.87	22L	48.22	64.4	845.95	10.13	0.356
Link	3a (1,2+3)	Comb Un-dev Ck Flow		3.27	153.38	895.282	0.06	0		153.38		0		0	0	0	0.1	0
Link	5L	Outlet To Tract #1632 Ex. 36" SD		3.27	3.69	108.759	0	0		3.69		0		0	0	0	0.1	0
Link	6L	To Existing Meadowlark Road		3.27	7.3	223.467	0	0		7.3		0		0	0	0	0.1	0
Link	7L	DMA 13		3.27	32.76	64.115	0	0	11L	32.76		0		0	0	0	0.1	0
Link	8L	DMA 8		3.27	1.5	44.689	0	0	5L	1.5		0		0	0	0	0.1	0
Link	9L	DMA 12		3.27	1.95	20.201	0	0	11L	1.95		0		0	0	0	0.1	0
Link	10L	To Linne Road Channel		3.27	17.06	276.531	1.18	0	18R	17.06		0		0	0	0	0.1	0
Link	11L	To Fontana Road SD		3.27	61.85	223.567	0.53	0		61.85		0		0	0	0	0.1	0
Link	15L	Sherwood/Niblick LP Xing		3.27	44.29	71.958	6.18	0	16L	44.29		0		0	0	0	0.1	0
Link	16L	Airport & Linne Road SD		3.27	57.36	359.38	2.33	0		57.36		0		0	0	0	0.1	0
Link	19L	14c(0+1)-Ex		3.27	49.6	73.884	1.37	0	18P	49.6		0		0	0	0	0.1	0
Link	22L	Linne Rd Overtopping Ex.Flow #2ar		3.27	74.45	0	0	0	7R	74.45		0		0	0	0	0.1	0
Link	23L	Linne Rd Overtop #1		3.27	51.56	0	0	0	7R	51.56		0		0	0	0	0.1	0

TABLE 10 - HYDROGRAPH ANALYSIS

EXISTING CONDITIONS RESULTS

Type	Number	Name	Event	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Imperv. Inflow Area (%)	Discarded Outflow Peak (cfs)	Primary Routing	Primary Outflow Peak (cfs)	Secondary Routing	Secondary Outflow Peak (cfs)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)
Subcat	1	Subcat 1		3.6	0	0	0	0	8R	0.95		0		0	0	0	0	0
Subcat	2	Subcat 2		3.6	0	0	0	0	8R	1.13		0		0	0	0	0	0
Subcat	3	Subcat 3		3.6	0	0	0	0	7R	3.7		0		0	0	0	0	0
Subcat	3a{(1)}-Ex	Subcat 3a{(1)}-Ex		3.6	0	0	0	0	8R	0.35		0		0	0	0	0	0
Subcat	3a{(2)}-Ex	Subcat 3a{(2)}-Ex		3.6	0	0	0	0	7R	1.33		0		0	0	0	0	0
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex		3.6	0	0	0	0	6R	2.8		0		0	0	0	0	0
Subcat	3b-Ex	Subcat 3b-Ex		3.6	0	0	0	0	6R	47.38		0		0	0	0	0	0
Subcat	4	Subcat 4		3.6	0	0	0	0	8R	3.46		0		0	0	0	0	0
Subcat	5	Subcat 5		3.6	0	0	0	0	5L	1.99		0		0	0	0	0	0
Subcat	6	Subcat 6		3.6	0	0	0	0	7R	3.02		0		0	0	0	0	0
Subcat	7	Subcat 7		3.6	0	0	0	0	5L	1.85		0		0	0	0	0	0
Subcat	8	Subcat 8		3.6	0	0	0	0	8L	1.67		0		0	0	0	0	0
Subcat	8a-Ex	Subcat 8a-Ex		3.6	0	0	0	0	8L	0.93		0		0	0	0	0	0
Subcat	9	Subcat 9		3.6	0	0	0	0	6L	1.38		0		0	0	0	0	0
Subcat	9a-Ex	Subcat 9a-Ex		3.6	0	0	0	0	6L	9.77		0		0	0	0	0	0
Subcat	10	Subcat 10		3.6	0	0	0	0	11L	3.44		0		0	0	0	0	0
Subcat	10a-Ex	Subcat 10a-Ex		3.6	0	0	0	0	11L	34.57		0		0	0	0	0	0
Subcat	11	Subcat 11		3.6	0	0	0	0	11L	1.49		0		0	0	0	0	0
Subcat	12	Subcat 12		3.6	0	0	0	0	9L	1.93		0		0	0	0	0	0
Subcat	12a-Ex	Subcat 12a-Ex		3.6	0	0	0	0	9L	1.45		0		0	0	0	0	0
Subcat	13	Subcat 13		3.6	0	0	0	0	7L	4.66		0		0	0	0	0	0
Subcat	13a-Ex	Subcat 13a-Ex		3.6	0	0	0	0	7L	1.93		0		0	0	0	0	0
Subcat	13b-Ex	Subcat 13b-Ex		3.6	0	0	0	0	7L	20.23		0		0	0	0	0	0
Subcat	13c-Ex	Subcat 13c-Ex		3.6	0	0	0	0	7L	14.24		0		0	0	0	0	0
Subcat	14	Subcat 14		3.6	0	0	0	0	15L	8.97		0		0	0	0	0	0
Subcat	14a{(1)}-Ex	Subcat 14a{(1)}-Ex		3.6	0	0	0	0	15L	3.53		0		0	0	0	0	0
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex		3.6	0	0	0	0	10L	1.54		0		0	0	0	0	0
Subcat	14b-Ex	Subcat 14b-Ex	10 Year	3.6	0	0	0	0	15L	41.39		0		0	0	0	0	0
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex		3.6	0	0	0	0	19L	31.22		0		0	0	0	0	0
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex		3.6	0	0	0	0	19L	28		0		0	0	0	0	0
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex		3.6	0	0	0	0	19P	14.53		0		0	0	0	0	0
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex		3.6	0	0	0	0	20P	9.15		0		0	0	0	0	0
Subcat	14d-Ex	Subcat 14d-Ex		3.6	0	0	0	0	17P	121.75		0		0	0	0	0	0
Subcat	14e-Ex	Subcat 14e-Ex		3.6	0	0	0	0	16L	2.09		0		0	0	0	0	0
Reach	6R	Reach 1c		3.6	60.06	763.083	0	0	7R	58.8		0		0	0	843.62	10.22	0.263
Reach	7R	Reach 1b		3.6	205.56	826.518	0	0	8R	201.89		0		0	0	840.22	10.19	0.985
Reach	8R	Reach 1a		3.6	207.3	895.282	0.06	0	3a (1,2+3)	204.85		0		0	0	834.52	10.25	0.864
Reach	17R	Reach 1d		3.6	28.12	0	0	0	6R	19.66		0		0	0	854.03	10.1	0.191
Reach	18R	Linne Road Grassed Chl		3.6	18.58	276.531	1.18	0	16L	17.83		0		0	0	842.19	10.22	0.194
Pond	17P	Gran Cielo Dwy		3.6	121.75	166.738	0.91	0	18P	93.28	18P	0	17R	28.12	121.4	854.84	10	0.224
Pond	18P	GC-CkD1		3.6	152.23	240.622	1.05	0	19P	1.04	19P	84.29	23L	60.65	145.98	851.4	10.05	1.174
Pond	19P	GC-CkD2		3.6	98.58	260.311	0.97	0	20P	1.34	20P	62.45	22L	31.29	95.08	849.6	10.11	0.742
Pond	20P	GC-CkD3		3.6	71.09	274.094	0.92	0	10L	6.49	10L	11.02	22L	53.24	70.75	846	10.11	0.371
Link	3a (1,2+3)	Comb Un-dev Ck Flow		3.6	204.85	895.282	0.06	0		204.85		0		0	0	0	0.1	0
Link	5L	Outlet To Tract #1632 Ex. 36" SD		3.6	6.41	108.759	0	0		6.41		0		0	0	0	0.1	0
Link	6L	To Existing Meadowlark Road		3.6	10.54	223.467	0	0		10.54		0		0	0	0	0.1	0
Link	7L	DMA 13		3.6	40.91	64.115	0	0	11L	40.91		0		0	0	0	0.1	0
Link	8L	DMA 8		3.6	2.57	44.689	0	0	5L	2.57		0		0	0	0	0.1	0
Link	9L	DMA 12		3.6	3.35	20.201	0	0	11L	3.35		0		0	0	0	0.1	0
Link	10L	To Linne Road Channel		3.6	18.58	276.531	1.18	0	18R	18.58		0		0	0	0	0.1	0
Link	11L	To Fontana Road SD		3.6	83.44	223.567	0.53	0		83.44		0		0	0	0	0.1	0
Link	15L	Sherwood/Niblick LP Xing		3.6	53.82	71.958	6.18	0	16L	53.82		0		0	0	0	0.1	0
Link	16L	Airport & Linne Road SD		3.6	68.98	359.38	2.33	0		68.98		0		0	0	0	0.1	0
Link	19L	14c(0+1)-Ex		3.6	59.11	73.884	1.37	0	18P	59.11		0		0	0	0	0.1	0
Link	22L	Linne Rd Overtopping Ex.Flow #2ar		3.6	84.51	0	0	0	7R	84.51		0		0	0	0	0.1	0
Link	23L	Linne Rd Overtop #1		3.6	60.65	0	0	0	7R	60.65		0		0	0	0	0.1	0

TABLE 10 - HYDROGRAPH ANALYSIS

EXISTING CONDITIONS RESULTS

Type	Number	Name	Event	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Imperv. Inflow Area (%)	Discarded Outflow Peak (cfs)	Primary Routing	Primary Outflow Peak (cfs)	Secondary Routing	Secondary Outflow Peak (cfs)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)
Subcat	1	Subcat 1	25 Year	4.2	0	0	0	0	8R	2.5		0		0	0	0	0	0
Subcat	2	Subcat 2		4.2	0	0	0	0	8R	3.01		0		0	0	0	0	0
Subcat	3	Subcat 3		4.2	0	0	0	0	7R	6.9		0		0	0	0	0	0
Subcat	3a{(1)}-Ex	Subcat 3a{(1)}-Ex		4.2	0	0	0	0	8R	0.93		0		0	0	0	0	0
Subcat	3a{(2)}-Ex	Subcat 3a{(2)}-Ex		4.2	0	0	0	0	7R	2.69		0		0	0	0	0	0
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex		4.2	0	0	0	0	6R	4.24		0		0	0	0	0	0
Subcat	3b-Ex	Subcat 3b-Ex		4.2	0	0	0	0	6R	90.76		0		0	0	0	0	0
Subcat	4	Subcat 4		4.2	0	0	0	0	8R	7.97		0		0	0	0	0	0
Subcat	5	Subcat 5		4.2	0	0	0	0	5L	4.51		0		0	0	0	0	0
Subcat	6	Subcat 6		4.2	0	0	0	0	7R	6.69		0		0	0	0	0	0
Subcat	7	Subcat 7		4.2	0	0	0	0	5L	4.06		0		0	0	0	0	0
Subcat	8	Subcat 8		4.2	0	0	0	0	8L	3.54		0		0	0	0	0	0
Subcat	8a-Ex	Subcat 8a-Ex		4.2	0	0	0	0	8L	2.33		0		0	0	0	0	0
Subcat	9	Subcat 9		4.2	0	0	0	0	6L	2.73		0		0	0	0	0	0
Subcat	9a-Ex	Subcat 9a-Ex		4.2	0	0	0	0	6L	18.56		0		0	0	0	0	0
Subcat	10	Subcat 10		4.2	0	0	0	0	11L	6.47		0		0	0	0	0	0
Subcat	10a-Ex	Subcat 10a-Ex		4.2	0	0	0	0	11L	54.9		0		0	0	0	0	0
Subcat	11	Subcat 11		4.2	0	0	0	0	11L	3.56		0		0	0	0	0	0
Subcat	12	Subcat 12		4.2	0	0	0	0	9L	4.57		0		0	0	0	0	0
Subcat	12a-Ex	Subcat 12a-Ex		4.2	0	0	0	0	9L	2.12		0		0	0	0	0	0
Subcat	13	Subcat 13		4.2	0	0	0	0	7L	9.46		0		0	0	0	0	0
Subcat	13a-Ex	Subcat 13a-Ex		4.2	0	0	0	0	7L	2.83		0		0	0	0	0	0
Subcat	13b-Ex	Subcat 13b-Ex		4.2	0	0	0	0	7L	26.22		0		0	0	0	0	0
Subcat	13c-Ex	Subcat 13c-Ex		4.2	0	0	0	0	7L	18.75		0		0	0	0	0	0
Subcat	14	Subcat 14		4.2	0	0	0	0	15L	11.03		0		0	0	0	0	0
Subcat	14a{(1)}-Ex	Subcat 14a{(1)}-Ex		4.2	0	0	0	0	15L	6.16		0		0	0	0	0	0
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex		4.2	0	0	0	0	10L	2.02		0		0	0	0	0	0
Subcat	14b-Ex	Subcat 14b-Ex		4.2	0	0	0	0	15L	55.16		0		0	0	0	0	0
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex		4.2	0	0	0	0	19L	40.63		0		0	0	0	0	0
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex		4.2	0	0	0	0	19L	36.54		0		0	0	0	0	0
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex		4.2	0	0	0	0	19P	19.74		0		0	0	0	0	0
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex		4.2	0	0	0	0	20P	12.7		0		0	0	0	0	0
Subcat	14d-Ex	Subcat 14d-Ex		4.2	0	0	0	0	17P	160.94		0		0	0	0	0	0
Subcat	14e-Ex	Subcat 14e-Ex		4.2	0	0	0	0	16L	3.74		0		0	0	0	0	0
Reach	6R	Reach 1c		4.2	131.45	763.083	0	0	7R	125.68		0		0	0	844.16	10.22	0.678
Reach	7R	Reach 1b		4.2	308.8	826.518	0	0	8R	304.34		0		0	0	840.37	10.19	1.387
Reach	8R	Reach 1a		4.2	315.66	895.282	0.06	0	3a (1,2+3)	312.43		0		0	0	834.73	10.24	1.243
Reach	17R	Reach 1d		4.2	55.87	0	0	0	6R	45.04		0		0	0	854.18	10.08	0.356
Reach	18R	Linne Road Grassed Chl		4.2	21.44	276.531	1.18	0	16L	20.56		0		0	0	842.22	10.18	0.214
Pond	17P	Gran Cielo Dwy		4.2	160.94	166.738	0.91	0	18P	104.69	18P	0.01	17R	55.87	160.58	855	10	0.252
Pond	18P	GC-CkD1		4.2	181.62	240.622	1.05	0	19P	1.04	19P	96.98	23L	76.59	174.59	851.6	10.04	1.293
Pond	19P	GC-CkD2		4.2	116.37	260.311	0.97	0	20P	1.37	20P	70.51	22L	40.16	112.03	849.72	10.09	0.827
Pond	20P	GC-CkD3		4.2	82.3	274.094	0.92	0	10L	6.72	10L	13.2	22L	62.01	81.94	846.07	10.09	0.396
Link	3a (1,2+3)	Comb Un-dev Ck Flow		4.2	312.43	895.282	0.06	0		312.43		0		0	0	0	0.1	0
Link	5L	Outlet To Tract #1632 Ex. 36" SD		4.2	14.23	108.759	0	0		14.23		0		0	0	0	0.1	0
Link	6L	To Existing Meadowlark Road		4.2	20.59	223.467	0	0		20.59		0		0	0	0	0.1	0
Link	7L	DMA 13		4.2	57.14	64.115	0	0	11L	57.14		0		0	0	0	0.1	0
Link	8L	DMA 8		4.2	5.66	44.689	0	0	5L	5.66		0		0	0	0	0.1	0
Link	9L	DMA 12		4.2	6.67	20.201	0	0	11L	6.67		0		0	0	0	0.1	0
Link	10L	To Linne Road Channel		4.2	21.44	276.531	1.18	0	18R	21.44		0		0	0	0	0.1	0
Link	11L	To Fontana Road SD		4.2	128.36	223.567	0.53	0		128.36		0		0	0	0	0.1	0
Link	15L	Sherwood/Niblick LP Xing		4.2	72.28	71.958	6.18	0	16L	72.28		0		0	0	0	0.1	0
Link	16L	Airport & Linne Road SD		4.2	92.25	359.38	2.33	0		92.25		0		0	0	0	0.1	0
Link	19L	14c(0+1)-Ex		4.2	77.03	73.884	1.37	0	18P	77.03		0		0	0	0	0.1	0
Link	22L	Linne Rd Overtopping Ex.Flow #2ar		4.2	102.17	0	0	0	7R	102.17		0		0	0	0	0.1	0
Link	23L	Linne Rd Overtop #1		4.2	76.59	0	0	0	7R	76.59		0		0	0	0	0.1	0

TABLE 10 - HYDROGRAPH ANALYSIS

EXISTING CONDITIONS RESULTS

Type	Number	Name	Event	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Imperv. Inflow Area (%)	Discarded Outflow Peak (cfs)	Primary Routing	Primary Outflow Peak (cfs)	Secondary Routing	Secondary Outflow Peak (cfs)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)
Subcat	1	Subcat 1	50 Year	4.6	0	0	0	0	8R	3.79		0		0	0	0	0	0
Subcat	2	Subcat 2		4.6	0	0	0	0	8R	4.58		0		0	0	0	0	0
Subcat	3	Subcat 3		4.6	0	0	0	0	7R	9.32		0		0	0	0	0	0
Subcat	3a{(1)}-Ex	Subcat 3a{(1)}-Ex		4.6	0	0	0	0	8R	1.4		0		0	0	0	0	0
Subcat	3a{(2)}-Ex	Subcat 3a{(2)}-Ex		4.6	0	0	0	0	7R	3.74		0		0	0	0	0	0
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex		4.6	0	0	0	0	6R	5.27		0		0	0	0	0	0
Subcat	3b-Ex	Subcat 3b-Ex		4.6	0	0	0	0	6R	126.69		0		0	0	0	0	0
Subcat	4	Subcat 4		4.6	0	0	0	0	8R	11.77		0		0	0	0	0	0
Subcat	5	Subcat 5		4.6	0	0	0	0	5L	6.98		0		0	0	0	0	0
Subcat	6	Subcat 6		4.6	0	0	0	0	7R	9.74		0		0	0	0	0	0
Subcat	7	Subcat 7		4.6	0	0	0	0	5L	6.29		0		0	0	0	0	0
Subcat	8	Subcat 8		4.6	0	0	0	0	8L	5.24		0		0	0	0	0	0
Subcat	8a-Ex	Subcat 8a-Ex		4.6	0	0	0	0	8L	3.59		0		0	0	0	0	0
Subcat	9	Subcat 9		4.6	0	0	0	0	6L	3.79		0		0	0	0	0	0
Subcat	9a-Ex	Subcat 9a-Ex		4.6	0	0	0	0	6L	26.71		0		0	0	0	0	0
Subcat	10	Subcat 10		4.6	0	0	0	0	11L	8.96		0		0	0	0	0	0
Subcat	10a-Ex	Subcat 10a-Ex		4.6	0	0	0	0	11L	69.66		0		0	0	0	0	0
Subcat	11	Subcat 11		4.6	0	0	0	0	11L	5.23		0		0	0	0	0	0
Subcat	12	Subcat 12		4.6	0	0	0	0	9L	6.71		0		0	0	0	0	0
Subcat	12a-Ex	Subcat 12a-Ex		4.6	0	0	0	0	9L	2.6		0		0	0	0	0	0
Subcat	13	Subcat 13		4.6	0	0	0	0	7L	13.14		0		0	0	0	0	0
Subcat	13a-Ex	Subcat 13a-Ex		4.6	0	0	0	0	7L	3.46		0		0	0	0	0	0
Subcat	13b-Ex	Subcat 13b-Ex		4.6	0	0	0	0	7L	30.32		0		0	0	0	0	0
Subcat	13c-Ex	Subcat 13c-Ex		4.6	0	0	0	0	7L	21.86		0		0	0	0	0	0
Subcat	14	Subcat 14		4.6	0	0	0	0	15L	12.51		0		0	0	0	0	0
Subcat	14a{(1)}-Ex	Subcat 14a{(1)}-Ex		4.6	0	0	0	0	15L	8.1		0		0	0	0	0	0
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex		4.6	0	0	0	0	10L	2.38		0		0	0	0	0	0
Subcat	14b-Ex	Subcat 14b-Ex		4.6	0	0	0	0	15L	64.67		0		0	0	0	0	0
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex		4.6	0	0	0	0	19L	47.07		0		0	0	0	0	0
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex		4.6	0	0	0	0	19L	42.4		0		0	0	0	0	0
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex		4.6	0	0	0	0	19P	23.37		0		0	0	0	0	0
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex		4.6	0	0	0	0	20P	15.2		0		0	0	0	0	0
Subcat	14d-Ex	Subcat 14d-Ex		4.6	0	0	0	0	17P	187.95		0		0	0	0	0	0
Subcat	14e-Ex	Subcat 14e-Ex		4.6	0	0	0	0	16L	5.07		0		0	0	0	0	0
Reach	6R	Reach 1c		4.6	189.25	763.083	0	0	7R	180.48		0		0	0	844.35	10.2	1.016
Reach	7R	Reach 1b		4.6	389.56	826.518	0	0	8R	383.89		0		0	0	840.48	10.19	1.694
Reach	8R	Reach 1a		4.6	399.94	895.282	0.06	0	3a (1,2+3)	395.78		0		0	0	834.89	10.23	1.533
Reach	17R	Reach 1d		4.6	76.42	0	0	0	6R	64.34		0		0	0	854.26	10.07	0.466
Reach	18R	Linne Road Grassed Chl		4.6	23.31	276.531	1.18	0	16L	22.35		0		0	0	842.25	10.17	0.226
Pond	17P	Gran Cielo Dwy		4.6	187.95	166.738	0.91	0	18P	111	18P	0.18	17R	76.42	187.59	855.09	10	0.269
Pond	18P	GC-CkD1		4.6	200.39	240.622	1.05	0	19P	1.05	19P	104.88	23L	86.9	192.8	851.71	10.04	1.367
Pond	19P	GC-CkD2		4.6	127.8	260.311	0.97	0	20P	1.38	20P	75.57	22L	45.89	122.85	849.79	10.09	0.883
Pond	20P	GC-CkD3		4.6	89.57	274.094	0.92	0	10L	6.84	10L	14.63	22L	67.73	89.2	846.11	10.08	0.412
Link	3a (1,2+3)	Comb Un-dev Ck Flow		4.6	395.78	895.282	0.06	0		395.78		0		0	0	0	0.1	0
Link	5L	Outlet To Tract #1632 Ex. 36" SD		4.6	22.05	108.759	0	0		22.05		0		0	0	0	0.1	0
Link	6L	To Existing Meadowlark Road		4.6	29.53	223.467	0	0		29.53		0		0	0	0	0.1	0
Link	7L	DMA 13		4.6	68.68	64.115	0	0	11L	68.68		0		0	0	0	0.1	0
Link	8L	DMA 8		4.6	8.78	44.689	0	0	5L	8.78		0		0	0	0	0.1	0
Link	9L	DMA 12		4.6	9.29	20.201	0	0	11L	9.29		0		0	0	0	0.1	0
Link	10L	To Linne Road Channel		4.6	23.31	276.531	1.18	0	18R	23.31		0		0	0	0	0.1	0
Link	11L	To Fontana Road SD		4.6	161.42	223.567	0.53	0		161.42		0		0	0	0	0.1	0
Link	15L	Sherwood/Niblick LP Xing		4.6	85.22	71.958	6.18	0	16L	85.22		0		0	0	0	0.1	0
Link	16L	Airport & Linne Road SD		4.6	108.41	359.38	2.33	0		108.41		0		0	0	0	0.1	0
Link	19L	14c(0+1)-Ex		4.6	89.31	73.884	1.37	0	18P	89.31		0		0	0	0	0.1	0
Link	22L	Linne Rd Overtopping Ex.Flow #2ar		4.6	113.61	0	0	0	7R	113.61		0		0	0	0	0.1	0
Link	23L	Linne Rd Overtop #1		4.6	86.9	0	0	0	7R	86.9		0		0	0	0	0.1	0

TABLE 10 - HYDROGRAPH ANALYSIS

EXISTING CONDITIONS RESULTS

Type	Number	Name	Event	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Imperv. Inflow Area (%)	Discarded Outflow Peak (cfs)	Primary Routing	Primary Outflow Peak (cfs)	Secondary Routing	Secondary Outflow Peak (cfs)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)
Subcat	1	Subcat 1	100 Year	5.1	0	0	0	0	8R	5.61		0		0	0	0	0	0
Subcat	2	Subcat 2		5.1	0	0	0	0	8R	6.82		0		0	0	0	0	0
Subcat	3	Subcat 3		5.1	0	0	0	0	7R	12.6		0		0	0	0	0	0
Subcat	3a{(1)}-Ex	Subcat 3a{(1)}-Ex		5.1	0	0	0	0	8R	2.08		0		0	0	0	0	0
Subcat	3a{(2)}-Ex	Subcat 3a{(2)}-Ex		5.1	0	0	0	0	7R	5.17		0		0	0	0	0	0
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex		5.1	0	0	0	0	6R	6.63		0		0	0	0	0	0
Subcat	3b-Ex	Subcat 3b-Ex		5.1	0	0	0	0	6R	178.43		0		0	0	0	0	0
Subcat	4	Subcat 4		5.1	0	0	0	0	8R	17.15		0		0	0	0	0	0
Subcat	5	Subcat 5		5.1	0	0	0	0	5L	10.59		0		0	0	0	0	0
Subcat	6	Subcat 6		5.1	0	0	0	0	7R	13.97		0		0	0	0	0	0
Subcat	7	Subcat 7		5.1	0	0	0	0	5L	9.56		0		0	0	0	0	0
Subcat	8	Subcat 8		5.1	0	0	0	0	8L	7.96		0		0	0	0	0	0
Subcat	8a-Ex	Subcat 8a-Ex		5.1	0	0	0	0	8L	5.39		0		0	0	0	0	0
Subcat	9	Subcat 9		5.1	0	0	0	0	6L	5.24		0		0	0	0	0	0
Subcat	9a-Ex	Subcat 9a-Ex		5.1	0	0	0	0	6L	38.64		0		0	0	0	0	0
Subcat	10	Subcat 10		5.1	0	0	0	0	11L	12.48		0		0	0	0	0	0
Subcat	10a-Ex	Subcat 10a-Ex		5.1	0	0	0	0	11L	89.24		0		0	0	0	0	0
Subcat	11	Subcat 11		5.1	0	0	0	0	11L	7.56		0		0	0	0	0	0
Subcat	12	Subcat 12		5.1	0	0	0	0	9L	9.66		0		0	0	0	0	0
Subcat	12a-Ex	Subcat 12a-Ex		5.1	0	0	0	0	9L	3.22		0		0	0	0	0	0
Subcat	13	Subcat 13		5.1	0	0	0	0	7L	18.16		0		0	0	0	0	0
Subcat	13a-Ex	Subcat 13a-Ex		5.1	0	0	0	0	7L	4.29		0		0	0	0	0	0
Subcat	13b-Ex	Subcat 13b-Ex		5.1	0	0	0	0	7L	35.51		0		0	0	0	0	0
Subcat	13c-Ex	Subcat 13c-Ex		5.1	0	0	0	0	7L	25.83		0		0	0	0	0	0
Subcat	14	Subcat 14		5.1	0	0	0	0	15L	14.43		0		0	0	0	0	0
Subcat	14a{(1)}-Ex	Subcat 14a{(1)}-Ex		5.1	0	0	0	0	15L	10.7		0		0	0	0	0	0
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex		5.1	0	0	0	0	10L	2.86		0		0	0	0	0	0
Subcat	14b-Ex	Subcat 14b-Ex		5.1	0	0	0	0	15L	76.84		0		0	0	0	0	0
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex		5.1	0	0	0	0	19L	55.26		0		0	0	0	0	0
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex		5.1	0	0	0	0	19L	49.85		0		0	0	0	0	0
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex		5.1	0	0	0	0	19P	28.04		0		0	0	0	0	0
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex		5.1	0	0	0	0	20P	18.42		0		0	0	0	0	0
Subcat	14d-Ex	Subcat 14d-Ex		5.1	0	0	0	0	17P	222.44		0		0	0	0	0	0
Subcat	14e-Ex	Subcat 14e-Ex		5.1	0	0	0	0	16L	6.91		0		0	0	0	0	0
Reach	6R	Reach 1c		5.1	270.35	763.083	0	0	7R	257.28		0		0	0	844.61	10.18	1.485
Reach	7R	Reach 1b		5.1	499.45	826.518	0	0	8R	492.11		0		0	0	840.63	10.18	2.107
Reach	8R	Reach 1a		5.1	514.9	895.282	0.06	0	3a (1,2+3)	509.5		0		0	0	835.11	10.23	1.926
Reach	17R	Reach 1d		5.1	103.48	0	0	0	6R	90.29		0		0	0	854.34	10.06	0.601
Reach	18R	Linne Road Grassed Chl		5.1	25.65	276.531	1.18	0	16L	24.58		0		0	0	842.28	10.15	0.241
Pond	17P	Gran Cielo Dwy		5.1	222.44	166.738	0.91	0	18P	117.95	18P	0.65	17R	103.48	222.08	855.19	9.99	0.288
Pond	18P	GC-CkD1		5.1	223.44	240.622	1.05	0	19P	1.07	19P	114.4	23L	99.64	215.08	851.86	10.04	1.458
Pond	19P	GC-CkD2		5.1	141.95	260.311	0.97	0	20P	1.4	20P	81.7	22L	53	136.09	849.87	10.08	0.954
Pond	20P	GC-CkD3		5.1	98.57	274.094	0.92	0	10L	6.94	10L	16.42	22L	74.78	98.14	846.16	10.07	0.43
Link	3a (1,2+3)	Comb Un-dev Ck Flow		5.1	509.5	895.282	0.06	0		509.5		0		0	0	0	0.1	0
Link	5L	Outlet To Tract #1632 Ex. 36" SD		5.1	33.49	108.759	0	0		33.49		0		0	0	0	0.1	0
Link	6L	To Existing Meadowlark Road		5.1	42.63	223.467	0	0		42.63		0		0	0	0	0.1	0
Link	7L	DMA 13		5.1	83.7	64.115	0	0	11L	83.7		0		0	0	0	0.1	0
Link	8L	DMA 8		5.1	13.34	44.689	0	0	5L	13.34		0		0	0	0	0.1	0
Link	9L	DMA 12		5.1	12.87	20.201	0	0	11L	12.87		0		0	0	0	0.1	0
Link	10L	To Linne Road Channel		5.1	25.65	276.531	1.18	0	18R	25.65		0		0	0	0	0.1	0
Link	11L	To Fontana Road SD		5.1	205.41	223.567	0.53	0		205.41		0		0	0	0	0.1	0
Link	15L	Sherwood/Niblick LP Xing		5.1	101.91	71.958	6.18	0	16L	101.91		0		0	0	0	0.1	0
Link	16L	Airport & Linne Road SD		5.1	129.17	359.38	2.33	0		129.17		0		0	0	0	0.1	0
Link	19L	14c(0+1)-Ex		5.1	104.93	73.884	1.37	0	18P	104.93		0		0	0	0	0.1	0
Link	22L	Linne Rd Overtopping Ex.Flow #2ar		5.1	127.75	0	0	0	7R	127.75		0		0	0	0	0.1	0
Link	23L	Linne Rd Overtop #1		5.1	99.64	0	0	0	7R	99.64		0		0	0	0	0.1	0

Proposed Conditions

TABLE 6 - Peak Flow Summary

PROPOSED CONDITIONS								
HydroCAD Node Type	HydroCAD Node Number	Subcatchment/DMA, Reach, Pond or Link Name	95th PERCENTILE STORM	2 YEAR STORM	10 YEAR STORM	25 YEAR STORM	50 YEAR STORM	100 YEAR STORM
Subcat	1	Subcat 1	4.7	8.1	13.1	15.9	17.9	20.5
Subcat	2	Subcat 2	5.0	8.8	14.2	17.2	19.3	22.1
Subcat	3	Subcat 3	9.9	17.3	28.4	33.8	37.4	42.0
Subcat	3a{(1)}-Ex	Subcat 3a(1)-Ex	0.0	0.0	0.4	0.9	1.4	2.1
Subcat	3a{(2)}-Ex	Subcat 3a(2)-Ex	0.0	0.1	1.3	2.7	3.7	5.2
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex	0.0	0.4	2.8	4.2	5.3	6.6
Subcat	3b-Ex	Subcat 3b-Ex	0.2	8.3	47.4	90.8	126.7	178.4
Subcat	4	Subcat 4	13.3	23.5	41.4	50.9	57.4	65.8
Subcat	5	Subcat 5	5.1	8.9	16.3	21.4	25.0	29.9
Subcat	6	Subcat 6	9.5	17.0	30.6	37.8	42.8	49.1
Subcat	7	Subcat 7	5.1	9.0	16.1	20.8	24.2	28.7
Subcat	8	Subcat 8	6.9	12.2	21.4	26.4	29.9	34.4
Subcat	8a-Ex	Subcat 8a-Ex	0.0	0.1	0.9	2.3	3.6	5.4
Subcat	9	Subcat 9	1.0	1.7	3.9	5.5	6.7	8.2
Subcat	9a-Ex	Subcat 9a-Ex	0.0	1.9	9.8	18.6	26.7	38.6
Subcat	10	Subcat 10	9.5	16.5	27.2	32.9	36.9	42.0
Subcat	10a-Ex	Subcat 10a-Ex	0.3	3.4	34.7	55.1	69.9	89.5
Subcat	11	Subcat 11	5.2	9.1	16.4	20.3	22.9	26.3
Subcat	12	Subcat 12	6.4	11.1	20.0	24.8	28.1	32.4
Subcat	12a-Ex	Subcat 12a-Ex	0.0	0.3	1.5	2.1	2.6	3.2
Subcat	13	Subcat 13	10.1	18.2	33.4	41.3	46.7	53.7
Subcat	13a-Ex	Subcat 13a-Ex	0.0	0.4	1.9	2.8	3.5	4.3
Subcat	13b-Ex	Subcat 13b-Ex	1.9	8.6	20.3	26.3	30.4	35.6
Subcat	13c-Ex	Subcat 13c-Ex	0.9	5.6	14.3	18.8	21.9	25.9
Subcat	14	Subcat 14	4.2	7.9	13.6	16.3	18.2	20.5
Subcat	14a{(1)}-Ex	Subcat 14a(1)-Ex	3.8	7.2	14.3	18.0	20.5	23.8
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex	1.3	2.3	3.7	4.4	4.9	5.5
Subcat	14b-Ex	Subcat 14b-Ex	2.0	15.5	41.5	55.3	64.8	77.0
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex	2.8	13.1	31.3	40.7	47.2	55.4
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex	2.4	11.6	28.1	36.6	42.5	50.0
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex	0.4	5.0	14.6	19.9	23.5	28.2
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex	0.2	2.8	9.2	12.7	15.2	18.5
Subcat	14d-Ex	Subcat 14d-Ex	7.7	47.5	122.1	161.3	188.4	223.0
Subcat	14e-Ex	Subcat 14e-Ex	0.5	0.8	2.1	3.8	5.1	6.9
Reach	6R	Un-named Creek 1c	0.2	8.3	56.1	120.8	173.7	248.0
Reach	7R	Creek XS 1b	11.1	62.7	193.1	281.4	347.3	434.5
Reach	8R	Creek 1b	11.1	62.2	192.8	280.9	346.7	434.0

TABLE 6 - Peak Flow Summary

HydroCAD Node Type	HydroCAD Node Number	Subcatchment/DMA, Reach, Pond or Link Name	95th PERCENTILE STORM	2 YEAR STORM	10 YEAR STORM	25 YEAR STORM	50 YEAR STORM	100 YEAR STORM
Reach	17R	Reach 1d	0.0	0.0	19.7	45.1	64.4	90.4
Reach	Ex Chl	RCP Dbl Arch 59x36 Outlet	12.5	70.0	136.2	149.0	156.0	163.5
Pond	1P	SD Inlet with Bypass SD	0.3	3.4	35.5	57.9	73.3	93.8
Pond	2P	60" SD MH	4.1	8.3	13.7	16.3	18.0	20.2
Pond	15P	SD System 42" HDPE	0.0	0.0	17.0	37.0	51.1	68.7
Pond	16P	Dbl Conc. Arch Culvert (37x23)	1.3	2.6	10.8	15.3	17.7	20.8
Pond	17P	Gran Cielo Dwy	7.6	46.4	121.7	161.0	188.1	222.7
Pond	18P	GC-CkD1	12.5	70.4	149.2	175.3	192.5	213.5
Pond	19P	GC-CkD2	0.3	1.5	19.7	40.0	53.6	70.7
Pond	20P	GC-CkD3	0.5	2.2	25.5	44.0	54.4	66.3
Pond	B1	Basin 1	0.9	3.9	14.8	30.3	36.6	43.9
Pond	B10	Basin 10	0.7	1.5	4.5	7.4	10.6	15.1
Pond	B11	Basin 11	0.2	1.0	3.7	5.5	7.8	10.5
Pond	B12	Basin 12	0.3	0.7	2.5	3.2	4.0	5.6
Pond	B13	Basin 13	1.2	5.0	35.0	62.5	84.6	108.6
Pond	B4	Basin 4	1.3	3.0	15.2	20.1	24.2	34.7
Pond	B5	Basin 5	0.5	1.3	4.7	7.5	9.7	12.7
Pond	B6	Basin 6	1.0	5.2	16.2	23.8	28.0	32.4
Pond	B7	Basin 7	0.8	2.0	8.1	13.1	17.5	24.2
Pond	B8	Basin 8	0.7	1.5	6.4	13.0	18.2	25.2
Pond	B9	Basin 9	0.5	1.0	2.5	3.6	4.3	5.1
Pond	Ex SD	Tract #1632 Ex. 36" SD Outlet	0.0	1.0	7.0	11.9	16.2	22.9
Pond	MC Q	SD System	8.6	17.2	28.2	33.6	37.2	41.8
Pond	SD	42" HDPE SD	0.5	1.9	10.1	19.6	26.8	36.4
Link	1L	DS Tailwater	0.0	1.0	7.0	11.9	16.2	22.9
Link	6L	To Existing Meadowlark Road	0.5	2.1	11.6	22.1	31.0	43.7
Link	10L	To Linne Road Channel	1.3	2.6	10.8	15.3	17.7	20.8
Link	11L	To Fontana Road SD	1.2	7.8	60.9	111.6	154.0	203.2
Link	15L	Sherwood/Niblick LP Xing	9.8	30.6	69.2	89.4	103.3	121.2
Link	16L	Airport & Linne Road SD	11.6	34.0	79.5	106.3	124.5	147.3
Link	22L	Linne Rd Ex Bypass Flow	0.0	0.0	17.0	37.0	51.1	68.7
Link	Ck Qa	100 Yr WSE in Creek (a)	11.2	63.7	217.1	327.1	403.9	508.9
Link	Ck Qb	100 Yr WSE in Creek (b)	0.8	4.9	15.8	23.4	27.6	32.0

TABLE 11 - HYDROGRAPH ANALYSIS

PROPOSED CONDITIONS RESULTS

Node Type	Node Number	Node Name	Event	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Imperv. Inflow Area (%)	Discarded Outflow Peak (cfs)	Primary Routing	Primary Outflow Peak (cfs)	Secondary Routing	Secondary Outflow Peak (cfs)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)
Subcat	1	Subcat 1	_95th Percentile Storm	1.4	0	0	0	0	B1	4.66		0		0	0	0	0	0
Subcat	2	Subcat 2		1.4	0	0	0	0	B1	5.04		0		0	0	0	0	0
Subcat	3	Subcat 3		1.4	0	0	0	0	MC Q	9.89		0		0	0	0	0	0
Subcat	3a{(1)}-Ex	Subcat 3a(1)-Ex		1.4	0	0	0	0	Ck Qa	0		0		0	0	0	0	0
Subcat	3a{(2)}-Ex	Subcat 3a(2)-Ex		1.4	0	0	0	0	8R	0.01		0		0	0	0	0	0
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex		1.4	0	0	0	0	7R	0.03		0		0	0	0	0	0
Subcat	3b-Ex	Subcat 3b-Ex		1.4	0	0	0	0	6R	0.23		0		0	0	0	0	0
Subcat	4	Subcat 4		1.4	0	0	0	0	B4	13.34		0		0	0	0	0	0
Subcat	5	Subcat 5		1.4	0	0	0	0	B5	5.11		0		0	0	0	0	0
Subcat	6	Subcat 6		1.4	0	0	0	0	B6	9.46		0		0	0	0	0	0
Subcat	7	Subcat 7		1.4	0	0	0	0	B7	5.13		0		0	0	0	0	0
Subcat	8	Subcat 8		1.4	0	0	0	0	B8	6.93		0		0	0	0	0	0
Subcat	8a-Ex	Subcat 8a-Ex		1.4	0	0	0	0	B8	0		0		0	0	0	0	0
Subcat	9	Subcat 9		1.4	0	0	0	0	B9	1		0		0	0	0	0	0
Subcat	9a-Ex	Subcat 9a-Ex		1.4	0	0	0	0	6L	0		0		0	0	0	0	0
Subcat	10	Subcat 10		1.4	0	0	0	0	B10	9.47		0		0	0	0	0	0
Subcat	10a-Ex	Subcat 10a-Ex		1.4	0	0	0	0	1P	0.33		0		0	0	0	0	0
Subcat	11	Subcat 11		1.4	0	0	0	0	B11	5.17		0		0	0	0	0	0
Subcat	12	Subcat 12		1.4	0	0	0	0	B12	6.36		0		0	0	0	0	0
Subcat	12a-Ex	Subcat 12a-Ex		1.4	0	0	0	0	B12	0.02		0		0	0	0	0	0
Subcat	13	Subcat 13		1.4	0	0	0	0	B13	10.14		0		0	0	0	0	0
Subcat	13a-Ex	Subcat 13a-Ex		1.4	0	0	0	0	B13	0.02		0		0	0	0	0	0
Subcat	13b-Ex	Subcat 13b-Ex		1.4	0	0	0	0	B13	1.93		0		0	0	0	0	0
Subcat	13c-Ex	Subcat 13c-Ex		1.4	0	0	0	0	B13	0.92		0		0	0	0	0	0
Subcat	14	Subcat 14		1.4	0	0	0	0	15L	4.21		0		0	0	0	0	0
Subcat	14a{(1)}-Ex	Subcat 14a(1)-Ex		1.4	0	0	0	0	15L	3.77		0		0	0	0	0	0
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex		1.4	0	0	0	0	16P	1.31		0		0	0	0	0	0
Subcat	14b-Ex	Subcat 14b-Ex		1.4	0	0	0	0	15L	1.97		0		0	0	0	0	0
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex		1.4	0	0	0	0	18P	2.82		0		0	0	0	0	0
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex		1.4	0	0	0	0	18P	2.38		0		0	0	0	0	0
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex		1.4	0	0	0	0	19P	0.41		0		0	0	0	0	0
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex		1.4	0	0	0	0	20P	0.16		0		0	0	0	0	0
Subcat	14d-Ex	Subcat 14d-Ex		1.4	0	0	0	0	17P	7.71		0		0	0	0	0	0
Subcat	14e-Ex	Subcat 14e-Ex		1.4	0	0	0	0	16L	0.47		0		0	0	0	0	0
Reach	6R	Un-named Creek 1c		1.4	0.23	757.079	0	0	7R	0.23		0		0	0	841.49	24.02	0.001
Reach	7R	Creek XS 1b		1.4	12.45	797.122	2.24	0	8R	11.11		0		0	0	839.41	10.36	0.152
Reach	8R	Creek 1b		1.4	11.11	805.022	2.22	0	Ck Qa	11.08		0		0	0	833.45	10.4	0.031
Reach	17R	Reach 1d		1.4	0	0	0	0	6R	0		0		0	0	853.6	0.01	0
Reach	Ex Chl	RCP Dbl Arch 59x36 Outlet		1.4	12.48	0	0	0	7R	12.45		0		0	0	841.13	10.08	0.02
Pond	1P	SD Inlet with Bypass SD		1.4	0.33	108.566	6.93	0	11L	0.33	11L	0		0	0.33	824.53	19.74	0
Pond	2P	60" SD MH		1.4	4.12	21.5	80	0	B1	4.12	B1	0		0	4.12	839.33	10.06	0
Pond	15P	SD System 42" HDPE		1.4	0	0	0	0	B1	0		0		0	0	844.17	0.85	0
Pond	16P	Dbl Conc. Arch Culvert (37x23)		1.4	1.31	276.531	1.6	0	10L	1.31		0		0	1.31	843.78	9.96	0
Pond	17P	Gran Cielo Dwy		1.4	7.71	166.738	0.91	0	18P	7.55	18P	0	17R	0	7.55	853.35	10.08	0.023
Pond	18P	GC-CkD1		1.4	12.48	240.622	1.05	0	19P	0	19P	0	Ex Chl	12.48	12.48	847.34	10.06	0.047
Pond	19P	GC-CkD2		1.4	0.41	260.311	0.99	0	20P	0.32	20P	0	22L	0	0.32	846.55	11.62	0.017
Pond	20P	GC-CkD3		1.4	0.48	274.094	0.94	0	16P	0.45	16P	0	22L	0	0.45	844.59	13.17	0.045
Pond	B1	Basin 1		1.4	16.44	47.388	67.98	0.91	Ck Qa	0	Ck Qa	0		0	0.91	834.16	19.68	1.559
Pond	B10	Basin 10		1.4	9.47	30.685	61.94	0.67	11L	0	11L	0		0	0.67	815.9	18.17	1.153
Pond	B11	Basin 11		1.4	5.17	14.461	52	0.17	1P	0	1P	0		0	0.17	830.96	23.18	0.527
Pond	B12	Basin 12		1.4	6.36	20.201	44.06	0.31	11L	0	11L	0		0	0.31	835.66	19.49	0.549
Pond	B13	Basin 13		1.4	12.88	64.115	22.11	0.31	11L	0.91	11L	0		0	1.22	839.94	15.55	1.188
Pond	B4	Basin 4		1.4	13.34	38.712	55.38	0.4	Ck Qa	0.88	Ck Qa	0		0	1.28	836.28	13.17	1.122
Pond	B5	Basin 5		1.4	5.11	32.696	30.34	0.31	SD	0.22		0		0	0.53	845.12	13.76	0.421
Pond	B6	Basin 6		1.4	9.46	34.039	52.56	0.26	Ck Qb	0.75	Ck Qb	0		0	1.01	848.49	13.68	0.958
Pond	B7	Basin 7		1.4	5.13	108.754	33.3	0.84	Ex SD	0		0		0	0.84	839.85	18.68	0.559
Pond	B8	Basin 8		1.4	6.93	44.689	35.47	0.38	SD	0.32		0		0	0.7	854.68	15.34	0.751
Pond	B9	Basin 9		1.4	1	11.446	17.36	0	6L	0.51		0		0	0.51	848.33	10.5	0.047
Pond	Ex SD	Tract #1632 Ex. 36" SD Outlet		1.4	0	108.754	33.3	0	1L	0		0		0	0	836	0.01	0
Pond	MC Q	SD System		1.4	9.89	21.5	80	0.1	2P	4.12	B1	4.36		0	8.58	845.68	10.06	0.493
Pond	SD	42" HDPE SD		1.4	0.54	77.385	33.3	0	B7	0.54		0		0	0.54	844.44	14.16	0
Link	1L	DS Tailwater		1.4	0	108.754	33.3	0		0		0		0	0	835	0.01	0
Link	6L	To Existing Meadowlark Road		1.4	0.51	223.467	0.89	0		0.51		0		0	0	0	0.01	0
Link	10L	To Linne Road Channel		1.4	1.31	276.531	1.6	0	16L	1.31		0		0	0	0	0.01	0
Link	11L	To Fontana Road SD		1.4	1.17	223.567	22.19	0		1.17		0		0	0	0	0.01	0
Link	15L	Sherwood/Niblick LP Xing		1.4	9.77	71.958	15.52	0	16L	9.77		0		0	0	0	0.01	0
Link	16L	Airport & Linne Road SD		1.4	11.55	359.38	4.52	0		11.55		0		0	0	0	0.01	0
Link	17L	Flow at Creek XS 1c		1.4	0	0	0	0		0		0		0	0	836.3	0.01	0
Link	22L	Linne Rd Ex Bypass Flow		1.4	0	0	0	0	15P	0		0		0	0	0	0.01	0
Link	Ck Qa	100 Yr WSE in Creek (a)		1.4	11.15	895.287	7.99	0		11.15		0		0	0	0	0.01	0
Link	Ck Qb	100 Yr WSE in Creek (b)		1.4	0.75	34.039	52.56	0	7R	0.75		0		0	0	842.5	0.01	0

TABLE 11 - HYDROGRAPH ANALYSIS

PROPOSED CONDITIONS RESULTS																		
Node Type	Node Number	Node Name	Event	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Imperv. Inflow Area (%)	Discarded Outflow Peak (cfs)	Primary Routing	Primary Outflow Peak (cfs)	Secondary Routing	Secondary Outflow Peak (cfs)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)
Subcat	1	Subcat 1		1.61	0	0	0	0	B1	5.45		0		0	0	0	0	0
Subcat	2	Subcat 2		1.61	0	0	0	0	B1	5.89		0		0	0	0	0	0
Subcat	3	Subcat 3		1.61	0	0	0	0	MC Q	11.57		0		0	0	0	0	0
Subcat	3a{(1)}-Ex	Subcat 3a(1)-Ex		1.61	0	0	0	0	Ck Qa	0		0		0	0	0	0	0
Subcat	3a{(2)}-Ex	Subcat 3a(2)-Ex		1.61	0	0	0	0	8R	0.02		0		0	0	0	0	0
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex		1.61	0	0	0	0	7R	0.05		0		0	0	0	0	0
Subcat	3b-Ex	Subcat 3b-Ex		1.61	0	0	0	0	6R	1.34		0		0	0	0	0	0
Subcat	4	Subcat 4		1.61	0	0	0	0	B4	15.59		0		0	0	0	0	0
Subcat	5	Subcat 5		1.61	0	0	0	0	B5	5.97		0		0	0	0	0	0
Subcat	6	Subcat 6		1.61	0	0	0	0	B6	11.07		0		0	0	0	0	0
Subcat	7	Subcat 7		1.61	0	0	0	0	B7	6		0		0	0	0	0	0
Subcat	8	Subcat 8		1.61	0	0	0	0	B8	8.11		0		0	0	0	0	0
Subcat	8a-Ex	Subcat 8a-Ex		1.61	0	0	0	0	B8	0.01		0		0	0	0	0	0
Subcat	9	Subcat 9		1.61	0	0	0	0	B9	1.17		0		0	0	0	0	0
Subcat	9a-Ex	Subcat 9a-Ex		1.61	0	0	0	0	6L	0.19		0		0	0	0	0	0
Subcat	10	Subcat 10		1.61	0	0	0	0	B10	11.08		0		0	0	0	0	0
Subcat	10a-Ex	Subcat 10a-Ex		1.61	0	0	0	0	1P	0.6		0		0	0	0	0	0
Subcat	11	Subcat 11		1.61	0	0	0	0	B11	6.04		0		0	0	0	0	0
Subcat	12	Subcat 12		1.61	0	0	0	0	B12	7.43		0		0	0	0	0	0
Subcat	12a-Ex	Subcat 12a-Ex		1.61	0	0	0	0	B12	0.03		0		0	0	0	0	0
Subcat	13	Subcat 13		1.61	0	0	0	0	B13	11.84		0		0	0	0	0	0
Subcat	13a-Ex	Subcat 13a-Ex		1.61	0	0	0	0	B13	0.04		0		0	0	0	0	0
Subcat	13b-Ex	Subcat 13b-Ex		1.61	0	0	0	0	B13	3.21		0		0	0	0	0	0
Subcat	13c-Ex	Subcat 13c-Ex		1.61	0	0	0	0	B13	1.78		0		0	0	0	0	0
Subcat	14	Subcat 14		1.61	0	0	0	0	15L	4.99		0		0	0	0	0	0
Subcat	14a{(1)}-Ex	Subcat 14a(1)-Ex		1.61	0	0	0	0	15L	4.41		0		0	0	0	0	0
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex		1.61	0	0	0	0	16P	1.54		0		0	0	0	0	0
Subcat	14b-Ex	Subcat 14b-Ex		1.61	0	0	0	0	15L	4.3		0		0	0	0	0	0
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex		1.61	0	0	0	0	18P	4.74		0		0	0	0	0	0
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex		1.61	0	0	0	0	18P	4.1		0		0	0	0	0	0
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex		1.61	0	0	0	0	19P	1.06		0		0	0	0	0	0
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex		1.61	0	0	0	0	20P	0.38		0		0	0	0	0	0
Subcat	14d-Ex	Subcat 14d-Ex		1.61	0	0	0	0	17P	14.73		0		0	0	0	0	0
Subcat	14e-Ex	Subcat 14e-Ex		1.61	0	0	0	0	16L	0.55		0		0	0	0	0	0
Reach	6R	Un-named Creek 1c	1 Year	1.61	1.34	757.079	0	0	7R	1.34		0		0	0	841.54	22.78	0.007
Reach	7R	Creek XS 1b		1.61	22.77	797.122	2.24	0	8R	19.91		0		0	0	839.55	10.26	0.236
Reach	8R	Creek 1b		1.61	19.91	805.022	2.22	0	Ck Qa	19.83		0		0	0	833.8	10.3	0.056
Reach	17R	Reach 1d		1.61	0	0	0	0	6R	0		0		0	0	853.6	0.01	0
Reach	Ex Chl	RCP Dbl Arch 59x36 Outlet		1.61	22.84	0	0	0	7R	22.77		0		0	0	841.23	10.05	0.032
Pond	1P	SD Inlet with Bypass SD		1.61	0.6	108.566	6.93	0	11L	0.6	11L	0		0	0.6	824.55	18.19	0
Pond	2P	60" SD MH		1.61	5.51	21.5	80	0	B1	5.51	B1	0		0	5.51	839.46	9.99	0
Pond	15P	SD System 42" HDPE		1.61	0	0	0	0	B1	0		0		0	0	844.17	0.85	0
Pond	16P	Dbl Conc. Arch Culvert (37x23)		1.61	1.54	276.531	1.6	0	10L	1.54		0		0	1.54	843.8	9.96	0
Pond	17P	Gran Cielo Dwy		1.61	14.73	166.738	0.91	0	18P	14.33	18P	0	17R	0	14.33	853.55	10.04	0.04
Pond	18P	GC-CkD1		1.61	22.86	240.622	1.05	0	19P	0	19P	0	Ex Chl	22.84	22.84	847.51	10.03	0.054
Pond	19P	GC-CkD2		1.61	1.06	260.311	0.99	0	20P	0.51	20P	0	22L	0	0.51	846.84	11.27	0.036
Pond	20P	GC-CkD3		1.61	0.82	274.094	0.94	0	16P	0.75	16P	0	22L	0	0.75	844.7	12.5	0.06
Pond	B1	Basin 1		1.61	22.52	47.388	67.98	0.93	Ck Qa	0.33	Ck Qa	0		0	1.26	834.45	17.9	1.914
Pond	B10	Basin 10		1.61	11.08	30.685	61.94	0.73	11L	0	11L	0		0	0.73	816.15	19.33	1.384
Pond	B11	Basin 11		1.61	6.04	14.461	52	0.19	1P	0	1P	0		0	0.19	831.54	23.9	0.652
Pond	B12	Basin 12		1.61	7.43	20.201	44.06	0.37	11L	0	11L	0		0	0.37	835.94	19.86	0.664
Pond	B13	Basin 13		1.61	16.74	64.115	22.11	0.32	11L	1.73	11L	0		0	2.05	840.14	13.16	1.26
Pond	B4	Basin 4		1.61	15.59	38.712	55.38	0.42	Ck Qa	1.18	Ck Qa	0		0	1.6	836.62	13.01	1.285
Pond	B5	Basin 5		1.61	5.97	32.696	30.34	0.31	SD	0.3		0		0	0.61	845.33	13.78	0.507
Pond	B6	Basin 6		1.61	11.07	34.039	52.56	0.27	Ck Qb	1.16	Ck Qb	0		0	1.43	848.91	12.96	1.091
Pond	B7	Basin 7		1.61	6.04	108.754	33.3	0.96	Ex SD	0		0		0	0.96	840.01	21.35	0.751
Pond	B8	Basin 8		1.61	8.11	44.689	35.47	0.4	SD	0.37		0		0	0.77	855.05	16.96	0.934
Pond	B9	Basin 9		1.61	1.17	11.446	17.36	0	6L	0.62		0		0	0.62	848.37	10.47	0.053
Pond	Ex SD	Tract #1632 Ex. 36" SD Outlet		1.61	0	108.754	33.3	0	1L	0		0		0	0	836	0.01	0
Pond	MC Q	SD System		1.61	11.57	21.5	80	0.1	2P	5.51	B1	5.84		0	11.45	845.72	9.99	0.497
Pond	SD	42" HDPE SD		1.61	0.67	77.385	33.3	0	B7	0.67		0		0	0.67	844.47	14.51	0
Link	1L	DS Tailwater		1.61	0	108.754	33.3	0		0		0		0	0	835	0.01	0
Link	6L	To Existing Meadowlark Road		1.61	0.62	223.467	0.89	0		0.62		0		0	0	0	0.01	0
Link	10L	To Linne Road Channel		1.61	1.54	276.531	1.6	0	16L	1.54		0		0	0	0	0.01	0
Link	11L	To Fontana Road SD		1.61	2.22	223.567	22.19	0		2.22		0		0	0	0	0.01	0
Link	15L	Sherwood/Niblick LP Xing		1.61	13.51	71.958	15.52	0	16L	13.51		0		0	0	0	0.01	0
Link	16L	Airport & Linne Road SD		1.61	15.58	359.38	4.52	0		15.58		0		0	0	0	0.01	0
Link	17L	Flow at Creek XS 1c		1.61	0	0	0	0		0		0		0	0	836.3	0.01	0
Link	22L	Linne Rd Ex Bypass Flow		1.61	0	0	0	0	15P	0		0		0	0	0	0.01	0
Link	Ck Qa	100 Yr WSE in Creek (a)		1.61	20.42	895.287	7.99	0		20.42		0		0	0	0	0.01	0
Link	Ck Qb	100 Yr WSE in Creek (b)		1.61	1.16	34.039	52.56	0	7R	1.16		0		0	0	842.5	0.01	0

TABLE 11 - HYDROGRAPH ANALYSIS

PROPOSED CONDITIONS RESULTS																		
Node Type	Node Number	Node Name	Event	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Imperv. Inflow Area (%)	Discarded Outflow Peak (cfs)	Primary Routing	Primary Outflow Peak (cfs)	Secondary Routing	Secondary Outflow Peak (cfs)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)
Subcat	1	Subcat 1		2.33	0	0	0	0	B1	8.11		0		0	0	0	0	0
Subcat	2	Subcat 2		2.33	0	0	0	0	B1	8.78		0		0	0	0	0	0
Subcat	3	Subcat 3		2.33	0	0	0	0	MC Q	17.34		0		0	0	0	0	0
Subcat	3a{(1)}-Ex	Subcat 3a(1)-Ex		2.33	0	0	0	0	Ck Qa	0.04		0		0	0	0	0	0
Subcat	3a{(2)}-Ex	Subcat 3a(2)-Ex		2.33	0	0	0	0	8R	#REF!		0		0	0	0	0	0
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex		2.33	0	0	0	0	7R	#REF!		0		0	0	0	0	0
Subcat	3b-Ex	Subcat 3b-Ex		2.33	0	0	0	0	6R	8.34		0		0	0	0	0	0
Subcat	4	Subcat 4		2.33	0	0	0	0	B4	23.47		0		0	0	0	0	0
Subcat	5	Subcat 5		2.33	0	0	0	0	B5	8.91		0		0	0	0	0	0
Subcat	6	Subcat 6		2.33	0	0	0	0	B6	16.99		0		0	0	0	0	0
Subcat	7	Subcat 7		2.33	0	0	0	0	B7	8.96		0		0	0	0	0	0
Subcat	8	Subcat 8		2.33	0	0	0	0	B8	12.19		0		0	0	0	0	0
Subcat	8a-Ex	Subcat 8a-Ex		2.33	0	0	0	0	B8	0.13		0		0	0	0	0	0
Subcat	9	Subcat 9		2.33	0	0	0	0	B9	1.74		0		0	0	0	0	0
Subcat	9a-Ex	Subcat 9a-Ex		2.33	0	0	0	0	6L	1.86		0		0	0	0	0	0
Subcat	10	Subcat 10		2.33	0	0	0	0	B10	16.54		0		0	0	0	0	0
Subcat	10a-Ex	Subcat 10a-Ex		2.33	0	0	0	0	1P	3.41		0		0	0	0	0	0
Subcat	11	Subcat 11		2.33	0	0	0	0	B11	9.1		0		0	0	0	0	0
Subcat	12	Subcat 12		2.33	0	0	0	0	B12	11.12		0		0	0	0	0	0
Subcat	12a-Ex	Subcat 12a-Ex		2.33	0	0	0	0	B12	0.3		0		0	0	0	0	0
Subcat	13	Subcat 13		2.33	0	0	0	0	B13	18.23		0		0	0	0	0	0
Subcat	13a-Ex	Subcat 13a-Ex		2.33	0	0	0	0	B13	0.41		0		0	0	0	0	0
Subcat	13b-Ex	Subcat 13b-Ex		2.33	0	0	0	0	B13	8.62		0		0	0	0	0	0
Subcat	13c-Ex	Subcat 13c-Ex		2.33	0	0	0	0	B13	5.63		0		0	0	0	0	0
Subcat	14	Subcat 14		2.33	0	0	0	0	15L	7.93		0		0	0	0	0	0
Subcat	14a{(1)}-Ex	Subcat 14a(1)-Ex		2.33	0	0	0	0	15L	7.22		0		0	0	0	0	0
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex		2.33	0	0	0	0	16P	2.29		0		0	0	0	0	0
Subcat	14b-Ex	Subcat 14b-Ex		2.33	0	0	0	0	15L	15.53		0		0	0	0	0	0
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex		2.33	0	0	0	0	18P	13.08		0		0	0	0	0	0
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex		2.33	0	0	0	0	18P	11.59		0		0	0	0	0	0
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex		2.33	0	0	0	0	19P	4.98		0		0	0	0	0	0
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex		2.33	0	0	0	0	20P	2.75		0		0	0	0	0	0
Subcat	14d-Ex	Subcat 14d-Ex		2.33	0	0	0	0	17P	47.53		0		0	0	0	0	0
Subcat	14e-Ex	Subcat 14e-Ex		2.33	0	0	0	0	16L	0.82		0		0	0	0	0	0
Reach	6R	Un-named Creek 1c	2 Year	2.33	8.34	757.079	0	0	7R	8.34		0		0	0	841.86	18.2	0.046
Reach	7R	Creek XS 1b		2.33	71.04	797.122	2.24	0	8R	62.7		0		0	0	839.95	10.16	0.619
Reach	8R	Creek 1b		2.33	62.7	805.022	2.22	0	Ck Qa	62.2		0		0	0	835.52	10.21	0.176
Reach	17R	Reach 1d		2.33	0	0	0	0	6R	0		0		0	0	853.6	0.01	0
Reach	Ex Chl	RCP Dbl Arch 59x36 Outlet		2.33	70.21	0	0	0	7R	70.04		0		0	0	841.48	10.02	0.074
Pond	1P	SD Inlet with Bypass SD		2.33	3.41	108.566	6.93	0	11L	3.41	11L	0		0	3.41	824.64	10.27	0
Pond	2P	60" SD MH		2.33	8.31	21.5	80	0	B1	8.31	B1	0		0	8.31	839.69	9.99	0
Pond	15P	SD System 42" HDPE		2.33	0	0	0	0	B1	0		0		0	0	844.17	0.85	0
Pond	16P	Dbl Conc. Arch Culvert (37x23)		2.33	2.62	276.531	1.6	0	10L	2.62		0		0	2.62	843.88	9.99	0
Pond	17P	Gran Cielo Dwy		2.33	47.53	166.738	0.91	0	18P	46.4	18P	0	17R	0	46.4	854.16	10.02	0.114
Pond	18P	GC-CkD1		2.33	70.49	240.622	1.05	0	19P	0.19	19P	0	Ex Chl	70.21	70.4	848.08	10.01	0.081
Pond	19P	GC-CkD2		2.33	5.16	260.311	0.99	0	20P	0.95	20P	0.54	22L	0	1.49	848.01	10.96	0.191
Pond	20P	GC-CkD3		2.33	3.41	274.094	0.94	0	16P	2.17	16P	0.04	22L	0	2.21	845.08	11.26	0.123
Pond	B1	Basin 1		2.33	33.8	47.388	67.98	0.96	Ck Qa	2.98	Ck Qa	0		0	3.94	834.95	12.43	2.513
Pond	B10	Basin 10		2.33	16.54	30.685	61.94	0.77	11L	0.7	11L	0		0	1.47	816.9	15.89	2.096
Pond	B11	Basin 11		2.33	9.1	14.461	52	0.21	1P	0.79	1P	0		0	1	832.03	12.68	0.766
Pond	B12	Basin 12		2.33	11.41	20.201	44.06	0.43	11L	0.29	11L	0		0	0.72	836.87	18.3	1.133
Pond	B13	Basin 13		2.33	32.84	64.115	22.11	0.38	11L	4.63	11L	0		0	5.01	841.67	11.7	1.893
Pond	B4	Basin 4		2.33	23.47	38.712	55.38	0.48	Ck Qa	2.53	Ck Qa	0		0	3.01	837.92	12.33	1.953
Pond	B5	Basin 5		2.33	8.91	32.696	30.34	0.34	SD	0.91		0		0	1.25	846.09	13.45	0.823
Pond	B6	Basin 6		2.33	16.99	34.039	52.56	0.3	Ck Qb	4.94	Ck Qb	0		0	5.24	849.79	10.89	1.388
Pond	B7	Basin 7		2.33	9.38	108.754	33.3	1.05	Ex SD	0.96		0		0	2.01	841.02	21.83	2.059
Pond	B8	Basin 8		2.33	12.19	44.689	35.47	0.46	SD	1.05		0		0	1.51	856.21	15.62	1.565
Pond	B9	Basin 9		2.33	1.74	11.446	17.36	0	6L	1.02		0		0	1.02	848.48	10.42	0.07
Pond	Ex SD	Tract #1632 Ex. 36" SD Outlet		2.33	0.96	108.754	33.3	0	1L	0.96		0		0	0.96	836.36	21.84	0
Pond	MC Q	SD System		2.33	17.34	21.5	80	0.11	2P	8.31	B1	8.8		0	17.22	845.79	9.99	0.505
Pond	SD	42" HDPE SD		2.33	1.91	77.385	33.3	0	B7	1.91		0		0	1.91	844.69	14.52	0
Link	1L	DS Tailwater		2.33	0.96	108.754	33.3	0		0.96		0		0	0	835	0.01	0
Link	6L	To Existing Meadowlark Road		2.33	2.11	223.467	0.89	0		2.11		0		0	0	0	0.01	0
Link	10L	To Linne Road Channel		2.33	2.62	276.531	1.6	0	16L	2.62		0		0	0	0	0.01	0
Link	11L	To Fontana Road SD		2.33	7.83	223.567	22.19	0		7.83		0		0	0	0	0.01	0
Link	15L	Sherwood/Niblick LP Xing		2.33	30.55	71.958	15.52	0	16L	30.55		0		0	0	0	0.01	0
Link	16L	Airport & Linne Road SD		2.33	33.97	359.38	4.52	0		33.97		0		0	0	0	0.01	0
Link	17L	Flow at Creek XS 1c		2.33	0	0	0	0		0		0		0	0	836.3	0.01	0
Link	22L	Linne Rd Ex Bypass Flow		2.33	0	0	0	0	15P	0		0		0	0	0	0.01	0
Link	Ck Qa	100 Yr WSE in Creek (a)		2.33	63.67	895.287	7.99	0		63.67		0		0	0	0	0.01	0
Link	Ck Qb	100 Yr WSE in Creek (b)		2.33	4.94	34.039	52.56	0	7R	4.94		0		0	0	842.5	0.01	0

TABLE 11 - HYDROGRAPH ANALYSIS

PROPOSED CONDITIONS RESULTS																		
Node Type	Node Number	Node Name	Event	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Imperv. Inflow Area (%)	Discarded Outflow Peak (cfs)	Primary Routing	Primary Outflow Peak (cfs)	Secondary Routing	Secondary Outflow Peak (cfs)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)
Subcat	1	Subcat 1		3.27	0	0	0	0	B1	11.65		0		0	0	0	0	0
Subcat	2	Subcat 2		3.27	0	0	0	0	B1	12.62		0		0	0	0	0	0
Subcat	3	Subcat 3		3.27	0	0	0	0	MC Q	25.44		0		0	0	0	0	0
Subcat	3a{(1)}-Ex	Subcat 3a(1)-Ex		3.27	0	0	0	0	Ck Qa	#REF!		0		0	0	0	0	0
Subcat	3a{(2)}-Ex	Subcat 3a(2)-Ex		3.27	0	0	0	0	8R	#REF!		0		0	0	0	0	0
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex		3.27	0	0	0	0	7R	#REF!		0		0	0	0	0	0
Subcat	3b-Ex	Subcat 3b-Ex		3.27	0	0	0	0	6R	31.08		0		0	0	0	0	0
Subcat	4	Subcat 4		3.27	0	0	0	0	B4	36.4		0		0	0	0	0	0
Subcat	5	Subcat 5		3.27	0	0	0	0	B5	13.89		0		0	0	0	0	0
Subcat	6	Subcat 6		3.27	0	0	0	0	B6	26.85		0		0	0	0	0	0
Subcat	7	Subcat 7		3.27	0	0	0	0	B7	13.8		0		0	0	0	0	0
Subcat	8	Subcat 8		3.27	0	0	0	0	B8	18.78		0		0	0	0	0	0
Subcat	8a-Ex	Subcat 8a-Ex		3.27	0	0	0	0	B8	0.52		0		0	0	0	0	0
Subcat	9	Subcat 9		3.27	0	0	0	0	B9	3.11		0		0	0	0	0	0
Subcat	9a-Ex	Subcat 9a-Ex		3.27	0	0	0	0	6L	6.78		0		0	0	0	0	0
Subcat	10	Subcat 10		3.27	0	0	0	0	B10	24.16		0		0	0	0	0	0
Subcat	10a-Ex	Subcat 10a-Ex		3.27	0	0	0	0	1P	24.63		0		0	0	0	0	0
Subcat	11	Subcat 11		3.27	0	0	0	0	B11	14.34		0		0	0	0	0	0
Subcat	12	Subcat 12		3.27	0	0	0	0	B12	17.47		0		0	0	0	0	0
Subcat	12a-Ex	Subcat 12a-Ex		3.27	0	0	0	0	B12	1.11		0		0	0	0	0	0
Subcat	13	Subcat 13		3.27	0	0	0	0	B13	29.21		0		0	0	0	0	0
Subcat	13a-Ex	Subcat 13a-Ex		3.27	0	0	0	0	B13	1.49		0		0	0	0	0	0
Subcat	13b-Ex	Subcat 13b-Ex		3.27	0	0	0	0	B13	17.09		0		0	0	0	0	0
Subcat	13c-Ex	Subcat 13c-Ex		3.27	0	0	0	0	B13	11.87		0		0	0	0	0	0
Subcat	14	Subcat 14		3.27	0	0	0	0	15L	12.06		0		0	0	0	0	0
Subcat	14a{(1)}-Ex	Subcat 14a(1)-Ex		3.27	0	0	0	0	15L	12.3		0		0	0	0	0	0
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex		3.27	0	0	0	0	16P	3.3		0		0	0	0	0	0
Subcat	14b-Ex	Subcat 14b-Ex		3.27	0	0	0	0	15L	34.25		0		0	0	0	0	0
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex		3.27	0	0	0	0	18P	26.29		0		0	0	0	0	0
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex		3.27	0	0	0	0	18P	23.52		0		0	0	0	0	0
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex		3.27	0	0	0	0	19P	11.9		0		0	0	0	0	0
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex		3.27	0	0	0	0	20P	7.34		0		0	0	0	0	0
Subcat	14d-Ex	Subcat 14d-Ex		3.27	0	0	0	0	17P	101.36		0		0	0	0	0	0
Subcat	14e-Ex	Subcat 14e-Ex		3.27	0	0	0	0	16L	1.44		0		0	0	0	0	0
Reach	6R	Un-named Creek 1c	5 Year	3.27	31.11	757.079	0	0	7R	31.1		0		0	0	842.91	11.61	0.172
Reach	7R	Creek XS 1b		3.27	155.78	797.122	2.24	0	8R	151.25		0		0	0	840.32	10.22	1.238
Reach	8R	Creek 1b		3.27	151.75	805.022	2.22	0	Ck Qa	150.08		0		0	0	835.86	10.27	0.53
Reach	17R	Reach 1d		3.27	15.06	0	0	0	6R	8.66		0		0	0	853.93	10.1	0.103
Reach	Ex Chl	RCP Dbl Arch 59x36 Outlet		3.27	127.28	0	0	0	7R	127.2		0		0	0	841.66	10.03	0.116
Pond	1P	SD Inlet with Bypass SD		3.27	24.63	108.566	6.93	0	11L	24.63	11L	0		0	24.63	825.04	9.98	0
Pond	2P	60" SD MH		3.27	12.22	21.5	80	0	B1	12.22	B1	0		0	12.22	839.97	9.99	0
Pond	15P	SD System 42" HDPE		3.27	8.49	0	0	0	B1	8.49		0		0	8.49	844.34	10.19	0
Pond	16P	Dbl Conc. Arch Culvert (37x23)		3.27	8.06	276.531	1.6	0	10L	8.06		0		0	8.06	844.18	10.14	0
Pond	17P	Gran Cielo Dwy		3.27	101.36	166.738	0.91	0	18P	85.85	18P	0	17R	15.06	100.91	854.74	10	0.205
Pond	18P	GC-CkD1		3.27	135.42	240.622	1.05	0	19P	0.65	19P	5.16	Ex Chl	127.28	133	848.84	10.02	0.163
Pond	19P	GC-CkD2		3.27	17.12	260.311	0.99	0	20P	1.09	20P	9.21	22L	0	10.3	848.51	10.14	0.302
Pond	20P	GC-CkD3		3.27	15.67	274.094	0.94	0	16P	3.99	16P	2.26	22L	8.49	14.75	845.46	10.19	0.21
Pond	B1	Basin 1		3.27	49.24	47.388	67.98	1.02	Ck Qa	9.63	Ck Qa	0		0	10.65	835.93	11.12	3.753
Pond	B10	Basin 10		3.27	24.16	30.685	61.94	0.8	11L	2.71	11L	0		0	3.51	817.46	12.86	2.653
Pond	B11	Basin 11		3.27	14.34	14.461	52	0.23	1P	2.88	1P	0		0	3.11	832.65	10.73	0.922
Pond	B12	Basin 12		3.27	18.57	20.201	44.06	0.45	11L	1.62	11L	0		0	2.08	837.3	12.63	1.363
Pond	B13	Basin 13		3.27	59.63	64.115	22.11	0.43	11L	23.88	11L	0		0	24.31	843.07	10.31	2.561
Pond	B4	Basin 4		3.27	36.4	38.712	55.38	0.52	Ck Qa	11.42	Ck Qa	0		0	11.94	838.69	10.57	2.4
Pond	B5	Basin 5		3.27	13.89	32.696	30.34	0.37	SD	3.09		0		0	3.45	846.82	11.51	1.152
Pond	B6	Basin 6		3.27	26.85	34.039	52.56	0.35	Ck Qb	11.64	Ck Qb	0		0	12	850.86	10.57	1.798
Pond	B7	Basin 7		3.27	14.56	108.754	33.3	1.11	Ex SD	5.13		0		0	6.24	841.67	15.63	2.955
Pond	B8	Basin 8		3.27	19.07	44.689	35.47	0.5	SD	3.61		0		0	4.11	857.14	12.6	2.124
Pond	B9	Basin 9		3.27	3.11	11.446	17.36	0	6L	2.01		0		0	2.01	848.7	10.45	0.104
Pond	Ex SD	Tract #1632 Ex. 36" SD Outlet		3.27	5.13	108.754	33.3	0	1L	5.13		0		0	5.13	836.85	15.63	0
Pond	MC Q	SD System		3.27	25.44	21.5	80	0.11	2P	12.22	B1	12.94		0	25.28	845.88	9.99	0.516
Pond	SD	42" HDPE SD		3.27	6.5	77.385	33.3	0	B7	6.5		0		0	6.5	845.13	12.39	0
Link	1L	DS Tailwater		3.27	5.13	108.754	33.3	0		5.13		0		0	0	835	0.01	0
Link	6L	To Existing Meadowlark Road		3.27	7.7	223.467	0.89	0		7.7		0		0	0	0	0.01	0
Link	10L	To Linne Road Channel		3.27	8.06	276.531	1.6	0	16L	8.06		0		0	0	0	0.01	0
Link	11L	To Fontana Road SD		3.27	41.11	223.567	22.19	0		41.11		0		0	0	0	0.01	0
Link	15L	Sherwood/Niblick LP Xing		3.27	58.46	71.958	15.52	0	16L	58.46		0		0	0	0	0.01	0
Link	16L	Airport & Linne Road SD		3.27	65.84	359.38	4.52	0		65.84		0		0	0	0	0.01	0
Link	17L	Flow at Creek XS 1c		3.27	0	0	0	0		0		0		0	0	836.3	0.01	0
Link	22L	Linne Rd Ex Bypass Flow		3.27	8.49	0	0	0	15P	8.49		0		0	0	0	0.01	0
Link	Ck Qa	100 Yr WSE in Creek (a)		3.27	164	895.287	7.99	0		164		0		0	0	0	0.01	0
Link	Ck Qb	100 Yr WSE in Creek (b)		3.27	11.64	34.039	52.56	0	7R	11.64		0		0	0	842.5	0.01	0

TABLE 11 - HYDROGRAPH ANALYSIS

PROPOSED CONDITIONS RESULTS																		
Node Type	Node Number	Node Name	Event	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Imperv. Inflow Area (%)	Discarded Outflow Peak (cfs)	Primary Routing	Primary Outflow Peak (cfs)	Secondary Routing	Secondary Outflow Peak (cfs)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)
Subcat	1	Subcat 1		3.6	0	0	0	0	B1	13.08		0		0	0	0	0	0
Subcat	2	Subcat 2		3.6	0	0	0	0	B1	14.16		0		0	0	0	0	0
Subcat	3	Subcat 3		3.6	0	0	0	0	MC Q	28.37		0		0	0	0	0	0
Subcat	3a{(1)}-Ex	Subcat 3a(1)-Ex		3.6	0	0	0	0	Ck Qa	#REF!		0		0	0	0	0	0
Subcat	3a{(2)}-Ex	Subcat 3a(2)-Ex		3.6	0	0	0	0	8R	#REF!		0		0	0	0	0	0
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex		3.6	0	0	0	0	7R	#REF!		0		0	0	0	0	0
Subcat	3b-Ex	Subcat 3b-Ex		3.6	0	0	0	0	6R	47.38		0		0	0	0	0	0
Subcat	4	Subcat 4		3.6	0	0	0	0	B4	41.42		0		0	0	0	0	0
Subcat	5	Subcat 5		3.6	0	0	0	0	B5	16.32		0		0	0	0	0	0
Subcat	6	Subcat 6		3.6	0	0	0	0	B6	30.64		0		0	0	0	0	0
Subcat	7	Subcat 7		3.6	0	0	0	0	B7	16.07		0		0	0	0	0	0
Subcat	8	Subcat 8		3.6	0	0	0	0	B8	21.4		0		0	0	0	0	0
Subcat	8a-Ex	Subcat 8a-Ex		3.6	0	0	0	0	B8	0.93		0		0	0	0	0	0
Subcat	9	Subcat 9		3.6	0	0	0	0	B9	3.86		0		0	0	0	0	0
Subcat	9a-Ex	Subcat 9a-Ex		3.6	0	0	0	0	6L	9.77		0		0	0	0	0	0
Subcat	10	Subcat 10		3.6	0	0	0	0	B10	27.15		0		0	0	0	0	0
Subcat	10a-Ex	Subcat 10a-Ex		3.6	0	0	0	0	1P	34.7		0		0	0	0	0	0
Subcat	11	Subcat 11		3.6	0	0	0	0	B11	16.38		0		0	0	0	0	0
Subcat	12	Subcat 12		3.6	0	0	0	0	B12	19.99		0		0	0	0	0	0
Subcat	12a-Ex	Subcat 12a-Ex		3.6	0	0	0	0	B12	1.45		0		0	0	0	0	0
Subcat	13	Subcat 13		3.6	0	0	0	0	B13	33.4		0		0	0	0	0	0
Subcat	13a-Ex	Subcat 13a-Ex		3.6	0	0	0	0	B13	1.94		0		0	0	0	0	0
Subcat	13b-Ex	Subcat 13b-Ex		3.6	0	0	0	0	B13	20.29		0		0	0	0	0	0
Subcat	13c-Ex	Subcat 13c-Ex		3.6	0	0	0	0	B13	14.27		0		0	0	0	0	0
Subcat	14	Subcat 14		3.6	0	0	0	0	15L	13.55		0		0	0	0	0	0
Subcat	14a{(1)}-Ex	Subcat 14a(1)-Ex		3.6	0	0	0	0	15L	14.25		0		0	0	0	0	0
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex		3.6	0	0	0	0	16P	3.69		0		0	0	0	0	0
Subcat	14b-Ex	Subcat 14b-Ex		3.6	0	0	0	0	15L	41.5		0		0	0	0	0	0
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex		3.6	0	0	0	0	18P	31.3		0		0	0	0	0	0
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex		3.6	0	0	0	0	18P	28.06		0		0	0	0	0	0
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex		3.6	0	0	0	0	19P	14.62		0		0	0	0	0	0
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex		3.6	0	0	0	0	20P	9.18		0		0	0	0	0	0
Subcat	14d-Ex	Subcat 14d-Ex		3.6	0	0	0	0	17P	122.07		0		0	0	0	0	0
Subcat	14e-Ex	Subcat 14e-Ex		3.6	0	0	0	0	16L	2.1		0		0	0	0	0	0
Reach	6R	Un-named Creek 1c	10 Year	3.6	58.19	757.079	0	0	7R	56.05		0		0	0	844.01	10.26	0.315
Reach	7R	Creek XS 1b		3.6	196.79	797.122	2.24	0	8R	193.14		0		0	0	840.44	10.27	1.495
Reach	8R	Creek 1b		3.6	193.95	805.022	2.22	0	Ck Qa	192.75		0		0	0	836.02	10.33	0.696
Reach	17R	Reach 1d		3.6	28.32	0	0	0	6R	19.69		0		0	0	854.03	10.09	0.191
Reach	Ex Chl	RCP Dbl Arch 59x36 Outlet		3.6	136.21	0	0	0	7R	136.16		0		0	0	841.68	10.03	0.122
Pond	1P	SD Inlet with Bypass SD		3.6	35.45	108.566	6.93	0	11L	35.45	11L	0		0	35.45	825.19	9.99	0
Pond	2P	60" SD MH		3.6	13.65	21.5	80	0	B1	13.65	B1	0		0	13.65	840.06	9.99	0
Pond	15P	SD System 42" HDPE		3.6	17.03	0	0	0	B1	17.03		0		0	17.03	844.4	10.14	0
Pond	16P	Dbl Conc. Arch Culvert (37x23)		3.6	10.83	276.531	1.6	0	10L	10.83		0		0	10.83	844.3	10.11	0
Pond	17P	Gran Cielo Dwy		3.6	122.07	166.738	0.91	0	18P	93.38	18P	0	17R	28.32	121.7	854.84	9.99	0.224
Pond	18P	GC-CkD1		3.6	152.52	240.622	1.05	0	19P	0.64	19P	12.52	Ex Chl	136.21	149.21	849.1	10.02	0.209
Pond	19P	GC-CkD2		3.6	27.17	260.311	0.99	0	20P	1.16	20P	18.4	22L	0.1	19.65	848.77	10.11	0.374
Pond	20P	GC-CkD3		3.6	26.7	274.094	0.94	0	16P	4.72	16P	3.87	22L	16.95	25.54	845.61	10.14	0.25
Pond	B1	Basin 1		3.6	61.24	47.388	67.98	1.05	Ck Qa	13.77	Ck Qa	0		0	14.82	836.34	10.93	4.294
Pond	B10	Basin 10		3.6	27.15	30.685	61.94	0.82	11L	3.68	11L	0		0	4.5	817.66	12.3	2.861
Pond	B11	Basin 11		3.6	16.38	14.461	52	0.24	1P	3.46	1P	0		0	3.7	833	10.69	1.019
Pond	B12	Basin 12		3.6	21.44	20.201	44.06	0.47	11L	2.02	11L	0		0	2.49	837.54	12.37	1.502
Pond	B13	Basin 13		3.6	69.87	64.115	22.11	0.44	11L	34.55	11L	0		0	34.99	843.39	10.22	2.73
Pond	B4	Basin 4		3.6	41.42	38.712	55.38	0.54	Ck Qa	14.66	Ck Qa	0		0	15.2	838.95	10.5	2.555
Pond	B5	Basin 5		3.6	16.32	32.696	30.34	0.38	SD	4.28		0		0	4.65	847.07	11.22	1.268
Pond	B6	Basin 6		3.6	30.64	34.039	52.56	0.37	Ck Qb	15.84	Ck Qb	0		0	16.21	851.09	10.45	1.896
Pond	B7	Basin 7		3.6	17.05	108.754	33.3	1.14	Ex SD	6.98		0		0	8.12	841.95	14.56	3.351
Pond	B8	Basin 8		3.6	22.23	44.689	35.47	0.51	SD	5.93		0		0	6.44	857.36	11.62	2.263
Pond	B9	Basin 9		3.6	3.86	11.446	17.36	0	6L	2.51		0		0	2.51	848.8	10.44	0.12
Pond	Ex SD	Tract #1632 Ex. 36" SD Outlet		3.6	6.98	108.754	33.3	0	1L	6.98		0		0	6.98	837	14.56	0
Pond	MC Q	SD System		3.6	28.37	21.5	80	0.11	2P	13.65	B1	14.45		0	28.21	845.91	9.99	0.519
Pond	SD	42" HDPE SD		3.6	10.07	77.385	33.3	0	B7	10.07		0		0	10.07	845.37	11.64	0
Link	1L	DS Tailwater		3.6	6.98	108.754	33.3	0		6.98		0		0	0	835	0.01	0
Link	6L	To Existing Meadowlark Road		3.6	11.61	223.467	0.89	0		11.61		0		0	0	0	0.01	0
Link	10L	To Linne Road Channel		3.6	10.83	276.531	1.6	0	16L	10.83		0		0	0	0	0.01	0
Link	11L	To Fontana Road SD		3.6	60.91	223.567	22.19	0		60.91		0		0	0	0	0.01	0
Link	15L	Sherwood/Niblick LP Xing		3.6	69.15	71.958	15.52	0	16L	69.15		0		0	0	0	0.01	0
Link	16L	Airport & Linne Road SD		3.6	79.54	359.38	4.52	0		79.54		0		0	0	0	0.01	0
Link	17L	Flow at Creek XS 1c		3.6	0	0	0	0		0		0		0	0	836.3	0.01	0
Link	22L	Linne Rd Ex Bypass Flow		3.6	17.03	0	0	0	15P	17.03		0		0	0	0	0.01	0
Link	Ck Qa	100 Yr WSE in Creek (a)		3.6	217.11	895.287	7.99	0		217.11		0		0	0	0	0.01	0
Link	Ck Qb	100 Yr WSE in Creek (b)		3.6	15.84	34.039	52.56	0	7R	15.84		0		0	0	842.5	0.01	0

TABLE 11 - HYDROGRAPH ANALYSIS

PROPOSED CONDITIONS RESULTS																		
Node Type	Node Number	Node Name	Event	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Imperv. Inflow Area (%)	Discarded Outflow Peak (cfs)	Primary Routing	Primary Outflow Peak (cfs)	Secondary Routing	Secondary Outflow Peak (cfs)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)
Subcat	1	Subcat 1		4.2	0	0	0	0	B1	15.92		0		0	0	0	0	0
Subcat	2	Subcat 2		4.2	0	0	0	0	B1	17.18		0		0	0	0	0	0
Subcat	3	Subcat 3		4.2	0	0	0	0	MC Q	33.79		0		0	0	0	0	0
Subcat	3a{(1)}-Ex	Subcat 3a(1)-Ex		4.2	0	0	0	0	Ck Qa	#REF!		0		0	0	0	0	0
Subcat	3a{(2)}-Ex	Subcat 3a(2)-Ex		4.2	0	0	0	0	8R	#REF!		0		0	0	0	0	0
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex		4.2	0	0	0	0	7R	#REF!		0		0	0	0	0	0
Subcat	3b-Ex	Subcat 3b-Ex		4.2	0	0	0	0	6R	90.77		0		0	0	0	0	0
Subcat	4	Subcat 4		4.2	0	0	0	0	B4	50.91		0		0	0	0	0	0
Subcat	5	Subcat 5		4.2	0	0	0	0	B5	21.35		0		0	0	0	0	0
Subcat	6	Subcat 6		4.2	0	0	0	0	B6	37.81		0		0	0	0	0	0
Subcat	7	Subcat 7		4.2	0	0	0	0	B7	20.76		0		0	0	0	0	0
Subcat	8	Subcat 8		4.2	0	0	0	0	B8	26.42		0		0	0	0	0	0
Subcat	8a-Ex	Subcat 8a-Ex		4.2	0	0	0	0	B8	2.34		0		0	0	0	0	0
Subcat	9	Subcat 9		4.2	0	0	0	0	B9	5.46		0		0	0	0	0	0
Subcat	9a-Ex	Subcat 9a-Ex		4.2	0	0	0	0	6L	18.56		0		0	0	0	0	0
Subcat	10	Subcat 10		4.2	0	0	0	0	B10	32.9		0		0	0	0	0	0
Subcat	10a-Ex	Subcat 10a-Ex		4.2	0	0	0	0	1P	55.07		0		0	0	0	0	0
Subcat	11	Subcat 11		4.2	0	0	0	0	B11	20.25		0		0	0	0	0	0
Subcat	12	Subcat 12		4.2	0	0	0	0	B12	24.79		0		0	0	0	0	0
Subcat	12a-Ex	Subcat 12a-Ex		4.2	0	0	0	0	B12	2.12		0		0	0	0	0	0
Subcat	13	Subcat 13		4.2	0	0	0	0	B13	41.3		0		0	0	0	0	0
Subcat	13a-Ex	Subcat 13a-Ex		4.2	0	0	0	0	B13	2.83		0		0	0	0	0	0
Subcat	13b-Ex	Subcat 13b-Ex		4.2	0	0	0	0	B13	26.29		0		0	0	0	0	0
Subcat	13c-Ex	Subcat 13c-Ex		4.2	0	0	0	0	B13	18.8		0		0	0	0	0	0
Subcat	14	Subcat 14		4.2	0	0	0	0	15L	16.31		0		0	0	0	0	0
Subcat	14a{(1)}-Ex	Subcat 14a(1)-Ex		4.2	0	0	0	0	15L	17.95		0		0	0	0	0	0
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex		4.2	0	0	0	0	16P	4.41		0		0	0	0	0	0
Subcat	14b-Ex	Subcat 14b-Ex		4.2	0	0	0	0	15L	55.28		0		0	0	0	0	0
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex		4.2	0	0	0	0	18P	40.74		0		0	0	0	0	0
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex		4.2	0	0	0	0	18P	36.62		0		0	0	0	0	0
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex		4.2	0	0	0	0	19P	19.85		0		0	0	0	0	0
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex		4.2	0	0	0	0	20P	12.74		0		0	0	0	0	0
Subcat	14d-Ex	Subcat 14d-Ex		4.2	0	0	0	0	17P	161.34		0		0	0	0	0	0
Subcat	14e-Ex	Subcat 14e-Ex		4.2	0	0	0	0	16L	3.76		0		0	0	0	0	0
Reach	6R	Un-named Creek 1c	25 Year	4.2	128.4	757.079	0	0	7R	120.77		0		0	0	844.29	10.24	0.825
Reach	7R	Creek XS 1b		4.2	285.9	797.122	2.24	0	8R	281.36		0		0	0	840.64	10.29	1.995
Reach	8R	Creek 1b		4.2	282.85	805.022	2.22	0	Ck Qa	280.93		0		0	0	836.34	10.34	1.037
Reach	17R	Reach 1d		4.2	56.21	0	0	0	6R	45.09		0		0	0	854.18	10.07	0.357
Reach	Ex Chl	RCP Dbl Arch 59x36 Outlet		4.2	149.04	0	0	0	7R	149		0		0	0	841.72	10.04	0.13
Pond	1P	SD Inlet with Bypass SD		4.2	57.87	108.566	6.93	0	11L	57.87	11L	0		0	57.87	825.45	9.98	0
Pond	2P	60" SD MH		4.2	16.26	21.5	80	0	B1	16.26	B1	0		0	16.26	840.22	9.99	0
Pond	15P	SD System 42" HDPE		4.2	36.99	0	0	0	B1	36.99		0		0	36.99	844.52	10.09	0
Pond	16P	Dbl Conc. Arch Culvert (37x23)		4.2	15.27	276.531	1.6	0	10L	15.27		0		0	15.27	844.48	10.07	0
Pond	17P	Gran Cielo Dwy		4.2	161.34	166.738	0.91	0	18P	104.8	18P	0.01	17R	56.21	161.03	855	9.99	0.253
Pond	18P	GC-CkD1		4.2	181.92	240.622	1.05	0	19P	0.6	19P	25.9	Ex Chl	149.04	175.31	849.52	10.03	0.309
Pond	19P	GC-CkD2		4.2	45.55	260.311	0.99	0	20P	1.23	20P	33.35	22L	5.36	39.95	849.11	10.08	0.48
Pond	20P	GC-CkD3		4.2	45.11	274.094	0.94	0	16P	5.62	16P	6.57	22L	31.77	43.97	845.79	10.1	0.304
Pond	B1	Basin 1		4.2	93.8	47.388	67.98	1.09	Ck Qa	29.18	Ck Qa	0		0	30.26	837	10.6	5.171
Pond	B10	Basin 10		4.2	32.9	30.685	61.94	0.84	11L	6.57	11L	0		0	7.4	817.99	11.45	3.196
Pond	B11	Basin 11		4.2	20.25	14.461	52	0.26	1P	5.24	1P	0		0	5.5	833.6	10.55	1.193
Pond	B12	Basin 12		4.2	26.91	20.201	44.06	0.49	11L	2.71	11L	0		0	3.2	838.07	12.16	1.809
Pond	B13	Basin 13		4.2	89.2	64.115	22.11	0.46	11L	62.05	11L	0		0	62.52	843.86	10.09	2.981
Pond	B4	Basin 4		4.2	50.91	38.712	55.38	0.57	Ck Qa	19.48	Ck Qa	0		0	20.05	839.49	10.46	2.897
Pond	B5	Basin 5		4.2	21.35	32.696	30.34	0.39	SD	7.13		0		0	7.52	847.51	10.91	1.476
Pond	B6	Basin 6		4.2	37.81	34.039	52.56	0.38	Ck Qb	23.43	Ck Qb	0		0	23.8	851.4	10.32	2.036
Pond	B7	Basin 7		4.2	28.12	108.754	33.3	1.2	Ex SD	11.9		0		0	13.1	842.46	13.1	4.094
Pond	B8	Basin 8		4.2	28.75	44.689	35.47	0.53	SD	12.49		0		0	13.01	857.57	10.87	2.399
Pond	B9	Basin 9		4.2	5.46	11.446	17.36	0	6L	3.56		0		0	3.56	849	10.42	0.153
Pond	Ex SD	Tract #1632 Ex. 36" SD Outlet		4.2	11.9	108.754	33.3	0	1L	11.9		0		0	11.9	837.33	13.1	0
Pond	MC Q	SD System		4.2	33.79	21.5	80	0.12	2P	16.26	B1	17.22		0	33.6	845.96	9.99	0.526
Pond	SD	42" HDPE SD		4.2	19.61	77.385	33.3	0	B7	19.61		0		0	19.61	845.86	10.93	0
Link	1L	DS Tailwater		4.2	11.9	108.754	33.3	0		11.9		0		0	0	835	0.01	0
Link	6L	To Existing Meadowlark Road		4.2	22.1	223.467	0.89	0		22.1		0		0	0	0	0.01	0
Link	10L	To Linne Road Channel		4.2	15.27	276.531	1.6	0	16L	15.27		0		0	0	0	0.01	0
Link	11L	To Fontana Road SD		4.2	111.64	223.567	22.19	0		111.64		0		0	0	0	0.01	0
Link	15L	Sherwood/Niblick LP Xing		4.2	89.39	71.958	15.52	0	16L	89.39		0		0	0	0	0.01	0
Link	16L	Airport & Linne Road SD		4.2	106.29	359.38	4.52	0		106.29		0		0	0	0	0.01	0
Link	17L	Flow at Creek XS 1c		4.2	0	0	0	0		0		0		0	0	836.3	0.01	0
Link	22L	Linne Rd Ex Bypass Flow		4.2	36.99	0	0	0	15P	36.99		0		0	0	0	0.01	0
Link	Ck Qa	100 Yr WSE in Creek (a)		4.2	327.05	895.287	7.99	0		327.05		0		0	0	0	0.01	0
Link	Ck Qb	100 Yr WSE in Creek (b)		4.2	23.43	34.039	52.56	0	7R	23.43		0		0	0	842.5	0.01	0

TABLE 11 - HYDROGRAPH ANALYSIS

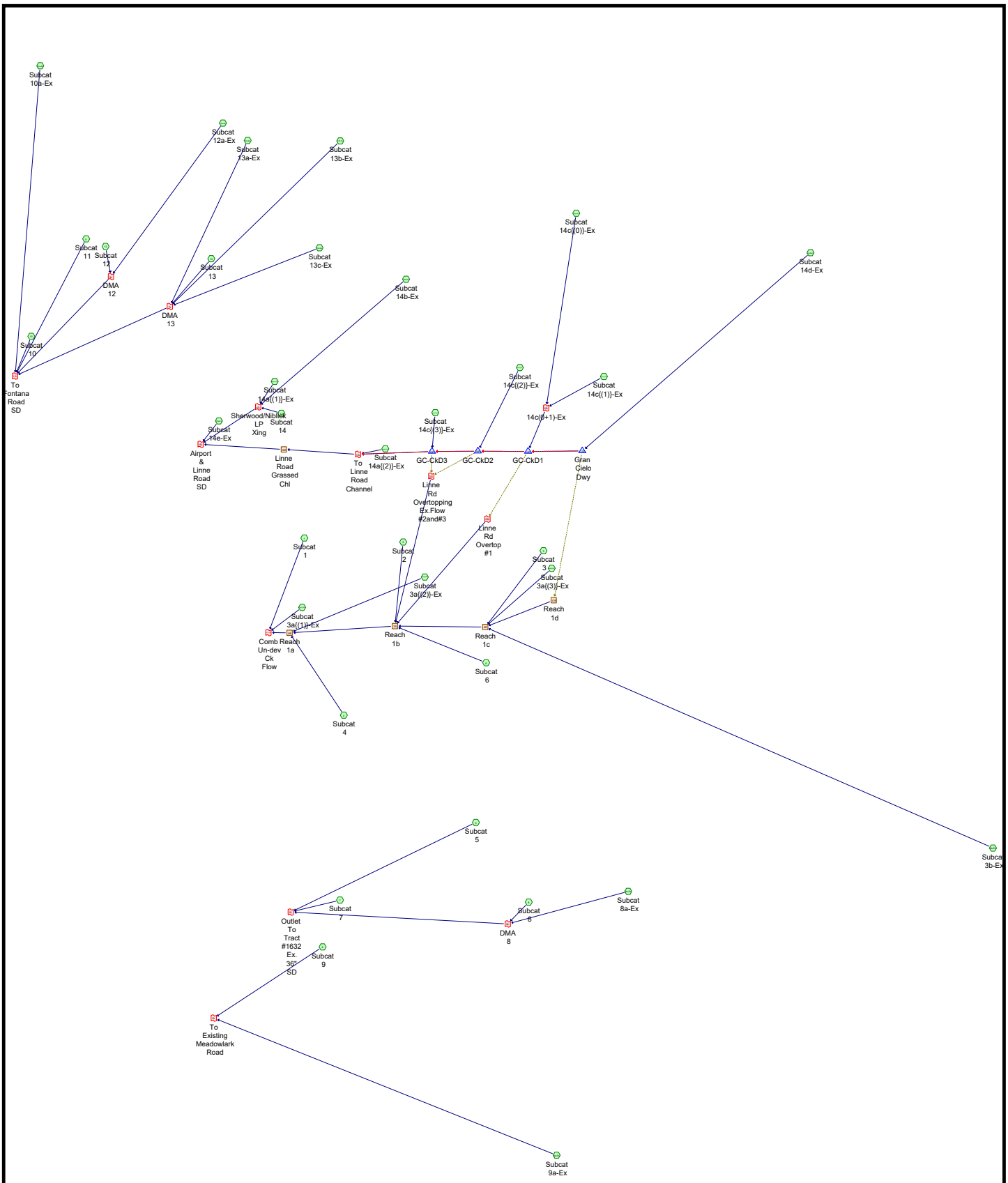
PROPOSED CONDITIONS RESULTS																		
Node Type	Node Number	Node Name	Event	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Imperv. Inflow Area (%)	Discarded Outflow Peak (cfs)	Primary Routing	Primary Outflow Peak (cfs)	Secondary Routing	Secondary Outflow Peak (cfs)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)
Subcat	1	Subcat 1		4.6	0	0	0	0	B1	17.91		0		0	0	0	0	0
Subcat	2	Subcat 2		4.6	0	0	0	0	B1	19.32		0		0	0	0	0	0
Subcat	3	Subcat 3		4.6	0	0	0	0	MC Q	37.43		0		0	0	0	0	0
Subcat	3a{(1)}-Ex	Subcat 3a(1)-Ex		4.6	0	0	0	0	Ck Qa	#REF!		0		0	0	0	0	0
Subcat	3a{(2)}-Ex	Subcat 3a(2)-Ex		4.6	0	0	0	0	8R	#REF!		0		0	0	0	0	0
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex		4.6	0	0	0	0	7R	#REF!		0		0	0	0	0	0
Subcat	3b-Ex	Subcat 3b-Ex		4.6	0	0	0	0	6R	126.69		0		0	0	0	0	0
Subcat	4	Subcat 4		4.6	0	0	0	0	B4	57.43		0		0	0	0	0	0
Subcat	5	Subcat 5		4.6	0	0	0	0	B5	25.03		0		0	0	0	0	0
Subcat	6	Subcat 6		4.6	0	0	0	0	B6	42.75		0		0	0	0	0	0
Subcat	7	Subcat 7		4.6	0	0	0	0	B7	24.19		0		0	0	0	0	0
Subcat	8	Subcat 8		4.6	0	0	0	0	B8	29.92		0		0	0	0	0	0
Subcat	8a-Ex	Subcat 8a-Ex		4.6	0	0	0	0	B8	3.6		0		0	0	0	0	0
Subcat	9	Subcat 9		4.6	0	0	0	0	B9	6.65		0		0	0	0	0	0
Subcat	9a-Ex	Subcat 9a-Ex		4.6	0	0	0	0	6L	26.71		0		0	0	0	0	0
Subcat	10	Subcat 10		4.6	0	0	0	0	B10	36.9		0		0	0	0	0	0
Subcat	10a-Ex	Subcat 10a-Ex		4.6	0	0	0	0	1P	69.86		0		0	0	0	0	0
Subcat	11	Subcat 11		4.6	0	0	0	0	B11	22.92		0		0	0	0	0	0
Subcat	12	Subcat 12		4.6	0	0	0	0	B12	28.11		0		0	0	0	0	0
Subcat	12a-Ex	Subcat 12a-Ex		4.6	0	0	0	0	B12	2.6		0		0	0	0	0	0
Subcat	13	Subcat 13		4.6	0	0	0	0	B13	46.73		0		0	0	0	0	0
Subcat	13a-Ex	Subcat 13a-Ex		4.6	0	0	0	0	B13	3.47		0		0	0	0	0	0
Subcat	13b-Ex	Subcat 13b-Ex		4.6	0	0	0	0	B13	30.39		0		0	0	0	0	0
Subcat	13c-Ex	Subcat 13c-Ex		4.6	0	0	0	0	B13	21.92		0		0	0	0	0	0
Subcat	14	Subcat 14		4.6	0	0	0	0	15L	18.17		0		0	0	0	0	0
Subcat	14a{(1)}-Ex	Subcat 14a(1)-Ex		4.6	0	0	0	0	15L	20.51		0		0	0	0	0	0
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex		4.6	0	0	0	0	16P	4.9		0		0	0	0	0	0
Subcat	14b-Ex	Subcat 14b-Ex		4.6	0	0	0	0	15L	64.81		0		0	0	0	0	0
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex		4.6	0	0	0	0	18P	47.2		0		0	0	0	0	0
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex		4.6	0	0	0	0	18P	42.49		0		0	0	0	0	0
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex		4.6	0	0	0	0	19P	23.48		0		0	0	0	0	0
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex		4.6	0	0	0	0	20P	15.23		0		0	0	0	0	0
Subcat	14d-Ex	Subcat 14d-Ex		4.6	0	0	0	0	17P	188.4		0		0	0	0	0	0
Subcat	14e-Ex	Subcat 14e-Ex		4.6	0	0	0	0	16L	5.09		0		0	0	0	0	0
Reach	6R	Un-named Creek 1c	50 Year	4.6	185.3	757.079	0	0	7R	173.74		0		0	0	844.52	10.23	1.228
Reach	7R	Creek XS 1b		4.6	352.23	797.122	2.24	0	8R	347.28		0		0	0	840.77	10.27	2.327
Reach	8R	Creek 1b		4.6	349.3	805.022	2.22	0	Ck Qa	346.69		0		0	0	836.59	10.33	1.292
Reach	17R	Reach 1d		4.6	76.79	0	0	0	6R	64.43		0		0	0	854.26	10.06	0.466
Reach	Ex Chl	RCP Dbl Arch 59x36 Outlet		4.6	156.05	0	0	0	7R	156.01		0		0	0	841.73	10.04	0.135
Pond	1P	SD Inlet with Bypass SD		4.6	73.26	108.566	6.93	0	11L	73.26	11L	0		0	73.26	825.62	9.98	0
Pond	2P	60" SD MH		4.6	18.03	21.5	80	0	B1	18.03	B1	0		0	18.03	840.33	9.99	0
Pond	15P	SD System 42" HDPE		4.6	51.1	0	0	0	B1	51.1		0		0	51.1	844.59	10.08	0
Pond	16P	Dbl Conc. Arch Culvert (37x23)		4.6	17.74	276.531	1.6	0	10L	17.74		0		0	17.74	844.57	10.05	0
Pond	17P	Gran Cielo Dwy		4.6	188.4	166.738	0.91	0	18P	111.11	18P	0.18	17R	76.79	188.08	855.09	9.99	0.269
Pond	18P	GC-CkD1		4.6	200.71	240.622	1.05	0	19P	0.59	19P	35.96	Ex Chl	156.05	192.48	849.76	10.04	0.384
Pond	19P	GC-CkD2		4.6	58.68	260.311	0.99	0	20P	1.27	20P	41.32	22L	10.96	53.55	849.25	10.07	0.543
Pond	20P	GC-CkD3		4.6	55.32	274.094	0.94	0	16P	6.01	16P	8.13	22L	40.2	54.35	845.88	10.09	0.332
Pond	B1	Basin 1		4.6	115.89	47.388	67.98	1.12	Ck Qa	35.49	Ck Qa	0		0	36.61	837.56	10.6	5.949
Pond	B10	Basin 10		4.6	36.9	30.685	61.94	0.85	11L	9.72	11L	0		0	10.57	818.15	11.07	3.364
Pond	B11	Basin 11		4.6	22.92	14.461	52	0.27	1P	7.55	1P	0		0	7.82	833.87	10.42	1.278
Pond	B12	Basin 12		4.6	30.7	20.201	44.06	0.51	11L	3.48	11L	0		0	3.99	838.38	11.75	1.998
Pond	B13	Basin 13		4.6	102.5	64.115	22.11	0.47	11L	84.13	11L	0		0	84.6	844.03	10.04	3.076
Pond	B4	Basin 4		4.6	57.43	38.712	55.38	0.59	Ck Qa	23.63	Ck Qa	0		0	24.21	839.85	10.42	3.14
Pond	B5	Basin 5		4.6	25.03	32.696	30.34	0.41	SD	9.31		0		0	9.72	847.79	10.8	1.616
Pond	B6	Basin 6		4.6	42.75	34.039	52.56	0.38	Ck Qb	27.62	Ck Qb	0		0	28	851.6	10.29	2.127
Pond	B7	Basin 7		4.6	38.88	108.754	33.3	1.23	Ex SD	16.23		0		0	17.47	842.8	12.48	4.603
Pond	B8	Basin 8		4.6	33.51	44.689	35.47	0.53	SD	17.63		0		0	18.16	857.7	10.65	2.483
Pond	B9	Basin 9		4.6	6.65	11.446	17.36	0	6L	4.29		0		0	4.29	849.15	10.42	0.179
Pond	Ex SD	Tract #1632 Ex. 36" SD Outlet		4.6	16.23	108.754	33.3	0	1L	16.23		0		0	16.23	837.58	12.48	0
Pond	MC Q	SD System		4.6	37.43	21.5	80	0.12	2P	18.03	B1	19.09		0	37.24	845.99	9.99	0.53
Pond	SD	42" HDPE SD		4.6	26.8	77.385	33.3	0	B7	26.8		0		0	26.8	846.18	10.74	0
Link	1L	DS Tailwater		4.6	16.23	108.754	33.3	0		16.23		0		0	0	835	0.01	0
Link	6L	To Existing Meadowlark Road		4.6	31	223.467	0.89	0		31		0		0	0	0	0.01	0
Link	10L	To Linne Road Channel		4.6	17.74	276.531	1.6	0	16L	17.74		0		0	0	0	0.01	0
Link	11L	To Fontana Road SD		4.6	154.03	223.567	22.19	0		154.03		0		0	0	0	0.01	0
Link	15L	Sherwood/Niblick LP Xing		4.6	103.34	71.958	15.52	0	16L	103.34		0		0	0	0	0.01	0
Link	16L	Airport & Linne Road SD		4.6	124.53	359.38	4.52	0		124.53		0		0	0	0	0.01	0
Link	17L	Flow at Creek XS 1c		4.6	0	0	0	0		0		0		0	0	836.3	0.01	0
Link	22L	Linne Rd Ex Bypass Flow		4.6	51.1	0	0	0	15P	51.1		0		0	0	0	0.01	0
Link	Ck Qa	100 Yr WSE in Creek (a)		4.6	403.91	895.287	7.99	0		403.91		0		0	0	0	0.01	0
Link	Ck Qb	100 Yr WSE in Creek (b)		4.6	27.62	34.039	52.56	0	7R	27.62		0		0	0	842.5	0.01	0

TABLE 11 - HYDROGRAPH ANALYSIS

PROPOSED CONDITIONS RESULTS																		
Node Type	Node Number	Node Name	Event	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Imperv. Inflow Area (%)	Discarded Outflow Peak (cfs)	Primary Routing	Primary Outflow Peak (cfs)	Secondary Routing	Secondary Outflow Peak (cfs)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)
Subcat	1	Subcat 1		5.1	0	0	0	0	B1	20.49		0		0	0	0	0	0
Subcat	2	Subcat 2		5.1	0	0	0	0	B1	22.09		0		0	0	0	0	0
Subcat	3	Subcat 3		5.1	0	0	0	0	MC Q	42.04		0		0	0	0	0	0
Subcat	3a{(1)}-Ex	Subcat 3a(1)-Ex		5.1	0	0	0	0	Ck Qa	#REF!		0		0	0	0	0	0
Subcat	3a{(2)}-Ex	Subcat 3a(2)-Ex		5.1	0	0	0	0	8R	#REF!		0		0	0	0	0	0
Subcat	3a{(3)}-Ex	Subcat 3a{(3)}-Ex		5.1	0	0	0	0	7R	#REF!		0		0	0	0	0	0
Subcat	3b-Ex	Subcat 3b-Ex		5.1	0	0	0	0	6R	178.44		0		0	0	0	0	0
Subcat	4	Subcat 4		5.1	0	0	0	0	B4	65.77		0		0	0	0	0	0
Subcat	5	Subcat 5		5.1	0	0	0	0	B5	29.91		0		0	0	0	0	0
Subcat	6	Subcat 6		5.1	0	0	0	0	B6	49.06		0		0	0	0	0	0
Subcat	7	Subcat 7		5.1	0	0	0	0	B7	28.7		0		0	0	0	0	0
Subcat	8	Subcat 8		5.1	0	0	0	0	B8	34.41		0		0	0	0	0	0
Subcat	8a-Ex	Subcat 8a-Ex		5.1	0	0	0	0	B8	5.42		0		0	0	0	0	0
Subcat	9	Subcat 9		5.1	0	0	0	0	B9	8.24		0		0	0	0	0	0
Subcat	9a-Ex	Subcat 9a-Ex		5.1	0	0	0	0	6L	38.64		0		0	0	0	0	0
Subcat	10	Subcat 10		5.1	0	0	0	0	B10	42.03		0		0	0	0	0	0
Subcat	10a-Ex	Subcat 10a-Ex		5.1	0	0	0	0	1P	89.48		0		0	0	0	0	0
Subcat	11	Subcat 11		5.1	0	0	0	0	B11	26.34		0		0	0	0	0	0
Subcat	12	Subcat 12		5.1	0	0	0	0	B12	32.36		0		0	0	0	0	0
Subcat	12a-Ex	Subcat 12a-Ex		5.1	0	0	0	0	B12	3.23		0		0	0	0	0	0
Subcat	13	Subcat 13		5.1	0	0	0	0	B13	53.68		0		0	0	0	0	0
Subcat	13a-Ex	Subcat 13a-Ex		5.1	0	0	0	0	B13	4.3		0		0	0	0	0	0
Subcat	13b-Ex	Subcat 13b-Ex		5.1	0	0	0	0	B13	35.59		0		0	0	0	0	0
Subcat	13c-Ex	Subcat 13c-Ex		5.1	0	0	0	0	B13	25.89		0		0	0	0	0	0
Subcat	14	Subcat 14		5.1	0	0	0	0	15L	20.52		0		0	0	0	0	0
Subcat	14a{(1)}-Ex	Subcat 14a(1)-Ex		5.1	0	0	0	0	15L	23.79		0		0	0	0	0	0
Subcat	14a{(2)}-Ex	Subcat 14a{(2)}-Ex		5.1	0	0	0	0	16P	5.52		0		0	0	0	0	0
Subcat	14b-Ex	Subcat 14b-Ex		5.1	0	0	0	0	15L	77.01		0		0	0	0	0	0
Subcat	14c{(0)}-Ex	Subcat 14c{(0)}-Ex		5.1	0	0	0	0	18P	55.41		0		0	0	0	0	0
Subcat	14c{(1)}-Ex	Subcat 14c{(1)}-Ex		5.1	0	0	0	0	18P	49.95		0		0	0	0	0	0
Subcat	14c{(2)}-Ex	Subcat 14c{(2)}-Ex		5.1	0	0	0	0	19P	28.16		0		0	0	0	0	0
Subcat	14c{(3)}-Ex	Subcat 14c{(3)}-Ex		5.1	0	0	0	0	20P	18.46		0		0	0	0	0	0
Subcat	14d-Ex	Subcat 14d-Ex		5.1	0	0	0	0	17P	222.96		0		0	0	0	0	0
Subcat	14e-Ex	Subcat 14e-Ex		5.1	0	0	0	0	16L	6.93		0		0	0	0	0	0
Reach	6R	Un-named Creek 1c	100 Year	5.1	265.18	757.079	0	0	7R	248.04		0		0	0	844.83	10.21	1.79
Reach	7R	Creek XS 1b		5.1	440.1	797.122	2.24	0	8R	434.53		0		0	0	840.91	10.26	2.737
Reach	8R	Creek 1b		5.1	437.31	805.022	2.22	0	Ck Qa	433.95		0		0	0	836.91	10.32	1.628
Reach	17R	Reach 1d		5.1	103.94	0	0	0	6R	90.36		0		0	0	854.34	10.06	0.601
Reach	Ex Chl	RCP Dbl Arch 59x36 Outlet		5.1	163.56	0	0	0	7R	163.52		0		0	0	841.75	10.05	0.14
Pond	1P	SD Inlet with Bypass SD		5.1	93.81	108.566	6.93	0	11L	93.81	11L	0		0	93.81	825.82	9.98	0
Pond	2P	60" SD MH		5.1	20.2	21.5	80	0	B1	20.2	B1	0		0	20.2	840.46	9.99	0
Pond	15P	SD System 42" HDPE		5.1	68.7	0	0	0	B1	68.7		0		0	68.7	844.66	10.08	0
Pond	16P	Dbl Conc. Arch Culvert (37x23)		5.1	20.76	276.531	1.6	0	10L	20.76		0		0	20.76	844.69	10.04	0
Pond	17P	Gran Cielo Dwy		5.1	222.96	166.738	0.91	0	18P	118.06	18P	0.66	17R	103.94	222.66	855.19	9.99	0.289
Pond	18P	GC-CkD1		5.1	223.8	240.622	1.05	0	19P	0.62	19P	49.36	Ex Chl	163.56	213.46	850.03	10.04	0.483
Pond	19P	GC-CkD2		5.1	76.4	260.311	0.99	0	20P	1.3	20P	50.4	22L	18.98	70.68	849.41	10.07	0.624
Pond	20P	GC-CkD3		5.1	67.1	274.094	0.94	0	16P	6.37	16P	10.21	22L	49.73	66.32	845.96	10.08	0.361
Pond	B1	Basin 1		5.1	143.08	47.388	67.98	1.18	Ck Qa	42.68	Ck Qa	0		0	43.86	838.35	10.61	7.075
Pond	B10	Basin 10		5.1	42.03	30.685	61.94	0.86	11L	14.28	11L	0		0	15.14	818.33	10.82	3.554
Pond	B11	Basin 11		5.1	26.34	14.461	52	0.28	1P	10.23	1P	0		0	10.51	834.16	10.34	1.37
Pond	B12	Basin 12		5.1	35.58	20.201	44.06	0.53	11L	5.12	11L	0		0	5.64	838.7	11.06	2.202
Pond	B13	Basin 13		5.1	119.46	64.115	22.11	0.48	11L	108.1	11L	0		0	108.58	844.19	10.01	3.165
Pond	B4	Basin 4		5.1	65.77	38.712	55.38	0.6	Ck Qa	34.06	Ck Qa	0		0	34.66	840.12	10.29	3.32
Pond	B5	Basin 5		5.1	29.91	32.696	30.34	0.42	SD	12.28		0		0	12.7	848.15	10.7	1.797
Pond	B6	Basin 6		5.1	49.06	34.039	52.56	0.39	Ck Qb	32.02	Ck Qb	0		0	32.41	851.88	10.28	2.255
Pond	B7	Basin 7		5.1	53.39	108.754	33.3	1.28	Ex SD	22.91		0		0	24.18	843.21	11.97	5.229
Pond	B8	Basin 8		5.1	39.82	44.689	35.47	0.54	SD	24.66		0		0	25.2	857.85	10.48	2.582
Pond	B9	Basin 9		5.1	8.24	11.446	17.36	0	6L	5.1		0		0	5.1	849.37	10.45	0.219
Pond	Ex SD	Tract #1632 Ex. 36" SD Outlet		5.1	22.91	108.754	33.3	0	1L	22.91		0		0	22.91	837.94	11.97	0
Pond	MC Q	SD System		5.1	42.04	21.5	80	0.12	2P	20.2	B1	21.51		0	41.83	846.03	9.99	0.535
Pond	SD	42" HDPE SD		5.1	36.4	77.385	33.3	0	B7	36.4		0		0	36.4	846.57	10.6	0
Link	1L	DS Tailwater		5.1	22.91	108.754	33.3	0		22.91		0		0	0	835	0.01	0
Link	6L	To Existing Meadowlark Road		5.1	43.71	223.467	0.89	0		43.71		0		0	0	0	0.01	0
Link	10L	To Linne Road Channel		5.1	20.76	276.531	1.6	0	16L	20.76		0		0	0	0	0.01	0
Link	11L	To Fontana Road SD		5.1	203.22	223.567	22.19	0		203.22		0		0	0	0	0.01	0
Link	15L	Sherwood/Niblick LP Xing		5.1	121.15	71.958	15.52	0	16L	121.15		0		0	0	0	0.01	0
Link	16L	Airport & Linne Road SD		5.1	147.31	359.38	4.52	0		147.31		0		0	0	0	0.01	0
Link	17L	Flow at Creek XS 1c		5.1	0	0	0	0		0		0		0	0	836.3	0.01	0
Link	22L	Linne Rd Ex Bypass Flow		5.1	68.7	0	0	0	15P	68.7		0		0	0	0	0.01	0
Link	Ck Qa	100 Yr WSE in Creek (a)		5.1	508.89	895.287	7.99	0		508.89		0		0	0	0	0.01	0
Link	Ck Qb	100 Yr WSE in Creek (b)		5.1	32.02	34.039	52.56	0	7R	32.02		0		0	0	842.5	0.01	0

Appendix H

Existing Hydrograph Analysis



Subcat Reach Pond Link

Routing Diagram for _2019-01-21_1465.01 O-C Ex Conds Hydl_City Precip_18P BCW-w

Prepared by Wallace Group, Printed 1/24/2019

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.765	68	1 acre lots, 20% imp, HSG B (4)
1,241.335	58	Meadow, non-grazed, HSG B (1, 2, 3, 3a{(1)}-Ex, 3a{(2)}-Ex, 3a{(3)}-Ex, 3b-Ex, 4, 5, 6, 7, 8, 8a-Ex, 9, 9a-Ex, 10, 10a-Ex, 11, 12, 13, 14, 14a{(1)}-Ex, 14a{(2)}-Ex, 14c{(2)}-Ex, 14e-Ex)
193.436	71	Meadow, non-grazed, HSG C (3, 3a{(2)}-Ex, 3a{(3)}-Ex, 3b-Ex, 6, 10, 10a-Ex, 11, 12, 12a-Ex, 13, 13a-Ex, 14d-Ex)
2.803	78	Meadow, non-grazed, HSG D (9, 9a-Ex)
0.918	77	Natural western desert, HSG B (10, 14e-Ex)
7.553	98	Paved roads w/curbs & sewers, HSG B (10, 14, 14a{(2)}-Ex, 14c{(1)}-Ex, 14d-Ex, 14e-Ex)
2.005	98	Paved roads w/curbs & sewers, HSG C (3, 3b-Ex, 14c{(0)}-Ex, 14c{(1)}-Ex, 14d-Ex)
107.281	75	Row crops, SR + CR, Good, HSG B (13, 13c-Ex, 14a{(1)}-Ex, 14a{(2)}-Ex, 14b-Ex, 14c{(1)}-Ex, 14c{(2)}-Ex, 14c{(3)}-Ex, 14d-Ex)
252.359	82	Row crops, SR + CR, Good, HSG C (13b-Ex, 13c-Ex, 14b-Ex, 14c{(0)}-Ex, 14c{(1)}-Ex, 14c{(2)}-Ex, 14d-Ex)
1,810.455	**64**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1,359.852	HSG B	1, 2, 3, 3a{(1)}-Ex, 3a{(2)}-Ex, 3a{(3)}-Ex, 3b-Ex, 4, 5, 6, 7, 8, 8a-Ex, 9, 9a-Ex, 10, 10a-Ex, 11, 12, 13, 13c-Ex, 14, 14a{(1)}-Ex, 14a{(2)}-Ex, 14b-Ex, 14c{(1)}-Ex, 14c{(2)}-Ex, 14c{(3)}-Ex, 14d-Ex, 14e-Ex
447.800	HSG C	3, 3a{(2)}-Ex, 3a{(3)}-Ex, 3b-Ex, 6, 10, 10a-Ex, 11, 12, 12a-Ex, 13, 13a-Ex, 13b-Ex, 13c-Ex, 14b-Ex, 14c{(0)}-Ex, 14c{(1)}-Ex, 14c{(2)}-Ex, 14d-Ex
2.803	HSG D	9, 9a-Ex
0.000	Other	
1,810.455		**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	2.765	0.000	0.000	0.000	2.765	1 acre lots, 20% imp	4
0.000	1,241.335	193.436	2.803	0.000	1,437.574	Meadow, non-grazed	1, 2, 3, 3a{(1)}-Ex, 3a{(2)}-Ex, 3a{(3)}-Ex, 3b-Ex, 4, 5, 6, 7, 8, 8a-Ex, 9, 9a-Ex, 10, 10a-Ex, 11, 12, 12a-Ex, 13, 13a-Ex, 14, 14a{(1)}-Ex, 14a{(2)}-Ex, 14c{(2)}-Ex, 14d-Ex, 14e-Ex
0.000	0.918	0.000	0.000	0.000	0.918	Natural western desert	10, 14e-Ex
0.000	7.553	2.005	0.000	0.000	9.557	Paved roads w/curbs & sewers	3, 3b-Ex, 10, 14, 14a{(2)}-Ex, 14c{(0)}-Ex, 14c{(1)}-Ex, 14d-Ex, 14e-Ex
0.000	107.281	252.359	0.000	0.000	359.640	Row crops, SR + CR, Good	13, 13b-Ex, 13c-Ex, 14a{(1)}-Ex, 14a{(2)}-Ex, 14b-Ex, 14c{(0)}-Ex, 14c{(1)}-Ex, 14c{(2)}-Ex, 14c{(3)}-Ex, 14d-Ex
0.000	**1,359.852**	**447.800**	**2.803**	**0.000**	**1,810.455**	**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	17P	852.84	851.76	77.0	0.0140	0.025	30.0	0.0	0.0
2	18P	847.69	847.67	26.0	0.0008	0.010	6.0	0.0	0.0
3	19P	846.12	845.98	26.0	0.0054	0.010	6.0	0.0	0.0
4	20P	844.22	843.98	26.0	0.0092	0.021	18.0	0.0	0.0

Time span=0.10-56.00 hrs, dt=0.02 hrs, 2796 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Subcat 1 Runoff Area=11.244 ac 0.00% Impervious Runoff Depth=0.10"
Tc=10.0 min CN=58/0 Runoff=0.10 cfs 0.090 af

Subcatchment2: Subcat 2 Runoff Area=14.644 ac 0.00% Impervious Runoff Depth=0.10"
Tc=11.5 min CN=58/0 Runoff=0.13 cfs 0.117 af

Subcatchment3: Subcat 3 Runoff Area=21.500 ac 0.02% Impervious Runoff Depth=0.19"
Tc=16.9 min CN=63/98 Runoff=0.35 cfs 0.341 af

Subcatchment3a{(1)}-Ex: Subcat 3a{(1)}-Ex Runoff Area=4.164 ac 0.00% Impervious Runoff Depth=0.10"
Tc=10.0 min CN=58/0 Runoff=0.04 cfs 0.033 af

Subcatchment3a{(2)}-Ex: Subcat 3a{(2)}-Ex Runoff Area=7.900 ac 0.00% Impervious Runoff Depth=0.15"
Tc=10.0 min CN=61/0 Runoff=0.10 cfs 0.098 af

Subcatchment3a{(3)}-Ex: Subcat 3a{(3)}-Ex Runoff Area=6.004 ac 0.00% Impervious Runoff Depth=0.35"
Tc=10.0 min CN=69/0 Runoff=0.43 cfs 0.173 af

Subcatchment3b-Ex: Subcat 3b-Ex Runoff Area=757.079 ac 0.00% Impervious Runoff Depth=0.13"
Tc=45.5 min CN=60/98 Runoff=8.34 cfs 8.178 af

Subcatchment4: Subcat 4 Runoff Area=38.712 ac 1.43% Impervious Runoff Depth=0.12"
Tc=14.2 min CN=58/98 Runoff=0.60 cfs 0.401 af

Subcatchment5: Subcat 5 Runoff Area=32.700 ac 0.00% Impervious Runoff Depth=0.10"
Tc=21.2 min CN=58/0 Runoff=0.29 cfs 0.261 af

Subcatchment6: Subcat 6 Runoff Area=34.035 ac 0.00% Impervious Runoff Depth=0.13"
Tc=20.1 min CN=60/0 Runoff=0.38 cfs 0.368 af

Subcatchment7: Subcat 7 Runoff Area=31.369 ac 0.00% Impervious Runoff Depth=0.10"
Tc=23.2 min CN=58/0 Runoff=0.28 cfs 0.250 af

Subcatchment8: Subcat 8 Runoff Area=30.487 ac 0.00% Impervious Runoff Depth=0.10"
Tc=28.8 min CN=58/0 Runoff=0.27 cfs 0.243 af

Subcatchment8a-Ex: Subcat 8a-Ex Runoff Area=14.202 ac 0.00% Impervious Runoff Depth=0.10"
Tc=16.5 min CN=58/0 Runoff=0.13 cfs 0.113 af

Subcatchment9: Subcat 9 Runoff Area=11.446 ac 0.00% Impervious Runoff Depth=0.17"
Tc=22.3 min CN=62/0 Runoff=0.16 cfs 0.161 af

Subcatchment9a-Ex: Subcat 9a-Ex Runoff Area=212.022 ac 0.00% Impervious Runoff Depth=0.10"
Flow Length=4,909' Tc=51.3 min CN=58/0 Runoff=1.86 cfs 1.691 af

Subcatchment10: Subcat 10 Runoff Area=30.685 ac 3.88% Impervious Runoff Depth=0.19"
Tc=22.6 min CN=59/98 Runoff=1.03 cfs 0.484 af

Subcatchment10a-Ex: Subcat 10a-Ex Runoff Area=94.105 ac 0.00% Impervious Runoff Depth=0.29"
Tc=11.0 min CN=67/0 Runoff=3.41 cfs 2.262 af

Subcatchment11: Subcat 11 Runoff Area=14.461 ac 0.00% Impervious Runoff Depth=0.11"
Tc=11.1 min CN=59/0 Runoff=0.14 cfs 0.135 af

Subcatchment12: Subcat 12 Runoff Area=17.572 ac 0.00% Impervious Runoff Depth=0.11"
Tc=10.0 min CN=59/0 Runoff=0.17 cfs 0.164 af

Subcatchment12a-Ex: Subcat 12a-Ex Runoff Area=2.629 ac 0.00% Impervious Runoff Depth=0.41"
Tc=10.0 min CN=71/0 Runoff=0.30 cfs 0.090 af

Subcatchment13: Subcat 13 Runoff Area=27.742 ac 0.00% Impervious Runoff Depth=0.15"
Flow Length=1,750' Tc=10.0 min CN=61/0 Runoff=0.34 cfs 0.343 af

Subcatchment13a-Ex: Subcat 13a-Ex Runoff Area=3.505 ac 0.00% Impervious Runoff Depth=0.41"
Tc=10.0 min CN=71/0 Runoff=0.40 cfs 0.119 af

Subcatchment13b-Ex: Subcat 13b-Ex Runoff Area=18.461 ac 0.00% Impervious Runoff Depth=0.88"
Tc=10.0 min CN=82/0 Runoff=8.60 cfs 1.346 af

Subcatchment13c-Ex: Subcat 13c-Ex Runoff Area=14.407 ac 0.00% Impervious Runoff Depth=0.77"
Tc=10.0 min CN=80/0 Runoff=5.61 cfs 0.929 af

Subcatchment14: Subcat 14 Runoff Area=8.669 ac 51.27% Impervious Runoff Depth=1.12"
Tc=10.0 min CN=58/98 Runoff=5.51 cfs 0.812 af

Subcatchment14a{(1)}-Ex: Subcat 14a{(1)}-Ex Runoff Area=13.081 ac 0.00% Impervious Runoff Depth=0.21"
Tc=10.0 min CN=64/0 Runoff=0.24 cfs 0.232 af

Subcatchment14a{(2)}-Ex: Subcat 14a{(2)}-Ex Runoff Area=2.438 ac 29.80% Impervious Runoff Depth=0.69"
Tc=10.0 min CN=58/98 Runoff=0.90 cfs 0.141 af

Subcatchment14b-Ex: Subcat 14b-Ex Runoff Area=50.209 ac 0.00% Impervious Runoff Depth=0.73"
Tc=13.4 min CN=79/0 Runoff=15.48 cfs 3.036 af

Subcatchment14c{(0)}-Ex: Subcat 14c{(0)}-Ex Runoff Area=43.677 ac 1.21% Impervious Runoff Depth=0.89"
Tc=24.5 min CN=82/98 Runoff=13.05 cfs 3.239 af

Subcatchment14c{(1)}-Ex: Subcat 14c{(1)}-Ex Runoff Area=30.208 ac 1.61% Impervious Runoff Depth=0.84"
Tc=13.6 min CN=81/98 Runoff=11.56 cfs 2.124 af

Subcatchment14c{(2)}-Ex: Subcat 14c{(2)}-Ex Runoff Area=19.689 ac 0.00% Impervious Runoff Depth=0.64"
Tc=13.2 min CN=77/0 Runoff=4.92 cfs 1.044 af

Subcatchment14c{(3)}-Ex: Subcat 14c{(3)}-Ex Runoff Area=13.782 ac 0.00% Impervious Runoff Depth=0.55"
Tc=12.6 min CN=75/0 Runoff=2.74 cfs 0.636 af

Subcatchment14d-Ex: Subcat 14d-Ex Runoff Area=166.738 ac 0.91% Impervious Runoff Depth=0.79"
Tc=19.4 min CN=80/98 Runoff=47.37 cfs 10.915 af

Subcatchment14e-Ex: Subcat 14e-Ex Runoff Area=10.890 ac 6.05% Impervious Runoff Depth=0.22"
Tc=10.0 min CN=58/98 Runoff=0.82 cfs 0.197 af

Reach 6R: Reach 1c Avg. Flow Depth=0.33' Max Vel=4.26 fps Inflow=8.78 cfs 8.692 af
n=0.024 L=830.0' S=0.0031 '/' Capacity=4,878.97 cfs Outflow=8.78 cfs 8.692 af

Reach 7R: Reach 1b Avg. Flow Depth=1.01' Max Vel=3.17 fps Inflow=56.46 cfs 19.384 af
n=0.024 L=883.0' S=0.0066 '/' Capacity=8,865.90 cfs Outflow=52.49 cfs 19.384 af

Reach 8R: Reach 1a Avg. Flow Depth=1.20' Max Vel=2.38 fps Inflow=52.81 cfs 19.883 af
n=0.024 L=583.0' S=0.0034 '/' Capacity=6,396.21 cfs Outflow=51.34 cfs 19.883 af

Reach 17R: Reach 1d Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.027 L=841.0' S=0.0110 '/' Capacity=1,276.84 cfs Outflow=0.00 cfs 0.000 af

Reach 18R: Linne Road Grassed Chl Avg. Flow Depth=0.44' Max Vel=2.27 fps Inflow=12.12 cfs 7.815 af
n=0.030 L=1,190.0' S=0.0087 '/' Capacity=66.25 cfs Outflow=11.03 cfs 7.815 af

Pond 17P: Gran Cielo Dwy Peak Elev=854.16' Storage=4,940 cf Inflow=47.37 cfs 10.915 af
Primary=46.35 cfs 10.915 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=46.35 cfs 10.915 af

Pond 18P: GC-CkD1 Peak Elev=850.77' Storage=36,035 cf Inflow=70.33 cfs 16.278 af
Primary=1.14 cfs 1.454 af Secondary=45.19 cfs 13.651 af Tertiary=19.48 cfs 1.110 af Outflow=65.63 cfs 16.215 af

Pond 19P: GC-CkD2 Peak Elev=849.20' Storage=22,607 cf Inflow=50.30 cfs 16.149 af
Primary=1.26 cfs 1.832 af Secondary=38.35 cfs 13.888 af Tertiary=8.61 cfs 0.427 af Outflow=48.22 cfs 16.147 af

Pond 20P: GC-CkD3 Peak Elev=845.77' Storage=12,910 cf Inflow=41.64 cfs 16.356 af
Primary=5.50 cfs 5.240 af Secondary=6.18 cfs 2.434 af Tertiary=29.57 cfs 8.670 af Outflow=41.26 cfs 16.344 af

Link 3a (1,2+3)-Ex: Comb Un-dev Ck Flow Inflow=51.34 cfs 20.006 af
Primary=51.34 cfs 20.006 af

Link 5L: Outlet To Tract #1632 Ex. 36" SD Inflow=0.96 cfs 0.867 af
Primary=0.96 cfs 0.867 af

Link 6L: To Existing Meadowlark Road Inflow=2.01 cfs 1.852 af
Primary=2.01 cfs 1.852 af

Link 7L: DMA 13 Inflow=14.61 cfs 2.738 af
Primary=14.61 cfs 2.738 af

Link 8L: DMA 8 Inflow=0.39 cfs 0.356 af
Primary=0.39 cfs 0.356 af

Link 9L: DMA 12 Inflow=0.30 cfs 0.254 af
Primary=0.30 cfs 0.254 af

Link 10L: To Linne Road Channel Inflow=12.12 cfs 7.815 af
Primary=12.12 cfs 7.815 af

Link 11L: To Fontana Road SD Inflow=18.93 cfs 5.872 af
Primary=18.93 cfs 5.872 af

Link 15L: Sherwood/NiblickLP Xing Inflow=20.94 cfs 4.080 af
Primary=20.94 cfs 4.080 af

Link 16L: Airport & Linne Road SD Inflow=23.19 cfs 12.092 af
Primary=23.19 cfs 12.092 af

Link 19L: 14c(0+1)-Ex Inflow=24.54 cfs 5.363 af
Primary=24.54 cfs 5.363 af

Link 22L: Linne Rd OvertoppingEx.Flow #2and#3 Inflow=38.07 cfs 9.098 af
Primary=38.07 cfs 9.098 af

Link 23L: Linne Rd Overtop#1 Inflow=19.48 cfs 1.110 af
Primary=19.48 cfs 1.110 af

Total Runoff Area = 1,810.455 ac Runoff Volume = 40.765 af Average Runoff Depth = 0.27"
99.44% Pervious = 1,800.345 ac 0.56% Impervious = 10.110 ac

Summary for Subcatchment 1: Subcat 1

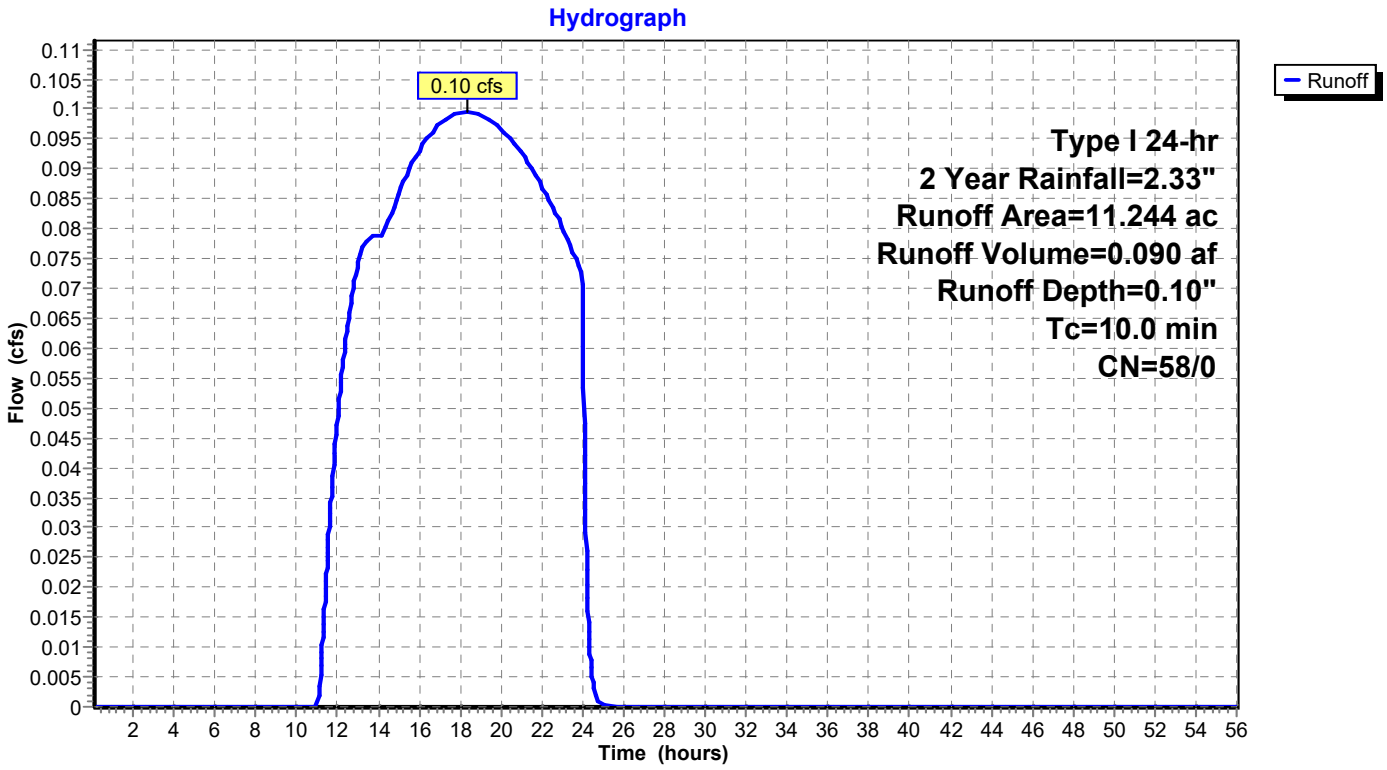
Runoff = 0.10 cfs @ 18.34 hrs, Volume= 0.090 af, Depth= 0.10"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
11.244	58	Meadow, non-grazed, HSG B
11.244	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9					**Direct Entry, SCS per Catchment Area CAD Info**
9.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 1: Subcat 1



Summary for Subcatchment 2: Subcat 2

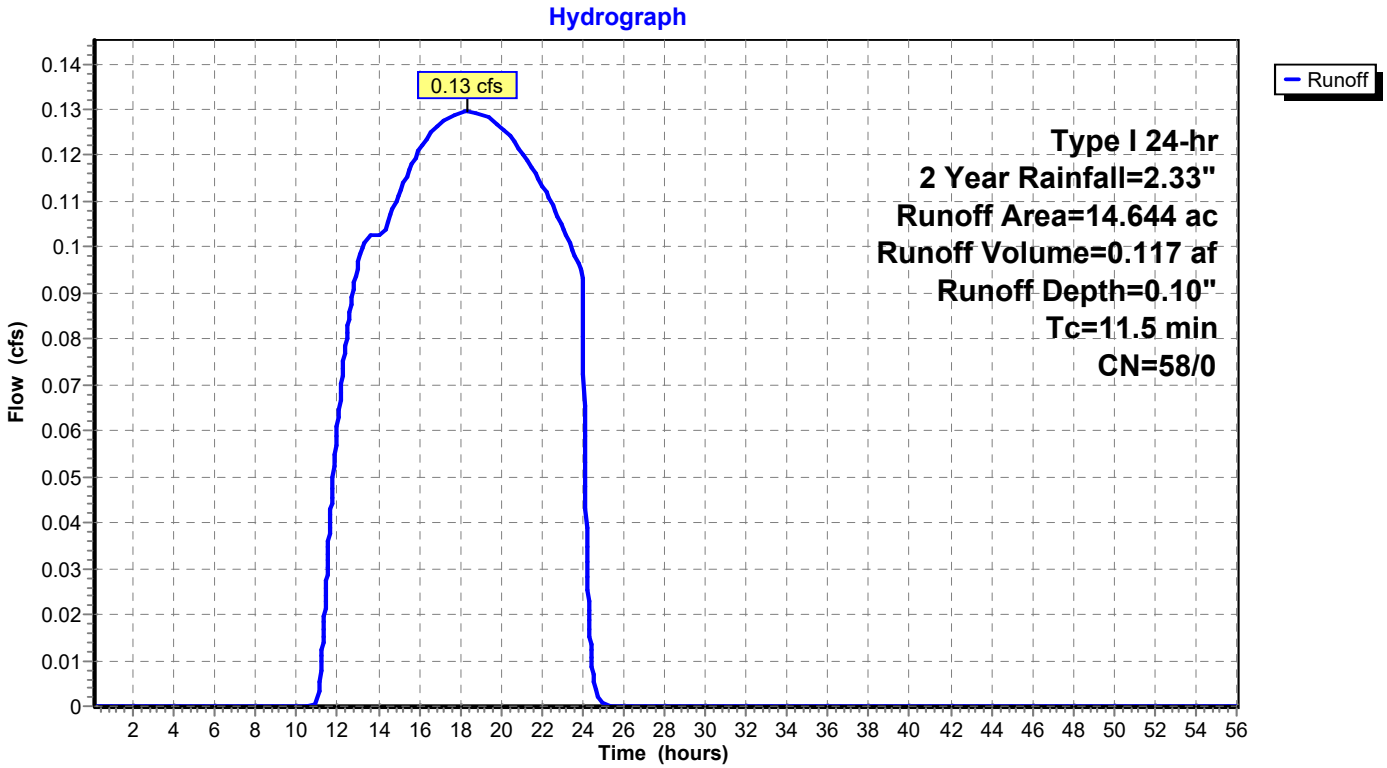
Runoff = 0.13 cfs @ 18.37 hrs, Volume= 0.117 af, Depth= 0.10"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
0.574	58	Meadow, non-grazed, HSG B
14.070	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
14.644	58	Weighted Average
14.644	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5					**Direct Entry, SCS per Catchment Area CAD Info**

Subcatchment 2: Subcat 2



Summary for Subcatchment 3: Subcat 3

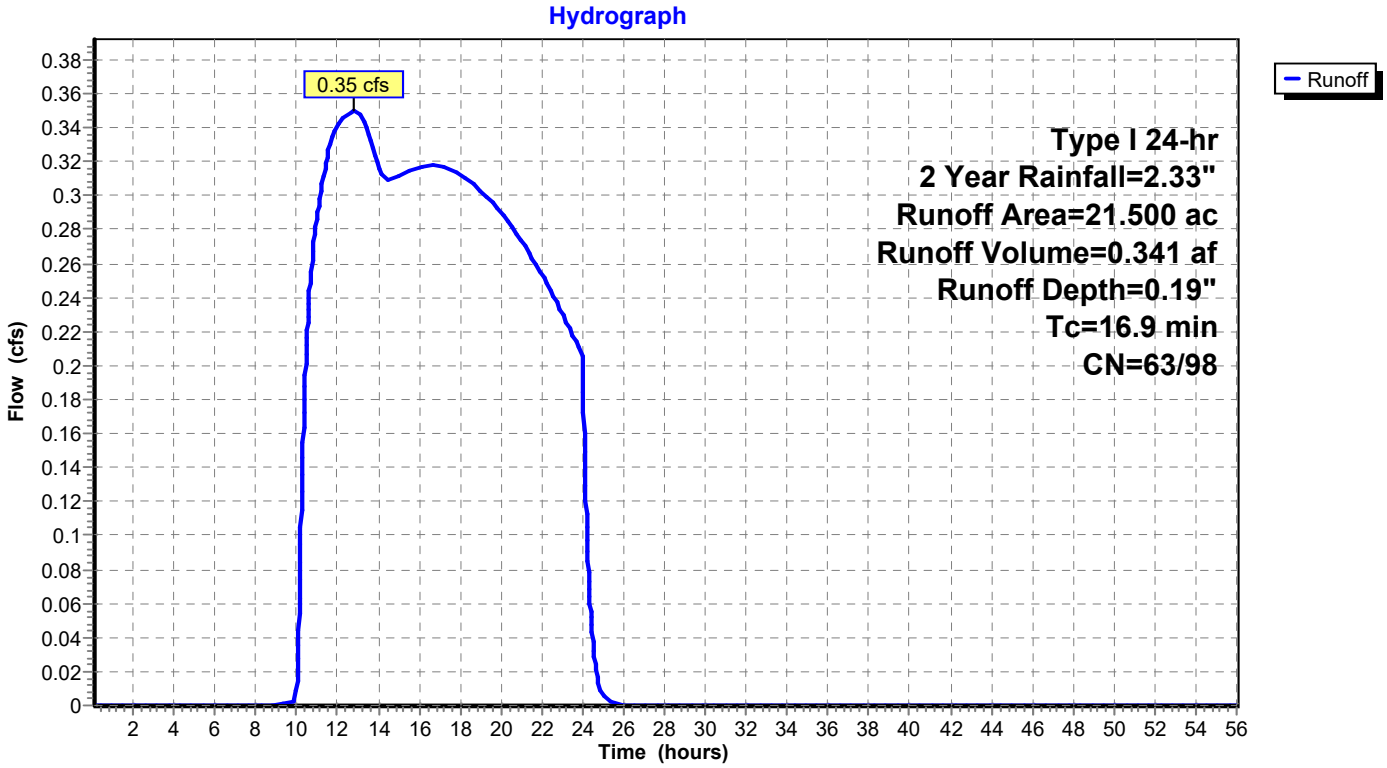
Runoff = 0.35 cfs @ 12.76 hrs, Volume= 0.341 af, Depth= 0.19"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
4.338	58	Meadow, non-grazed, HSG B
8.761	58	Meadow, non-grazed, HSG B
8.398	71	Meadow, non-grazed, HSG C
0.003	98	Paved roads w/curbs & sewers, HSG C
21.500	63	Weighted Average
21.497	63	99.98% Pervious Area
0.003	98	0.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.9					**Direct Entry, SCS per Catchment Area CAD Info**

Subcatchment 3: Subcat 3



Summary for Subcatchment 3a{(1)}-Ex: Subcat 3a{(1)}-Ex

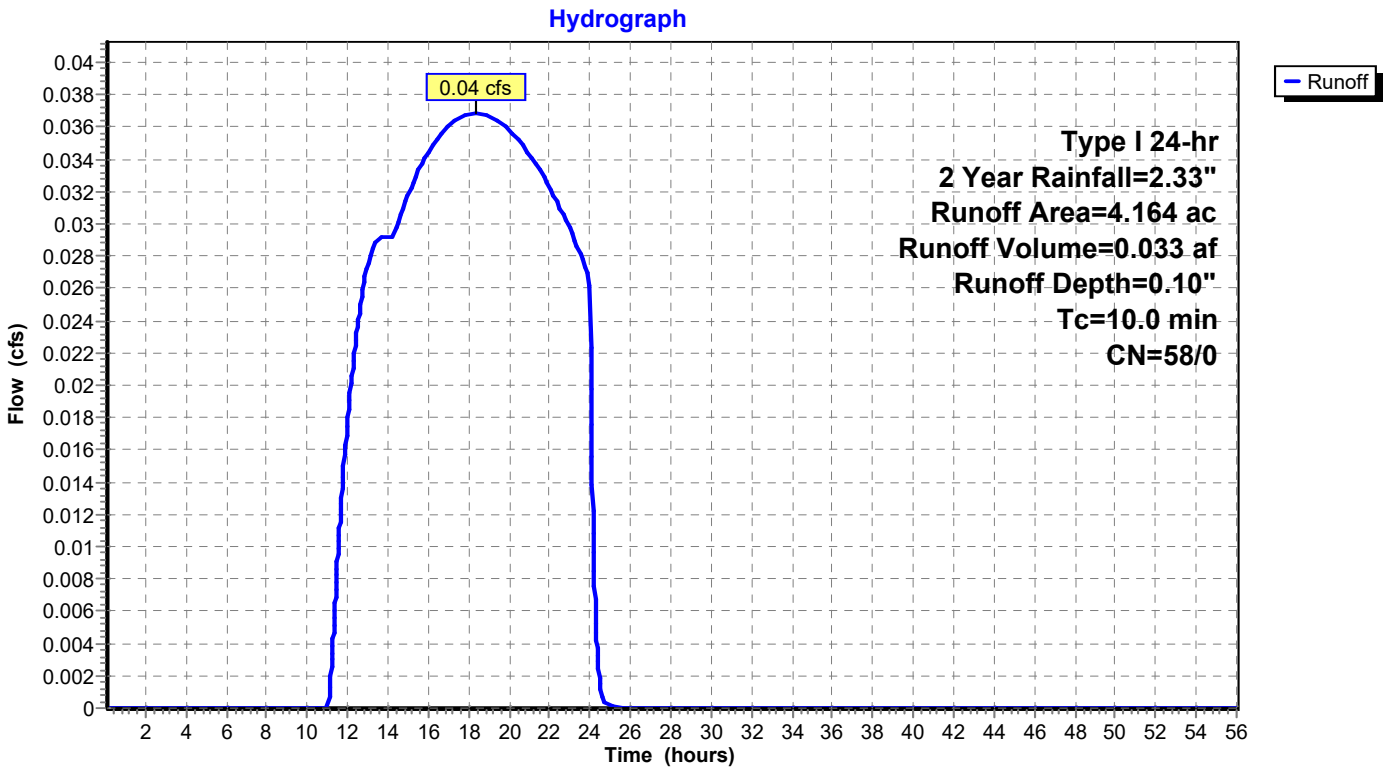
Runoff = 0.04 cfs @ 18.34 hrs, Volume= 0.033 af, Depth= 0.10"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
2.302	58	Meadow, non-grazed, HSG B
1.861	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
4.164	58	Weighted Average
4.164	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1					**Direct Entry,**
6.1	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 3a{(1)}-Ex: Subcat 3a{(1)}-Ex



Summary for Subcatchment 3a{(2)}-Ex: Subcat 3a{(2)}-Ex

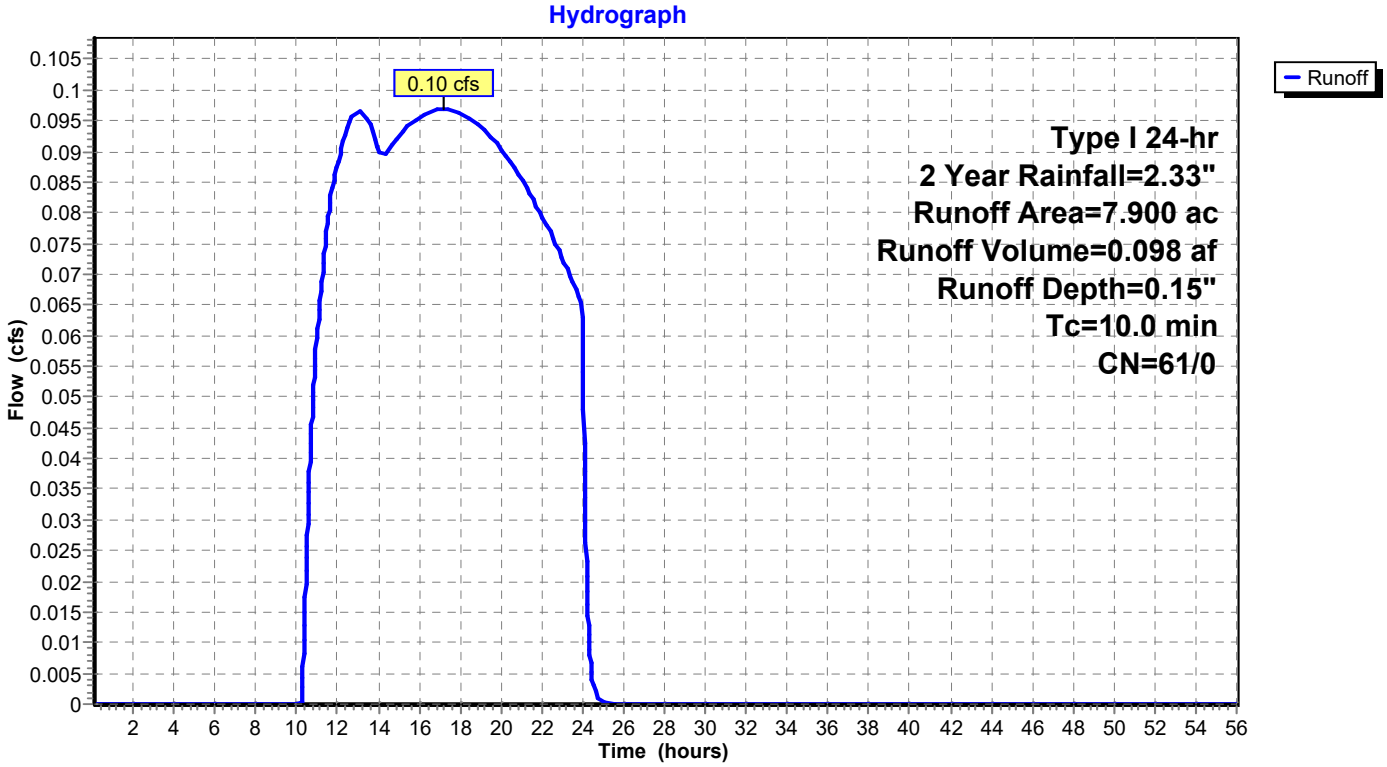
Runoff = 0.10 cfs @ 17.16 hrs, Volume= 0.098 af, Depth= 0.15"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
3.124	58	Meadow, non-grazed, HSG B
2.841	58	Meadow, non-grazed, HSG B
1.936	71	Meadow, non-grazed, HSG C
7.900	61	Weighted Average
7.900	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1					**Direct Entry,**
6.1	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 3a{(2)}-Ex: Subcat 3a{(2)}-Ex



Summary for Subcatchment 3a{(3)}-Ex: Subcat 3a{(3)}-Ex

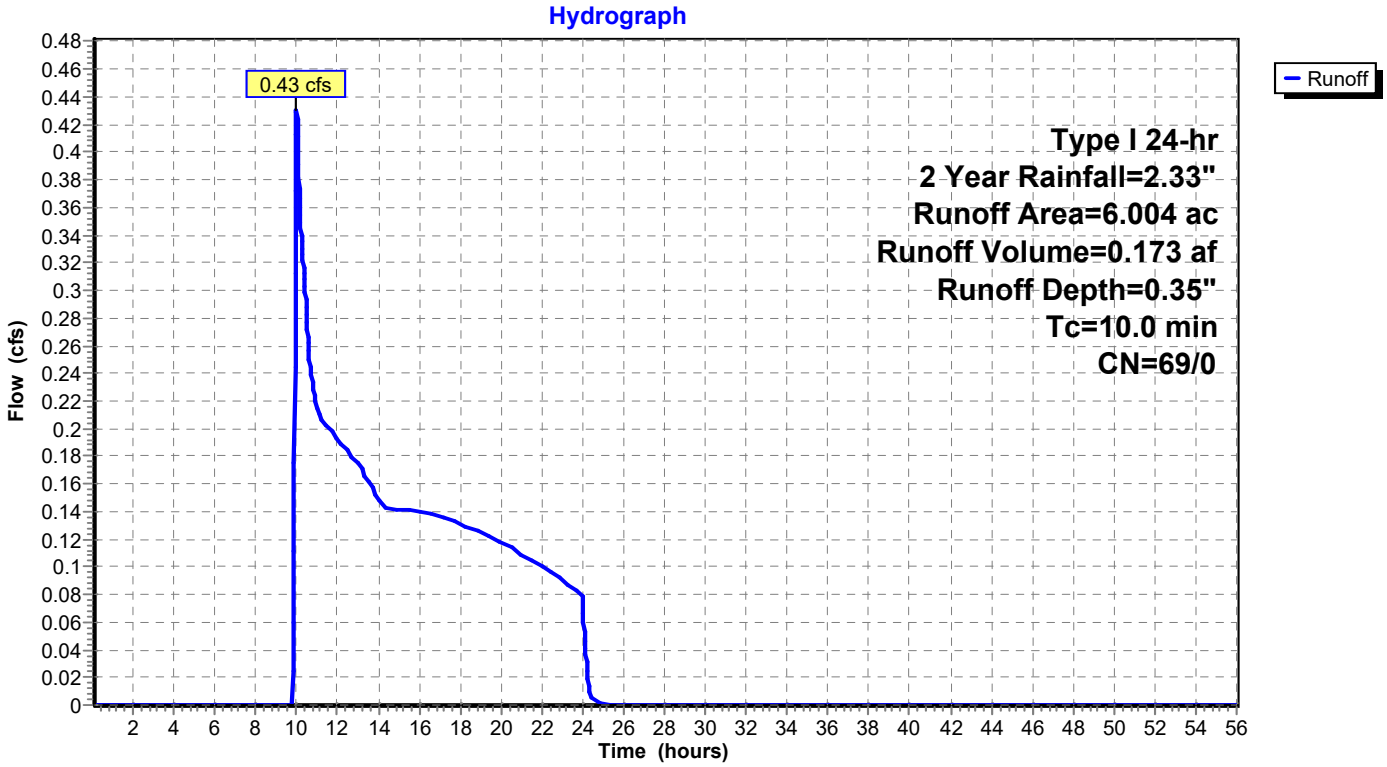
Runoff = 0.43 cfs @ 10.00 hrs, Volume= 0.173 af, Depth= 0.35"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
1.129	58	Meadow, non-grazed, HSG B
4.876	71	Meadow, non-grazed, HSG C
6.004	69	Weighted Average
6.004	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1					**Direct Entry, 14c{(2)}-Ex**
6.1	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 3a{(3)}-Ex: Subcat 3a{(3)}-Ex



Summary for Subcatchment 3b-Ex: Subcat 3b-Ex

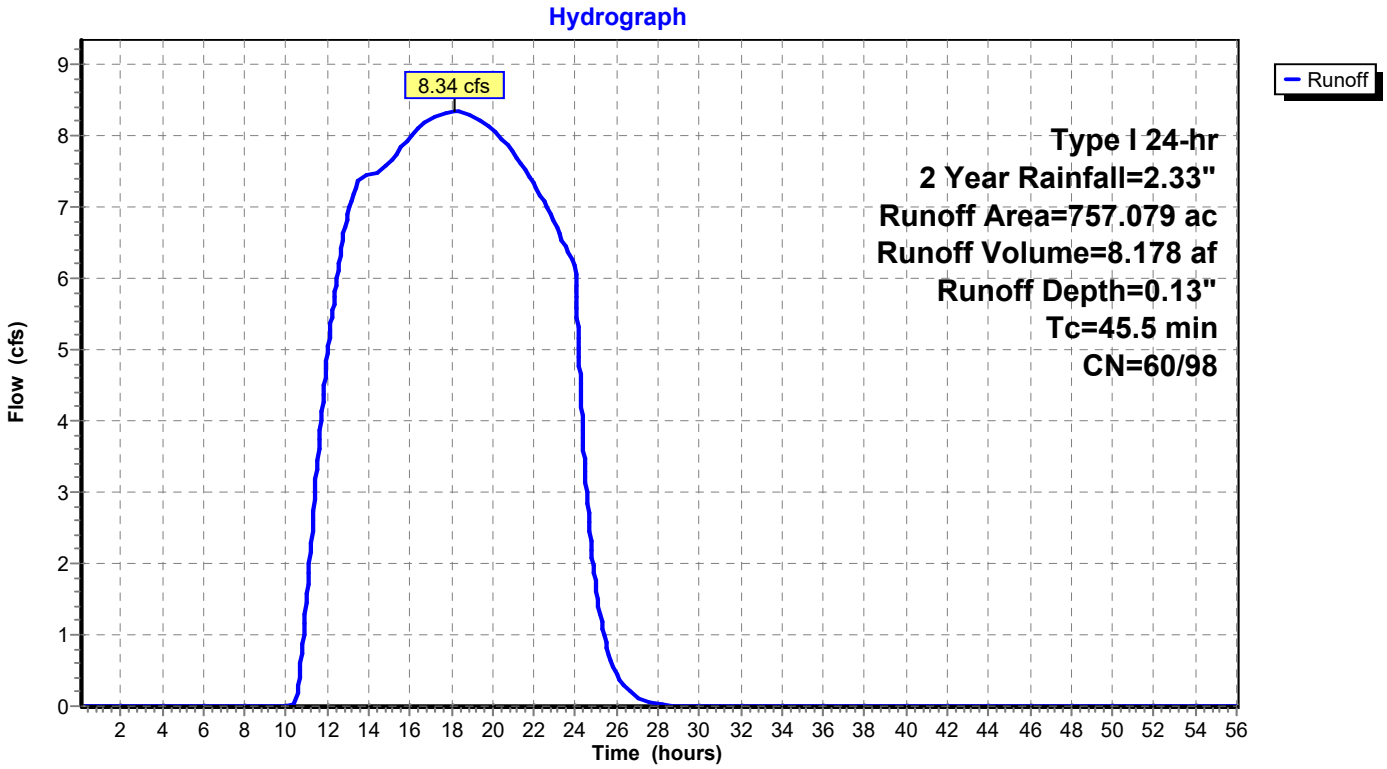
Runoff = 8.34 cfs @ 18.14 hrs, Volume= 8.178 af, Depth= 0.13"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
234.658	58	Meadow, non-grazed, HSG B
36.169	58	Meadow, non-grazed, HSG B
0.022	58	Meadow, non-grazed, HSG B
51.779	58	Meadow, non-grazed, HSG B
10.304	58	Meadow, non-grazed, HSG B
28.620	58	Meadow, non-grazed, HSG B
28.650	58	Meadow, non-grazed, HSG B
67.424	58	Meadow, non-grazed, HSG B
203.020	58	Meadow, non-grazed, HSG B
26.053	71	Meadow, non-grazed, HSG C
12.803	71	Meadow, non-grazed, HSG C
44.268	71	Meadow, non-grazed, HSG C
13.308	71	Meadow, non-grazed, HSG C
0.001	98	Paved roads w/curbs & sewers, HSG C
757.079	60	Weighted Average
757.078	60	100.00% Pervious Area
0.001	98	0.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.5					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 3b-Ex: Subcat 3b-Ex



Summary for Subcatchment 4: Subcat 4

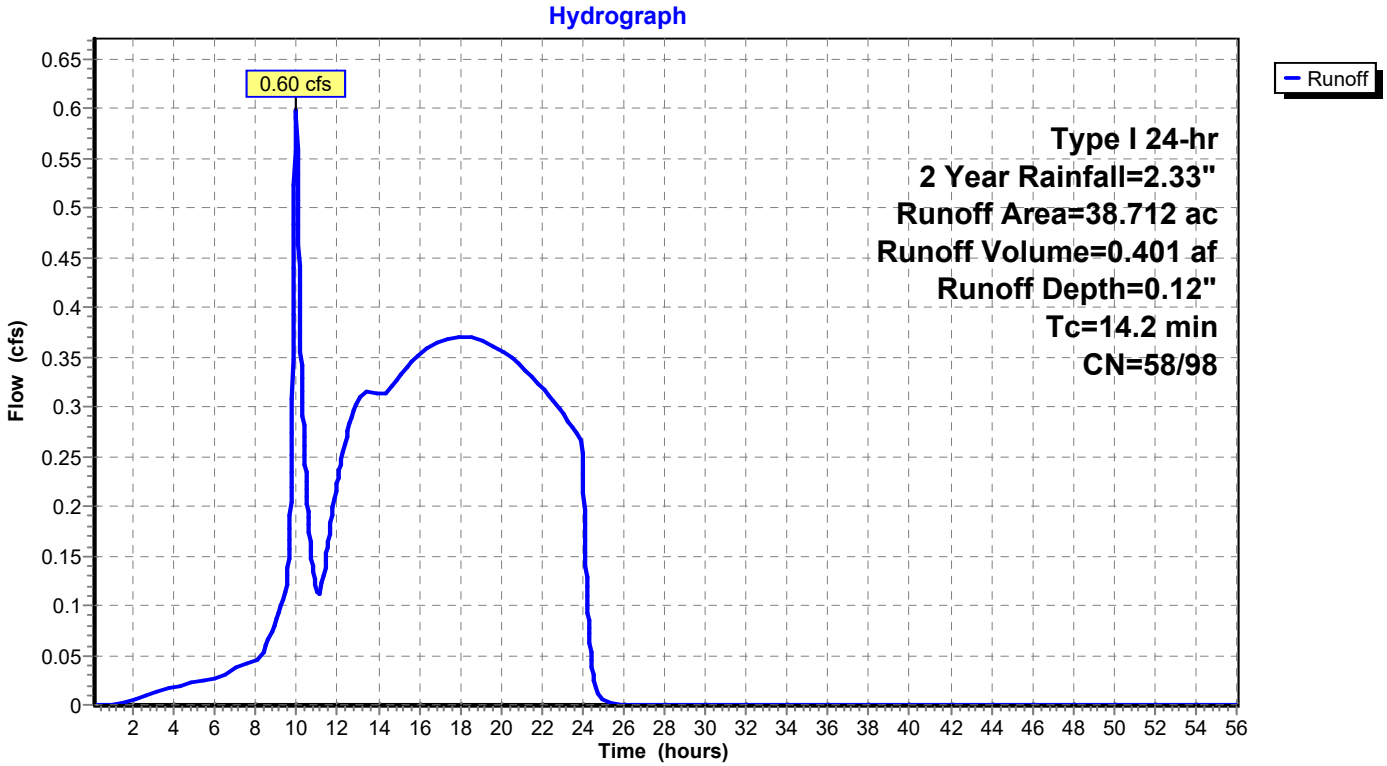
Runoff = 0.60 cfs @ 9.97 hrs, Volume= 0.401 af, Depth= 0.12"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
2.765	68	1 acre lots, 20% imp, HSG B
0.000	58	Meadow, non-grazed, HSG B
7.644	58	Meadow, non-grazed, HSG B
0.126	58	Meadow, non-grazed, HSG B
5.342	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
20.803	58	Meadow, non-grazed, HSG B
0.971	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
1.061	58	Meadow, non-grazed, HSG B
38.712	59	Weighted Average
38.159	58	98.57% Pervious Area
0.553	98	1.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 4: Subcat 4



Summary for Subcatchment 5: Subcat 5

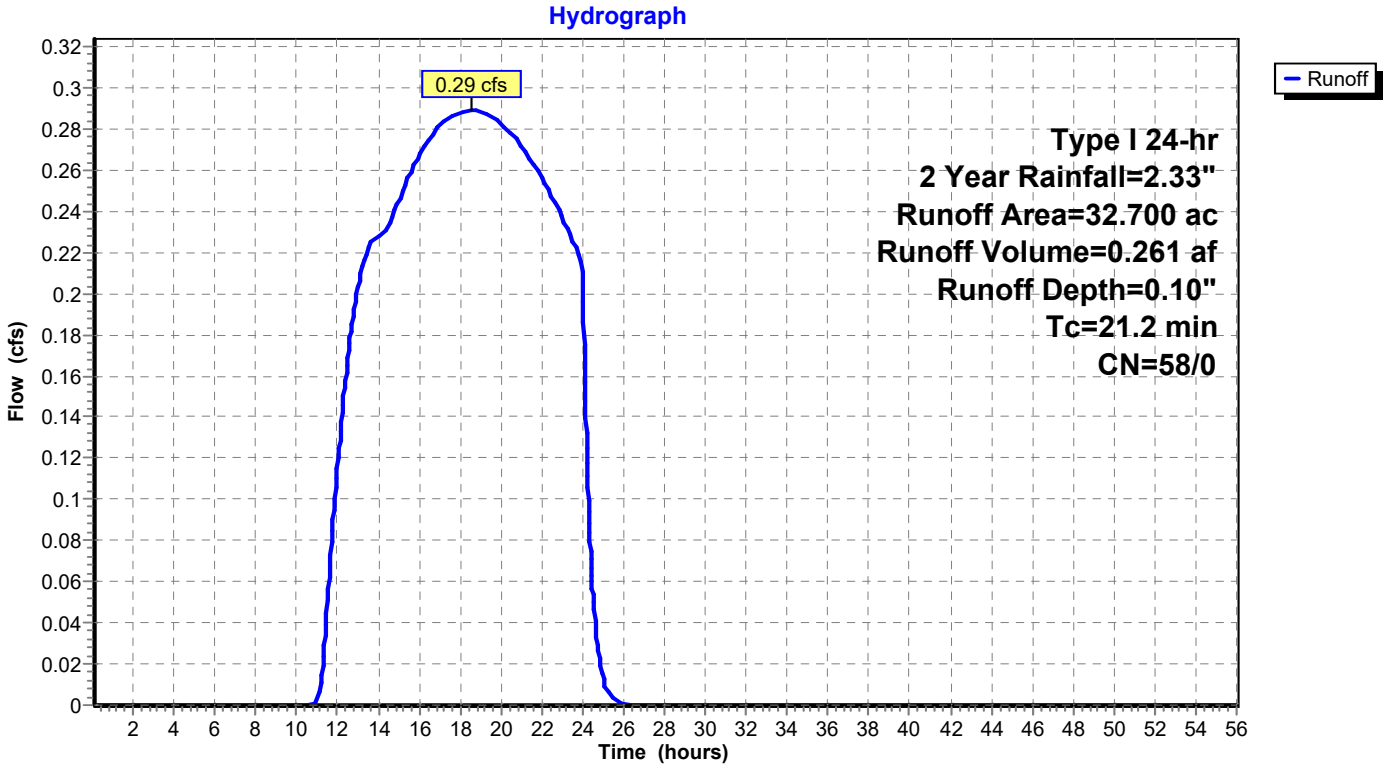
Runoff = 0.29 cfs @ 18.54 hrs, Volume= 0.261 af, Depth= 0.10"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
9.224	58	Meadow, non-grazed, HSG B
23.476	58	Meadow, non-grazed, HSG B
32.700	58	Weighted Average
32.700	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.2					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 5: Subcat 5



Summary for Subcatchment 6: Subcat 6

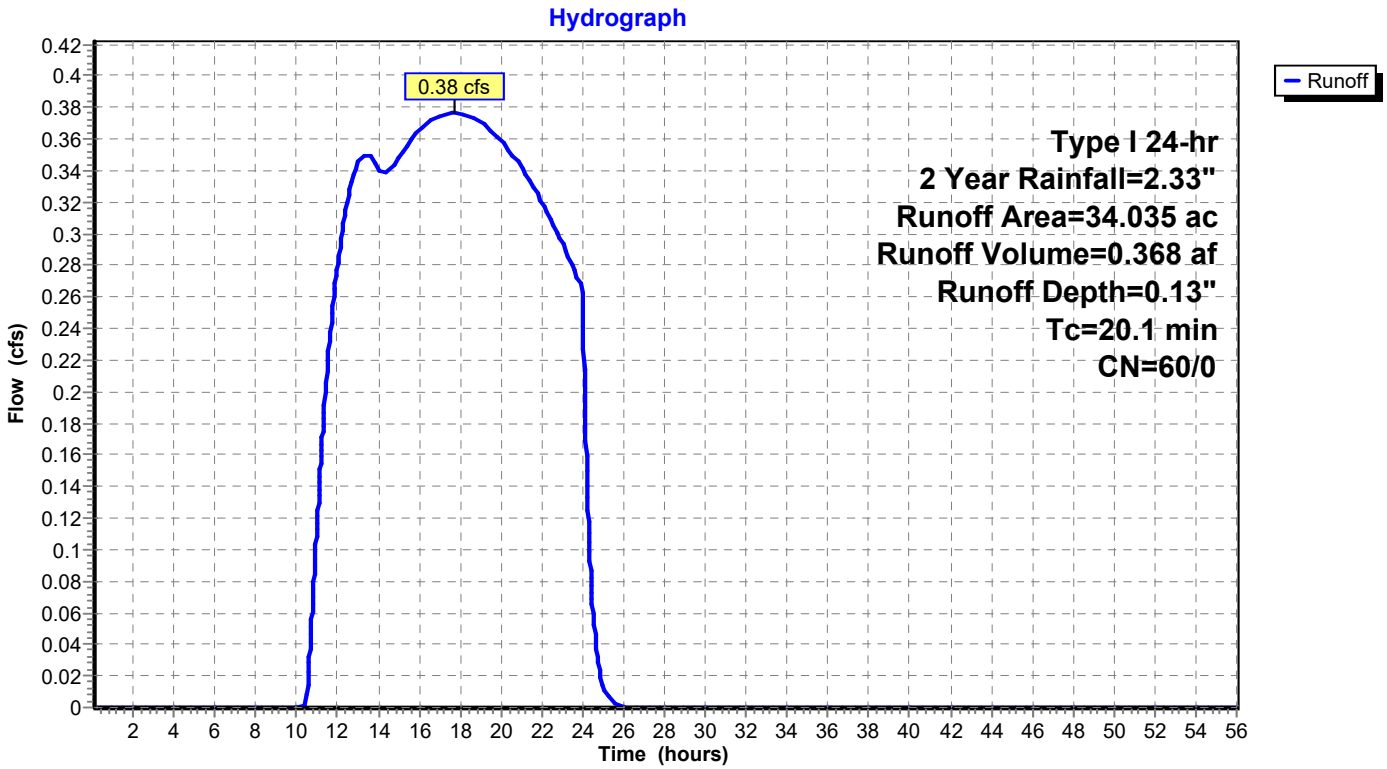
Runoff = 0.38 cfs @ 17.71 hrs, Volume= 0.368 af, Depth= 0.13"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
23.646	58	Meadow, non-grazed, HSG B
0.010	58	Meadow, non-grazed, HSG B
0.081	58	Meadow, non-grazed, HSG B
4.046	58	Meadow, non-grazed, HSG B
2.192	58	Meadow, non-grazed, HSG B
4.059	71	Meadow, non-grazed, HSG C
34.035	60	Weighted Average
34.035	60	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.1					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 6: Subcat 6



Summary for Subcatchment 7: Subcat 7

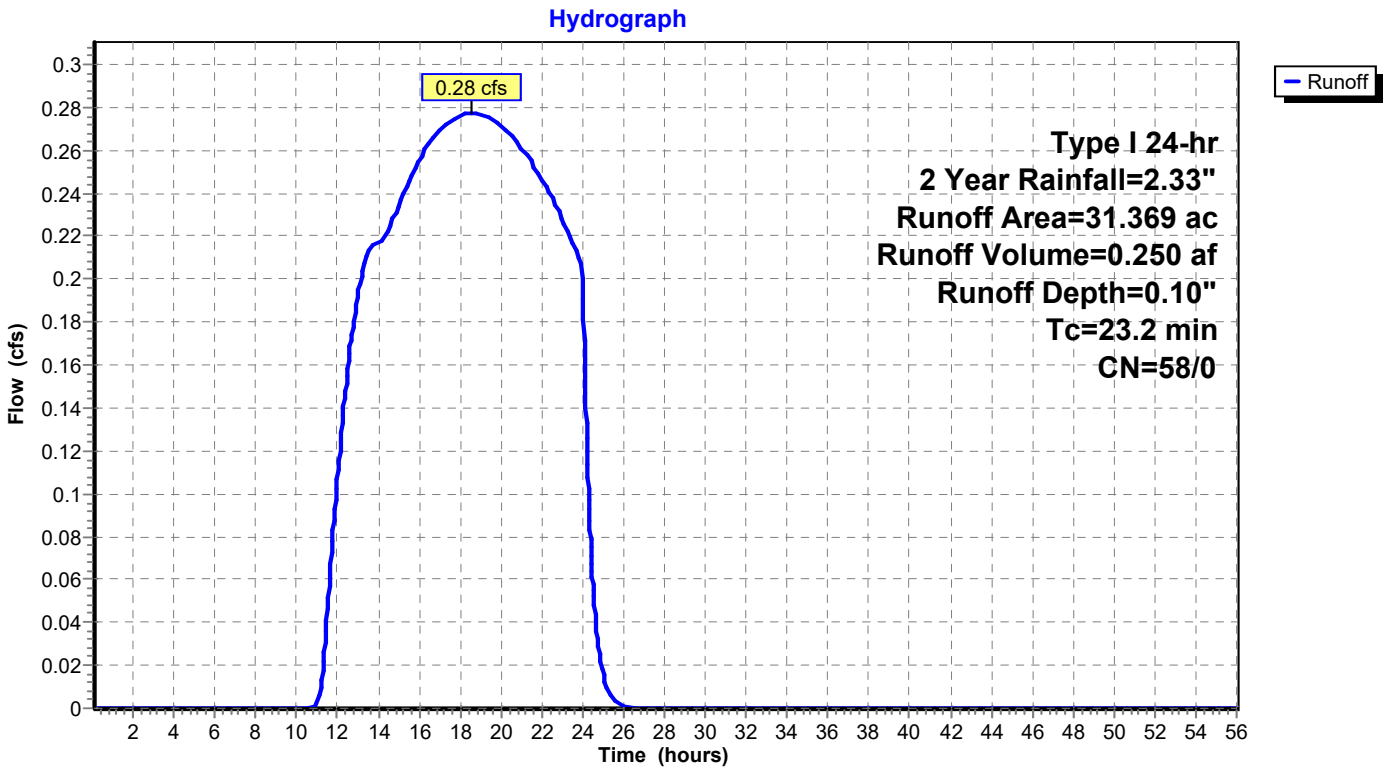
Runoff = 0.28 cfs @ 18.57 hrs, Volume= 0.250 af, Depth= 0.10"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
4.398	58	Meadow, non-grazed, HSG B
11.983	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
14.988	58	Meadow, non-grazed, HSG B
31.369	58	Weighted Average
31.369	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.2					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 7: Subcat 7



Summary for Subcatchment 8: Subcat 8

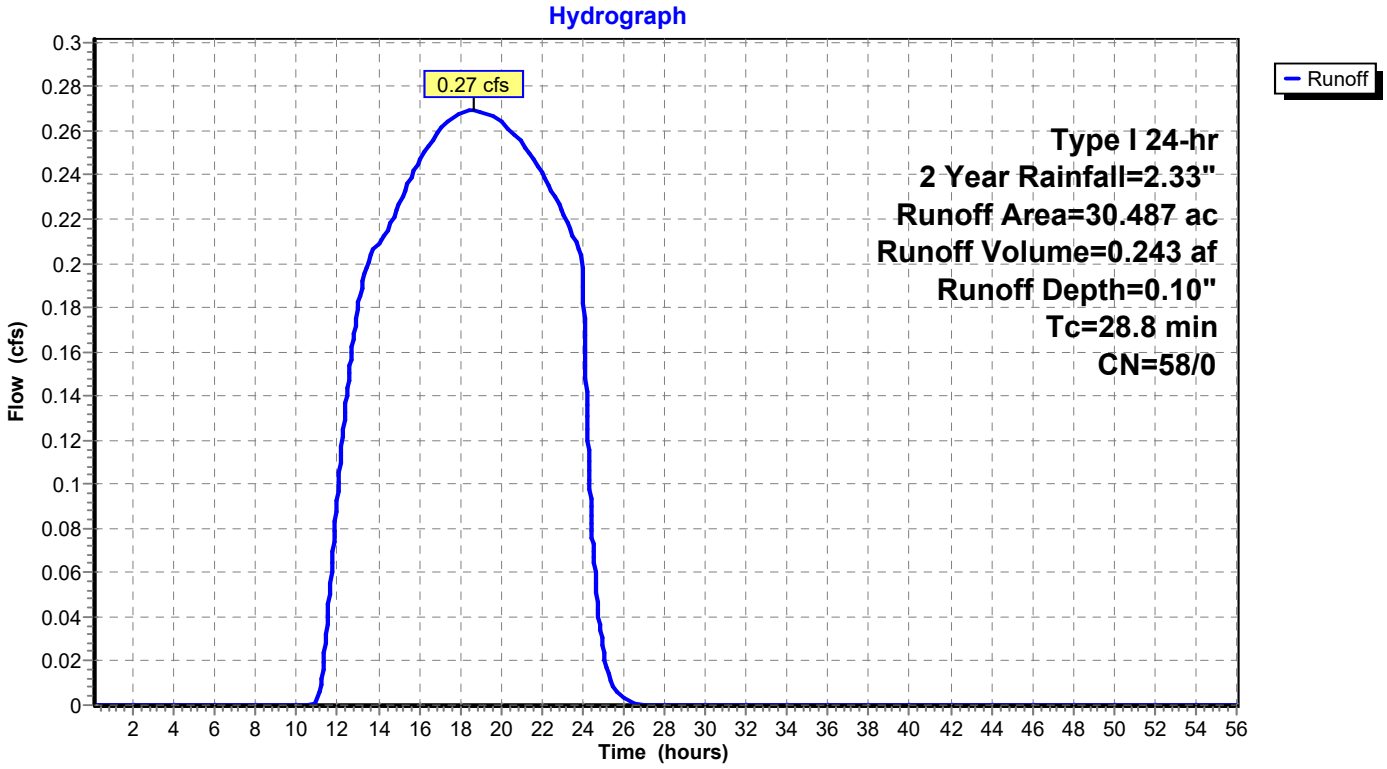
Runoff = 0.27 cfs @ 18.67 hrs, Volume= 0.243 af, Depth= 0.10"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
1.331	58	Meadow, non-grazed, HSG B
29.156	58	Meadow, non-grazed, HSG B
30.487	58	Weighted Average
30.487	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 8: Subcat 8



Summary for Subcatchment 8a-Ex: Subcat 8a-Ex

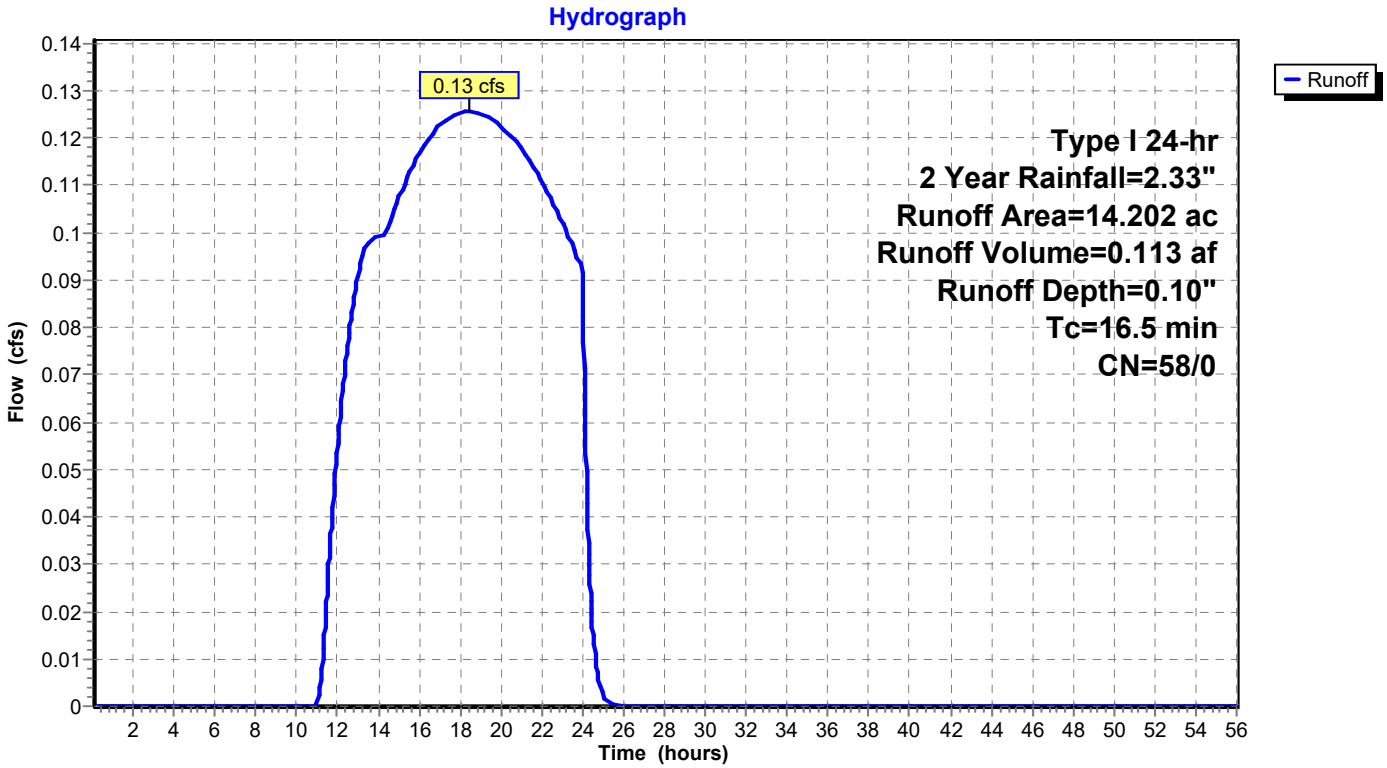
Runoff = 0.13 cfs @ 18.45 hrs, Volume= 0.113 af, Depth= 0.10"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
2.036	58	Meadow, non-grazed, HSG B
7.264	58	Meadow, non-grazed, HSG B
4.903	58	Meadow, non-grazed, HSG B
14.202	58	Weighted Average
14.202	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 8a-Ex: Subcat 8a-Ex



Summary for Subcatchment 9: Subcat 9

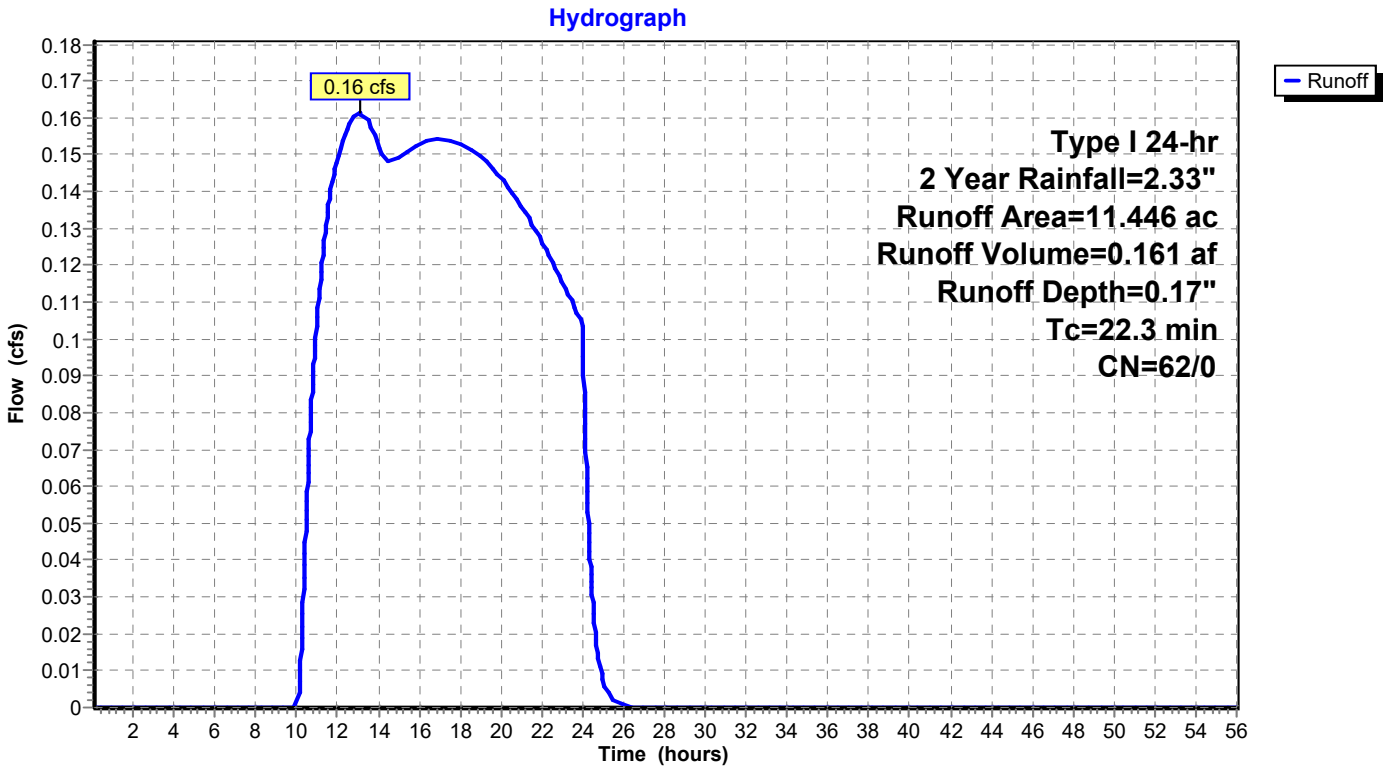
Runoff = 0.16 cfs @ 13.06 hrs, Volume= 0.161 af, Depth= 0.17"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
0.006	58	Meadow, non-grazed, HSG B
8.451	58	Meadow, non-grazed, HSG B
0.026	58	Meadow, non-grazed, HSG B
0.469	58	Meadow, non-grazed, HSG B
0.005	58	Meadow, non-grazed, HSG B
2.489	78	Meadow, non-grazed, HSG D
11.446	62	Weighted Average
11.446	62	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3					**Direct Entry, Tc from CAD Catchments (SCS Method)**

Subcatchment 9: Subcat 9



Summary for Subcatchment 9a-Ex: Subcat 9a-Ex

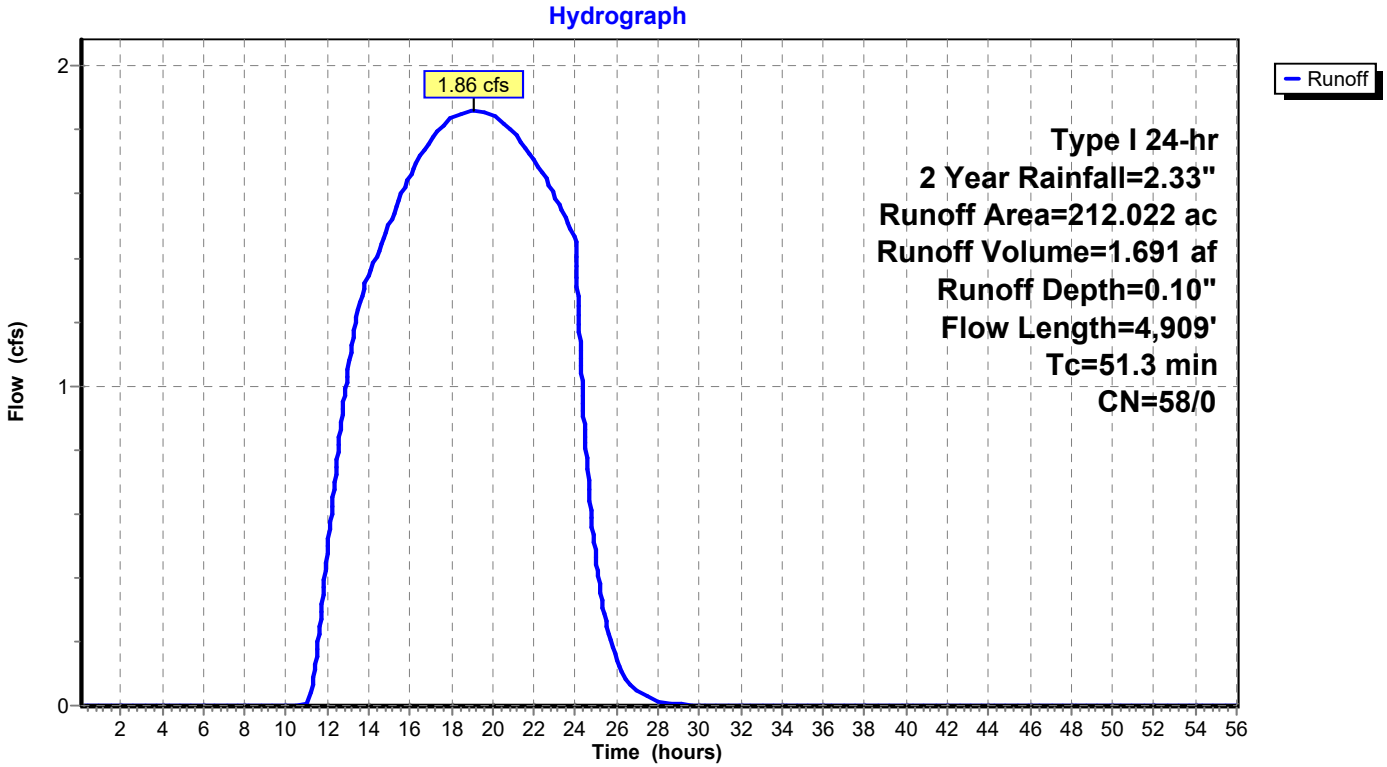
Runoff = 1.86 cfs @ 19.07 hrs, Volume= 1.691 af, Depth= 0.10"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
16.535	58	Meadow, non-grazed, HSG B
38.755	58	Meadow, non-grazed, HSG B
2.915	58	Meadow, non-grazed, HSG B
114.179	58	Meadow, non-grazed, HSG B
31.194	58	Meadow, non-grazed, HSG B
8.131	58	Meadow, non-grazed, HSG B
0.314	78	Meadow, non-grazed, HSG D
212.022	58	Weighted Average
212.022	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
51.3	4,909		1.59		**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 9a-Ex: Subcat 9a-Ex



Summary for Subcatchment 10: Subcat 10

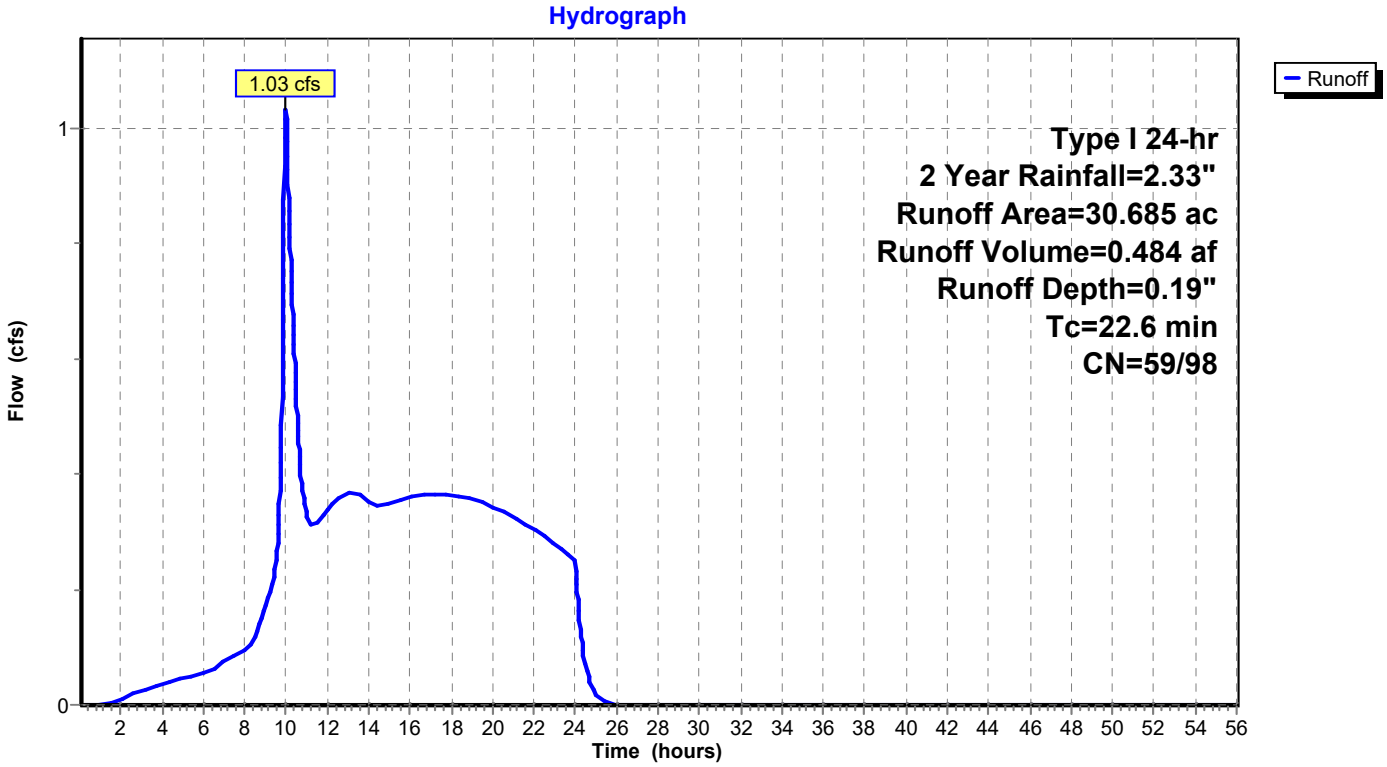
Runoff = 1.03 cfs @ 9.99 hrs, Volume= 0.484 af, Depth= 0.19"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
5.865	58	Meadow, non-grazed, HSG B
22.679	58	Meadow, non-grazed, HSG B
0.039	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.039	71	Meadow, non-grazed, HSG C
0.175	77	Natural western desert, HSG B
0.700	77	Natural western desert, HSG B
1.189	98	Paved roads w/curbs & sewers, HSG B
30.685	60	Weighted Average
29.496	59	96.12% Pervious Area
1.189	98	3.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.6					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 10: Subcat 10



Summary for Subcatchment 10a-Ex: Subcat 10a-Ex

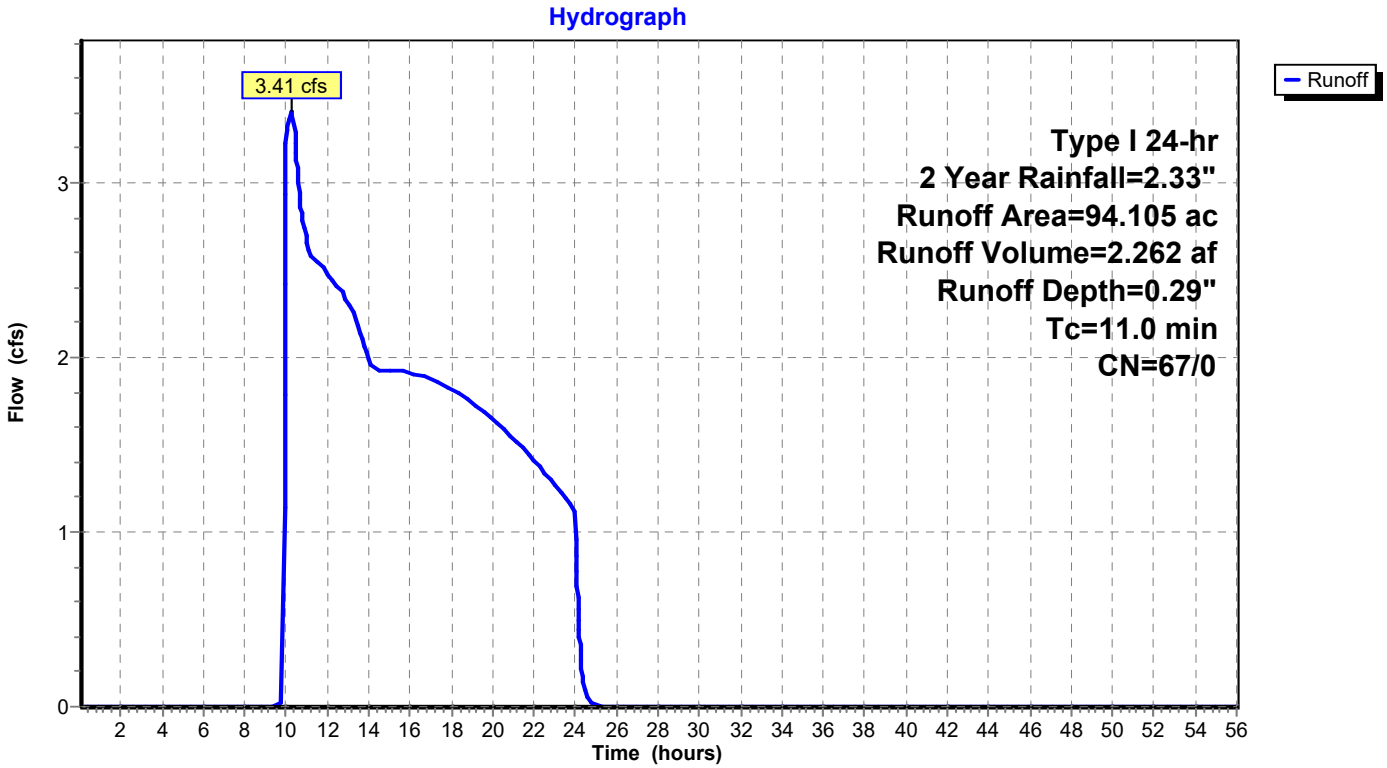
Runoff = 3.41 cfs @ 10.27 hrs, Volume= 2.262 af, Depth= 0.29"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
0.173	58	Meadow, non-grazed, HSG B
9.477	58	Meadow, non-grazed, HSG B
11.002	58	Meadow, non-grazed, HSG B
0.163	58	Meadow, non-grazed, HSG B
0.158	58	Meadow, non-grazed, HSG B
10.113	58	Meadow, non-grazed, HSG B
48.708	71	Meadow, non-grazed, HSG C
14.310	71	Meadow, non-grazed, HSG C
94.105	67	Weighted Average
94.105	67	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 10a-Ex: Subcat 10a-Ex



Summary for Subcatchment 11: Subcat 11

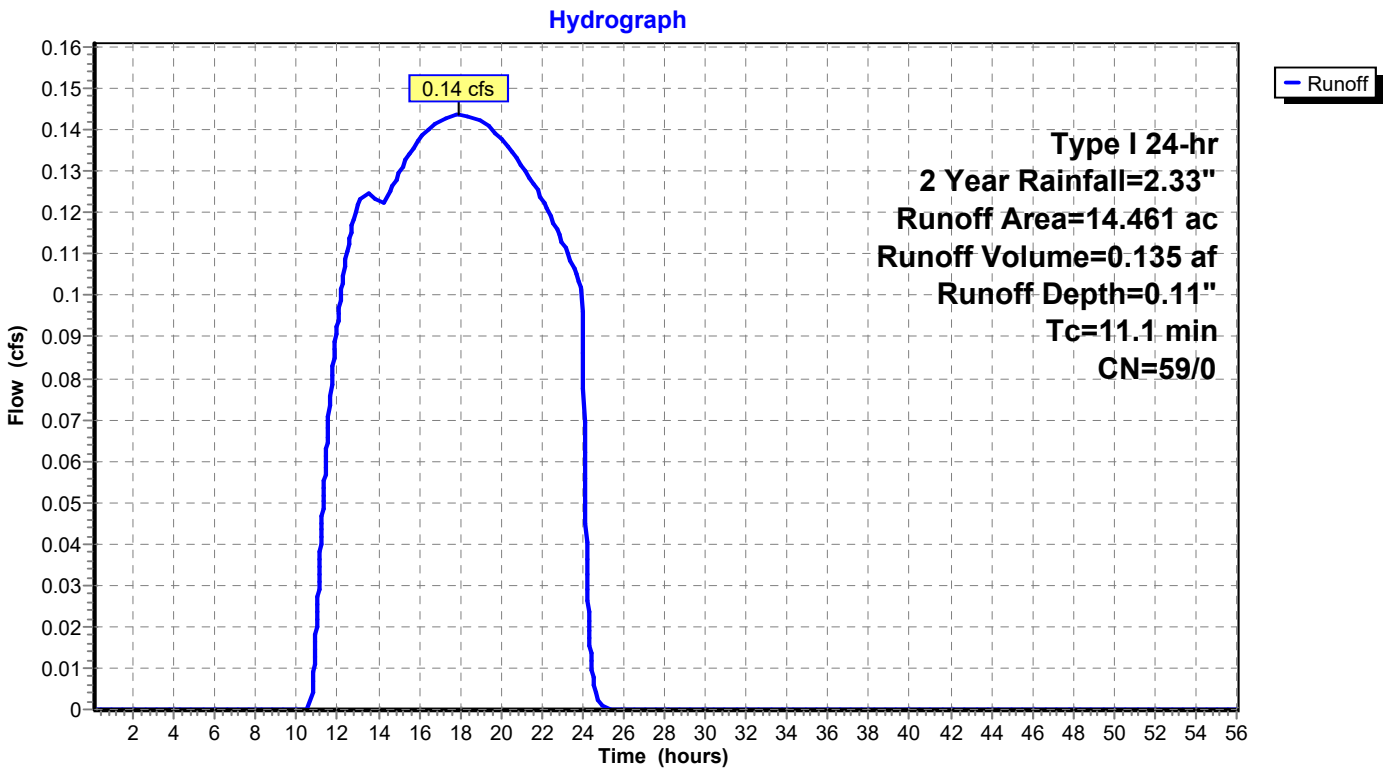
Runoff = 0.14 cfs @ 17.95 hrs, Volume= 0.135 af, Depth= 0.11"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
0.000	58	Meadow, non-grazed, HSG B
0.328	58	Meadow, non-grazed, HSG B
13.072	58	Meadow, non-grazed, HSG B
0.762	71	Meadow, non-grazed, HSG C
0.298	71	Meadow, non-grazed, HSG C
14.461	59	Weighted Average
14.461	59	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 11: Subcat 11



Summary for Subcatchment 12: Subcat 12

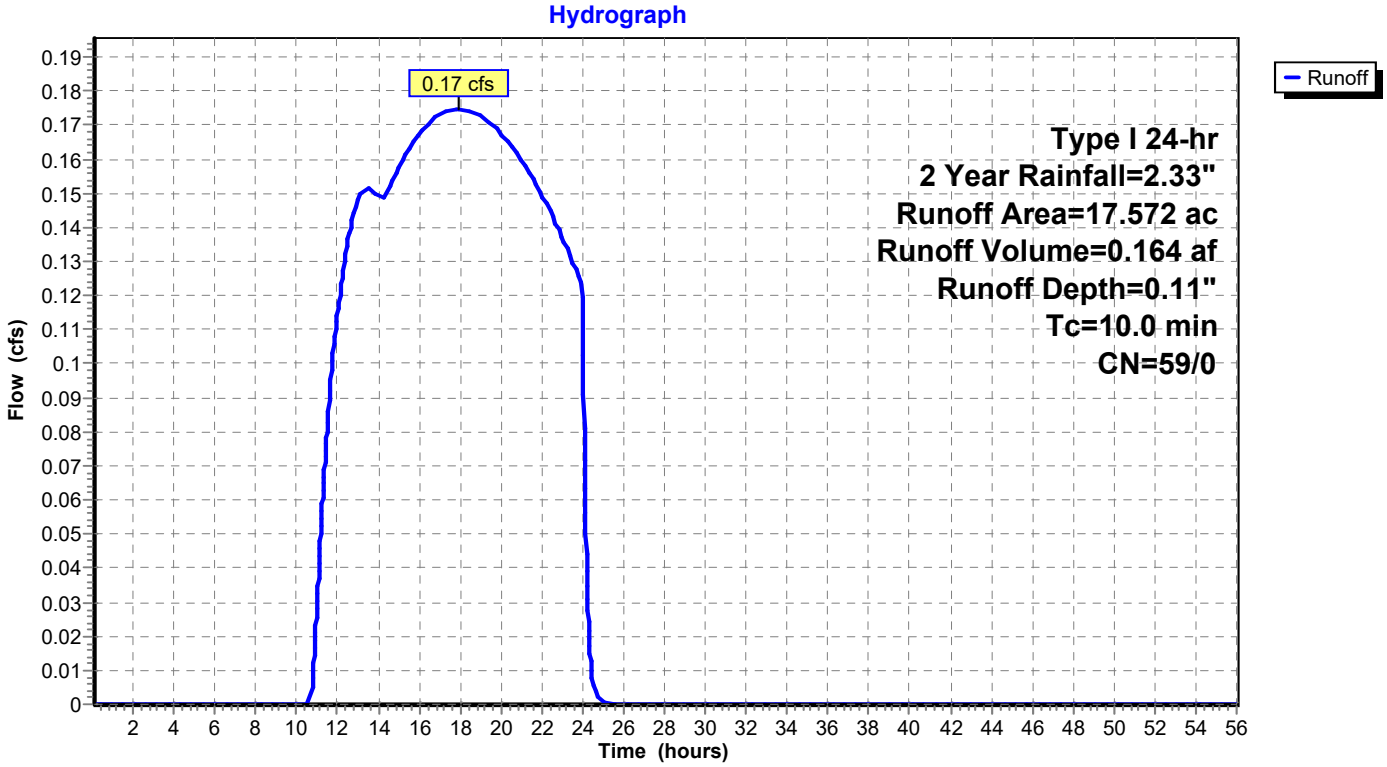
Runoff = 0.17 cfs @ 17.93 hrs, Volume= 0.164 af, Depth= 0.11"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
0.000	58	Meadow, non-grazed, HSG B
0.977	58	Meadow, non-grazed, HSG B
15.916	58	Meadow, non-grazed, HSG B
0.001	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	71	Meadow, non-grazed, HSG C
0.223	71	Meadow, non-grazed, HSG C
0.456	71	Meadow, non-grazed, HSG C
17.572	59	Weighted Average
17.572	59	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9					**Direct Entry, SCS Method taken from Catchment in ACAD file**
7.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 12: Subcat 12



Summary for Subcatchment 12a-Ex: Subcat 12a-Ex

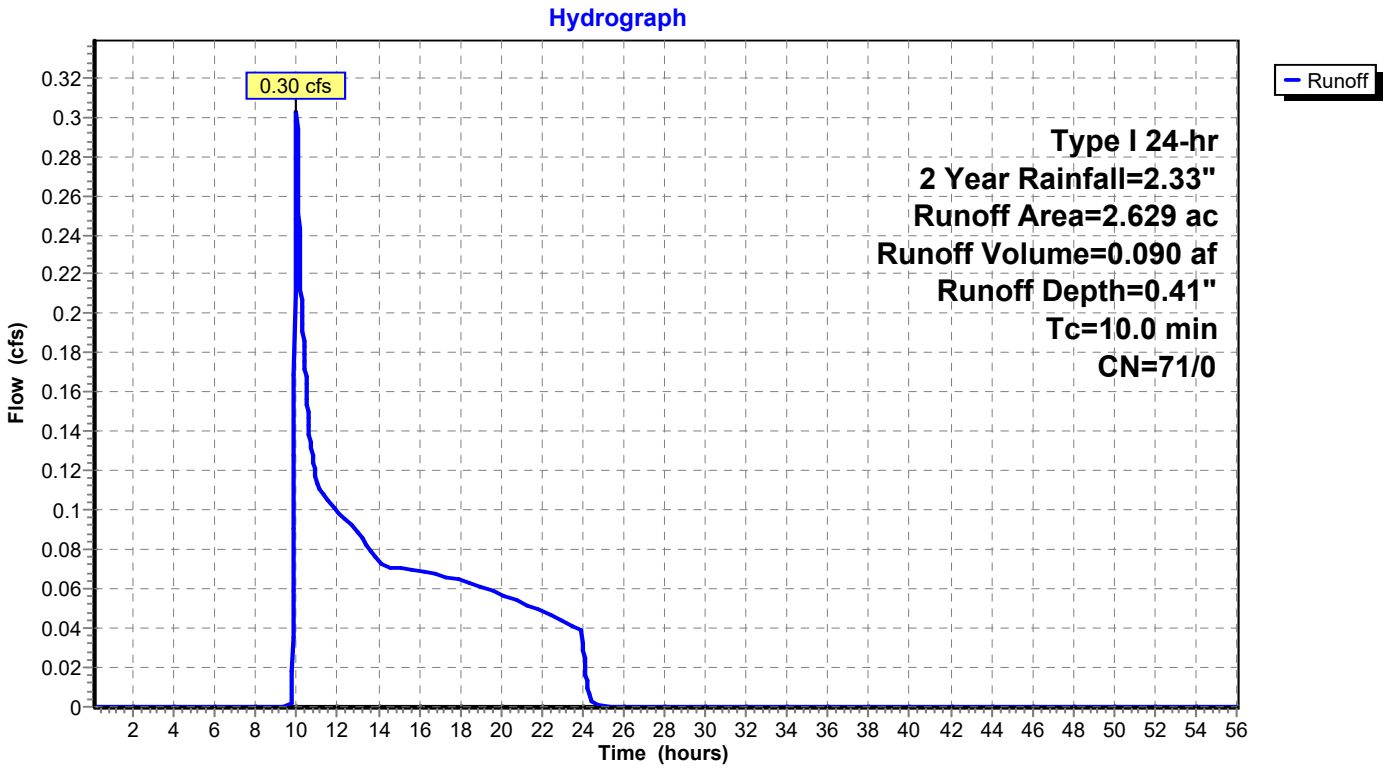
Runoff = 0.30 cfs @ 10.00 hrs, Volume= 0.090 af, Depth= 0.41"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
2.629	71	Meadow, non-grazed, HSG C
2.629	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9					**Direct Entry, SCS Method taken from Catchment in ACAD file**
4.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 12a-Ex: Subcat 12a-Ex



Summary for Subcatchment 13: Subcat 13

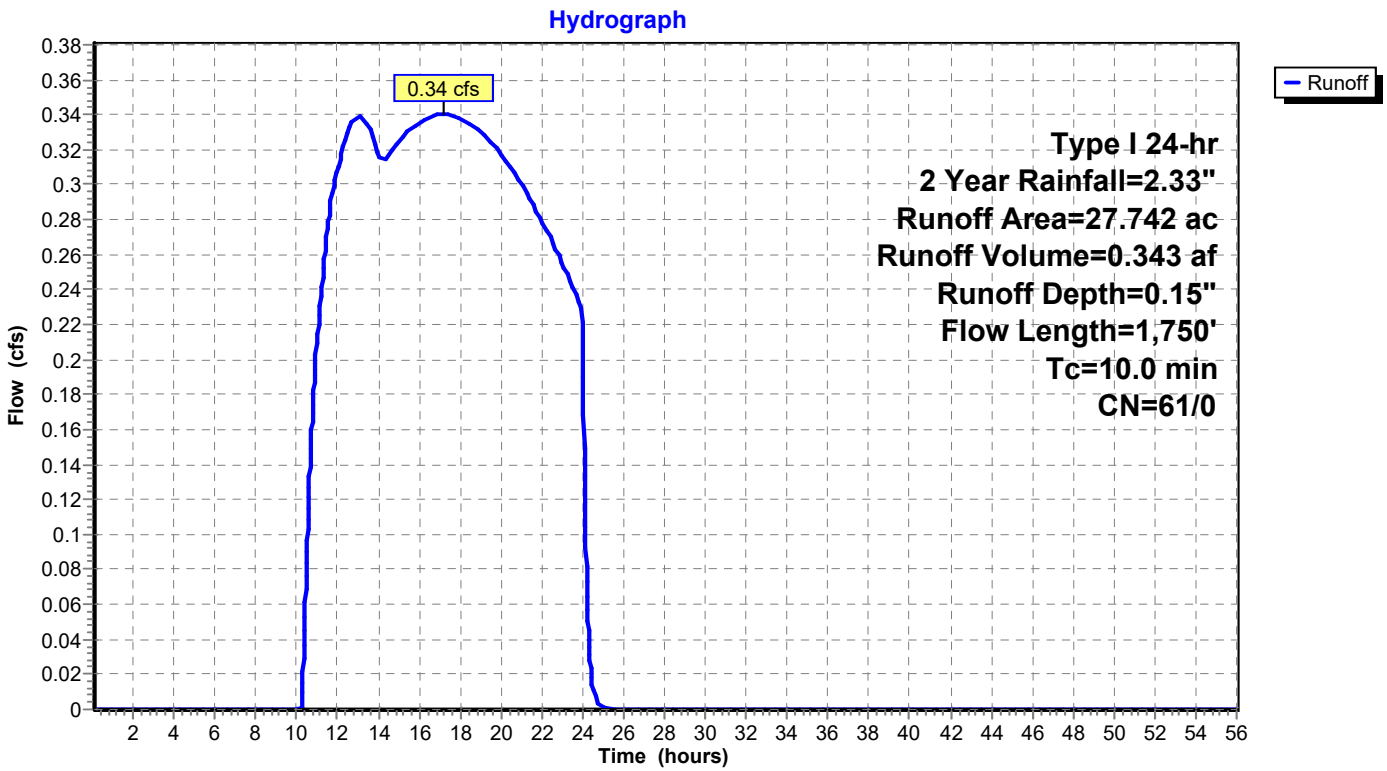
Runoff = 0.34 cfs @ 17.16 hrs, Volume= 0.343 af, Depth= 0.15"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
15.931	58	Meadow, non-grazed, HSG B
4.853	58	Meadow, non-grazed, HSG B
0.000	71	Meadow, non-grazed, HSG C
6.330	71	Meadow, non-grazed, HSG C
0.477	71	Meadow, non-grazed, HSG C
0.151	75	Row crops, SR + CR, Good, HSG B
27.742	61	Weighted Average
27.742	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	1,750		3.74		**Direct Entry, SCS Method taken from Catchment in ACAD file**
7.8	1,750	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 13: Subcat 13



Summary for Subcatchment 13a-Ex: Subcat 13a-Ex

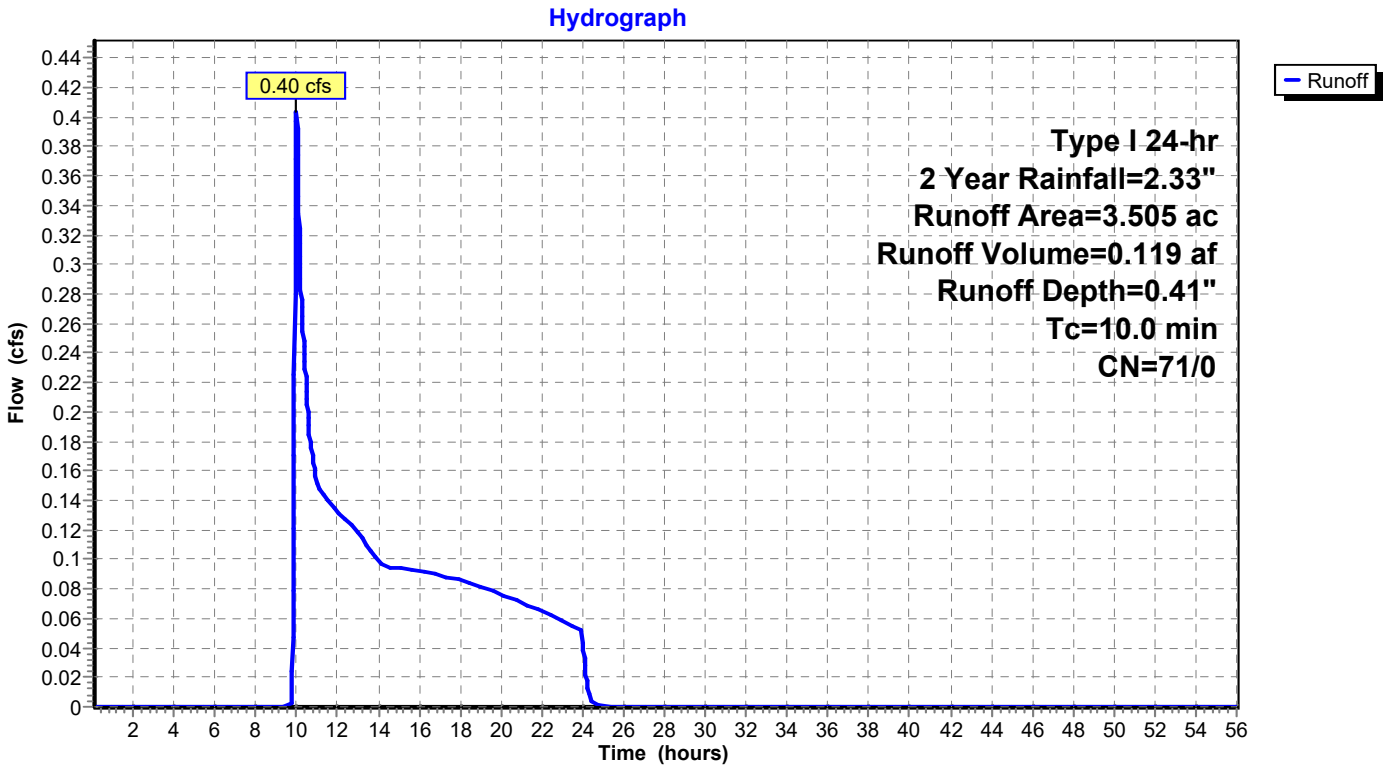
Runoff = 0.40 cfs @ 10.00 hrs, Volume= 0.119 af, Depth= 0.41"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
3.505	71	Meadow, non-grazed, HSG C
3.505	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9					**Direct Entry, SCS Method taken from Catchment in ACAD file**
8.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 13a-Ex: Subcat 13a-Ex



Summary for Subcatchment 13b-Ex: Subcat 13b-Ex

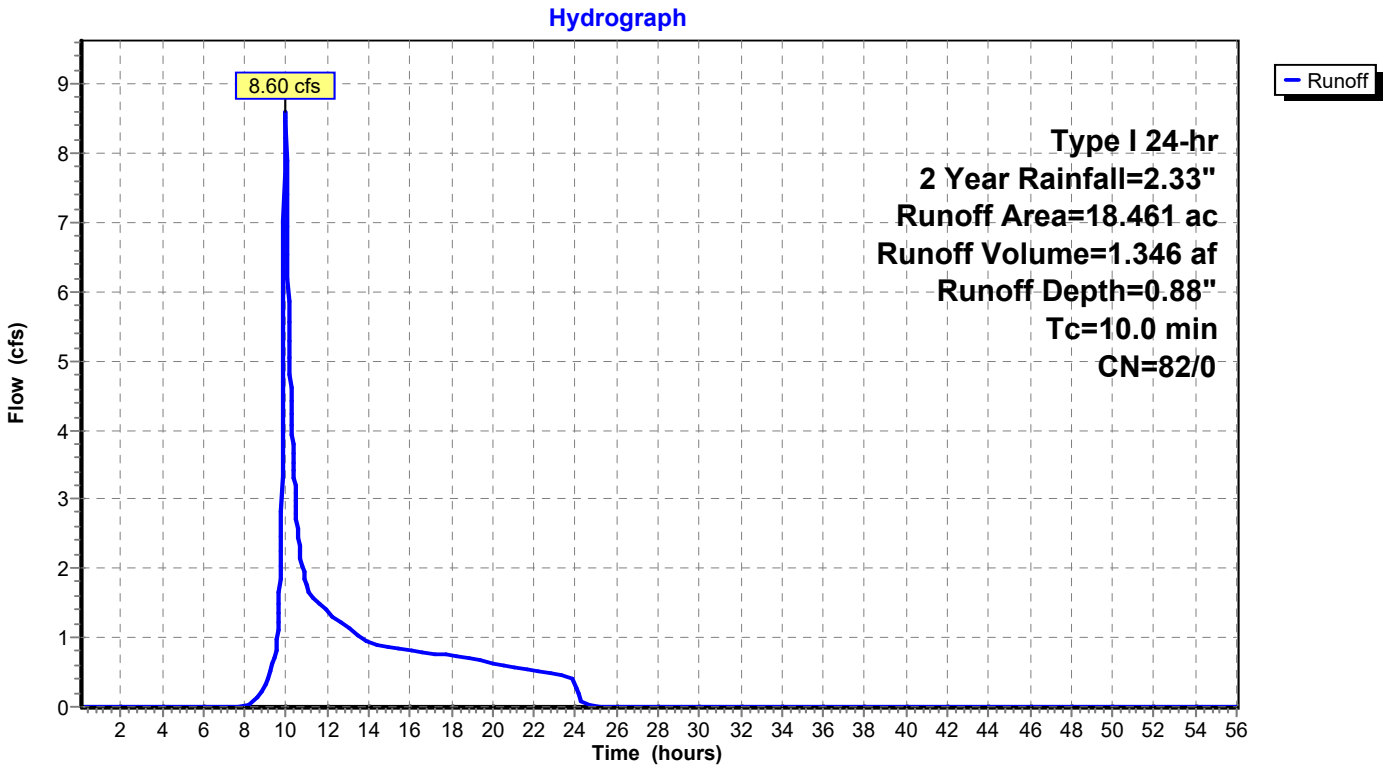
Runoff = 8.60 cfs @ 9.97 hrs, Volume= 1.346 af, Depth= 0.88"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
18.461	82	Row crops, SR + CR, Good, HSG C
18.461	82	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry, SCS Method taken from Catchment in ACAD file**
7.0	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 13b-Ex: Subcat 13b-Ex



Summary for Subcatchment 13c-Ex: Subcat 13c-Ex

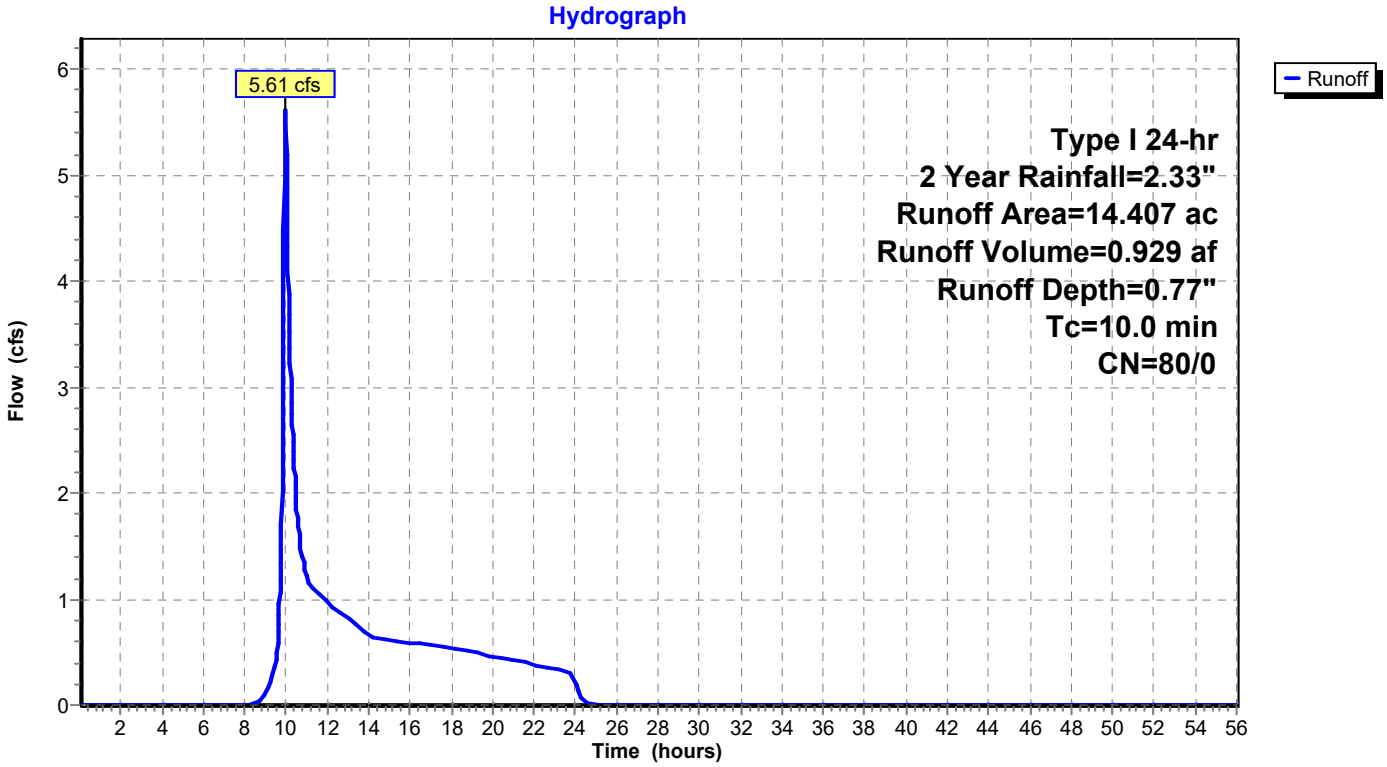
Runoff = 5.61 cfs @ 9.98 hrs, Volume= 0.929 af, Depth= 0.77"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
3.718	75	Row crops, SR + CR, Good, HSG B
10.689	82	Row crops, SR + CR, Good, HSG C
14.407	80	Weighted Average
14.407	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9					**Direct Entry, SCS Method taken from Catchment in ACAD file**
6.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 13c-Ex: Subcat 13c-Ex



Summary for Subcatchment 14: Subcat 14

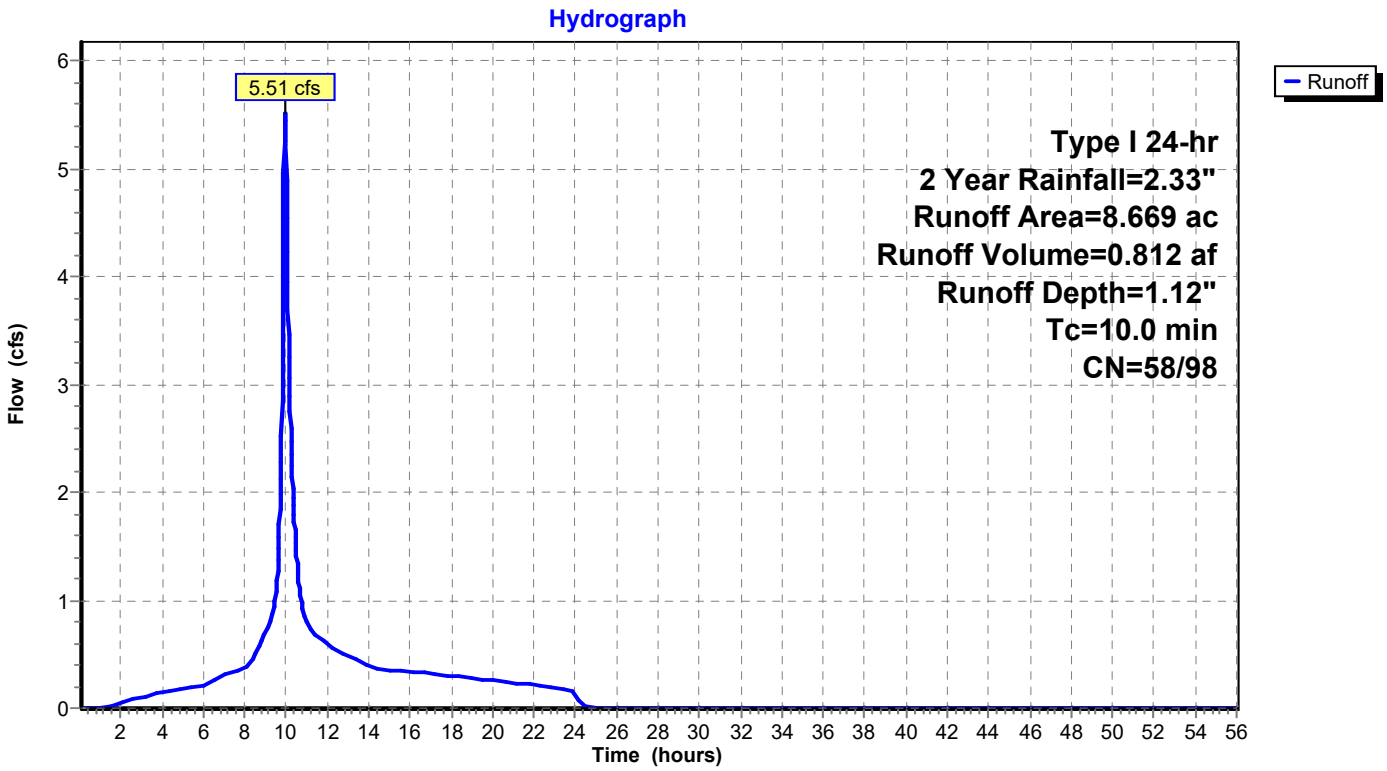
Runoff = 5.51 cfs @ 9.96 hrs, Volume= 0.812 af, Depth= 1.12"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
4.224	58	Meadow, non-grazed, HSG B
4.445	98	Paved roads w/curbs & sewers, HSG B
8.669	79	Weighted Average
4.224	58	48.73% Pervious Area
4.445	98	51.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6					**Direct Entry, SCS Method taken from Catchment in ACAD file**
8.6	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 14: Subcat 14



Summary for Subcatchment 14a{(1)}-Ex: Subcat 14a{(1)}-Ex

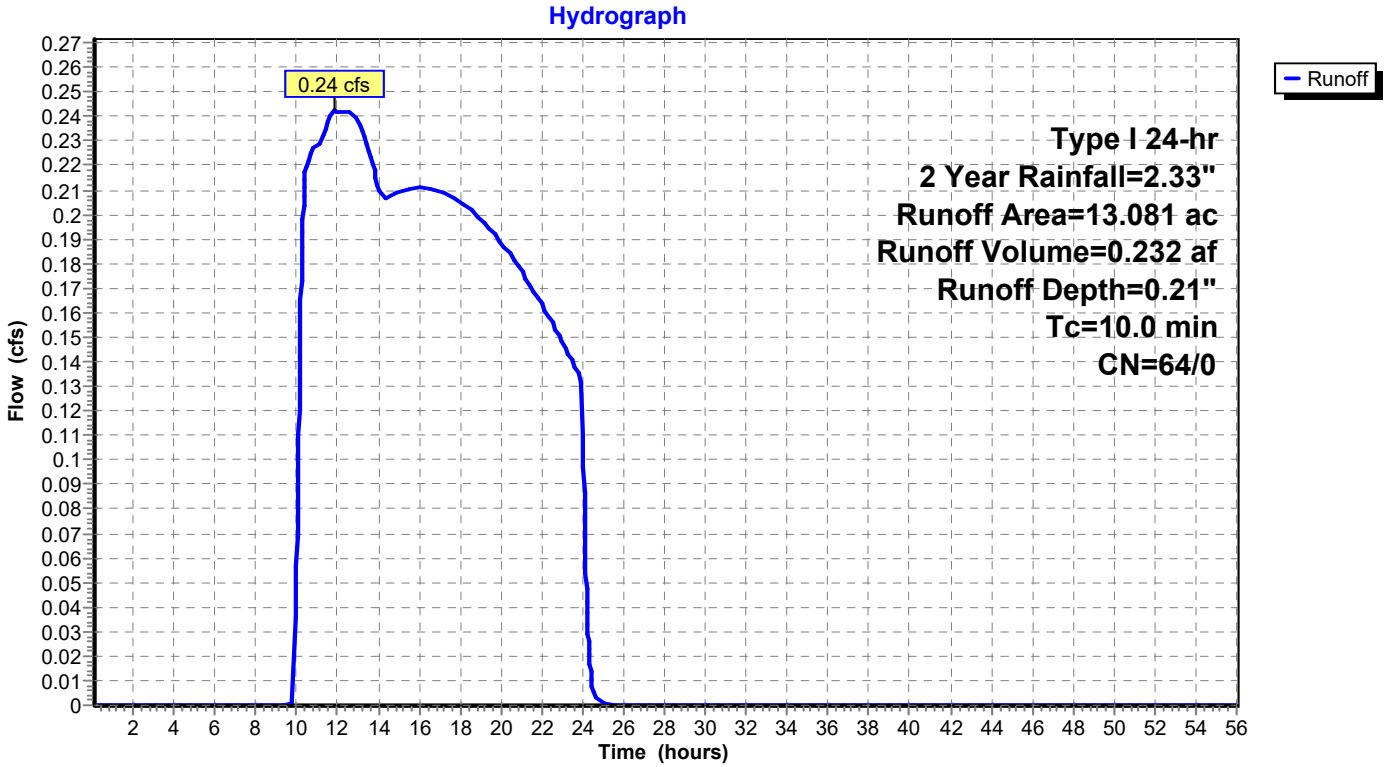
Runoff = 0.24 cfs @ 11.89 hrs, Volume= 0.232 af, Depth= 0.21"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
0.000	58	Meadow, non-grazed, HSG B
8.116	58	Meadow, non-grazed, HSG B
2.383	75	Row crops, SR + CR, Good, HSG B
0.000	75	Row crops, SR + CR, Good, HSG B
2.581	75	Row crops, SR + CR, Good, HSG B
13.081	64	Weighted Average
13.081	64	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**
8.7	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 14a{(1)}-Ex: Subcat 14a{(1)}-Ex



Summary for Subcatchment 14a{(2)}-Ex: Subcat 14a{(2)}-Ex

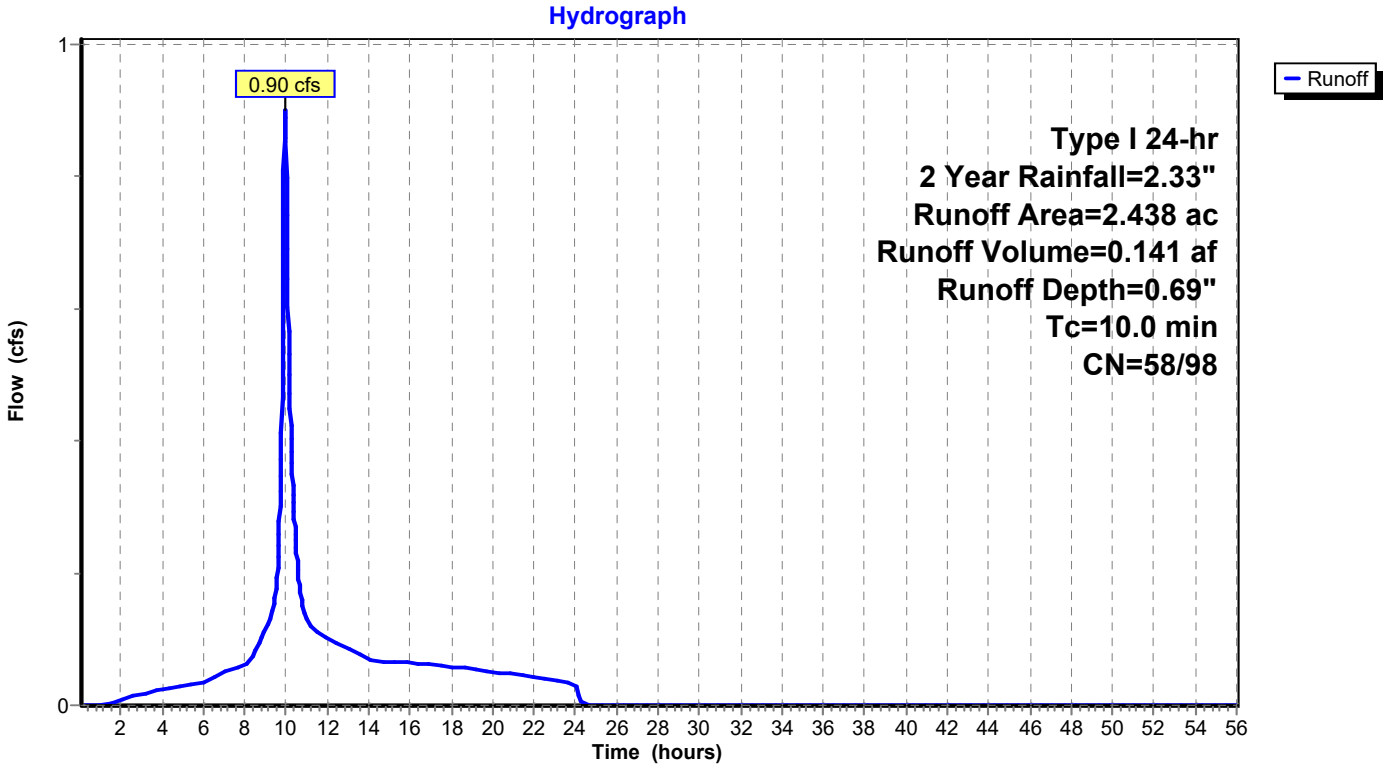
Runoff = 0.90 cfs @ 9.96 hrs, Volume= 0.141 af, Depth= 0.69"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
1.711	58	Meadow, non-grazed, HSG B
0.726	98	Paved roads w/curbs & sewers, HSG B
0.000	75	Row crops, SR + CR, Good, HSG B
0.000	75	Row crops, SR + CR, Good, HSG B
2.438	70	Weighted Average
1.711	58	70.20% Pervious Area
0.726	98	29.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**
4.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 14a{(2)}-Ex: Subcat 14a{(2)}-Ex



Summary for Subcatchment 14b-Ex: Subcat 14b-Ex

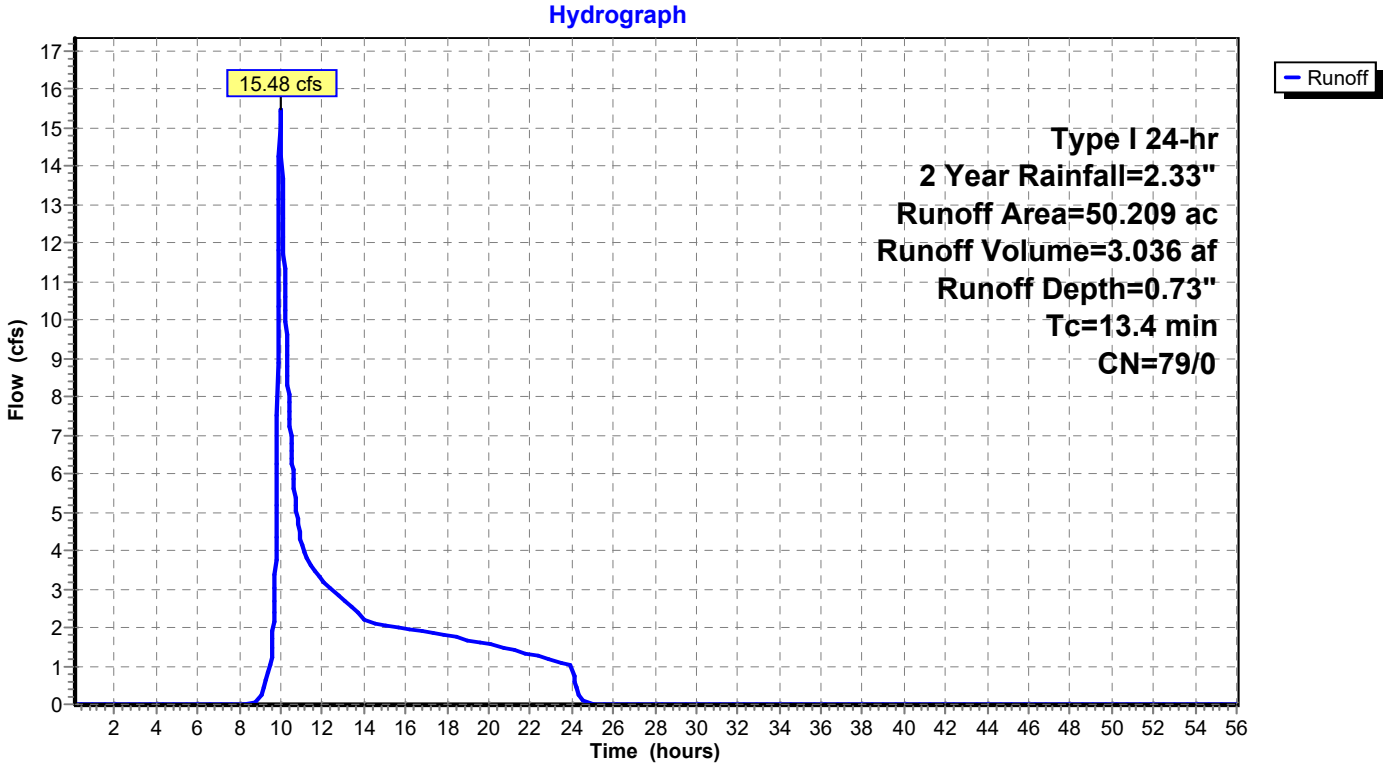
Runoff = 15.48 cfs @ 9.99 hrs, Volume= 3.036 af, Depth= 0.73"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
13.606	75	Row crops, SR + CR, Good, HSG B
8.804	75	Row crops, SR + CR, Good, HSG B
0.005	82	Row crops, SR + CR, Good, HSG C
27.793	82	Row crops, SR + CR, Good, HSG C
50.209	79	Weighted Average
50.209	79	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 14b-Ex: Subcat 14b-Ex



Summary for Subcatchment 14c{(0)}-Ex: Subcat 14c{(0)}-Ex

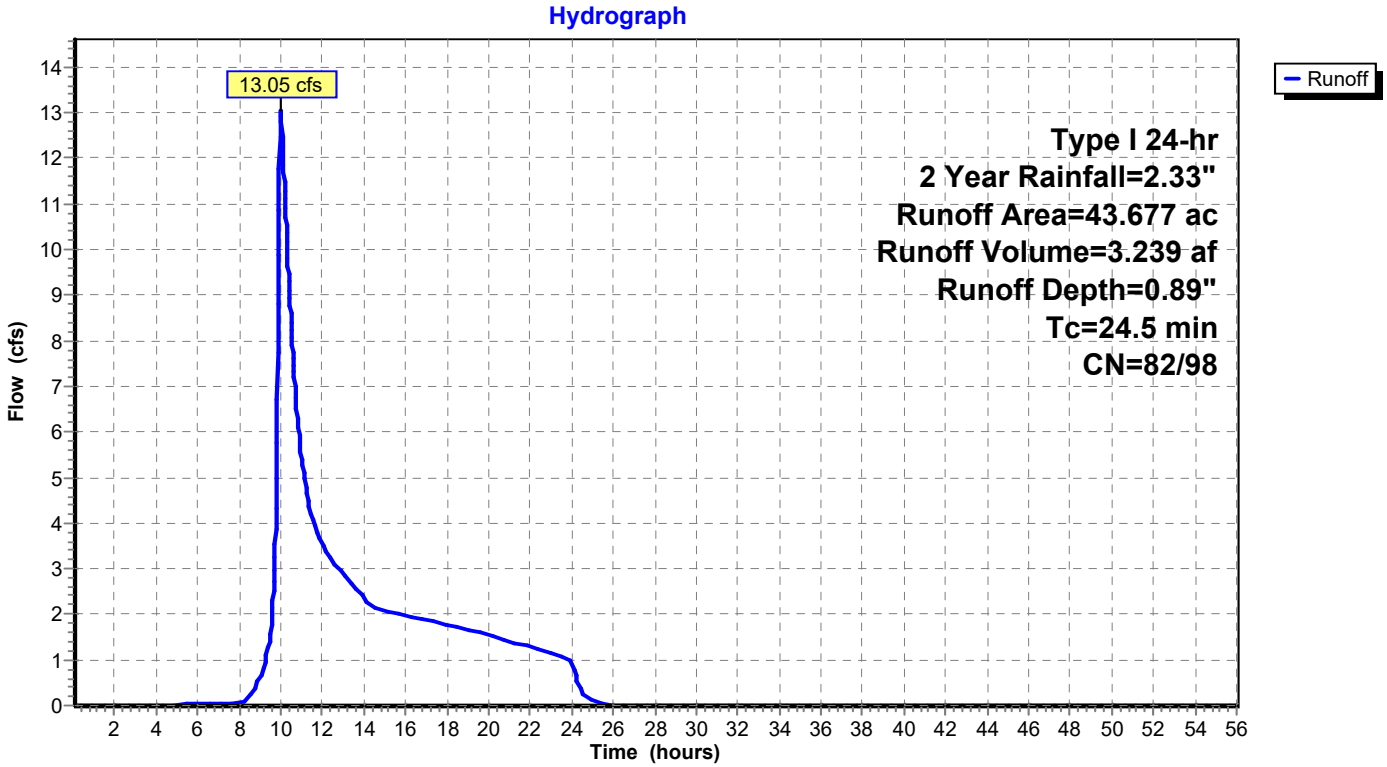
Runoff = 13.05 cfs @ 10.00 hrs, Volume= 3.239 af, Depth= 0.89"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
0.486	98	Paved roads w/curbs & sewers, HSG C
0.041	98	Paved roads w/curbs & sewers, HSG C
37.308	82	Row crops, SR + CR, Good, HSG C
0.070	82	Row crops, SR + CR, Good, HSG C
5.772	82	Row crops, SR + CR, Good, HSG C
43.677	82	Weighted Average
43.150	82	98.79% Pervious Area
0.527	98	1.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 14c{(0)}-Ex: Subcat 14c{(0)}-Ex



Summary for Subcatchment 14c{(1)}-Ex: Subcat 14c{(1)}-Ex

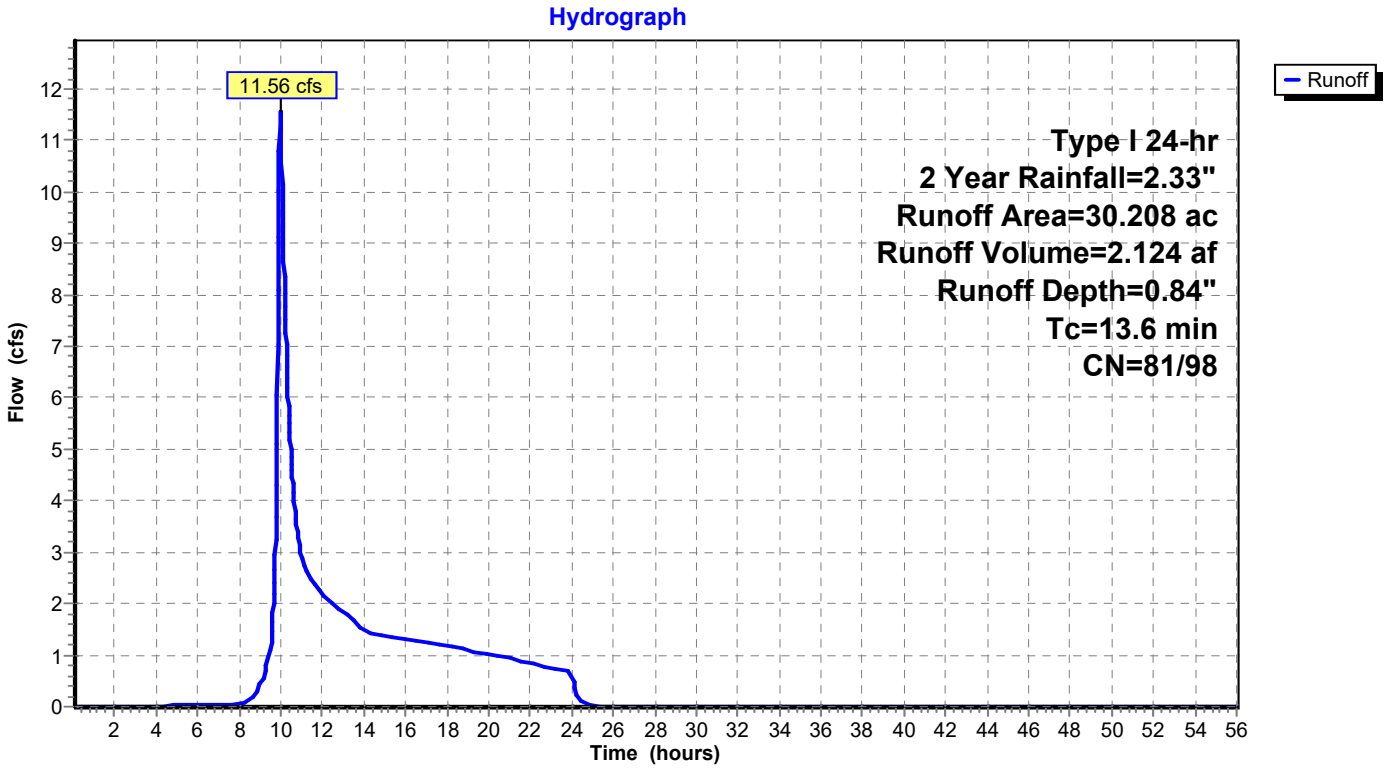
Runoff = 11.56 cfs @ 9.98 hrs, Volume= 2.124 af, Depth= 0.84"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
0.093	98	Paved roads w/curbs & sewers, HSG B
0.394	98	Paved roads w/curbs & sewers, HSG C
2.571	75	Row crops, SR + CR, Good, HSG B
2.743	75	Row crops, SR + CR, Good, HSG B
13.825	82	Row crops, SR + CR, Good, HSG C
10.454	82	Row crops, SR + CR, Good, HSG C
0.128	82	Row crops, SR + CR, Good, HSG C
30.208	81	Weighted Average
29.721	81	98.39% Pervious Area
0.486	98	1.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 14c{(1)}-Ex: Subcat 14c{(1)}-Ex



Summary for Subcatchment 14c{(2)}-Ex: Subcat 14c{(2)}-Ex

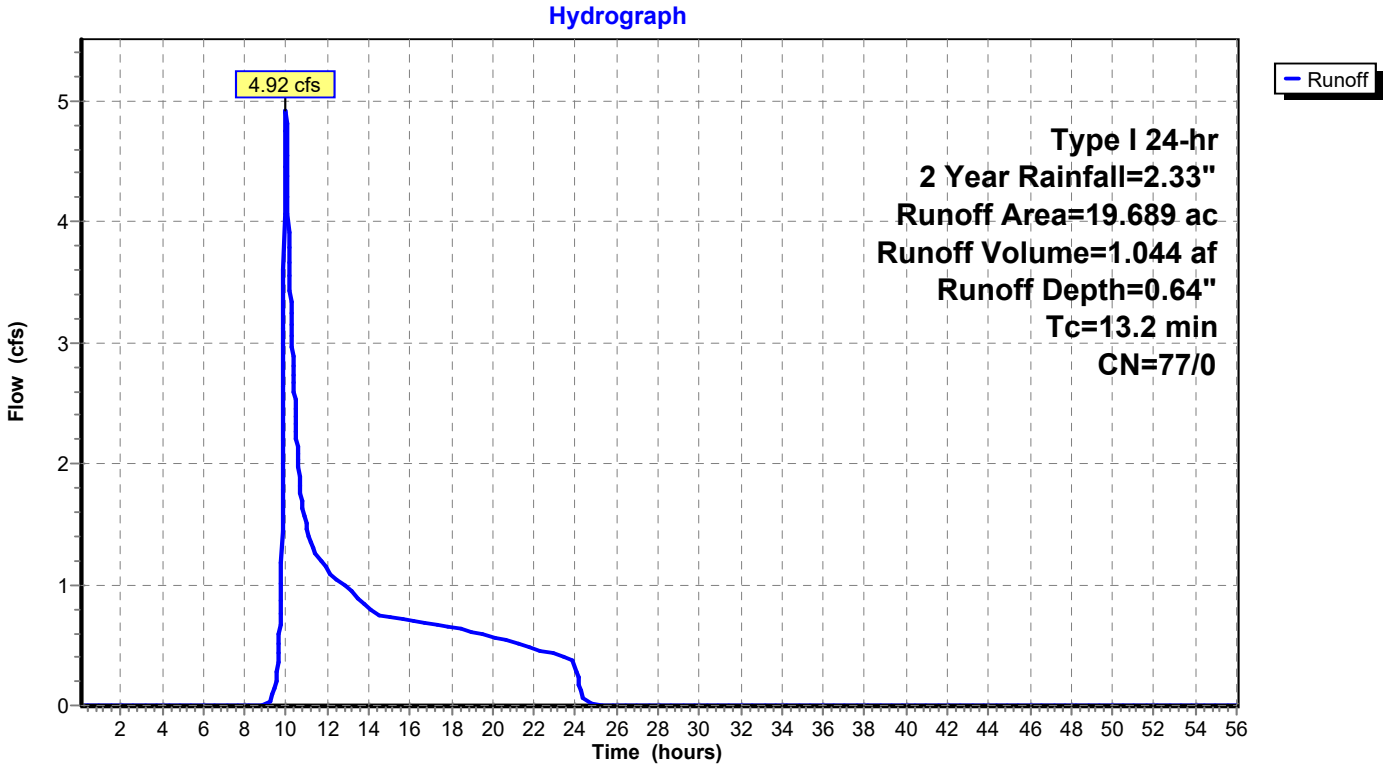
Runoff = 4.92 cfs @ 9.99 hrs, Volume= 1.044 af, Depth= 0.64"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
0.112	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
10.117	75	Row crops, SR + CR, Good, HSG B
3.200	75	Row crops, SR + CR, Good, HSG B
6.261	82	Row crops, SR + CR, Good, HSG C
19.689	77	Weighted Average
19.689	77	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 14c{(2)}-Ex: Subcat 14c{(2)}-Ex



Summary for Subcatchment 14c{(3)}-Ex: Subcat 14c{(3)}-Ex

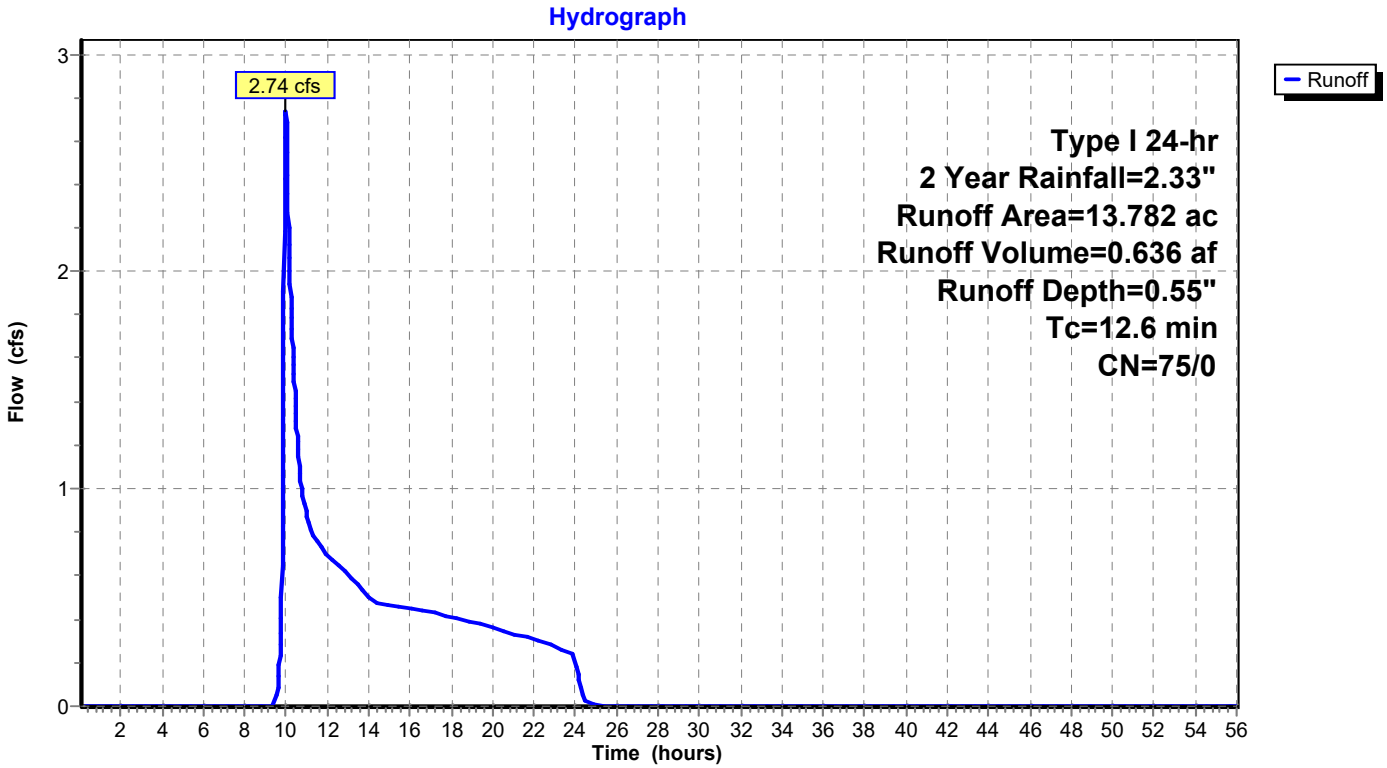
Runoff = 2.74 cfs @ 9.99 hrs, Volume= 0.636 af, Depth= 0.55"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
6.980	75	Row crops, SR + CR, Good, HSG B
0.000	75	Row crops, SR + CR, Good, HSG B
6.802	75	Row crops, SR + CR, Good, HSG B
13.782	75	Weighted Average
13.782	75	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 14c{(3)}-Ex: Subcat 14c{(3)}-Ex



Summary for Subcatchment 14d-Ex: Subcat 14d-Ex

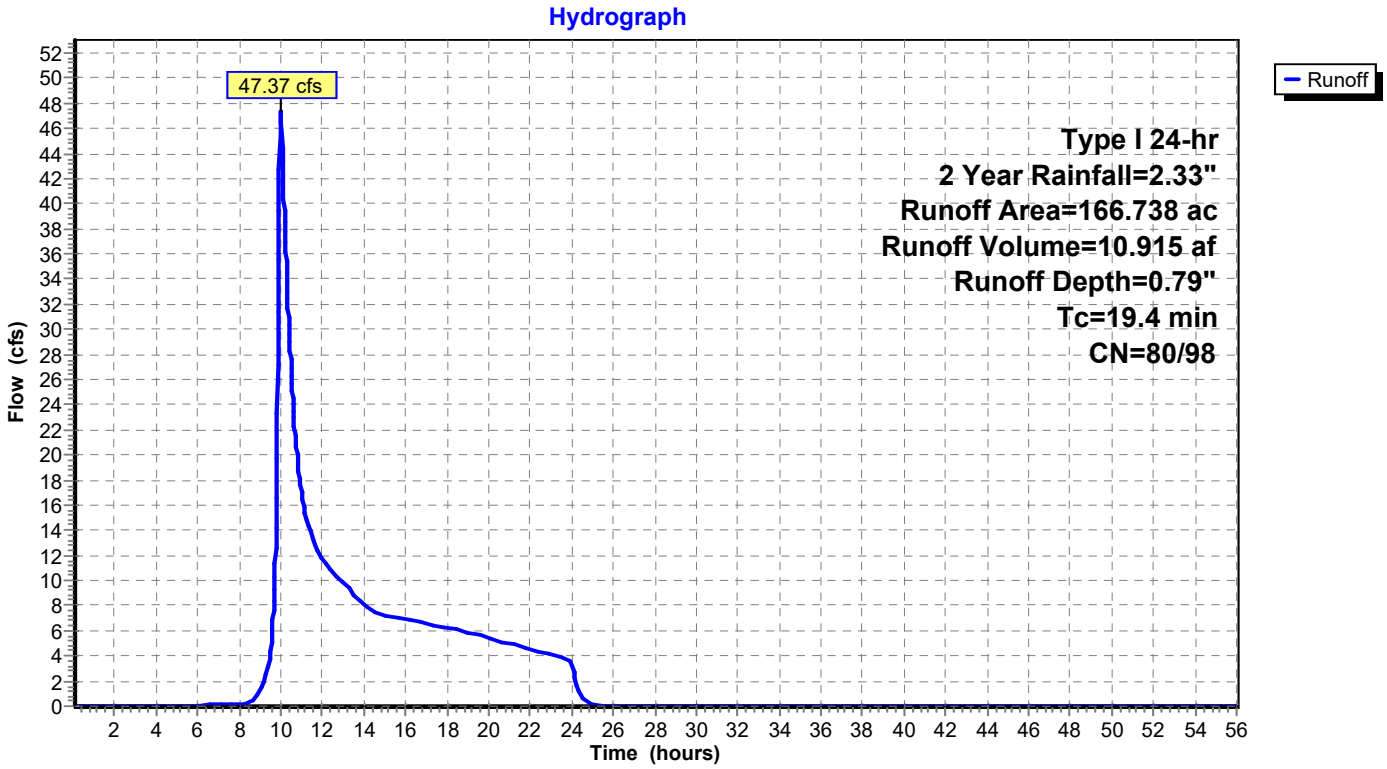
Runoff = 47.37 cfs @ 10.00 hrs, Volume= 10.915 af, Depth= 0.79"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
0.000	71	Meadow, non-grazed, HSG C
0.000	71	Meadow, non-grazed, HSG C
0.000	71	Meadow, non-grazed, HSG C
0.000	71	Meadow, non-grazed, HSG C
0.000	71	Meadow, non-grazed, HSG C
0.440	98	Paved roads w/curbs & sewers, HSG B
0.500	98	Paved roads w/curbs & sewers, HSG C
0.580	98	Paved roads w/curbs & sewers, HSG C
22.046	75	Row crops, SR + CR, Good, HSG B
2.662	75	Row crops, SR + CR, Good, HSG B
18.916	75	Row crops, SR + CR, Good, HSG B
108.025	82	Row crops, SR + CR, Good, HSG C
6.305	82	Row crops, SR + CR, Good, HSG C
7.263	82	Row crops, SR + CR, Good, HSG C
166.738	80	Weighted Average
165.218	80	99.09% Pervious Area
1.520	98	0.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.4					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 14d-Ex: Subcat 14d-Ex



Summary for Subcatchment 14e-Ex: Subcat 14e-Ex

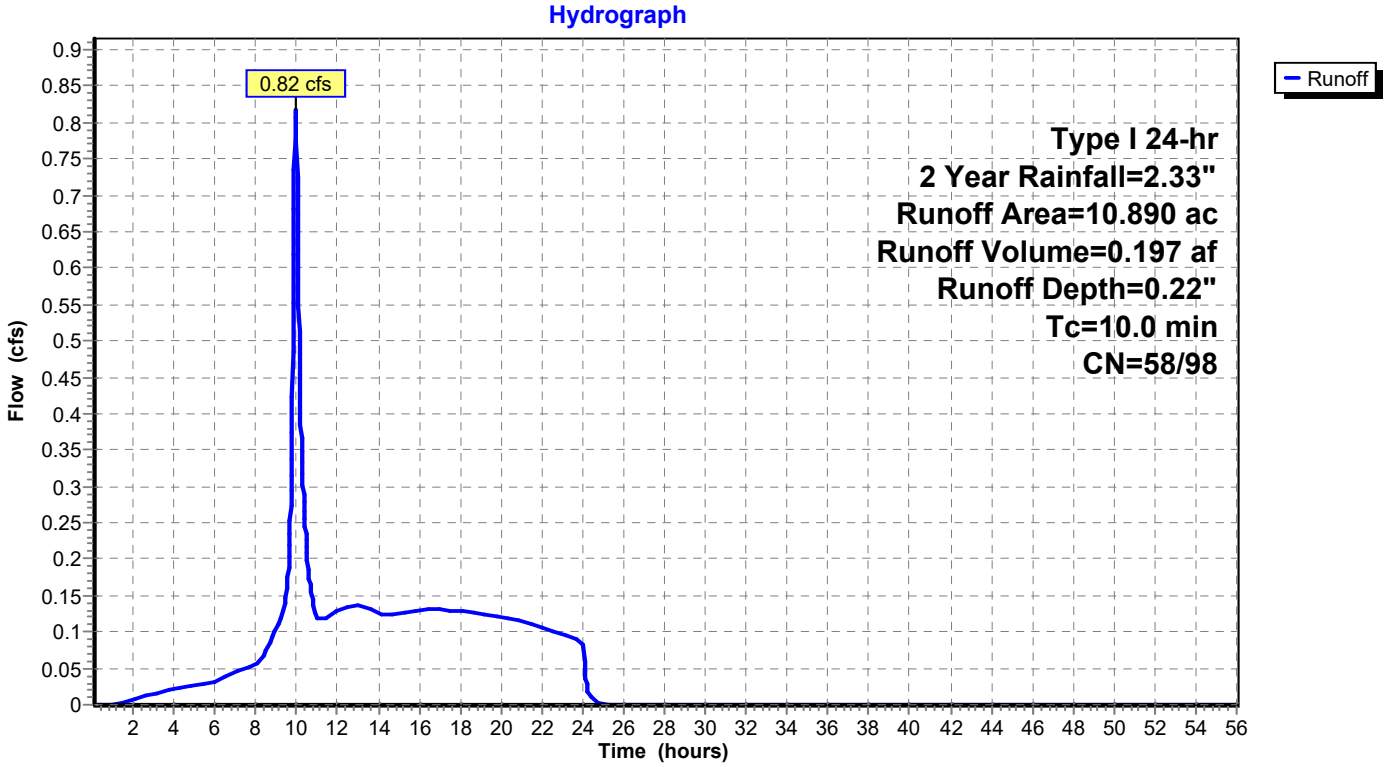
Runoff = 0.82 cfs @ 9.96 hrs, Volume= 0.197 af, Depth= 0.22"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 2 Year Rainfall=2.33"

Area (ac)	CN	Description
10.185	58	Meadow, non-grazed, HSG B
0.003	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.043	77	Natural western desert, HSG B
0.659	98	Paved roads w/curbs & sewers, HSG B
10.890	60	Weighted Average
10.231	58	93.95% Pervious Area
0.659	98	6.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4					**Direct Entry, SCS Method taken from Catchment in ACAD file**
9.4	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 14e-Ex: Subcat 14e-Ex



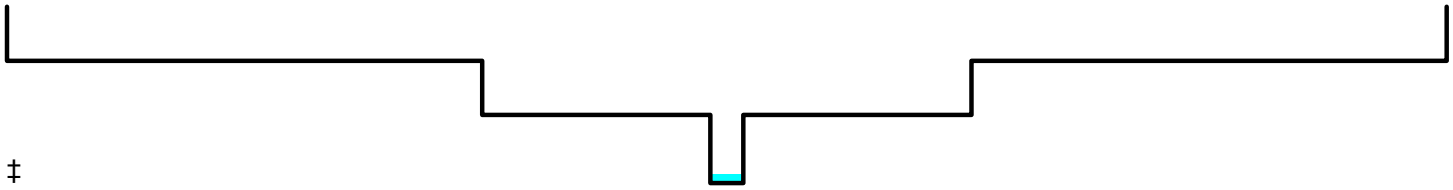
Summary for Reach 6R: Reach 1c

Inflow Area = 784.583 ac, 0.00% Impervious, Inflow Depth = 0.13" for 2 Year event
Inflow = 8.78 cfs @ 18.05 hrs, Volume= 8.692 af
Outflow = 8.78 cfs @ 18.11 hrs, Volume= 8.692 af, Atten= 0%, Lag= 3.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.26 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 4.26 fps, Avg. Travel Time= 3.2 min

Peak Storage= 1,711 cf @ 18.11 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 6.52' Flow Area= 758.7 sf, Capacity= 4,878.97 cfs

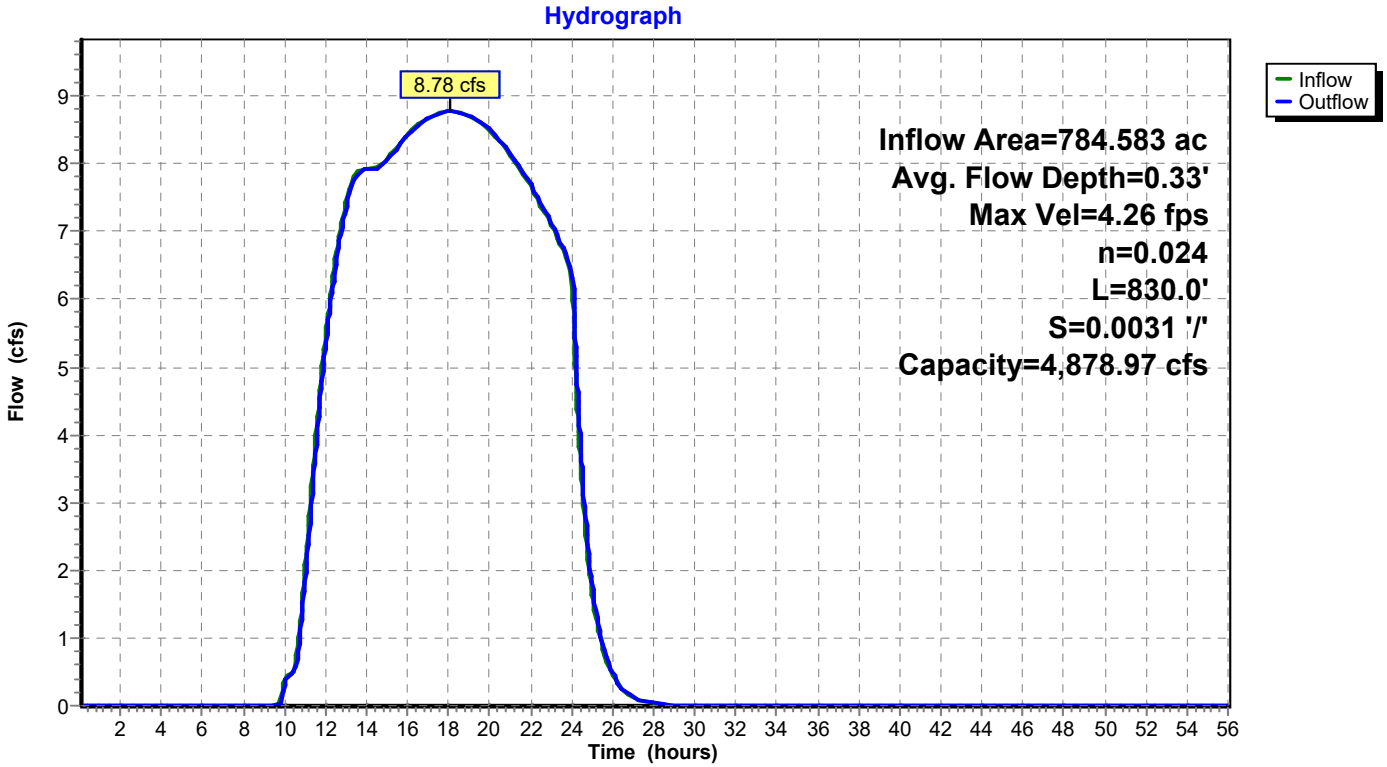
Custom stage-perimeter table, n= 0.024
102 Intermediate values determined by Multi-point interpolation
Length= 830.0' Slope= 0.0031 '/'
Inlet Invert= 841.43', Outlet Invert= 838.82'



‡

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.52	15.9	11.7	13,197	67.73
4.52	204.4	231.7	169,652	652.79
6.52	758.7	301.0	629,721	4,878.97

Reach 6R: Reach 1c



Summary for Reach 7R: Reach 1b

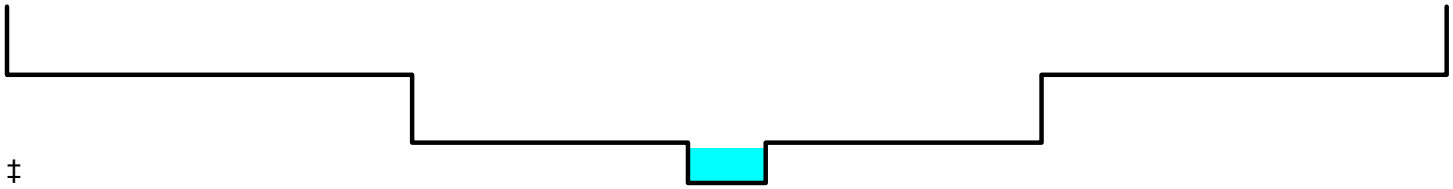
[62] Hint: Exceeded Reach 6R OUTLET depth by 0.99' @ 10.28 hrs

Inflow Area = 833.262 ac, 0.00% Impervious, Inflow Depth = 0.28" for 2 Year event
Inflow = 56.46 cfs @ 10.17 hrs, Volume= 19.384 af
Outflow = 52.49 cfs @ 10.28 hrs, Volume= 19.384 af, Atten= 7%, Lag= 6.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.17 fps, Min. Travel Time= 4.6 min
Avg. Velocity = 3.17 fps, Avg. Travel Time= 4.6 min

Peak Storage= 14,638 cf @ 10.28 hrs
Average Depth at Peak Storage= 1.01'
Bank-Full Depth= 5.18' Flow Area= 896.3 sf, Capacity= 8,865.90 cfs

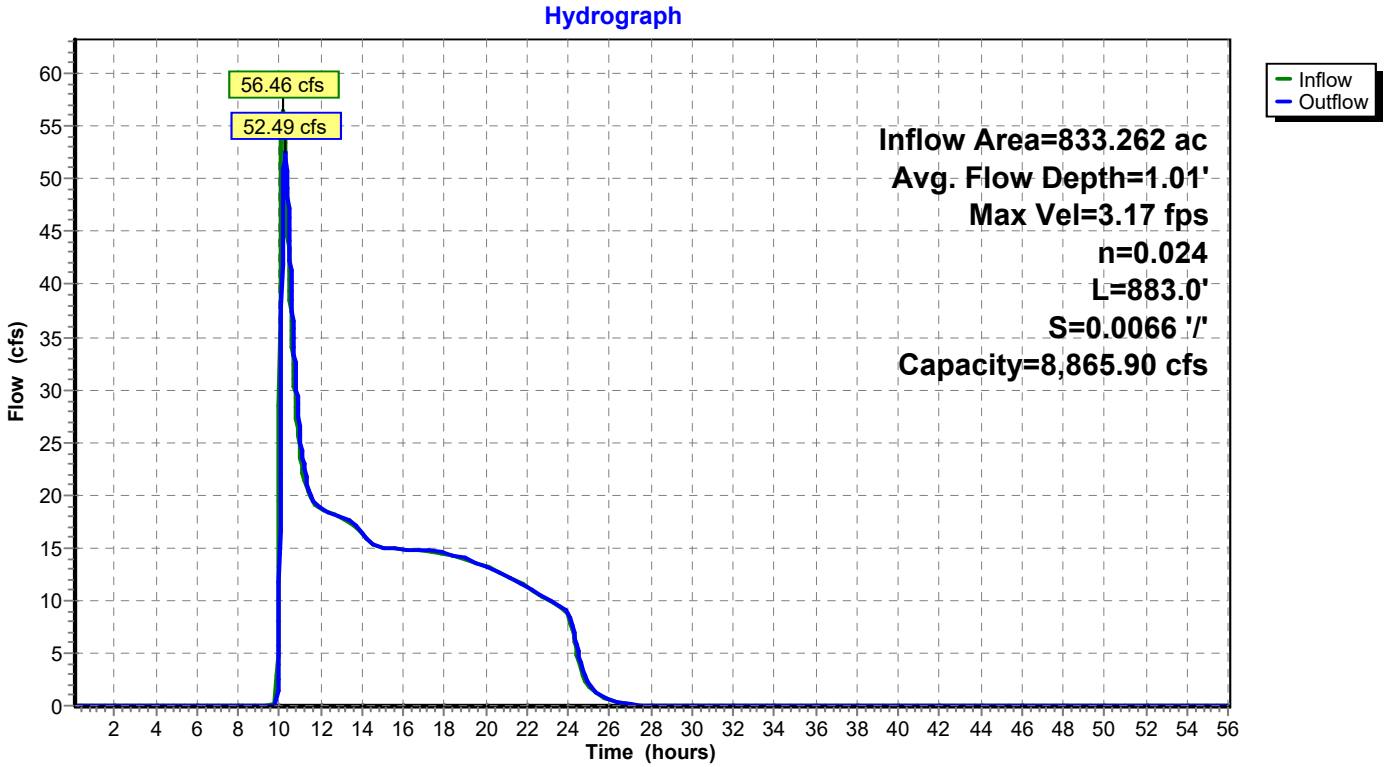
Custom stage-perimeter table, n= 0.024
102 Intermediate values determined by Multi-point interpolation
Length= 883.0' Slope= 0.0066 '/'
Inlet Invert= 838.82', Outlet Invert= 833.00'



‡

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.18	19.4	38.8	17,130	61.43
3.18	286.2	275.2	252,715	1,476.75
5.18	896.3	324.7	791,433	8,865.90

Reach 7R: Reach 1b



Summary for Reach 8R: Reach 1a

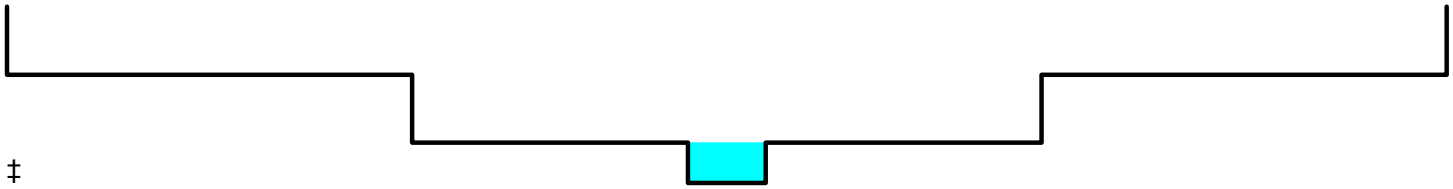
[62] Hint: Exceeded Reach 7R OUTLET depth by 0.38' @ 10.56 hrs

Inflow Area = 879.875 ac, 0.06% Impervious, Inflow Depth = 0.27" for 2 Year event
Inflow = 52.81 cfs @ 10.28 hrs, Volume= 19.883 af
Outflow = 51.34 cfs @ 10.35 hrs, Volume= 19.883 af, Atten= 3%, Lag= 4.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.38 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 2.29 fps, Avg. Travel Time= 4.3 min

Peak Storage= 12,588 cf @ 10.35 hrs
Average Depth at Peak Storage= 1.20'
Bank-Full Depth= 5.18' Flow Area= 896.3 sf, Capacity= 6,396.21 cfs

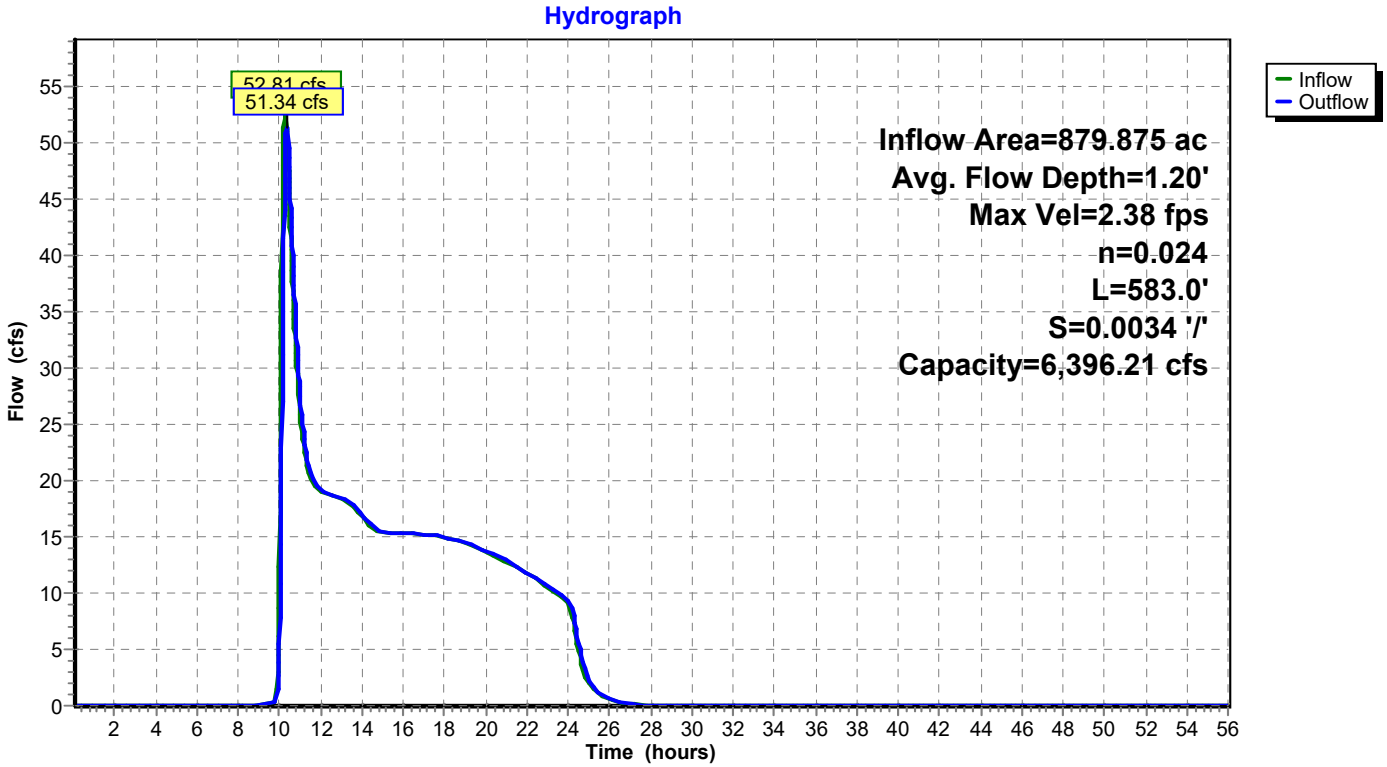
Custom stage-perimeter table, n= 0.024
102 Intermediate values determined by Multi-point interpolation
Length= 583.0' Slope= 0.0034 '/'
Inlet Invert= 833.00', Outlet Invert= 831.00'



‡

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.18	19.4	38.8	11,310	44.32
3.18	286.2	275.2	166,855	1,065.38
5.18	896.3	324.7	522,543	6,396.21

Reach 8R: Reach 1a



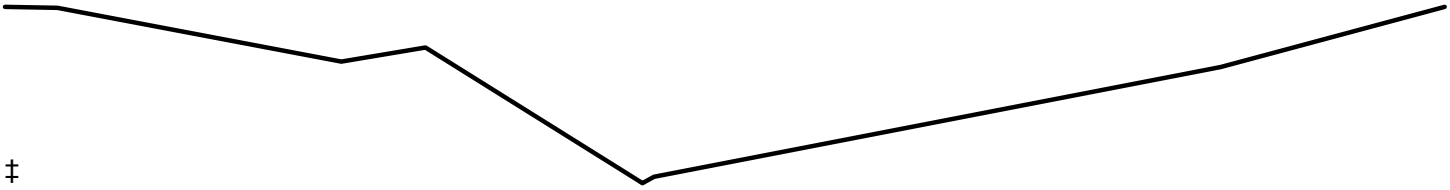
Summary for Reach 17R: Reach 1d

Inflow	=	0.00 cfs @	0.10 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	0.10 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min	

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.10 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.96' Flow Area= 247.0 sf, Capacity= 1,276.84 cfs

Custom cross-section, Length= 841.0' Slope= 0.0110 '/' (102 Elevation Intervals)
Constant n= 0.027
Inlet Invert= 853.60', Outlet Invert= 844.31'

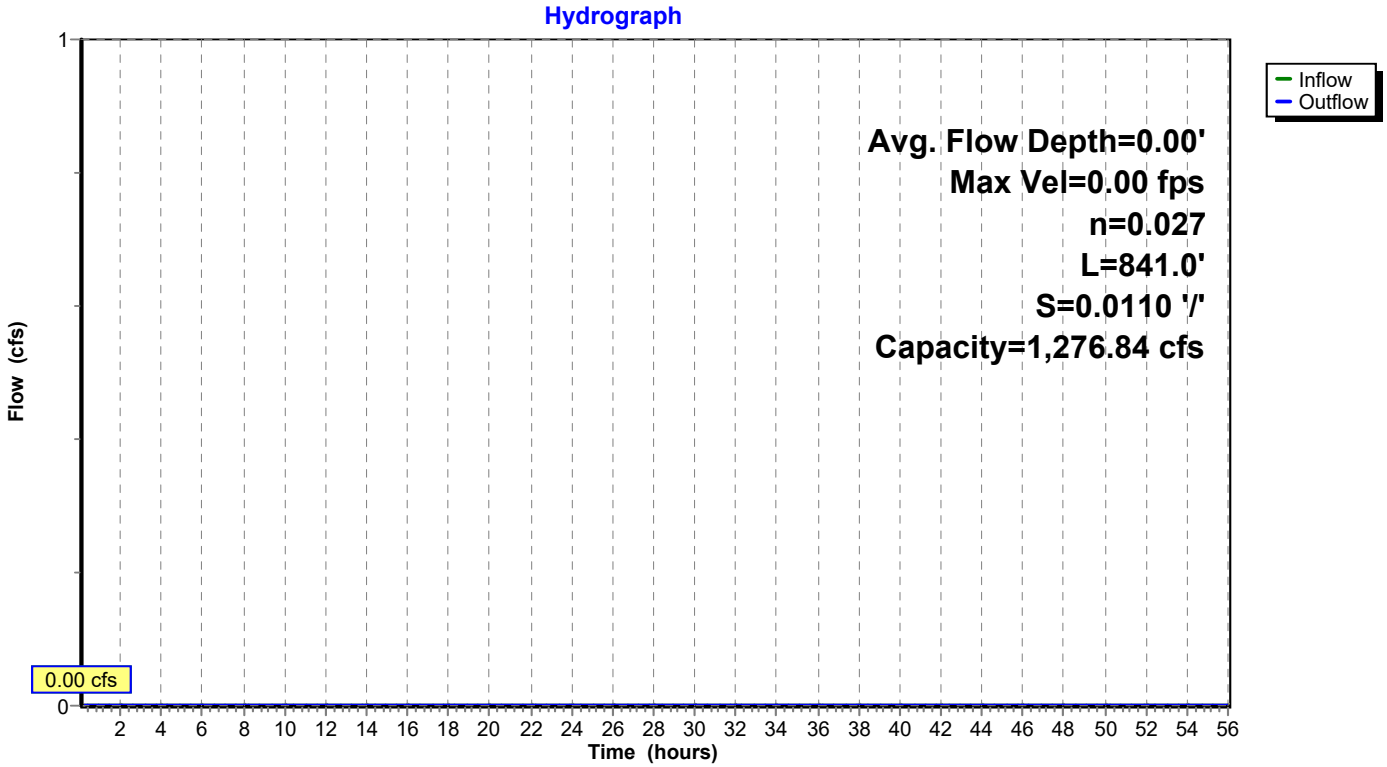


‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
8.56	851.18	0.00
19.24	851.17	0.01
76.81	850.57	0.61
93.88	850.73	0.45
136.80	849.26	1.92
137.90	849.22	1.96
140.29	849.29	1.89
255.27	850.51	0.67
300.75	851.18	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.04	0.0	2.5	42	0.02
0.07	0.2	4.4	128	0.09
1.29	97.3	155.0	81,870	413.13
1.35	106.8	160.8	89,836	469.56
1.51	136.4	208.8	114,697	594.12
1.95	244.1	280.9	205,277	1,285.78
1.96	247.0	292.2	207,687	1,276.84

Reach 17R: Reach 1d



Summary for Reach 18R: Linne Road Grassed Chl

Inflow Area = 276.531 ac, 1.18% Impervious, Inflow Depth = 0.34" for 2 Year event
Inflow = 12.12 cfs @ 10.20 hrs, Volume= 7.815 af
Outflow = 11.03 cfs @ 10.47 hrs, Volume= 7.815 af, Atten= 9%, Lag= 15.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.27 fps, Min. Travel Time= 8.7 min
Avg. Velocity = 2.27 fps, Avg. Travel Time= 8.7 min

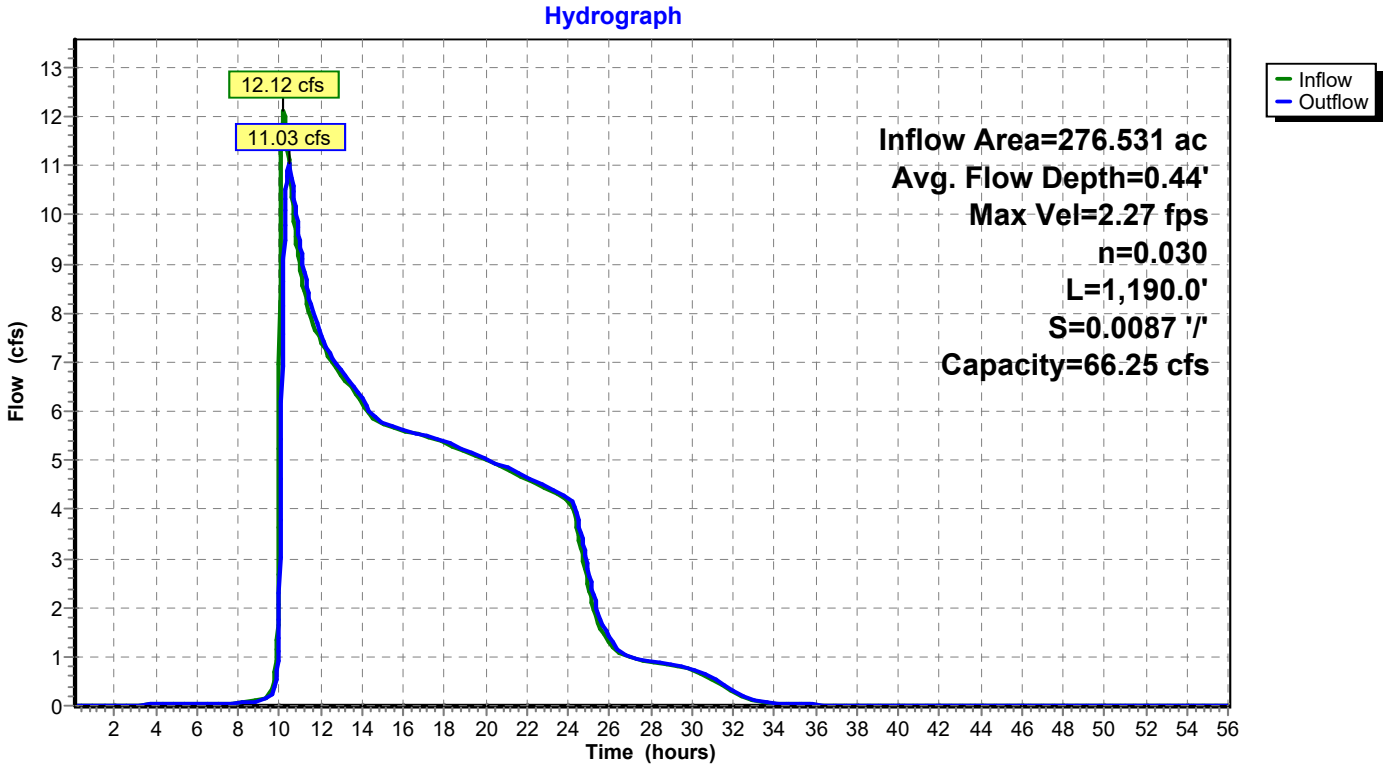
Peak Storage= 5,785 cf @ 10.47 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 1.11' Flow Area= 18.0 sf, Capacity= 66.25 cfs

Custom stage-perimeter table, n= 0.030
100 Intermediate values determined by Multi-point interpolation
Length= 1,190.0' Slope= 0.0087 '/'
Inlet Invert= 841.60', Outlet Invert= 831.20'

‡

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.52	5.8	16.9	6,916	13.23
0.93	13.8	22.4	16,431	46.30
1.11	18.0	25.4	21,420	66.25

Reach 18R: Linne Road Grassed Chl

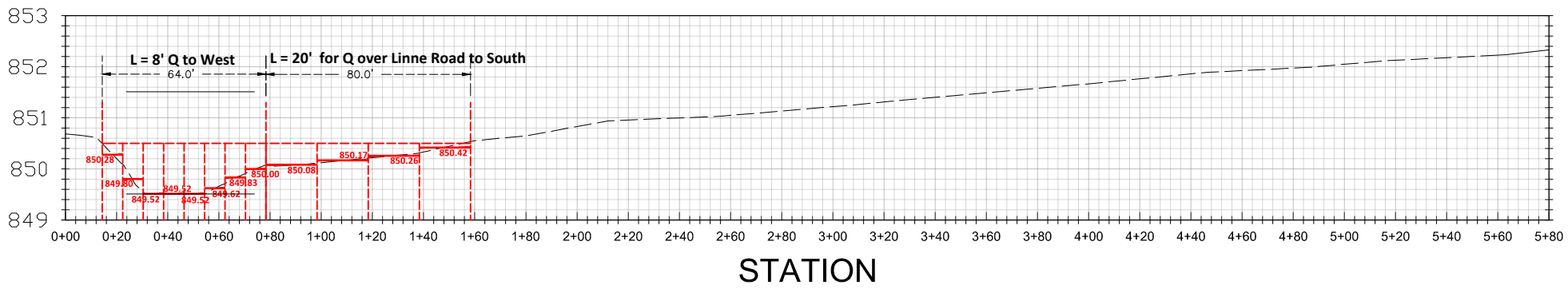


OLSEN RANCH PROJECT

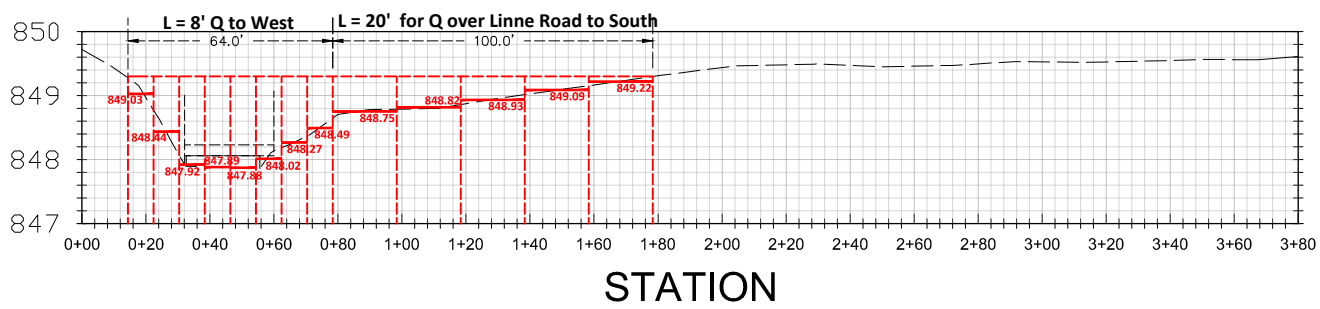
Broad Crested Weir Sizing Details

Linne Road Overtopping

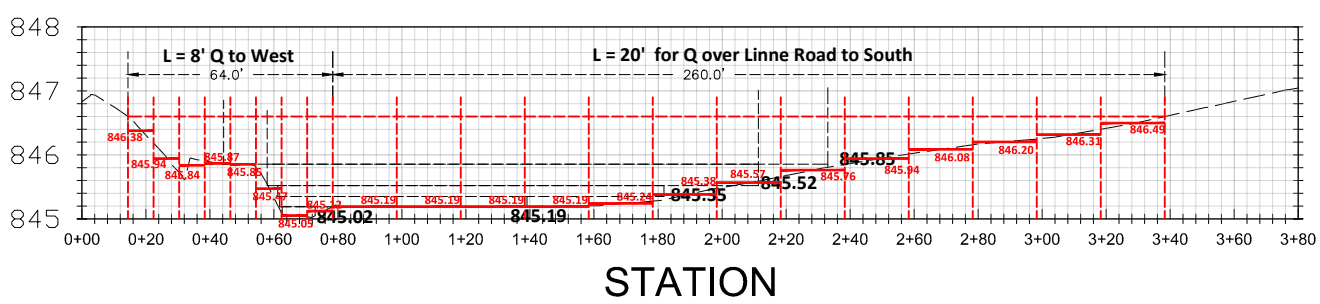
PROFILE OF CHECK DAM #1 (NORTH OF LINNE ROAD)



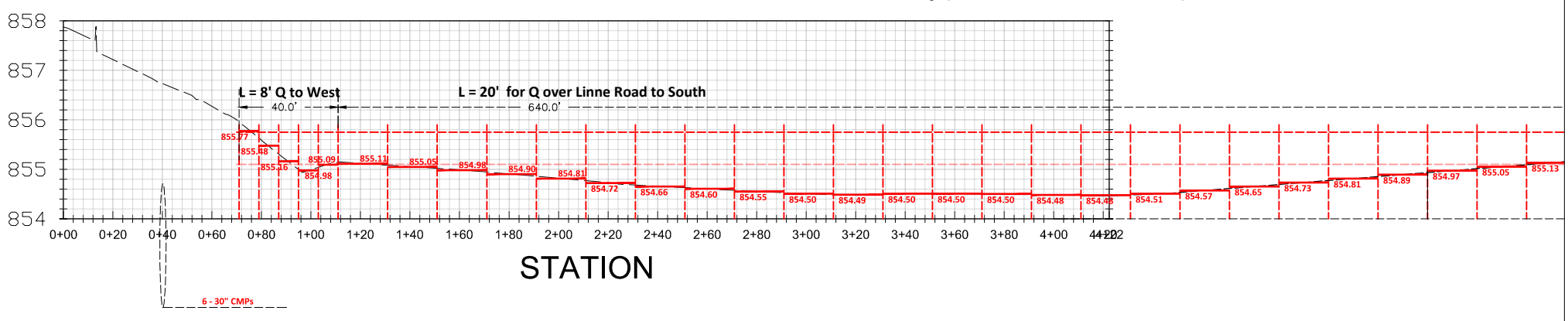
PROFILE OF CHECK DAM #2 (NORTH OF LINNE ROAD)



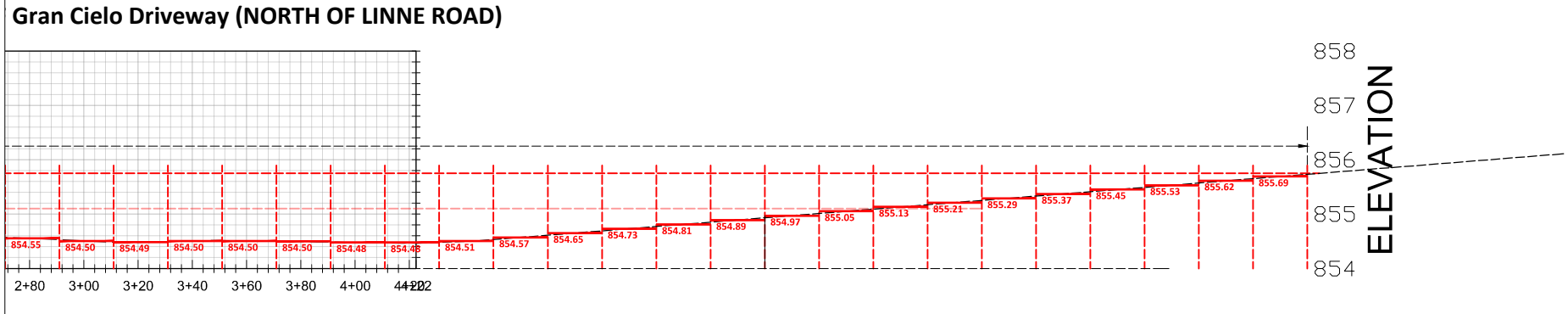
PROFILE OF CHECK DAM #3 (NORTH OF LINNE ROAD)



PROFILE OF Gran Cielo Driveway (NORTH OF LINNE ROAD)



Gran Cielo Driveway (NORTH OF LINNE ROAD)



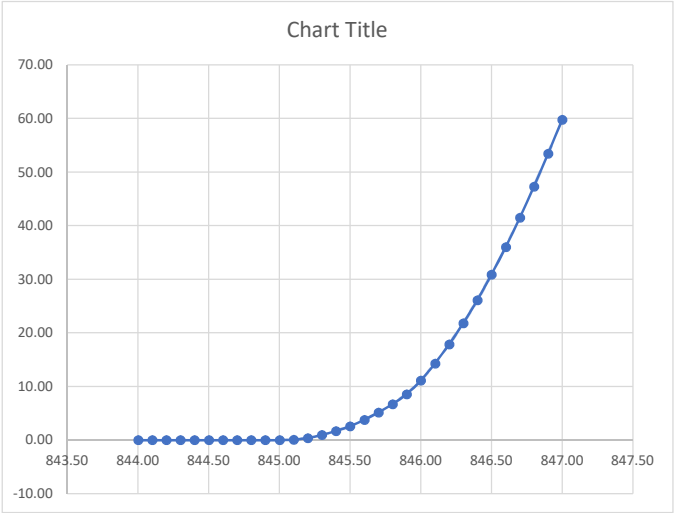
CHECK DAM CkD3 Q to West

IRREGULAR BROAD CRESTED WEIR METHOD

Q = CL(H^1.5)

C	0.60
L	8.00

0.10	W1	W2	W3	W4	W5	W6	W7	W8	W9	Total
WSE	846.38	845.94	845.84	845.87	845.85	845.47	845.05	845.12		
844.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
844.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
844.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
844.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
844.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
844.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
844.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
844.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
844.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
844.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
845.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
845.10	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00		0.05
845.20	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.11		0.39
845.30	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.37		0.97
845.40	0.00	0.00	0.00	0.00	0.00	0.00	0.99	0.71		1.71
845.50	0.00	0.00	0.00	0.00	0.00	0.02	1.45	1.12		2.60
845.60	0.00	0.00	0.00	0.00	0.00	0.22	1.96	1.60		3.78
845.70	0.00	0.00	0.00	0.00	0.00	0.53	2.52	2.12		5.17
845.80	0.00	0.00	0.00	0.00	0.00	0.91	3.12	2.69		6.72
845.90	0.00	0.00	0.07	0.02	0.05	1.35	3.76	3.31		8.57
846.00	0.00	0.07	0.31	0.22	0.28	1.85	4.44	3.96		11.14
846.10	0.00	0.31	0.64	0.53	0.60	2.40	5.16	4.66		14.29
846.20	0.00	0.64	1.04	0.91	0.99	2.99	5.92	5.39		17.88
846.30	0.00	1.04	1.50	1.35	1.45	3.63	6.71	6.15		21.83
846.40	0.01	1.50	2.01	1.85	1.96	4.30	7.53	6.95		26.12
846.50	0.20	2.01	2.57	2.40	2.52	5.02	8.38	7.78		30.88
846.60	0.50	2.57	3.18	2.99	3.12	5.77	9.26	8.64		36.03
846.70	0.87	3.18	3.83	3.63	3.76	6.55	10.17	9.53		41.52
846.80	1.31	3.83	4.51	4.30	4.44	7.36	11.11	10.45		47.33
846.90	1.80	4.51	5.24	5.02	5.16	8.21	12.08	11.40		53.42
847.00	2.34	5.24	6.00	5.77	5.92	9.08	13.07	12.37		59.79



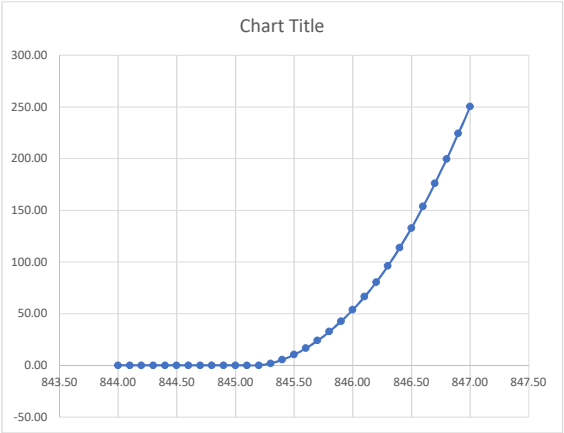
CHECK DAM CkD3 Q to South

IRREGULAR BROAD CRESTED WEIR METHOD

Q = CL(H^1.5)

C	0.60
L	20.00

0.10	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	Total
WSE	845.19	845.19	845.19	845.19	845.24	845.38	845.57	845.76	845.94	846.08	846.20	846.31	846.49	
844.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
844.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
844.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
844.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
844.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
844.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
844.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
844.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
844.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
844.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
845.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
845.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
845.20	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
845.30	0.44	0.44	0.44	0.44	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.93
845.40	1.15	1.15	1.15	1.15	0.77	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.42
845.50	2.07	2.07	2.07	2.07	1.59	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.37
845.60	3.15	3.15	3.15	3.15	2.59	1.24	0.06	0.00	0.00	0.00	0.00	0.00	0.00	16.49
845.70	4.37	4.37	4.37	4.37	3.74	2.17	0.56	0.00	0.00	0.00	0.00	0.00	0.00	23.96
845.80	5.72	5.72	5.72	5.72	5.03	3.27	1.32	0.10	0.00	0.00	0.00	0.00	0.00	32.58
845.90	7.18	7.18	7.18	7.18	6.43	4.50	2.27	0.63	0.00	0.00	0.00	0.00	0.00	42.55
846.00	8.75	8.75	8.75	8.75	7.95	5.86	3.38	1.41	0.18	0.00	0.00	0.00	0.00	53.77
846.10	10.42	10.42	10.42	10.42	9.57	7.33	4.63	2.38	0.77	0.03	0.00	0.00	0.00	66.38
846.20	12.18	12.18	12.18	12.18	11.29	8.91	6.00	3.50	1.59	0.50	0.00	0.00	0.00	80.51
846.30	14.03	14.03	14.03	14.03	13.10	10.59	7.48	4.76	2.59	1.24	0.38	0.00	0.00	96.28
846.40	15.97	15.97	15.97	15.97	14.99	12.36	9.07	6.14	3.74	2.17	1.07	0.32	0.00	113.77
846.50	17.99	17.99	17.99	17.99	16.97	14.22	10.76	7.64	5.03	3.27	1.97	0.99	0.01	132.84
846.60	20.09	20.09	20.09	20.09	19.03	16.17	12.54	9.24	6.43	4.50	3.04	1.87	0.44	153.63
846.70	22.27	22.27	22.27	22.27	21.17	18.20	14.41	10.94	7.95	5.86	4.24	2.92	1.15	175.91
846.80	24.51	24.51	24.51	24.51	23.38	20.31	16.37	12.73	9.57	7.33	5.58	4.12	2.07	199.51
846.90	26.83	26.83	26.83	26.83	25.67	22.49	18.41	14.61	11.29	8.91	7.03	5.44	3.15	224.31
847.00	29.22	29.22	29.22	29.22	28.02	24.74	20.52	16.57	13.10	10.59	8.59	6.88	4.37	250.26

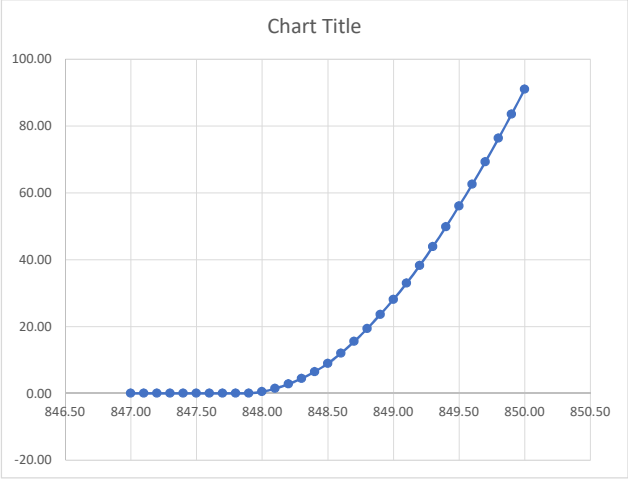


CHECK DAM CkD2 Q to West

IRREGULAR BROAD CRESTED WEIR METHOD

Q = CL(H^1.5)	
C	0.60
L	8.00

0.10	W1	W2	W3	W4	W5	W6	W7	W8	W9	Total
WSE	849.03	848.44	847.92	847.89	847.88	848.02	848.27	848.49		
847.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
847.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
847.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
847.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
847.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
847.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
847.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
847.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
847.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
847.90	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00		0.02
848.00	0.00	0.00	0.11	0.18	0.20	0.00	0.00	0.00		0.48
848.10	0.00	0.00	0.37	0.46	0.50	0.11	0.00	0.00		1.43
848.20	0.00	0.00	0.71	0.83	0.87	0.37	0.00	0.00		2.78
848.30	0.00	0.00	1.12	1.26	1.31	0.71	0.02	0.00		4.43
848.40	0.00	0.00	1.60	1.75	1.80	1.12	0.22	0.00		6.49
848.50	0.00	0.07	2.12	2.29	2.34	1.60	0.53	0.00		8.95
848.60	0.00	0.31	2.69	2.87	2.93	2.12	0.91	0.18		12.01
848.70	0.00	0.64	3.31	3.50	3.56	2.69	1.35	0.46		15.51
848.80	0.00	1.04	3.96	4.17	4.24	3.31	1.85	0.83		19.39
848.90	0.00	1.50	4.66	4.87	4.94	3.96	2.40	1.26		23.59
849.00	0.00	2.01	5.39	5.61	5.69	4.66	2.99	1.75		28.10
849.10	0.09	2.57	6.15	6.39	6.47	5.39	3.63	2.29		32.98
849.20	0.34	3.18	6.95	7.20	7.28	6.15	4.30	2.87		38.27
849.30	0.67	3.83	7.78	8.04	8.12	6.95	5.02	3.50		43.91
849.40	1.08	4.51	8.64	8.91	9.00	7.78	5.77	4.17		49.85
849.50	1.55	5.24	9.53	9.81	9.90	8.64	6.55	4.87		56.08
849.60	2.07	6.00	10.45	10.73	10.83	9.53	7.36	5.61		62.58
849.70	2.63	6.79	11.40	11.69	11.79	10.45	8.21	6.39		69.34
849.80	3.24	7.61	12.37	12.67	12.77	11.40	9.08	7.20		76.35
849.90	3.90	8.47	13.37	13.68	13.78	12.37	9.99	8.04		83.59
850.00	4.59	9.35	14.40	14.71	14.82	13.37	10.92	8.91		91.07
850.10	5.31	10.27	15.45	15.77	15.88	14.40	11.88	9.81		98.76
850.20	6.07	11.21	16.53	16.85	16.96	15.45	12.87	10.73		106.67
850.30	6.87	12.18	17.62	17.96	18.07	16.53	13.88	11.69		114.80
850.40	7.70	13.17	18.75	19.09	19.20	17.62	14.92	12.67		123.12
850.50	8.55	14.19	19.89	20.24	20.36	18.75	15.98	13.68		131.64
850.60	9.44	15.24	21.06	21.41	21.53	19.89	17.07	14.71		140.36
850.70	10.36	16.31	22.25	22.61	22.73	21.06	18.18	15.77		149.27
850.80	11.30	17.40	23.46	23.83	23.95	22.25	19.32	16.85		158.36
850.90	12.27	18.52	24.69	25.07	25.19	23.46	20.47	17.96		167.64
851.00	13.27	19.66	25.95	26.33	26.45	24.69	21.65	19.09		177.09
851.10	14.30	20.82	27.22	27.61	27.73	25.95	22.85	20.24		186.72
851.20	15.34	22.01	28.51	28.91	29.04	27.22	24.07	21.41		196.52
851.30	16.42	23.22	29.83	30.23	30.36	28.51	25.32	22.61		206.48
851.40	17.51	24.44	31.16	31.56	31.70	29.83	26.58	23.83		216.62
851.50	18.63	25.69	32.51	32.92	33.06	31.16	27.86	25.07		226.91



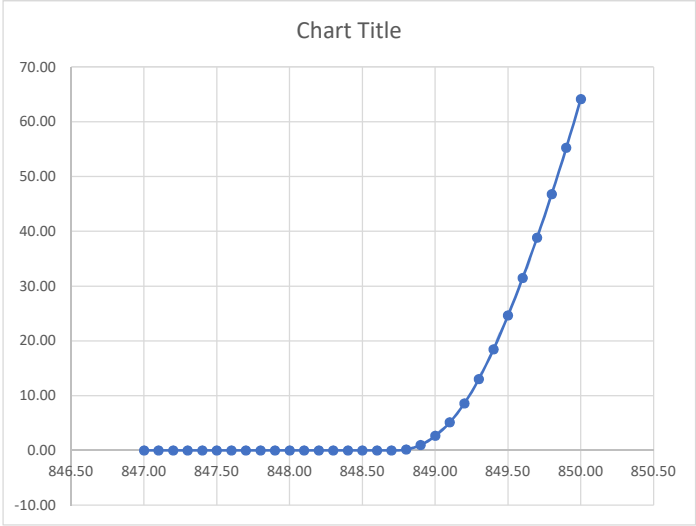
CHECK DAM CkD2 Q to South

IRREGULAR BROAD CRESTED WEIR METHOD

Q = CL(H^1.5)

C	0.60
L	20.00

0.10	W1	W2	W3	W4	W5	W6	W7	Total
WSE	848.75	848.82	848.93	849.09	849.22			
847.00	0.00	0.00	0.00	0.00	0.00			0.00
847.10	0.00	0.00	0.00	0.00	0.00			0.00
847.20	0.00	0.00	0.00	0.00	0.00			0.00
847.30	0.00	0.00	0.00	0.00	0.00			0.00
847.40	0.00	0.00	0.00	0.00	0.00			0.00
847.50	0.00	0.00	0.00	0.00	0.00			0.00
847.60	0.00	0.00	0.00	0.00	0.00			0.00
847.70	0.00	0.00	0.00	0.00	0.00			0.00
847.80	0.00	0.00	0.00	0.00	0.00			0.00
847.90	0.00	0.00	0.00	0.00	0.00			0.00
848.00	0.00	0.00	0.00	0.00	0.00			0.00
848.10	0.00	0.00	0.00	0.00	0.00			0.00
848.20	0.00	0.00	0.00	0.00	0.00			0.00
848.30	0.00	0.00	0.00	0.00	0.00			0.00
848.40	0.00	0.00	0.00	0.00	0.00			0.00
848.50	0.00	0.00	0.00	0.00	0.00			0.00
848.60	0.00	0.00	0.00	0.00	0.00			0.00
848.70	0.00	0.00	0.00	0.00	0.00			0.00
848.80	0.13	0.00	0.00	0.00	0.00			0.13
848.90	0.70	0.27	0.00	0.00	0.00			0.97
849.00	1.50	0.92	0.22	0.00	0.00			2.64
849.10	2.48	1.78	0.84	0.01	0.00			5.12
849.20	3.62	2.81	1.68	0.44	0.00			8.55
849.30	4.89	3.99	2.70	1.15	0.27			13.01
849.40	6.29	5.30	3.87	2.07	0.92			18.44
849.50	7.79	6.73	5.16	3.15	1.78			24.62
849.60	9.40	8.27	6.58	4.37	2.81			31.43
849.70	11.11	9.91	8.11	5.72	3.99			38.83
849.80	12.91	11.64	9.74	7.18	5.30			46.77
849.90	14.80	13.47	11.46	8.75	6.73			55.21
850.00	16.77	15.38	13.28	10.42	8.27			64.12



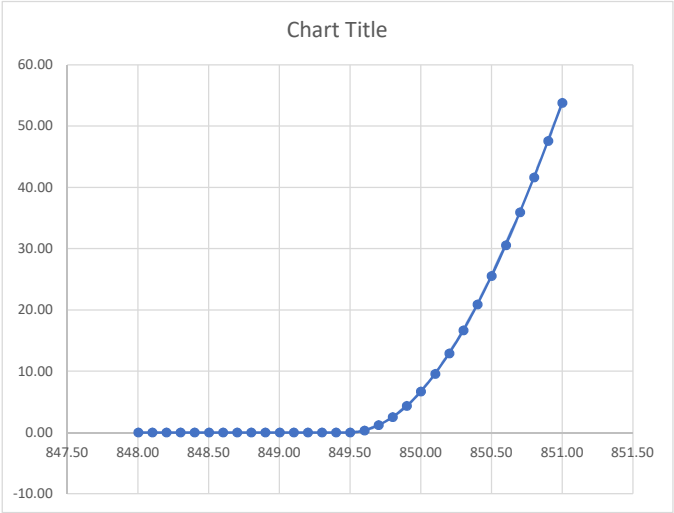
CHECK DAM CkD1 Q to West

IRREGULAR BROAD CRESTED WEIR METHOD

Q = CL(H^1.5)

C	0.60
L	8.00

0.10	W1	W2	W3	W4	W5	W6	W7	W8	W9	Total
WSE	850.28	849.80	849.52	849.52	849.52	849.62	849.83	850.00		
848.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
848.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
848.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
848.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
848.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
848.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
848.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
848.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
848.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
848.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
849.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
849.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
849.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
849.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
849.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
849.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
849.60	0.00	0.00	0.11	0.11	0.11	0.00	0.00	0.00		0.33
849.70	0.00	0.00	0.37	0.37	0.37	0.11	0.00	0.00		1.21
849.80	0.00	0.00	0.71	0.71	0.71	0.37	0.00	0.00		2.50
849.90	0.00	0.15	1.12	1.12	1.12	0.71	0.09	0.00		4.33
850.00	0.00	0.43	1.60	1.60	1.60	1.12	0.34	0.00		6.68
850.10	0.00	0.79	2.12	2.12	2.12	1.60	0.67	0.15		9.57
850.20	0.00	1.21	2.69	2.69	2.69	2.12	1.08	0.43		12.92
850.30	0.01	1.70	3.31	3.31	3.31	2.69	1.55	0.79		16.66
850.40	0.20	2.23	3.96	3.96	3.96	3.31	2.07	1.21		20.90
850.50	0.50	2.81	4.66	4.66	4.66	3.96	2.63	1.70		25.57
850.60	0.87	3.43	5.39	5.39	5.39	4.66	3.24	2.23		30.60
850.70	1.31	4.10	6.15	6.15	6.15	5.39	3.90	2.81		35.96
850.80	1.80	4.80	6.95	6.95	6.95	6.15	4.59	3.43		41.63
850.90	2.34	5.54	7.78	7.78	7.78	6.95	5.31	4.10		47.59
851.00	2.93	6.31	8.64	8.64	8.64	7.78	6.07	4.80		53.83
851.10	3.56	7.11	9.53	9.53	9.53	8.64	6.87	5.54		60.33
851.20	4.24	7.95	10.45	10.45	10.45	9.53	7.70	6.31		67.08
851.30	4.94	8.82	11.40	11.40	11.40	10.45	8.55	7.11		74.08
851.40	5.69	9.71	12.37	12.37	12.37	11.40	9.44	7.95		81.32
851.50	6.47	10.64	13.37	13.37	13.37	12.37	10.36	8.82		88.78
851.60	7.28	11.59	14.40	14.40	14.40	13.37	11.30	9.71		96.46
851.70	8.12	12.57	15.45	15.45	15.45	14.40	12.27	10.64		104.36
851.80	9.00	13.58	16.53	16.53	16.53	15.45	13.27	11.59		112.46
851.90	9.90	14.61	17.62	17.62	17.62	16.53	14.30	12.57		120.77
852.00	10.83	15.66	18.75	18.75	18.75	17.62	15.34	13.58		129.27



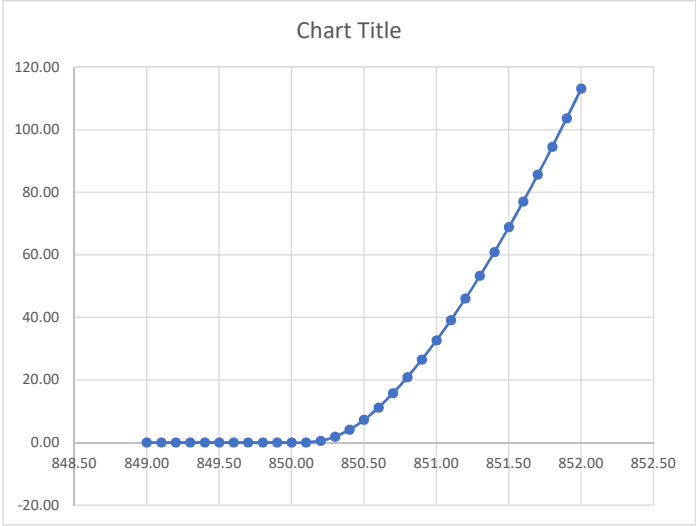
CHECK DAM CkD1 Q to South

IRREGULAR BROAD CRESTED WEIR METHOD

Q = CL(H^1.5)

C	0.60
L	20.00

0.10	W1	W2	W3	W4	W5	W6	W7	Total
WSE	850.08	850.17	850.26	850.42				
849.00	0.00	0.00	0.00	0.00				0.00
849.10	0.00	0.00	0.00	0.00				0.00
849.20	0.00	0.00	0.00	0.00				0.00
849.30	0.00	0.00	0.00	0.00				0.00
849.40	0.00	0.00	0.00	0.00				0.00
849.50	0.00	0.00	0.00	0.00				0.00
849.60	0.00	0.00	0.00	0.00				0.00
849.70	0.00	0.00	0.00	0.00				0.00
849.80	0.00	0.00	0.00	0.00				0.00
849.90	0.00	0.00	0.00	0.00				0.00
850.00	0.00	0.00	0.00	0.00				0.00
850.10	0.03	0.00	0.00	0.00				0.03
850.20	0.50	0.06	0.00	0.00				0.56
850.30	1.24	0.56	0.10	0.00				1.90
850.40	2.17	1.32	0.63	0.00				4.12
850.50	3.27	2.27	1.41	0.27				7.22
850.60	4.50	3.38	2.38	0.92				11.18
850.70	5.86	4.63	3.50	1.78				15.77
850.80	7.33	6.00	4.76	2.81				20.90
850.90	8.91	7.48	6.14	3.99				26.53
851.00	10.59	9.07	7.64	5.30				32.60
851.10	12.36	10.76	9.24	6.73				39.09
851.20	14.22	12.54	10.94	8.27				45.97
851.30	16.17	14.41	12.73	9.91				53.22
851.40	18.20	16.37	14.61	11.64				60.82
851.50	20.31	18.41	16.57	13.47				68.75
851.60	22.49	20.52	18.61	15.38				77.00
851.70	24.74	22.71	20.74	17.38				85.57
851.80	27.07	24.97	22.93	19.45				94.43
851.90	29.46	27.31	25.20	21.61				103.58
852.00	31.93	29.71	27.54	23.83				113.01



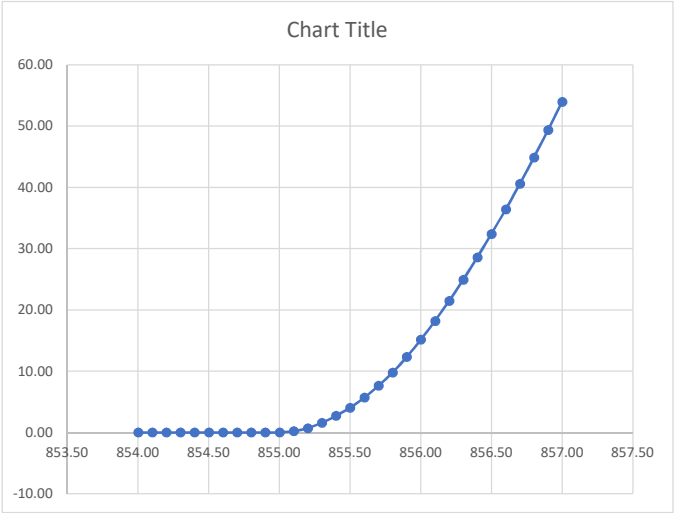
Gran Cielo Driveway GCDwy Q to West

IRREGULAR BROAD CRESTED WEIR METHOD

Q = CL(H^1.5)

C	0.60
L	8.00

0.10	W1	W2	W3	W4	W5	W6	W7	W8	W9	Total
WSE	855.77	855.48	855.16	854.98	855.09					
854.00	0.00	0.00	0.00	0.00	0.00					0.00
854.10	0.00	0.00	0.00	0.00	0.00					0.00
854.20	0.00	0.00	0.00	0.00	0.00					0.00
854.30	0.00	0.00	0.00	0.00	0.00					0.00
854.40	0.00	0.00	0.00	0.00	0.00					0.00
854.50	0.00	0.00	0.00	0.00	0.00					0.00
854.60	0.00	0.00	0.00	0.00	0.00					0.00
854.70	0.00	0.00	0.00	0.00	0.00					0.00
854.80	0.00	0.00	0.00	0.00	0.00					0.00
854.90	0.00	0.00	0.00	0.00	0.00					0.00
855.00	0.00	0.00	0.00	0.01	0.00					0.01
855.10	0.00	0.00	0.00	0.20	0.00					0.20
855.20	0.00	0.00	0.04	0.50	0.18					0.71
855.30	0.00	0.00	0.25	0.87	0.46					1.58
855.40	0.00	0.00	0.56	1.31	0.83					2.70
855.50	0.00	0.01	0.95	1.80	1.26					4.03
855.60	0.00	0.20	1.40	2.34	1.75					5.69
855.70	0.00	0.50	1.90	2.93	2.29					7.62
855.80	0.02	0.87	2.46	3.56	2.87					9.79
855.90	0.22	1.31	3.06	4.24	3.50					12.32
856.00	0.53	1.80	3.70	4.94	4.17					15.14
856.10	0.91	2.34	4.37	5.69	4.87					18.19
856.20	1.35	2.93	5.09	6.47	5.61					21.46
856.30	1.85	3.56	5.84	7.28	6.39					24.93
856.40	2.40	4.24	6.63	8.12	7.20					28.58
856.50	2.99	4.94	7.45	9.00	8.04					32.42
856.60	3.63	5.69	8.29	9.90	8.91					36.42
856.70	4.30	6.47	9.17	10.83	9.81					40.58
856.80	5.02	7.28	10.08	11.79	10.73					44.90
856.90	5.77	8.12	11.02	12.77	11.69					49.36
857.00	6.55	9.00	11.98	13.78	12.67					53.97



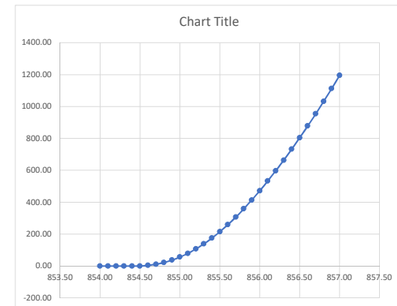
Gran Cielo Driveway GCDwy Q to South

IRREGULAR BROAD CRESTED WEIR METHOD

Q = CL(H^1.5)

C	0.60
L	20.00

0.10	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W13	W14	W15	W16	W17	W18	W19	W20	W21	W22	W23	W24	W25	W26	W27	W28	W29	W30	W31	Total
WSE	855.11	855.05	854.98	854.90	854.81	854.72	854.66	854.60	854.55	854.50	854.49	854.50	854.50	854.50	854.48	854.48	854.51	854.57	854.65	854.73	854.81	854.89	854.97	855.05	855.13	855.21	855.29	855.37	855.45	855.53	855.62	855.69	
854.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
854.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
854.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
854.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
854.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
854.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
854.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.38	0.44	0.38	0.38	0.38	0.50	0.50	0.32	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.47
854.70	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.38	0.70	1.07	1.15	1.07	1.07	1.07	1.24	1.24	0.99	0.56	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.79
854.80	0.00	0.00	0.00	0.00	0.00	0.27	0.63	1.07	1.50	1.97	2.07	1.97	1.97	1.97	2.17	2.17	1.87	1.32	0.70	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.89
854.90	0.00	0.00	0.00	0.00	0.32	0.92	1.41	1.97	2.48	3.04	3.15	3.04	3.04	3.04	3.27	3.27	2.92	2.27	1.50	0.84	0.32	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.81
855.00	0.00	0.00	0.03	0.38	0.99	1.78	2.38	3.04	3.62	4.24	4.37	4.24	4.24	4.24	4.50	4.50	4.12	3.38	2.48	1.68	0.99	0.44	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.72
855.10	0.00	0.13	0.50	1.07	1.87	2.81	3.50	4.24	4.89	5.58	5.72	5.58	5.58	5.58	5.86	5.86	5.44	4.63	3.62	2.70	1.87	1.15	0.56	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	78.89
855.20	0.32	0.70	1.24	1.97	2.92	3.99	4.76	5.58	6.29	7.03	7.18	7.03	7.03	7.03	7.33	7.33	6.88	6.00	4.89	3.87	2.92	2.07	1.32	0.70	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	106.60
855.30	0.99	1.50	2.17	3.04	4.12	5.30	6.14	7.03	7.79	8.59	8.75	8.59	8.59	8.59	8.91	8.91	8.43	7.48	6.29	5.16	4.12	3.15	2.27	1.50	0.84	0.32	0.01	0.00	0.00	0.00	0.00	0.00	138.58
855.40	1.87	2.48	3.27	4.24	5.44	6.73	7.64	8.59	9.40	10.25	10.42	10.25	10.25	10.25	10.59	10.59	10.08	9.07	7.79	6.58	5.44	4.37	3.38	2.48	1.68	0.99	0.44	0.06	0.00	0.00	0.00	0.00	174.62
855.50	2.92	3.62	4.50	5.58	6.88	8.27	9.24	10.25	11.11	12.00	12.18	12.00	12.00	12.00	12.36	12.36	11.82	10.76	9.40	8.11	6.88	5.72	4.63	3.62	2.70	1.87	1.15	0.56	0.13	0.00	0.00	0.00	214.63
855.60	4.12	4.89	5.86	7.03	8.43	9.91	10.94	12.00	12.91	13.84	14.03	13.84	13.84	13.84	14.22	14.22	13.66	12.54	11.11	9.74	8.43	7.18	6.00	4.89	3.87	2.92	2.07	1.32	0.70	0.22	0.00	0.00	258.59
855.70	5.44	6.29	7.33	8.59	10.08	11.64	12.73	13.84	14.80	15.77	15.97	15.77	15.77	15.77	16.17	16.17	15.58	14.41	12.91	11.46	10.08	8.75	7.48	6.29	5.16	4.12	3.15	2.27	1.50	0.84	0.27	0.01	306.44
855.80	6.88	7.79	8.91	10.25	11.82	13.47	14.61	15.77	16.77	17.79	17.99	17.79	17.79	17.79	18.20	18.20	17.58	16.37	14.80	13.28	11.82	10.42	9.07	7.79	6.58	5.44	4.37	3.38	2.48	1.68	0.92	0.44	358.24
855.90	8.43	9.40	10.59	12.00	13.66	15.38	16.57	17.79	18.82	19.88	20.09	19.88	19.88	19.88	20.31	20.31	19.67	18.41	16.77	15.19	13.66	12.18	10.76	9.40	8.11	6.88	5.72	4.63	3.62	2.70	1.78	1.15	413.47
856.00	10.08	11.11	12.36	13.84	15.58	17.38	18.61	19.88	20.95	22.05	22.27	22.05	22.05	22.05	22.49	22.49	21.83	20.52	18.82	17.17	15.58	14.03	12.54	11.11	9.74	8.43	7.18	6.00	4.89	3.87	2.81	2.07	471.81
856.10	11.82	12.91	14.22	15.77	17.58	19.45	20.74	22.05	23.16	24.29	24.51	24.29	24.29	24.29	24.74	24.74	24.06	22.71	20.95	19.24	17.58	15.97	14.41	12.91	11.46	10.08	8.75	7.48	6.29	5.16	3.99	3.15	533.06
856.20	13.66	14.80	16.17	17.79	19.67	21.61	22.93	24.29	25.43	26.60	26.83	26.60	26.60	26.60	27.07	27.07	26.36	24.97	23.16	21.39	19.67	17.99	16.37	14.80	13.28	11.82	10.42	9.07	7.79	6.58	5.30	4.37	597.05
856.30	15.58	16.77	18.20	19.88	21.83	23.83	25.20	26.60	27.78	28.98	29.22	28.98	28.98	28.98	29.46	29.46	28.74	27.31	25.43	23.61	21.83	20.09	18.41	16.77	15.19	13.66	12.18	10.76	9.40	8.11	6.73	5.72	663.65
856.40	17.58	18.82	20.31	22.05	24.06	26.13	27.54	28.98	30.20	31.43	31.68	31.43	31.43	31.43	31.93	31.93	31.18	29.71	27.78	25.90	24.06	22.27	20.52	18.82	17.17	15.58	14.03	12.54	11.11	9.74	8.27	7.18	732.76
856.50	19.67	20.95	22.49	24.29	26.36	28.50	29.95	31.43	32.68	33.94	34.20	33.94	33.94	33.94	34.45	34.45	33.69	32.17	30.20	28.26	26.36	24.51	22.71	20.95	19.24	17.58	15.97	14.41	12.91	11.46	9.91	8.75	804.27
856.60	21.83	23.16	24.74	26.60	28.74	30.93	32.43	33.94	35.22	36.52	36.78	36.52	36.52	36.52	37.04	37.04	36.26	34.71	32.68	30.69	28.74	26.83	24.97	23.16	21.39	19.67	17.99	16.37	14.80	13.28	11.64	10.42	878.10
856.70	24.06	25.43	27.07	28.98	31.18	33.43	34.96	36.52	37.83	39.16	39.42	39.16	39.16	39.16	39.69	39.69	38.89	37.30	35.22	33.18	31.18	29.22	27.31	25.43	23.61	21.83	20.09	18.41	16.77	15.19	13.47	12.18	954.18
856.80	26.36	27.78	29.46	31.43	33.69	36.00	37.57	39.16	40.50	41.86	42.13	41.86	41.86	41.86	42.40	42.40	41.58	39.96	37.83	35.74	33.69	31.68	29.71	27.78	25.90	24.06	22.27	20.52	18.82	17.17	15.38	14.03	1032.44
856.90	28.74	30.20	31.93	33.94	36.26	38.62	40.23	41.86	43.23	44.62	44.90	44.62	44.62	44.62	45.18	45.18	44.34	42.68	40.50	38.36	36.26	34.20	32.17	30.20	28.26	26.36	24.51	22.71	20.95	19.24	17.38	15.97	1112.81
857.00	31.18	32.68	34.45	36.52	38.89	41.31	42.95	44.62	46.02	47.43	47.72	47.43	47.43	47.43	48.00	48.00	47.15	45.46	43.23	41.04	38.89	36.78	34.71	32.68	30.69	28.74	26.83	24.97	23.16	21.39	19.45	17.99	1195.24



Summary for Pond 17P: Gran Cielo Dwy

Inflow Area = 166.738 ac, 0.91% Impervious, Inflow Depth = 0.79" for 2 Year event
Inflow = 47.37 cfs @ 10.00 hrs, Volume= 10.915 af
Outflow = 46.35 cfs @ 10.03 hrs, Volume= 10.915 af, Atten= 2%, Lag= 1.8 min
Primary = 46.35 cfs @ 10.03 hrs, Volume= 10.915 af
Secondary = 0.00 cfs @ 0.10 hrs, Volume= 0.000 af
Tertiary = 0.00 cfs @ 0.10 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Peak Elev= 854.16' @ 10.03 hrs Surf.Area= 6,316 sf Storage= 4,940 cf
Flood Elev= 854.46' Surf.Area= 6,947 sf Storage= 6,934 cf

Plug-Flow detention time= 2.2 min calculated for 10.911 af (100% of inflow)
Center-of-Mass det. time= 2.2 min (868.9 - 866.8)

Volume	Invert	Avail.Storage	Storage Description
#1	852.84'	22,270 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.84	0	0	0
853.14	2,586	388	388
854.14	6,275	4,431	4,818
855.14	8,376	7,326	12,144
856.14	11,876	10,126	22,270

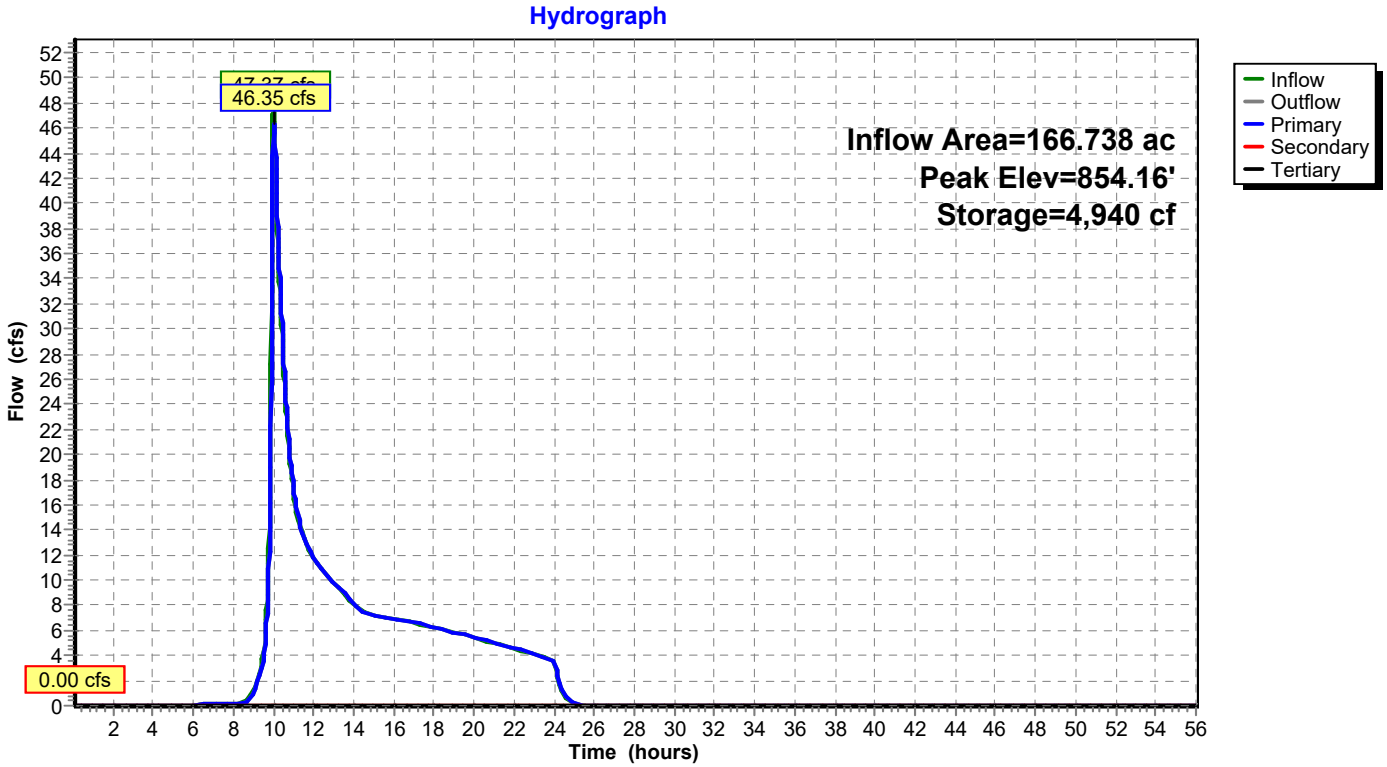
Device	Routing	Invert	Outlet Devices
#1	Primary	852.84'	**30.0" Round Culvert X 6.00** L= 77.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 852.84' / 851.76' S= 0.0140 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Secondary	854.90'	**Special & User-Defined** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 Disch. (cfs) 0.000 0.010 0.200 0.710 1.580 2.700 4.030 5.690 7.620 9.790 12.320 15.140 18.190 21.460 24.930 28.580 32.420 36.420 40.580 44.900 49.360 53.970
#3	Tertiary	854.40'	**Special & User-Defined** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 Disch. (cfs) 0.000 0.080 3.470 10.790 21.890 36.810 55.720 78.890 106.600 138.580 174.620 214.630 258.590 306.440 358.240 413.470 471.810 533.060 597.050 663.650 732.760 804.270 878.100 954.180 1,032.440 1,112.810 1,195.240

Primary OutFlow Max=46.26 cfs @ 10.03 hrs HW=854.16' TW=850.73' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 46.26 cfs @ 4.27 fps)

Secondary OutFlow Max=0.00 cfs @ 0.10 hrs HW=852.84' TW=844.56' (Dynamic Tailwater)
└─**2=Special & User-Defined** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.10 hrs HW=852.84' TW=853.60' (Dynamic Tailwater)
└─**3=Special & User-Defined** (Controls 0.00 cfs)

Pond 17P: Gran Cielo Dwy



Summary for Pond 18P: GC-CkD1

[58] Hint: Peaked 0.60' above defined flood level

Inflow Area = 240.622 ac, 1.05% Impervious, Inflow Depth = 0.81" for 2 Year event
Inflow = 70.33 cfs @ 10.01 hrs, Volume= 16.278 af
Outflow = 65.63 cfs @ 10.09 hrs, Volume= 16.215 af, Atten= 7%, Lag= 4.8 min
Primary = 1.14 cfs @ 9.88 hrs, Volume= 1.454 af
Secondary = 45.19 cfs @ 10.09 hrs, Volume= 13.651 af
Tertiary = 19.48 cfs @ 10.09 hrs, Volume= 1.110 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Peak Elev= 850.77' @ 10.09 hrs Surf.Area= 22,453 sf Storage= 36,035 cf
Flood Elev= 850.17' Surf.Area= 18,994 sf Storage= 23,481 cf

Plug-Flow detention time= 30.0 min calculated for 16.209 af (100% of inflow)
Center-of-Mass det. time= 27.9 min (892.7 - 864.8)

Volume	Invert	Avail.Storage	Storage Description
#1	844.56'	67,617 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.56	10	0	0
845.00	200	46	46
846.00	600	400	446
847.00	1,500	1,050	1,496
848.00	2,166	1,833	3,329
849.00	7,688	4,927	8,256
850.00	16,694	12,191	20,447
850.20	19,400	3,609	24,057
852.00	29,000	43,560	67,617

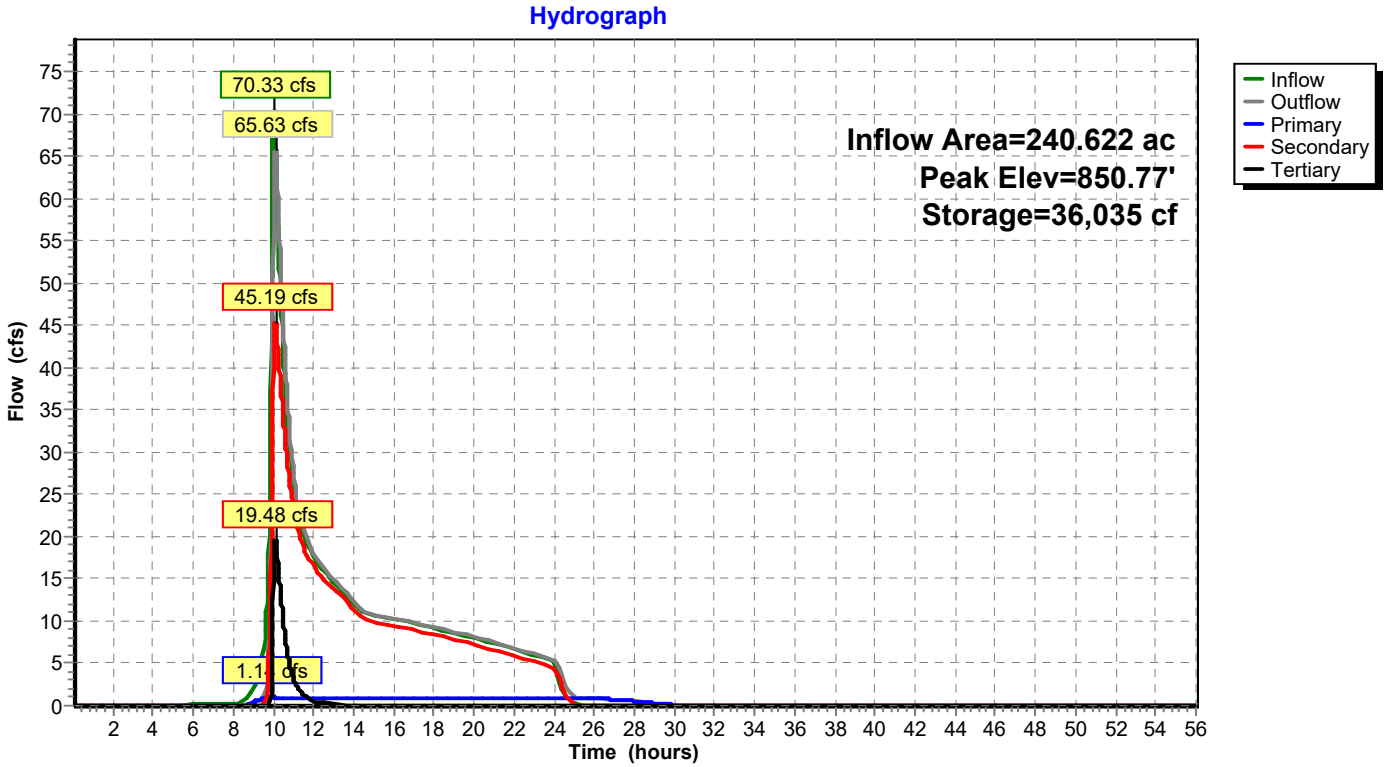
Device	Routing	Invert	Outlet Devices
#1	Primary	847.69'	**6.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 847.69' / 847.67' S= 0.0008 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Secondary	849.50'	**9.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59
#3	Tertiary	850.00'	**Special & User-Defined (CkD1-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 Disch. (cfs) 0.000 0.030 0.560 1.900 4.120 7.220 11.180 15.770 20.900 26.530 32.600 39.090 45.970 53.220 60.820 68.750 77.000 85.570 94.430 103.580 113.010

Primary OutFlow Max=1.10 cfs @ 9.88 hrs HW=850.26' TW=848.09' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.10 cfs @ 5.61 fps)

Secondary OutFlow Max=45.17 cfs @ 10.09 hrs HW=850.77' TW=849.17' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 45.17 cfs @ 3.95 fps)

Tertiary OutFlow Max=19.46 cfs @ 10.09 hrs HW=850.77' TW=0.00' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD1-S)** (Custom Controls 19.46 cfs)

Pond 18P: GC-CkD1



Summary for Pond 19P: GC-CkD2

[58] Hint: Peaked 0.55' above defined flood level

Inflow Area = 260.311 ac, 0.97% Impervious, Inflow Depth = 0.74" for 2 Year event
Inflow = 50.30 cfs @ 10.08 hrs, Volume= 16.149 af
Outflow = 48.22 cfs @ 10.17 hrs, Volume= 16.147 af, Atten= 4%, Lag= 5.4 min
Primary = 1.26 cfs @ 10.17 hrs, Volume= 1.832 af
Secondary = 38.35 cfs @ 10.17 hrs, Volume= 13.888 af
Tertiary = 8.61 cfs @ 10.17 hrs, Volume= 0.427 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Peak Elev= 849.20' @ 10.17 hrs Surf.Area= 19,195 sf Storage= 22,607 cf
Flood Elev= 848.65' Surf.Area= 11,850 sf Storage= 14,787 cf

Plug-Flow detention time= 20.8 min calculated for 16.147 af (100% of inflow)
Center-of-Mass det. time= 20.5 min (930.6 - 910.1)

Volume	Invert	Avail.Storage	Storage Description
#1	846.00'	46,430 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
846.00	267	0	0
847.00	4,055	2,161	2,161
848.00	8,178	6,117	8,278
849.00	13,828	11,003	19,281
850.00	40,470	27,149	46,430

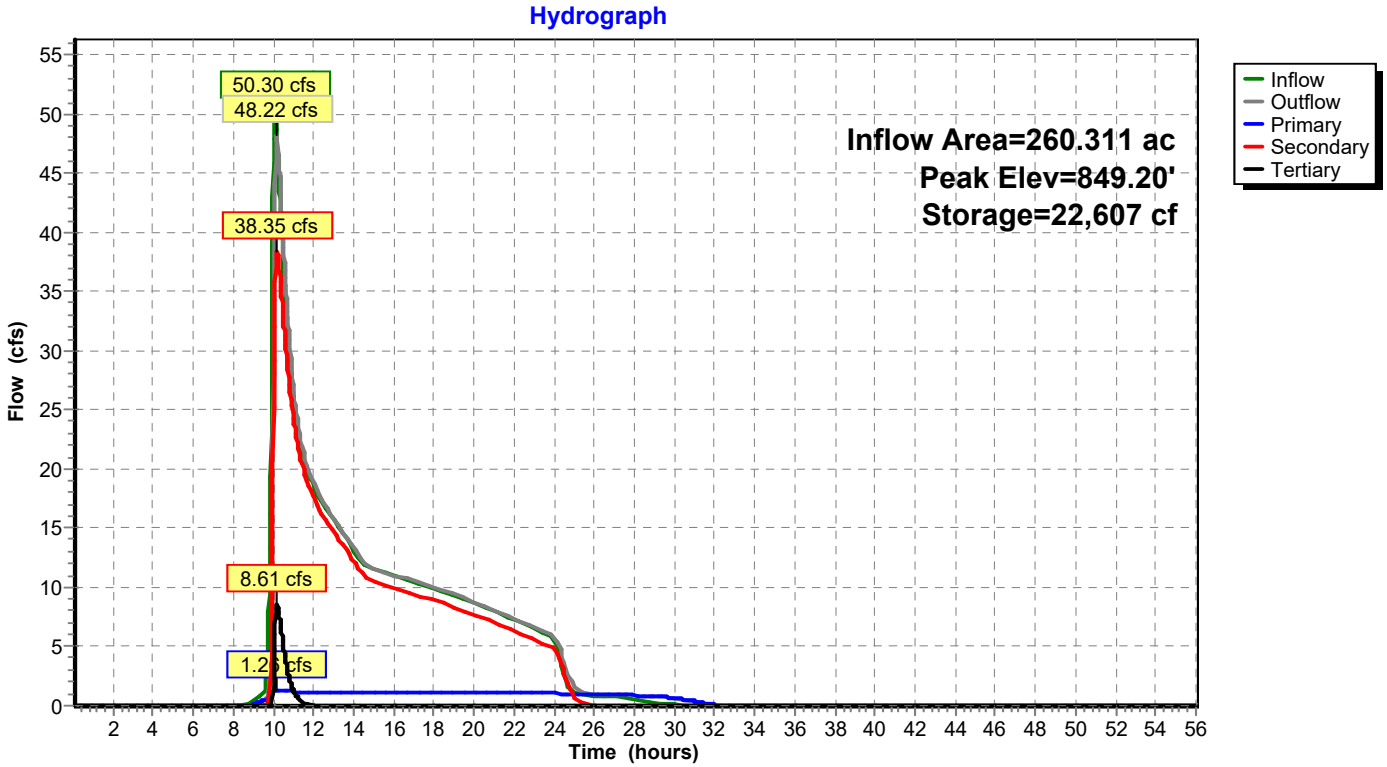
Device	Routing	Invert	Outlet Devices
#1	Primary	846.12'	**6.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 846.12' / 845.98' S= 0.0054 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Tertiary	848.70'	**Special & User-Defined (CkD2-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 Disch. (cfs) 0.000 0.130 0.970 2.640 5.120 8.550 13.010 18.440 24.620 31.430 38.830 46.770 55.210 64.120
#3	Secondary	847.80'	**Special & User-Defined (CkD2-W)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 Disch. (cfs) 0.000 0.020 0.480 1.430 2.780 4.430 6.490 8.950 12.010 15.510 19.390 23.590 28.100 32.980 38.270 43.910 49.850 56.080 62.580 69.340 76.350 83.590 91.070

Primary OutFlow Max=1.26 cfs @ 10.17 hrs HW=849.20' TW=845.76' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.26 cfs @ 6.40 fps)

Secondary OutFlow Max=38.34 cfs @ 10.17 hrs HW=849.20' TW=845.76' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD2-W)** (Custom Controls 38.34 cfs)

Tertiary OutFlow Max=8.60 cfs @ 10.17 hrs HW=849.20' TW=0.00' (Dynamic Tailwater)
└─**2=Special & User-Defined (CkD2-S)** (Custom Controls 8.60 cfs)

Pond 19P: GC-CkD2



Summary for Pond 20P: GC-CkD3

[58] Hint: Peaked 0.75' above defined flood level

Inflow Area = 274.094 ac, 0.92% Impervious, Inflow Depth = 0.72" for 2 Year event
Inflow = 41.64 cfs @ 10.17 hrs, Volume= 16.356 af
Outflow = 41.26 cfs @ 10.22 hrs, Volume= 16.344 af, Atten= 1%, Lag= 3.0 min
Primary = 5.50 cfs @ 10.22 hrs, Volume= 5.240 af
Secondary = 6.18 cfs @ 10.22 hrs, Volume= 2.434 af
Tertiary = 29.57 cfs @ 10.22 hrs, Volume= 8.670 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Peak Elev= 845.77' @ 10.22 hrs Surf.Area= 13,400 sf Storage= 12,910 cf
Flood Elev= 845.02' Surf.Area= 8,229 sf Storage= 4,852 cf

Plug-Flow detention time= 12.9 min calculated for 16.339 af (100% of inflow)
Center-of-Mass det. time= 12.3 min (949.6 - 937.3)

Volume	Invert	Avail.Storage	Storage Description
#1	844.00'	24,632 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.00	1,288	0	0
845.00	8,090	4,689	4,689
846.50	18,500	19,943	24,632

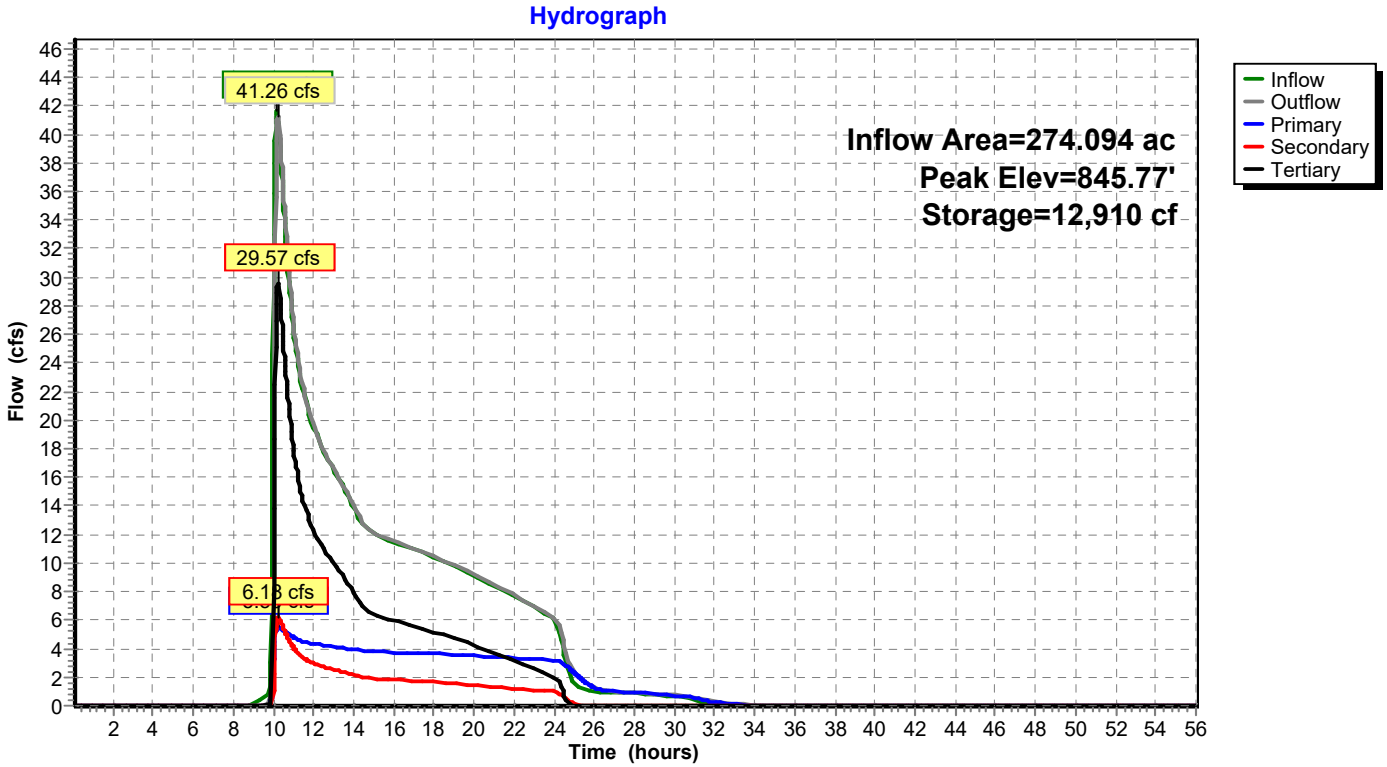
Device	Routing	Invert	Outlet Devices
#1	Primary	844.22'	**18.0" Round Culvert** L= 26.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 844.22' / 843.98' S= 0.0092 '/' Cc= 0.900 n= 0.021 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	845.00'	**Special & User-Defined (CkD3-W)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 Disch. (cfs) 0.000 0.050 0.390 0.970 1.710 2.600 3.780 5.170 6.720 8.570 11.140 14.290 17.880 21.830 26.120 30.880 36.030 41.520 47.330 53.420 59.790
#3	Tertiary	845.10'	**Special & User-Defined (CkD3-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 Disch. (cfs) 0.000 0.050 1.930 5.420 10.370 16.490 23.960 32.580 42.550 53.770 66.380 80.510 96.280 113.770 132.840 153.630 175.910 199.510 224.310 250.260

Primary OutFlow Max=5.50 cfs @ 10.22 hrs HW=845.77' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 5.50 cfs @ 3.76 fps)

Secondary OutFlow Max=6.18 cfs @ 10.22 hrs HW=845.77' TW=0.00' (Dynamic Tailwater)
└─**2=Special & User-Defined (CkD3-W)** (Custom Controls 6.18 cfs)

Tertiary OutFlow Max=29.56 cfs @ 10.22 hrs HW=845.77' TW=0.00' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD3-S)** (Custom Controls 29.56 cfs)

Pond 20P: GC-CkD3

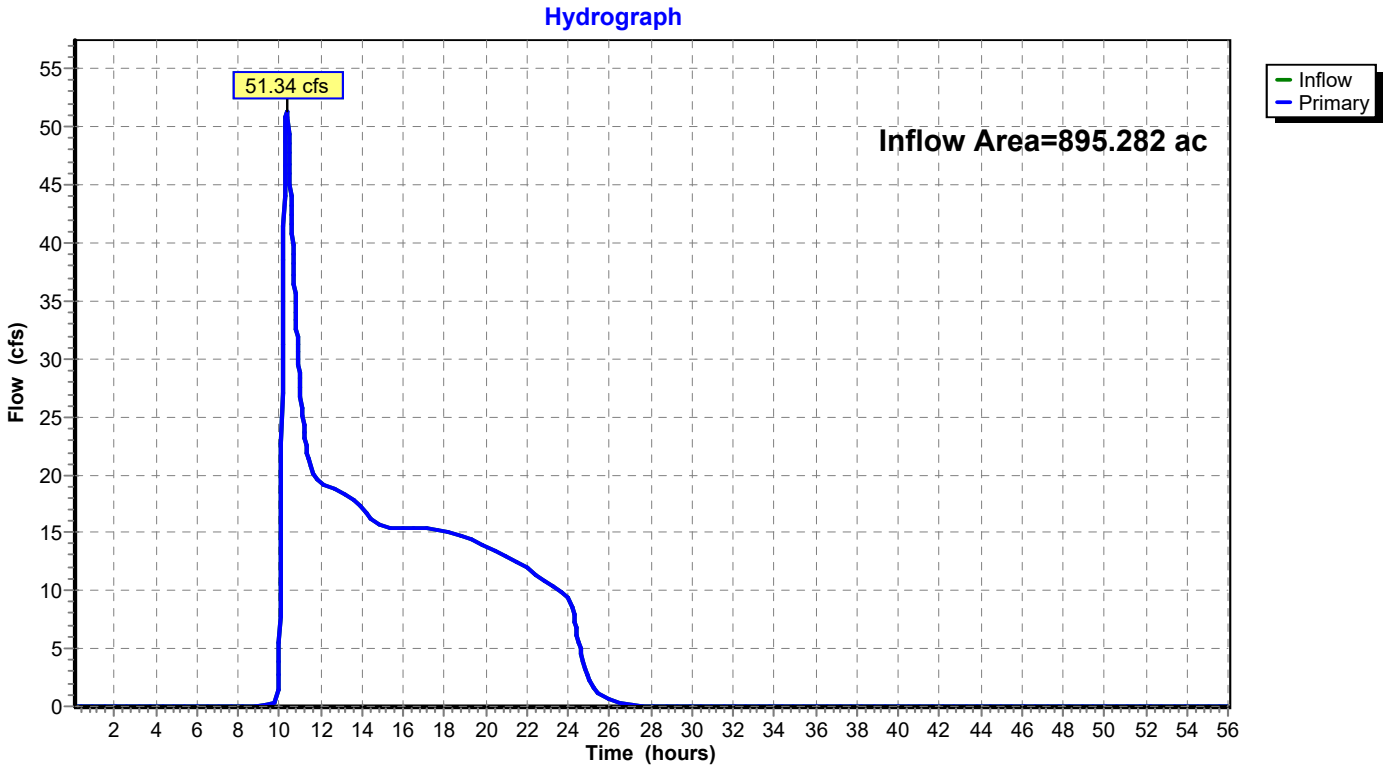


Summary for Link 3a (1,2+3)-Ex: Comb Un-dev Ck Flow

Inflow Area = 895.282 ac, 0.06% Impervious, Inflow Depth = 0.27" for 2 Year event
Inflow = 51.34 cfs @ 10.35 hrs, Volume= 20.006 af
Primary = 51.34 cfs @ 10.35 hrs, Volume= 20.006 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 3a (1,2+3)-Ex: Comb Un-dev Ck Flow

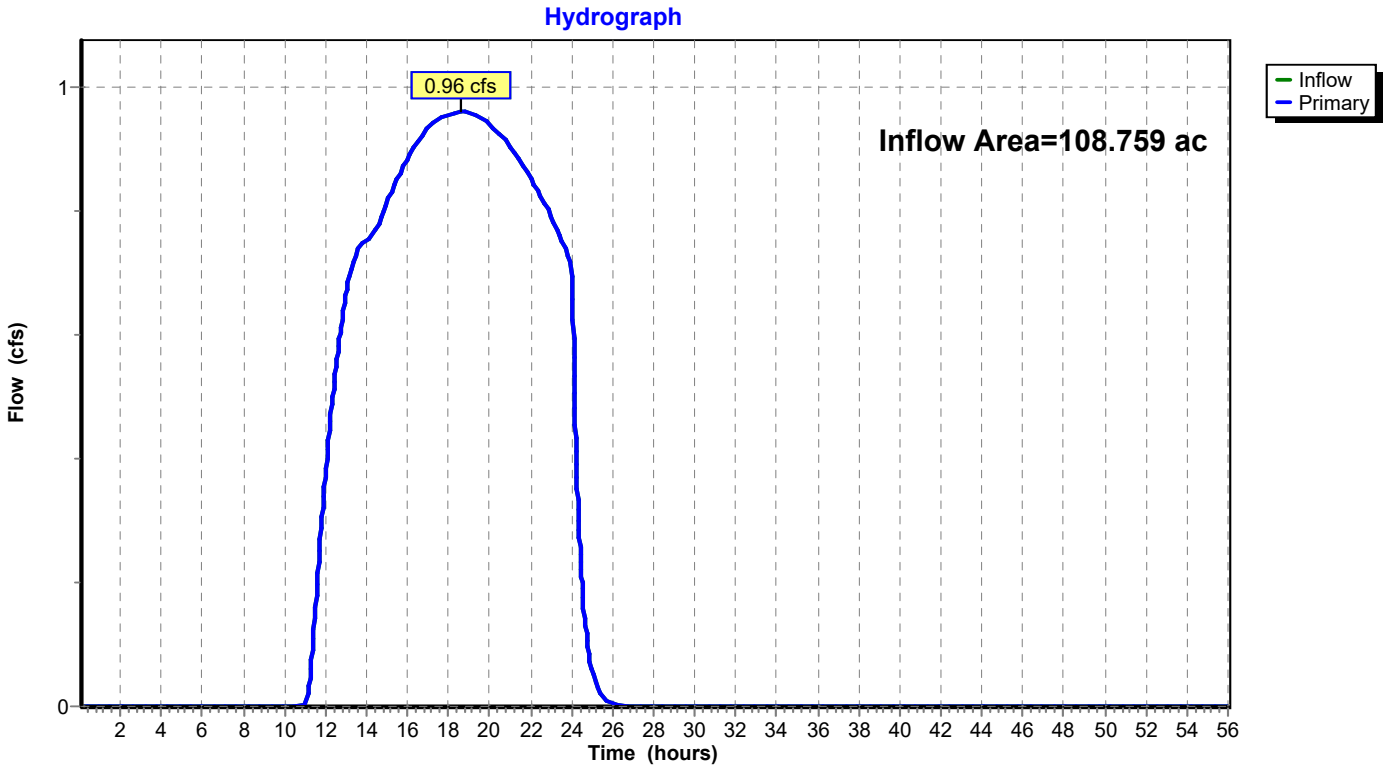


Summary for Link 5L: Outlet To Tract #1632 Ex. 36" SD

Inflow Area = 108.759 ac, 0.00% Impervious, Inflow Depth = 0.10" for 2 Year event
Inflow = 0.96 cfs @ 18.57 hrs, Volume= 0.867 af
Primary = 0.96 cfs @ 18.57 hrs, Volume= 0.867 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 5L: Outlet To Tract #1632 Ex. 36" SD

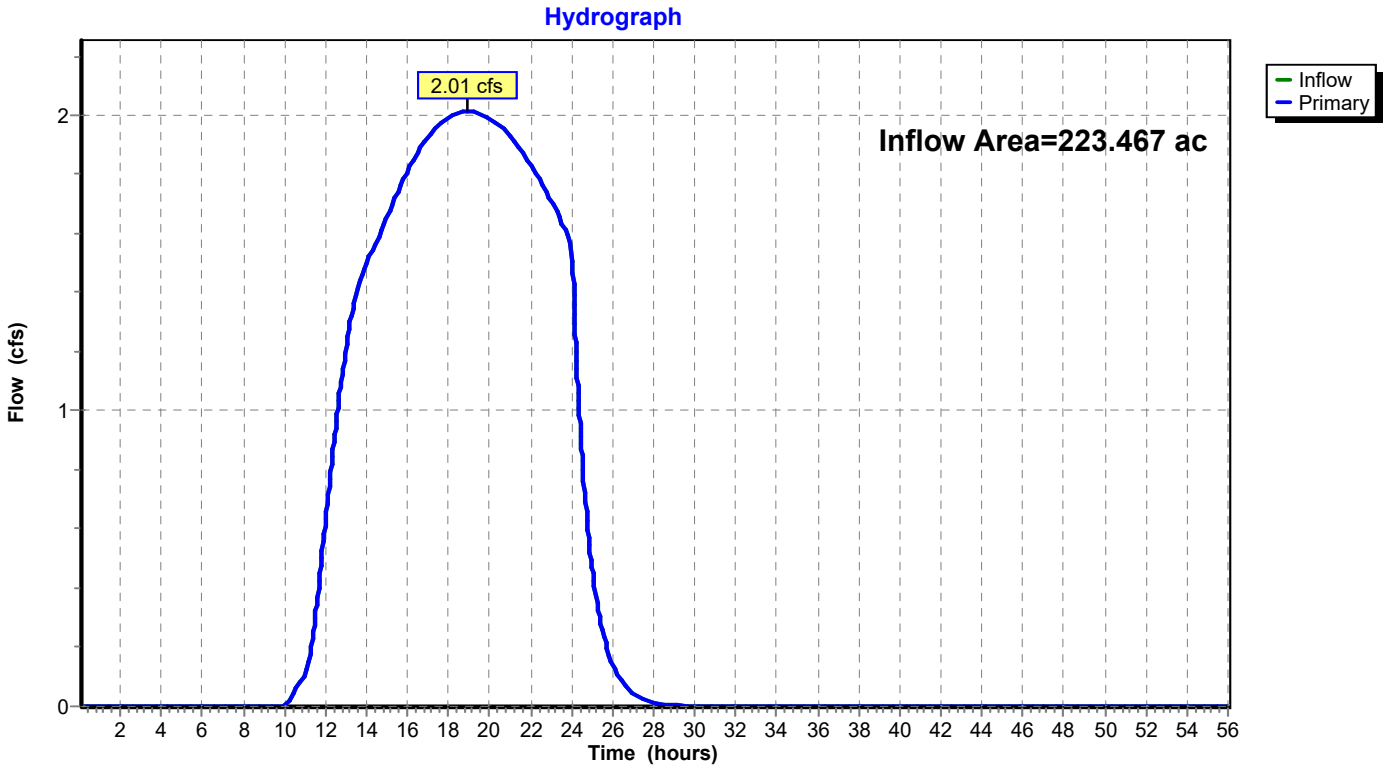


Summary for Link 6L: To Existing Meadowlark Road

Inflow Area = 223.467 ac, 0.00% Impervious, Inflow Depth = 0.10" for 2 Year event
Inflow = 2.01 cfs @ 18.95 hrs, Volume= 1.852 af
Primary = 2.01 cfs @ 18.95 hrs, Volume= 1.852 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 6L: To Existing Meadowlark Road

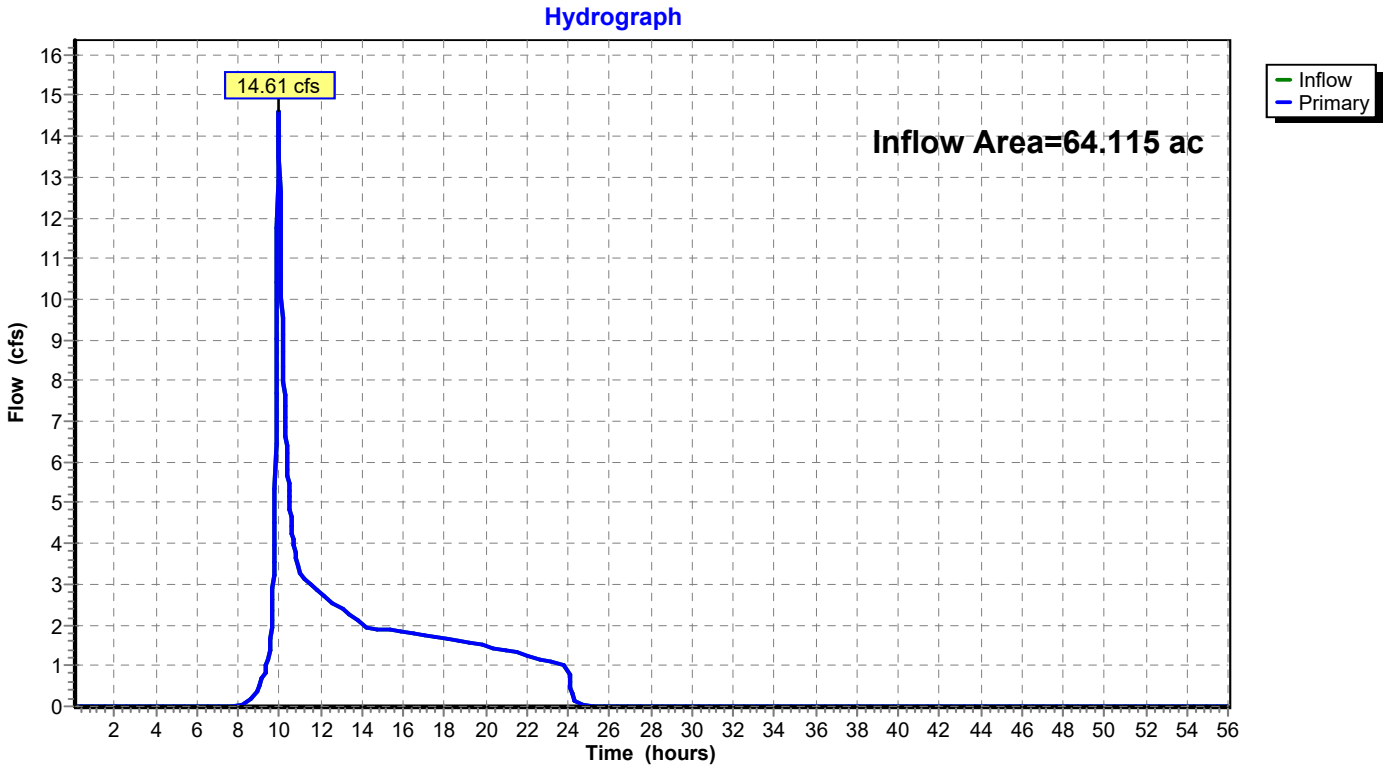


Summary for Link 7L: DMA 13

Inflow Area = 64.115 ac, 0.00% Impervious, Inflow Depth = 0.51" for 2 Year event
Inflow = 14.61 cfs @ 9.98 hrs, Volume= 2.738 af
Primary = 14.61 cfs @ 9.98 hrs, Volume= 2.738 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 7L: DMA 13

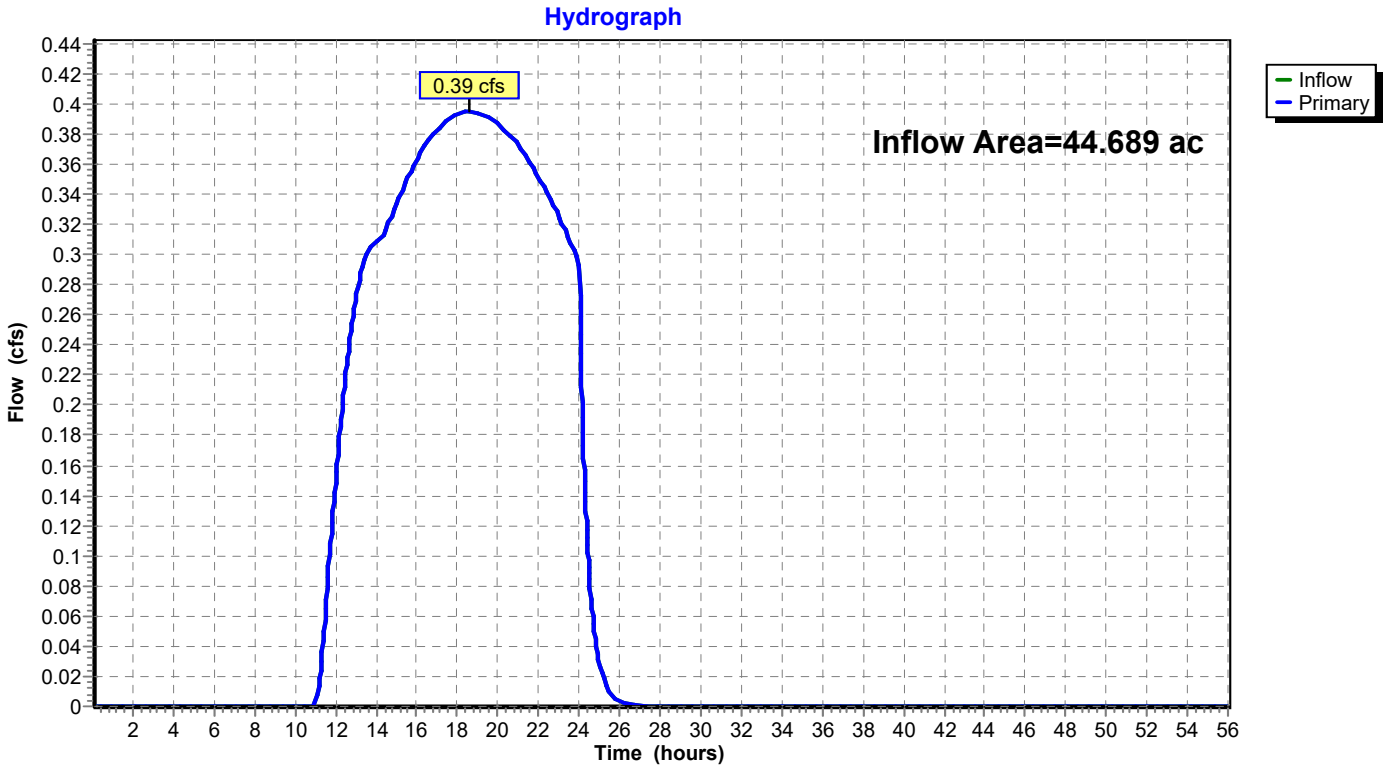


Summary for Link 8L: DMA 8

Inflow Area = 44.689 ac, 0.00% Impervious, Inflow Depth = 0.10" for 2 Year event
Inflow = 0.39 cfs @ 18.60 hrs, Volume= 0.356 af
Primary = 0.39 cfs @ 18.60 hrs, Volume= 0.356 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 8L: DMA 8

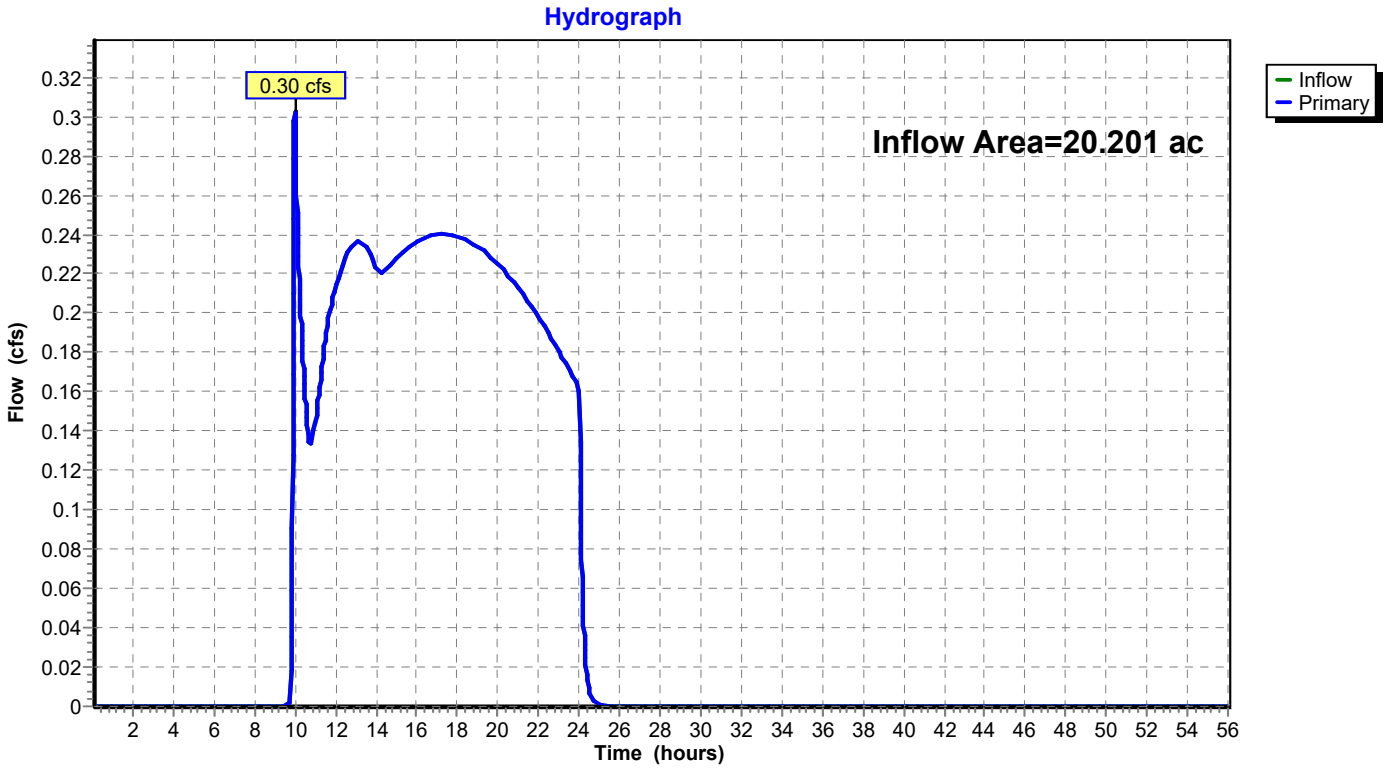


Summary for Link 9L: DMA 12

Inflow Area = 20.201 ac, 0.00% Impervious, Inflow Depth = 0.15" for 2 Year event
Inflow = 0.30 cfs @ 10.00 hrs, Volume= 0.254 af
Primary = 0.30 cfs @ 10.00 hrs, Volume= 0.254 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 9L: DMA 12

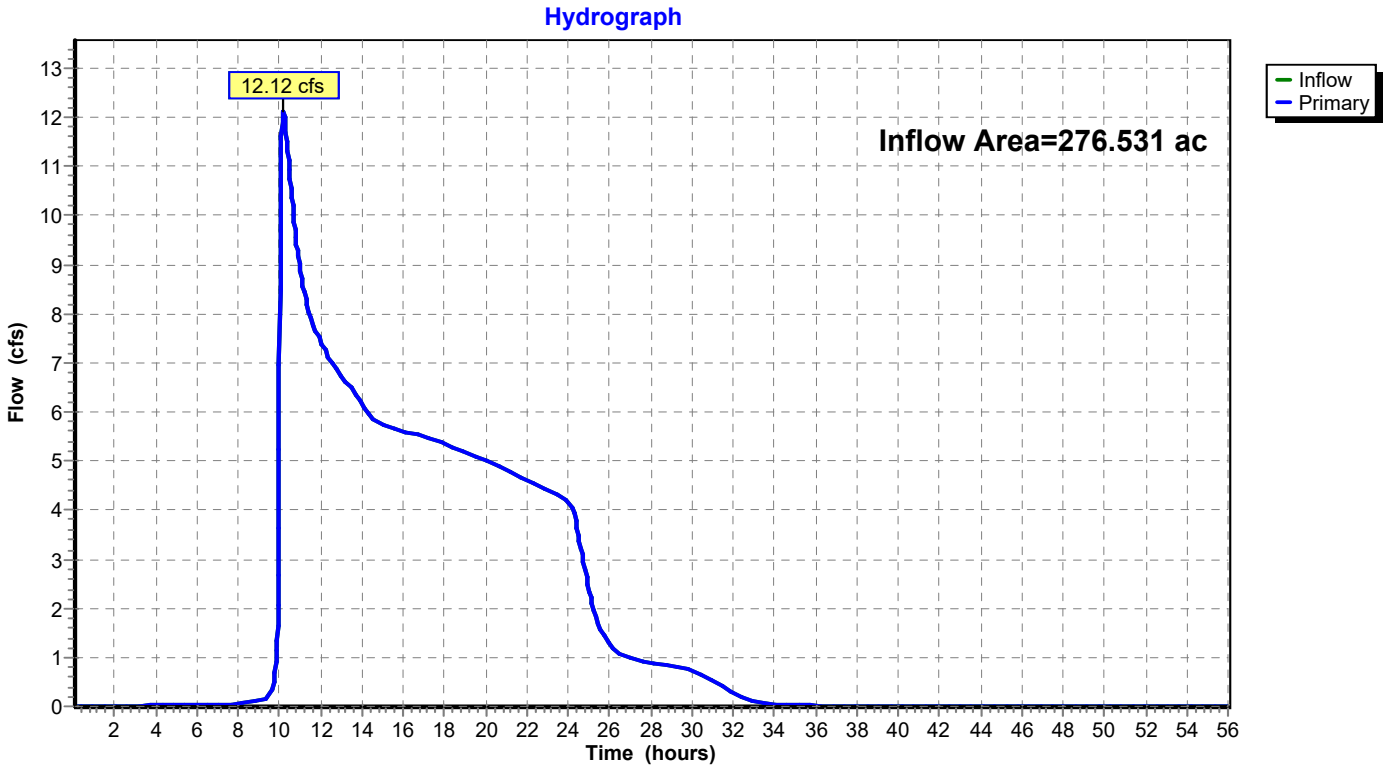


Summary for Link 10L: To Linne Road Channel

Inflow Area = 276.531 ac, 1.18% Impervious, Inflow Depth = 0.34" for 2 Year event
Inflow = 12.12 cfs @ 10.20 hrs, Volume= 7.815 af
Primary = 12.12 cfs @ 10.20 hrs, Volume= 7.815 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 10L: To Linne Road Channel

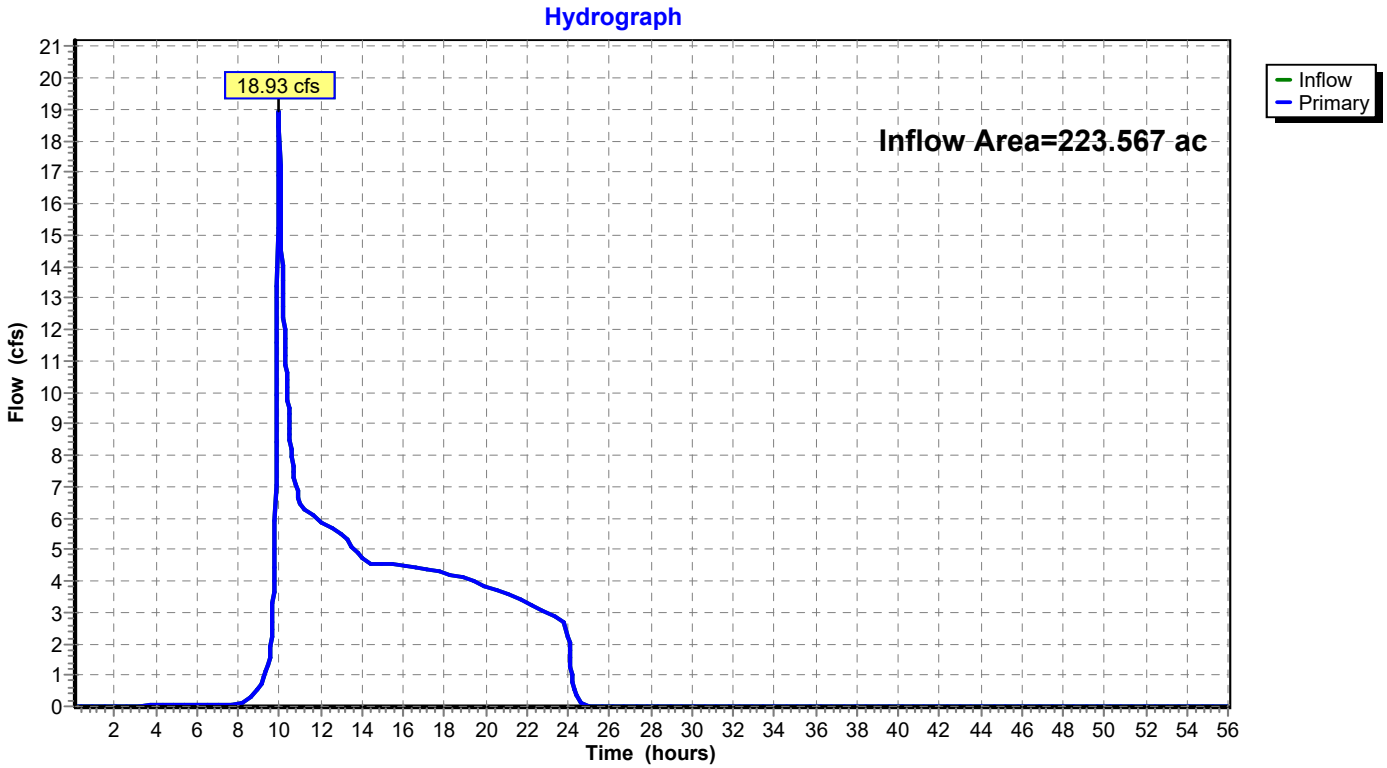


Summary for Link 11L: To Fontana Road SD

Inflow Area = 223.567 ac, 0.53% Impervious, Inflow Depth = 0.32" for 2 Year event
Inflow = 18.93 cfs @ 9.99 hrs, Volume= 5.872 af
Primary = 18.93 cfs @ 9.99 hrs, Volume= 5.872 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 11L: To Fontana Road SD

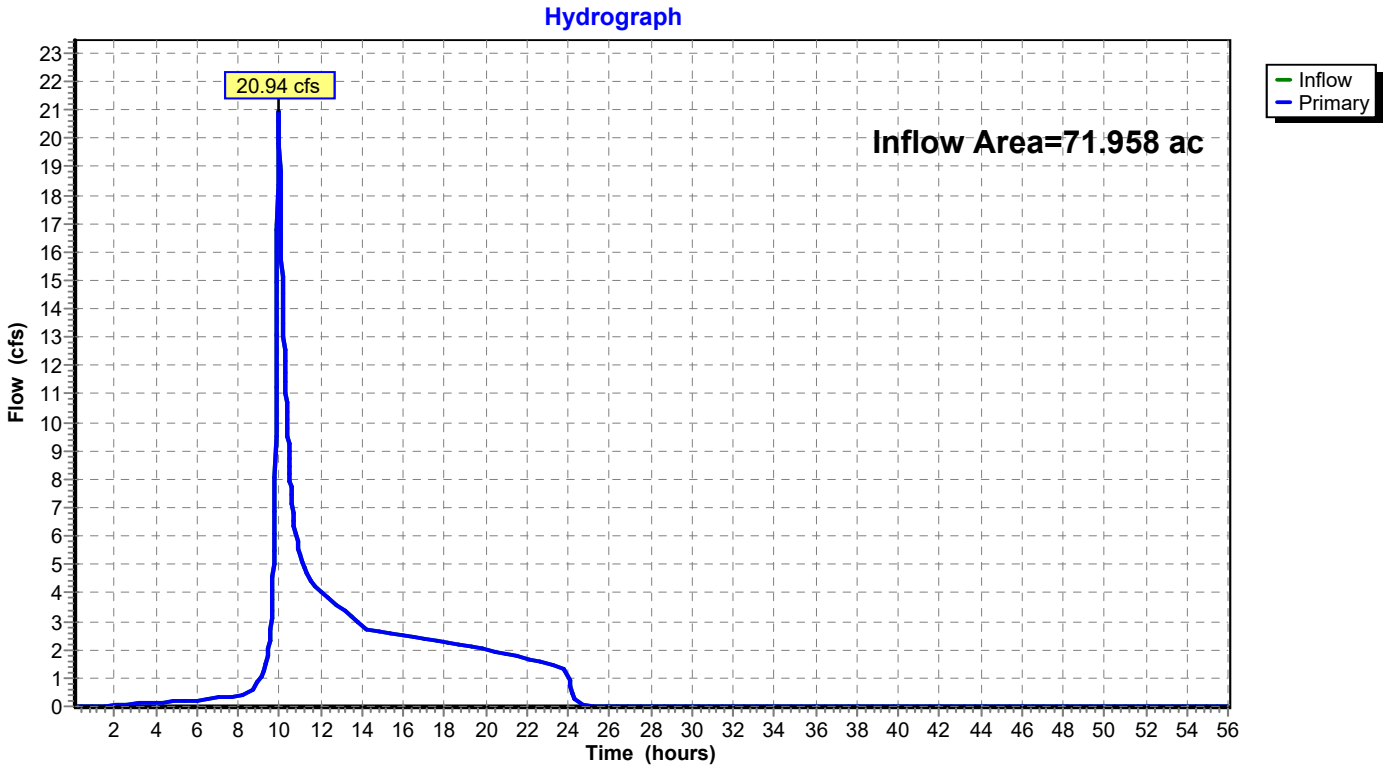


Summary for Link 15L: Sherwood/Niblick LP Xing

Inflow Area = 71.958 ac, 6.18% Impervious, Inflow Depth = 0.68" for 2 Year event
Inflow = 20.94 cfs @ 9.98 hrs, Volume= 4.080 af
Primary = 20.94 cfs @ 9.98 hrs, Volume= 4.080 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 15L: Sherwood/Niblick LP Xing

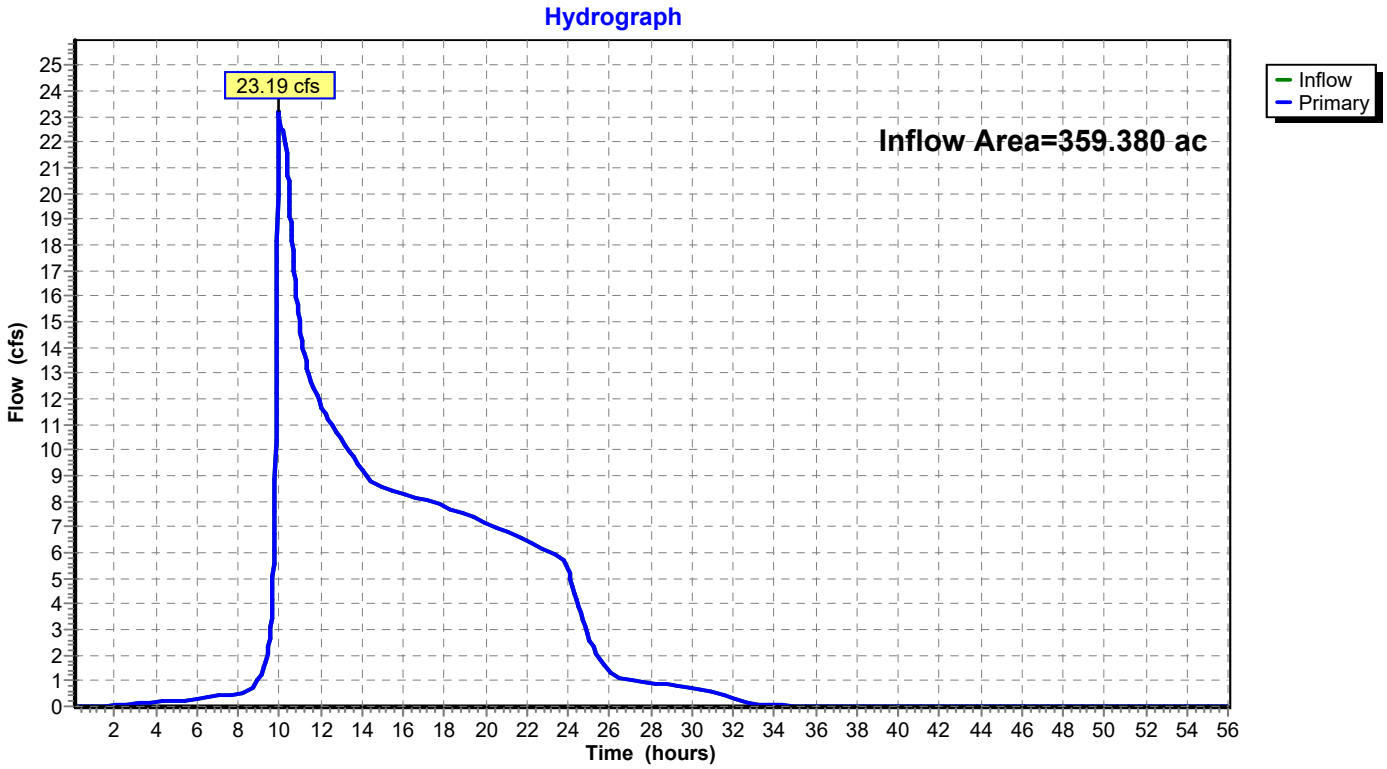


Summary for Link 16L: Airport & Linne Road SD

Inflow Area = 359.380 ac, 2.33% Impervious, Inflow Depth = 0.40" for 2 Year event
Inflow = 23.19 cfs @ 9.99 hrs, Volume= 12.092 af
Primary = 23.19 cfs @ 9.99 hrs, Volume= 12.092 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 16L: Airport & Linne Road SD

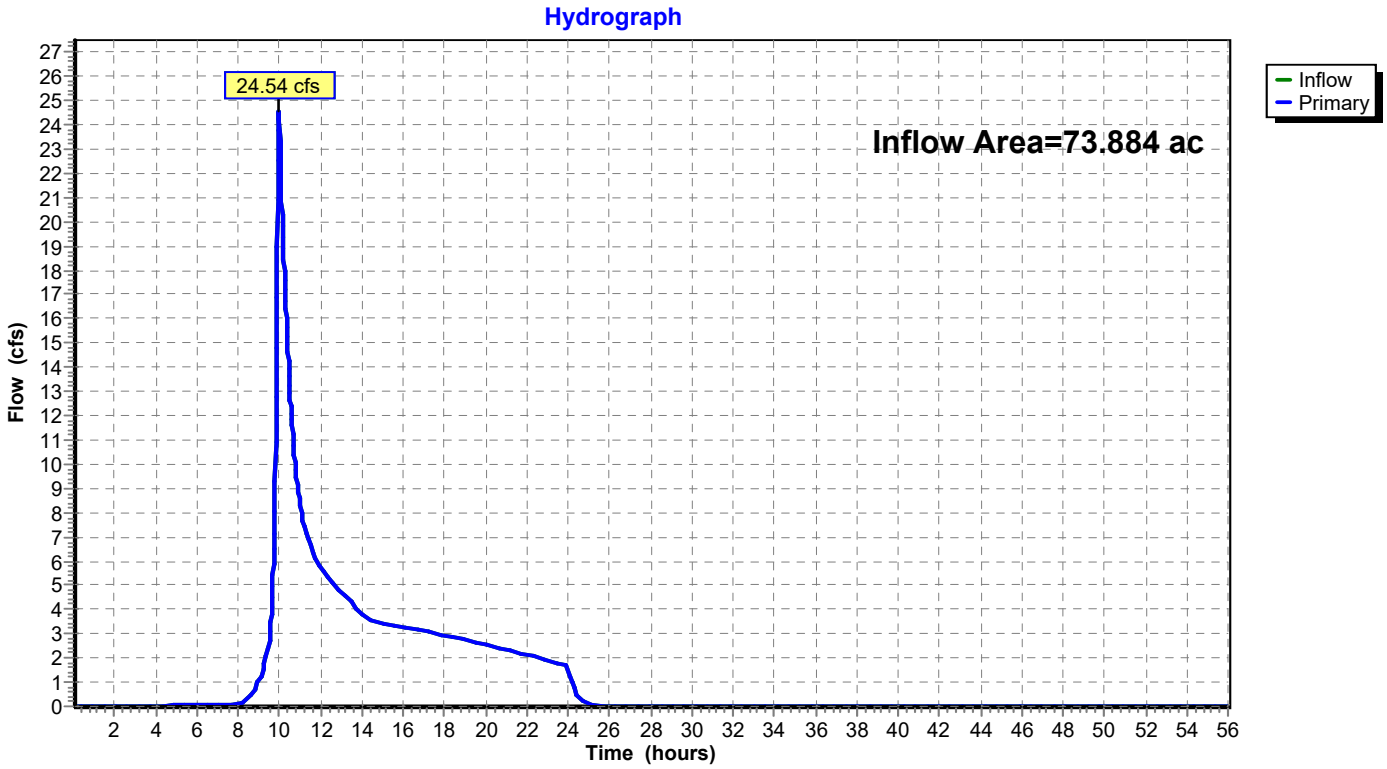


Summary for Link 19L: 14c(0+1)-Ex

Inflow Area = 73.884 ac, 1.37% Impervious, Inflow Depth = 0.87" for 2 Year event
Inflow = 24.54 cfs @ 9.99 hrs, Volume= 5.363 af
Primary = 24.54 cfs @ 9.99 hrs, Volume= 5.363 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 19L: 14c(0+1)-Ex

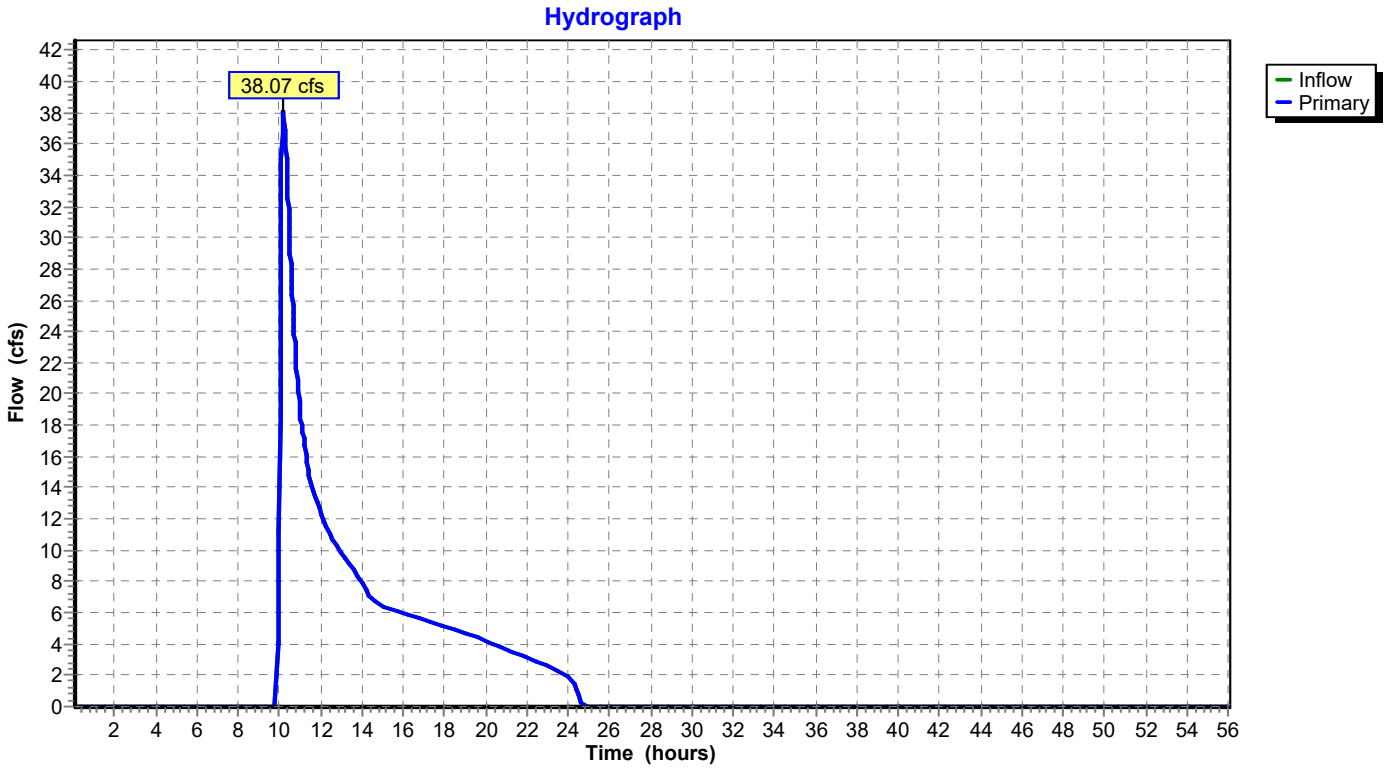


Summary for Link 22L: Linne Rd Overtopping Ex.Flow #2and#3

Inflow	=	38.07 cfs @	10.20 hrs,	Volume=	9.098 af
Primary	=	38.07 cfs @	10.20 hrs,	Volume=	9.098 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 22L: Linne Rd Overtopping Ex.Flow #2and#3

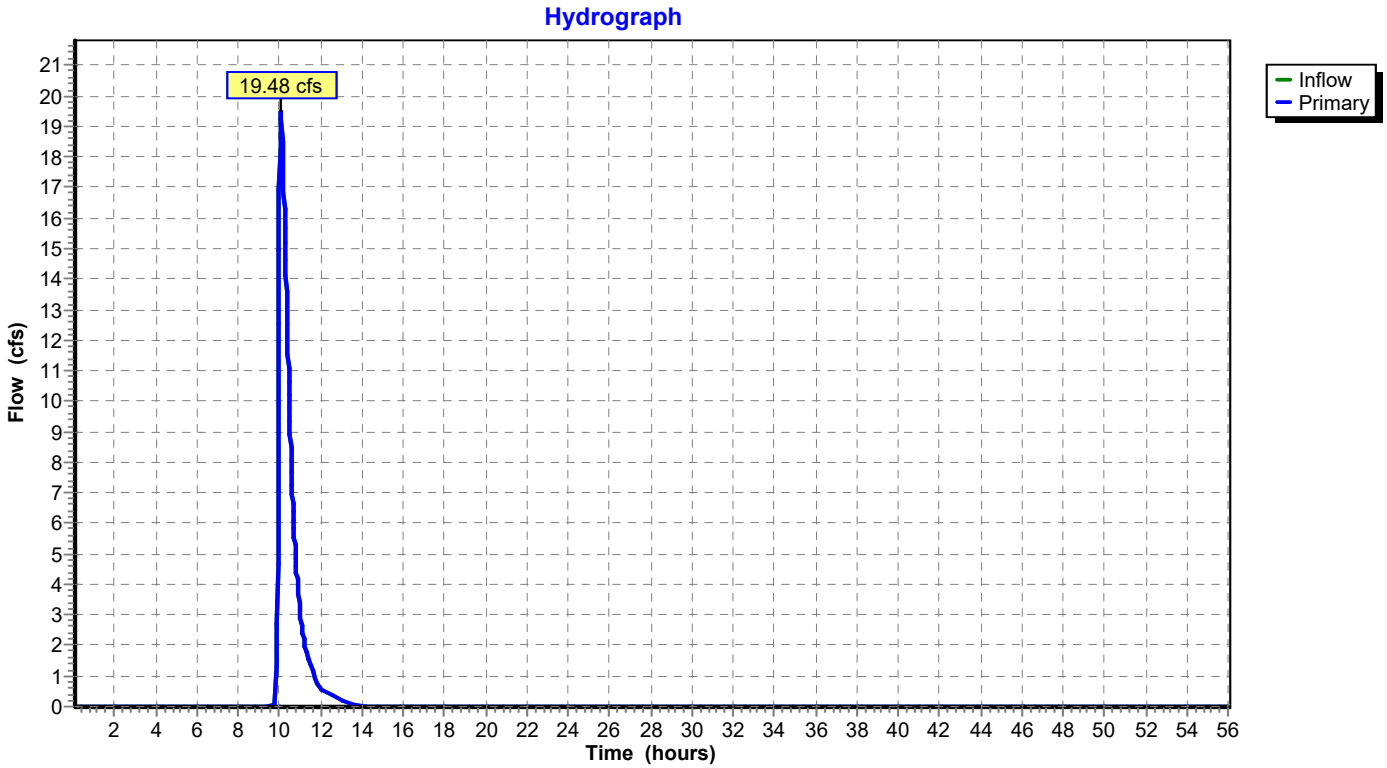


Summary for Link 23L: Linne Rd Overtop #1

Inflow	=	19.48 cfs @	10.09 hrs,	Volume=	1.110 af
Primary	=	19.48 cfs @	10.09 hrs,	Volume=	1.110 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 23L: Linne Rd Overtop #1



Time span=0.10-56.00 hrs, dt=0.02 hrs, 2796 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Subcat 1 Runoff Area=11.244 ac 0.00% Impervious Runoff Depth=0.49"
Tc=10.0 min CN=58/0 Runoff=0.95 cfs 0.462 af

Subcatchment2: Subcat 2 Runoff Area=14.644 ac 0.00% Impervious Runoff Depth=0.49"
Tc=11.5 min CN=58/0 Runoff=1.13 cfs 0.602 af

Subcatchment3: Subcat 3 Runoff Area=21.500 ac 0.02% Impervious Runoff Depth=0.71"
Tc=16.9 min CN=63/98 Runoff=3.70 cfs 1.271 af

Subcatchment3a{(1)}-Ex: Subcat 3a{(1)}-Ex Runoff Area=4.164 ac 0.00% Impervious Runoff Depth=0.49"
Tc=10.0 min CN=58/0 Runoff=0.35 cfs 0.171 af

Subcatchment3a{(2)}-Ex: Subcat 3a{(2)}-Ex Runoff Area=7.900 ac 0.00% Impervious Runoff Depth=0.62"
Tc=10.0 min CN=61/0 Runoff=1.33 cfs 0.407 af

Subcatchment3a{(3)}-Ex: Subcat 3a{(3)}-Ex Runoff Area=6.004 ac 0.00% Impervious Runoff Depth=1.01"
Tc=10.0 min CN=69/0 Runoff=2.80 cfs 0.508 af

Subcatchment3b-Ex: Subcat 3b-Ex Runoff Area=757.079 ac 0.00% Impervious Runoff Depth=0.58"
Tc=45.5 min CN=60/98 Runoff=47.38 cfs 36.285 af

Subcatchment4: Subcat 4 Runoff Area=38.712 ac 1.43% Impervious Runoff Depth=0.53"
Tc=14.2 min CN=58/98 Runoff=3.46 cfs 1.723 af

Subcatchment5: Subcat 5 Runoff Area=32.700 ac 0.00% Impervious Runoff Depth=0.49"
Tc=21.2 min CN=58/0 Runoff=1.99 cfs 1.343 af

Subcatchment6: Subcat 6 Runoff Area=34.035 ac 0.00% Impervious Runoff Depth=0.58"
Tc=20.1 min CN=60/0 Runoff=3.02 cfs 1.631 af

Subcatchment7: Subcat 7 Runoff Area=31.369 ac 0.00% Impervious Runoff Depth=0.49"
Tc=23.2 min CN=58/0 Runoff=1.85 cfs 1.289 af

Subcatchment8: Subcat 8 Runoff Area=30.487 ac 0.00% Impervious Runoff Depth=0.49"
Tc=28.8 min CN=58/0 Runoff=1.67 cfs 1.252 af

Subcatchment8a-Ex: Subcat 8a-Ex Runoff Area=14.202 ac 0.00% Impervious Runoff Depth=0.49"
Tc=16.5 min CN=58/0 Runoff=0.93 cfs 0.583 af

Subcatchment9: Subcat 9 Runoff Area=11.446 ac 0.00% Impervious Runoff Depth=0.66"
Tc=22.3 min CN=62/0 Runoff=1.38 cfs 0.632 af

Subcatchment9a-Ex: Subcat 9a-Ex Runoff Area=212.022 ac 0.00% Impervious Runoff Depth=0.49"
Flow Length=4,909' Tc=51.3 min CN=58/0 Runoff=9.77 cfs 8.709 af

Subcatchment10: Subcat 10 Runoff Area=30.685 ac 3.88% Impervious Runoff Depth=0.64"
Tc=22.6 min CN=59/98 Runoff=3.44 cfs 1.645 af

Subcatchment10a-Ex: Subcat 10a-Ex Runoff Area=94.105 ac 0.00% Impervious Runoff Depth=0.91"
Tc=11.0 min CN=67/0 Runoff=34.57 cfs 7.111 af

Subcatchment11: Subcat 11 Runoff Area=14.461 ac 0.00% Impervious Runoff Depth=0.53"
Tc=11.1 min CN=59/0 Runoff=1.49 cfs 0.643 af

Subcatchment12: Subcat 12 Runoff Area=17.572 ac 0.00% Impervious Runoff Depth=0.53"
Tc=10.0 min CN=59/0 Runoff=1.93 cfs 0.781 af

Subcatchment12a-Ex: Subcat 12a-Ex Runoff Area=2.629 ac 0.00% Impervious Runoff Depth=1.13"
Tc=10.0 min CN=71/0 Runoff=1.45 cfs 0.247 af

Subcatchment13: Subcat 13 Runoff Area=27.742 ac 0.00% Impervious Runoff Depth=0.62"
Flow Length=1,750' Tc=10.0 min CN=61/0 Runoff=4.66 cfs 1.429 af

Subcatchment13a-Ex: Subcat 13a-Ex Runoff Area=3.505 ac 0.00% Impervious Runoff Depth=1.13"
Tc=10.0 min CN=71/0 Runoff=1.93 cfs 0.329 af

Subcatchment13b-Ex: Subcat 13b-Ex Runoff Area=18.461 ac 0.00% Impervious Runoff Depth=1.87"
Tc=10.0 min CN=82/0 Runoff=20.23 cfs 2.870 af

Subcatchment13c-Ex: Subcat 13c-Ex Runoff Area=14.407 ac 0.00% Impervious Runoff Depth=1.72"
Tc=10.0 min CN=80/0 Runoff=14.24 cfs 2.060 af

Subcatchment14: Subcat 14 Runoff Area=8.669 ac 51.27% Impervious Runoff Depth=1.97"
Tc=10.0 min CN=58/98 Runoff=8.97 cfs 1.420 af

Subcatchment14a{(1)}-Ex: Subcat 14a{(1)}-Ex Runoff Area=13.081 ac 0.00% Impervious Runoff Depth=0.76"
Tc=10.0 min CN=64/0 Runoff=3.53 cfs 0.824 af

Subcatchment14a{(2)}-Ex: Subcat 14a{(2)}-Ex Runoff Area=2.438 ac 29.80% Impervious Runoff Depth=1.35"
Tc=10.0 min CN=58/98 Runoff=1.54 cfs 0.274 af

Subcatchment14b-Ex: Subcat 14b-Ex Runoff Area=50.209 ac 0.00% Impervious Runoff Depth=1.64"
Tc=13.4 min CN=79/0 Runoff=41.39 cfs 6.879 af

Subcatchment14c{(0)}-Ex: Subcat 14c{(0)}-Ex Runoff Area=43.677 ac 1.21% Impervious Runoff Depth=1.88"
Tc=24.5 min CN=82/98 Runoff=31.22 cfs 6.856 af

Subcatchment14c{(1)}-Ex: Subcat 14c{(1)}-Ex Runoff Area=30.208 ac 1.61% Impervious Runoff Depth=1.82"
Tc=13.6 min CN=81/98 Runoff=28.00 cfs 4.570 af

Subcatchment14c{(2)}-Ex: Subcat 14c{(2)}-Ex Runoff Area=19.689 ac 0.00% Impervious Runoff Depth=1.51"
Tc=13.2 min CN=77/0 Runoff=14.53 cfs 2.470 af

Subcatchment14c{(3)}-Ex: Subcat 14c{(3)}-Ex Runoff Area=13.782 ac 0.00% Impervious Runoff Depth=1.37"
Tc=12.6 min CN=75/0 Runoff=9.15 cfs 1.577 af

Subcatchment14d-Ex: Subcat 14d-Ex Runoff Area=166.738 ac 0.91% Impervious Runoff Depth=1.73"
Tc=19.4 min CN=80/98 Runoff=121.75 cfs 24.054 af

Subcatchment14e-Ex: Subcat 14e-Ex Runoff Area=10.890 ac 6.05% Impervious Runoff Depth=0.67"
Tc=10.0 min CN=58/98 Runoff=2.09 cfs 0.605 af

Reach 6R: Reach 1c Avg. Flow Depth=2.31' Max Vel=4.26 fps Inflow=63.40 cfs 38.668 af
n=0.024 L=830.0' S=0.0031 '/' Capacity=4,878.97 cfs Outflow=62.08 cfs 38.668 af

Reach 7R: Reach 1b Avg. Flow Depth=1.40' Max Vel=4.15 fps Inflow=205.65 cfs 68.684 af
n=0.024 L=883.0' S=0.0066 '/' Capacity=8,865.90 cfs Outflow=201.96 cfs 68.684 af

Reach 8R: Reach 1a Avg. Flow Depth=1.52' Max Vel=3.17 fps Inflow=206.14 cfs 70.814 af
n=0.024 L=583.0' S=0.0034 '/' Capacity=6,396.21 cfs Outflow=203.68 cfs 70.814 af

Reach 17R: Reach 1d Avg. Flow Depth=0.43' Max Vel=1.99 fps Inflow=28.12 cfs 0.605 af
n=0.027 L=841.0' S=0.0110 '/' Capacity=1,276.84 cfs Outflow=19.66 cfs 0.605 af

Reach 18R: Linne Road Grassed Chl Avg. Flow Depth=0.59' Max Vel=2.51 fps Inflow=18.58 cfs 11.335 af
n=0.030 L=1,190.0' S=0.0087 '/' Capacity=66.25 cfs Outflow=17.83 cfs 11.335 af

Pond 17P: Gran Cielo Dwy Peak Elev=854.84' Storage=9,739 cf Inflow=121.75 cfs 24.054 af
Primary=93.28 cfs 23.449 af Secondary=0.00 cfs 0.000 af Tertiary=28.12 cfs 0.605 af Outflow=121.40 cfs 24.054 af

Pond 18P: GC-CkD1 Peak Elev=851.40' Storage=51,119 cf Inflow=152.23 cfs 34.874 af
Primary=1.04 cfs 1.606 af Secondary=84.29 cfs 27.429 af Tertiary=60.65 cfs 5.776 af Outflow=145.98 cfs 34.811 af

Pond 19P: GC-CkD2 Peak Elev=849.60' Storage=32,312 cf Inflow=98.58 cfs 31.505 af
Primary=1.34 cfs 2.070 af Secondary=62.45 cfs 26.745 af Tertiary=31.29 cfs 2.688 af Outflow=95.08 cfs 31.504 af

Pond 20P: GC-CkD3 Peak Elev=846.00' Storage=16,178 cf Inflow=71.09 cfs 30.392 af
Primary=6.49 cfs 6.543 af Secondary=11.02 cfs 4.518 af Tertiary=53.24 cfs 19.319 af Outflow=70.75 cfs 30.381 af

Link 3a (1,2+3)-Ex: Comb Un-dev Ck Flow Inflow=204.80 cfs 71.447 af
Primary=204.80 cfs 71.447 af

Link 5L: Outlet To Tract #1632 Ex. 36" SD Inflow=6.41 cfs 4.467 af
Primary=6.41 cfs 4.467 af

Link 6L: To Existing Meadowlark Road Inflow=10.54 cfs 9.341 af
Primary=10.54 cfs 9.341 af

Link 7L: DMA 13 Inflow=40.91 cfs 6.689 af
Primary=40.91 cfs 6.689 af

Link 8L: DMA 8 Inflow=2.57 cfs 1.836 af
Primary=2.57 cfs 1.836 af

Link 9L: DMA 12 Inflow=3.35 cfs 1.028 af
Primary=3.35 cfs 1.028 af

Link 10L: To Linne Road Channel Inflow=18.58 cfs 11.335 af
Primary=18.58 cfs 11.335 af

Link 11L: To Fontana Road SD Inflow=83.44 cfs 17.116 af
Primary=83.44 cfs 17.116 af

Link 15L: Sherwood/NiblickLP Xing Inflow=53.82 cfs 9.123 af
Primary=53.82 cfs 9.123 af

Link 16L: Airport & Linne Road SD Inflow=68.98 cfs 21.064 af
Primary=68.98 cfs 21.064 af

Link 19L: 14c(0+1)-Ex Inflow=59.11 cfs 11.425 af
Primary=59.11 cfs 11.425 af

Link 22L: Linne Rd OvertoppingEx.Flow #2and#3 Inflow=84.51 cfs 22.008 af
Primary=84.51 cfs 22.008 af

Link 23L: Linne Rd Overtop#1 Inflow=60.65 cfs 5.776 af
Primary=60.65 cfs 5.776 af

Total Runoff Area = 1,810.455 ac Runoff Volume = 123.511 af Average Runoff Depth = 0.82"
99.44% Pervious = 1,800.345 ac 0.56% Impervious = 10.110 ac

Summary for Subcatchment 1: Subcat 1

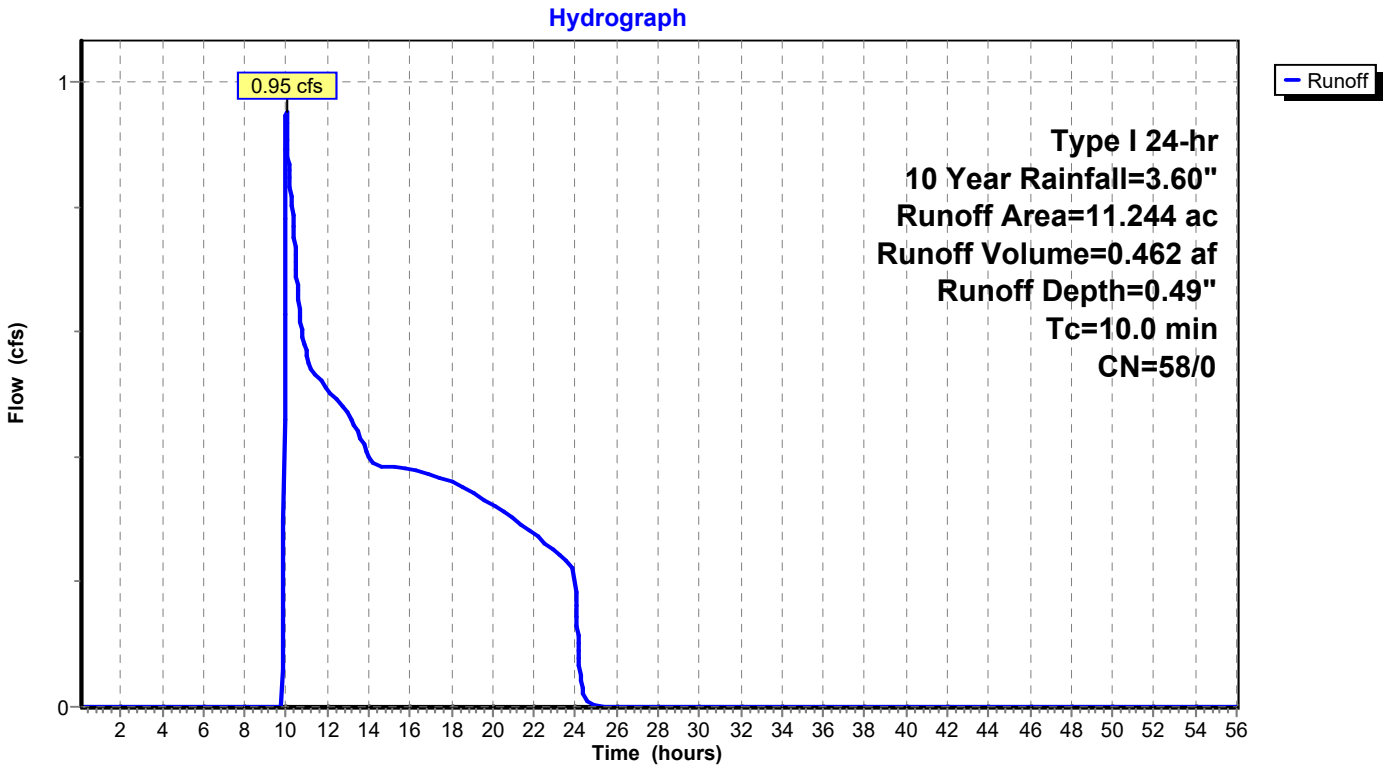
Runoff = 0.95 cfs @ 10.01 hrs, Volume= 0.462 af, Depth= 0.49"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
11.244	58	Meadow, non-grazed, HSG B
11.244	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9					**Direct Entry, SCS per Catchment Area CAD Info**
9.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 1: Subcat 1



Summary for Subcatchment 2: Subcat 2

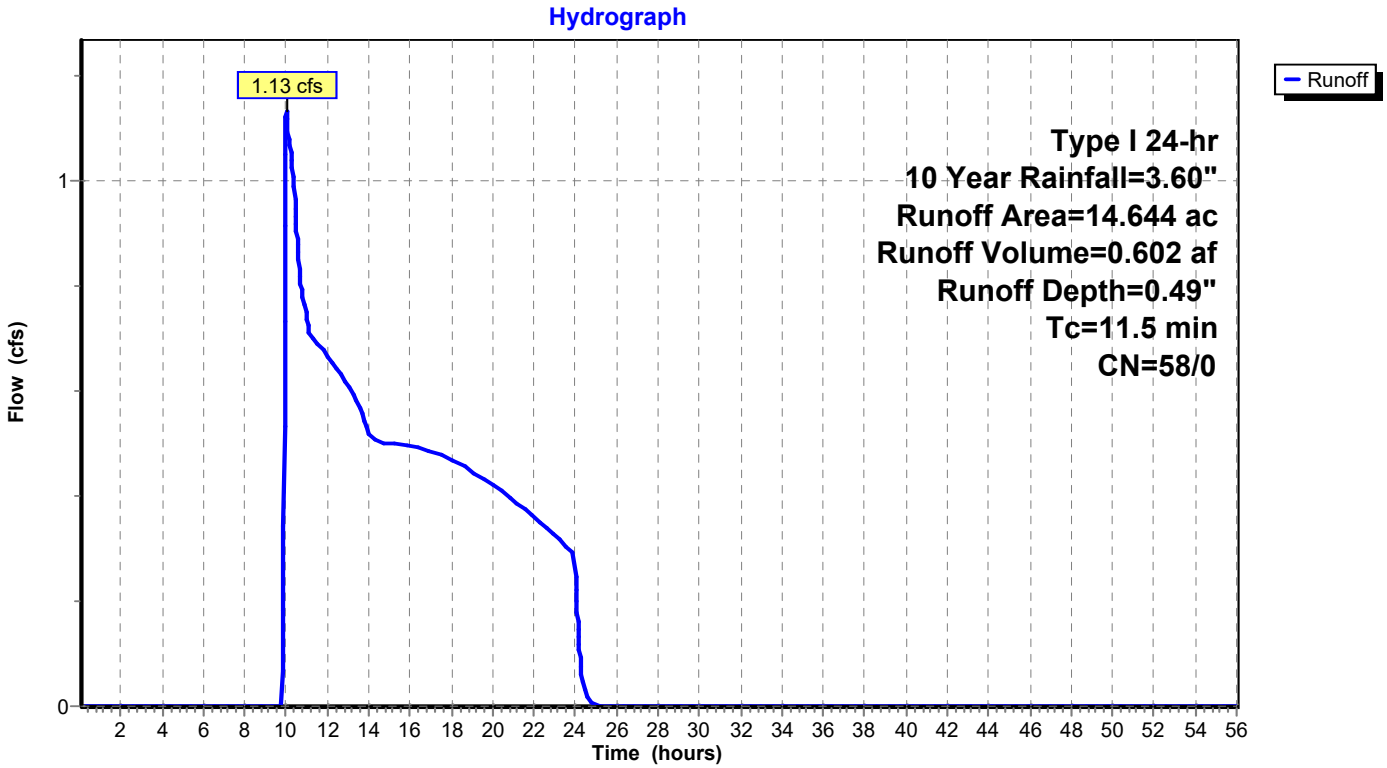
Runoff = 1.13 cfs @ 10.02 hrs, Volume= 0.602 af, Depth= 0.49"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
0.574	58	Meadow, non-grazed, HSG B
14.070	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
14.644	58	Weighted Average
14.644	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5					**Direct Entry, SCS per Catchment Area CAD Info**

Subcatchment 2: Subcat 2



Summary for Subcatchment 3: Subcat 3

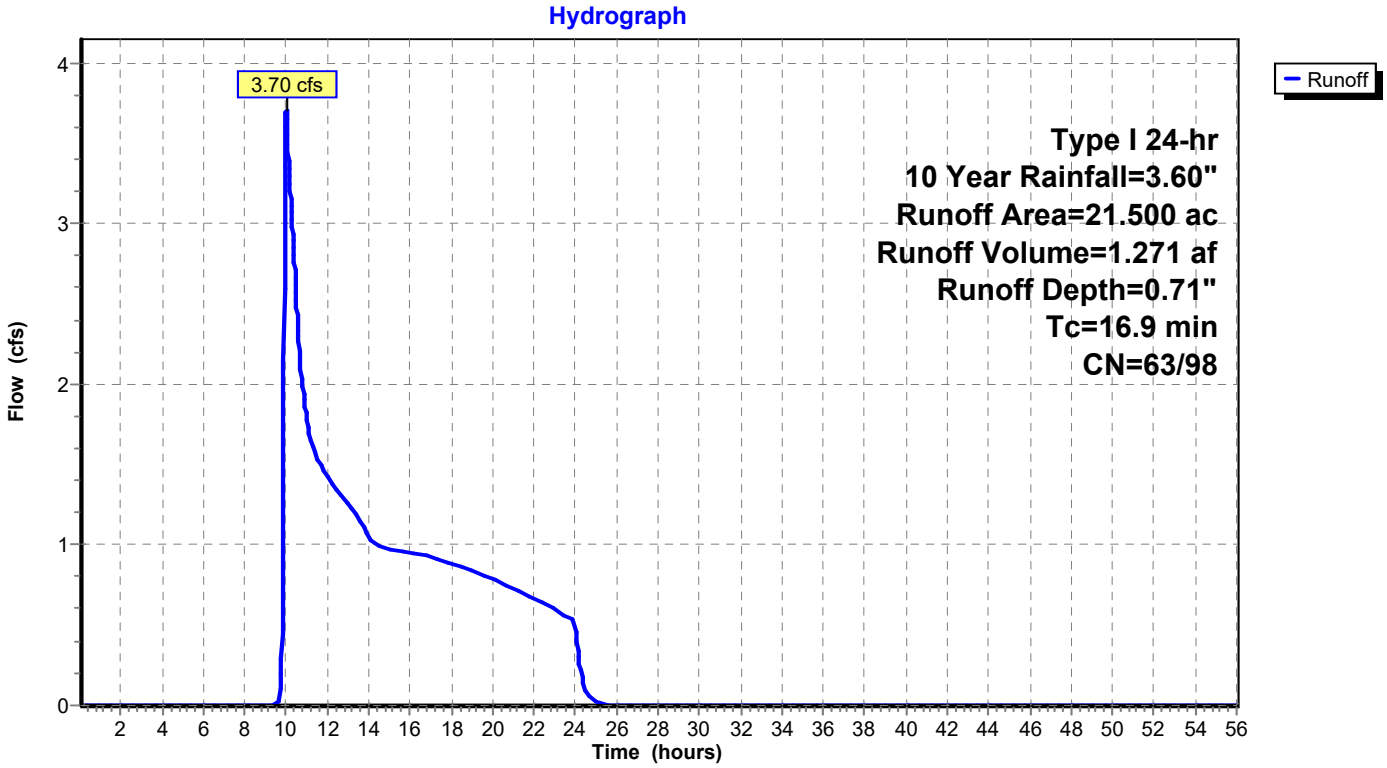
Runoff = 3.70 cfs @ 10.01 hrs, Volume= 1.271 af, Depth= 0.71"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
4.338	58	Meadow, non-grazed, HSG B
8.761	58	Meadow, non-grazed, HSG B
8.398	71	Meadow, non-grazed, HSG C
0.003	98	Paved roads w/curbs & sewers, HSG C
21.500	63	Weighted Average
21.497	63	99.98% Pervious Area
0.003	98	0.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.9					**Direct Entry, SCS per Catchment Area CAD Info**

Subcatchment 3: Subcat 3



Summary for Subcatchment 3a{(1)}-Ex: Subcat 3a{(1)}-Ex

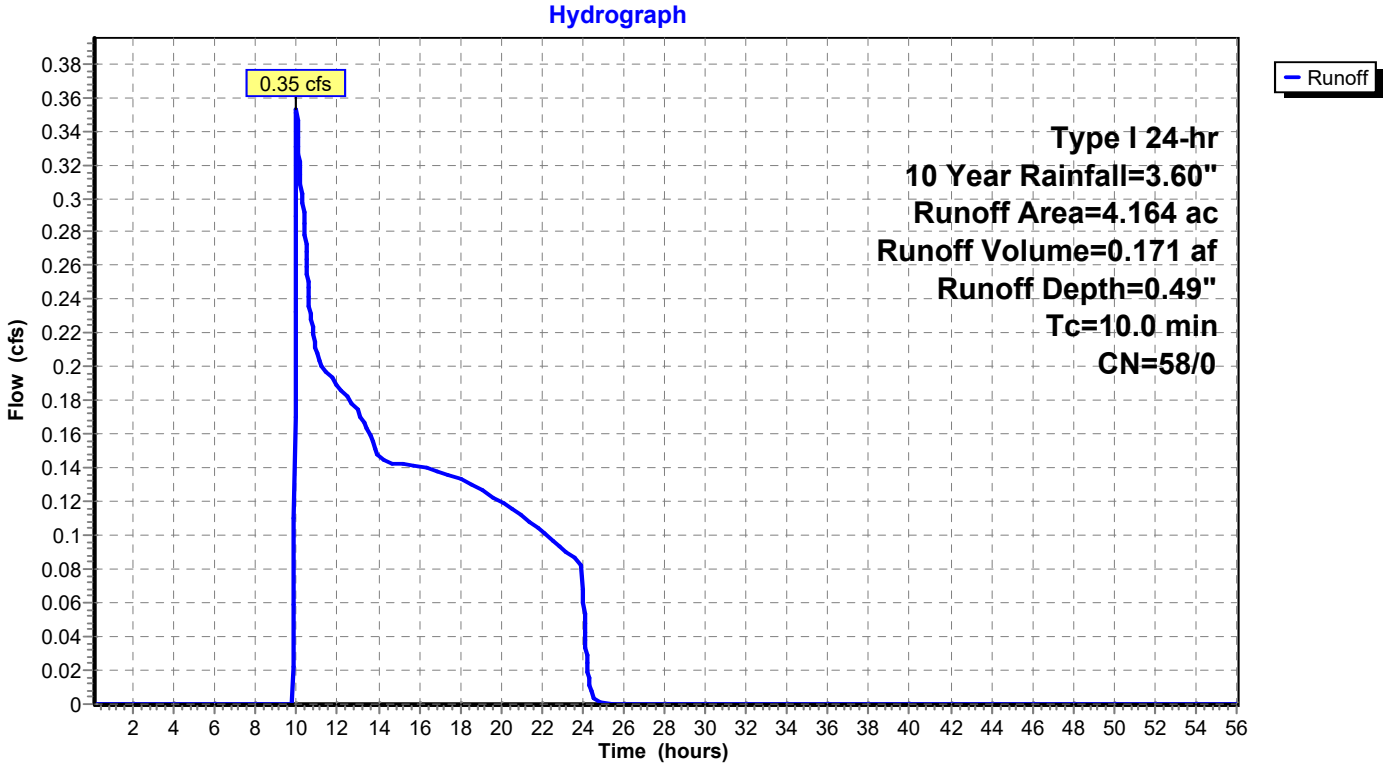
Runoff = 0.35 cfs @ 10.01 hrs, Volume= 0.171 af, Depth= 0.49"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
2.302	58	Meadow, non-grazed, HSG B
1.861	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
4.164	58	Weighted Average
4.164	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1					**Direct Entry,**
6.1	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 3a{(1)}-Ex: Subcat 3a{(1)}-Ex



Summary for Subcatchment 3a{(2)}-Ex: Subcat 3a{(2)}-Ex

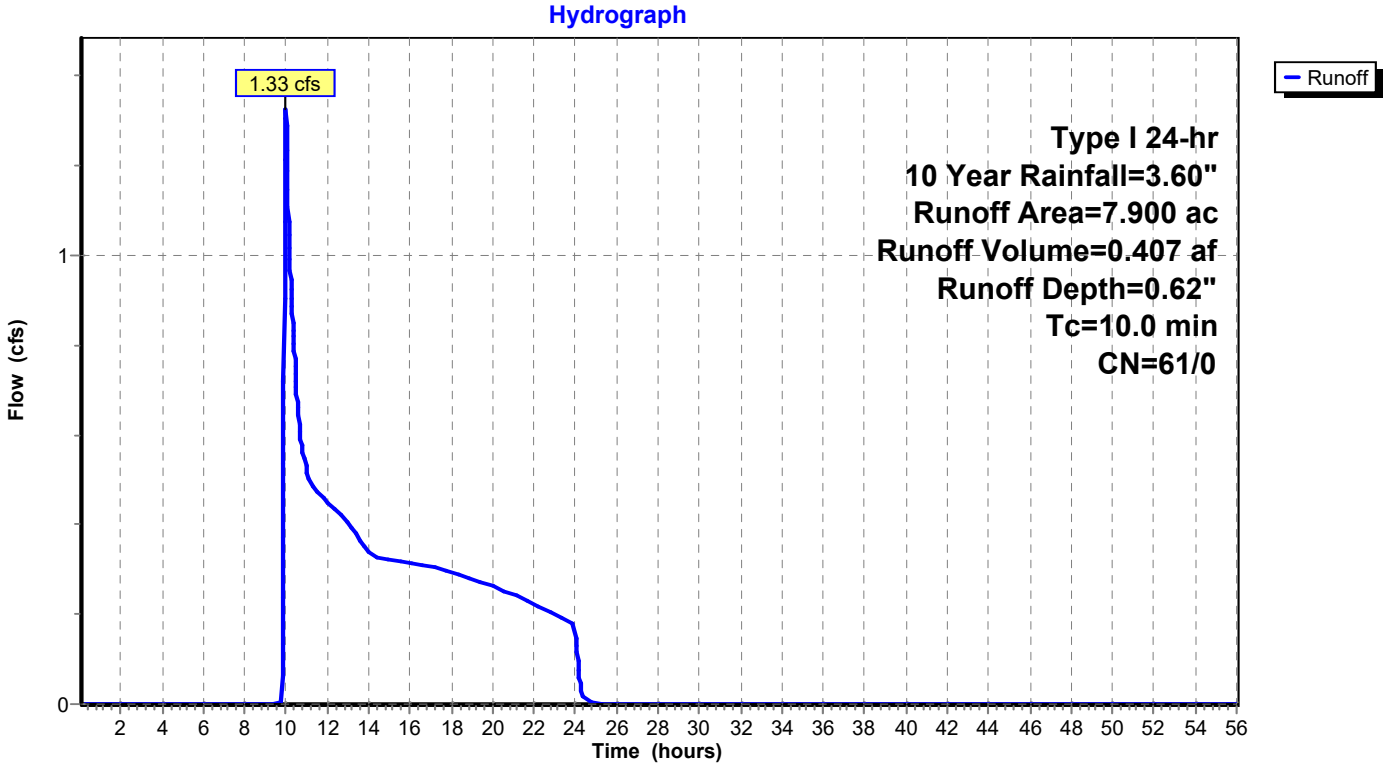
Runoff = 1.33 cfs @ 10.00 hrs, Volume= 0.407 af, Depth= 0.62"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
3.124	58	Meadow, non-grazed, HSG B
2.841	58	Meadow, non-grazed, HSG B
1.936	71	Meadow, non-grazed, HSG C
7.900	61	Weighted Average
7.900	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1					**Direct Entry,**
6.1	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 3a{(2)}-Ex: Subcat 3a{(2)}-Ex



Summary for Subcatchment 3a{(3)}-Ex: Subcat 3a{(3)}-Ex

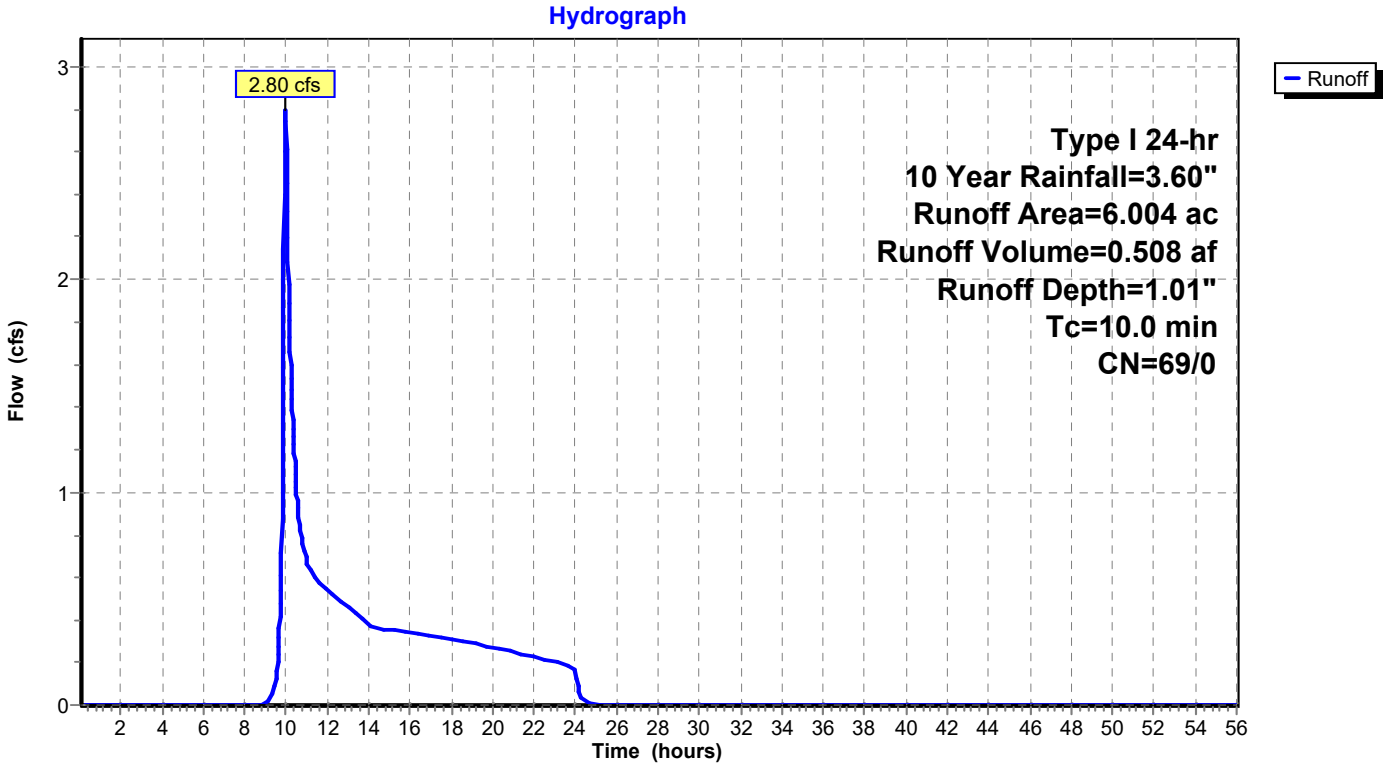
Runoff = 2.80 cfs @ 9.98 hrs, Volume= 0.508 af, Depth= 1.01"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
1.129	58	Meadow, non-grazed, HSG B
4.876	71	Meadow, non-grazed, HSG C
6.004	69	Weighted Average
6.004	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1					**Direct Entry, 14c{(2)}-Ex**
6.1	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 3a{(3)}-Ex: Subcat 3a{(3)}-Ex



Summary for Subcatchment 3b-Ex: Subcat 3b-Ex

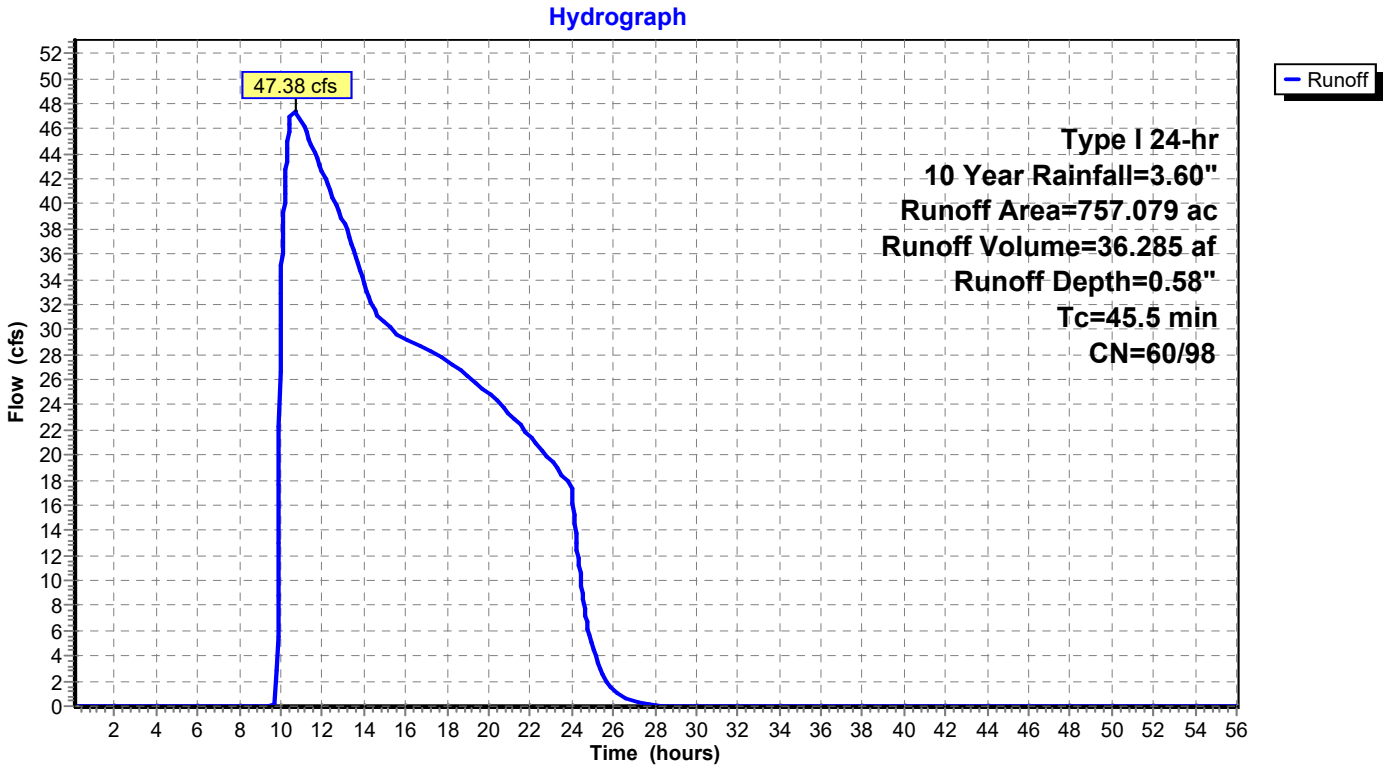
Runoff = 47.38 cfs @ 10.69 hrs, Volume= 36.285 af, Depth= 0.58"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
234.658	58	Meadow, non-grazed, HSG B
36.169	58	Meadow, non-grazed, HSG B
0.022	58	Meadow, non-grazed, HSG B
51.779	58	Meadow, non-grazed, HSG B
10.304	58	Meadow, non-grazed, HSG B
28.620	58	Meadow, non-grazed, HSG B
28.650	58	Meadow, non-grazed, HSG B
67.424	58	Meadow, non-grazed, HSG B
203.020	58	Meadow, non-grazed, HSG B
26.053	71	Meadow, non-grazed, HSG C
12.803	71	Meadow, non-grazed, HSG C
44.268	71	Meadow, non-grazed, HSG C
13.308	71	Meadow, non-grazed, HSG C
0.001	98	Paved roads w/curbs & sewers, HSG C
757.079	60	Weighted Average
757.078	60	100.00% Pervious Area
0.001	98	0.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.5					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 3b-Ex: Subcat 3b-Ex



Summary for Subcatchment 4: Subcat 4

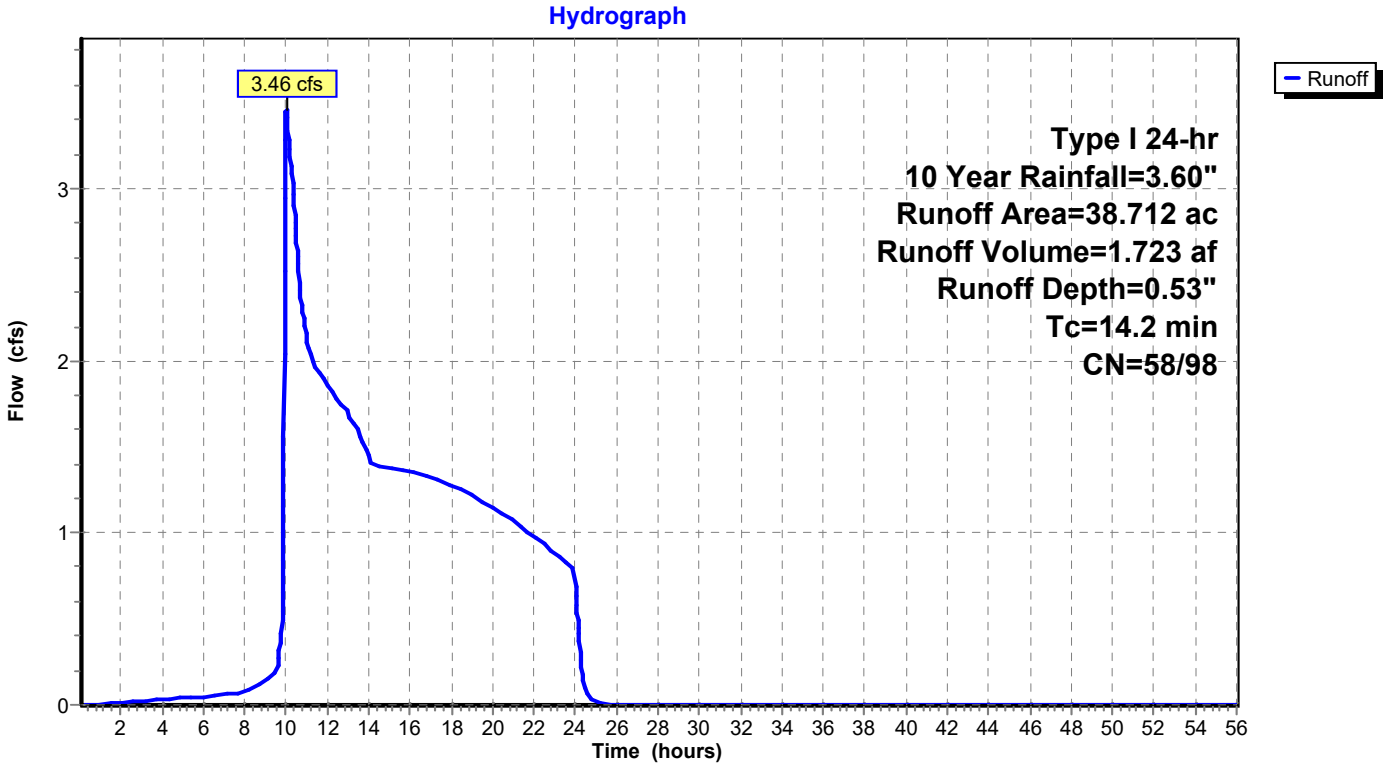
Runoff = 3.46 cfs @ 10.01 hrs, Volume= 1.723 af, Depth= 0.53"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
2.765	68	1 acre lots, 20% imp, HSG B
0.000	58	Meadow, non-grazed, HSG B
7.644	58	Meadow, non-grazed, HSG B
0.126	58	Meadow, non-grazed, HSG B
5.342	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
20.803	58	Meadow, non-grazed, HSG B
0.971	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
1.061	58	Meadow, non-grazed, HSG B
38.712	59	Weighted Average
38.159	58	98.57% Pervious Area
0.553	98	1.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 4: Subcat 4



Summary for Subcatchment 5: Subcat 5

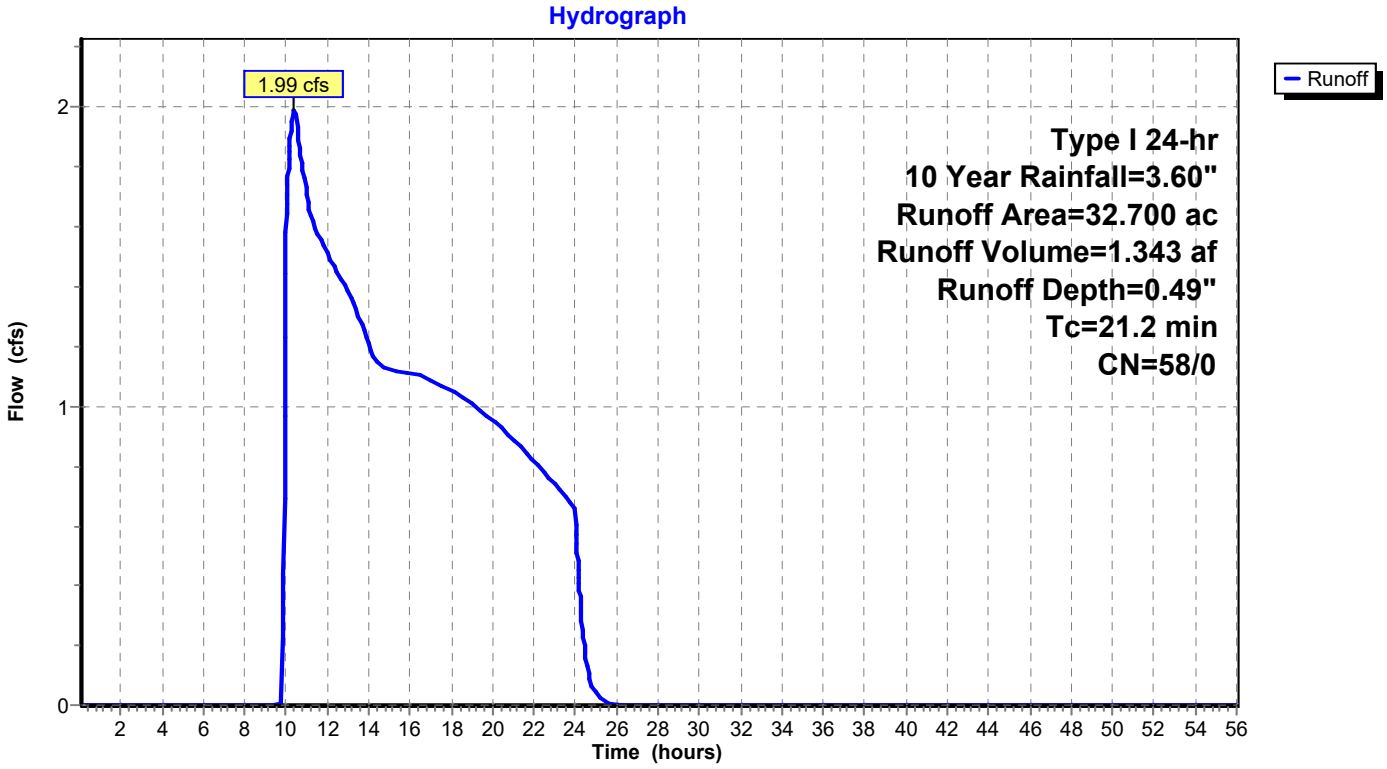
Runoff = 1.99 cfs @ 10.39 hrs, Volume= 1.343 af, Depth= 0.49"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
9.224	58	Meadow, non-grazed, HSG B
23.476	58	Meadow, non-grazed, HSG B
32.700	58	Weighted Average
32.700	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.2					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 5: Subcat 5



Summary for Subcatchment 6: Subcat 6

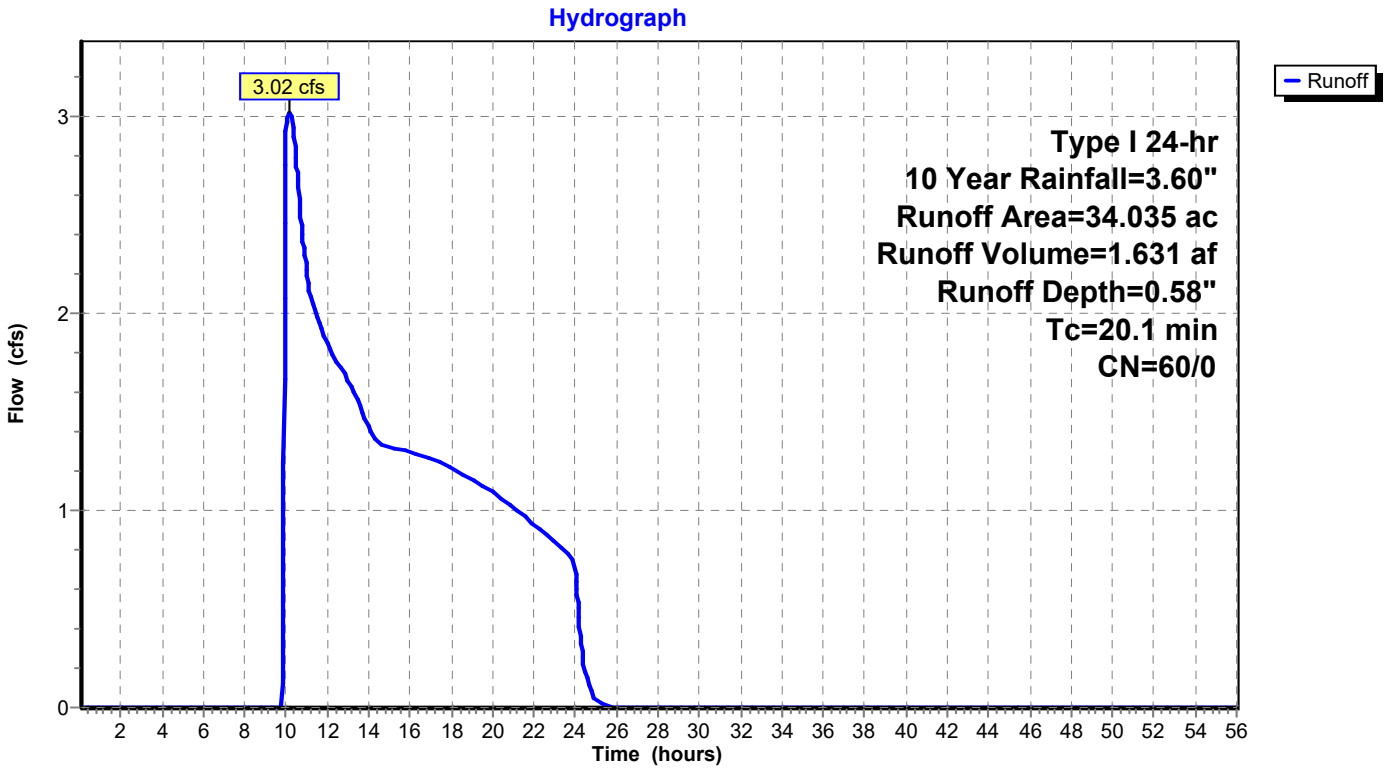
Runoff = 3.02 cfs @ 10.19 hrs, Volume= 1.631 af, Depth= 0.58"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
23.646	58	Meadow, non-grazed, HSG B
0.010	58	Meadow, non-grazed, HSG B
0.081	58	Meadow, non-grazed, HSG B
4.046	58	Meadow, non-grazed, HSG B
2.192	58	Meadow, non-grazed, HSG B
4.059	71	Meadow, non-grazed, HSG C
34.035	60	Weighted Average
34.035	60	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.1					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 6: Subcat 6



Summary for Subcatchment 7: Subcat 7

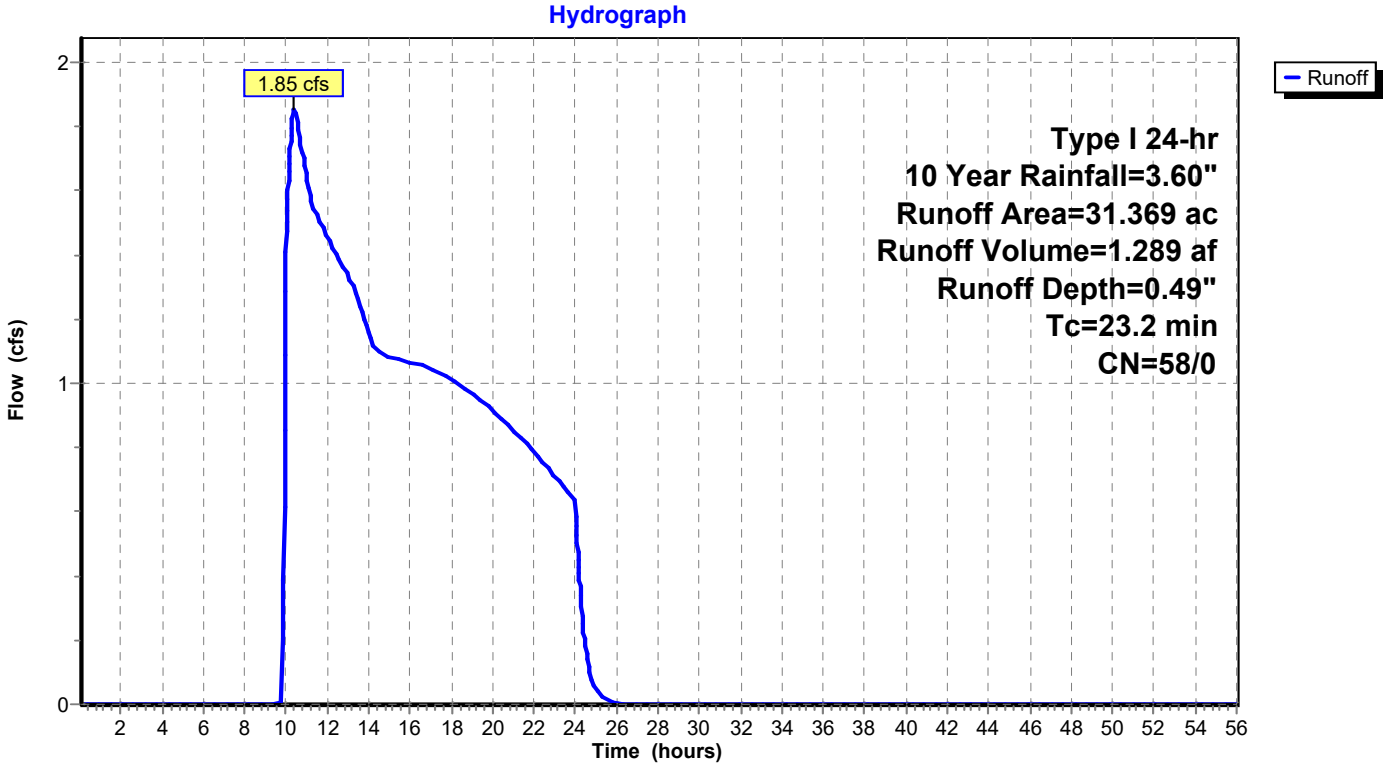
Runoff = 1.85 cfs @ 10.42 hrs, Volume= 1.289 af, Depth= 0.49"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
4.398	58	Meadow, non-grazed, HSG B
11.983	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
14.988	58	Meadow, non-grazed, HSG B
31.369	58	Weighted Average
31.369	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.2					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 7: Subcat 7



Summary for Subcatchment 8: Subcat 8

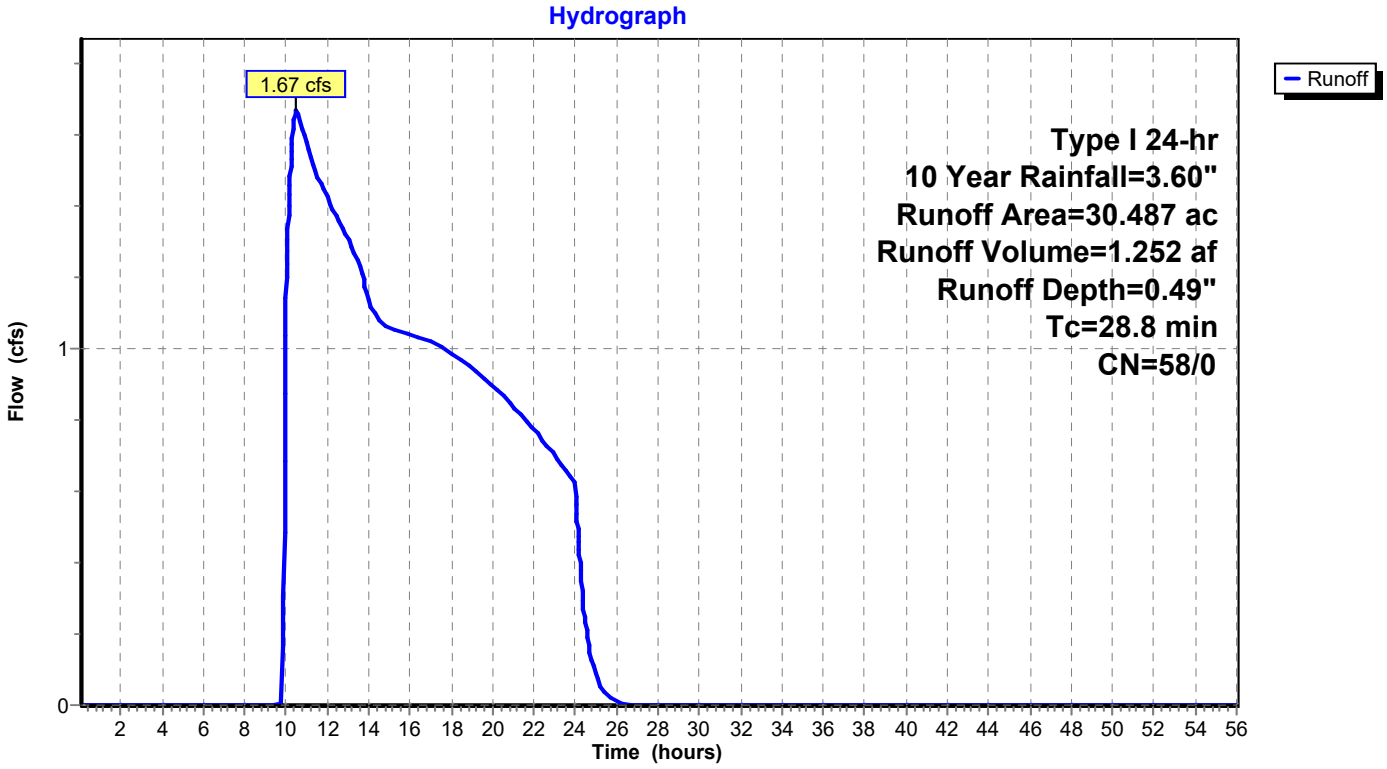
Runoff = 1.67 cfs @ 10.48 hrs, Volume= 1.252 af, Depth= 0.49"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
1.331	58	Meadow, non-grazed, HSG B
29.156	58	Meadow, non-grazed, HSG B
30.487	58	Weighted Average
30.487	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 8: Subcat 8



Summary for Subcatchment 8a-Ex: Subcat 8a-Ex

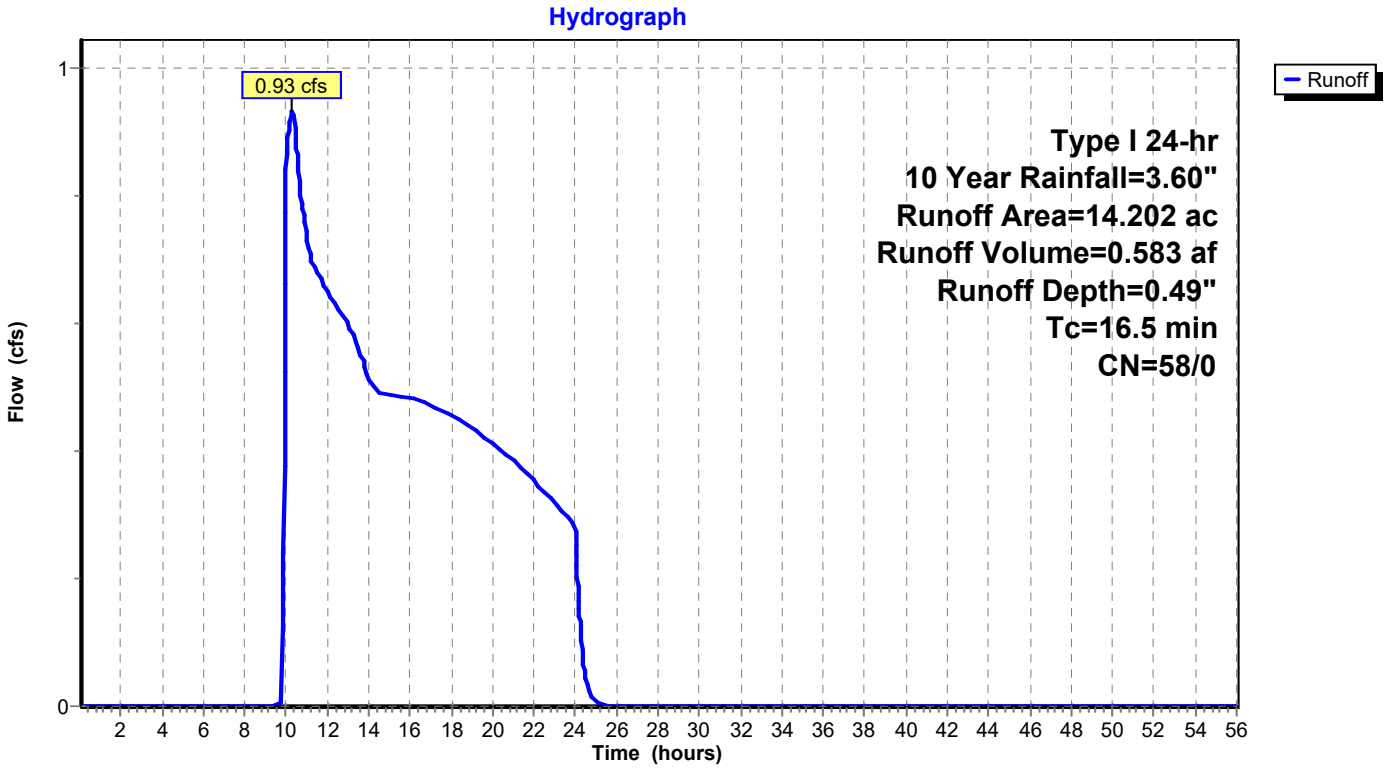
Runoff = 0.93 cfs @ 10.30 hrs, Volume= 0.583 af, Depth= 0.49"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
2.036	58	Meadow, non-grazed, HSG B
7.264	58	Meadow, non-grazed, HSG B
4.903	58	Meadow, non-grazed, HSG B
14.202	58	Weighted Average
14.202	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 8a-Ex: Subcat 8a-Ex



Summary for Subcatchment 9: Subcat 9

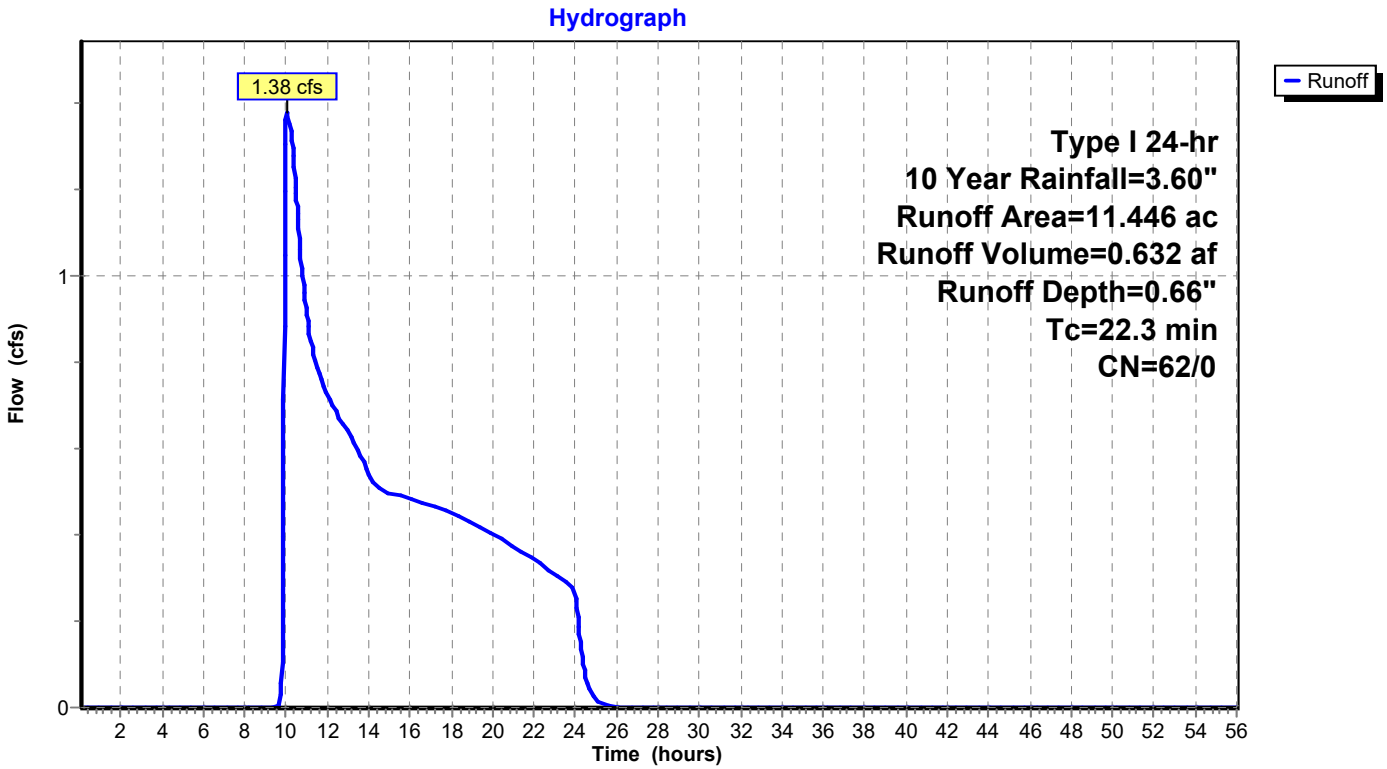
Runoff = 1.38 cfs @ 10.03 hrs, Volume= 0.632 af, Depth= 0.66"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
0.006	58	Meadow, non-grazed, HSG B
8.451	58	Meadow, non-grazed, HSG B
0.026	58	Meadow, non-grazed, HSG B
0.469	58	Meadow, non-grazed, HSG B
0.005	58	Meadow, non-grazed, HSG B
2.489	78	Meadow, non-grazed, HSG D
11.446	62	Weighted Average
11.446	62	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3					**Direct Entry, Tc from CAD Catchments (SCS Method)**

Subcatchment 9: Subcat 9



Summary for Subcatchment 9a-Ex: Subcat 9a-Ex

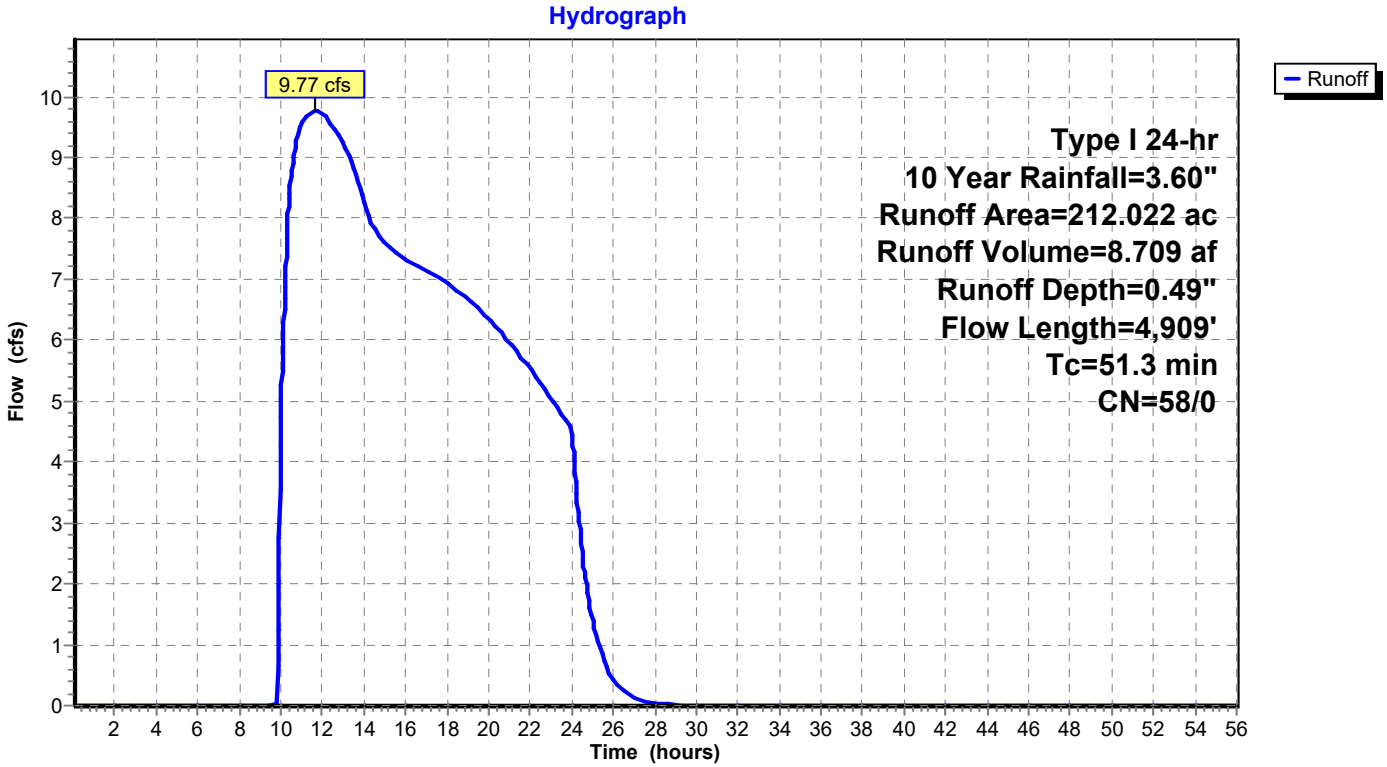
Runoff = 9.77 cfs @ 11.69 hrs, Volume= 8.709 af, Depth= 0.49"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
16.535	58	Meadow, non-grazed, HSG B
38.755	58	Meadow, non-grazed, HSG B
2.915	58	Meadow, non-grazed, HSG B
114.179	58	Meadow, non-grazed, HSG B
31.194	58	Meadow, non-grazed, HSG B
8.131	58	Meadow, non-grazed, HSG B
0.314	78	Meadow, non-grazed, HSG D
212.022	58	Weighted Average
212.022	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
51.3	4,909		1.59		**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 9a-Ex: Subcat 9a-Ex



Summary for Subcatchment 10: Subcat 10

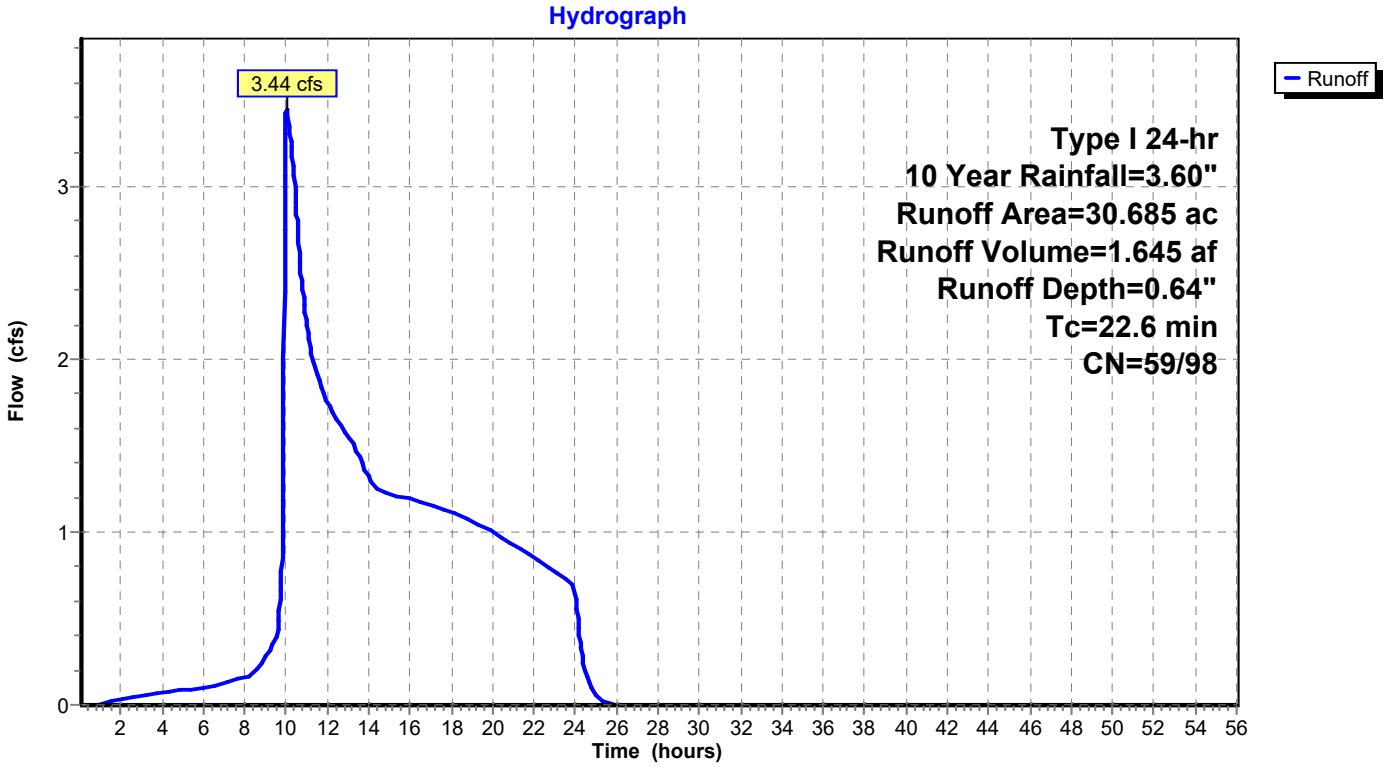
Runoff = 3.44 cfs @ 10.02 hrs, Volume= 1.645 af, Depth= 0.64"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
5.865	58	Meadow, non-grazed, HSG B
22.679	58	Meadow, non-grazed, HSG B
0.039	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.039	71	Meadow, non-grazed, HSG C
0.175	77	Natural western desert, HSG B
0.700	77	Natural western desert, HSG B
1.189	98	Paved roads w/curbs & sewers, HSG B
30.685	60	Weighted Average
29.496	59	96.12% Pervious Area
1.189	98	3.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.6					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 10: Subcat 10



Summary for Subcatchment 10a-Ex: Subcat 10a-Ex

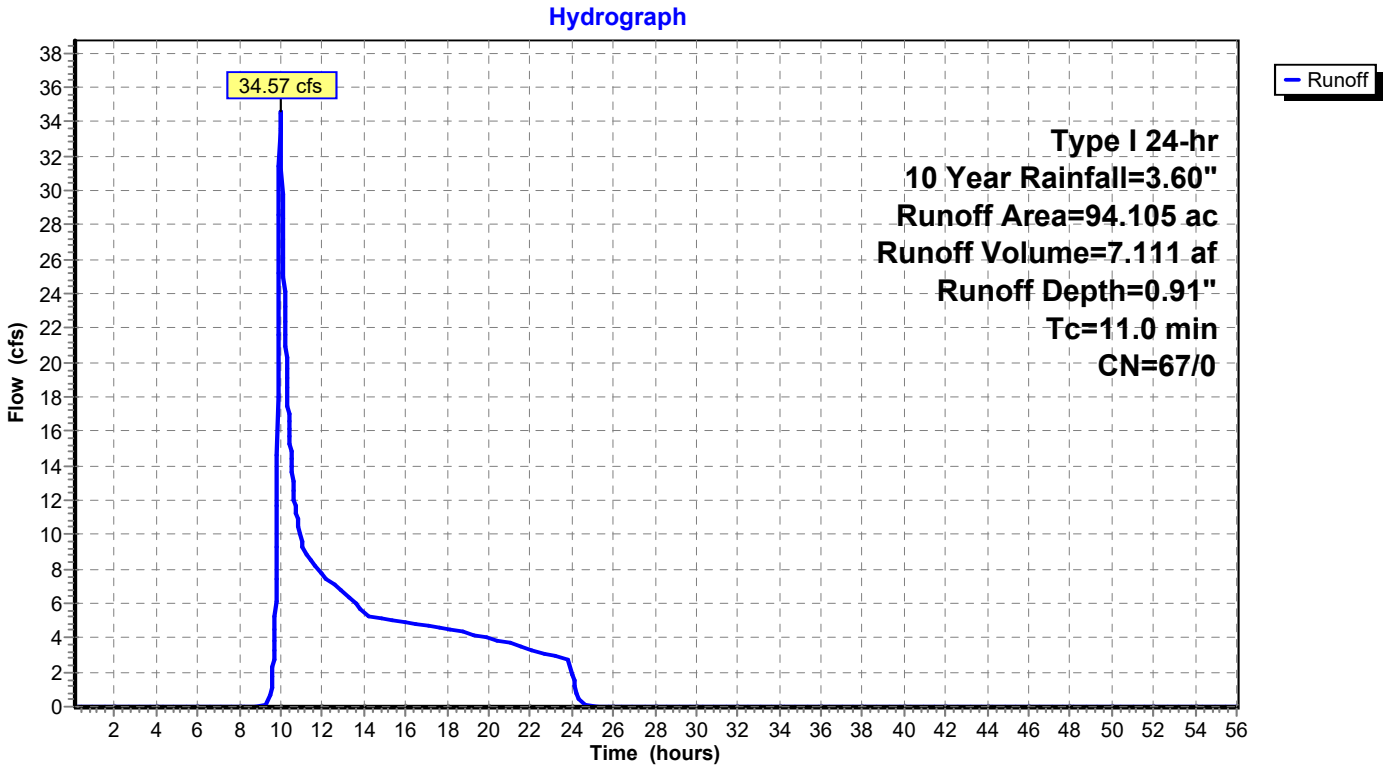
Runoff = 34.57 cfs @ 9.99 hrs, Volume= 7.111 af, Depth= 0.91"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
0.173	58	Meadow, non-grazed, HSG B
9.477	58	Meadow, non-grazed, HSG B
11.002	58	Meadow, non-grazed, HSG B
0.163	58	Meadow, non-grazed, HSG B
0.158	58	Meadow, non-grazed, HSG B
10.113	58	Meadow, non-grazed, HSG B
48.708	71	Meadow, non-grazed, HSG C
14.310	71	Meadow, non-grazed, HSG C
94.105	67	Weighted Average
94.105	67	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 10a-Ex: Subcat 10a-Ex



Summary for Subcatchment 11: Subcat 11

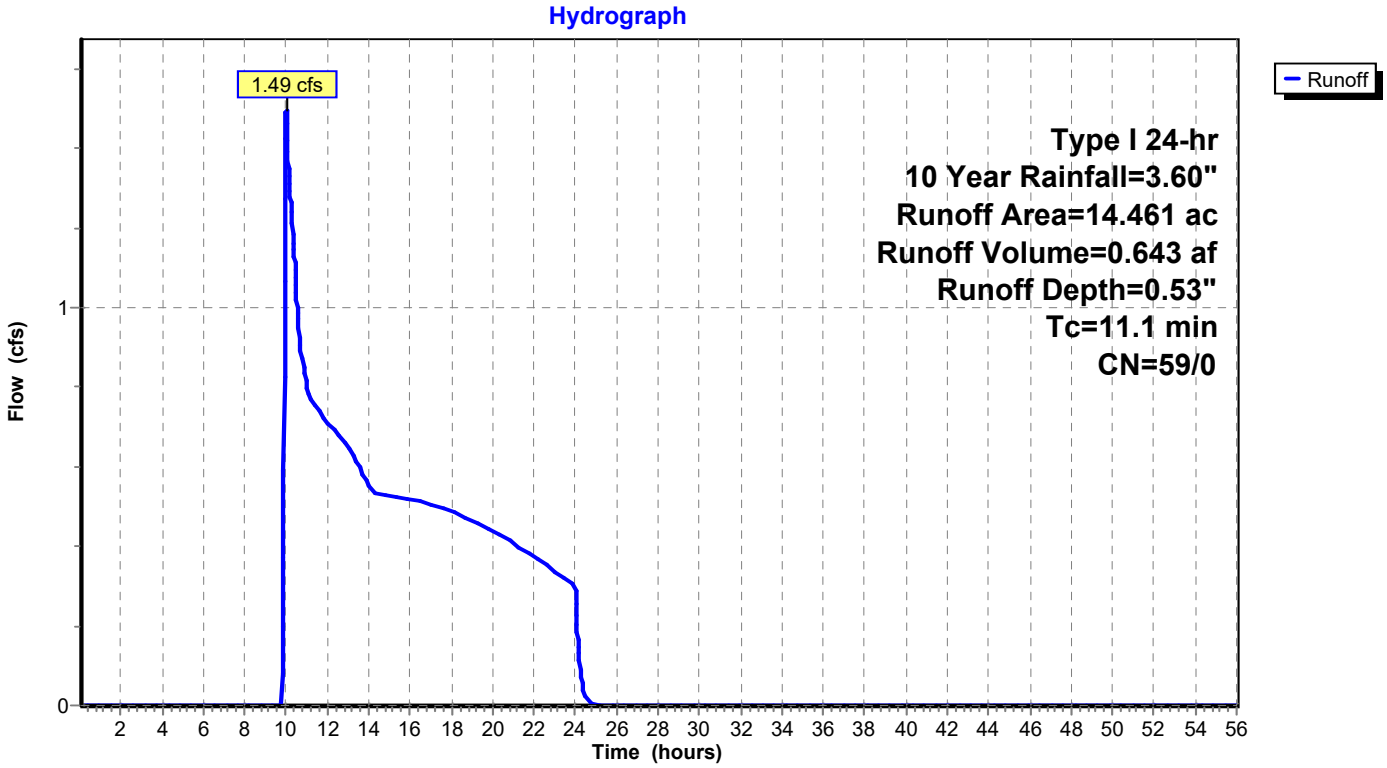
Runoff = 1.49 cfs @ 10.01 hrs, Volume= 0.643 af, Depth= 0.53"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
0.000	58	Meadow, non-grazed, HSG B
0.328	58	Meadow, non-grazed, HSG B
13.072	58	Meadow, non-grazed, HSG B
0.762	71	Meadow, non-grazed, HSG C
0.298	71	Meadow, non-grazed, HSG C
14.461	59	Weighted Average
14.461	59	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 11: Subcat 11



Summary for Subcatchment 12: Subcat 12

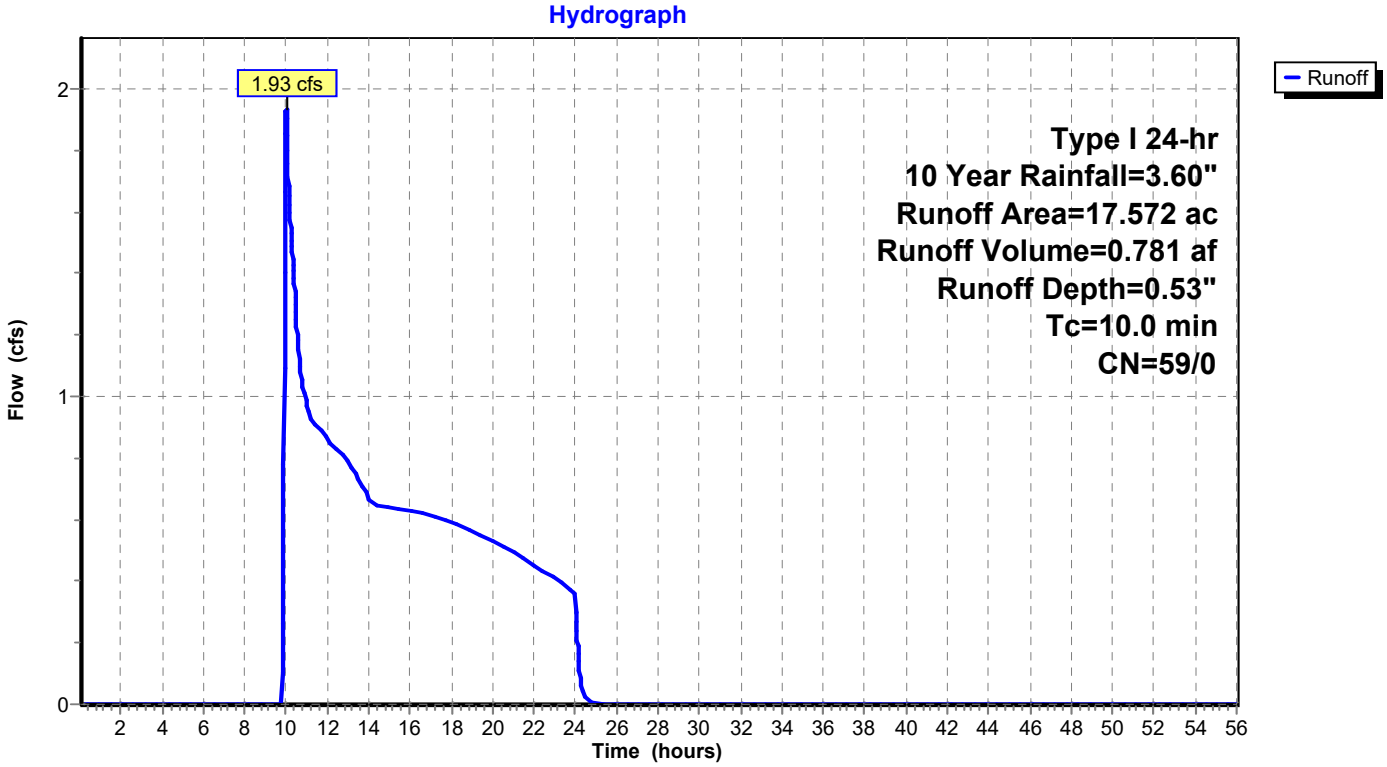
Runoff = 1.93 cfs @ 10.01 hrs, Volume= 0.781 af, Depth= 0.53"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
0.000	58	Meadow, non-grazed, HSG B
0.977	58	Meadow, non-grazed, HSG B
15.916	58	Meadow, non-grazed, HSG B
0.001	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	71	Meadow, non-grazed, HSG C
0.223	71	Meadow, non-grazed, HSG C
0.456	71	Meadow, non-grazed, HSG C
17.572	59	Weighted Average
17.572	59	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9					**Direct Entry, SCS Method taken from Catchment in ACAD file**
7.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 12: Subcat 12



Summary for Subcatchment 12a-Ex: Subcat 12a-Ex

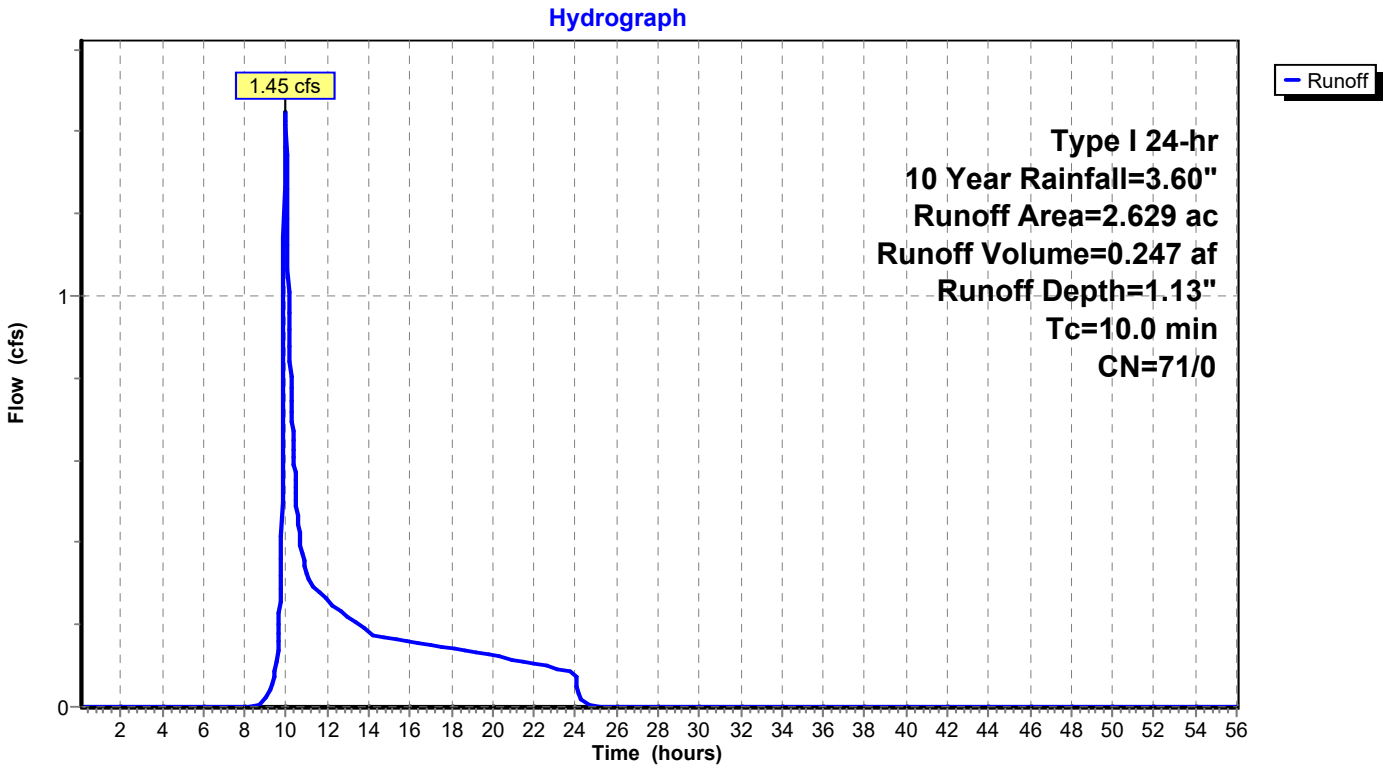
Runoff = 1.45 cfs @ 9.98 hrs, Volume= 0.247 af, Depth= 1.13"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
2.629	71	Meadow, non-grazed, HSG C
2.629	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9					**Direct Entry, SCS Method taken from Catchment in ACAD file**
4.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 12a-Ex: Subcat 12a-Ex



Summary for Subcatchment 13: Subcat 13

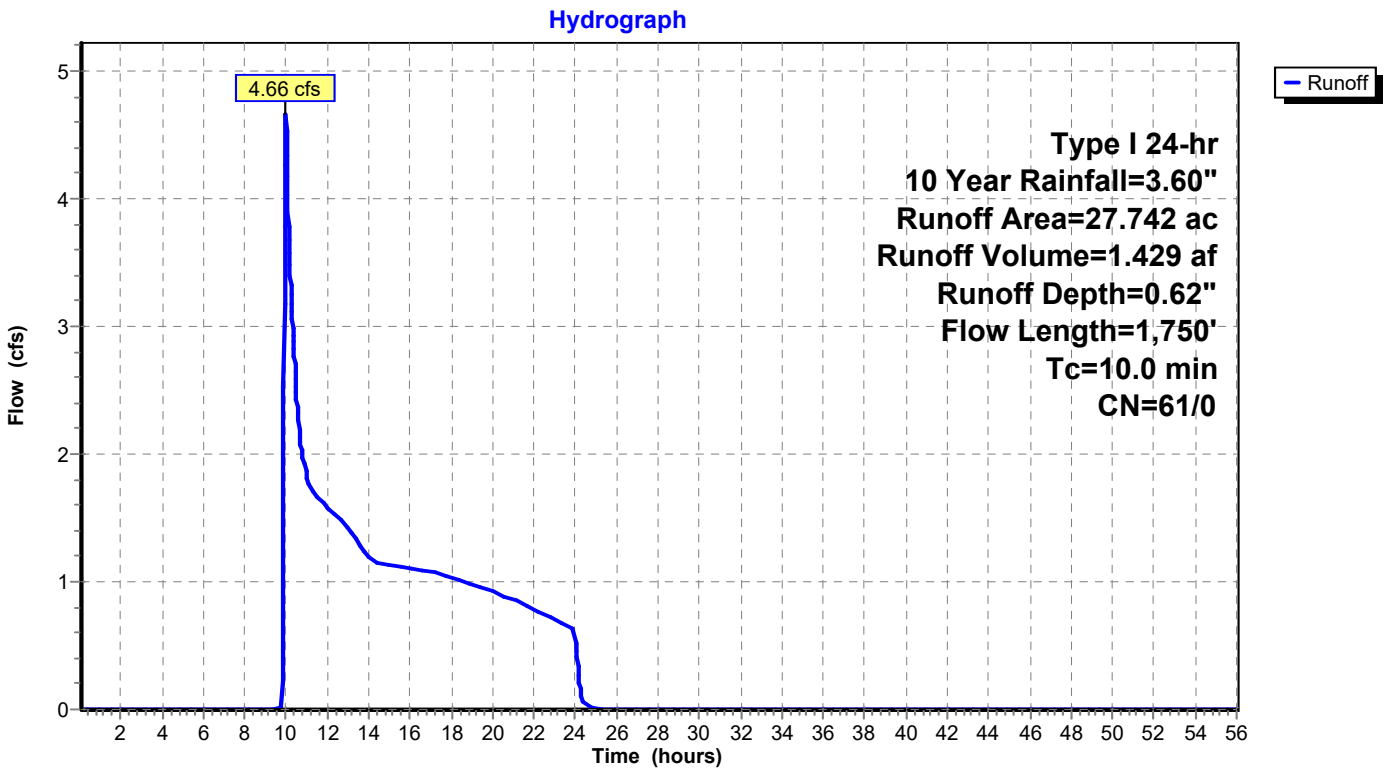
Runoff = 4.66 cfs @ 10.00 hrs, Volume= 1.429 af, Depth= 0.62"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
15.931	58	Meadow, non-grazed, HSG B
4.853	58	Meadow, non-grazed, HSG B
0.000	71	Meadow, non-grazed, HSG C
6.330	71	Meadow, non-grazed, HSG C
0.477	71	Meadow, non-grazed, HSG C
0.151	75	Row crops, SR + CR, Good, HSG B
27.742	61	Weighted Average
27.742	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	1,750		3.74		**Direct Entry, SCS Method taken from Catchment in ACAD file**
7.8	1,750	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 13: Subcat 13



Summary for Subcatchment 13a-Ex: Subcat 13a-Ex

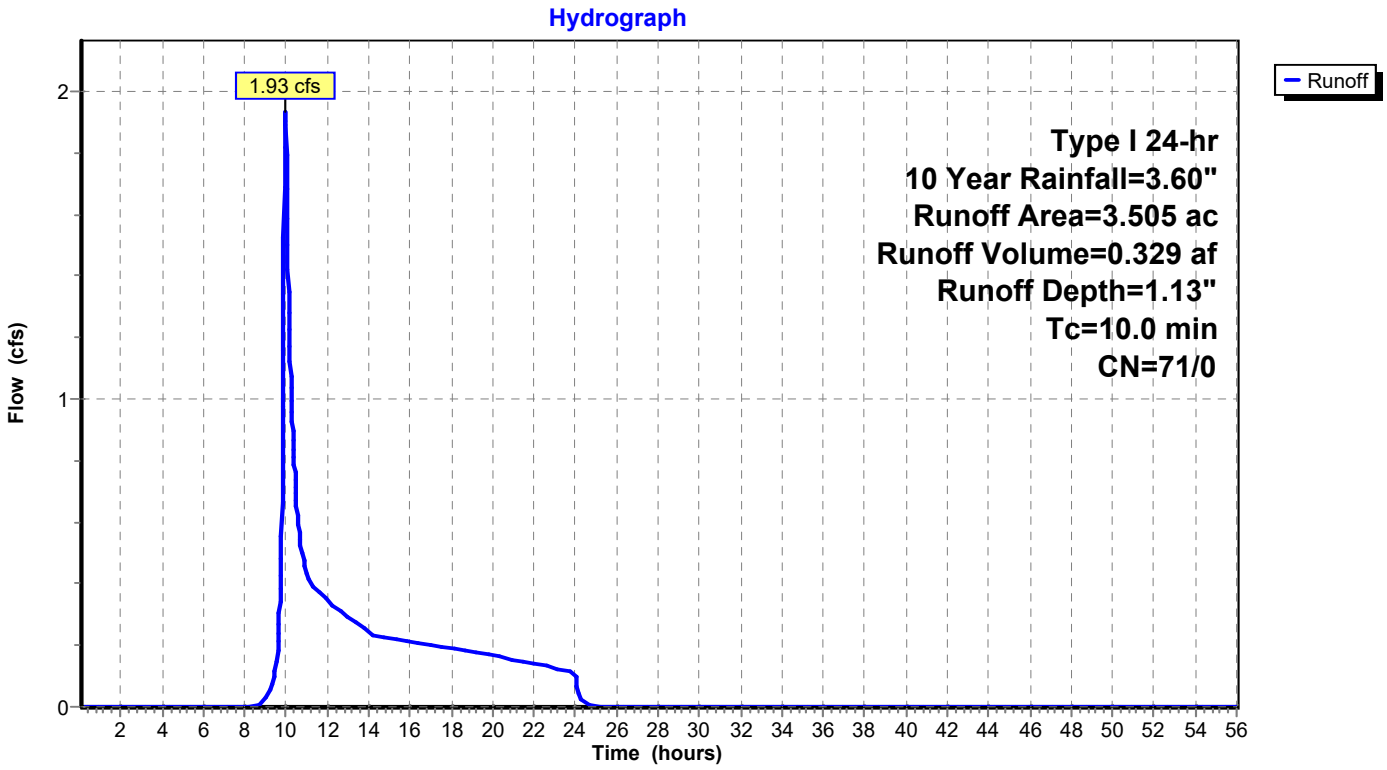
Runoff = 1.93 cfs @ 9.98 hrs, Volume= 0.329 af, Depth= 1.13"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
3.505	71	Meadow, non-grazed, HSG C
3.505	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9					**Direct Entry, SCS Method taken from Catchment in ACAD file**
8.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 13a-Ex: Subcat 13a-Ex



Summary for Subcatchment 13b-Ex: Subcat 13b-Ex

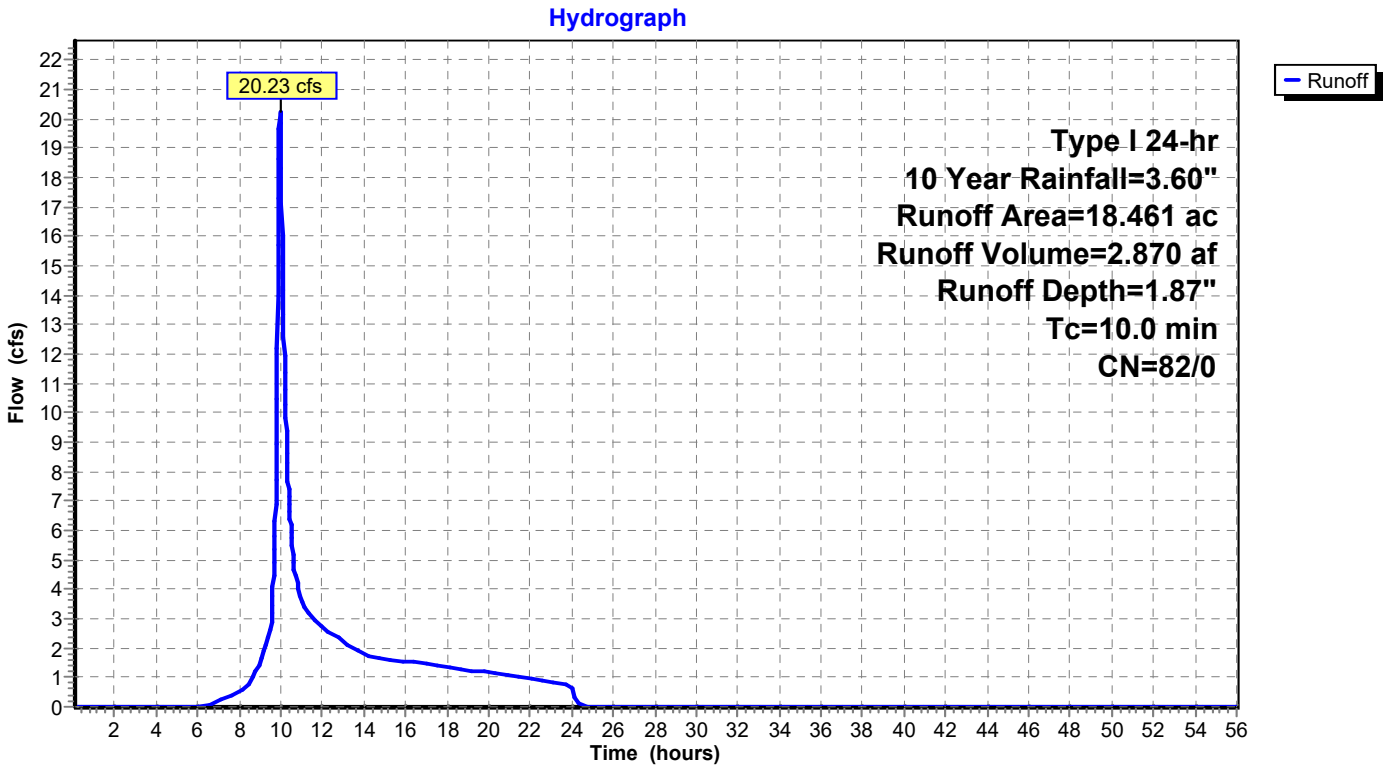
Runoff = 20.23 cfs @ 9.97 hrs, Volume= 2.870 af, Depth= 1.87"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
18.461	82	Row crops, SR + CR, Good, HSG C
18.461	82	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry, SCS Method taken from Catchment in ACAD file**
7.0	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 13b-Ex: Subcat 13b-Ex



Summary for Subcatchment 13c-Ex: Subcat 13c-Ex

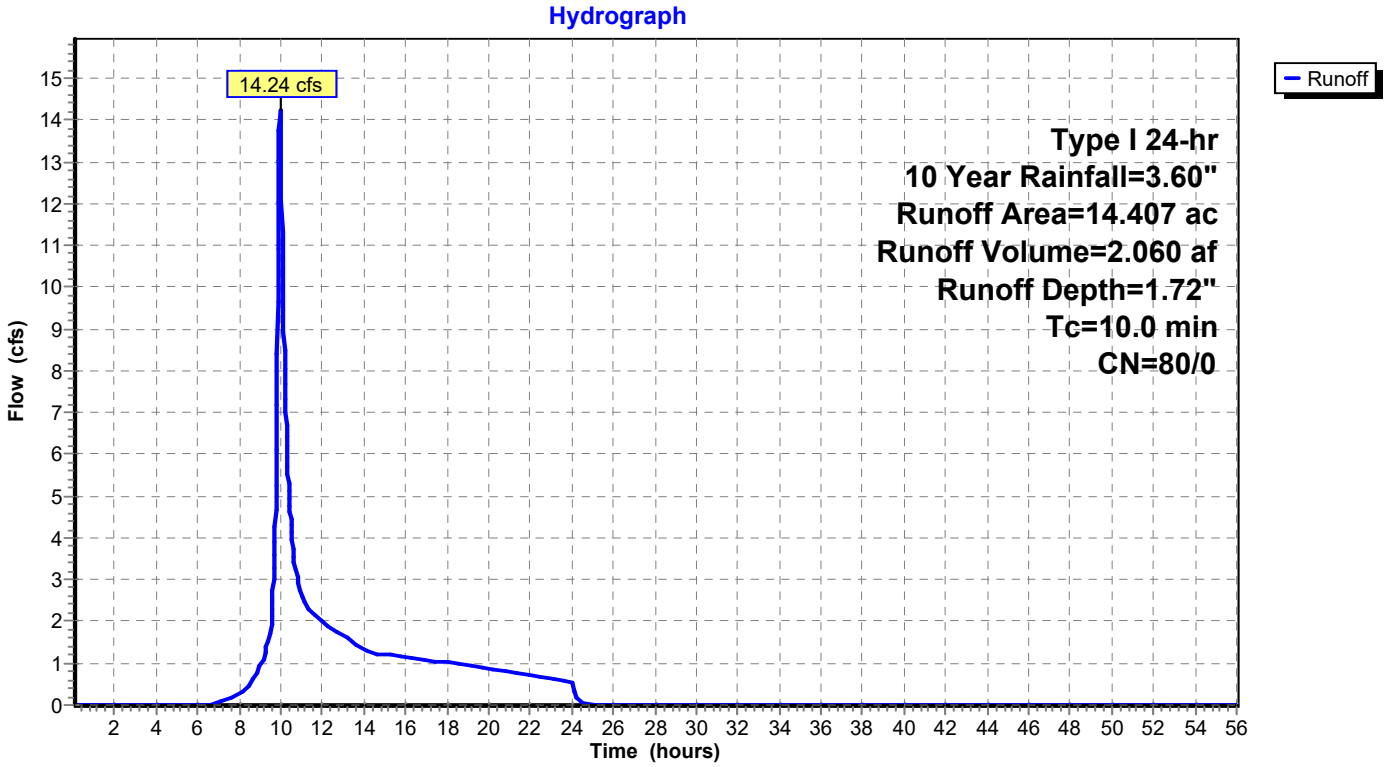
Runoff = 14.24 cfs @ 9.97 hrs, Volume= 2.060 af, Depth= 1.72"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
3.718	75	Row crops, SR + CR, Good, HSG B
10.689	82	Row crops, SR + CR, Good, HSG C
14.407	80	Weighted Average
14.407	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9					**Direct Entry, SCS Method taken from Catchment in ACAD file**
6.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 13c-Ex: Subcat 13c-Ex



Summary for Subcatchment 14: Subcat 14

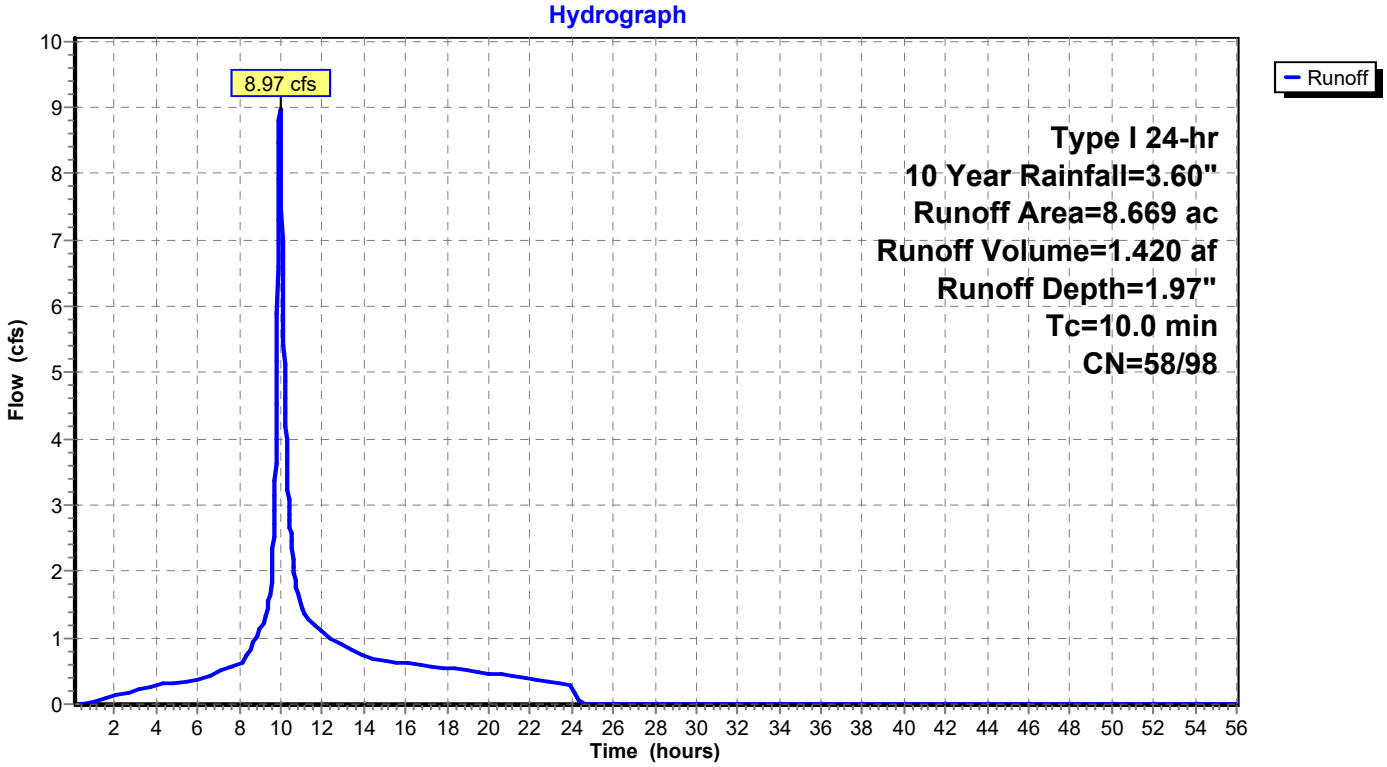
Runoff = 8.97 cfs @ 9.96 hrs, Volume= 1.420 af, Depth= 1.97"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
4.224	58	Meadow, non-grazed, HSG B
4.445	98	Paved roads w/curbs & sewers, HSG B
8.669	79	Weighted Average
4.224	58	48.73% Pervious Area
4.445	98	51.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6					**Direct Entry, SCS Method taken from Catchment in ACAD file**
8.6	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 14: Subcat 14



Summary for Subcatchment 14a{(1)}-Ex: Subcat 14a{(1)}-Ex

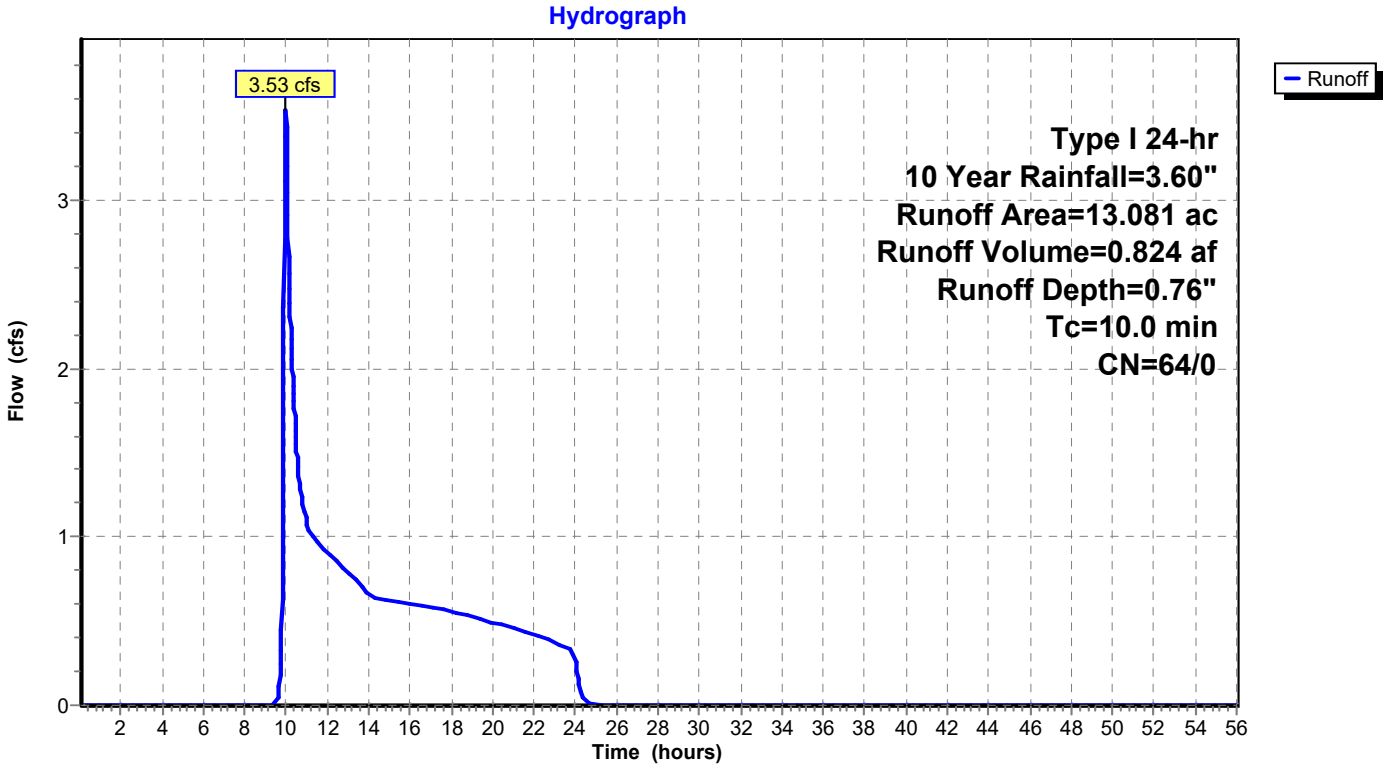
Runoff = 3.53 cfs @ 9.99 hrs, Volume= 0.824 af, Depth= 0.76"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
0.000	58	Meadow, non-grazed, HSG B
8.116	58	Meadow, non-grazed, HSG B
2.383	75	Row crops, SR + CR, Good, HSG B
0.000	75	Row crops, SR + CR, Good, HSG B
2.581	75	Row crops, SR + CR, Good, HSG B
13.081	64	Weighted Average
13.081	64	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**
8.7	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 14a{(1)}-Ex: Subcat 14a{(1)}-Ex



Summary for Subcatchment 14a{(2)}-Ex: Subcat 14a{(2)}-Ex

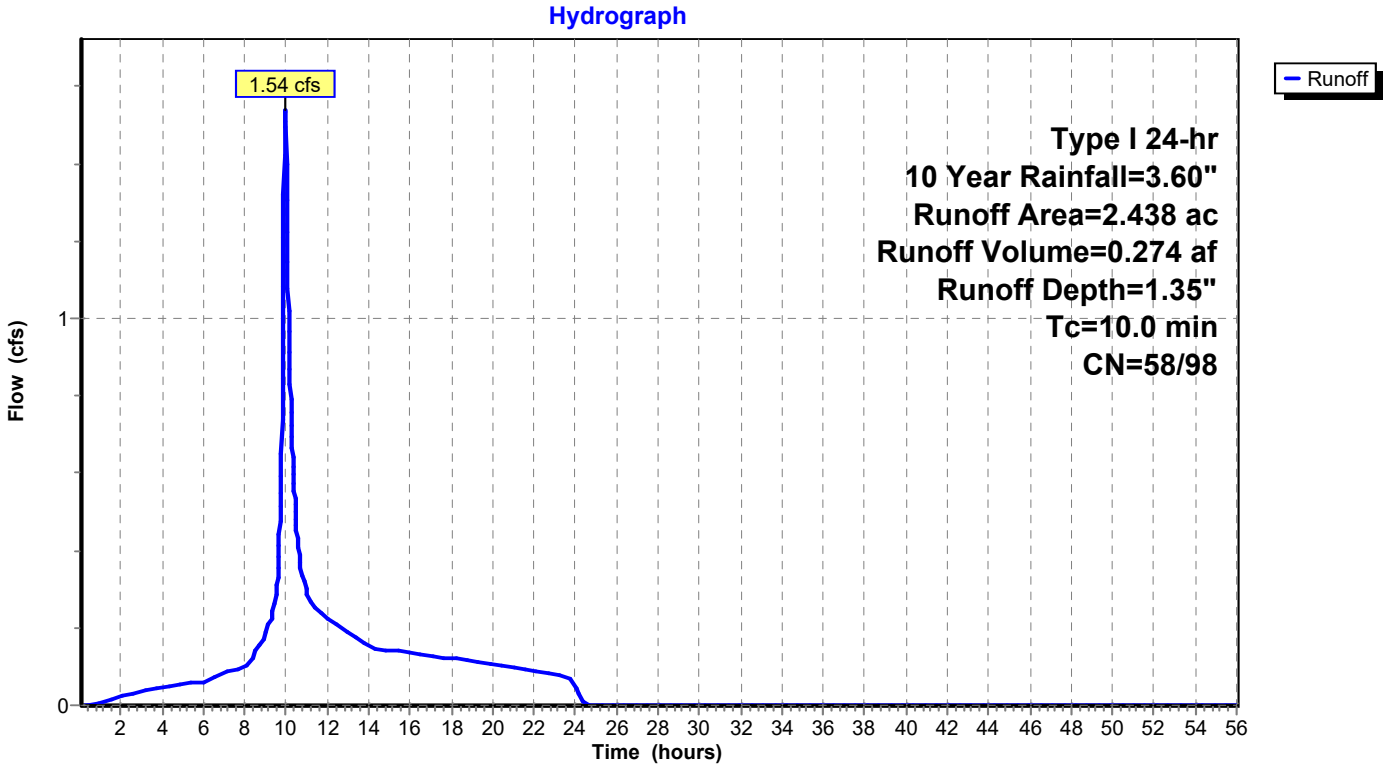
Runoff = 1.54 cfs @ 9.97 hrs, Volume= 0.274 af, Depth= 1.35"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
1.711	58	Meadow, non-grazed, HSG B
0.726	98	Paved roads w/curbs & sewers, HSG B
0.000	75	Row crops, SR + CR, Good, HSG B
0.000	75	Row crops, SR + CR, Good, HSG B
2.438	70	Weighted Average
1.711	58	70.20% Pervious Area
0.726	98	29.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**
4.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 14a{(2)}-Ex: Subcat 14a{(2)}-Ex



Summary for Subcatchment 14b-Ex: Subcat 14b-Ex

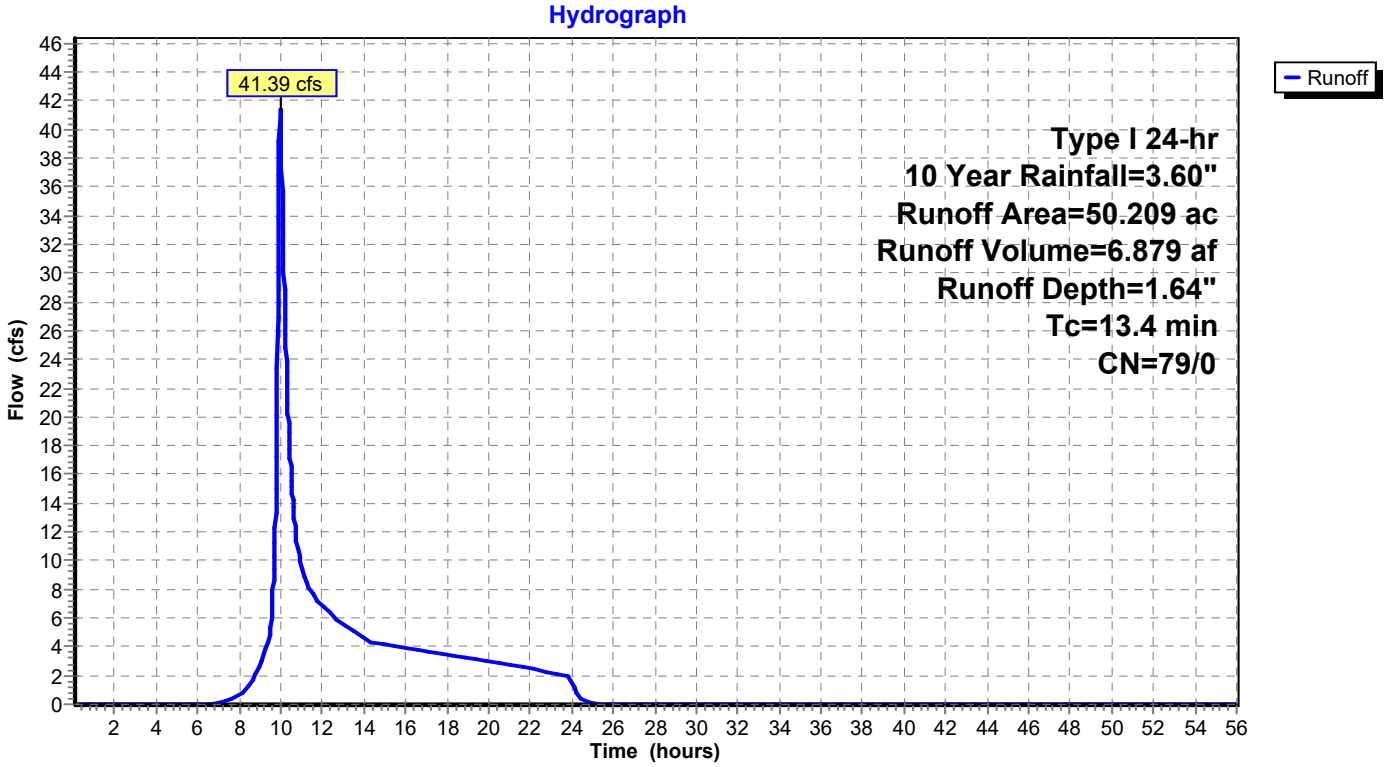
Runoff = 41.39 cfs @ 9.98 hrs, Volume= 6.879 af, Depth= 1.64"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
13.606	75	Row crops, SR + CR, Good, HSG B
8.804	75	Row crops, SR + CR, Good, HSG B
0.005	82	Row crops, SR + CR, Good, HSG C
27.793	82	Row crops, SR + CR, Good, HSG C
50.209	79	Weighted Average
50.209	79	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 14b-Ex: Subcat 14b-Ex



Summary for Subcatchment 14c{(0)}-Ex: Subcat 14c{(0)}-Ex

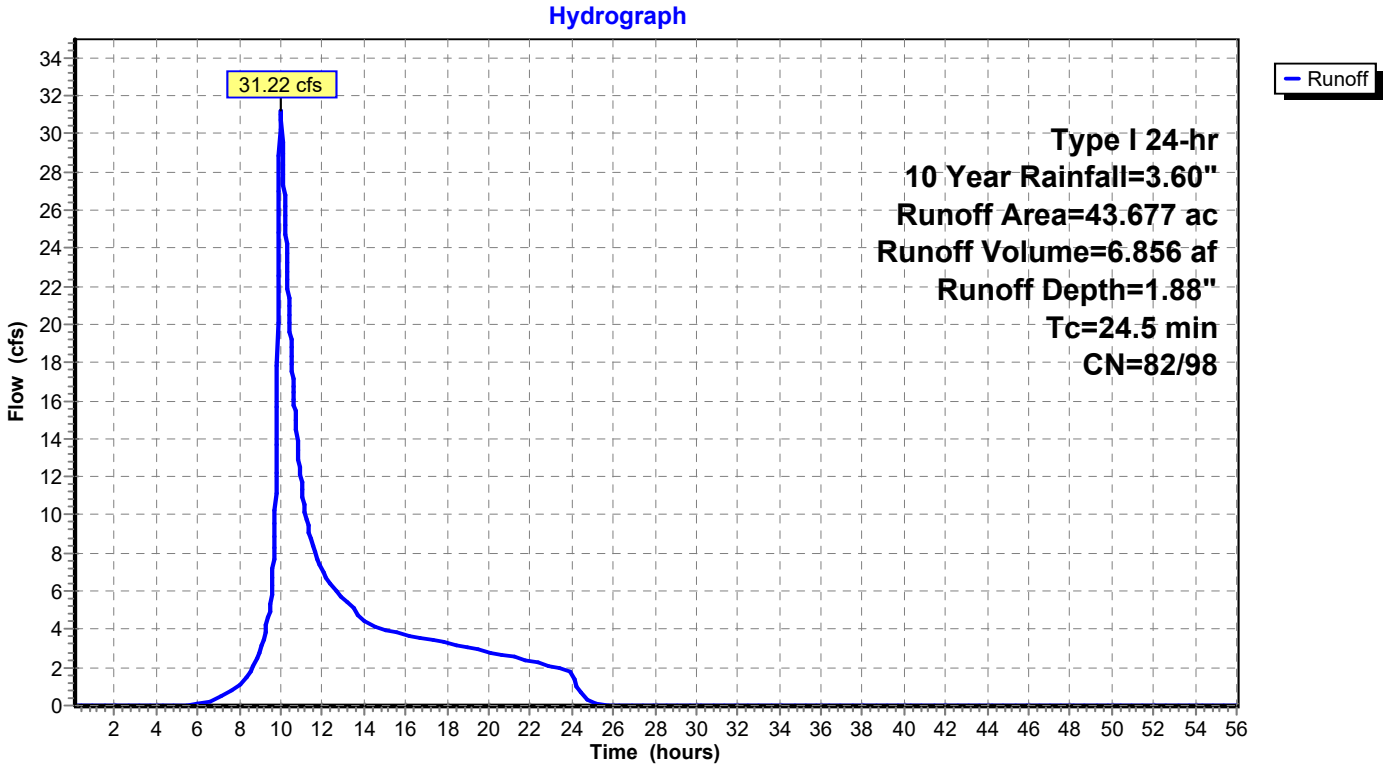
Runoff = 31.22 cfs @ 10.00 hrs, Volume= 6.856 af, Depth= 1.88"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
0.486	98	Paved roads w/curbs & sewers, HSG C
0.041	98	Paved roads w/curbs & sewers, HSG C
37.308	82	Row crops, SR + CR, Good, HSG C
0.070	82	Row crops, SR + CR, Good, HSG C
5.772	82	Row crops, SR + CR, Good, HSG C
43.677	82	Weighted Average
43.150	82	98.79% Pervious Area
0.527	98	1.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 14c{(0)}-Ex: Subcat 14c{(0)}-Ex



Summary for Subcatchment 14c{(1)}-Ex: Subcat 14c{(1)}-Ex

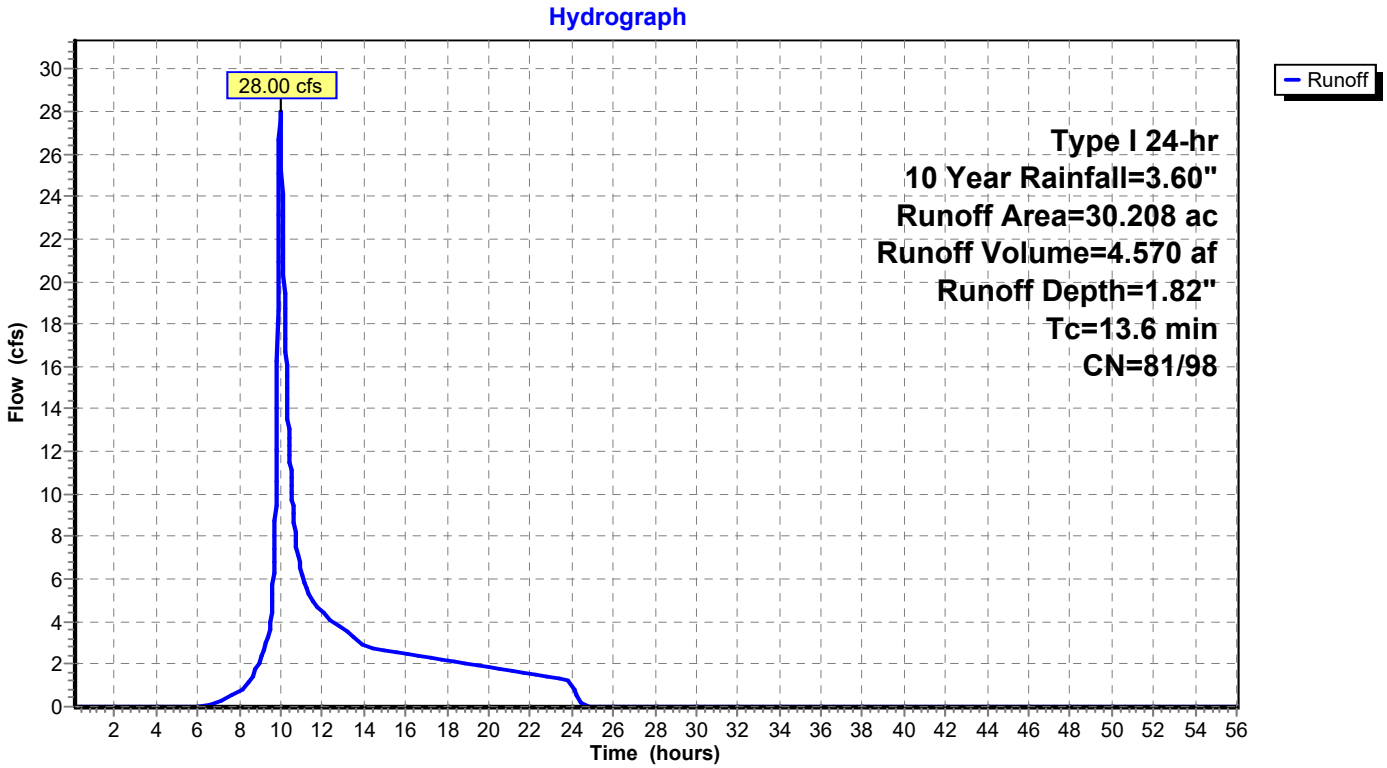
Runoff = 28.00 cfs @ 9.98 hrs, Volume= 4.570 af, Depth= 1.82"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
0.093	98	Paved roads w/curbs & sewers, HSG B
0.394	98	Paved roads w/curbs & sewers, HSG C
2.571	75	Row crops, SR + CR, Good, HSG B
2.743	75	Row crops, SR + CR, Good, HSG B
13.825	82	Row crops, SR + CR, Good, HSG C
10.454	82	Row crops, SR + CR, Good, HSG C
0.128	82	Row crops, SR + CR, Good, HSG C
30.208	81	Weighted Average
29.721	81	98.39% Pervious Area
0.486	98	1.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 14c{(1)}-Ex: Subcat 14c{(1)}-Ex



Summary for Subcatchment 14c{(2)}-Ex: Subcat 14c{(2)}-Ex

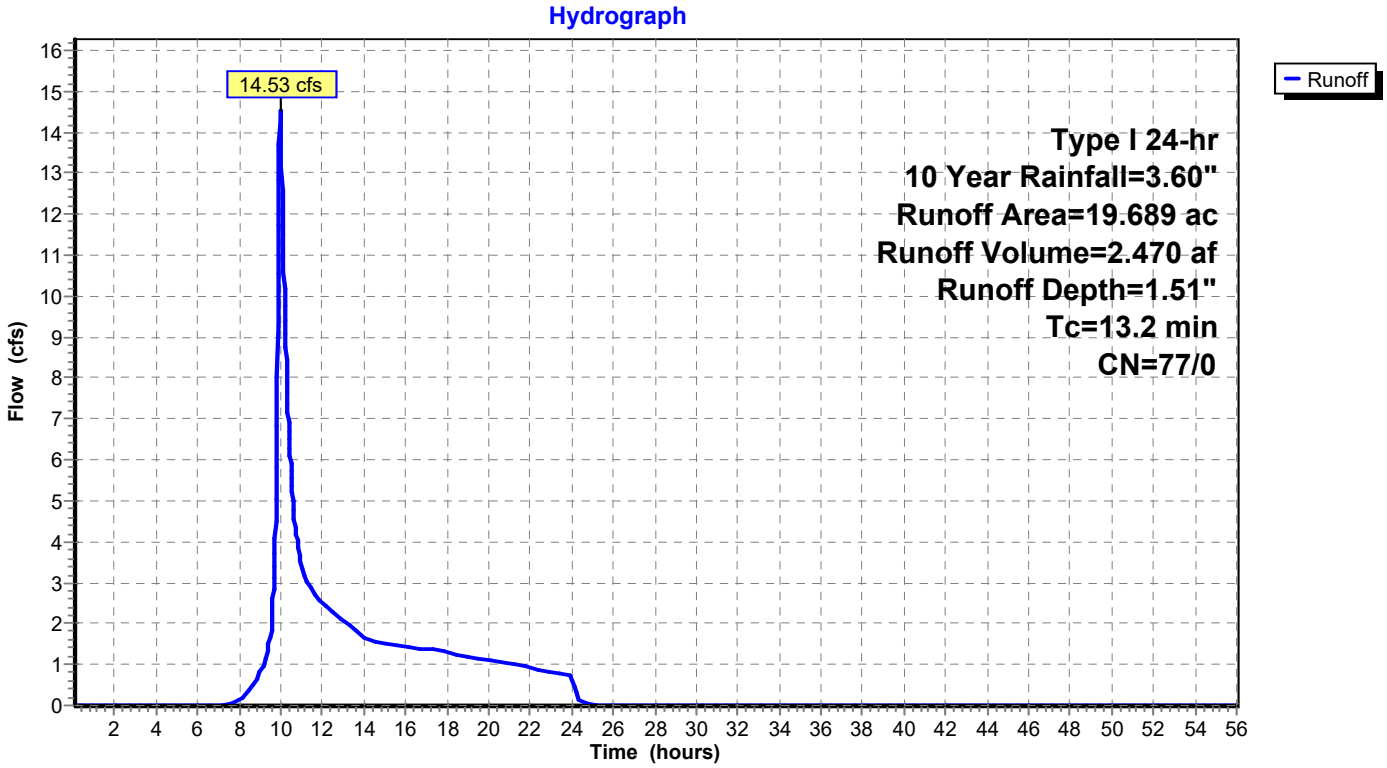
Runoff = 14.53 cfs @ 9.98 hrs, Volume= 2.470 af, Depth= 1.51"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
0.112	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
10.117	75	Row crops, SR + CR, Good, HSG B
3.200	75	Row crops, SR + CR, Good, HSG B
6.261	82	Row crops, SR + CR, Good, HSG C
19.689	77	Weighted Average
19.689	77	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 14c{(2)}-Ex: Subcat 14c{(2)}-Ex



Summary for Subcatchment 14c{(3)}-Ex: Subcat 14c{(3)}-Ex

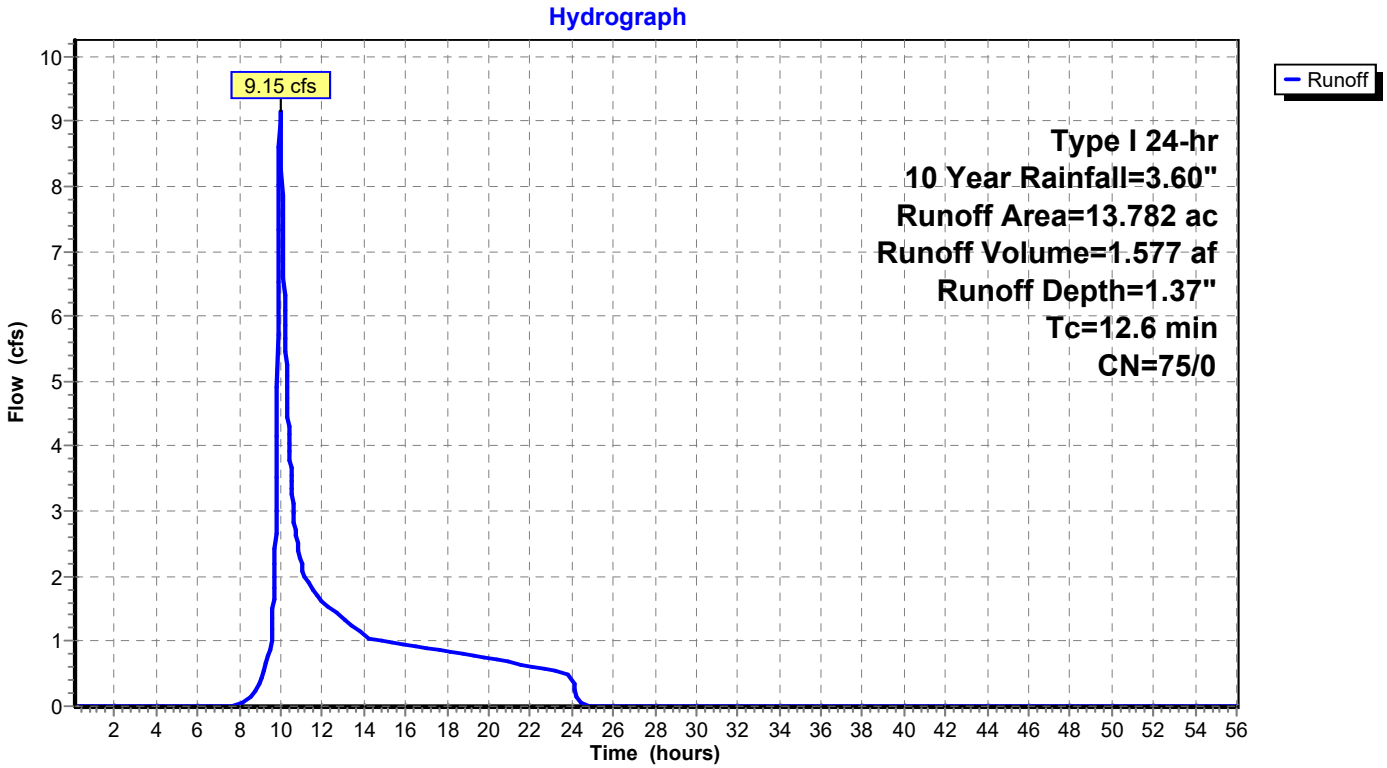
Runoff = 9.15 cfs @ 9.98 hrs, Volume= 1.577 af, Depth= 1.37"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
6.980	75	Row crops, SR + CR, Good, HSG B
0.000	75	Row crops, SR + CR, Good, HSG B
6.802	75	Row crops, SR + CR, Good, HSG B
13.782	75	Weighted Average
13.782	75	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 14c{(3)}-Ex: Subcat 14c{(3)}-Ex



Summary for Subcatchment 14d-Ex: Subcat 14d-Ex

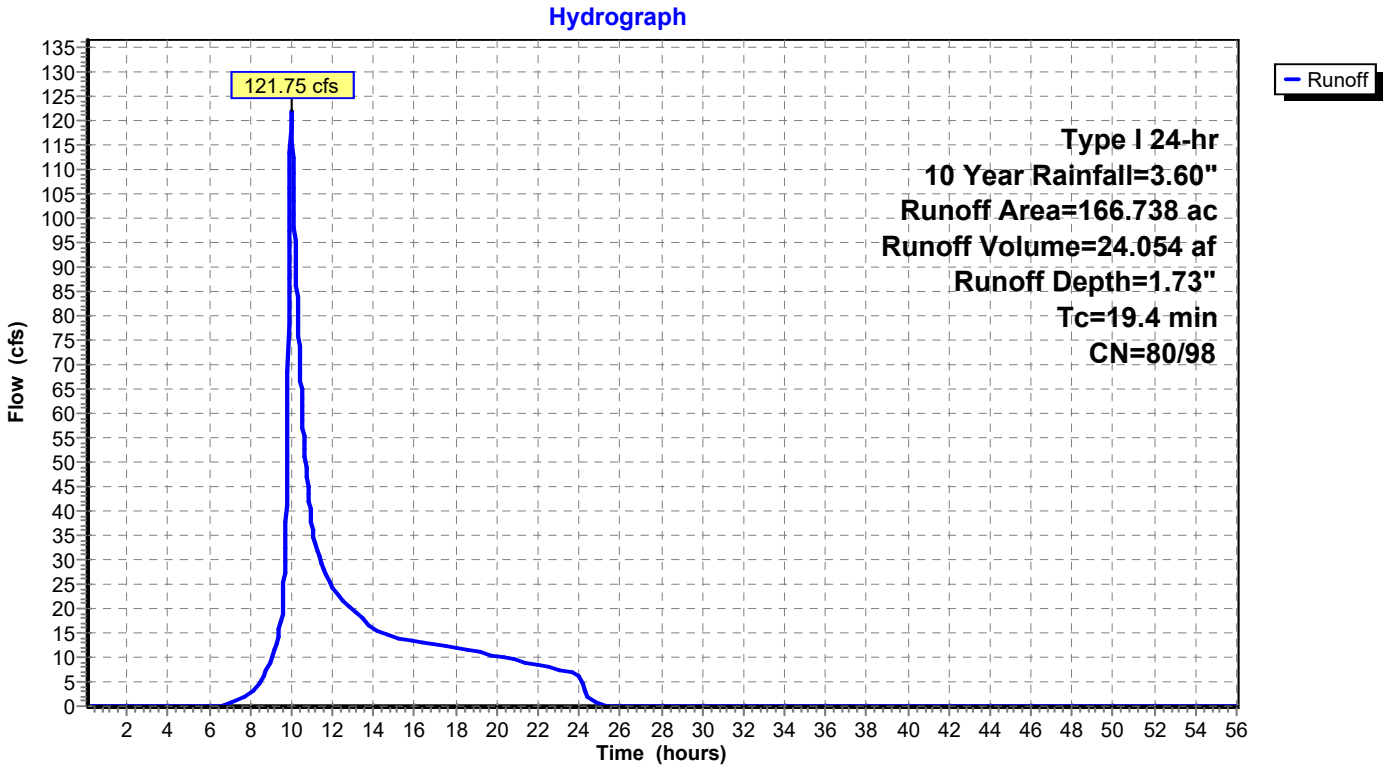
Runoff = 121.75 cfs @ 9.99 hrs, Volume= 24.054 af, Depth= 1.73"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
0.000	71	Meadow, non-grazed, HSG C
0.000	71	Meadow, non-grazed, HSG C
0.000	71	Meadow, non-grazed, HSG C
0.000	71	Meadow, non-grazed, HSG C
0.000	71	Meadow, non-grazed, HSG C
0.440	98	Paved roads w/curbs & sewers, HSG B
0.500	98	Paved roads w/curbs & sewers, HSG C
0.580	98	Paved roads w/curbs & sewers, HSG C
22.046	75	Row crops, SR + CR, Good, HSG B
2.662	75	Row crops, SR + CR, Good, HSG B
18.916	75	Row crops, SR + CR, Good, HSG B
108.025	82	Row crops, SR + CR, Good, HSG C
6.305	82	Row crops, SR + CR, Good, HSG C
7.263	82	Row crops, SR + CR, Good, HSG C
166.738	80	Weighted Average
165.218	80	99.09% Pervious Area
1.520	98	0.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.4					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 14d-Ex: Subcat 14d-Ex



Summary for Subcatchment 14e-Ex: Subcat 14e-Ex

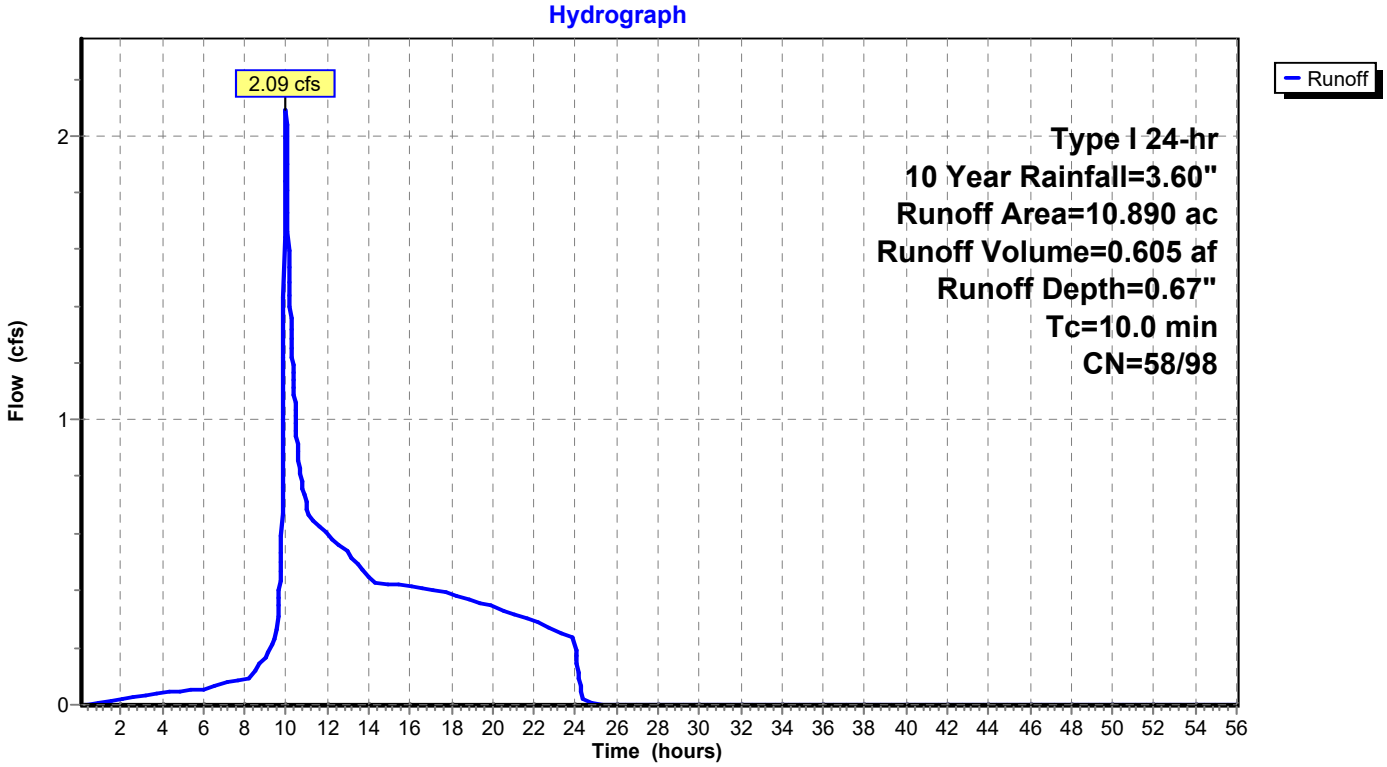
Runoff = 2.09 cfs @ 9.99 hrs, Volume= 0.605 af, Depth= 0.67"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 10 Year Rainfall=3.60"

Area (ac)	CN	Description
10.185	58	Meadow, non-grazed, HSG B
0.003	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.043	77	Natural western desert, HSG B
0.659	98	Paved roads w/curbs & sewers, HSG B
10.890	60	Weighted Average
10.231	58	93.95% Pervious Area
0.659	98	6.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4					**Direct Entry, SCS Method taken from Catchment in ACAD file**
9.4	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 14e-Ex: Subcat 14e-Ex



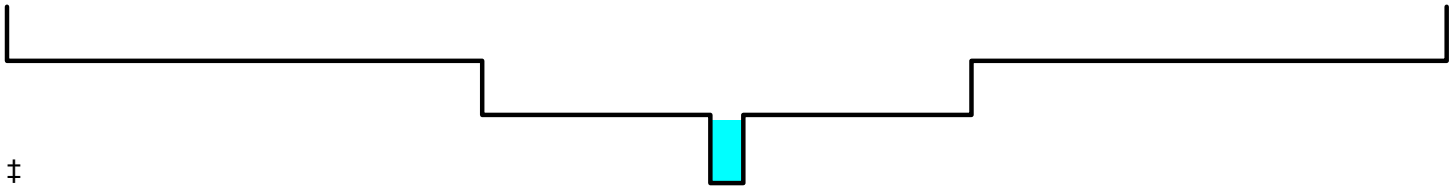
Summary for Reach 6R: Reach 1c

Inflow Area = 784.583 ac, 0.00% Impervious, Inflow Depth = 0.59" for 10 Year event
Inflow = 63.40 cfs @ 10.14 hrs, Volume= 38.668 af
Outflow = 62.08 cfs @ 10.22 hrs, Volume= 38.668 af, Atten= 2%, Lag= 4.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.26 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 4.26 fps, Avg. Travel Time= 3.2 min

Peak Storage= 12,095 cf @ 10.22 hrs
Average Depth at Peak Storage= 2.31'
Bank-Full Depth= 6.52' Flow Area= 758.7 sf, Capacity= 4,878.97 cfs

Custom stage-perimeter table, n= 0.024
102 Intermediate values determined by Multi-point interpolation
Length= 830.0' Slope= 0.0031 '/'
Inlet Invert= 841.43', Outlet Invert= 838.82'



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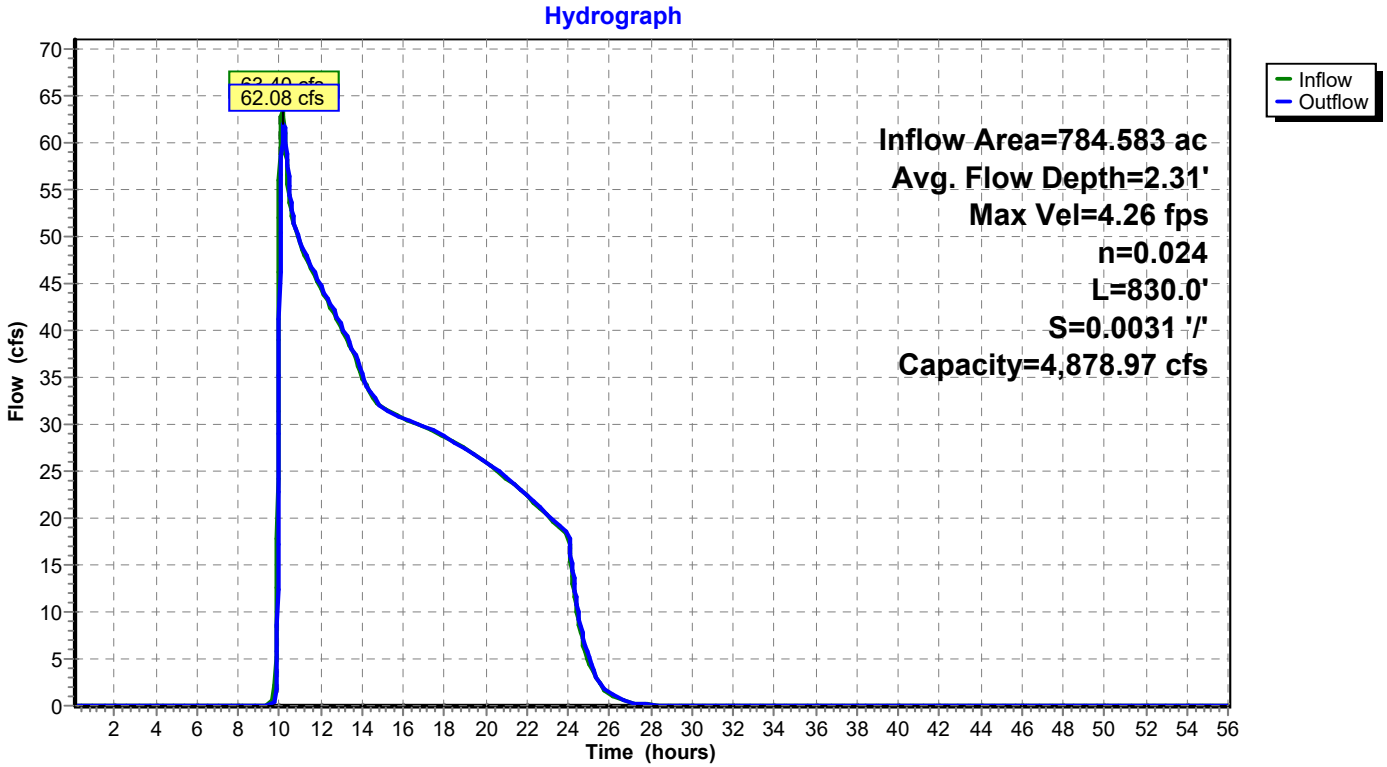
Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.52	15.9	11.7	13,197	67.73
4.52	204.4	231.7	169,652	652.79
6.52	758.7	301.0	629,721	4,878.97

Reach 6R: Reach 1c



Summary for Reach 7R: Reach 1b

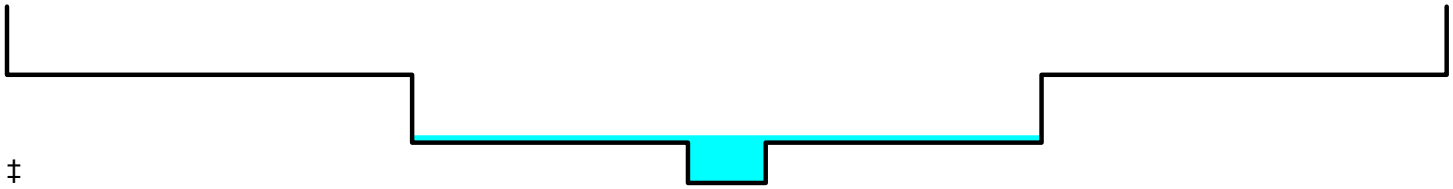
[62] Hint: Exceeded Reach 6R OUTLET depth by 0.82' @ 9.90 hrs

Inflow Area = 833.262 ac, 0.00% Impervious, Inflow Depth = 0.99" for 10 Year event
Inflow = 205.65 cfs @ 10.13 hrs, Volume= 68.684 af
Outflow = 201.96 cfs @ 10.19 hrs, Volume= 68.684 af, Atten= 2%, Lag= 3.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.15 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 3.22 fps, Avg. Travel Time= 4.6 min

Peak Storage= 42,919 cf @ 10.19 hrs
Average Depth at Peak Storage= 1.40'
Bank-Full Depth= 5.18' Flow Area= 896.3 sf, Capacity= 8,865.90 cfs

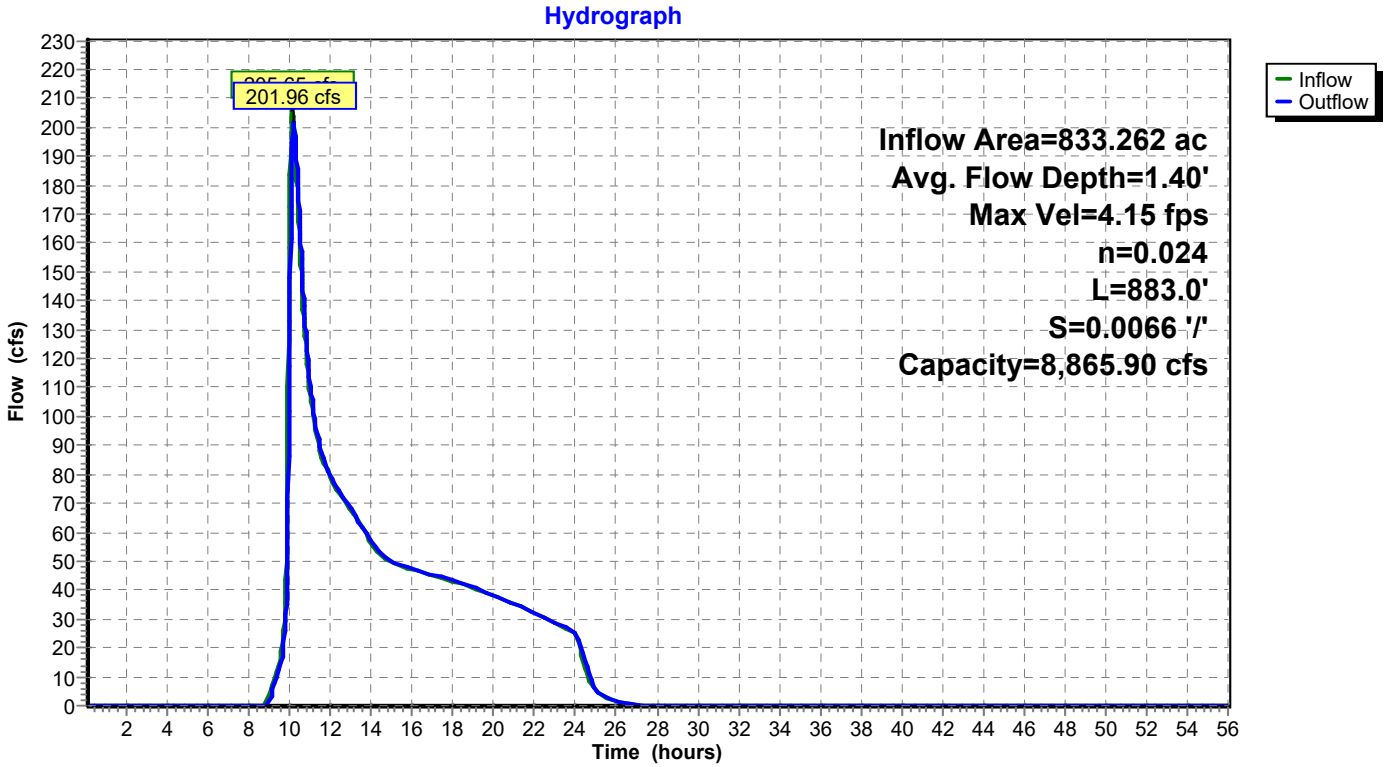
Custom stage-perimeter table, n= 0.024
102 Intermediate values determined by Multi-point interpolation
Length= 883.0' Slope= 0.0066 '/'
Inlet Invert= 838.82', Outlet Invert= 833.00'



‡

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.18	19.4	38.8	17,130	61.43
3.18	286.2	275.2	252,715	1,476.75
5.18	896.3	324.7	791,433	8,865.90

Reach 7R: Reach 1b



Summary for Reach 8R: Reach 1a

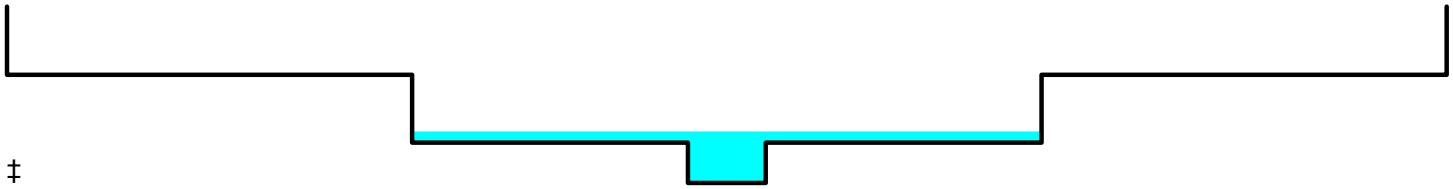
[62] Hint: Exceeded Reach 7R OUTLET depth by 0.36' @ 18.26 hrs

Inflow Area = 879.875 ac, 0.06% Impervious, Inflow Depth = 0.97" for 10 Year event
Inflow = 206.14 cfs @ 10.19 hrs, Volume= 70.814 af
Outflow = 203.68 cfs @ 10.25 hrs, Volume= 70.814 af, Atten= 1%, Lag= 3.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.17 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 2.35 fps, Avg. Travel Time= 4.1 min

Peak Storage= 37,435 cf @ 10.25 hrs
Average Depth at Peak Storage= 1.52'
Bank-Full Depth= 5.18' Flow Area= 896.3 sf, Capacity= 6,396.21 cfs

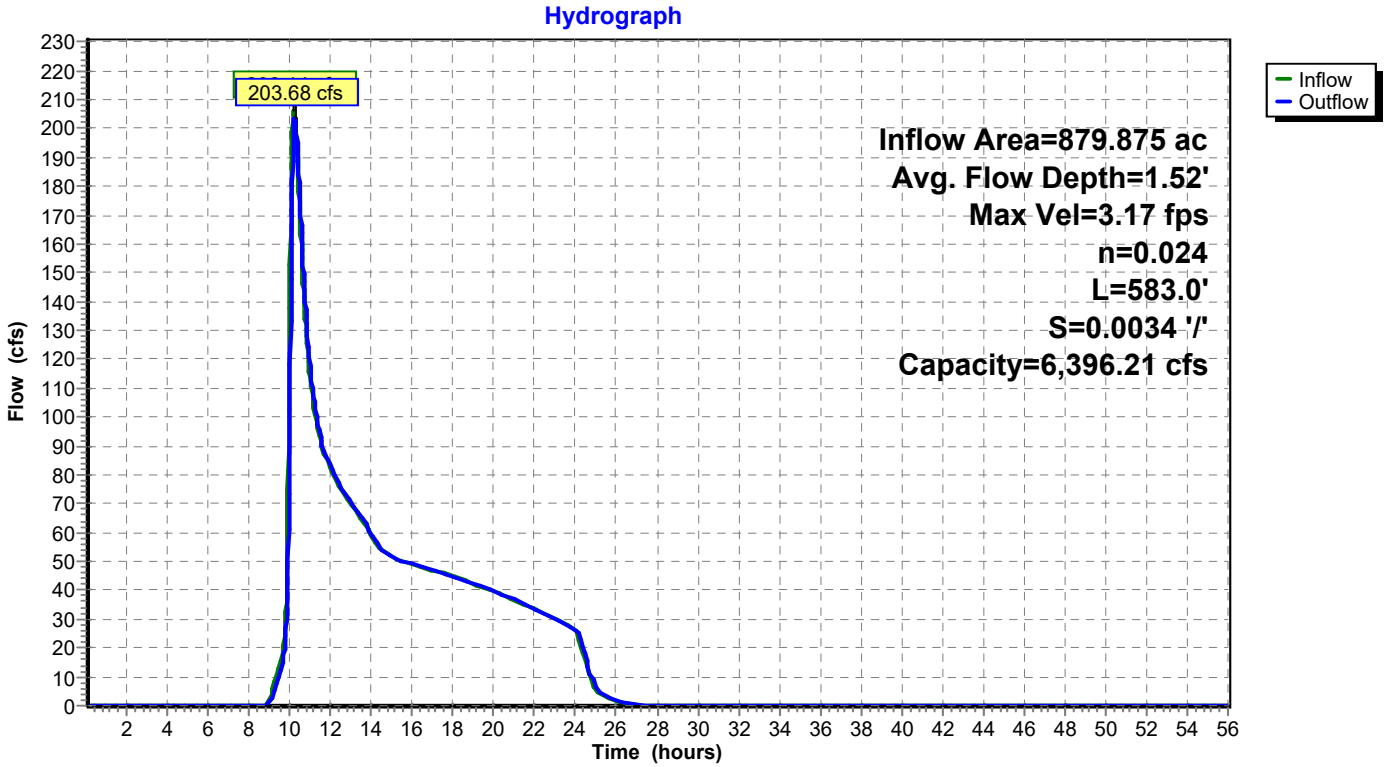
Custom stage-perimeter table, n= 0.024
102 Intermediate values determined by Multi-point interpolation
Length= 583.0' Slope= 0.0034 '/'
Inlet Invert= 833.00', Outlet Invert= 831.00'



‡

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.18	19.4	38.8	11,310	44.32
3.18	286.2	275.2	166,855	1,065.38
5.18	896.3	324.7	522,543	6,396.21

Reach 8R: Reach 1a



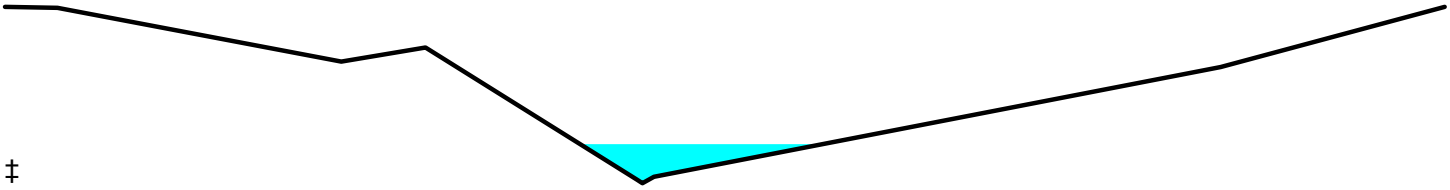
Summary for Reach 17R: Reach 1d

Inflow = 28.12 cfs @ 10.00 hrs, Volume= 0.605 af
Outflow = 19.66 cfs @ 10.10 hrs, Volume= 0.605 af, Atten= 30%, Lag= 5.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.99 fps, Min. Travel Time= 7.1 min
Avg. Velocity = 0.48 fps, Avg. Travel Time= 29.4 min

Peak Storage= 8,327 cf @ 10.10 hrs
Average Depth at Peak Storage= 0.43'
Bank-Full Depth= 1.96' Flow Area= 247.0 sf, Capacity= 1,276.84 cfs

Custom cross-section, Length= 841.0' Slope= 0.0110 '/' (102 Elevation Intervals)
Constant n= 0.027
Inlet Invert= 853.60', Outlet Invert= 844.31'

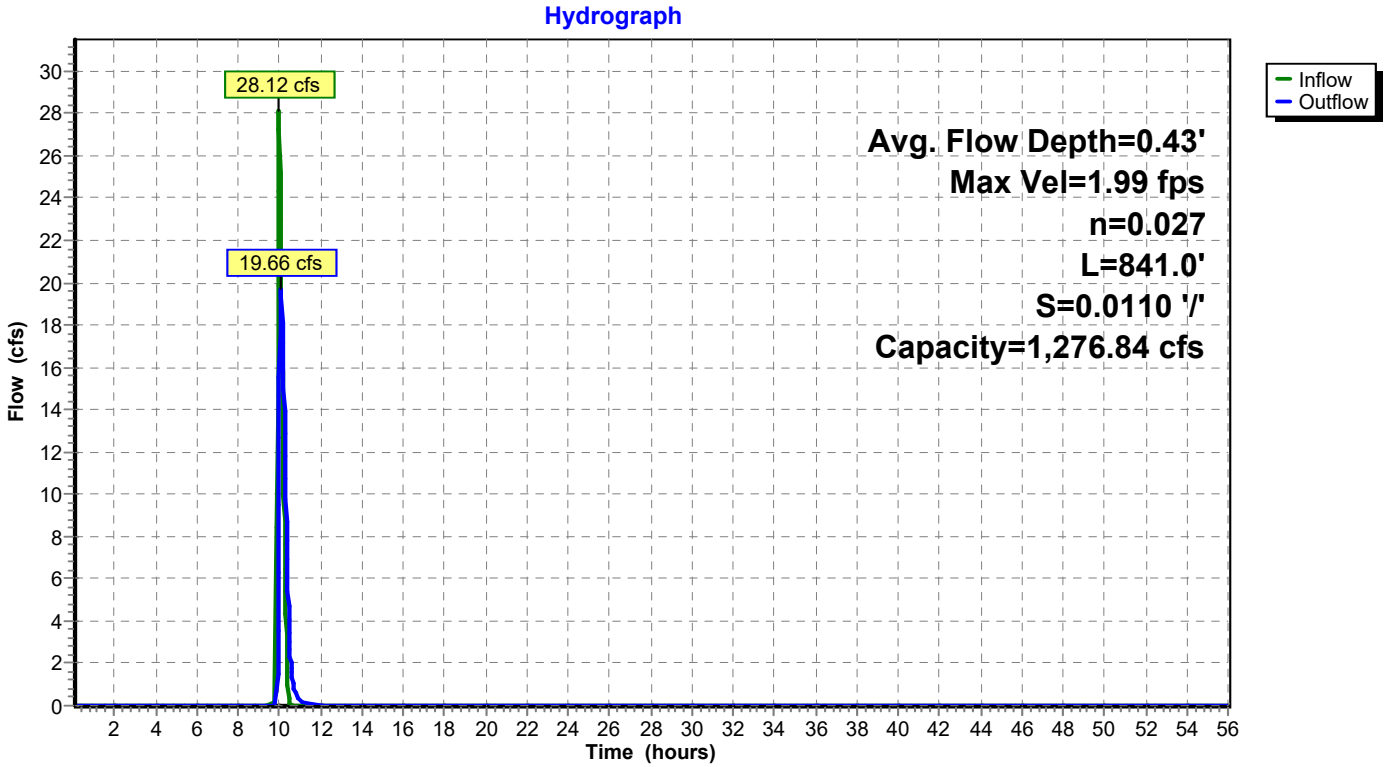


‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
8.56	851.18	0.00
19.24	851.17	0.01
76.81	850.57	0.61
93.88	850.73	0.45
136.80	849.26	1.92
137.90	849.22	1.96
140.29	849.29	1.89
255.27	850.51	0.67
300.75	851.18	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.04	0.0	2.5	42	0.02
0.07	0.2	4.4	128	0.09
1.29	97.3	155.0	81,870	413.13
1.35	106.8	160.8	89,836	469.56
1.51	136.4	208.8	114,697	594.12
1.95	244.1	280.9	205,277	1,285.78
1.96	247.0	292.2	207,687	1,276.84

Reach 17R: Reach 1d



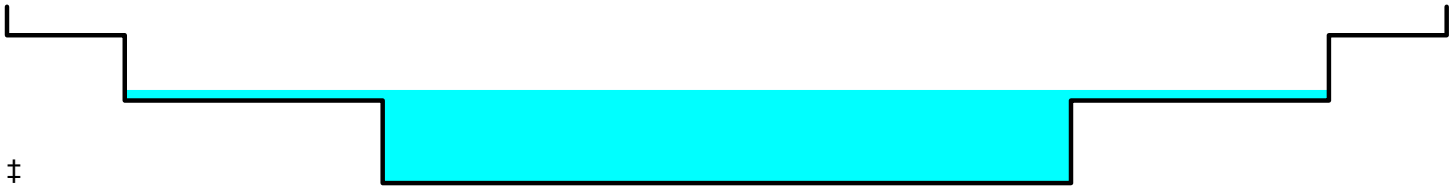
Summary for Reach 18R: Linne Road Grassed Chl

Inflow Area = 276.531 ac, 1.18% Impervious, Inflow Depth = 0.49" for 10 Year event
Inflow = 18.58 cfs @ 10.09 hrs, Volume= 11.335 af
Outflow = 17.83 cfs @ 10.22 hrs, Volume= 11.335 af, Atten= 4%, Lag= 7.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.51 fps, Min. Travel Time= 7.9 min
Avg. Velocity = 2.27 fps, Avg. Travel Time= 8.7 min

Peak Storage= 8,452 cf @ 10.22 hrs
Average Depth at Peak Storage= 0.59'
Bank-Full Depth= 1.11' Flow Area= 18.0 sf, Capacity= 66.25 cfs

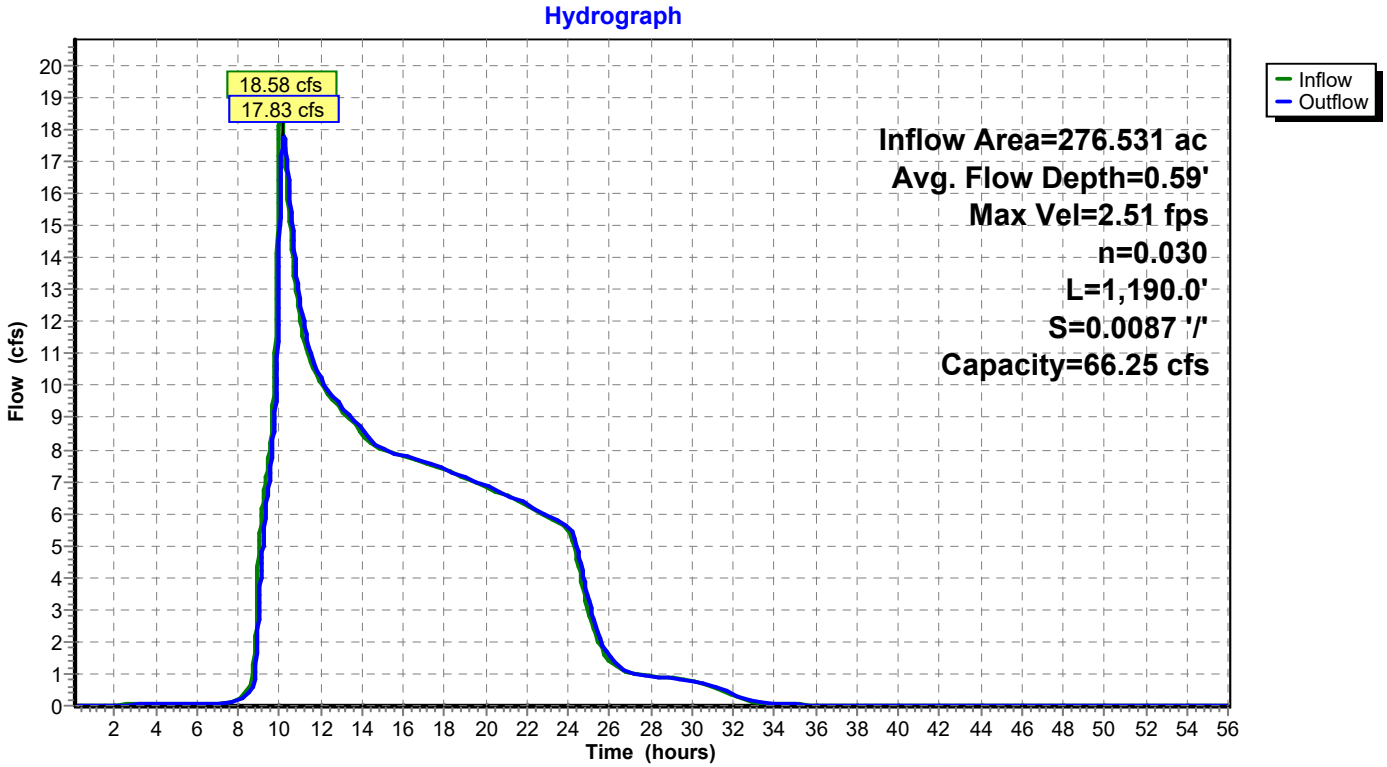
Custom stage-perimeter table, n= 0.030
100 Intermediate values determined by Multi-point interpolation
Length= 1,190.0' Slope= 0.0087 '/'
Inlet Invert= 841.60', Outlet Invert= 831.20'



‡

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.52	5.8	16.9	6,916	13.23
0.93	13.8	22.4	16,431	46.30
1.11	18.0	25.4	21,420	66.25

Reach 18R: Linne Road Grassed Chl



Summary for Pond 17P: Gran Cielo Dwy

[58] Hint: Peaked 0.38' above defined flood level

Inflow Area = 166.738 ac, 0.91% Impervious, Inflow Depth = 1.73" for 10 Year event
Inflow = 121.75 cfs @ 9.99 hrs, Volume= 24.054 af
Outflow = 121.40 cfs @ 10.00 hrs, Volume= 24.054 af, Atten= 0%, Lag= 0.6 min
Primary = 93.28 cfs @ 10.00 hrs, Volume= 23.449 af
Secondary = 0.00 cfs @ 0.10 hrs, Volume= 0.000 af
Tertiary = 28.12 cfs @ 10.00 hrs, Volume= 0.605 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Peak Elev= 854.84' @ 10.00 hrs Surf.Area= 7,749 sf Storage= 9,739 cf
Flood Elev= 854.46' Surf.Area= 6,947 sf Storage= 6,934 cf

Plug-Flow detention time= 1.9 min calculated for 24.045 af (100% of inflow)
Center-of-Mass det. time= 1.9 min (831.7 - 829.8)

Volume	Invert	Avail.Storage	Storage Description
#1	852.84'	22,270 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.84	0	0	0
853.14	2,586	388	388
854.14	6,275	4,431	4,818
855.14	8,376	7,326	12,144
856.14	11,876	10,126	22,270

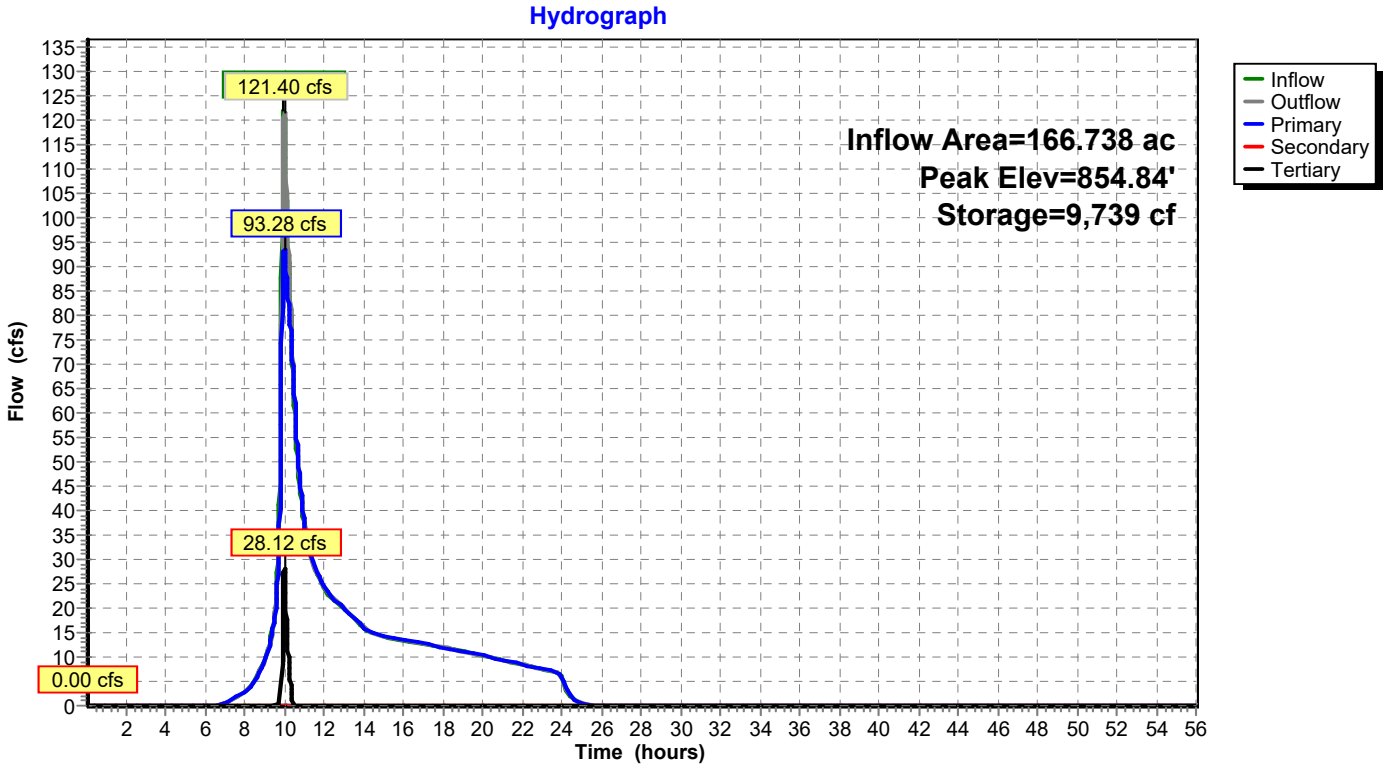
Device	Routing	Invert	Outlet Devices
#1	Primary	852.84'	**30.0" Round Culvert X 6.00** L= 77.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 852.84' / 851.76' S= 0.0140 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Secondary	854.90'	**Special & User-Defined** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 Disch. (cfs) 0.000 0.010 0.200 0.710 1.580 2.700 4.030 5.690 7.620 9.790 12.320 15.140 18.190 21.460 24.930 28.580 32.420 36.420 40.580 44.900 49.360 53.970
#3	Tertiary	854.40'	**Special & User-Defined** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 Disch. (cfs) 0.000 0.080 3.470 10.790 21.890 36.810 55.720 78.890 106.600 138.580 174.620 214.630 258.590 306.440 358.240 413.470 471.810 533.060 597.050 663.650 732.760 804.270 878.100 954.180 1,032.440 1,112.810 1,195.240

Primary OutFlow Max=93.28 cfs @ 10.00 hrs HW=854.84' TW=851.36' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 93.28 cfs @ 5.05 fps)

Secondary OutFlow Max=0.00 cfs @ 0.10 hrs HW=852.84' TW=844.56' (Dynamic Tailwater)
└─**2=Special & User-Defined** (Controls 0.00 cfs)

Tertiary OutFlow Max=28.11 cfs @ 10.00 hrs HW=854.84' TW=853.97' (Dynamic Tailwater)
└─**3=Special & User-Defined** (Custom Controls 28.11 cfs)

Pond 17P: Gran Cielo Dwy



Summary for Pond 18P: GC-CkD1

[58] Hint: Peaked 1.23' above defined flood level

Inflow Area = 240.622 ac, 1.05% Impervious, Inflow Depth = 1.74" for 10 Year event
Inflow = 152.23 cfs @ 9.99 hrs, Volume= 34.874 af
Outflow = 145.98 cfs @ 10.05 hrs, Volume= 34.811 af, Atten= 4%, Lag= 3.5 min
Primary = 1.04 cfs @ 8.63 hrs, Volume= 1.606 af
Secondary = 84.29 cfs @ 10.05 hrs, Volume= 27.429 af
Tertiary = 60.65 cfs @ 10.05 hrs, Volume= 5.776 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Peak Elev= 851.40' @ 10.05 hrs Surf.Area= 25,788 sf Storage= 51,119 cf
Flood Elev= 850.17' Surf.Area= 18,994 sf Storage= 23,481 cf

Plug-Flow detention time= 18.6 min calculated for 34.811 af (100% of inflow)
Center-of-Mass det. time= 17.2 min (849.7 - 832.5)

Volume	Invert	Avail.Storage	Storage Description
#1	844.56'	67,617 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.56	10	0	0
845.00	200	46	46
846.00	600	400	446
847.00	1,500	1,050	1,496
848.00	2,166	1,833	3,329
849.00	7,688	4,927	8,256
850.00	16,694	12,191	20,447
850.20	19,400	3,609	24,057
852.00	29,000	43,560	67,617

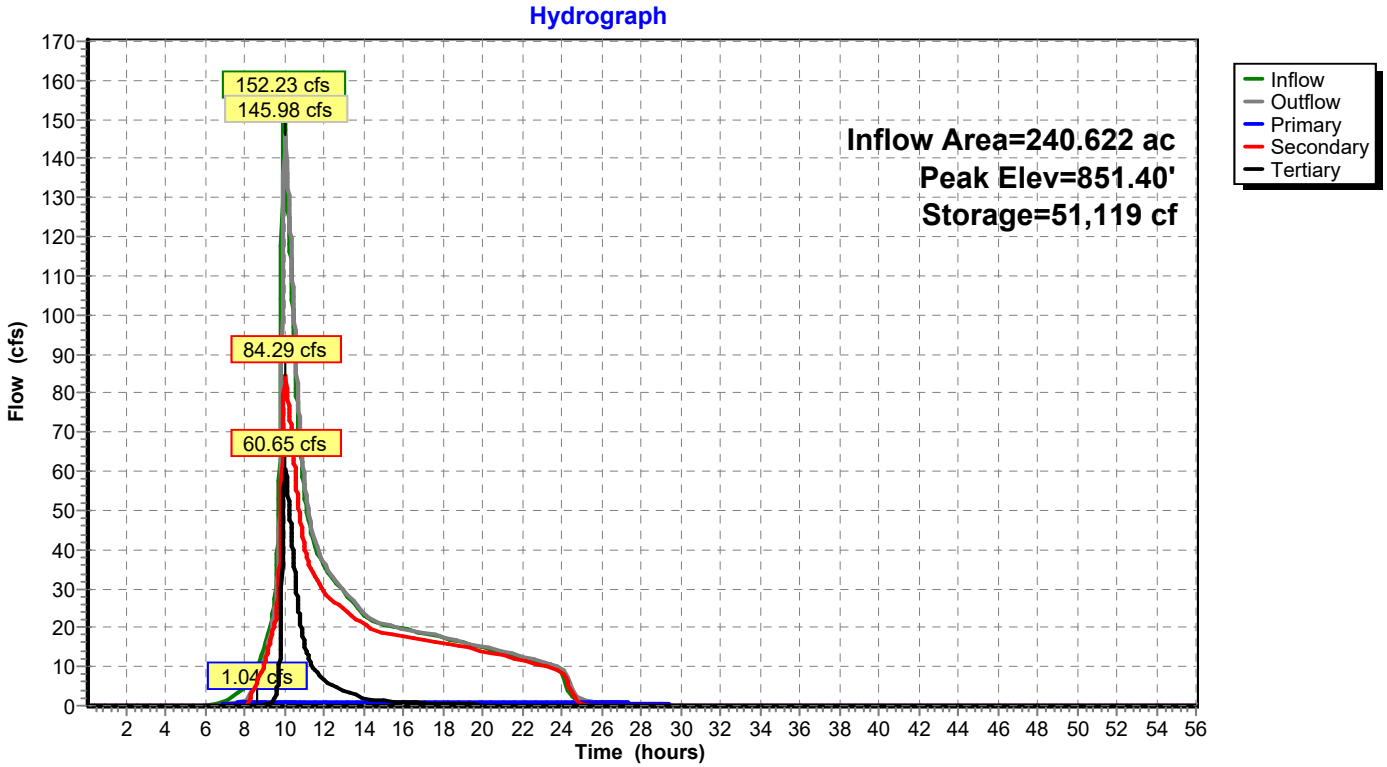
Device	Routing	Invert	Outlet Devices
#1	Primary	847.69'	**6.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 847.69' / 847.67' S= 0.0008 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Secondary	849.50'	**9.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59
#3	Tertiary	850.00'	**Special & User-Defined (CkD1-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 Disch. (cfs) 0.000 0.030 0.560 1.900 4.120 7.220 11.180 15.770 20.900 26.530 32.600 39.090 45.970 53.220 60.820 68.750 77.000 85.570 94.430 103.580 113.010

Primary OutFlow Max=1.03 cfs @ 8.63 hrs HW=849.88' TW=847.98' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.03 cfs @ 5.24 fps)

Secondary OutFlow Max=84.14 cfs @ 10.05 hrs HW=851.40' TW=849.58' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 84.14 cfs @ 4.93 fps)

Tertiary OutFlow Max=60.59 cfs @ 10.05 hrs HW=851.40' TW=0.00' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD1-S)** (Custom Controls 60.59 cfs)

Pond 18P: GC-CkD1



Summary for Pond 19P: GC-CkD2

[58] Hint: Peaked 0.95' above defined flood level

Inflow Area = 260.311 ac, 0.97% Impervious, Inflow Depth = 1.45" for 10 Year event
Inflow = 98.58 cfs @ 10.03 hrs, Volume= 31.505 af
Outflow = 95.08 cfs @ 10.11 hrs, Volume= 31.504 af, Atten= 4%, Lag= 4.7 min
Primary = 1.34 cfs @ 10.11 hrs, Volume= 2.070 af
Secondary = 62.45 cfs @ 10.11 hrs, Volume= 26.745 af
Tertiary = 31.29 cfs @ 10.11 hrs, Volume= 2.688 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Peak Elev= 849.60' @ 10.11 hrs Surf.Area= 29,759 sf Storage= 32,312 cf
Flood Elev= 848.65' Surf.Area= 11,850 sf Storage= 14,787 cf

Plug-Flow detention time= 13.6 min calculated for 31.492 af (100% of inflow)
Center-of-Mass det. time= 13.6 min (895.2 - 881.6)

Volume	Invert	Avail.Storage	Storage Description
#1	846.00'	46,430 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
846.00	267	0	0
847.00	4,055	2,161	2,161
848.00	8,178	6,117	8,278
849.00	13,828	11,003	19,281
850.00	40,470	27,149	46,430

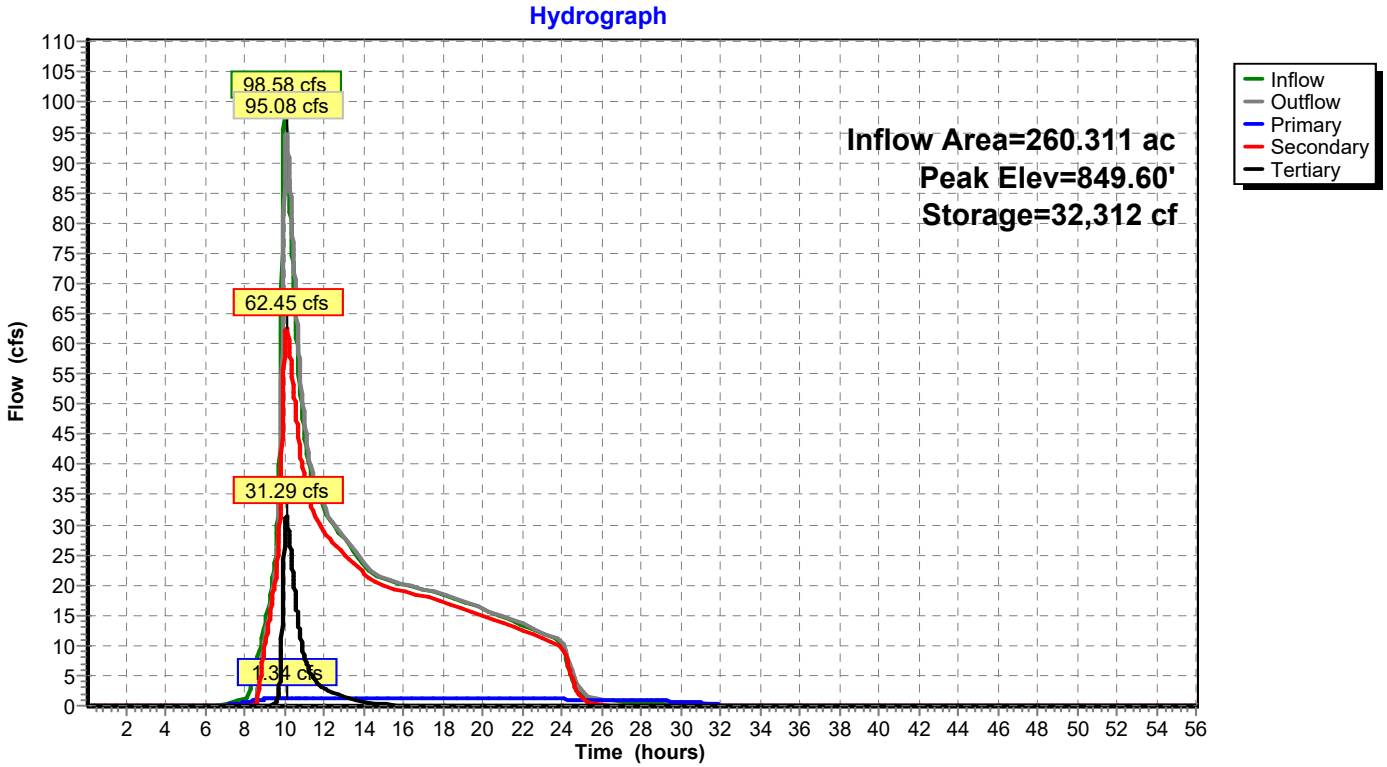
Device	Routing	Invert	Outlet Devices
#1	Primary	846.12'	**6.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 846.12' / 845.98' S= 0.0054 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Tertiary	848.70'	**Special & User-Defined (CkD2-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 Disch. (cfs) 0.000 0.130 0.970 2.640 5.120 8.550 13.010 18.440 24.620 31.430 38.830 46.770 55.210 64.120
#3	Secondary	847.80'	**Special & User-Defined (CkD2-W)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 Disch. (cfs) 0.000 0.020 0.480 1.430 2.780 4.430 6.490 8.950 12.010 15.510 19.390 23.590 28.100 32.980 38.270 43.910 49.850 56.080 62.580 69.340 76.350 83.590 91.070

Primary OutFlow Max=1.34 cfs @ 10.11 hrs HW=849.60' TW=845.99' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.34 cfs @ 6.83 fps)

Secondary OutFlow Max=62.42 cfs @ 10.11 hrs HW=849.60' TW=845.99' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD2-W)** (Custom Controls 62.42 cfs)

Tertiary OutFlow Max=31.26 cfs @ 10.11 hrs HW=849.60' TW=0.00' (Dynamic Tailwater)
└─**2=Special & User-Defined (CkD2-S)** (Custom Controls 31.26 cfs)

Pond 19P: GC-CkD2



Summary for Pond 20P: GC-CkD3

[58] Hint: Peaked 0.98' above defined flood level

Inflow Area = 274.094 ac, 0.92% Impervious, Inflow Depth = 1.33" for 10 Year event
Inflow = 71.09 cfs @ 10.08 hrs, Volume= 30.392 af
Outflow = 70.75 cfs @ 10.11 hrs, Volume= 30.381 af, Atten= 0%, Lag= 2.1 min
Primary = 6.49 cfs @ 10.11 hrs, Volume= 6.543 af
Secondary = 11.02 cfs @ 10.11 hrs, Volume= 4.518 af
Tertiary = 53.24 cfs @ 10.11 hrs, Volume= 19.319 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Peak Elev= 846.00' @ 10.11 hrs Surf.Area= 14,997 sf Storage= 16,178 cf
Flood Elev= 845.02' Surf.Area= 8,229 sf Storage= 4,852 cf

Plug-Flow detention time= 8.9 min calculated for 30.381 af (100% of inflow)
Center-of-Mass det. time= 8.3 min (922.7 - 914.4)

Volume	Invert	Avail.Storage	Storage Description
#1	844.00'	24,632 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.00	1,288	0	0
845.00	8,090	4,689	4,689
846.50	18,500	19,943	24,632

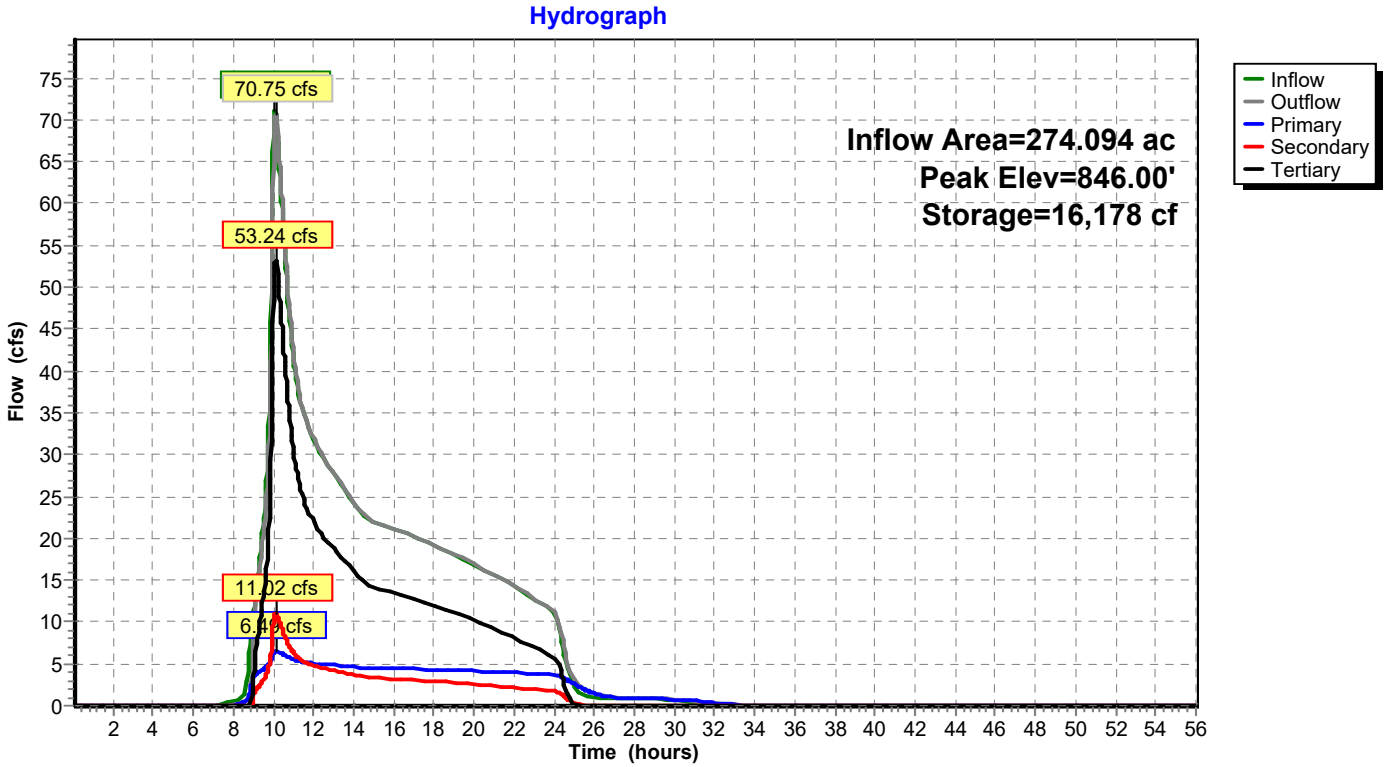
Device	Routing	Invert	Outlet Devices
#1	Primary	844.22'	**18.0" Round Culvert** L= 26.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 844.22' / 843.98' S= 0.0092 '/' Cc= 0.900 n= 0.021 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	845.00'	**Special & User-Defined (CkD3-W)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 Disch. (cfs) 0.000 0.050 0.390 0.970 1.710 2.600 3.780 5.170 6.720 8.570 11.140 14.290 17.880 21.830 26.120 30.880 36.030 41.520 47.330 53.420 59.790
#3	Tertiary	845.10'	**Special & User-Defined (CkD3-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 Disch. (cfs) 0.000 0.050 1.930 5.420 10.370 16.490 23.960 32.580 42.550 53.770 66.380 80.510 96.280 113.770 132.840 153.630 175.910 199.510 224.310 250.260

Primary OutFlow Max=6.49 cfs @ 10.11 hrs HW=846.00' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 6.49 cfs @ 3.91 fps)

Secondary OutFlow Max=11.01 cfs @ 10.11 hrs HW=846.00' TW=0.00' (Dynamic Tailwater)
└─**2=Special & User-Defined (CkD3-W)** (Custom Controls 11.01 cfs)

Tertiary OutFlow Max=53.22 cfs @ 10.11 hrs HW=846.00' TW=0.00' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD3-S)** (Custom Controls 53.22 cfs)

Pond 20P: GC-CkD3

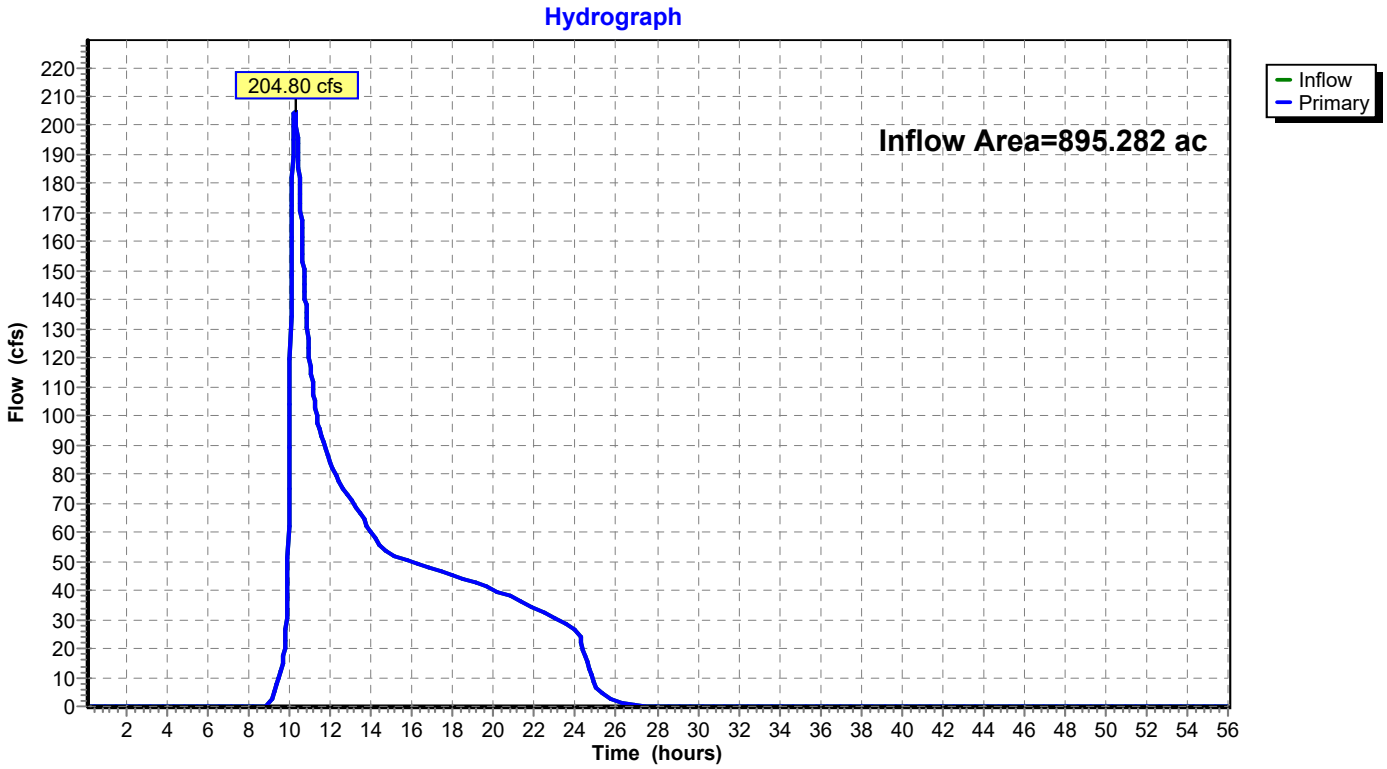


Summary for Link 3a (1,2+3)-Ex: Comb Un-dev Ck Flow

Inflow Area = 895.282 ac, 0.06% Impervious, Inflow Depth = 0.96" for 10 Year event
Inflow = 204.80 cfs @ 10.25 hrs, Volume= 71.447 af
Primary = 204.80 cfs @ 10.25 hrs, Volume= 71.447 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 3a (1,2+3)-Ex: Comb Un-dev Ck Flow

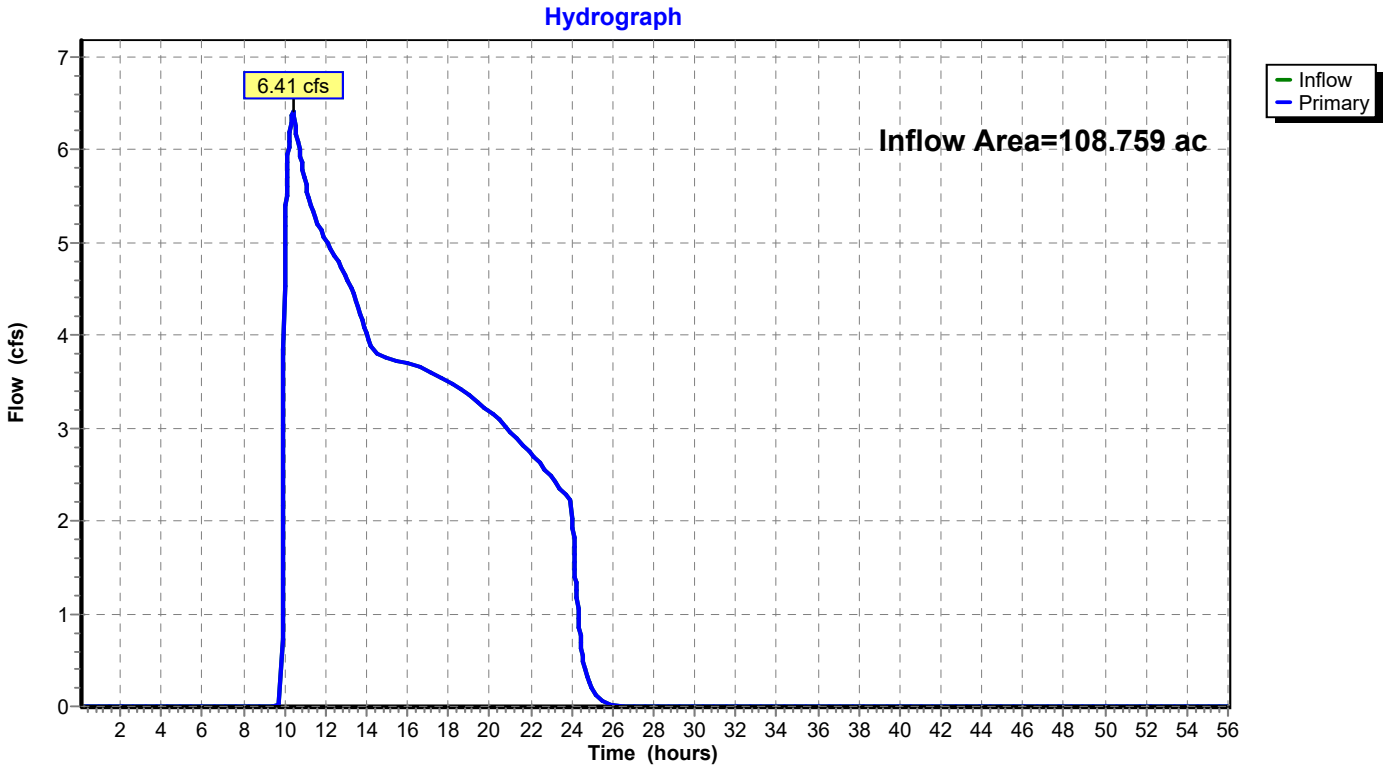


Summary for Link 5L: Outlet To Tract #1632 Ex. 36" SD

Inflow Area = 108.759 ac, 0.00% Impervious, Inflow Depth = 0.49" for 10 Year event
Inflow = 6.41 cfs @ 10.41 hrs, Volume= 4.467 af
Primary = 6.41 cfs @ 10.41 hrs, Volume= 4.467 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 5L: Outlet To Tract #1632 Ex. 36" SD

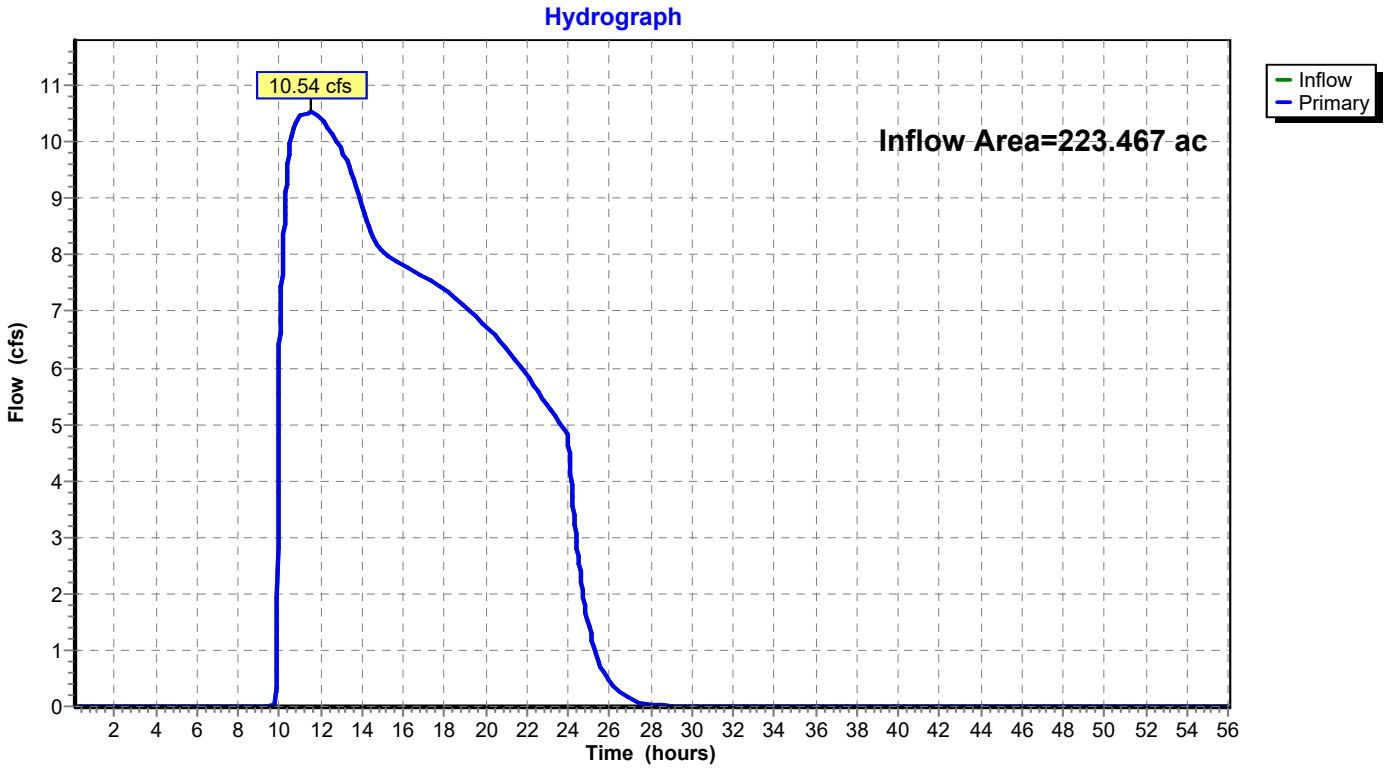


Summary for Link 6L: To Existing Meadowlark Road

Inflow Area = 223.467 ac, 0.00% Impervious, Inflow Depth = 0.50" for 10 Year event
Inflow = 10.54 cfs @ 11.55 hrs, Volume= 9.341 af
Primary = 10.54 cfs @ 11.55 hrs, Volume= 9.341 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 6L: To Existing Meadowlark Road

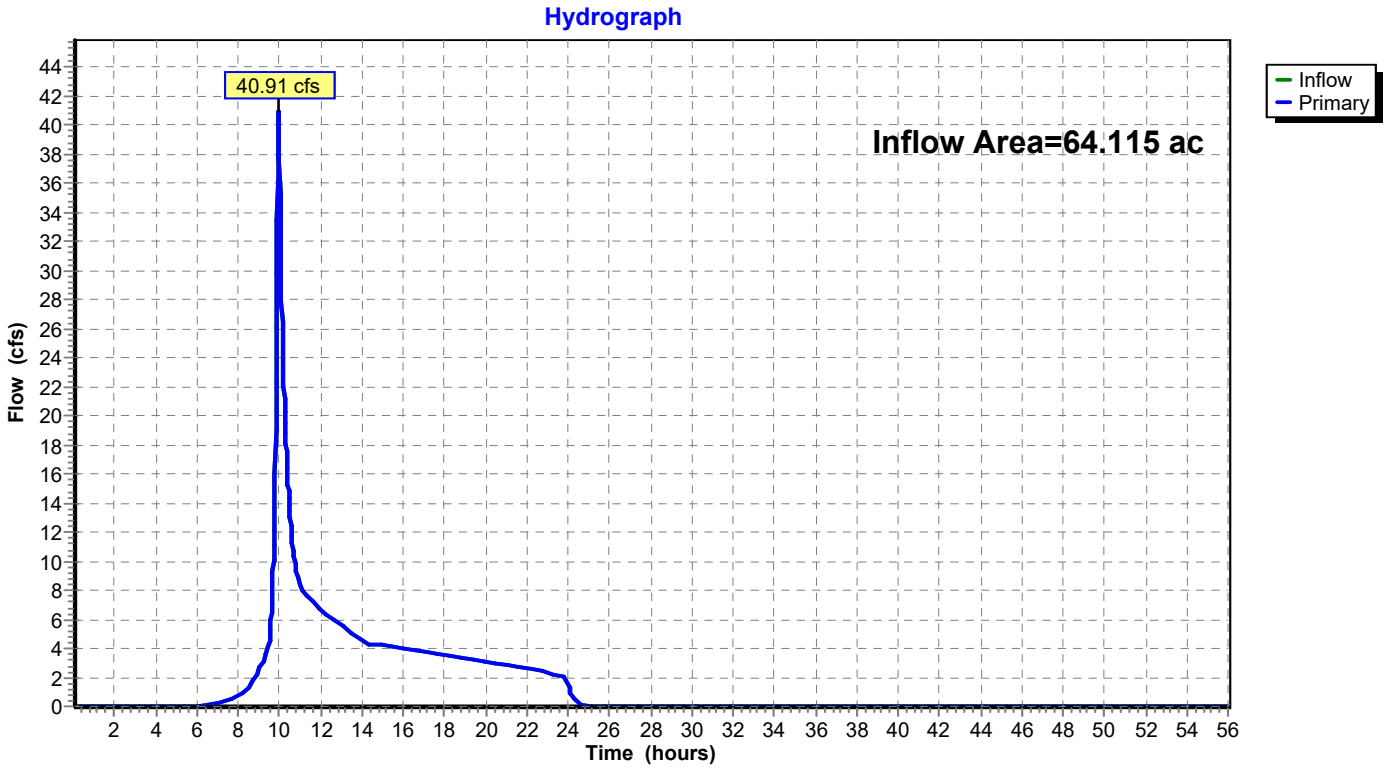


Summary for Link 7L: DMA 13

Inflow Area = 64.115 ac, 0.00% Impervious, Inflow Depth = 1.25" for 10 Year event
Inflow = 40.91 cfs @ 9.97 hrs, Volume= 6.689 af
Primary = 40.91 cfs @ 9.97 hrs, Volume= 6.689 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 7L: DMA 13

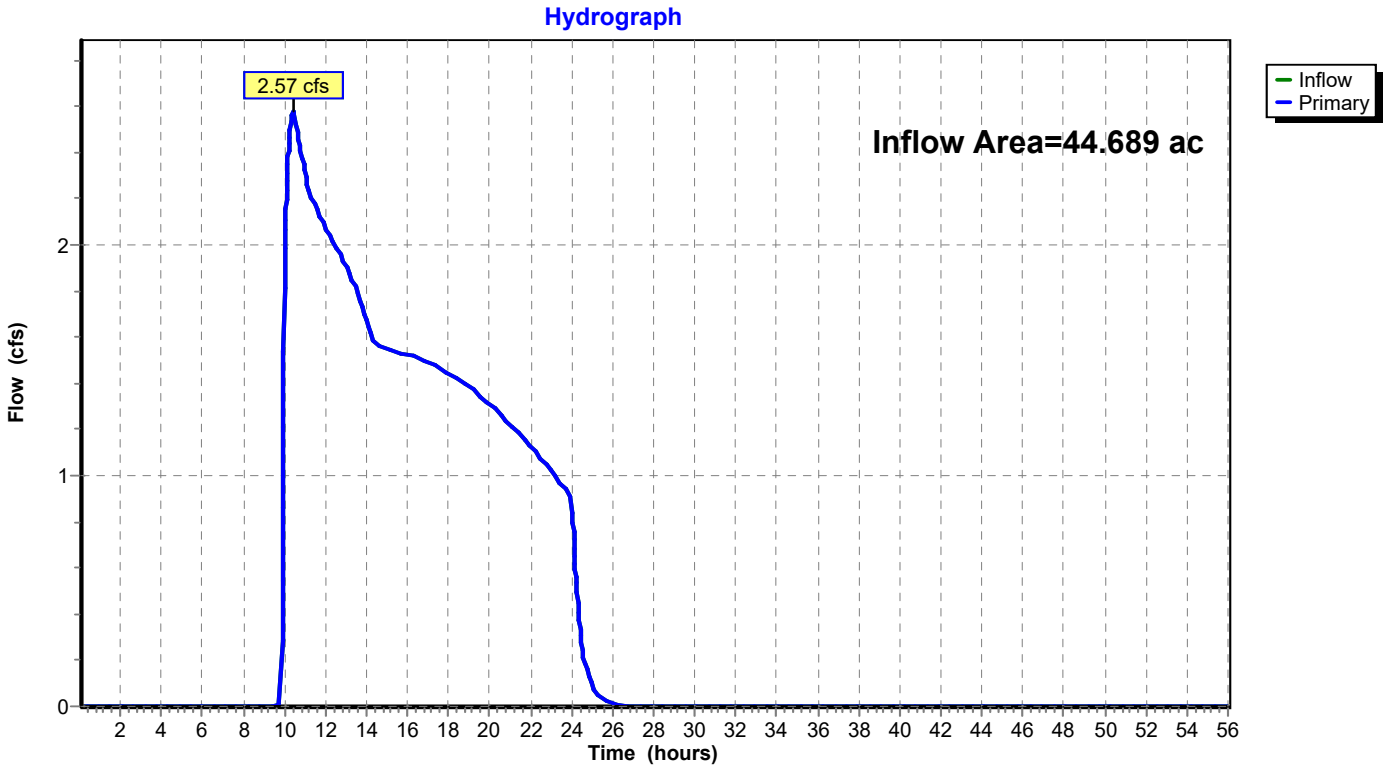


Summary for Link 8L: DMA 8

Inflow Area = 44.689 ac, 0.00% Impervious, Inflow Depth = 0.49" for 10 Year event
Inflow = 2.57 cfs @ 10.42 hrs, Volume= 1.836 af
Primary = 2.57 cfs @ 10.42 hrs, Volume= 1.836 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 8L: DMA 8

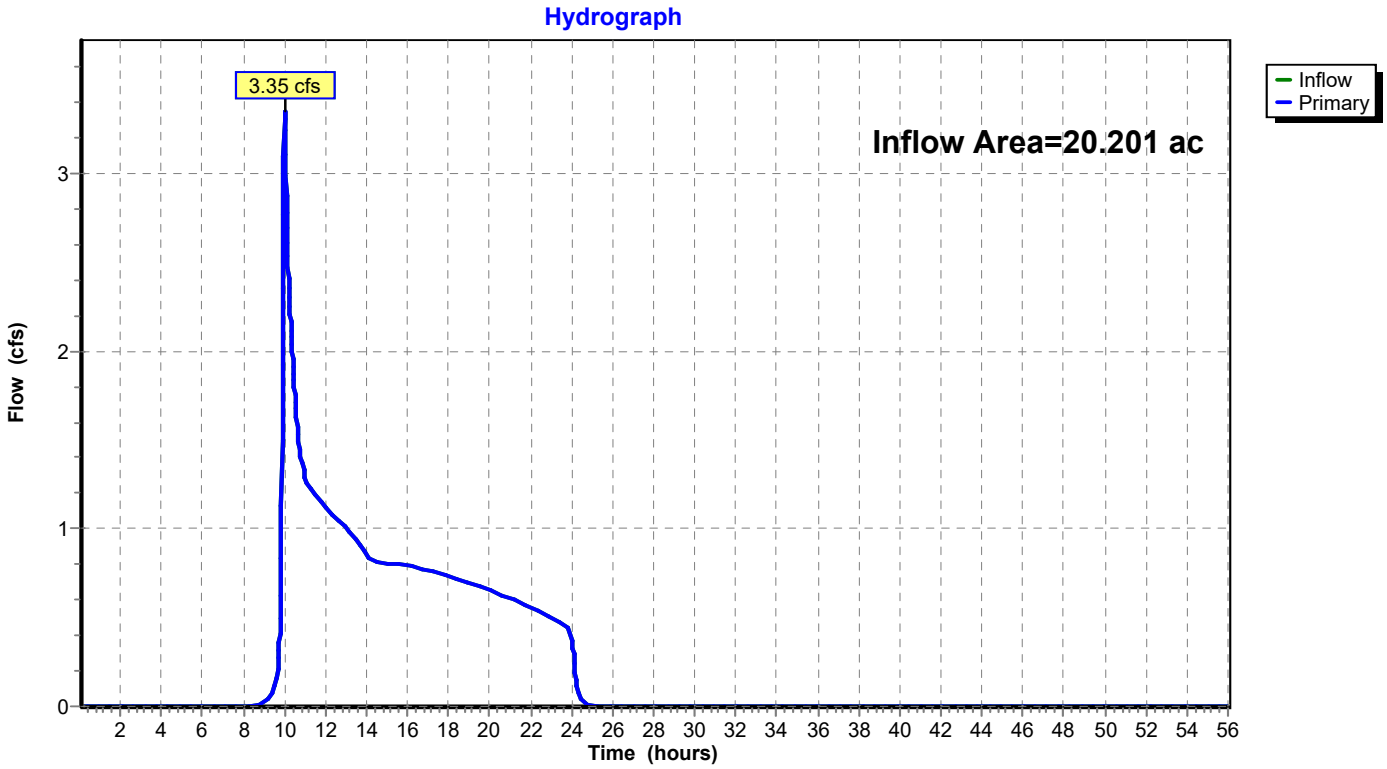


Summary for Link 9L: DMA 12

Inflow Area = 20.201 ac, 0.00% Impervious, Inflow Depth = 0.61" for 10 Year event
Inflow = 3.35 cfs @ 10.00 hrs, Volume= 1.028 af
Primary = 3.35 cfs @ 10.00 hrs, Volume= 1.028 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 9L: DMA 12

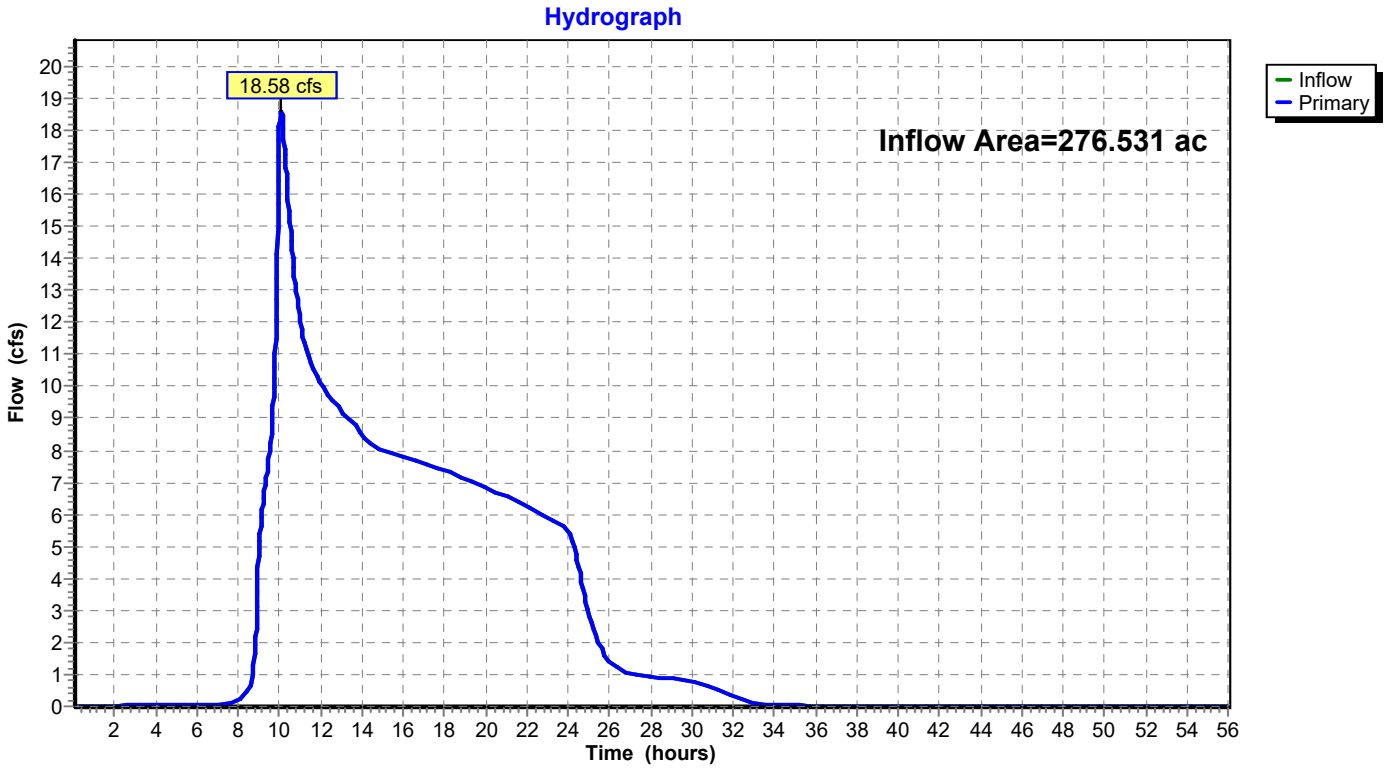


Summary for Link 10L: To Linne Road Channel

Inflow Area = 276.531 ac, 1.18% Impervious, Inflow Depth = 0.49" for 10 Year event
Inflow = 18.58 cfs @ 10.09 hrs, Volume= 11.335 af
Primary = 18.58 cfs @ 10.09 hrs, Volume= 11.335 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 10L: To Linne Road Channel

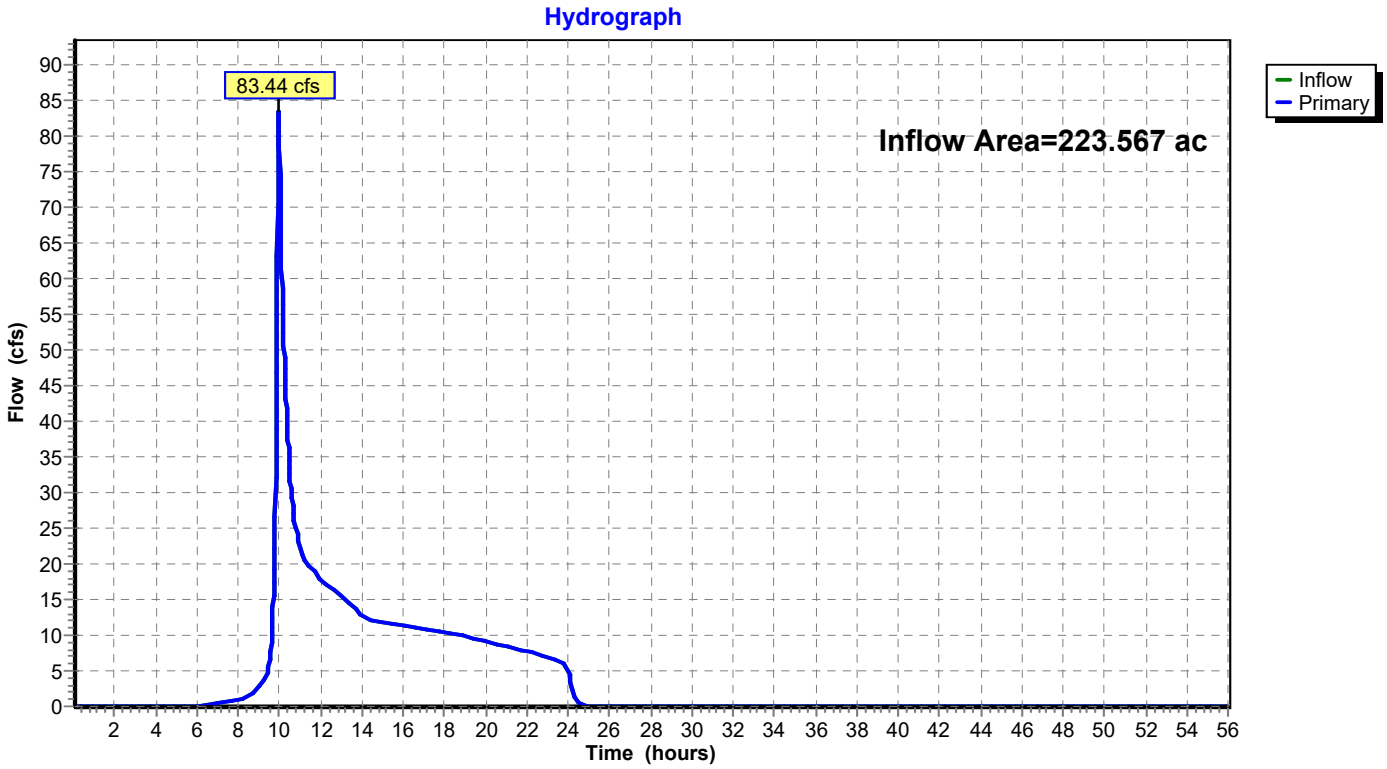


Summary for Link 11L: To Fontana Road SD

Inflow Area = 223.567 ac, 0.53% Impervious, Inflow Depth = 0.92" for 10 Year event
Inflow = 83.44 cfs @ 9.98 hrs, Volume= 17.116 af
Primary = 83.44 cfs @ 9.98 hrs, Volume= 17.116 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 11L: To Fontana Road SD

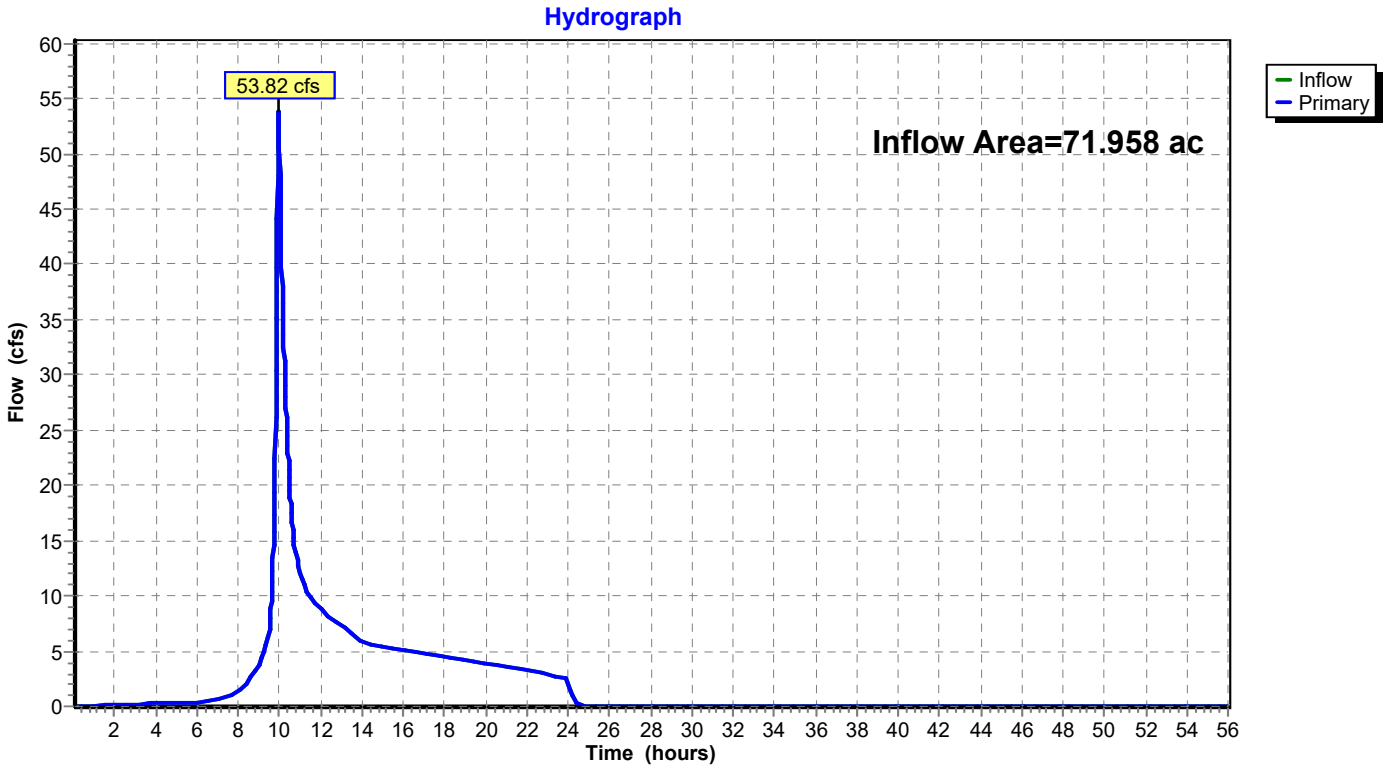


Summary for Link 15L: Sherwood/Niblick LP Xing

Inflow Area = 71.958 ac, 6.18% Impervious, Inflow Depth = 1.52" for 10 Year event
Inflow = 53.82 cfs @ 9.98 hrs, Volume= 9.123 af
Primary = 53.82 cfs @ 9.98 hrs, Volume= 9.123 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 15L: Sherwood/Niblick LP Xing

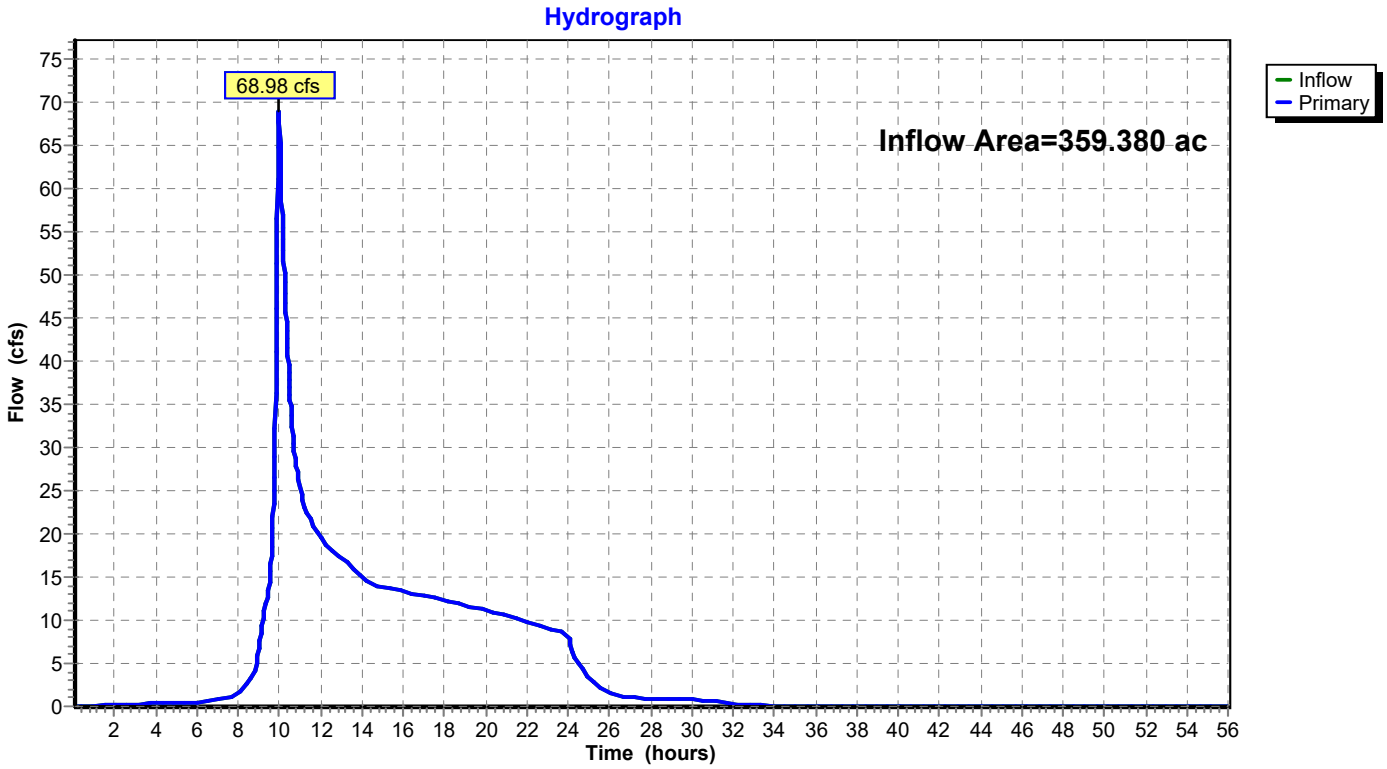


Summary for Link 16L: Airport & Linne Road SD

Inflow Area = 359.380 ac, 2.33% Impervious, Inflow Depth = 0.70" for 10 Year event
Inflow = 68.98 cfs @ 9.99 hrs, Volume= 21.064 af
Primary = 68.98 cfs @ 9.99 hrs, Volume= 21.064 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 16L: Airport & Linne Road SD

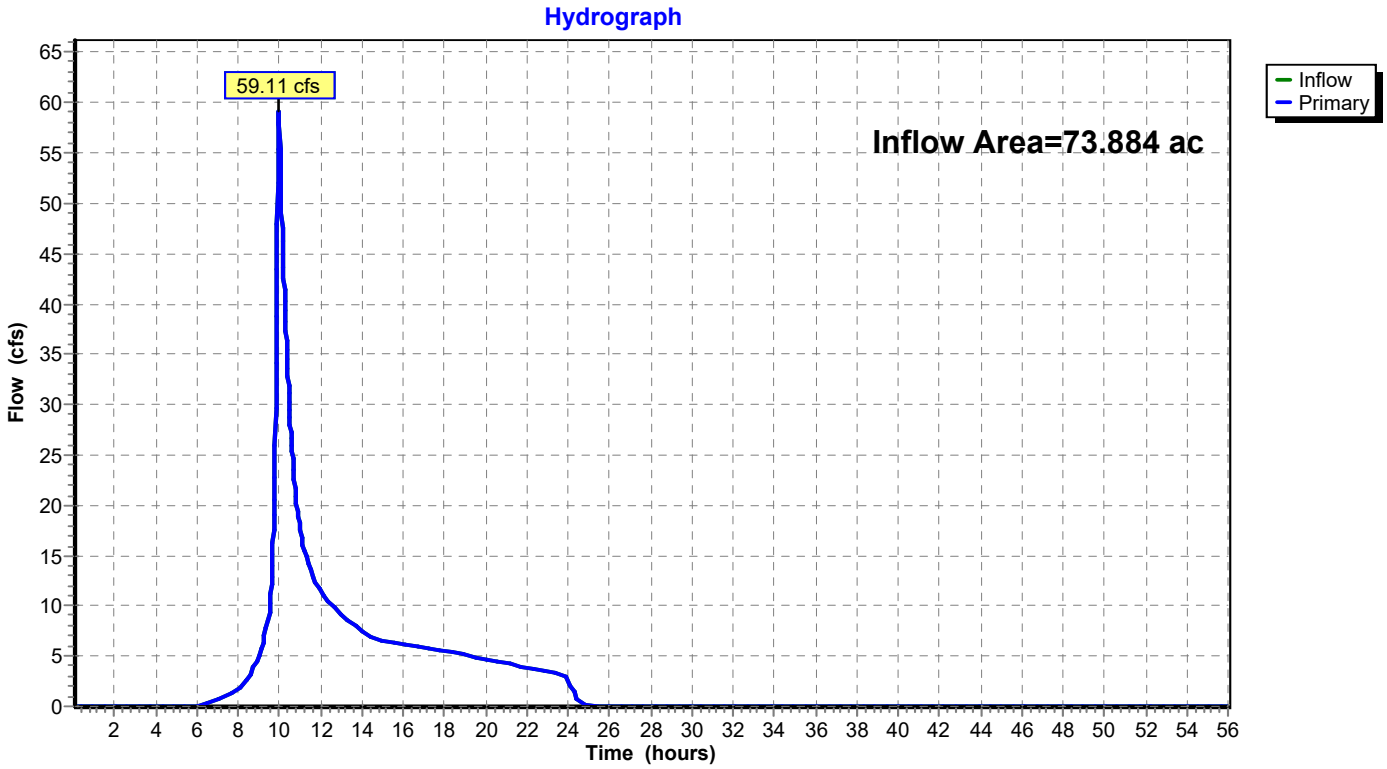


Summary for Link 19L: 14c(0+1)-Ex

Inflow Area = 73.884 ac, 1.37% Impervious, Inflow Depth = 1.86" for 10 Year event
Inflow = 59.11 cfs @ 9.99 hrs, Volume= 11.425 af
Primary = 59.11 cfs @ 9.99 hrs, Volume= 11.425 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 19L: 14c(0+1)-Ex

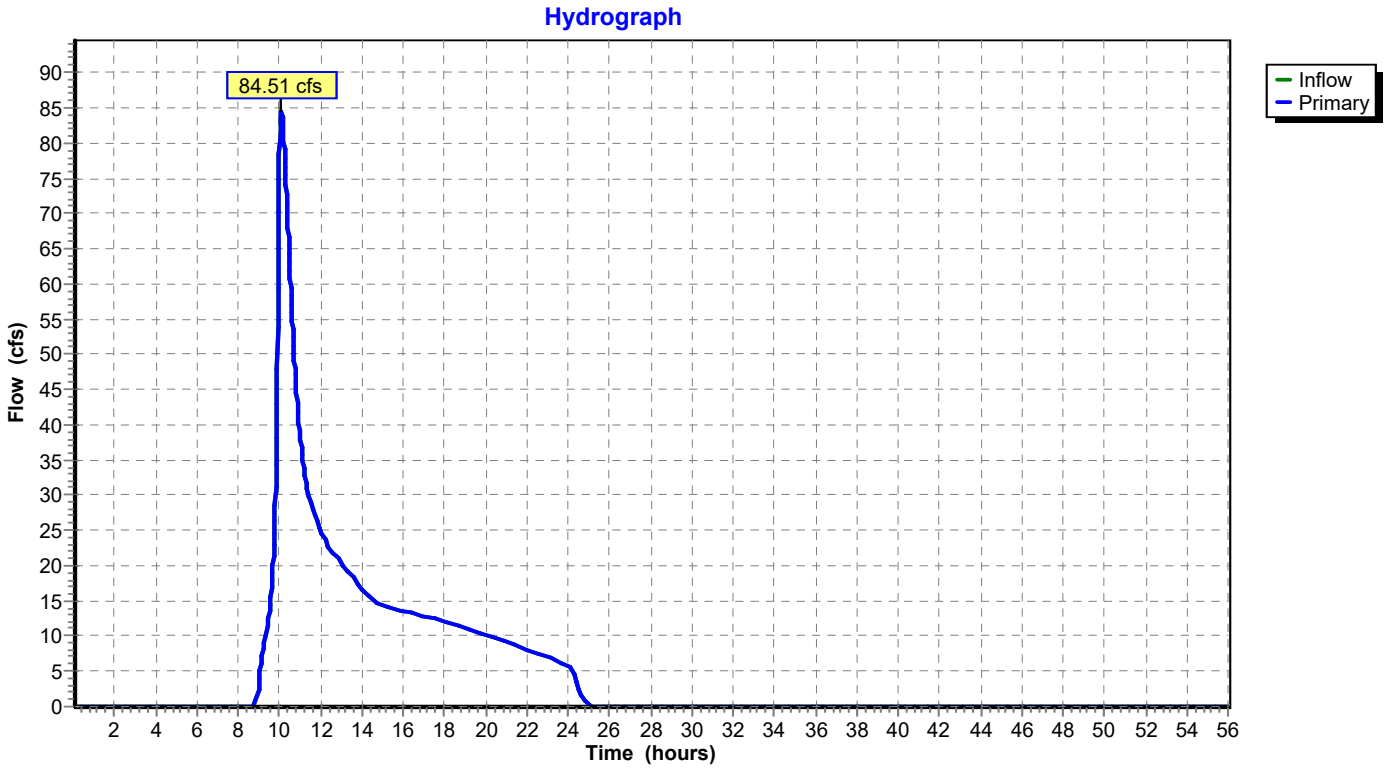


Summary for Link 22L: Linne Rd Overtopping Ex.Flow #2and#3

Inflow	=	84.51 cfs @	10.11 hrs,	Volume=	22.008 af
Primary	=	84.51 cfs @	10.11 hrs,	Volume=	22.008 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 22L: Linne Rd Overtopping Ex.Flow #2and#3

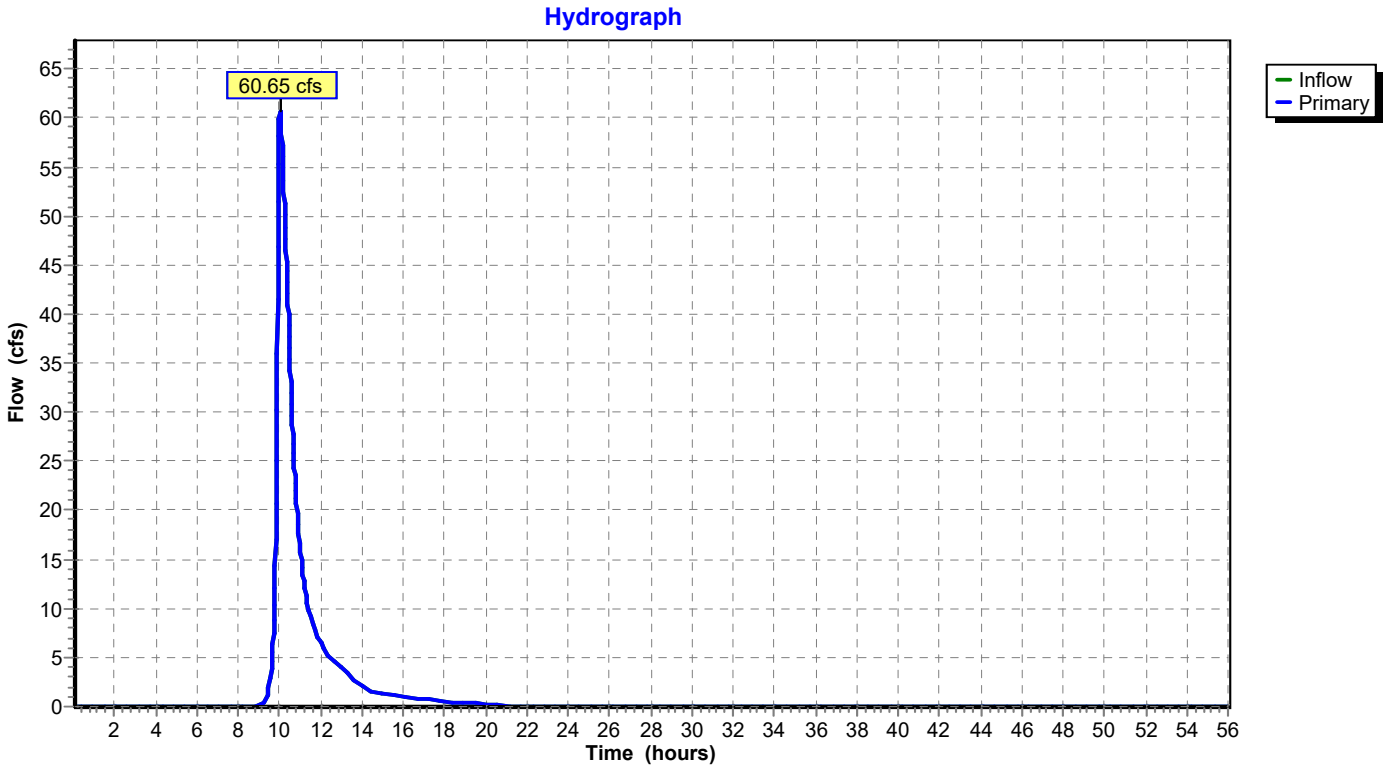


Summary for Link 23L: Linne Rd Overtop #1

Inflow	=	60.65 cfs @	10.05 hrs,	Volume=	5.776 af
Primary	=	60.65 cfs @	10.05 hrs,	Volume=	5.776 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 23L: Linne Rd Overtop #1



Time span=0.10-56.00 hrs, dt=0.02 hrs, 2796 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Subcat 1 Runoff Area=11.244 ac 0.00% Impervious Runoff Depth=0.76"
Tc=10.0 min CN=58/0 Runoff=2.50 cfs 0.710 af

Subcatchment2: Subcat 2 Runoff Area=14.644 ac 0.00% Impervious Runoff Depth=0.76"
Tc=11.5 min CN=58/0 Runoff=3.01 cfs 0.925 af

Subcatchment3: Subcat 3 Runoff Area=21.500 ac 0.02% Impervious Runoff Depth=1.03"
Tc=16.9 min CN=63/98 Runoff=6.90 cfs 1.844 af

Subcatchment3a{(1)}-Ex: Subcat 3a{(1)}-Ex Runoff Area=4.164 ac 0.00% Impervious Runoff Depth=0.76"
Tc=10.0 min CN=58/0 Runoff=0.93 cfs 0.263 af

Subcatchment3a{(2)}-Ex: Subcat 3a{(2)}-Ex Runoff Area=7.900 ac 0.00% Impervious Runoff Depth=0.92"
Tc=10.0 min CN=61/0 Runoff=2.69 cfs 0.603 af

Subcatchment3a{(3)}-Ex: Subcat 3a{(3)}-Ex Runoff Area=6.004 ac 0.00% Impervious Runoff Depth=1.40"
Tc=10.0 min CN=69/0 Runoff=4.24 cfs 0.700 af

Subcatchment3b-Ex: Subcat 3b-Ex Runoff Area=757.079 ac 0.00% Impervious Runoff Depth=0.86"
Tc=45.5 min CN=60/98 Runoff=90.76 cfs 54.384 af

Subcatchment4: Subcat 4 Runoff Area=38.712 ac 1.43% Impervious Runoff Depth=0.80"
Tc=14.2 min CN=58/98 Runoff=7.97 cfs 2.592 af

Subcatchment5: Subcat 5 Runoff Area=32.700 ac 0.00% Impervious Runoff Depth=0.76"
Tc=21.2 min CN=58/0 Runoff=4.51 cfs 2.065 af

Subcatchment6: Subcat 6 Runoff Area=34.035 ac 0.00% Impervious Runoff Depth=0.86"
Tc=20.1 min CN=60/0 Runoff=6.69 cfs 2.445 af

Subcatchment7: Subcat 7 Runoff Area=31.369 ac 0.00% Impervious Runoff Depth=0.76"
Tc=23.2 min CN=58/0 Runoff=4.06 cfs 1.981 af

Subcatchment8: Subcat 8 Runoff Area=30.487 ac 0.00% Impervious Runoff Depth=0.76"
Tc=28.8 min CN=58/0 Runoff=3.54 cfs 1.925 af

Subcatchment8a-Ex: Subcat 8a-Ex Runoff Area=14.202 ac 0.00% Impervious Runoff Depth=0.76"
Tc=16.5 min CN=58/0 Runoff=2.33 cfs 0.897 af

Subcatchment9: Subcat 9 Runoff Area=11.446 ac 0.00% Impervious Runoff Depth=0.97"
Tc=22.3 min CN=62/0 Runoff=2.73 cfs 0.927 af

Subcatchment9a-Ex: Subcat 9a-Ex Runoff Area=212.022 ac 0.00% Impervious Runoff Depth=0.76"
Flow Length=4,909' Tc=51.3 min CN=58/0 Runoff=18.56 cfs 13.388 af

Subcatchment10: Subcat 10 Runoff Area=30.685 ac 3.88% Impervious Runoff Depth=0.93"
Tc=22.6 min CN=59/98 Runoff=6.47 cfs 2.382 af

Subcatchment10a-Ex: Subcat 10a-Ex Runoff Area=94.105 ac 0.00% Impervious Runoff Depth=1.27"
Tc=11.0 min CN=67/0 Runoff=54.90 cfs 9.957 af

Subcatchment11: Subcat 11 Runoff Area=14.461 ac 0.00% Impervious Runoff Depth=0.81"
Tc=11.1 min CN=59/0 Runoff=3.56 cfs 0.975 af

Subcatchment12: Subcat 12 Runoff Area=17.572 ac 0.00% Impervious Runoff Depth=0.81"
Tc=10.0 min CN=59/0 Runoff=4.57 cfs 1.185 af

Subcatchment12a-Ex: Subcat 12a-Ex Runoff Area=2.629 ac 0.00% Impervious Runoff Depth=1.53"
Tc=10.0 min CN=71/0 Runoff=2.12 cfs 0.336 af

Subcatchment13: Subcat 13 Runoff Area=27.742 ac 0.00% Impervious Runoff Depth=0.92"
Flow Length=1,750' Tc=10.0 min CN=61/0 Runoff=9.46 cfs 2.118 af

Subcatchment13a-Ex: Subcat 13a-Ex Runoff Area=3.505 ac 0.00% Impervious Runoff Depth=1.53"
Tc=10.0 min CN=71/0 Runoff=2.83 cfs 0.448 af

Subcatchment13b-Ex: Subcat 13b-Ex Runoff Area=18.461 ac 0.00% Impervious Runoff Depth=2.37"
Tc=10.0 min CN=82/0 Runoff=26.22 cfs 3.654 af

Subcatchment13c-Ex: Subcat 13c-Ex Runoff Area=14.407 ac 0.00% Impervious Runoff Depth=2.21"
Tc=10.0 min CN=80/0 Runoff=18.75 cfs 2.651 af

Subcatchment14: Subcat 14 Runoff Area=8.669 ac 51.27% Impervious Runoff Depth=2.40"
Tc=10.0 min CN=58/98 Runoff=11.03 cfs 1.735 af

Subcatchment14a{(1)}-Ex: Subcat 14a{(1)}-Ex Runoff Area=13.081 ac 0.00% Impervious Runoff Depth=1.09"
Tc=10.0 min CN=64/0 Runoff=6.16 cfs 1.185 af

Subcatchment14a{(2)}-Ex: Subcat 14a{(2)}-Ex Runoff Area=2.438 ac 29.80% Impervious Runoff Depth=1.71"
Tc=10.0 min CN=58/98 Runoff=2.02 cfs 0.348 af

Subcatchment14b-Ex: Subcat 14b-Ex Runoff Area=50.209 ac 0.00% Impervious Runoff Depth=2.13"
Tc=13.4 min CN=79/0 Runoff=55.16 cfs 8.900 af

Subcatchment14c{(0)}-Ex: Subcat 14c{(0)}-Ex Runoff Area=43.677 ac 1.21% Impervious Runoff Depth=2.39"
Tc=24.5 min CN=82/98 Runoff=40.63 cfs 8.714 af

Subcatchment14c{(1)}-Ex: Subcat 14c{(1)}-Ex Runoff Area=30.208 ac 1.61% Impervious Runoff Depth=2.32"
Tc=13.6 min CN=81/98 Runoff=36.54 cfs 5.834 af

Subcatchment14c{(2)}-Ex: Subcat 14c{(2)}-Ex Runoff Area=19.689 ac 0.00% Impervious Runoff Depth=1.97"
Tc=13.2 min CN=77/0 Runoff=19.74 cfs 3.232 af

Subcatchment14c{(3)}-Ex: Subcat 14c{(3)}-Ex Runoff Area=13.782 ac 0.00% Impervious Runoff Depth=1.82"
Tc=12.6 min CN=75/0 Runoff=12.70 cfs 2.088 af

Subcatchment14d-Ex: Subcat 14d-Ex Runoff Area=166.738 ac 0.91% Impervious Runoff Depth=2.22"
Tc=19.4 min CN=80/98 Runoff=160.94 cfs 30.903 af

Subcatchment14e-Ex: Subcat 14e-Ex Runoff Area=10.890 ac 6.05% Impervious Runoff Depth=0.95"
Tc=10.0 min CN=58/98 Runoff=3.74 cfs 0.864 af

Reach 6R: Reach 1c Avg. Flow Depth=2.75' Max Vel=4.26 fps Inflow=137.65 cfs 58.525 af
n=0.024 L=830.0' S=0.0031 '/' Capacity=4,878.97 cfs Outflow=131.50 cfs 58.525 af

Reach 7R: Reach 1b Avg. Flow Depth=1.55' Max Vel=4.45 fps Inflow=309.45 cfs 98.507 af
n=0.024 L=883.0' S=0.0066 '/' Capacity=8,865.90 cfs Outflow=304.94 cfs 98.507 af

Reach 8R: Reach 1a Avg. Flow Depth=1.73' Max Vel=3.36 fps Inflow=313.21 cfs 101.702 af
n=0.024 L=583.0' S=0.0034 '/' Capacity=6,396.21 cfs Outflow=310.01 cfs 101.702 af

Reach 17R: Reach 1d Avg. Flow Depth=0.58' Max Vel=2.44 fps Inflow=55.87 cfs 1.597 af
n=0.027 L=841.0' S=0.0110 '/' Capacity=1,276.84 cfs Outflow=45.04 cfs 1.597 af

Reach 18R: Linne Road Grassed Chl Avg. Flow Depth=0.62' Max Vel=2.63 fps Inflow=21.44 cfs 12.833 af
n=0.030 L=1,190.0' S=0.0087 '/' Capacity=66.25 cfs Outflow=20.56 cfs 12.833 af

Pond 17P: Gran Cielo Dwy Peak Elev=855.00' Storage=10,997 cf Inflow=160.94 cfs 30.903 af
Primary=104.69 cfs 29.306 af Secondary=0.01 cfs 0.000 af Tertiary=55.87 cfs 1.597 af Outflow=160.58 cfs 30.903 af

Pond 18P: GC-CkD1 Peak Elev=851.60' Storage=56,309 cf Inflow=181.62 cfs 43.854 af
Primary=1.04 cfs 1.666 af Secondary=96.98 cfs 33.439 af Tertiary=76.59 cfs 8.686 af Outflow=174.59 cfs 43.791 af

Pond 19P: GC-CkD2 Peak Elev=849.72' Storage=36,034 cf Inflow=116.37 cfs 38.336 af
Primary=1.37 cfs 2.166 af Secondary=70.51 cfs 32.030 af Tertiary=40.16 cfs 4.140 af Outflow=112.03 cfs 38.335 af

Pond 20P: GC-CkD3 Peak Elev=846.07' Storage=17,246 cf Inflow=82.30 cfs 36.283 af
Primary=6.72 cfs 7.070 af Secondary=13.20 cfs 5.415 af Tertiary=62.01 cfs 23.787 af Outflow=81.94 cfs 36.272 af

Link 3a (1,2+3)-Ex: Comb Un-dev Ck Flow Inflow=312.31 cfs 102.675 af
Primary=312.31 cfs 102.675 af

Link 5L: Outlet To Tract #1632 Ex. 36" SD Inflow=14.23 cfs 6.867 af
Primary=14.23 cfs 6.867 af

Link 6L: To Existing Meadowlark Road Inflow=20.59 cfs 14.315 af
Primary=20.59 cfs 14.315 af

Link 7L: DMA 13 Inflow=57.14 cfs 8.870 af
Primary=57.14 cfs 8.870 af

Link 8L: DMA 8 Inflow=5.66 cfs 2.822 af
Primary=5.66 cfs 2.822 af

Link 9L: DMA 12 Inflow=6.67 cfs 1.521 af
Primary=6.67 cfs 1.521 af

Link 10L: To Linne Road Channel Inflow=21.44 cfs 12.833 af
Primary=21.44 cfs 12.833 af

Link 11L: To Fontana Road SD Inflow=128.36 cfs 23.705 af
Primary=128.36 cfs 23.705 af

Link 15L: Sherwood/NiblickLP Xing Inflow=72.28 cfs 11.820 af
Primary=72.28 cfs 11.820 af

Link 16L: Airport & Linne Road SD Inflow=92.25 cfs 25.516 af
Primary=92.25 cfs 25.516 af

Link 19L: 14c(0+1)-Ex Inflow=77.03 cfs 14.548 af
Primary=77.03 cfs 14.548 af

Link 22L: Linne Rd OvertoppingEx.Flow #2and#3 Inflow=102.17 cfs 27.926 af
Primary=102.17 cfs 27.926 af

Link 23L: Linne Rd Overtop#1 Inflow=76.59 cfs 8.686 af
Primary=76.59 cfs 8.686 af

Total Runoff Area = 1,810.455 ac Runoff Volume = 173.154 af Average Runoff Depth = 1.15"
99.44% Pervious = 1,800.345 ac 0.56% Impervious = 10.110 ac

Summary for Subcatchment 1: Subcat 1

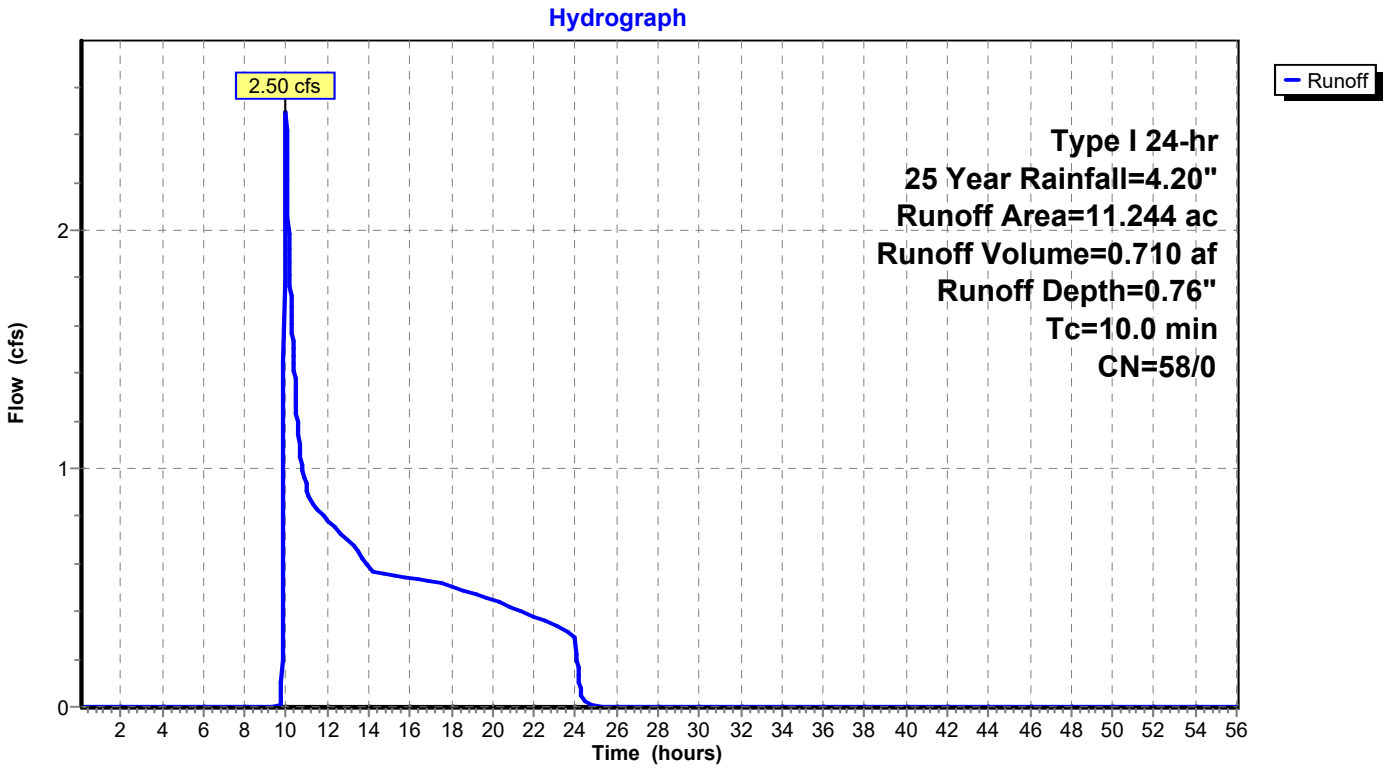
Runoff = 2.50 cfs @ 10.00 hrs, Volume= 0.710 af, Depth= 0.76"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
11.244	58	Meadow, non-grazed, HSG B
11.244	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9					**Direct Entry, SCS per Catchment Area CAD Info**
9.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 1: Subcat 1



Summary for Subcatchment 2: Subcat 2

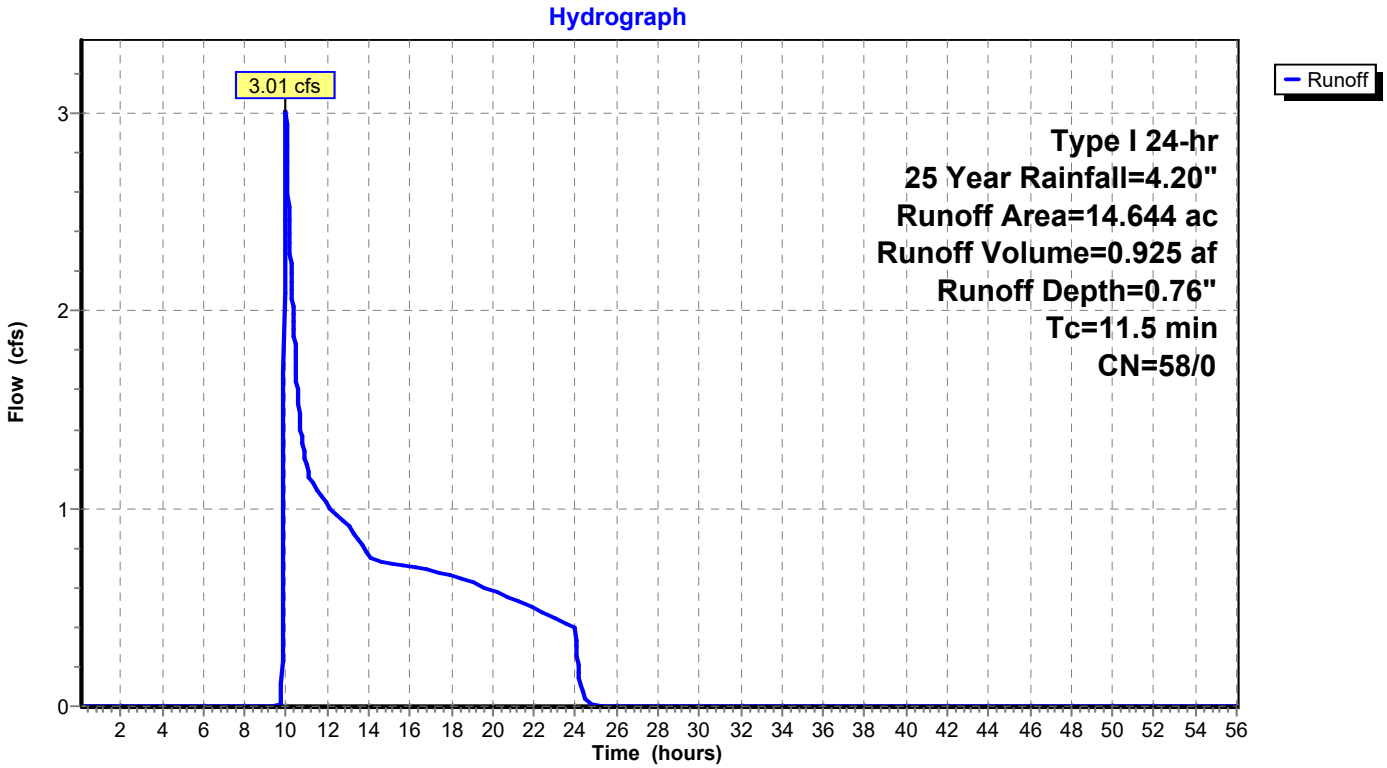
Runoff = 3.01 cfs @ 10.00 hrs, Volume= 0.925 af, Depth= 0.76"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
0.574	58	Meadow, non-grazed, HSG B
14.070	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
14.644	58	Weighted Average
14.644	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5					**Direct Entry, SCS per Catchment Area CAD Info**

Subcatchment 2: Subcat 2



Summary for Subcatchment 3: Subcat 3

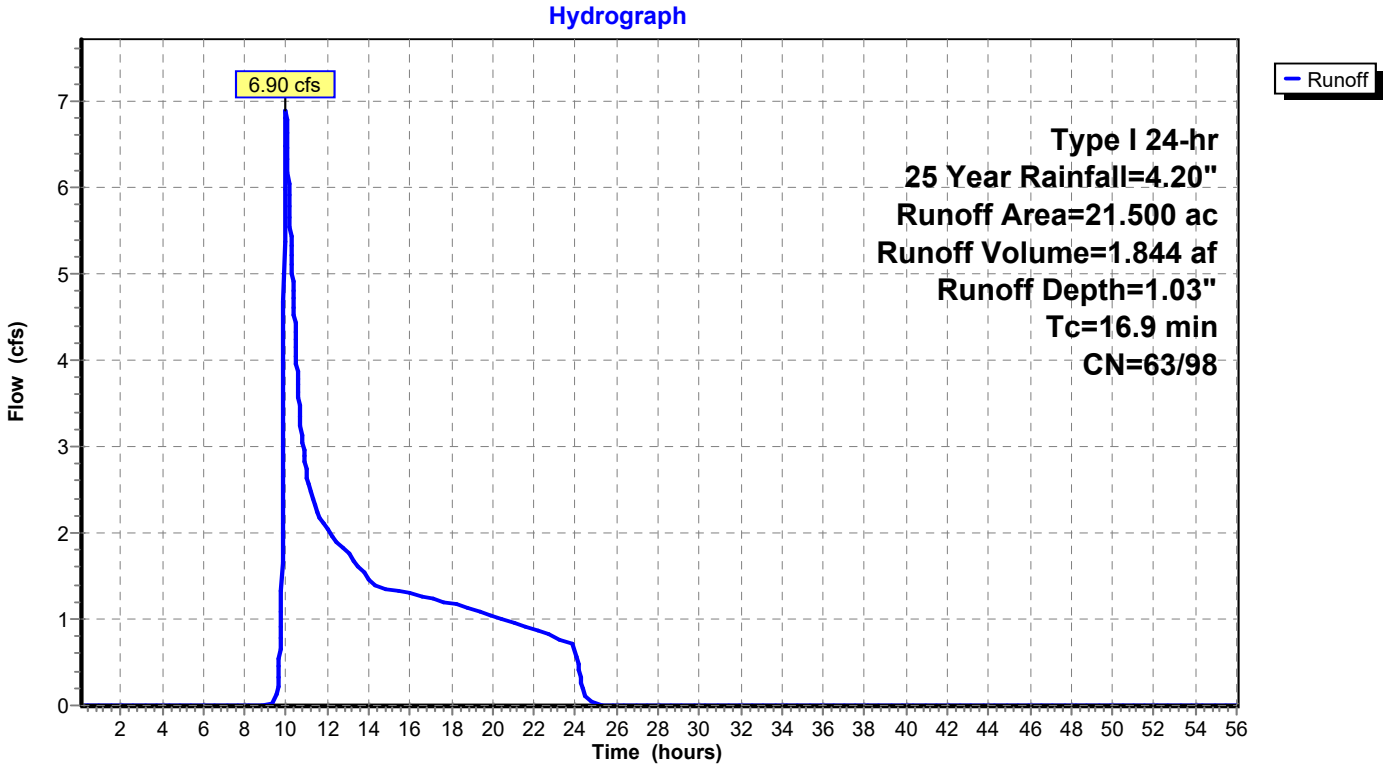
Runoff = 6.90 cfs @ 10.00 hrs, Volume= 1.844 af, Depth= 1.03"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
4.338	58	Meadow, non-grazed, HSG B
8.761	58	Meadow, non-grazed, HSG B
8.398	71	Meadow, non-grazed, HSG C
0.003	98	Paved roads w/curbs & sewers, HSG C
21.500	63	Weighted Average
21.497	63	99.98% Pervious Area
0.003	98	0.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.9					**Direct Entry, SCS per Catchment Area CAD Info**

Subcatchment 3: Subcat 3



Summary for Subcatchment 3a{(1)}-Ex: Subcat 3a{(1)}-Ex

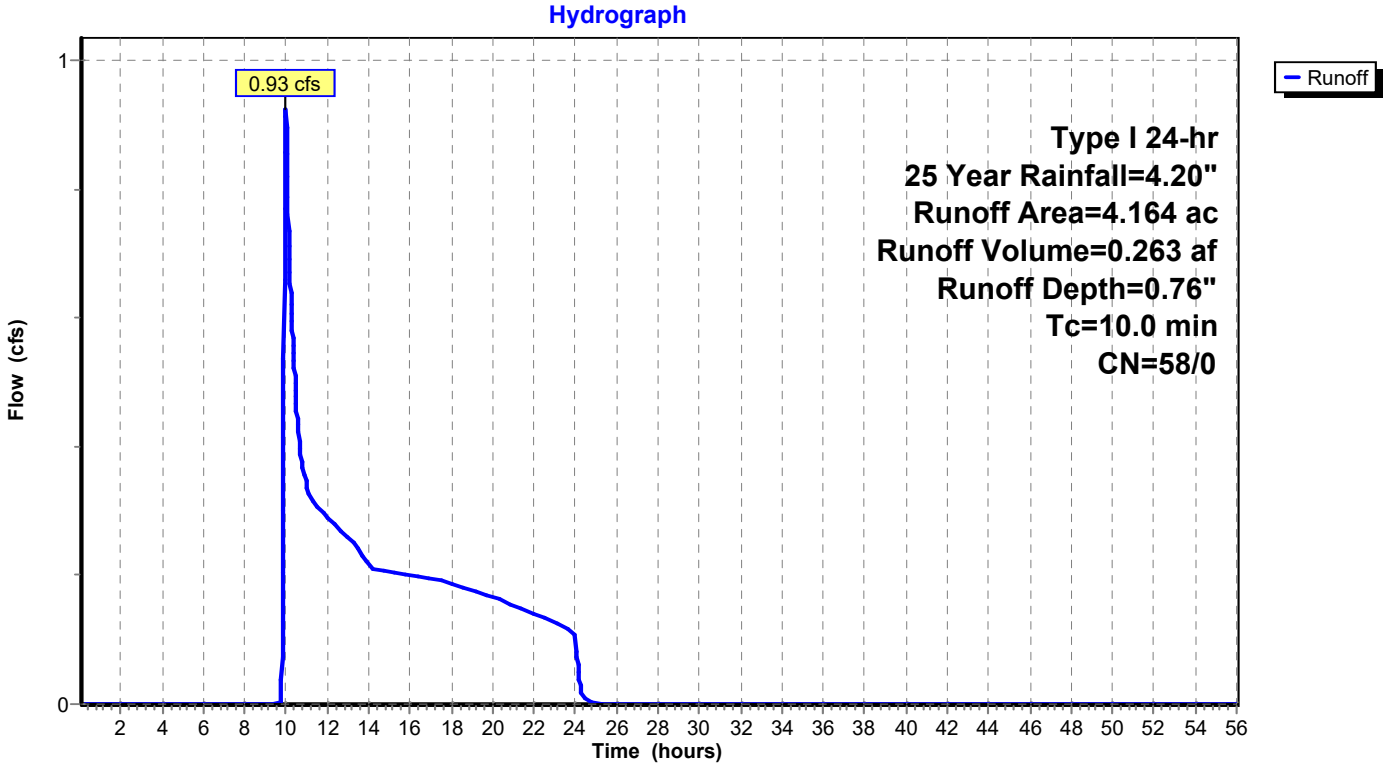
Runoff = 0.93 cfs @ 10.00 hrs, Volume= 0.263 af, Depth= 0.76"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
2.302	58	Meadow, non-grazed, HSG B
1.861	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
4.164	58	Weighted Average
4.164	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1					**Direct Entry,**
6.1	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 3a{(1)}-Ex: Subcat 3a{(1)}-Ex



Summary for Subcatchment 3a{(2)}-Ex: Subcat 3a{(2)}-Ex

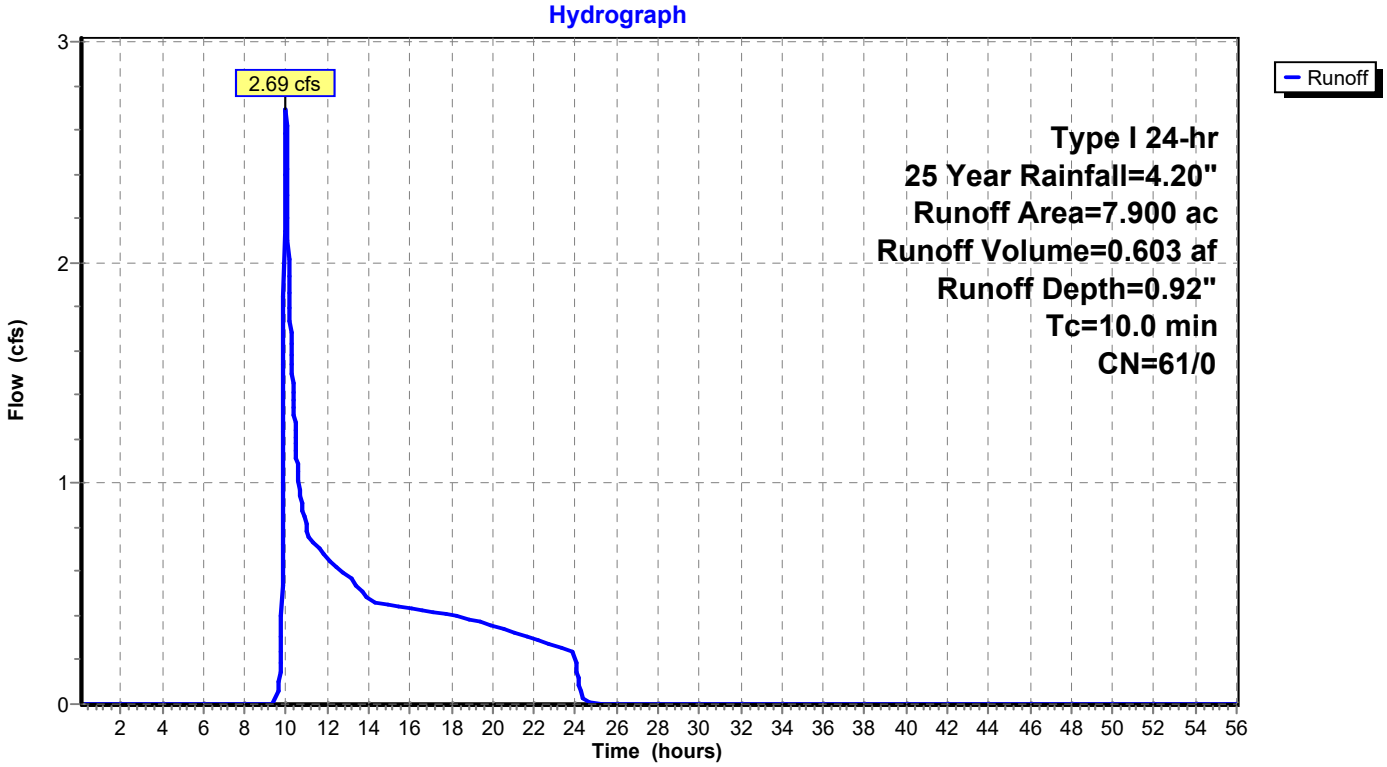
Runoff = 2.69 cfs @ 9.99 hrs, Volume= 0.603 af, Depth= 0.92"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
3.124	58	Meadow, non-grazed, HSG B
2.841	58	Meadow, non-grazed, HSG B
1.936	71	Meadow, non-grazed, HSG C
7.900	61	Weighted Average
7.900	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1					**Direct Entry,**
6.1	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 3a{(2)}-Ex: Subcat 3a{(2)}-Ex



Summary for Subcatchment 3a{(3)}-Ex: Subcat 3a{(3)}-Ex

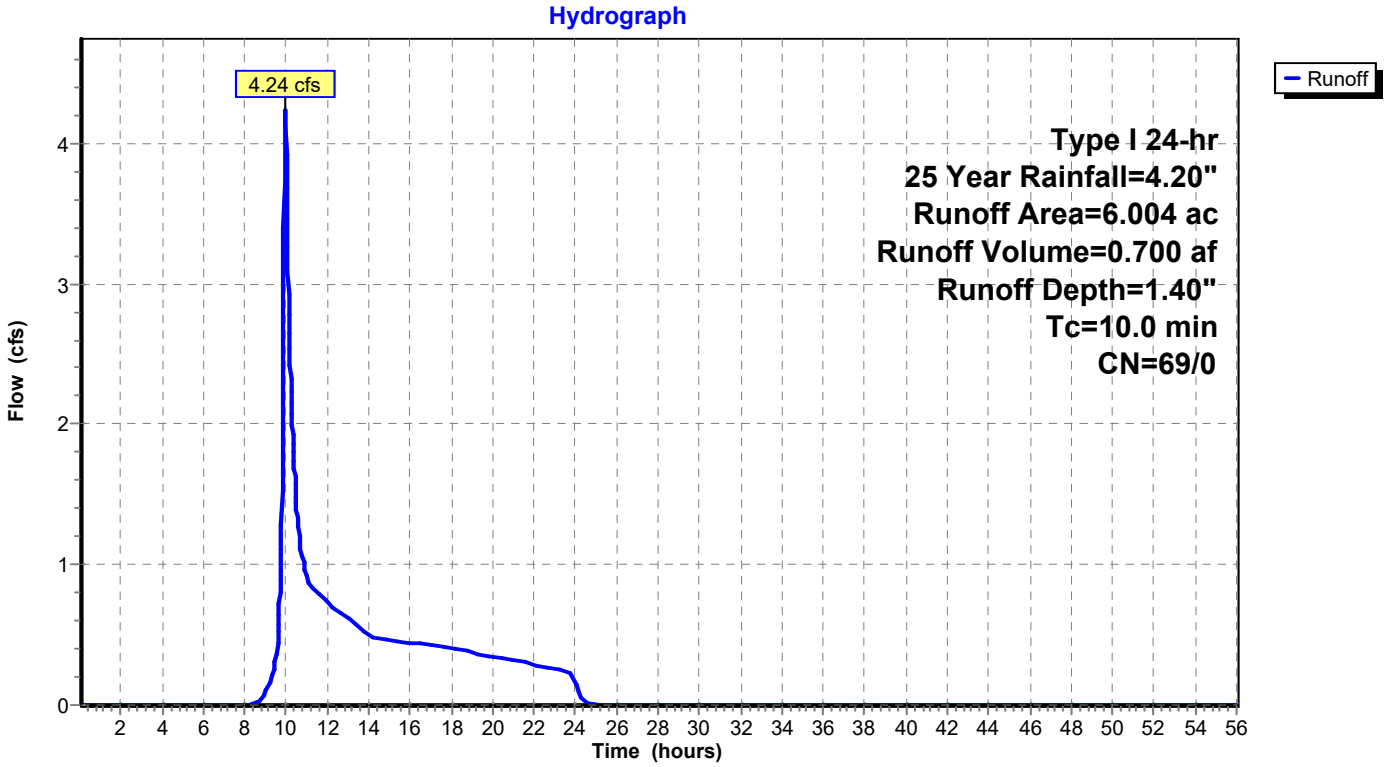
Runoff = 4.24 cfs @ 9.98 hrs, Volume= 0.700 af, Depth= 1.40"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
1.129	58	Meadow, non-grazed, HSG B
4.876	71	Meadow, non-grazed, HSG C
6.004	69	Weighted Average
6.004	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1					**Direct Entry, 14c{(2)}-Ex**
6.1	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 3a{(3)}-Ex: Subcat 3a{(3)}-Ex



Summary for Subcatchment 3b-Ex: Subcat 3b-Ex

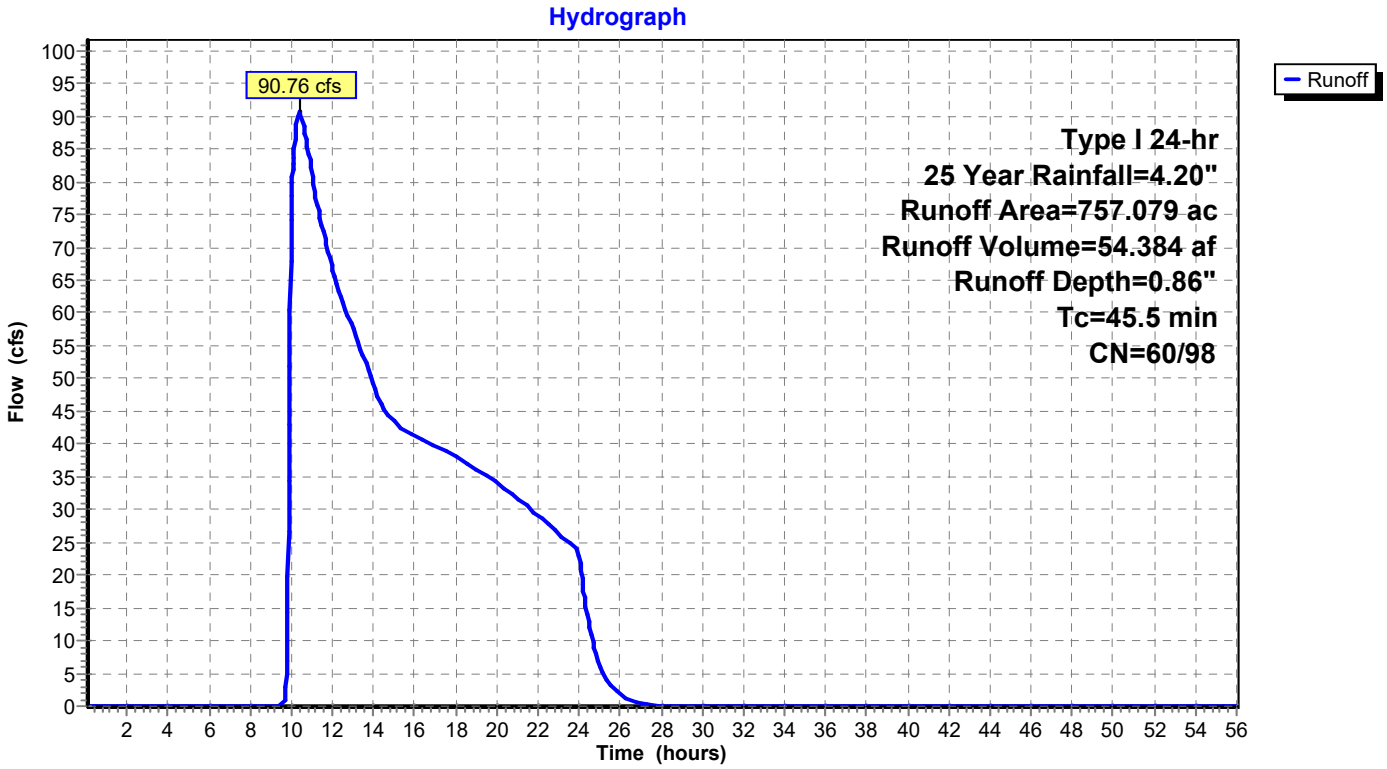
Runoff = 90.76 cfs @ 10.41 hrs, Volume= 54.384 af, Depth= 0.86"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
234.658	58	Meadow, non-grazed, HSG B
36.169	58	Meadow, non-grazed, HSG B
0.022	58	Meadow, non-grazed, HSG B
51.779	58	Meadow, non-grazed, HSG B
10.304	58	Meadow, non-grazed, HSG B
28.620	58	Meadow, non-grazed, HSG B
28.650	58	Meadow, non-grazed, HSG B
67.424	58	Meadow, non-grazed, HSG B
203.020	58	Meadow, non-grazed, HSG B
26.053	71	Meadow, non-grazed, HSG C
12.803	71	Meadow, non-grazed, HSG C
44.268	71	Meadow, non-grazed, HSG C
13.308	71	Meadow, non-grazed, HSG C
0.001	98	Paved roads w/curbs & sewers, HSG C
757.079	60	Weighted Average
757.078	60	100.00% Pervious Area
0.001	98	0.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.5					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 3b-Ex: Subcat 3b-Ex



Summary for Subcatchment 4: Subcat 4

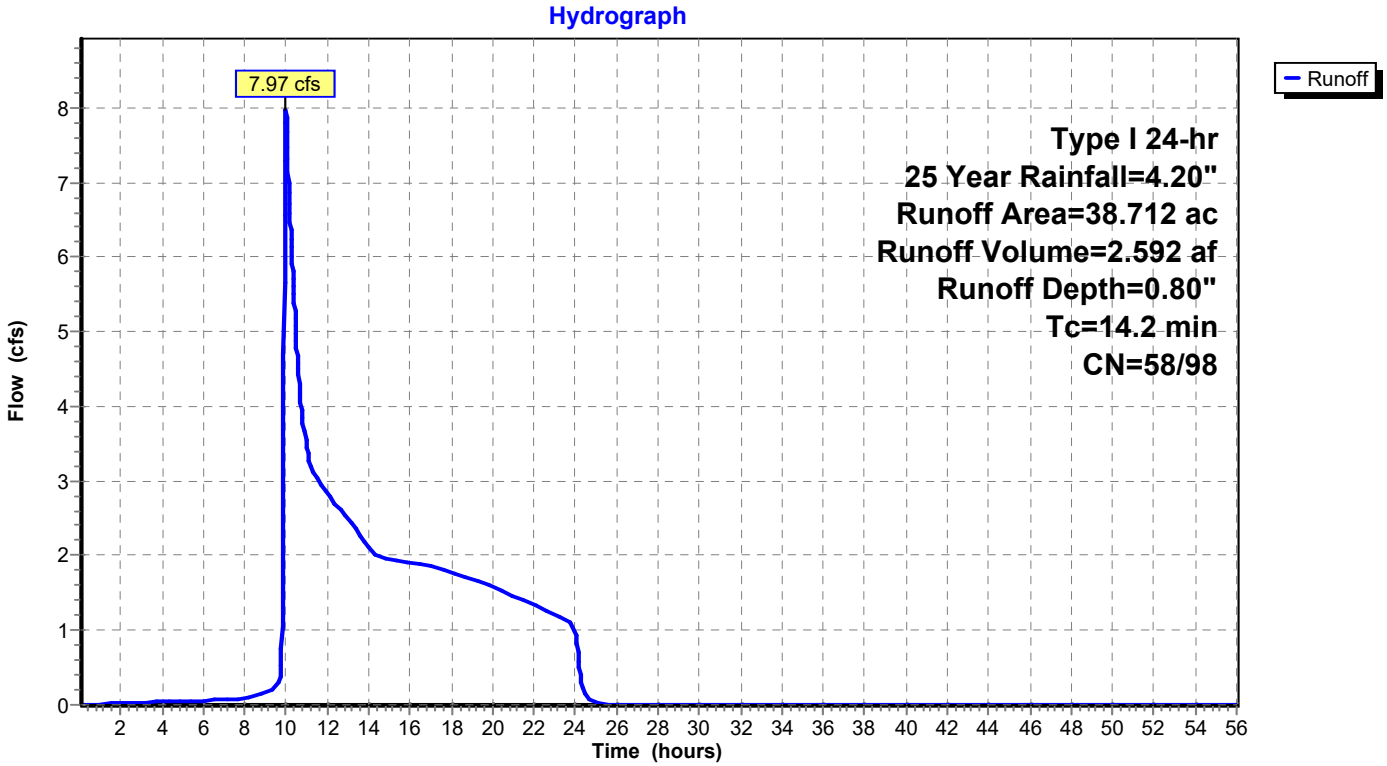
Runoff = 7.97 cfs @ 10.00 hrs, Volume= 2.592 af, Depth= 0.80"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
2.765	68	1 acre lots, 20% imp, HSG B
0.000	58	Meadow, non-grazed, HSG B
7.644	58	Meadow, non-grazed, HSG B
0.126	58	Meadow, non-grazed, HSG B
5.342	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
20.803	58	Meadow, non-grazed, HSG B
0.971	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
1.061	58	Meadow, non-grazed, HSG B
38.712	59	Weighted Average
38.159	58	98.57% Pervious Area
0.553	98	1.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 4: Subcat 4



Summary for Subcatchment 5: Subcat 5

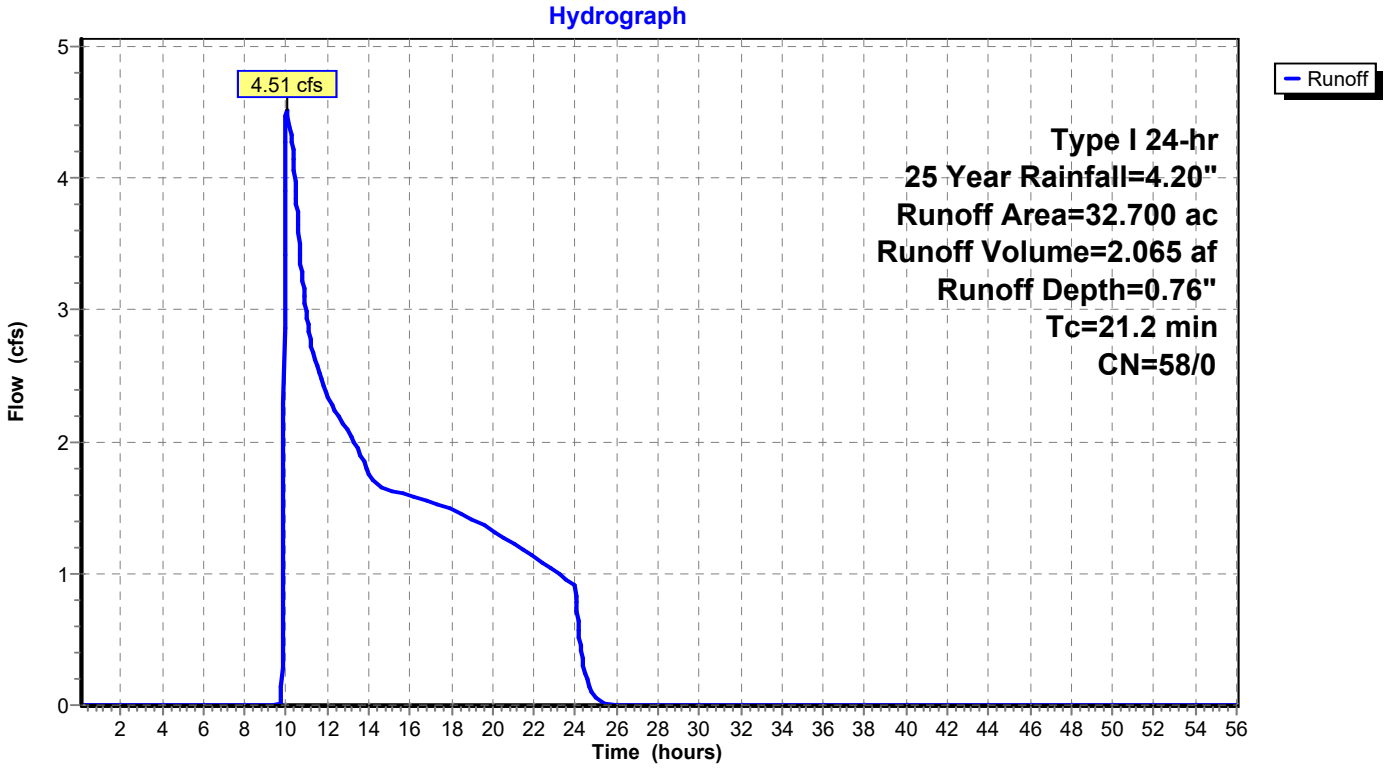
Runoff = 4.51 cfs @ 10.03 hrs, Volume= 2.065 af, Depth= 0.76"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
9.224	58	Meadow, non-grazed, HSG B
23.476	58	Meadow, non-grazed, HSG B
32.700	58	Weighted Average
32.700	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.2					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 5: Subcat 5



Summary for Subcatchment 6: Subcat 6

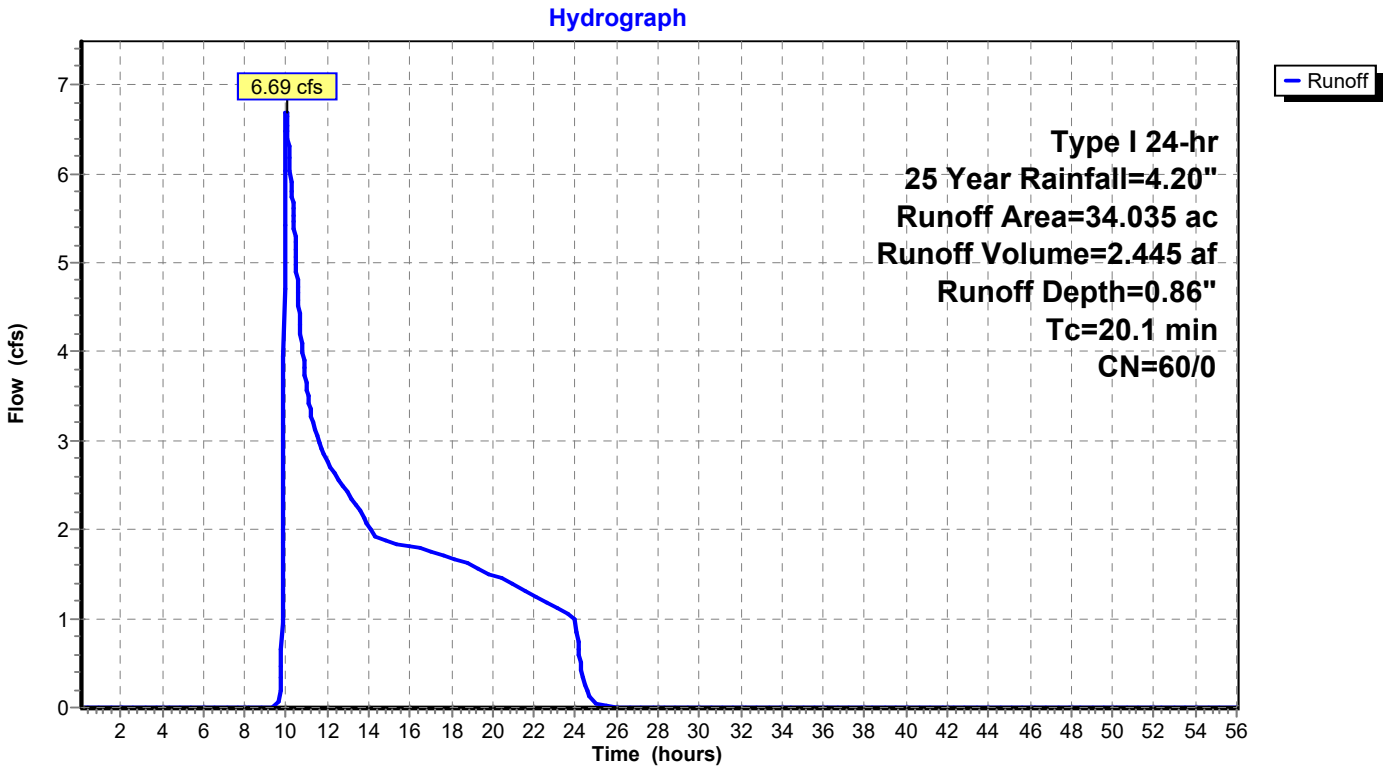
Runoff = 6.69 cfs @ 10.01 hrs, Volume= 2.445 af, Depth= 0.86"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
23.646	58	Meadow, non-grazed, HSG B
0.010	58	Meadow, non-grazed, HSG B
0.081	58	Meadow, non-grazed, HSG B
4.046	58	Meadow, non-grazed, HSG B
2.192	58	Meadow, non-grazed, HSG B
4.059	71	Meadow, non-grazed, HSG C
34.035	60	Weighted Average
34.035	60	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.1					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 6: Subcat 6



Summary for Subcatchment 7: Subcat 7

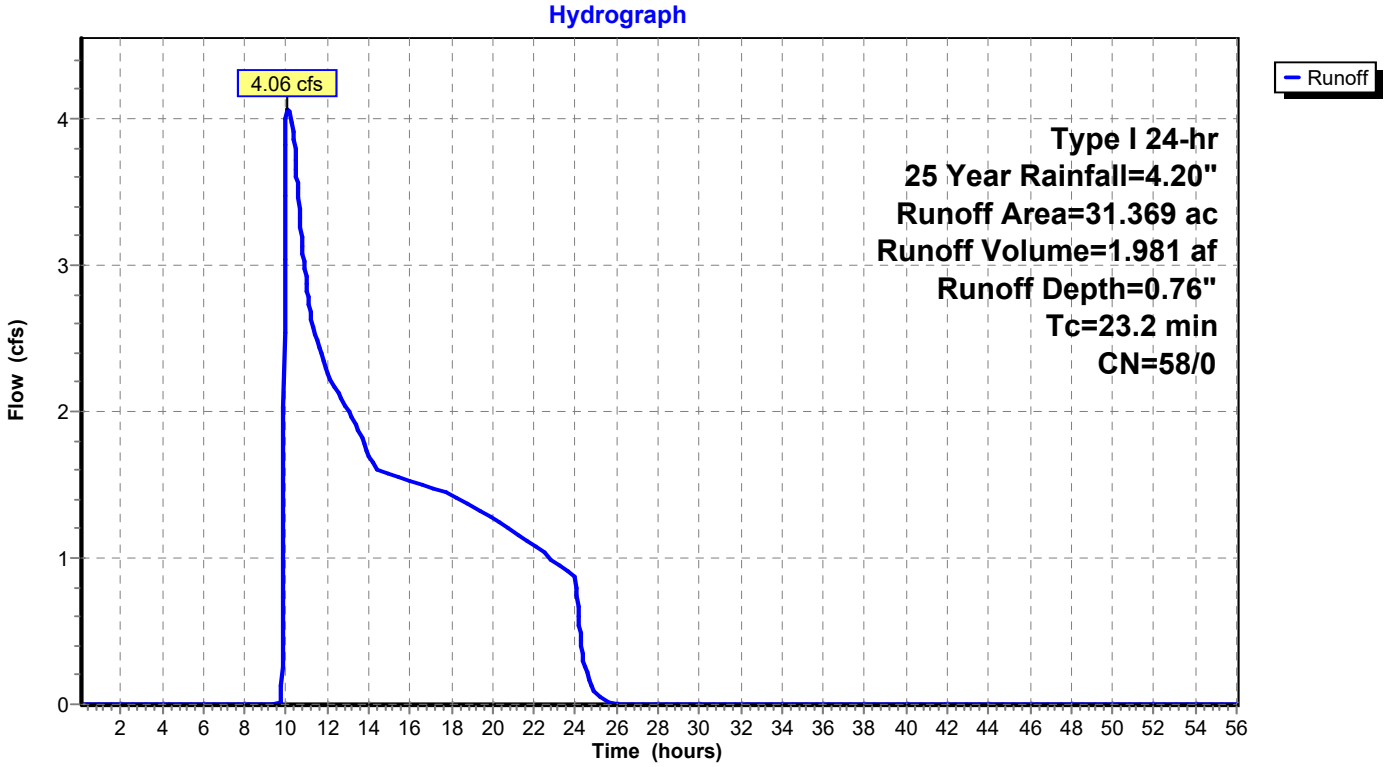
Runoff = 4.06 cfs @ 10.09 hrs, Volume= 1.981 af, Depth= 0.76"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
4.398	58	Meadow, non-grazed, HSG B
11.983	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
14.988	58	Meadow, non-grazed, HSG B
31.369	58	Weighted Average
31.369	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.2					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 7: Subcat 7



Summary for Subcatchment 8: Subcat 8

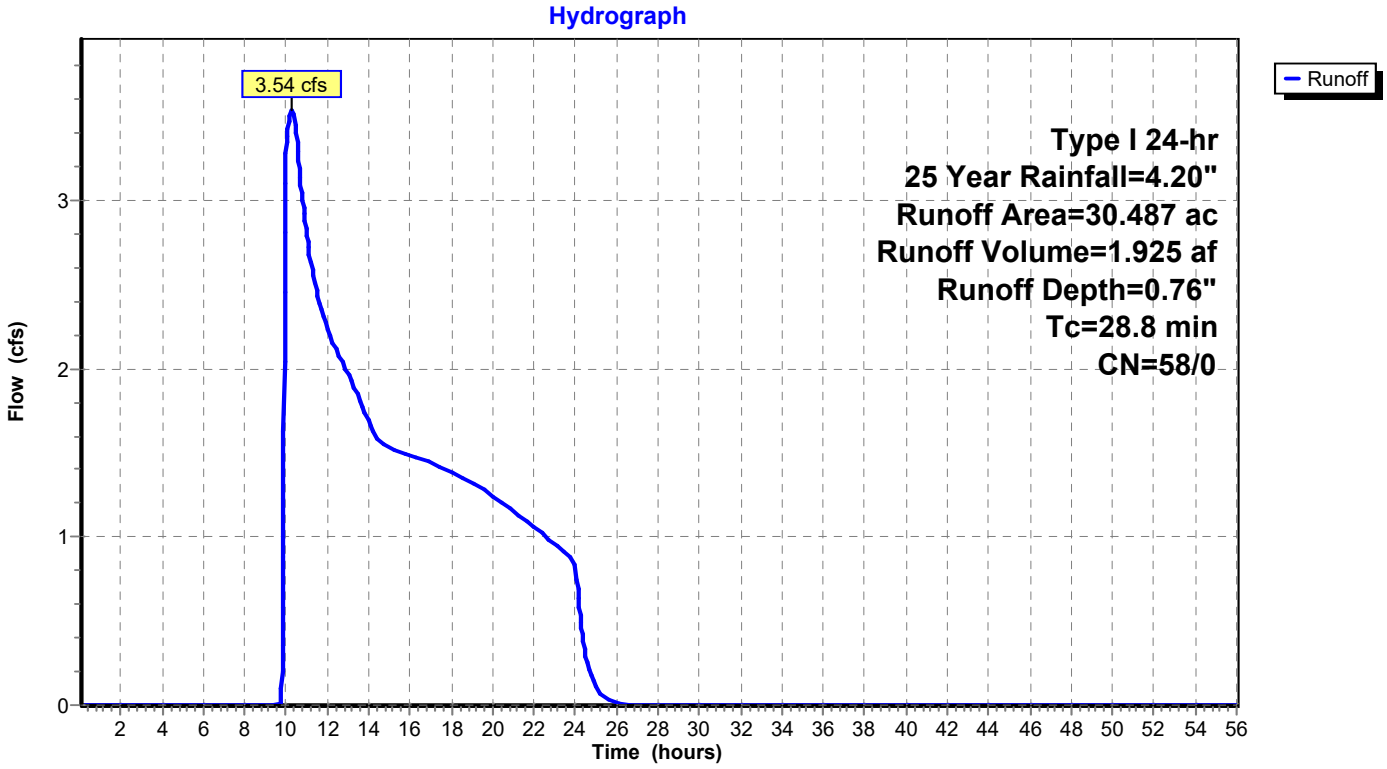
Runoff = 3.54 cfs @ 10.28 hrs, Volume= 1.925 af, Depth= 0.76"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
1.331	58	Meadow, non-grazed, HSG B
29.156	58	Meadow, non-grazed, HSG B
30.487	58	Weighted Average
30.487	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 8: Subcat 8



Summary for Subcatchment 8a-Ex: Subcat 8a-Ex

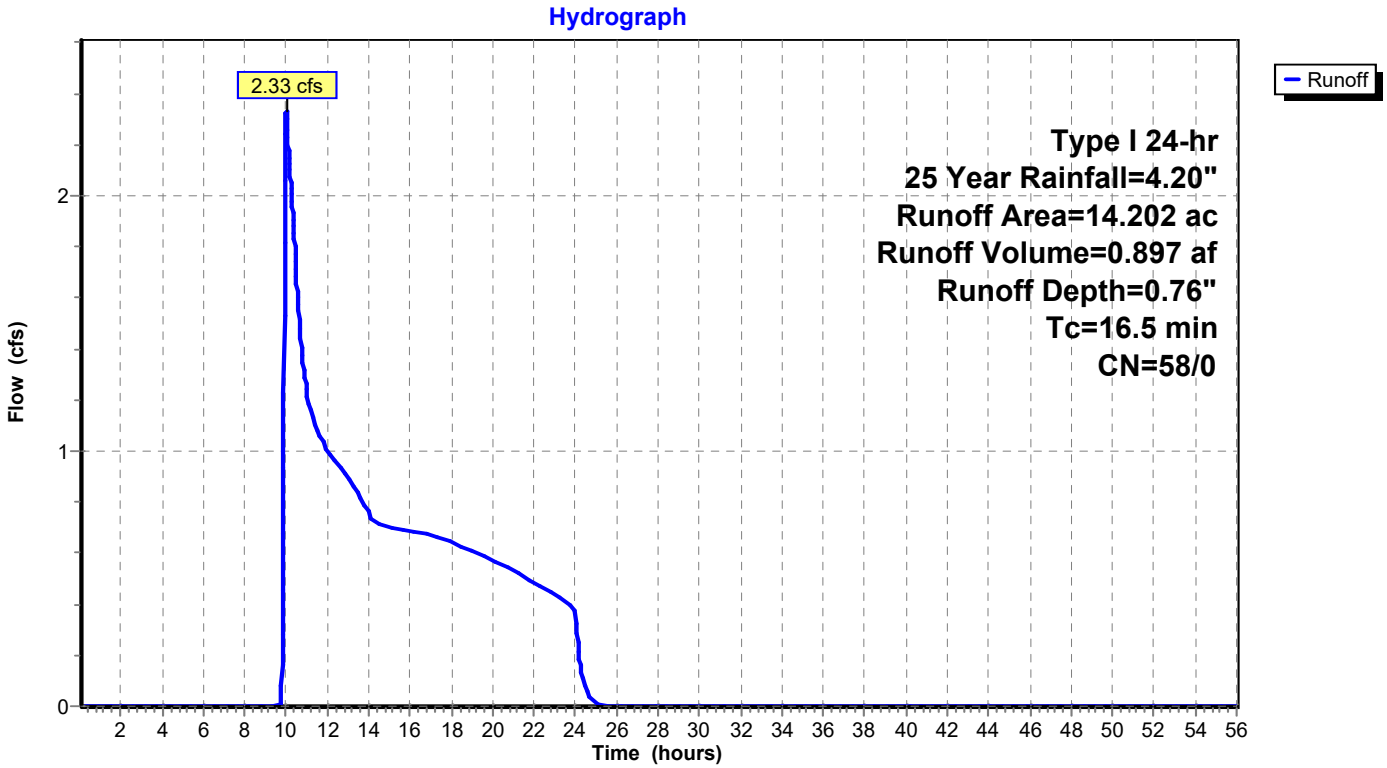
Runoff = 2.33 cfs @ 10.01 hrs, Volume= 0.897 af, Depth= 0.76"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
2.036	58	Meadow, non-grazed, HSG B
7.264	58	Meadow, non-grazed, HSG B
4.903	58	Meadow, non-grazed, HSG B
14.202	58	Weighted Average
14.202	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 8a-Ex: Subcat 8a-Ex



Summary for Subcatchment 9: Subcat 9

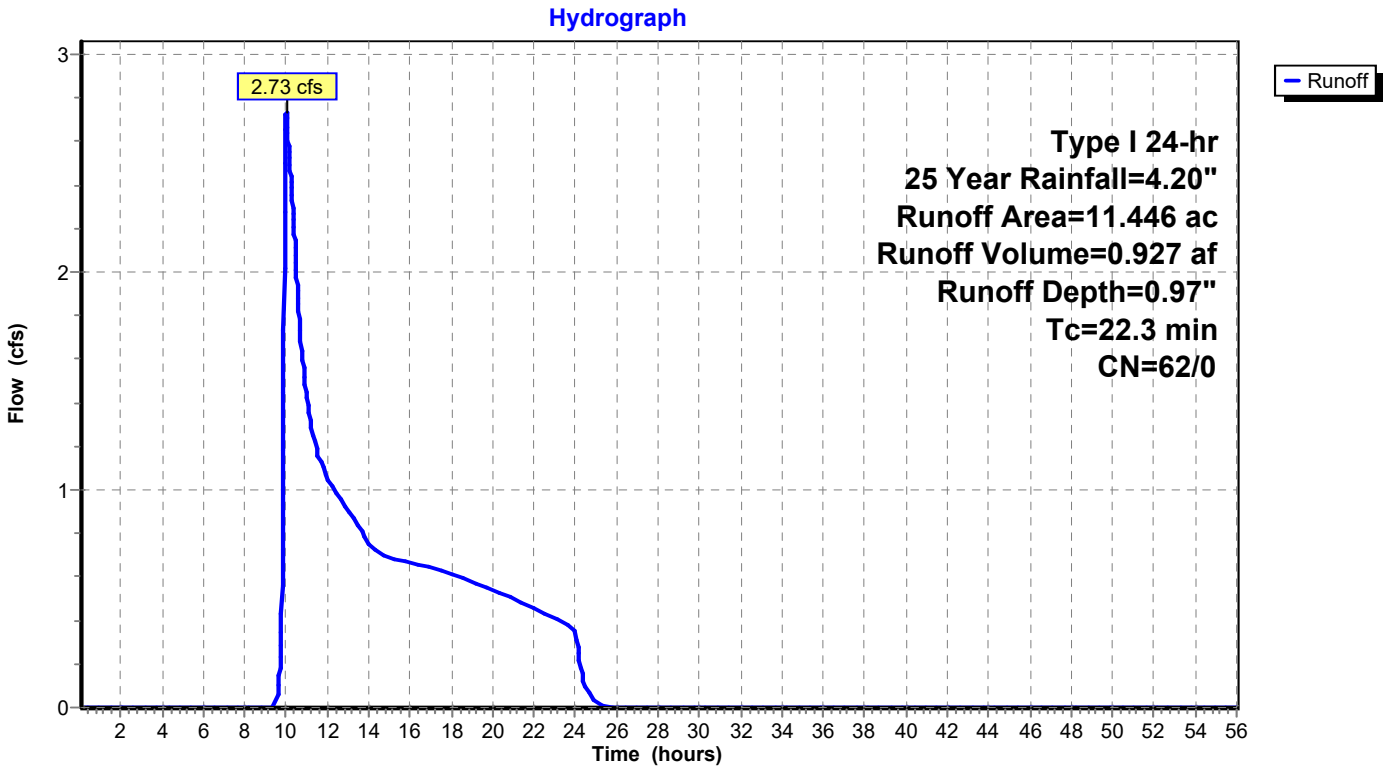
Runoff = 2.73 cfs @ 10.01 hrs, Volume= 0.927 af, Depth= 0.97"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
0.006	58	Meadow, non-grazed, HSG B
8.451	58	Meadow, non-grazed, HSG B
0.026	58	Meadow, non-grazed, HSG B
0.469	58	Meadow, non-grazed, HSG B
0.005	58	Meadow, non-grazed, HSG B
2.489	78	Meadow, non-grazed, HSG D
11.446	62	Weighted Average
11.446	62	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3					**Direct Entry, Tc from CAD Catchments (SCS Method)**

Subcatchment 9: Subcat 9



Summary for Subcatchment 9a-Ex: Subcat 9a-Ex

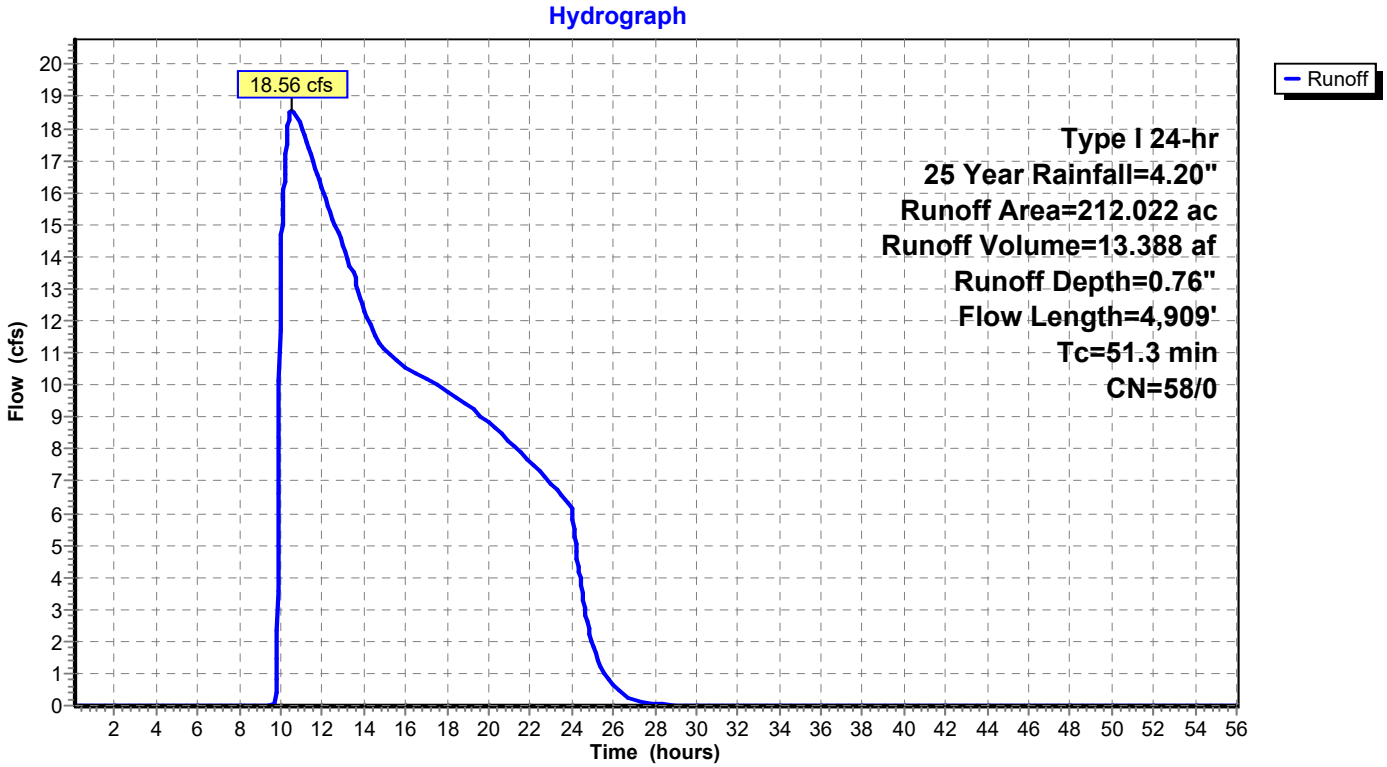
Runoff = 18.56 cfs @ 10.53 hrs, Volume= 13.388 af, Depth= 0.76"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
16.535	58	Meadow, non-grazed, HSG B
38.755	58	Meadow, non-grazed, HSG B
2.915	58	Meadow, non-grazed, HSG B
114.179	58	Meadow, non-grazed, HSG B
31.194	58	Meadow, non-grazed, HSG B
8.131	58	Meadow, non-grazed, HSG B
0.314	78	Meadow, non-grazed, HSG D
212.022	58	Weighted Average
212.022	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
51.3	4,909		1.59		**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 9a-Ex: Subcat 9a-Ex



Summary for Subcatchment 10: Subcat 10

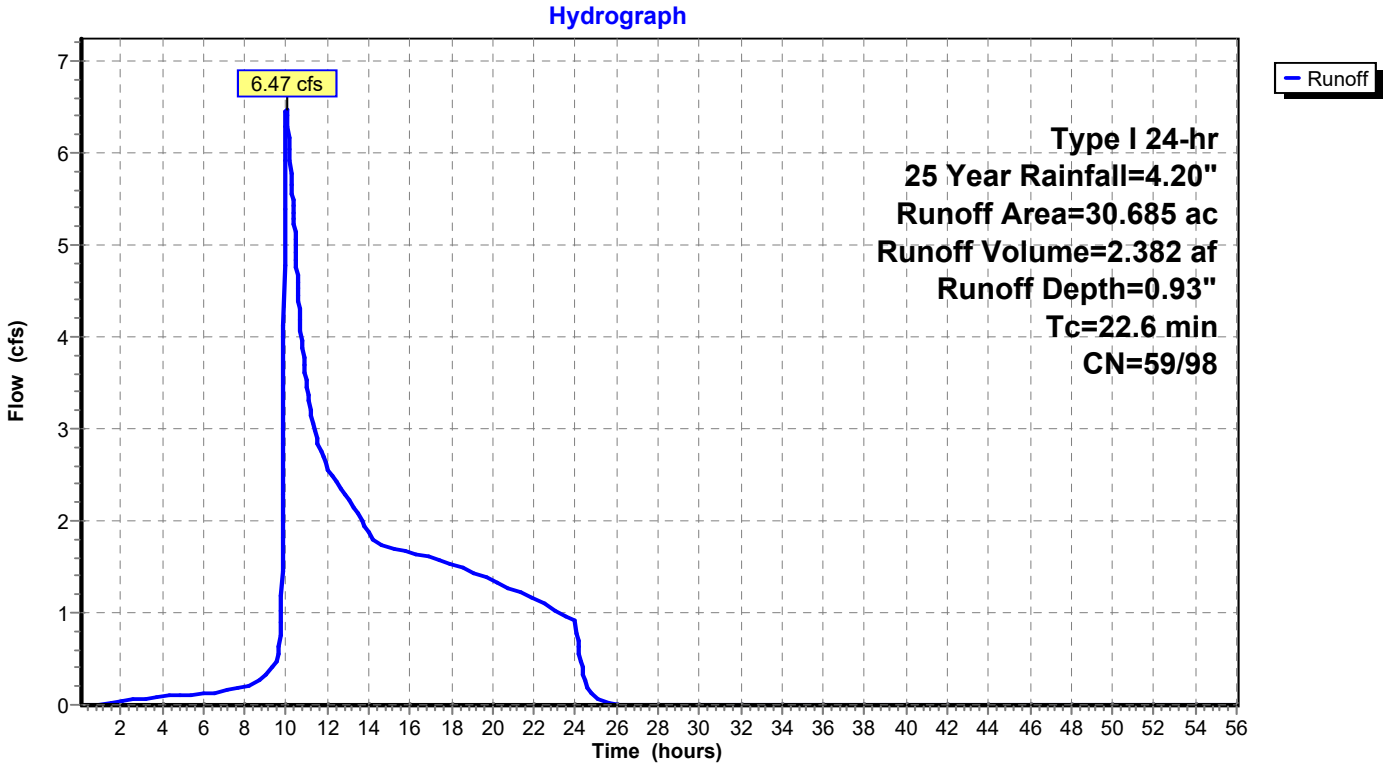
Runoff = 6.47 cfs @ 10.01 hrs, Volume= 2.382 af, Depth= 0.93"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
5.865	58	Meadow, non-grazed, HSG B
22.679	58	Meadow, non-grazed, HSG B
0.039	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.039	71	Meadow, non-grazed, HSG C
0.175	77	Natural western desert, HSG B
0.700	77	Natural western desert, HSG B
1.189	98	Paved roads w/curbs & sewers, HSG B
30.685	60	Weighted Average
29.496	59	96.12% Pervious Area
1.189	98	3.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.6					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 10: Subcat 10



Summary for Subcatchment 10a-Ex: Subcat 10a-Ex

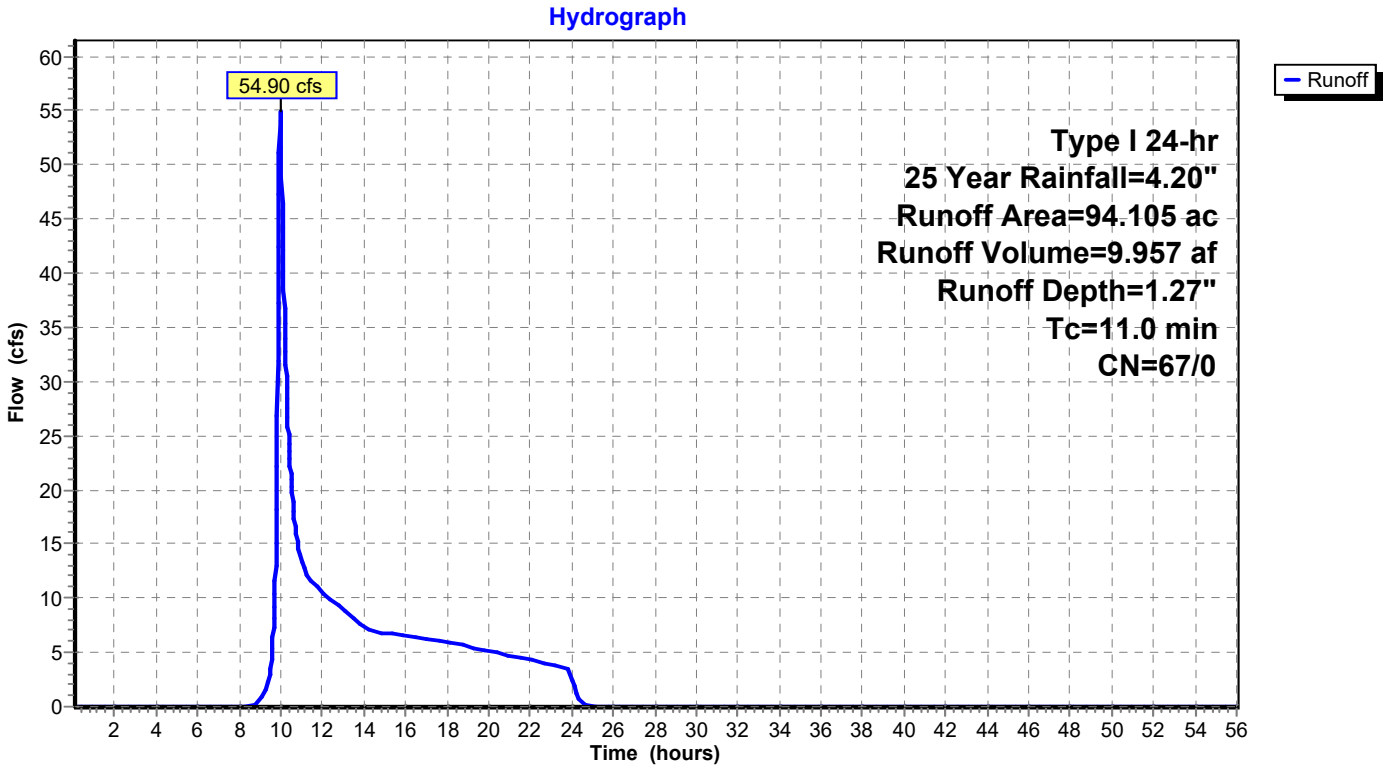
Runoff = 54.90 cfs @ 9.98 hrs, Volume= 9.957 af, Depth= 1.27"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
0.173	58	Meadow, non-grazed, HSG B
9.477	58	Meadow, non-grazed, HSG B
11.002	58	Meadow, non-grazed, HSG B
0.163	58	Meadow, non-grazed, HSG B
0.158	58	Meadow, non-grazed, HSG B
10.113	58	Meadow, non-grazed, HSG B
48.708	71	Meadow, non-grazed, HSG C
14.310	71	Meadow, non-grazed, HSG C
94.105	67	Weighted Average
94.105	67	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 10a-Ex: Subcat 10a-Ex



Summary for Subcatchment 11: Subcat 11

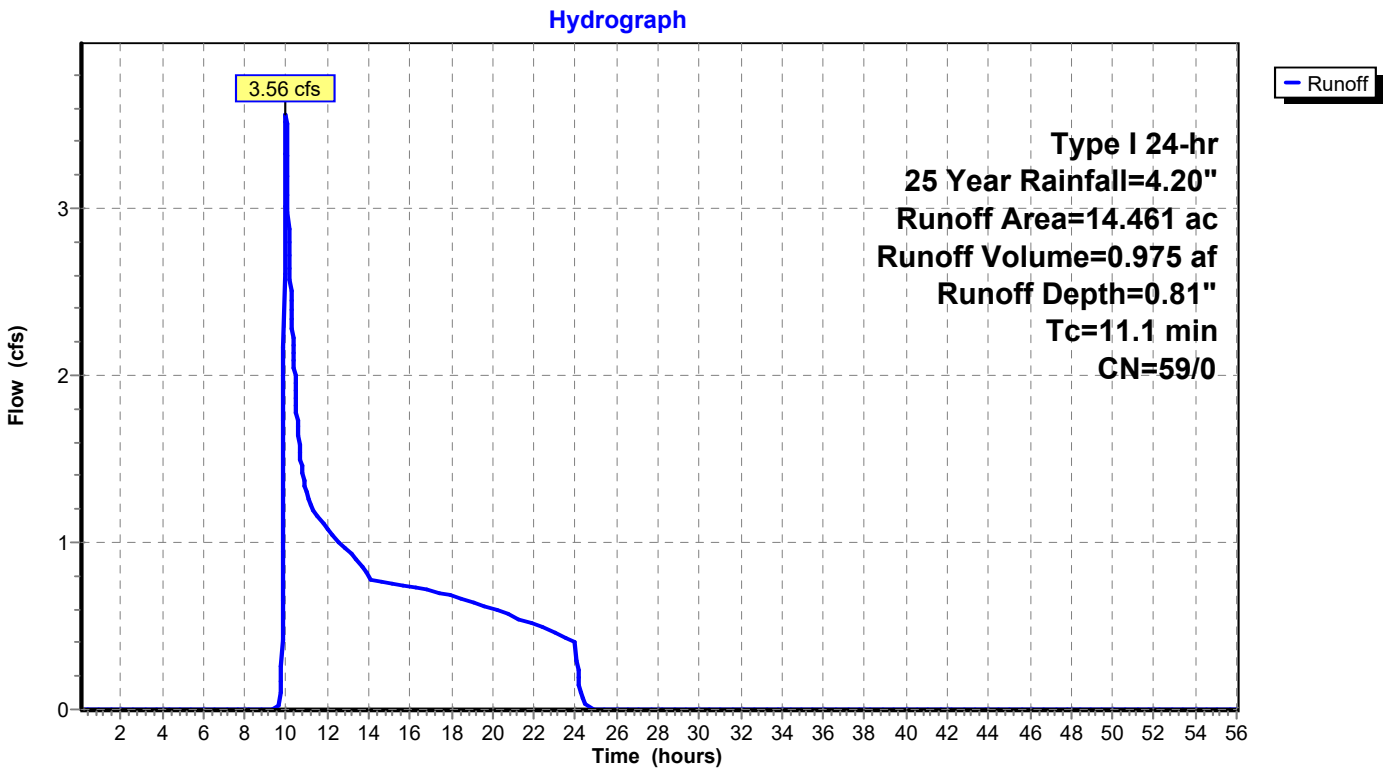
Runoff = 3.56 cfs @ 10.00 hrs, Volume= 0.975 af, Depth= 0.81"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
0.000	58	Meadow, non-grazed, HSG B
0.328	58	Meadow, non-grazed, HSG B
13.072	58	Meadow, non-grazed, HSG B
0.762	71	Meadow, non-grazed, HSG C
0.298	71	Meadow, non-grazed, HSG C
14.461	59	Weighted Average
14.461	59	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 11: Subcat 11



Summary for Subcatchment 12: Subcat 12

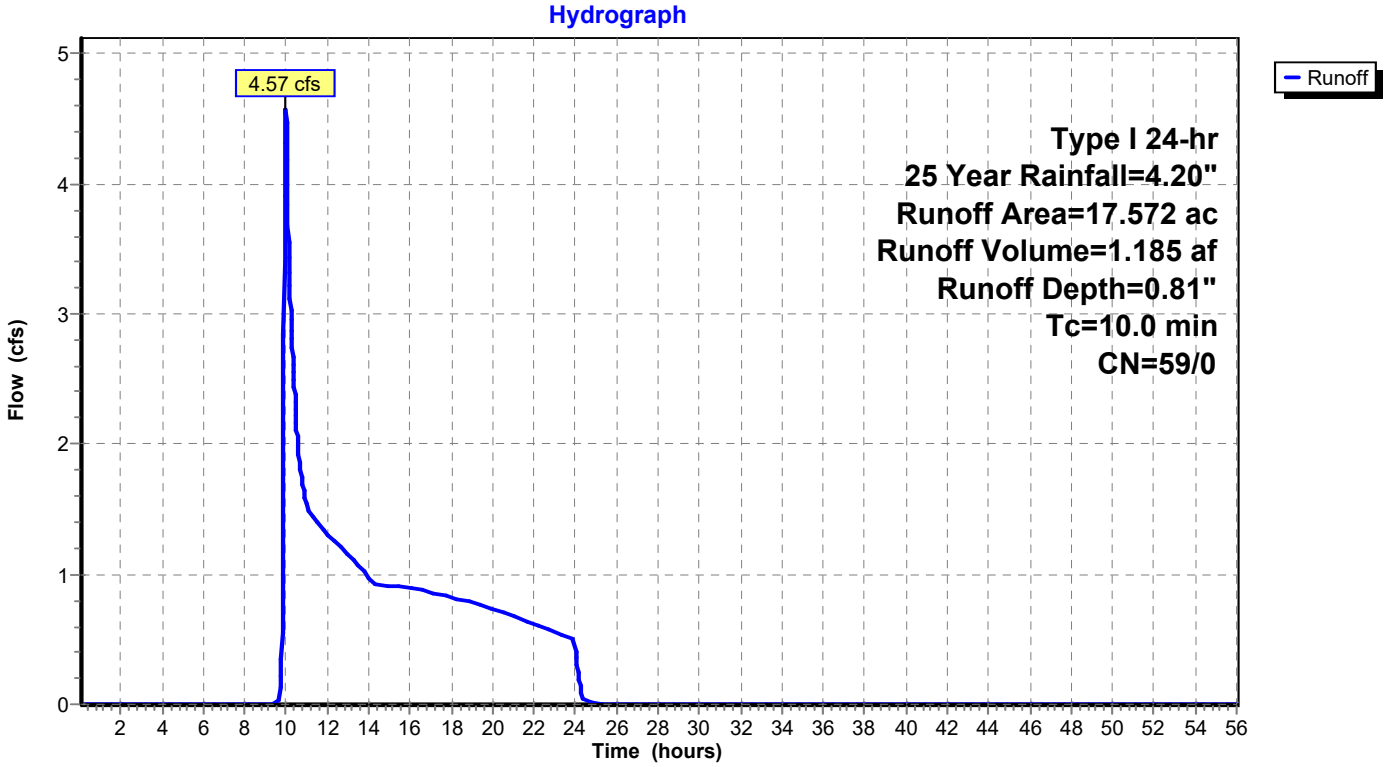
Runoff = 4.57 cfs @ 9.99 hrs, Volume= 1.185 af, Depth= 0.81"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
0.000	58	Meadow, non-grazed, HSG B
0.977	58	Meadow, non-grazed, HSG B
15.916	58	Meadow, non-grazed, HSG B
0.001	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	71	Meadow, non-grazed, HSG C
0.223	71	Meadow, non-grazed, HSG C
0.456	71	Meadow, non-grazed, HSG C
17.572	59	Weighted Average
17.572	59	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9					**Direct Entry, SCS Method taken from Catchment in ACAD file**
7.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 12: Subcat 12



Summary for Subcatchment 12a-Ex: Subcat 12a-Ex

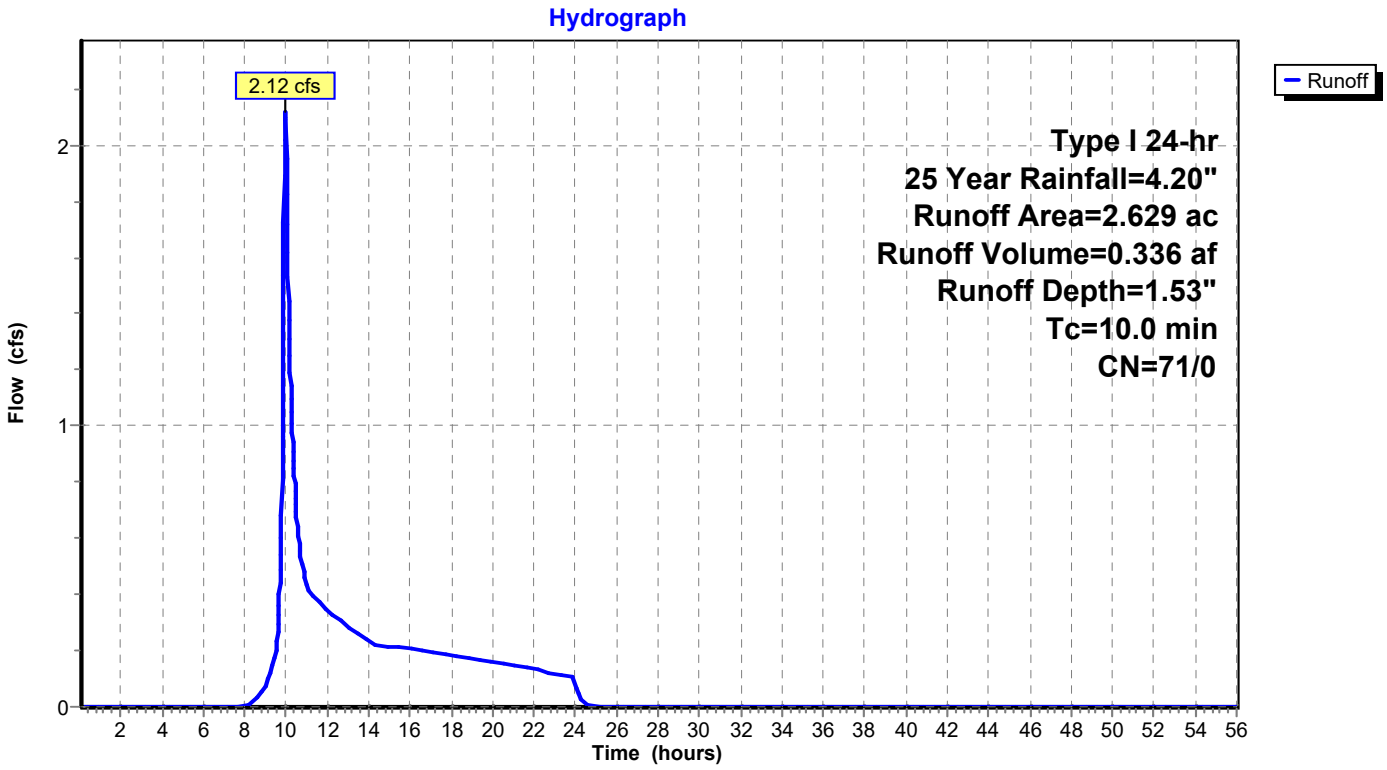
Runoff = 2.12 cfs @ 9.97 hrs, Volume= 0.336 af, Depth= 1.53"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
2.629	71	Meadow, non-grazed, HSG C
2.629	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9					**Direct Entry, SCS Method taken from Catchment in ACAD file**
4.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 12a-Ex: Subcat 12a-Ex



Summary for Subcatchment 13: Subcat 13

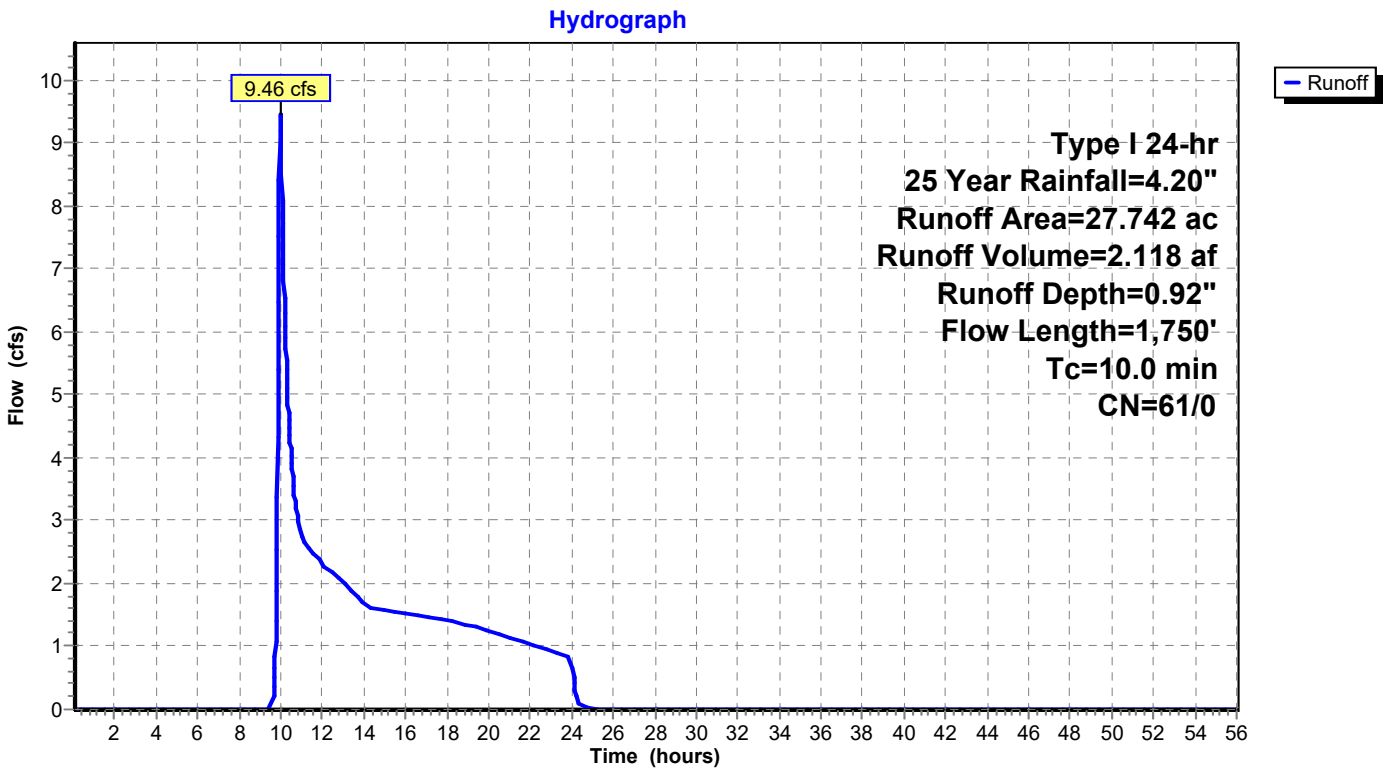
Runoff = 9.46 cfs @ 9.99 hrs, Volume= 2.118 af, Depth= 0.92"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
15.931	58	Meadow, non-grazed, HSG B
4.853	58	Meadow, non-grazed, HSG B
0.000	71	Meadow, non-grazed, HSG C
6.330	71	Meadow, non-grazed, HSG C
0.477	71	Meadow, non-grazed, HSG C
0.151	75	Row crops, SR + CR, Good, HSG B
27.742	61	Weighted Average
27.742	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	1,750		3.74		**Direct Entry, SCS Method taken from Catchment in ACAD file**
7.8	1,750	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 13: Subcat 13



Summary for Subcatchment 13a-Ex: Subcat 13a-Ex

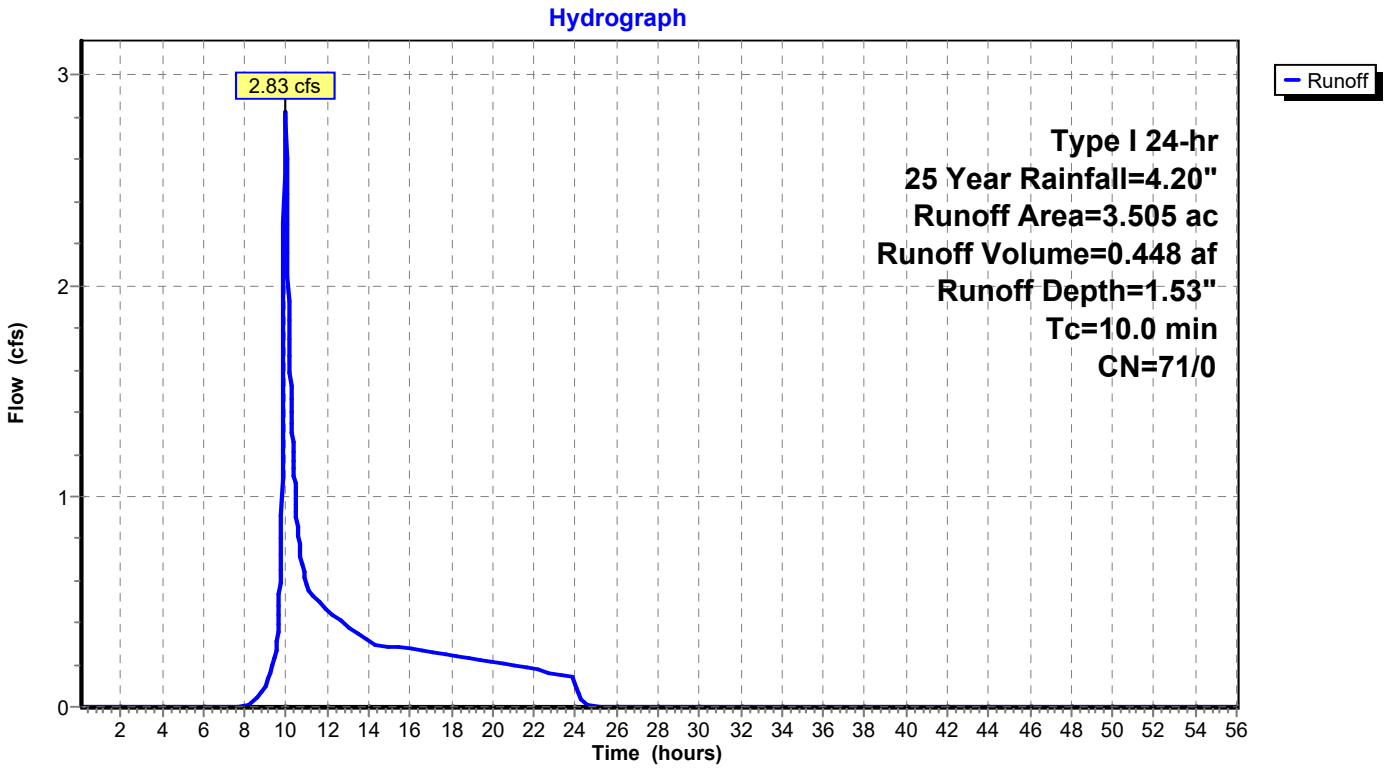
Runoff = 2.83 cfs @ 9.97 hrs, Volume= 0.448 af, Depth= 1.53"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
3.505	71	Meadow, non-grazed, HSG C
3.505	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9					**Direct Entry, SCS Method taken from Catchment in ACAD file**
8.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 13a-Ex: Subcat 13a-Ex



Summary for Subcatchment 13b-Ex: Subcat 13b-Ex

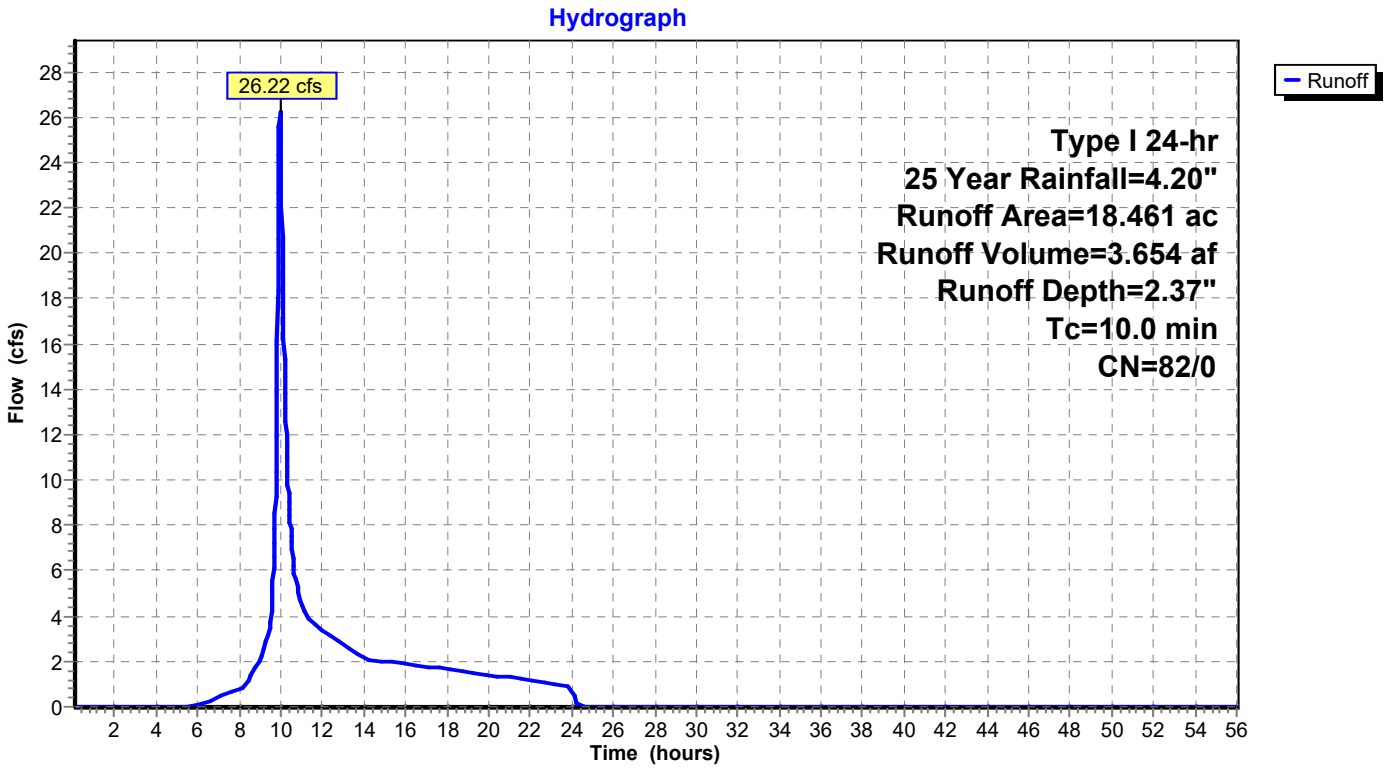
Runoff = 26.22 cfs @ 9.97 hrs, Volume= 3.654 af, Depth= 2.37"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
18.461	82	Row crops, SR + CR, Good, HSG C
18.461	82	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry, SCS Method taken from Catchment in ACAD file**
7.0	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 13b-Ex: Subcat 13b-Ex



Summary for Subcatchment 13c-Ex: Subcat 13c-Ex

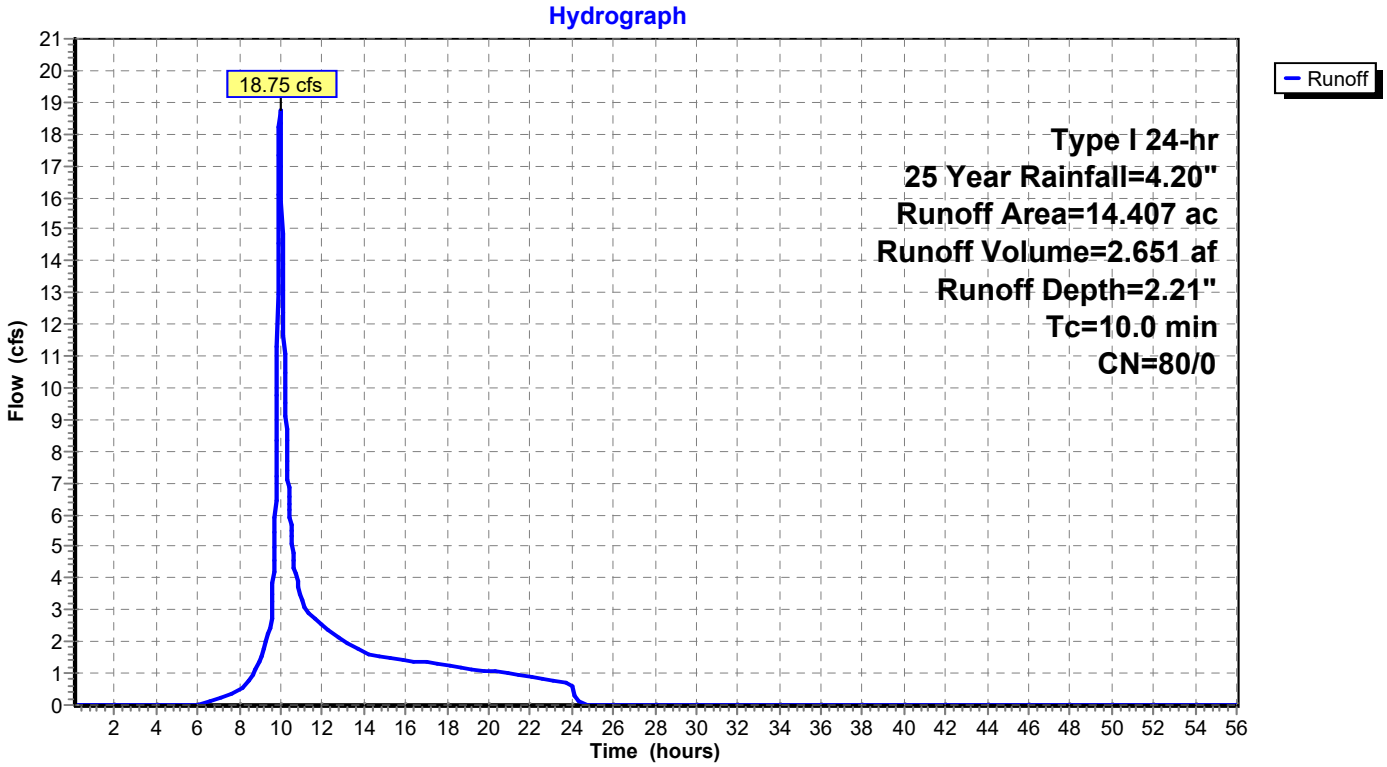
Runoff = 18.75 cfs @ 9.97 hrs, Volume= 2.651 af, Depth= 2.21"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
3.718	75	Row crops, SR + CR, Good, HSG B
10.689	82	Row crops, SR + CR, Good, HSG C
14.407	80	Weighted Average
14.407	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9					**Direct Entry, SCS Method taken from Catchment in ACAD file**
6.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 13c-Ex: Subcat 13c-Ex



Summary for Subcatchment 14: Subcat 14

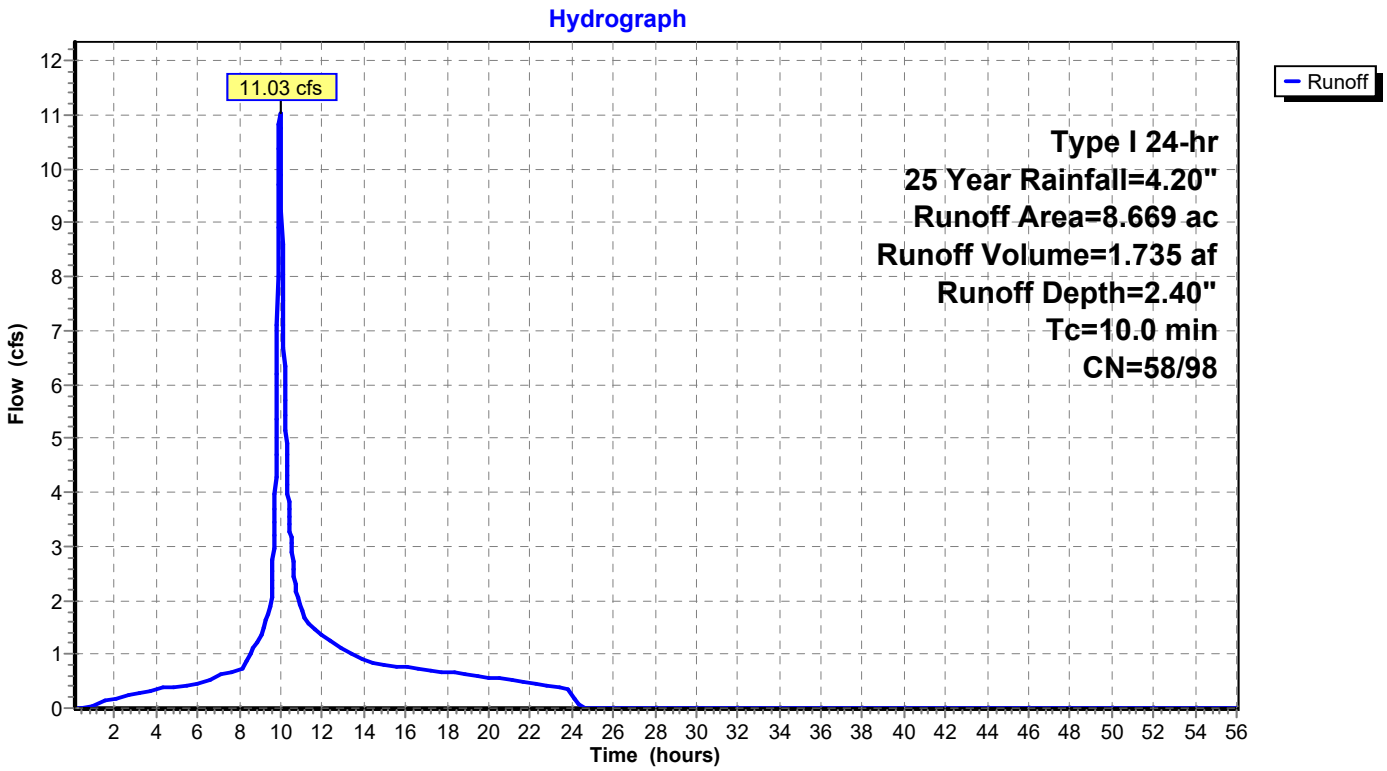
Runoff = 11.03 cfs @ 9.96 hrs, Volume= 1.735 af, Depth= 2.40"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
4.224	58	Meadow, non-grazed, HSG B
4.445	98	Paved roads w/curbs & sewers, HSG B
8.669	79	Weighted Average
4.224	58	48.73% Pervious Area
4.445	98	51.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6					**Direct Entry, SCS Method taken from Catchment in ACAD file**
8.6	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 14: Subcat 14



Summary for Subcatchment 14a{(1)}-Ex: Subcat 14a{(1)}-Ex

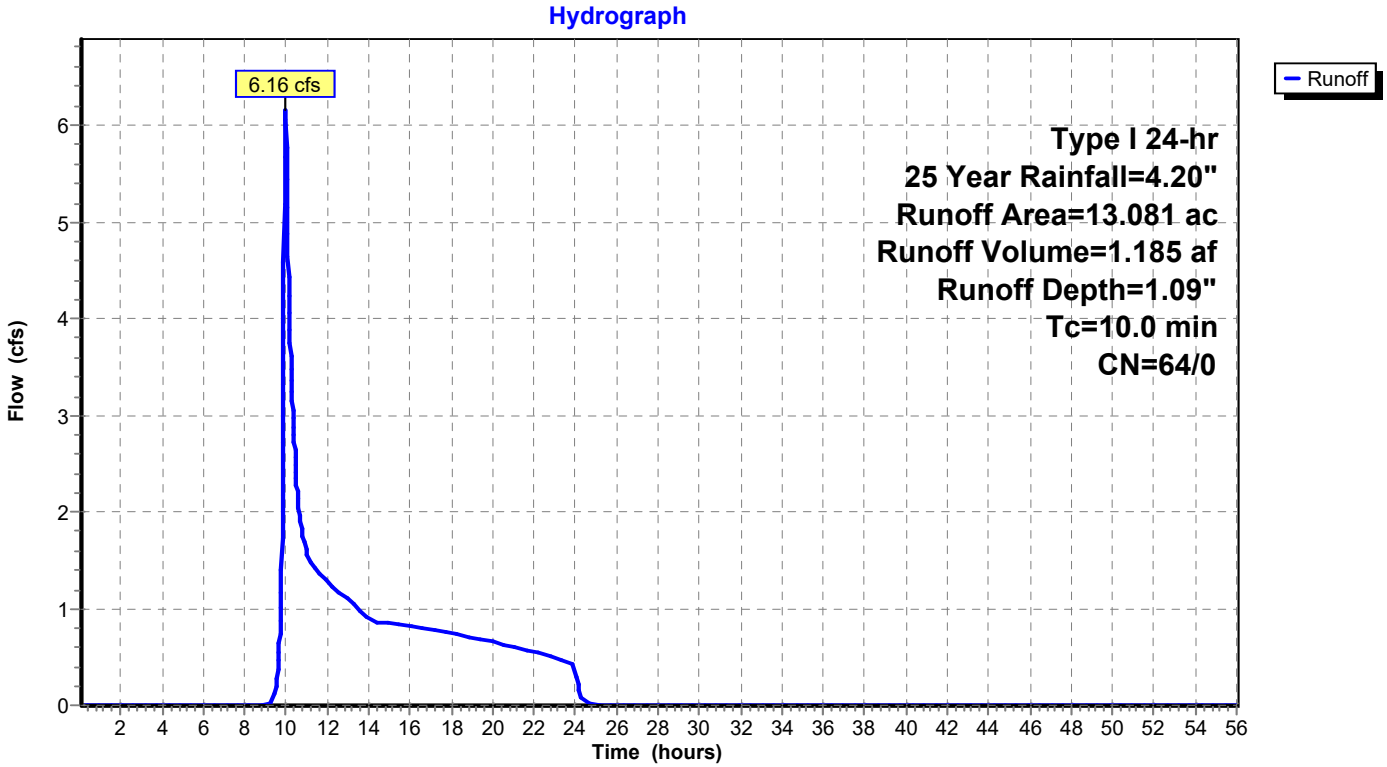
Runoff = 6.16 cfs @ 9.98 hrs, Volume= 1.185 af, Depth= 1.09"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
0.000	58	Meadow, non-grazed, HSG B
8.116	58	Meadow, non-grazed, HSG B
2.383	75	Row crops, SR + CR, Good, HSG B
0.000	75	Row crops, SR + CR, Good, HSG B
2.581	75	Row crops, SR + CR, Good, HSG B
13.081	64	Weighted Average
13.081	64	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**
8.7	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 14a{(1)}-Ex: Subcat 14a{(1)}-Ex



Summary for Subcatchment 14a{(2)}-Ex: Subcat 14a{(2)}-Ex

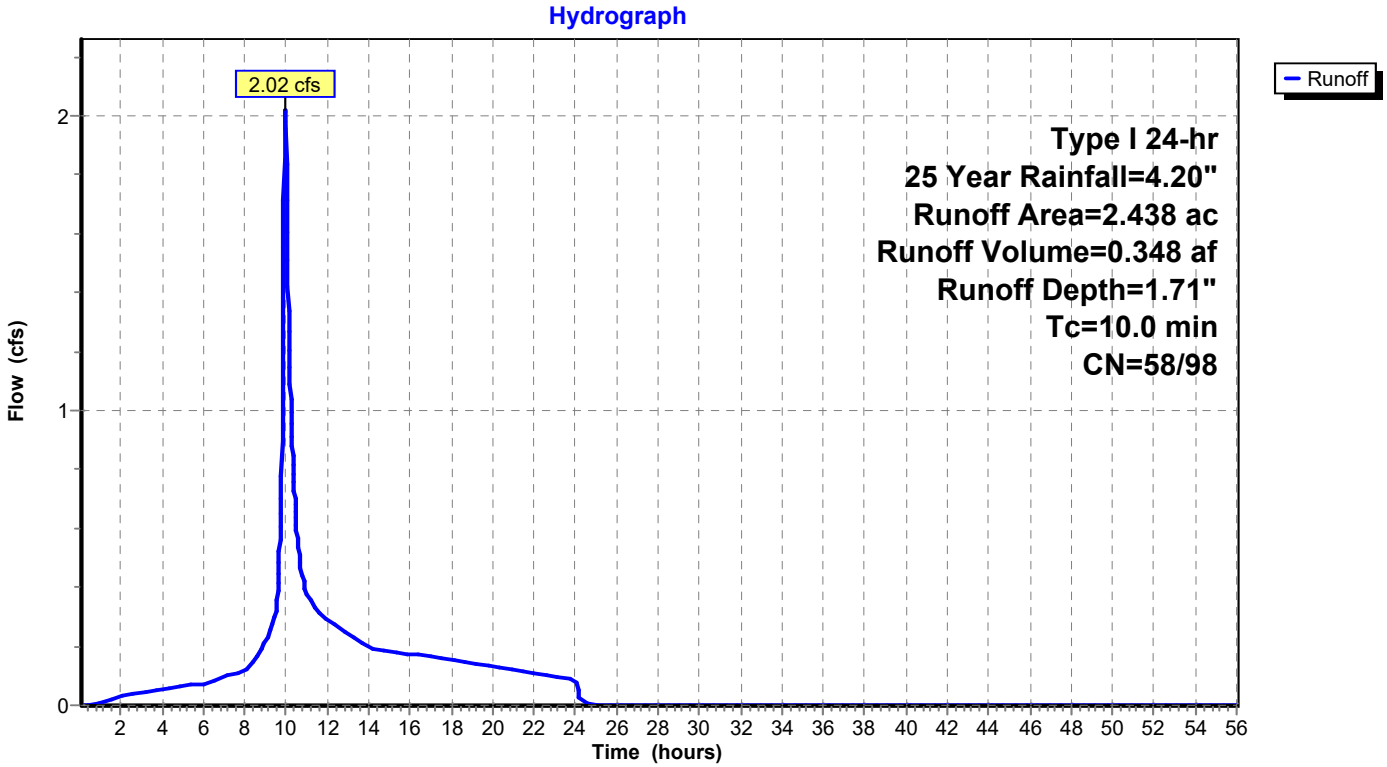
Runoff = 2.02 cfs @ 9.97 hrs, Volume= 0.348 af, Depth= 1.71"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
1.711	58	Meadow, non-grazed, HSG B
0.726	98	Paved roads w/curbs & sewers, HSG B
0.000	75	Row crops, SR + CR, Good, HSG B
0.000	75	Row crops, SR + CR, Good, HSG B
2.438	70	Weighted Average
1.711	58	70.20% Pervious Area
0.726	98	29.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**
4.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 14a{(2)}-Ex: Subcat 14a{(2)}-Ex



Summary for Subcatchment 14b-Ex: Subcat 14b-Ex

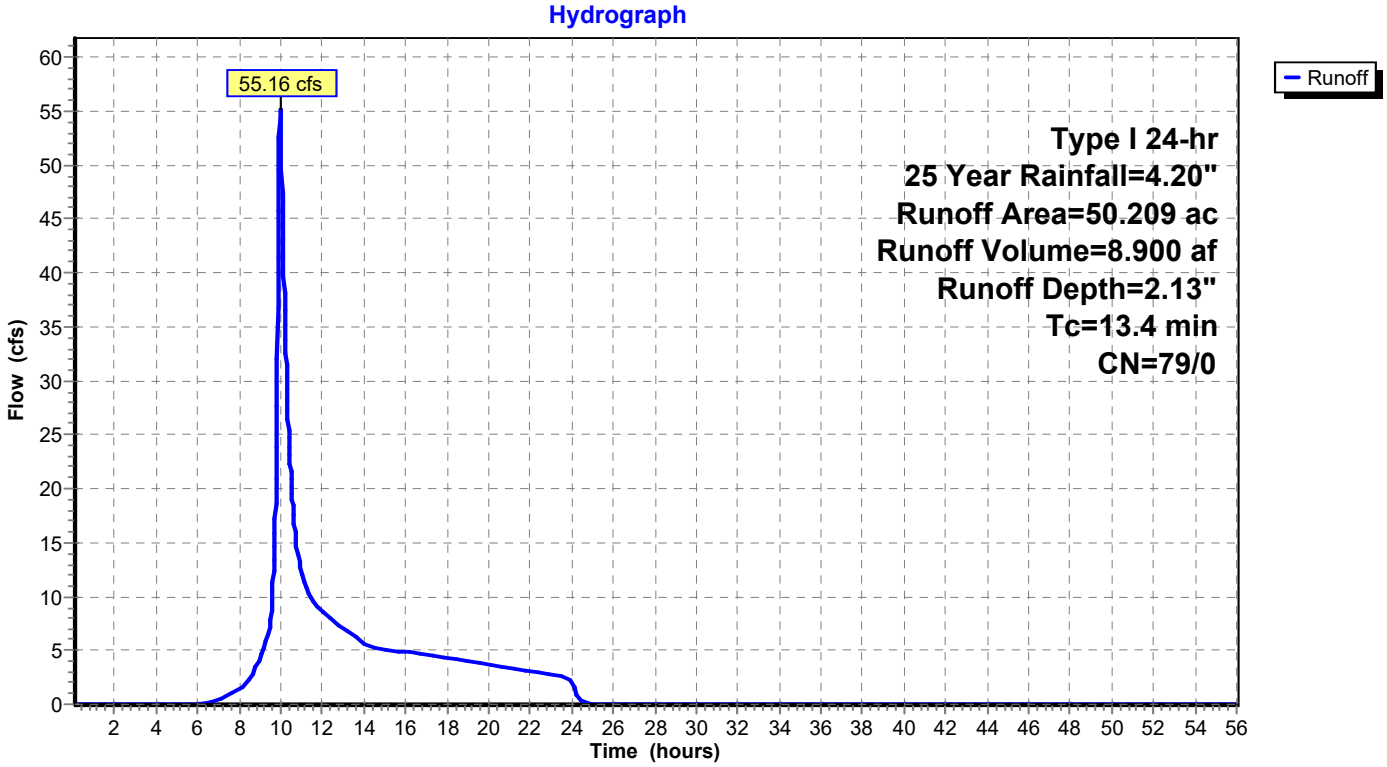
Runoff = 55.16 cfs @ 9.98 hrs, Volume= 8.900 af, Depth= 2.13"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
13.606	75	Row crops, SR + CR, Good, HSG B
8.804	75	Row crops, SR + CR, Good, HSG B
0.005	82	Row crops, SR + CR, Good, HSG C
27.793	82	Row crops, SR + CR, Good, HSG C
50.209	79	Weighted Average
50.209	79	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 14b-Ex: Subcat 14b-Ex



Summary for Subcatchment 14c{(0)}-Ex: Subcat 14c{(0)}-Ex

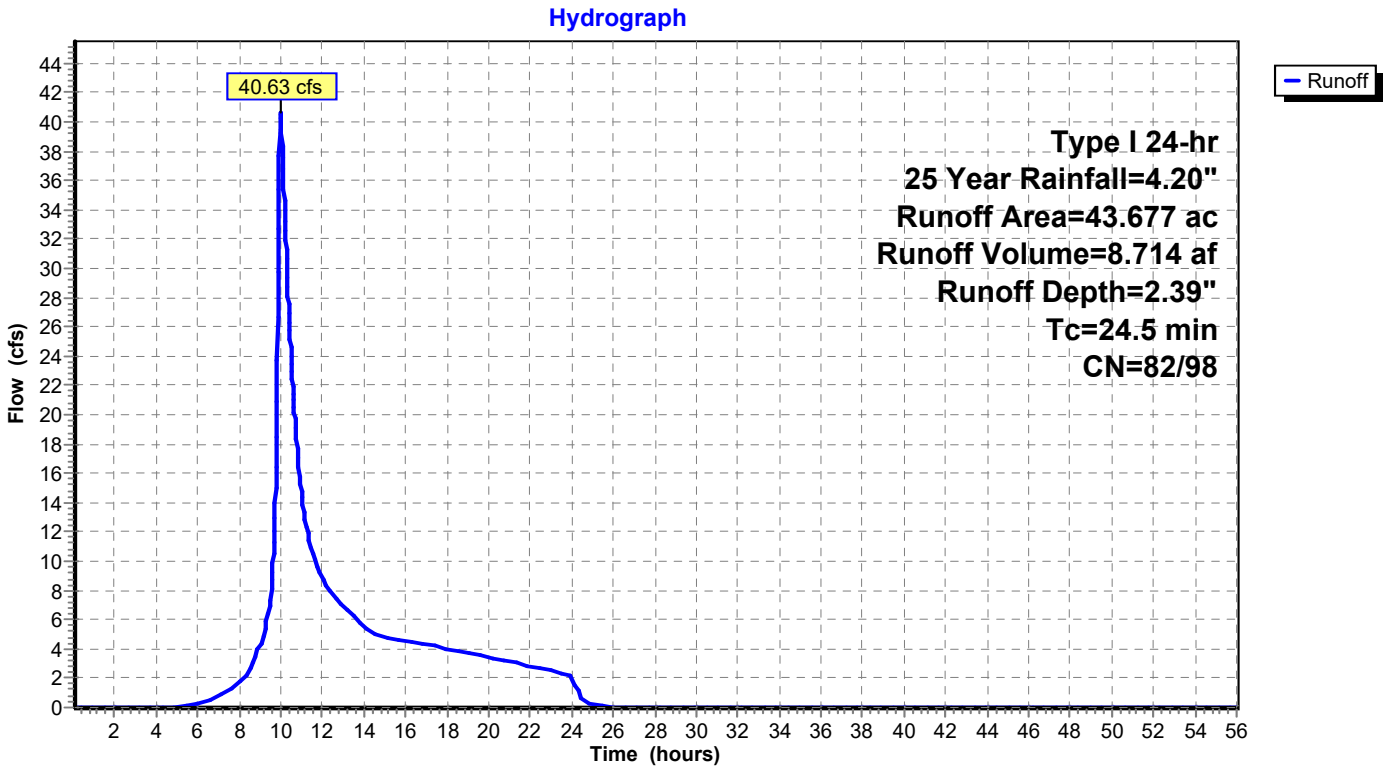
Runoff = 40.63 cfs @ 9.99 hrs, Volume= 8.714 af, Depth= 2.39"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
0.486	98	Paved roads w/curbs & sewers, HSG C
0.041	98	Paved roads w/curbs & sewers, HSG C
37.308	82	Row crops, SR + CR, Good, HSG C
0.070	82	Row crops, SR + CR, Good, HSG C
5.772	82	Row crops, SR + CR, Good, HSG C
43.677	82	Weighted Average
43.150	82	98.79% Pervious Area
0.527	98	1.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 14c{(0)}-Ex: Subcat 14c{(0)}-Ex



Summary for Subcatchment 14c{(1)}-Ex: Subcat 14c{(1)}-Ex

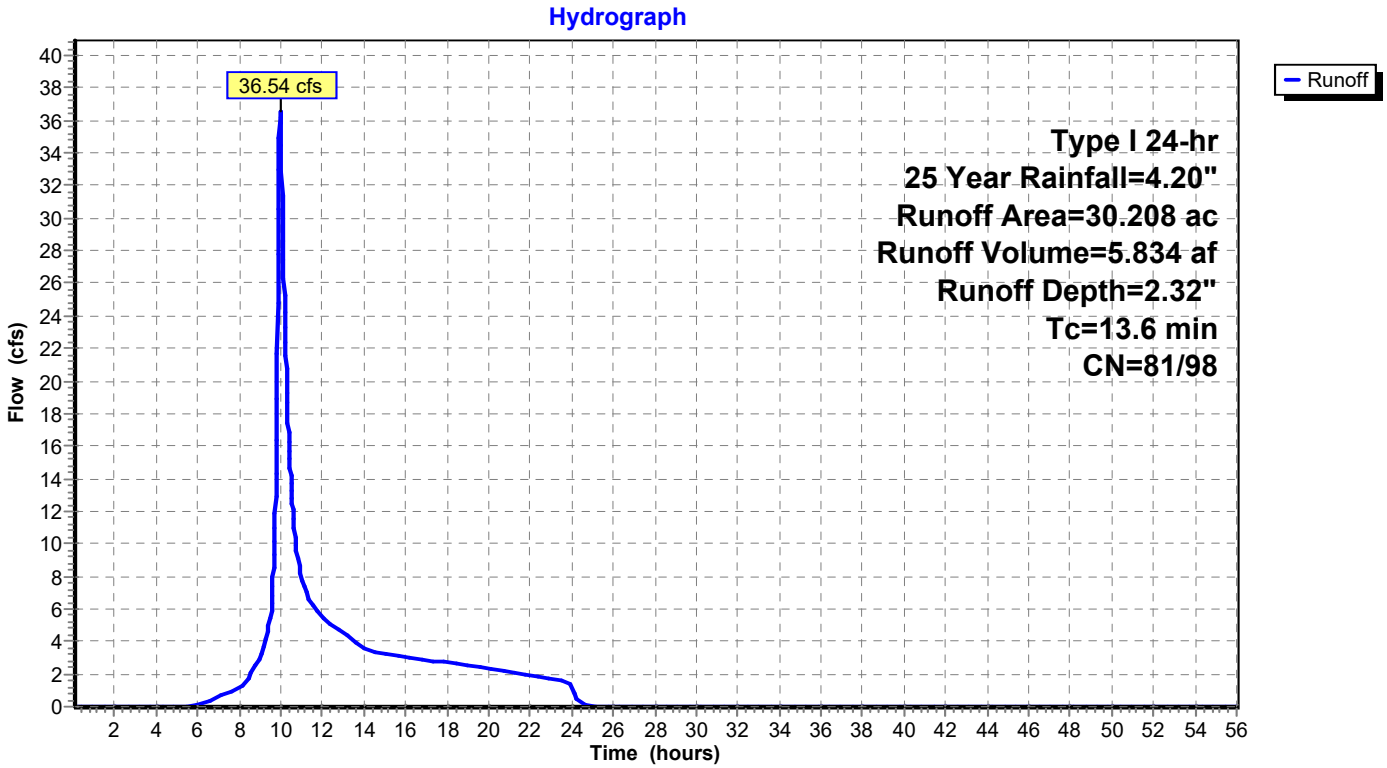
Runoff = 36.54 cfs @ 9.98 hrs, Volume= 5.834 af, Depth= 2.32"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
0.093	98	Paved roads w/curbs & sewers, HSG B
0.394	98	Paved roads w/curbs & sewers, HSG C
2.571	75	Row crops, SR + CR, Good, HSG B
2.743	75	Row crops, SR + CR, Good, HSG B
13.825	82	Row crops, SR + CR, Good, HSG C
10.454	82	Row crops, SR + CR, Good, HSG C
0.128	82	Row crops, SR + CR, Good, HSG C
30.208	81	Weighted Average
29.721	81	98.39% Pervious Area
0.486	98	1.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 14c{(1)}-Ex: Subcat 14c{(1)}-Ex



Summary for Subcatchment 14c{(2)}-Ex: Subcat 14c{(2)}-Ex

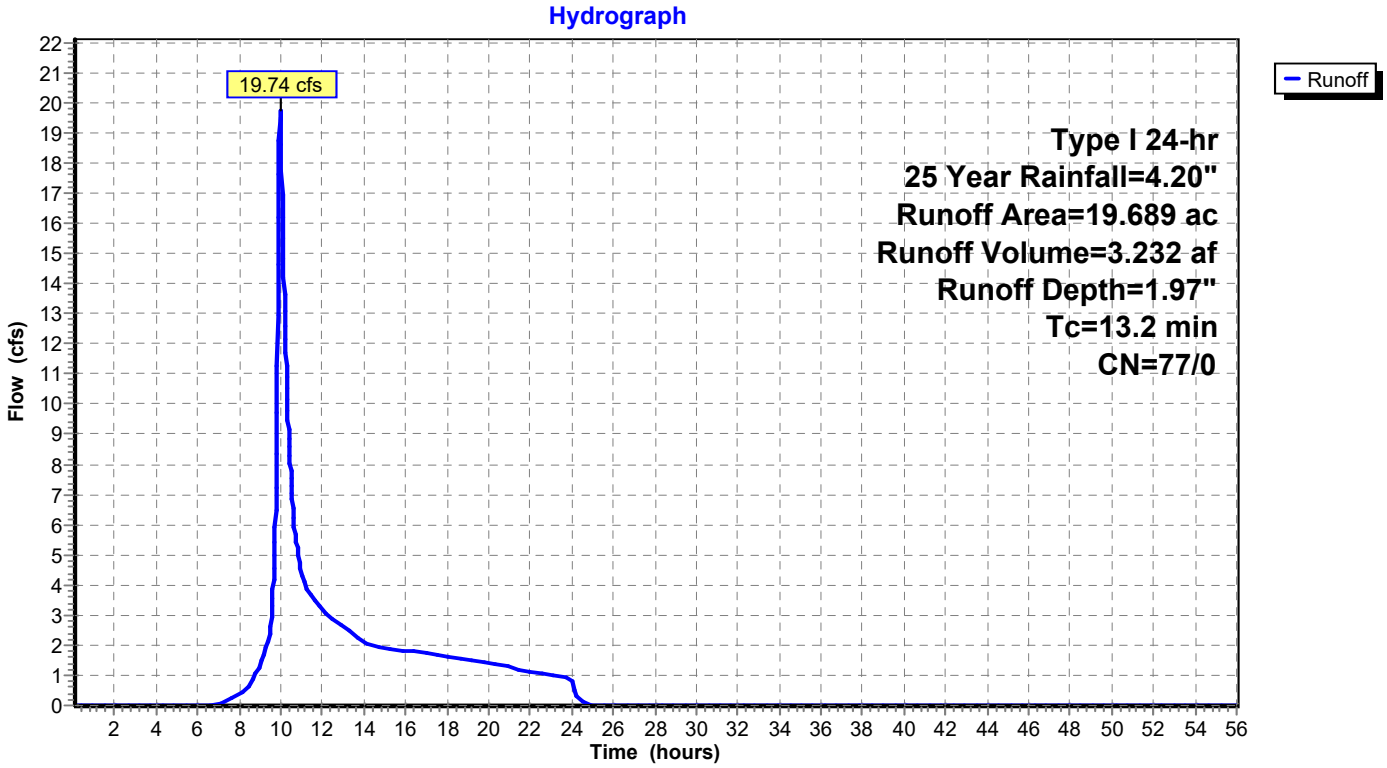
Runoff = 19.74 cfs @ 9.98 hrs, Volume= 3.232 af, Depth= 1.97"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
0.112	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
10.117	75	Row crops, SR + CR, Good, HSG B
3.200	75	Row crops, SR + CR, Good, HSG B
6.261	82	Row crops, SR + CR, Good, HSG C
19.689	77	Weighted Average
19.689	77	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 14c{(2)}-Ex: Subcat 14c{(2)}-Ex



Summary for Subcatchment 14c{(3)}-Ex: Subcat 14c{(3)}-Ex

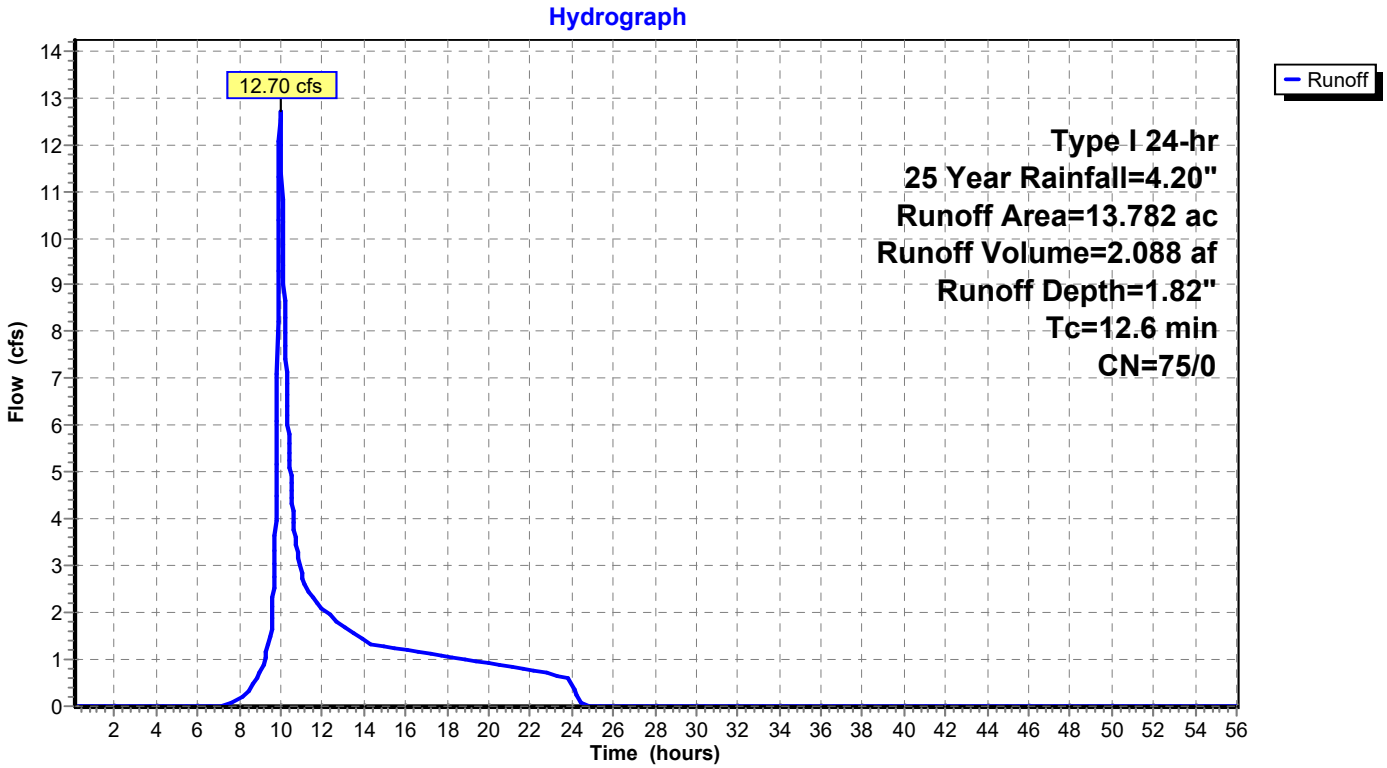
Runoff = 12.70 cfs @ 9.98 hrs, Volume= 2.088 af, Depth= 1.82"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
6.980	75	Row crops, SR + CR, Good, HSG B
0.000	75	Row crops, SR + CR, Good, HSG B
6.802	75	Row crops, SR + CR, Good, HSG B
13.782	75	Weighted Average
13.782	75	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 14c{(3)}-Ex: Subcat 14c{(3)}-Ex



Summary for Subcatchment 14d-Ex: Subcat 14d-Ex

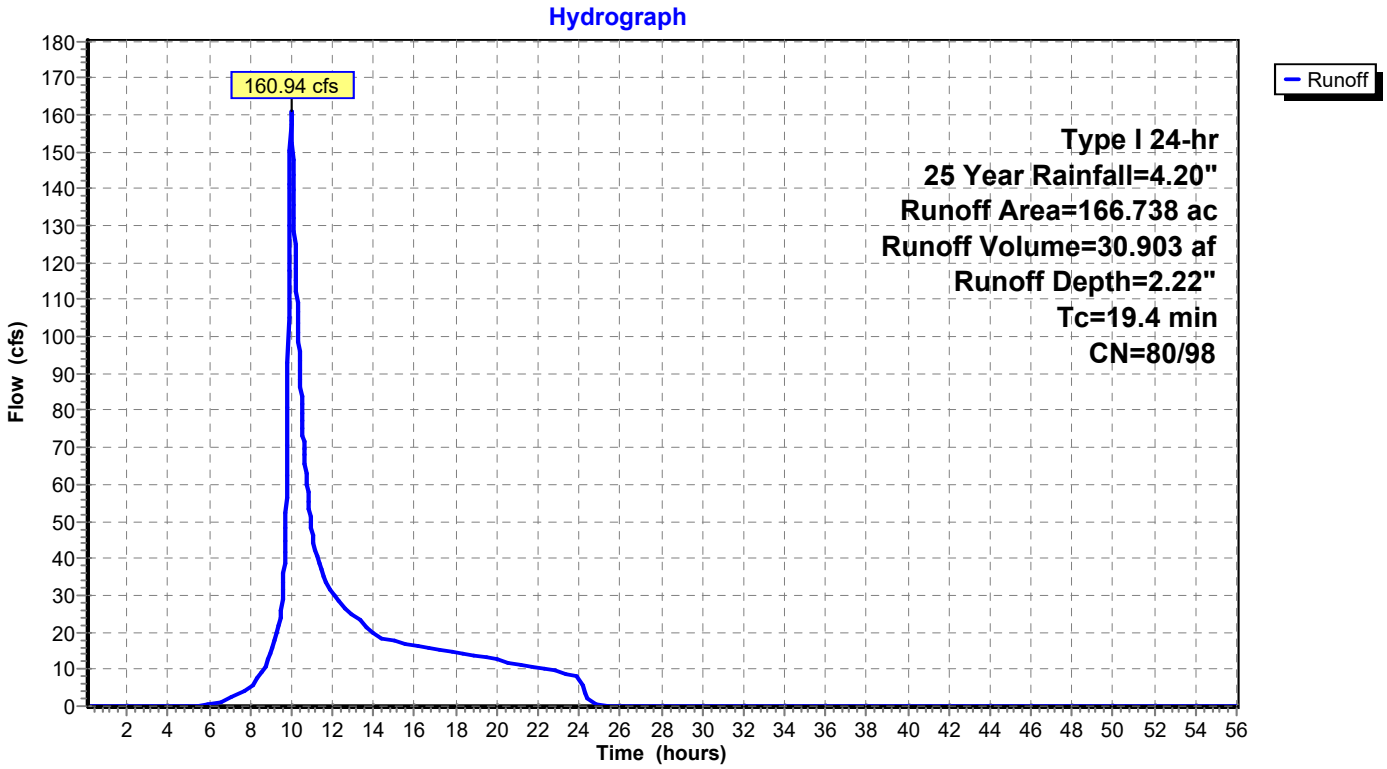
Runoff = 160.94 cfs @ 9.99 hrs, Volume= 30.903 af, Depth= 2.22"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
0.000	71	Meadow, non-grazed, HSG C
0.000	71	Meadow, non-grazed, HSG C
0.000	71	Meadow, non-grazed, HSG C
0.000	71	Meadow, non-grazed, HSG C
0.000	71	Meadow, non-grazed, HSG C
0.440	98	Paved roads w/curbs & sewers, HSG B
0.500	98	Paved roads w/curbs & sewers, HSG C
0.580	98	Paved roads w/curbs & sewers, HSG C
22.046	75	Row crops, SR + CR, Good, HSG B
2.662	75	Row crops, SR + CR, Good, HSG B
18.916	75	Row crops, SR + CR, Good, HSG B
108.025	82	Row crops, SR + CR, Good, HSG C
6.305	82	Row crops, SR + CR, Good, HSG C
7.263	82	Row crops, SR + CR, Good, HSG C
166.738	80	Weighted Average
165.218	80	99.09% Pervious Area
1.520	98	0.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.4					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 14d-Ex: Subcat 14d-Ex



Summary for Subcatchment 14e-Ex: Subcat 14e-Ex

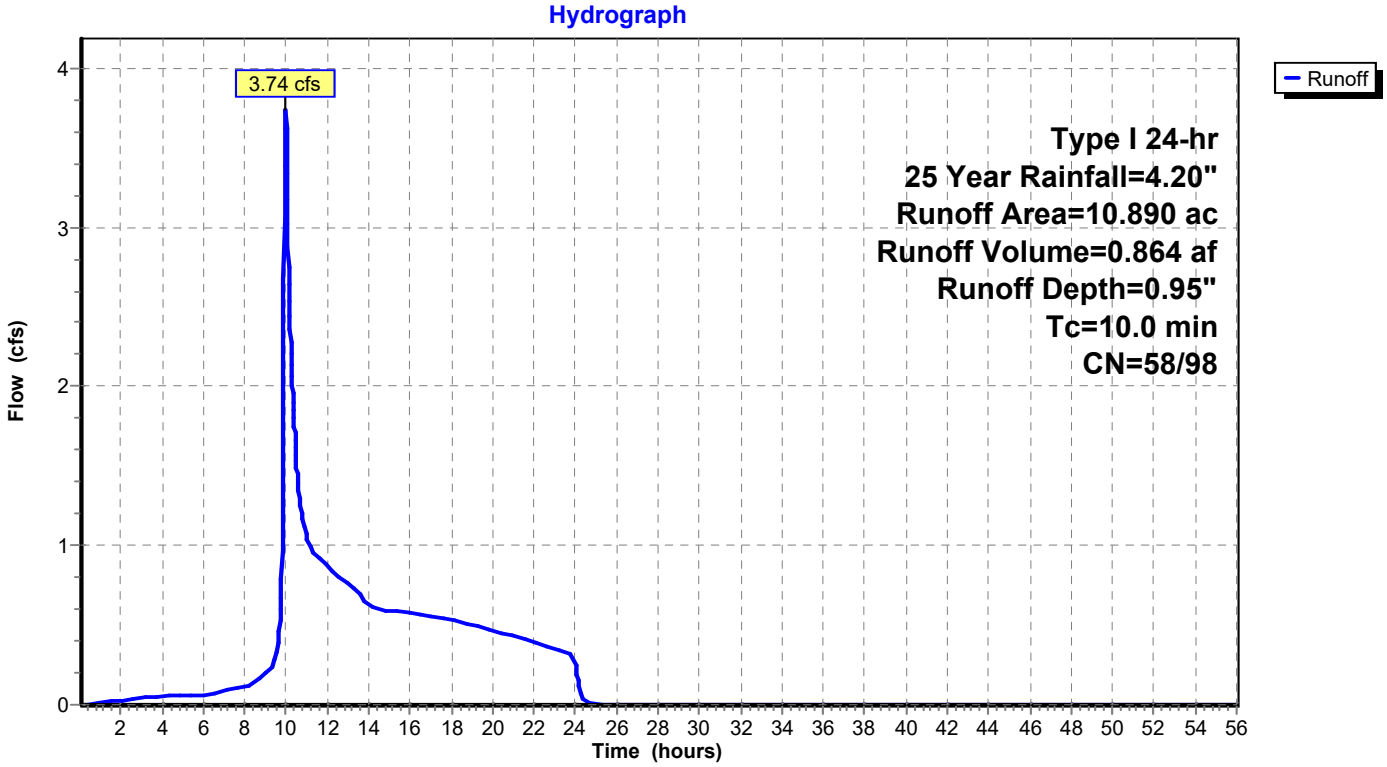
Runoff = 3.74 cfs @ 9.99 hrs, Volume= 0.864 af, Depth= 0.95"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 25 Year Rainfall=4.20"

Area (ac)	CN	Description
10.185	58	Meadow, non-grazed, HSG B
0.003	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.043	77	Natural western desert, HSG B
0.659	98	Paved roads w/curbs & sewers, HSG B
10.890	60	Weighted Average
10.231	58	93.95% Pervious Area
0.659	98	6.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4					**Direct Entry, SCS Method taken from Catchment in ACAD file**
9.4	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 14e-Ex: Subcat 14e-Ex



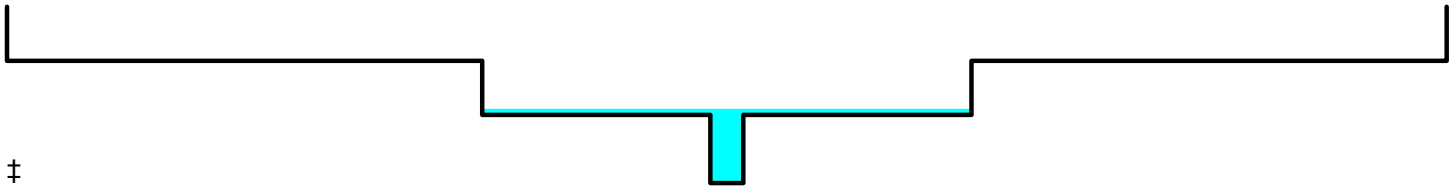
Summary for Reach 6R: Reach 1c

Inflow Area = 784.583 ac, 0.00% Impervious, Inflow Depth = 0.90" for 25 Year event
Inflow = 137.65 cfs @ 10.10 hrs, Volume= 58.525 af
Outflow = 131.50 cfs @ 10.21 hrs, Volume= 58.525 af, Atten= 4%, Lag= 6.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.26 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 4.22 fps, Avg. Travel Time= 3.3 min

Peak Storage= 31,100 cf @ 10.21 hrs
Average Depth at Peak Storage= 2.75'
Bank-Full Depth= 6.52' Flow Area= 758.7 sf, Capacity= 4,878.97 cfs

Custom stage-perimeter table, n= 0.024
102 Intermediate values determined by Multi-point interpolation
Length= 830.0' Slope= 0.0031 '/'
Inlet Invert= 841.43', Outlet Invert= 838.82'



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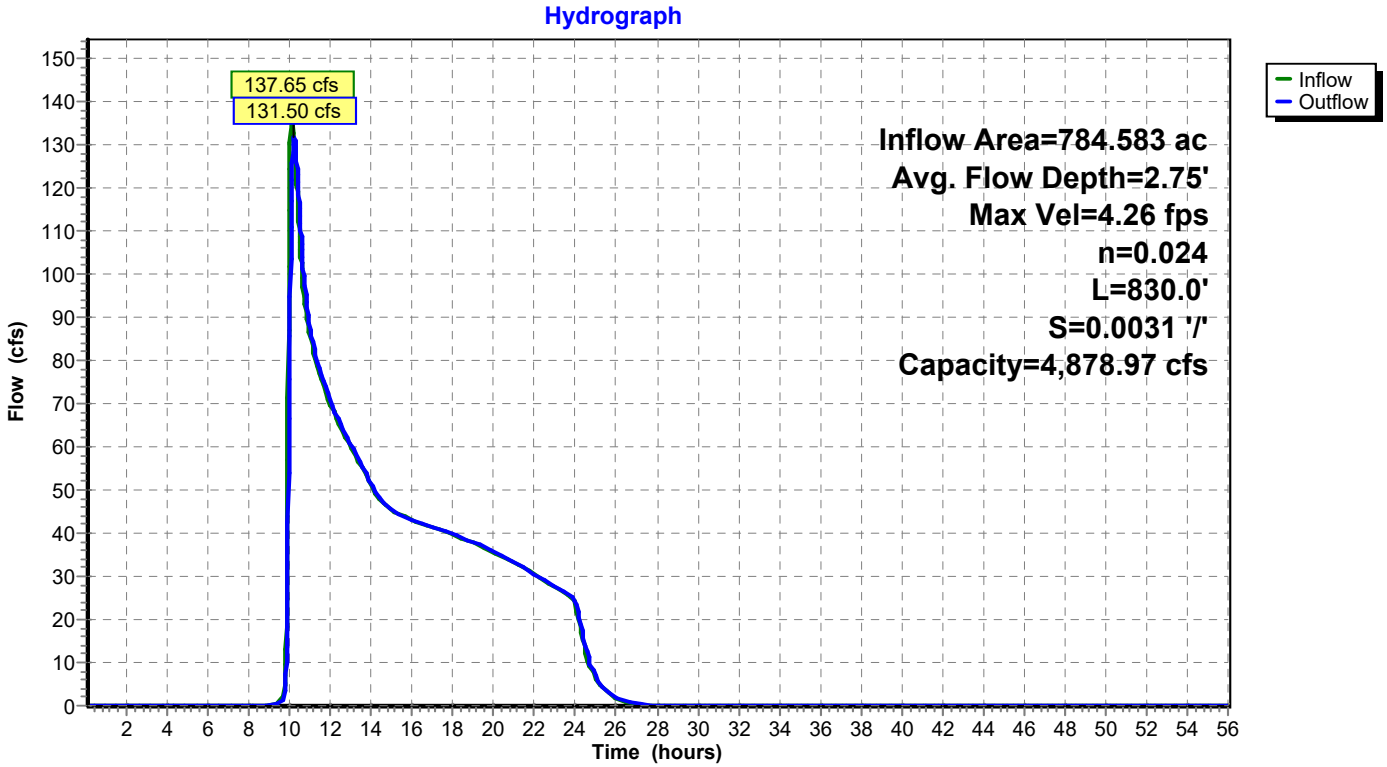
Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.52	15.9	11.7	13,197	67.73
4.52	204.4	231.7	169,652	652.79
6.52	758.7	301.0	629,721	4,878.97

Reach 6R: Reach 1c



Summary for Reach 7R: Reach 1b

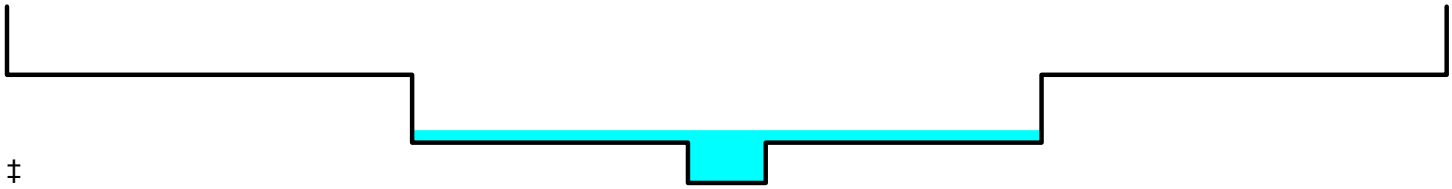
[62] Hint: Exceeded Reach 6R OUTLET depth by 0.77' @ 9.82 hrs

Inflow Area = 833.262 ac, 0.00% Impervious, Inflow Depth = 1.42" for 25 Year event
Inflow = 309.45 cfs @ 10.13 hrs, Volume= 98.507 af
Outflow = 304.94 cfs @ 10.19 hrs, Volume= 98.507 af, Atten= 1%, Lag= 3.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.45 fps, Min. Travel Time= 3.3 min
Avg. Velocity = 3.27 fps, Avg. Travel Time= 4.5 min

Peak Storage= 60,531 cf @ 10.19 hrs
Average Depth at Peak Storage= 1.55'
Bank-Full Depth= 5.18' Flow Area= 896.3 sf, Capacity= 8,865.90 cfs

Custom stage-perimeter table, n= 0.024
102 Intermediate values determined by Multi-point interpolation
Length= 883.0' Slope= 0.0066 '/'
Inlet Invert= 838.82', Outlet Invert= 833.00'



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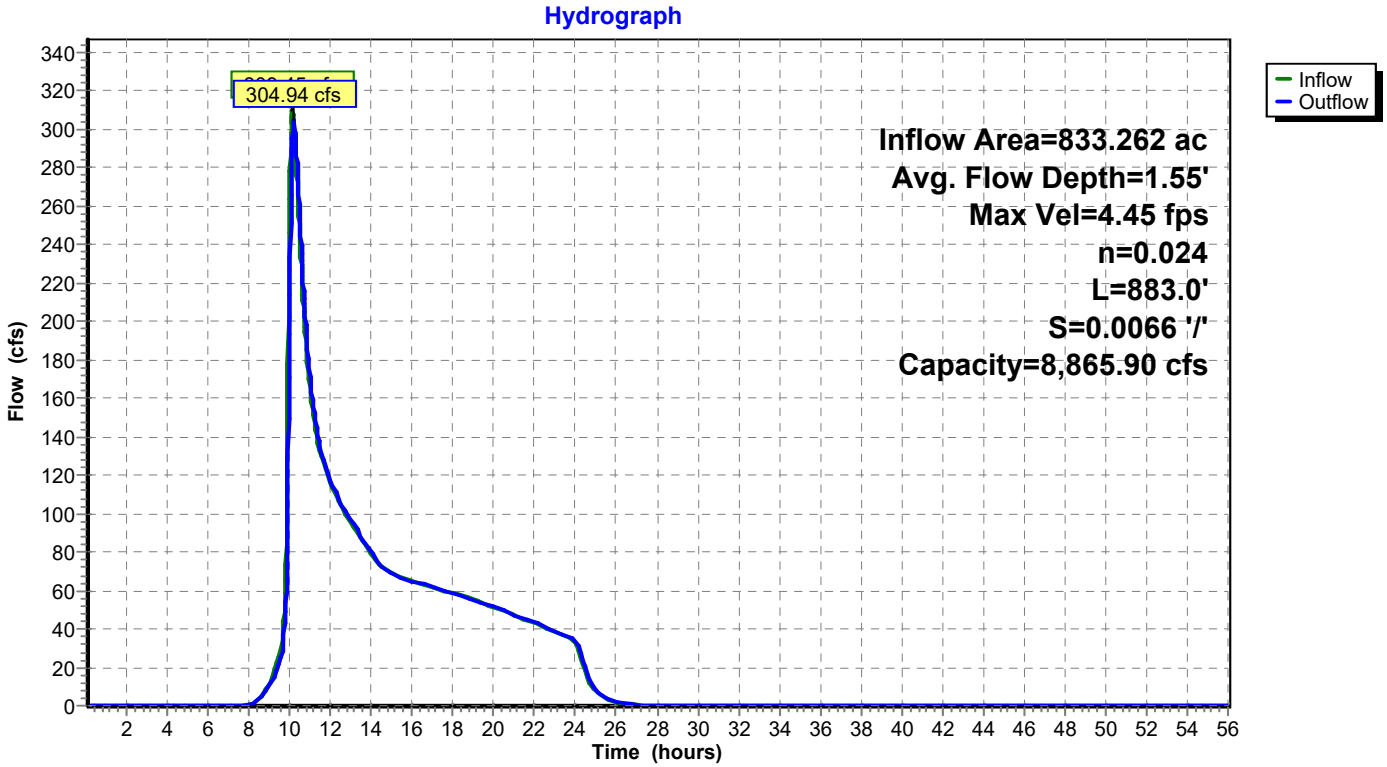
Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.18	19.4	38.8	17,130	61.43
3.18	286.2	275.2	252,715	1,476.75
5.18	896.3	324.7	791,433	8,865.90

Reach 7R: Reach 1b



Summary for Reach 8R: Reach 1a

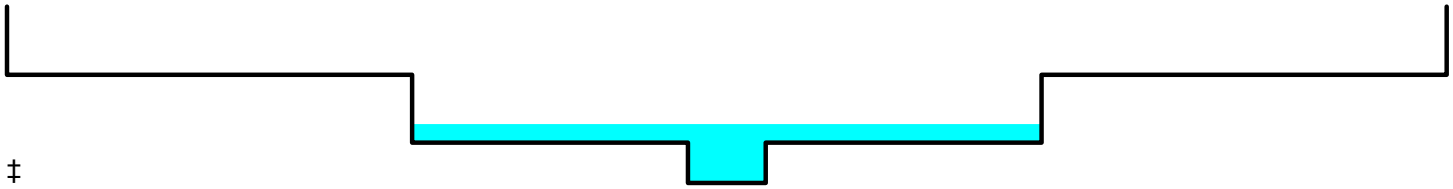
[62] Hint: Exceeded Reach 7R OUTLET depth by 0.36' @ 22.18 hrs

Inflow Area = 879.875 ac, 0.06% Impervious, Inflow Depth = 1.39" for 25 Year event
Inflow = 313.21 cfs @ 10.19 hrs, Volume= 101.702 af
Outflow = 310.01 cfs @ 10.24 hrs, Volume= 101.702 af, Atten= 1%, Lag= 3.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.36 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 2.42 fps, Avg. Travel Time= 4.0 min

Peak Storage= 53,760 cf @ 10.24 hrs
Average Depth at Peak Storage= 1.73'
Bank-Full Depth= 5.18' Flow Area= 896.3 sf, Capacity= 6,396.21 cfs

Custom stage-perimeter table, n= 0.024
102 Intermediate values determined by Multi-point interpolation
Length= 583.0' Slope= 0.0034 '/'
Inlet Invert= 833.00', Outlet Invert= 831.00'



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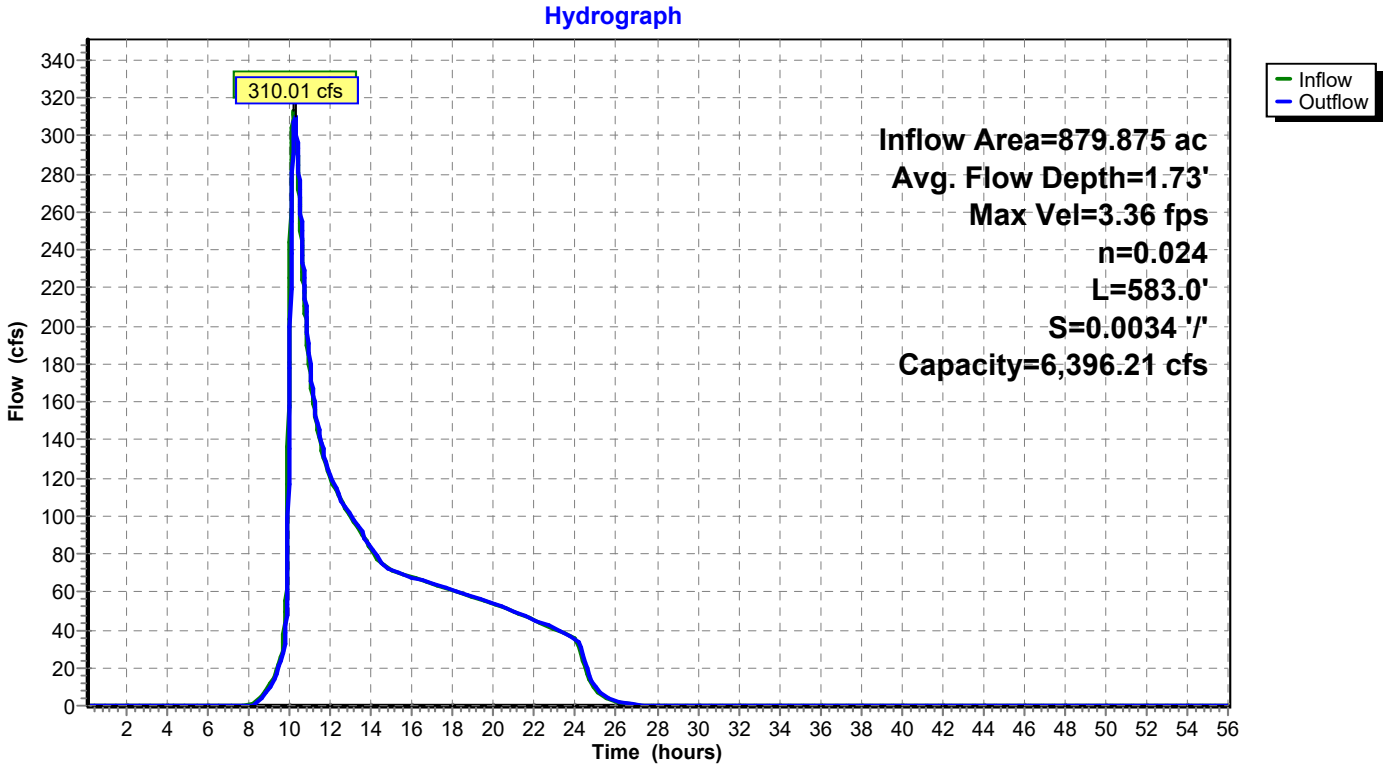
Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.18	19.4	38.8	11,310	44.32
3.18	286.2	275.2	166,855	1,065.38
5.18	896.3	324.7	522,543	6,396.21

Reach 8R: Reach 1a



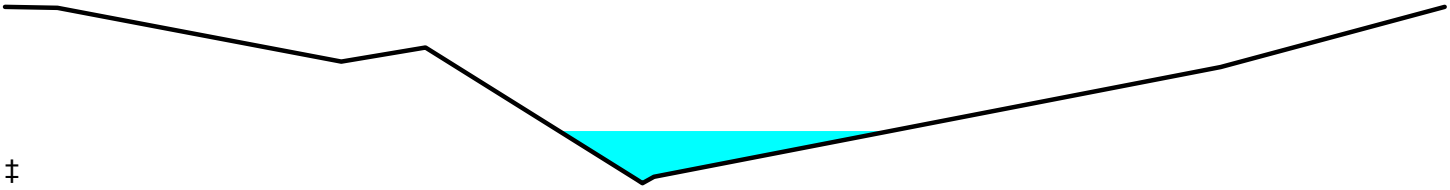
Summary for Reach 17R: Reach 1d

Inflow = 55.87 cfs @ 10.00 hrs, Volume= 1.597 af
Outflow = 45.04 cfs @ 10.08 hrs, Volume= 1.597 af, Atten= 19%, Lag= 5.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.44 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 0.55 fps, Avg. Travel Time= 25.6 min

Peak Storage= 15,520 cf @ 10.08 hrs
Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 1.96' Flow Area= 247.0 sf, Capacity= 1,276.84 cfs

Custom cross-section, Length= 841.0' Slope= 0.0110 '/' (102 Elevation Intervals)
Constant n= 0.027
Inlet Invert= 853.60', Outlet Invert= 844.31'



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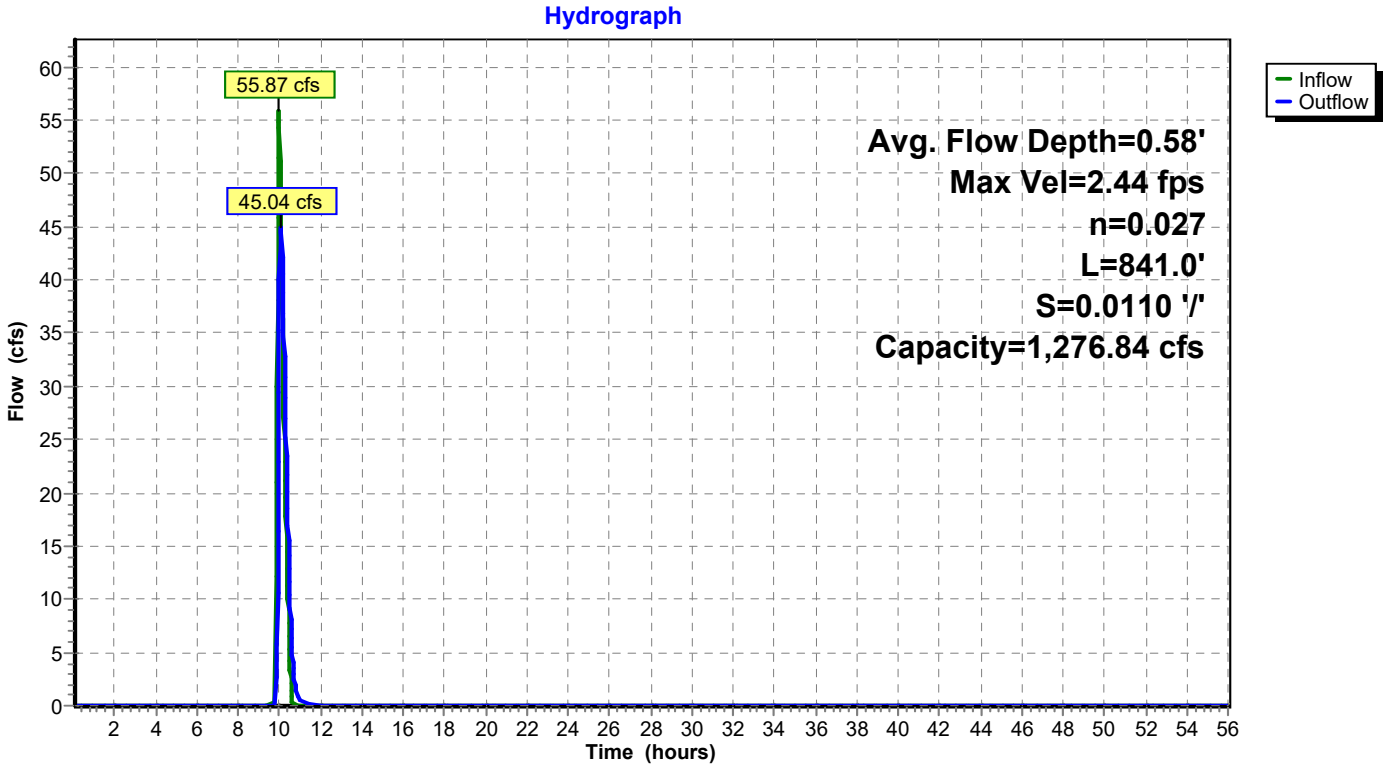
Offset (feet)	Elevation (feet)	Chan.Depth (feet)
8.56	851.18	0.00
19.24	851.17	0.01
76.81	850.57	0.61
93.88	850.73	0.45
136.80	849.26	1.92
137.90	849.22	1.96
140.29	849.29	1.89
255.27	850.51	0.67
300.75	851.18	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.04	0.0	2.5	42	0.02
0.07	0.2	4.4	128	0.09
1.29	97.3	155.0	81,870	413.13
1.35	106.8	160.8	89,836	469.56
1.51	136.4	208.8	114,697	594.12
1.95	244.1	280.9	205,277	1,285.78
1.96	247.0	292.2	207,687	1,276.84

Reach 17R: Reach 1d



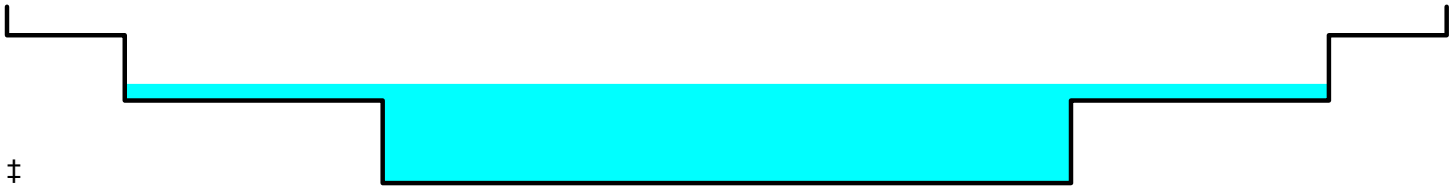
Summary for Reach 18R: Linne Road Grassed Chl

Inflow Area = 276.531 ac, 1.18% Impervious, Inflow Depth = 0.56" for 25 Year event
Inflow = 21.44 cfs @ 10.07 hrs, Volume= 12.833 af
Outflow = 20.56 cfs @ 10.18 hrs, Volume= 12.833 af, Atten= 4%, Lag= 6.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.63 fps, Min. Travel Time= 7.5 min
Avg. Velocity = 2.27 fps, Avg. Travel Time= 8.7 min

Peak Storage= 9,309 cf @ 10.18 hrs
Average Depth at Peak Storage= 0.62'
Bank-Full Depth= 1.11' Flow Area= 18.0 sf, Capacity= 66.25 cfs

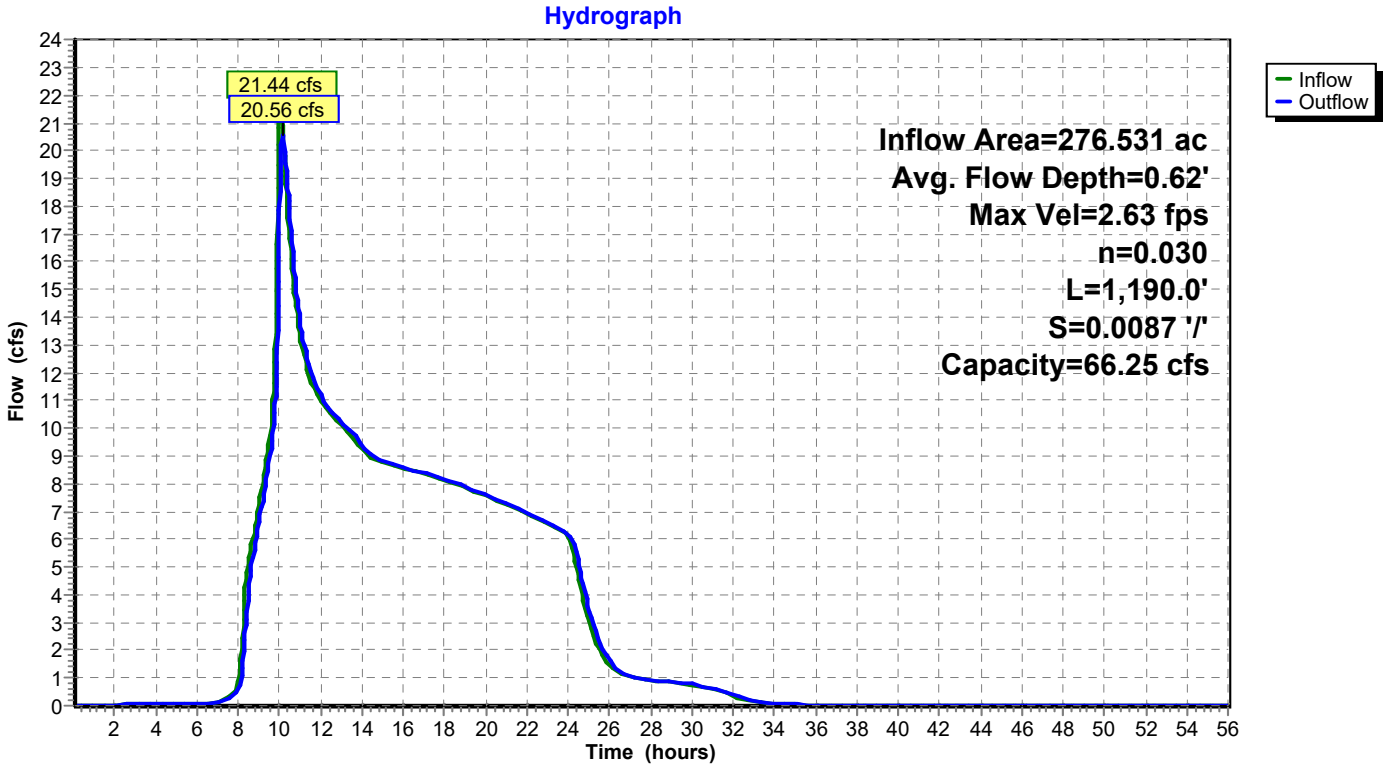
Custom stage-perimeter table, n= 0.030
100 Intermediate values determined by Multi-point interpolation
Length= 1,190.0' Slope= 0.0087 '/'
Inlet Invert= 841.60', Outlet Invert= 831.20'



‡

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.52	5.8	16.9	6,916	13.23
0.93	13.8	22.4	16,431	46.30
1.11	18.0	25.4	21,420	66.25

Reach 18R: Linne Road Grassed Chl



Summary for Pond 17P: Gran Cielo Dwy

[58] Hint: Peaked 0.54' above defined flood level

Inflow Area = 166.738 ac, 0.91% Impervious, Inflow Depth = 2.22" for 25 Year event
Inflow = 160.94 cfs @ 9.99 hrs, Volume= 30.903 af
Outflow = 160.58 cfs @ 10.00 hrs, Volume= 30.903 af, Atten= 0%, Lag= 0.6 min
Primary = 104.69 cfs @ 10.00 hrs, Volume= 29.306 af
Secondary = 0.01 cfs @ 10.00 hrs, Volume= 0.000 af
Tertiary = 55.87 cfs @ 10.00 hrs, Volume= 1.597 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Peak Elev= 855.00' @ 10.00 hrs Surf.Area= 8,083 sf Storage= 10,997 cf
Flood Elev= 854.46' Surf.Area= 6,947 sf Storage= 6,934 cf

Plug-Flow detention time= 1.8 min calculated for 30.892 af (100% of inflow)
Center-of-Mass det. time= 1.8 min (820.4 - 818.5)

Volume	Invert	Avail.Storage	Storage Description
#1	852.84'	22,270 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.84	0	0	0
853.14	2,586	388	388
854.14	6,275	4,431	4,818
855.14	8,376	7,326	12,144
856.14	11,876	10,126	22,270

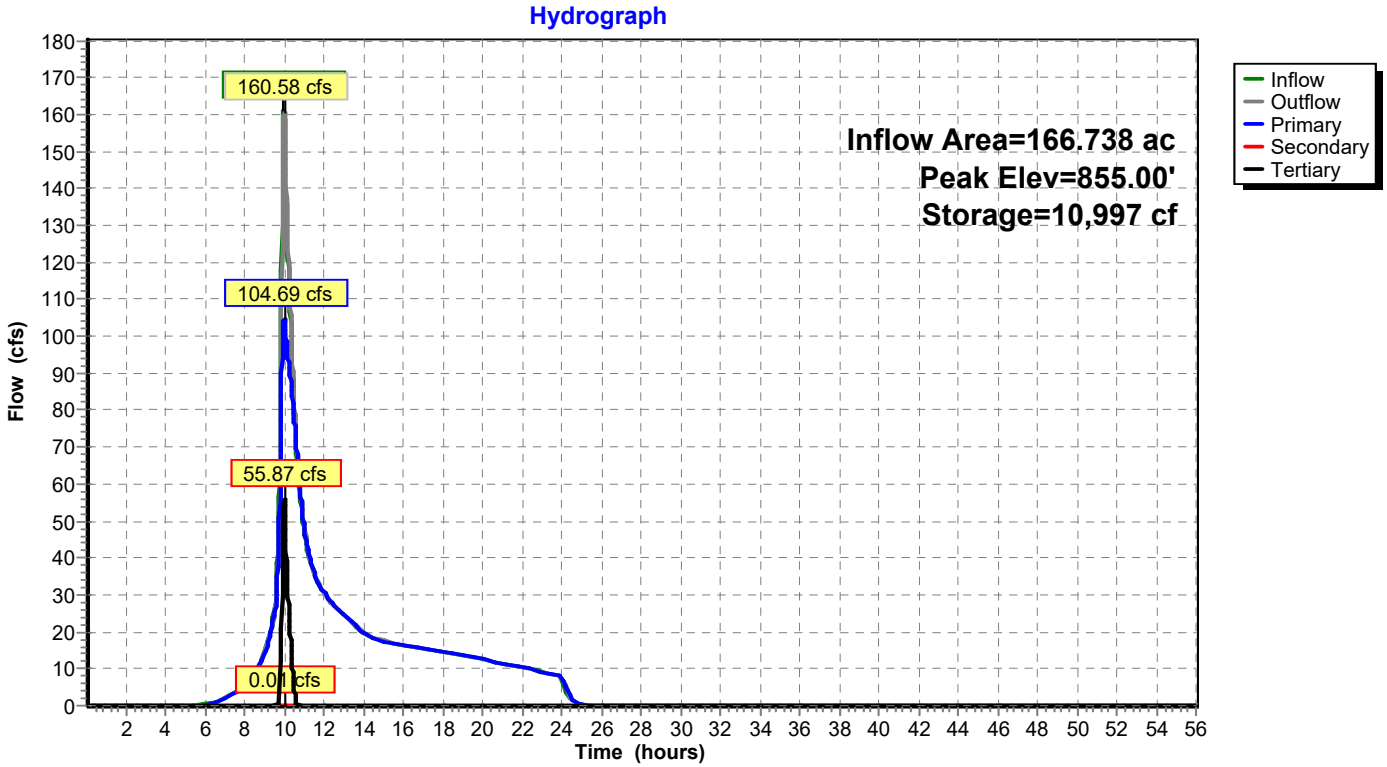
Device	Routing	Invert	Outlet Devices
#1	Primary	852.84'	**30.0" Round Culvert X 6.00** L= 77.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 852.84' / 851.76' S= 0.0140 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Secondary	854.90'	**Special & User-Defined** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 Disch. (cfs) 0.000 0.010 0.200 0.710 1.580 2.700 4.030 5.690 7.620 9.790 12.320 15.140 18.190 21.460 24.930 28.580 32.420 36.420 40.580 44.900 49.360 53.970
#3	Tertiary	854.40'	**Special & User-Defined** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 Disch. (cfs) 0.000 0.080 3.470 10.790 21.890 36.810 55.720 78.890 106.600 138.580 174.620 214.630 258.590 306.440 358.240 413.470 471.810 533.060 597.050 663.650 732.760 804.270 878.100 954.180 1,032.440 1,112.810 1,195.240

Primary OutFlow Max=104.64 cfs @ 10.00 hrs HW=855.00' TW=851.56' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 104.64 cfs @ 5.18 fps)

Secondary OutFlow Max=0.01 cfs @ 10.00 hrs HW=855.00' TW=851.57' (Dynamic Tailwater)
└─**2=Special & User-Defined** (Custom Controls 0.01 cfs)

Tertiary OutFlow Max=55.70 cfs @ 10.00 hrs HW=855.00' TW=854.13' (Dynamic Tailwater)
└─**3=Special & User-Defined** (Custom Controls 55.70 cfs)

Pond 17P: Gran Cielo Dwy



Summary for Pond 18P: GC-CkD1

[58] Hint: Peaked 1.43' above defined flood level

Inflow Area = 240.622 ac, 1.05% Impervious, Inflow Depth = 2.19" for 25 Year event
Inflow = 181.62 cfs @ 9.99 hrs, Volume= 43.854 af
Outflow = 174.59 cfs @ 10.04 hrs, Volume= 43.791 af, Atten= 4%, Lag= 3.2 min
Primary = 1.04 cfs @ 9.98 hrs, Volume= 1.666 af
Secondary = 96.98 cfs @ 10.04 hrs, Volume= 33.439 af
Tertiary = 76.59 cfs @ 10.04 hrs, Volume= 8.686 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Peak Elev= 851.60' @ 10.04 hrs Surf.Area= 26,840 sf Storage= 56,309 cf
Flood Elev= 850.17' Surf.Area= 18,994 sf Storage= 23,481 cf

Plug-Flow detention time= 16.2 min calculated for 43.791 af (100% of inflow)
Center-of-Mass det. time= 15.1 min (840.3 - 825.2)

Volume	Invert	Avail.Storage	Storage Description
#1	844.56'	67,617 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.56	10	0	0
845.00	200	46	46
846.00	600	400	446
847.00	1,500	1,050	1,496
848.00	2,166	1,833	3,329
849.00	7,688	4,927	8,256
850.00	16,694	12,191	20,447
850.20	19,400	3,609	24,057
852.00	29,000	43,560	67,617

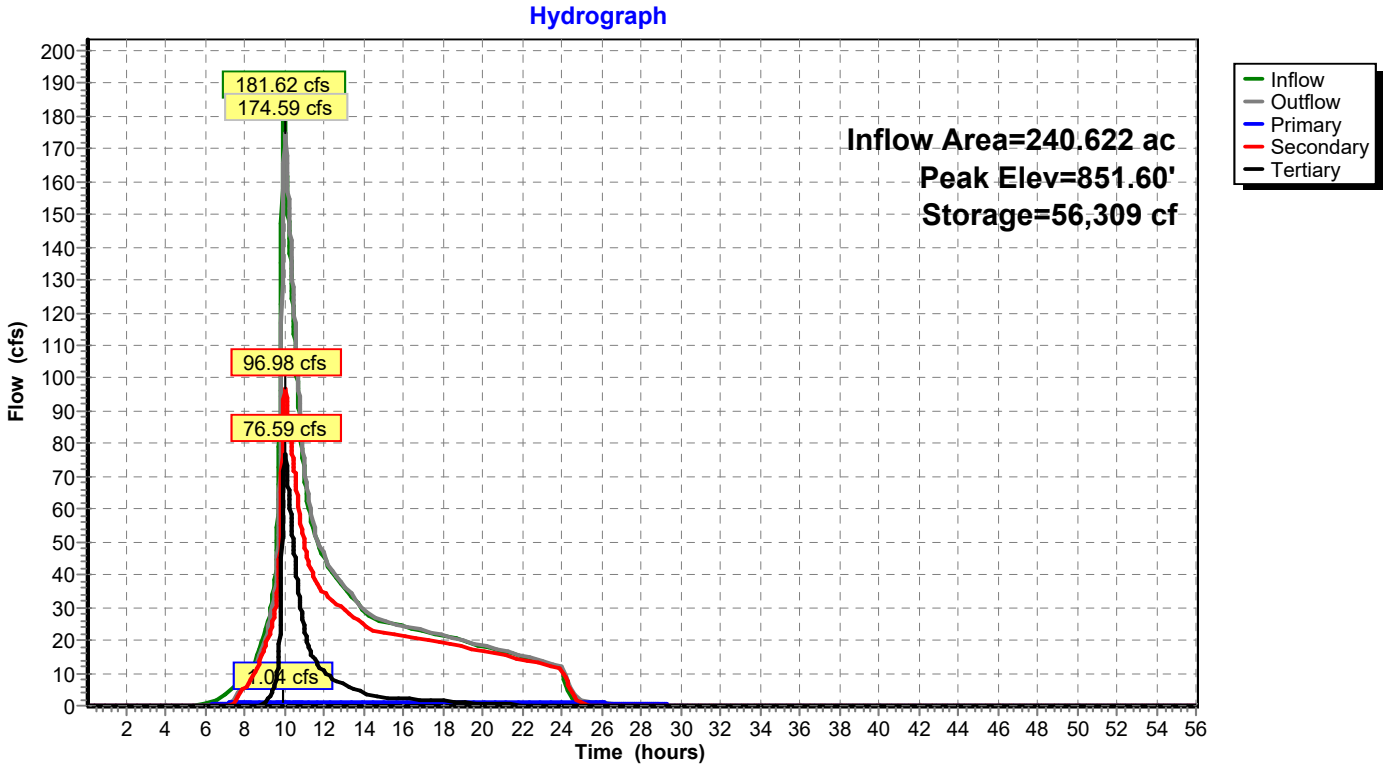
Device	Routing	Invert	Outlet Devices
#1	Primary	847.69'	**6.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 847.69' / 847.67' S= 0.0008 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Secondary	849.50'	**9.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59
#3	Tertiary	850.00'	**Special & User-Defined (CkD1-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 Disch. (cfs) 0.000 0.030 0.560 1.900 4.120 7.220 11.180 15.770 20.900 26.530 32.600 39.090 45.970 53.220 60.820 68.750 77.000 85.570 94.430 103.580 113.010

Primary OutFlow Max=1.03 cfs @ 9.98 hrs HW=851.54' TW=849.63' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.03 cfs @ 5.25 fps)

Secondary OutFlow Max=96.82 cfs @ 10.04 hrs HW=851.59' TW=849.70' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 96.82 cfs @ 5.14 fps)

Tertiary OutFlow Max=76.52 cfs @ 10.04 hrs HW=851.59' TW=0.00' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD1-S)** (Custom Controls 76.52 cfs)

Pond 18P: GC-CkD1



Summary for Pond 19P: GC-CkD2

[58] Hint: Peaked 1.07' above defined flood level

Inflow Area = 260.311 ac, 0.97% Impervious, Inflow Depth = 1.77" for 25 Year event
Inflow = 116.37 cfs @ 10.02 hrs, Volume= 38.336 af
Outflow = 112.03 cfs @ 10.09 hrs, Volume= 38.335 af, Atten= 4%, Lag= 4.5 min
Primary = 1.37 cfs @ 10.09 hrs, Volume= 2.166 af
Secondary = 70.51 cfs @ 10.09 hrs, Volume= 32.030 af
Tertiary = 40.16 cfs @ 10.09 hrs, Volume= 4.140 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Peak Elev= 849.72' @ 10.09 hrs Surf.Area= 32,923 sf Storage= 36,034 cf
Flood Elev= 848.65' Surf.Area= 11,850 sf Storage= 14,787 cf

Plug-Flow detention time= 12.2 min calculated for 38.321 af (100% of inflow)
Center-of-Mass det. time= 12.2 min (885.1 - 872.9)

Volume	Invert	Avail.Storage	Storage Description
#1	846.00'	46,430 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
846.00	267	0	0
847.00	4,055	2,161	2,161
848.00	8,178	6,117	8,278
849.00	13,828	11,003	19,281
850.00	40,470	27,149	46,430

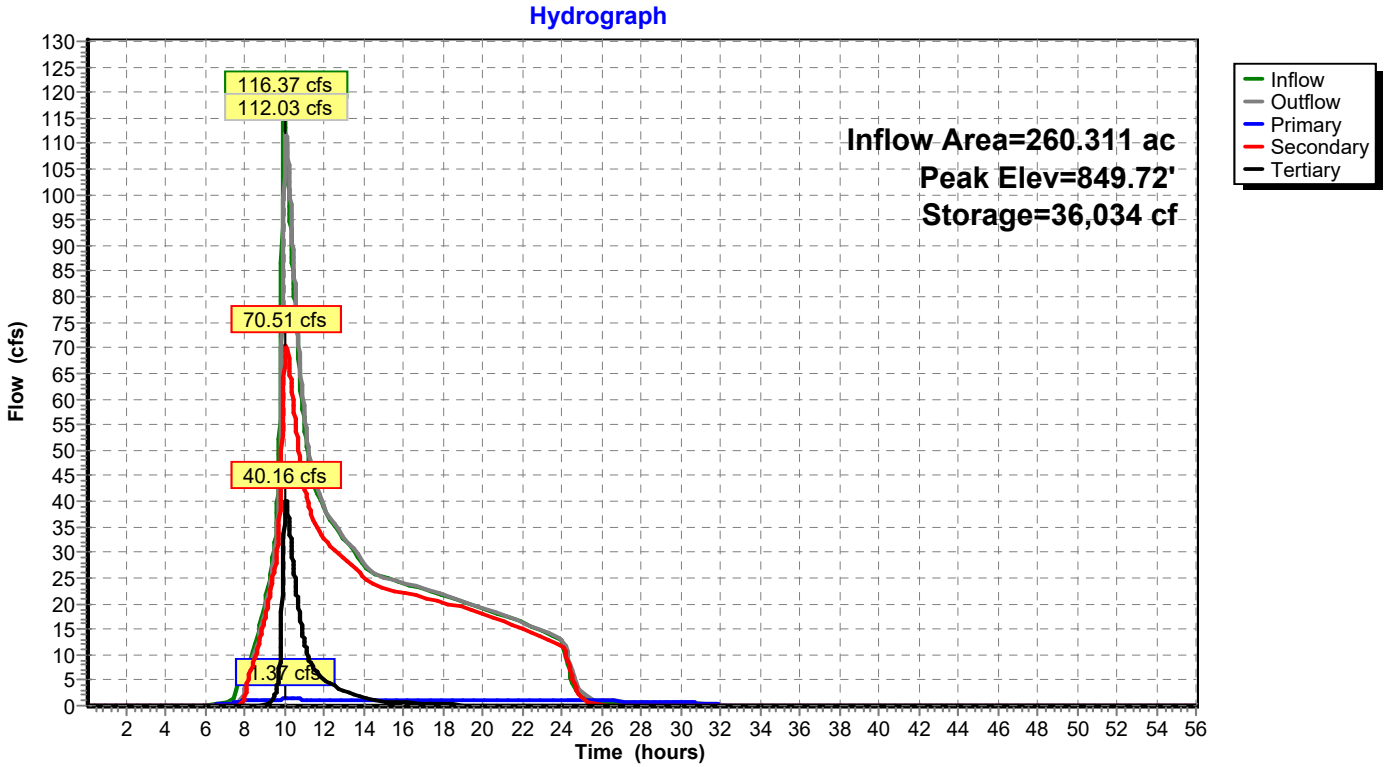
Device	Routing	Invert	Outlet Devices
#1	Primary	846.12'	**6.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 846.12' / 845.98' S= 0.0054 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Tertiary	848.70'	**Special & User-Defined (CkD2-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 Disch. (cfs) 0.000 0.130 0.970 2.640 5.120 8.550 13.010 18.440 24.620 31.430 38.830 46.770 55.210 64.120
#3	Secondary	847.80'	**Special & User-Defined (CkD2-W)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 Disch. (cfs) 0.000 0.020 0.480 1.430 2.780 4.430 6.490 8.950 12.010 15.510 19.390 23.590 28.100 32.980 38.270 43.910 49.850 56.080 62.580 69.340 76.350 83.590 91.070

Primary OutFlow Max=1.37 cfs @ 10.09 hrs HW=849.72' TW=846.07' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.37 cfs @ 6.95 fps)

Secondary OutFlow Max=70.49 cfs @ 10.09 hrs HW=849.72' TW=846.07' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD2-W)** (Custom Controls 70.49 cfs)

Tertiary OutFlow Max=40.13 cfs @ 10.09 hrs HW=849.72' TW=0.00' (Dynamic Tailwater)
└─**2=Special & User-Defined (CkD2-S)** (Custom Controls 40.13 cfs)

Pond 19P: GC-CkD2



Summary for Pond 20P: GC-CkD3

[58] Hint: Peaked 1.05' above defined flood level

Inflow Area = 274.094 ac, 0.92% Impervious, Inflow Depth = 1.59" for 25 Year event
Inflow = 82.30 cfs @ 10.06 hrs, Volume= 36.283 af
Outflow = 81.94 cfs @ 10.09 hrs, Volume= 36.272 af, Atten= 0%, Lag= 1.8 min
Primary = 6.72 cfs @ 10.09 hrs, Volume= 7.070 af
Secondary = 13.20 cfs @ 10.09 hrs, Volume= 5.415 af
Tertiary = 62.01 cfs @ 10.09 hrs, Volume= 23.787 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Peak Elev= 846.07' @ 10.09 hrs Surf.Area= 15,484 sf Storage= 17,246 cf
Flood Elev= 845.02' Surf.Area= 8,229 sf Storage= 4,852 cf

Plug-Flow detention time= 8.1 min calculated for 36.272 af (100% of inflow)
Center-of-Mass det. time= 7.5 min (914.4 - 906.8)

Volume	Invert	Avail.Storage	Storage Description
#1	844.00'	24,632 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.00	1,288	0	0
845.00	8,090	4,689	4,689
846.50	18,500	19,943	24,632

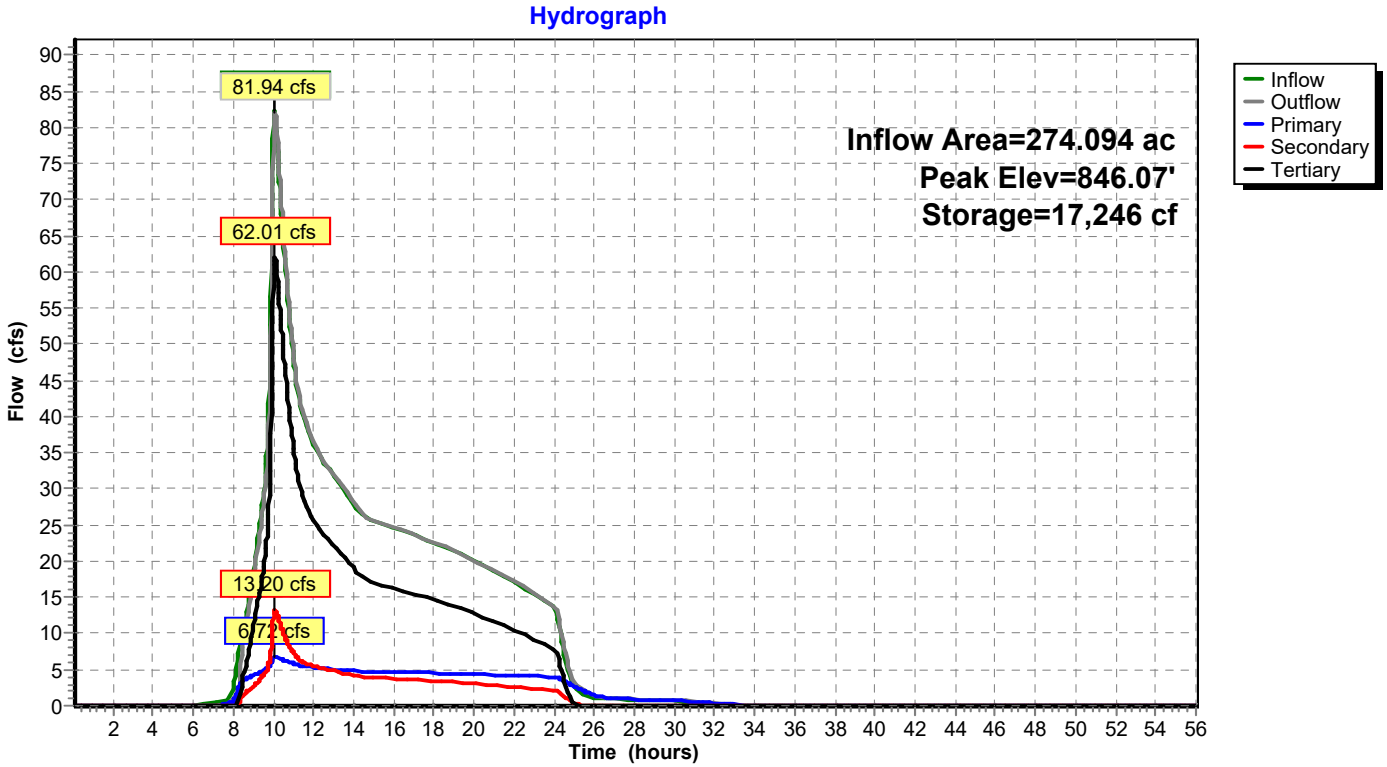
Device	Routing	Invert	Outlet Devices
#1	Primary	844.22'	**18.0" Round Culvert** L= 26.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 844.22' / 843.98' S= 0.0092 '/' Cc= 0.900 n= 0.021 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	845.00'	**Special & User-Defined (CkD3-W)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 Disch. (cfs) 0.000 0.050 0.390 0.970 1.710 2.600 3.780 5.170 6.720 8.570 11.140 14.290 17.880 21.830 26.120 30.880 36.030 41.520 47.330 53.420 59.790
#3	Tertiary	845.10'	**Special & User-Defined (CkD3-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 Disch. (cfs) 0.000 0.050 1.930 5.420 10.370 16.490 23.960 32.580 42.550 53.770 66.380 80.510 96.280 113.770 132.840 153.630 175.910 199.510 224.310 250.260

Primary OutFlow Max=6.72 cfs @ 10.09 hrs HW=846.07' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 6.72 cfs @ 3.95 fps)

Secondary OutFlow Max=13.19 cfs @ 10.09 hrs HW=846.07' TW=0.00' (Dynamic Tailwater)
└─**2=Special & User-Defined (CkD3-W)** (Custom Controls 13.19 cfs)

Tertiary OutFlow Max=61.98 cfs @ 10.09 hrs HW=846.07' TW=0.00' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD3-S)** (Custom Controls 61.98 cfs)

Pond 20P: GC-CkD3

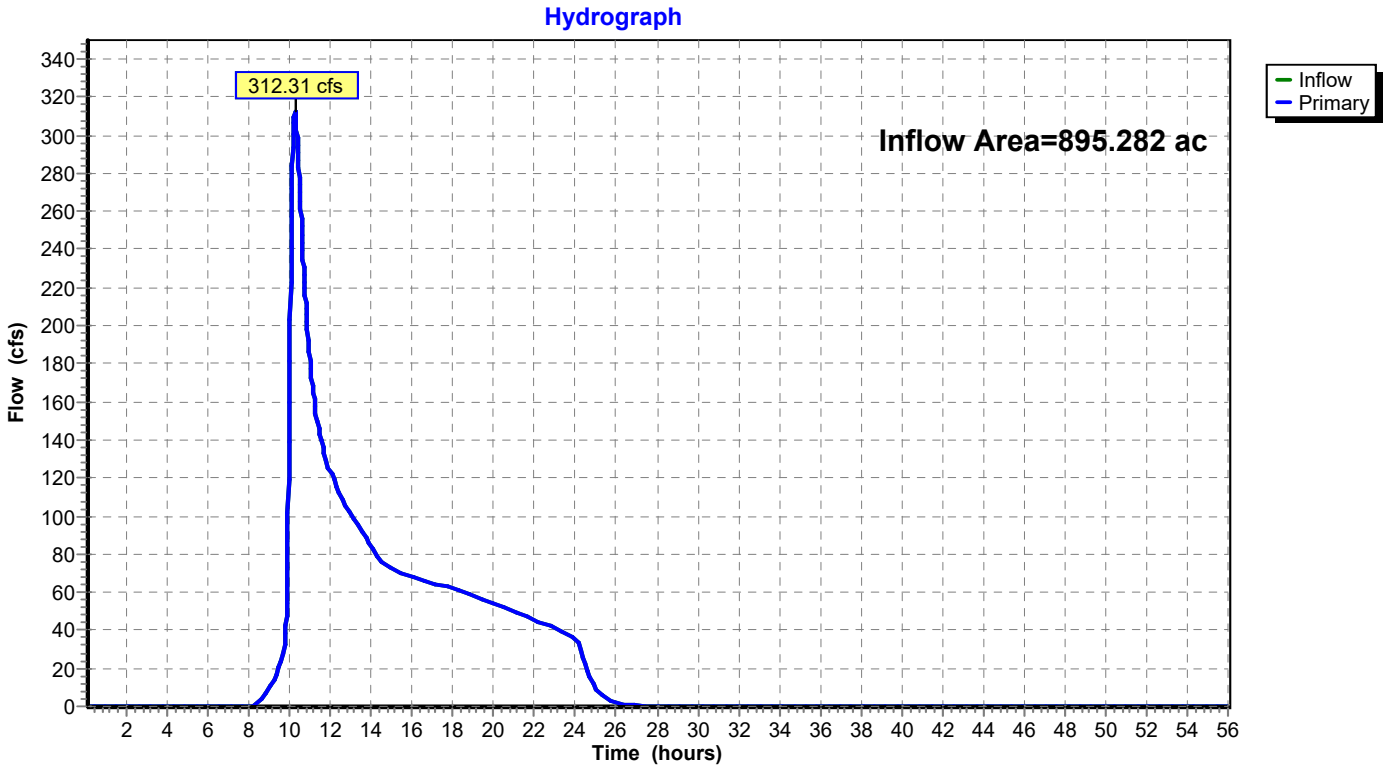


Summary for Link 3a (1,2+3)-Ex: Comb Un-dev Ck Flow

Inflow Area = 895.282 ac, 0.06% Impervious, Inflow Depth = 1.38" for 25 Year event
Inflow = 312.31 cfs @ 10.24 hrs, Volume= 102.675 af
Primary = 312.31 cfs @ 10.24 hrs, Volume= 102.675 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 3a (1,2+3)-Ex: Comb Un-dev Ck Flow

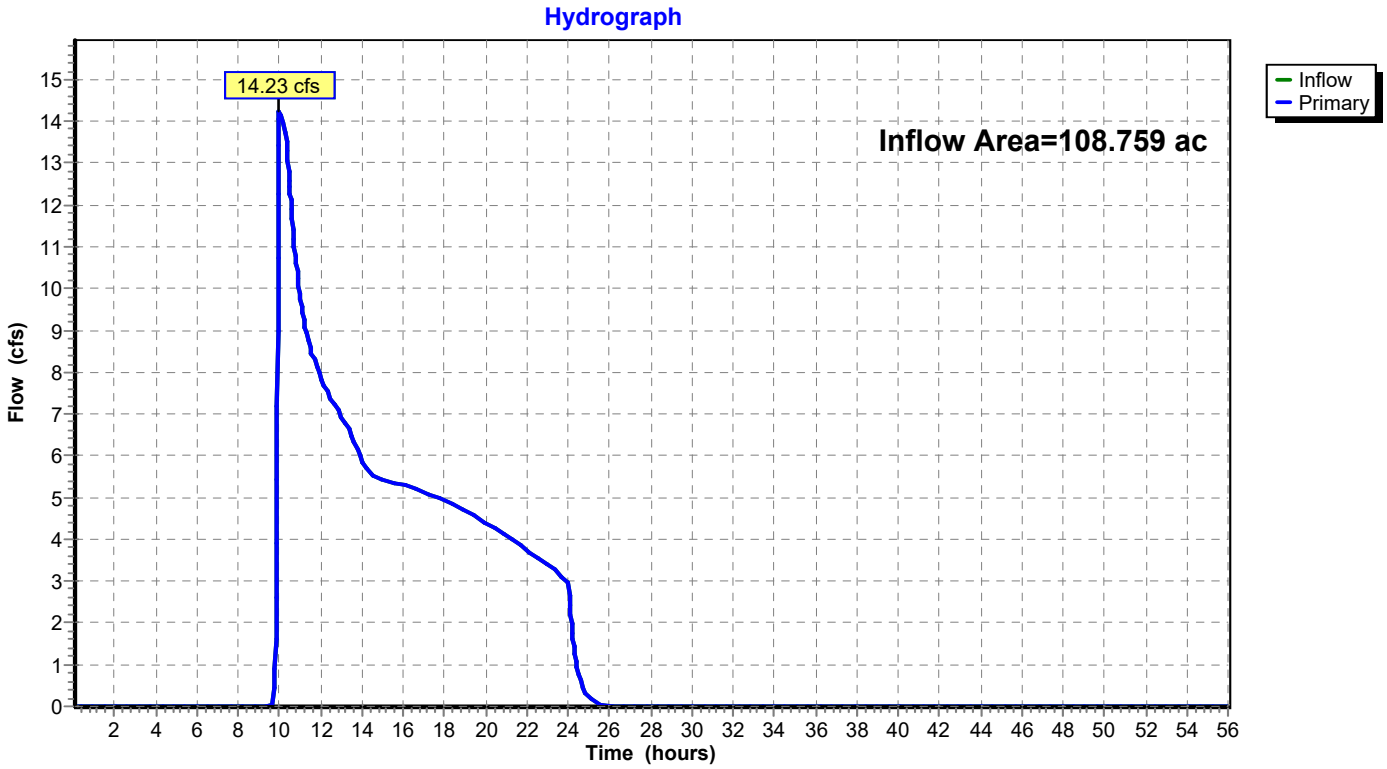


Summary for Link 5L: Outlet To Tract #1632 Ex. 36" SD

Inflow Area = 108.759 ac, 0.00% Impervious, Inflow Depth = 0.76" for 25 Year event
Inflow = 14.23 cfs @ 10.02 hrs, Volume= 6.867 af
Primary = 14.23 cfs @ 10.02 hrs, Volume= 6.867 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 5L: Outlet To Tract #1632 Ex. 36" SD

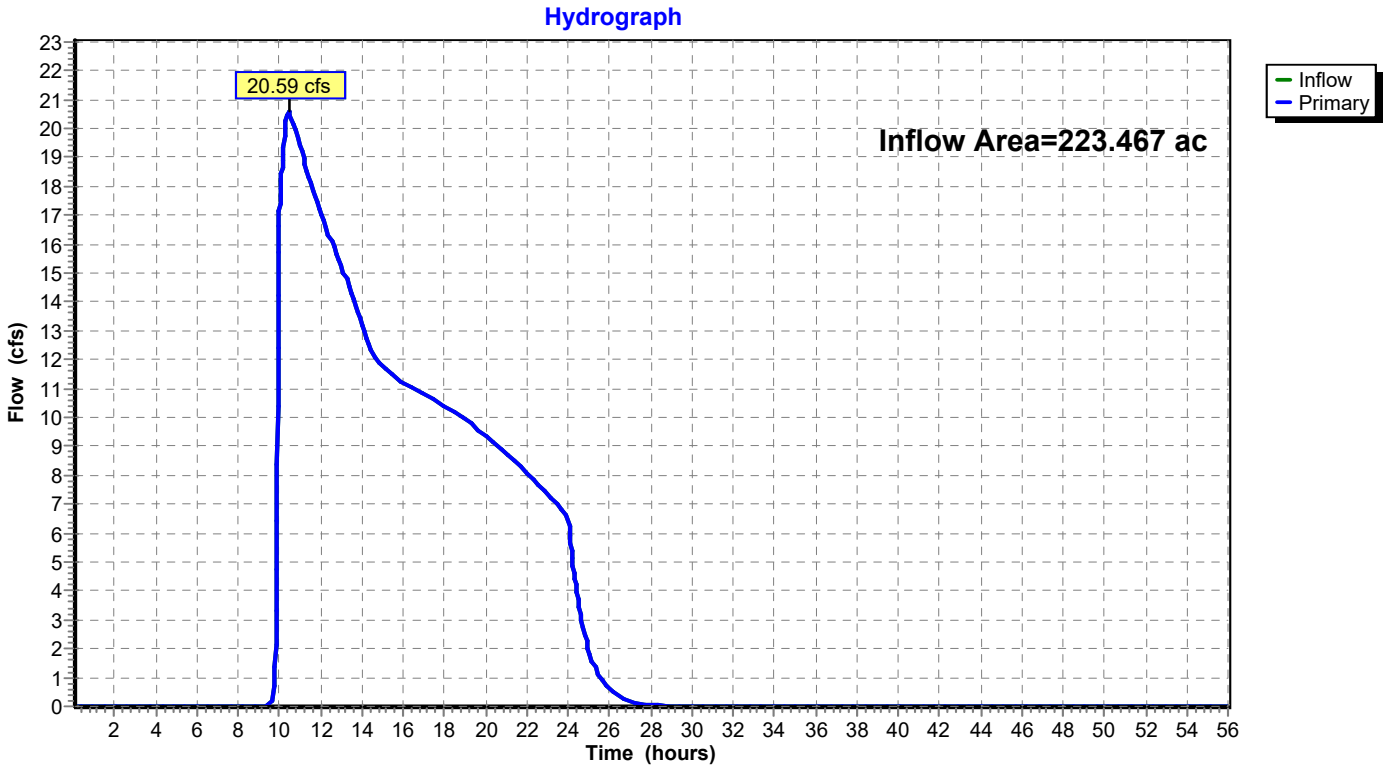


Summary for Link 6L: To Existing Meadowlark Road

Inflow Area = 223.467 ac, 0.00% Impervious, Inflow Depth = 0.77" for 25 Year event
Inflow = 20.59 cfs @ 10.47 hrs, Volume= 14.315 af
Primary = 20.59 cfs @ 10.47 hrs, Volume= 14.315 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 6L: To Existing Meadowlark Road

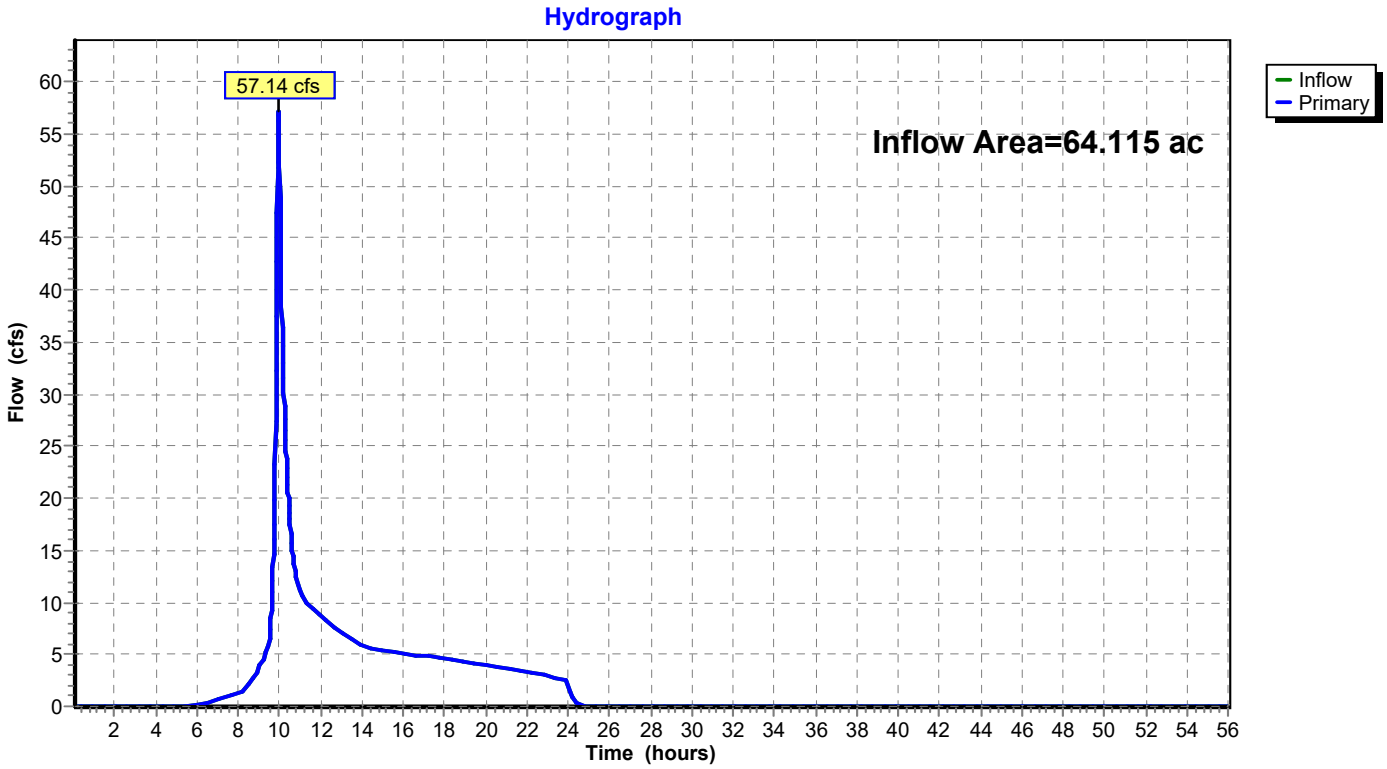


Summary for Link 7L: DMA 13

Inflow Area = 64.115 ac, 0.00% Impervious, Inflow Depth = 1.66" for 25 Year event
Inflow = 57.14 cfs @ 9.97 hrs, Volume= 8.870 af
Primary = 57.14 cfs @ 9.97 hrs, Volume= 8.870 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 7L: DMA 13

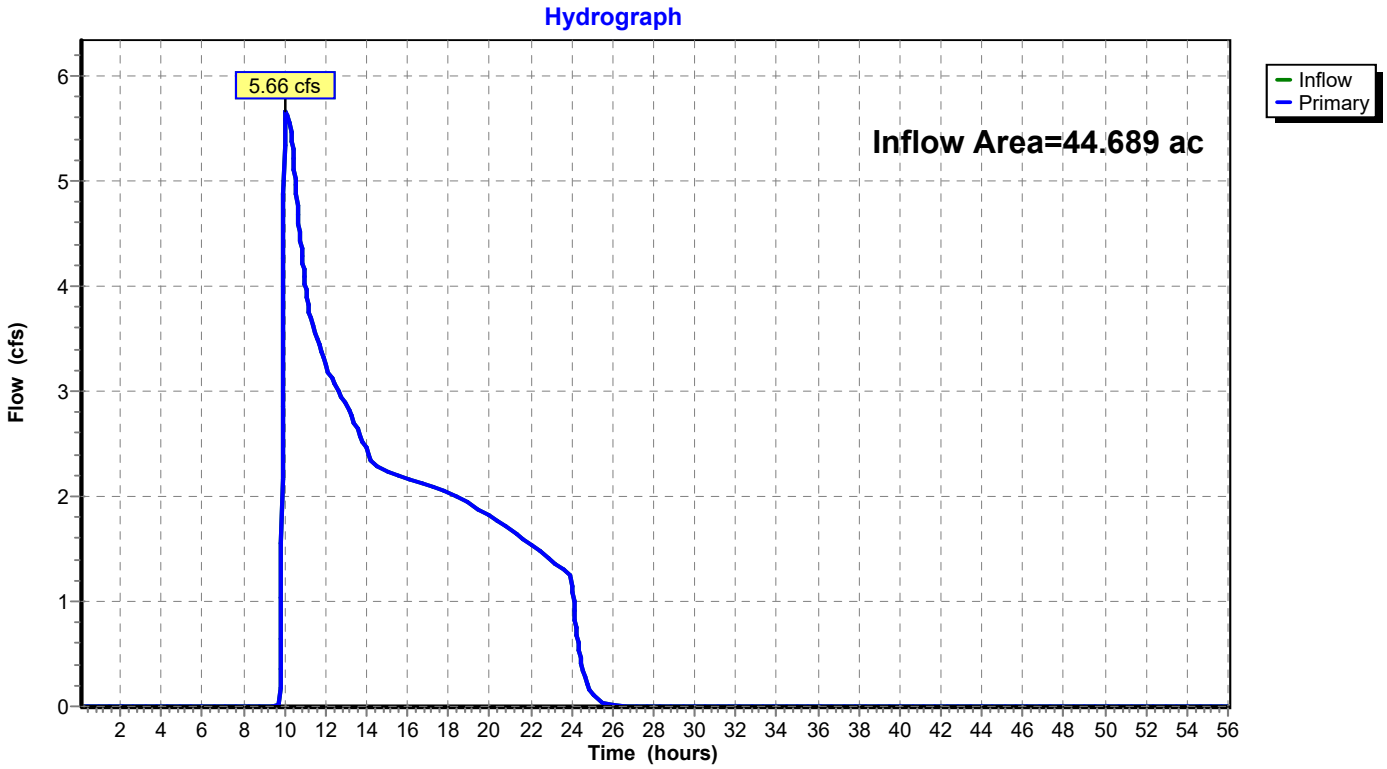


Summary for Link 8L: DMA 8

Inflow Area = 44.689 ac, 0.00% Impervious, Inflow Depth = 0.76" for 25 Year event
Inflow = 5.66 cfs @ 10.02 hrs, Volume= 2.822 af
Primary = 5.66 cfs @ 10.02 hrs, Volume= 2.822 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 8L: DMA 8

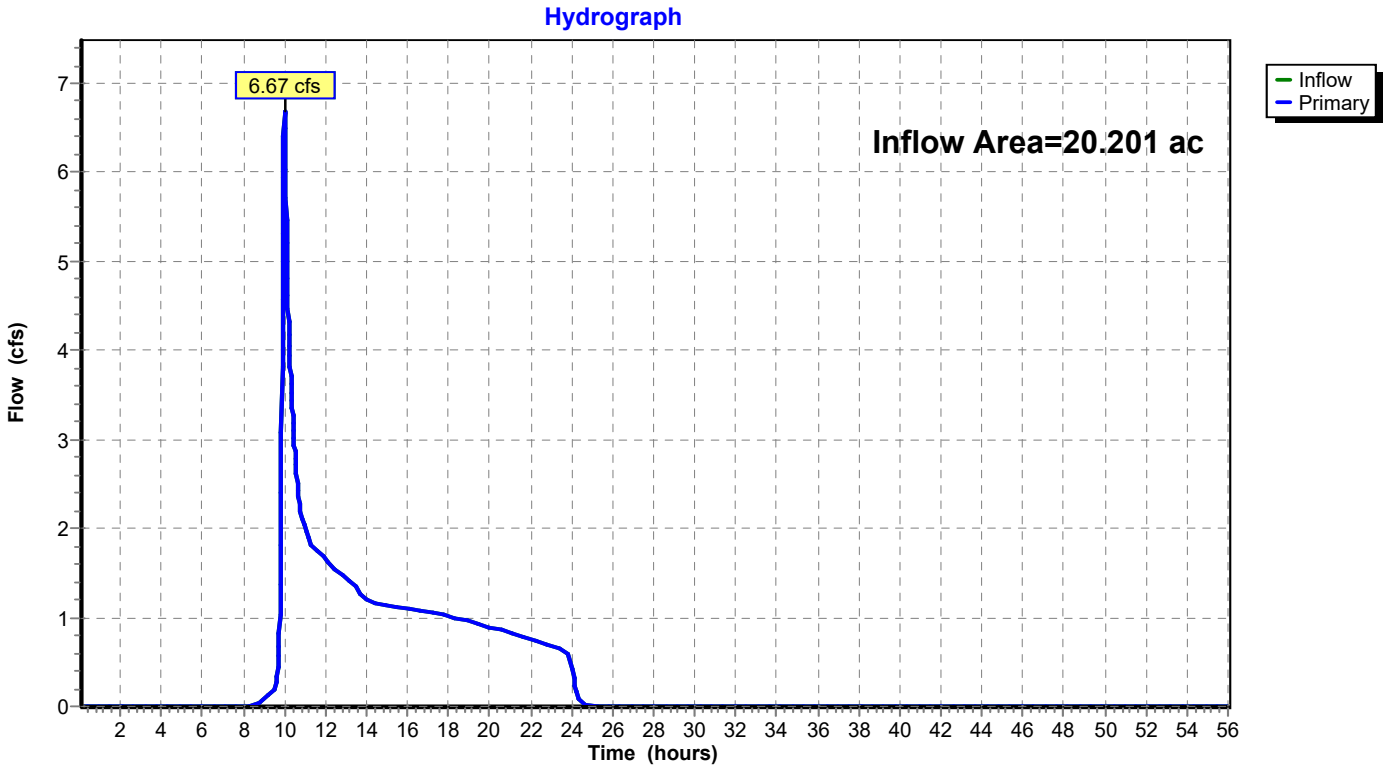


Summary for Link 9L: DMA 12

Inflow Area = 20.201 ac, 0.00% Impervious, Inflow Depth = 0.90" for 25 Year event
Inflow = 6.67 cfs @ 9.99 hrs, Volume= 1.521 af
Primary = 6.67 cfs @ 9.99 hrs, Volume= 1.521 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 9L: DMA 12

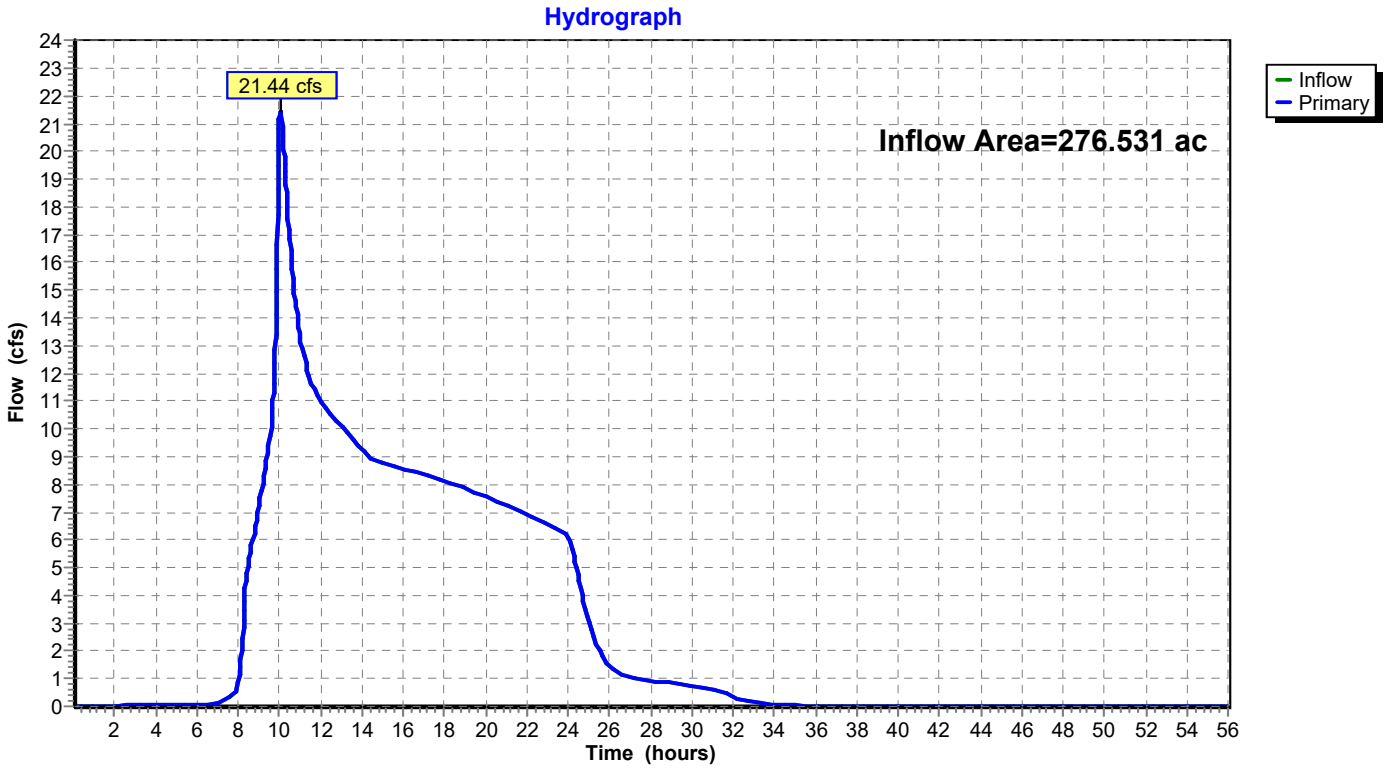


Summary for Link 10L: To Linne Road Channel

Inflow Area = 276.531 ac, 1.18% Impervious, Inflow Depth = 0.56" for 25 Year event
Inflow = 21.44 cfs @ 10.07 hrs, Volume= 12.833 af
Primary = 21.44 cfs @ 10.07 hrs, Volume= 12.833 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 10L: To Linne Road Channel

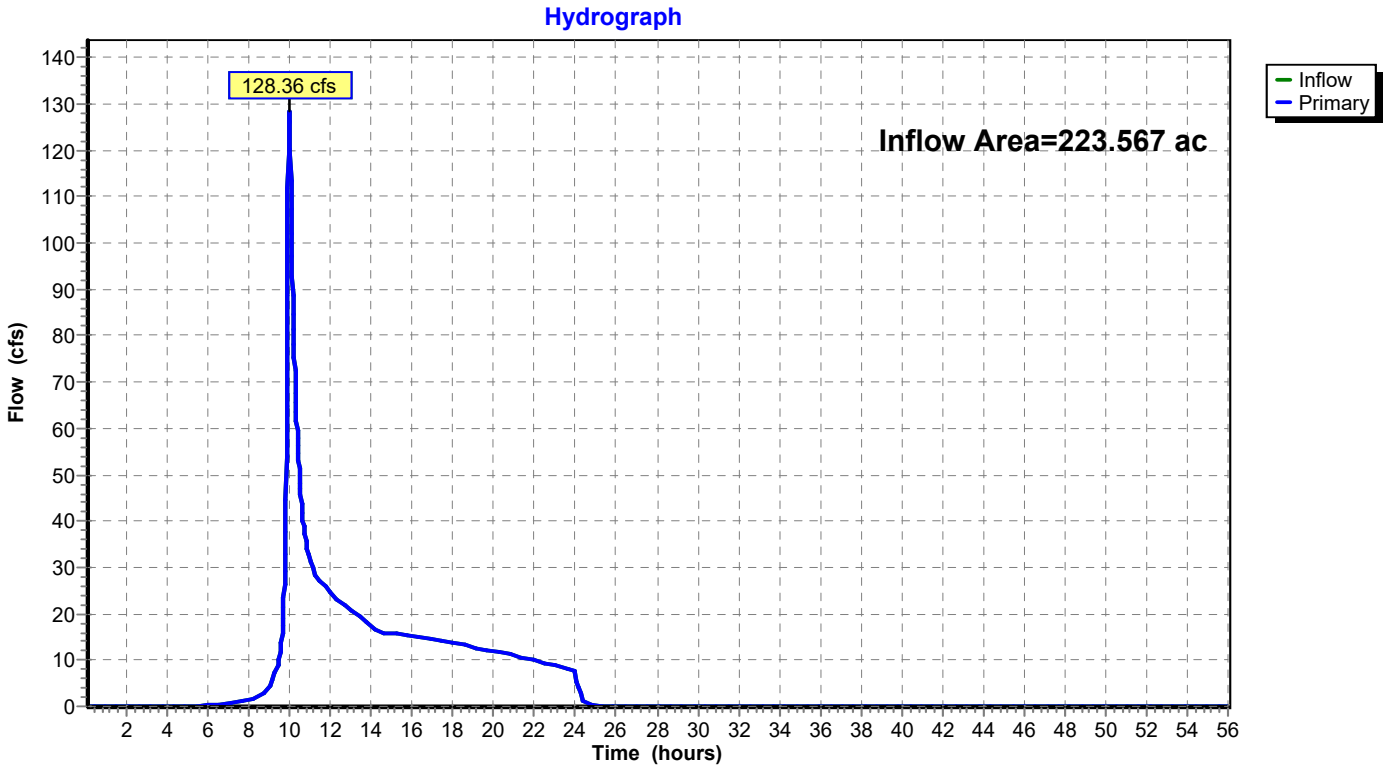


Summary for Link 11L: To Fontana Road SD

Inflow Area = 223.567 ac, 0.53% Impervious, Inflow Depth = 1.27" for 25 Year event
Inflow = 128.36 cfs @ 9.98 hrs, Volume= 23.705 af
Primary = 128.36 cfs @ 9.98 hrs, Volume= 23.705 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 11L: To Fontana Road SD

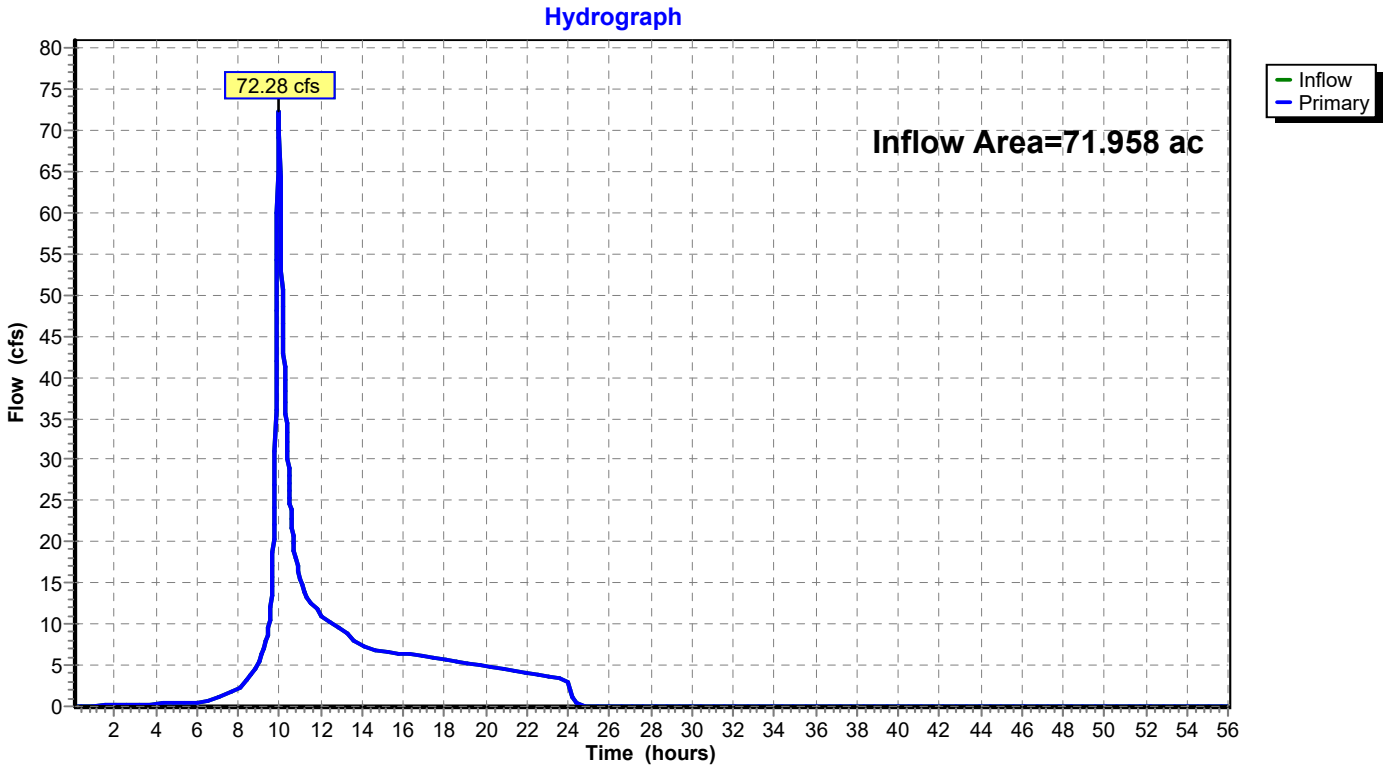


Summary for Link 15L: Sherwood/Niblick LP Xing

Inflow Area = 71.958 ac, 6.18% Impervious, Inflow Depth = 1.97" for 25 Year event
Inflow = 72.28 cfs @ 9.98 hrs, Volume= 11.820 af
Primary = 72.28 cfs @ 9.98 hrs, Volume= 11.820 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 15L: Sherwood/Niblick LP Xing

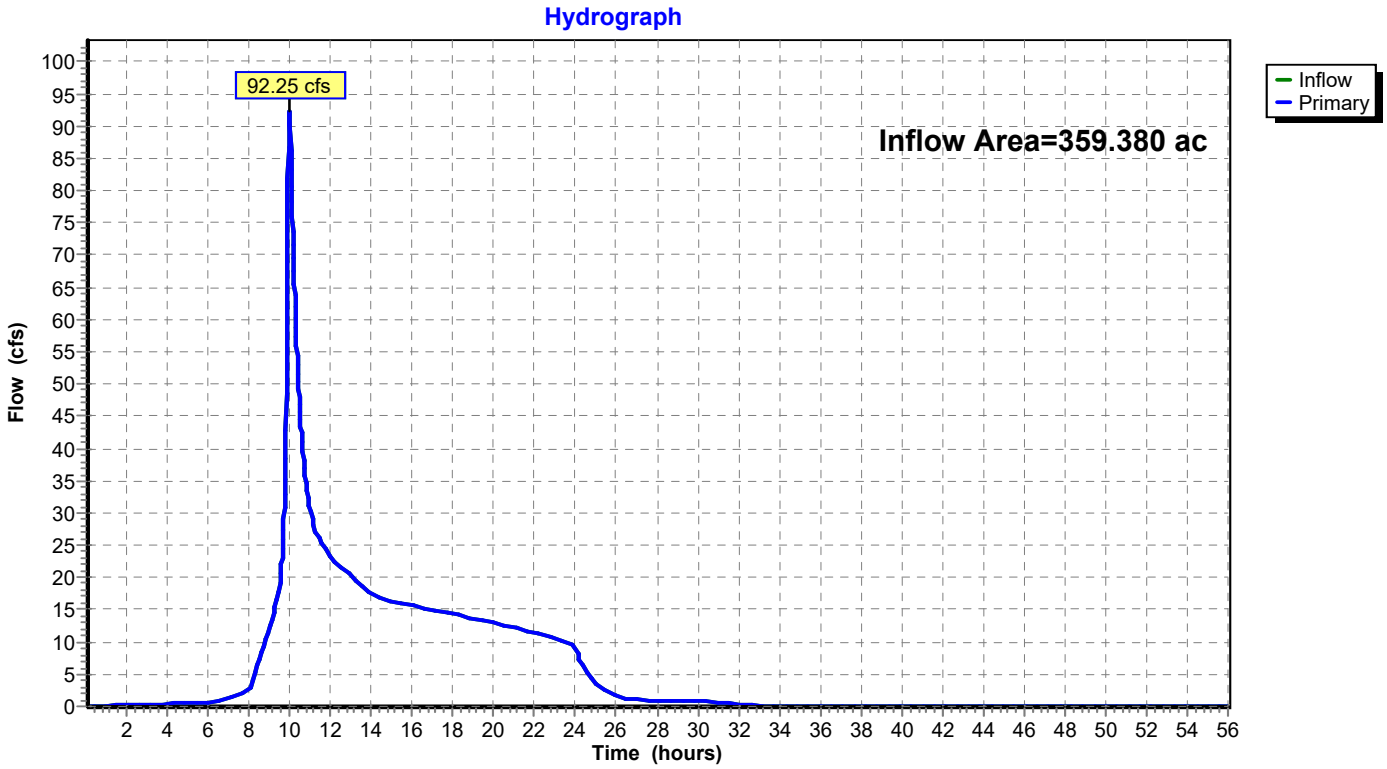


Summary for Link 16L: Airport & Linne Road SD

Inflow Area = 359.380 ac, 2.33% Impervious, Inflow Depth = 0.85" for 25 Year event
Inflow = 92.25 cfs @ 9.98 hrs, Volume= 25.516 af
Primary = 92.25 cfs @ 9.98 hrs, Volume= 25.516 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 16L: Airport & Linne Road SD

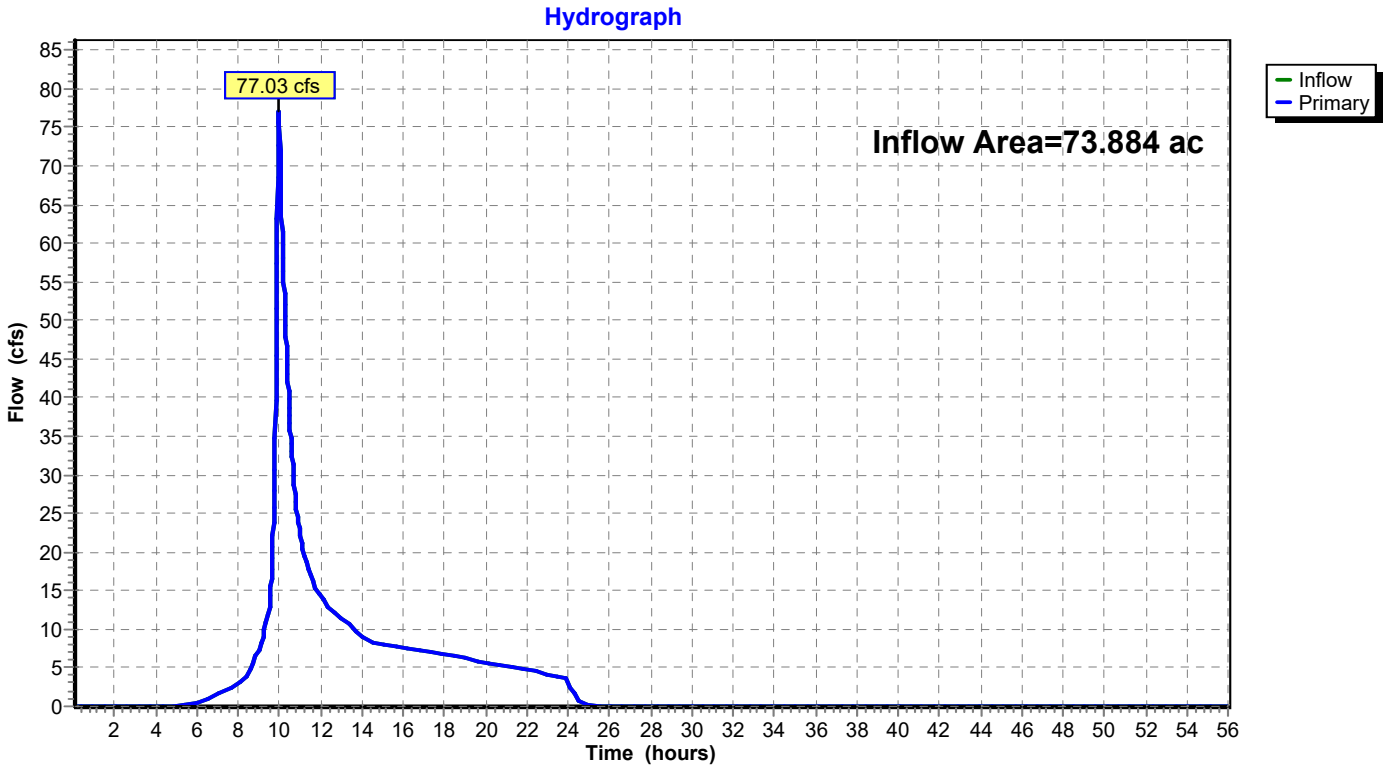


Summary for Link 19L: 14c(0+1)-Ex

Inflow Area = 73.884 ac, 1.37% Impervious, Inflow Depth = 2.36" for 25 Year event
Inflow = 77.03 cfs @ 9.98 hrs, Volume= 14.548 af
Primary = 77.03 cfs @ 9.98 hrs, Volume= 14.548 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 19L: 14c(0+1)-Ex

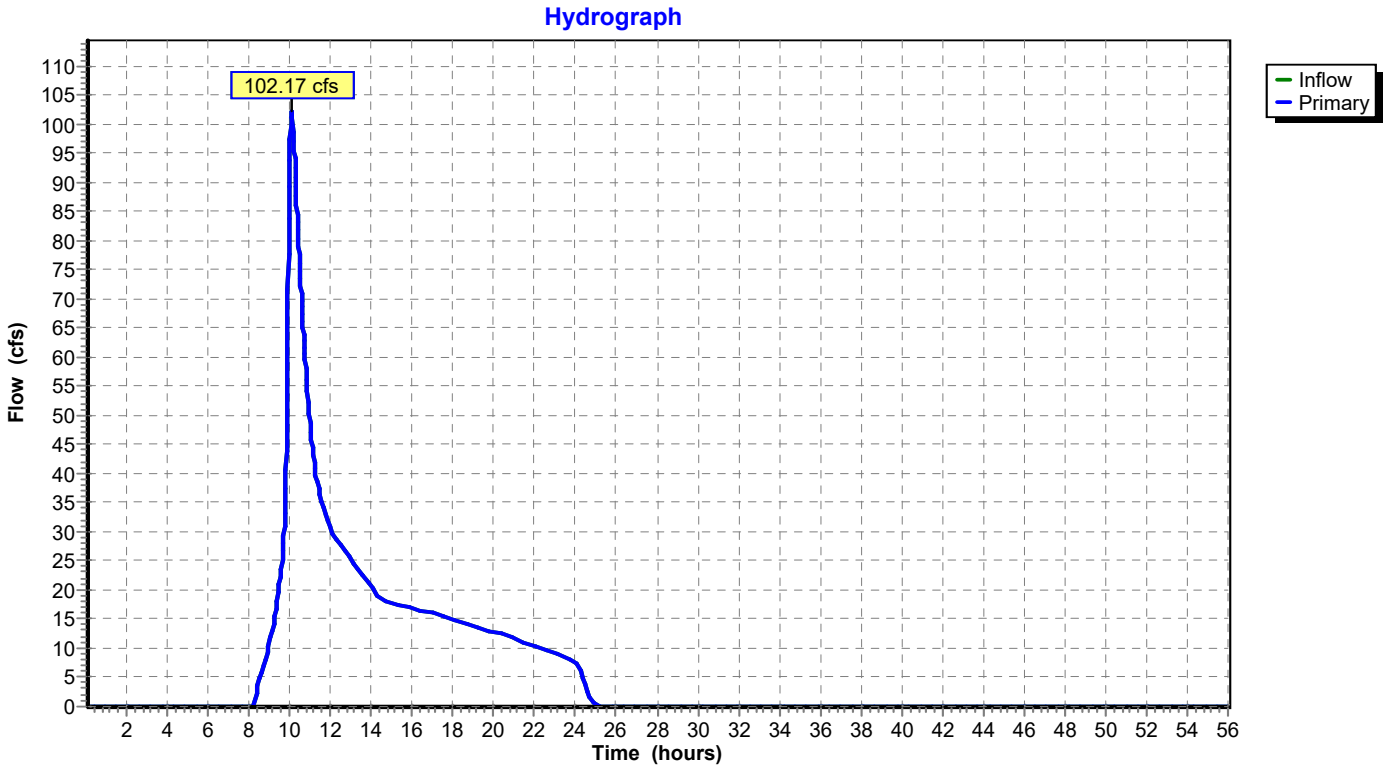


Summary for Link 22L: Linne Rd Overtopping Ex.Flow #2and#3

Inflow	=	102.17 cfs @	10.09 hrs,	Volume=	27.926 af
Primary	=	102.17 cfs @	10.09 hrs,	Volume=	27.926 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 22L: Linne Rd Overtopping Ex.Flow #2and#3

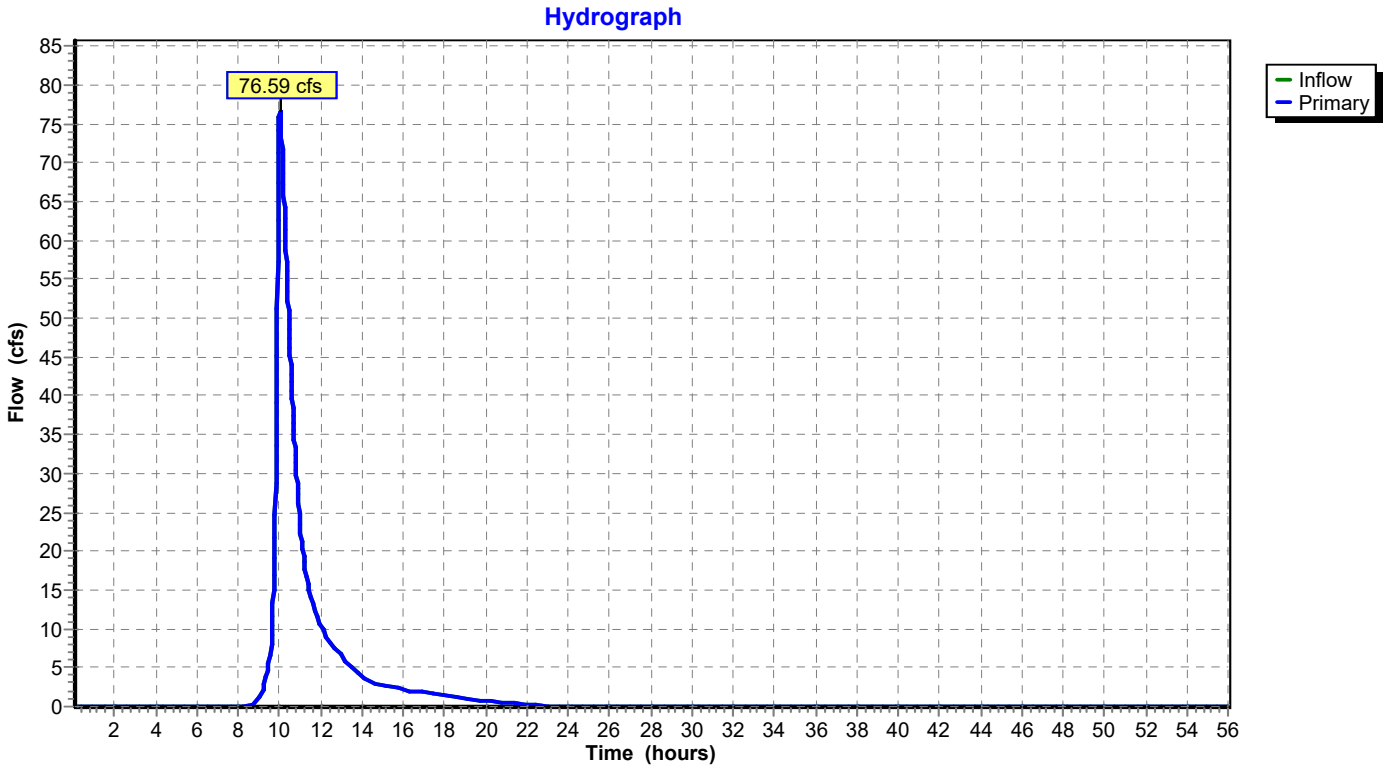


Summary for Link 23L: Linne Rd Overtop #1

Inflow	=	76.59 cfs @	10.04 hrs,	Volume=	8.686 af
Primary	=	76.59 cfs @	10.04 hrs,	Volume=	8.686 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 23L: Linne Rd Overtop #1



Time span=0.10-56.00 hrs, dt=0.02 hrs, 2796 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Subcat 1 Runoff Area=11.244 ac 0.00% Impervious Runoff Depth=1.22"
Tc=10.0 min CN=58/0 Runoff=5.61 cfs 1.147 af

Subcatchment2: Subcat 2 Runoff Area=14.644 ac 0.00% Impervious Runoff Depth=1.22"
Tc=11.5 min CN=58/0 Runoff=6.82 cfs 1.494 af

Subcatchment3: Subcat 3 Runoff Area=21.500 ac 0.02% Impervious Runoff Depth=1.57"
Tc=16.9 min CN=63/98 Runoff=12.60 cfs 2.819 af

Subcatchment3a{(1)}-Ex: Subcat 3a{(1)}-Ex Runoff Area=4.164 ac 0.00% Impervious Runoff Depth=1.22"
Tc=10.0 min CN=58/0 Runoff=2.08 cfs 0.425 af

Subcatchment3a{(2)}-Ex: Subcat 3a{(2)}-Ex Runoff Area=7.900 ac 0.00% Impervious Runoff Depth=1.43"
Tc=10.0 min CN=61/0 Runoff=5.17 cfs 0.941 af

Subcatchment3a{(3)}-Ex: Subcat 3a{(3)}-Ex Runoff Area=6.004 ac 0.00% Impervious Runoff Depth=2.03"
Tc=10.0 min CN=69/0 Runoff=6.63 cfs 1.016 af

Subcatchment3b-Ex: Subcat 3b-Ex Runoff Area=757.079 ac 0.00% Impervious Runoff Depth=1.36"
Tc=45.5 min CN=60/98 Runoff=178.43 cfs 85.793 af

Subcatchment4: Subcat 4 Runoff Area=38.712 ac 1.43% Impervious Runoff Depth=1.28"
Tc=14.2 min CN=58/98 Runoff=17.15 cfs 4.117 af

Subcatchment5: Subcat 5 Runoff Area=32.700 ac 0.00% Impervious Runoff Depth=1.22"
Tc=21.2 min CN=58/0 Runoff=10.59 cfs 3.336 af

Subcatchment6: Subcat 6 Runoff Area=34.035 ac 0.00% Impervious Runoff Depth=1.36"
Tc=20.1 min CN=60/0 Runoff=13.97 cfs 3.857 af

Subcatchment7: Subcat 7 Runoff Area=31.369 ac 0.00% Impervious Runoff Depth=1.22"
Tc=23.2 min CN=58/0 Runoff=9.56 cfs 3.200 af

Subcatchment8: Subcat 8 Runoff Area=30.487 ac 0.00% Impervious Runoff Depth=1.22"
Tc=28.8 min CN=58/0 Runoff=7.96 cfs 3.110 af

Subcatchment8a-Ex: Subcat 8a-Ex Runoff Area=14.202 ac 0.00% Impervious Runoff Depth=1.22"
Tc=16.5 min CN=58/0 Runoff=5.39 cfs 1.449 af

Subcatchment9: Subcat 9 Runoff Area=11.446 ac 0.00% Impervious Runoff Depth=1.50"
Tc=22.3 min CN=62/0 Runoff=5.24 cfs 1.431 af

Subcatchment9a-Ex: Subcat 9a-Ex Runoff Area=212.022 ac 0.00% Impervious Runoff Depth=1.22"
Flow Length=4,909' Tc=51.3 min CN=58/0 Runoff=38.64 cfs 21.629 af

Subcatchment10: Subcat 10 Runoff Area=30.685 ac 3.88% Impervious Runoff Depth=1.43"
Tc=22.6 min CN=59/98 Runoff=12.48 cfs 3.656 af

Subcatchment10a-Ex: Subcat 10a-Ex Runoff Area=94.105 ac 0.00% Impervious Runoff Depth=1.87"
Tc=11.0 min CN=67/0 Runoff=89.24 cfs 14.688 af

Subcatchment11: Subcat 11 Runoff Area=14.461 ac 0.00% Impervious Runoff Depth=1.29"
Tc=11.1 min CN=59/0 Runoff=7.56 cfs 1.556 af

Subcatchment12: Subcat 12 Runoff Area=17.572 ac 0.00% Impervious Runoff Depth=1.29"
Tc=10.0 min CN=59/0 Runoff=9.66 cfs 1.891 af

Subcatchment12a-Ex: Subcat 12a-Ex Runoff Area=2.629 ac 0.00% Impervious Runoff Depth=2.19"
Tc=10.0 min CN=71/0 Runoff=3.22 cfs 0.480 af

Subcatchment13: Subcat 13 Runoff Area=27.742 ac 0.00% Impervious Runoff Depth=1.43"
Flow Length=1,750' Tc=10.0 min CN=61/0 Runoff=18.16 cfs 3.305 af

Subcatchment13a-Ex: Subcat 13a-Ex Runoff Area=3.505 ac 0.00% Impervious Runoff Depth=2.19"
Tc=10.0 min CN=71/0 Runoff=4.29 cfs 0.640 af

Subcatchment13b-Ex: Subcat 13b-Ex Runoff Area=18.461 ac 0.00% Impervious Runoff Depth=3.17"
Tc=10.0 min CN=82/0 Runoff=35.51 cfs 4.875 af

Subcatchment13c-Ex: Subcat 13c-Ex Runoff Area=14.407 ac 0.00% Impervious Runoff Depth=2.98"
Tc=10.0 min CN=80/0 Runoff=25.83 cfs 3.578 af

Subcatchment14: Subcat 14 Runoff Area=8.669 ac 51.27% Impervious Runoff Depth=3.09"
Tc=10.0 min CN=58/98 Runoff=14.43 cfs 2.232 af

Subcatchment14a{(1)}-Ex: Subcat 14a{(1)}-Ex Runoff Area=13.081 ac 0.00% Impervious Runoff Depth=1.65"
Tc=10.0 min CN=64/0 Runoff=10.70 cfs 1.794 af

Subcatchment14a{(2)}-Ex: Subcat 14a{(2)}-Ex Runoff Area=2.438 ac 29.80% Impervious Runoff Depth=2.31"
Tc=10.0 min CN=58/98 Runoff=2.86 cfs 0.469 af

Subcatchment14b-Ex: Subcat 14b-Ex Runoff Area=50.209 ac 0.00% Impervious Runoff Depth=2.89"
Tc=13.4 min CN=79/0 Runoff=76.84 cfs 12.083 af

Subcatchment14c{(0)}-Ex: Subcat 14c{(0)}-Ex Runoff Area=43.677 ac 1.21% Impervious Runoff Depth=3.19"
Tc=24.5 min CN=82/98 Runoff=55.26 cfs 11.607 af

Subcatchment14c{(1)}-Ex: Subcat 14c{(1)}-Ex Runoff Area=30.208 ac 1.61% Impervious Runoff Depth=3.10"
Tc=13.6 min CN=81/98 Runoff=49.85 cfs 7.810 af

Subcatchment14c{(2)}-Ex: Subcat 14c{(2)}-Ex Runoff Area=19.689 ac 0.00% Impervious Runoff Depth=2.71"
Tc=13.2 min CN=77/0 Runoff=28.04 cfs 4.441 af

Subcatchment14c{(3)}-Ex: Subcat 14c{(3)}-Ex Runoff Area=13.782 ac 0.00% Impervious Runoff Depth=2.53"
Tc=12.6 min CN=75/0 Runoff=18.42 cfs 2.906 af

Subcatchment14d-Ex: Subcat 14d-Ex Runoff Area=166.738 ac 0.91% Impervious Runoff Depth=3.00"
Tc=19.4 min CN=80/98 Runoff=222.44 cfs 41.649 af

Subcatchment14e-Ex: Subcat 14e-Ex Runoff Area=10.890 ac 6.05% Impervious Runoff Depth=1.44"
Tc=10.0 min CN=58/98 Runoff=6.91 cfs 1.311 af

Reach 6R: Reach 1c Avg. Flow Depth=3.21' Max Vel=4.26 fps Inflow=281.87 cfs 93.331 af
n=0.024 L=830.0' S=0.0031 '/' Capacity=4,878.97 cfs Outflow=267.92 cfs 93.331 af

Reach 7R: Reach 1b Avg. Flow Depth=1.82' Max Vel=4.74 fps Inflow=501.58 cfs 148.911 af
n=0.024 L=883.0' S=0.0066 '/' Capacity=8,865.90 cfs Outflow=494.14 cfs 148.911 af

Reach 8R: Reach 1a Avg. Flow Depth=2.10' Max Vel=3.54 fps Inflow=510.36 cfs 153.969 af
n=0.024 L=583.0' S=0.0034 '/' Capacity=6,396.21 cfs Outflow=504.95 cfs 153.969 af

Reach 17R: Reach 1d Avg. Flow Depth=0.74' Max Vel=2.90 fps Inflow=103.48 cfs 3.704 af
n=0.027 L=841.0' S=0.0110 '/' Capacity=1,276.84 cfs Outflow=90.29 cfs 3.704 af

Reach 18R: Linne Road Grassed Chl Avg. Flow Depth=0.68' Max Vel=2.78 fps Inflow=25.65 cfs 14.875 af
n=0.030 L=1,190.0' S=0.0087 '/' Capacity=66.25 cfs Outflow=24.58 cfs 14.875 af

Pond 17P: Gran Cielo Dwy Peak Elev=855.19' Storage=12,556 cf Inflow=222.44 cfs 41.649 af
Primary=117.95 cfs 37.936 af Secondary=0.65 cfs 0.009 af Tertiary=103.48 cfs 3.704 af Outflow=222.08 cfs 41.649 af

Pond 18P: GC-CkD1 Peak Elev=851.86' Storage=63,522 cf Inflow=223.44 cfs 57.363 af
Primary=1.07 cfs 1.743 af Secondary=114.40 cfs 41.965 af Tertiary=99.64 cfs 13.592 af Outflow=215.08 cfs 57.300 af

Pond 19P: GC-CkD2 Peak Elev=849.87' Storage=41,536 cf Inflow=141.95 cfs 48.150 af
Primary=1.40 cfs 2.285 af Secondary=81.70 cfs 39.175 af Tertiary=53.00 cfs 6.687 af Outflow=136.09 cfs 48.148 af

Pond 20P: GC-CkD3 Peak Elev=846.16' Storage=18,734 cf Inflow=98.57 cfs 44.367 af
Primary=6.94 cfs 7.743 af Secondary=16.42 cfs 6.664 af Tertiary=74.78 cfs 29.949 af Outflow=98.14 cfs 44.355 af

Link 3a (1,2+3)-Ex: Comb Un-dev Ck Flow Inflow=509.50 cfs 155.541 af
Primary=509.50 cfs 155.541 af

Link 5L: Outlet To Tract #1632 Ex. 36" SD Inflow=33.49 cfs 11.095 af
Primary=33.49 cfs 11.095 af

Link 6L: To Existing Meadowlark Road Inflow=42.63 cfs 23.060 af
Primary=42.63 cfs 23.060 af

Link 7L: DMA 13 Inflow=83.70 cfs 12.398 af
Primary=83.70 cfs 12.398 af

Link 8L: DMA 8 Inflow=13.34 cfs 4.559 af
Primary=13.34 cfs 4.559 af

Link 9L: DMA 12 Inflow=12.87 cfs 2.371 af
Primary=12.87 cfs 2.371 af

Link 10L: To Linne Road Channel Inflow=25.65 cfs 14.875 af
Primary=25.65 cfs 14.875 af

Link 11L: To Fontana Road SD Inflow=205.41 cfs 34.670 af
Primary=205.41 cfs 34.670 af

Link 15L: Sherwood/NiblickLP Xing Inflow=101.91 cfs 16.110 af
Primary=101.91 cfs 16.110 af

Link 16L: Airport & Linne Road SD Inflow=129.17 cfs 32.296 af
Primary=129.17 cfs 32.296 af

Link 19L: 14c(0+1)-Ex Inflow=104.93 cfs 19.418 af
Primary=104.93 cfs 19.418 af

Link 22L: Linne Rd OvertoppingEx.Flow #2and#3 Inflow=127.75 cfs 36.636 af
Primary=127.75 cfs 36.636 af

Link 23L: Linne Rd Overtop#1 Inflow=99.64 cfs 13.592 af
Primary=99.64 cfs 13.592 af

Total Runoff Area = 1,810.455 ac Runoff Volume = 256.738 af Average Runoff Depth = 1.70"
99.44% Pervious = 1,800.345 ac 0.56% Impervious = 10.110 ac

Summary for Subcatchment 1: Subcat 1

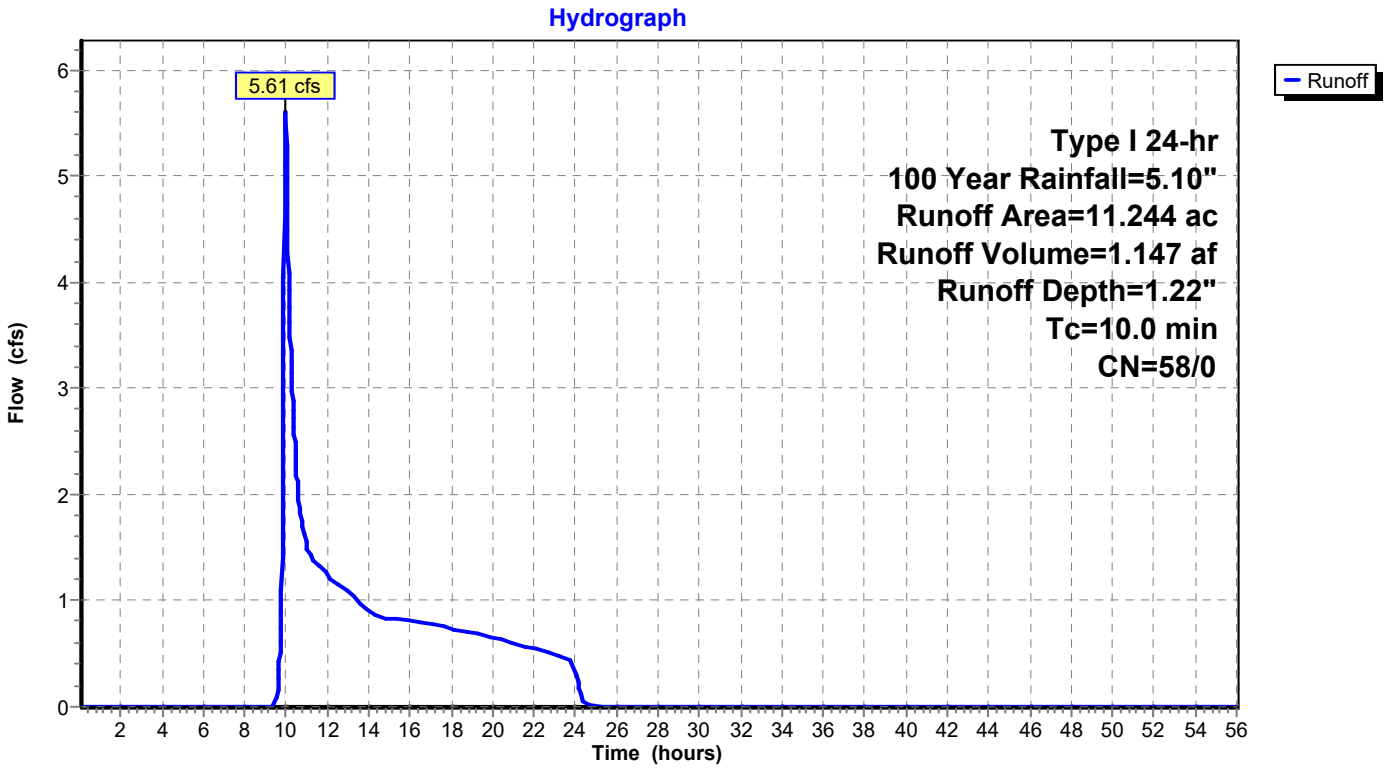
Runoff = 5.61 cfs @ 9.98 hrs, Volume= 1.147 af, Depth= 1.22"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
11.244	58	Meadow, non-grazed, HSG B
11.244	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9					**Direct Entry, SCS per Catchment Area CAD Info**
9.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 1: Subcat 1



Summary for Subcatchment 2: Subcat 2

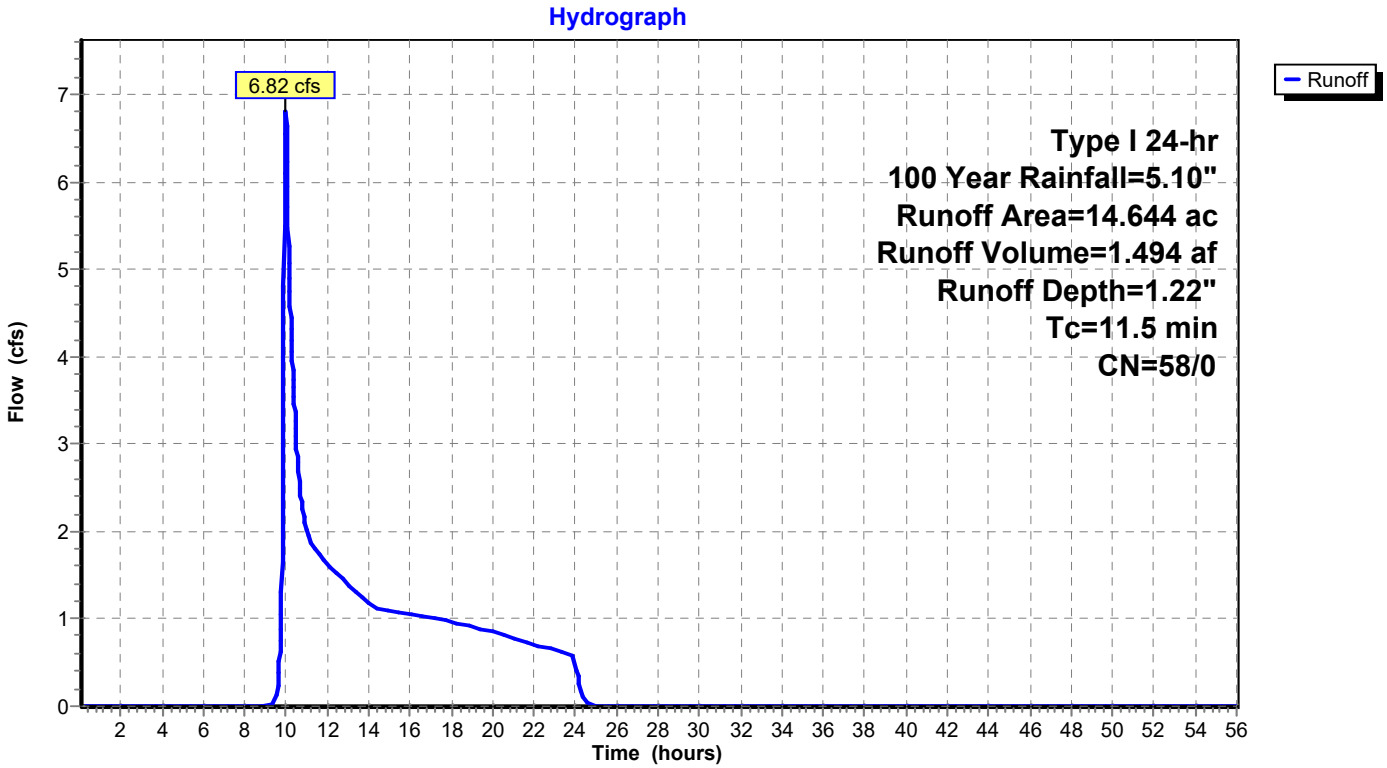
Runoff = 6.82 cfs @ 9.99 hrs, Volume= 1.494 af, Depth= 1.22"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
0.574	58	Meadow, non-grazed, HSG B
14.070	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
14.644	58	Weighted Average
14.644	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5					**Direct Entry, SCS per Catchment Area CAD Info**

Subcatchment 2: Subcat 2



Summary for Subcatchment 3: Subcat 3

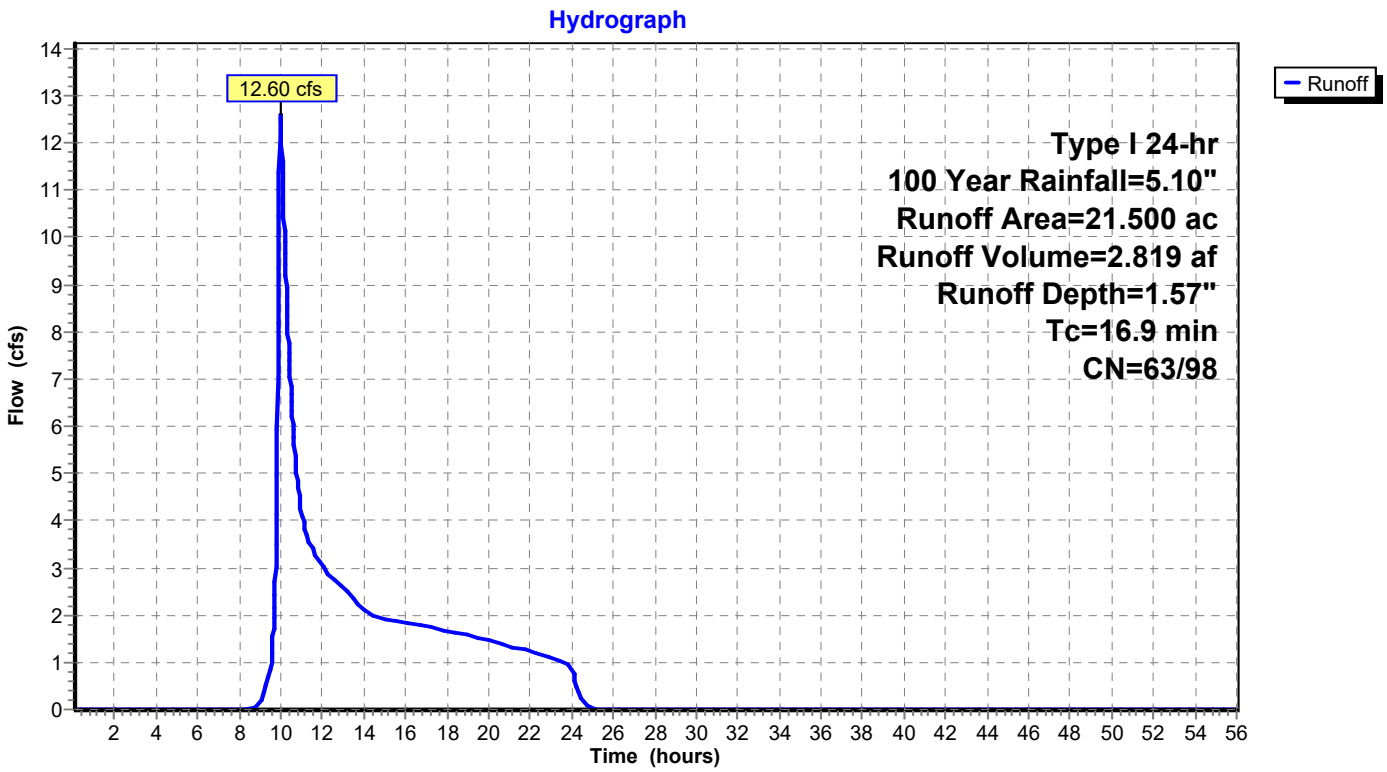
Runoff = 12.60 cfs @ 9.99 hrs, Volume= 2.819 af, Depth= 1.57"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
4.338	58	Meadow, non-grazed, HSG B
8.761	58	Meadow, non-grazed, HSG B
8.398	71	Meadow, non-grazed, HSG C
0.003	98	Paved roads w/curbs & sewers, HSG C
21.500	63	Weighted Average
21.497	63	99.98% Pervious Area
0.003	98	0.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.9					**Direct Entry, SCS per Catchment Area CAD Info**

Subcatchment 3: Subcat 3



Summary for Subcatchment 3a{(1)}-Ex: Subcat 3a{(1)}-Ex

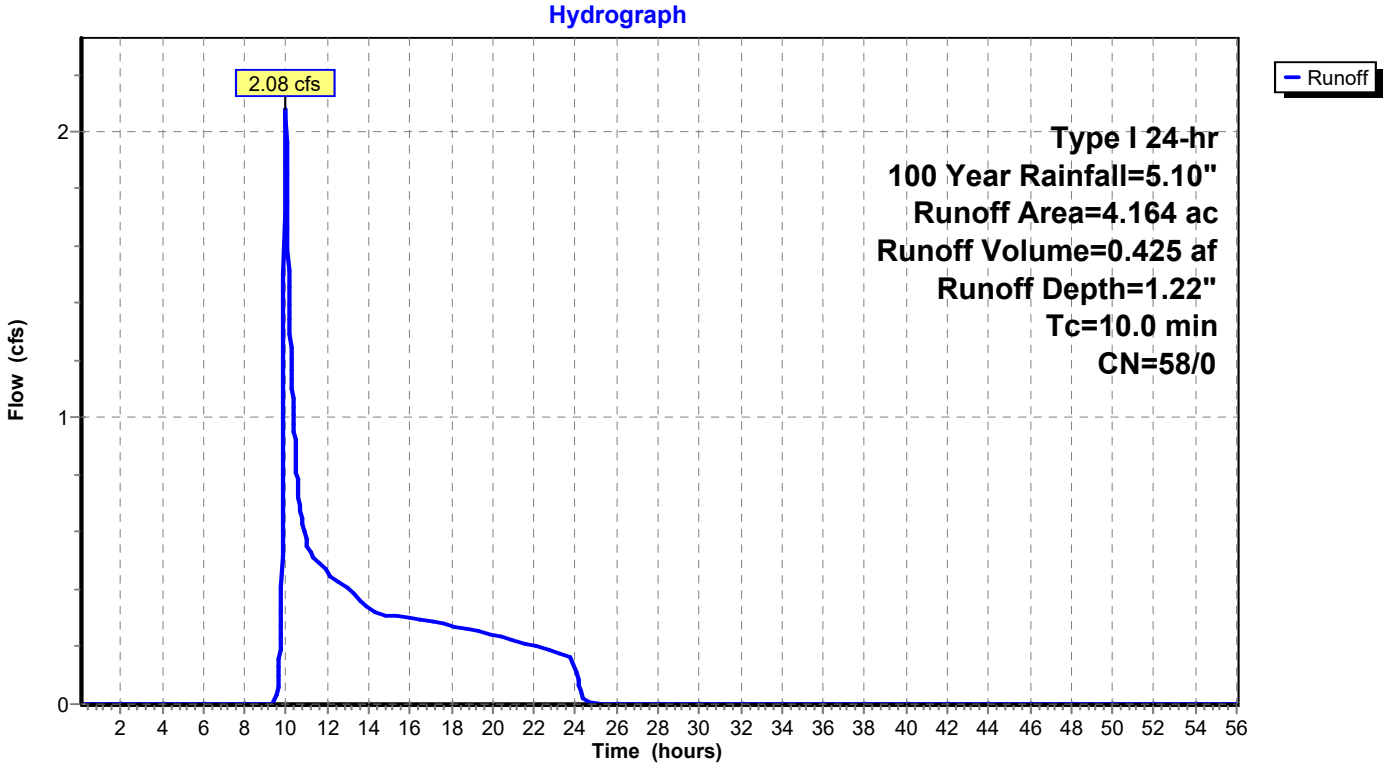
Runoff = 2.08 cfs @ 9.98 hrs, Volume= 0.425 af, Depth= 1.22"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
2.302	58	Meadow, non-grazed, HSG B
1.861	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
4.164	58	Weighted Average
4.164	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1					**Direct Entry,**
6.1	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 3a{(1)}-Ex: Subcat 3a{(1)}-Ex



Summary for Subcatchment 3a{(2)}-Ex: Subcat 3a{(2)}-Ex

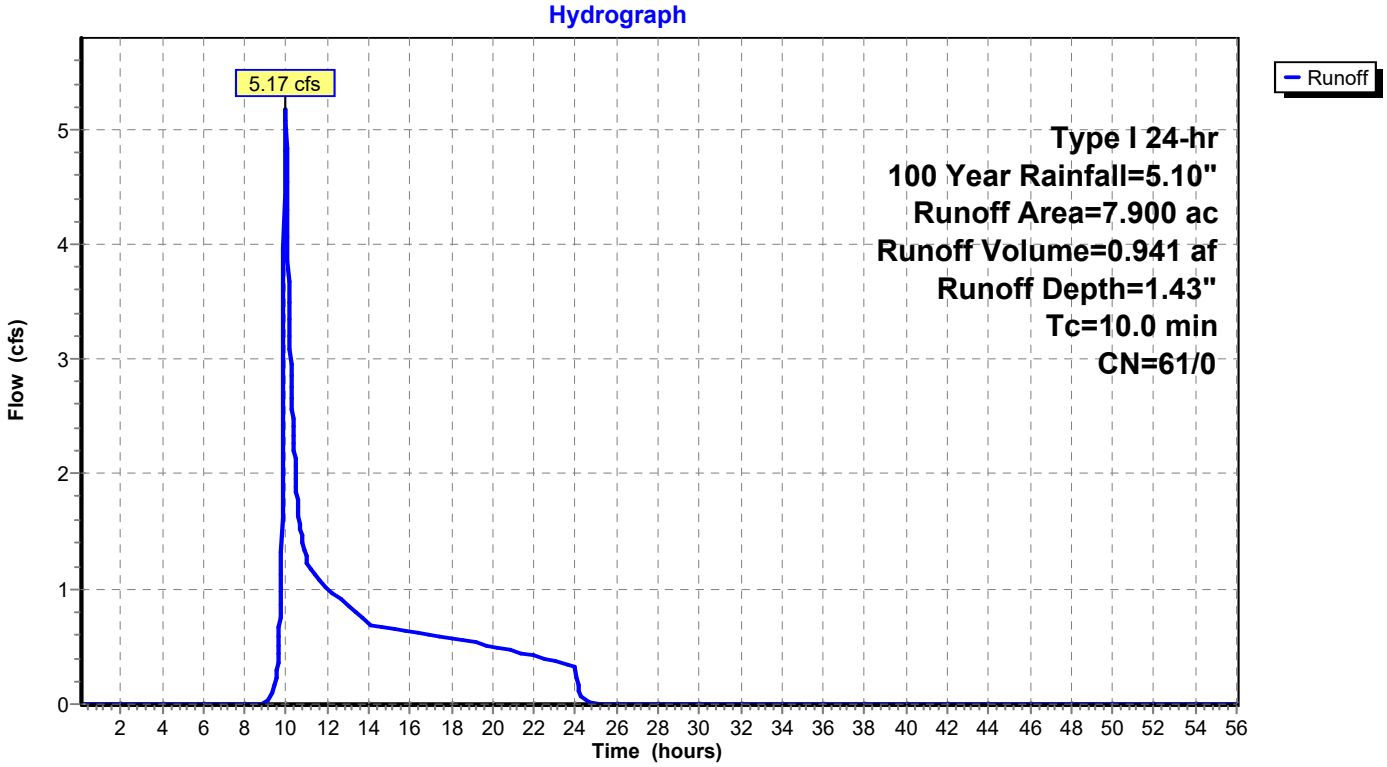
Runoff = 5.17 cfs @ 9.98 hrs, Volume= 0.941 af, Depth= 1.43"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
3.124	58	Meadow, non-grazed, HSG B
2.841	58	Meadow, non-grazed, HSG B
1.936	71	Meadow, non-grazed, HSG C
7.900	61	Weighted Average
7.900	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1					**Direct Entry,**
6.1	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 3a{(2)}-Ex: Subcat 3a{(2)}-Ex



Summary for Subcatchment 3a{(3)}-Ex: Subcat 3a{(3)}-Ex

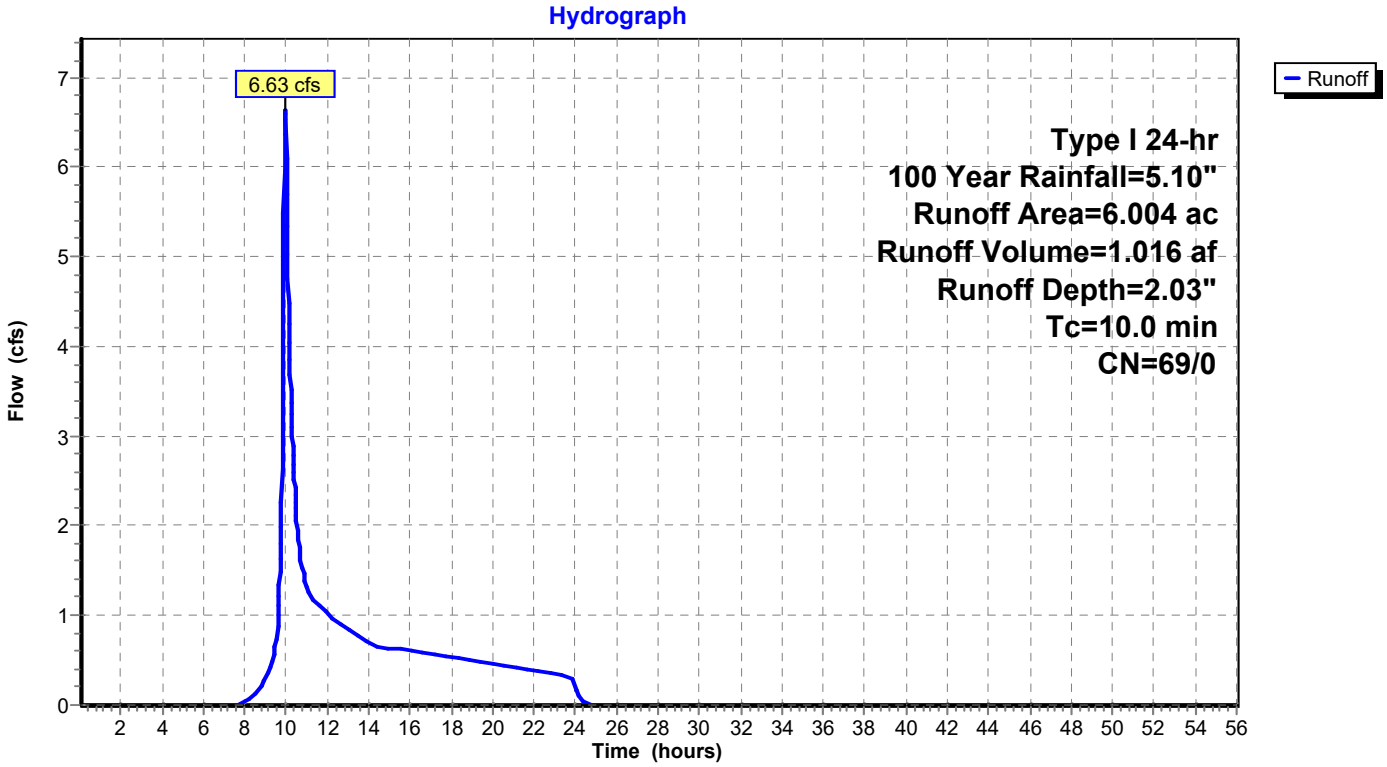
Runoff = 6.63 cfs @ 9.97 hrs, Volume= 1.016 af, Depth= 2.03"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
1.129	58	Meadow, non-grazed, HSG B
4.876	71	Meadow, non-grazed, HSG C
6.004	69	Weighted Average
6.004	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1					**Direct Entry, 14c{(2)}-Ex**
6.1	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 3a{(3)}-Ex: Subcat 3a{(3)}-Ex



Summary for Subcatchment 3b-Ex: Subcat 3b-Ex

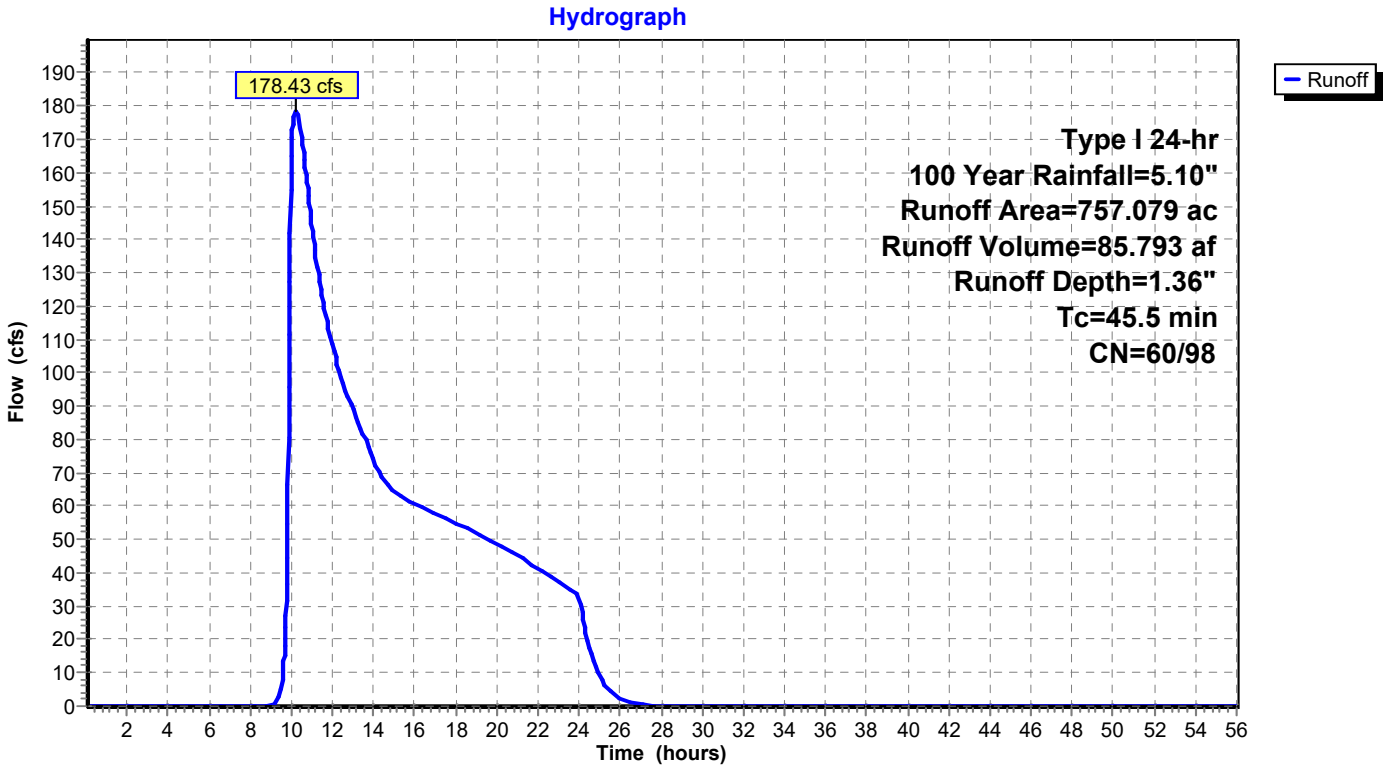
Runoff = 178.43 cfs @ 10.25 hrs, Volume= 85.793 af, Depth= 1.36"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
234.658	58	Meadow, non-grazed, HSG B
36.169	58	Meadow, non-grazed, HSG B
0.022	58	Meadow, non-grazed, HSG B
51.779	58	Meadow, non-grazed, HSG B
10.304	58	Meadow, non-grazed, HSG B
28.620	58	Meadow, non-grazed, HSG B
28.650	58	Meadow, non-grazed, HSG B
67.424	58	Meadow, non-grazed, HSG B
203.020	58	Meadow, non-grazed, HSG B
26.053	71	Meadow, non-grazed, HSG C
12.803	71	Meadow, non-grazed, HSG C
44.268	71	Meadow, non-grazed, HSG C
13.308	71	Meadow, non-grazed, HSG C
0.001	98	Paved roads w/curbs & sewers, HSG C
757.079	60	Weighted Average
757.078	60	100.00% Pervious Area
0.001	98	0.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.5					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 3b-Ex: Subcat 3b-Ex



Summary for Subcatchment 4: Subcat 4

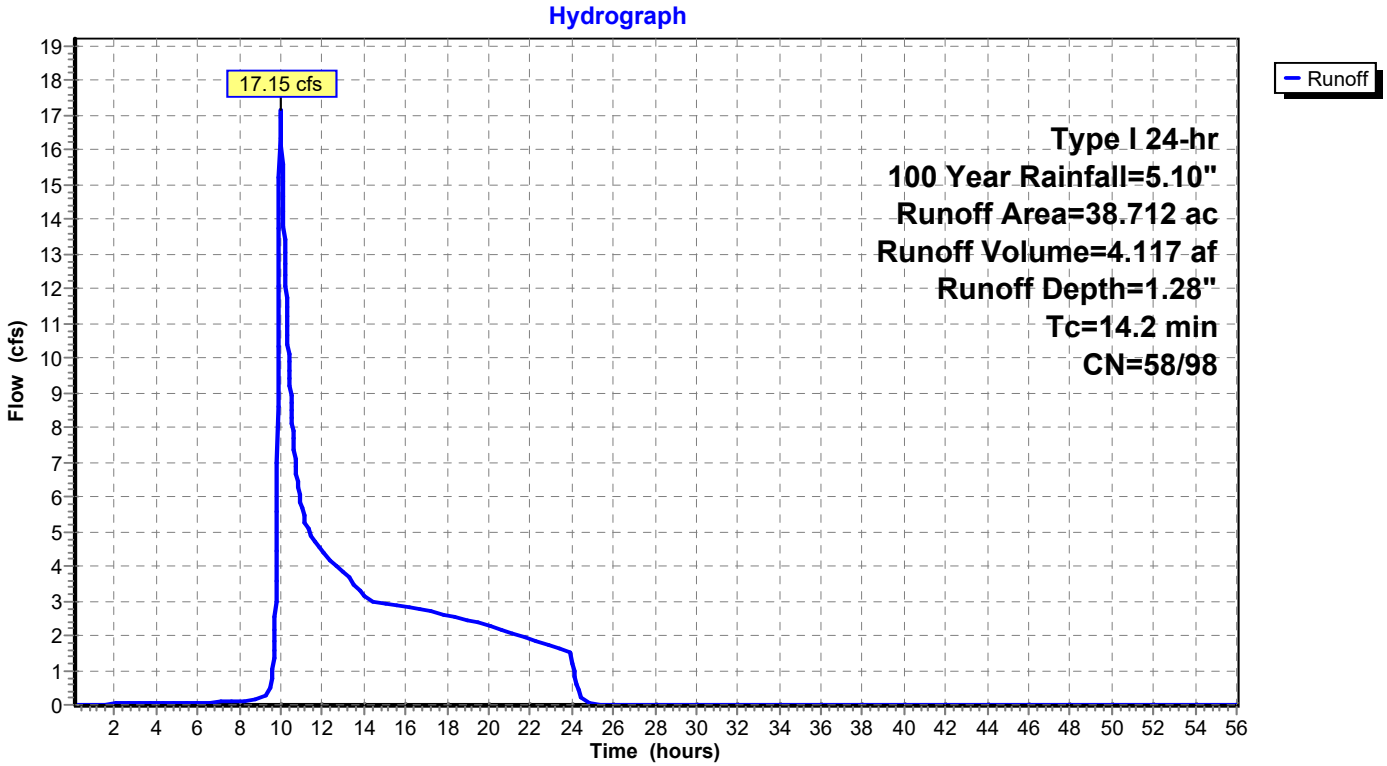
Runoff = 17.15 cfs @ 9.99 hrs, Volume= 4.117 af, Depth= 1.28"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
2.765	68	1 acre lots, 20% imp, HSG B
0.000	58	Meadow, non-grazed, HSG B
7.644	58	Meadow, non-grazed, HSG B
0.126	58	Meadow, non-grazed, HSG B
5.342	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
20.803	58	Meadow, non-grazed, HSG B
0.971	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
1.061	58	Meadow, non-grazed, HSG B
38.712	59	Weighted Average
38.159	58	98.57% Pervious Area
0.553	98	1.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 4: Subcat 4



Summary for Subcatchment 5: Subcat 5

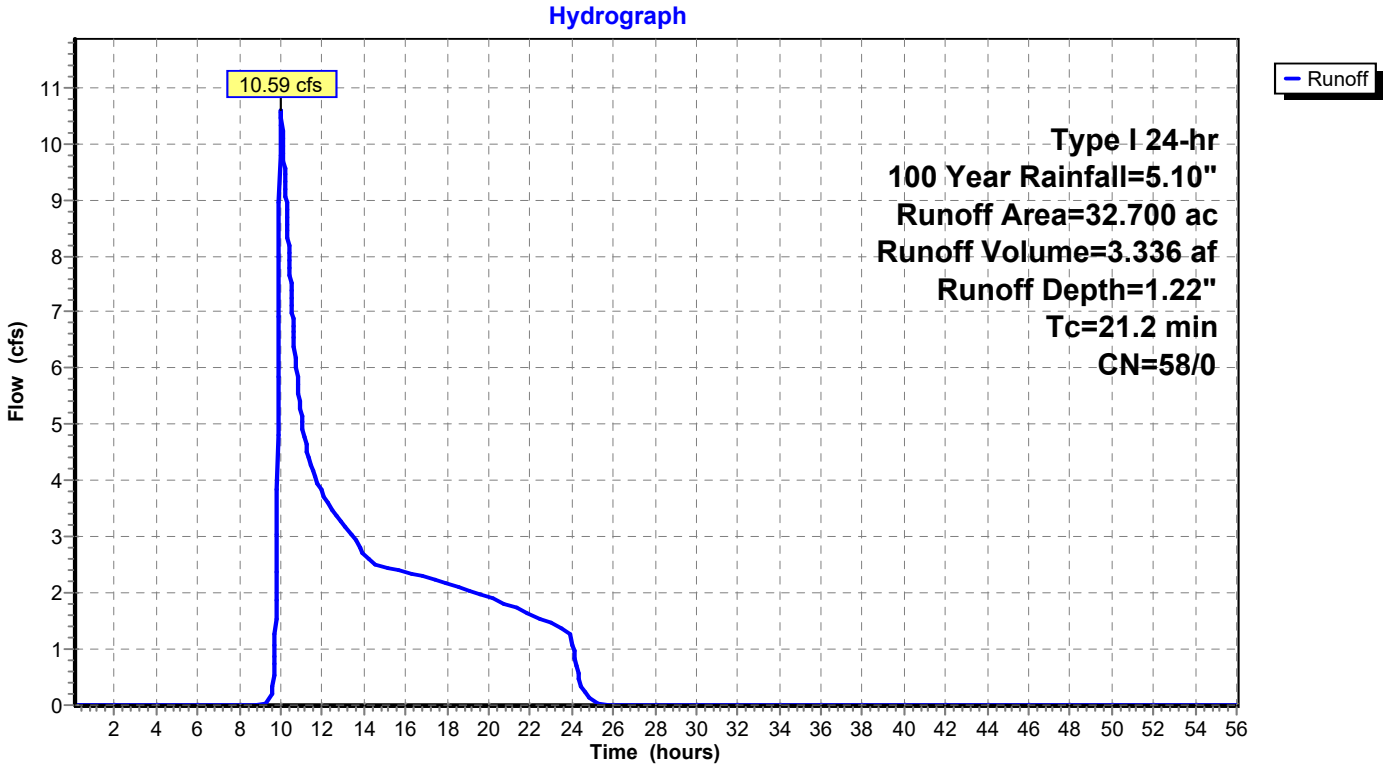
Runoff = 10.59 cfs @ 10.01 hrs, Volume= 3.336 af, Depth= 1.22"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
9.224	58	Meadow, non-grazed, HSG B
23.476	58	Meadow, non-grazed, HSG B
32.700	58	Weighted Average
32.700	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.2					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 5: Subcat 5



Summary for Subcatchment 6: Subcat 6

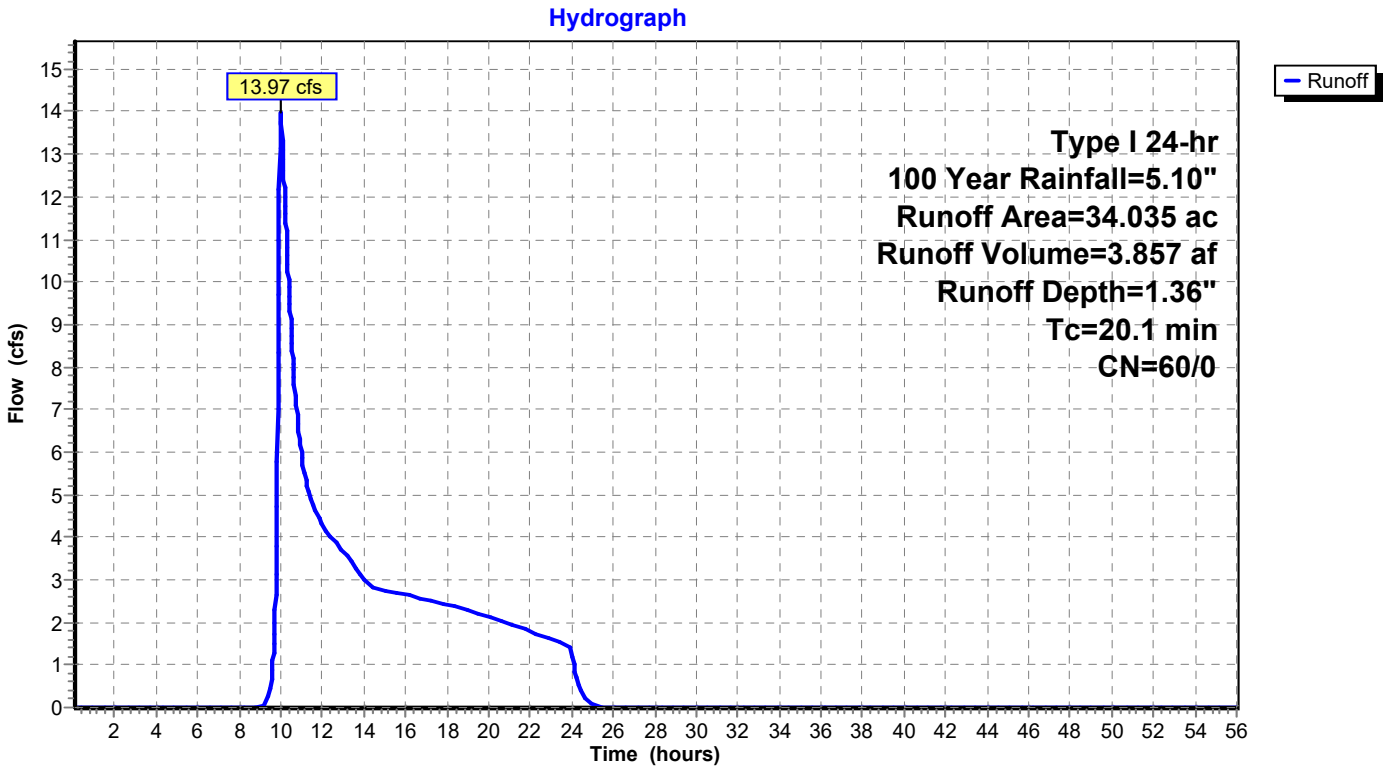
Runoff = 13.97 cfs @ 10.00 hrs, Volume= 3.857 af, Depth= 1.36"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
23.646	58	Meadow, non-grazed, HSG B
0.010	58	Meadow, non-grazed, HSG B
0.081	58	Meadow, non-grazed, HSG B
4.046	58	Meadow, non-grazed, HSG B
2.192	58	Meadow, non-grazed, HSG B
4.059	71	Meadow, non-grazed, HSG C
34.035	60	Weighted Average
34.035	60	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.1					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 6: Subcat 6



Summary for Subcatchment 7: Subcat 7

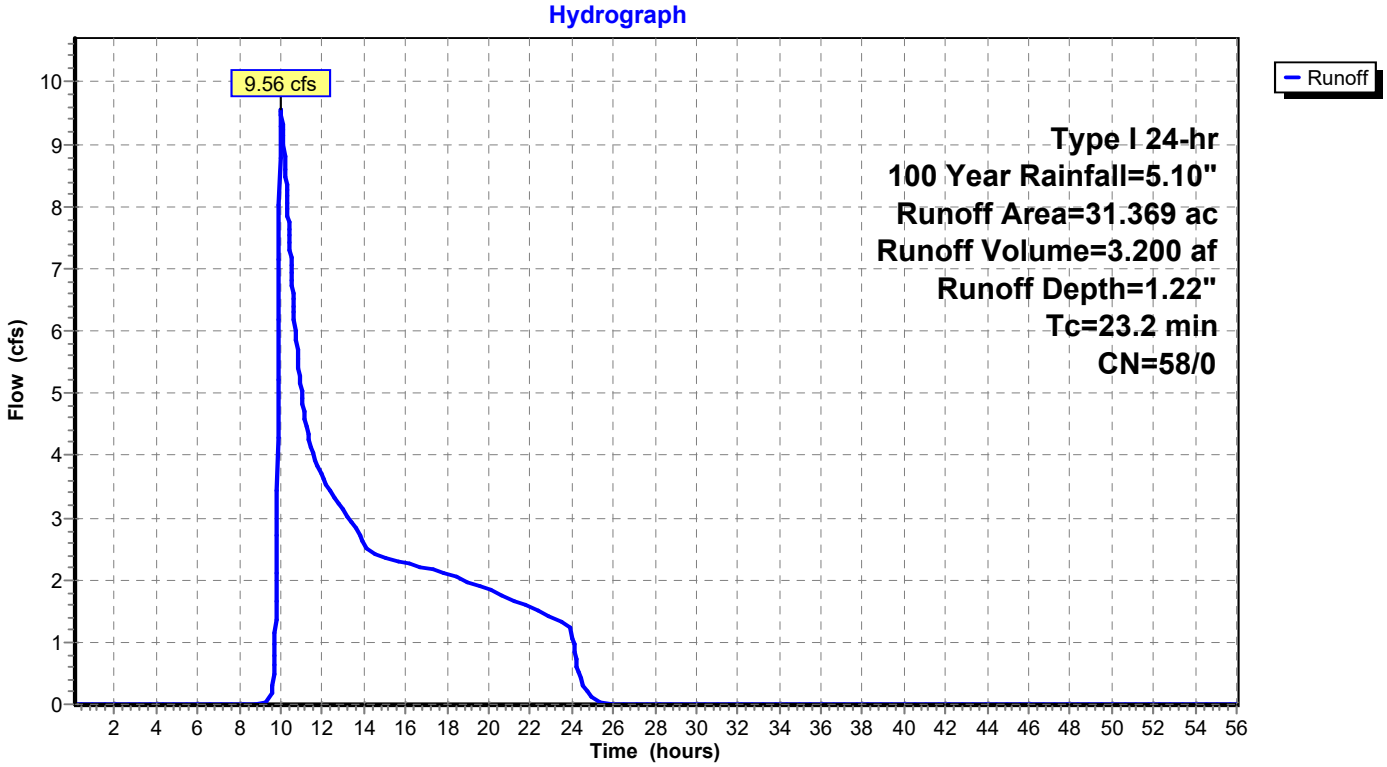
Runoff = 9.56 cfs @ 10.01 hrs, Volume= 3.200 af, Depth= 1.22"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
4.398	58	Meadow, non-grazed, HSG B
11.983	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
14.988	58	Meadow, non-grazed, HSG B
31.369	58	Weighted Average
31.369	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.2					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 7: Subcat 7



Summary for Subcatchment 8: Subcat 8

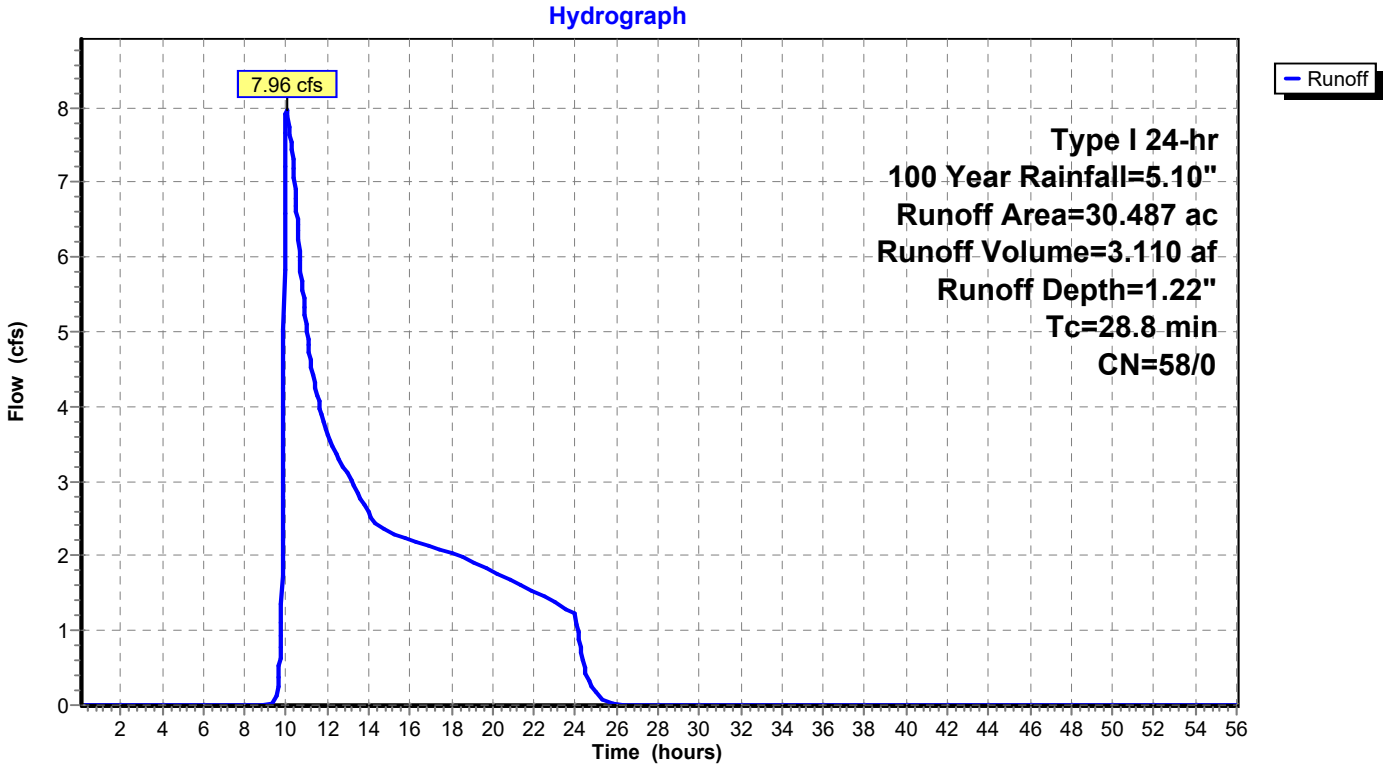
Runoff = 7.96 cfs @ 10.02 hrs, Volume= 3.110 af, Depth= 1.22"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
1.331	58	Meadow, non-grazed, HSG B
29.156	58	Meadow, non-grazed, HSG B
30.487	58	Weighted Average
30.487	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 8: Subcat 8



Summary for Subcatchment 8a-Ex: Subcat 8a-Ex

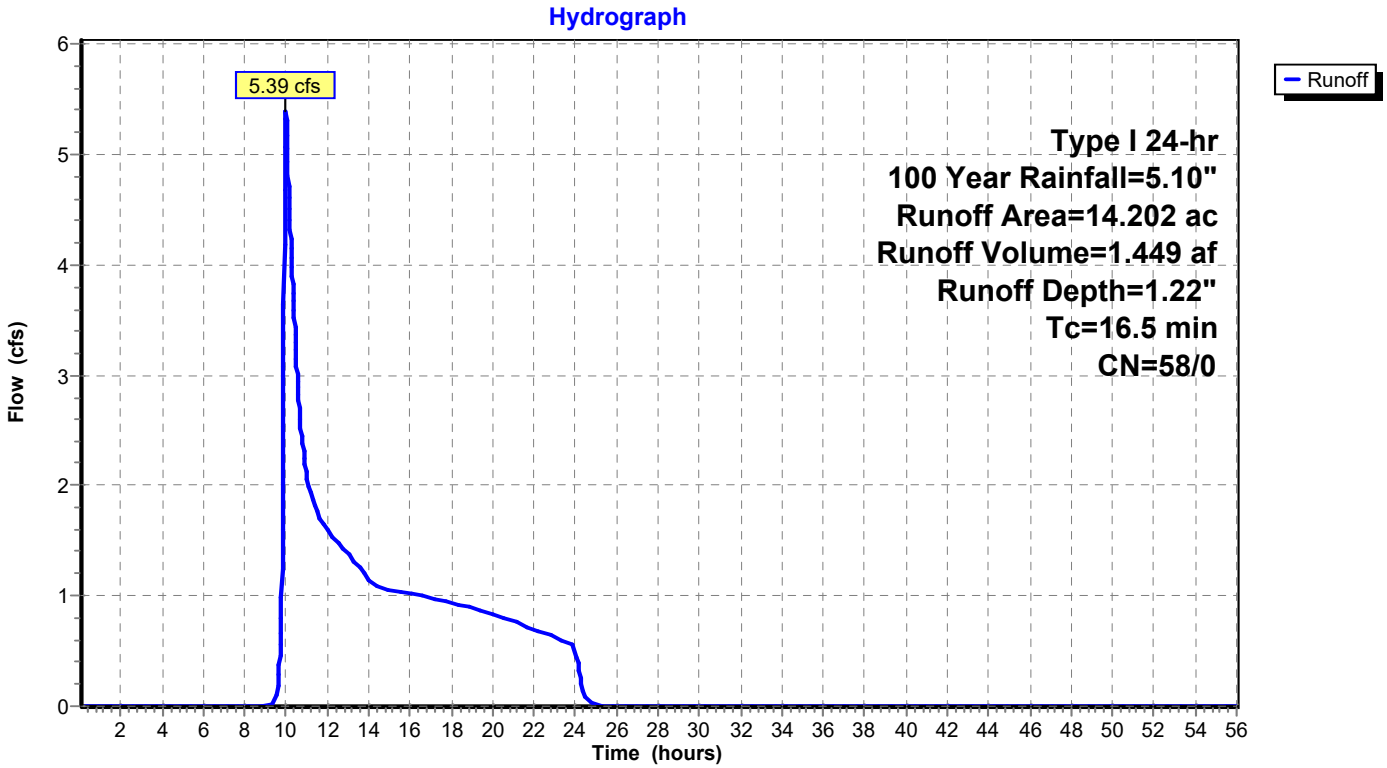
Runoff = 5.39 cfs @ 10.00 hrs, Volume= 1.449 af, Depth= 1.22"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
2.036	58	Meadow, non-grazed, HSG B
7.264	58	Meadow, non-grazed, HSG B
4.903	58	Meadow, non-grazed, HSG B
14.202	58	Weighted Average
14.202	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 8a-Ex: Subcat 8a-Ex



Summary for Subcatchment 9: Subcat 9

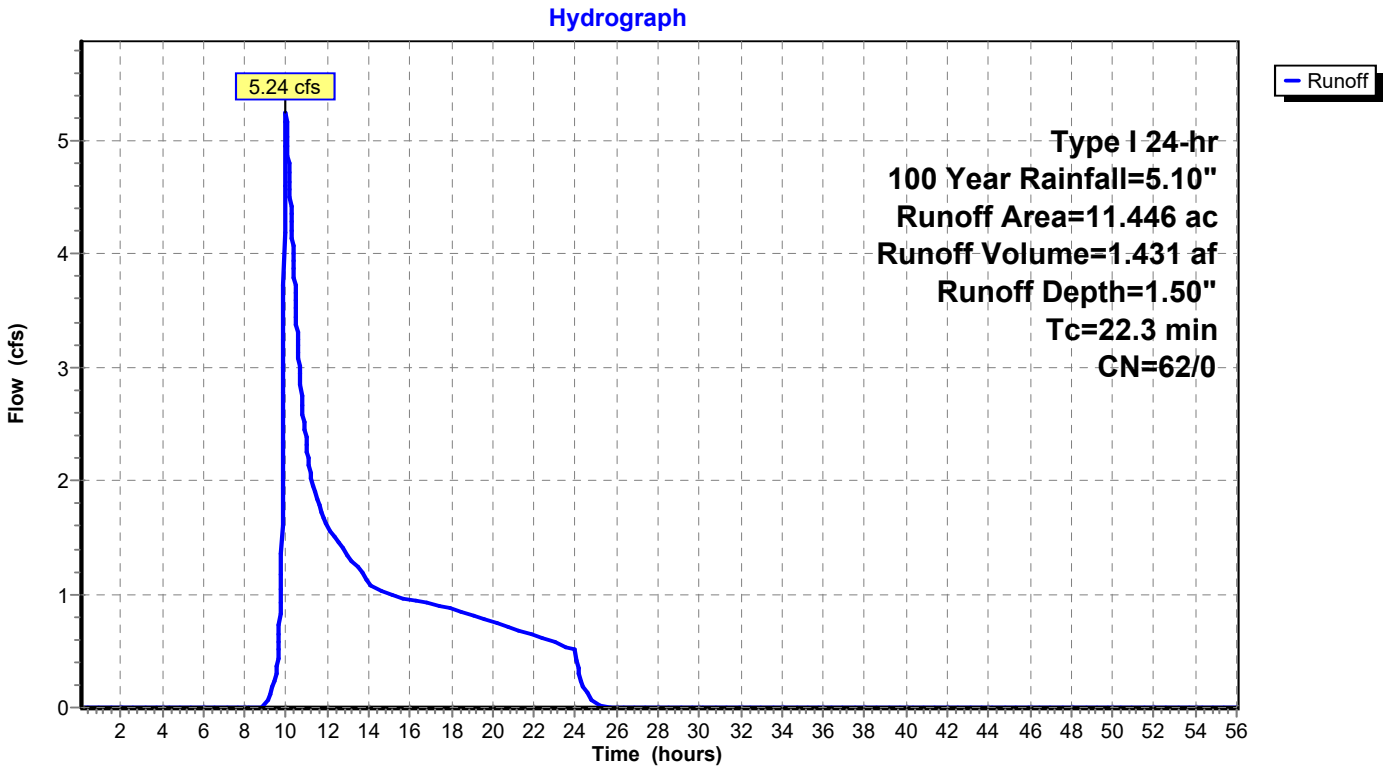
Runoff = 5.24 cfs @ 10.00 hrs, Volume= 1.431 af, Depth= 1.50"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
0.006	58	Meadow, non-grazed, HSG B
8.451	58	Meadow, non-grazed, HSG B
0.026	58	Meadow, non-grazed, HSG B
0.469	58	Meadow, non-grazed, HSG B
0.005	58	Meadow, non-grazed, HSG B
2.489	78	Meadow, non-grazed, HSG D
11.446	62	Weighted Average
11.446	62	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3					**Direct Entry, Tc from CAD Catchments (SCS Method)**

Subcatchment 9: Subcat 9



Summary for Subcatchment 9a-Ex: Subcat 9a-Ex

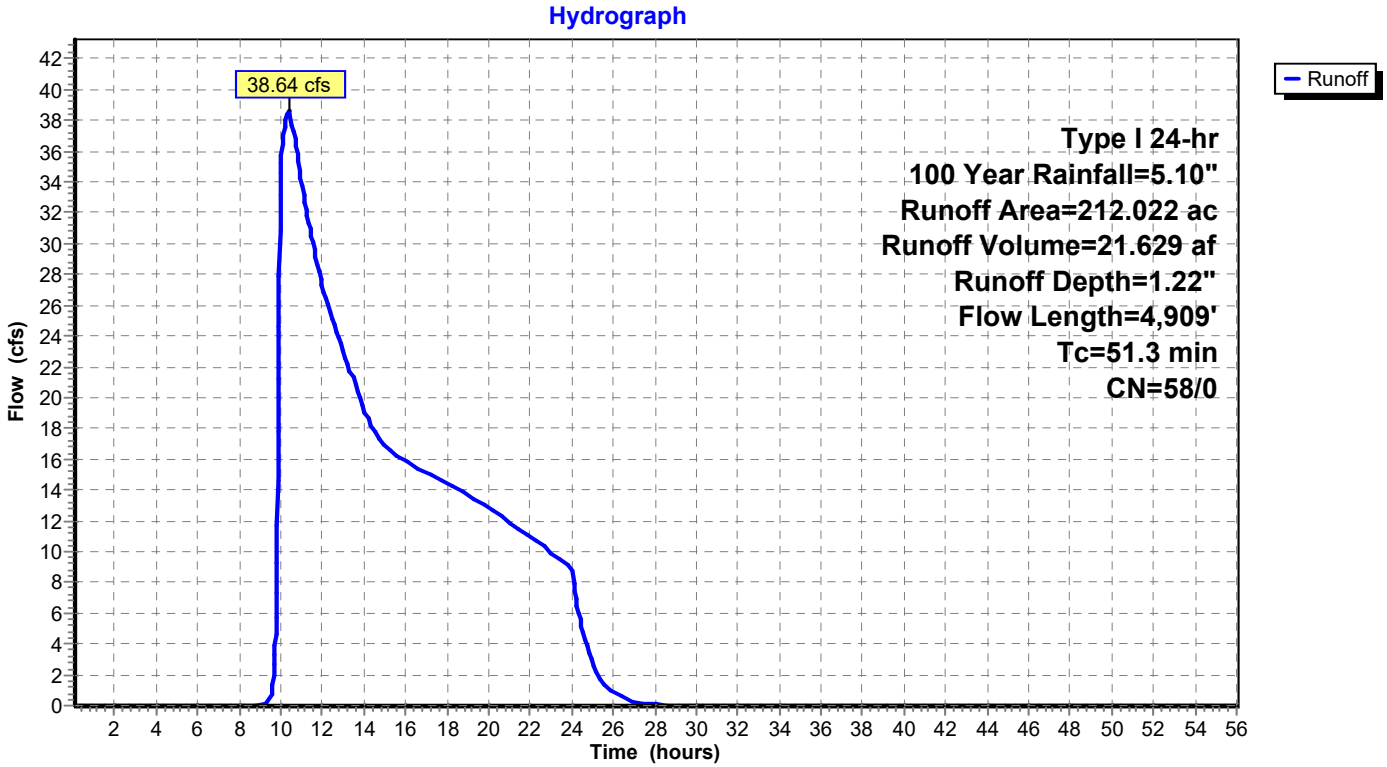
Runoff = 38.64 cfs @ 10.37 hrs, Volume= 21.629 af, Depth= 1.22"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
16.535	58	Meadow, non-grazed, HSG B
38.755	58	Meadow, non-grazed, HSG B
2.915	58	Meadow, non-grazed, HSG B
114.179	58	Meadow, non-grazed, HSG B
31.194	58	Meadow, non-grazed, HSG B
8.131	58	Meadow, non-grazed, HSG B
0.314	78	Meadow, non-grazed, HSG D
212.022	58	Weighted Average
212.022	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
51.3	4,909		1.59		**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 9a-Ex: Subcat 9a-Ex



Summary for Subcatchment 10: Subcat 10

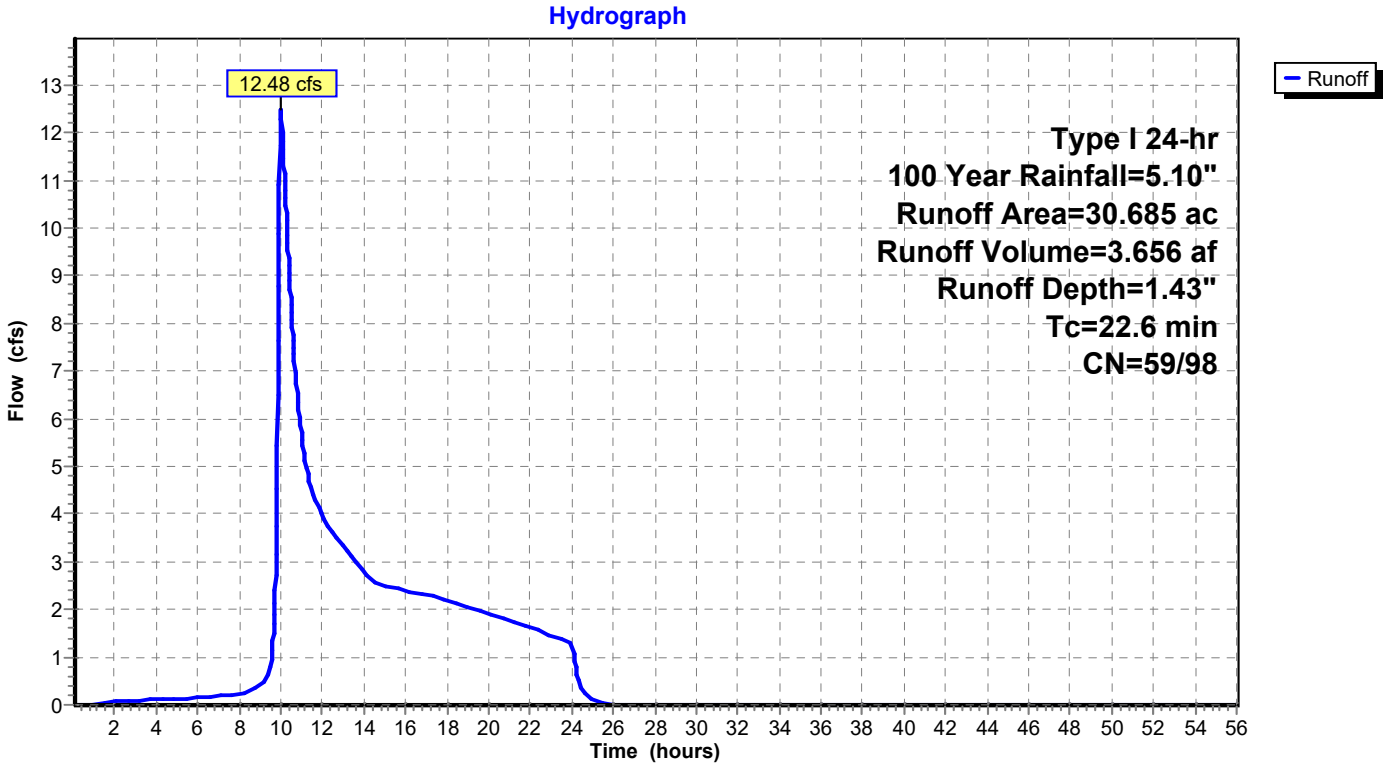
Runoff = 12.48 cfs @ 10.00 hrs, Volume= 3.656 af, Depth= 1.43"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
5.865	58	Meadow, non-grazed, HSG B
22.679	58	Meadow, non-grazed, HSG B
0.039	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.039	71	Meadow, non-grazed, HSG C
0.175	77	Natural western desert, HSG B
0.700	77	Natural western desert, HSG B
1.189	98	Paved roads w/curbs & sewers, HSG B
30.685	60	Weighted Average
29.496	59	96.12% Pervious Area
1.189	98	3.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.6					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 10: Subcat 10



Summary for Subcatchment 10a-Ex: Subcat 10a-Ex

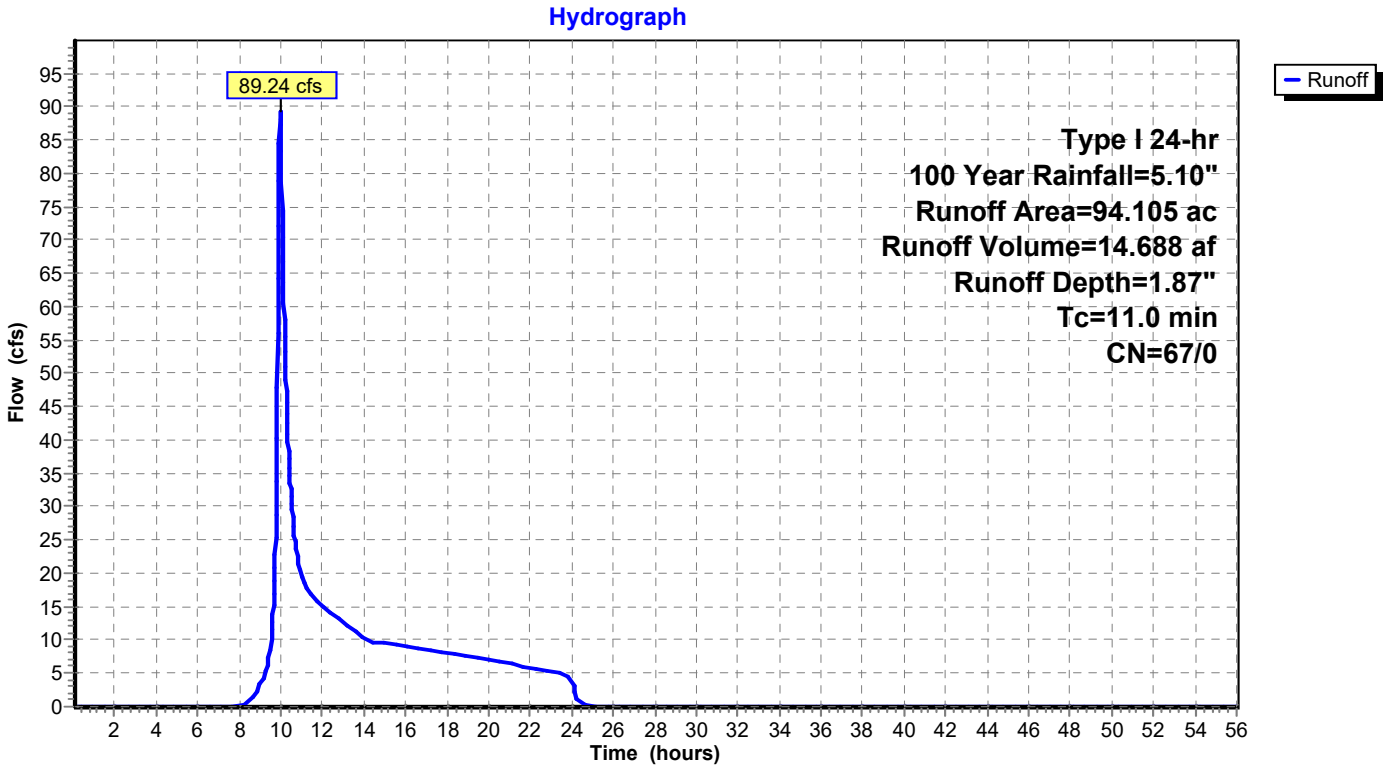
Runoff = 89.24 cfs @ 9.98 hrs, Volume= 14.688 af, Depth= 1.87"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
0.173	58	Meadow, non-grazed, HSG B
9.477	58	Meadow, non-grazed, HSG B
11.002	58	Meadow, non-grazed, HSG B
0.163	58	Meadow, non-grazed, HSG B
0.158	58	Meadow, non-grazed, HSG B
10.113	58	Meadow, non-grazed, HSG B
48.708	71	Meadow, non-grazed, HSG C
14.310	71	Meadow, non-grazed, HSG C
94.105	67	Weighted Average
94.105	67	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 10a-Ex: Subcat 10a-Ex



Summary for Subcatchment 11: Subcat 11

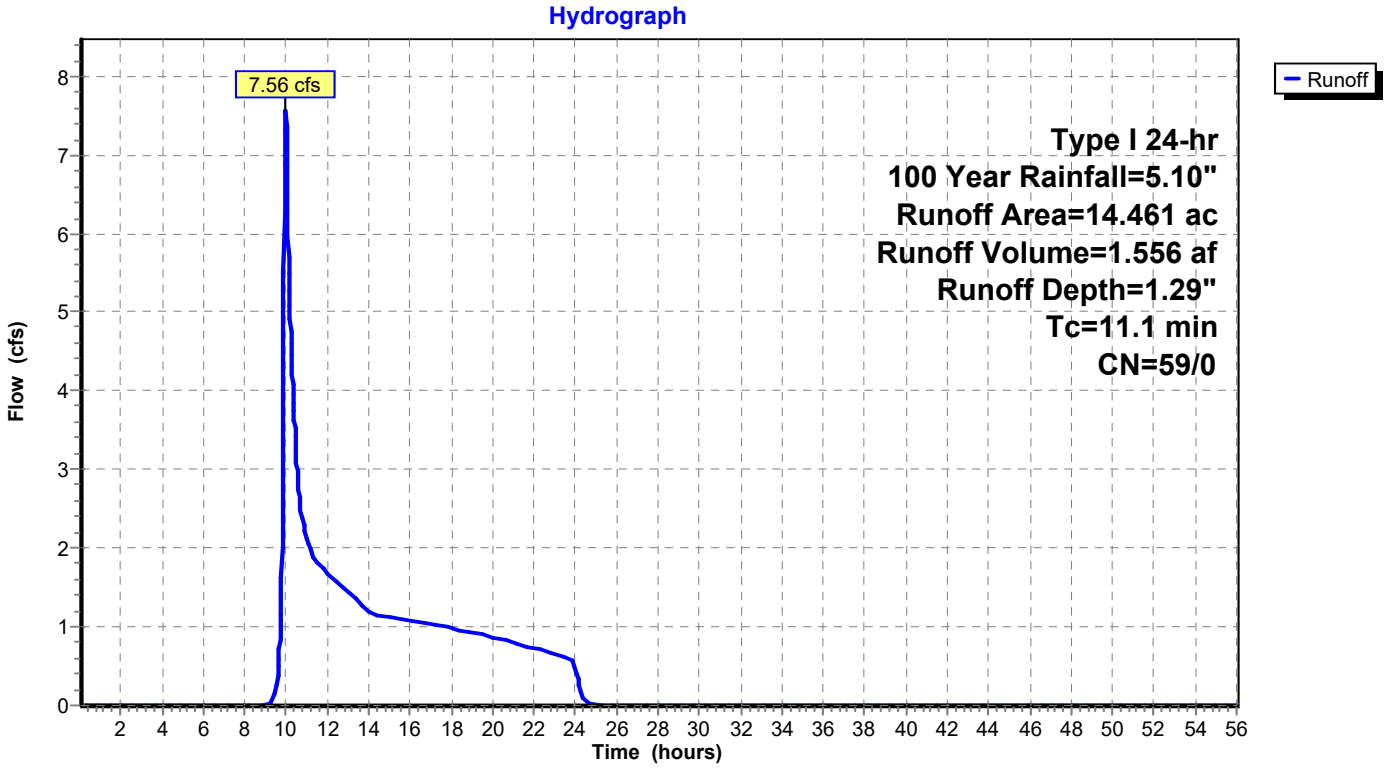
Runoff = 7.56 cfs @ 9.99 hrs, Volume= 1.556 af, Depth= 1.29"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
0.000	58	Meadow, non-grazed, HSG B
0.328	58	Meadow, non-grazed, HSG B
13.072	58	Meadow, non-grazed, HSG B
0.762	71	Meadow, non-grazed, HSG C
0.298	71	Meadow, non-grazed, HSG C
14.461	59	Weighted Average
14.461	59	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 11: Subcat 11



Summary for Subcatchment 12: Subcat 12

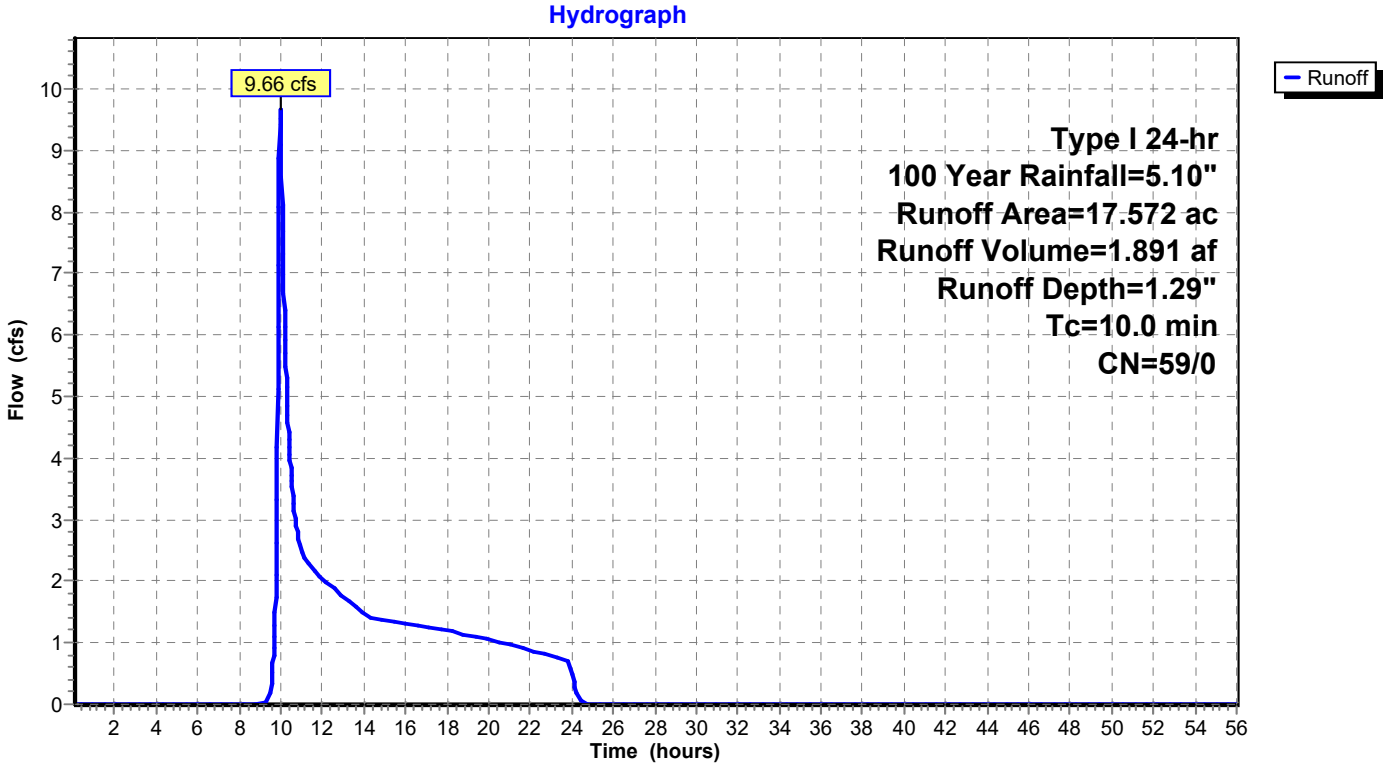
Runoff = 9.66 cfs @ 9.98 hrs, Volume= 1.891 af, Depth= 1.29"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
0.000	58	Meadow, non-grazed, HSG B
0.977	58	Meadow, non-grazed, HSG B
15.916	58	Meadow, non-grazed, HSG B
0.001	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	71	Meadow, non-grazed, HSG C
0.223	71	Meadow, non-grazed, HSG C
0.456	71	Meadow, non-grazed, HSG C
17.572	59	Weighted Average
17.572	59	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9					**Direct Entry, SCS Method taken from Catchment in ACAD file**
7.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 12: Subcat 12



Summary for Subcatchment 12a-Ex: Subcat 12a-Ex

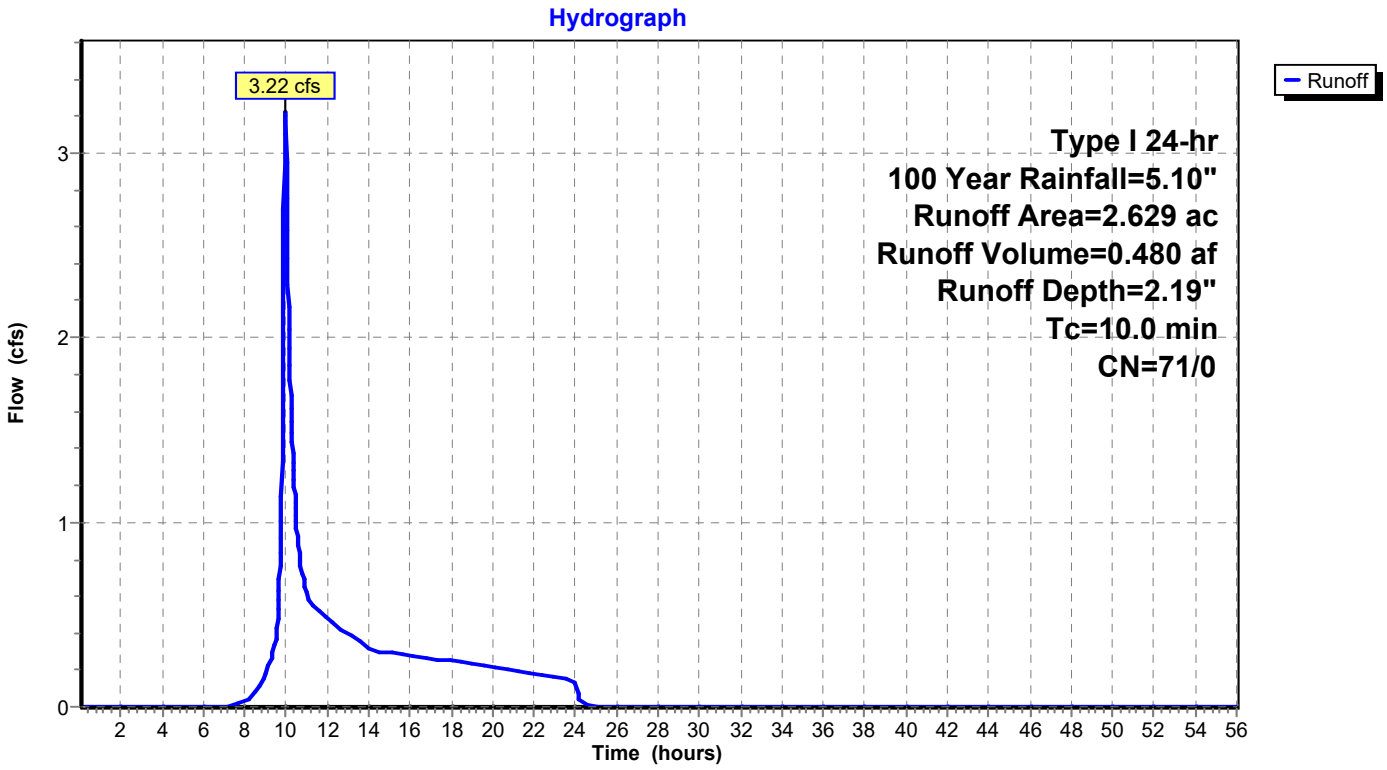
Runoff = 3.22 cfs @ 9.97 hrs, Volume= 0.480 af, Depth= 2.19"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
2.629	71	Meadow, non-grazed, HSG C
2.629	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9					**Direct Entry, SCS Method taken from Catchment in ACAD file**
4.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 12a-Ex: Subcat 12a-Ex



Summary for Subcatchment 13: Subcat 13

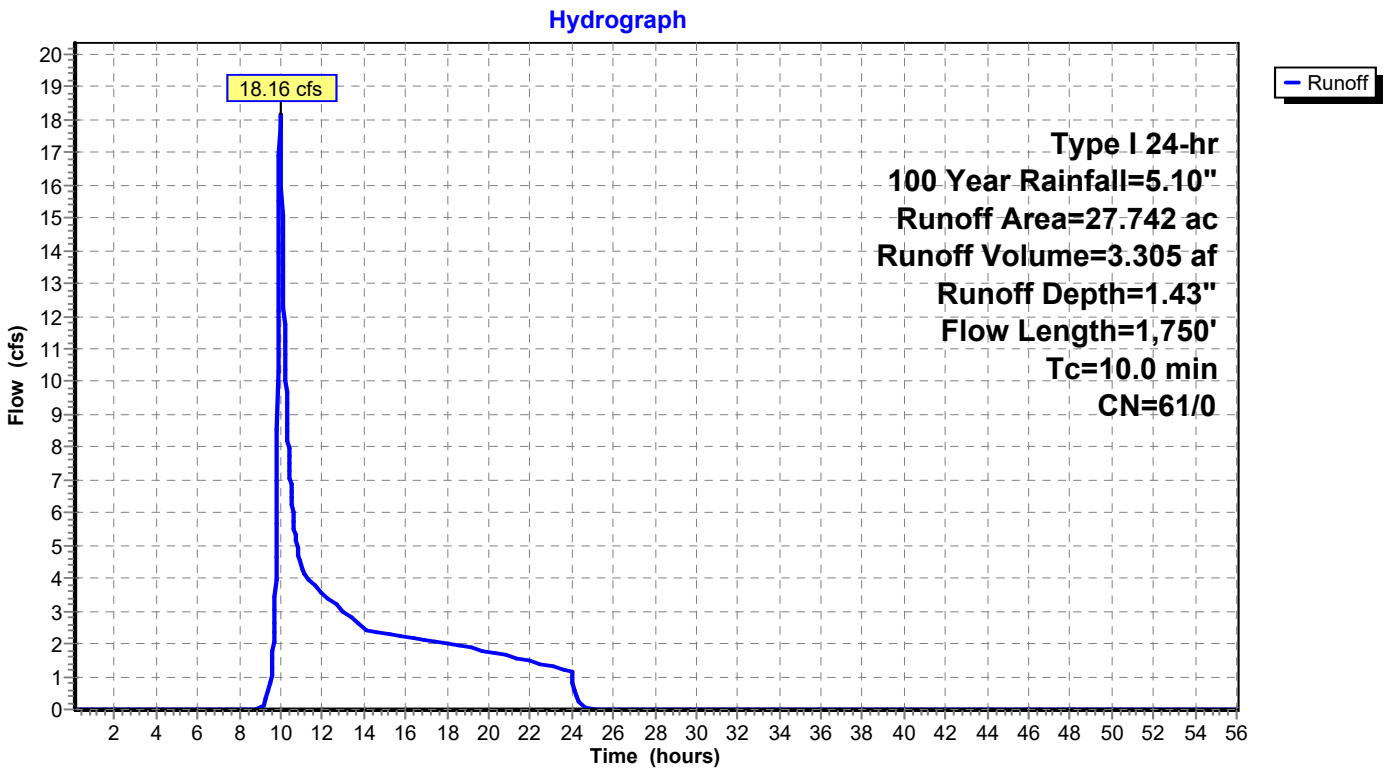
Runoff = 18.16 cfs @ 9.98 hrs, Volume= 3.305 af, Depth= 1.43"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
15.931	58	Meadow, non-grazed, HSG B
4.853	58	Meadow, non-grazed, HSG B
0.000	71	Meadow, non-grazed, HSG C
6.330	71	Meadow, non-grazed, HSG C
0.477	71	Meadow, non-grazed, HSG C
0.151	75	Row crops, SR + CR, Good, HSG B
27.742	61	Weighted Average
27.742	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	1,750		3.74		**Direct Entry, SCS Method taken from Catchment in ACAD file**
7.8	1,750	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 13: Subcat 13



Summary for Subcatchment 13a-Ex: Subcat 13a-Ex

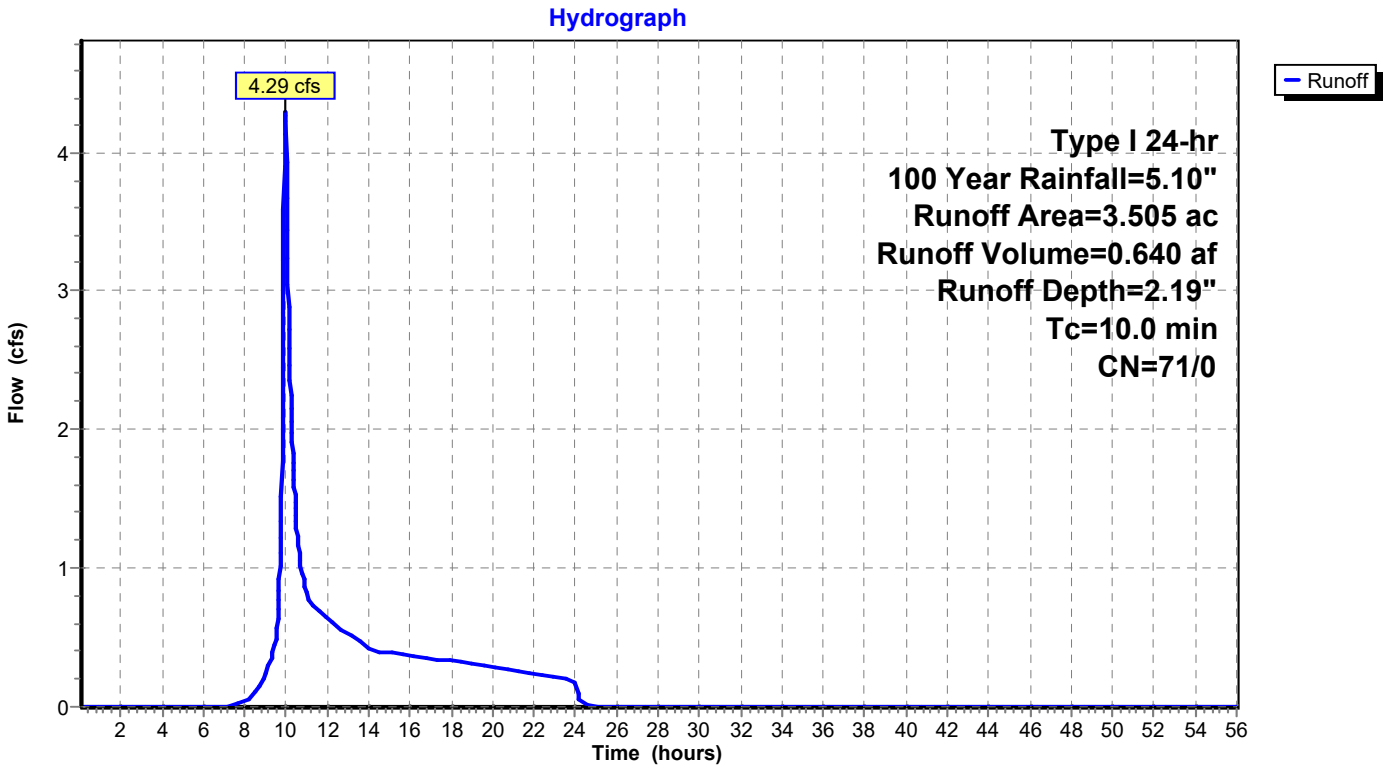
Runoff = 4.29 cfs @ 9.97 hrs, Volume= 0.640 af, Depth= 2.19"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
3.505	71	Meadow, non-grazed, HSG C
3.505	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9					**Direct Entry, SCS Method taken from Catchment in ACAD file**
8.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 13a-Ex: Subcat 13a-Ex



Summary for Subcatchment 13b-Ex: Subcat 13b-Ex

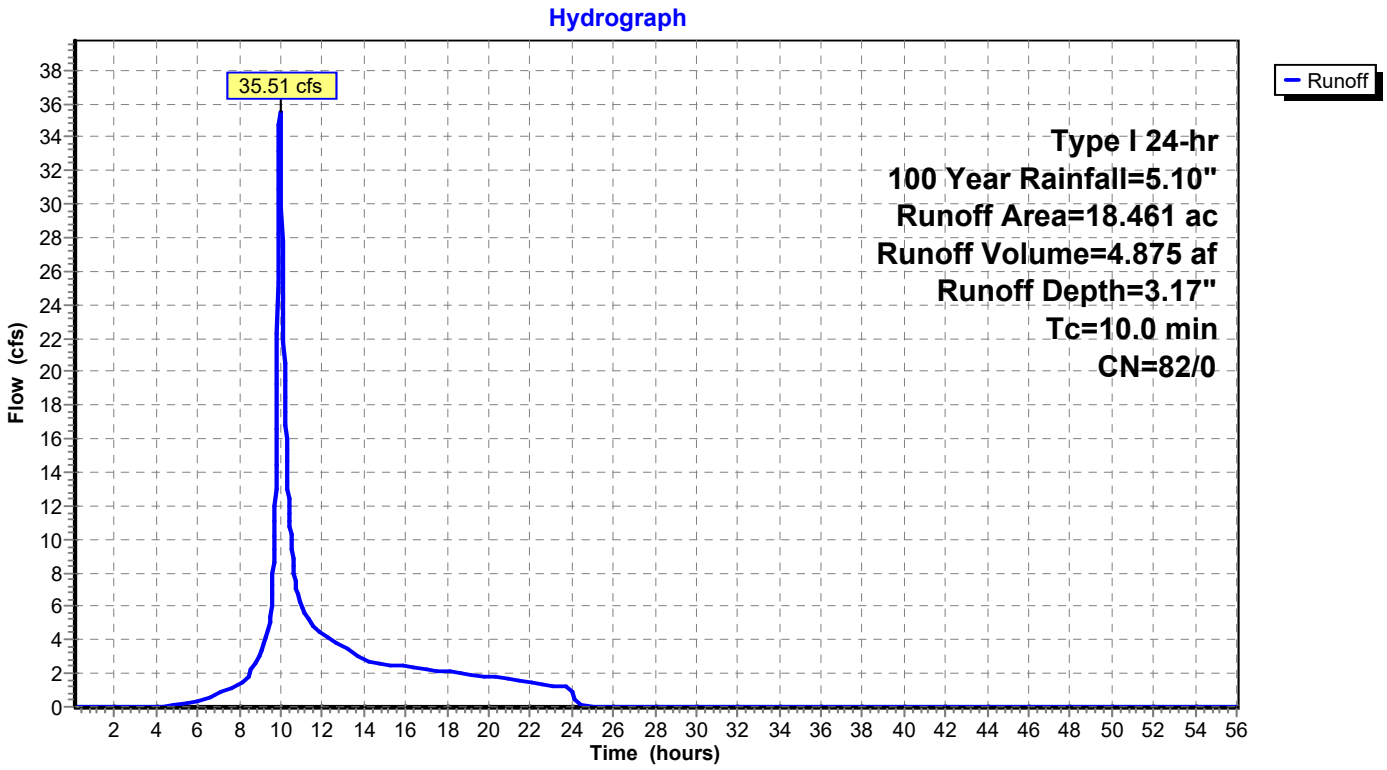
Runoff = 35.51 cfs @ 9.97 hrs, Volume= 4.875 af, Depth= 3.17"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
18.461	82	Row crops, SR + CR, Good, HSG C
18.461	82	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry, SCS Method taken from Catchment in ACAD file**
7.0	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 13b-Ex: Subcat 13b-Ex



Summary for Subcatchment 13c-Ex: Subcat 13c-Ex

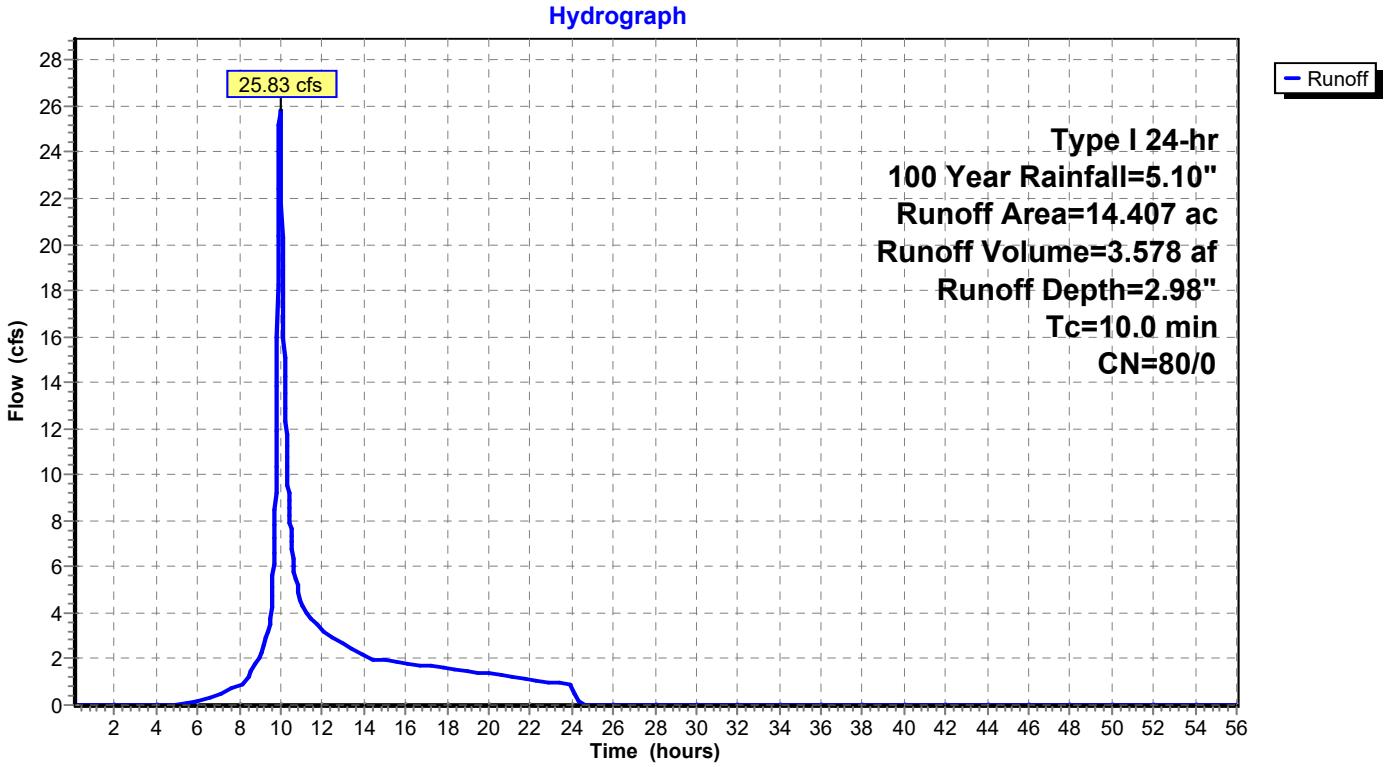
Runoff = 25.83 cfs @ 9.97 hrs, Volume= 3.578 af, Depth= 2.98"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
3.718	75	Row crops, SR + CR, Good, HSG B
10.689	82	Row crops, SR + CR, Good, HSG C
14.407	80	Weighted Average
14.407	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9					**Direct Entry, SCS Method taken from Catchment in ACAD file**
6.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 13c-Ex: Subcat 13c-Ex



Summary for Subcatchment 14: Subcat 14

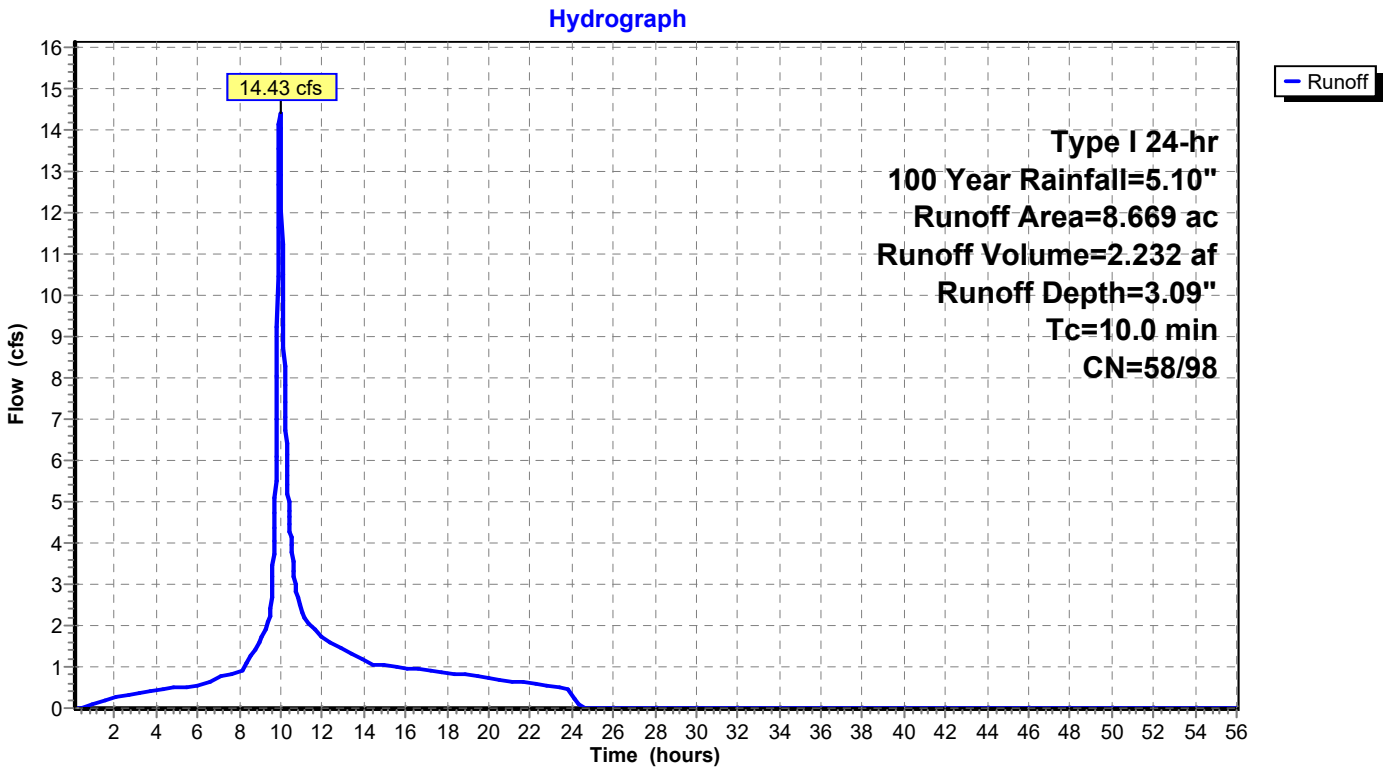
Runoff = 14.43 cfs @ 9.96 hrs, Volume= 2.232 af, Depth= 3.09"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
4.224	58	Meadow, non-grazed, HSG B
4.445	98	Paved roads w/curbs & sewers, HSG B
8.669	79	Weighted Average
4.224	58	48.73% Pervious Area
4.445	98	51.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6					**Direct Entry, SCS Method taken from Catchment in ACAD file**
8.6	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 14: Subcat 14



Summary for Subcatchment 14a{(1)}-Ex: Subcat 14a{(1)}-Ex

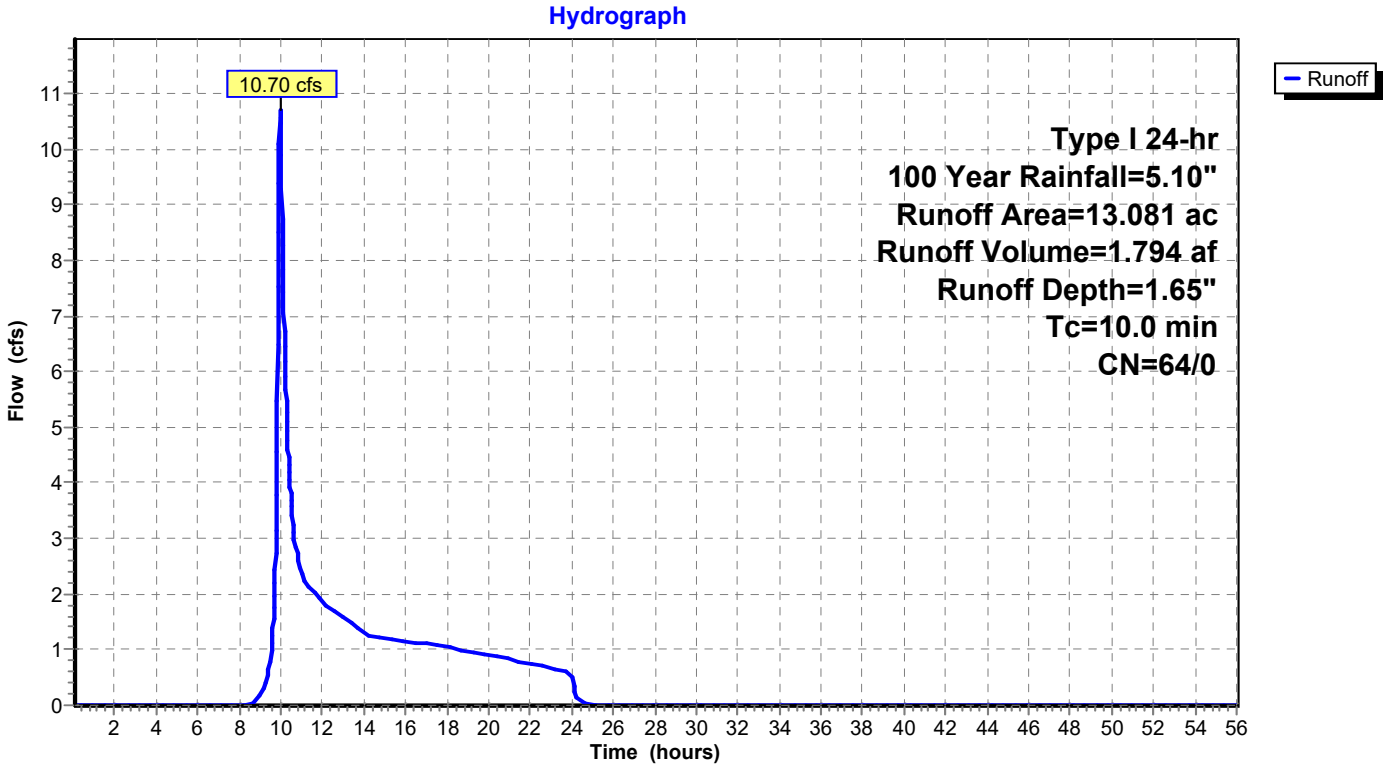
Runoff = 10.70 cfs @ 9.98 hrs, Volume= 1.794 af, Depth= 1.65"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
0.000	58	Meadow, non-grazed, HSG B
8.116	58	Meadow, non-grazed, HSG B
2.383	75	Row crops, SR + CR, Good, HSG B
0.000	75	Row crops, SR + CR, Good, HSG B
2.581	75	Row crops, SR + CR, Good, HSG B
13.081	64	Weighted Average
13.081	64	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**
8.7	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 14a{(1)}-Ex: Subcat 14a{(1)}-Ex



Summary for Subcatchment 14a{(2)}-Ex: Subcat 14a{(2)}-Ex

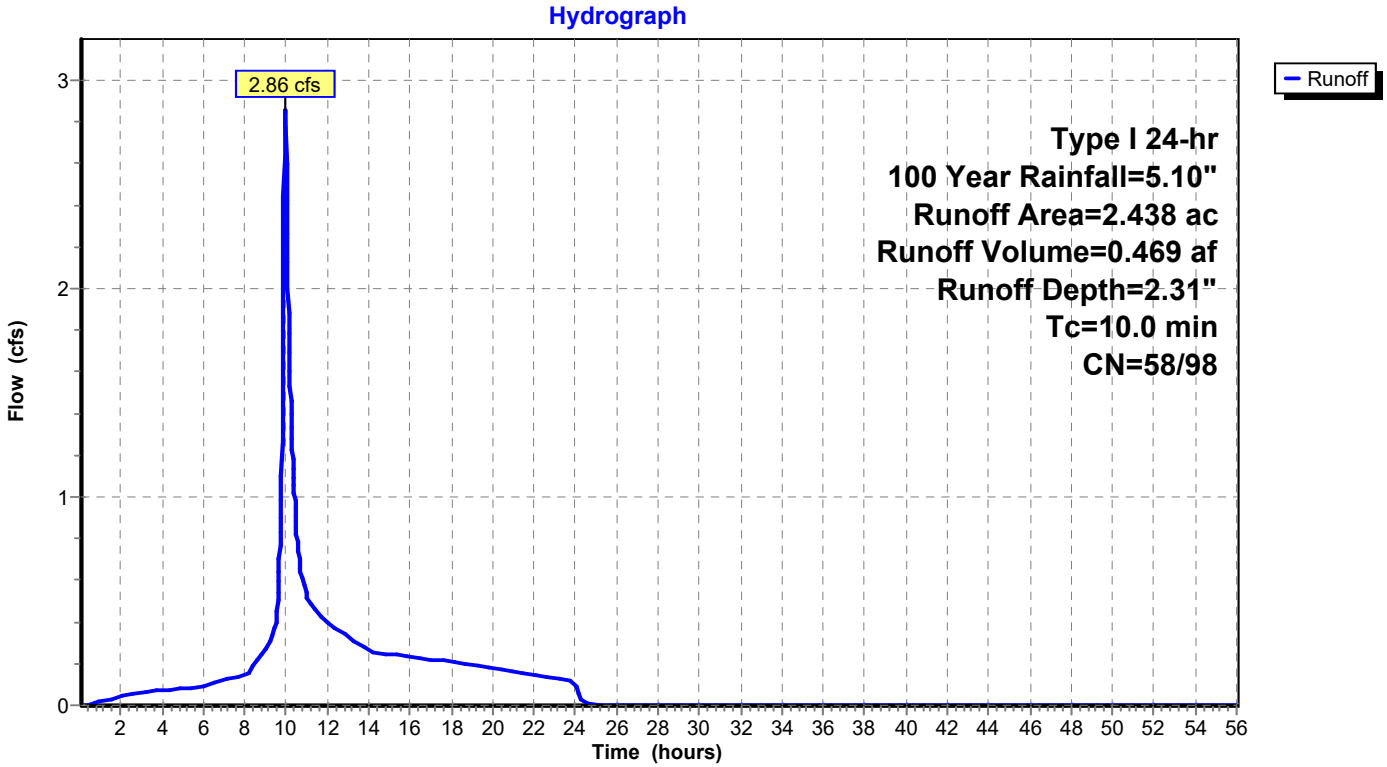
Runoff = 2.86 cfs @ 9.97 hrs, Volume= 0.469 af, Depth= 2.31"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
1.711	58	Meadow, non-grazed, HSG B
0.726	98	Paved roads w/curbs & sewers, HSG B
0.000	75	Row crops, SR + CR, Good, HSG B
0.000	75	Row crops, SR + CR, Good, HSG B
2.438	70	Weighted Average
1.711	58	70.20% Pervious Area
0.726	98	29.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**
4.9	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 14a{(2)}-Ex: Subcat 14a{(2)}-Ex



Summary for Subcatchment 14b-Ex: Subcat 14b-Ex

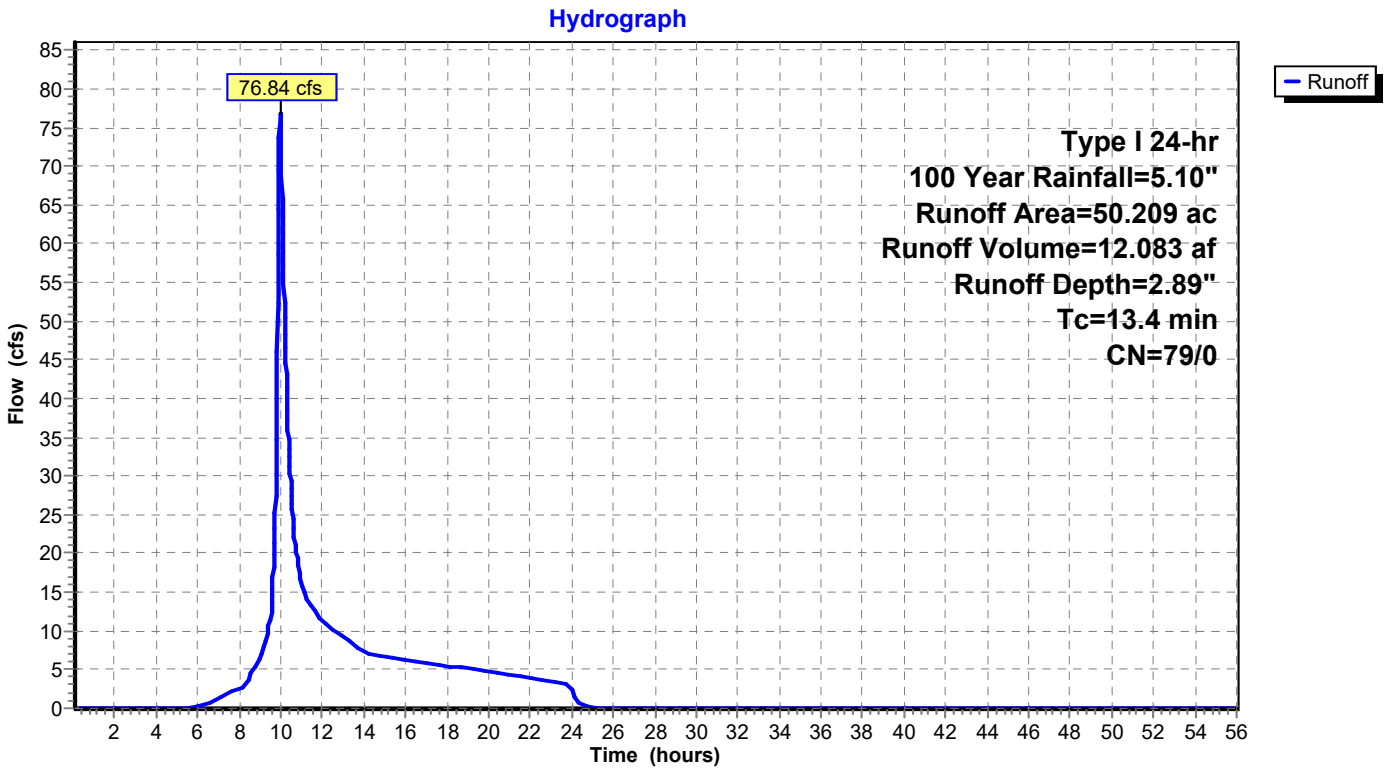
Runoff = 76.84 cfs @ 9.98 hrs, Volume= 12.083 af, Depth= 2.89"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
13.606	75	Row crops, SR + CR, Good, HSG B
8.804	75	Row crops, SR + CR, Good, HSG B
0.005	82	Row crops, SR + CR, Good, HSG C
27.793	82	Row crops, SR + CR, Good, HSG C
50.209	79	Weighted Average
50.209	79	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 14b-Ex: Subcat 14b-Ex



Summary for Subcatchment 14c{(0)}-Ex: Subcat 14c{(0)}-Ex

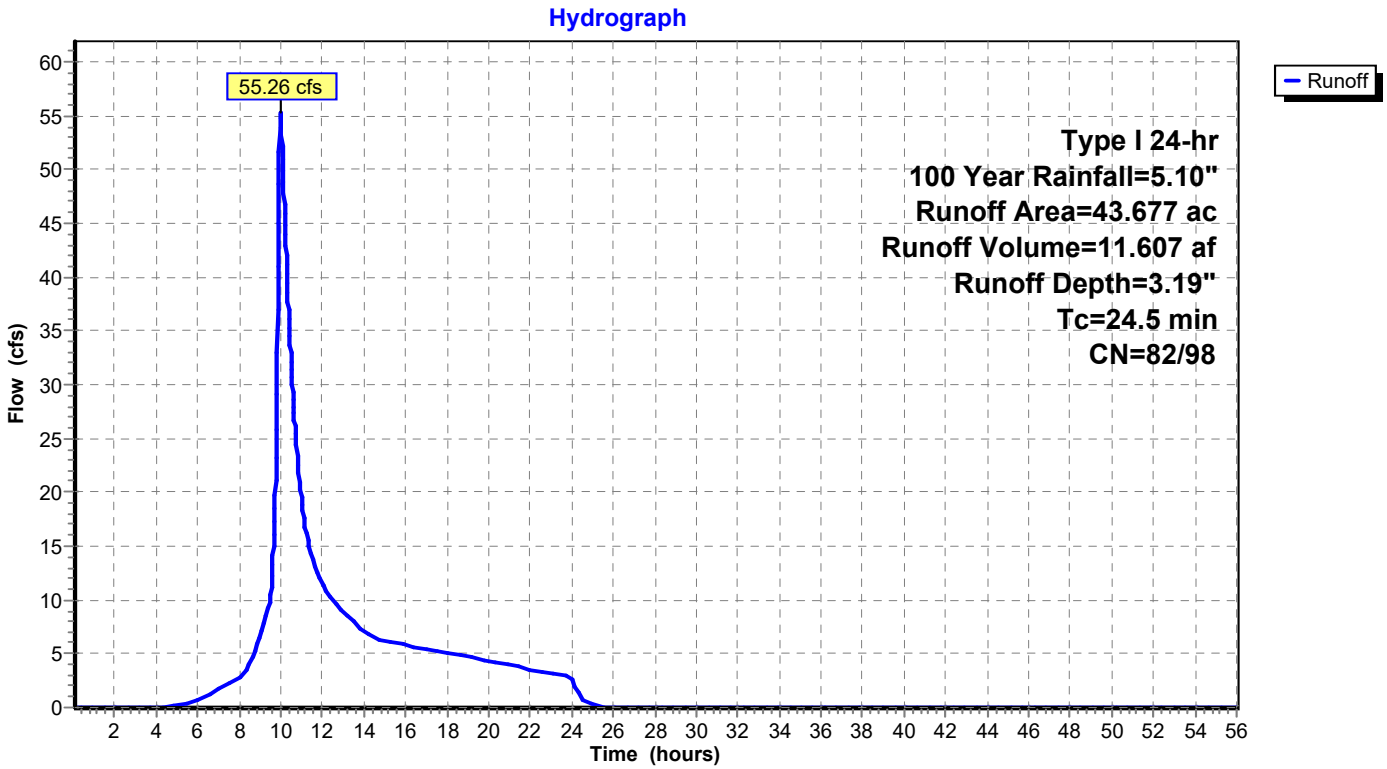
Runoff = 55.26 cfs @ 9.99 hrs, Volume= 11.607 af, Depth= 3.19"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
0.486	98	Paved roads w/curbs & sewers, HSG C
0.041	98	Paved roads w/curbs & sewers, HSG C
37.308	82	Row crops, SR + CR, Good, HSG C
0.070	82	Row crops, SR + CR, Good, HSG C
5.772	82	Row crops, SR + CR, Good, HSG C
43.677	82	Weighted Average
43.150	82	98.79% Pervious Area
0.527	98	1.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 14c{(0)}-Ex: Subcat 14c{(0)}-Ex



Summary for Subcatchment 14c{(1)}-Ex: Subcat 14c{(1)}-Ex

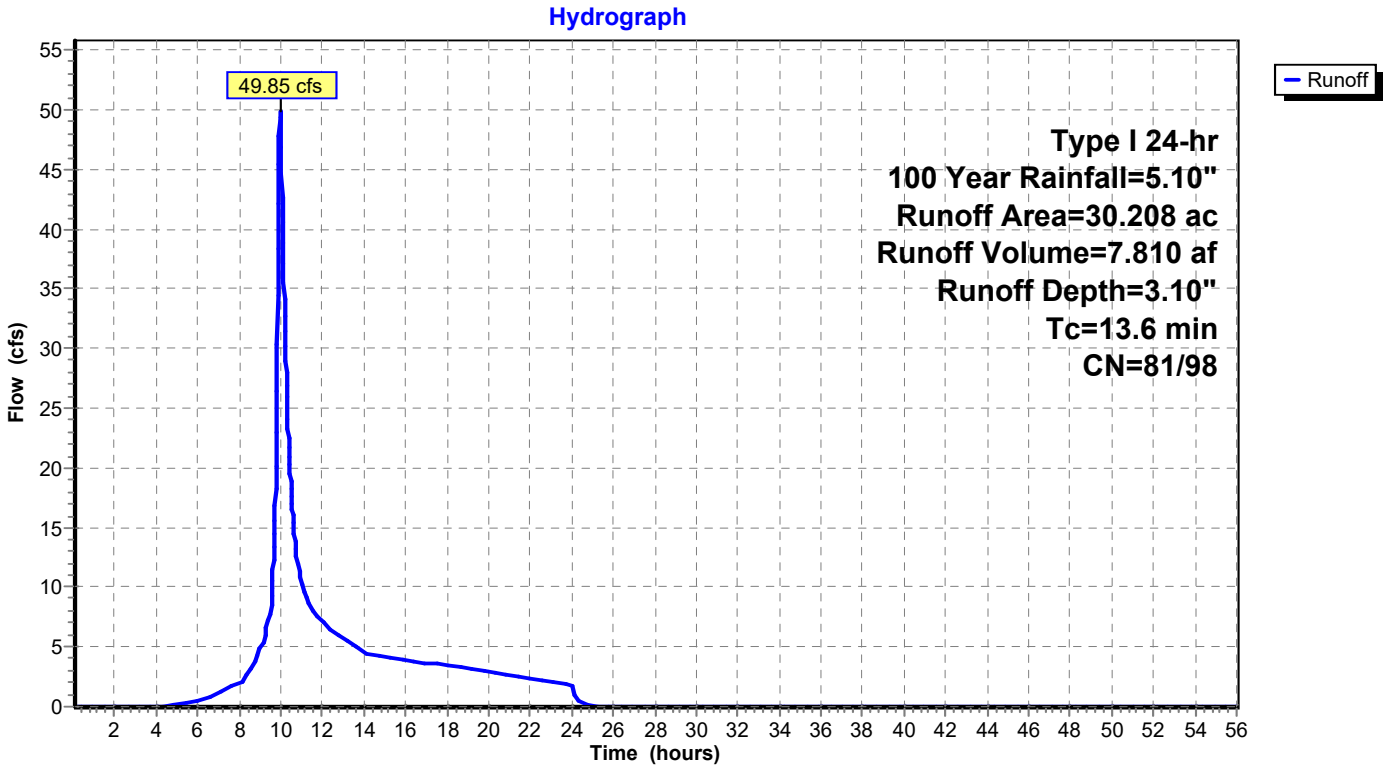
Runoff = 49.85 cfs @ 9.98 hrs, Volume= 7.810 af, Depth= 3.10"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
0.093	98	Paved roads w/curbs & sewers, HSG B
0.394	98	Paved roads w/curbs & sewers, HSG C
2.571	75	Row crops, SR + CR, Good, HSG B
2.743	75	Row crops, SR + CR, Good, HSG B
13.825	82	Row crops, SR + CR, Good, HSG C
10.454	82	Row crops, SR + CR, Good, HSG C
0.128	82	Row crops, SR + CR, Good, HSG C
30.208	81	Weighted Average
29.721	81	98.39% Pervious Area
0.486	98	1.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 14c{(1)}-Ex: Subcat 14c{(1)}-Ex



Summary for Subcatchment 14c{(2)}-Ex: Subcat 14c{(2)}-Ex

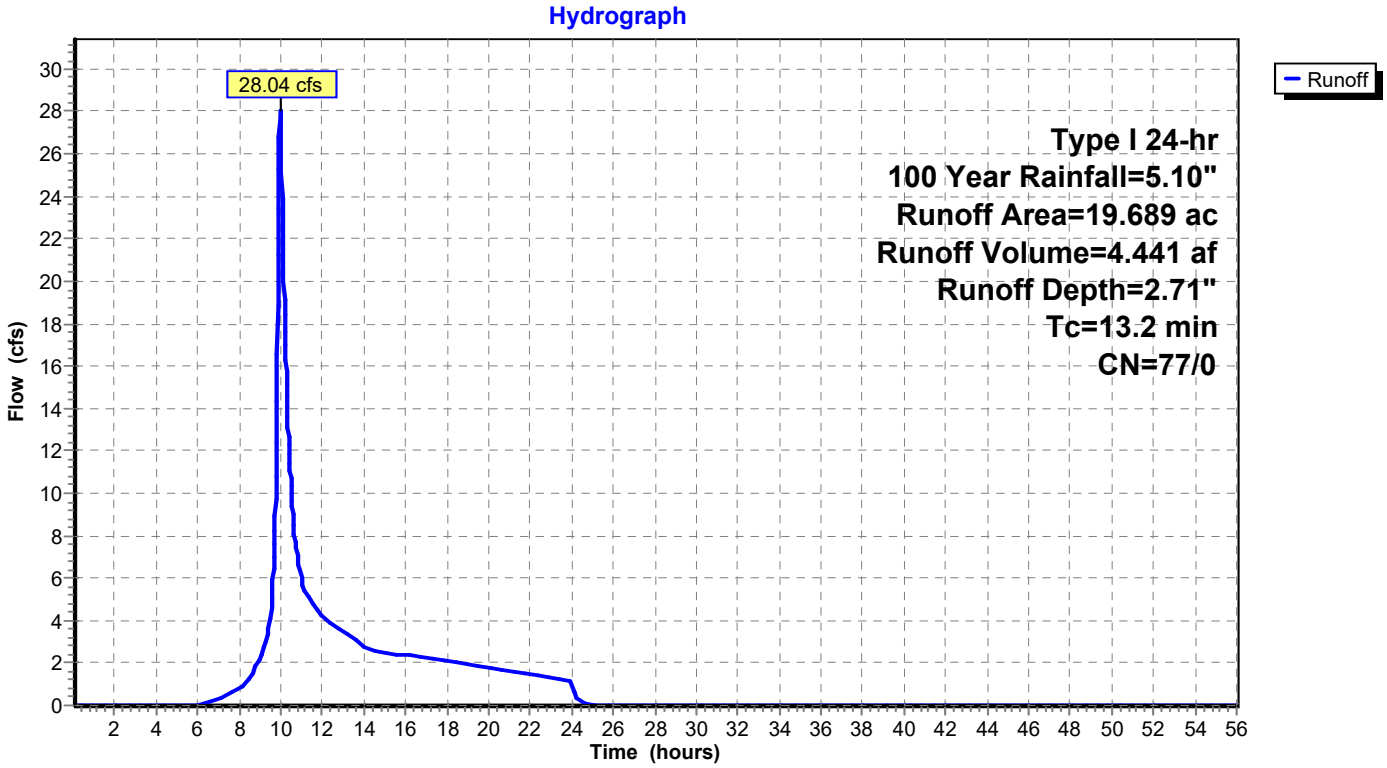
Runoff = 28.04 cfs @ 9.98 hrs, Volume= 4.441 af, Depth= 2.71"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
0.112	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
10.117	75	Row crops, SR + CR, Good, HSG B
3.200	75	Row crops, SR + CR, Good, HSG B
6.261	82	Row crops, SR + CR, Good, HSG C
19.689	77	Weighted Average
19.689	77	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2					**Direct Entry, Tc from CAD Catchment Data (SCS Method)**

Subcatchment 14c{(2)}-Ex: Subcat 14c{(2)}-Ex



Summary for Subcatchment 14c{(3)}-Ex: Subcat 14c{(3)}-Ex

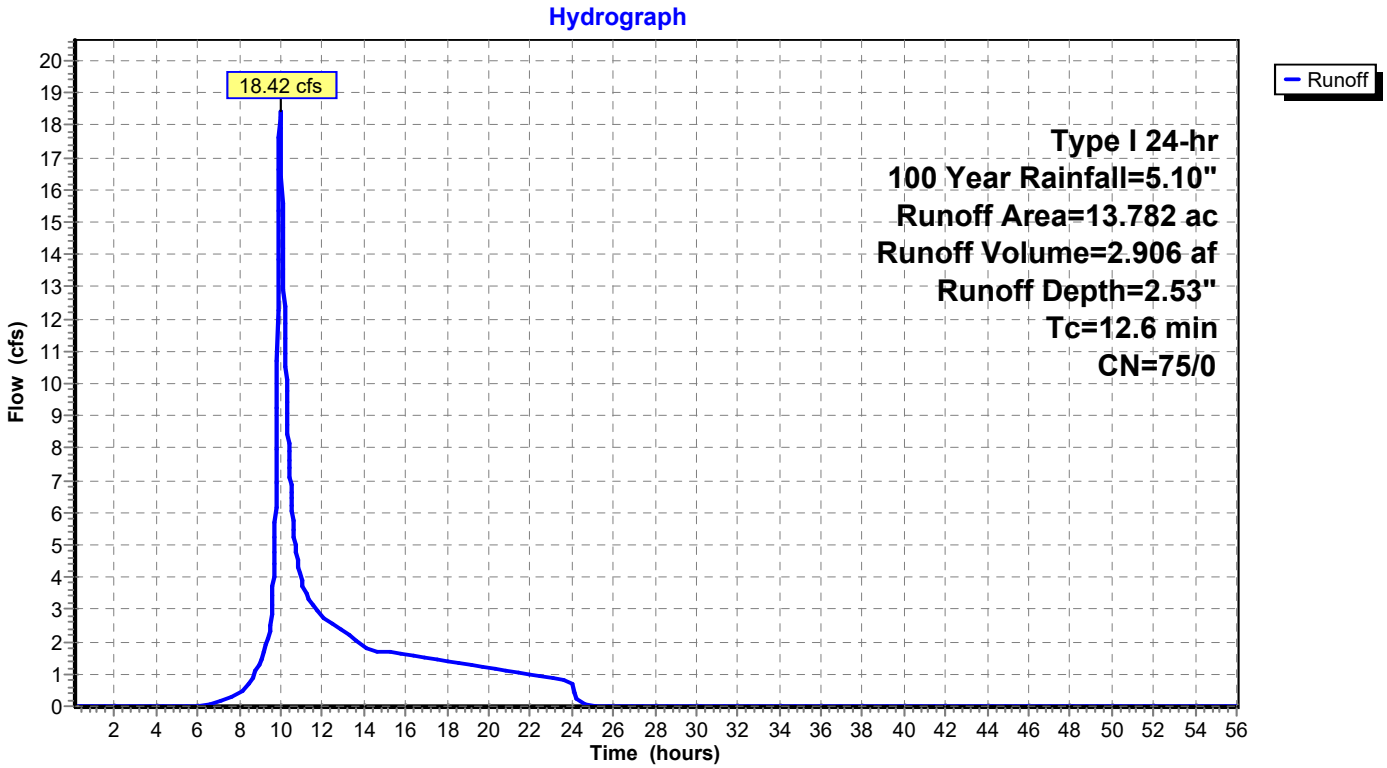
Runoff = 18.42 cfs @ 9.98 hrs, Volume= 2.906 af, Depth= 2.53"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
6.980	75	Row crops, SR + CR, Good, HSG B
0.000	75	Row crops, SR + CR, Good, HSG B
6.802	75	Row crops, SR + CR, Good, HSG B
13.782	75	Weighted Average
13.782	75	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 14c{(3)}-Ex: Subcat 14c{(3)}-Ex



Summary for Subcatchment 14d-Ex: Subcat 14d-Ex

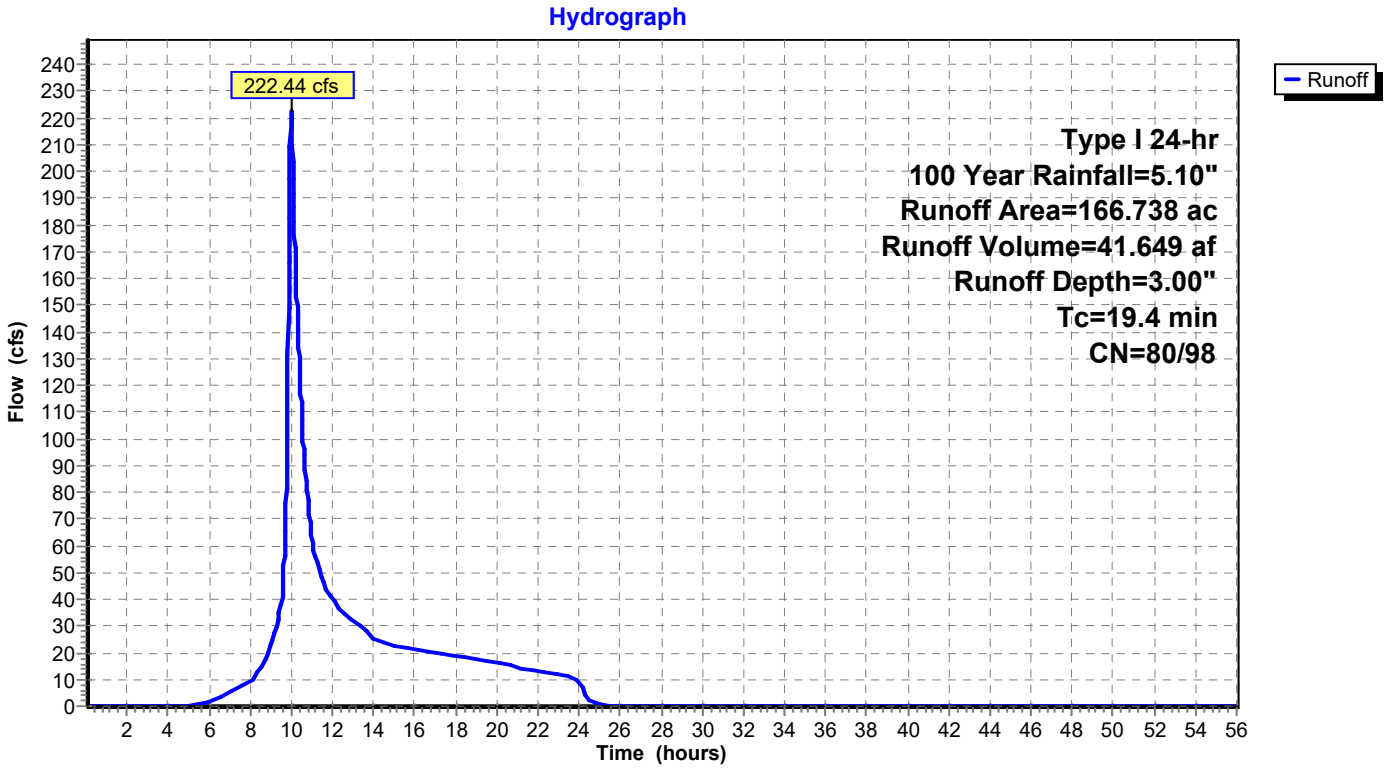
Runoff = 222.44 cfs @ 9.99 hrs, Volume= 41.649 af, Depth= 3.00"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
0.000	71	Meadow, non-grazed, HSG C
0.000	71	Meadow, non-grazed, HSG C
0.000	71	Meadow, non-grazed, HSG C
0.000	71	Meadow, non-grazed, HSG C
0.000	71	Meadow, non-grazed, HSG C
0.440	98	Paved roads w/curbs & sewers, HSG B
0.500	98	Paved roads w/curbs & sewers, HSG C
0.580	98	Paved roads w/curbs & sewers, HSG C
22.046	75	Row crops, SR + CR, Good, HSG B
2.662	75	Row crops, SR + CR, Good, HSG B
18.916	75	Row crops, SR + CR, Good, HSG B
108.025	82	Row crops, SR + CR, Good, HSG C
6.305	82	Row crops, SR + CR, Good, HSG C
7.263	82	Row crops, SR + CR, Good, HSG C
166.738	80	Weighted Average
165.218	80	99.09% Pervious Area
1.520	98	0.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.4					**Direct Entry, SCS Method taken from Catchment in ACAD file**

Subcatchment 14d-Ex: Subcat 14d-Ex



Summary for Subcatchment 14e-Ex: Subcat 14e-Ex

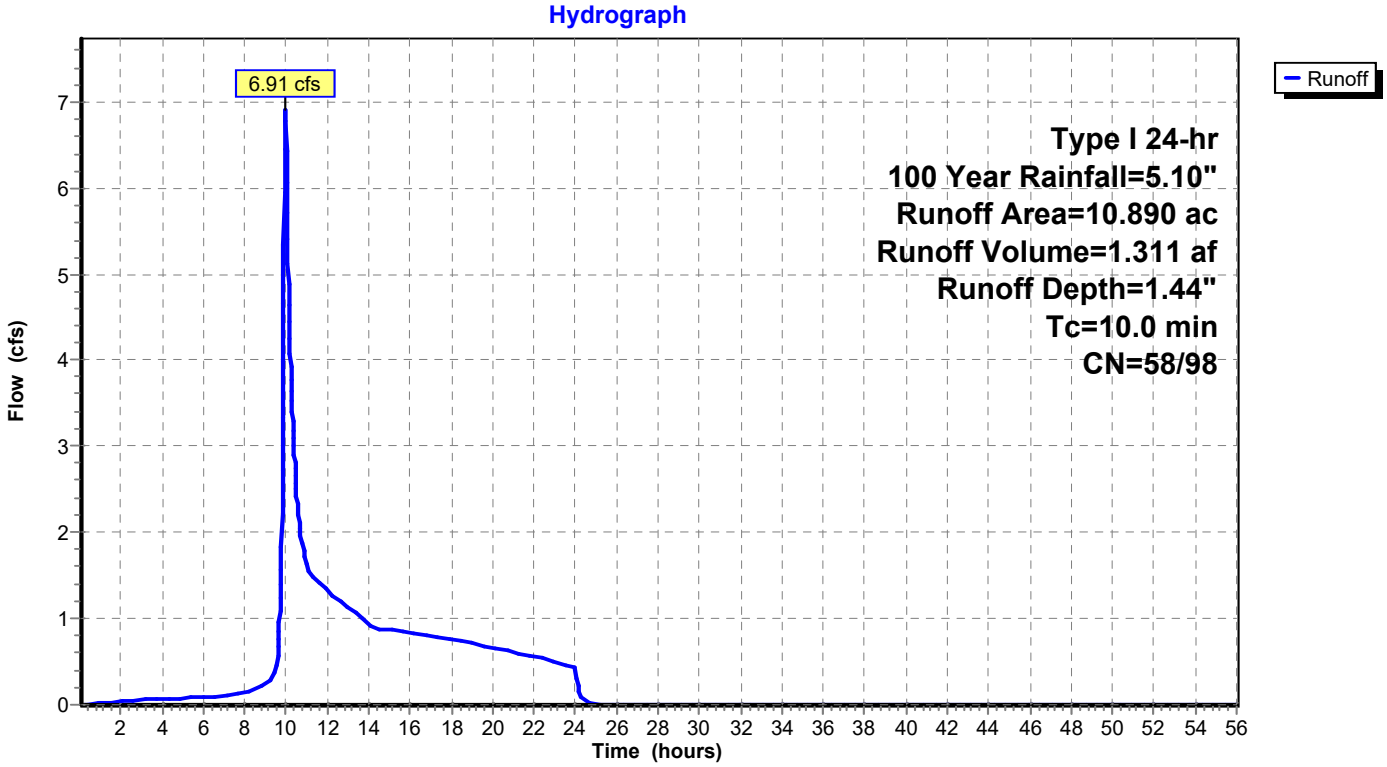
Runoff = 6.91 cfs @ 9.98 hrs, Volume= 1.311 af, Depth= 1.44"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Type I 24-hr 100 Year Rainfall=5.10"

Area (ac)	CN	Description
10.185	58	Meadow, non-grazed, HSG B
0.003	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.000	58	Meadow, non-grazed, HSG B
0.043	77	Natural western desert, HSG B
0.659	98	Paved roads w/curbs & sewers, HSG B
10.890	60	Weighted Average
10.231	58	93.95% Pervious Area
0.659	98	6.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4					**Direct Entry, SCS Method taken from Catchment in ACAD file**
9.4	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 14e-Ex: Subcat 14e-Ex



Summary for Reach 6R: Reach 1c

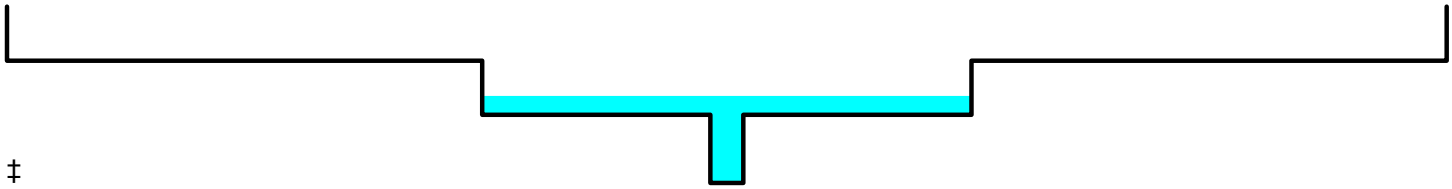
[61] Hint: Exceeded Reach 17R outlet invert by 0.33' @ 10.18 hrs

Inflow Area = 784.583 ac, 0.00% Impervious, Inflow Depth = 1.43" for 100 Year event
Inflow = 281.87 cfs @ 10.06 hrs, Volume= 93.331 af
Outflow = 267.92 cfs @ 10.18 hrs, Volume= 93.331 af, Atten= 5%, Lag= 6.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.26 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 4.16 fps, Avg. Travel Time= 3.3 min

Peak Storage= 67,536 cf @ 10.18 hrs
Average Depth at Peak Storage= 3.21'
Bank-Full Depth= 6.52' Flow Area= 758.7 sf, Capacity= 4,878.97 cfs

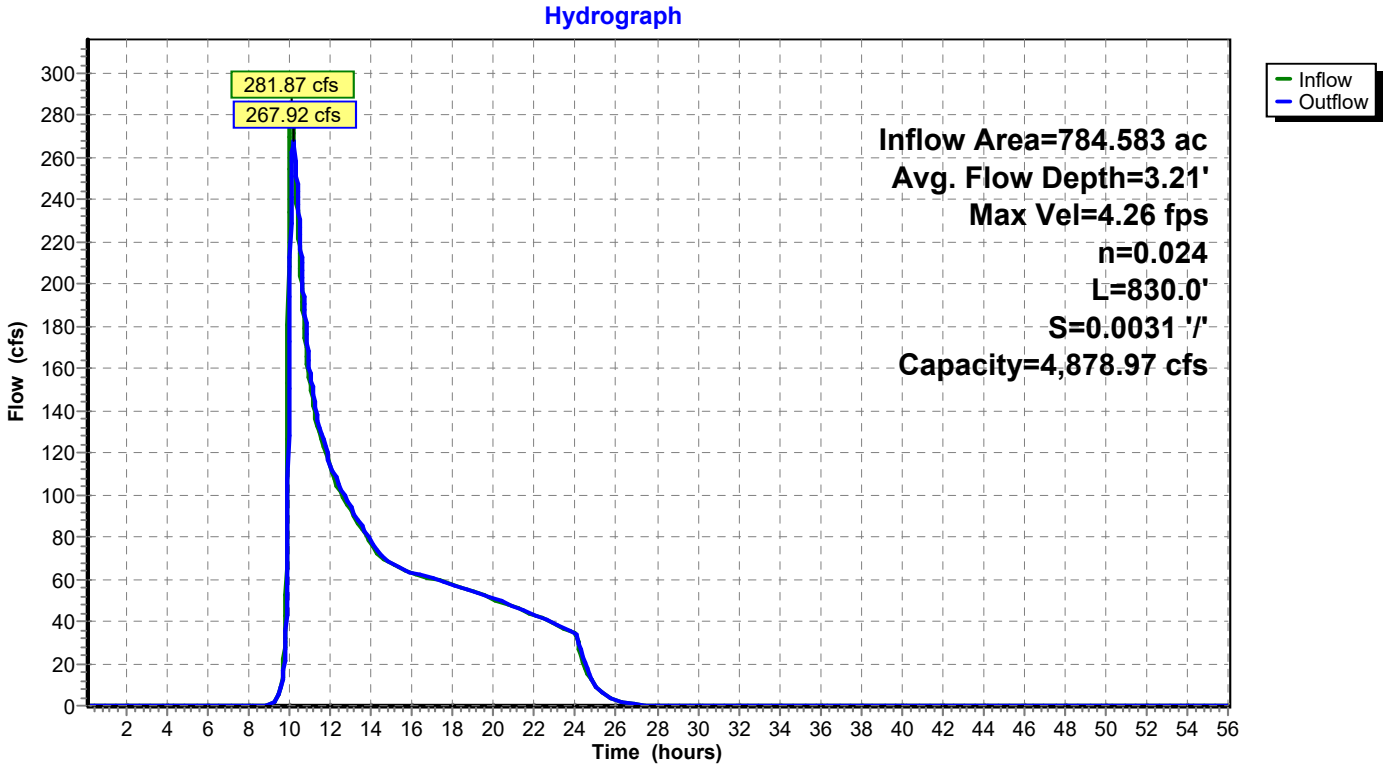
Custom stage-perimeter table, n= 0.024
102 Intermediate values determined by Multi-point interpolation
Length= 830.0' Slope= 0.0031 '/'
Inlet Invert= 841.43', Outlet Invert= 838.82'



‡

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.52	15.9	11.7	13,197	67.73
4.52	204.4	231.7	169,652	652.79
6.52	758.7	301.0	629,721	4,878.97

Reach 6R: Reach 1c



Summary for Reach 7R: Reach 1b

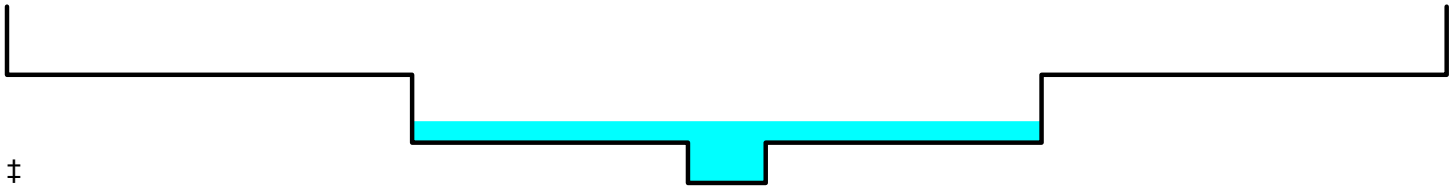
[62] Hint: Exceeded Reach 6R OUTLET depth by 0.69' @ 9.62 hrs

Inflow Area = 833.262 ac, 0.00% Impervious, Inflow Depth = 2.14" for 100 Year event
Inflow = 501.58 cfs @ 10.13 hrs, Volume= 148.911 af
Outflow = 494.14 cfs @ 10.18 hrs, Volume= 148.911 af, Atten= 1%, Lag= 3.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.74 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 3.37 fps, Avg. Travel Time= 4.4 min

Peak Storage= 92,114 cf @ 10.18 hrs
Average Depth at Peak Storage= 1.82'
Bank-Full Depth= 5.18' Flow Area= 896.3 sf, Capacity= 8,865.90 cfs

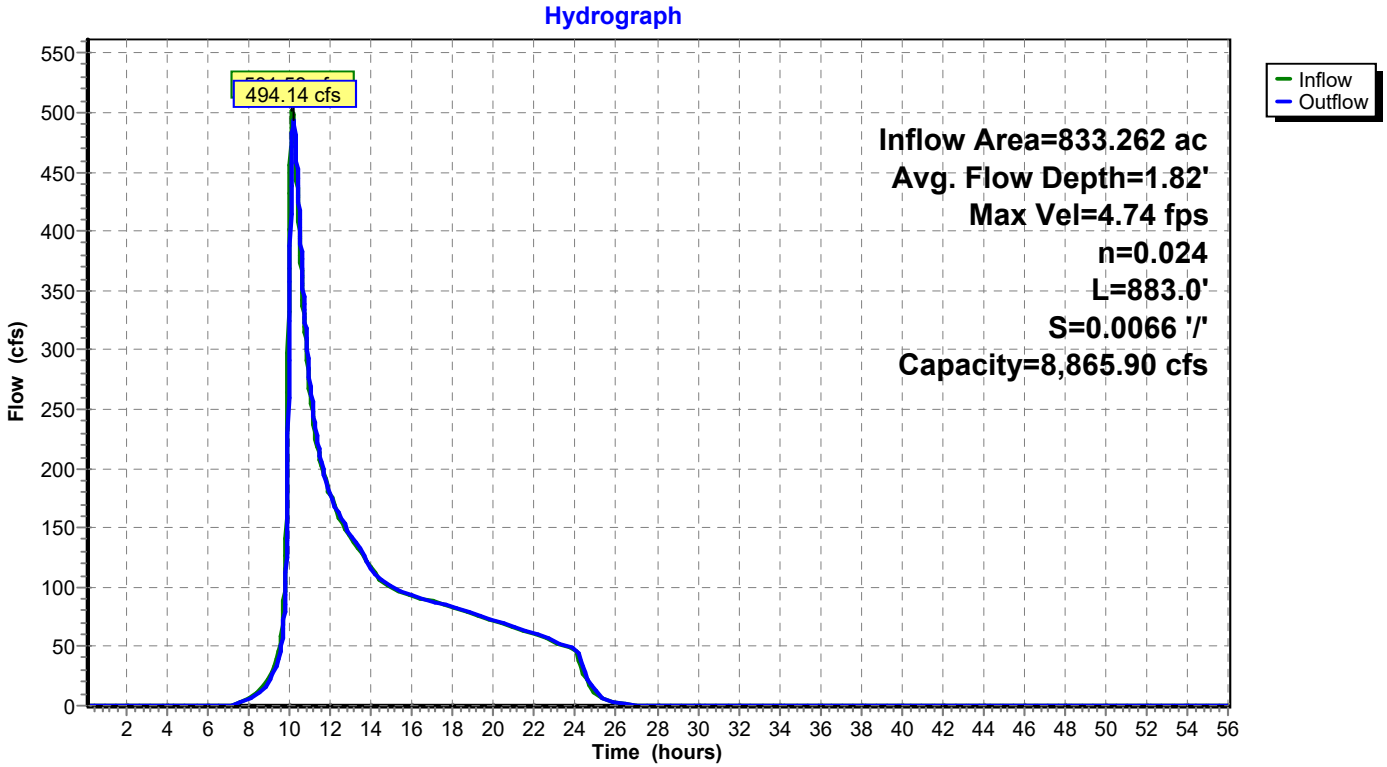
Custom stage-perimeter table, n= 0.024
102 Intermediate values determined by Multi-point interpolation
Length= 883.0' Slope= 0.0066 '/'
Inlet Invert= 838.82', Outlet Invert= 833.00'



‡

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.18	19.4	38.8	17,130	61.43
3.18	286.2	275.2	252,715	1,476.75
5.18	896.3	324.7	791,433	8,865.90

Reach 7R: Reach 1b



Summary for Reach 8R: Reach 1a

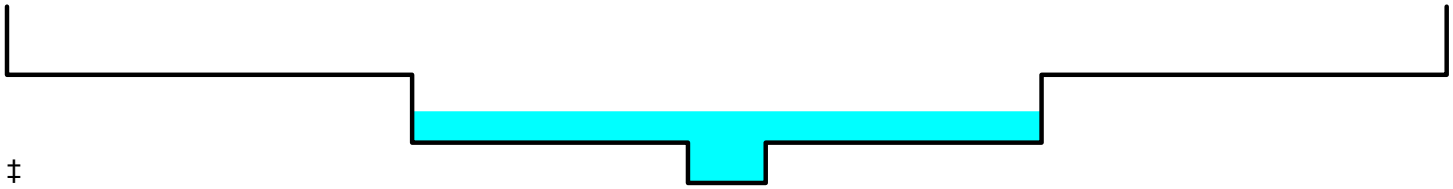
[62] Hint: Exceeded Reach 7R OUTLET depth by 0.39' @ 24.24 hrs

Inflow Area = 879.875 ac, 0.06% Impervious, Inflow Depth = 2.10" for 100 Year event
Inflow = 510.36 cfs @ 10.18 hrs, Volume= 153.969 af
Outflow = 504.95 cfs @ 10.23 hrs, Volume= 153.969 af, Atten= 1%, Lag= 3.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.54 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 2.51 fps, Avg. Travel Time= 3.9 min

Peak Storage= 83,193 cf @ 10.23 hrs
Average Depth at Peak Storage= 2.10'
Bank-Full Depth= 5.18' Flow Area= 896.3 sf, Capacity= 6,396.21 cfs

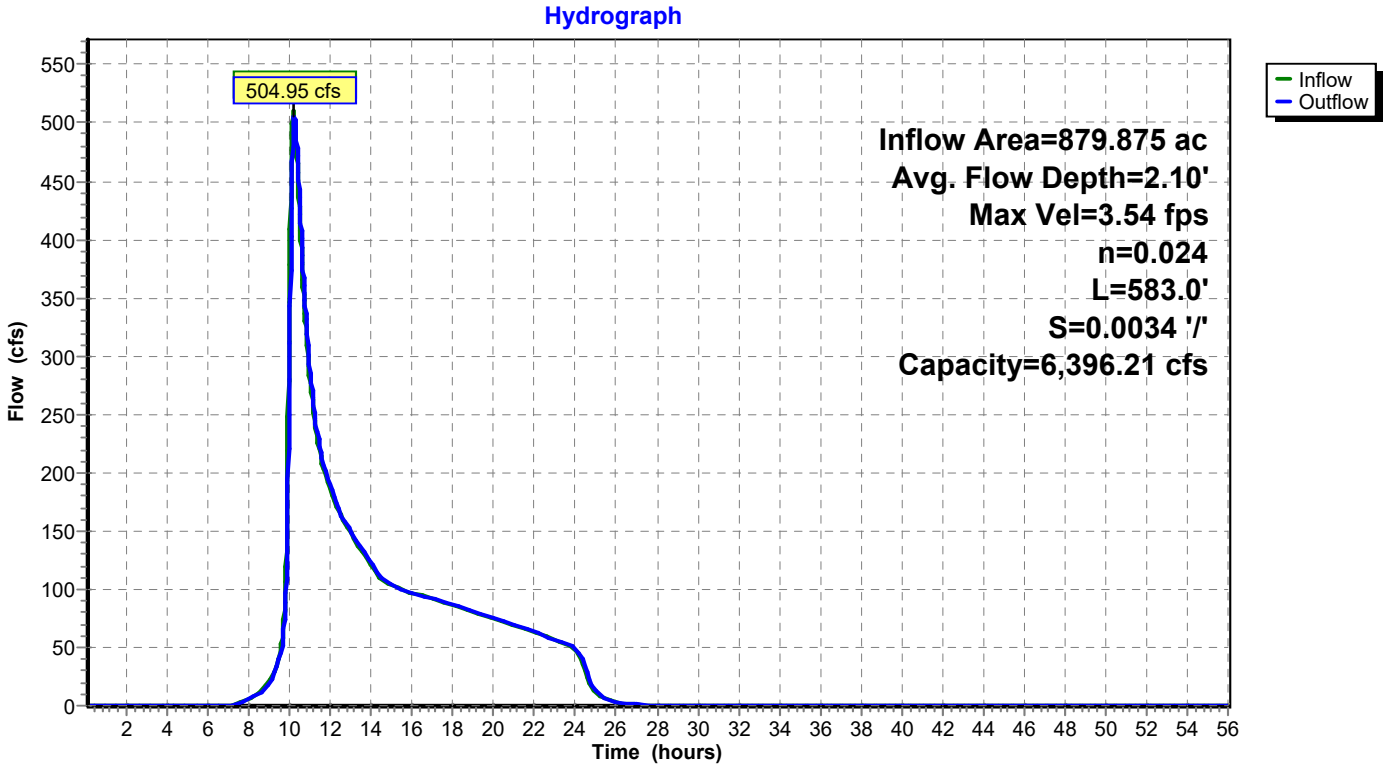
Custom stage-perimeter table, n= 0.024
102 Intermediate values determined by Multi-point interpolation
Length= 583.0' Slope= 0.0034 '/'
Inlet Invert= 833.00', Outlet Invert= 831.00'



‡

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.18	19.4	38.8	11,310	44.32
3.18	286.2	275.2	166,855	1,065.38
5.18	896.3	324.7	522,543	6,396.21

Reach 8R: Reach 1a



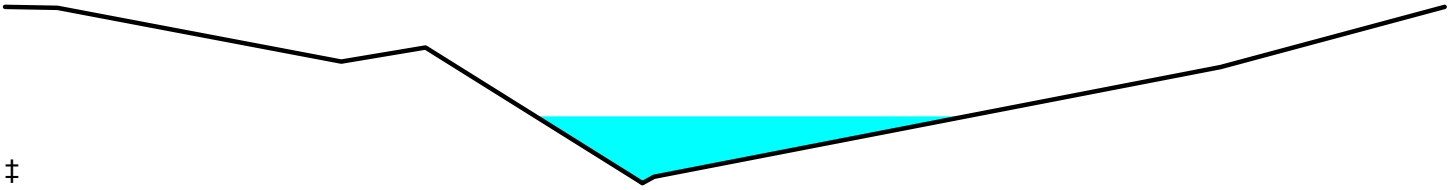
Summary for Reach 17R: Reach 1d

Inflow = 103.48 cfs @ 9.99 hrs, Volume= 3.704 af
Outflow = 90.29 cfs @ 10.06 hrs, Volume= 3.704 af, Atten= 13%, Lag= 4.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.90 fps, Min. Travel Time= 4.8 min
Avg. Velocity = 0.64 fps, Avg. Travel Time= 21.9 min

Peak Storage= 26,166 cf @ 10.06 hrs
Average Depth at Peak Storage= 0.74'
Bank-Full Depth= 1.96' Flow Area= 247.0 sf, Capacity= 1,276.84 cfs

Custom cross-section, Length= 841.0' Slope= 0.0110 '/' (102 Elevation Intervals)
Constant n= 0.027
Inlet Invert= 853.60', Outlet Invert= 844.31'



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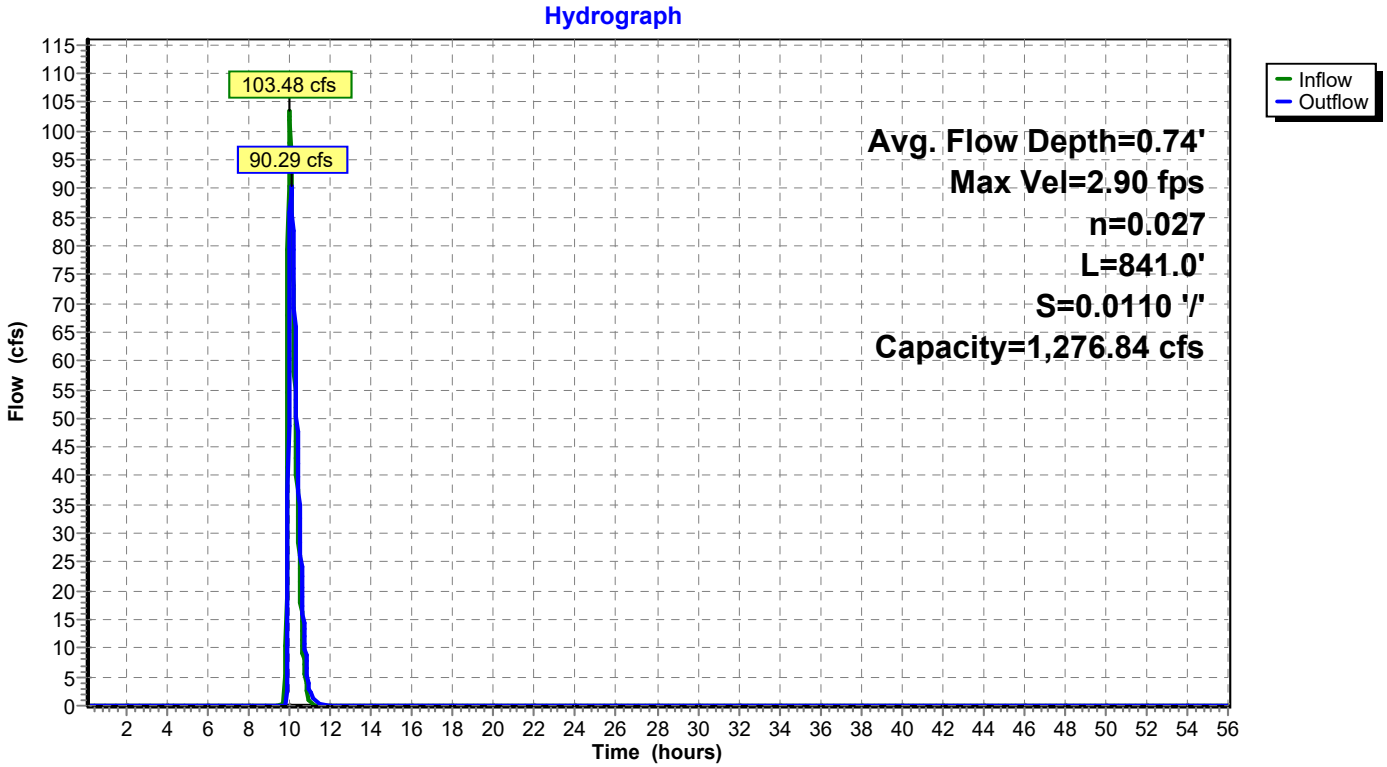
Offset (feet)	Elevation (feet)	Chan.Depth (feet)
8.56	851.18	0.00
19.24	851.17	0.01
76.81	850.57	0.61
93.88	850.73	0.45
136.80	849.26	1.92
137.90	849.22	1.96
140.29	849.29	1.89
255.27	850.51	0.67
300.75	851.18	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.04	0.0	2.5	42	0.02
0.07	0.2	4.4	128	0.09
1.29	97.3	155.0	81,870	413.13
1.35	106.8	160.8	89,836	469.56
1.51	136.4	208.8	114,697	594.12
1.95	244.1	280.9	205,277	1,285.78
1.96	247.0	292.2	207,687	1,276.84

Reach 17R: Reach 1d



Summary for Reach 18R: Linne Road Grassed Chl

Inflow Area = 276.531 ac, 1.18% Impervious, Inflow Depth = 0.65" for 100 Year event
Inflow = 25.65 cfs @ 10.05 hrs, Volume= 14.875 af
Outflow = 24.58 cfs @ 10.15 hrs, Volume= 14.875 af, Atten= 4%, Lag= 6.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.78 fps, Min. Travel Time= 7.1 min
Avg. Velocity = 2.28 fps, Avg. Travel Time= 8.7 min

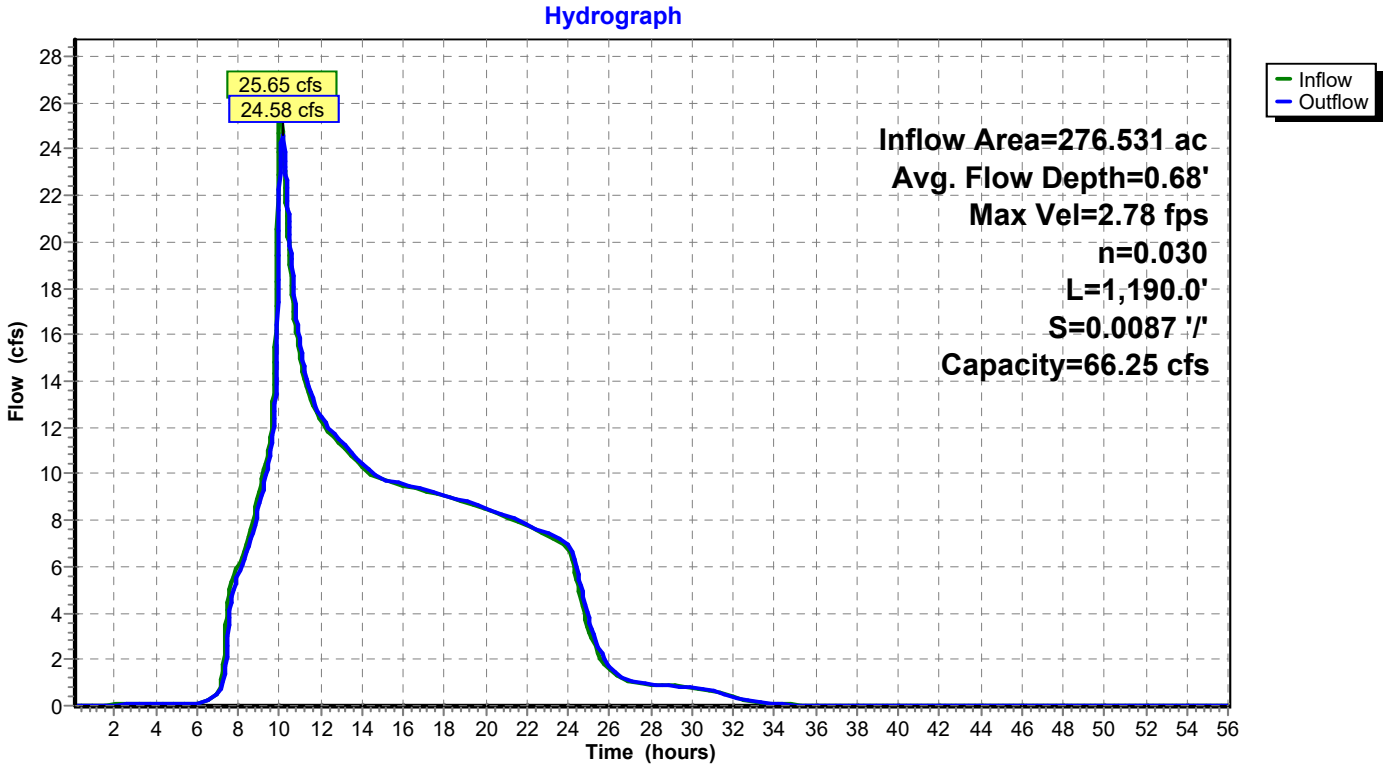
Peak Storage= 10,517 cf @ 10.15 hrs
Average Depth at Peak Storage= 0.68'
Bank-Full Depth= 1.11' Flow Area= 18.0 sf, Capacity= 66.25 cfs

Custom stage-perimeter table, n= 0.030
100 Intermediate values determined by Multi-point interpolation
Length= 1,190.0' Slope= 0.0087 '/'
Inlet Invert= 841.60', Outlet Invert= 831.20'

‡

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.52	5.8	16.9	6,916	13.23
0.93	13.8	22.4	16,431	46.30
1.11	18.0	25.4	21,420	66.25

Reach 18R: Linne Road Grassed Chl



Summary for Pond 17P: Gran Cielo Dwy

[58] Hint: Peaked 0.73' above defined flood level

Inflow Area = 166.738 ac, 0.91% Impervious, Inflow Depth = 3.00" for 100 Year event
Inflow = 222.44 cfs @ 9.99 hrs, Volume= 41.649 af
Outflow = 222.08 cfs @ 9.99 hrs, Volume= 41.649 af, Atten= 0%, Lag= 0.4 min
Primary = 117.95 cfs @ 9.99 hrs, Volume= 37.936 af
Secondary = 0.65 cfs @ 9.99 hrs, Volume= 0.009 af
Tertiary = 103.48 cfs @ 9.99 hrs, Volume= 3.704 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Peak Elev= 855.19' @ 9.99 hrs Surf.Area= 8,547 sf Storage= 12,556 cf
Flood Elev= 854.46' Surf.Area= 6,947 sf Storage= 6,934 cf

Plug-Flow detention time= 1.7 min calculated for 41.634 af (100% of inflow)
Center-of-Mass det. time= 1.7 min (807.2 - 805.5)

Volume	Invert	Avail.Storage	Storage Description
#1	852.84'	22,270 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.84	0	0	0
853.14	2,586	388	388
854.14	6,275	4,431	4,818
855.14	8,376	7,326	12,144
856.14	11,876	10,126	22,270

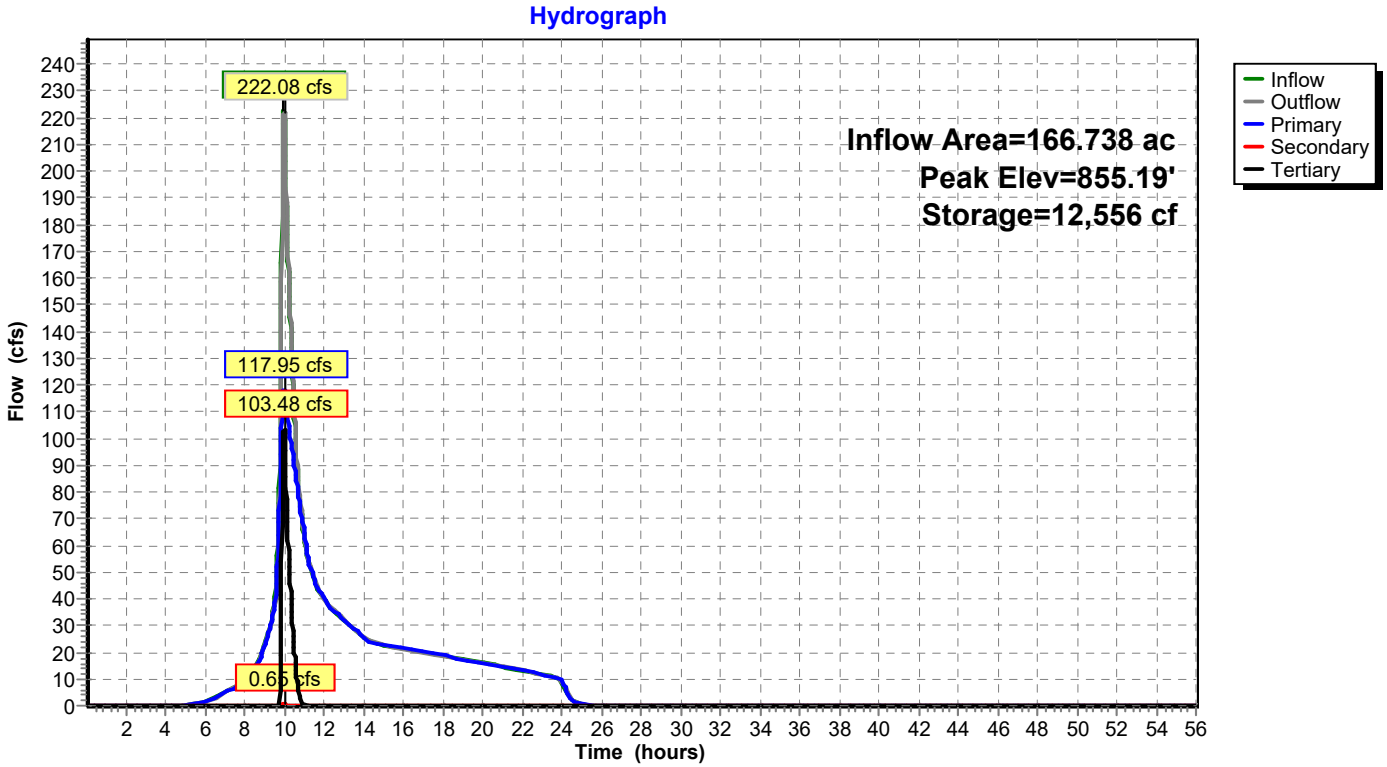
Device	Routing	Invert	Outlet Devices
#1	Primary	852.84'	**30.0" Round Culvert X 6.00** L= 77.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 852.84' / 851.76' S= 0.0140 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Secondary	854.90'	**Special & User-Defined** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 Disch. (cfs) 0.000 0.010 0.200 0.710 1.580 2.700 4.030 5.690 7.620 9.790 12.320 15.140 18.190 21.460 24.930 28.580 32.420 36.420 40.580 44.900 49.360 53.970
#3	Tertiary	854.40'	**Special & User-Defined** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 Disch. (cfs) 0.000 0.080 3.470 10.790 21.890 36.810 55.720 78.890 106.600 138.580 174.620 214.630 258.590 306.440 358.240 413.470 471.810 533.060 597.050 663.650 732.760 804.270 878.100 954.180 1,032.440 1,112.810 1,195.240

Primary OutFlow Max=117.85 cfs @ 9.99 hrs HW=855.19' TW=851.82' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 117.85 cfs @ 5.32 fps)

Secondary OutFlow Max=0.65 cfs @ 9.99 hrs HW=855.19' TW=851.82' (Dynamic Tailwater)
└─**2=Special & User-Defined** (Custom Controls 0.65 cfs)

Tertiary OutFlow Max=103.09 cfs @ 9.99 hrs HW=855.19' TW=854.30' (Dynamic Tailwater)
└─**3=Special & User-Defined** (Custom Controls 103.09 cfs)

Pond 17P: Gran Cielo Dwy



Summary for Pond 18P: GC-CkD1

[58] Hint: Peaked 1.69' above defined flood level

Inflow Area = 240.622 ac, 1.05% Impervious, Inflow Depth = 2.86" for 100 Year event
Inflow = 223.44 cfs @ 9.99 hrs, Volume= 57.363 af
Outflow = 215.08 cfs @ 10.04 hrs, Volume= 57.300 af, Atten= 4%, Lag= 3.0 min
Primary = 1.07 cfs @ 9.99 hrs, Volume= 1.743 af
Secondary = 114.40 cfs @ 10.03 hrs, Volume= 41.965 af
Tertiary = 99.64 cfs @ 10.04 hrs, Volume= 13.592 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Peak Elev= 851.86' @ 10.04 hrs Surf.Area= 28,237 sf Storage= 63,522 cf
Flood Elev= 850.17' Surf.Area= 18,994 sf Storage= 23,481 cf

Plug-Flow detention time= 13.9 min calculated for 57.300 af (100% of inflow)
Center-of-Mass det. time= 12.9 min (830.1 - 817.2)

Volume	Invert	Avail.Storage	Storage Description
#1	844.56'	67,617 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.56	10	0	0
845.00	200	46	46
846.00	600	400	446
847.00	1,500	1,050	1,496
848.00	2,166	1,833	3,329
849.00	7,688	4,927	8,256
850.00	16,694	12,191	20,447
850.20	19,400	3,609	24,057
852.00	29,000	43,560	67,617

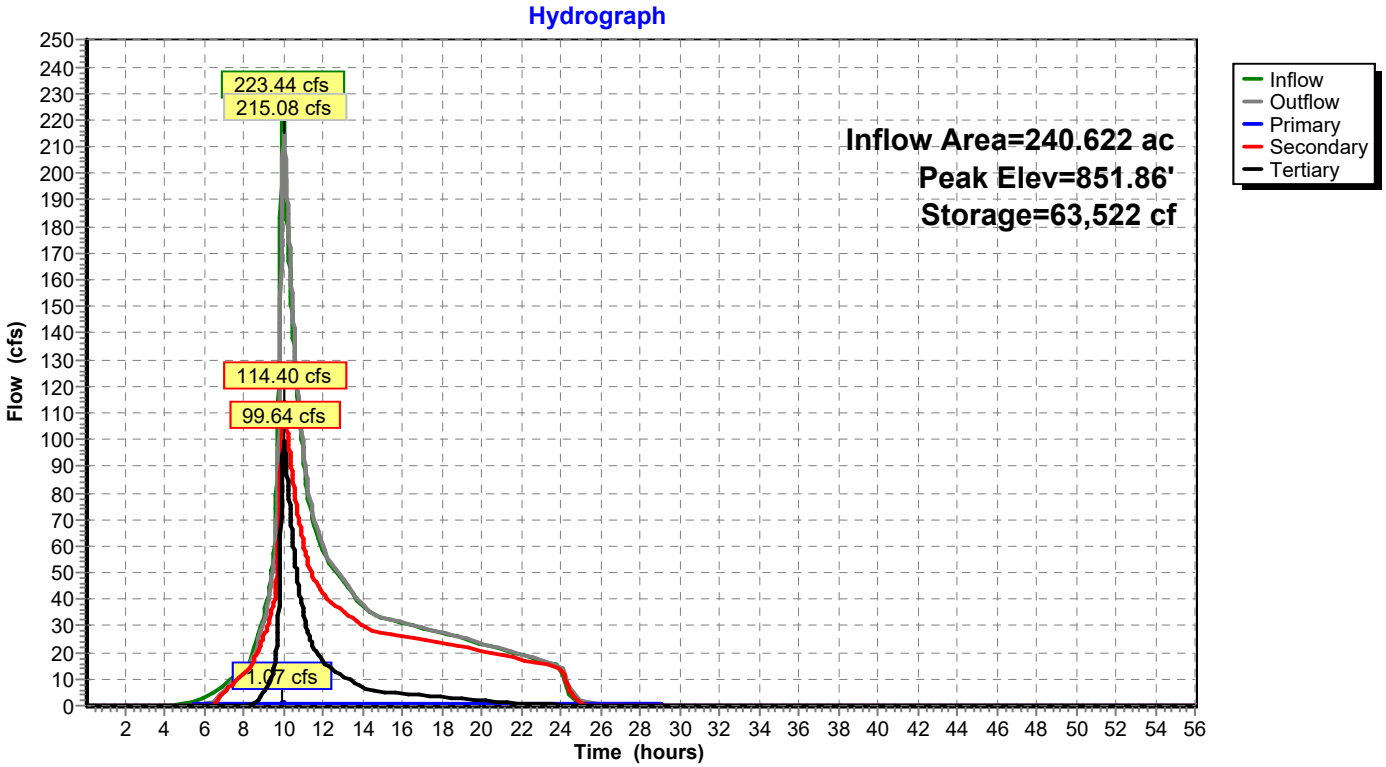
Device	Routing	Invert	Outlet Devices
#1	Primary	847.69'	**6.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 847.69' / 847.67' S= 0.0008 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Secondary	849.50'	**9.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59
#3	Tertiary	850.00'	**Special & User-Defined (CkD1-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 Disch. (cfs) 0.000 0.030 0.560 1.900 4.120 7.220 11.180 15.770 20.900 26.530 32.600 39.090 45.970 53.220 60.820 68.750 77.000 85.570 94.430 103.580 113.010

Primary OutFlow Max=1.06 cfs @ 9.99 hrs HW=851.81' TW=849.80' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.06 cfs @ 5.39 fps)

Secondary OutFlow Max=114.10 cfs @ 10.03 hrs HW=851.86' TW=849.85' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 114.10 cfs @ 5.38 fps)

Tertiary OutFlow Max=99.61 cfs @ 10.04 hrs HW=851.86' TW=0.00' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD1-S)** (Custom Controls 99.61 cfs)

Pond 18P: GC-CkD1



Summary for Pond 19P: GC-CkD2

[58] Hint: Peaked 1.22' above defined flood level

Inflow Area = 260.311 ac, 0.97% Impervious, Inflow Depth = 2.22" for 100 Year event
Inflow = 141.95 cfs @ 10.01 hrs, Volume= 48.150 af
Outflow = 136.09 cfs @ 10.08 hrs, Volume= 48.148 af, Atten= 4%, Lag= 4.5 min
Primary = 1.40 cfs @ 10.08 hrs, Volume= 2.285 af
Secondary = 81.70 cfs @ 10.08 hrs, Volume= 39.175 af
Tertiary = 53.00 cfs @ 10.08 hrs, Volume= 6.687 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Peak Elev= 849.87' @ 10.08 hrs Surf.Area= 37,109 sf Storage= 41,536 cf
Flood Elev= 848.65' Surf.Area= 11,850 sf Storage= 14,787 cf

Plug-Flow detention time= 11.0 min calculated for 48.148 af (100% of inflow)
Center-of-Mass det. time= 10.8 min (871.9 - 861.1)

Volume	Invert	Avail.Storage	Storage Description
#1	846.00'	46,430 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
846.00	267	0	0
847.00	4,055	2,161	2,161
848.00	8,178	6,117	8,278
849.00	13,828	11,003	19,281
850.00	40,470	27,149	46,430

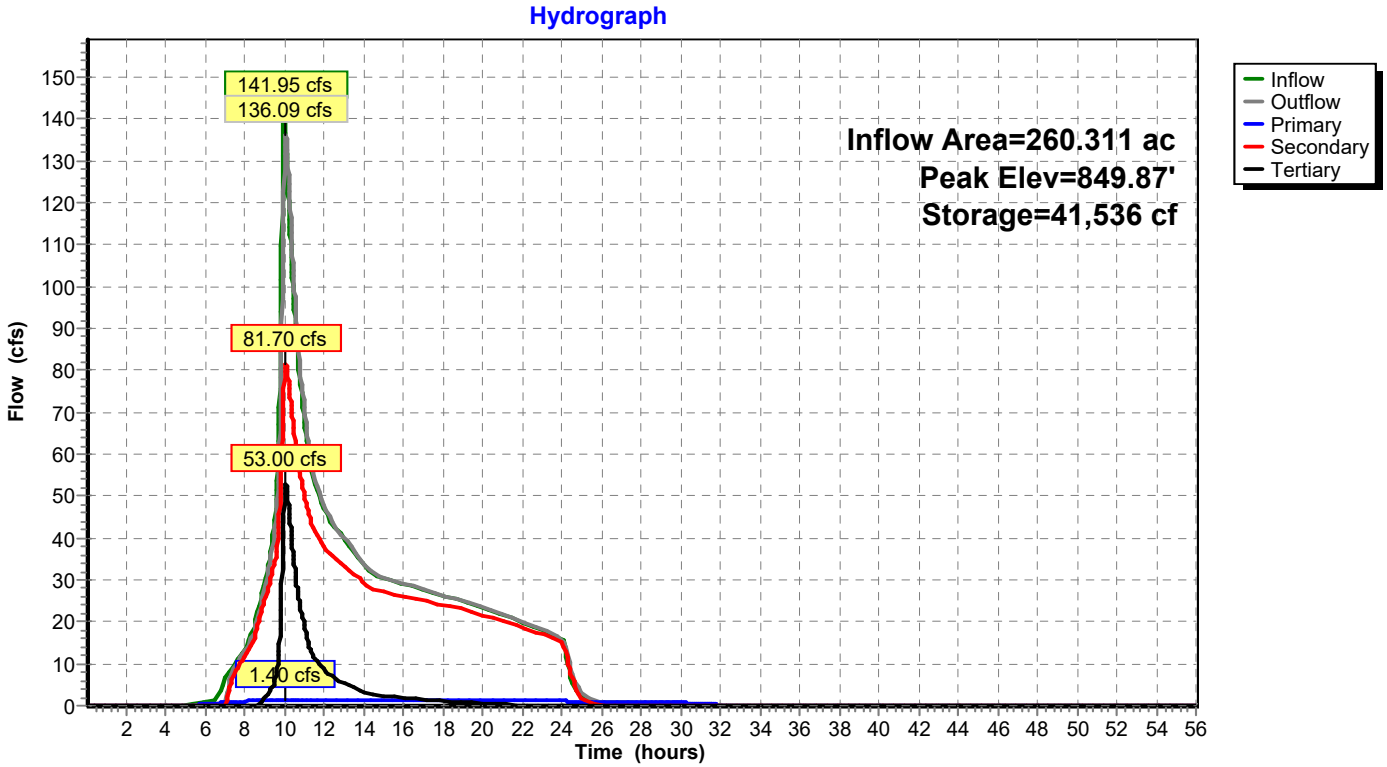
Device	Routing	Invert	Outlet Devices
#1	Primary	846.12'	**6.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 846.12' / 845.98' S= 0.0054 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Tertiary	848.70'	**Special & User-Defined (CkD2-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 Disch. (cfs) 0.000 0.130 0.970 2.640 5.120 8.550 13.010 18.440 24.620 31.430 38.830 46.770 55.210 64.120
#3	Secondary	847.80'	**Special & User-Defined (CkD2-W)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 Disch. (cfs) 0.000 0.020 0.480 1.430 2.780 4.430 6.490 8.950 12.010 15.510 19.390 23.590 28.100 32.980 38.270 43.910 49.850 56.080 62.580 69.340 76.350 83.590 91.070

Primary OutFlow Max=1.40 cfs @ 10.08 hrs HW=849.87' TW=846.16' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.40 cfs @ 7.12 fps)

Secondary OutFlow Max=81.67 cfs @ 10.08 hrs HW=849.87' TW=846.16' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD2-W)** (Custom Controls 81.67 cfs)

Tertiary OutFlow Max=52.97 cfs @ 10.08 hrs HW=849.87' TW=0.00' (Dynamic Tailwater)
└─**2=Special & User-Defined (CkD2-S)** (Custom Controls 52.97 cfs)

Pond 19P: GC-CkD2



Summary for Pond 20P: GC-CkD3

[58] Hint: Peaked 1.14' above defined flood level

Inflow Area =	274.094 ac,	0.92% Impervious,	Inflow Depth =	1.94"	for 100 Year event
Inflow =	98.57 cfs @	10.04 hrs,	Volume=	44.367 af	
Outflow =	98.14 cfs @	10.07 hrs,	Volume=	44.355 af,	Atten= 0%, Lag= 1.8 min
Primary =	6.94 cfs @	10.07 hrs,	Volume=	7.743 af	
Secondary =	16.42 cfs @	10.07 hrs,	Volume=	6.664 af	
Tertiary =	74.78 cfs @	10.07 hrs,	Volume=	29.949 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs
Peak Elev= 846.16' @ 10.07 hrs Surf.Area= 16,137 sf Storage= 18,734 cf
Flood Elev= 845.02' Surf.Area= 8,229 sf Storage= 4,852 cf

Plug-Flow detention time= 7.2 min calculated for 44.355 af (100% of inflow)
Center-of-Mass det. time= 6.8 min (901.9 - 895.1)

Volume	Invert	Avail.Storage	Storage Description
#1	844.00'	24,632 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.00	1,288	0	0
845.00	8,090	4,689	4,689
846.50	18,500	19,943	24,632

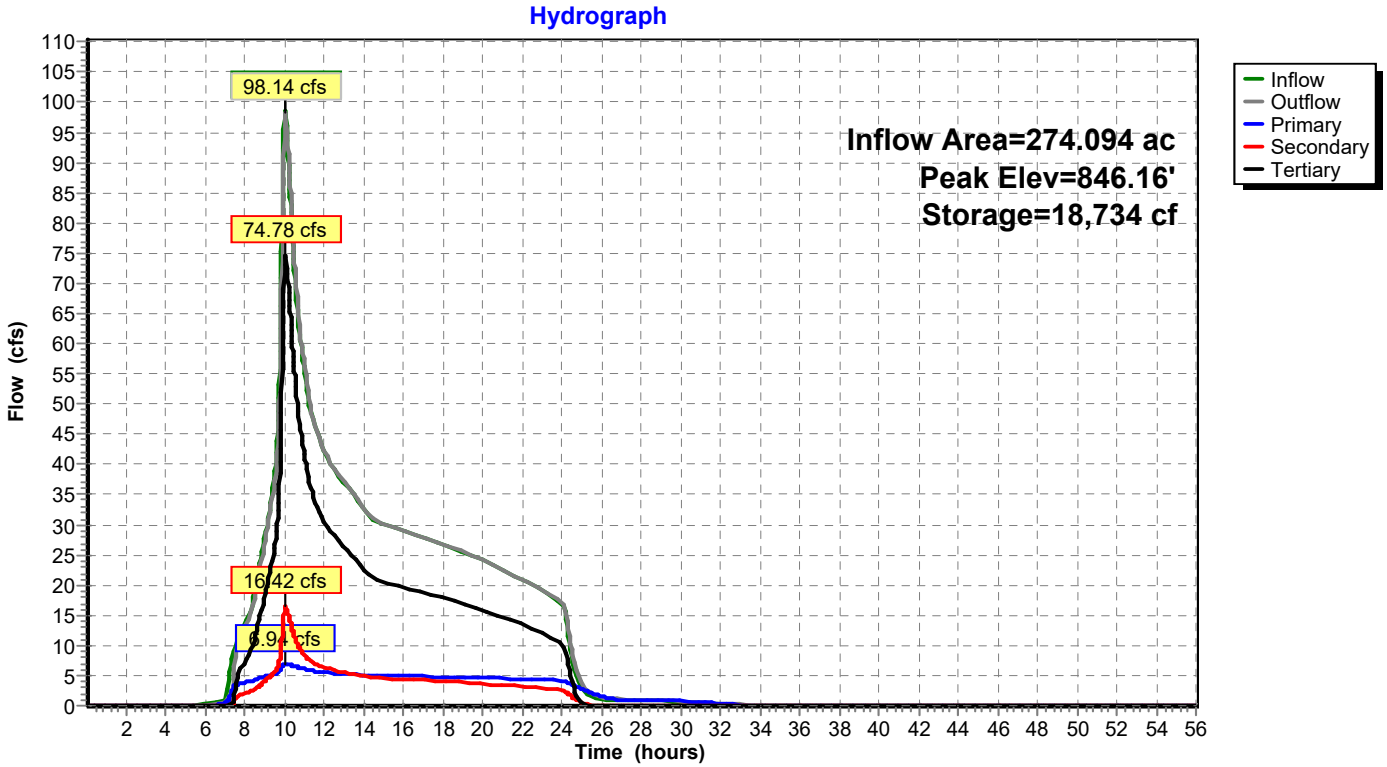
Device	Routing	Invert	Outlet Devices
#1	Primary	844.22'	**18.0" Round Culvert** L= 26.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 844.22' / 843.98' S= 0.0092 '/' Cc= 0.900 n= 0.021 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	845.00'	**Special & User-Defined (CkD3-W)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 Disch. (cfs) 0.000 0.050 0.390 0.970 1.710 2.600 3.780 5.170 6.720 8.570 11.140 14.290 17.880 21.830 26.120 30.880 36.030 41.520 47.330 53.420 59.790
#3	Tertiary	845.10'	**Special & User-Defined (CkD3-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 Disch. (cfs) 0.000 0.050 1.930 5.420 10.370 16.490 23.960 32.580 42.550 53.770 66.380 80.510 96.280 113.770 132.840 153.630 175.910 199.510 224.310 250.260

Primary OutFlow Max=6.94 cfs @ 10.07 hrs HW=846.16' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 6.94 cfs @ 3.96 fps)

Secondary OutFlow Max=16.42 cfs @ 10.07 hrs HW=846.16' TW=0.00' (Dynamic Tailwater)
└─**2=Special & User-Defined (CkD3-W)** (Custom Controls 16.42 cfs)

Tertiary OutFlow Max=74.74 cfs @ 10.07 hrs HW=846.16' TW=0.00' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD3-S)** (Custom Controls 74.74 cfs)

Pond 20P: GC-CkD3

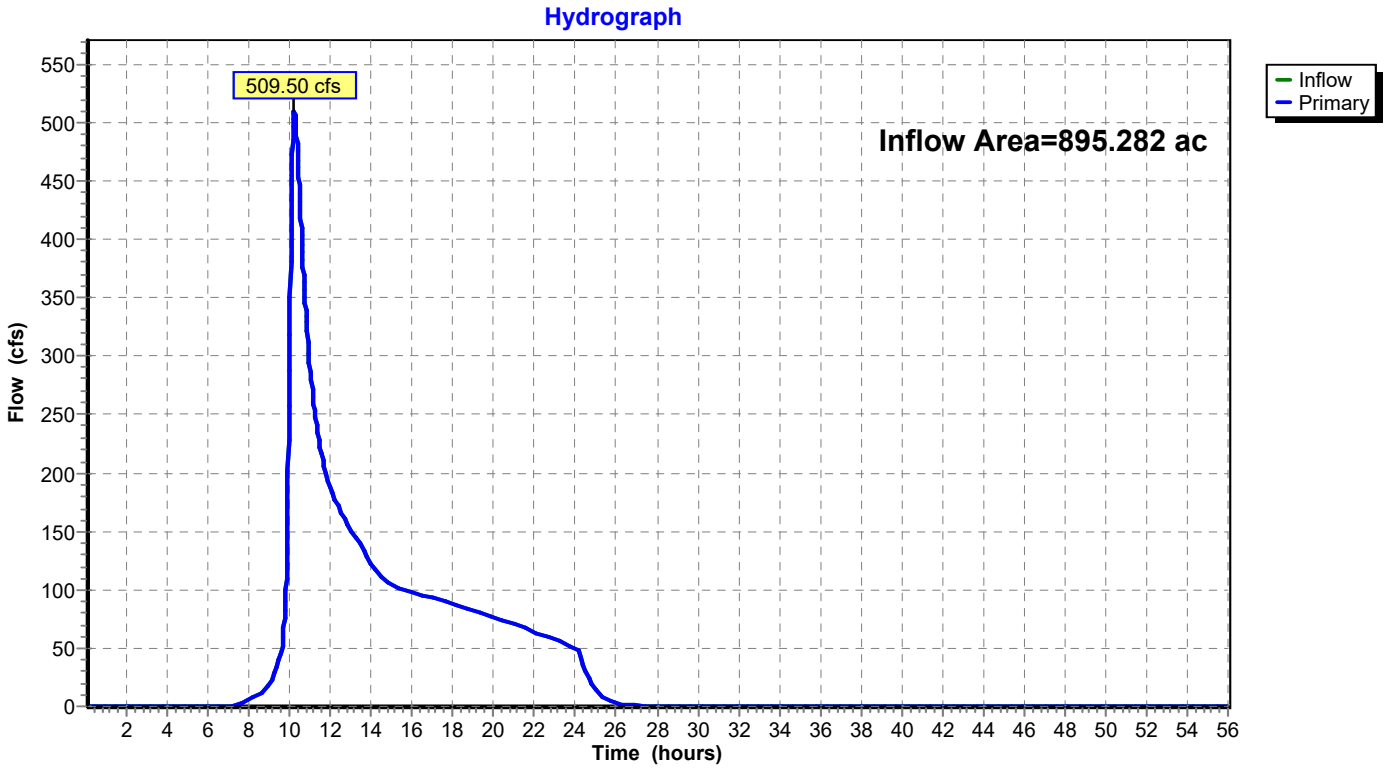


Summary for Link 3a (1,2+3)-Ex: Comb Un-dev Ck Flow

Inflow Area = 895.282 ac, 0.06% Impervious, Inflow Depth = 2.08" for 100 Year event
Inflow = 509.50 cfs @ 10.23 hrs, Volume= 155.541 af
Primary = 509.50 cfs @ 10.23 hrs, Volume= 155.541 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 3a (1,2+3)-Ex: Comb Un-dev Ck Flow

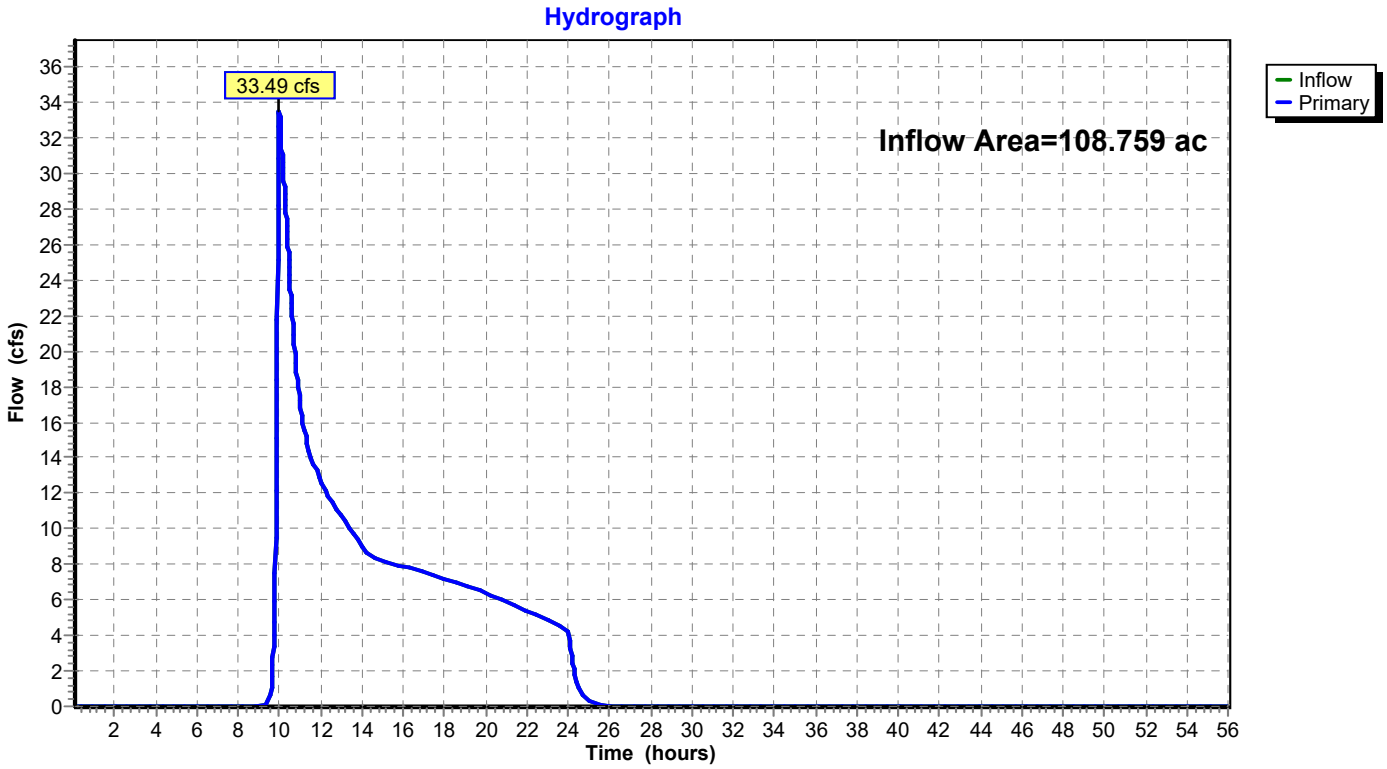


Summary for Link 5L: Outlet To Tract #1632 Ex. 36" SD

Inflow Area = 108.759 ac, 0.00% Impervious, Inflow Depth = 1.22" for 100 Year event
Inflow = 33.49 cfs @ 10.01 hrs, Volume= 11.095 af
Primary = 33.49 cfs @ 10.01 hrs, Volume= 11.095 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 5L: Outlet To Tract #1632 Ex. 36" SD

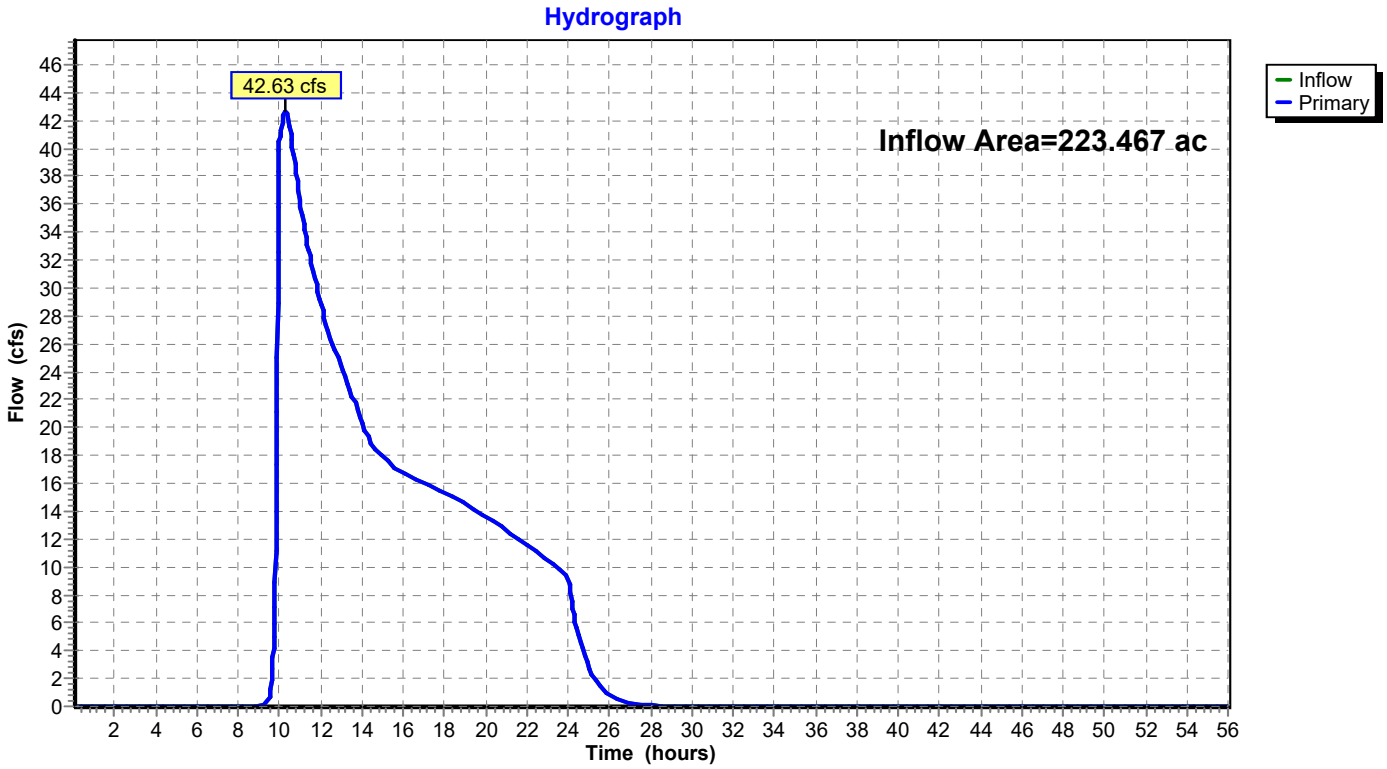


Summary for Link 6L: To Existing Meadowlark Road

Inflow Area = 223.467 ac, 0.00% Impervious, Inflow Depth = 1.24" for 100 Year event
Inflow = 42.63 cfs @ 10.31 hrs, Volume= 23.060 af
Primary = 42.63 cfs @ 10.31 hrs, Volume= 23.060 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 6L: To Existing Meadowlark Road

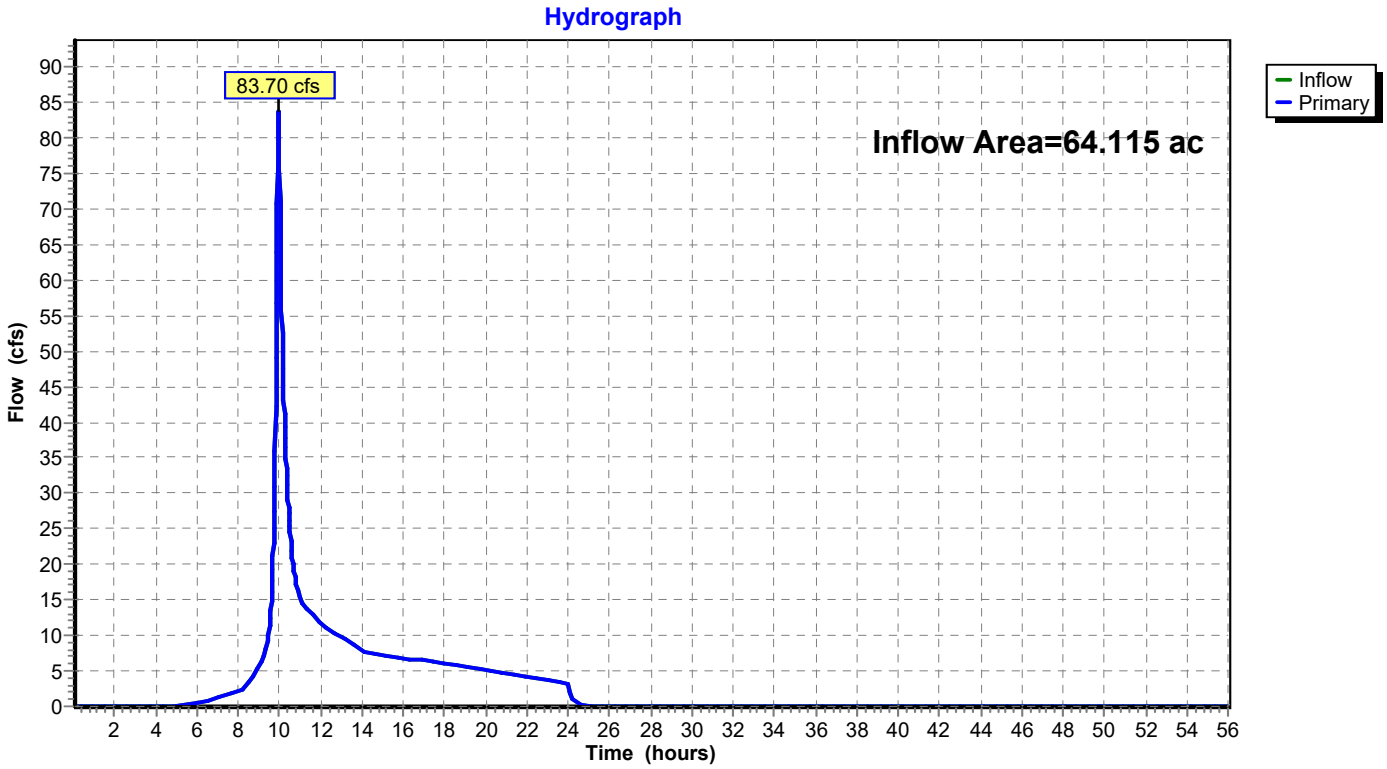


Summary for Link 7L: DMA 13

Inflow Area = 64.115 ac, 0.00% Impervious, Inflow Depth = 2.32" for 100 Year event
Inflow = 83.70 cfs @ 9.97 hrs, Volume= 12.398 af
Primary = 83.70 cfs @ 9.97 hrs, Volume= 12.398 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 7L: DMA 13

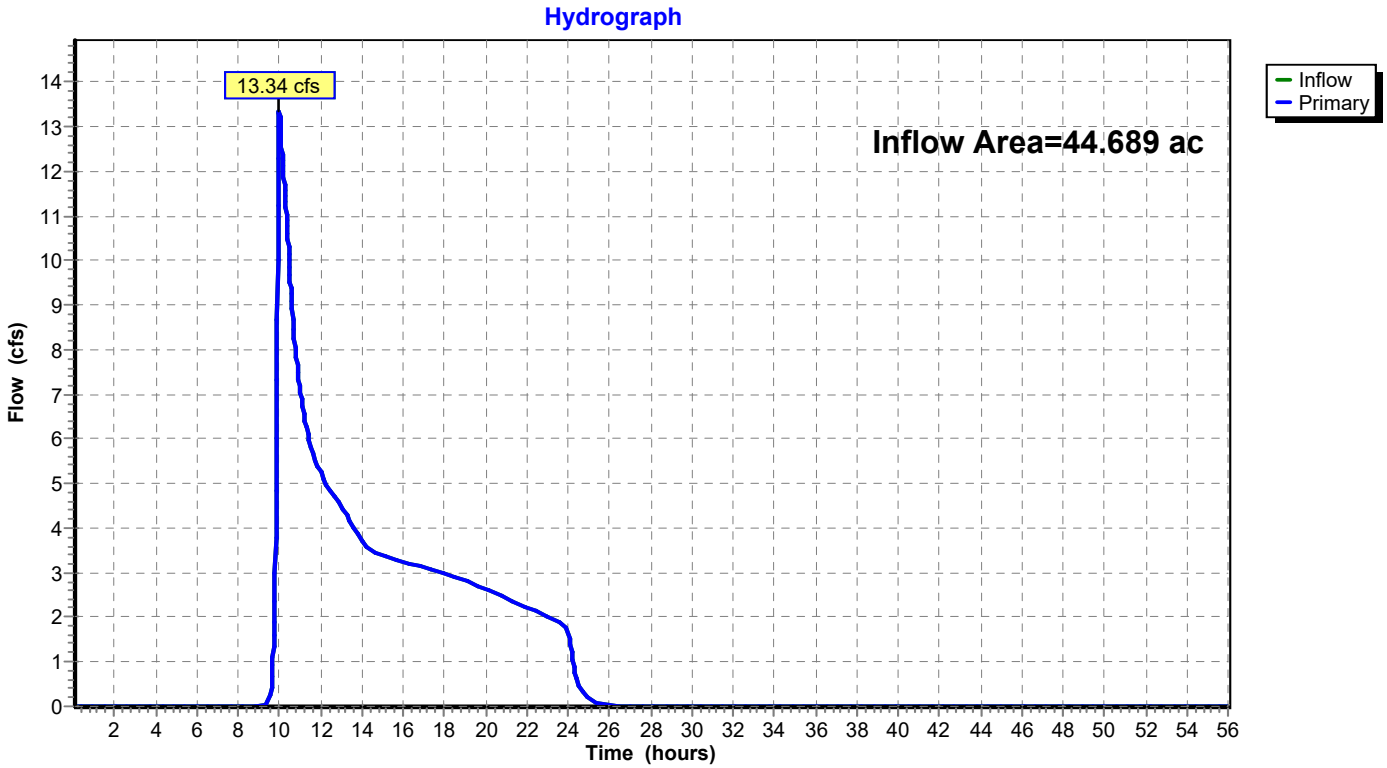


Summary for Link 8L: DMA 8

Inflow Area = 44.689 ac, 0.00% Impervious, Inflow Depth = 1.22" for 100 Year event
Inflow = 13.34 cfs @ 10.01 hrs, Volume= 4.559 af
Primary = 13.34 cfs @ 10.01 hrs, Volume= 4.559 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 8L: DMA 8

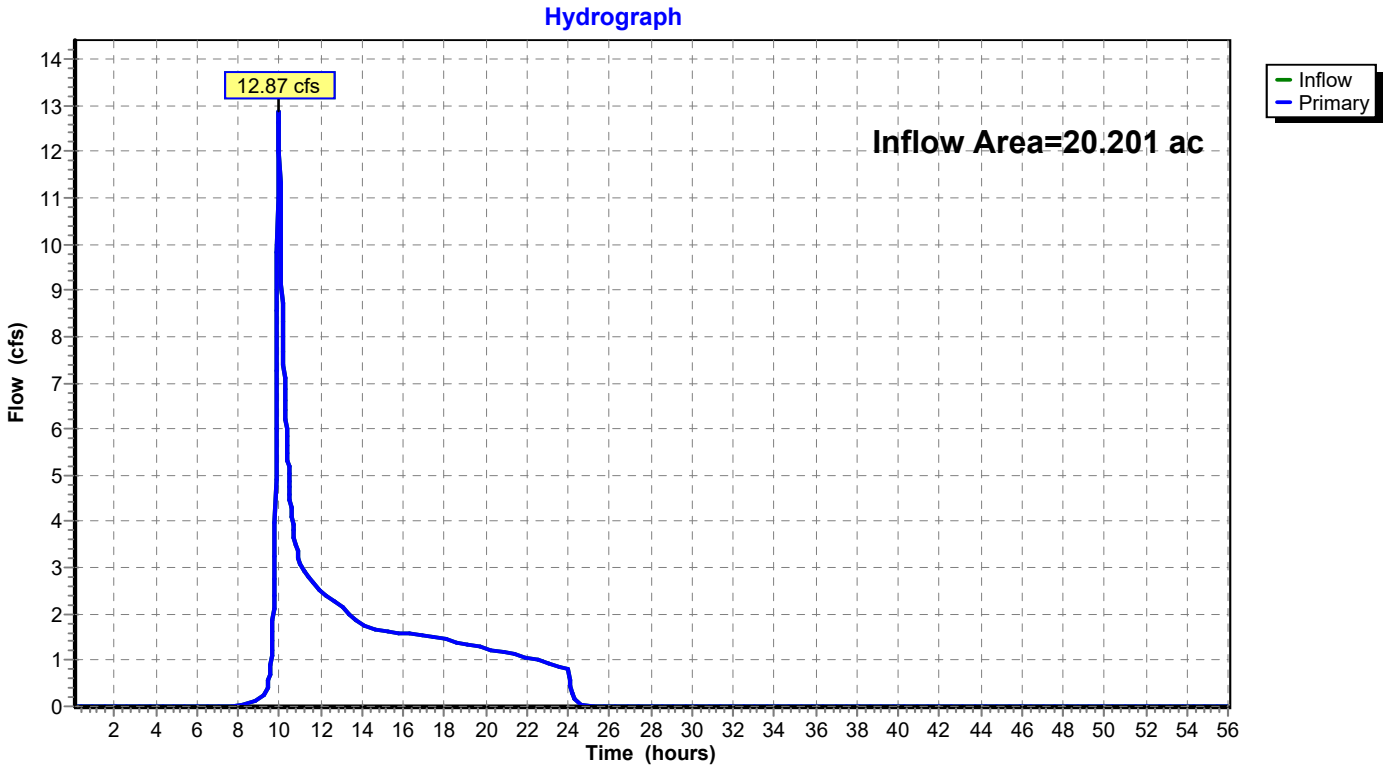


Summary for Link 9L: DMA 12

Inflow Area = 20.201 ac, 0.00% Impervious, Inflow Depth = 1.41" for 100 Year event
Inflow = 12.87 cfs @ 9.98 hrs, Volume= 2.371 af
Primary = 12.87 cfs @ 9.98 hrs, Volume= 2.371 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 9L: DMA 12

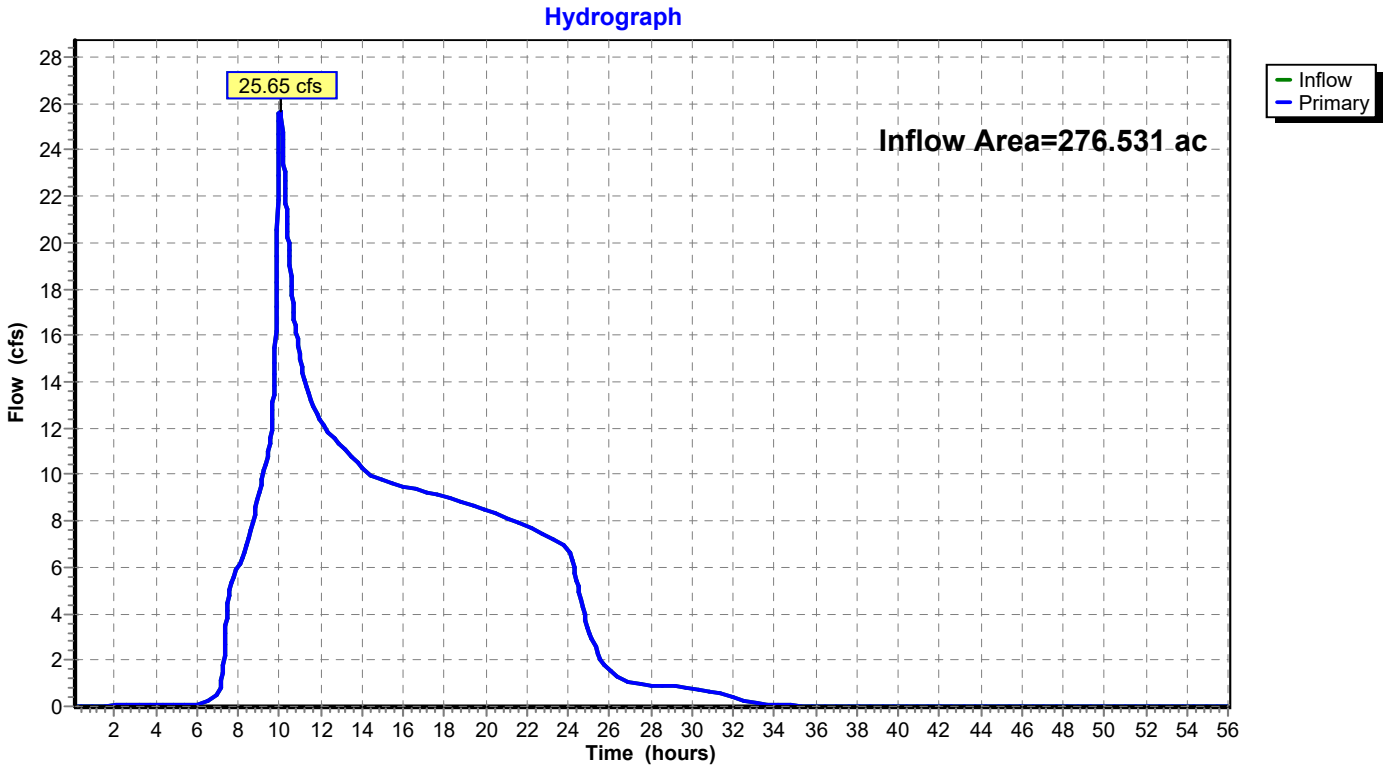


Summary for Link 10L: To Linne Road Channel

Inflow Area = 276.531 ac, 1.18% Impervious, Inflow Depth = 0.65" for 100 Year event
Inflow = 25.65 cfs @ 10.05 hrs, Volume= 14.875 af
Primary = 25.65 cfs @ 10.05 hrs, Volume= 14.875 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 10L: To Linne Road Channel

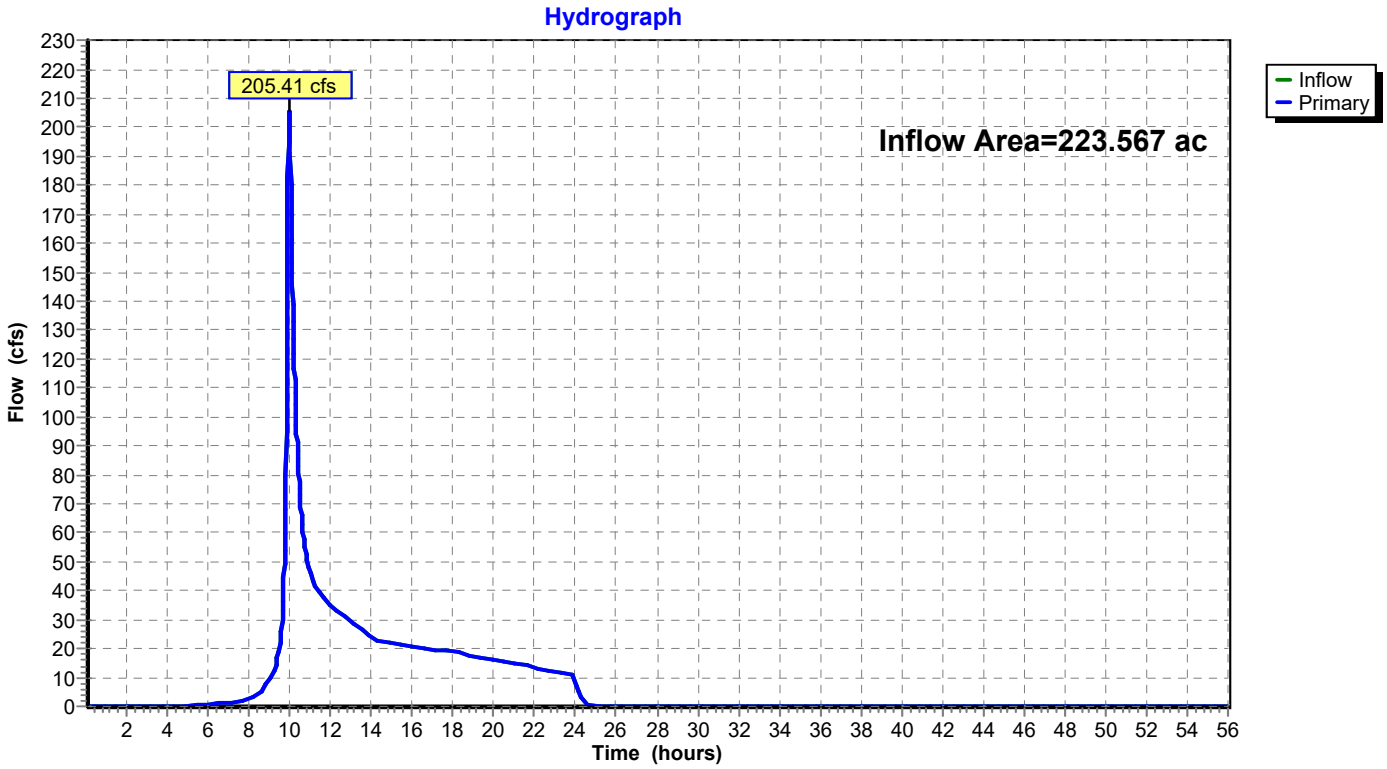


Summary for Link 11L: To Fontana Road SD

Inflow Area = 223.567 ac, 0.53% Impervious, Inflow Depth = 1.86" for 100 Year event
Inflow = 205.41 cfs @ 9.98 hrs, Volume= 34.670 af
Primary = 205.41 cfs @ 9.98 hrs, Volume= 34.670 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 11L: To Fontana Road SD

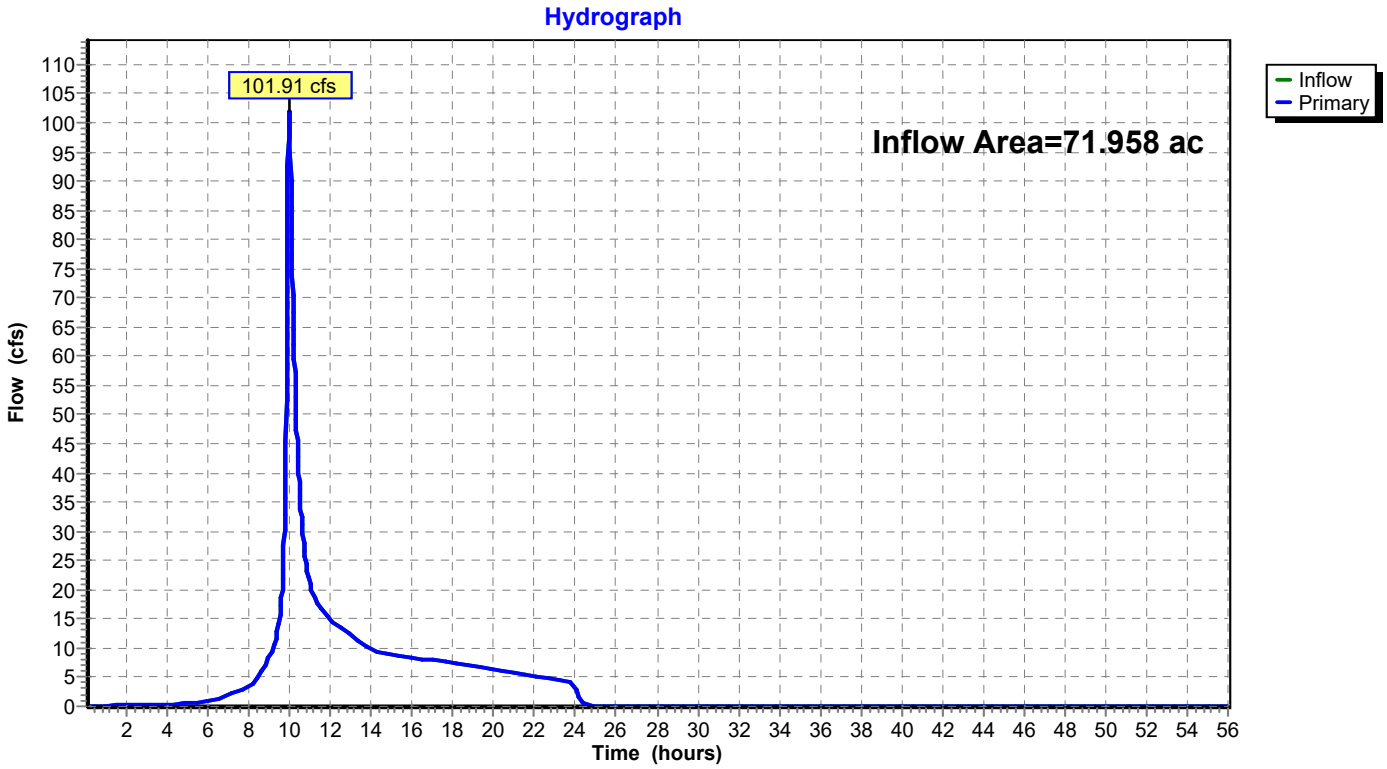


Summary for Link 15L: Sherwood/Niblick LP Xing

Inflow Area = 71.958 ac, 6.18% Impervious, Inflow Depth = 2.69" for 100 Year event
Inflow = 101.91 cfs @ 9.98 hrs, Volume= 16.110 af
Primary = 101.91 cfs @ 9.98 hrs, Volume= 16.110 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 15L: Sherwood/Niblick LP Xing

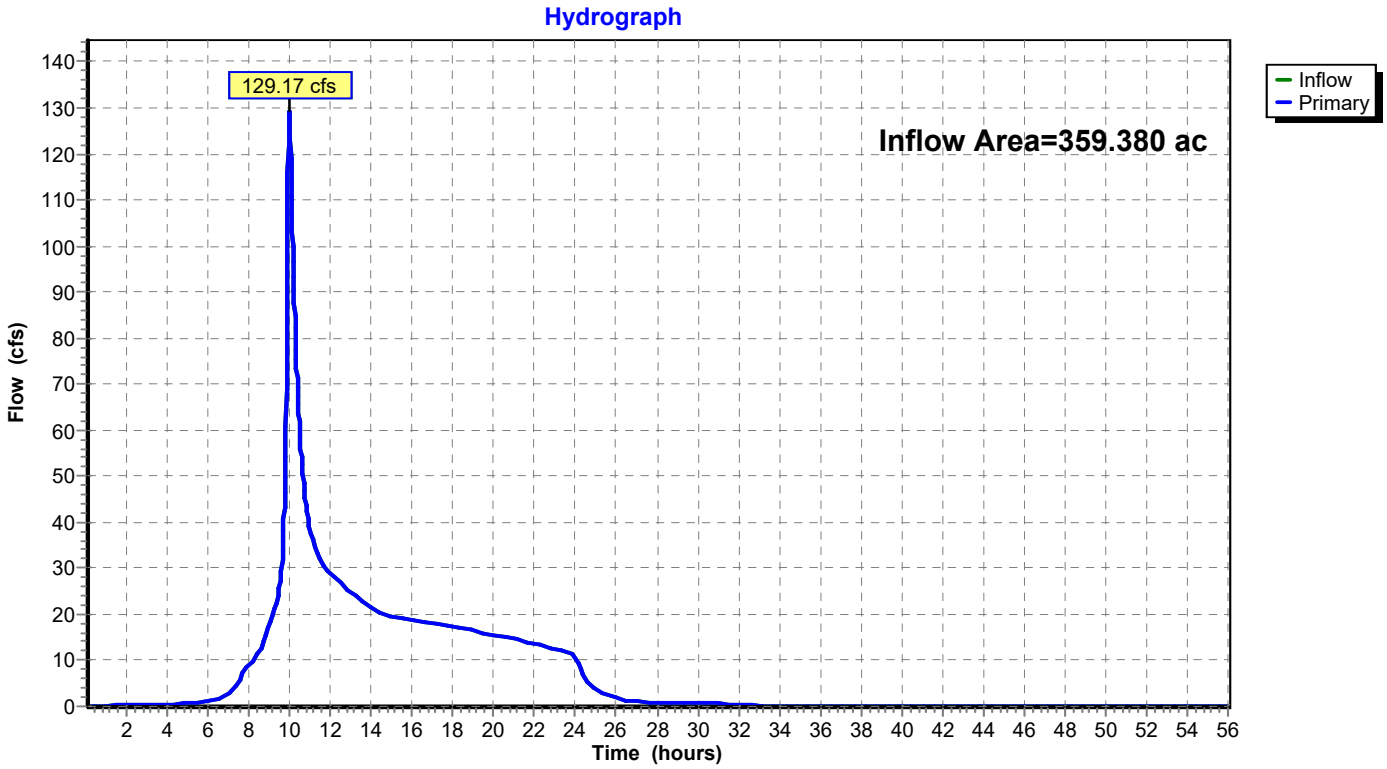


Summary for Link 16L: Airport & Linne Road SD

Inflow Area = 359.380 ac, 2.33% Impervious, Inflow Depth = 1.08" for 100 Year event
Inflow = 129.17 cfs @ 9.98 hrs, Volume= 32.296 af
Primary = 129.17 cfs @ 9.98 hrs, Volume= 32.296 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 16L: Airport & Linne Road SD

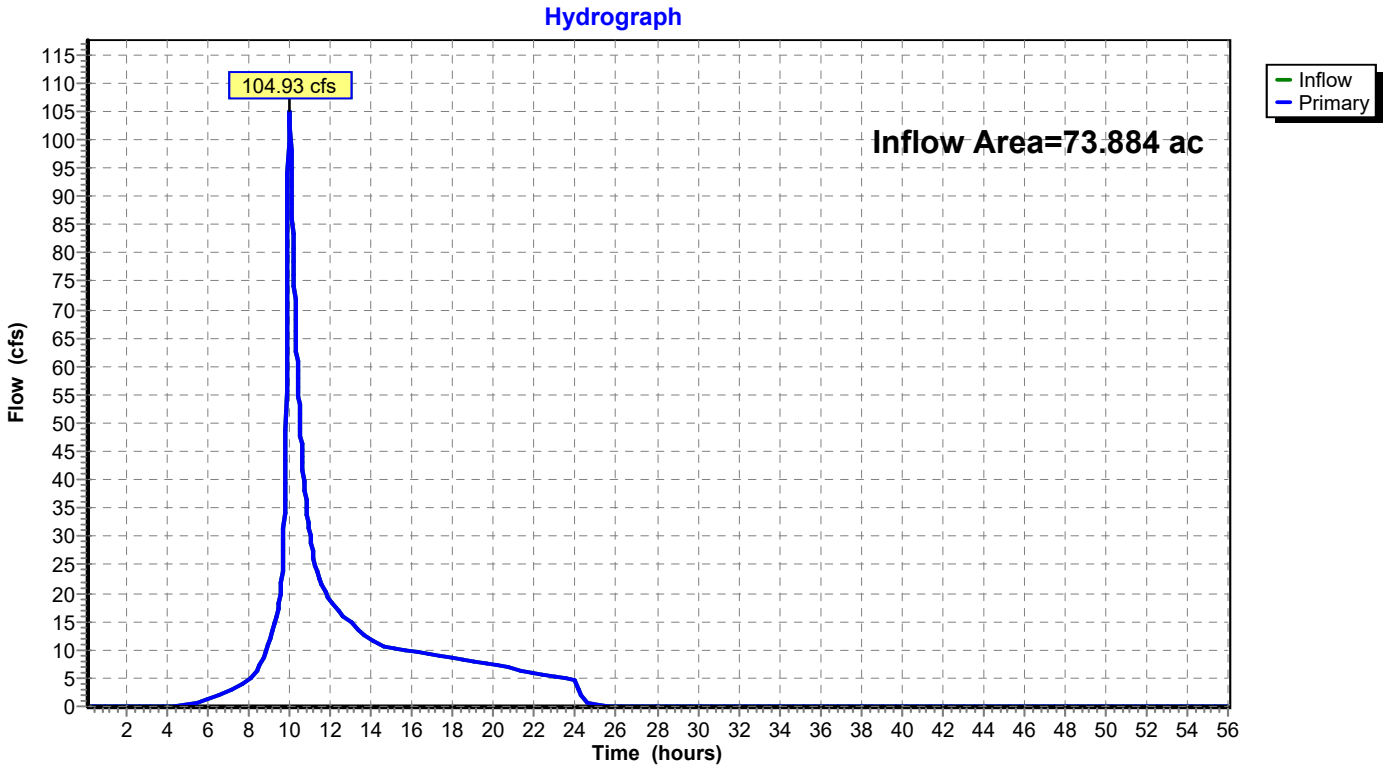


Summary for Link 19L: 14c(0+1)-Ex

Inflow Area = 73.884 ac, 1.37% Impervious, Inflow Depth = 3.15" for 100 Year event
Inflow = 104.93 cfs @ 9.98 hrs, Volume= 19.418 af
Primary = 104.93 cfs @ 9.98 hrs, Volume= 19.418 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 19L: 14c(0+1)-Ex

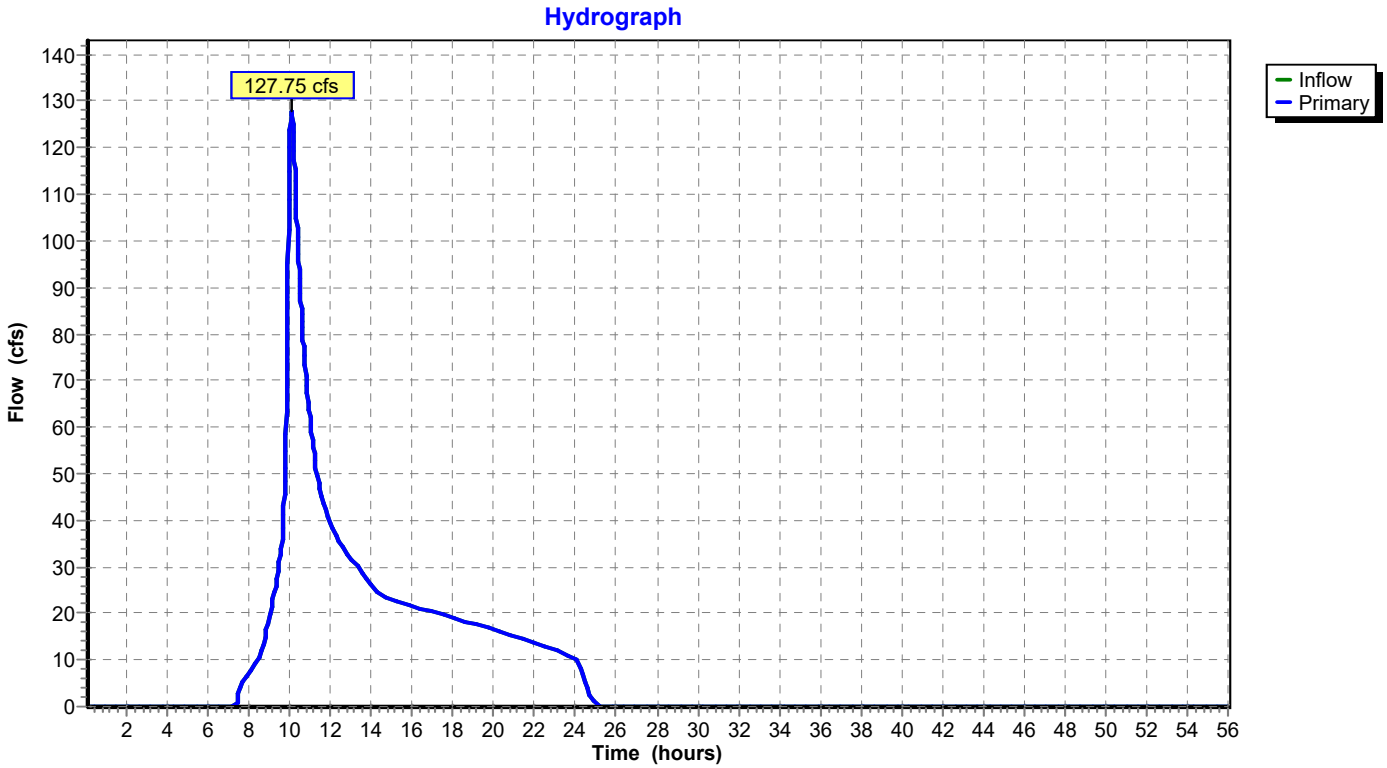


Summary for Link 22L: Linne Rd Overtopping Ex.Flow #2and#3

Inflow	=	127.75 cfs @	10.08 hrs,	Volume=	36.636 af
Primary	=	127.75 cfs @	10.08 hrs,	Volume=	36.636 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 22L: Linne Rd Overtopping Ex.Flow #2and#3

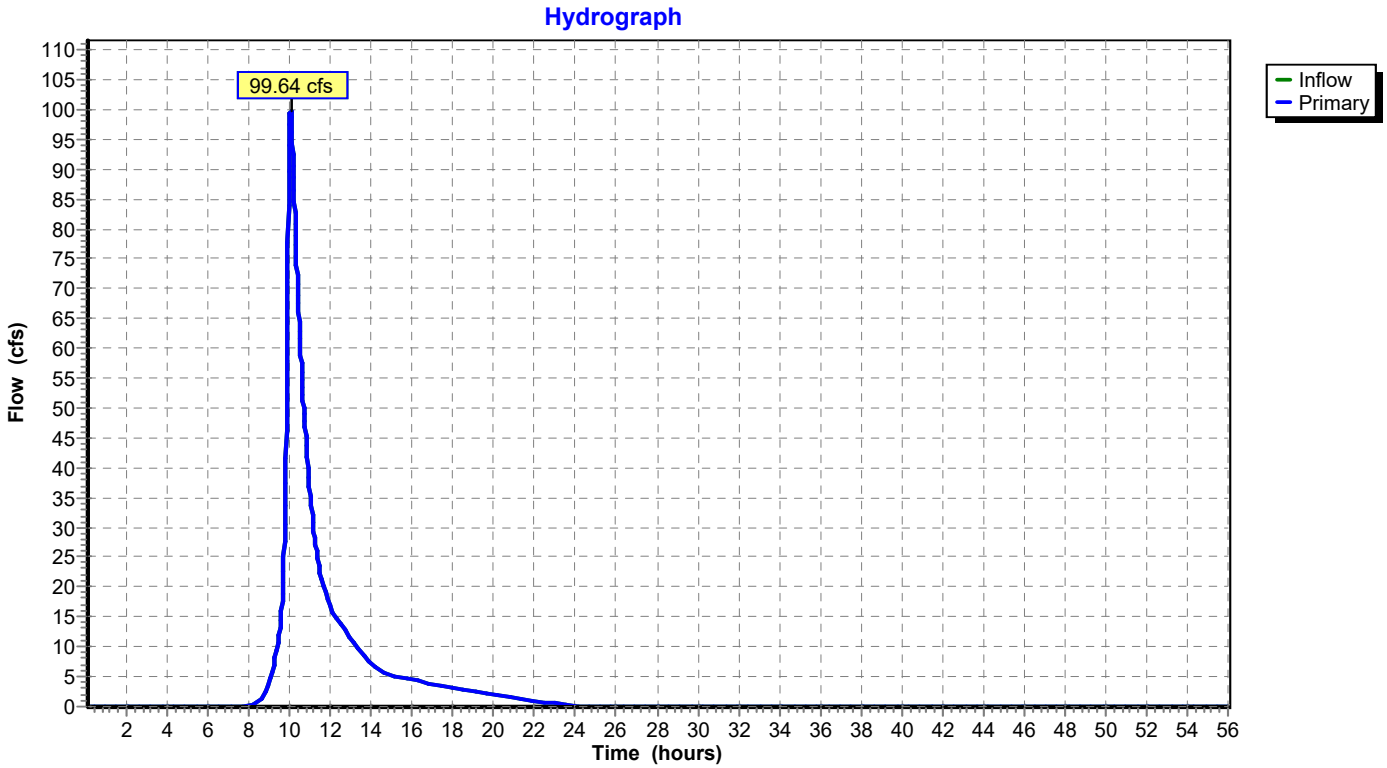


Summary for Link 23L: Linne Rd Overtop #1

Inflow	=	99.64 cfs @	10.04 hrs,	Volume=	13.592 af
Primary	=	99.64 cfs @	10.04 hrs,	Volume=	13.592 af, Atten= 0%, Lag= 0.0 min

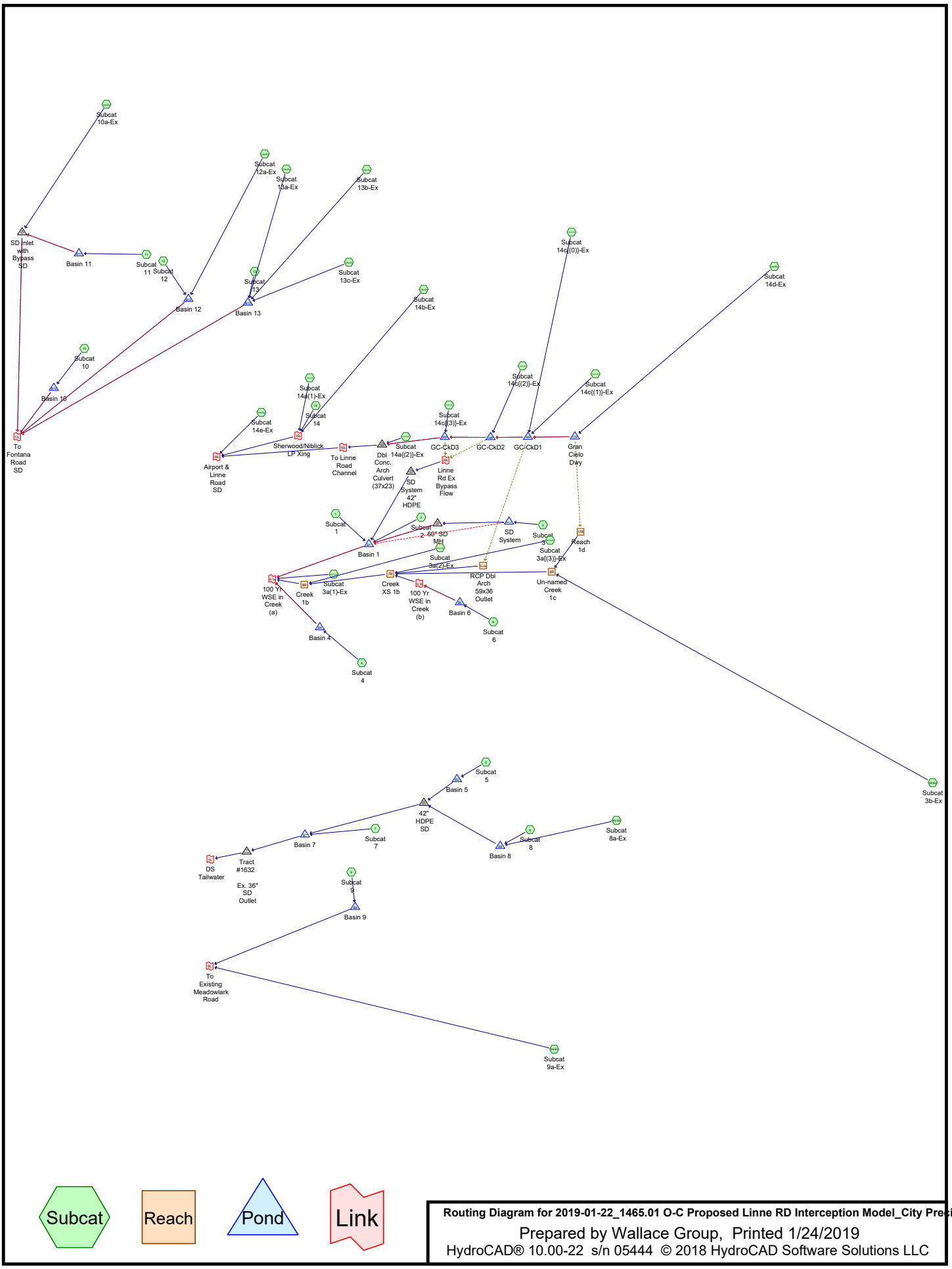
Primary outflow = Inflow, Time Span= 0.10-56.00 hrs, dt= 0.02 hrs

Link 23L: Linne Rd Overtop #1



Appendix I

Proposed Hydrograph Modeling with Detention Basin Sizing



Routing Diagram for 2019-01-22_1465.01 O-C Proposed Linne RD Interception Model_City Precip

Prepared by Wallace Group, Printed 1/24/2019

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
22.244	85	1/8 acre lots, 65% imp, HSG B (10, 14a{(1)}-Ex, 14a{(2)}-Ex)
0.007	90	1/8 acre lots, 65% imp, HSG C (10)
175.180	82	Large SF Lots, 52% imp, HSG B (3, 3a{(1)}-Ex, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14e-Ex)
11.703	88	Large SF Lots, 52% imp, HSG C (3, 6, 10, 11, 12, 13, 13a-Ex, 14d-Ex)
1.386	90	Large SF Lots, 52% imp, HSG D (9)
972.973	58	Meadow, non-grazed, HSG B (3a{(1)}-Ex, 3a{(2)}-Ex, 3a{(3)}-Ex, 3b-Ex, 5, 7, 8a-Ex, 9, 9a-Ex, 10, 10a-Ex, 14e-Ex)
173.327	71	Meadow, non-grazed, HSG C (3a{(2)}-Ex, 3a{(3)}-Ex, 3b-Ex, 10a-Ex, 12, 12a-Ex, 13, 13a-Ex)
1.254	78	Meadow, non-grazed, HSG D (9, 9a-Ex)
13.099	91	Motor Court SF Lots, 80% imp, HSG B (3)
8.398	93	Motor Court SF Lots, 80% imp, HSG C (3, 3a{(2)}-Ex, 3b-Ex)
5.408	77	Natural western desert, HSG B (4, 6, 10, 14e-Ex)
4.532	98	Paved roads w/curbs & sewers, HSG B (9, 10, 14a{(2)}-Ex, 14c{(1)}-Ex, 14d-Ex, 14e-Ex)
2.005	98	Paved roads w/curbs & sewers, HSG C (3, 3b-Ex, 14c{(0)}-Ex, 14c{(1)}-Ex, 14d-Ex)
0.163	98	Paved roads w/curbs & sewers, HSG D (9)
4.336	89	Paved roads w/open ditches, 50% imp, HSG B (14, 14c{(2)}-Ex)
107.131	75	Row crops, SR + CR, Good, HSG B (13c-Ex, 14a{(1)}-Ex, 14b-Ex, 14c{(1)}-Ex, 14c{(2)}-Ex, 14c{(3)}-Ex, 14d-Ex)
252.359	82	Row crops, SR + CR, Good, HSG C (13b-Ex, 13c-Ex, 14b-Ex, 14c{(0)}-Ex, 14c{(1)}-Ex, 14c{(2)}-Ex, 14d-Ex)
35.301	81	Small SF Lots, 58% imp, HSG B (1, 2, 10, 14c{(3)}-Ex)
19.650	92	Urban commercial, 85% imp, HSG B (4, 6, 10, 14)
1,810.455	**68**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1,359.852	HSG B	1, 2, 3, 3a{(1)}-Ex, 3a{(2)}-Ex, 3a{(3)}-Ex, 3b-Ex, 4, 5, 6, 7, 8, 8a-Ex, 9, 9a-Ex, 10, 10a-Ex, 11, 12, 13, 13c-Ex, 14, 14a{(1)}-Ex, 14a{(2)}-Ex, 14b-Ex, 14c{(1)}-Ex, 14c{(2)}-Ex, 14c{(3)}-Ex, 14d-Ex, 14e-Ex
447.800	HSG C	3, 3a{(2)}-Ex, 3a{(3)}-Ex, 3b-Ex, 6, 10, 10a-Ex, 11, 12, 12a-Ex, 13, 13a-Ex, 13b-Ex, 13c-Ex, 14b-Ex, 14c{(0)}-Ex, 14c{(1)}-Ex, 14c{(2)}-Ex, 14d-Ex
2.803	HSG D	9, 9a-Ex
0.000	Other	
1,810.455		**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	22.244	0.007	0.000	0.000	22.251	1/8 acre lots, 65% imp	10, 14a{(1)}-Ex, 14a{(2)}-Ex
0.000	175.180	11.703	1.386	0.000	188.270	Large SF Lots, 52% imp	3, 3a{(1)}-Ex, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 13a-Ex, 14d-Ex, 14e-Ex
0.000	972.973	173.327	1.254	0.000	1,147.553	Meadow, non-grazed	3a{(1)}-Ex, 3a{(2)}-Ex, 3a{(3)}-Ex, 3b-Ex, 5, 7, 8a-Ex, 9, 9a-Ex, 10, 10a-Ex, 12, 12a-Ex, 13, 13a-Ex, 14e-Ex
0.000	13.099	8.398	0.000	0.000	21.497	Motor Court SF Lots, 80% imp	3, 3a{(2)}-Ex, 3b-Ex
0.000	5.408	0.000	0.000	0.000	5.408	Natural western desert	4, 6, 10, 14e-Ex
0.000	4.532	2.005	0.163	0.000	6.699	Paved roads w/curbs & sewers	3, 3b-Ex, 9, 10, 14a{(2)}-Ex, 14c{(0)}-Ex, 14c{(1)}-Ex, 14d-Ex, 14e-Ex
0.000	4.336	0.000	0.000	0.000	4.336	Paved roads w/open ditches, 50% imp	14, 14c{(2)}-Ex
0.000	107.131	252.359	0.000	0.000	359.490	Row crops, SR + CR, Good	13b-Ex, 13c-Ex, 14a{(1)}-Ex, 14b-Ex, 14c{(0)}-Ex, 14c{(1)}-Ex, 14c{(2)}-Ex, 14c{(3)}-Ex, 14d-Ex
0.000	35.301	0.000	0.000	0.000	35.301	Small SF Lots, 58% imp	1, 2, 10, 14c{(3)}-Ex
0.000	19.650	0.000	0.000	0.000	19.650	Urban commercial, 85% imp	4, 6, 10, 14
0.000	**1,359.852**	**447.800**	**2.803**	**0.000**	**1,810.455**	**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	1P	820.00	814.11	990.0	0.0059	0.012	48.0	0.0	0.0
2	2P	838.50	836.50	500.0	0.0040	0.012	36.0	0.0	0.0
3	15P	839.75	833.60	1,370.0	0.0045	0.012	42.0	0.0	0.0
4	16P	843.50	841.40	860.0	0.0024	0.011	36.3	22.5	0.0
5	17P	852.84	851.76	77.0	0.0140	0.025	30.0	0.0	0.0
6	18P	847.69	847.67	26.0	0.0008	0.010	6.0	0.0	0.0
7	18P	843.15	840.75	960.0	0.0025	0.013	58.5	36.0	0.0
8	19P	846.12	845.98	26.0	0.0054	0.010	6.0	0.0	0.0
9	20P	844.22	843.98	26.0	0.0092	0.021	18.0	0.0	0.0
10	B1	833.12	831.20	385.5	0.0050	0.012	36.0	0.0	0.0
11	B10	816.00	815.10	45.0	0.0200	0.012	30.0	0.0	0.0
12	B11	831.67	820.50	165.0	0.0677	0.012	24.0	0.0	0.0
13	B12	836.67	832.50	130.0	0.0321	0.012	30.0	0.0	0.0
14	B13	834.25	832.50	175.0	0.0100	0.012	48.0	0.0	0.0
15	B4	835.67	834.20	210.0	0.0070	0.012	30.0	0.0	0.0
16	B5	844.67	844.17	100.0	0.0050	0.012	30.0	0.0	0.0
17	B6	843.65	842.90	150.0	0.0050	0.012	24.0	0.0	0.0
18	B7	836.67	836.00	63.0	0.0106	0.012	36.0	0.0	0.0
19	B8	853.00	844.17	1,200.0	0.0074	0.012	30.0	0.0	0.0
20	B9	848.00	847.00	110.0	0.0091	0.012	18.0	0.0	0.0
21	Ex SD	836.00	834.00	150.0	0.0133	0.012	36.0	0.0	0.0
22	MC Q	841.50	838.50	585.0	0.0051	0.012	36.0	0.0	0.0
23	SD	844.17	839.00	840.0	0.0062	0.012	42.0	0.0	0.0

Time span=0.01-60.00 hrs, dt=0.01 hrs, 6000 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Subcat 1 Runoff Area=11.244 ac 58.00% Impervious Runoff Depth=0.69"
Tc=10.0 min CN=58/98 Runoff=4.66 cfs 0.642 af

Subcatchment2: Subcat 2 Runoff Area=14.644 ac 58.00% Impervious Runoff Depth=0.69"
Tc=15.8 min CN=58/98 Runoff=5.04 cfs 0.836 af

Subcatchment3: Subcat 3 Runoff Area=21.500 ac 80.00% Impervious Runoff Depth=0.95"
Tc=16.9 min CN=67/98 Runoff=9.89 cfs 1.705 af

Subcatchment3a{(1)}-Ex: Subcat 3a(1)-Ex Runoff Area=4.164 ac 0.00% Impervious Runoff Depth=0.00"
Tc=10.0 min CN=58/98 Runoff=0.00 cfs 0.000 af

Subcatchment3a{(2)}-Ex: Subcat 3a(2)-Ex Runoff Area=7.900 ac 0.00% Impervious Runoff Depth=0.00"
Tc=10.0 min CN=61/98 Runoff=0.01 cfs 0.001 af

Subcatchment3a{(3)}-Ex: Subcat 3a{(3)}-Ex Runoff Area=6.004 ac 0.00% Impervious Runoff Depth=0.05"
Tc=10.0 min CN=69/0 Runoff=0.03 cfs 0.025 af

Subcatchment3b-Ex: Subcat 3b-Ex Runoff Area=757.079 ac 0.00% Impervious Runoff Depth=0.00"
Tc=45.5 min CN=60/98 Runoff=0.23 cfs 0.042 af

Subcatchment4: Subcat 4 Runoff Area=38.712 ac 55.38% Impervious Runoff Depth=0.67"
Tc=14.2 min CN=66/98 Runoff=13.34 cfs 2.147 af

Subcatchment5: Subcat 5 Runoff Area=32.696 ac 30.34% Impervious Runoff Depth=0.36"
Tc=21.2 min CN=61/98 Runoff=5.11 cfs 0.981 af

Subcatchment6: Subcat 6 Runoff Area=34.039 ac 52.56% Impervious Runoff Depth=0.64"
Tc=20.1 min CN=68/98 Runoff=9.46 cfs 1.817 af

Subcatchment7: Subcat 7 Runoff Area=31.369 ac 33.28% Impervious Runoff Depth=0.39"
Tc=23.2 min CN=61/98 Runoff=5.13 cfs 1.032 af

Subcatchment8: Subcat 8 Runoff Area=30.487 ac 52.00% Impervious Runoff Depth=0.62"
Tc=28.8 min CN=65/98 Runoff=6.93 cfs 1.584 af

Subcatchment8a-Ex: Subcat 8a-Ex Runoff Area=14.202 ac 0.00% Impervious Runoff Depth=0.00"
Tc=16.5 min CN=58/0 Runoff=0.00 cfs 0.000 af

Subcatchment9: Subcat 9 Runoff Area=11.446 ac 17.36% Impervious Runoff Depth=0.21"
Tc=22.3 min CN=62/98 Runoff=1.00 cfs 0.199 af

Subcatchment9a-Ex: Subcat 9a-Ex Runoff Area=212.022 ac 0.00% Impervious Runoff Depth=0.00"
Tc=51.3 min CN=58/0 Runoff=0.00 cfs 0.000 af

Subcatchment10: Subcat 10 Runoff Area=30.685 ac 61.94% Impervious Runoff Depth=0.73"
Tc=22.6 min CN=61/98 Runoff=9.47 cfs 1.874 af

Subcatchment10a-Ex: Subcat 10a-Ex Runoff Area=94.105 ac 0.00% Impervious Runoff Depth=0.03"
Tc=11.0 min CN=67/0 Runoff=0.33 cfs 0.253 af

Subcatchment11: Subcat 11 Runoff Area=14.461 ac 52.00% Impervious Runoff Depth=0.63"
Tc=11.1 min CN=66/98 Runoff=5.17 cfs 0.755 af

Subcatchment12: Subcat 12 Runoff Area=17.572 ac 50.65% Impervious Runoff Depth=0.61"
Tc=10.0 min CN=65/98 Runoff=6.36 cfs 0.890 af

Subcatchment12a-Ex: Subcat 12a-Ex Runoff Area=2.629 ac 0.00% Impervious Runoff Depth=0.07"
Tc=10.0 min CN=71/0 Runoff=0.02 cfs 0.016 af

Subcatchment13: Subcat 13 Runoff Area=27.742 ac 51.11% Impervious Runoff Depth=0.62"
Tc=10.0 min CN=68/98 Runoff=10.14 cfs 1.442 af

Subcatchment13a-Ex: Subcat 13a-Ex Runoff Area=3.505 ac 0.00% Impervious Runoff Depth=0.07"
Tc=10.0 min CN=71/98 Runoff=0.02 cfs 0.021 af

Subcatchment13b-Ex: Subcat 13b-Ex Runoff Area=18.461 ac 0.00% Impervious Runoff Depth=0.29"
Tc=10.0 min CN=82/0 Runoff=1.93 cfs 0.450 af

Subcatchment13c-Ex: Subcat 13c-Ex Runoff Area=14.407 ac 0.00% Impervious Runoff Depth=0.24"
Tc=10.0 min CN=80/0 Runoff=0.92 cfs 0.286 af

Subcatchment14: Subcat 14 Runoff Area=8.669 ac 67.94% Impervious Runoff Depth=0.85"
Tc=10.0 min CN=75/98 Runoff=4.21 cfs 0.611 af

Subcatchment14a{(1)}-Ex: Subcat 14a(1)-Ex Runoff Area=13.081 ac 40.33% Impervious Runoff Depth=0.51"
Tc=10.0 min CN=70/98 Runoff=3.77 cfs 0.559 af

Subcatchment14a{(2)}-Ex: Subcat 14a{(2)}-Ex Runoff Area=2.438 ac 75.43% Impervious Runoff Depth=0.89"
Tc=10.0 min CN=61/98 Runoff=1.31 cfs 0.181 af

Subcatchment14b-Ex: Subcat 14b-Ex Runoff Area=50.209 ac 0.00% Impervious Runoff Depth=0.21"
Tc=13.4 min CN=79/0 Runoff=1.97 cfs 0.895 af

Subcatchment14c{(0)}-Ex: Subcat 14c{(0)}-Ex Runoff Area=43.677 ac 1.21% Impervious Runoff Depth=0.30"
Tc=24.5 min CN=82/98 Runoff=2.82 cfs 1.104 af

Subcatchment14c{(1)}-Ex: Subcat 14c{(1)}-Ex Runoff Area=30.208 ac 1.61% Impervious Runoff Depth=0.28"
Tc=13.6 min CN=81/98 Runoff=2.38 cfs 0.703 af

Subcatchment14c{(2)}-Ex: Subcat 14c{(2)}-Ex Runoff Area=19.689 ac 0.28% Impervious Runoff Depth=0.17"
Tc=13.2 min CN=77/98 Runoff=0.41 cfs 0.284 af

Subcatchment14c{(3)}-Ex: Subcat 14c{(3)}-Ex Runoff Area=13.782 ac 0.00% Impervious Runoff Depth=0.13"
Tc=12.6 min CN=75/98 Runoff=0.16 cfs 0.152 af

Subcatchment14d-Ex: Subcat 14d-Ex Runoff Area=166.738 ac 0.91% Impervious Runoff Depth=0.25"
Tc=19.4 min CN=80/98 Runoff=7.71 cfs 3.430 af

Subcatchment14e-Ex: Subcat 14e-Ex Runoff Area=10.890 ac 6.07% Impervious Runoff Depth=0.07"
Tc=10.0 min CN=58/98 Runoff=0.47 cfs 0.065 af

Reach 6R: Un-named Creek 1c Avg. Flow Depth=0.01' Max Vel=3.44 fps Inflow=0.23 cfs 0.042 af
n=0.030 L=830.0' S=0.0032 '/' Capacity=3,940.38 cfs Outflow=0.23 cfs 0.042 af

Reach 7R: Creek XS 1b Avg. Flow Depth=0.59' Max Vel=1.65 fps Inflow=12.45 cfs 5.976 af
n=0.030 L=983.0' S=0.0059 '/' Capacity=1,505.35 cfs Outflow=11.11 cfs 5.976 af

Reach 8R: Creek 1b Avg. Flow Depth=0.45' Max Vel=3.91 fps Inflow=11.11 cfs 5.977 af
n=0.030 L=483.0' S=0.0041 '/' Capacity=4,478.97 cfs Outflow=11.08 cfs 5.977 af

Reach 17R: Reach 1d Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.027 L=841.0' S=0.0110 '/' Capacity=1,276.84 cfs Outflow=0.00 cfs 0.000 af

Reach Ex Chl: RCP Dbl Arch 59x36 Outlet Avg. Flow Depth=0.38' Max Vel=2.12 fps Inflow=12.48 cfs 5.202 af
n=0.025 L=150.0' S=0.0116 '/' Capacity=3,071.94 cfs Outflow=12.45 cfs 5.202 af

Pond 1P: SD Inlet with Bypass SD Peak Elev=824.53' Inflow=0.33 cfs 0.253 af
Primary=0.33 cfs 0.253 af Secondary=0.00 cfs 0.000 af Outflow=0.33 cfs 0.253 af

Pond 2P: 60" SD MH Peak Elev=839.33' Inflow=4.12 cfs 0.523 af
Primary=4.12 cfs 0.523 af Secondary=0.00 cfs 0.000 af Outflow=4.12 cfs 0.523 af

Pond 15P: SD System 42" HDPE Peak Elev=844.17' Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 16P: Dbl Conc. Arch Culvert (37x23) Peak Elev=843.78' Inflow=1.31 cfs 0.604 af
36.3" x 22.5", R=18.8"/51.0" Pipe Arch Culvert x 2.00 n=0.011 L=860.0' S=0.0024 '/' Outflow=1.31 cfs 0.604 af

Pond 17P: Gran Cielo Dwy Peak Elev=853.35' Storage=1,021 cf Inflow=7.71 cfs 3.430 af
Primary=7.55 cfs 3.430 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=7.55 cfs 3.430 af

Pond 18P: GC-CkD1 Peak Elev=847.34' Storage=2,050 cf Inflow=12.48 cfs 5.237 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Tertiary=12.48 cfs 5.202 af Outflow=12.48 cfs 5.202 af

Pond 19P: GC-CkD2 Peak Elev=846.55' Storage=728 cf Inflow=0.41 cfs 0.284 af
Primary=0.32 cfs 0.282 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.32 cfs 0.282 af

Pond 20P: GC-CkD3 Peak Elev=844.59' Storage=1,962 cf Inflow=0.48 cfs 0.434 af
Primary=0.45 cfs 0.423 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.45 cfs 0.423 af

Pond B1: Basin 1 Peak Elev=834.16' Storage=1.559 af Inflow=16.44 cfs 2.556 af
Discarded=0.91 cfs 2.283 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.91 cfs 2.283 af

Pond B10: Basin 10 Peak Elev=815.90' Storage=50,223 cf Inflow=9.47 cfs 1.874 af
Discarded=0.67 cfs 1.652 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.67 cfs 1.652 af

Pond B11: Basin 11 Peak Elev=830.96' Storage=22,949 cf Inflow=5.17 cfs 0.755 af
Discarded=0.17 cfs 0.564 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.17 cfs 0.564 af

Pond B12: Basin 12 Peak Elev=835.66' Storage=23,909 cf Inflow=6.36 cfs 0.906 af
Discarded=0.31 cfs 0.743 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.31 cfs 0.743 af

Pond B13: Basin 13 Peak Elev=839.94' Storage=1.188 af Inflow=12.88 cfs 2.200 af
Discarded=0.31 cfs 1.142 af Primary=0.91 cfs 0.674 af Secondary=0.00 cfs 0.000 af Outflow=1.22 cfs 1.816 af

Pond B4: Basin 4 Peak Elev=836.28' Storage=48,879 cf Inflow=13.34 cfs 2.147 af
Discarded=0.40 cfs 1.228 af Primary=0.88 cfs 0.709 af Secondary=0.00 cfs 0.000 af Outflow=1.28 cfs 1.936 af

Pond B5: Basin 5 Peak Elev=845.12' Storage=18,337 cf Inflow=5.11 cfs 0.981 af
Discarded=0.31 cfs 0.788 af Primary=0.22 cfs 0.193 af Secondary=0.00 cfs 0.000 af Outflow=0.53 cfs 0.981 af

Pond B6: Basin 6 Peak Elev=848.49' Storage=0.958 af Inflow=9.46 cfs 1.817 af
Discarded=0.26 cfs 0.849 af Primary=0.75 cfs 0.707 af Secondary=0.00 cfs 0.000 af Outflow=1.01 cfs 1.556 af

Pond B7: Basin 7 Peak Elev=839.85' Storage=24,357 cf Inflow=5.13 cfs 1.670 af
Discarded=0.84 cfs 1.670 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.84 cfs 1.670 af

Pond B8: Basin 8 Peak Elev=854.68' Storage=32,697 cf Inflow=6.93 cfs 1.584 af
Discarded=0.38 cfs 1.139 af Primary=0.32 cfs 0.445 af Secondary=0.00 cfs 0.000 af Outflow=0.70 cfs 1.584 af

Pond B9: Basin 9 Peak Elev=848.33' Storage=2,059 cf Inflow=1.00 cfs 0.199 af
Outflow=0.51 cfs 0.198 af

Pond Ex SD: Tract #1632 **Ex. 36" SD Outlet** Peak Elev=836.00' Inflow=0.00 cfs 0.000 af
36.0" Round Culvert n=0.012 L=150.0' S=0.0133 '/' Outflow=0.00 cfs 0.000 af

Pond MC Q: SD System Peak Elev=845.68' Storage=0.493 af Inflow=9.89 cfs 1.705 af
Discarded=0.10 cfs 0.348 af Primary=4.12 cfs 0.523 af Secondary=4.36 cfs 0.554 af Outflow=8.58 cfs 1.426 af

Pond SD: 42" HDPE SD Peak Elev=844.44' Inflow=0.54 cfs 0.638 af
42.0" Round Culvert n=0.012 L=840.0' S=0.0062 '/' Outflow=0.54 cfs 0.638 af

Link 1L: DS Tailwater below 77.30 cfs Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Link 6L: To Existing Meadowlark Road Inflow=0.51 cfs 0.198 af
Primary=0.51 cfs 0.198 af

Link 10L: To Linne Road Channel Inflow=1.31 cfs 0.604 af
Primary=1.31 cfs 0.604 af

Link 11L: To Fontana Road SD Inflow=1.17 cfs 0.927 af
Primary=1.17 cfs 0.927 af

Link 15L: Sherwood/NiblickLP Xing Inflow=9.77 cfs 2.064 af
Primary=9.77 cfs 2.064 af

Link 16L: Airport & Linne Road SD Inflow=11.55 cfs 2.734 af
Primary=11.55 cfs 2.734 af

Link 22L: Linne Rd Ex Bypass Flow Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link Ck Qa: 100 Yr WSE in Creek (a) Inflow=11.15 cfs 6.686 af
Primary=11.15 cfs 6.686 af

Link Ck Qb: 100 Yr WSE in Creek (b) Inflow=0.75 cfs 0.707 af
Primary=0.75 cfs 0.707 af

Total Runoff Area = 1,810.455 ac Runoff Volume = 24.982 af Average Runoff Depth = 0.17"
90.30% Pervious = 1,634.850 ac 9.70% Impervious = 175.605 ac

Time span=0.01-60.00 hrs, dt=0.01 hrs, 6000 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Subcat 1 Runoff Area=11.244 ac 58.00% Impervious Runoff Depth=1.26"
Tc=10.0 min CN=58/98 Runoff=8.11 cfs 1.180 af

Subcatchment2: Subcat 2 Runoff Area=14.644 ac 58.00% Impervious Runoff Depth=1.26"
Tc=15.8 min CN=58/98 Runoff=8.78 cfs 1.537 af

Subcatchment3: Subcat 3 Runoff Area=21.500 ac 80.00% Impervious Runoff Depth=1.74"
Tc=16.9 min CN=67/98 Runoff=17.34 cfs 3.116 af

Subcatchment3a{(1)}-Ex: Subcat 3a(1)-Ex Runoff Area=4.164 ac 0.00% Impervious Runoff Depth=0.10"
Tc=10.0 min CN=58/98 Runoff=0.04 cfs 0.033 af

Subcatchment3a{(2)}-Ex: Subcat 3a(2)-Ex Runoff Area=7.900 ac 0.00% Impervious Runoff Depth=0.15"
Tc=10.0 min CN=61/98 Runoff=0.10 cfs 0.098 af

Subcatchment3a{(3)}-Ex: Subcat 3a{(3)}-Ex Runoff Area=6.004 ac 0.00% Impervious Runoff Depth=0.35"
Tc=10.0 min CN=69/0 Runoff=0.43 cfs 0.173 af

Subcatchment3b-Ex: Subcat 3b-Ex Runoff Area=757.079 ac 0.00% Impervious Runoff Depth=0.13"
Tc=45.5 min CN=60/98 Runoff=8.34 cfs 8.178 af

Subcatchment4: Subcat 4 Runoff Area=38.712 ac 55.38% Impervious Runoff Depth=1.28"
Tc=14.2 min CN=66/98 Runoff=23.47 cfs 4.132 af

Subcatchment5: Subcat 5 Runoff Area=32.696 ac 30.34% Impervious Runoff Depth=0.74"
Tc=21.2 min CN=61/98 Runoff=8.91 cfs 2.019 af

Subcatchment6: Subcat 6 Runoff Area=34.039 ac 52.56% Impervious Runoff Depth=1.25"
Tc=20.1 min CN=68/98 Runoff=16.99 cfs 3.559 af

Subcatchment7: Subcat 7 Runoff Area=31.369 ac 33.28% Impervious Runoff Depth=0.80"
Tc=23.2 min CN=61/98 Runoff=8.96 cfs 2.087 af

Subcatchment8: Subcat 8 Runoff Area=30.487 ac 52.00% Impervious Runoff Depth=1.21"
Tc=28.8 min CN=65/98 Runoff=12.19 cfs 3.065 af

Subcatchment8a-Ex: Subcat 8a-Ex Runoff Area=14.202 ac 0.00% Impervious Runoff Depth=0.10"
Tc=16.5 min CN=58/0 Runoff=0.13 cfs 0.113 af

Subcatchment9: Subcat 9 Runoff Area=11.446 ac 17.36% Impervious Runoff Depth=0.50"
Tc=22.3 min CN=62/98 Runoff=1.74 cfs 0.481 af

Subcatchment9a-Ex: Subcat 9a-Ex Runoff Area=212.022 ac 0.00% Impervious Runoff Depth=0.10"
Tc=51.3 min CN=58/0 Runoff=1.86 cfs 1.691 af

Subcatchment10: Subcat 10 Runoff Area=30.685 ac 61.94% Impervious Runoff Depth=1.36"
Tc=22.6 min CN=61/98 Runoff=16.54 cfs 3.474 af

Subcatchment10a-Ex: Subcat 10a-Ex Runoff Area=94.105 ac 0.00% Impervious Runoff Depth=0.29"
Tc=11.0 min CN=67/0 Runoff=3.41 cfs 2.262 af

Subcatchment11: Subcat 11 Runoff Area=14.461 ac 52.00% Impervious Runoff Depth=1.22"
Tc=11.1 min CN=66/98 Runoff=9.10 cfs 1.469 af

Subcatchment12: Subcat 12 Runoff Area=17.572 ac 50.65% Impervious Runoff Depth=1.18"
Tc=10.0 min CN=65/98 Runoff=11.12 cfs 1.730 af

Subcatchment12a-Ex: Subcat 12a-Ex Runoff Area=2.629 ac 0.00% Impervious Runoff Depth=0.41"
Tc=10.0 min CN=71/0 Runoff=0.30 cfs 0.090 af

Subcatchment13: Subcat 13 Runoff Area=27.742 ac 51.11% Impervious Runoff Depth=1.23"
Tc=10.0 min CN=68/98 Runoff=18.23 cfs 2.841 af

Subcatchment13a-Ex: Subcat 13a-Ex Runoff Area=3.505 ac 0.00% Impervious Runoff Depth=0.41"
Tc=10.0 min CN=71/98 Runoff=0.41 cfs 0.119 af

Subcatchment13b-Ex: Subcat 13b-Ex Runoff Area=18.461 ac 0.00% Impervious Runoff Depth=0.88"
Tc=10.0 min CN=82/0 Runoff=8.62 cfs 1.346 af

Subcatchment13c-Ex: Subcat 13c-Ex Runoff Area=14.407 ac 0.00% Impervious Runoff Depth=0.77"
Tc=10.0 min CN=80/0 Runoff=5.63 cfs 0.929 af

Subcatchment14: Subcat 14 Runoff Area=8.669 ac 67.94% Impervious Runoff Depth=1.61"
Tc=10.0 min CN=75/98 Runoff=7.93 cfs 1.160 af

Subcatchment14a{(1)}-Ex: Subcat 14a(1)-Ex Runoff Area=13.081 ac 40.33% Impervious Runoff Depth=1.07"
Tc=10.0 min CN=70/98 Runoff=7.22 cfs 1.169 af

Subcatchment14a{(2)}-Ex: Subcat 14a{(2)}-Ex Runoff Area=2.438 ac 75.43% Impervious Runoff Depth=1.62"
Tc=10.0 min CN=61/98 Runoff=2.29 cfs 0.329 af

Subcatchment14b-Ex: Subcat 14b-Ex Runoff Area=50.209 ac 0.00% Impervious Runoff Depth=0.73"
Tc=13.4 min CN=79/0 Runoff=15.53 cfs 3.036 af

Subcatchment14c{(0)}-Ex: Subcat 14c{(0)}-Ex Runoff Area=43.677 ac 1.21% Impervious Runoff Depth=0.89"
Tc=24.5 min CN=82/98 Runoff=13.08 cfs 3.239 af

Subcatchment14c{(1)}-Ex: Subcat 14c{(1)}-Ex Runoff Area=30.208 ac 1.61% Impervious Runoff Depth=0.84"
Tc=13.6 min CN=81/98 Runoff=11.59 cfs 2.124 af

Subcatchment14c{(2)}-Ex: Subcat 14c{(2)}-Ex Runoff Area=19.689 ac 0.28% Impervious Runoff Depth=0.64"
Tc=13.2 min CN=77/98 Runoff=4.98 cfs 1.050 af

Subcatchment14c{(3)}-Ex: Subcat 14c{(3)}-Ex Runoff Area=13.782 ac 0.00% Impervious Runoff Depth=0.55"
Tc=12.6 min CN=75/98 Runoff=2.75 cfs 0.636 af

Subcatchment14d-Ex: Subcat 14d-Ex Runoff Area=166.738 ac 0.91% Impervious Runoff Depth=0.79"
Tc=19.4 min CN=80/98 Runoff=47.53 cfs 10.915 af

Subcatchment14e-Ex: Subcat 14e-Ex Runoff Area=10.890 ac 6.07% Impervious Runoff Depth=0.22"
Tc=10.0 min CN=58/98 Runoff=0.82 cfs 0.197 af

Reach 6R: Un-named Creek 1c Avg. Flow Depth=0.38' Max Vel=3.44 fps Inflow=8.34 cfs 8.178 af
n=0.030 L=830.0' S=0.0032 '/' Capacity=3,940.38 cfs Outflow=8.34 cfs 8.178 af

Reach 7R: Creek XS 1b Avg. Flow Depth=1.13' Max Vel=2.29 fps Inflow=71.24 cfs 26.924 af
n=0.030 L=983.0' S=0.0059 '/' Capacity=1,505.35 cfs Outflow=62.84 cfs 26.924 af

Reach 8R: Creek 1b Avg. Flow Depth=2.52' Max Vel=3.91 fps Inflow=62.84 cfs 27.021 af
n=0.030 L=483.0' S=0.0041 '/' Capacity=4,478.97 cfs Outflow=62.30 cfs 27.021 af

Reach 17R: Reach 1d Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.027 L=841.0' S=0.0110 '/' Capacity=1,276.84 cfs Outflow=0.00 cfs 0.000 af

Reach Ex Chl: RCP Dbl Arch 59x36 Outlet Avg. Flow Depth=0.73' Max Vel=3.26 fps Inflow=70.21 cfs 16.239 af
n=0.025 L=150.0' S=0.0116 '/' Capacity=3,071.94 cfs Outflow=70.04 cfs 16.239 af

Pond 1P: SD Inlet with Bypass SD Peak Elev=824.64' Inflow=3.41 cfs 2.735 af
Primary=3.41 cfs 2.735 af Secondary=0.00 cfs 0.000 af Outflow=3.41 cfs 2.735 af

Pond 2P: 60" SD MH Peak Elev=839.69' Inflow=8.31 cfs 1.203 af
Primary=8.31 cfs 1.203 af Secondary=0.00 cfs 0.000 af Outflow=8.31 cfs 1.203 af

Pond 15P: SD System 42" HDPE Peak Elev=844.17' Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 16P: Dbl Conc. Arch Culvert (37x23) Peak Elev=843.88' Inflow=2.62 cfs 2.008 af
36.3" x 22.5", R=18.8"/51.0" Pipe Arch Culvert x 2.00 n=0.011 L=860.0' S=0.0024 '/' Outflow=2.62 cfs 2.008 af

Pond 17P: Gran Cielo Dwy Peak Elev=854.16' Storage=4,945 cf Inflow=47.53 cfs 10.915 af
Primary=46.40 cfs 10.915 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=46.40 cfs 10.915 af

Pond 18P: GC-CkD1 Peak Elev=848.08' Storage=3,533 cf Inflow=70.49 cfs 16.278 af
Primary=0.19 cfs 0.004 af Secondary=0.00 cfs 0.000 af Tertiary=70.21 cfs 16.239 af Outflow=70.40 cfs 16.244 af

Pond 19P: GC-CkD2 Peak Elev=848.01' Storage=8,327 cf Inflow=5.16 cfs 1.055 af
Primary=0.95 cfs 0.982 af Secondary=0.54 cfs 0.072 af Tertiary=0.00 cfs 0.000 af Outflow=1.49 cfs 1.053 af

Pond 20P: GC-CkD3 Peak Elev=845.08' Storage=5,376 cf Inflow=3.41 cfs 1.689 af
Primary=2.17 cfs 1.674 af Secondary=0.04 cfs 0.005 af Tertiary=0.00 cfs 0.000 af Outflow=2.21 cfs 1.678 af

Pond B1: Basin 1 Peak Elev=834.95' Storage=2.513 af Inflow=33.80 cfs 5.194 af
Discarded=0.96 cfs 2.782 af Primary=2.98 cfs 2.060 af Secondary=0.00 cfs 0.000 af Outflow=3.94 cfs 4.842 af

Pond B10: Basin 10 Peak Elev=816.90' Storage=91,317 cf Inflow=16.54 cfs 3.474 af
Discarded=0.77 cfs 2.542 af Primary=0.70 cfs 0.513 af Secondary=0.00 cfs 0.000 af Outflow=1.47 cfs 3.055 af

Pond B11: Basin 11 Peak Elev=832.03' Storage=33,359 cf Inflow=9.10 cfs 1.469 af
Discarded=0.21 cfs 0.739 af Primary=0.79 cfs 0.473 af Secondary=0.00 cfs 0.000 af Outflow=1.00 cfs 1.212 af

Pond B12: Basin 12 Peak Elev=836.87' Storage=49,369 cf Inflow=11.41 cfs 1.819 af
Discarded=0.43 cfs 1.374 af Primary=0.29 cfs 0.184 af Secondary=0.00 cfs 0.000 af Outflow=0.72 cfs 1.558 af

Pond B13: Basin 13 Peak Elev=841.67' Storage=1.893 af Inflow=32.84 cfs 5.235 af
Discarded=0.38 cfs 1.221 af Primary=4.63 cfs 3.620 af Secondary=0.00 cfs 0.000 af Outflow=5.01 cfs 4.841 af

Pond B4: Basin 4 Peak Elev=837.92' Storage=85,087 cf Inflow=23.47 cfs 4.132 af
Discarded=0.48 cfs 1.470 af Primary=2.53 cfs 2.426 af Secondary=0.00 cfs 0.000 af Outflow=3.01 cfs 3.896 af

Pond B5: Basin 5 Peak Elev=846.09' Storage=35,848 cf Inflow=8.91 cfs 2.019 af
Discarded=0.34 cfs 1.073 af Primary=0.91 cfs 0.946 af Secondary=0.00 cfs 0.000 af Outflow=1.25 cfs 2.019 af

Pond B6: Basin 6 Peak Elev=849.79' Storage=1.388 af Inflow=16.99 cfs 3.559 af
Discarded=0.30 cfs 0.944 af Primary=4.94 cfs 2.333 af Secondary=0.00 cfs 0.000 af Outflow=5.24 cfs 3.277 af

Pond B7: Basin 7 Peak Elev=841.02' Storage=89,685 cf Inflow=9.38 cfs 4.548 af
Discarded=1.05 cfs 3.899 af Primary=0.96 cfs 0.621 af Secondary=0.00 cfs 0.000 af Outflow=2.01 cfs 4.520 af

Pond B8: Basin 8 Peak Elev=856.21' Storage=68,173 cf Inflow=12.19 cfs 3.178 af
Discarded=0.46 cfs 1.664 af Primary=1.05 cfs 1.514 af Secondary=0.00 cfs 0.000 af Outflow=1.51 cfs 3.178 af

Pond B9: Basin 9 Peak Elev=848.48' Storage=3,029 cf Inflow=1.74 cfs 0.481 af
Outflow=1.02 cfs 0.479 af

Pond Ex SD: Tract #1632 **Ex. 36" SD Outlet** Peak Elev=836.36' Inflow=0.96 cfs 0.621 af
36.0" Round Culvert n=0.012 L=150.0' S=0.0133 '/' Outflow=0.96 cfs 0.621 af

Pond MC Q: SD System Peak Elev=845.79' Storage=0.505 af Inflow=17.34 cfs 3.116 af
Discarded=0.11 cfs 0.358 af Primary=8.31 cfs 1.203 af Secondary=8.80 cfs 1.274 af Outflow=17.22 cfs 2.836 af

Pond SD: 42" HDPE SD Peak Elev=844.69' Inflow=1.91 cfs 2.460 af
42.0" Round Culvert n=0.012 L=840.0' S=0.0062 '/' Outflow=1.91 cfs 2.460 af

Link 1L: DS Tailwater below 77.30 cfs Inflow=0.96 cfs 0.621 af
Primary=0.96 cfs 0.621 af Secondary=0.00 cfs 0.000 af

Link 6L: To Existing Meadowlark Road Inflow=2.11 cfs 2.170 af
Primary=2.11 cfs 2.170 af

Link 10L: To Linne Road Channel Inflow=2.62 cfs 2.008 af
Primary=2.62 cfs 2.008 af

Link 11L: To Fontana Road SD Inflow=7.83 cfs 7.053 af
Primary=7.83 cfs 7.053 af

Link 15L: Sherwood/NiblickLP Xing Inflow=30.55 cfs 5.365 af
Primary=30.55 cfs 5.365 af

Link 16L: Airport & Linne Road SD Inflow=33.97 cfs 7.570 af
Primary=33.97 cfs 7.570 af

Link 22L: Linne Rd Ex Bypass Flow Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link Ck Qa: 100 Yr WSE in Creek (a) Inflow=63.77 cfs 31.540 af
Primary=63.77 cfs 31.540 af

Link Ck Qb: 100 Yr WSE in Creek (b) Inflow=4.94 cfs 2.333 af
Primary=4.94 cfs 2.333 af

Total Runoff Area = 1,810.455 ac Runoff Volume = 69.578 af Average Runoff Depth = 0.46"
90.30% Pervious = 1,634.850 ac 9.70% Impervious = 175.605 ac

Time span=0.01-60.00 hrs, dt=0.01 hrs, 6000 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Subcat 1 Runoff Area=11.244 ac 58.00% Impervious Runoff Depth=2.16"
Tc=10.0 min CN=58/98 Runoff=13.08 cfs 2.023 af

Subcatchment2: Subcat 2 Runoff Area=14.644 ac 58.00% Impervious Runoff Depth=2.16"
Tc=15.8 min CN=58/98 Runoff=14.16 cfs 2.635 af

Subcatchment3: Subcat 3 Runoff Area=21.500 ac 80.00% Impervious Runoff Depth=2.87"
Tc=16.9 min CN=67/98 Runoff=28.37 cfs 5.150 af

Subcatchment3a{(1)}-Ex: Subcat 3a(1)-Ex Runoff Area=4.164 ac 0.00% Impervious Runoff Depth=0.49"
Tc=10.0 min CN=58/98 Runoff=0.35 cfs 0.171 af

Subcatchment3a{(2)}-Ex: Subcat 3a(2)-Ex Runoff Area=7.900 ac 0.00% Impervious Runoff Depth=0.62"
Tc=10.0 min CN=61/98 Runoff=1.34 cfs 0.407 af

Subcatchment3a{(3)}-Ex: Subcat 3a{(3)}-Ex Runoff Area=6.004 ac 0.00% Impervious Runoff Depth=1.01"
Tc=10.0 min CN=69/0 Runoff=2.81 cfs 0.508 af

Subcatchment3b-Ex: Subcat 3b-Ex Runoff Area=757.079 ac 0.00% Impervious Runoff Depth=0.58"
Tc=45.5 min CN=60/98 Runoff=47.38 cfs 36.285 af

Subcatchment4: Subcat 4 Runoff Area=38.712 ac 55.38% Impervious Runoff Depth=2.25"
Tc=14.2 min CN=66/98 Runoff=41.42 cfs 7.245 af

Subcatchment5: Subcat 5 Runoff Area=32.696 ac 30.34% Impervious Runoff Depth=1.45"
Tc=21.2 min CN=61/98 Runoff=16.32 cfs 3.956 af

Subcatchment6: Subcat 6 Runoff Area=34.039 ac 52.56% Impervious Runoff Depth=2.22"
Tc=20.1 min CN=68/98 Runoff=30.64 cfs 6.310 af

Subcatchment7: Subcat 7 Runoff Area=31.369 ac 33.28% Impervious Runoff Depth=1.53"
Tc=23.2 min CN=61/98 Runoff=16.07 cfs 4.007 af

Subcatchment8: Subcat 8 Runoff Area=30.487 ac 52.00% Impervious Runoff Depth=2.14"
Tc=28.8 min CN=65/98 Runoff=21.40 cfs 5.429 af

Subcatchment8a-Ex: Subcat 8a-Ex Runoff Area=14.202 ac 0.00% Impervious Runoff Depth=0.49"
Tc=16.5 min CN=58/0 Runoff=0.93 cfs 0.583 af

Subcatchment9: Subcat 9 Runoff Area=11.446 ac 17.36% Impervious Runoff Depth=1.13"
Tc=22.3 min CN=62/98 Runoff=3.86 cfs 1.080 af

Subcatchment9a-Ex: Subcat 9a-Ex Runoff Area=212.022 ac 0.00% Impervious Runoff Depth=0.49"
Tc=51.3 min CN=58/0 Runoff=9.77 cfs 8.709 af

Subcatchment10: Subcat 10 Runoff Area=30.685 ac 61.94% Impervious Runoff Depth=2.32"
Tc=22.6 min CN=61/98 Runoff=27.15 cfs 5.934 af

Subcatchment10a-Ex: Subcat 10a-Ex Runoff Area=94.105 ac 0.00% Impervious Runoff Depth=0.91"
Tc=11.0 min CN=67/0 Runoff=34.70 cfs 7.111 af

Subcatchment11: Subcat 11 Runoff Area=14.461 ac 52.00% Impervious Runoff Depth=2.16"
Tc=11.1 min CN=66/98 Runoff=16.38 cfs 2.604 af

Subcatchment12: Subcat 12 Runoff Area=17.572 ac 50.65% Impervious Runoff Depth=2.10"
Tc=10.0 min CN=65/98 Runoff=19.99 cfs 3.079 af

Subcatchment12a-Ex: Subcat 12a-Ex Runoff Area=2.629 ac 0.00% Impervious Runoff Depth=1.13"
Tc=10.0 min CN=71/0 Runoff=1.45 cfs 0.247 af

Subcatchment13: Subcat 13 Runoff Area=27.742 ac 51.11% Impervious Runoff Depth=2.19"
Tc=10.0 min CN=68/98 Runoff=33.40 cfs 5.062 af

Subcatchment13a-Ex: Subcat 13a-Ex Runoff Area=3.505 ac 0.00% Impervious Runoff Depth=1.13"
Tc=10.0 min CN=71/98 Runoff=1.94 cfs 0.329 af

Subcatchment13b-Ex: Subcat 13b-Ex Runoff Area=18.461 ac 0.00% Impervious Runoff Depth=1.87"
Tc=10.0 min CN=82/0 Runoff=20.29 cfs 2.870 af

Subcatchment13c-Ex: Subcat 13c-Ex Runoff Area=14.407 ac 0.00% Impervious Runoff Depth=1.72"
Tc=10.0 min CN=80/0 Runoff=14.27 cfs 2.060 af

Subcatchment14: Subcat 14 Runoff Area=8.669 ac 67.94% Impervious Runoff Depth=2.73"
Tc=10.0 min CN=75/98 Runoff=13.55 cfs 1.970 af

Subcatchment14a{(1)}-Ex: Subcat 14a(1)-Ex Runoff Area=13.081 ac 40.33% Impervious Runoff Depth=2.00"
Tc=10.0 min CN=70/98 Runoff=14.25 cfs 2.176 af

Subcatchment14a{(2)}-Ex: Subcat 14a{(2)}-Ex Runoff Area=2.438 ac 75.43% Impervious Runoff Depth=2.69"
Tc=10.0 min CN=61/98 Runoff=3.69 cfs 0.547 af

Subcatchment14b-Ex: Subcat 14b-Ex Runoff Area=50.209 ac 0.00% Impervious Runoff Depth=1.64"
Tc=13.4 min CN=79/0 Runoff=41.50 cfs 6.879 af

Subcatchment14c{(0)}-Ex: Subcat 14c{(0)}-Ex Runoff Area=43.677 ac 1.21% Impervious Runoff Depth=1.88"
Tc=24.5 min CN=82/98 Runoff=31.30 cfs 6.856 af

Subcatchment14c{(1)}-Ex: Subcat 14c{(1)}-Ex Runoff Area=30.208 ac 1.61% Impervious Runoff Depth=1.82"
Tc=13.6 min CN=81/98 Runoff=28.06 cfs 4.570 af

Subcatchment14c{(2)}-Ex: Subcat 14c{(2)}-Ex Runoff Area=19.689 ac 0.28% Impervious Runoff Depth=1.51"
Tc=13.2 min CN=77/98 Runoff=14.62 cfs 2.478 af

Subcatchment14c{(3)}-Ex: Subcat 14c{(3)}-Ex Runoff Area=13.782 ac 0.00% Impervious Runoff Depth=1.37"
Tc=12.6 min CN=75/98 Runoff=9.18 cfs 1.577 af

Subcatchment14d-Ex: Subcat 14d-Ex Runoff Area=166.738 ac 0.91% Impervious Runoff Depth=1.73"
Tc=19.4 min CN=80/98 Runoff=122.07 cfs 24.054 af

Subcatchment14e-Ex: Subcat 14e-Ex Runoff Area=10.890 ac 6.07% Impervious Runoff Depth=0.67"
Tc=10.0 min CN=58/98 Runoff=2.10 cfs 0.605 af

Reach 6R: Un-named Creek 1c Avg. Flow Depth=2.53' Max Vel=3.44 fps Inflow=58.19 cfs 36.890 af
n=0.030 L=830.0' S=0.0032 '/' Capacity=3,940.38 cfs Outflow=56.05 cfs 36.890 af

Reach 7R: Creek XS 1b Avg. Flow Depth=1.62' Max Vel=2.92 fps Inflow=197.04 cfs 77.017 af
n=0.030 L=983.0' S=0.0059 '/' Capacity=1,505.35 cfs Outflow=193.36 cfs 77.017 af

Reach 8R: Creek 1b Avg. Flow Depth=3.02' Max Vel=3.91 fps Inflow=194.25 cfs 77.424 af
n=0.030 L=483.0' S=0.0041 '/' Capacity=4,478.97 cfs Outflow=193.04 cfs 77.424 af

Reach 17R: Reach 1d Avg. Flow Depth=0.43' Max Vel=1.99 fps Inflow=28.32 cfs 0.605 af
n=0.027 L=841.0' S=0.0110 '/' Capacity=1,276.84 cfs Outflow=19.69 cfs 0.605 af

Reach Ex Chl: RCP Dbl Arch 59x36 Outlet Avg. Flow Depth=0.93' Max Vel=3.85 fps Inflow=136.21 cfs 34.611 af
n=0.025 L=150.0' S=0.0116 '/' Capacity=3,071.94 cfs Outflow=136.16 cfs 34.611 af

Pond 1P: SD Inlet with Bypass SD Peak Elev=825.19' Inflow=35.45 cfs 8.685 af
Primary=35.45 cfs 8.685 af Secondary=0.00 cfs 0.000 af Outflow=35.45 cfs 8.685 af

Pond 2P: 60" SD MH Peak Elev=840.06' Inflow=13.65 cfs 2.186 af
Primary=13.65 cfs 2.186 af Secondary=0.00 cfs 0.000 af Outflow=13.65 cfs 2.186 af

Pond 15P: SD System 42" HDPE Peak Elev=844.40' Inflow=17.03 cfs 0.846 af
Outflow=17.03 cfs 0.846 af

Pond 16P: Dbl Conc. Arch Culvert (37x23) Peak Elev=844.30' Inflow=10.83 cfs 3.972 af
36.3" x 22.5", R=18.8"/51.0" Pipe Arch Culvert x 2.00 n=0.011 L=860.0' S=0.0024 '/' Outflow=10.83 cfs 3.972 af

Pond 17P: Gran Cielo Dwy Peak Elev=854.84' Storage=9,750 cf Inflow=122.07 cfs 24.054 af
Primary=93.38 cfs 23.448 af Secondary=0.00 cfs 0.000 af Tertiary=28.32 cfs 0.605 af Outflow=121.70 cfs 24.054 af

Pond 18P: GC-CkD1 Peak Elev=849.10' Storage=9,110 cf Inflow=152.52 cfs 34.873 af
Primary=0.64 cfs 0.017 af Secondary=12.52 cfs 0.211 af Tertiary=136.21 cfs 34.611 af Outflow=149.21 cfs 34.839 af

Pond 19P: GC-CkD2 Peak Elev=848.77' Storage=16,306 cf Inflow=27.17 cfs 2.706 af
Primary=1.16 cfs 1.345 af Secondary=18.40 cfs 1.360 af Tertiary=0.10 cfs 0.001 af Outflow=19.65 cfs 2.705 af

Pond 20P: GC-CkD3 Peak Elev=845.61' Storage=10,869 cf Inflow=26.70 cfs 4.281 af
Primary=4.72 cfs 3.046 af Secondary=3.87 cfs 0.379 af Tertiary=16.95 cfs 0.845 af Outflow=25.54 cfs 4.270 af

Pond B1: Basin 1 Peak Elev=836.34' Storage=4.294 af Inflow=61.24 cfs 10.005 af
Discarded=1.05 cfs 3.020 af Primary=13.77 cfs 6.610 af Secondary=0.00 cfs 0.000 af Outflow=14.82 cfs 9.629 af

Pond B10: Basin 10 Peak Elev=817.66' Storage=124,636 cf Inflow=27.15 cfs 5.934 af
Discarded=0.82 cfs 2.723 af Primary=3.68 cfs 2.761 af Secondary=0.00 cfs 0.000 af Outflow=4.50 cfs 5.484 af

Pond B11: Basin 11 Peak Elev=833.00' Storage=44,390 cf Inflow=16.38 cfs 2.604 af
Discarded=0.24 cfs 0.770 af Primary=3.46 cfs 1.573 af Secondary=0.00 cfs 0.000 af Outflow=3.70 cfs 2.343 af

Pond B12: Basin 12 Peak Elev=837.54' Storage=65,439 cf Inflow=21.44 cfs 3.326 af
Discarded=0.47 cfs 1.467 af Primary=2.02 cfs 1.588 af Secondary=0.00 cfs 0.000 af Outflow=2.49 cfs 3.055 af

Pond B13: Basin 13 Peak Elev=843.39' Storage=2.730 af Inflow=69.87 cfs 10.322 af
Discarded=0.44 cfs 1.321 af Primary=34.55 cfs 8.587 af Secondary=0.00 cfs 0.000 af Outflow=34.99 cfs 9.908 af

Pond B4: Basin 4 Peak Elev=838.95' Storage=111,294 cf Inflow=41.42 cfs 7.245 af
Discarded=0.54 cfs 1.630 af Primary=14.66 cfs 5.358 af Secondary=0.00 cfs 0.000 af Outflow=15.20 cfs 6.988 af

Pond B5: Basin 5 Peak Elev=847.07' Storage=55,240 cf Inflow=16.32 cfs 3.956 af
Discarded=0.38 cfs 1.188 af Primary=4.28 cfs 2.768 af Secondary=0.00 cfs 0.000 af Outflow=4.65 cfs 3.956 af

Pond B6: Basin 6 Peak Elev=851.09' Storage=1.896 af Inflow=30.64 cfs 6.310 af
Discarded=0.37 cfs 1.011 af Primary=15.84 cfs 5.009 af Secondary=0.00 cfs 0.000 af Outflow=16.21 cfs 6.019 af

Pond B7: Basin 7 Peak Elev=841.95' Storage=145,975 cf Inflow=17.05 cfs 10.954 af
Discarded=1.14 cfs 4.271 af Primary=6.98 cfs 6.584 af Secondary=0.00 cfs 0.000 af Outflow=8.12 cfs 10.855 af

Pond B8: Basin 8 Peak Elev=857.36' Storage=98,560 cf Inflow=22.23 cfs 6.012 af
Discarded=0.51 cfs 1.833 af Primary=5.93 cfs 4.179 af Secondary=0.00 cfs 0.000 af Outflow=6.44 cfs 6.012 af

Pond B9: Basin 9 Peak Elev=848.80' Storage=5,232 cf Inflow=3.86 cfs 1.080 af
Outflow=2.51 cfs 1.078 af

Pond Ex SD: Tract #1632 **Ex. 36" SD Outlet** Peak Elev=837.00' Inflow=6.98 cfs 6.584 af
36.0" Round Culvert n=0.012 L=150.0' S=0.0133 '/' Outflow=6.98 cfs 6.584 af

Pond MC Q: SD System Peak Elev=845.91' Storage=0.519 af Inflow=28.37 cfs 5.150 af
Discarded=0.11 cfs 0.368 af Primary=13.65 cfs 2.186 af Secondary=14.45 cfs 2.315 af Outflow=28.21 cfs 4.869 af

Pond SD: 42" HDPE SD Peak Elev=845.37' Inflow=10.07 cfs 6.947 af
42.0" Round Culvert n=0.012 L=840.0' S=0.0062 '/' Outflow=10.07 cfs 6.947 af

Link 1L: DS Tailwater below 77.30 cfs Inflow=6.98 cfs 6.584 af
Primary=6.98 cfs 6.584 af Secondary=0.00 cfs 0.000 af

Link 6L: To Existing Meadowlark Road Inflow=11.61 cfs 9.787 af
Primary=11.61 cfs 9.787 af

Link 10L: To Linne Road Channel Inflow=10.83 cfs 3.972 af
Primary=10.83 cfs 3.972 af

Link 11L: To Fontana Road SD Inflow=60.91 cfs 21.621 af
Primary=60.91 cfs 21.621 af

Link 15L: Sherwood/NiblickLP Xing Inflow=69.15 cfs 11.025 af
Primary=69.15 cfs 11.025 af

Link 16L: Airport & Linne Road SD Inflow=79.54 cfs 15.602 af
Primary=79.54 cfs 15.602 af

Link 22L: Linne Rd Ex Bypass Flow Inflow=17.03 cfs 0.846 af
Primary=17.03 cfs 0.846 af

Link Ck Qa: 100 Yr WSE in Creek (a) Inflow=217.34 cfs 89.563 af
Primary=217.34 cfs 89.563 af

Link Ck Qb: 100 Yr WSE in Creek (b) Inflow=15.84 cfs 5.009 af
Primary=15.84 cfs 5.009 af

Total Runoff Area = 1,810.455 ac Runoff Volume = 165.506 af Average Runoff Depth = 1.10"
90.30% Pervious = 1,634.850 ac 9.70% Impervious = 175.605 ac

Peak Elev= 845.91' @ 9.99 hrs Surf.Area= 0.126 ac Storage= 0.519 af
Flood Elev= 845.50' Surf.Area= 0.097 ac Storage= 0.474 af

Plug-Flow detention time= 151.4 min calculated for 4.869 af (95% of inflow)
Center-of-Mass det. time= 114.6 min (838.4 - 723.9)

Volume	Invert	Avail.Storage	Storage Description
#1	839.50'	0.607 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
839.50	0.081	0.000	0.000
840.00	0.081	0.040	0.040
841.00	0.081	0.081	0.121
842.00	0.081	0.081	0.202
843.00	0.081	0.081	0.283
844.00	0.081	0.081	0.364
845.00	0.061	0.071	0.434
846.00	0.133	0.097	0.531
846.50	0.172	0.076	0.607

Device	Routing	Invert	Outlet Devices
#1	Primary	841.50'	**36.0" Round Culvert** L= 585.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 841.50' / 838.50' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	845.50'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	839.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 750.00'
#4	Secondary	845.50'	**20.0' long (Profile 4) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.77 2.97 3.21

Discarded OutFlow Max=0.11 cfs @ 9.99 hrs HW=845.91' (Free Discharge)
└─**3=Exfiltration** (Controls 0.11 cfs)

Primary OutFlow Max=13.64 cfs @ 9.99 hrs HW=845.91' TW=840.06' (Dynamic Tailwater)
└─**1=Culvert** (Passes 13.64 cfs of 52.64 cfs potential flow)
└─**2=Orifice/Grate** (Weir Controls 13.64 cfs @ 2.09 fps)

Secondary OutFlow Max=14.44 cfs @ 9.99 hrs HW=845.91' TW=834.93' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 14.44 cfs @ 1.77 fps)

Summary for Pond SD: 42" HDPE SD

Inflow Area = 77.385 ac, 33.30% Impervious, Inflow Depth = 1.08" for 10 Year event
Inflow = 10.07 cfs @ 11.57 hrs, Volume= 6.947 af
Outflow = 10.07 cfs @ 11.57 hrs, Volume= 6.947 af, Atten= 0%, Lag= 0.0 min
Primary = 10.07 cfs @ 11.57 hrs, Volume= 6.947 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 845.37' @ 11.64 hrs
Flood Elev= 853.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	844.17'	**42.0" Round Culvert** L= 840.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 844.17' / 839.00' S= 0.0062 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=10.06 cfs @ 11.57 hrs HW=845.37' TW=841.29' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 10.06 cfs @ 5.16 fps)

Summary for Link 1L: DS Tailwater

Inflow Area = 108.754 ac, 33.30% Impervious, Inflow Depth = 0.73" for 10 Year event
Inflow = 6.98 cfs @ 14.56 hrs, Volume= 6.584 af
Primary = 6.98 cfs @ 14.56 hrs, Volume= 6.584 af, Atten= 0%, Lag= 0.0 min
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Primary outflow = Inflow below 77.30 cfs, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 835.00'

Summary for Link 6L: To Existing Meadowlark Road

Inflow Area = 223.467 ac, 0.89% Impervious, Inflow Depth = 0.53" for 10 Year event
Inflow = 11.61 cfs @ 10.85 hrs, Volume= 9.787 af
Primary = 11.61 cfs @ 10.85 hrs, Volume= 9.787 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs

Summary for Link 10L: To Linne Road Channel

Inflow Area = 276.531 ac, 1.60% Impervious, Inflow Depth = 0.17" for 10 Year event
Inflow = 10.83 cfs @ 10.11 hrs, Volume= 3.972 af
Primary = 10.83 cfs @ 10.11 hrs, Volume= 3.972 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs

Summary for Link 11L: To Fontana Road SD

Inflow Area = 223.567 ac, 22.19% Impervious, Inflow Depth = 1.16" for 10 Year event
Inflow = 60.91 cfs @ 10.17 hrs, Volume= 21.621 af
Primary = 60.91 cfs @ 10.17 hrs, Volume= 21.621 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs

Summary for Link 15L: Sherwood/Niblick LP Xing

Inflow Area = 71.958 ac, 15.52% Impervious, Inflow Depth = 1.84" for 10 Year event
Inflow = 69.15 cfs @ 9.97 hrs, Volume= 11.025 af
Primary = 69.15 cfs @ 9.97 hrs, Volume= 11.025 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs

Summary for Link 16L: Airport & Linne Road SD

Inflow Area = 359.380 ac, 4.52% Impervious, Inflow Depth = 0.52" for 10 Year event
Inflow = 79.54 cfs @ 9.98 hrs, Volume= 15.602 af
Primary = 79.54 cfs @ 9.98 hrs, Volume= 15.602 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs

Summary for Link 22L: Linne Rd Ex Bypass Flow

Inflow = 17.03 cfs @ 10.14 hrs, Volume= 0.846 af
Primary = 17.03 cfs @ 10.14 hrs, Volume= 0.846 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs

Summary for Link Ck Qa: 100 Yr WSE in Creek (a)

Inflow Area = 895.287 ac, 7.99% Impervious, Inflow Depth = 1.20" for 10 Year event
Inflow = 217.34 cfs @ 10.35 hrs, Volume= 89.563 af
Primary = 217.34 cfs @ 10.35 hrs, Volume= 89.563 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs

Summary for Link Ck Qb: 100 Yr WSE in Creek (b)

Inflow Area = 34.039 ac, 52.56% Impervious, Inflow Depth = 1.77" for 10 Year event
Inflow = 15.84 cfs @ 10.45 hrs, Volume= 5.009 af
Primary = 15.84 cfs @ 10.45 hrs, Volume= 5.009 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 842.50'

Time span=0.01-60.00 hrs, dt=0.01 hrs, 6000 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Subcat 1 Runoff Area=11.244 ac 58.00% Impervious Runoff Depth=2.62"
Tc=10.0 min CN=58/98 Runoff=15.92 cfs 2.453 af

Subcatchment2: Subcat 2 Runoff Area=14.644 ac 58.00% Impervious Runoff Depth=2.62"
Tc=15.8 min CN=58/98 Runoff=17.18 cfs 3.195 af

Subcatchment3: Subcat 3 Runoff Area=21.500 ac 80.00% Impervious Runoff Depth=3.43"
Tc=16.9 min CN=67/98 Runoff=33.79 cfs 6.138 af

Subcatchment3a{(1)}-Ex: Subcat 3a(1)-Ex Runoff Area=4.164 ac 0.00% Impervious Runoff Depth=0.76"
Tc=10.0 min CN=58/98 Runoff=0.93 cfs 0.263 af

Subcatchment3a{(2)}-Ex: Subcat 3a(2)-Ex Runoff Area=7.900 ac 0.00% Impervious Runoff Depth=0.92"
Tc=10.0 min CN=61/98 Runoff=2.70 cfs 0.603 af

Subcatchment3a{(3)}-Ex: Subcat 3a{(3)}-Ex Runoff Area=6.004 ac 0.00% Impervious Runoff Depth=1.40"
Tc=10.0 min CN=69/0 Runoff=4.25 cfs 0.700 af

Subcatchment3b-Ex: Subcat 3b-Ex Runoff Area=757.079 ac 0.00% Impervious Runoff Depth=0.86"
Tc=45.5 min CN=60/98 Runoff=90.77 cfs 54.384 af

Subcatchment4: Subcat 4 Runoff Area=38.712 ac 55.38% Impervious Runoff Depth=2.73"
Tc=14.2 min CN=66/98 Runoff=50.91 cfs 8.821 af

Subcatchment5: Subcat 5 Runoff Area=32.696 ac 30.34% Impervious Runoff Depth=1.84"
Tc=21.2 min CN=61/98 Runoff=21.35 cfs 5.016 af

Subcatchment6: Subcat 6 Runoff Area=34.039 ac 52.56% Impervious Runoff Depth=2.72"
Tc=20.1 min CN=68/98 Runoff=37.81 cfs 7.705 af

Subcatchment7: Subcat 7 Runoff Area=31.369 ac 33.28% Impervious Runoff Depth=1.93"
Tc=23.2 min CN=61/98 Runoff=20.76 cfs 5.047 af

Subcatchment8: Subcat 8 Runoff Area=30.487 ac 52.00% Impervious Runoff Depth=2.61"
Tc=28.8 min CN=65/98 Runoff=26.42 cfs 6.636 af

Subcatchment8a-Ex: Subcat 8a-Ex Runoff Area=14.202 ac 0.00% Impervious Runoff Depth=0.76"
Tc=16.5 min CN=58/0 Runoff=2.34 cfs 0.897 af

Subcatchment9: Subcat 9 Runoff Area=11.446 ac 17.36% Impervious Runoff Depth=1.49"
Tc=22.3 min CN=62/98 Runoff=5.46 cfs 1.422 af

Subcatchment9a-Ex: Subcat 9a-Ex Runoff Area=212.022 ac 0.00% Impervious Runoff Depth=0.76"
Tc=51.3 min CN=58/0 Runoff=18.56 cfs 13.388 af

Subcatchment10: Subcat 10 Runoff Area=30.685 ac 61.94% Impervious Runoff Depth=2.80"
Tc=22.6 min CN=61/98 Runoff=32.90 cfs 7.171 af

Subcatchment10a-Ex: Subcat 10a-Ex Runoff Area=94.105 ac 0.00% Impervious Runoff Depth=1.27"
Tc=11.0 min CN=67/0 Runoff=55.07 cfs 9.957 af

Subcatchment11: Subcat 11 Runoff Area=14.461 ac 52.00% Impervious Runoff Depth=2.64"
Tc=11.1 min CN=66/98 Runoff=20.25 cfs 3.183 af

Subcatchment12: Subcat 12 Runoff Area=17.572 ac 50.65% Impervious Runoff Depth=2.57"
Tc=10.0 min CN=65/98 Runoff=24.79 cfs 3.769 af

Subcatchment12a-Ex: Subcat 12a-Ex Runoff Area=2.629 ac 0.00% Impervious Runoff Depth=1.53"
Tc=10.0 min CN=71/0 Runoff=2.12 cfs 0.336 af

Subcatchment13: Subcat 13 Runoff Area=27.742 ac 51.11% Impervious Runoff Depth=2.68"
Tc=10.0 min CN=68/98 Runoff=41.30 cfs 6.191 af

Subcatchment13a-Ex: Subcat 13a-Ex Runoff Area=3.505 ac 0.00% Impervious Runoff Depth=1.53"
Tc=10.0 min CN=71/98 Runoff=2.83 cfs 0.448 af

Subcatchment13b-Ex: Subcat 13b-Ex Runoff Area=18.461 ac 0.00% Impervious Runoff Depth=2.37"
Tc=10.0 min CN=82/0 Runoff=26.29 cfs 3.654 af

Subcatchment13c-Ex: Subcat 13c-Ex Runoff Area=14.407 ac 0.00% Impervious Runoff Depth=2.21"
Tc=10.0 min CN=80/0 Runoff=18.80 cfs 2.651 af

Subcatchment14: Subcat 14 Runoff Area=8.669 ac 67.94% Impervious Runoff Depth=3.28"
Tc=10.0 min CN=75/98 Runoff=16.31 cfs 2.367 af

Subcatchment14a{(1)}-Ex: Subcat 14a(1)-Ex Runoff Area=13.081 ac 40.33% Impervious Runoff Depth=2.47"
Tc=10.0 min CN=70/98 Runoff=17.95 cfs 2.696 af

Subcatchment14a{(2)}-Ex: Subcat 14a{(2)}-Ex Runoff Area=2.438 ac 75.43% Impervious Runoff Depth=3.22"
Tc=10.0 min CN=61/98 Runoff=4.41 cfs 0.653 af

Subcatchment14b-Ex: Subcat 14b-Ex Runoff Area=50.209 ac 0.00% Impervious Runoff Depth=2.13"
Tc=13.4 min CN=79/0 Runoff=55.28 cfs 8.900 af

Subcatchment14c{(0)}-Ex: Subcat 14c{(0)}-Ex Runoff Area=43.677 ac 1.21% Impervious Runoff Depth=2.39"
Tc=24.5 min CN=82/98 Runoff=40.74 cfs 8.714 af

Subcatchment14c{(1)}-Ex: Subcat 14c{(1)}-Ex Runoff Area=30.208 ac 1.61% Impervious Runoff Depth=2.32"
Tc=13.6 min CN=81/98 Runoff=36.62 cfs 5.834 af

Subcatchment14c{(2)}-Ex: Subcat 14c{(2)}-Ex Runoff Area=19.689 ac 0.28% Impervious Runoff Depth=1.98"
Tc=13.2 min CN=77/98 Runoff=19.85 cfs 3.241 af

Subcatchment14c{(3)}-Ex: Subcat 14c{(3)}-Ex Runoff Area=13.782 ac 0.00% Impervious Runoff Depth=1.82"
Tc=12.6 min CN=75/98 Runoff=12.74 cfs 2.088 af

Subcatchment14d-Ex: Subcat 14d-Ex Runoff Area=166.738 ac 0.91% Impervious Runoff Depth=2.22"
Tc=19.4 min CN=80/98 Runoff=161.34 cfs 30.903 af

Subcatchment14e-Ex: Subcat 14e-Ex Runoff Area=10.890 ac 6.07% Impervious Runoff Depth=0.95"
Tc=10.0 min CN=58/98 Runoff=3.76 cfs 0.864 af

Reach 6R: Un-named Creek 1c Avg. Flow Depth=2.81' Max Vel=3.44 fps Inflow=128.40 cfs 55.983 af
n=0.030 L=830.0' S=0.0032 '/' Capacity=3,940.38 cfs Outflow=120.77 cfs 55.983 af

Reach 7R: Creek XS 1b Avg. Flow Depth=1.82' Max Vel=3.18 fps Inflow=286.07 cfs 106.177 af
n=0.030 L=983.0' S=0.0059 '/' Capacity=1,505.35 cfs Outflow=281.52 cfs 106.177 af

Reach 8R: Creek 1b Avg. Flow Depth=3.34' Max Vel=3.91 fps Inflow=283.04 cfs 106.780 af
n=0.030 L=483.0' S=0.0041 '/' Capacity=4,478.97 cfs Outflow=281.11 cfs 106.780 af

Reach 17R: Reach 1d Avg. Flow Depth=0.58' Max Vel=2.44 fps Inflow=56.21 cfs 1.599 af
n=0.027 L=841.0' S=0.0110 '/' Capacity=1,276.84 cfs Outflow=45.09 cfs 1.599 af

Reach Ex Chl: RCP Dbl Arch 59x36 Outlet Avg. Flow Depth=0.97' Max Vel=3.94 fps Inflow=149.04 cfs 43.115 af
n=0.025 L=150.0' S=0.0116 '/' Capacity=3,071.94 cfs Outflow=149.00 cfs 43.115 af

Pond 1P: SD Inlet with Bypass SD Peak Elev=825.45' Inflow=57.87 cfs 12.093 af
Primary=57.87 cfs 12.093 af Secondary=0.00 cfs 0.000 af Outflow=57.87 cfs 12.093 af

Pond 2P: 60" SD MH Peak Elev=840.22' Inflow=16.26 cfs 2.664 af
Primary=16.26 cfs 2.664 af Secondary=0.00 cfs 0.000 af Outflow=16.26 cfs 2.664 af

Pond 15P: SD System 42" HDPE Peak Elev=844.52' Inflow=36.99 cfs 1.833 af
Outflow=36.99 cfs 1.833 af

Pond 16P: Dbl Conc. Arch Culvert (37x23) Peak Elev=844.48' Inflow=15.27 cfs 4.839 af
36.3" x 22.5", R=18.8"/51.0" Pipe Arch Culvert x 2.00 n=0.011 L=860.0' S=0.0024 '/' Outflow=15.27 cfs 4.839 af

Pond 17P: Gran Cielo Dwy Peak Elev=855.00' Storage=11,009 cf Inflow=161.34 cfs 30.903 af
Primary=104.80 cfs 29.304 af Secondary=0.01 cfs 0.000 af Tertiary=56.21 cfs 1.599 af Outflow=161.03 cfs 30.903 af

Pond 18P: GC-CkD1 Peak Elev=849.52' Storage=13,468 cf Inflow=181.92 cfs 43.852 af
Primary=0.60 cfs 0.025 af Secondary=25.90 cfs 0.677 af Tertiary=149.04 cfs 43.115 af Outflow=175.31 cfs 43.818 af

Pond 19P: GC-CkD2 Peak Elev=849.11' Storage=20,913 cf Inflow=45.55 cfs 3.943 af
Primary=1.23 cfs 1.419 af Secondary=33.35 cfs 2.431 af Tertiary=5.36 cfs 0.092 af Outflow=39.95 cfs 3.942 af

Pond 20P: GC-CkD3 Peak Elev=845.79' Storage=13,254 cf Inflow=45.11 cfs 5.938 af
Primary=5.62 cfs 3.513 af Secondary=6.57 cfs 0.672 af Tertiary=31.77 cfs 1.741 af Outflow=43.97 cfs 5.927 af

Pond B1: Basin 1 Peak Elev=837.00' Storage=5.171 af Inflow=93.80 cfs 12.965 af
Discarded=1.09 cfs 3.116 af Primary=29.18 cfs 9.465 af Secondary=0.00 cfs 0.000 af Outflow=30.26 cfs 12.581 af

Pond B10: Basin 10 Peak Elev=817.99' Storage=139,204 cf Inflow=32.90 cfs 7.171 af
Discarded=0.84 cfs 2.797 af Primary=6.57 cfs 3.913 af Secondary=0.00 cfs 0.000 af Outflow=7.40 cfs 6.710 af

Pond B11: Basin 11 Peak Elev=833.60' Storage=51,986 cf Inflow=20.25 cfs 3.183 af
Discarded=0.26 cfs 0.785 af Primary=5.24 cfs 2.136 af Secondary=0.00 cfs 0.000 af Outflow=5.50 cfs 2.921 af

Pond B12: Basin 12 Peak Elev=838.07' Storage=78,816 cf Inflow=26.91 cfs 4.105 af
Discarded=0.49 cfs 1.514 af Primary=2.71 cfs 2.317 af Secondary=0.00 cfs 0.000 af Outflow=3.20 cfs 3.831 af

Pond B13: Basin 13 Peak Elev=843.86' Storage=2.981 af Inflow=89.20 cfs 12.943 af
Discarded=0.46 cfs 1.355 af Primary=62.05 cfs 11.167 af Secondary=0.00 cfs 0.000 af Outflow=62.52 cfs 12.522 af

Pond B4: Basin 4 Peak Elev=839.49' Storage=126,212 cf Inflow=50.91 cfs 8.821 af
Discarded=0.57 cfs 1.674 af Primary=19.48 cfs 6.886 af Secondary=0.00 cfs 0.000 af Outflow=20.05 cfs 8.559 af

Pond B5: Basin 5 Peak Elev=847.51' Storage=64,298 cf Inflow=21.35 cfs 5.016 af
Discarded=0.39 cfs 1.221 af Primary=7.13 cfs 3.796 af Secondary=0.00 cfs 0.000 af Outflow=7.52 cfs 5.016 af

Pond B6: Basin 6 Peak Elev=851.40' Storage=2.036 af Inflow=37.81 cfs 7.705 af
Discarded=0.38 cfs 1.034 af Primary=23.43 cfs 6.379 af Secondary=0.00 cfs 0.000 af Outflow=23.80 cfs 7.412 af

Pond B7: Basin 7 Peak Elev=842.46' Storage=178,348 cf Inflow=28.12 cfs 14.500 af
Discarded=1.20 cfs 4.392 af Primary=11.90 cfs 9.989 af Secondary=0.00 cfs 0.000 af Outflow=13.10 cfs 14.381 af

Pond B8: Basin 8 Peak Elev=857.57' Storage=104,516 cf Inflow=28.75 cfs 7.533 af
Discarded=0.53 cfs 1.876 af Primary=12.49 cfs 5.657 af Secondary=0.00 cfs 0.000 af Outflow=13.01 cfs 7.533 af

Pond B9: Basin 9 Peak Elev=849.00' Storage=6,676 cf Inflow=5.46 cfs 1.422 af
Outflow=3.56 cfs 1.421 af

Pond Ex SD: Tract #1632 **Ex. 36" SD Outlet** Peak Elev=837.33' Inflow=11.90 cfs 9.989 af
36.0" Round Culvert n=0.012 L=150.0' S=0.0133 '/' Outflow=11.90 cfs 9.989 af

Pond MC Q: SD System Peak Elev=845.96' Storage=0.526 af Inflow=33.79 cfs 6.138 af
Discarded=0.12 cfs 0.372 af Primary=16.26 cfs 2.664 af Secondary=17.22 cfs 2.821 af Outflow=33.60 cfs 5.857 af

Pond SD: 42" HDPE SD Peak Elev=845.86' Inflow=19.61 cfs 9.453 af
42.0" Round Culvert n=0.012 L=840.0' S=0.0062 '/' Outflow=19.61 cfs 9.453 af

Link 1L: DS Tailwater below 77.30 cfs Inflow=11.90 cfs 9.989 af
Primary=11.90 cfs 9.989 af Secondary=0.00 cfs 0.000 af

Link 6L: To Existing Meadowlark Road Inflow=22.10 cfs 14.809 af
Primary=22.10 cfs 14.809 af

Link 10L: To Linne Road Channel Inflow=15.27 cfs 4.839 af
Primary=15.27 cfs 4.839 af

Link 11L: To Fontana Road SD Inflow=111.64 cfs 29.489 af
Primary=111.64 cfs 29.489 af

Link 15L: Sherwood/NiblickLP Xing Inflow=89.39 cfs 13.962 af
Primary=89.39 cfs 13.962 af

Link 16L: Airport & Linne Road SD Inflow=106.29 cfs 19.666 af
Primary=106.29 cfs 19.666 af

Link 22L: Linne Rd Ex Bypass Flow Inflow=36.99 cfs 1.833 af
Primary=36.99 cfs 1.833 af

Link Ck Qa: 100 Yr WSE in Creek (a) Inflow=327.08 cfs 123.393 af
Primary=327.08 cfs 123.393 af

Link Ck Qb: 100 Yr WSE in Creek (b) Inflow=23.43 cfs 6.379 af
Primary=23.43 cfs 6.379 af

Total Runoff Area = 1,810.455 ac Runoff Volume = 220.287 af Average Runoff Depth = 1.46"
90.30% Pervious = 1,634.850 ac 9.70% Impervious = 175.605 ac

Pond 1P: SD Inlet with Bypass SD Peak Elev=825.62' Inflow=73.26 cfs 14.523 af
Primary=73.26 cfs 14.523 af Secondary=0.00 cfs 0.000 af Outflow=73.26 cfs 14.523 af

Pond 2P: 60" SD MH Peak Elev=840.33' Inflow=18.03 cfs 2.986 af
Primary=18.03 cfs 2.986 af Secondary=0.00 cfs 0.000 af Outflow=18.03 cfs 2.986 af

Pond 15P: SD System 42" HDPE Peak Elev=844.59' Inflow=51.10 cfs 2.683 af
Outflow=51.10 cfs 2.683 af

Pond 16P: Dbl Conc. Arch Culvert (37x23) Peak Elev=844.57' Inflow=17.74 cfs 5.377 af
36.3" x 22.5", R=18.8"/51.0" Pipe Arch Culvert x 2.00 n=0.011 L=860.0' S=0.0024 '/' Outflow=17.74 cfs 5.377 af

Pond 17P: Gran Cielo Dwy Peak Elev=855.09' Storage=11,735 cf Inflow=188.40 cfs 35.620 af
Primary=111.11 cfs 33.164 af Secondary=0.18 cfs 0.002 af Tertiary=76.79 cfs 2.454 af Outflow=188.08 cfs 35.620 af

Pond 18P: GC-CkD1 Peak Elev=849.76' Storage=16,732 cf Inflow=200.71 cfs 49.854 af
Primary=0.59 cfs 0.031 af Secondary=35.96 cfs 1.101 af Tertiary=156.05 cfs 48.688 af Outflow=192.48 cfs 49.820 af

Pond 19P: GC-CkD2 Peak Elev=849.25' Storage=23,653 cf Inflow=58.68 cfs 4.902 af
Primary=1.27 cfs 1.460 af Secondary=41.32 cfs 3.201 af Tertiary=10.96 cfs 0.240 af Outflow=53.55 cfs 4.901 af

Pond 20P: GC-CkD3 Peak Elev=845.88' Storage=14,445 cf Inflow=55.32 cfs 7.106 af
Primary=6.01 cfs 3.774 af Secondary=8.13 cfs 0.878 af Tertiary=40.20 cfs 2.444 af Outflow=54.35 cfs 7.095 af

Pond B1: Basin 1 Peak Elev=837.56' Storage=5.949 af Inflow=115.89 cfs 15.158 af
Discarded=1.12 cfs 3.177 af Primary=35.49 cfs 11.591 af Secondary=0.00 cfs 0.000 af Outflow=36.61 cfs 14.768 af

Pond B10: Basin 10 Peak Elev=818.15' Storage=146,516 cf Inflow=36.90 cfs 8.017 af
Discarded=0.85 cfs 2.841 af Primary=9.72 cfs 4.707 af Secondary=0.00 cfs 0.000 af Outflow=10.57 cfs 7.548 af

Pond B11: Basin 11 Peak Elev=833.87' Storage=55,671 cf Inflow=22.92 cfs 3.580 af
Discarded=0.27 cfs 0.793 af Primary=7.55 cfs 2.524 af Secondary=0.00 cfs 0.000 af Outflow=7.82 cfs 3.317 af

Pond B12: Basin 12 Peak Elev=838.38' Storage=87,046 cf Inflow=30.70 cfs 4.642 af
Discarded=0.51 cfs 1.546 af Primary=3.48 cfs 2.819 af Secondary=0.00 cfs 0.000 af Outflow=3.99 cfs 4.365 af

Pond B13: Basin 13 Peak Elev=844.03' Storage=3.076 af Inflow=102.50 cfs 14.744 af
Discarded=0.47 cfs 1.375 af Primary=84.13 cfs 12.945 af Secondary=0.00 cfs 0.000 af Outflow=84.60 cfs 14.320 af

Pond B4: Basin 4 Peak Elev=839.85' Storage=136,770 cf Inflow=57.43 cfs 9.900 af
Discarded=0.59 cfs 1.698 af Primary=23.63 cfs 7.938 af Secondary=0.00 cfs 0.000 af Outflow=24.21 cfs 9.636 af

Pond B5: Basin 5 Peak Elev=847.79' Storage=70,408 cf Inflow=25.03 cfs 5.762 af
Discarded=0.41 cfs 1.238 af Primary=9.31 cfs 4.524 af Secondary=0.00 cfs 0.000 af Outflow=9.72 cfs 5.762 af

Pond B6: Basin 6 Peak Elev=851.60' Storage=2.127 af Inflow=42.75 cfs 8.660 af
Discarded=0.38 cfs 1.047 af Primary=27.62 cfs 7.319 af Secondary=0.00 cfs 0.000 af Outflow=28.00 cfs 8.366 af

Pond B7: Basin 7 Peak Elev=842.80' Storage=200,494 cf Inflow=38.88 cfs 16.997 af
Discarded=1.23 cfs 4.463 af Primary=16.23 cfs 12.404 af Secondary=0.00 cfs 0.000 af Outflow=17.47 cfs 16.867 af

Pond B8: Basin 8 Peak Elev=857.70' Storage=108,148 cf Inflow=33.51 cfs 8.595 af
Discarded=0.53 cfs 1.899 af Primary=17.63 cfs 6.696 af Secondary=0.00 cfs 0.000 af Outflow=18.16 cfs 8.596 af

Pond B9: Basin 9 Peak Elev=849.15' Storage=7,800 cf Inflow=6.65 cfs 1.667 af
Outflow=4.29 cfs 1.665 af

Pond Ex SD: Tract #1632 **Ex. 36" SD Outlet** Peak Elev=837.58' Inflow=16.23 cfs 12.404 af
36.0" Round Culvert n=0.012 L=150.0' S=0.0133 '/' Outflow=16.23 cfs 12.404 af

Pond MC Q: SD System Peak Elev=845.99' Storage=0.530 af Inflow=37.43 cfs 6.803 af
Discarded=0.12 cfs 0.374 af Primary=18.03 cfs 2.986 af Secondary=19.09 cfs 3.162 af Outflow=37.24 cfs 6.522 af

Pond SD: 42" HDPE SD Peak Elev=846.18' Inflow=26.80 cfs 11.220 af
42.0" Round Culvert n=0.012 L=840.0' S=0.0062 '/' Outflow=26.80 cfs 11.220 af

Link 1L: DS Tailwater below 77.30 cfs Inflow=16.23 cfs 12.404 af
Primary=16.23 cfs 12.404 af Secondary=0.00 cfs 0.000 af

Link 6L: To Existing Meadowlark Road Inflow=31.00 cfs 18.552 af
Primary=31.00 cfs 18.552 af

Link 10L: To Linne Road Channel Inflow=17.74 cfs 5.377 af
Primary=17.74 cfs 5.377 af

Link 11L: To Fontana Road SD Inflow=154.03 cfs 34.994 af
Primary=154.03 cfs 34.994 af

Link 15L: Sherwood/NiblickLP Xing Inflow=103.34 cfs 15.984 af
Primary=103.34 cfs 15.984 af

Link 16L: Airport & Linne Road SD Inflow=124.53 cfs 22.416 af
Primary=124.53 cfs 22.416 af

Link 22L: Linne Rd Ex Bypass Flow Inflow=51.10 cfs 2.683 af
Primary=51.10 cfs 2.683 af

Link Ck Qa: 100 Yr WSE in Creek (a) Inflow=403.95 cfs 147.682 af
Primary=403.95 cfs 147.682 af

Link Ck Qb: 100 Yr WSE in Creek (b) Inflow=27.62 cfs 7.319 af
Primary=27.62 cfs 7.319 af

Total Runoff Area = 1,810.455 ac Runoff Volume = 259.341 af Average Runoff Depth = 1.72"
90.30% Pervious = 1,634.850 ac 9.70% Impervious = 175.605 ac

Time span=0.01-60.00 hrs, dt=0.01 hrs, 6000 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Subcat 1 Runoff Area=11.244 ac 58.00% Impervious Runoff Depth=3.33"
Tc=10.0 min CN=58/98 Runoff=20.49 cfs 3.125 af

Subcatchment2: Subcat 2 Runoff Area=14.644 ac 58.00% Impervious Runoff Depth=3.33"
Tc=15.8 min CN=58/98 Runoff=22.09 cfs 4.070 af

Subcatchment3: Subcat 3 Runoff Area=21.500 ac 80.00% Impervious Runoff Depth=4.27"
Tc=16.9 min CN=67/98 Runoff=42.04 cfs 7.642 af

Subcatchment3a{(1)}-Ex: Subcat 3a(1)-Ex Runoff Area=4.164 ac 0.00% Impervious Runoff Depth=1.22"
Tc=10.0 min CN=58/98 Runoff=2.08 cfs 0.425 af

Subcatchment3a{(2)}-Ex: Subcat 3a(2)-Ex Runoff Area=7.900 ac 0.00% Impervious Runoff Depth=1.43"
Tc=10.0 min CN=61/98 Runoff=5.19 cfs 0.941 af

Subcatchment3a{(3)}-Ex: Subcat 3a{(3)}-Ex Runoff Area=6.004 ac 0.00% Impervious Runoff Depth=2.03"
Tc=10.0 min CN=69/0 Runoff=6.65 cfs 1.016 af

Subcatchment3b-Ex: Subcat 3b-Ex Runoff Area=757.079 ac 0.00% Impervious Runoff Depth=1.36"
Tc=45.5 min CN=60/98 Runoff=178.44 cfs 85.793 af

Subcatchment4: Subcat 4 Runoff Area=38.712 ac 55.38% Impervious Runoff Depth=3.49"
Tc=14.2 min CN=66/98 Runoff=65.77 cfs 11.274 af

Subcatchment5: Subcat 5 Runoff Area=32.696 ac 30.34% Impervious Runoff Depth=2.47"
Tc=21.2 min CN=61/98 Runoff=29.91 cfs 6.733 af

Subcatchment6: Subcat 6 Runoff Area=34.039 ac 52.56% Impervious Runoff Depth=3.48"
Tc=20.1 min CN=68/98 Runoff=49.06 cfs 9.876 af

Subcatchment7: Subcat 7 Runoff Area=31.369 ac 33.28% Impervious Runoff Depth=2.57"
Tc=23.2 min CN=61/98 Runoff=28.70 cfs 6.724 af

Subcatchment8: Subcat 8 Runoff Area=30.487 ac 52.00% Impervious Runoff Depth=3.35"
Tc=28.8 min CN=65/98 Runoff=34.41 cfs 8.523 af

Subcatchment8a-Ex: Subcat 8a-Ex Runoff Area=14.202 ac 0.00% Impervious Runoff Depth=1.22"
Tc=16.5 min CN=58/0 Runoff=5.42 cfs 1.449 af

Subcatchment9: Subcat 9 Runoff Area=11.446 ac 17.36% Impervious Runoff Depth=2.08"
Tc=22.3 min CN=62/98 Runoff=8.24 cfs 1.988 af

Subcatchment9a-Ex: Subcat 9a-Ex Runoff Area=212.022 ac 0.00% Impervious Runoff Depth=1.22"
Tc=51.3 min CN=58/0 Runoff=38.64 cfs 21.629 af

Subcatchment10: Subcat 10 Runoff Area=30.685 ac 61.94% Impervious Runoff Depth=3.56"
Tc=22.6 min CN=61/98 Runoff=42.03 cfs 9.094 af

Subcatchment10a-Ex: Subcat 10a-Ex Runoff Area=94.105 ac 0.00% Impervious Runoff Depth=1.87"
Tc=11.0 min CN=67/0 Runoff=89.48 cfs 14.688 af

Subcatchment11: Subcat 11 Runoff Area=14.461 ac 52.00% Impervious Runoff Depth=3.39"
Tc=11.1 min CN=66/98 Runoff=26.34 cfs 4.086 af

Subcatchment12: Subcat 12 Runoff Area=17.572 ac 50.65% Impervious Runoff Depth=3.31"
Tc=10.0 min CN=65/98 Runoff=32.36 cfs 4.850 af

Subcatchment12a-Ex: Subcat 12a-Ex Runoff Area=2.629 ac 0.00% Impervious Runoff Depth=2.19"
Tc=10.0 min CN=71/0 Runoff=3.23 cfs 0.480 af

Subcatchment13: Subcat 13 Runoff Area=27.742 ac 51.11% Impervious Runoff Depth=3.44"
Tc=10.0 min CN=68/98 Runoff=53.68 cfs 7.951 af

Subcatchment13a-Ex: Subcat 13a-Ex Runoff Area=3.505 ac 0.00% Impervious Runoff Depth=2.19"
Tc=10.0 min CN=71/98 Runoff=4.30 cfs 0.640 af

Subcatchment13b-Ex: Subcat 13b-Ex Runoff Area=18.461 ac 0.00% Impervious Runoff Depth=3.17"
Tc=10.0 min CN=82/0 Runoff=35.59 cfs 4.875 af

Subcatchment13c-Ex: Subcat 13c-Ex Runoff Area=14.407 ac 0.00% Impervious Runoff Depth=2.98"
Tc=10.0 min CN=80/0 Runoff=25.89 cfs 3.578 af

Subcatchment14: Subcat 14 Runoff Area=8.669 ac 67.94% Impervious Runoff Depth=4.12"
Tc=10.0 min CN=75/98 Runoff=20.52 cfs 2.973 af

Subcatchment14a{(1)}-Ex: Subcat 14a(1)-Ex Runoff Area=13.081 ac 40.33% Impervious Runoff Depth=3.22"
Tc=10.0 min CN=70/98 Runoff=23.79 cfs 3.511 af

Subcatchment14a{(2)}-Ex: Subcat 14a{(2)}-Ex Runoff Area=2.438 ac 75.43% Impervious Runoff Depth=4.02"
Tc=10.0 min CN=61/98 Runoff=5.52 cfs 0.817 af

Subcatchment14b-Ex: Subcat 14b-Ex Runoff Area=50.209 ac 0.00% Impervious Runoff Depth=2.89"
Tc=13.4 min CN=79/0 Runoff=77.01 cfs 12.083 af

Subcatchment14c{(0)}-Ex: Subcat 14c{(0)}-Ex Runoff Area=43.677 ac 1.21% Impervious Runoff Depth=3.19"
Tc=24.5 min CN=82/98 Runoff=55.41 cfs 11.607 af

Subcatchment14c{(1)}-Ex: Subcat 14c{(1)}-Ex Runoff Area=30.208 ac 1.61% Impervious Runoff Depth=3.10"
Tc=13.6 min CN=81/98 Runoff=49.95 cfs 7.810 af

Subcatchment14c{(2)}-Ex: Subcat 14c{(2)}-Ex Runoff Area=19.689 ac 0.28% Impervious Runoff Depth=2.71"
Tc=13.2 min CN=77/98 Runoff=28.16 cfs 4.451 af

Subcatchment14c{(3)}-Ex: Subcat 14c{(3)}-Ex Runoff Area=13.782 ac 0.00% Impervious Runoff Depth=2.53"
Tc=12.6 min CN=75/98 Runoff=18.46 cfs 2.906 af

Subcatchment14d-Ex: Subcat 14d-Ex Runoff Area=166.738 ac 0.91% Impervious Runoff Depth=3.00"
Tc=19.4 min CN=80/98 Runoff=222.96 cfs 41.649 af

Subcatchment14e-Ex: Subcat 14e-Ex Runoff Area=10.890 ac 6.07% Impervious Runoff Depth=1.44"
Tc=10.0 min CN=58/98 Runoff=6.93 cfs 1.311 af

Reach 6R: Un-named Creek 1c Avg. Flow Depth=3.35' Max Vel=3.44 fps Inflow=265.18 cfs 89.498 af
n=0.030 L=830.0' S=0.0032 '/' Capacity=3,940.38 cfs Outflow=248.04 cfs 89.498 af

Reach 7R: Creek XS 1b Avg. Flow Depth=2.09' Max Vel=3.58 fps Inflow=440.34 cfs 154.593 af
n=0.030 L=983.0' S=0.0059 '/' Capacity=1,505.35 cfs Outflow=434.74 cfs 154.593 af

Reach 8R: Creek 1b Avg. Flow Depth=3.91' Max Vel=3.91 fps Inflow=437.48 cfs 155.534 af
n=0.030 L=483.0' S=0.0041 '/' Capacity=4,478.97 cfs Outflow=434.10 cfs 155.534 af

Reach 17R: Reach 1d Avg. Flow Depth=0.74' Max Vel=2.90 fps Inflow=103.94 cfs 3.705 af
n=0.027 L=841.0' S=0.0110 '/' Capacity=1,276.84 cfs Outflow=90.36 cfs 3.705 af

Reach Ex Chl: RCP Dbl Arch 59x36 Outlet Avg. Flow Depth=1.00' Max Vel=4.03 fps Inflow=163.56 cfs 55.561 af
n=0.025 L=150.0' S=0.0116 '/' Capacity=3,071.94 cfs Outflow=163.52 cfs 55.561 af

Pond 1P: SD Inlet with Bypass SD Peak Elev=825.82' Inflow=93.81 cfs 17.708 af
Primary=93.81 cfs 17.708 af Secondary=0.00 cfs 0.000 af Outflow=93.81 cfs 17.708 af

Pond 2P: 60" SD MH Peak Elev=840.46' Inflow=20.20 cfs 3.392 af
Primary=20.20 cfs 3.392 af Secondary=0.00 cfs 0.000 af Outflow=20.20 cfs 3.392 af

Pond 15P: SD System 42" HDPE Peak Elev=844.66' Inflow=68.70 cfs 3.916 af
Outflow=68.70 cfs 3.916 af

Pond 16P: Dbl Conc. Arch Culvert (37x23) Peak Elev=844.69' Inflow=20.76 cfs 6.013 af
36.3" x 22.5", R=18.8"/51.0" Pipe Arch Culvert x 2.00 n=0.011 L=860.0' S=0.0024 '/' Outflow=20.76 cfs 6.013 af

Pond 17P: Gran Cielo Dwy Peak Elev=855.19' Storage=12,570 cf Inflow=222.96 cfs 41.649 af
Primary=118.06 cfs 37.935 af Secondary=0.66 cfs 0.009 af Tertiary=103.94 cfs 3.705 af Outflow=222.66 cfs 41.649 af

Pond 18P: GC-CkD1 Peak Elev=850.03' Storage=21,023 cf Inflow=223.80 cfs 57.362 af
Primary=0.62 cfs 0.037 af Secondary=49.36 cfs 1.730 af Tertiary=163.56 cfs 55.561 af Outflow=213.46 cfs 57.328 af

Pond 19P: GC-CkD2 Peak Elev=849.41' Storage=27,160 cf Inflow=76.40 cfs 6.218 af
Primary=1.30 cfs 1.510 af Secondary=50.40 cfs 4.202 af Tertiary=18.98 cfs 0.506 af Outflow=70.68 cfs 6.217 af

Pond 20P: GC-CkD3 Peak Elev=845.96' Storage=15,712 cf Inflow=67.10 cfs 8.618 af
Primary=6.37 cfs 4.056 af Secondary=10.21 cfs 1.141 af Tertiary=49.73 cfs 3.410 af Outflow=66.32 cfs 8.607 af

Pond B1: Basin 1 Peak Elev=838.35' Storage=7.075 af Inflow=143.08 cfs 18.094 af
Discarded=1.18 cfs 3.251 af Primary=42.68 cfs 14.446 af Secondary=0.00 cfs 0.000 af Outflow=43.86 cfs 17.698 af

Pond B10: Basin 10 Peak Elev=818.33' Storage=154,822 cf Inflow=42.03 cfs 9.094 af
Discarded=0.86 cfs 2.890 af Primary=14.28 cfs 5.727 af Secondary=0.00 cfs 0.000 af Outflow=15.14 cfs 8.617 af

Pond B11: Basin 11 Peak Elev=834.16' Storage=59,695 cf Inflow=26.34 cfs 4.086 af
Discarded=0.28 cfs 0.803 af Primary=10.23 cfs 3.020 af Secondary=0.00 cfs 0.000 af Outflow=10.51 cfs 3.823 af

Pond B12: Basin 12 Peak Elev=838.70' Storage=95,925 cf Inflow=35.58 cfs 5.330 af
Discarded=0.53 cfs 1.585 af Primary=5.12 cfs 3.464 af Secondary=0.00 cfs 0.000 af Outflow=5.64 cfs 5.049 af

Pond B13: Basin 13 Peak Elev=844.19' Storage=3.165 af Inflow=119.46 cfs 17.044 af
Discarded=0.48 cfs 1.396 af Primary=108.10 cfs 15.220 af Secondary=0.00 cfs 0.000 af Outflow=108.58 cfs 16.616 af

Pond B4: Basin 4 Peak Elev=840.12' Storage=144,637 cf Inflow=65.77 cfs 11.274 af
Discarded=0.60 cfs 1.723 af Primary=34.06 cfs 9.285 af Secondary=0.00 cfs 0.000 af Outflow=34.66 cfs 11.007 af

Pond B5: Basin 5 Peak Elev=848.15' Storage=78,258 cf Inflow=29.91 cfs 6.733 af
Discarded=0.42 cfs 1.257 af Primary=12.28 cfs 5.476 af Secondary=0.00 cfs 0.000 af Outflow=12.70 cfs 6.733 af

Pond B6: Basin 6 Peak Elev=851.88' Storage=2.255 af Inflow=49.06 cfs 9.876 af
Discarded=0.39 cfs 1.062 af Primary=32.02 cfs 8.518 af Secondary=0.00 cfs 0.000 af Outflow=32.41 cfs 9.581 af

Pond B7: Basin 7 Peak Elev=843.21' Storage=227,792 cf Inflow=53.39 cfs 20.246 af
Discarded=1.28 cfs 4.541 af Primary=22.91 cfs 15.562 af Secondary=0.00 cfs 0.000 af Outflow=24.18 cfs 20.103 af

Pond B8: Basin 8 Peak Elev=857.85' Storage=112,464 cf Inflow=39.82 cfs 9.971 af
Discarded=0.54 cfs 1.926 af Primary=24.66 cfs 8.046 af Secondary=0.00 cfs 0.000 af Outflow=25.20 cfs 9.971 af

Pond B9: Basin 9 Peak Elev=849.37' Storage=9,543 cf Inflow=8.24 cfs 1.988 af
Outflow=5.10 cfs 1.986 af

Pond Ex SD: Tract #1632 **Ex. 36" SD Outlet** Peak Elev=837.94' Inflow=22.91 cfs 15.562 af
36.0" Round Culvert n=0.012 L=150.0' S=0.0133 '/' Outflow=22.91 cfs 15.562 af

Pond MC Q: SD System Peak Elev=846.03' Storage=0.535 af Inflow=42.04 cfs 7.642 af
Discarded=0.12 cfs 0.377 af Primary=20.20 cfs 3.392 af Secondary=21.51 cfs 3.592 af Outflow=41.83 cfs 7.360 af

Pond SD: 42" HDPE SD Peak Elev=846.57' Inflow=36.40 cfs 13.522 af
42.0" Round Culvert n=0.012 L=840.0' S=0.0062 '/' Outflow=36.40 cfs 13.522 af

Link 1L: DS Tailwater below 77.30 cfs Inflow=22.91 cfs 15.562 af
Primary=22.91 cfs 15.562 af Secondary=0.00 cfs 0.000 af

Link 6L: To Existing Meadowlark Road Inflow=43.71 cfs 23.616 af
Primary=43.71 cfs 23.616 af

Link 10L: To Linne Road Channel Inflow=20.76 cfs 6.013 af
Primary=20.76 cfs 6.013 af

Link 11L: To Fontana Road SD Inflow=203.22 cfs 42.120 af
Primary=203.22 cfs 42.120 af

Link 15L: Sherwood/NiblickLP Xing Inflow=121.15 cfs 18.567 af
Primary=121.15 cfs 18.567 af

Link 16L: Airport & Linne Road SD Inflow=147.31 cfs 25.891 af
Primary=147.31 cfs 25.891 af

Link 22L: Linne Rd Ex Bypass Flow Inflow=68.70 cfs 3.916 af
Primary=68.70 cfs 3.916 af

Link Ck Qa: 100 Yr WSE in Creek (a) Inflow=508.94 cfs 179.690 af
Primary=508.94 cfs 179.690 af

Link Ck Qb: 100 Yr WSE in Creek (b) Inflow=32.02 cfs 8.518 af
Primary=32.02 cfs 8.518 af

Total Runoff Area = 1,810.455 ac Runoff Volume = 310.568 af Average Runoff Depth = 2.06"
90.30% Pervious = 1,634.850 ac 9.70% Impervious = 175.605 ac

OLSEN-CHANDLER RANCH TENTATIVE TRACT MAP

PRELIMINARY DETENTION BASIN SUMMARY
95th Percentile Storm Event
Proposed Conditions

Node Type	Node Number	Node Name	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Peak Time (hours)	Inflow Volume (acre-feet)	Inflow Area (acres)	Imperv. Inflow Area (%)	Inflow Depth (inches)	Discarded Outflow Peak (cfs)	Discarded Outflow Peak Time (hours)	Discarded Outflow Volume (AF)	Primary Routing	Primary Outflow Peak (cfs)	Primary Outflow Peak Time (hours)	Primary Outflow Volume (acre-feet)	Secondary Routing	Secondary Outflow Peak (cfs)	Secondary Outflow Peak Time (hours)	Secondary Outflow Volume (AF)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)	Top Elevation (feet)	Top Storage (acre-feet)
Pond	1P	SD Inlet with Bypass SD	1.4	0.33	19.74	0.253	108.566	6.93	0.03	0	0	0	11L	0.33	19.74	0.253	11L	0	0.01	0		0	0.33	824.53	19.74	0	0	0
Pond	2P	60" SD MH	1.4	4.12	10.06	0.523	21.5	80	0.29	0	0	0	B1	4.12	10.06	0.523	B1	0	0.01	0		0	4.12	839.33	10.06	0	0	0
Pond	15P	SD System 42" HDPE	1.4	0	0.01	0	0	0	0	0	0	0	B1	0	0.01	0		0	0	0		0	0	844.17	0.85	0	0	0
Pond	16P	Dbl Conc. Arch Culvert (37x23)	1.4	1.31	9.96	0.604	276.531	1.6	0.03	0	0	0	10L	1.31	9.96	0.604		0	0	0		0	1.31	843.78	9.96	0	0	0
Pond	17P	Gran Cielo Dwy	1.4	7.71	10.01	3.43	166.738	0.91	0.25	0	0	0	18P	7.55	10.08	3.43	18P	0	0.01	0	17R	0	7.55	853.35	10.08	0.023	856.14	0.511
Pond	18P	GC-CkD1	1.4	12.48	10.05	5.237	240.622	1.05	0.26	0	0	0	19P	0	0.01	0	19P	0	0.01	0	Ex Chl	12.48	12.48	847.34	10.06	0.047	852	1.614
Pond	19P	GC-CkD2	1.4	0.41	10.32	0.284	260.311	0.99	0.01	0	0	0	20P	0.32	11.62	0.282	20P	0	0.01	0	22L	0	0.32	846.55	11.62	0.017	850	1.066
Pond	20P	GC-CkD3	1.4	0.48	11.78	0.434	274.094	0.94	0.02	0	0	0	16P	0.45	13.17	0.423	16P	0	0.01	0	22L	0	0.45	844.59	13.17	0.045	846.5	0.565
Pond	B1	Basin 1	1.4	16.44	10.05	2.556	47.388	67.98	0.65	0.91	19.68	2.283	Ck Qa	0	0.01	0	Ck Qa	0	0.01	0		0	0.91	834.16	19.68	1.559	839.35	8.595
Pond	B10	Basin 10	1.4	9.47	9.98	1.874	30.685	61.94	0.73	0.67	18.17	1.652	11L	0	0.01	0	11L	0	0.01	0		0	0.67	815.9	18.17	1.153	820	5.425
Pond	B11	Basin 11	1.4	5.17	9.96	0.755	14.461	52	0.63	0.17	23.18	0.564	1P	0	0.01	0	1P	0	0.01	0		0	0.17	830.96	23.18	0.527	836	2.037
Pond	B12	Basin 12	1.4	6.36	9.96	0.906	20.201	44.06	0.54	0.31	19.49	0.743	11L	0	0.01	0	11L	0	0.01	0		0	0.31	835.66	19.49	0.549	841	3.803
Pond	B13	Basin 13	1.4	12.88	9.97	2.2	64.115	22.11	0.41	0.31	15.55	1.142	11L	0.91	15.55	0.674	11L	0	0.01	0		0	1.22	839.94	15.55	1.188	846	4.267
Pond	B4	Basin 4	1.4	13.34	9.97	2.147	38.712	55.38	0.67	0.4	13.17	1.228	Ck Qa	0.88	13.17	0.709	Ck Qa	0	0.01	0		0	1.28	836.28	13.17	1.122	842.5	5.149
Pond	B5	Basin 5	1.4	5.11	9.98	0.981	32.696	30.34	0.36	0.31	13.76	0.788	SD	0.22	13.76	0.193		0	0.01	0		0	0.53	845.12	13.76	0.421	852	4.099
Pond	B6	Basin 6	1.4	9.46	9.98	1.817	34.039	52.56	0.64	0.26	13.68	0.849	Ck Qb	0.75	13.68	0.707	Ck Qb	0	0.01	0		0	1.01	848.49	13.68	0.958	854.4	3.598
Pond	B7	Basin 7	1.4	5.13	9.98	1.67	108.754	33.3	0.18	0.84	18.68	1.67	Ex SD	0	0.01	0		0	0.01	0		0	0.84	839.85	18.68	0.559	847	11.849
Pond	B8	Basin 8	1.4	6.93	9.99	1.584	44.689	35.47	0.43	0.38	15.34	1.139	SD	0.32	15.34	0.445		0	0.01	0		0	0.7	854.68	15.34	0.751	859	3.387
Pond	B9	Basin 9	1.4	1	9.98	0.199	11.446	17.36	0.21	0	0	0	6L	0.51	10.5	0.198		0	0	0		0	0.51	848.33	10.5	0.047	853	1.119
Pond	Ex SD	Tract #1632 Ex. 36" SD Outlet	1.4	0	0.01	0	108.754	33.3	0	0	0	0	1L	0	0.01	0		0	0	0		0	0	836	0.01	0	0	0
Pond	MC Q	SD System	1.4	9.89	9.97	1.705	21.5	80	0.95	0.1	10.06	0.348	2P	4.12	10.06	0.523	B1	4.36	10.06	0.554		0	8.58	845.68	10.06	0.493	846.5	0.607
Pond	SD	42" HDPE SD	1.4	0.54	14.08	0.638	77.385	33.3	0.1	0	0	0	B7	0.54	14.08	0.638		0	0	0		0	0.54	844.44	14.16	0	0	0

OLSEN-CHANDLER RANCH TENTATIVE TRACT MAP

PRELIMINARY DETENTION BASIN SUMMARY

1 Year Storm Event

Proposed Conditions

Node Type	Node Number	Node Name	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Peak Time (hours)	Inflow Volume (acre-feet)	Inflow Area (acres)	Imperv. Inflow Area (%)	Inflow Depth (inches)	Discarded Outflow Peak (cfs)	Discarded Outflow Peak Time (hours)	Discarded Outflow Volume (AF)	Primary Routing	Primary Outflow Peak (cfs)	Primary Outflow Peak Time (hours)	Primary Outflow Volume (acre-feet)	Secondary Routing	Secondary Outflow Peak (cfs)	Secondary Outflow Peak Time (hours)	Secondary Outflow Volume (AF)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)	Top Elevation (feet)	Top Storage (acre-feet)
Pond	1P	SD Inlet with Bypass SD	1.61	0.6	18.2	0.552	108.566	6.93	0.06	0	0	0	11L	0.6	18.19	0.552	11L	0	0.01	0		0	0.6	824.55	18.19	0	0	0
Pond	2P	60" SD MH	1.61	5.51	9.99	0.673	21.5	80	0.38	0	0	0	B1	5.51	9.99	0.673	B1	0	0.01	0		0	5.51	839.46	9.99	0	0	0
Pond	15P	SD System 42" HDPE	1.61	0	0.01	0	0	0	0	0	0	0	B1	0	0.01	0		0	0	0		0	0	844.17	0.85	0	0	0
Pond	16P	Dbl Conc. Arch Culvert (37x23)	1.61	1.54	9.96	0.866	276.531	1.6	0.04	0	0	0	10L	1.54	9.96	0.866		0	0	0		0	1.54	843.8	9.96	0	0	0
Pond	17P	Gran Cielo Dwy	1.61	14.73	10	4.875	166.738	0.91	0.35	0	0	0	18P	14.33	10.04	4.875	18P	0	0.01	0	17R	0	14.33	853.55	10.04	0.04	856.14	0.511
Pond	18P	GC-CkD1	1.61	22.86	10.02	7.382	240.622	1.05	0.37	0	0	0	19P	0	0.01	0	19P	0	0.01	0	Ex Chl	22.84	22.84	847.51	10.03	0.054	852	1.614
Pond	19P	GC-CkD2	1.61	1.06	10	0.426	260.311	0.99	0.02	0	0	0	20P	0.51	11.27	0.424	20P	0	0.01	0	22L	0	0.51	846.84	11.27	0.036	850	1.066
Pond	20P	GC-CkD3	1.61	0.82	10.46	0.663	274.094	0.94	0.03	0	0	0	16P	0.75	12.5	0.653	16P	0	0.01	0	22L	0	0.75	844.7	12.5	0.06	846.5	0.565
Pond	B1	Basin 1	1.61	22.52	9.98	3.126	47.388	67.98	0.79	0.93	17.9	2.603	Ck Qa	0.33	17.9	0.195	Ck Qa	0	0.01	0		0	1.26	834.45	17.9	1.914	839.35	8.595
Pond	B10	Basin 10	1.61	11.08	9.98	2.215	30.685	61.94	0.87	0.73	19.33	1.951	11L	0	0.01	0	11L	0	0.01	0		0	0.73	816.15	19.33	1.384	820	5.425
Pond	B11	Basin 11	1.61	6.04	9.96	0.904	14.461	52	0.75	0.19	23.9	0.668	1P	0	0.01	0	1P	0	0.01	0		0	0.19	831.54	23.9	0.652	836	2.037
Pond	B12	Basin 12	1.61	7.43	9.96	1.093	20.201	44.06	0.65	0.37	19.86	0.908	11L	0	0.01	0	11L	0	0.01	0		0	0.37	835.94	19.86	0.664	841	3.803
Pond	B13	Basin 13	1.61	16.74	9.97	2.809	64.115	22.11	0.53	0.32	13.16	1.157	11L	1.73	13.16	1.265	11L	0	0.01	0		0	2.05	840.14	13.16	1.26	846	4.267
Pond	B4	Basin 4	1.61	15.59	9.97	2.565	38.712	55.38	0.8	0.42	13.01	1.271	Ck Qa	1.18	13.01	1.08	Ck Qa	0	0.01	0		0	1.6	836.62	13.01	1.285	842.5	5.149
Pond	B5	Basin 5	1.61	5.97	9.98	1.179	32.696	30.34	0.43	0.31	13.78	0.862	SD	0.3	13.78	0.317		0	0.01	0		0	0.61	845.33	13.78	0.507	852	4.099
Pond	B6	Basin 6	1.61	11.07	9.98	2.182	34.039	52.56	0.77	0.27	12.96	0.88	Ck Qb	1.16	12.96	1.034	Ck Qb	0	0.01	0		0	1.43	848.91	12.96	1.091	854.4	3.598
Pond	B7	Basin 7	1.61	6.04	9.98	2.165	108.754	33.3	0.24	0.96	21.35	2.165	Ex SD	0	0.01	0		0	0.01	0		0	0.96	840.01	21.35	0.751	847	11.849
Pond	B8	Basin 8	1.61	8.11	9.99	1.897	44.689	35.47	0.51	0.4	16.96	1.286	SD	0.37	16.96	0.612		0	0.01	0		0	0.77	855.05	16.96	0.934	859	3.387
Pond	B9	Basin 9	1.61	1.17	9.98	0.248	11.446	17.36	0.26	0	0	0	6L	0.62	10.47	0.246		0	0	0		0	0.62	848.37	10.47	0.053	853	1.119
Pond	Ex SD	Tract #1632 Ex. 36" SD Outlet	1.61	0	0.01	0	108.754	33.3	0	0	0	0	1L	0	0.01	0		0	0	0		0	0	836	0.01	0	0	0
Pond	MC Q	SD System	1.61	11.57	9.97	2.016	21.5	80	1.12	0.1	9.99	0.351	2P	5.51	9.99	0.673	B1	5.84	9.99	0.712		0	11.45	845.72	9.99	0.497	846.5	0.607
Pond	SD	42" HDPE SD	1.61	0.67	14.3	0.928	77.385	33.3	0.14	0	0	0	B7	0.67	14.31	0.928		0	0	0		0	0.67	844.47	14.51	0	0	0

OLSEN-CHANDLER RANCH TENTATIVE TRACT MAP

PRELIMINARY DETENTION BASIN SUMMARY

2 Year Storm Event

Proposed Conditions

Node Type	Node Number	Node Name	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Peak Time (hours)	Inflow Volume (acre-feet)	Inflow Area (acres)	Imperv. Inflow Area (%)	Inflow Depth (inches)	Discarded Outflow Peak (cfs)	Discarded Outflow Peak Time (hours)	Discarded Outflow Volume (AF)	Primary Routing	Primary Outflow Peak (cfs)	Primary Outflow Peak Time (hours)	Primary Outflow Volume (acre-feet)	Secondary Routing	Secondary Outflow Peak (cfs)	Secondary Outflow Peak Time (hours)	Secondary Outflow Volume (AF)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)	Top Elevation (feet)	Top Storage (acre-feet)
Pond	1P	SD Inlet with Bypass SD	2.33	3.41	10.27	2.735	108.566	6.93	0.3	0	0	0	11L	3.41	10.27	2.735	11L	0	0.01	0		0	3.41	824.64	10.27	0	0	0
Pond	2P	60" SD MH	2.33	8.31	9.99	1.203	21.5	80	0.67	0	0	0	B1	8.31	9.99	1.203	B1	0	0.01	0		0	8.31	839.69	9.99	0	0	0
Pond	15P	SD System 42" HDPE	2.33	0	0.01	0	0	0	0	0	0	0	B1	0	0.01	0		0	0	0		0	0	844.17	0.85	0	0	0
Pond	16P	Dbl Conc. Arch Culvert (37x23)	2.33	2.62	9.99	2.008	276.531	1.6	0.09	0	0	0	10L	2.62	9.99	2.008		0	0	0		0	2.62	843.88	9.99	0	0	0
Pond	17P	Gran Cielo Dwy	2.33	47.53	9.99	10.915	166.738	0.91	0.79	0	0	0	18P	46.4	10.02	10.915	18P	0	0.01	0	17R	0	46.4	854.16	10.02	0.114	856.14	0.511
Pond	18P	GC-CkD1	2.33	70.49	10.01	16.278	240.622	1.05	0.81	0	0	0	19P	0.19	10.01	0.004	19P	0	0.01	0	Ex Chl	70.21	70.4	848.08	10.01	0.081	852	1.614
Pond	19P	GC-CkD2	2.33	5.16	9.99	1.055	260.311	0.99	0.05	0	0	0	20P	0.95	10.96	0.982	20P	0.54	10.96	0.072	22L	0	1.49	848.01	10.96	0.191	850	1.066
Pond	20P	GC-CkD3	2.33	3.41	9.99	1.689	274.094	0.94	0.07	0	0	0	16P	2.17	11.26	1.674	16P	0.04	11.26	0.005	22L	0	2.21	845.08	11.26	0.123	846.5	0.565
Pond	B1	Basin 1	2.33	33.8	9.98	5.194	47.388	67.98	1.32	0.96	12.43	2.782	Ck Qa	2.98	12.43	2.06	Ck Qa	0	0.01	0		0	3.94	834.95	12.43	2.513	839.35	8.595
Pond	B10	Basin 10	2.33	16.54	9.98	3.474	30.685	61.94	1.36	0.77	15.89	2.542	11L	0.7	15.89	0.513	11L	0	0.01	0		0	1.47	816.9	15.89	2.096	820	5.425
Pond	B11	Basin 11	2.33	9.1	9.96	1.469	14.461	52	1.22	0.21	12.68	0.739	1P	0.79	12.68	0.473	1P	0	0.01	0		0	1	832.03	12.68	0.766	836	2.037
Pond	B12	Basin 12	2.33	11.41	9.96	1.819	20.201	44.06	1.08	0.43	18.3	1.374	11L	0.29	18.3	0.184	11L	0	0.01	0		0	0.72	836.87	18.3	1.133	841	3.803
Pond	B13	Basin 13	2.33	32.84	9.97	5.235	64.115	22.11	0.98	0.38	11.7	1.221	11L	4.63	11.7	3.62	11L	0	0.01	0		0	5.01	841.67	11.7	1.893	846	4.267
Pond	B4	Basin 4	2.33	23.47	9.97	4.132	38.712	55.38	1.28	0.48	12.33	1.47	Ck Qa	2.53	12.33	2.426	Ck Qa	0	0.01	0		0	3.01	837.92	12.33	1.953	842.5	5.149
Pond	B5	Basin 5	2.33	8.91	9.98	2.019	32.696	30.34	0.74	0.34	13.45	1.073	SD	0.91	13.45	0.946		0	0.01	0		0	1.25	846.09	13.45	0.823	852	4.099
Pond	B6	Basin 6	2.33	16.99	9.98	3.559	34.039	52.56	1.25	0.3	10.89	0.944	Ck Qb	4.94	10.89	2.333	Ck Qb	0	0.01	0		0	5.24	849.79	10.89	1.388	854.4	3.598
Pond	B7	Basin 7	2.33	9.38	9.98	4.548	108.754	33.3	0.5	1.05	21.83	3.899	Ex SD	0.96	21.83	0.621		0	0.01	0		0	2.01	841.02	21.83	2.059	847	11.849
Pond	B8	Basin 8	2.33	12.19	9.99	3.178	44.689	35.47	0.85	0.46	15.62	1.664	SD	1.05	15.62	1.514		0	0.01	0		0	1.51	856.21	15.62	1.565	859	3.387
Pond	B9	Basin 9	2.33	1.74	9.98	0.481	11.446	17.36	0.5	0	0	0	6L	1.02	10.42	0.479		0	0	0		0	1.02	848.48	10.42	0.07	853	1.119
Pond	Ex SD	Tract #1632 Ex. 36" SD Outlet	2.33	0.96	21.83	0.621	108.754	33.3	0.07	0	0	0	1L	0.96	21.84	0.621		0	0	0		0	0.96	836.36	21.84	0	0	0
Pond	MC Q	SD System	2.33	17.34	9.97	3.116	21.5	80	1.74	0.11	9.99	0.358	2P	8.31	9.99	1.203	B1	8.8	9.99	1.274		0	17.22	845.79	9.99	0.505	846.5	0.607
Pond	SD	42" HDPE SD	2.33	1.91	14.17	2.46	77.385	33.3	0.38	0	0	0	B7	1.91	14.17	2.46		0	0	0		0	1.91	844.69	14.52	0	0	0

OLSEN-CHANDLER RANCH TENTATIVE TRACT MAP

PRELIMINARY DETENTION BASIN SUMMARY

5 Year Storm Event

Proposed Conditions

Node Type	Node Number	Node Name	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Peak Time (hours)	Inflow Volume (acre-feet)	Inflow Area (acres)	Imperv. Inflow Area (%)	Inflow Depth (inches)	Discarded Outflow Peak (cfs)	Discarded Outflow Peak Time (hours)	Discarded Outflow Volume (AF)	Primary Routing	Primary Outflow Peak (cfs)	Primary Outflow Peak Time (hours)	Primary Outflow Volume (acre-feet)	Secondary Routing	Secondary Outflow Peak (cfs)	Secondary Outflow Peak Time (hours)	Secondary Outflow Volume (AF)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)	Top Elevation (feet)	Top Storage (acre-feet)
Pond	1P	SD Inlet with Bypass SD	3.27	24.63	9.98	6.953	108.566	6.93	0.77	0	0	0	11L	24.63	9.98	6.953	11L	0	0.01	0		0	24.63	825.04	9.98	0	0	0
Pond	2P	60" SD MH	3.27	12.22	9.99	1.926	21.5	80	1.08	0	0	0	B1	12.22	9.99	1.926	B1	0	0.01	0		0	12.22	839.97	9.99	0	0	0
Pond	15P	SD System 42" HDPE	3.27	8.49	10.19	0.455	0	0	0	0	0	0	B1	8.49	10.19	0.455		0	0	0		0	8.49	844.34	10.19	0	0	0
Pond	16P	Dbl Conc. Arch Culvert (37x23)	3.27	8.06	10.14	3.487	276.531	1.6	0.15	0	0	0	10L	8.06	10.14	3.487		0	0	0		0	8.06	844.18	10.14	0	0	0
Pond	17P	Gran Cielo Dwy	3.27	101.36	9.99	20.431	166.738	0.91	1.47	0	0	0	18P	85.85	10	20.189	18P	0	0.01	0	17R	15.06	100.91	854.74	10	0.205	856.14	0.511
Pond	18P	GC-CkD1	3.27	135.42	9.99	29.955	240.622	1.05	1.49	0	0	0	19P	0.65	9.96	0.013	19P	5.16	10.02	0.062	Ex Chl	127.28	133	848.84	10.02	0.163	852	1.614
Pond	19P	GC-CkD2	3.27	17.12	10	2.154	260.311	0.99	0.1	0	0	0	20P	1.09	10.14	1.289	20P	9.21	10.14	0.864	22L	0	10.3	848.51	10.14	0.302	850	1.066
Pond	20P	GC-CkD3	3.27	15.67	10.12	3.464	274.094	0.94	0.15	0	0	0	16P	3.99	10.19	2.748	16P	2.26	10.19	0.25	22L	8.49	14.75	845.46	10.19	0.21	846.5	0.565
Pond	B1	Basin 1	3.27	49.24	9.98	8.553	47.388	67.98	2.17	1.02	11.12	2.96	Ck Qa	9.63	11.12	5.222	Ck Qa	0	0.01	0		0	10.65	835.93	11.12	3.753	839.35	8.595
Pond	B10	Basin 10	3.27	24.16	9.98	5.271	30.685	61.94	2.06	0.8	12.86	2.679	11L	2.71	12.86	2.15	11L	0	0.01	0		0	3.51	817.46	12.86	2.653	820	5.425
Pond	B11	Basin 11	3.27	14.34	9.96	2.296	14.461	52	1.91	0.23	10.73	0.761	1P	2.88	10.73	1.274	1P	0	0.01	0		0	3.11	832.65	10.73	0.922	836	2.037
Pond	B12	Basin 12	3.27	18.57	9.96	2.913	20.201	44.06	1.73	0.45	12.63	1.444	11L	1.62	12.63	1.2	11L	0	0.01	0		0	2.08	837.3	12.63	1.363	841	3.803
Pond	B13	Basin 13	3.27	59.63	9.96	8.93	64.115	22.11	1.67	0.43	10.31	1.298	11L	23.88	10.31	7.223	11L	0	0.01	0		0	24.31	843.07	10.31	2.561	846	4.267
Pond	B4	Basin 4	3.27	36.4	9.97	6.403	38.712	55.38	1.98	0.52	10.57	1.6	Ck Qa	11.42	10.57	4.55	Ck Qa	0	0.01	0		0	11.94	838.69	10.57	2.4	842.5	5.149
Pond	B5	Basin 5	3.27	13.89	9.99	3.408	32.696	30.34	1.25	0.37	11.51	1.166	SD	3.09	11.5	2.242		0	0.01	0		0	3.45	846.82	11.51	1.152	852	4.099
Pond	B6	Basin 6	3.27	26.85	9.98	5.566	34.039	52.56	1.96	0.35	10.57	0.996	Ck Qb	11.64	10.57	4.28	Ck Qb	0	0.01	0		0	12	850.86	10.57	1.798	854.4	3.598
Pond	B7	Basin 7	3.27	14.56	9.99	9.126	108.754	33.3	1.01	1.11	15.63	4.196	Ex SD	5.13	15.63	4.846		0	0.01	0		0	6.24	841.67	15.63	2.955	847	11.849
Pond	B8	Basin 8	3.27	19.07	9.99	5.22	44.689	35.47	1.4	0.5	12.6	1.803	SD	3.61	12.6	3.417		0	0.01	0		0	4.11	857.14	12.6	2.124	859	3.387
Pond	B9	Basin 9	3.27	3.11	9.99	0.906	11.446	17.36	0.95	0	0	0	6L	2.01	10.45	0.904		0	0	0		0	2.01	848.7	10.45	0.104	853	1.119
Pond	Ex SD	Tract #1632 Ex. 36" SD Outlet	3.27	5.13	15.63	4.846	108.754	33.3	0.53	0	0	0	1L	5.13	15.63	4.846		0	0	0		0	5.13	836.85	15.63	0	0	0
Pond	MC Q	SD System	3.27	25.44	9.97	4.613	21.5	80	2.57	0.11	9.99	0.366	2P	12.22	9.99	1.926	B1	12.94	9.99	2.04		0	25.28	845.88	9.99	0.516	846.5	0.607
Pond	SD	42" HDPE SD	3.27	6.5	12.07	5.659	77.385	33.3	0.88	0	0	0	B7	6.5	12.07	5.659		0	0	0		0	6.5	845.13	12.39	0	0	0

OLSEN-CHANDLER RANCH TENTATIVE TRACT MAP

PRELIMINARY DETENTION BASIN SUMMARY
10 Year Storm Event
Proposed Conditions

Node Type	Node Number	Node Name	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Peak Time (hours)	Inflow Volume (acre-feet)	Inflow Area (acres)	Imperv. Inflow Area (%)	Inflow Depth (inches)	Discarded Outflow Peak (cfs)	Discarded Outflow Peak Time (hours)	Discarded Outflow Volume (AF)	Primary Routing	Primary Outflow Peak (cfs)	Primary Outflow Peak Time (hours)	Primary Outflow Volume (acre-feet)	Secondary Routing	Secondary Outflow Peak (cfs)	Secondary Outflow Peak Time (hours)	Secondary Outflow Volume (AF)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)	Top Elevation (feet)	Top Storage (acre-feet)
Pond	1P	SD Inlet with Bypass SD	3.6	35.45	9.99	8.685	108.566	6.93	0.96	0	0	0	11L	35.45	9.99	8.685	11L	0	0.01	0		0	35.45	825.19	9.99	0	0	0
Pond	2P	60" SD MH	3.6	13.65	9.99	2.186	21.5	80	1.22	0	0	0	B1	13.65	9.99	2.186	B1	0	0.01	0		0	13.65	840.06	9.99	0	0	0
Pond	15P	SD System 42" HDPE	3.6	17.03	10.14	0.846	0	0	0	0	0	0	B1	17.03	10.14	0.846		0	0	0		0	17.03	844.4	10.14	0	0	0
Pond	16P	Dbl Conc. Arch Culvert (37x23)	3.6	10.83	10.11	3.972	276.531	1.6	0.17	0	0	0	10L	10.83	10.11	3.972		0	0	0		0	10.83	844.3	10.11	0	0	0
Pond	17P	Gran Cielo Dwy	3.6	122.07	9.98	24.054	166.738	0.91	1.73	0	0	0	18P	93.38	9.99	23.448	18P	0	0.01	0	17R	28.32	121.7	854.84	9.99	0.224	856.14	0.511
Pond	18P	GC-CkD1	3.6	152.52	9.99	34.873	240.622	1.05	1.74	0	0	0	19P	0.64	9.93	0.017	19P	12.52	10.01	0.211	Ex Chl	136.21	149.21	849.1	10.02	0.209	852	1.614
Pond	19P	GC-CkD2	3.6	27.17	10	2.706	260.311	0.99	0.12	0	0	0	20P	1.16	10.11	1.345	20P	18.4	10.11	1.36	22L	0.1	19.65	848.77	10.11	0.374	850	1.066
Pond	20P	GC-CkD3	3.6	26.7	10.09	4.281	274.094	0.94	0.19	0	0	0	16P	4.72	10.14	3.046	16P	3.87	10.14	0.379	22L	16.95	25.54	845.61	10.14	0.25	846.5	0.565
Pond	B1	Basin 1	3.6	61.24	10.05	10.005	47.388	67.98	2.53	1.05	10.93	3.02	Ck Qa	13.77	10.93	6.61	Ck Qa	0	0.01	0		0	14.82	836.34	10.93	4.294	839.35	8.595
Pond	B10	Basin 10	3.6	27.15	9.98	5.934	30.685	61.94	2.32	0.82	12.3	2.723	11L	3.68	12.3	2.761	11L	0	0.01	0		0	4.5	817.66	12.3	2.861	820	5.425
Pond	B11	Basin 11	3.6	16.38	9.96	2.604	14.461	52	2.16	0.24	10.69	0.77	1P	3.46	10.69	1.573	1P	0	0.01	0		0	3.7	833	10.69	1.019	836	2.037
Pond	B12	Basin 12	3.6	21.44	9.96	3.326	20.201	44.06	1.98	0.47	12.37	1.467	11L	2.02	12.37	1.588	11L	0	0.01	0		0	2.49	837.54	12.37	1.502	841	3.803
Pond	B13	Basin 13	3.6	69.87	9.96	10.322	64.115	22.11	1.93	0.44	10.22	1.321	11L	34.55	10.22	8.587	11L	0	0.01	0		0	34.99	843.39	10.22	2.73	846	4.267
Pond	B4	Basin 4	3.6	41.42	9.97	7.245	38.712	55.38	2.25	0.54	10.5	1.63	Ck Qa	14.66	10.5	5.358	Ck Qa	0	0.01	0		0	15.2	838.95	10.5	2.555	842.5	5.149
Pond	B5	Basin 5	3.6	16.32	9.99	3.956	32.696	30.34	1.45	0.38	11.22	1.188	SD	4.28	11.19	2.768		0	0.01	0		0	4.65	847.07	11.22	1.268	852	4.099
Pond	B6	Basin 6	3.6	30.64	9.98	6.31	34.039	52.56	2.22	0.37	10.45	1.011	Ck Qb	15.84	10.45	5.009	Ck Qb	0	0.01	0		0	16.21	851.09	10.45	1.896	854.4	3.598
Pond	B7	Basin 7	3.6	17.05	9.99	10.954	108.754	33.3	1.21	1.14	14.56	4.271	Ex SD	6.98	14.56	6.584		0	0.01	0		0	8.12	841.95	14.56	3.351	847	11.849
Pond	B8	Basin 8	3.6	22.23	9.99	6.012	44.689	35.47	1.61	0.51	11.62	1.833	SD	5.93	11.62	4.179		0	0.01	0		0	6.44	857.36	11.62	2.263	859	3.387
Pond	B9	Basin 9	3.6	3.86	9.99	1.08	11.446	17.36	1.13	0	0	0	6L	2.51	10.44	1.078		0	0	0		0	2.51	848.8	10.44	0.12	853	1.119
Pond	Ex SD	Tract #1632 Ex. 36" SD Outlet	3.6	6.98	14.56	6.584	108.754	33.3	0.73	0	0	0	1L	6.98	14.56	6.584		0	0	0		0	6.98	837	14.56	0	0	0
Pond	MC Q	SD System	3.6	28.37	9.97	5.15	21.5	80	2.87	0.11	9.99	0.368	2P	13.65	9.99	2.186	B1	14.45	9.99	2.315		0	28.21	845.91	9.99	0.519	846.5	0.607
Pond	SD	42" HDPE SD	3.6	10.07	11.57	6.947	77.385	33.3	1.08	0	0	0	B7	10.07	11.57	6.947		0	0	0		0	10.07	845.37	11.64	0	0	0

OLSEN-CHANDLER RANCH TENTATIVE TRACT MAP

PRELIMINARY DETENTION BASIN SUMMARY

25 Year Storm Event

Proposed Conditions

Node Type	Node Number	Node Name	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Peak Time (hours)	Inflow Volume (acre-feet)	Inflow Area (acres)	Imperv. Inflow Area (%)	Inflow Depth (inches)	Discarded Outflow Peak (cfs)	Discarded Outflow Peak Time (hours)	Discarded Outflow Volume (AF)	Primary Routing	Primary Outflow Peak (cfs)	Primary Outflow Peak Time (hours)	Primary Outflow Volume (acre-feet)	Secondary Routing	Secondary Outflow Peak (cfs)	Secondary Outflow Peak Time (hours)	Secondary Outflow Volume (AF)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)	Top Elevation (feet)	Top Storage (acre-feet)
Pond	1P	SD Inlet with Bypass SD	4.2	57.87	9.98	12.093	108.566	6.93	1.34	0	0	0	11L	57.87	9.98	12.093	11L	0	0.01	0		0	57.87	825.45	9.98	0	0	0
Pond	2P	60" SD MH	4.2	16.26	9.99	2.664	21.5	80	1.49	0	0	0	B1	16.26	9.99	2.664	B1	0	0.01	0		0	16.26	840.22	9.99	0	0	0
Pond	15P	SD System 42" HDPE	4.2	36.99	10.09	1.833	0	0	0	0	0	0	B1	36.99	10.09	1.833		0	0	0		0	36.99	844.52	10.09	0	0	0
Pond	16P	Dbl Conc. Arch Culvert (37x23)	4.2	15.27	10.07	4.839	276.531	1.6	0.21	0	0	0	10L	15.27	10.07	4.839		0	0	0		0	15.27	844.48	10.07	0	0	0
Pond	17P	Gran Cielo Dwy	4.2	161.34	9.98	30.903	166.738	0.91	2.22	0	0	0	18P	104.8	9.99	29.304	18P	0.01	9.99	0	17R	56.21	161.03	855	9.99	0.253	856.14	0.511
Pond	18P	GC-CkD1	4.2	181.92	9.98	43.852	240.622	1.05	2.19	0	0	0	19P	0.6	9.92	0.025	19P	25.9	10.01	0.677	Ex Chl	149.04	175.31	849.52	10.03	0.309	852	1.614
Pond	19P	GC-CkD2	4.2	45.55	10	3.943	260.311	0.99	0.18	0	0	0	20P	1.23	10.08	1.419	20P	33.35	10.08	2.431	22L	5.36	39.95	849.11	10.08	0.48	850	1.066
Pond	20P	GC-CkD3	4.2	45.11	10.06	5.938	274.094	0.94	0.26	0	0	0	16P	5.62	10.1	3.513	16P	6.57	10.1	0.672	22L	31.77	43.97	845.79	10.1	0.304	846.5	0.565
Pond	B1	Basin 1	4.2	93.8	10.04	12.965	47.388	67.98	3.28	1.09	10.6	3.116	Ck Qa	29.18	10.6	9.465	Ck Qa	0	0.01	0		0	30.26	837	10.6	5.171	839.35	8.595
Pond	B10	Basin 10	4.2	32.9	9.98	7.171	30.685	61.94	2.8	0.84	11.45	2.797	11L	6.57	11.45	3.913	11L	0	0.01	0		0	7.4	817.99	11.45	3.196	820	5.425
Pond	B11	Basin 11	4.2	20.25	9.96	3.183	14.461	52	2.64	0.26	10.55	0.785	1P	5.24	10.55	2.136	1P	0	0.01	0		0	5.5	833.6	10.55	1.193	836	2.037
Pond	B12	Basin 12	4.2	26.91	9.96	4.105	20.201	44.06	2.44	0.49	12.16	1.514	11L	2.71	12.16	2.317	11L	0	0.01	0		0	3.2	838.07	12.16	1.809	841	3.803
Pond	B13	Basin 13	4.2	89.2	9.96	12.943	64.115	22.11	2.42	0.46	10.09	1.355	11L	62.05	10.09	11.167	11L	0	0.01	0		0	62.52	843.86	10.09	2.981	846	4.267
Pond	B4	Basin 4	4.2	50.91	9.97	8.821	38.712	55.38	2.73	0.57	10.46	1.674	Ck Qa	19.48	10.46	6.886	Ck Qa	0	0.01	0		0	20.05	839.49	10.46	2.897	842.5	5.149
Pond	B5	Basin 5	4.2	21.35	9.99	5.016	32.696	30.34	1.84	0.39	10.91	1.221	SD	7.13	10.91	3.796		0	0.01	0		0	7.52	847.51	10.91	1.476	852	4.099
Pond	B6	Basin 6	4.2	37.81	9.98	7.705	34.039	52.56	2.72	0.38	10.32	1.034	Ck Qb	23.43	10.32	6.379	Ck Qb	0	0.01	0		0	23.8	851.4	10.32	2.036	854.4	3.598
Pond	B7	Basin 7	4.2	28.12	10.77	14.5	108.754	33.3	1.6	1.2	13.1	4.392	Ex SD	11.9	13.1	9.989		0	0.01	0		0	13.1	842.46	13.1	4.094	847	11.849
Pond	B8	Basin 8	4.2	28.75	9.99	7.533	44.689	35.47	2.02	0.53	10.87	1.876	SD	12.49	10.87	5.657		0	0.01	0		0	13.01	857.57	10.87	2.399	859	3.387
Pond	B9	Basin 9	4.2	5.46	9.99	1.422	11.446	17.36	1.49	0	0	0	6L	3.56	10.42	1.421		0	0	0		0	3.56	849	10.42	0.153	853	1.119
Pond	Ex SD	Tract #1632 Ex. 36" SD Outlet	4.2	11.9	13.1	9.989	108.754	33.3	1.1	0	0	0	1L	11.9	13.1	9.989		0	0	0		0	11.9	837.33	13.1	0	0	0
Pond	MC Q	SD System	4.2	33.79	9.97	6.138	21.5	80	3.43	0.12	9.99	0.372	2P	16.26	9.99	2.664	B1	17.22	9.99	2.821		0	33.6	845.96	9.99	0.526	846.5	0.607
Pond	SD	42" HDPE SD	4.2	19.61	10.87	9.453	77.385	33.3	1.47	0	0	0	B7	19.61	10.87	9.453		0	0	0		0	19.61	845.86	10.93	0	0	0

OLSEN-CHANDLER RANCH TENTATIVE TRACT MAP

PRELIMINARY DETENTION BASIN SUMMARY

50 Year Storm Event

Proposed Conditions

Node Type	Node Number	Node Name	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Peak Time (hours)	Inflow Volume (acre-feet)	Inflow Area (acres)	Imperv. Inflow Area (%)	Inflow Depth (inches)	Discarded Outflow Peak (cfs)	Discarded Outflow Peak Time (hours)	Discarded Outflow Volume (AF)	Primary Routing	Primary Outflow Peak (cfs)	Primary Outflow Peak Time (hours)	Primary Outflow Volume (acre-feet)	Secondary Routing	Secondary Outflow Peak (cfs)	Secondary Outflow Peak Time (hours)	Secondary Outflow Volume (AF)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)	Top Elevation (feet)	Top Storage (acre-feet)
Pond	1P	SD Inlet with Bypass SD	4.6	73.26	9.98	14.523	108.566	6.93	1.61	0	0	0	11L	73.26	9.98	14.523	11L	0	0.01	0		0	73.26	825.62	9.98	0	0	0
Pond	2P	60" SD MH	4.6	18.03	9.99	2.986	21.5	80	1.67	0	0	0	B1	18.03	9.99	2.986	B1	0	0.01	0		0	18.03	840.33	9.99	0	0	0
Pond	15P	SD System 42" HDPE	4.6	51.1	10.08	2.683	0	0	0	0	0	0	B1	51.1	10.08	2.683		0	0	0		0	51.1	844.59	10.08	0	0	0
Pond	16P	Dbl Conc. Arch Culvert (37x23)	4.6	17.74	10.05	5.377	276.531	1.6	0.23	0	0	0	10L	17.74	10.05	5.377		0	0	0		0	17.74	844.57	10.05	0	0	0
Pond	17P	Gran Cielo Dwy	4.6	188.4	9.98	35.62	166.738	0.91	2.56	0	0	0	18P	111.11	9.99	33.164	18P	0.18	9.99	0.002	17R	76.79	188.08	855.09	9.99	0.269	856.14	0.511
Pond	18P	GC-CkD1	4.6	200.71	9.98	49.854	240.622	1.05	2.49	0	0	0	19P	0.59	9.91	0.031	19P	35.96	10.02	1.101	Ex Chl	156.05	192.48	849.76	10.04	0.384	852	1.614
Pond	19P	GC-CkD2	4.6	58.68	10.01	4.902	260.311	0.99	0.23	0	0	0	20P	1.27	10.07	1.46	20P	41.32	10.07	3.201	22L	10.96	53.55	849.25	10.07	0.543	850	1.066
Pond	20P	GC-CkD3	4.6	55.32	10.05	7.106	274.094	0.94	0.31	0	0	0	16P	6.01	10.09	3.774	16P	8.13	10.09	0.878	22L	40.2	54.35	845.88	10.09	0.332	846.5	0.565
Pond	B1	Basin 1	4.6	115.89	10.03	15.158	47.388	67.98	3.84	1.12	10.6	3.177	Ck Qa	35.49	10.6	11.591	Ck Qa	0	0.01	0		0	36.61	837.56	10.6	5.949	839.35	8.595
Pond	B10	Basin 10	4.6	36.9	9.98	8.017	30.685	61.94	3.14	0.85	11.07	2.841	11L	9.72	11.07	4.707	11L	0	0.01	0		0	10.57	818.15	11.07	3.364	820	5.425
Pond	B11	Basin 11	4.6	22.92	9.96	3.58	14.461	52	2.97	0.27	10.42	0.793	1P	7.55	10.42	2.524	1P	0	0.01	0		0	7.82	833.87	10.42	1.278	836	2.037
Pond	B12	Basin 12	4.6	30.7	9.96	4.642	20.201	44.06	2.76	0.51	11.75	1.546	11L	3.48	11.75	2.819	11L	0	0.01	0		0	3.99	838.38	11.75	1.998	841	3.803
Pond	B13	Basin 13	4.6	102.5	9.96	14.744	64.115	22.11	2.76	0.47	10.04	1.375	11L	84.13	10.04	12.945	11L	0	0.01	0		0	84.6	844.03	10.04	3.076	846	4.267
Pond	B4	Basin 4	4.6	57.43	9.97	9.9	38.712	55.38	3.07	0.59	10.42	1.698	Ck Qa	23.63	10.42	7.938	Ck Qa	0	0.01	0		0	24.21	839.85	10.42	3.14	842.5	5.149
Pond	B5	Basin 5	4.6	25.03	9.99	5.762	32.696	30.34	2.11	0.41	10.8	1.238	SD	9.31	10.8	4.524		0	0.01	0		0	9.72	847.79	10.8	1.616	852	4.099
Pond	B6	Basin 6	4.6	42.75	9.98	8.66	34.039	52.56	3.05	0.38	10.29	1.047	Ck Qb	27.62	10.29	7.319	Ck Qb	0	0.01	0		0	28	851.6	10.29	2.127	854.4	3.598
Pond	B7	Basin 7	4.6	38.88	10.57	16.997	108.754	33.3	1.88	1.23	12.48	4.463	Ex SD	16.23	12.48	12.404		0	0.01	0		0	17.47	842.8	12.48	4.603	847	11.849
Pond	B8	Basin 8	4.6	33.51	9.99	8.595	44.689	35.47	2.31	0.53	10.65	1.899	SD	17.63	10.65	6.696		0	0.01	0		0	18.16	857.7	10.65	2.483	859	3.387
Pond	B9	Basin 9	4.6	6.65	9.99	1.667	11.446	17.36	1.75	0	0	0	6L	4.29	10.42	1.665		0	0	0		0	4.29	849.15	10.42	0.179	853	1.119
Pond	Ex SD	Tract #1632 Ex. 36" SD Outlet	4.6	16.23	12.48	12.404	108.754	33.3	1.37	0	0	0	1L	16.23	12.48	12.404		0	0	0		0	16.23	837.58	12.48	0	0	0
Pond	MC Q	SD System	4.6	37.43	9.97	6.803	21.5	80	3.8	0.12	9.99	0.374	2P	18.03	9.99	2.986	B1	19.09	9.99	3.162		0	37.24	845.99	9.99	0.53	846.5	0.607
Pond	SD	42" HDPE SD	4.6	26.8	10.67	11.22	77.385	33.3	1.74	0	0	0	B7	26.8	10.67	11.22		0	0	0		0	26.8	846.18	10.74	0	0	0

OLSEN-CHANDLER RANCH TENTATIVE TRACT MAP

PRELIMINARY DETENTION BASIN SUMMARY

100 Year Storm Event

Proposed Conditions

Node Type	Node Number	Node Name	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Peak Time (hours)	Inflow Volume (acre-feet)	Inflow Area (acres)	Imperv. Inflow Area (%)	Inflow Depth (inches)	Discarded Outflow Peak (cfs)	Discarded Outflow Peak Time (hours)	Discarded Outflow Volume (AF)	Primary Routing	Primary Outflow Peak (cfs)	Primary Outflow Peak Time (hours)	Primary Outflow Volume (acre-feet)	Secondary Routing	Secondary Outflow Peak (cfs)	Secondary Outflow Peak Time (hours)	Secondary Outflow Volume (AF)	Tertiary Routing	Tertiary Outflow Peak (cfs)	Outflow Total Peak (cfs)	Peak Elevation (feet)	Peak Elevation Time (hours)	Peak Storage (acre-feet)	Top Elevation (feet)	Top Storage (acre-feet)
Pond	1P	SD Inlet with Bypass SD	5.1	93.81	9.98	17.708	108.566	6.93	1.96	0	0	0	11L	93.81	9.98	17.708	11L	0	0.01	0		0	93.81	825.82	9.98	0	0	0
Pond	2P	60" SD MH	5.1	20.2	9.99	3.392	21.5	80	1.89	0	0	0	B1	20.2	9.99	3.392	B1	0	0.01	0		0	20.2	840.46	9.99	0	0	0
Pond	15P	SD System 42" HDPE	5.1	68.7	10.08	3.916	0	0	0	0	0	0	B1	68.7	10.08	3.916		0	0	0		0	68.7	844.66	10.08	0	0	0
Pond	16P	Dbl Conc. Arch Culvert (37x23)	5.1	20.76	10.04	6.013	276.531	1.6	0.26	0	0	0	10L	20.76	10.04	6.013		0	0	0		0	20.76	844.69	10.04	0	0	0
Pond	17P	Gran Cielo Dwy	5.1	222.96	9.98	41.649	166.738	0.91	3	0	0	0	18P	118.06	9.99	37.935	18P	0.66	9.99	0.009	17R	103.94	222.66	855.19	9.99	0.289	856.14	0.511
Pond	18P	GC-CkD1	5.1	223.8	9.98	57.362	240.622	1.05	2.86	0	0	0	19P	0.62	9.99	0.037	19P	49.36	10.03	1.73	Ex Chl	163.56	213.46	850.03	10.04	0.483	852	1.614
Pond	19P	GC-CkD2	5.1	76.4	10.01	6.218	260.311	0.99	0.29	0	0	0	20P	1.3	10.07	1.51	20P	50.4	10.07	4.202	22L	18.98	70.68	849.41	10.07	0.624	850	1.066
Pond	20P	GC-CkD3	5.1	67.1	10.05	8.618	274.094	0.94	0.38	0	0	0	16P	6.37	10.08	4.056	16P	10.21	10.08	1.141	22L	49.73	66.32	845.96	10.08	0.361	846.5	0.565
Pond	B1	Basin 1	5.1	143.08	10.02	18.094	47.388	67.98	4.58	1.18	10.61	3.251	Ck Qa	42.68	10.61	14.446	Ck Qa	0	0.01	0		0	43.86	838.35	10.61	7.075	839.35	8.595
Pond	B10	Basin 10	5.1	42.03	9.98	9.094	30.685	61.94	3.56	0.86	10.82	2.89	11L	14.28	10.82	5.727	11L	0	0.01	0		0	15.14	818.33	10.82	3.554	820	5.425
Pond	B11	Basin 11	5.1	26.34	9.96	4.086	14.461	52	3.39	0.28	10.34	0.803	1P	10.23	10.34	3.02	1P	0	0.01	0		0	10.51	834.16	10.34	1.37	836	2.037
Pond	B12	Basin 12	5.1	35.58	9.96	5.33	20.201	44.06	3.17	0.53	11.06	1.585	11L	5.12	11.06	3.464	11L	0	0.01	0		0	5.64	838.7	11.06	2.202	841	3.803
Pond	B13	Basin 13	5.1	119.46	9.96	17.044	64.115	22.11	3.19	0.48	10.01	1.396	11L	108.1	10.01	15.22	11L	0	0.01	0		0	108.58	844.19	10.01	3.165	846	4.267
Pond	B4	Basin 4	5.1	65.77	9.97	11.274	38.712	55.38	3.49	0.6	10.29	1.723	Ck Qa	34.06	10.29	9.285	Ck Qa	0	0.01	0		0	34.66	840.12	10.29	3.32	842.5	5.149
Pond	B5	Basin 5	5.1	29.91	9.99	6.733	32.696	30.34	2.47	0.42	10.7	1.257	SD	12.28	10.72	5.476		0	0.01	0		0	12.7	848.15	10.7	1.797	852	4.099
Pond	B6	Basin 6	5.1	49.06	9.98	9.876	34.039	52.56	3.48	0.39	10.28	1.062	Ck Qb	32.02	10.28	8.518	Ck Qb	0	0.01	0		0	32.41	851.88	10.28	2.255	854.4	3.598
Pond	B7	Basin 7	5.1	53.39	10.42	20.246	108.754	33.3	2.23	1.28	11.97	4.541	Ex SD	22.91	11.97	15.562		0	0.01	0		0	24.18	843.21	11.97	5.229	847	11.849
Pond	B8	Basin 8	5.1	39.82	9.99	9.971	44.689	35.47	2.68	0.54	10.48	1.926	SD	24.66	10.48	8.046		0	0.01	0		0	25.2	857.85	10.48	2.582	859	3.387
Pond	B9	Basin 9	5.1	8.24	9.99	1.988	11.446	17.36	2.08	0	0	0	6L	5.1	10.45	1.986		0	0	0		0	5.1	849.37	10.45	0.219	853	1.119
Pond	Ex SD	Tract #1632 Ex. 36" SD Outlet	5.1	22.91	11.97	15.562	108.754	33.3	1.72	0	0	0	1L	22.91	11.97	15.562		0	0	0		0	22.91	837.94	11.97	0	0	0
Pond	MC Q	SD System	5.1	42.04	9.97	7.642	21.5	80	4.27	0.12	9.99	0.377	2P	20.2	9.99	3.392	B1	21.51	9.99	3.592		0	41.83	846.03	9.99	0.535	846.5	0.607
Pond	SD	42" HDPE SD	5.1	36.4	10.52	13.522	77.385	33.3	2.1	0	0	0	B7	36.4	10.52	13.522		0	0	0		0	36.4	846.57	10.6	0	0	0

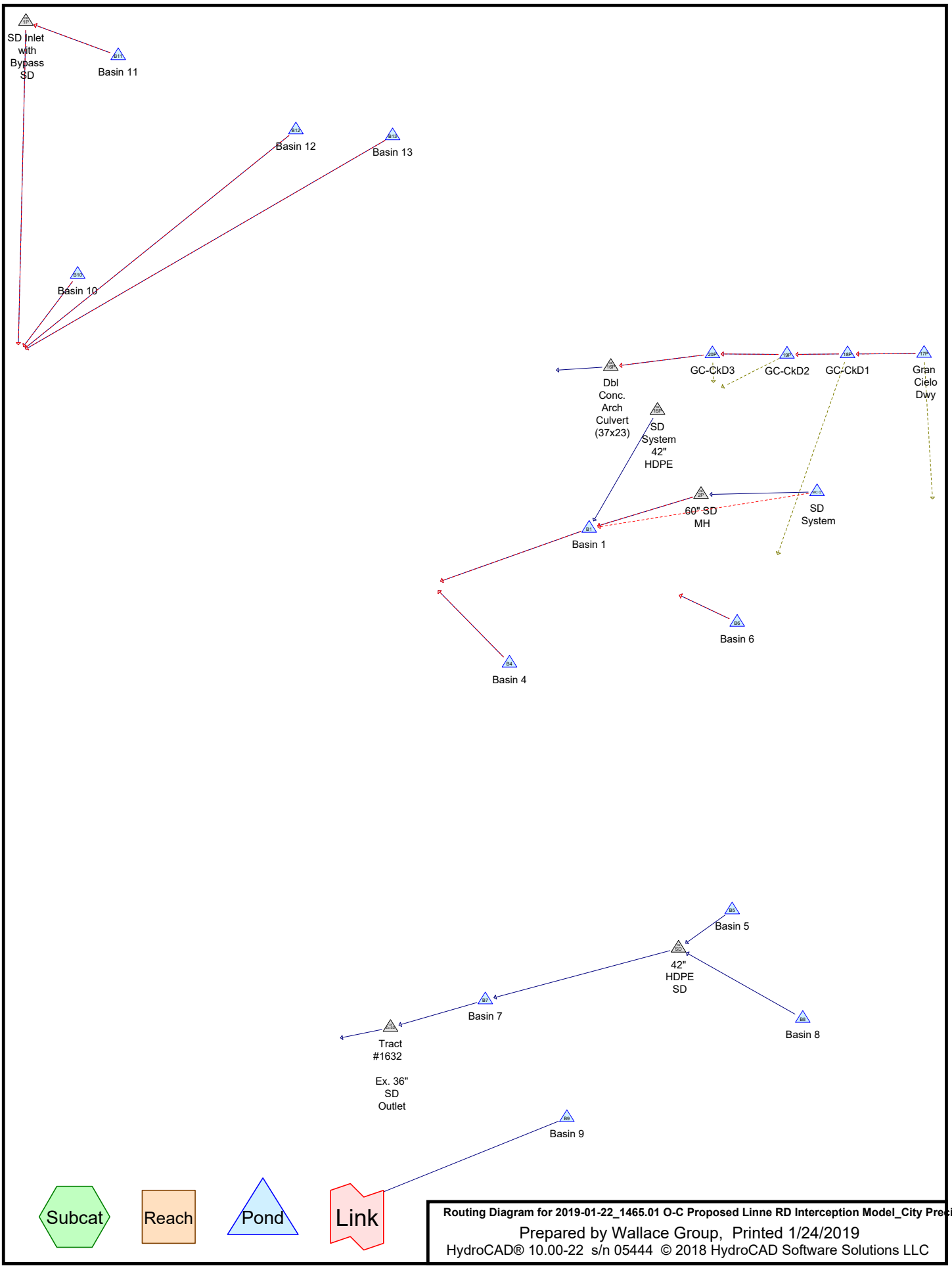
OLSEN-CHANDLER RANCH TENTATIVE TRACT MAP

PRELIMINARY DETENTION BASIN SUMMARY

100 Year Storm Detention Route

Proposed Conditions

Detention Pond Number	Detention Pond Name	Rainfall Depth (inches)	Inflow Peak (cfs)	Inflow Area (acres)	Outflow Total Peak (cfs)	Outflow Total Peak Time (hours)	Peak Elevation (feet)	Peak Storage (acre-feet)	Top Elevation (feet)	Top Storage (acre-feet)
B1	Basin 1	5.1	143.08	47.388	43.86	10.61	838.35	7.075	839.35	8.595
B4	Basin 4	5.1	65.77	38.712	34.66	10.29	840.12	3.32	842.5	5.149
B5	Basin 5	5.1	29.91	32.696	12.7	10.72	848.15	1.797	852	4.099
B6	Basin 6	5.1	49.06	34.039	32.41	10.28	851.88	2.255	854.4	3.598
B7	Basin 7	5.1	53.39	108.754	24.18	11.97	843.21	5.229	847	11.849
B8	Basin 8	5.1	39.82	44.689	25.2	10.48	857.85	2.582	859	3.387
B9	Basin 9	5.1	8.24	11.446	5.1	10.45	849.37	0.219	853	1.119
B10	Basin 10	5.1	42.03	30.685	15.14	10.82	818.33	3.554	820	5.425
B11	Basin 11	5.1	26.34	14.461	10.51	10.34	834.16	1.37	836	2.037
B12	Basin 12	5.1	35.58	20.201	5.64	11.06	838.7	2.202	841	3.803
B13	Basin 13	5.1	119.46	64.115	108.58	10.01	844.19	3.165	846	4.267



Routing Diagram for 2019-01-22_1465.01 O-C Proposed Linne RD Interception Model_City Precip

Prepared by Wallace Group, Printed 1/24/2019

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Pipe Listing (selected 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	1P	820.00	814.11	990.0	0.0059	0.012	48.0	0.0	0.0
2	2P	838.50	836.50	500.0	0.0040	0.012	36.0	0.0	0.0
3	15P	839.75	833.60	1,370.0	0.0045	0.012	42.0	0.0	0.0
4	16P	843.50	841.40	860.0	0.0024	0.011	36.3	22.5	0.0
5	17P	852.84	851.76	77.0	0.0140	0.025	30.0	0.0	0.0
6	18P	847.69	847.67	26.0	0.0008	0.010	6.0	0.0	0.0
7	18P	843.15	840.75	960.0	0.0025	0.013	58.5	36.0	0.0
8	19P	846.12	845.98	26.0	0.0054	0.010	6.0	0.0	0.0
9	20P	844.22	843.98	26.0	0.0092	0.021	18.0	0.0	0.0
10	B1	833.12	831.20	385.5	0.0050	0.012	36.0	0.0	0.0
11	B10	816.00	815.10	45.0	0.0200	0.012	30.0	0.0	0.0
12	B11	831.67	820.50	165.0	0.0677	0.012	24.0	0.0	0.0
13	B12	836.67	832.50	130.0	0.0321	0.012	30.0	0.0	0.0
14	B13	834.25	832.50	175.0	0.0100	0.012	48.0	0.0	0.0
15	B4	835.67	834.20	210.0	0.0070	0.012	30.0	0.0	0.0
16	B5	844.67	844.17	100.0	0.0050	0.012	30.0	0.0	0.0
17	B6	843.65	842.90	150.0	0.0050	0.012	24.0	0.0	0.0
18	B7	836.67	836.00	63.0	0.0106	0.012	36.0	0.0	0.0
19	B8	853.00	844.17	1,200.0	0.0074	0.012	30.0	0.0	0.0
20	B9	848.00	847.00	110.0	0.0091	0.012	18.0	0.0	0.0
21	Ex SD	836.00	834.00	150.0	0.0133	0.012	36.0	0.0	0.0
22	MC Q	841.50	838.50	585.0	0.0051	0.012	36.0	0.0	0.0
23	SD	844.17	839.00	840.0	0.0062	0.012	42.0	0.0	0.0

Time span=0.01-60.00 hrs, dt=0.01 hrs, 6000 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Pond 1P: SD Inlet with Bypass SD Peak Elev=824.64' Inflow=3.41 cfs 2.735 af
Primary=3.41 cfs 2.735 af Secondary=0.00 cfs 0.000 af Outflow=3.41 cfs 2.735 af

Pond 2P: 60" SD MH Peak Elev=839.69' Inflow=8.31 cfs 1.203 af
Primary=8.31 cfs 1.203 af Secondary=0.00 cfs 0.000 af Outflow=8.31 cfs 1.203 af

Pond 15P: SD System 42" HDPE Peak Elev=844.17' Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 16P: Dbl Conc. Arch Culvert (37x23) Peak Elev=843.88' Inflow=2.62 cfs 2.008 af
36.3" x 22.5", R=18.8"/51.0" Pipe Arch Culvert x 2.00 n=0.011 L=860.0' S=0.0024 '/' Outflow=2.62 cfs 2.008 af

Pond 17P: Gran Cielo Dwy Peak Elev=854.16' Storage=4,945 cf Inflow=47.53 cfs 10.915 af
Primary=46.40 cfs 10.915 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=46.40 cfs 10.915 af

Pond 18P: GC-CkD1 Peak Elev=848.08' Storage=3,533 cf Inflow=70.49 cfs 16.278 af
Primary=0.19 cfs 0.004 af Secondary=0.00 cfs 0.000 af Tertiary=70.21 cfs 16.239 af Outflow=70.40 cfs 16.244 af

Pond 19P: GC-CkD2 Peak Elev=848.01' Storage=8,327 cf Inflow=5.16 cfs 1.055 af
Primary=0.95 cfs 0.982 af Secondary=0.54 cfs 0.072 af Tertiary=0.00 cfs 0.000 af Outflow=1.49 cfs 1.053 af

Pond 20P: GC-CkD3 Peak Elev=845.08' Storage=5,376 cf Inflow=3.41 cfs 1.689 af
Primary=2.17 cfs 1.674 af Secondary=0.04 cfs 0.005 af Tertiary=0.00 cfs 0.000 af Outflow=2.21 cfs 1.678 af

Pond B1: Basin 1 Peak Elev=834.95' Storage=2.513 af Inflow=33.80 cfs 5.194 af
Discarded=0.96 cfs 2.782 af Primary=2.98 cfs 2.060 af Secondary=0.00 cfs 0.000 af Outflow=3.94 cfs 4.842 af

Pond B10: Basin 10 Peak Elev=816.90' Storage=91,317 cf Inflow=16.54 cfs 3.474 af
Discarded=0.77 cfs 2.542 af Primary=0.70 cfs 0.513 af Secondary=0.00 cfs 0.000 af Outflow=1.47 cfs 3.055 af

Pond B11: Basin 11 Peak Elev=832.03' Storage=33,359 cf Inflow=9.10 cfs 1.469 af
Discarded=0.21 cfs 0.739 af Primary=0.79 cfs 0.473 af Secondary=0.00 cfs 0.000 af Outflow=1.00 cfs 1.212 af

Pond B12: Basin 12 Peak Elev=836.87' Storage=49,369 cf Inflow=11.41 cfs 1.819 af
Discarded=0.43 cfs 1.374 af Primary=0.29 cfs 0.184 af Secondary=0.00 cfs 0.000 af Outflow=0.72 cfs 1.558 af

Pond B13: Basin 13 Peak Elev=841.67' Storage=1.893 af Inflow=32.84 cfs 5.235 af
Discarded=0.38 cfs 1.221 af Primary=4.63 cfs 3.620 af Secondary=0.00 cfs 0.000 af Outflow=5.01 cfs 4.841 af

Pond B4: Basin 4 Peak Elev=837.92' Storage=85,087 cf Inflow=23.47 cfs 4.132 af
Discarded=0.48 cfs 1.470 af Primary=2.53 cfs 2.426 af Secondary=0.00 cfs 0.000 af Outflow=3.01 cfs 3.896 af

Pond B5: Basin 5 Peak Elev=846.09' Storage=35,848 cf Inflow=8.91 cfs 2.019 af
Discarded=0.34 cfs 1.073 af Primary=0.91 cfs 0.946 af Secondary=0.00 cfs 0.000 af Outflow=1.25 cfs 2.019 af

Pond B6: Basin 6 Peak Elev=849.79' Storage=1.388 af Inflow=16.99 cfs 3.559 af
Discarded=0.30 cfs 0.944 af Primary=4.94 cfs 2.333 af Secondary=0.00 cfs 0.000 af Outflow=5.24 cfs 3.277 af

Pond B7: Basin 7 Peak Elev=841.02' Storage=89,685 cf Inflow=9.38 cfs 4.548 af
Discarded=1.05 cfs 3.899 af Primary=0.96 cfs 0.621 af Secondary=0.00 cfs 0.000 af Outflow=2.01 cfs 4.520 af

Pond B8: Basin 8 Peak Elev=856.21' Storage=68,173 cf Inflow=12.19 cfs 3.178 af
Discarded=0.46 cfs 1.664 af Primary=1.05 cfs 1.514 af Secondary=0.00 cfs 0.000 af Outflow=1.51 cfs 3.178 af

Pond B9: Basin 9 Peak Elev=848.48' Storage=3,029 cf Inflow=1.74 cfs 0.481 af
Outflow=1.02 cfs 0.479 af

Pond Ex SD: Tract #1632 **Ex. 36" SD Outlet** Peak Elev=836.36' Inflow=0.96 cfs 0.621 af
36.0" Round Culvert n=0.012 L=150.0' S=0.0133 '/' Outflow=0.96 cfs 0.621 af

Pond MC Q: SD System Peak Elev=845.79' Storage=0.505 af Inflow=17.34 cfs 3.116 af
Discarded=0.11 cfs 0.358 af Primary=8.31 cfs 1.203 af Secondary=8.80 cfs 1.274 af Outflow=17.22 cfs 2.836 af

Pond SD: 42" HDPE SD Peak Elev=844.69' Inflow=1.91 cfs 2.460 af
42.0" Round Culvert n=0.012 L=840.0' S=0.0062 '/' Outflow=1.91 cfs 2.460 af

Summary for Pond 1P: SD Inlet with Bypass SD

Inflow Area =	108.566 ac,	6.93% Impervious,	Inflow Depth =	0.30"	for 2 Year event
Inflow =	3.41 cfs @	10.27 hrs,	Volume=	2.735 af	
Outflow =	3.41 cfs @	10.27 hrs,	Volume=	2.735 af,	Atten= 0%, Lag= 0.0 min
Primary =	3.41 cfs @	10.27 hrs,	Volume=	2.735 af	
Secondary =	0.00 cfs @	0.01 hrs,	Volume=	0.000 af	

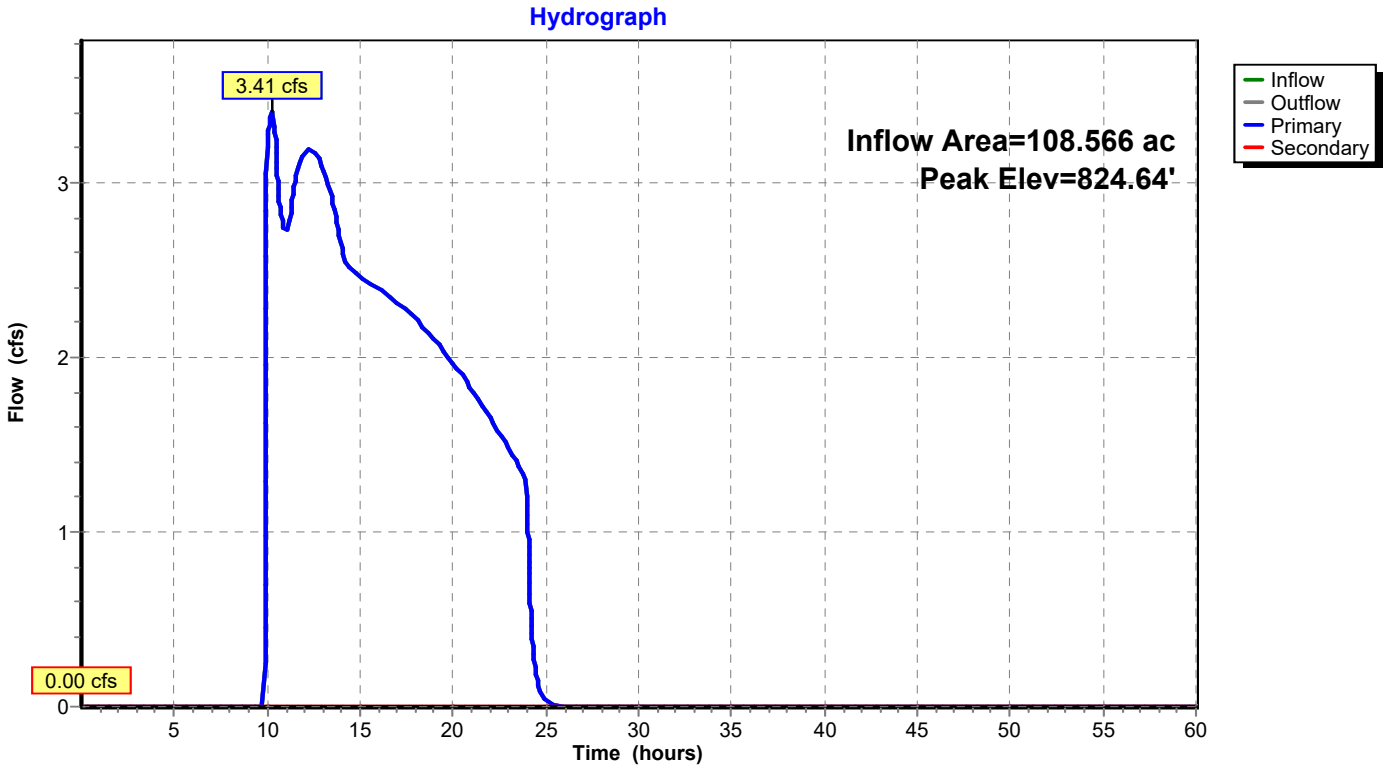
Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 824.64' @ 10.27 hrs
Flood Elev= 826.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	820.00'	**48.0" Round Culvert** L= 990.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 820.00' / 814.11' S= 0.0059 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	824.50'	**78.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	825.90'	**Special & User-Defined** Head (feet) 0.00 0.50 0.67 0.83 Disch. (cfs) 0.000 200.000 450.000 1,200.000

Primary OutFlow Max=3.41 cfs @ 10.27 hrs HW=824.64' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.41 cfs of 98.40 cfs potential flow)
└─**2=Orifice/Grate** (Weir Controls 3.41 cfs @ 1.24 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=820.00' TW=0.00' (Dynamic Tailwater)
└─**3=Special & User-Defined** (Controls 0.00 cfs)

Pond 1P: SD Inlet with Bypass SD



Summary for Pond 2P: 60" SD MH

Inflow Area =	21.500 ac,	80.00% Impervious,	Inflow Depth =	0.67"	for 2 Year event
Inflow =	8.31 cfs @	9.99 hrs,	Volume=	1.203 af	
Outflow =	8.31 cfs @	9.99 hrs,	Volume=	1.203 af,	Atten= 0%, Lag= 0.0 min
Primary =	8.31 cfs @	9.99 hrs,	Volume=	1.203 af	
Secondary =	0.00 cfs @	0.01 hrs,	Volume=	0.000 af	

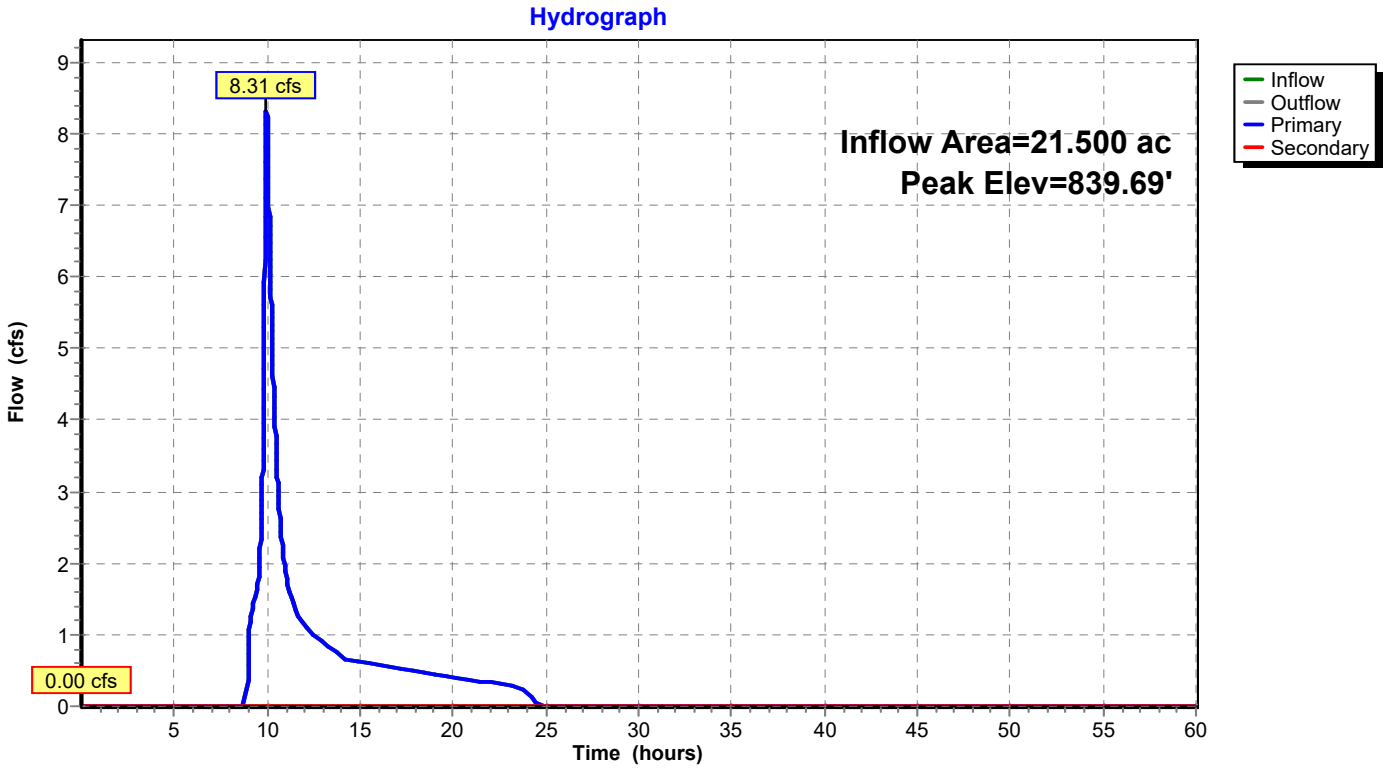
Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 839.69' @ 9.99 hrs
Flood Elev= 845.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	838.50'	**36.0" Round Culvert** L= 500.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 838.50' / 836.50' S= 0.0040 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf
#2	Secondary	844.25'	**69.6" W x 9.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=8.31 cfs @ 9.99 hrs HW=839.69' TW=833.92' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 8.31 cfs @ 4.71 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=838.50' TW=826.50' (Dynamic Tailwater)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: 60" SD MH



Summary for Pond 15P: SD System 42" HDPE

2 - 6 foot long curb openings (one on both sides of Linne Rd)
with 25 foot x 12 inch wide channel drain in Conc C&G

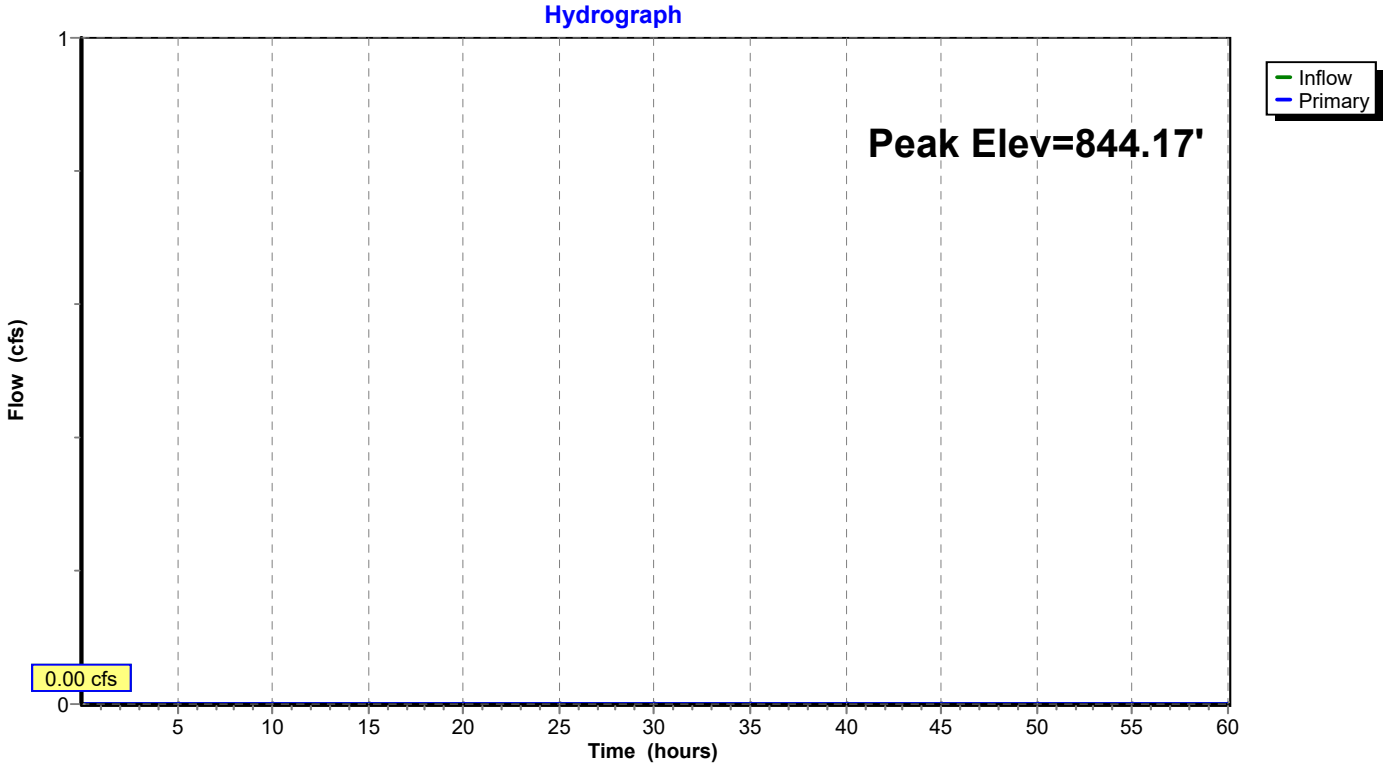
Inflow	=	0.00 cfs @	0.01 hrs,	Volume=	0.000 af
Outflow	=	0.00 cfs @	0.01 hrs,	Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.00 cfs @	0.01 hrs,	Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 844.17' @ 0.85 hrs
Flood Elev= 845.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	839.75'	**42.0" Round Culvert** L= 1,370.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 839.75' / 833.60' S= 0.0045 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf
#2	Device 1	844.17'	**72.0" W x 9.0" H Vert. Orifice/Grate X 2.00** C= 0.600
#3	Device 1	844.25'	**12.0" x 180.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.01 hrs HW=839.75' TW=826.50' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 15P: SD System 42" HDPE



Summary for Pond 16P: Dbl Conc. Arch Culvert (37x23)

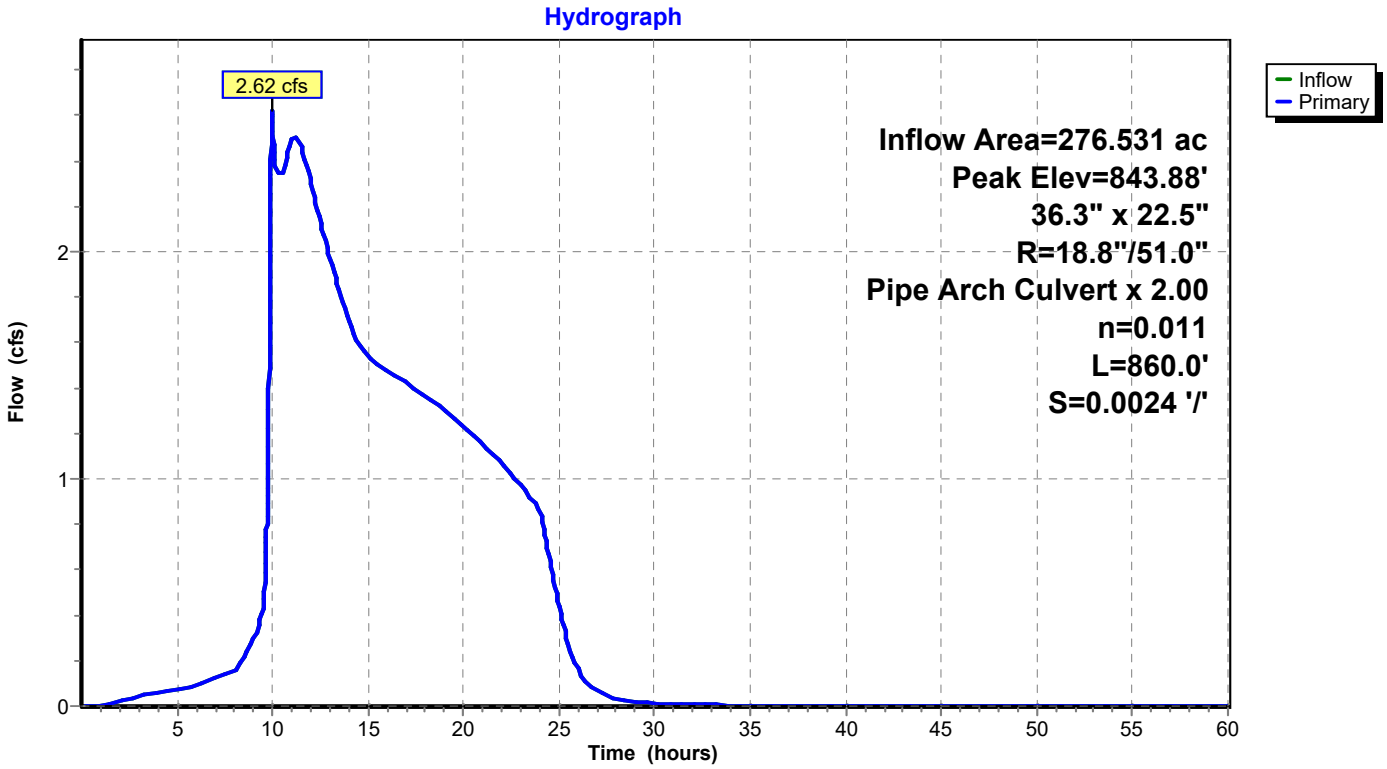
Inflow Area = 276.531 ac, 1.60% Impervious, Inflow Depth = 0.09" for 2 Year event
Inflow = 2.62 cfs @ 9.99 hrs, Volume= 2.008 af
Outflow = 2.62 cfs @ 9.99 hrs, Volume= 2.008 af, Atten= 0%, Lag= 0.0 min
Primary = 2.62 cfs @ 9.99 hrs, Volume= 2.008 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 843.88' @ 9.99 hrs
Flood Elev= 846.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	843.50'	**36.3" W x 22.5" H, R=18.8"/51.0" Pipe Arch RCP_Arch 37x23 X 2.00** L= 860.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 843.50' / 841.40' S= 0.0024 '/' Cc= 0.900 n= 0.011, Flow Area= 4.43 sf

Primary OutFlow Max=2.62 cfs @ 9.99 hrs HW=843.88' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Arch 37x23** (Barrel Controls 2.62 cfs @ 2.28 fps)

Pond 16P: Dbl Conc. Arch Culvert (37x23)

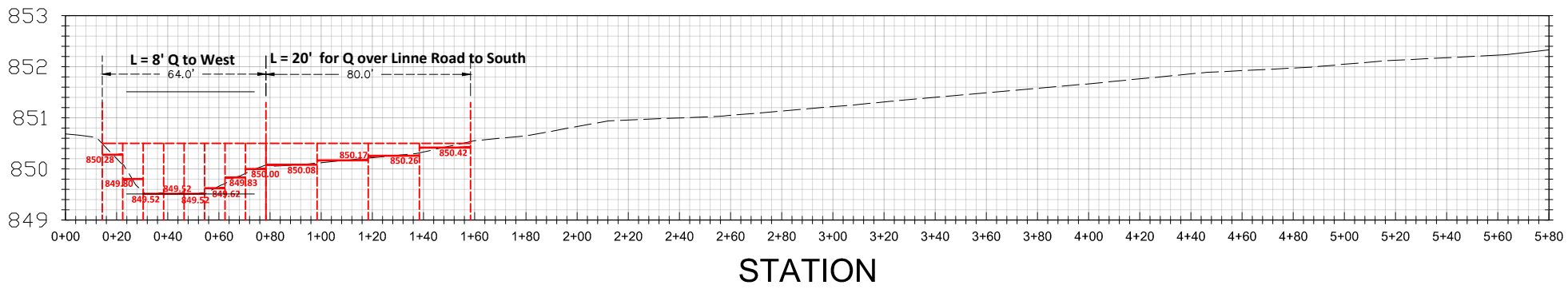


OLSEN RANCH PROJECT

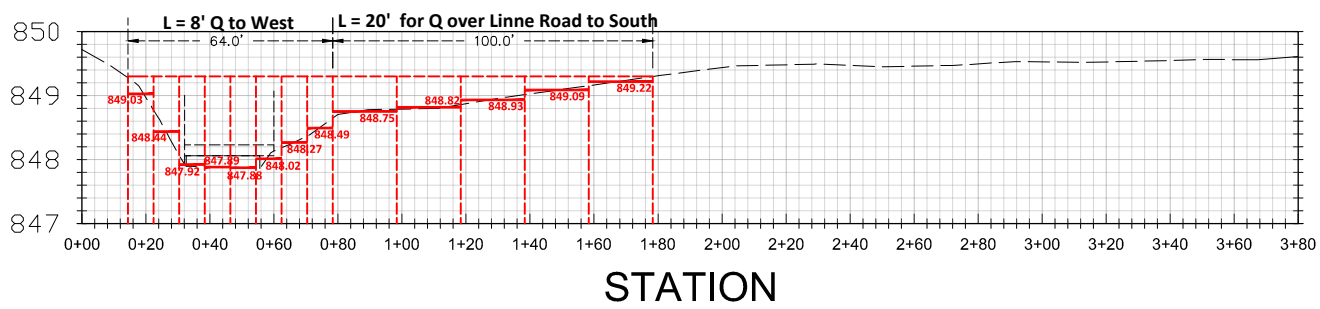
Broad Crested Weir Sizing Details

Linne Road Overtopping

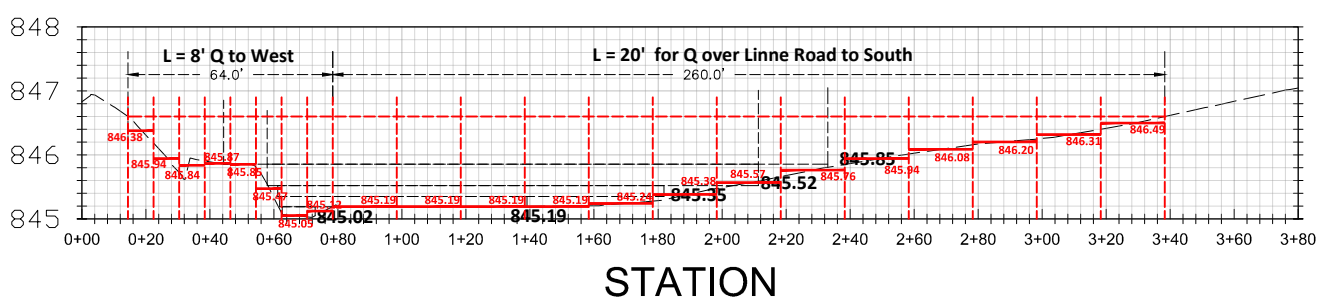
PROFILE OF CHECK DAM #1 (NORTH OF LINNE ROAD)



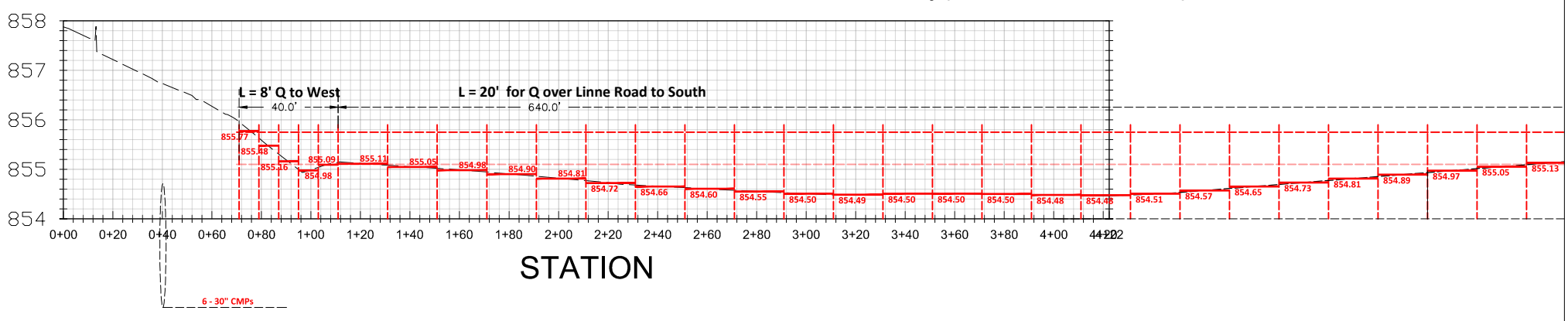
PROFILE OF CHECK DAM #2 (NORTH OF LINNE ROAD)



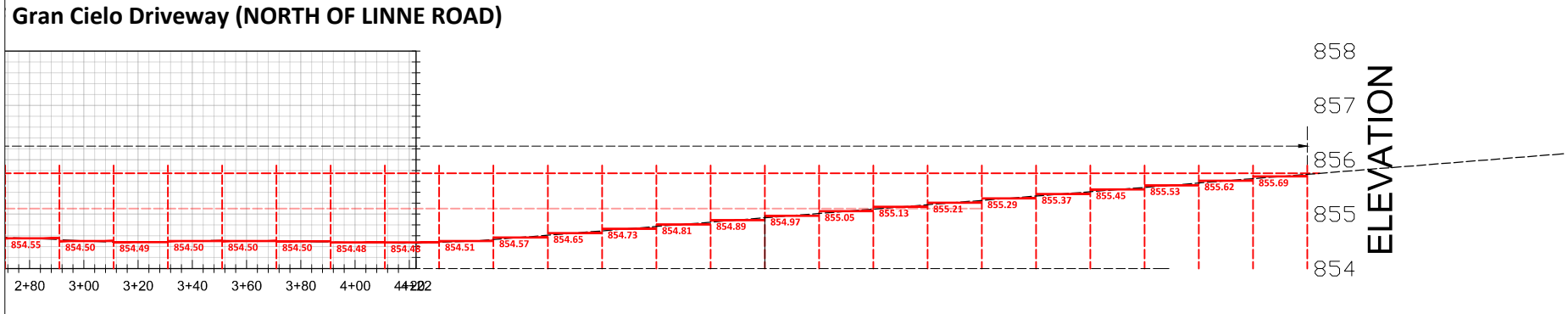
PROFILE OF CHECK DAM #3 (NORTH OF LINNE ROAD)



PROFILE OF Gran Cielo Driveway (NORTH OF LINNE ROAD)



Gran Cielo Driveway (NORTH OF LINNE ROAD)



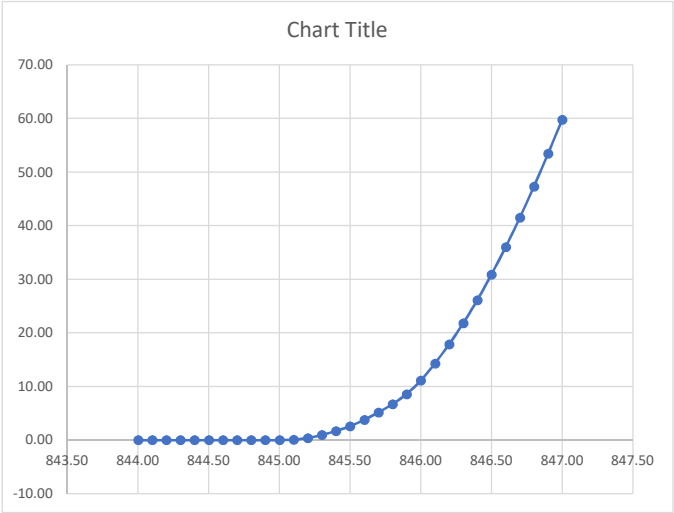
CHECK DAM CkD3 Q to West

IRREGULAR BROAD CRESTED WEIR METHOD

Q = CL(H^1.5)

C	0.60
L	8.00

0.10	W1	W2	W3	W4	W5	W6	W7	W8	W9	Total
WSE	846.38	845.94	845.84	845.87	845.85	845.47	845.05	845.12		
844.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
844.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
844.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
844.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
844.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
844.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
844.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
844.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
844.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
844.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
845.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
845.10	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00		0.05
845.20	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.11		0.39
845.30	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.37		0.97
845.40	0.00	0.00	0.00	0.00	0.00	0.00	0.99	0.71		1.71
845.50	0.00	0.00	0.00	0.00	0.00	0.02	1.45	1.12		2.60
845.60	0.00	0.00	0.00	0.00	0.00	0.22	1.96	1.60		3.78
845.70	0.00	0.00	0.00	0.00	0.00	0.53	2.52	2.12		5.17
845.80	0.00	0.00	0.00	0.00	0.00	0.91	3.12	2.69		6.72
845.90	0.00	0.00	0.07	0.02	0.05	1.35	3.76	3.31		8.57
846.00	0.00	0.07	0.31	0.22	0.28	1.85	4.44	3.96		11.14
846.10	0.00	0.31	0.64	0.53	0.60	2.40	5.16	4.66		14.29
846.20	0.00	0.64	1.04	0.91	0.99	2.99	5.92	5.39		17.88
846.30	0.00	1.04	1.50	1.35	1.45	3.63	6.71	6.15		21.83
846.40	0.01	1.50	2.01	1.85	1.96	4.30	7.53	6.95		26.12
846.50	0.20	2.01	2.57	2.40	2.52	5.02	8.38	7.78		30.88
846.60	0.50	2.57	3.18	2.99	3.12	5.77	9.26	8.64		36.03
846.70	0.87	3.18	3.83	3.63	3.76	6.55	10.17	9.53		41.52
846.80	1.31	3.83	4.51	4.30	4.44	7.36	11.11	10.45		47.33
846.90	1.80	4.51	5.24	5.02	5.16	8.21	12.08	11.40		53.42
847.00	2.34	5.24	6.00	5.77	5.92	9.08	13.07	12.37		59.79



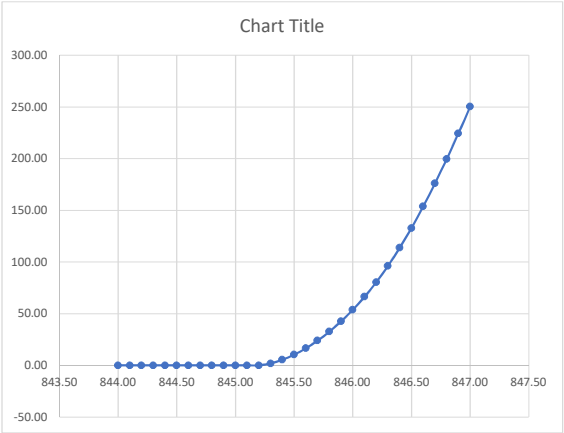
CHECK DAM CkD3 Q to South

IRREGULAR BROAD CRESTED WEIR METHOD

Q = CL(H^1.5)

C	0.60
L	20.00

0.10	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	Total
WSE	845.19	845.19	845.19	845.19	845.24	845.38	845.57	845.76	845.94	846.08	846.20	846.31	846.49	
844.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
844.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
844.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
844.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
844.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
844.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
844.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
844.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
844.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
844.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
845.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
845.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
845.20	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
845.30	0.44	0.44	0.44	0.44	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.93
845.40	1.15	1.15	1.15	1.15	0.77	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.42
845.50	2.07	2.07	2.07	2.07	1.59	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.37
845.60	3.15	3.15	3.15	3.15	2.59	1.24	0.06	0.00	0.00	0.00	0.00	0.00	0.00	16.49
845.70	4.37	4.37	4.37	4.37	3.74	2.17	0.56	0.00	0.00	0.00	0.00	0.00	0.00	23.96
845.80	5.72	5.72	5.72	5.72	5.03	3.27	1.32	0.10	0.00	0.00	0.00	0.00	0.00	32.58
845.90	7.18	7.18	7.18	7.18	6.43	4.50	2.27	0.63	0.00	0.00	0.00	0.00	0.00	42.55
846.00	8.75	8.75	8.75	8.75	7.95	5.86	3.38	1.41	0.18	0.00	0.00	0.00	0.00	53.77
846.10	10.42	10.42	10.42	10.42	9.57	7.33	4.63	2.38	0.77	0.03	0.00	0.00	0.00	66.38
846.20	12.18	12.18	12.18	12.18	11.29	8.91	6.00	3.50	1.59	0.50	0.00	0.00	0.00	80.51
846.30	14.03	14.03	14.03	14.03	13.10	10.59	7.48	4.76	2.59	1.24	0.38	0.00	0.00	96.28
846.40	15.97	15.97	15.97	15.97	14.99	12.36	9.07	6.14	3.74	2.17	1.07	0.32	0.00	113.77
846.50	17.99	17.99	17.99	17.99	16.97	14.22	10.76	7.64	5.03	3.27	1.97	0.99	0.01	132.84
846.60	20.09	20.09	20.09	20.09	19.03	16.17	12.54	9.24	6.43	4.50	3.04	1.87	0.44	153.63
846.70	22.27	22.27	22.27	22.27	21.17	18.20	14.41	10.94	7.95	5.86	4.24	2.92	1.15	175.91
846.80	24.51	24.51	24.51	24.51	23.38	20.31	16.37	12.73	9.57	7.33	5.58	4.12	2.07	199.51
846.90	26.83	26.83	26.83	26.83	25.67	22.49	18.41	14.61	11.29	8.91	7.03	5.44	3.15	224.31
847.00	29.22	29.22	29.22	29.22	28.02	24.74	20.52	16.57	13.10	10.59	8.59	6.88	4.37	250.26

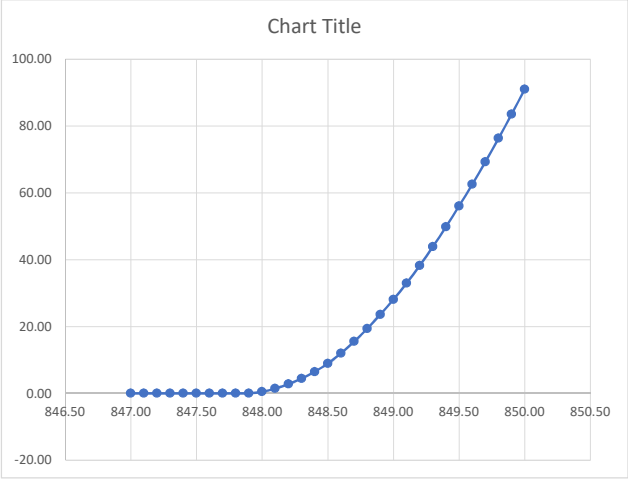


CHECK DAM CkD2 Q to West

IRREGULAR BROAD CRESTED WEIR METHOD

Q = CL(H^1.5)	
C	0.60
L	8.00

0.10	W1	W2	W3	W4	W5	W6	W7	W8	W9	Total
WSE	849.03	848.44	847.92	847.89	847.88	848.02	848.27	848.49		
847.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
847.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
847.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
847.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
847.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
847.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
847.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
847.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
847.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
847.90	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00		0.02
848.00	0.00	0.00	0.11	0.18	0.20	0.00	0.00	0.00		0.48
848.10	0.00	0.00	0.37	0.46	0.50	0.11	0.00	0.00		1.43
848.20	0.00	0.00	0.71	0.83	0.87	0.37	0.00	0.00		2.78
848.30	0.00	0.00	1.12	1.26	1.31	0.71	0.02	0.00		4.43
848.40	0.00	0.00	1.60	1.75	1.80	1.12	0.22	0.00		6.49
848.50	0.00	0.07	2.12	2.29	2.34	1.60	0.53	0.00		8.95
848.60	0.00	0.31	2.69	2.87	2.93	2.12	0.91	0.18		12.01
848.70	0.00	0.64	3.31	3.50	3.56	2.69	1.35	0.46		15.51
848.80	0.00	1.04	3.96	4.17	4.24	3.31	1.85	0.83		19.39
848.90	0.00	1.50	4.66	4.87	4.94	3.96	2.40	1.26		23.59
849.00	0.00	2.01	5.39	5.61	5.69	4.66	2.99	1.75		28.10
849.10	0.09	2.57	6.15	6.39	6.47	5.39	3.63	2.29		32.98
849.20	0.34	3.18	6.95	7.20	7.28	6.15	4.30	2.87		38.27
849.30	0.67	3.83	7.78	8.04	8.12	6.95	5.02	3.50		43.91
849.40	1.08	4.51	8.64	8.91	9.00	7.78	5.77	4.17		49.85
849.50	1.55	5.24	9.53	9.81	9.90	8.64	6.55	4.87		56.08
849.60	2.07	6.00	10.45	10.73	10.83	9.53	7.36	5.61		62.58
849.70	2.63	6.79	11.40	11.69	11.79	10.45	8.21	6.39		69.34
849.80	3.24	7.61	12.37	12.67	12.77	11.40	9.08	7.20		76.35
849.90	3.90	8.47	13.37	13.68	13.78	12.37	9.99	8.04		83.59
850.00	4.59	9.35	14.40	14.71	14.82	13.37	10.92	8.91		91.07
850.10	5.31	10.27	15.45	15.77	15.88	14.40	11.88	9.81		98.76
850.20	6.07	11.21	16.53	16.85	16.96	15.45	12.87	10.73		106.67
850.30	6.87	12.18	17.62	17.96	18.07	16.53	13.88	11.69		114.80
850.40	7.70	13.17	18.75	19.09	19.20	17.62	14.92	12.67		123.12
850.50	8.55	14.19	19.89	20.24	20.36	18.75	15.98	13.68		131.64
850.60	9.44	15.24	21.06	21.41	21.53	19.89	17.07	14.71		140.36
850.70	10.36	16.31	22.25	22.61	22.73	21.06	18.18	15.77		149.27
850.80	11.30	17.40	23.46	23.83	23.95	22.25	19.32	16.85		158.36
850.90	12.27	18.52	24.69	25.07	25.19	23.46	20.47	17.96		167.64
851.00	13.27	19.66	25.95	26.33	26.45	24.69	21.65	19.09		177.09
851.10	14.30	20.82	27.22	27.61	27.73	25.95	22.85	20.24		186.72
851.20	15.34	22.01	28.51	28.91	29.04	27.22	24.07	21.41		196.52
851.30	16.42	23.22	29.83	30.23	30.36	28.51	25.32	22.61		206.48
851.40	17.51	24.44	31.16	31.56	31.70	29.83	26.58	23.83		216.62
851.50	18.63	25.69	32.51	32.92	33.06	31.16	27.86	25.07		226.91



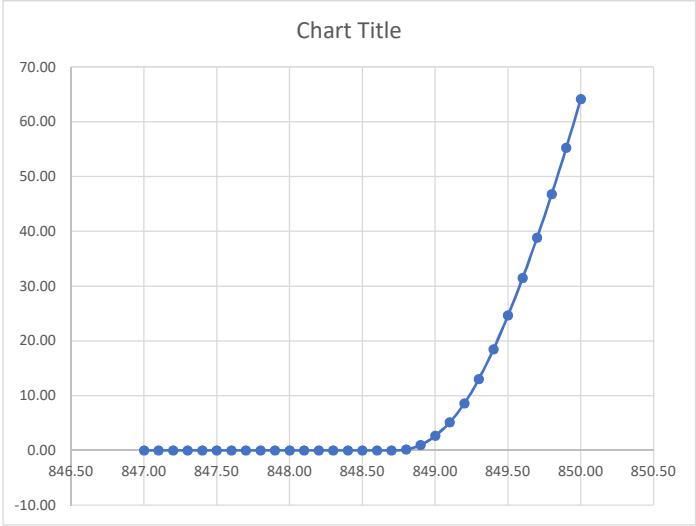
CHECK DAM CkD2 Q to South

IRREGULAR BROAD CRESTED WEIR METHOD

Q = CL(H^1.5)

C	0.60
L	20.00

0.10	W1	W2	W3	W4	W5	W6	W7	Total
WSE	848.75	848.82	848.93	849.09	849.22			
847.00	0.00	0.00	0.00	0.00	0.00			0.00
847.10	0.00	0.00	0.00	0.00	0.00			0.00
847.20	0.00	0.00	0.00	0.00	0.00			0.00
847.30	0.00	0.00	0.00	0.00	0.00			0.00
847.40	0.00	0.00	0.00	0.00	0.00			0.00
847.50	0.00	0.00	0.00	0.00	0.00			0.00
847.60	0.00	0.00	0.00	0.00	0.00			0.00
847.70	0.00	0.00	0.00	0.00	0.00			0.00
847.80	0.00	0.00	0.00	0.00	0.00			0.00
847.90	0.00	0.00	0.00	0.00	0.00			0.00
848.00	0.00	0.00	0.00	0.00	0.00			0.00
848.10	0.00	0.00	0.00	0.00	0.00			0.00
848.20	0.00	0.00	0.00	0.00	0.00			0.00
848.30	0.00	0.00	0.00	0.00	0.00			0.00
848.40	0.00	0.00	0.00	0.00	0.00			0.00
848.50	0.00	0.00	0.00	0.00	0.00			0.00
848.60	0.00	0.00	0.00	0.00	0.00			0.00
848.70	0.00	0.00	0.00	0.00	0.00			0.00
848.80	0.13	0.00	0.00	0.00	0.00			0.13
848.90	0.70	0.27	0.00	0.00	0.00			0.97
849.00	1.50	0.92	0.22	0.00	0.00			2.64
849.10	2.48	1.78	0.84	0.01	0.00			5.12
849.20	3.62	2.81	1.68	0.44	0.00			8.55
849.30	4.89	3.99	2.70	1.15	0.27			13.01
849.40	6.29	5.30	3.87	2.07	0.92			18.44
849.50	7.79	6.73	5.16	3.15	1.78			24.62
849.60	9.40	8.27	6.58	4.37	2.81			31.43
849.70	11.11	9.91	8.11	5.72	3.99			38.83
849.80	12.91	11.64	9.74	7.18	5.30			46.77
849.90	14.80	13.47	11.46	8.75	6.73			55.21
850.00	16.77	15.38	13.28	10.42	8.27			64.12



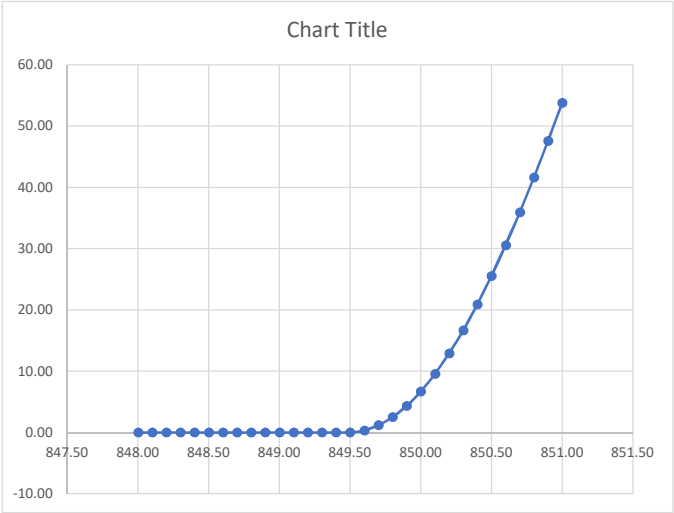
CHECK DAM CkD1 Q to West

IRREGULAR BROAD CRESTED WEIR METHOD

Q = CL(H^1.5)

C	0.60
L	8.00

0.10	W1	W2	W3	W4	W5	W6	W7	W8	W9	Total
WSE	850.28	849.80	849.52	849.52	849.52	849.62	849.83	850.00		
848.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
848.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
848.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
848.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
848.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
848.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
848.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
848.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
848.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
848.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
849.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
849.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
849.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
849.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
849.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
849.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
849.60	0.00	0.00	0.11	0.11	0.11	0.00	0.00	0.00		0.33
849.70	0.00	0.00	0.37	0.37	0.37	0.11	0.00	0.00		1.21
849.80	0.00	0.00	0.71	0.71	0.71	0.37	0.00	0.00		2.50
849.90	0.00	0.15	1.12	1.12	1.12	0.71	0.09	0.00		4.33
850.00	0.00	0.43	1.60	1.60	1.60	1.12	0.34	0.00		6.68
850.10	0.00	0.79	2.12	2.12	2.12	1.60	0.67	0.15		9.57
850.20	0.00	1.21	2.69	2.69	2.69	2.12	1.08	0.43		12.92
850.30	0.01	1.70	3.31	3.31	3.31	2.69	1.55	0.79		16.66
850.40	0.20	2.23	3.96	3.96	3.96	3.31	2.07	1.21		20.90
850.50	0.50	2.81	4.66	4.66	4.66	3.96	2.63	1.70		25.57
850.60	0.87	3.43	5.39	5.39	5.39	4.66	3.24	2.23		30.60
850.70	1.31	4.10	6.15	6.15	6.15	5.39	3.90	2.81		35.96
850.80	1.80	4.80	6.95	6.95	6.95	6.15	4.59	3.43		41.63
850.90	2.34	5.54	7.78	7.78	7.78	6.95	5.31	4.10		47.59
851.00	2.93	6.31	8.64	8.64	8.64	7.78	6.07	4.80		53.83
851.10	3.56	7.11	9.53	9.53	9.53	8.64	6.87	5.54		60.33
851.20	4.24	7.95	10.45	10.45	10.45	9.53	7.70	6.31		67.08
851.30	4.94	8.82	11.40	11.40	11.40	10.45	8.55	7.11		74.08
851.40	5.69	9.71	12.37	12.37	12.37	11.40	9.44	7.95		81.32
851.50	6.47	10.64	13.37	13.37	13.37	12.37	10.36	8.82		88.78
851.60	7.28	11.59	14.40	14.40	14.40	13.37	11.30	9.71		96.46
851.70	8.12	12.57	15.45	15.45	15.45	14.40	12.27	10.64		104.36
851.80	9.00	13.58	16.53	16.53	16.53	15.45	13.27	11.59		112.46
851.90	9.90	14.61	17.62	17.62	17.62	16.53	14.30	12.57		120.77
852.00	10.83	15.66	18.75	18.75	18.75	17.62	15.34	13.58		129.27



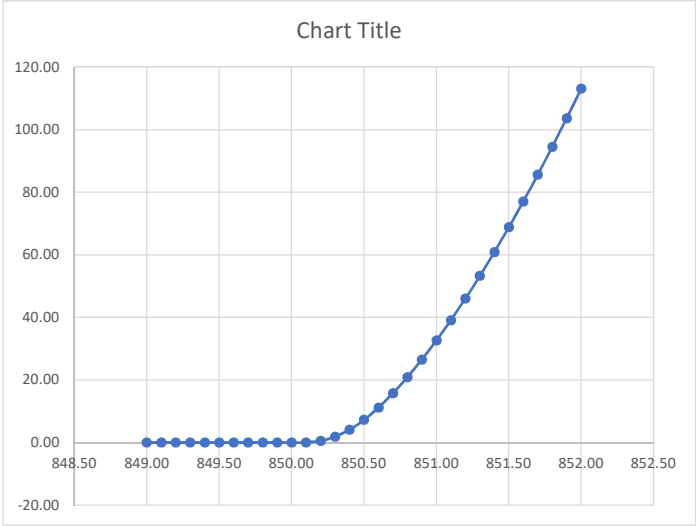
CHECK DAM CkD1 Q to South

IRREGULAR BROAD CRESTED WEIR METHOD

Q = CL(H^1.5)

C	0.60
L	20.00

0.10	W1	W2	W3	W4	W5	W6	W7	Total
WSE	850.08	850.17	850.26	850.42				
849.00	0.00	0.00	0.00	0.00				0.00
849.10	0.00	0.00	0.00	0.00				0.00
849.20	0.00	0.00	0.00	0.00				0.00
849.30	0.00	0.00	0.00	0.00				0.00
849.40	0.00	0.00	0.00	0.00				0.00
849.50	0.00	0.00	0.00	0.00				0.00
849.60	0.00	0.00	0.00	0.00				0.00
849.70	0.00	0.00	0.00	0.00				0.00
849.80	0.00	0.00	0.00	0.00				0.00
849.90	0.00	0.00	0.00	0.00				0.00
850.00	0.00	0.00	0.00	0.00				0.00
850.10	0.03	0.00	0.00	0.00				0.03
850.20	0.50	0.06	0.00	0.00				0.56
850.30	1.24	0.56	0.10	0.00				1.90
850.40	2.17	1.32	0.63	0.00				4.12
850.50	3.27	2.27	1.41	0.27				7.22
850.60	4.50	3.38	2.38	0.92				11.18
850.70	5.86	4.63	3.50	1.78				15.77
850.80	7.33	6.00	4.76	2.81				20.90
850.90	8.91	7.48	6.14	3.99				26.53
851.00	10.59	9.07	7.64	5.30				32.60
851.10	12.36	10.76	9.24	6.73				39.09
851.20	14.22	12.54	10.94	8.27				45.97
851.30	16.17	14.41	12.73	9.91				53.22
851.40	18.20	16.37	14.61	11.64				60.82
851.50	20.31	18.41	16.57	13.47				68.75
851.60	22.49	20.52	18.61	15.38				77.00
851.70	24.74	22.71	20.74	17.38				85.57
851.80	27.07	24.97	22.93	19.45				94.43
851.90	29.46	27.31	25.20	21.61				103.58
852.00	31.93	29.71	27.54	23.83				113.01



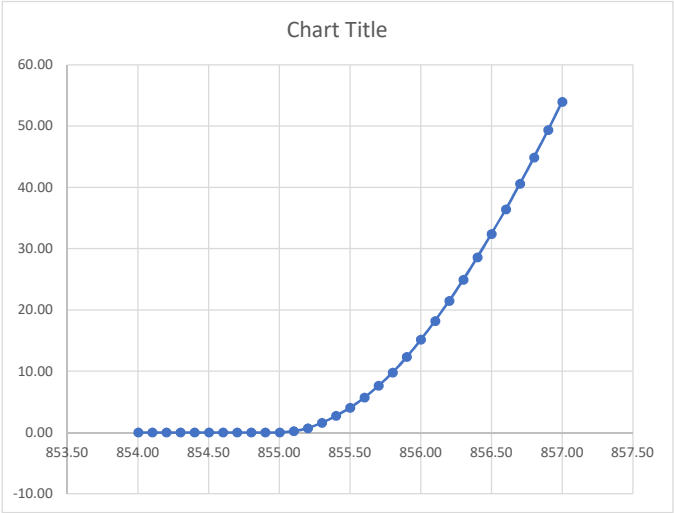
Gran Cielo Driveway GCDwy Q to West

IRREGULAR BROAD CRESTED WEIR METHOD

Q = CL(H^1.5)

C	0.60
L	8.00

0.10	W1	W2	W3	W4	W5	W6	W7	W8	W9	Total
WSE	855.77	855.48	855.16	854.98	855.09					
854.00	0.00	0.00	0.00	0.00	0.00					0.00
854.10	0.00	0.00	0.00	0.00	0.00					0.00
854.20	0.00	0.00	0.00	0.00	0.00					0.00
854.30	0.00	0.00	0.00	0.00	0.00					0.00
854.40	0.00	0.00	0.00	0.00	0.00					0.00
854.50	0.00	0.00	0.00	0.00	0.00					0.00
854.60	0.00	0.00	0.00	0.00	0.00					0.00
854.70	0.00	0.00	0.00	0.00	0.00					0.00
854.80	0.00	0.00	0.00	0.00	0.00					0.00
854.90	0.00	0.00	0.00	0.00	0.00					0.00
855.00	0.00	0.00	0.00	0.01	0.00					0.01
855.10	0.00	0.00	0.00	0.20	0.00					0.20
855.20	0.00	0.00	0.04	0.50	0.18					0.71
855.30	0.00	0.00	0.25	0.87	0.46					1.58
855.40	0.00	0.00	0.56	1.31	0.83					2.70
855.50	0.00	0.01	0.95	1.80	1.26					4.03
855.60	0.00	0.20	1.40	2.34	1.75					5.69
855.70	0.00	0.50	1.90	2.93	2.29					7.62
855.80	0.02	0.87	2.46	3.56	2.87					9.79
855.90	0.22	1.31	3.06	4.24	3.50					12.32
856.00	0.53	1.80	3.70	4.94	4.17					15.14
856.10	0.91	2.34	4.37	5.69	4.87					18.19
856.20	1.35	2.93	5.09	6.47	5.61					21.46
856.30	1.85	3.56	5.84	7.28	6.39					24.93
856.40	2.40	4.24	6.63	8.12	7.20					28.58
856.50	2.99	4.94	7.45	9.00	8.04					32.42
856.60	3.63	5.69	8.29	9.90	8.91					36.42
856.70	4.30	6.47	9.17	10.83	9.81					40.58
856.80	5.02	7.28	10.08	11.79	10.73					44.90
856.90	5.77	8.12	11.02	12.77	11.69					49.36
857.00	6.55	9.00	11.98	13.78	12.67					53.97



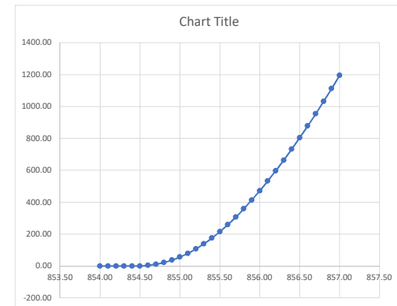
Gran Cielo Driveway GCDwy Q to South

IRREGULAR BROAD CRESTED WEIR METHOD

Q = CL(H^1.5)

C	0.60
L	20.00

0.10	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W13	W14	W15	W16	W17	W18	W19	W20	W21	W22	W23	W24	W25	W26	W27	W28	W29	W30	W31	Total
WSE	855.11	855.05	854.98	854.90	854.81	854.72	854.66	854.60	854.55	854.50	854.49	854.50	854.50	854.50	854.48	854.48	854.51	854.57	854.65	854.73	854.81	854.89	854.97	855.05	855.13	855.21	855.29	855.37	855.45	855.53	855.62	855.69	
854.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
854.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
854.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
854.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
854.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
854.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
854.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.38	0.44	0.38	0.38	0.38	0.50	0.50	0.32	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.47
854.70	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.38	0.70	1.07	1.15	1.07	1.07	1.07	1.24	1.24	0.99	0.56	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.79
854.80	0.00	0.00	0.00	0.00	0.00	0.27	0.63	1.07	1.50	1.97	2.07	1.97	1.97	1.97	2.17	2.17	1.87	1.32	0.70	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.89
854.90	0.00	0.00	0.00	0.00	0.32	0.92	1.41	1.97	2.48	3.04	3.15	3.04	3.04	3.04	3.27	3.27	2.92	2.27	1.50	0.84	0.32	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.81
855.00	0.00	0.00	0.03	0.38	0.99	1.78	2.38	3.04	3.62	4.24	4.37	4.24	4.24	4.24	4.50	4.50	4.12	3.38	2.48	1.68	0.99	0.44	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.72
855.10	0.00	0.13	0.50	1.07	1.87	2.81	3.50	4.24	4.89	5.58	5.72	5.58	5.58	5.58	5.86	5.86	5.44	4.63	3.62	2.70	1.87	1.15	0.56	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	78.89
855.20	0.32	0.70	1.24	1.97	2.92	3.99	4.76	5.58	6.29	7.03	7.18	7.03	7.03	7.03	7.33	7.33	6.88	6.00	4.89	3.87	2.92	2.07	1.32	0.70	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	106.60
855.30	0.99	1.50	2.17	3.04	4.12	5.30	6.14	7.03	7.79	8.59	8.75	8.59	8.59	8.59	8.91	8.91	8.43	7.48	6.29	5.16	4.12	3.15	2.27	1.50	0.84	0.32	0.01	0.00	0.00	0.00	0.00	0.00	138.58
855.40	1.87	2.48	3.27	4.24	5.44	6.73	7.64	8.59	9.40	10.25	10.42	10.25	10.25	10.25	10.59	10.59	10.08	9.07	7.79	6.58	5.44	4.37	3.38	2.48	1.68	0.99	0.44	0.06	0.00	0.00	0.00	0.00	174.62
855.50	2.92	3.62	4.50	5.58	6.88	8.27	9.24	10.25	11.11	12.00	12.18	12.00	12.00	12.00	12.36	12.36	11.82	10.76	9.40	8.11	6.88	5.72	4.63	3.62	2.70	1.87	1.15	0.56	0.13	0.00	0.00	0.00	214.63
855.60	4.12	4.89	5.86	7.03	8.43	9.91	10.94	12.00	12.91	13.84	14.03	13.84	13.84	13.84	14.22	14.22	13.66	12.54	11.11	9.74	8.43	7.18	6.00	4.89	3.87	2.92	2.07	1.32	0.70	0.22	0.00	0.00	258.59
855.70	5.44	6.29	7.33	8.59	10.08	11.64	12.73	13.84	14.80	15.77	15.97	15.77	15.77	15.77	16.17	16.17	15.58	14.41	12.91	11.46	10.08	8.75	7.48	6.29	5.16	4.12	3.15	2.27	1.50	0.84	0.27	0.01	306.44
855.80	6.88	7.79	8.91	10.25	11.82	13.47	14.61	15.77	16.77	17.79	17.99	17.79	17.79	17.79	18.20	18.20	17.58	16.37	14.80	13.28	11.82	10.42	9.07	7.79	6.58	5.44	4.37	3.38	2.48	1.68	0.92	0.44	358.24
855.90	8.43	9.40	10.59	12.00	13.66	15.38	16.57	17.79	18.82	19.88	20.09	19.88	19.88	19.88	20.31	20.31	19.67	18.41	16.77	15.19	13.66	12.18	10.76	9.40	8.11	6.88	5.72	4.63	3.62	2.70	1.78	1.15	413.47
856.00	10.08	11.11	12.36	13.84	15.58	17.38	18.61	19.88	20.95	22.05	22.27	22.05	22.05	22.05	22.49	22.49	21.83	20.52	18.82	17.17	15.58	14.03	12.54	11.11	9.74	8.43	7.18	6.00	4.89	3.87	2.81	2.07	471.81
856.10	11.82	12.91	14.22	15.77	17.58	19.45	20.74	22.05	23.16	24.29	24.51	24.29	24.29	24.29	24.74	24.74	24.06	22.71	20.95	19.24	17.58	15.97	14.41	12.91	11.46	10.08	8.75	7.48	6.29	5.16	3.99	3.15	533.06
856.20	13.66	14.80	16.17	17.79	19.67	21.61	22.93	24.29	25.43	26.60	26.83	26.60	26.60	26.60	27.07	27.07	26.36	24.97	23.16	21.39	19.67	17.99	16.37	14.80	13.28	11.82	10.42	9.07	7.79	6.58	5.30	4.37	597.05
856.30	15.58	16.77	18.20	19.88	21.83	23.83	25.20	26.60	27.78	28.98	29.22	28.98	28.98	28.98	29.46	29.46	28.74	27.31	25.43	23.61	21.83	20.09	18.41	16.77	15.19	13.66	12.18	10.76	9.40	8.11	6.73	5.72	663.65
856.40	17.58	18.82	20.31	22.05	24.06	26.13	27.54	28.98	30.20	31.43	31.68	31.43	31.43	31.43	31.93	31.93	31.18	29.71	27.78	25.90	24.06	22.27	20.52	18.82	17.17	15.58	14.03	12.54	11.11	9.74	8.27	7.18	732.76
856.50	19.67	20.95	22.49	24.29	26.36	28.50	29.95	31.43	32.68	33.94	34.20	33.94	33.94	33.94	34.45	34.45	33.69	32.17	30.20	28.26	26.36	24.51	22.71	20.95	19.24	17.58	15.97	14.41	12.91	11.46	9.91	8.75	804.27
856.60	21.83	23.16	24.74	26.60	28.74	30.93	32.43	33.94	35.22	36.52	36.78	36.52	36.52	36.52	37.04	37.04	36.26	34.71	32.68	30.69	28.74	26.83	24.97	23.16	21.39	19.67	17.99	16.37	14.80	13.28	11.64	10.42	878.10
856.70	24.06	25.43	27.07	28.98	31.18	33.43	34.96	36.52	37.83	39.16	39.42	39.16	39.16	39.16	39.69	39.69	38.89	37.30	35.22	33.18	31.18	29.22	27.31	25.43	23.61	21.83	20.09	18.41	16.77	15.19	13.47	12.18	954.18
856.80	26.36	27.78	29.46	31.43	33.69	36.00	37.57	39.16	40.50	41.86	42.13	41.86	41.86	41.86	42.40	42.40	41.58	39.96	37.83	35.74	33.69	31.68	29.71	27.78	25.90	24.06	22.27	20.52	18.82	17.17	15.38	14.03	1032.44
856.90	28.74	30.20	31.93	33.94	36.26	38.62	40.23	41.86	43.23	44.62	44.90	44.62	44.62	44.62	45.18	45.18	44.34	42.68	40.50	38.36	36.26	34.20	32.17	30.20	28.26	26.36	24.51	22.71	20.95	19.24	17.38	15.97	1112.81
857.00	31.18	32.68	34.45	36.52	38.89	41.31	42.95	44.62	46.02	47.43	47.72	47.43	47.43	47.43	48.00	48.00	47.15	45.46	43.23	41.04	38.89	36.78	34.71	32.68	30.69	28.74	26.83	24.97	23.16	21.39	19.45	17.99	1195.24



Summary for Pond 17P: Gran Cielo Dwy

Inflow Area = 166.738 ac, 0.91% Impervious, Inflow Depth = 0.79" for 2 Year event
Inflow = 47.53 cfs @ 9.99 hrs, Volume= 10.915 af
Outflow = 46.40 cfs @ 10.02 hrs, Volume= 10.915 af, Atten= 2%, Lag= 1.7 min
Primary = 46.40 cfs @ 10.02 hrs, Volume= 10.915 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af
Tertiary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 854.16' @ 10.02 hrs Surf.Area= 6,317 sf Storage= 4,945 cf
Flood Elev= 854.46' Surf.Area= 6,947 sf Storage= 6,934 cf

Plug-Flow detention time= 2.2 min calculated for 10.913 af (100% of inflow)
Center-of-Mass det. time= 2.2 min (868.6 - 866.5)

Volume	Invert	Avail.Storage	Storage Description
#1	852.84'	22,270 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.84	0	0	0
853.14	2,586	388	388
854.14	6,275	4,431	4,818
855.14	8,376	7,326	12,144
856.14	11,876	10,126	22,270

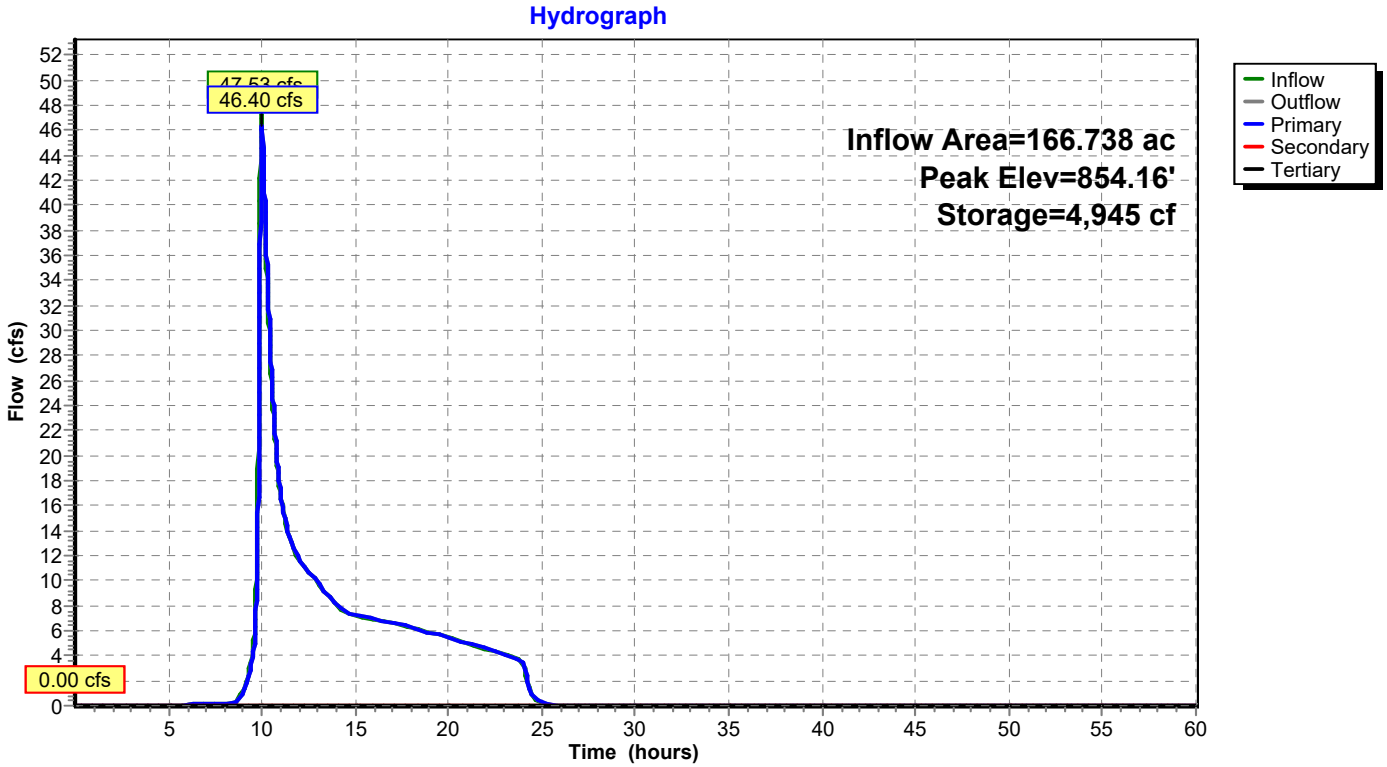
Device	Routing	Invert	Outlet Devices
#1	Primary	852.84'	**30.0" Round Culvert X 6.00** L= 77.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 852.84' / 851.76' S= 0.0140 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Secondary	854.90'	**Special & User-Defined** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 Disch. (cfs) 0.000 0.010 0.200 0.710 1.580 2.700 4.030 5.690 7.620 9.790 12.320 15.140 18.190 21.460 24.930 28.580 32.420 36.420 40.580 44.900 49.360 53.970
#3	Tertiary	854.40'	**Special & User-Defined** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 Disch. (cfs) 0.000 0.080 3.470 10.790 21.890 36.810 55.720 78.890 106.600 138.580 174.620 214.630 258.590 306.440 358.240 413.470 471.810 533.060 597.050 663.650 732.760 804.270 878.100 954.180 1,032.440 1,112.810 1,195.240

Primary OutFlow Max=46.39 cfs @ 10.02 hrs HW=854.16' TW=848.08' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 46.39 cfs @ 4.27 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=852.84' TW=844.56' (Dynamic Tailwater)
└─**2=Special & User-Defined** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.01 hrs HW=852.84' TW=853.60' (Dynamic Tailwater)
└─**3=Special & User-Defined** (Controls 0.00 cfs)

Pond 17P: Gran Cielo Dwy



Summary for Pond 18P: GC-CkD1

Inflow Area = 240.622 ac, 1.05% Impervious, Inflow Depth = 0.81" for 2 Year event
Inflow = 70.49 cfs @ 10.01 hrs, Volume= 16.278 af
Outflow = 70.40 cfs @ 10.01 hrs, Volume= 16.244 af, Atten= 0%, Lag= 0.5 min
Primary = 0.19 cfs @ 10.01 hrs, Volume= 0.004 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af
Tertiary = 70.21 cfs @ 10.01 hrs, Volume= 16.239 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 848.08' @ 10.01 hrs Surf.Area= 2,635 sf Storage= 3,533 cf
Flood Elev= 850.17' Surf.Area= 18,446 sf Storage= 23,434 cf

Plug-Flow detention time= 3.2 min calculated for 16.241 af (100% of inflow)
Center-of-Mass det. time= 1.9 min (866.4 - 864.5)

Volume	Invert	Avail.Storage	Storage Description
#1	844.56'	70,294 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.56	10	0	0
845.00	200	46	46
846.00	600	400	446
847.00	1,500	1,050	1,496
848.00	2,166	1,833	3,329
849.00	7,688	4,927	8,256
850.00	16,694	12,191	20,447
851.00	27,000	21,847	42,294
852.00	29,000	28,000	70,294

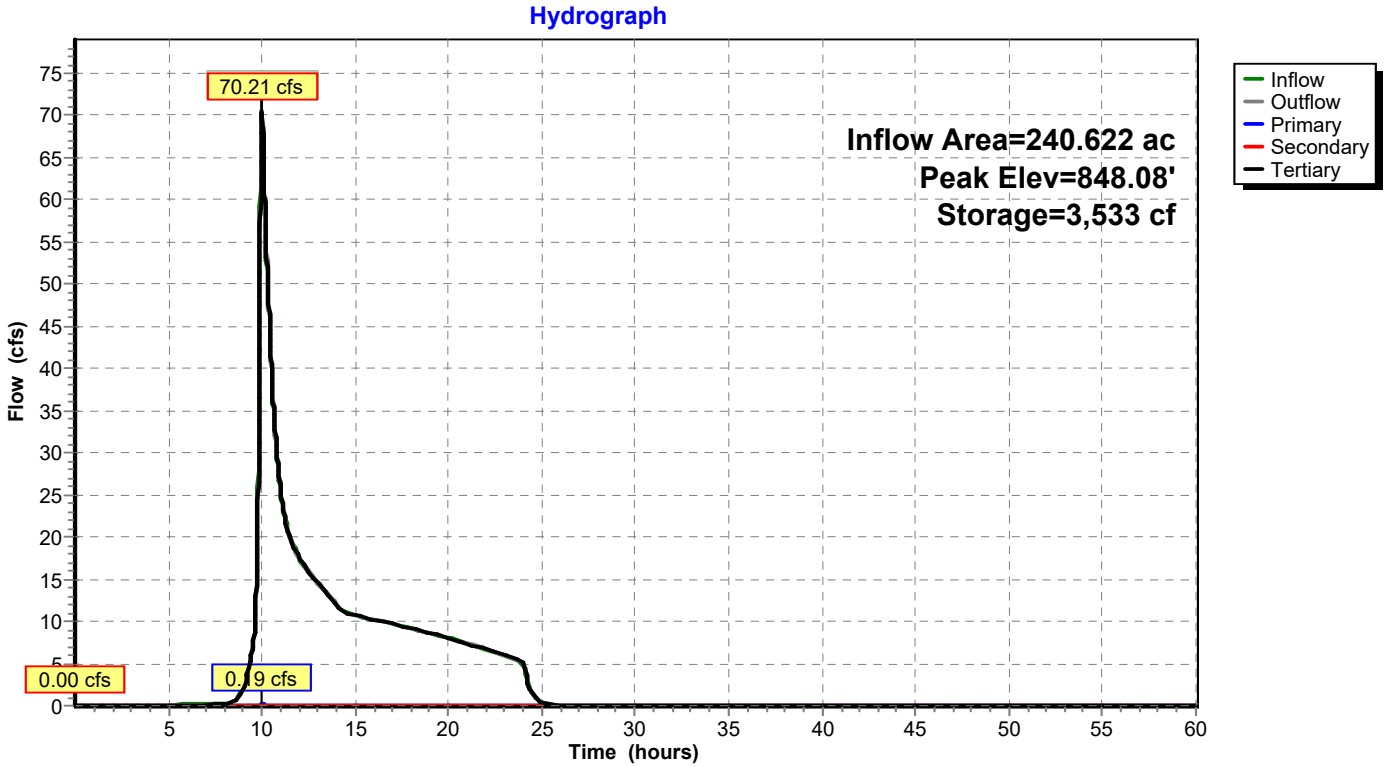
Device	Routing	Invert	Outlet Devices
#1	Primary	847.69'	**6.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 847.69' / 847.67' S= 0.0008 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Secondary	848.50'	**9.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59
#3	Tertiary	843.15'	**58.5" W x 36.0" H, R=30.0"/84.0" Pipe Arch RCP_Arch 59x36 X 2.00** L= 960.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 843.15' / 840.75' S= 0.0025 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 11.40 sf
#4	Device 3	847.00'	**78.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Tertiary	850.00'	**Special & User-Defined (CkD1-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 Disch. (cfs) 0.000 0.030 0.560 1.900 4.120 7.220 11.180 15.770 20.900 26.530 32.600 39.090 45.970 53.220 60.820 68.750 77.000 85.570 94.430 103.580 113.010

Primary OutFlow Max=0.19 cfs @ 10.01 hrs HW=848.08' TW=847.23' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 0.19 cfs @ 1.60 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=844.56' TW=846.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Tertiary OutFlow Max=70.16 cfs @ 10.01 hrs HW=848.08' TW=841.48' (Dynamic Tailwater)
├─**3=RCP_Arch 59x36** (Passes 70.16 cfs of 148.65 cfs potential flow)
│ └─**4=Orifice/Grate** (Weir Controls 70.16 cfs @ 3.41 fps)
└─**5=Special & User-Defined (CkD1-S)** (Controls 0.00 cfs)

Pond 18P: GC-CkD1



Summary for Pond 19P: GC-CkD2

[80] Warning: Exceeded Pond 18P by 0.55' @ 13.82 hrs (0.05 cfs 0.029 af)

Inflow Area =	260.311 ac,	0.99% Impervious,	Inflow Depth =	0.05"	for 2 Year event
Inflow =	5.16 cfs @	9.99 hrs,	Volume=	1.055 af	
Outflow =	1.49 cfs @	10.96 hrs,	Volume=	1.053 af,	Atten= 71%, Lag= 58.6 min
Primary =	0.95 cfs @	10.96 hrs,	Volume=	0.982 af	
Secondary =	0.54 cfs @	10.96 hrs,	Volume=	0.072 af	
Tertiary =	0.00 cfs @	0.01 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 848.01' @ 10.96 hrs Surf.Area= 8,212 sf Storage= 8,327 cf
Flood Elev= 848.65' Surf.Area= 11,850 sf Storage= 14,787 cf

Plug-Flow detention time= 99.9 min calculated for 1.053 af (100% of inflow)
Center-of-Mass det. time= 99.1 min (979.8 - 880.7)

Volume	Invert	Avail.Storage	Storage Description
#1	846.00'	46,430 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
846.00	267	0	0
847.00	4,055	2,161	2,161
848.00	8,178	6,117	8,278
849.00	13,828	11,003	19,281
850.00	40,470	27,149	46,430

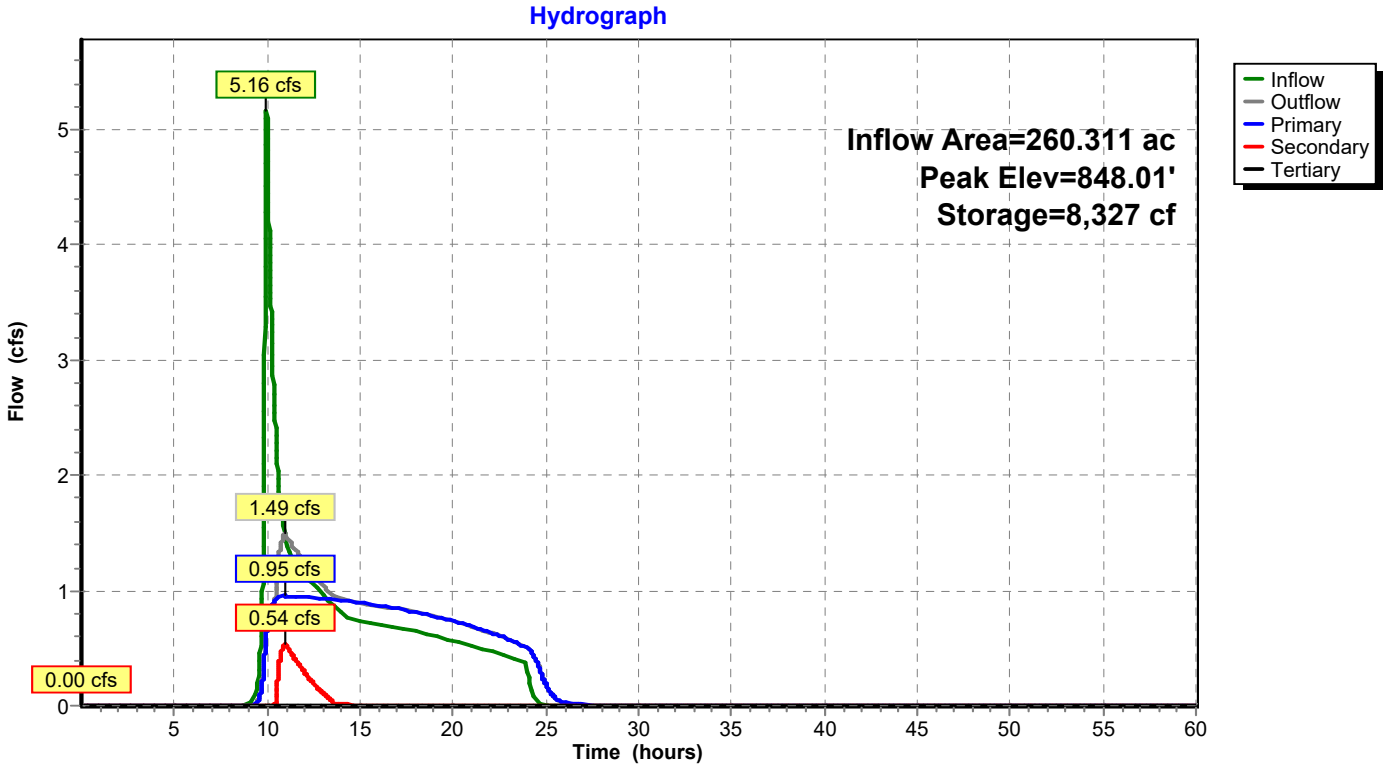
Device	Routing	Invert	Outlet Devices
#1	Primary	846.12'	**6.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 846.12' / 845.98' S= 0.0054 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Tertiary	848.70'	**Special & User-Defined (CkD2-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 Disch. (cfs) 0.000 0.130 0.970 2.640 5.120 8.550 13.010 18.440 24.620 31.430 38.830 46.770 55.210 64.120
#3	Secondary	847.80'	**Special & User-Defined (CkD2-W)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 Disch. (cfs) 0.000 0.020 0.480 1.430 2.780 4.430 6.490 8.950 12.010 15.510 19.390 23.590 28.100 32.980 38.270 43.910 49.850 56.080 62.580 69.340 76.350 83.590 91.070

Primary OutFlow Max=0.95 cfs @ 10.96 hrs HW=848.01' TW=845.07' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.95 cfs @ 4.86 fps)

Secondary OutFlow Max=0.54 cfs @ 10.96 hrs HW=848.01' TW=845.07' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD2-W)** (Custom Controls 0.54 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.01 hrs HW=846.00' TW=0.00' (Dynamic Tailwater)
└─**2=Special & User-Defined (CkD2-S)** (Controls 0.00 cfs)

Pond 19P: GC-CkD2



Summary for Pond 20P: GC-CkD3

[58] Hint: Peaked 0.06' above defined flood level

Inflow Area =	274.094 ac,	0.94% Impervious,	Inflow Depth =	0.07"	for 2 Year event
Inflow =	3.41 cfs @	9.99 hrs,	Volume=	1.689 af	
Outflow =	2.21 cfs @	11.26 hrs,	Volume=	1.678 af,	Atten= 35%, Lag= 76.2 min
Primary =	2.17 cfs @	11.26 hrs,	Volume=	1.674 af	
Secondary =	0.04 cfs @	11.26 hrs,	Volume=	0.005 af	
Tertiary =	0.00 cfs @	0.01 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 845.08' @ 11.26 hrs Surf.Area= 8,659 sf Storage= 5,376 cf
Flood Elev= 845.02' Surf.Area= 8,229 sf Storage= 4,852 cf

Plug-Flow detention time= 49.1 min calculated for 1.678 af (99% of inflow)
Center-of-Mass det. time= 45.1 min (993.6 - 948.5)

Volume	Invert	Avail.Storage	Storage Description
#1	844.00'	24,632 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.00	1,288	0	0
845.00	8,090	4,689	4,689
846.50	18,500	19,943	24,632

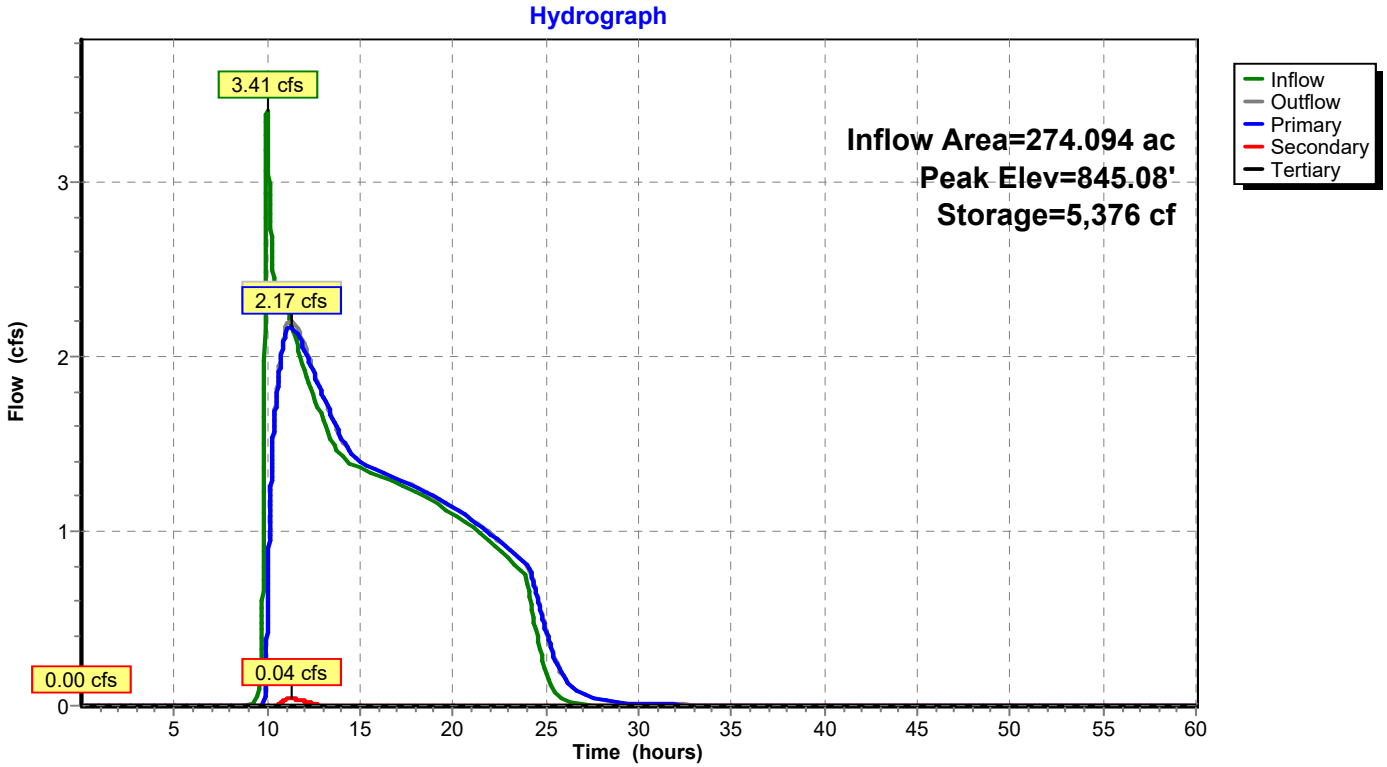
Device	Routing	Invert	Outlet Devices
#1	Primary	844.22'	**18.0" Round Culvert** L= 26.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 844.22' / 843.98' S= 0.0092 '/' Cc= 0.900 n= 0.021 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	845.00'	**Special & User-Defined (CkD3-W)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 Disch. (cfs) 0.000 0.050 0.390 0.970 1.710 2.600 3.780 5.170 6.720 8.570 11.140 14.290 17.880 21.830 26.120 30.880 36.030 41.520 47.330 53.420 59.790
#3	Tertiary	845.10'	**Special & User-Defined (CkD3-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 Disch. (cfs) 0.000 0.050 1.930 5.420 10.370 16.490 23.960 32.580 42.550 53.770 66.380 80.510 96.280 113.770 132.840 153.630 175.910 199.510 224.310 250.260

Primary OutFlow Max=2.17 cfs @ 11.26 hrs HW=845.08' TW=843.88' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 2.17 cfs @ 2.97 fps)

Secondary OutFlow Max=0.04 cfs @ 11.26 hrs HW=845.08' TW=843.88' (Dynamic Tailwater)
└─**2=Special & User-Defined (CkD3-W)** (Custom Controls 0.04 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.01 hrs HW=844.00' TW=0.00' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD3-S)** (Controls 0.00 cfs)

Pond 20P: GC-CkD3



Summary for Pond B1: Basin 1

Inflow Area = 47.388 ac, 67.98% Impervious, Inflow Depth = 1.32" for 2 Year event
Inflow = 33.80 cfs @ 9.98 hrs, Volume= 5.194 af
Outflow = 3.94 cfs @ 12.43 hrs, Volume= 4.842 af, Atten= 88%, Lag= 147.5 min
Discarded = 0.96 cfs @ 12.43 hrs, Volume= 2.782 af
Primary = 2.98 cfs @ 12.43 hrs, Volume= 2.060 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 834.95' @ 12.43 hrs Surf.Area= 1.231 ac Storage= 2.513 af

Plug-Flow detention time= 653.8 min calculated for 4.841 af (93% of inflow)
Center-of-Mass det. time= 611.3 min (1,371.1 - 759.9)

Volume	Invert	Avail.Storage	Storage Description
#1	826.50'	8.466 af	**Custom Stage Data (Prismatic)** Listed below (Recalc) 8.789 af Overall - 0.323 af Embedded = 8.466 af
#2	826.50'	0.129 af	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 0.323 af Overall x 40.0% Voids
		8.595 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
826.50	0.081	0.000	0.000
827.00	0.081	0.040	0.040
828.00	0.081	0.081	0.121
829.00	0.081	0.081	0.202
830.00	0.081	0.081	0.283
831.00	0.081	0.081	0.365
832.00	0.203	0.142	0.506
833.00	0.376	0.289	0.796
834.00	1.171	0.774	1.569
835.00	1.234	1.202	2.772
836.00	1.299	1.267	4.038
837.00	1.365	1.332	5.370
838.00	1.432	1.399	6.769
839.00	1.500	1.466	8.235
839.35	1.665	0.554	8.789

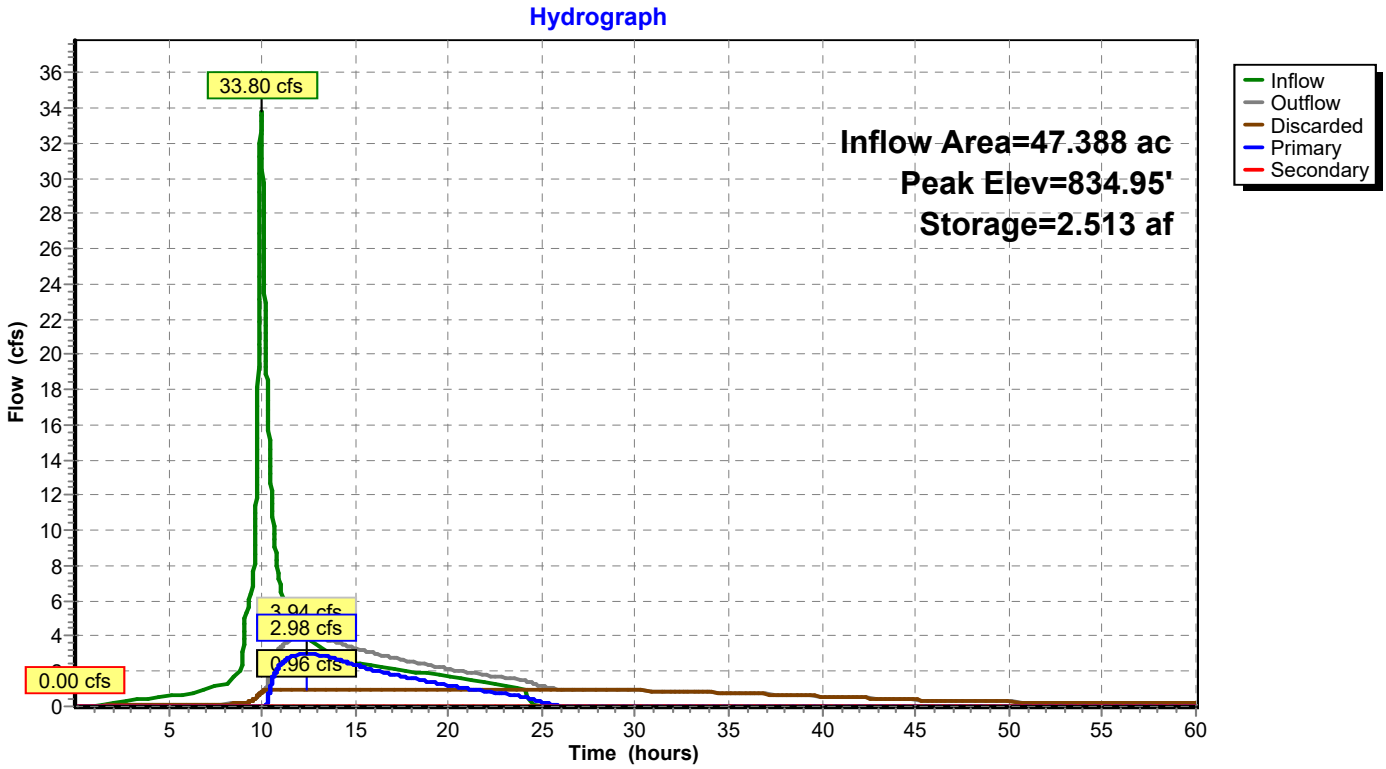
Device	Routing	Invert	Outlet Devices
#1	Primary	833.12'	**36.0" Round Culvert** L= 385.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 833.12' / 831.20' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Discarded	826.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	834.33'	**16.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	834.33'	**12.0" W x 8.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	835.33'	**30.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	836.17'	**24.0" Horiz. Orifice/Grate** C= 0.600 in 78.0" x 36.0" Grate (16% open area) Limited to weir flow at low heads
#7	Secondary	838.35'	**30.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.96 cfs @ 12.43 hrs HW=834.95' (Free Discharge)
└─**2=Exfiltration** (Controls 0.96 cfs)

Primary OutFlow Max=2.98 cfs @ 12.43 hrs HW=834.95' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.98 cfs of 19.26 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 1.43 cfs @ 3.21 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.56 cfs @ 2.52 fps)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=826.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B1: Basin 1



Summary for Pond B10: Basin 10

Inflow Area = 30.685 ac, 61.94% Impervious, Inflow Depth = 1.36" for 2 Year event
Inflow = 16.54 cfs @ 9.98 hrs, Volume= 3.474 af
Outflow = 1.47 cfs @ 15.89 hrs, Volume= 3.055 af, Atten= 91%, Lag= 354.3 min
Discarded = 0.77 cfs @ 15.89 hrs, Volume= 2.542 af
Primary = 0.70 cfs @ 15.89 hrs, Volume= 0.513 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 816.90' @ 15.89 hrs Surf.Area= 42,517 sf Storage= 91,317 cf

Plug-Flow detention time= 999.1 min calculated for 3.055 af (88% of inflow)
Center-of-Mass det. time= 924.6 min (1,667.4 - 742.8)

Volume	Invert	Avail.Storage	Storage Description
#1	808.50'	230,693 cf	**Custom Stage Data (Conic)** Listed below (Recalc) 244,773 cf Overall - 14,080 cf Embedded = 230,693 cf
#2	808.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		236,325 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
808.50	3,520	0	0	3,520
809.00	3,520	1,760	1,760	3,625
810.00	3,520	3,520	5,280	3,835
811.00	3,520	3,520	8,800	4,046
812.00	3,520	3,520	12,320	4,256
813.00	3,520	3,520	15,840	4,466
814.00	8,931	6,019	21,859	9,884
815.00	17,294	12,884	34,744	18,257
816.00	40,146	27,930	62,673	41,116
817.00	42,792	41,462	104,135	43,859
818.00	45,490	44,134	148,269	46,658
819.00	48,243	46,860	195,129	49,516
820.00	51,058	49,644	244,773	52,440

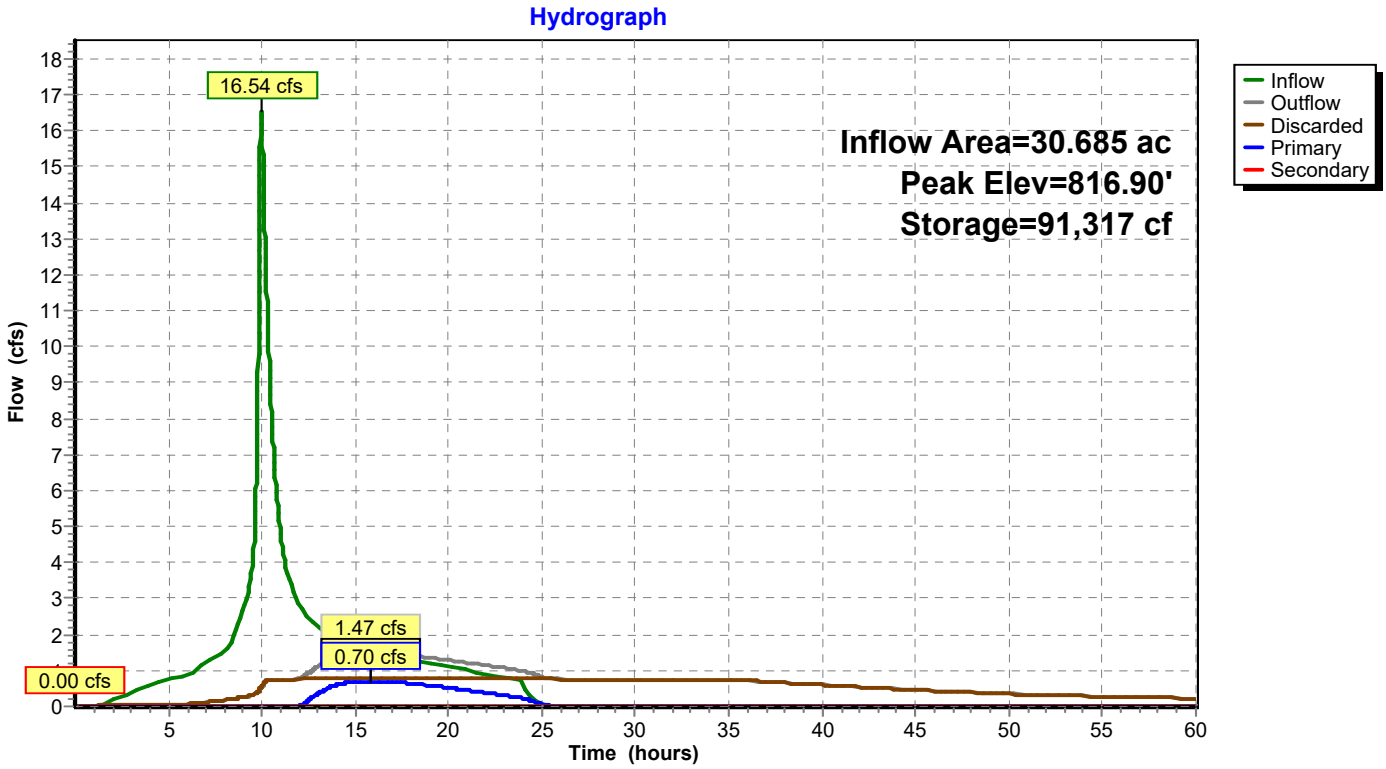
Device	Routing	Invert	Outlet Devices
#1	Primary	816.00'	**30.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 816.00' / 815.10' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	808.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	816.67'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	817.33'	**15.0" W x 18.0" H Vert. Orifice/Grate** X 2 rows with 8.0" cc spacing C= 0.600
#5	Device 1	817.83'	**60.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	819.00'	**78.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Secondary	819.33'	**36.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.77 cfs @ 15.89 hrs HW=816.90' (Free Discharge)
└─**2=Exfiltration** (Controls 0.77 cfs)

Primary OutFlow Max=0.70 cfs @ 15.89 hrs HW=816.90' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.70 cfs of 5.11 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 0.70 cfs @ 1.53 fps)
  ├─**4=Orifice/Grate** (Controls 0.00 cfs)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=808.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B10: Basin 10



Summary for Pond B11: Basin 11

Inflow Area = 14.461 ac, 52.00% Impervious, Inflow Depth = 1.22" for 2 Year event
Inflow = 9.10 cfs @ 9.96 hrs, Volume= 1.469 af
Outflow = 1.00 cfs @ 12.68 hrs, Volume= 1.212 af, Atten= 89%, Lag= 163.1 min
Discarded = 0.21 cfs @ 12.68 hrs, Volume= 0.739 af
Primary = 0.79 cfs @ 12.68 hrs, Volume= 0.473 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 832.03' @ 12.68 hrs Surf.Area= 10,567 sf Storage= 33,359 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 752.1 min (1,496.5 - 744.4)

Volume	Invert	Avail.Storage	Storage Description
#1	823.50'	83,101 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 97,181 cf Overall - 14,080 cf Embedded = 83,101 cf
#2	823.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		88,733 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
823.50	3,520	0	0
824.00	3,520	1,760	1,760
825.00	3,520	3,520	5,280
826.00	3,520	3,520	8,800
827.00	3,520	3,520	12,320
828.00	3,520	3,520	15,840
829.00	2,800	3,160	19,000
830.00	6,900	4,850	23,850
831.00	8,919	7,910	31,760
832.00	10,515	9,717	41,477
833.00	12,169	11,342	52,819
834.00	13,879	13,024	65,843
835.00	15,655	14,767	80,610
836.00	17,488	16,572	97,181

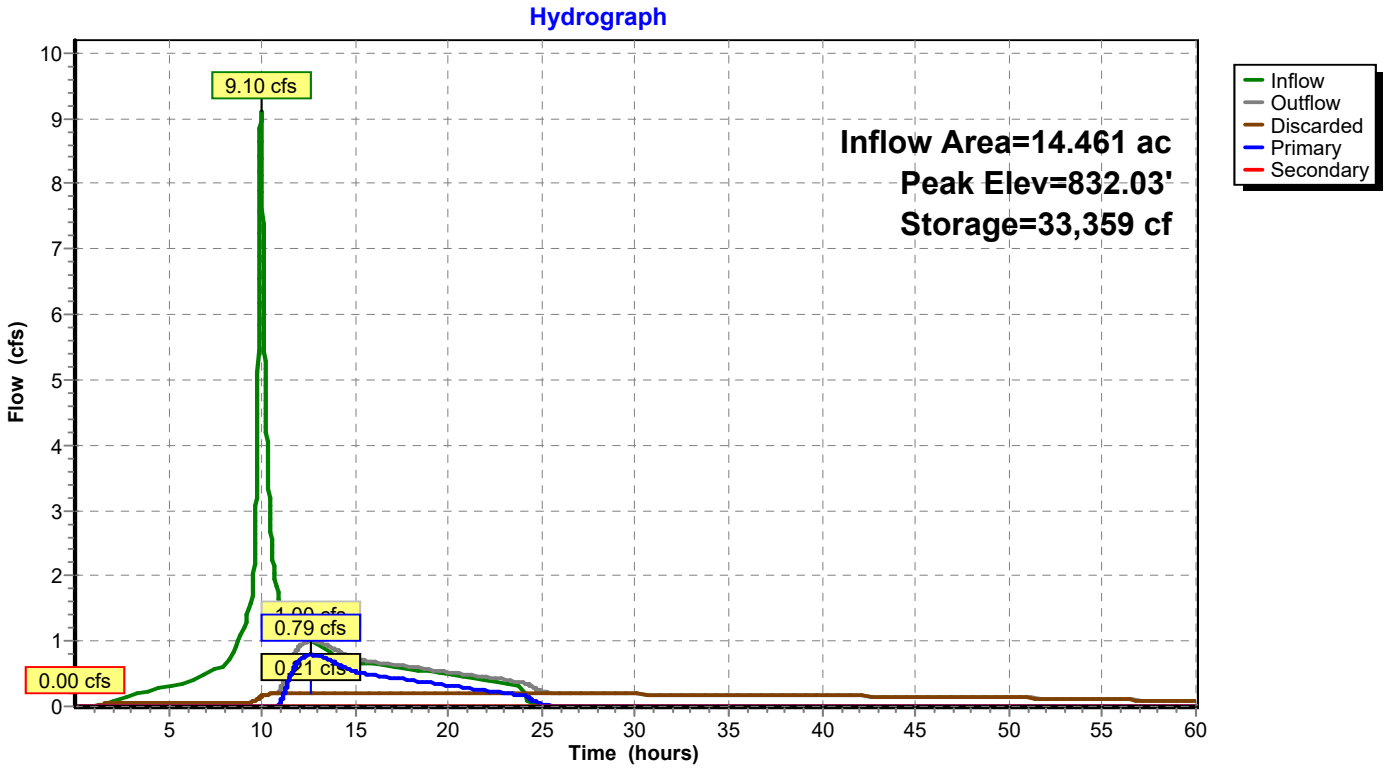
Device	Routing	Invert	Outlet Devices
#1	Primary	831.67'	**24.0" Round Culvert** L= 165.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 831.67' / 820.50' S= 0.0677 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Discarded	823.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	831.67'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	833.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	833.50'	**27.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	834.50'	**48.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Secondary	834.83'	**16.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.21 cfs @ 12.68 hrs HW=832.03' (Free Discharge)
└─**2=Exfiltration** (Controls 0.21 cfs)

Primary OutFlow Max=0.79 cfs @ 12.68 hrs HW=832.03' TW=824.64' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.79 cfs @ 2.05 fps)
  ├─**3=Orifice/Grate** (Passes 0.79 cfs of 1.36 cfs potential flow)
  ├─**4=Orifice/Grate** (Controls 0.00 cfs)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=823.50' TW=820.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B11: Basin 11



Summary for Pond B12: Basin 12

Inflow Area = 20.201 ac, 44.06% Impervious, Inflow Depth = 1.08" for 2 Year event
Inflow = 11.41 cfs @ 9.96 hrs, Volume= 1.819 af
Outflow = 0.72 cfs @ 18.30 hrs, Volume= 1.558 af, Atten= 94%, Lag= 500.5 min
Discarded = 0.43 cfs @ 18.30 hrs, Volume= 1.374 af
Primary = 0.29 cfs @ 18.30 hrs, Volume= 0.184 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 836.87' @ 18.30 hrs Surf.Area= 23,091 sf Storage= 49,369 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 929.6 min (1,681.8 - 752.2)

Volume	Invert	Avail.Storage	Storage Description
#1	828.50'	160,016 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 174,096 cf Overall - 14,080 cf Embedded = 160,016 cf
#2	828.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		165,648 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
828.50	3,520	0	0
829.00	3,520	1,760	1,760
830.00	3,520	3,520	5,280
831.00	3,520	3,520	8,800
832.00	3,520	3,520	12,320
833.00	3,520	3,520	15,840
834.00	2,600	3,060	18,900
835.00	8,000	5,300	24,200
836.00	20,849	14,425	38,625
837.00	23,415	22,132	60,757
838.00	26,037	24,726	85,483
839.00	28,717	27,377	112,860
840.00	31,383	30,050	142,910
841.00	30,990	31,187	174,096

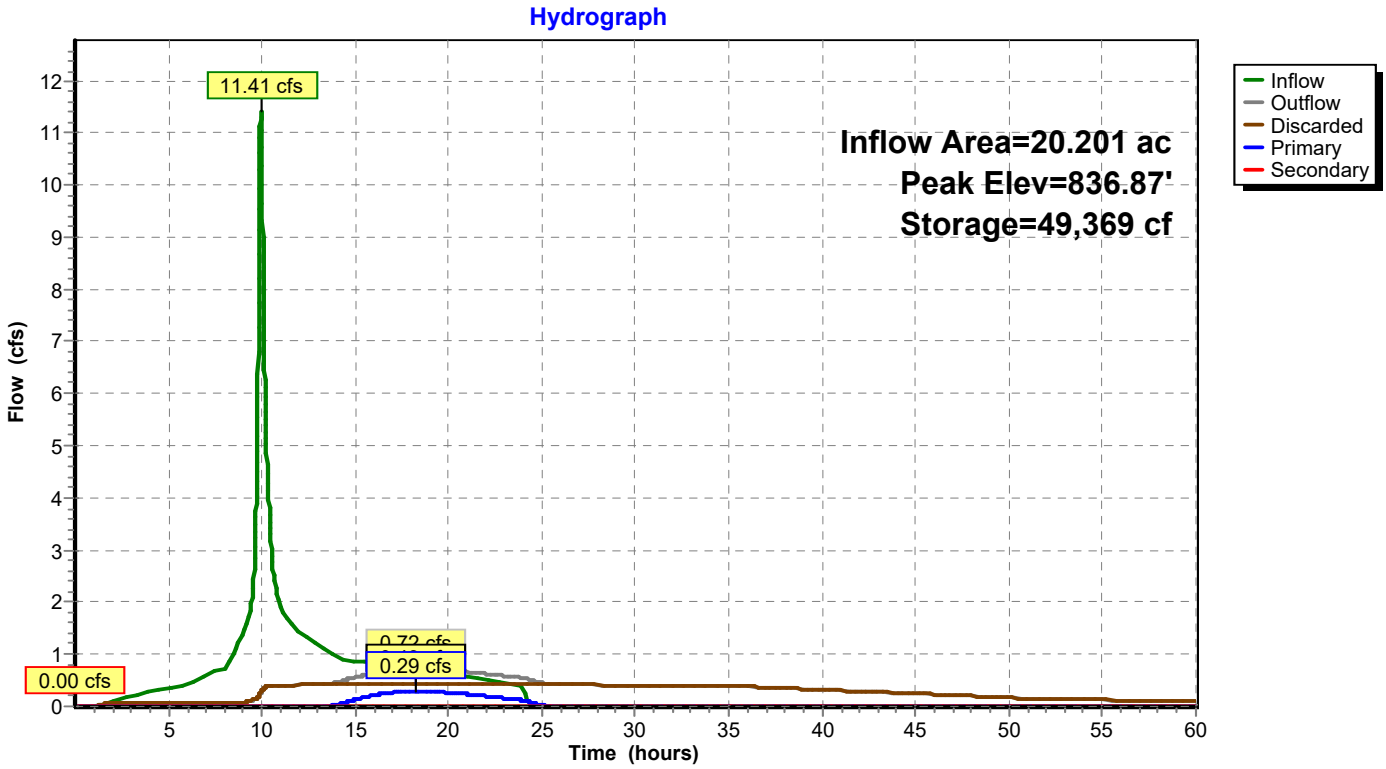
Device	Routing	Invert	Outlet Devices
#1	Primary	836.67'	**30.0" Round Culvert** L= 130.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.67' / 832.50' S= 0.0321 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	828.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	836.67'	**18.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	838.00'	**8.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	838.50'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	839.50'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Secondary	840.00'	**18.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.43 cfs @ 18.30 hrs HW=836.87' (Free Discharge)
└─**2=Exfiltration** (Controls 0.43 cfs)

Primary OutFlow Max=0.29 cfs @ 18.30 hrs HW=836.87' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.29 cfs @ 1.54 fps)
  ├─**3=Orifice/Grate** (Passes 0.29 cfs of 0.44 cfs potential flow)
  ├─**4=Orifice/Grate** (Controls 0.00 cfs)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=828.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B12: Basin 12



Summary for Pond B13: Basin 13

Inflow Area = 64.115 ac, 22.11% Impervious, Inflow Depth = 0.98" for 2 Year event
Inflow = 32.84 cfs @ 9.97 hrs, Volume= 5.235 af
Outflow = 5.01 cfs @ 11.70 hrs, Volume= 4.841 af, Atten= 85%, Lag= 104.3 min
Discarded = 0.38 cfs @ 11.70 hrs, Volume= 1.221 af
Primary = 4.63 cfs @ 11.70 hrs, Volume= 3.620 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 841.67' @ 11.70 hrs Surf.Area= 0.446 ac Storage= 1.893 af

Plug-Flow detention time= 434.7 min calculated for 4.840 af (92% of inflow)
Center-of-Mass det. time= 389.4 min (1,186.2 - 796.9)

Volume	Invert	Avail.Storage	Storage Description
#1	830.50'	4.138 af	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4.461 af Overall - 0.323 af Embedded = 4.138 af
#2	830.50'	0.129 af	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 0.323 af Overall x 40.0% Voids
		4.267 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
830.50	0.081	0.000	0.000
831.00	0.081	0.040	0.040
832.00	0.081	0.081	0.121
833.00	0.081	0.081	0.202
834.00	0.081	0.081	0.283
835.00	0.081	0.081	0.364
836.00	0.059	0.070	0.433
837.00	0.139	0.099	0.532
838.00	0.287	0.213	0.745
839.00	0.329	0.308	1.053
840.00	0.372	0.350	1.403
841.00	0.416	0.394	1.797
842.00	0.461	0.439	2.236
843.00	0.508	0.484	2.720
844.00	0.555	0.531	3.251
845.00	0.605	0.580	3.831
846.00	0.655	0.630	4.461

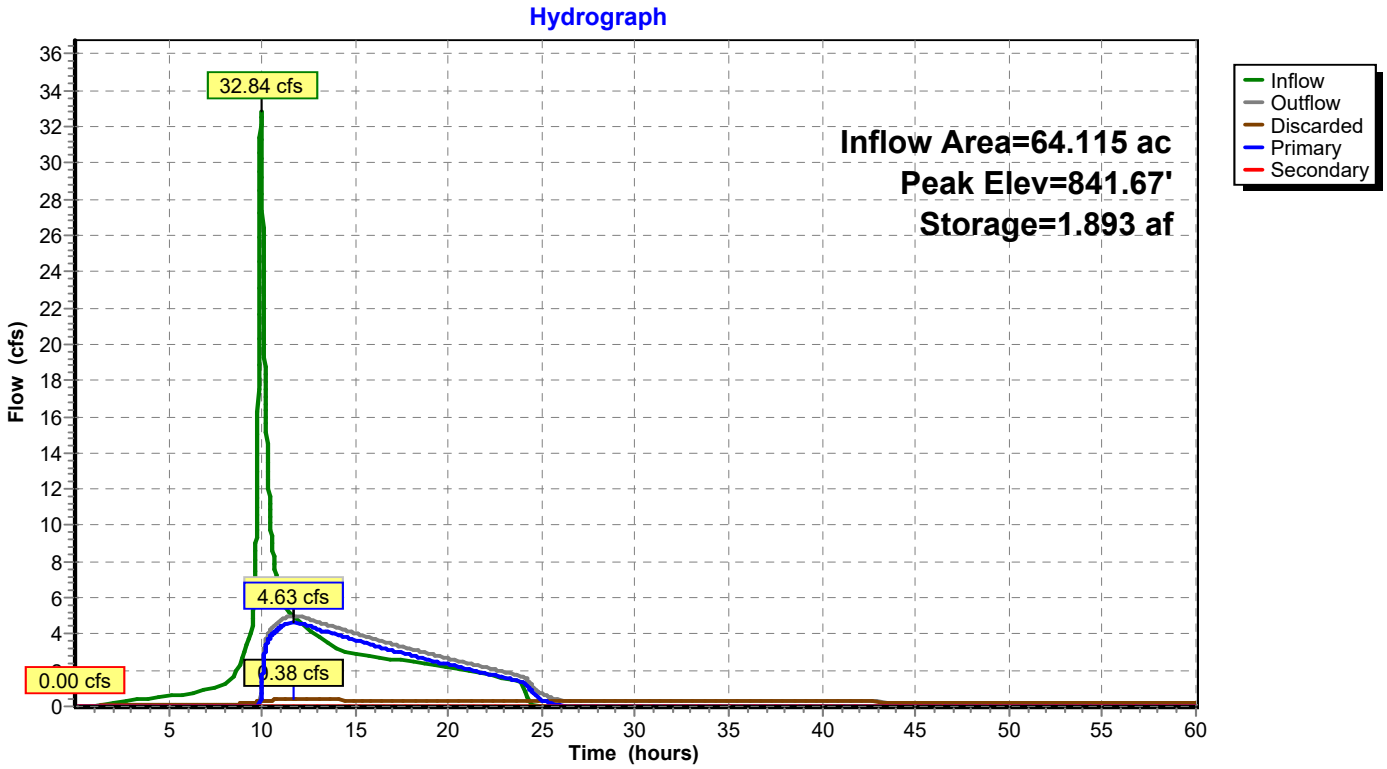
Device	Routing	Invert	Outlet Devices
#1	Primary	834.25'	**48.0" Round Culvert** L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 834.25' / 832.50' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Discarded	830.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	839.67'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	841.50'	**15.0" W x 18.0" H Vert. Orifice/Grate** X 2 rows with 8.0" cc spacing C= 0.600
#5	Device 1	842.50'	**60.0" W x 8.0" H Vert. Orifice/Grate** X 2 rows with 8.0" cc spacing C= 0.600
#6	Device 1	843.67'	**78.0" x 36.0" Horiz. Orifice/Grate** X 2 rows C= 0.600 Limited to weir flow at low heads
#7	Secondary	844.67'	**36.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.38 cfs @ 11.70 hrs HW=841.67' (Free Discharge)
└─**2=Exfiltration** (Controls 0.38 cfs)

Primary OutFlow Max=4.63 cfs @ 11.70 hrs HW=841.67' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 4.63 cfs of 140.89 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 4.35 cfs @ 6.52 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.29 cfs @ 1.33 fps)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=830.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B13: Basin 13



Summary for Pond B4: Basin 4

Inflow Area = 38.712 ac, 55.38% Impervious, Inflow Depth = 1.28" for 2 Year event
Inflow = 23.47 cfs @ 9.97 hrs, Volume= 4.132 af
Outflow = 3.01 cfs @ 12.33 hrs, Volume= 3.896 af, Atten= 87%, Lag= 141.9 min
Discarded = 0.48 cfs @ 12.33 hrs, Volume= 1.470 af
Primary = 2.53 cfs @ 12.33 hrs, Volume= 2.426 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 837.92' @ 12.33 hrs Surf.Area= 24,142 sf Storage= 85,087 cf

Plug-Flow detention time= 592.9 min calculated for 3.896 af (94% of inflow)
Center-of-Mass det. time= 555.6 min (1,300.1 - 744.5)

Volume	Invert	Avail.Storage	Storage Description
#1	827.50'	218,652 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 232,732 cf Overall - 14,080 cf Embedded = 218,652 cf
#2	827.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		224,284 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
827.50	3,520	0	0
828.00	3,520	1,760	1,760
829.00	3,520	3,520	5,280
830.00	3,520	3,520	8,800
831.00	3,520	3,520	12,320
832.00	3,520	3,520	15,840
833.00	1,064	2,292	18,132
834.00	6,719	3,892	22,024
835.00	16,858	11,789	33,812
836.00	19,297	18,078	51,890
837.00	21,780	20,539	72,428
838.00	24,350	23,065	95,493
839.00	27,007	25,679	121,172
840.00	29,708	28,358	149,529
841.00	32,452	31,080	180,609
842.00	35,196	33,824	214,433
842.50	38,000	18,299	232,732

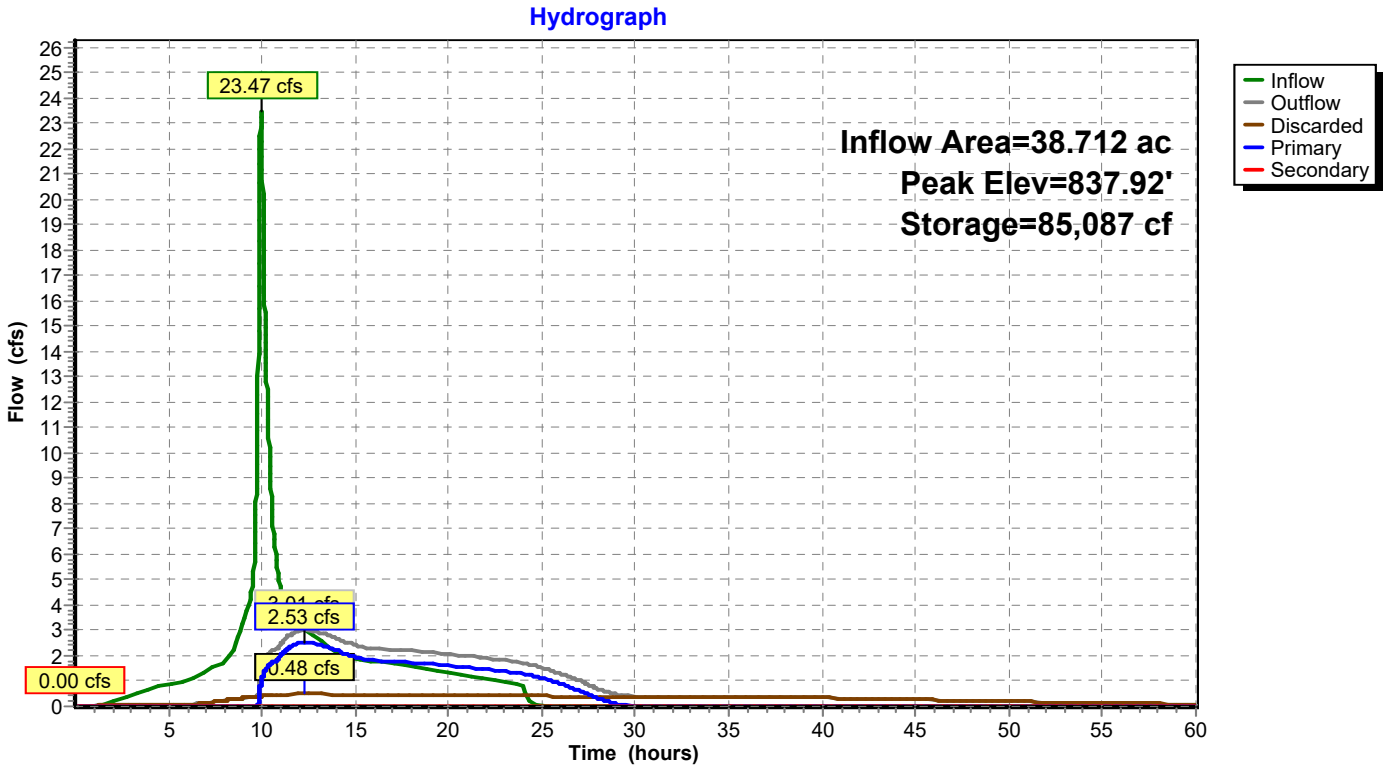
Device	Routing	Invert	Outlet Devices
#1	Primary	835.67'	**30.0" Round Culvert** L= 210.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 835.67' / 834.20' S= 0.0070 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	827.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	835.67'	**10.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	837.67'	**18.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	838.17'	**42.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	839.75'	**48.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 in 78.0" x 36.0" Grate (62% open area) Limited to weir flow at low heads
#7	Secondary	841.12'	**40.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.48 cfs @ 12.33 hrs HW=837.92' (Free Discharge)
└─**2=Exfiltration** (Controls 0.48 cfs)

Primary OutFlow Max=2.53 cfs @ 12.33 hrs HW=837.92' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.53 cfs of 23.75 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 1.93 cfs @ 6.95 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.60 cfs @ 1.60 fps)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=827.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B4: Basin 4



Summary for Pond B5: Basin 5

Inflow Area =	32.696 ac, 30.34% Impervious, Inflow Depth = 0.74" for 2 Year event				
Inflow =	8.91 cfs @	9.98 hrs,	Volume=	2.019 af	
Outflow =	1.25 cfs @	13.45 hrs,	Volume=	2.019 af,	Atten= 86%, Lag= 208.1 min
Discarded =	0.34 cfs @	13.45 hrs,	Volume=	1.073 af	
Primary =	0.91 cfs @	13.45 hrs,	Volume=	0.946 af	
Secondary =	0.00 cfs @	0.01 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 846.09' @ 13.45 hrs Surf.Area= 18,858 sf Storage= 35,848 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 497.5 min (1,270.1 - 772.6)

Volume	Invert	Avail.Storage	Storage Description
#1	844.00'	178,542 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.00	15,500	0	0
845.00	17,076	16,288	16,288
846.00	18,708	17,892	34,180
847.00	20,397	19,553	53,733
848.00	22,143	21,270	75,003
849.00	23,945	23,044	98,047
850.00	25,804	24,875	122,921
851.00	27,719	26,762	149,683
852.00	30,000	28,860	178,542

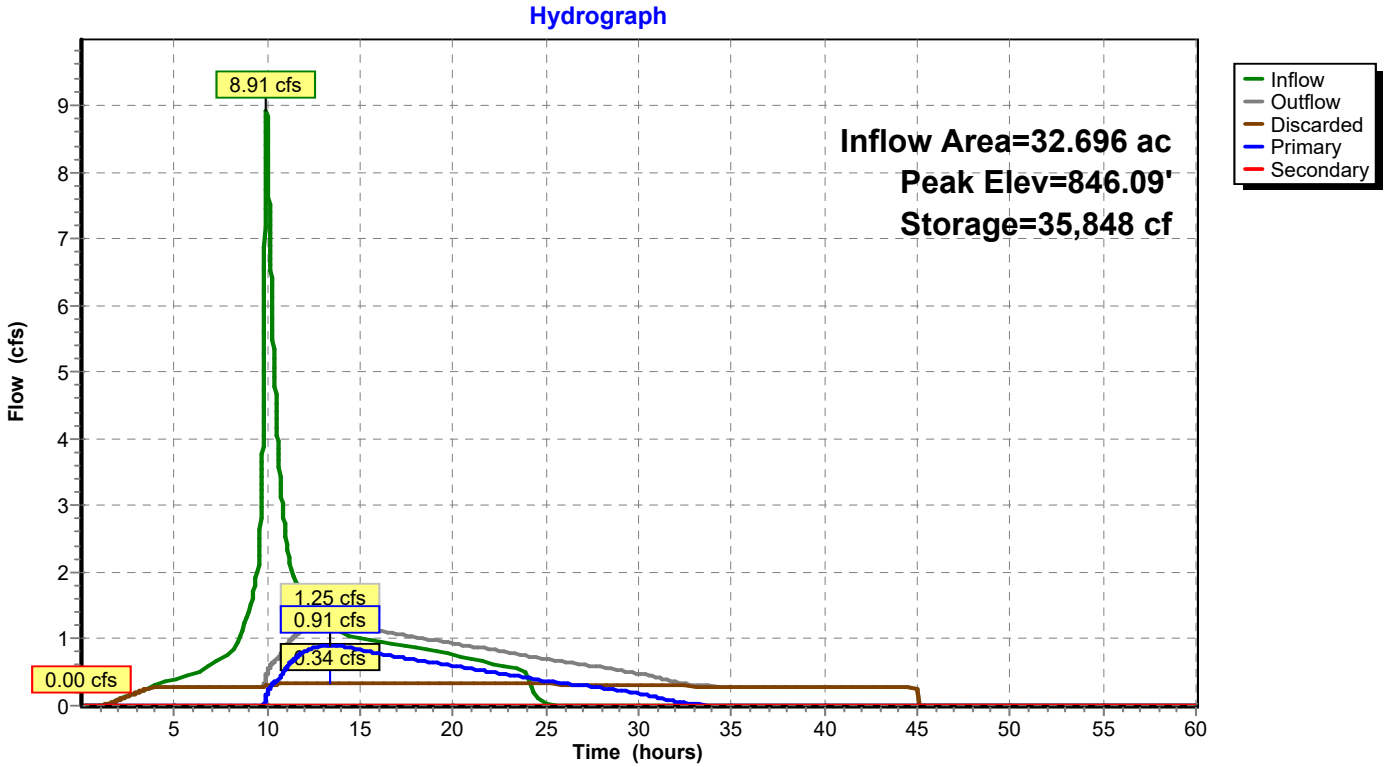
Device	Routing	Invert	Outlet Devices
#1	Primary	844.67'	**30.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 844.67' / 844.17' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	844.00'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#3	Device 1	844.67'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	845.67'	**6.0" W x 37.0" H Vert. Orifice/Grate** X 3 rows with 8.0" cc spacing C= 0.600
#5	Device 1	849.75'	**36.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 in 36.0" x 24.0" Grate (100% open area) Limited to weir flow at low heads
#6	Secondary	851.00'	**12.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.34 cfs @ 13.45 hrs HW=846.09' (Free Discharge)
└─**2=Exfiltration** (Controls 0.34 cfs)

Primary OutFlow Max=0.91 cfs @ 13.45 hrs HW=846.09' TW=844.68' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.91 cfs of 9.51 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 0.47 cfs @ 5.39 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.44 cfs @ 2.08 fps)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=844.00' (Free Discharge)
└─**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B5: Basin 5



Summary for Pond B6: Basin 6

Inflow Area = 34.039 ac, 52.56% Impervious, Inflow Depth = 1.25" for 2 Year event
Inflow = 16.99 cfs @ 9.98 hrs, Volume= 3.559 af
Outflow = 5.24 cfs @ 10.89 hrs, Volume= 3.277 af, Atten= 69%, Lag= 54.8 min
Discarded = 0.30 cfs @ 10.89 hrs, Volume= 0.944 af
Primary = 4.94 cfs @ 10.89 hrs, Volume= 2.333 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 849.79' @ 10.89 hrs Surf.Area= 0.353 ac Storage= 1.388 af

Plug-Flow detention time= 478.9 min calculated for 3.276 af (92% of inflow)
Center-of-Mass det. time= 428.3 min (1,183.5 - 755.2)

Volume	Invert	Avail.Storage	Storage Description
#1	839.50'	3.469 af	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3.792 af Overall - 0.323 af Embedded = 3.469 af
#2	839.50'	0.129 af	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 0.323 af Overall x 40.0% Voids
		3.598 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
839.50	0.081	0.000	0.000
840.00	0.081	0.040	0.040
841.00	0.081	0.081	0.121
842.00	0.081	0.081	0.202
843.00	0.081	0.081	0.283
844.00	0.081	0.081	0.364
845.00	0.061	0.071	0.435
846.00	0.133	0.097	0.532
847.00	0.260	0.196	0.729
848.00	0.292	0.276	1.005
849.00	0.325	0.309	1.313
850.00	0.360	0.343	1.656
851.00	0.434	0.397	2.053
852.00	0.474	0.454	2.507
854.40	0.597	1.285	3.792

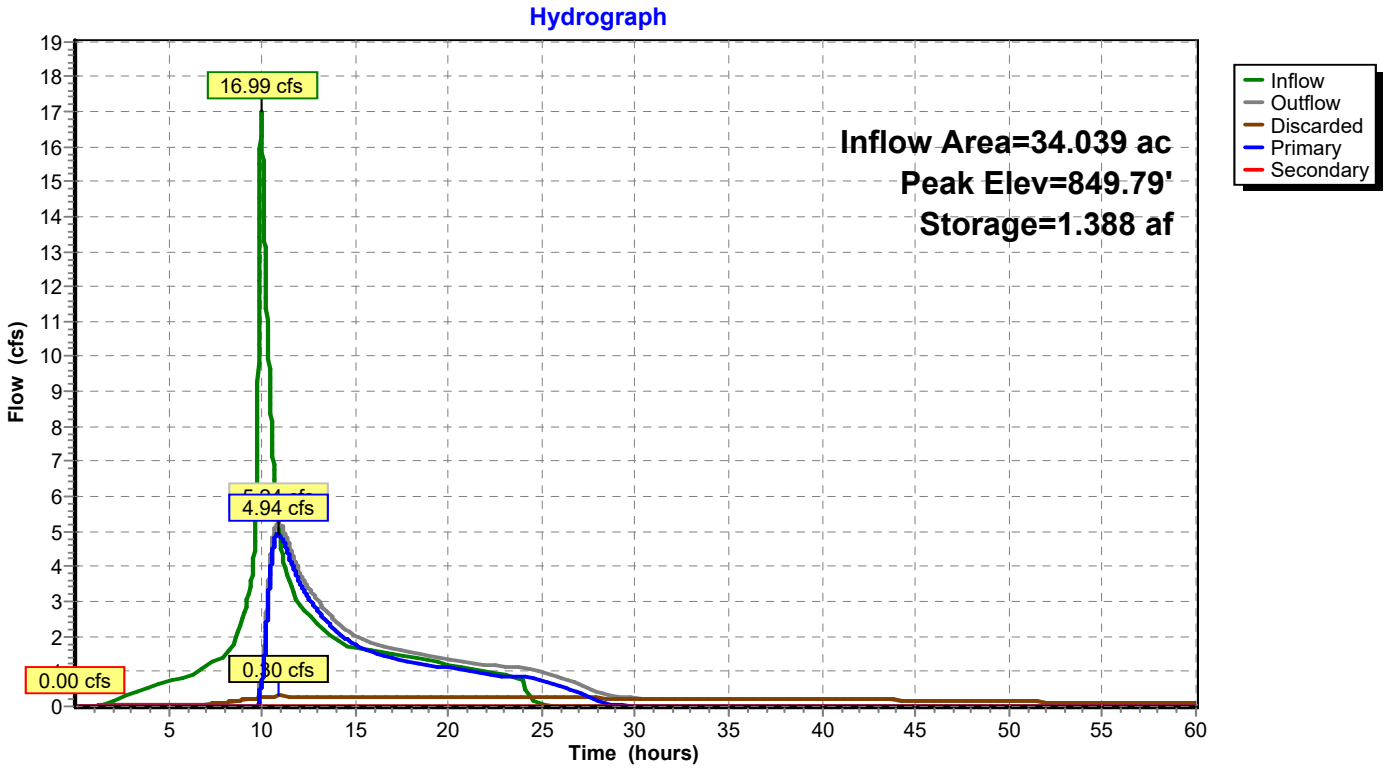
Device	Routing	Invert	Outlet Devices
#1	Primary	843.65'	**24.0" Round Culvert** L= 150.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 843.65' / 842.90' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Discarded	839.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	847.67'	**9.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	848.75'	**12.0" W x 9.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	849.50'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	850.67'	**69.6" W x 9.0" H Vert. Orifice/Grate** C= 0.600
#7	Secondary	852.88'	**40.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.30 cfs @ 10.89 hrs HW=849.79' (Free Discharge)
└─**2=Exfiltration** (Controls 0.30 cfs)

Primary OutFlow Max=4.94 cfs @ 10.89 hrs HW=849.79' TW=842.50' (Dynamic Tailwater)
└─**1=Culvert** (Passes 4.94 cfs of 31.71 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 1.28 cfs @ 6.80 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 2.91 cfs @ 3.88 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 0.76 cfs @ 1.73 fps)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=839.50' TW=842.50' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B6: Basin 6



Summary for Pond B7: Basin 7

Inflow Area = 108.754 ac, 33.30% Impervious, Inflow Depth = 0.50" for 2 Year event
Inflow = 9.38 cfs @ 9.98 hrs, Volume= 4.548 af
Outflow = 2.01 cfs @ 21.83 hrs, Volume= 4.520 af, Atten= 79%, Lag= 711.0 min
Discarded = 1.05 cfs @ 21.83 hrs, Volume= 3.899 af
Primary = 0.96 cfs @ 21.83 hrs, Volume= 0.621 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 841.02' @ 21.83 hrs Surf.Area= 58,402 sf Storage= 89,685 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 768.6 min (1,791.8 - 1,023.2)

Volume	Invert	Avail.Storage	Storage Description
#1	839.00'	516,122 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
839.00	10,000	0	0
840.00	54,515	32,258	32,258
841.00	58,335	56,425	88,683
842.00	62,211	60,273	148,956
843.00	66,912	64,562	213,517
844.00	71,188	69,050	282,567
845.00	75,535	73,362	355,929
846.00	79,981	77,758	433,687
847.00	84,890	82,436	516,122

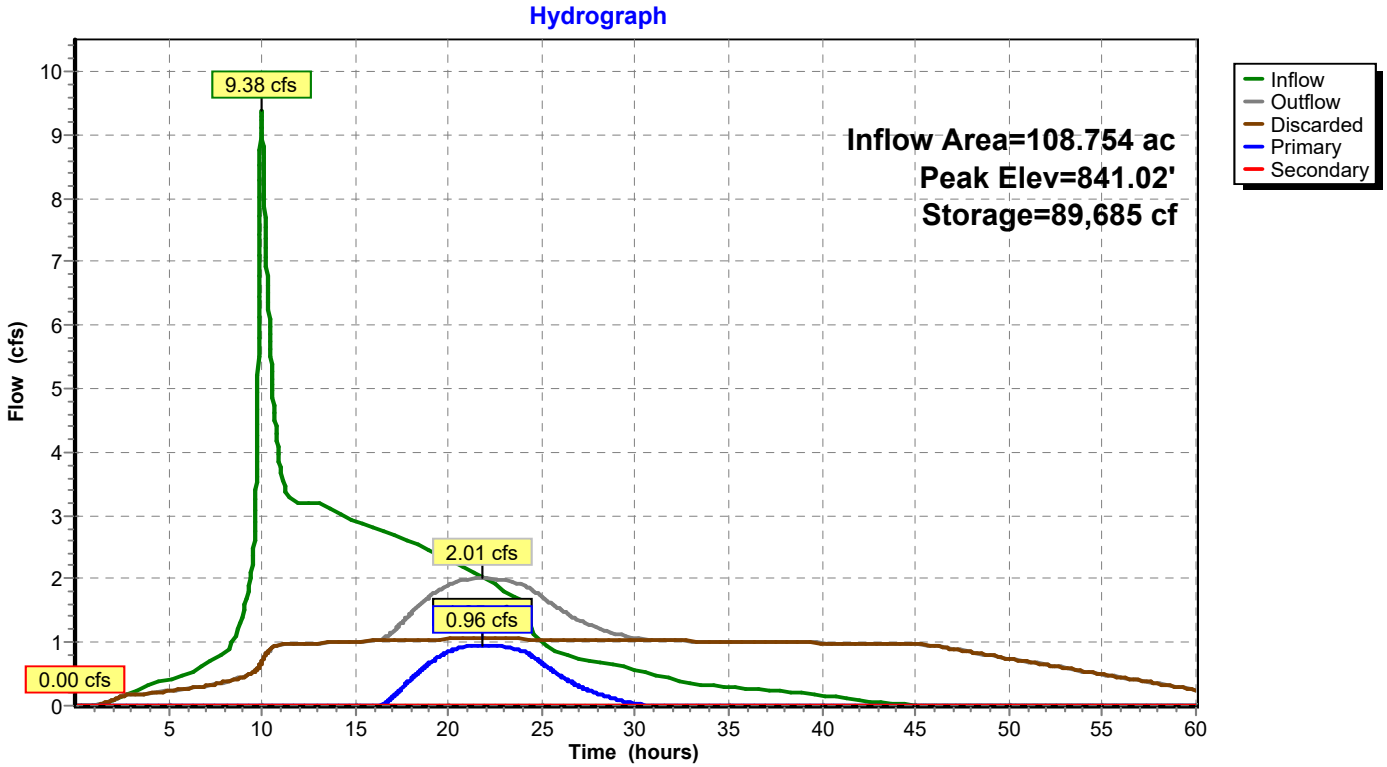
Device	Routing	Invert	Outlet Devices
#1	Primary	836.67'	**36.0" Round Culvert** L= 63.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.67' / 836.00' S= 0.0106 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Discarded	839.00'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#3	Device 1	840.75'	**26.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	841.25'	**12.0" W x 36.0" H Vert. Orifice/Grate** X 3 rows with 8.0" cc spacing C= 0.600
#5	Device 1	844.50'	**48.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 in 48.0" x 36.0" Grate (100% open area) Limited to weir flow at low heads
#6	Secondary	845.50'	**12.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=1.05 cfs @ 21.83 hrs HW=841.02' (Free Discharge)
└─**2=Exfiltration** (Controls 1.05 cfs)

Primary OutFlow Max=0.96 cfs @ 21.83 hrs HW=841.02' TW=836.36' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.96 cfs of 57.43 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 0.96 cfs @ 1.66 fps)
  ├─**4=Orifice/Grate** (Controls 0.00 cfs)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=839.00' (Free Discharge)
└─**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B7: Basin 7



Summary for Pond B8: Basin 8

Inflow Area = 44.689 ac, 35.47% Impervious, Inflow Depth = 0.85" for 2 Year event
Inflow = 12.19 cfs @ 9.99 hrs, Volume= 3.178 af
Outflow = 1.51 cfs @ 15.62 hrs, Volume= 3.178 af, Atten= 88%, Lag= 337.9 min
Discarded = 0.46 cfs @ 15.62 hrs, Volume= 1.664 af
Primary = 1.05 cfs @ 15.62 hrs, Volume= 1.514 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 856.21' @ 15.62 hrs Surf.Area= 25,008 sf Storage= 68,173 cf

Plug-Flow detention time= 734.3 min calculated for 3.178 af (100% of inflow)
Center-of-Mass det. time= 734.4 min (1,507.0 - 772.6)

Volume	Invert	Avail.Storage	Storage Description
#1	853.00'	147,517 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
853.00	17,554	0	0
854.00	19,812	18,683	18,683
855.00	22,126	20,969	39,652
856.00	24,497	23,312	62,964
857.00	26,924	25,711	88,674
858.00	29,407	28,166	116,840
859.00	31,948	30,678	147,517

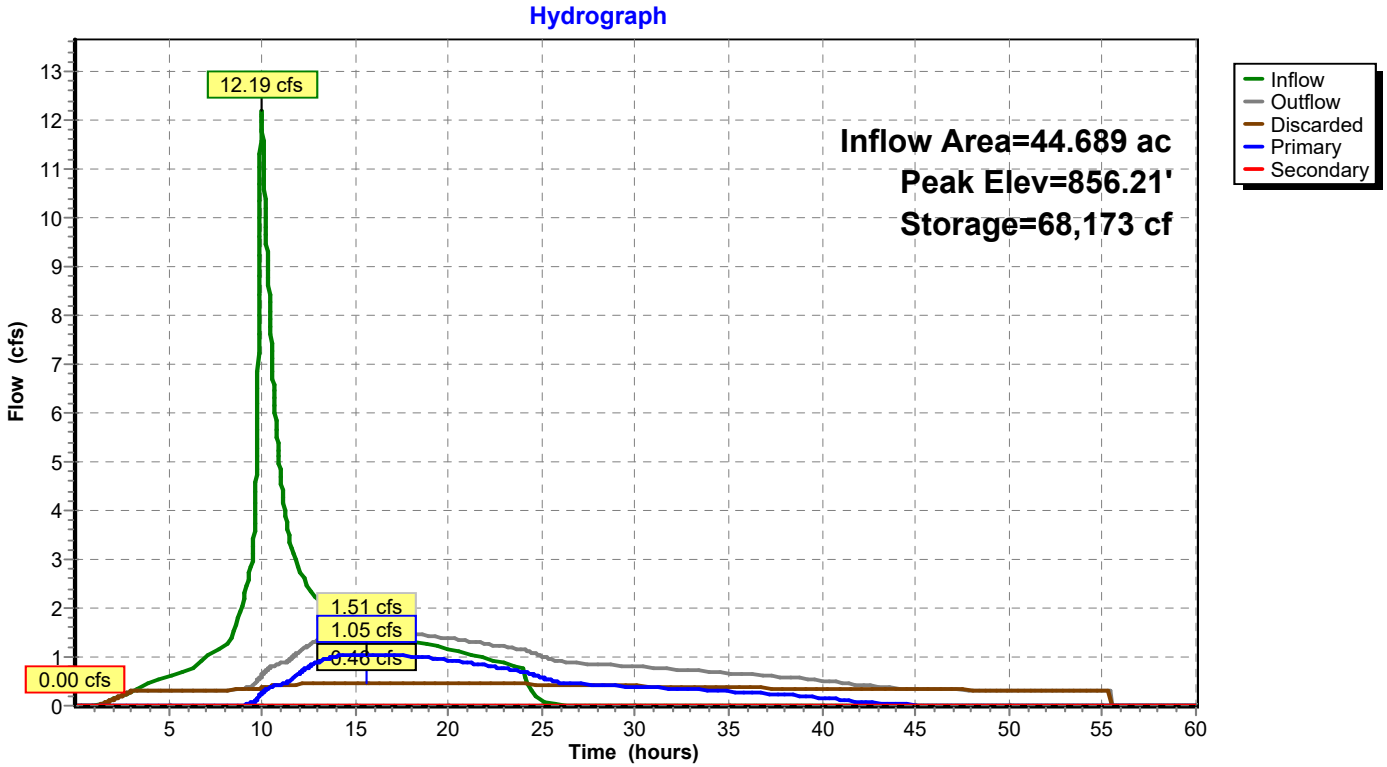
Device	Routing	Invert	Outlet Devices
#1	Primary	853.00'	**30.0" Round Culvert** L= 1,200.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 853.00' / 844.17' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	853.00'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#3	Device 1	853.58'	**2.0" W x 5.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	855.67'	**5.0" W x 12.0" H Vert. Orifice/Grate** X 4 rows with 8.0" cc spacing C= 0.600
#5	Device 1	857.25'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 in 36.0" x 36.0" Grate (100% open area) Limited to weir flow at low heads
#6	Secondary	858.75'	**16.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.46 cfs @ 15.62 hrs HW=856.21' (Free Discharge)
└─**2=Exfiltration** (Controls 0.46 cfs)

Primary OutFlow Max=1.05 cfs @ 15.62 hrs HW=856.21' TW=844.68' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.05 cfs of 33.09 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 0.52 cfs @ 7.49 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.53 cfs @ 2.36 fps)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=853.00' (Free Discharge)
└─**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B8: Basin 8



Summary for Pond B9: Basin 9

Inflow Area = 11.446 ac, 17.36% Impervious, Inflow Depth = 0.50" for 2 Year event
Inflow = 1.74 cfs @ 9.98 hrs, Volume= 0.481 af
Outflow = 1.02 cfs @ 10.42 hrs, Volume= 0.479 af, Atten= 42%, Lag= 26.5 min
Primary = 1.02 cfs @ 10.42 hrs, Volume= 0.479 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 848.48' @ 10.42 hrs Surf.Area= 6,668 sf Storage= 3,029 cf

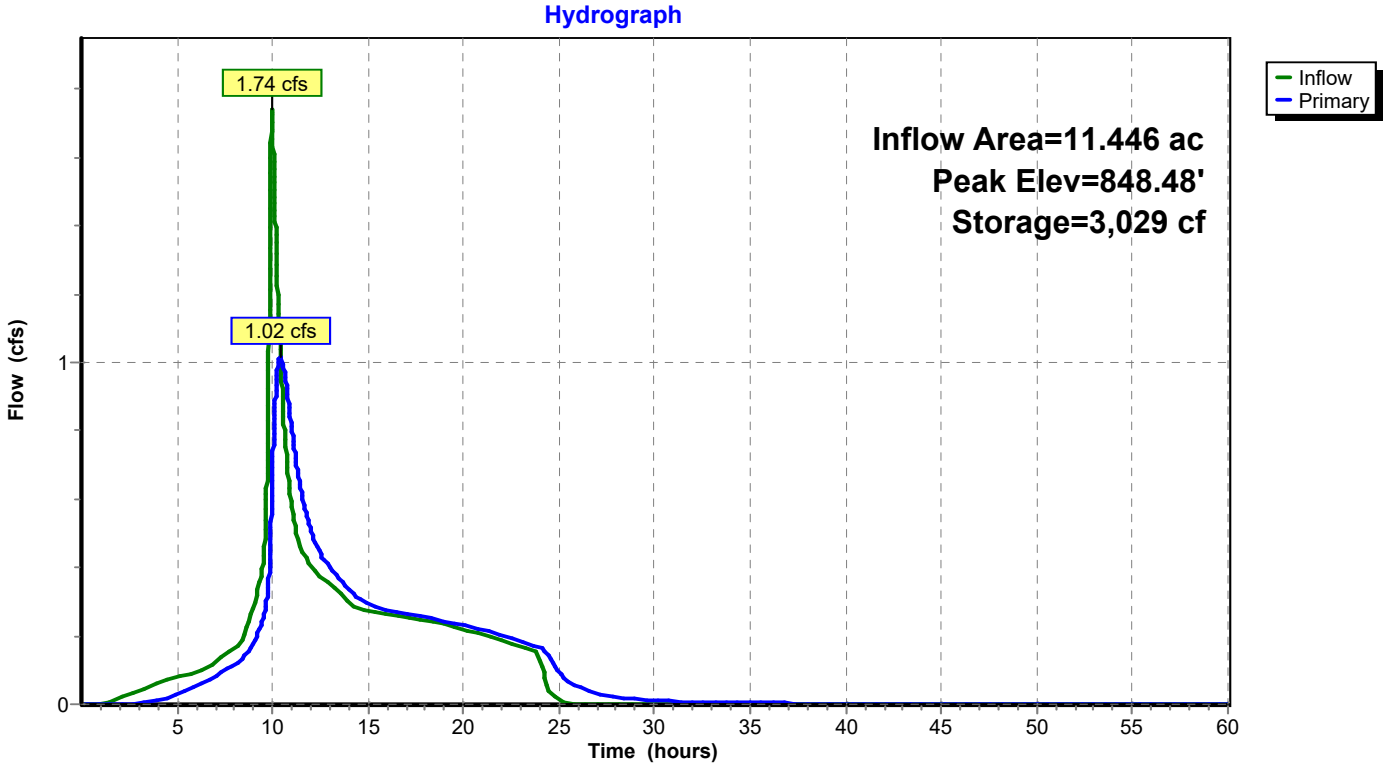
Plug-Flow detention time= 93.3 min calculated for 0.479 af (100% of inflow)
Center-of-Mass det. time= 91.6 min (904.8 - 813.2)

Volume	Invert	Avail.Storage	Storage Description
#1	848.00'	48,750 cf	**30.00'W x 200.00'L x 5.00'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	848.00'	**18.0" Round Culvert** L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 848.00' / 847.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	848.00'	**15.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.02 cfs @ 10.42 hrs HW=848.48' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.02 cfs of 1.14 cfs potential flow)
└─**2=Orifice/Grate** (Orifice Controls 1.02 cfs @ 2.35 fps)

Pond B9: Basin 9



Summary for Pond Ex SD: Tract #1632 Ex. 36" SD Outlet

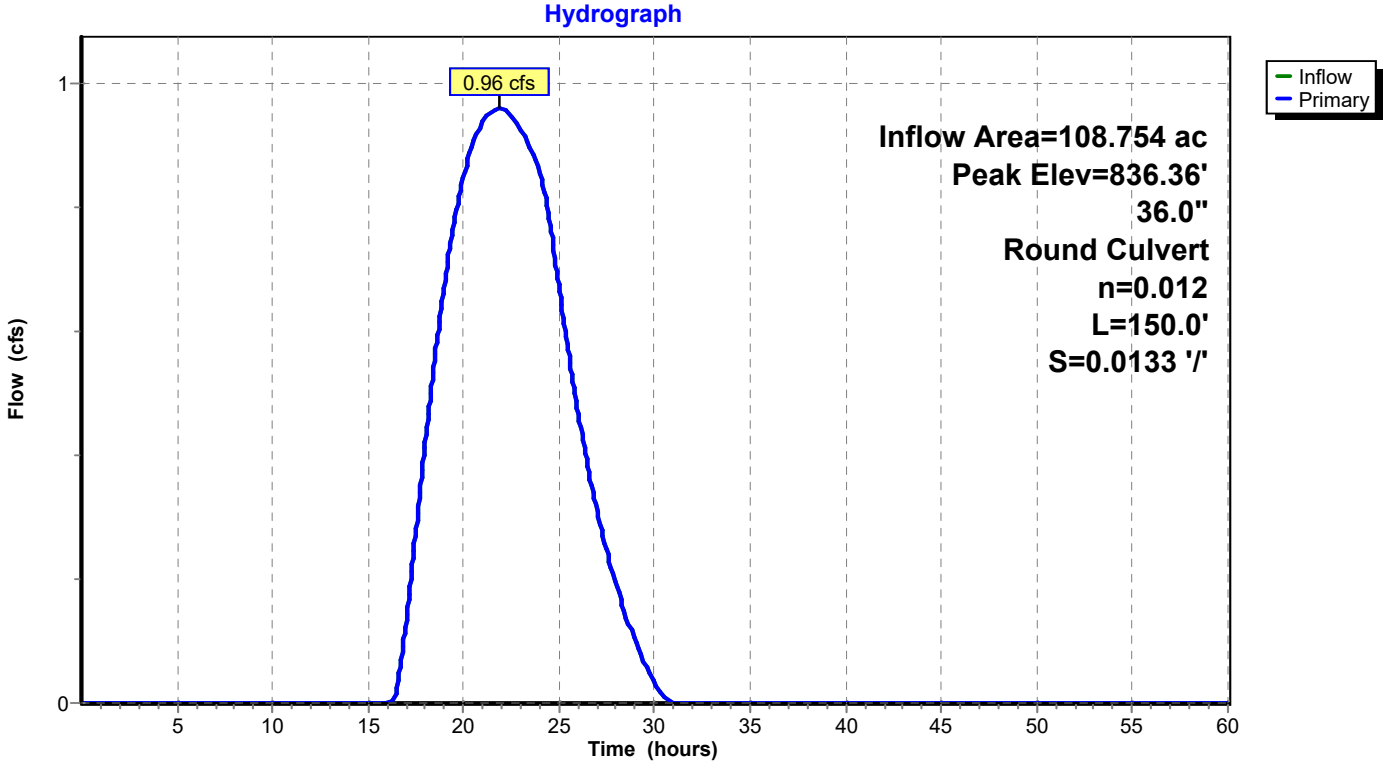
Inflow Area = 108.754 ac, 33.30% Impervious, Inflow Depth = 0.07" for 2 Year event
Inflow = 0.96 cfs @ 21.83 hrs, Volume= 0.621 af
Outflow = 0.96 cfs @ 21.84 hrs, Volume= 0.621 af, Atten= 0%, Lag= 0.2 min
Primary = 0.96 cfs @ 21.84 hrs, Volume= 0.621 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 836.36' @ 21.84 hrs
Flood Elev= 843.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	836.00'	**36.0" Round Culvert** L= 150.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.00' / 834.00' S= 0.0133 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=0.96 cfs @ 21.84 hrs HW=836.36' TW=835.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.96 cfs @ 2.03 fps)

Pond Ex SD: Tract #1632 Ex. 36" SD Outlet



Summary for Pond MC Q: SD System

[58] Hint: Peaked 0.29' above defined flood level

Inflow Area =	21.500 ac, 80.00% Impervious, Inflow Depth = 1.74" for 2 Year event				
Inflow =	17.34 cfs @	9.97 hrs,	Volume=	3.116 af	
Outflow =	17.22 cfs @	9.99 hrs,	Volume=	2.836 af,	Atten= 1%, Lag= 0.9 min
Discarded =	0.11 cfs @	9.99 hrs,	Volume=	0.358 af	
Primary =	8.31 cfs @	9.99 hrs,	Volume=	1.203 af	
Secondary =	8.80 cfs @	9.99 hrs,	Volume=	1.274 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 845.79' @ 9.99 hrs Surf.Area= 0.118 ac Storage= 0.505 af
Flood Elev= 845.50' Surf.Area= 0.097 ac Storage= 0.474 af

Plug-Flow detention time= 236.1 min calculated for 2.836 af (91% of inflow)
Center-of-Mass det. time= 178.6 min (910.6 - 732.0)

Volume	Invert	Avail.Storage	Storage Description
#1	839.50'	0.607 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
839.50	0.081	0.000	0.000
840.00	0.081	0.040	0.040
841.00	0.081	0.081	0.121
842.00	0.081	0.081	0.202
843.00	0.081	0.081	0.283
844.00	0.081	0.081	0.364
845.00	0.061	0.071	0.434
846.00	0.133	0.097	0.531
846.50	0.172	0.076	0.607

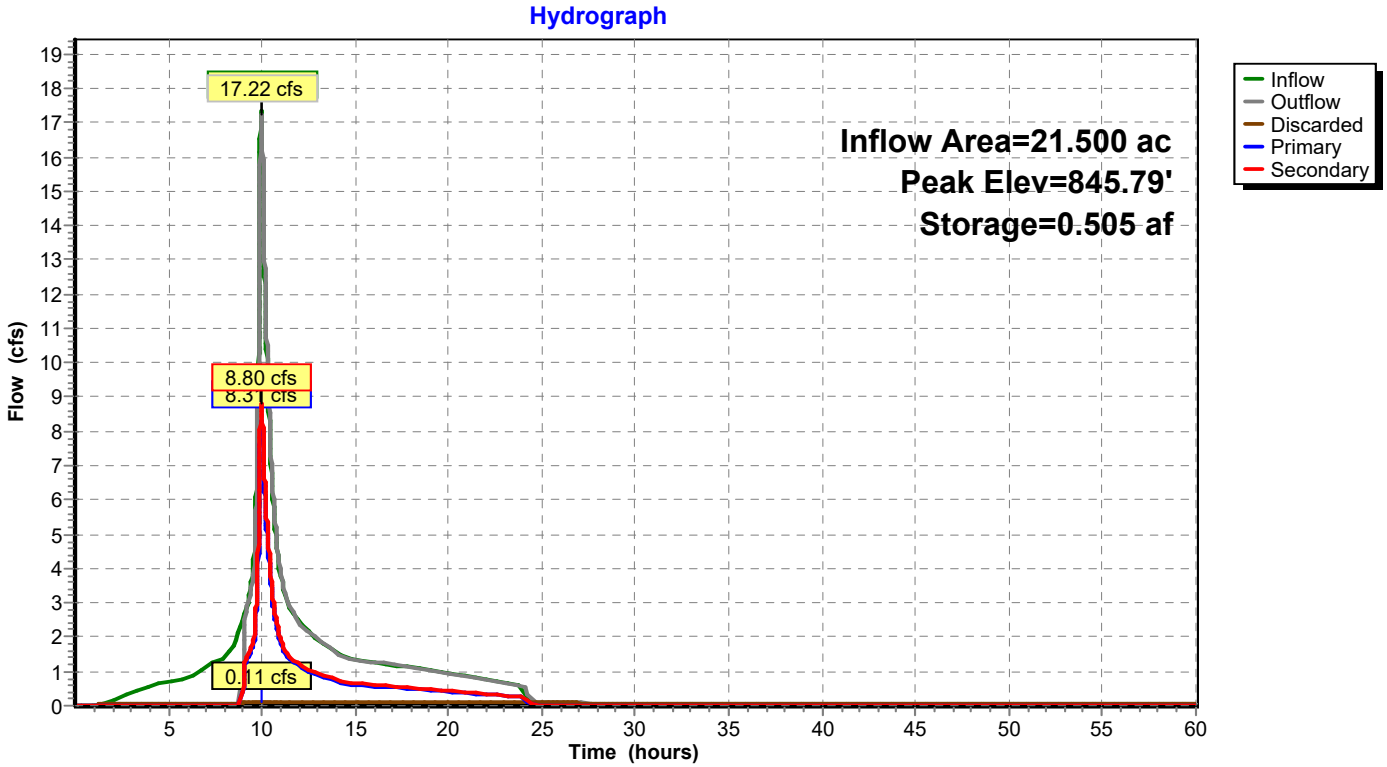
Device	Routing	Invert	Outlet Devices
#1	Primary	841.50'	**36.0" Round Culvert** L= 585.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 841.50' / 838.50' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	845.50'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	839.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 750.00'
#4	Secondary	845.50'	**20.0' long (Profile 4) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.77 2.97 3.21

Discarded OutFlow Max=0.11 cfs @ 9.99 hrs HW=845.79' (Free Discharge)
└─**3=Exfiltration** (Controls 0.11 cfs)

Primary OutFlow Max=8.31 cfs @ 9.99 hrs HW=845.79' TW=839.69' (Dynamic Tailwater)
└─**1=Culvert** (Passes 8.31 cfs of 51.95 cfs potential flow)
  └─**2=Orifice/Grate** (Weir Controls 8.31 cfs @ 1.77 fps)

Secondary OutFlow Max=8.80 cfs @ 9.99 hrs HW=845.79' TW=833.92' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 8.80 cfs @ 1.50 fps)

Pond MC Q: SD System



Summary for Pond SD: 42" HDPE SD

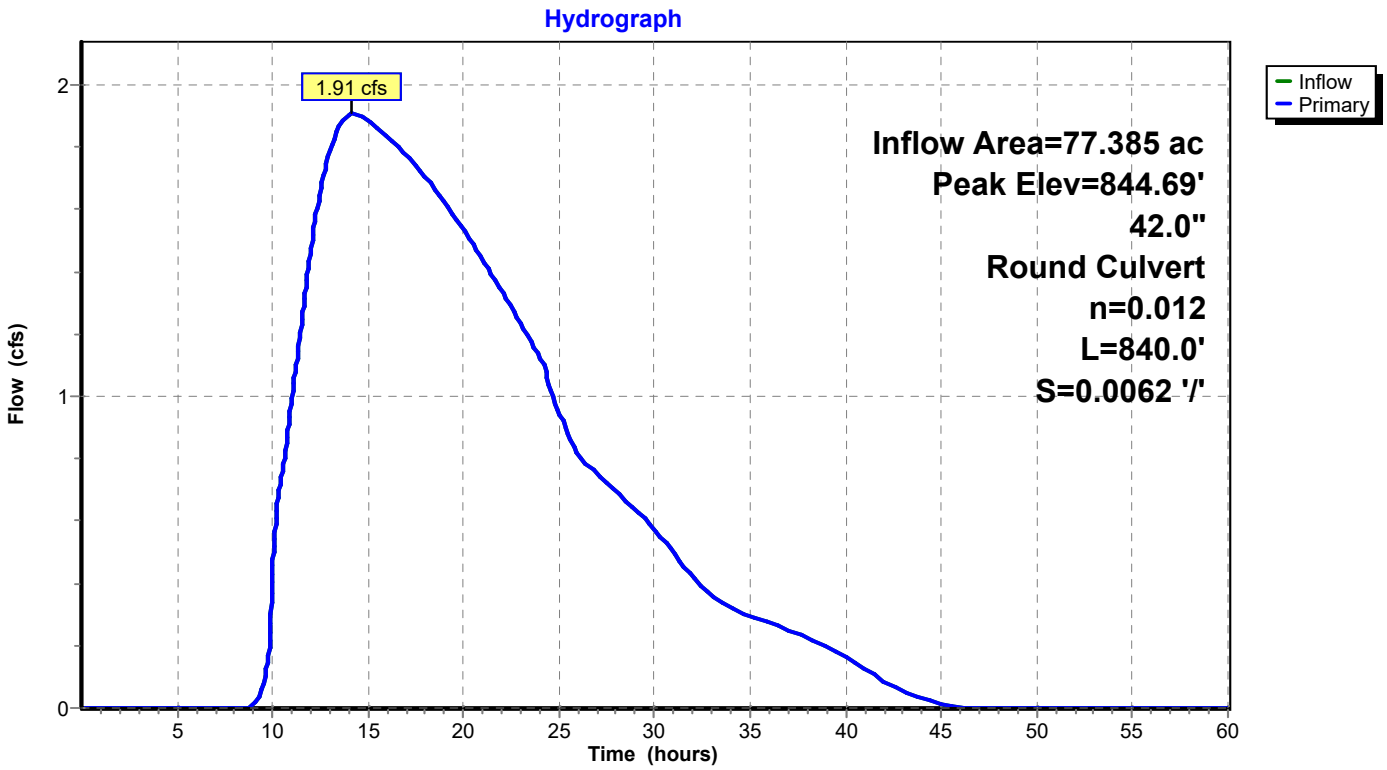
Inflow Area = 77.385 ac, 33.30% Impervious, Inflow Depth = 0.38" for 2 Year event
Inflow = 1.91 cfs @ 14.17 hrs, Volume= 2.460 af
Outflow = 1.91 cfs @ 14.17 hrs, Volume= 2.460 af, Atten= 0%, Lag= 0.0 min
Primary = 1.91 cfs @ 14.17 hrs, Volume= 2.460 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 844.69' @ 14.52 hrs
Flood Elev= 853.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	844.17'	**42.0" Round Culvert** L= 840.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 844.17' / 839.00' S= 0.0062 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=1.91 cfs @ 14.17 hrs HW=844.68' TW=840.50' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.91 cfs @ 3.30 fps)

Pond SD: 42" HDPE SD



Time span=0.01-60.00 hrs, dt=0.01 hrs, 6000 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Pond 1P: SD Inlet with Bypass SD Peak Elev=825.19' Inflow=35.45 cfs 8.685 af
Primary=35.45 cfs 8.685 af Secondary=0.00 cfs 0.000 af Outflow=35.45 cfs 8.685 af

Pond 2P: 60" SD MH Peak Elev=840.06' Inflow=13.65 cfs 2.186 af
Primary=13.65 cfs 2.186 af Secondary=0.00 cfs 0.000 af Outflow=13.65 cfs 2.186 af

Pond 15P: SD System 42" HDPE Peak Elev=844.40' Inflow=17.03 cfs 0.846 af
Outflow=17.03 cfs 0.846 af

Pond 16P: Dbl Conc. Arch Culvert (37x23) Peak Elev=844.30' Inflow=10.83 cfs 3.972 af
36.3" x 22.5", R=18.8"/51.0" Pipe Arch Culvert x 2.00 n=0.011 L=860.0' S=0.0024 '/' Outflow=10.83 cfs 3.972 af

Pond 17P: Gran Cielo Dwy Peak Elev=854.84' Storage=9,750 cf Inflow=122.07 cfs 24.054 af
Primary=93.38 cfs 23.448 af Secondary=0.00 cfs 0.000 af Tertiary=28.32 cfs 0.605 af Outflow=121.70 cfs 24.054 af

Pond 18P: GC-CkD1 Peak Elev=849.10' Storage=9,110 cf Inflow=152.52 cfs 34.873 af
Primary=0.64 cfs 0.017 af Secondary=12.52 cfs 0.211 af Tertiary=136.21 cfs 34.611 af Outflow=149.21 cfs 34.839 af

Pond 19P: GC-CkD2 Peak Elev=848.77' Storage=16,306 cf Inflow=27.17 cfs 2.706 af
Primary=1.16 cfs 1.345 af Secondary=18.40 cfs 1.360 af Tertiary=0.10 cfs 0.001 af Outflow=19.65 cfs 2.705 af

Pond 20P: GC-CkD3 Peak Elev=845.61' Storage=10,869 cf Inflow=26.70 cfs 4.281 af
Primary=4.72 cfs 3.046 af Secondary=3.87 cfs 0.379 af Tertiary=16.95 cfs 0.845 af Outflow=25.54 cfs 4.270 af

Pond B1: Basin 1 Peak Elev=836.34' Storage=4.294 af Inflow=61.24 cfs 10.005 af
Discarded=1.05 cfs 3.020 af Primary=13.77 cfs 6.610 af Secondary=0.00 cfs 0.000 af Outflow=14.82 cfs 9.629 af

Pond B10: Basin 10 Peak Elev=817.66' Storage=124,636 cf Inflow=27.15 cfs 5.934 af
Discarded=0.82 cfs 2.723 af Primary=3.68 cfs 2.761 af Secondary=0.00 cfs 0.000 af Outflow=4.50 cfs 5.484 af

Pond B11: Basin 11 Peak Elev=833.00' Storage=44,390 cf Inflow=16.38 cfs 2.604 af
Discarded=0.24 cfs 0.770 af Primary=3.46 cfs 1.573 af Secondary=0.00 cfs 0.000 af Outflow=3.70 cfs 2.343 af

Pond B12: Basin 12 Peak Elev=837.54' Storage=65,439 cf Inflow=21.44 cfs 3.326 af
Discarded=0.47 cfs 1.467 af Primary=2.02 cfs 1.588 af Secondary=0.00 cfs 0.000 af Outflow=2.49 cfs 3.055 af

Pond B13: Basin 13 Peak Elev=843.39' Storage=2.730 af Inflow=69.87 cfs 10.322 af
Discarded=0.44 cfs 1.321 af Primary=34.55 cfs 8.587 af Secondary=0.00 cfs 0.000 af Outflow=34.99 cfs 9.908 af

Pond B4: Basin 4 Peak Elev=838.95' Storage=111,294 cf Inflow=41.42 cfs 7.245 af
Discarded=0.54 cfs 1.630 af Primary=14.66 cfs 5.358 af Secondary=0.00 cfs 0.000 af Outflow=15.20 cfs 6.988 af

Pond B5: Basin 5 Peak Elev=847.07' Storage=55,240 cf Inflow=16.32 cfs 3.956 af
Discarded=0.38 cfs 1.188 af Primary=4.28 cfs 2.768 af Secondary=0.00 cfs 0.000 af Outflow=4.65 cfs 3.956 af

Pond B6: Basin 6 Peak Elev=851.09' Storage=1.896 af Inflow=30.64 cfs 6.310 af
Discarded=0.37 cfs 1.011 af Primary=15.84 cfs 5.009 af Secondary=0.00 cfs 0.000 af Outflow=16.21 cfs 6.019 af

Pond B7: Basin 7 Peak Elev=841.95' Storage=145,975 cf Inflow=17.05 cfs 10.954 af
Discarded=1.14 cfs 4.271 af Primary=6.98 cfs 6.584 af Secondary=0.00 cfs 0.000 af Outflow=8.12 cfs 10.855 af

Pond B8: Basin 8 Peak Elev=857.36' Storage=98,560 cf Inflow=22.23 cfs 6.012 af
Discarded=0.51 cfs 1.833 af Primary=5.93 cfs 4.179 af Secondary=0.00 cfs 0.000 af Outflow=6.44 cfs 6.012 af

Pond B9: Basin 9 Peak Elev=848.80' Storage=5,232 cf Inflow=3.86 cfs 1.080 af
Outflow=2.51 cfs 1.078 af

Pond Ex SD: Tract #1632 **Ex. 36" SD Outlet** Peak Elev=837.00' Inflow=6.98 cfs 6.584 af
36.0" Round Culvert n=0.012 L=150.0' S=0.0133 '/' Outflow=6.98 cfs 6.584 af

Pond MC Q: SD System Peak Elev=845.91' Storage=0.519 af Inflow=28.37 cfs 5.150 af
Discarded=0.11 cfs 0.368 af Primary=13.65 cfs 2.186 af Secondary=14.45 cfs 2.315 af Outflow=28.21 cfs 4.869 af

Pond SD: 42" HDPE SD Peak Elev=845.37' Inflow=10.07 cfs 6.947 af
42.0" Round Culvert n=0.012 L=840.0' S=0.0062 '/' Outflow=10.07 cfs 6.947 af

Summary for Pond 1P: SD Inlet with Bypass SD

Inflow Area = 108.566 ac, 6.93% Impervious, Inflow Depth = 0.96" for 10 Year event
Inflow = 35.45 cfs @ 9.99 hrs, Volume= 8.685 af
Outflow = 35.45 cfs @ 9.99 hrs, Volume= 8.685 af, Atten= 0%, Lag= 0.0 min
Primary = 35.45 cfs @ 9.99 hrs, Volume= 8.685 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

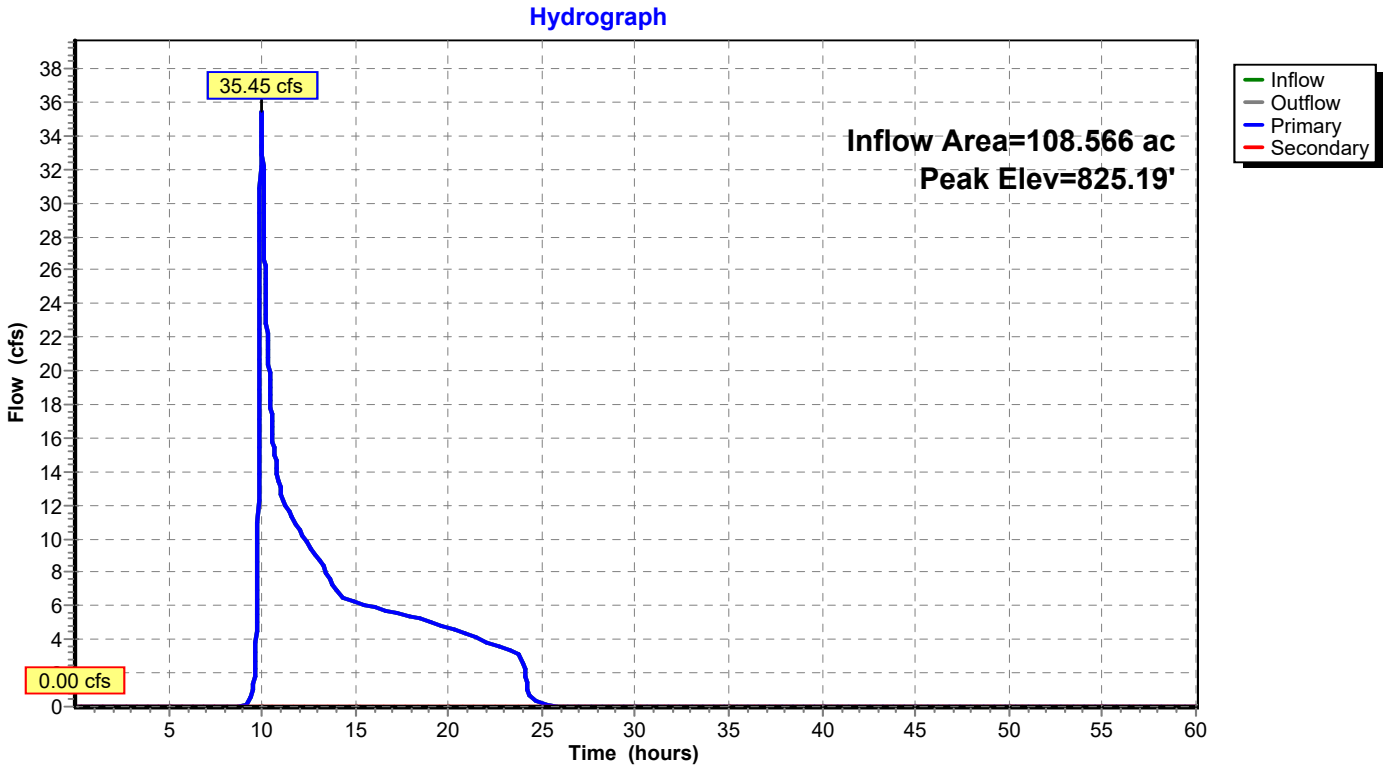
Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 825.19' @ 9.99 hrs
Flood Elev= 826.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	820.00'	**48.0" Round Culvert** L= 990.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 820.00' / 814.11' S= 0.0059 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	824.50'	**78.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	825.90'	**Special & User-Defined** Head (feet) 0.00 0.50 0.67 0.83 Disch. (cfs) 0.000 200.000 450.000 1,200.000

Primary OutFlow Max=35.41 cfs @ 9.99 hrs HW=825.19' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 35.41 cfs of 108.02 cfs potential flow)
└─**2=Orifice/Grate** (Weir Controls 35.41 cfs @ 2.71 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=820.00' TW=0.00' (Dynamic Tailwater)
└─**3=Special & User-Defined** (Controls 0.00 cfs)

Pond 1P: SD Inlet with Bypass SD



Summary for Pond 2P: 60" SD MH

Inflow Area = 21.500 ac, 80.00% Impervious, Inflow Depth = 1.22" for 10 Year event
Inflow = 13.65 cfs @ 9.99 hrs, Volume= 2.186 af
Outflow = 13.65 cfs @ 9.99 hrs, Volume= 2.186 af, Atten= 0%, Lag= 0.0 min
Primary = 13.65 cfs @ 9.99 hrs, Volume= 2.186 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

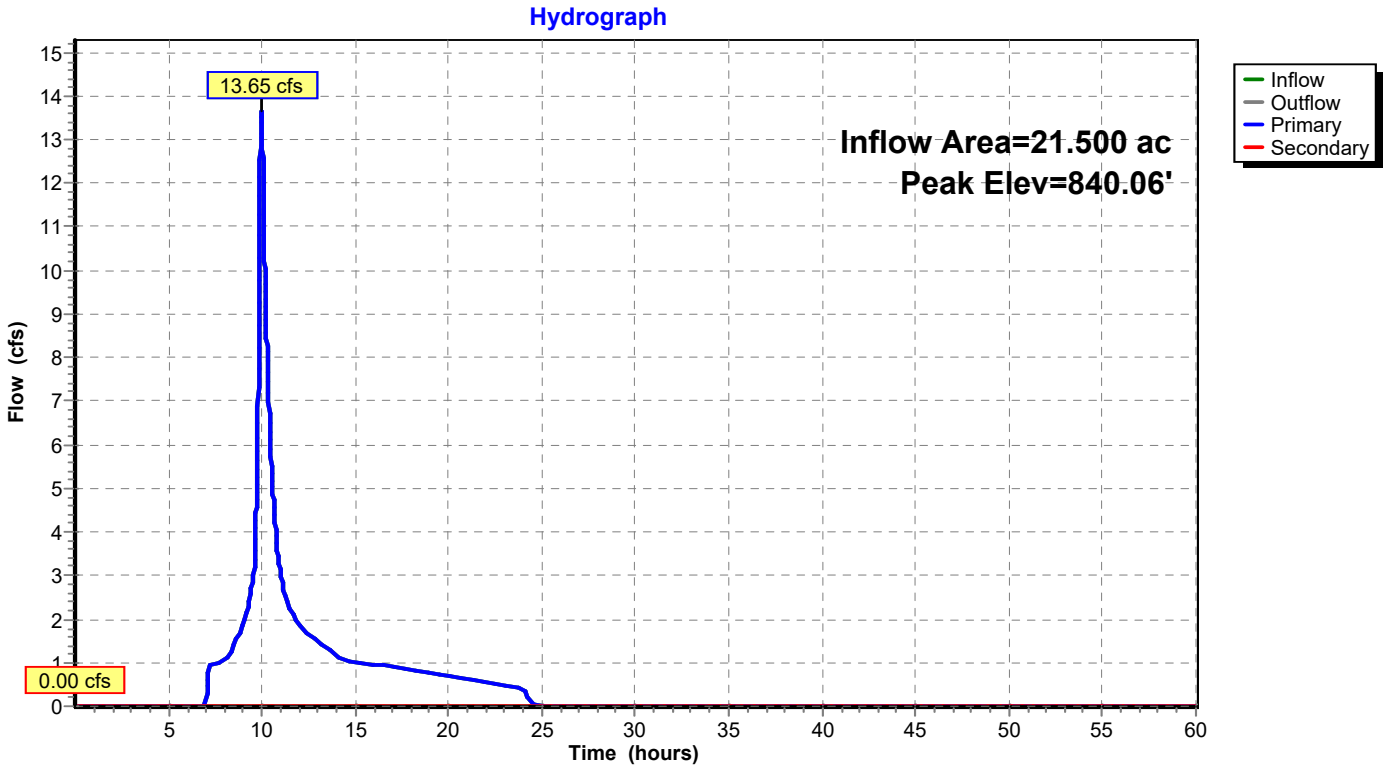
Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 840.06' @ 9.99 hrs
Flood Elev= 845.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	838.50'	**36.0" Round Culvert** L= 500.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 838.50' / 836.50' S= 0.0040 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf
#2	Secondary	844.25'	**69.6" W x 9.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=13.64 cfs @ 9.99 hrs HW=840.06' TW=834.93' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 13.64 cfs @ 5.34 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=838.50' TW=826.50' (Dynamic Tailwater)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: 60" SD MH



Summary for Pond 15P: SD System 42" HDPE

2 - 6 foot long curb openings (one on both sides of Linne Rd)
with 25 foot x 12 inch wide channel drain in Conc C&G

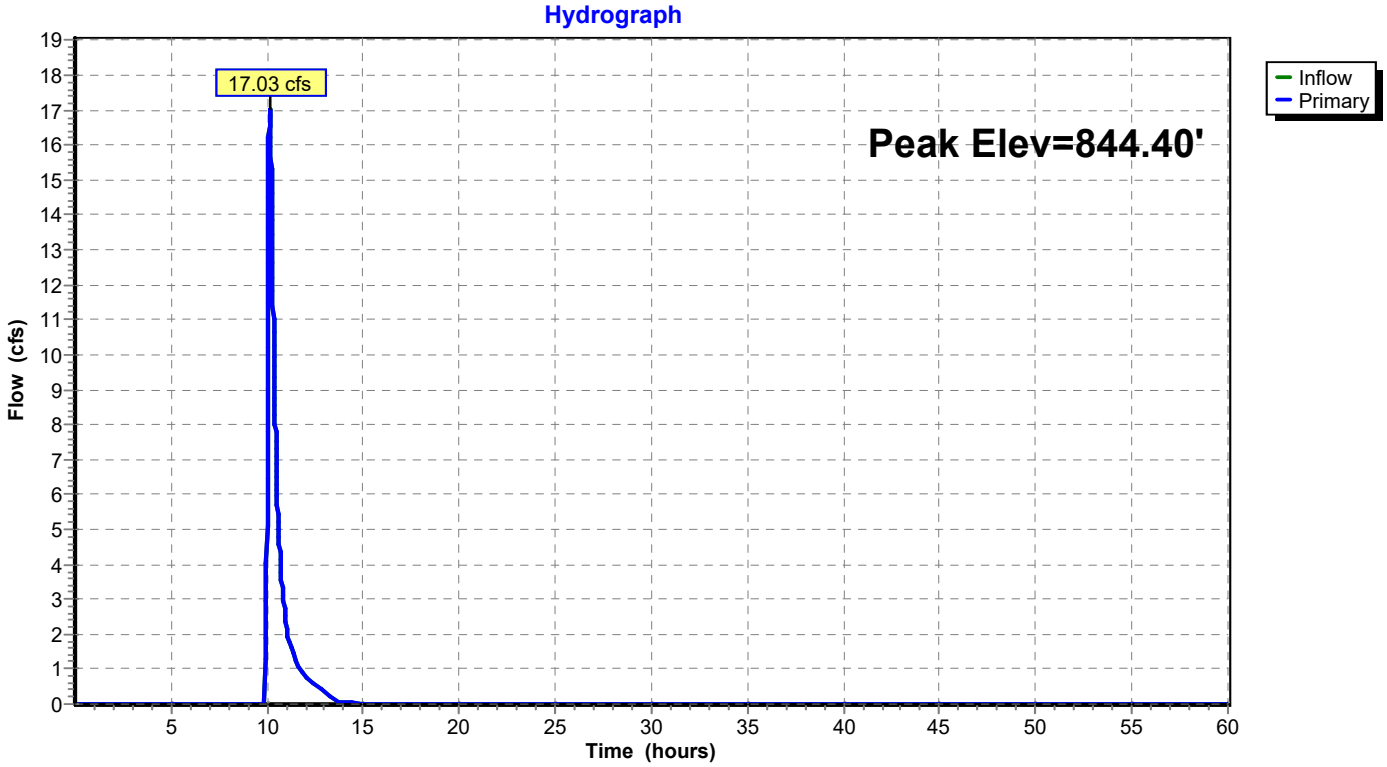
Inflow	=	17.03 cfs @	10.14 hrs,	Volume=	0.846 af
Outflow	=	17.03 cfs @	10.14 hrs,	Volume=	0.846 af, Atten= 0%, Lag= 0.0 min
Primary	=	17.03 cfs @	10.14 hrs,	Volume=	0.846 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 844.40' @ 10.14 hrs
Flood Elev= 845.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	839.75'	**42.0" Round Culvert** L= 1,370.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 839.75' / 833.60' S= 0.0045 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf
#2	Device 1	844.17'	**72.0" W x 9.0" H Vert. Orifice/Grate X 2.00** C= 0.600
#3	Device 1	844.25'	**12.0" x 180.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=17.03 cfs @ 10.14 hrs HW=844.40' TW=835.48' (Dynamic Tailwater)
└─**1=Culvert** (Passes 17.03 cfs of 75.23 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 4.36 cfs @ 1.55 fps)
  └─**3=Orifice/Grate** (Weir Controls 12.67 cfs @ 1.28 fps)

Pond 15P: SD System 42" HDPE



Summary for Pond 16P: Dbl Conc. Arch Culvert (37x23)

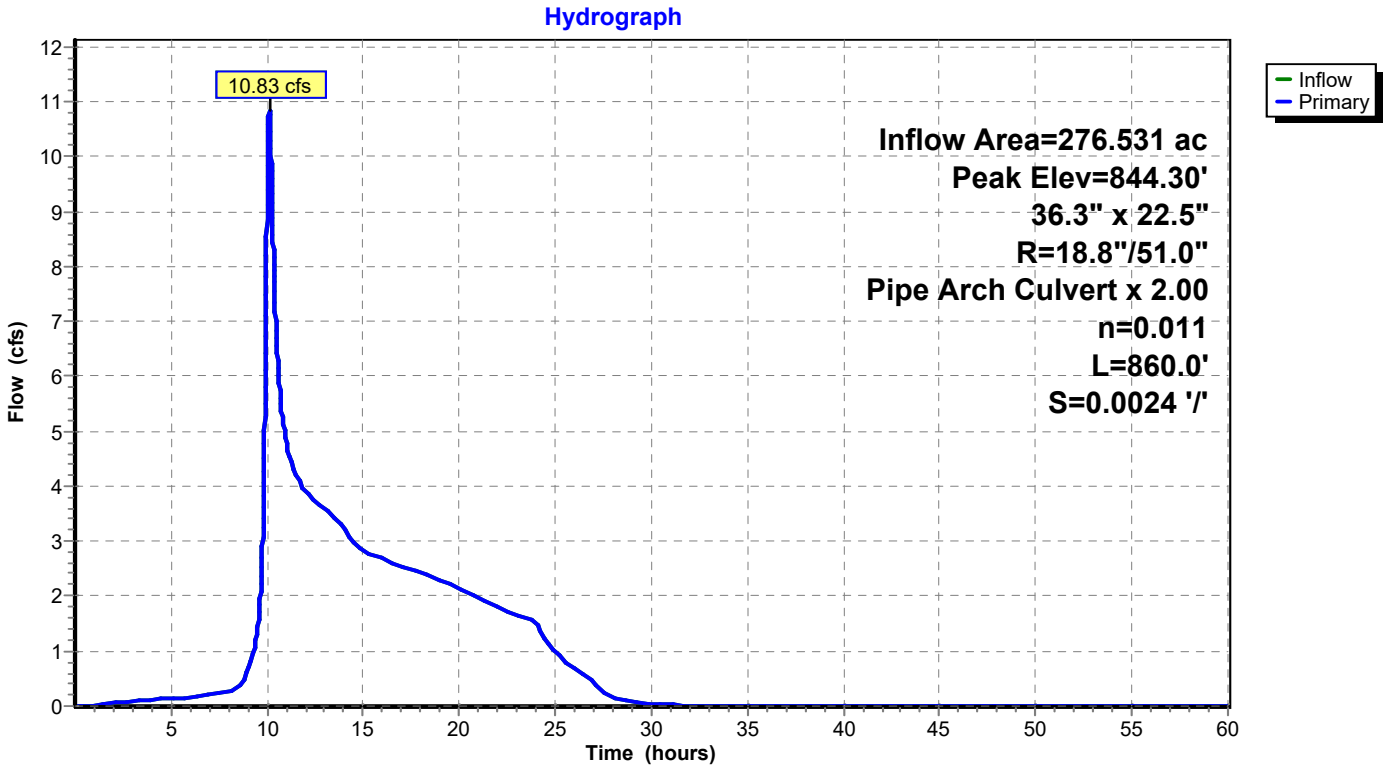
Inflow Area = 276.531 ac, 1.60% Impervious, Inflow Depth = 0.17" for 10 Year event
Inflow = 10.83 cfs @ 10.11 hrs, Volume= 3.972 af
Outflow = 10.83 cfs @ 10.11 hrs, Volume= 3.972 af, Atten= 0%, Lag= 0.0 min
Primary = 10.83 cfs @ 10.11 hrs, Volume= 3.972 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 844.30' @ 10.11 hrs
Flood Elev= 846.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	843.50'	**36.3" W x 22.5" H, R=18.8"/51.0" Pipe Arch RCP_Arch 37x23 X 2.00** L= 860.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 843.50' / 841.40' S= 0.0024 '/' Cc= 0.900 n= 0.011, Flow Area= 4.43 sf

Primary OutFlow Max=10.83 cfs @ 10.11 hrs HW=844.30' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Arch 37x23** (Barrel Controls 10.83 cfs @ 3.64 fps)

Pond 16P: Dbl Conc. Arch Culvert (37x23)



Summary for Pond 17P: Gran Cielo Dwy

[58] Hint: Peaked 0.38' above defined flood level

Inflow Area =	166.738 ac,	0.91% Impervious,	Inflow Depth =	1.73"	for 10 Year event
Inflow =	122.07 cfs @	9.98 hrs,	Volume=	24.054 af	
Outflow =	121.70 cfs @	9.99 hrs,	Volume=	24.054 af,	Atten= 0%, Lag= 0.6 min
Primary =	93.38 cfs @	9.99 hrs,	Volume=	23.448 af	
Secondary =	0.00 cfs @	0.01 hrs,	Volume=	0.000 af	
Tertiary =	28.32 cfs @	9.99 hrs,	Volume=	0.605 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 854.84' @ 9.99 hrs Surf.Area= 7,752 sf Storage= 9,750 cf
Flood Elev= 854.46' Surf.Area= 6,947 sf Storage= 6,934 cf

Plug-Flow detention time= 1.9 min calculated for 24.050 af (100% of inflow)
Center-of-Mass det. time= 1.9 min (831.4 - 829.5)

Volume	Invert	Avail.Storage	Storage Description
#1	852.84'	22,270 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.84	0	0	0
853.14	2,586	388	388
854.14	6,275	4,431	4,818
855.14	8,376	7,326	12,144
856.14	11,876	10,126	22,270

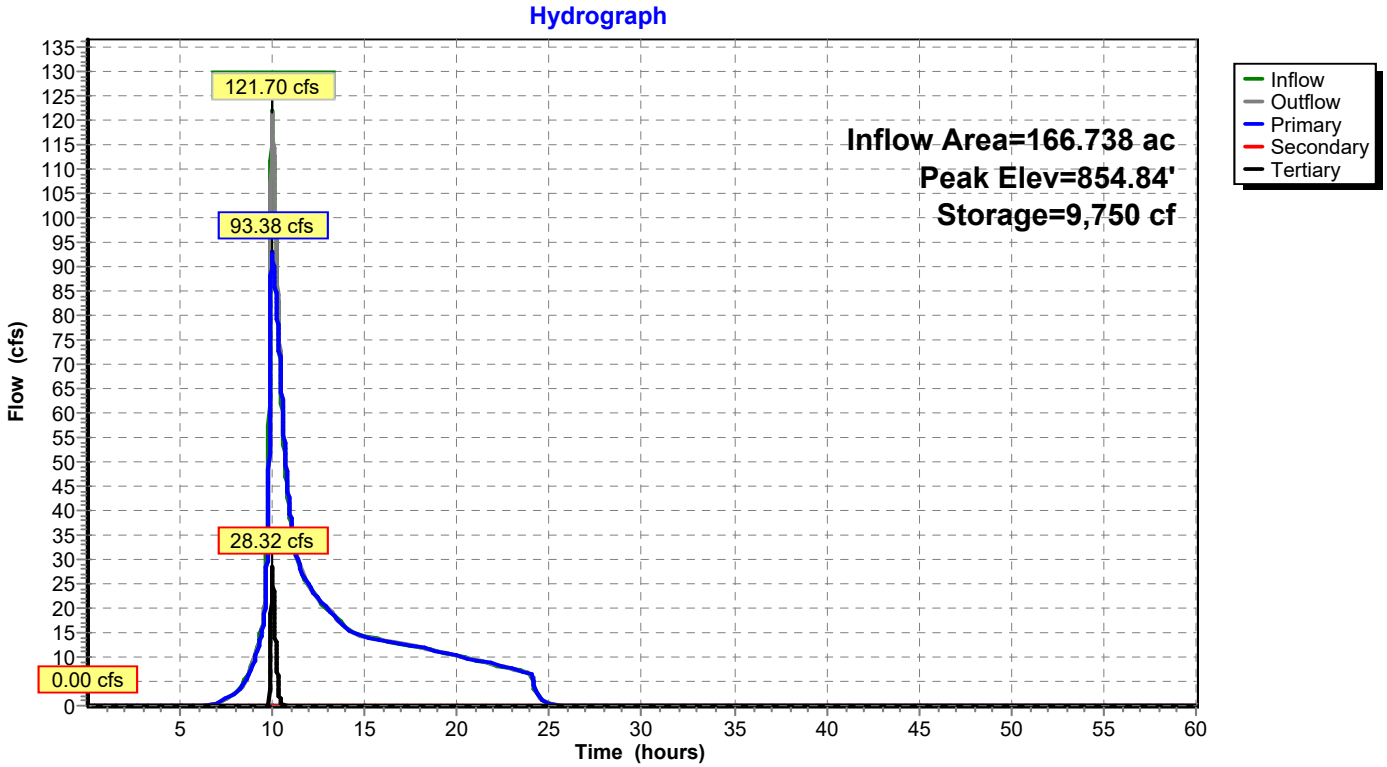
Device	Routing	Invert	Outlet Devices
#1	Primary	852.84'	**30.0" Round Culvert X 6.00** L= 77.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 852.84' / 851.76' S= 0.0140 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Secondary	854.90'	**Special & User-Defined** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 Disch. (cfs) 0.000 0.010 0.200 0.710 1.580 2.700 4.030 5.690 7.620 9.790 12.320 15.140 18.190 21.460 24.930 28.580 32.420 36.420 40.580 44.900 49.360 53.970
#3	Tertiary	854.40'	**Special & User-Defined** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 Disch. (cfs) 0.000 0.080 3.470 10.790 21.890 36.810 55.720 78.890 106.600 138.580 174.620 214.630 258.590 306.440 358.240 413.470 471.810 533.060 597.050 663.650 732.760 804.270 878.100 954.180 1,032.440 1,112.810 1,195.240

Primary OutFlow Max=93.35 cfs @ 9.99 hrs HW=854.84' TW=849.08' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 93.35 cfs @ 5.05 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=852.84' TW=844.56' (Dynamic Tailwater)
└─**2=Special & User-Defined** (Controls 0.00 cfs)

Tertiary OutFlow Max=28.26 cfs @ 9.99 hrs HW=854.84' TW=853.97' (Dynamic Tailwater)
└─**3=Special & User-Defined** (Custom Controls 28.26 cfs)

Pond 17P: Gran Cielo Dwy



Summary for Pond 18P: GC-CkD1

Inflow Area = 240.622 ac, 1.05% Impervious, Inflow Depth = 1.74" for 10 Year event
Inflow = 152.52 cfs @ 9.99 hrs, Volume= 34.873 af
Outflow = 149.21 cfs @ 10.02 hrs, Volume= 34.839 af, Atten= 2%, Lag= 1.8 min
Primary = 0.64 cfs @ 9.93 hrs, Volume= 0.017 af
Secondary = 12.52 cfs @ 10.01 hrs, Volume= 0.211 af
Tertiary = 136.21 cfs @ 10.02 hrs, Volume= 34.611 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 849.10' @ 10.02 hrs Surf.Area= 8,631 sf Storage= 9,110 cf
Flood Elev= 850.17' Surf.Area= 18,446 sf Storage= 23,434 cf

Plug-Flow detention time= 1.9 min calculated for 34.833 af (100% of inflow)
Center-of-Mass det. time= 1.3 min (833.4 - 832.2)

Volume	Invert	Avail.Storage	Storage Description
#1	844.56'	70,294 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.56	10	0	0
845.00	200	46	46
846.00	600	400	446
847.00	1,500	1,050	1,496
848.00	2,166	1,833	3,329
849.00	7,688	4,927	8,256
850.00	16,694	12,191	20,447
851.00	27,000	21,847	42,294
852.00	29,000	28,000	70,294

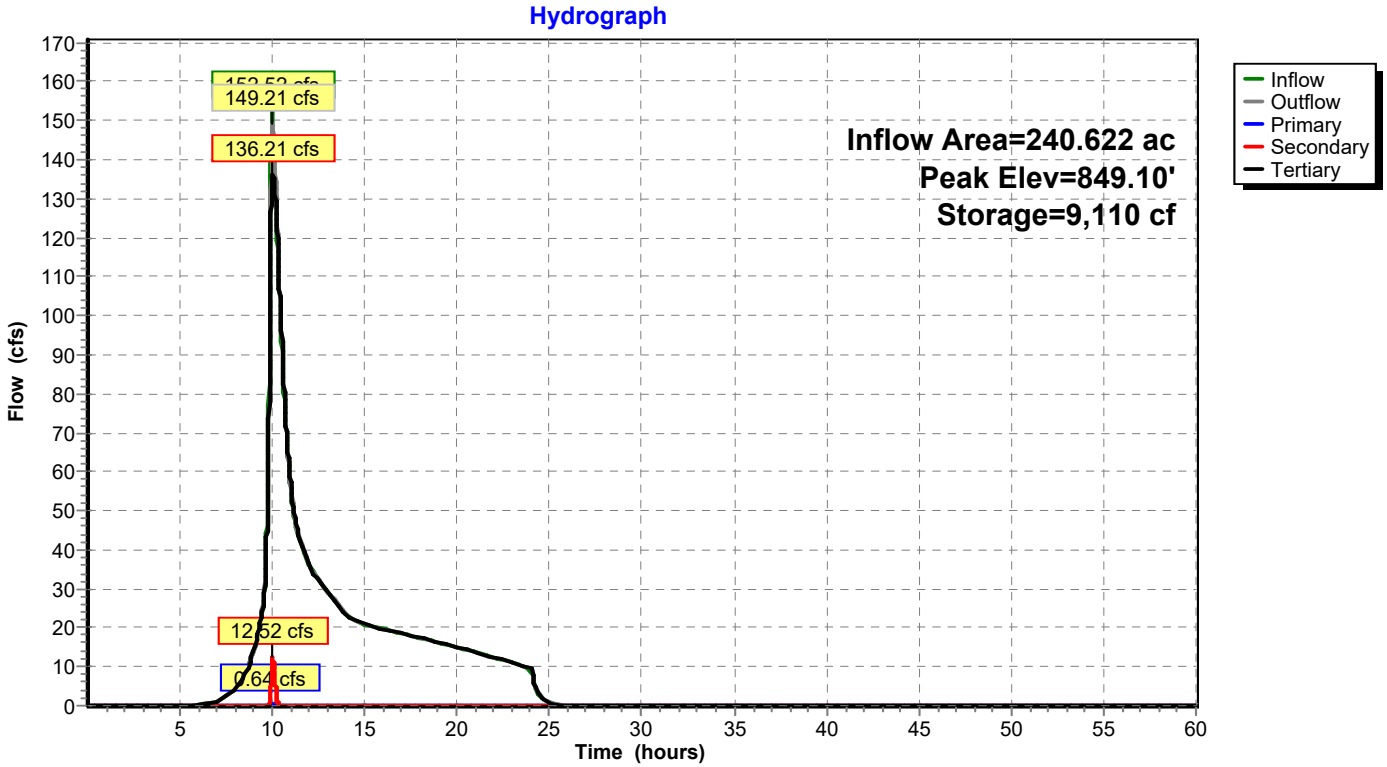
Device	Routing	Invert	Outlet Devices
#1	Primary	847.69'	**6.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 847.69' / 847.67' S= 0.0008 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Secondary	848.50'	**9.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59
#3	Tertiary	843.15'	**58.5" W x 36.0" H, R=30.0"/84.0" Pipe Arch RCP_Arch 59x36 X 2.00** L= 960.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 843.15' / 840.75' S= 0.0025 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 11.40 sf
#4	Device 3	847.00'	**78.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Tertiary	850.00'	**Special & User-Defined (CkD1-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 Disch. (cfs) 0.000 0.030 0.560 1.900 4.120 7.220 11.180 15.770 20.900 26.530 32.600 39.090 45.970 53.220 60.820 68.750 77.000 85.570 94.430 103.580 113.010

Primary OutFlow Max=0.61 cfs @ 9.93 hrs HW=848.81' TW=848.13' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.61 cfs @ 3.12 fps)

Secondary OutFlow Max=12.28 cfs @ 10.01 hrs HW=849.10' TW=848.61' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 12.28 cfs @ 2.27 fps)

Tertiary OutFlow Max=136.20 cfs @ 10.02 hrs HW=849.10' TW=841.68' (Dynamic Tailwater)
├─**3=RCP_Arch 59x36** (Passes 136.20 cfs of 165.22 cfs potential flow)
│ └─**4=Orifice/Grate** (Orifice Controls 136.20 cfs @ 6.98 fps)
└─**5=Special & User-Defined (CkD1-S)** (Controls 0.00 cfs)

Pond 18P: GC-CkD1



Summary for Pond 19P: GC-CkD2

[58] Hint: Peaked 0.12' above defined flood level
[80] Warning: Exceeded Pond 18P by 0.56' @ 22.37 hrs (0.06 cfs 0.144 af)
[80] Warning: Exceeded Pond 18P by 0.03' @ 10.36 hrs (0.01 cfs 0.000 af)

Inflow Area =	260.311 ac,	0.99% Impervious,	Inflow Depth =	0.12"	for 10 Year event
Inflow =	27.17 cfs @	10.00 hrs,	Volume=	2.706 af	
Outflow =	19.65 cfs @	10.11 hrs,	Volume=	2.705 af,	Atten= 28%, Lag= 6.1 min
Primary =	1.16 cfs @	10.11 hrs,	Volume=	1.345 af	
Secondary =	18.40 cfs @	10.11 hrs,	Volume=	1.360 af	
Tertiary =	0.10 cfs @	10.11 hrs,	Volume=	0.001 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 848.77' @ 10.11 hrs Surf.Area= 12,554 sf Storage= 16,306 cf
Flood Elev= 848.65' Surf.Area= 11,850 sf Storage= 14,787 cf

Plug-Flow detention time= 67.9 min calculated for 2.705 af (100% of inflow)
Center-of-Mass det. time= 67.5 min (886.6 - 819.1)

Volume	Invert	Avail.Storage	Storage Description
#1	846.00'	46,430 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
846.00	267	0	0
847.00	4,055	2,161	2,161
848.00	8,178	6,117	8,278
849.00	13,828	11,003	19,281
850.00	40,470	27,149	46,430

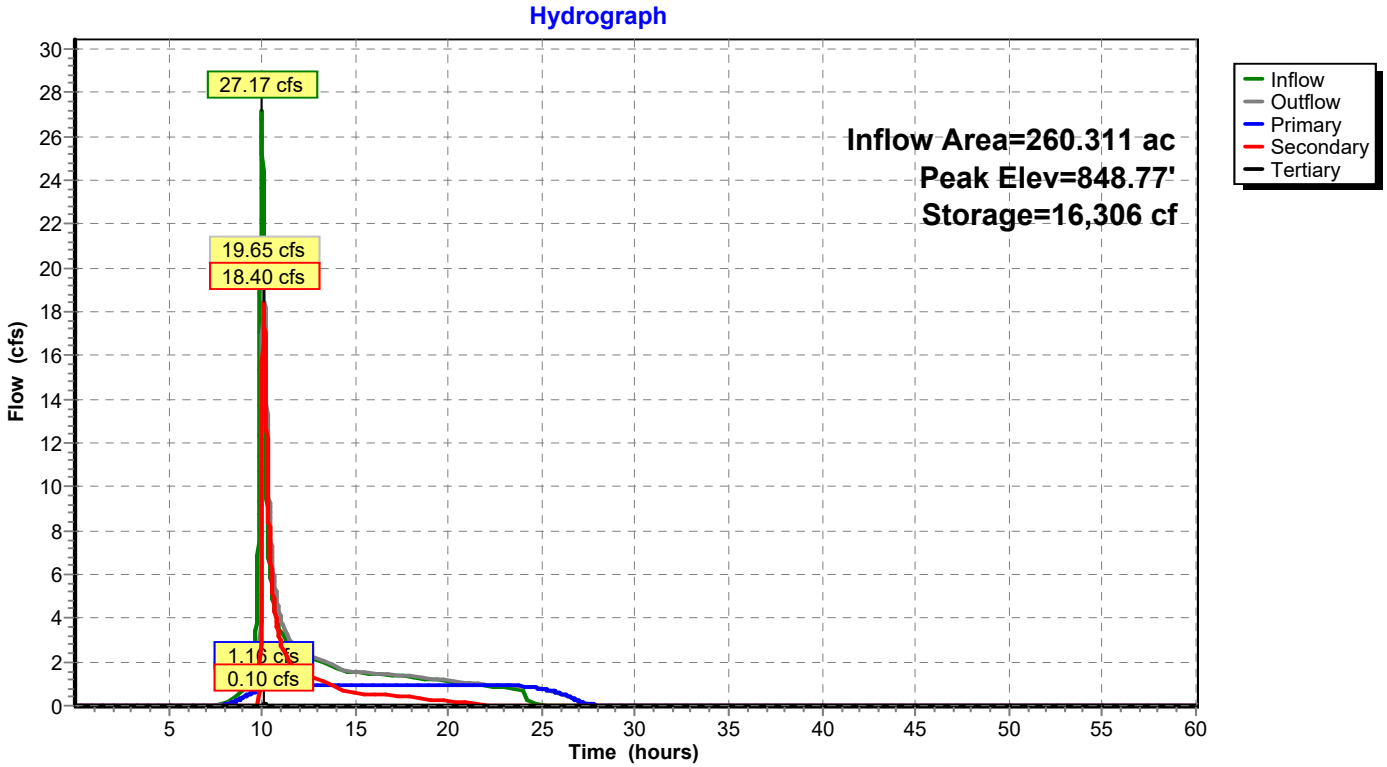
Device	Routing	Invert	Outlet Devices
#1	Primary	846.12'	**6.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 846.12' / 845.98' S= 0.0054 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Tertiary	848.70'	**Special & User-Defined (CkD2-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 Disch. (cfs) 0.000 0.130 0.970 2.640 5.120 8.550 13.010 18.440 24.620 31.430 38.830 46.770 55.210 64.120
#3	Secondary	847.80'	**Special & User-Defined (CkD2-W)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 Disch. (cfs) 0.000 0.020 0.480 1.430 2.780 4.430 6.490 8.950 12.010 15.510 19.390 23.590 28.100 32.980 38.270 43.910 49.850 56.080 62.580 69.340 76.350 83.590 91.070

Primary OutFlow Max=1.16 cfs @ 10.11 hrs HW=848.77' TW=845.60' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.16 cfs @ 5.89 fps)

Secondary OutFlow Max=18.39 cfs @ 10.11 hrs HW=848.77' TW=845.60' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD2-W)** (Custom Controls 18.39 cfs)

Tertiary OutFlow Max=0.10 cfs @ 10.11 hrs HW=848.77' TW=0.00' (Dynamic Tailwater)
└─**2=Special & User-Defined (CkD2-S)** (Custom Controls 0.10 cfs)

Pond 19P: GC-CkD2



Summary for Pond 20P: GC-CkD3

[58] Hint: Peaked 0.59' above defined flood level

Inflow Area =	274.094 ac,	0.94% Impervious,	Inflow Depth =	0.19"	for 10 Year event
Inflow =	26.70 cfs @	10.09 hrs,	Volume=	4.281 af	
Outflow =	25.54 cfs @	10.14 hrs,	Volume=	4.270 af,	Atten= 4%, Lag= 3.1 min
Primary =	4.72 cfs @	10.14 hrs,	Volume=	3.046 af	
Secondary =	3.87 cfs @	10.14 hrs,	Volume=	0.379 af	
Tertiary =	16.95 cfs @	10.14 hrs,	Volume=	0.845 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 845.61' @ 10.14 hrs Surf.Area= 12,297 sf Storage= 10,869 cf
Flood Elev= 845.02' Surf.Area= 8,229 sf Storage= 4,852 cf

Plug-Flow detention time= 31.0 min calculated for 4.270 af (100% of inflow)
Center-of-Mass det. time= 28.9 min (901.7 - 872.8)

Volume	Invert	Avail.Storage	Storage Description
#1	844.00'	24,632 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.00	1,288	0	0
845.00	8,090	4,689	4,689
846.50	18,500	19,943	24,632

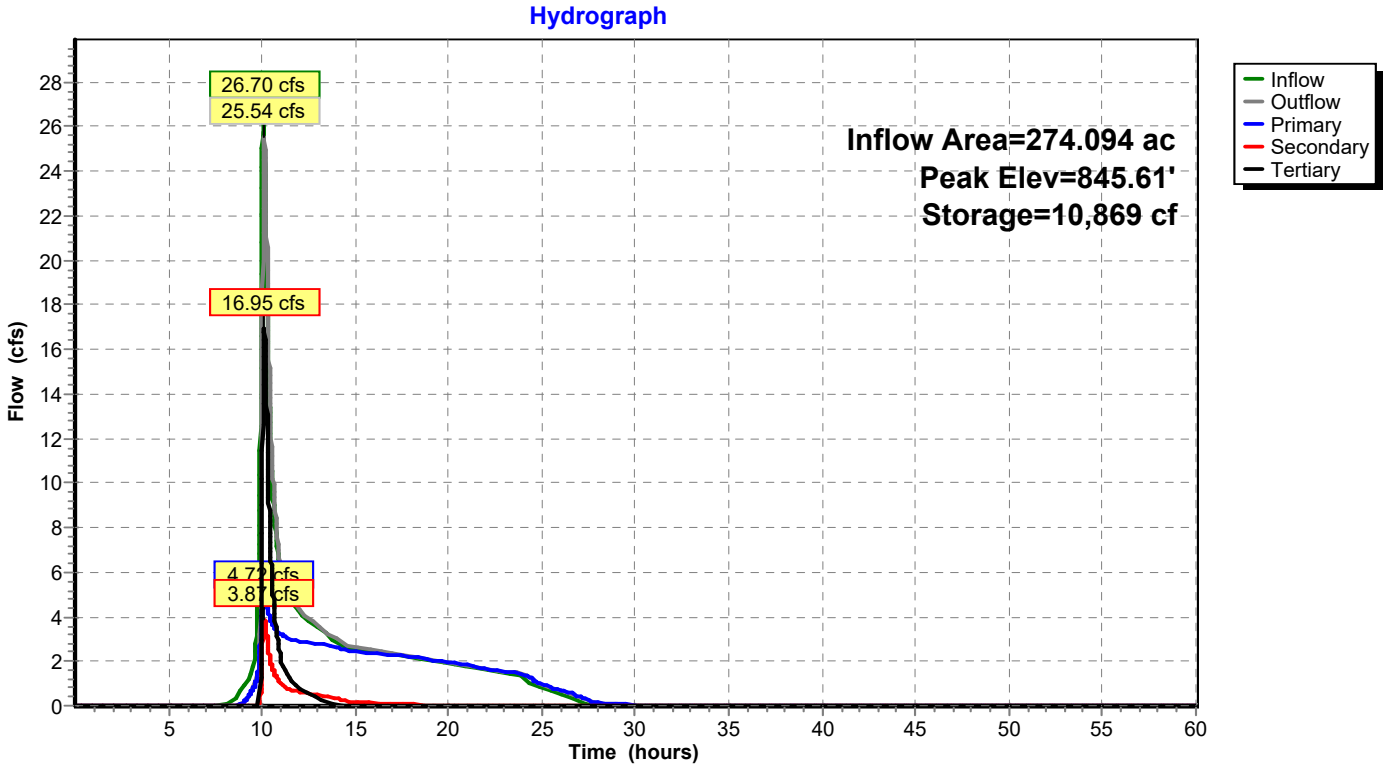
Device	Routing	Invert	Outlet Devices
#1	Primary	844.22'	**18.0" Round Culvert** L= 26.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 844.22' / 843.98' S= 0.0092 '/' Cc= 0.900 n= 0.021 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	845.00'	**Special & User-Defined (CkD3-W)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 Disch. (cfs) 0.000 0.050 0.390 0.970 1.710 2.600 3.780 5.170 6.720 8.570 11.140 14.290 17.880 21.830 26.120 30.880 36.030 41.520 47.330 53.420 59.790
#3	Tertiary	845.10'	**Special & User-Defined (CkD3-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 Disch. (cfs) 0.000 0.050 1.930 5.420 10.370 16.490 23.960 32.580 42.550 53.770 66.380 80.510 96.280 113.770 132.840 153.630 175.910 199.510 224.310 250.260

Primary OutFlow Max=4.72 cfs @ 10.14 hrs HW=845.61' TW=844.30' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 4.72 cfs @ 3.61 fps)

Secondary OutFlow Max=3.87 cfs @ 10.14 hrs HW=845.61' TW=844.30' (Dynamic Tailwater)
└─**2=Special & User-Defined (CkD3-W)** (Custom Controls 3.87 cfs)

Tertiary OutFlow Max=16.95 cfs @ 10.14 hrs HW=845.61' TW=0.00' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD3-S)** (Custom Controls 16.95 cfs)

Pond 20P: GC-CkD3



Summary for Pond B1: Basin 1

Inflow Area = 47.388 ac, 67.98% Impervious, Inflow Depth = 2.53" for 10 Year event
Inflow = 61.24 cfs @ 10.05 hrs, Volume= 10.005 af
Outflow = 14.82 cfs @ 10.93 hrs, Volume= 9.629 af, Atten= 76%, Lag= 52.6 min
Discarded = 1.05 cfs @ 10.93 hrs, Volume= 3.020 af
Primary = 13.77 cfs @ 10.93 hrs, Volume= 6.610 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 836.34' @ 10.93 hrs Surf.Area= 1.322 ac Storage= 4.294 af

Plug-Flow detention time= 423.9 min calculated for 9.629 af (96% of inflow)
Center-of-Mass det. time= 398.7 min (1,138.8 - 740.1)

Volume	Invert	Avail.Storage	Storage Description
#1	826.50'	8.466 af	**Custom Stage Data (Prismatic)** Listed below (Recalc) 8.789 af Overall - 0.323 af Embedded = 8.466 af
#2	826.50'	0.129 af	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 0.323 af Overall x 40.0% Voids
		8.595 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
826.50	0.081	0.000	0.000
827.00	0.081	0.040	0.040
828.00	0.081	0.081	0.121
829.00	0.081	0.081	0.202
830.00	0.081	0.081	0.283
831.00	0.081	0.081	0.365
832.00	0.203	0.142	0.506
833.00	0.376	0.289	0.796
834.00	1.171	0.774	1.569
835.00	1.234	1.202	2.772
836.00	1.299	1.267	4.038
837.00	1.365	1.332	5.370
838.00	1.432	1.399	6.769
839.00	1.500	1.466	8.235
839.35	1.665	0.554	8.789

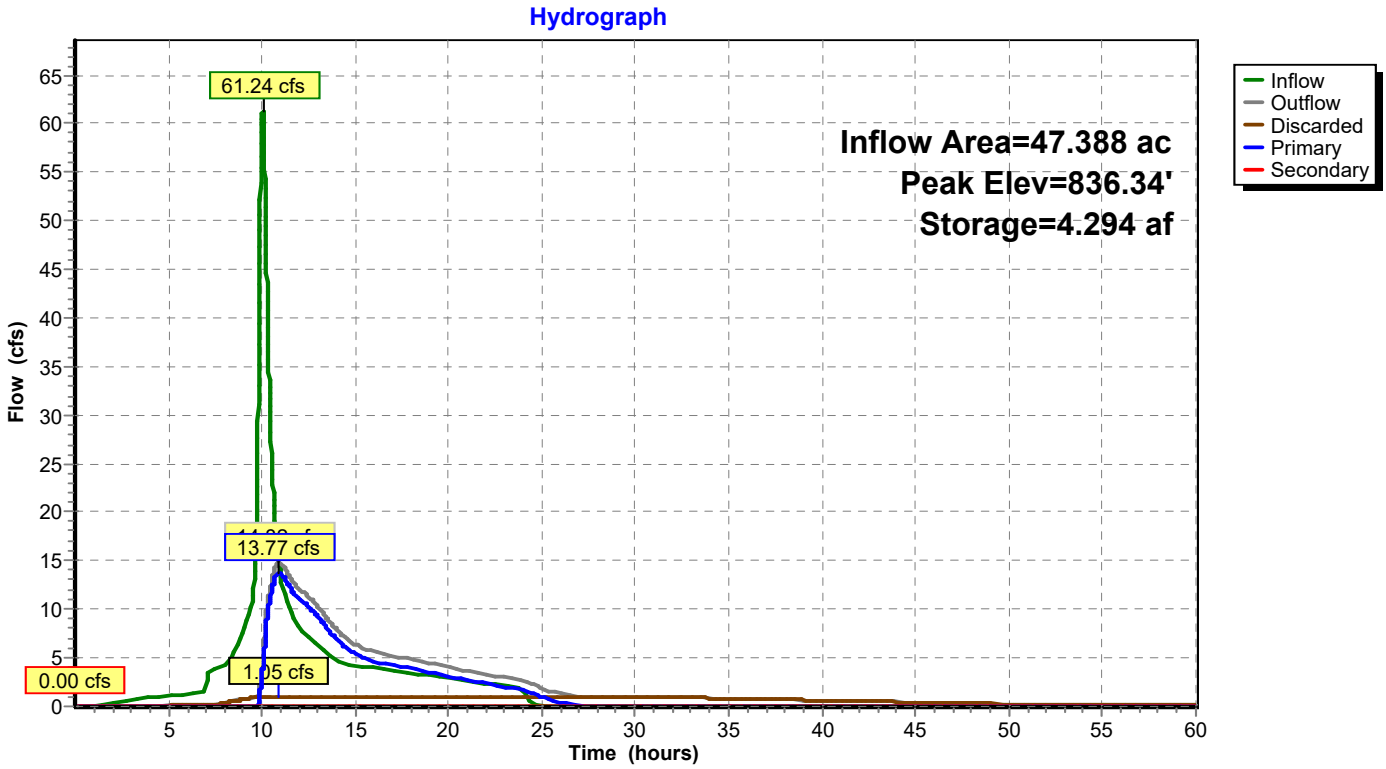
Device	Routing	Invert	Outlet Devices
#1	Primary	833.12'	**36.0" Round Culvert** L= 385.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 833.12' / 831.20' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Discarded	826.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	834.33'	**16.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	834.33'	**12.0" W x 8.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	835.33'	**30.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	836.17'	**24.0" Horiz. Orifice/Grate** C= 0.600 in 78.0" x 36.0" Grate (16% open area) Limited to weir flow at low heads
#7	Secondary	838.35'	**30.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=1.05 cfs @ 10.93 hrs HW=836.34' (Free Discharge)
└─**2=Exfiltration** (Controls 1.05 cfs)

Primary OutFlow Max=13.77 cfs @ 10.93 hrs HW=836.34' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 13.77 cfs of 44.28 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 2.91 cfs @ 6.54 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 4.15 cfs @ 6.23 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 5.23 cfs @ 4.19 fps)
  └─**6=Orifice/Grate** (Weir Controls 1.48 cfs @ 1.36 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=826.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B1: Basin 1



Summary for Pond B10: Basin 10

Inflow Area = 30.685 ac, 61.94% Impervious, Inflow Depth = 2.32" for 10 Year event
Inflow = 27.15 cfs @ 9.98 hrs, Volume= 5.934 af
Outflow = 4.50 cfs @ 12.30 hrs, Volume= 5.484 af, Atten= 83%, Lag= 138.8 min
Discarded = 0.82 cfs @ 12.30 hrs, Volume= 2.723 af
Primary = 3.68 cfs @ 12.30 hrs, Volume= 2.761 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 817.66' @ 12.30 hrs Surf.Area= 44,571 sf Storage= 124,636 cf

Plug-Flow detention time= 675.4 min calculated for 5.483 af (92% of inflow)
Center-of-Mass det. time= 626.2 min (1,366.7 - 740.5)

Volume	Invert	Avail.Storage	Storage Description
#1	808.50'	230,693 cf	**Custom Stage Data (Conic)** Listed below (Recalc) 244,773 cf Overall - 14,080 cf Embedded = 230,693 cf
#2	808.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		236,325 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
808.50	3,520	0	0	3,520
809.00	3,520	1,760	1,760	3,625
810.00	3,520	3,520	5,280	3,835
811.00	3,520	3,520	8,800	4,046
812.00	3,520	3,520	12,320	4,256
813.00	3,520	3,520	15,840	4,466
814.00	8,931	6,019	21,859	9,884
815.00	17,294	12,884	34,744	18,257
816.00	40,146	27,930	62,673	41,116
817.00	42,792	41,462	104,135	43,859
818.00	45,490	44,134	148,269	46,658
819.00	48,243	46,860	195,129	49,516
820.00	51,058	49,644	244,773	52,440

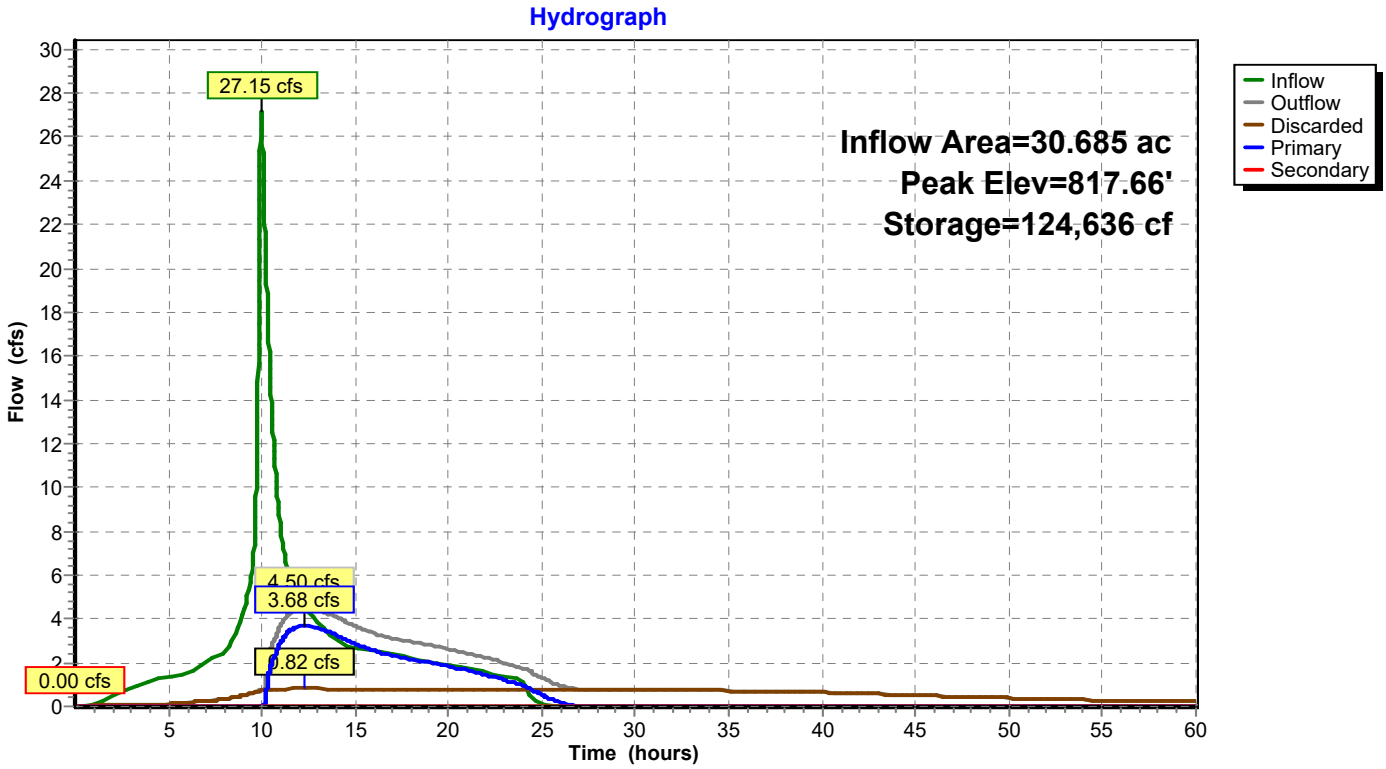
Device	Routing	Invert	Outlet Devices
#1	Primary	816.00'	**30.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 816.00' / 815.10' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	808.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	816.67'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	817.33'	**15.0" W x 18.0" H Vert. Orifice/Grate** X 2 rows with 8.0" cc spacing C= 0.600
#5	Device 1	817.83'	**60.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	819.00'	**78.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Secondary	819.33'	**36.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.82 cfs @ 12.30 hrs HW=817.66' (Free Discharge)
└─**2=Exfiltration** (Controls 0.82 cfs)

Primary OutFlow Max=3.68 cfs @ 12.30 hrs HW=817.66' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.68 cfs of 15.22 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 2.91 cfs @ 4.37 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.77 cfs @ 1.85 fps)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=808.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B10: Basin 10



Summary for Pond B11: Basin 11

Inflow Area = 14.461 ac, 52.00% Impervious, Inflow Depth = 2.16" for 10 Year event
Inflow = 16.38 cfs @ 9.96 hrs, Volume= 2.604 af
Outflow = 3.70 cfs @ 10.69 hrs, Volume= 2.343 af, Atten= 77%, Lag= 43.5 min
Discarded = 0.24 cfs @ 10.69 hrs, Volume= 0.770 af
Primary = 3.46 cfs @ 10.69 hrs, Volume= 1.573 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 833.00' @ 10.69 hrs Surf.Area= 12,172 sf Storage= 44,390 cf

Plug-Flow detention time= 499.1 min calculated for 2.343 af (90% of inflow)
Center-of-Mass det. time= 436.4 min (1,178.8 - 742.4)

Volume	Invert	Avail.Storage	Storage Description
#1	823.50'	83,101 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 97,181 cf Overall - 14,080 cf Embedded = 83,101 cf
#2	823.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		88,733 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
823.50	3,520	0	0
824.00	3,520	1,760	1,760
825.00	3,520	3,520	5,280
826.00	3,520	3,520	8,800
827.00	3,520	3,520	12,320
828.00	3,520	3,520	15,840
829.00	2,800	3,160	19,000
830.00	6,900	4,850	23,850
831.00	8,919	7,910	31,760
832.00	10,515	9,717	41,477
833.00	12,169	11,342	52,819
834.00	13,879	13,024	65,843
835.00	15,655	14,767	80,610
836.00	17,488	16,572	97,181

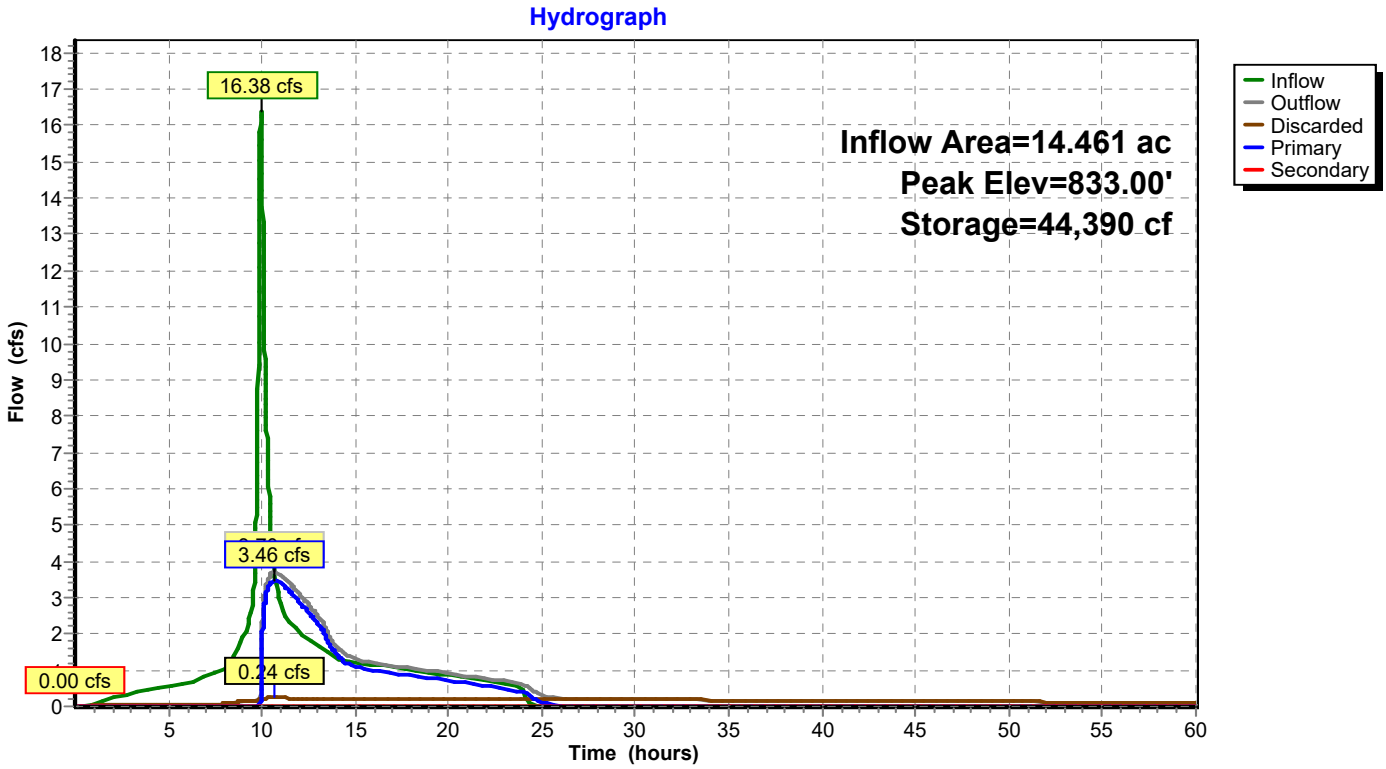
Device	Routing	Invert	Outlet Devices
#1	Primary	831.67'	**24.0" Round Culvert** L= 165.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 831.67' / 820.50' S= 0.0677 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Discarded	823.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	831.67'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	833.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	833.50'	**27.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	834.50'	**48.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Secondary	834.83'	**16.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.24 cfs @ 10.69 hrs HW=833.00' (Free Discharge)
└─**2=Exfiltration** (Controls 0.24 cfs)

Primary OutFlow Max=3.46 cfs @ 10.69 hrs HW=833.00' TW=824.89' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.46 cfs of 8.73 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 3.46 cfs @ 5.19 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.13 fps)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=823.50' TW=820.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B11: Basin 11



Summary for Pond B12: Basin 12

Inflow Area = 20.201 ac, 44.06% Impervious, Inflow Depth = 1.98" for 10 Year event
Inflow = 21.44 cfs @ 9.96 hrs, Volume= 3.326 af
Outflow = 2.49 cfs @ 12.37 hrs, Volume= 3.055 af, Atten= 88%, Lag= 144.7 min
Discarded = 0.47 cfs @ 12.37 hrs, Volume= 1.467 af
Primary = 2.02 cfs @ 12.37 hrs, Volume= 1.588 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 837.54' @ 12.37 hrs Surf.Area= 24,842 sf Storage= 65,439 cf

Plug-Flow detention time= 626.8 min calculated for 3.055 af (92% of inflow)
Center-of-Mass det. time= 575.1 min (1,326.6 - 751.5)

Volume	Invert	Avail.Storage	Storage Description
#1	828.50'	160,016 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 174,096 cf Overall - 14,080 cf Embedded = 160,016 cf
#2	828.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		165,648 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
828.50	3,520	0	0
829.00	3,520	1,760	1,760
830.00	3,520	3,520	5,280
831.00	3,520	3,520	8,800
832.00	3,520	3,520	12,320
833.00	3,520	3,520	15,840
834.00	2,600	3,060	18,900
835.00	8,000	5,300	24,200
836.00	20,849	14,425	38,625
837.00	23,415	22,132	60,757
838.00	26,037	24,726	85,483
839.00	28,717	27,377	112,860
840.00	31,383	30,050	142,910
841.00	30,990	31,187	174,096

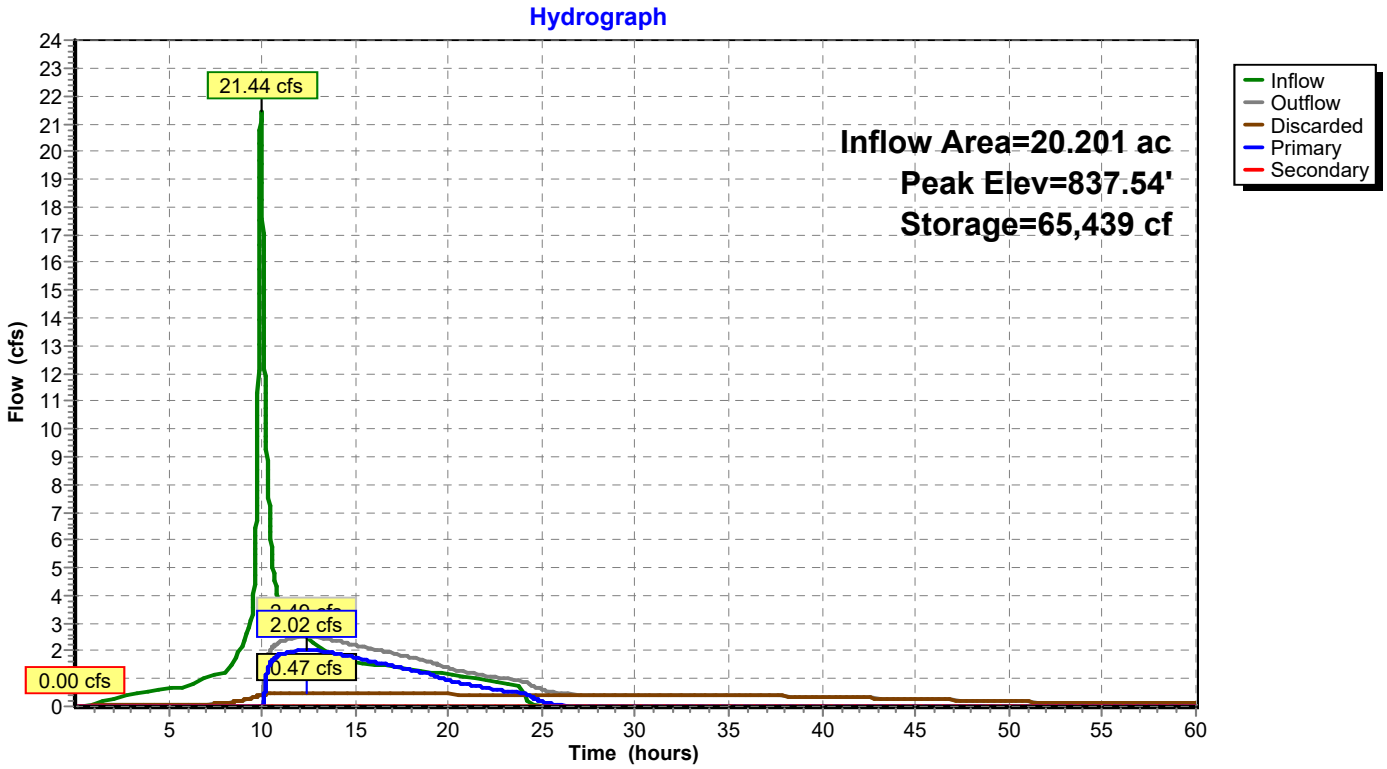
Device	Routing	Invert	Outlet Devices
#1	Primary	836.67'	**30.0" Round Culvert** L= 130.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.67' / 832.50' S= 0.0321 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	828.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	836.67'	**18.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	838.00'	**8.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	838.50'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	839.50'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Secondary	840.00'	**18.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.47 cfs @ 12.37 hrs HW=837.54' (Free Discharge)
└─**2=Exfiltration** (Controls 0.47 cfs)

Primary OutFlow Max=2.02 cfs @ 12.37 hrs HW=837.54' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.02 cfs of 4.87 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 2.02 cfs @ 4.04 fps)
  ├─**4=Orifice/Grate** (Controls 0.00 cfs)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=828.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B12: Basin 12



Summary for Pond B13: Basin 13

Inflow Area = 64.115 ac, 22.11% Impervious, Inflow Depth = 1.93" for 10 Year event
Inflow = 69.87 cfs @ 9.96 hrs, Volume= 10.322 af
Outflow = 34.99 cfs @ 10.22 hrs, Volume= 9.908 af, Atten= 50%, Lag= 15.1 min
Discarded = 0.44 cfs @ 10.22 hrs, Volume= 1.321 af
Primary = 34.55 cfs @ 10.22 hrs, Volume= 8.587 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 843.39' @ 10.22 hrs Surf.Area= 0.526 ac Storage= 2.730 af

Plug-Flow detention time= 265.3 min calculated for 9.908 af (96% of inflow)
Center-of-Mass det. time= 239.7 min (1,021.9 - 782.2)

Volume	Invert	Avail.Storage	Storage Description
#1	830.50'	4.138 af	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4.461 af Overall - 0.323 af Embedded = 4.138 af
#2	830.50'	0.129 af	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 0.323 af Overall x 40.0% Voids
		4.267 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
830.50	0.081	0.000	0.000
831.00	0.081	0.040	0.040
832.00	0.081	0.081	0.121
833.00	0.081	0.081	0.202
834.00	0.081	0.081	0.283
835.00	0.081	0.081	0.364
836.00	0.059	0.070	0.433
837.00	0.139	0.099	0.532
838.00	0.287	0.213	0.745
839.00	0.329	0.308	1.053
840.00	0.372	0.350	1.403
841.00	0.416	0.394	1.797
842.00	0.461	0.439	2.236
843.00	0.508	0.484	2.720
844.00	0.555	0.531	3.251
845.00	0.605	0.580	3.831
846.00	0.655	0.630	4.461

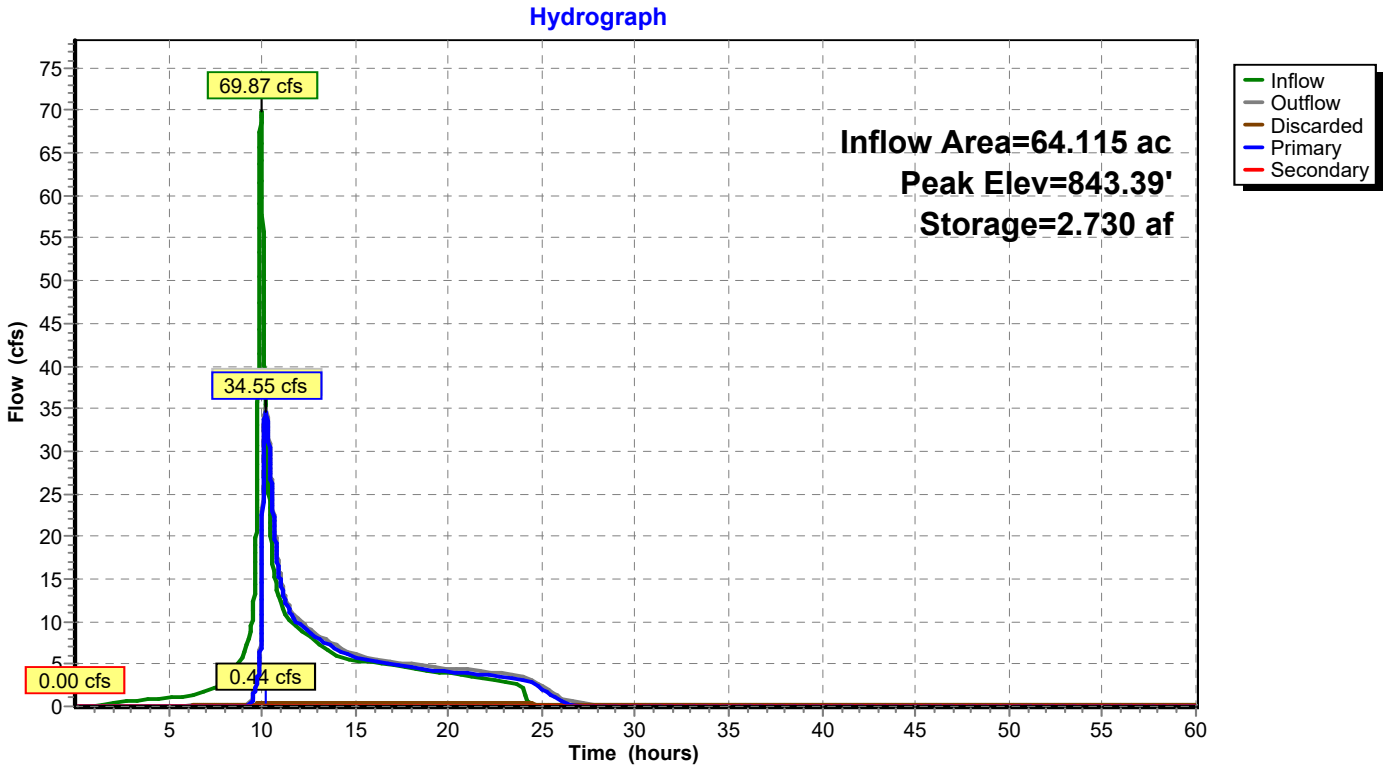
Device	Routing	Invert	Outlet Devices
#1	Primary	834.25'	**48.0" Round Culvert** L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 834.25' / 832.50' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Discarded	830.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	839.67'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	841.50'	**15.0" W x 18.0" H Vert. Orifice/Grate** X 2 rows with 8.0" cc spacing C= 0.600
#5	Device 1	842.50'	**60.0" W x 8.0" H Vert. Orifice/Grate** X 2 rows with 8.0" cc spacing C= 0.600
#6	Device 1	843.67'	**78.0" x 36.0" Horiz. Orifice/Grate** X 2 rows C= 0.600 Limited to weir flow at low heads
#7	Secondary	844.67'	**36.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.44 cfs @ 10.22 hrs HW=843.39' (Free Discharge)
└─**2=Exfiltration** (Controls 0.44 cfs)

Primary OutFlow Max=34.54 cfs @ 10.22 hrs HW=843.39' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 34.54 cfs of 161.72 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 6.05 cfs @ 9.08 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 14.92 cfs @ 4.38 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 13.57 cfs @ 3.03 fps)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=830.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B13: Basin 13



Summary for Pond B4: Basin 4

Inflow Area = 38.712 ac, 55.38% Impervious, Inflow Depth = 2.25" for 10 Year event
Inflow = 41.42 cfs @ 9.97 hrs, Volume= 7.245 af
Outflow = 15.20 cfs @ 10.50 hrs, Volume= 6.988 af, Atten= 63%, Lag= 31.6 min
Discarded = 0.54 cfs @ 10.50 hrs, Volume= 1.630 af
Primary = 14.66 cfs @ 10.50 hrs, Volume= 5.358 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 838.95' @ 10.50 hrs Surf.Area= 26,866 sf Storage= 111,294 cf

Plug-Flow detention time= 407.0 min calculated for 6.987 af (96% of inflow)
Center-of-Mass det. time= 383.2 min (1,124.9 - 741.7)

Volume	Invert	Avail.Storage	Storage Description
#1	827.50'	218,652 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 232,732 cf Overall - 14,080 cf Embedded = 218,652 cf
#2	827.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		224,284 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
827.50	3,520	0	0
828.00	3,520	1,760	1,760
829.00	3,520	3,520	5,280
830.00	3,520	3,520	8,800
831.00	3,520	3,520	12,320
832.00	3,520	3,520	15,840
833.00	1,064	2,292	18,132
834.00	6,719	3,892	22,024
835.00	16,858	11,789	33,812
836.00	19,297	18,078	51,890
837.00	21,780	20,539	72,428
838.00	24,350	23,065	95,493
839.00	27,007	25,679	121,172
840.00	29,708	28,358	149,529
841.00	32,452	31,080	180,609
842.00	35,196	33,824	214,433
842.50	38,000	18,299	232,732

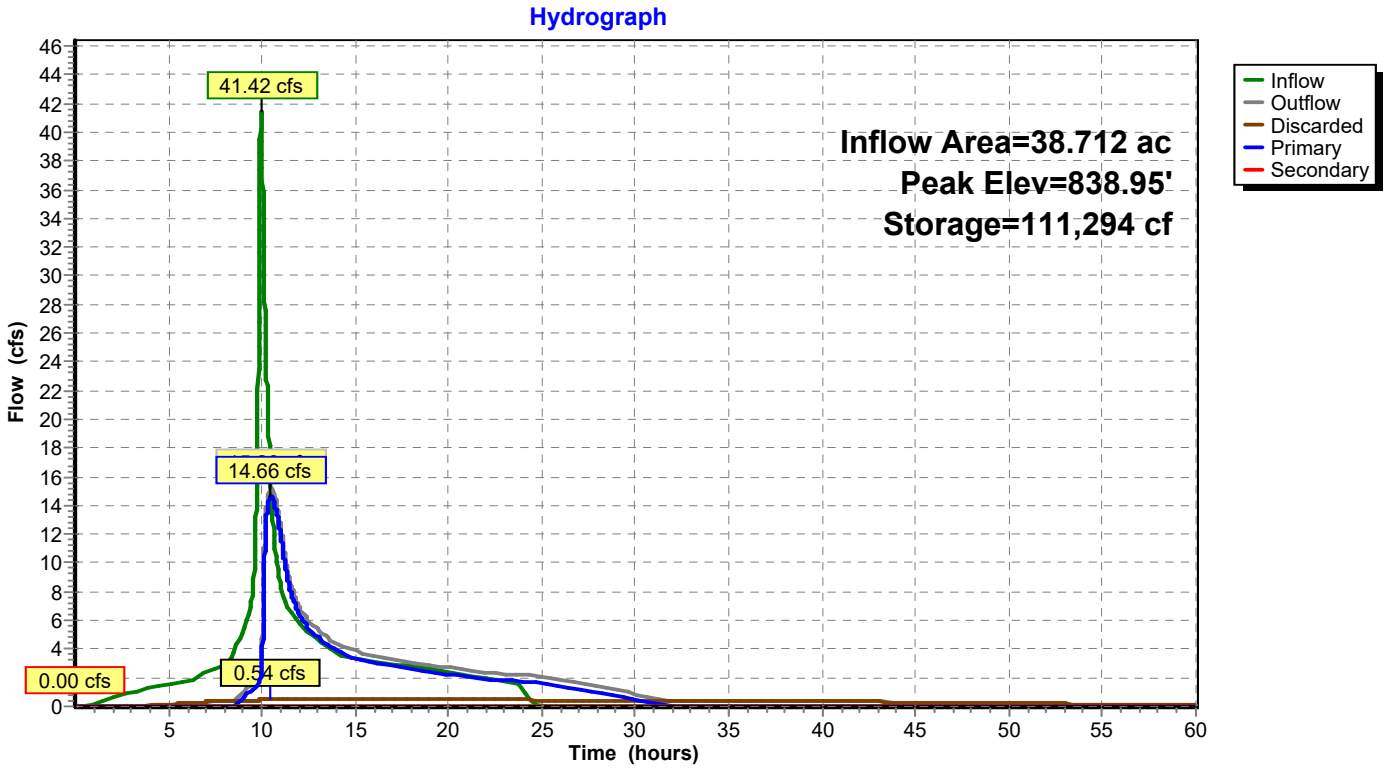
Device	Routing	Invert	Outlet Devices
#1	Primary	835.67'	**30.0" Round Culvert** L= 210.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 835.67' / 834.20' S= 0.0070 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	827.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	835.67'	**10.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	837.67'	**18.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	838.17'	**42.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	839.75'	**48.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 in 78.0" x 36.0" Grate (62% open area) Limited to weir flow at low heads
#7	Secondary	841.12'	**40.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.54 cfs @ 10.50 hrs HW=838.95' (Free Discharge)
└─**2=Exfiltration** (Controls 0.54 cfs)

Primary OutFlow Max=14.66 cfs @ 10.50 hrs HW=838.95' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 14.66 cfs of 33.65 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 2.36 cfs @ 8.49 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 6.25 cfs @ 4.16 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 6.06 cfs @ 3.46 fps)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=827.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B4: Basin 4



Summary for Pond B5: Basin 5

Inflow Area = 32.696 ac, 30.34% Impervious, Inflow Depth = 1.45" for 10 Year event
Inflow = 16.32 cfs @ 9.99 hrs, Volume= 3.956 af
Outflow = 4.65 cfs @ 11.19 hrs, Volume= 3.956 af, Atten= 71%, Lag= 72.4 min
Discarded = 0.38 cfs @ 11.22 hrs, Volume= 1.188 af
Primary = 4.28 cfs @ 11.19 hrs, Volume= 2.768 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 847.07' @ 11.22 hrs Surf.Area= 20,526 sf Storage= 55,240 cf

Plug-Flow detention time= 348.7 min calculated for 3.955 af (100% of inflow)
Center-of-Mass det. time= 348.8 min (1,131.2 - 782.3)

Volume	Invert	Avail.Storage	Storage Description
#1	844.00'	178,542 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.00	15,500	0	0
845.00	17,076	16,288	16,288
846.00	18,708	17,892	34,180
847.00	20,397	19,553	53,733
848.00	22,143	21,270	75,003
849.00	23,945	23,044	98,047
850.00	25,804	24,875	122,921
851.00	27,719	26,762	149,683
852.00	30,000	28,860	178,542

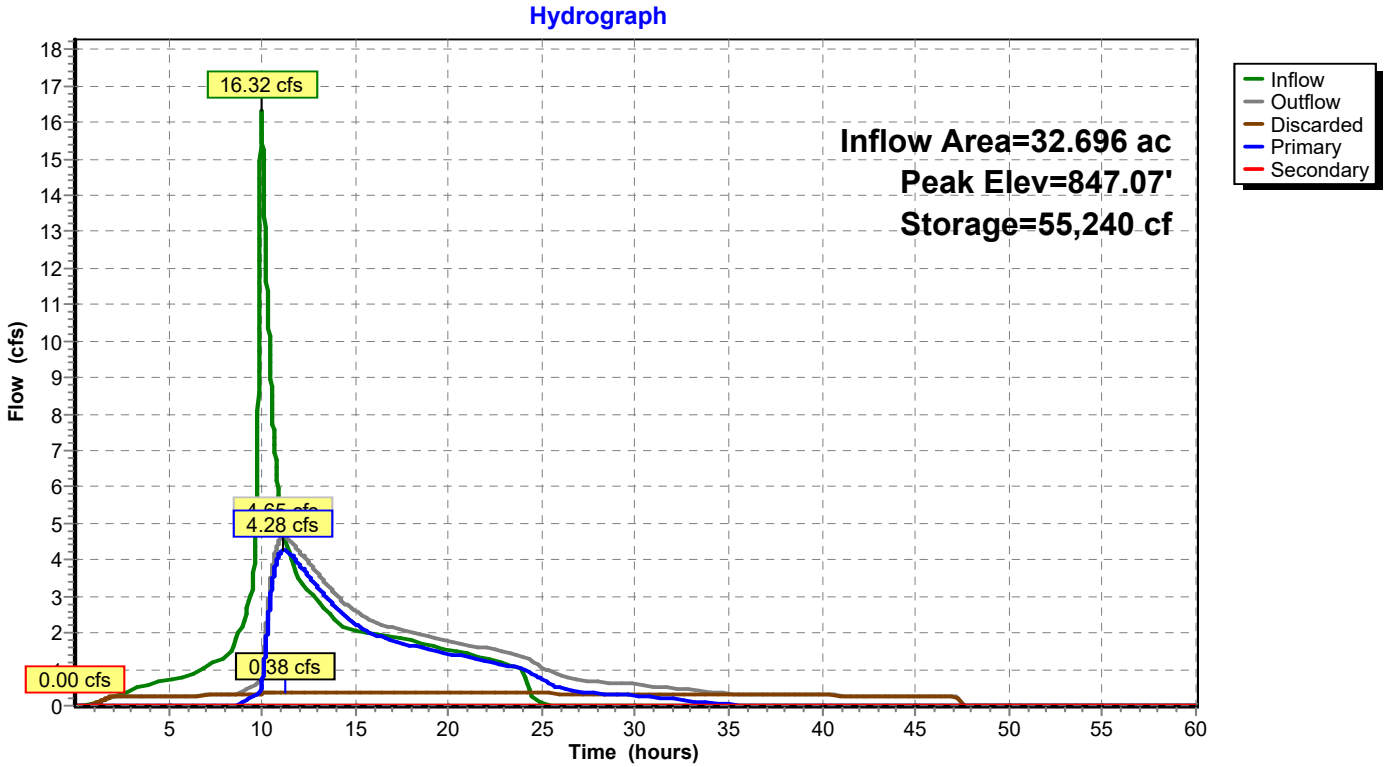
Device	Routing	Invert	Outlet Devices
#1	Primary	844.67'	**30.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 844.67' / 844.17' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	844.00'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#3	Device 1	844.67'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	845.67'	**6.0" W x 37.0" H Vert. Orifice/Grate** X 3 rows with 8.0" cc spacing C= 0.600
#5	Device 1	849.75'	**36.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 in 36.0" x 24.0" Grate (100% open area) Limited to weir flow at low heads
#6	Secondary	851.00'	**12.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.38 cfs @ 11.22 hrs HW=847.07' (Free Discharge)
└─**2=Exfiltration** (Controls 0.38 cfs)

Primary OutFlow Max=4.28 cfs @ 11.19 hrs HW=847.07' TW=845.28' (Dynamic Tailwater)
└─**1=Culvert** (Passes 4.28 cfs of 21.91 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 0.56 cfs @ 6.45 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 3.71 cfs @ 3.36 fps)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=844.00' (Free Discharge)
└─**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B5: Basin 5



Summary for Pond B6: Basin 6

Inflow Area = 34.039 ac, 52.56% Impervious, Inflow Depth = 2.22" for 10 Year event
Inflow = 30.64 cfs @ 9.98 hrs, Volume= 6.310 af
Outflow = 16.21 cfs @ 10.45 hrs, Volume= 6.019 af, Atten= 47%, Lag= 28.0 min
Discarded = 0.37 cfs @ 10.45 hrs, Volume= 1.011 af
Primary = 15.84 cfs @ 10.45 hrs, Volume= 5.009 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 851.09' @ 10.45 hrs Surf.Area= 0.437 ac Storage= 1.896 af

Plug-Flow detention time= 306.1 min calculated for 6.018 af (95% of inflow)
Center-of-Mass det. time= 275.7 min (1,027.5 - 751.8)

Volume	Invert	Avail.Storage	Storage Description
#1	839.50'	3.469 af	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3.792 af Overall - 0.323 af Embedded = 3.469 af
#2	839.50'	0.129 af	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 0.323 af Overall x 40.0% Voids
		3.598 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
839.50	0.081	0.000	0.000
840.00	0.081	0.040	0.040
841.00	0.081	0.081	0.121
842.00	0.081	0.081	0.202
843.00	0.081	0.081	0.283
844.00	0.081	0.081	0.364
845.00	0.061	0.071	0.435
846.00	0.133	0.097	0.532
847.00	0.260	0.196	0.729
848.00	0.292	0.276	1.005
849.00	0.325	0.309	1.313
850.00	0.360	0.343	1.656
851.00	0.434	0.397	2.053
852.00	0.474	0.454	2.507
854.40	0.597	1.285	3.792

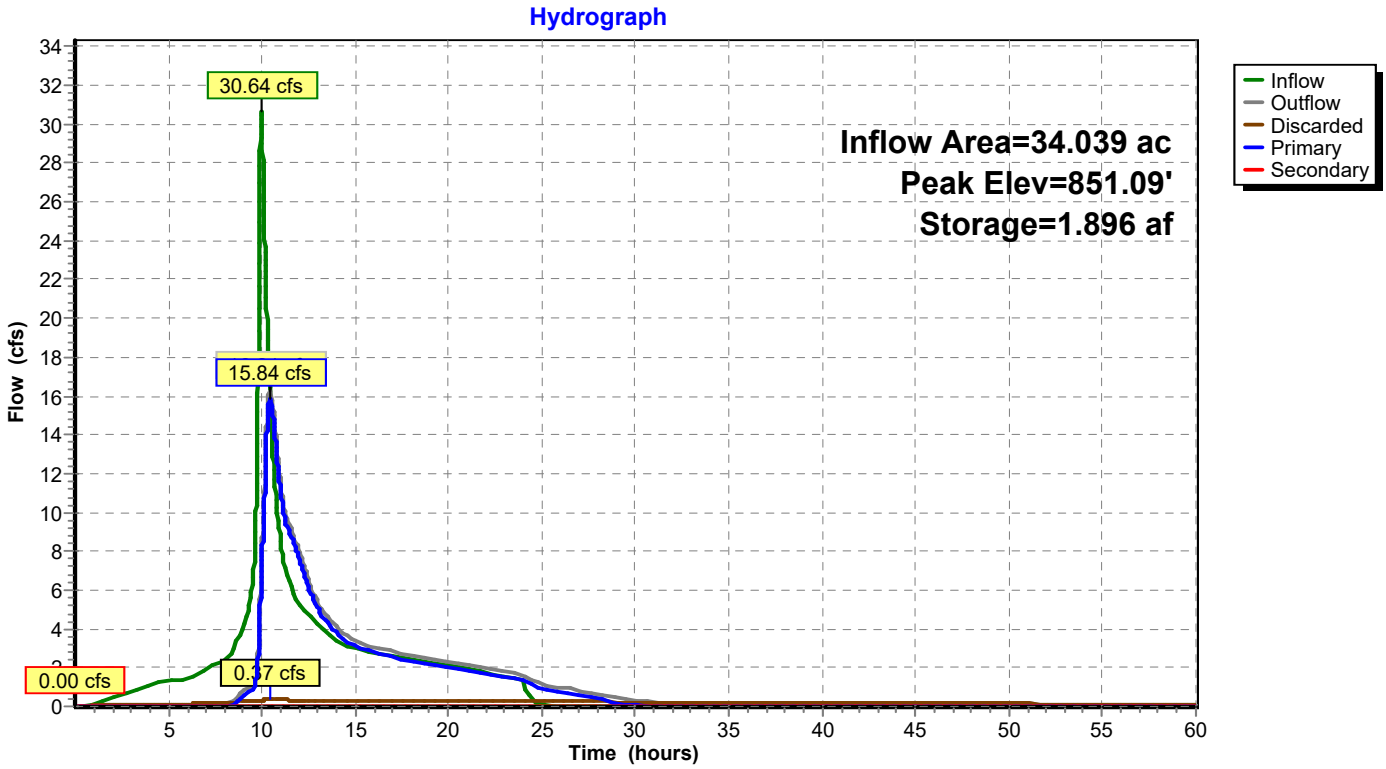
Device	Routing	Invert	Outlet Devices
#1	Primary	843.65'	**24.0" Round Culvert** L= 150.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 843.65' / 842.90' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Discarded	839.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	847.67'	**9.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	848.75'	**12.0" W x 9.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	849.50'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	850.67'	**69.6" W x 9.0" H Vert. Orifice/Grate** C= 0.600
#7	Secondary	852.88'	**40.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.37 cfs @ 10.45 hrs HW=851.09' (Free Discharge)
└─**2=Exfiltration** (Controls 0.37 cfs)

Primary OutFlow Max=15.84 cfs @ 10.45 hrs HW=851.09' TW=842.50' (Dynamic Tailwater)
└─**1=Culvert** (Passes 15.84 cfs of 35.65 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 1.64 cfs @ 8.73 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 5.05 cfs @ 6.73 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 4.17 cfs @ 5.56 fps)
  └─**6=Orifice/Grate** (Orifice Controls 4.99 cfs @ 2.07 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=839.50' TW=842.50' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B6: Basin 6



Summary for Pond B7: Basin 7

Inflow Area = 108.754 ac, 33.30% Impervious, Inflow Depth = 1.21" for 10 Year event
Inflow = 17.05 cfs @ 9.99 hrs, Volume= 10.954 af
Outflow = 8.12 cfs @ 14.56 hrs, Volume= 10.855 af, Atten= 52%, Lag= 274.1 min
Discarded = 1.14 cfs @ 14.56 hrs, Volume= 4.271 af
Primary = 6.98 cfs @ 14.56 hrs, Volume= 6.584 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 841.95' @ 14.56 hrs Surf.Area= 62,025 sf Storage= 145,975 cf

Plug-Flow detention time= 456.0 min calculated for 10.855 af (99% of inflow)
Center-of-Mass det. time= 442.2 min (1,401.6 - 959.5)

Volume	Invert	Avail.Storage	Storage Description
#1	839.00'	516,122 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
839.00	10,000	0	0
840.00	54,515	32,258	32,258
841.00	58,335	56,425	88,683
842.00	62,211	60,273	148,956
843.00	66,912	64,562	213,517
844.00	71,188	69,050	282,567
845.00	75,535	73,362	355,929
846.00	79,981	77,758	433,687
847.00	84,890	82,436	516,122

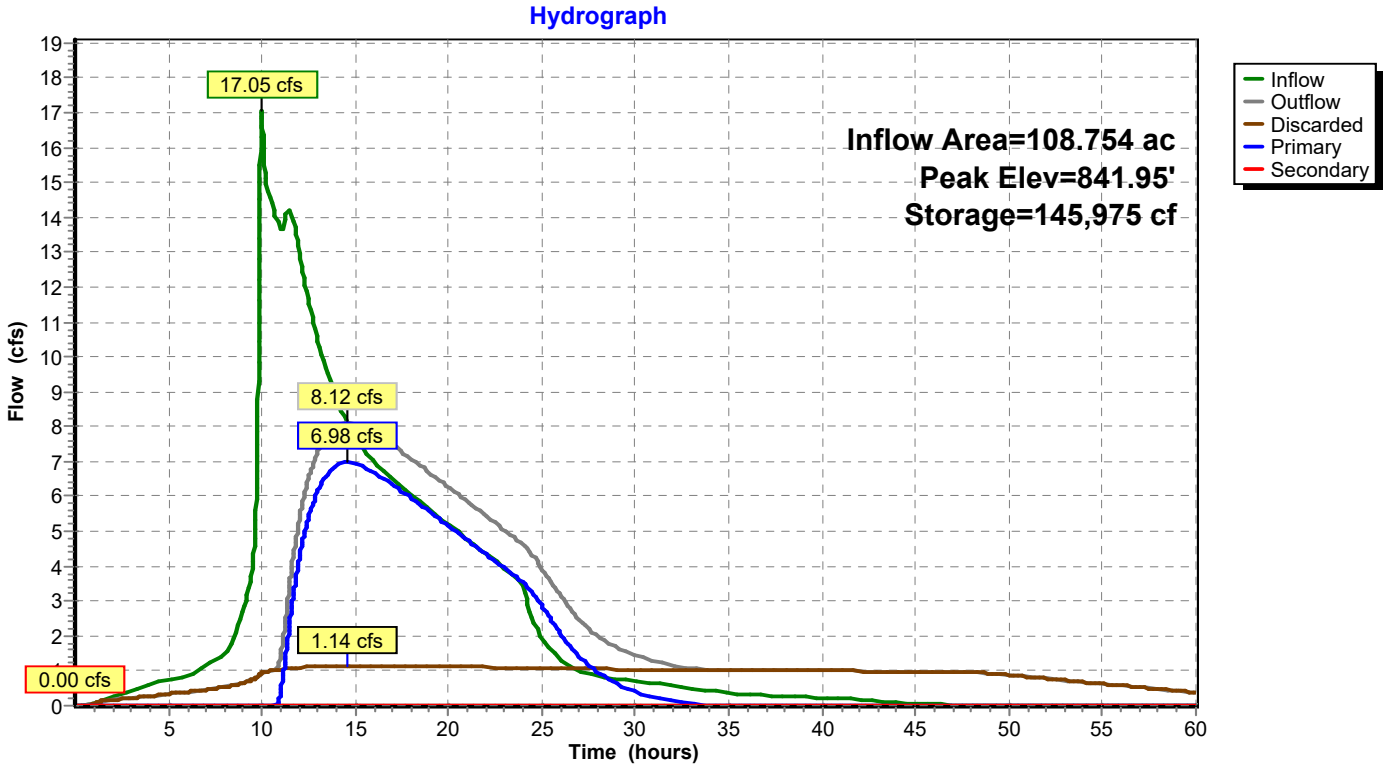
Device	Routing	Invert	Outlet Devices
#1	Primary	836.67'	**36.0" Round Culvert** L= 63.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.67' / 836.00' S= 0.0106 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Discarded	839.00'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#3	Device 1	840.75'	**26.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	841.25'	**12.0" W x 36.0" H Vert. Orifice/Grate** X 3 rows with 8.0" cc spacing C= 0.600
#5	Device 1	844.50'	**48.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 in 48.0" x 36.0" Grate (100% open area) Limited to weir flow at low heads
#6	Secondary	845.50'	**12.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=1.14 cfs @ 14.56 hrs HW=841.95' (Free Discharge)
└─**2=Exfiltration** (Controls 1.14 cfs)

Primary OutFlow Max=6.98 cfs @ 14.56 hrs HW=841.95' TW=837.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 6.98 cfs of 66.19 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 5.07 cfs @ 4.68 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.91 cfs @ 2.59 fps)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=839.00' (Free Discharge)
└─**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B7: Basin 7



Summary for Pond B8: Basin 8

Inflow Area = 44.689 ac, 35.47% Impervious, Inflow Depth = 1.61" for 10 Year event
Inflow = 22.23 cfs @ 9.99 hrs, Volume= 6.012 af
Outflow = 6.44 cfs @ 11.62 hrs, Volume= 6.012 af, Atten= 71%, Lag= 97.9 min
Discarded = 0.51 cfs @ 11.62 hrs, Volume= 1.833 af
Primary = 5.93 cfs @ 11.62 hrs, Volume= 4.179 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 857.36' @ 11.62 hrs Surf.Area= 27,821 sf Storage= 98,560 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 506.8 min (1,285.4 - 778.6)

Volume	Invert	Avail.Storage	Storage Description
#1	853.00'	147,517 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
853.00	17,554	0	0
854.00	19,812	18,683	18,683
855.00	22,126	20,969	39,652
856.00	24,497	23,312	62,964
857.00	26,924	25,711	88,674
858.00	29,407	28,166	116,840
859.00	31,948	30,678	147,517

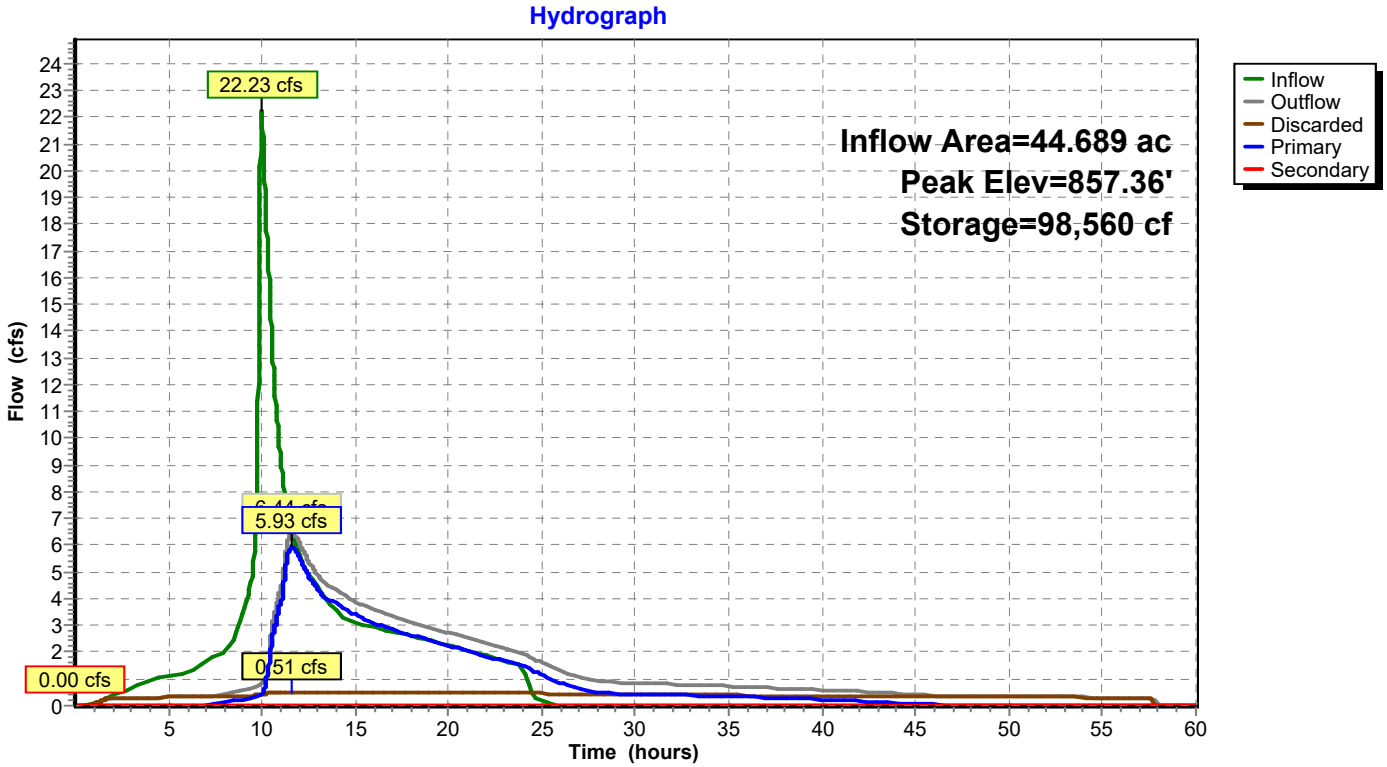
Device	Routing	Invert	Outlet Devices
#1	Primary	853.00'	**30.0" Round Culvert** L= 1,200.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 853.00' / 844.17' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	853.00'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#3	Device 1	853.58'	**2.0" W x 5.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	855.67'	**5.0" W x 12.0" H Vert. Orifice/Grate** X 4 rows with 8.0" cc spacing C= 0.600
#5	Device 1	857.25'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 in 36.0" x 36.0" Grate (100% open area) Limited to weir flow at low heads
#6	Secondary	858.75'	**16.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.51 cfs @ 11.62 hrs HW=857.36' (Free Discharge)
└─**2=Exfiltration** (Controls 0.51 cfs)

Primary OutFlow Max=5.93 cfs @ 11.62 hrs HW=857.36' TW=845.37' (Dynamic Tailwater)
└─**1=Culvert** (Passes 5.93 cfs of 38.90 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 0.63 cfs @ 9.10 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 3.84 cfs @ 3.91 fps)
  └─**5=Orifice/Grate** (Weir Controls 1.45 cfs @ 1.09 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=853.00' (Free Discharge)
└─**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B8: Basin 8



Summary for Pond B9: Basin 9

Inflow Area = 11.446 ac, 17.36% Impervious, Inflow Depth = 1.13" for 10 Year event
Inflow = 3.86 cfs @ 9.99 hrs, Volume= 1.080 af
Outflow = 2.51 cfs @ 10.44 hrs, Volume= 1.078 af, Atten= 35%, Lag= 26.9 min
Primary = 2.51 cfs @ 10.44 hrs, Volume= 1.078 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 848.80' @ 10.44 hrs Surf.Area= 7,124 sf Storage= 5,232 cf

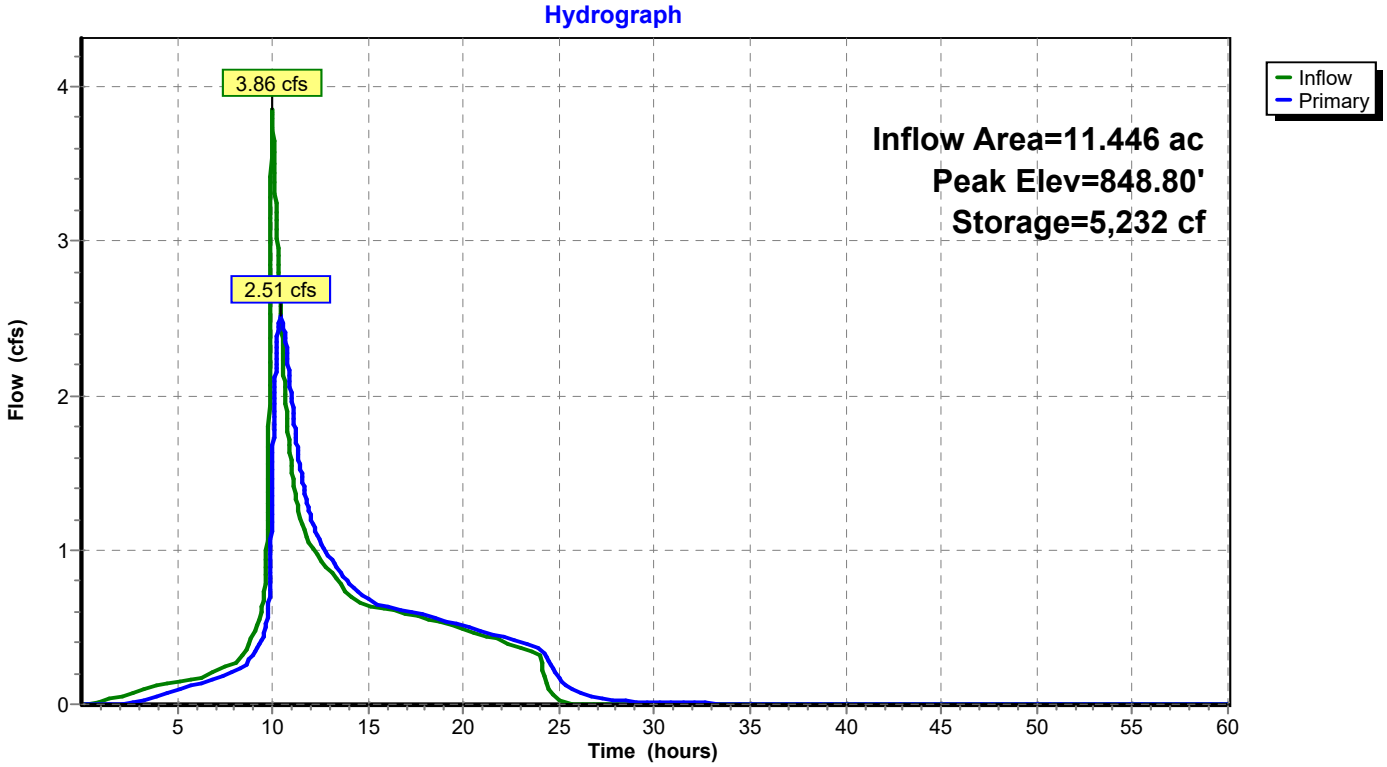
Plug-Flow detention time= 63.1 min calculated for 1.078 af (100% of inflow)
Center-of-Mass det. time= 62.5 min (883.9 - 821.4)

Volume	Invert	Avail.Storage	Storage Description
#1	848.00'	48,750 cf	**30.00'W x 200.00'L x 5.00'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	848.00'	**18.0" Round Culvert** L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 848.00' / 847.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	848.00'	**15.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.51 cfs @ 10.44 hrs HW=848.80' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.51 cfs of 2.90 cfs potential flow)
└─**2=Orifice/Grate** (Orifice Controls 2.51 cfs @ 3.04 fps)

Pond B9: Basin 9



Summary for Pond Ex SD: Tract #1632 Ex. 36" SD Outlet

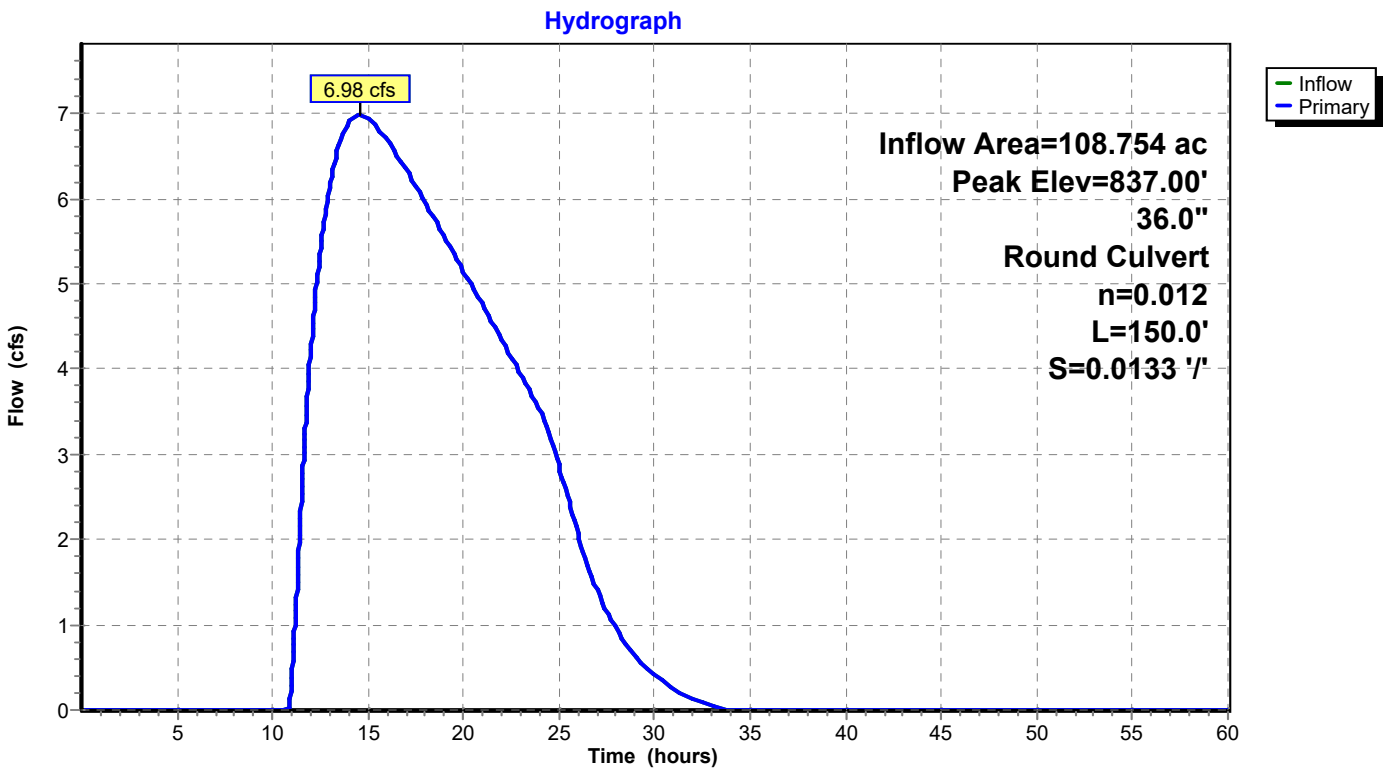
Inflow Area = 108.754 ac, 33.30% Impervious, Inflow Depth = 0.73" for 10 Year event
Inflow = 6.98 cfs @ 14.56 hrs, Volume= 6.584 af
Outflow = 6.98 cfs @ 14.56 hrs, Volume= 6.584 af, Atten= 0%, Lag= 0.0 min
Primary = 6.98 cfs @ 14.56 hrs, Volume= 6.584 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 837.00' @ 14.56 hrs
Flood Elev= 843.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	836.00'	**36.0" Round Culvert** L= 150.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.00' / 834.00' S= 0.0133 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=6.98 cfs @ 14.56 hrs HW=837.00' TW=835.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 6.98 cfs @ 3.40 fps)

Pond Ex SD: Tract #1632 Ex. 36" SD Outlet



Summary for Pond MC Q: SD System

[58] Hint: Peaked 0.41' above defined flood level

Inflow Area =	21.500 ac, 80.00% Impervious, Inflow Depth = 2.87" for 10 Year event				
Inflow =	28.37 cfs @	9.97 hrs,	Volume=	5.150 af	
Outflow =	28.21 cfs @	9.99 hrs,	Volume=	4.869 af,	Atten= 1%, Lag= 0.8 min
Discarded =	0.11 cfs @	9.99 hrs,	Volume=	0.368 af	
Primary =	13.65 cfs @	9.99 hrs,	Volume=	2.186 af	
Secondary =	14.45 cfs @	9.99 hrs,	Volume=	2.315 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 845.91' @ 9.99 hrs Surf.Area= 0.126 ac Storage= 0.519 af
Flood Elev= 845.50' Surf.Area= 0.097 ac Storage= 0.474 af

Plug-Flow detention time= 151.4 min calculated for 4.869 af (95% of inflow)
Center-of-Mass det. time= 114.6 min (838.4 - 723.9)

Volume	Invert	Avail.Storage	Storage Description
#1	839.50'	0.607 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
839.50	0.081	0.000	0.000
840.00	0.081	0.040	0.040
841.00	0.081	0.081	0.121
842.00	0.081	0.081	0.202
843.00	0.081	0.081	0.283
844.00	0.081	0.081	0.364
845.00	0.061	0.071	0.434
846.00	0.133	0.097	0.531
846.50	0.172	0.076	0.607

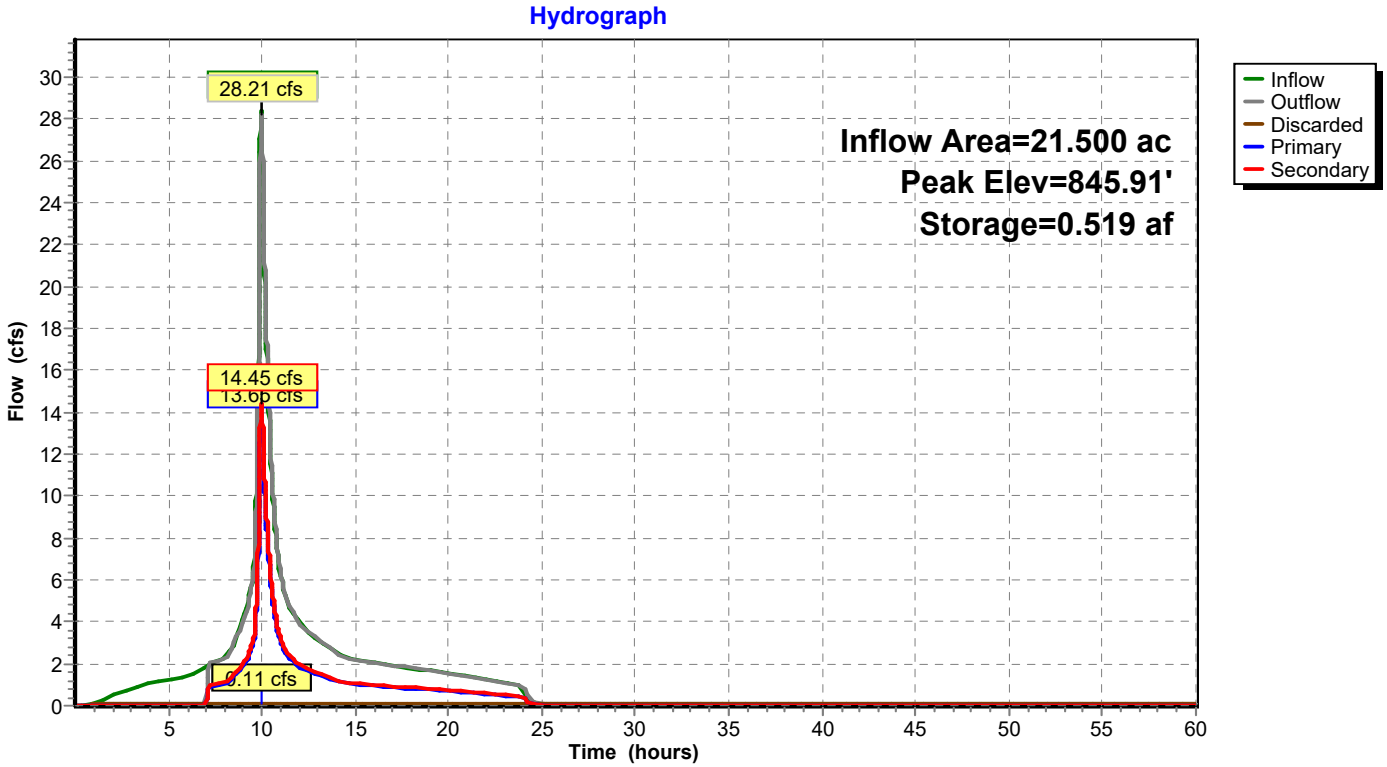
Device	Routing	Invert	Outlet Devices
#1	Primary	841.50'	**36.0" Round Culvert** L= 585.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 841.50' / 838.50' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	845.50'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	839.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 750.00'
#4	Secondary	845.50'	**20.0' long (Profile 4) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.77 2.97 3.21

Discarded OutFlow Max=0.11 cfs @ 9.99 hrs HW=845.91' (Free Discharge)
└─**3=Exfiltration** (Controls 0.11 cfs)

Primary OutFlow Max=13.64 cfs @ 9.99 hrs HW=845.91' TW=840.06' (Dynamic Tailwater)
└─**1=Culvert** (Passes 13.64 cfs of 52.64 cfs potential flow)
  └─**2=Orifice/Grate** (Weir Controls 13.64 cfs @ 2.09 fps)

Secondary OutFlow Max=14.44 cfs @ 9.99 hrs HW=845.91' TW=834.93' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 14.44 cfs @ 1.77 fps)

Pond MC Q: SD System



Summary for Pond SD: 42" HDPE SD

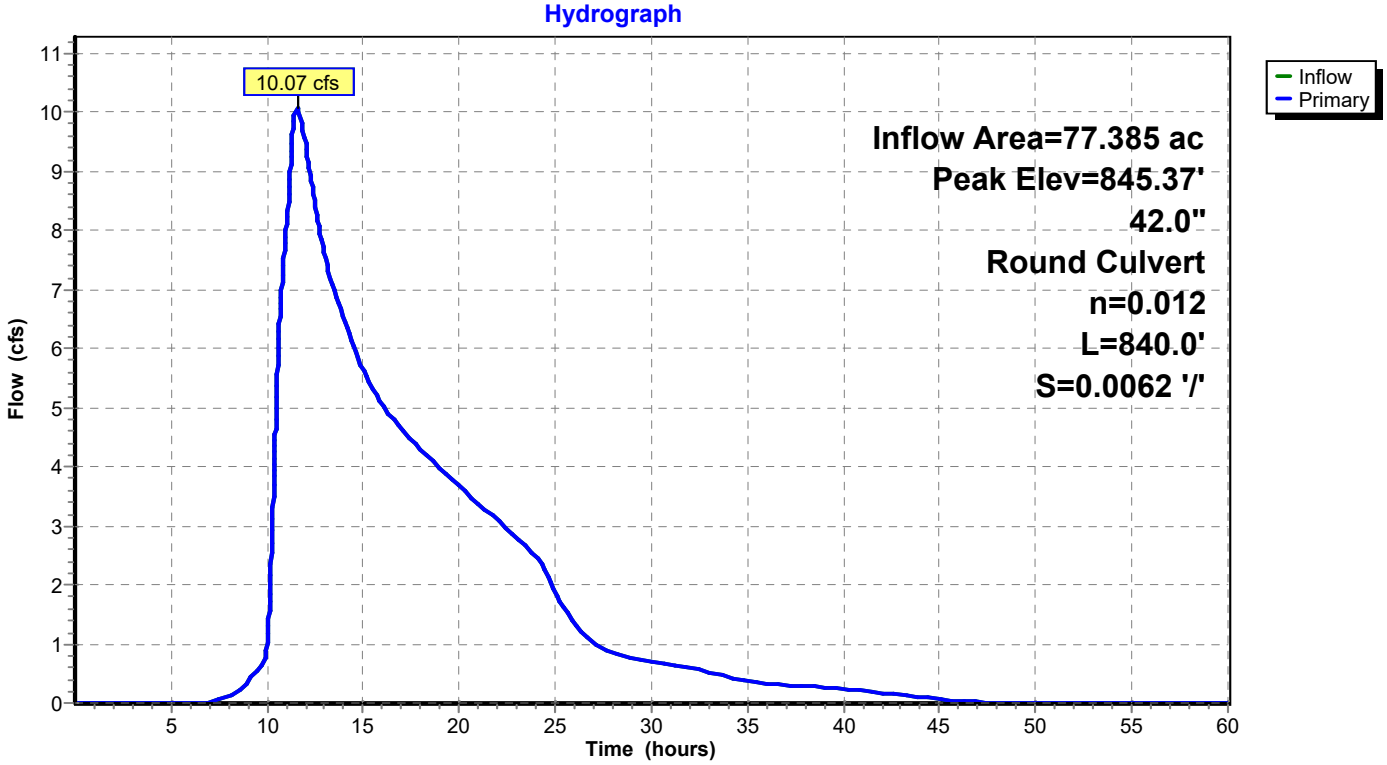
Inflow Area = 77.385 ac, 33.30% Impervious, Inflow Depth = 1.08" for 10 Year event
Inflow = 10.07 cfs @ 11.57 hrs, Volume= 6.947 af
Outflow = 10.07 cfs @ 11.57 hrs, Volume= 6.947 af, Atten= 0%, Lag= 0.0 min
Primary = 10.07 cfs @ 11.57 hrs, Volume= 6.947 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 845.37' @ 11.64 hrs
Flood Elev= 853.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	844.17'	**42.0" Round Culvert** L= 840.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 844.17' / 839.00' S= 0.0062 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=10.06 cfs @ 11.57 hrs HW=845.37' TW=841.29' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 10.06 cfs @ 5.16 fps)

Pond SD: 42" HDPE SD



Time span=0.01-60.00 hrs, dt=0.01 hrs, 6000 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Pond 1P: SD Inlet with Bypass SD Peak Elev=825.45' Inflow=57.87 cfs 12.093 af
Primary=57.87 cfs 12.093 af Secondary=0.00 cfs 0.000 af Outflow=57.87 cfs 12.093 af

Pond 2P: 60" SD MH Peak Elev=840.22' Inflow=16.26 cfs 2.664 af
Primary=16.26 cfs 2.664 af Secondary=0.00 cfs 0.000 af Outflow=16.26 cfs 2.664 af

Pond 15P: SD System 42" HDPE Peak Elev=844.52' Inflow=36.99 cfs 1.833 af
Outflow=36.99 cfs 1.833 af

Pond 16P: Dbl Conc. Arch Culvert (37x23) Peak Elev=844.48' Inflow=15.27 cfs 4.839 af
36.3" x 22.5", R=18.8"/51.0" Pipe Arch Culvert x 2.00 n=0.011 L=860.0' S=0.0024 '/' Outflow=15.27 cfs 4.839 af

Pond 17P: Gran Cielo Dwy Peak Elev=855.00' Storage=11,009 cf Inflow=161.34 cfs 30.903 af
Primary=104.80 cfs 29.304 af Secondary=0.01 cfs 0.000 af Tertiary=56.21 cfs 1.599 af Outflow=161.03 cfs 30.903 af

Pond 18P: GC-CkD1 Peak Elev=849.52' Storage=13,468 cf Inflow=181.92 cfs 43.852 af
Primary=0.60 cfs 0.025 af Secondary=25.90 cfs 0.677 af Tertiary=149.04 cfs 43.115 af Outflow=175.31 cfs 43.818 af

Pond 19P: GC-CkD2 Peak Elev=849.11' Storage=20,913 cf Inflow=45.55 cfs 3.943 af
Primary=1.23 cfs 1.419 af Secondary=33.35 cfs 2.431 af Tertiary=5.36 cfs 0.092 af Outflow=39.95 cfs 3.942 af

Pond 20P: GC-CkD3 Peak Elev=845.79' Storage=13,254 cf Inflow=45.11 cfs 5.938 af
Primary=5.62 cfs 3.513 af Secondary=6.57 cfs 0.672 af Tertiary=31.77 cfs 1.741 af Outflow=43.97 cfs 5.927 af

Pond B1: Basin 1 Peak Elev=837.00' Storage=5.171 af Inflow=93.80 cfs 12.965 af
Discarded=1.09 cfs 3.116 af Primary=29.18 cfs 9.465 af Secondary=0.00 cfs 0.000 af Outflow=30.26 cfs 12.581 af

Pond B10: Basin 10 Peak Elev=817.99' Storage=139,204 cf Inflow=32.90 cfs 7.171 af
Discarded=0.84 cfs 2.797 af Primary=6.57 cfs 3.913 af Secondary=0.00 cfs 0.000 af Outflow=7.40 cfs 6.710 af

Pond B11: Basin 11 Peak Elev=833.60' Storage=51,986 cf Inflow=20.25 cfs 3.183 af
Discarded=0.26 cfs 0.785 af Primary=5.24 cfs 2.136 af Secondary=0.00 cfs 0.000 af Outflow=5.50 cfs 2.921 af

Pond B12: Basin 12 Peak Elev=838.07' Storage=78,816 cf Inflow=26.91 cfs 4.105 af
Discarded=0.49 cfs 1.514 af Primary=2.71 cfs 2.317 af Secondary=0.00 cfs 0.000 af Outflow=3.20 cfs 3.831 af

Pond B13: Basin 13 Peak Elev=843.86' Storage=2.981 af Inflow=89.20 cfs 12.943 af
Discarded=0.46 cfs 1.355 af Primary=62.05 cfs 11.167 af Secondary=0.00 cfs 0.000 af Outflow=62.52 cfs 12.522 af

Pond B4: Basin 4 Peak Elev=839.49' Storage=126,212 cf Inflow=50.91 cfs 8.821 af
Discarded=0.57 cfs 1.674 af Primary=19.48 cfs 6.886 af Secondary=0.00 cfs 0.000 af Outflow=20.05 cfs 8.559 af

Pond B5: Basin 5 Peak Elev=847.51' Storage=64,298 cf Inflow=21.35 cfs 5.016 af
Discarded=0.39 cfs 1.221 af Primary=7.13 cfs 3.796 af Secondary=0.00 cfs 0.000 af Outflow=7.52 cfs 5.016 af

Pond B6: Basin 6 Peak Elev=851.40' Storage=2.036 af Inflow=37.81 cfs 7.705 af
Discarded=0.38 cfs 1.034 af Primary=23.43 cfs 6.379 af Secondary=0.00 cfs 0.000 af Outflow=23.80 cfs 7.412 af

Pond B7: Basin 7 Peak Elev=842.46' Storage=178,348 cf Inflow=28.12 cfs 14.500 af
Discarded=1.20 cfs 4.392 af Primary=11.90 cfs 9.989 af Secondary=0.00 cfs 0.000 af Outflow=13.10 cfs 14.381 af

Pond B8: Basin 8 Peak Elev=857.57' Storage=104,516 cf Inflow=28.75 cfs 7.533 af
Discarded=0.53 cfs 1.876 af Primary=12.49 cfs 5.657 af Secondary=0.00 cfs 0.000 af Outflow=13.01 cfs 7.533 af

Pond B9: Basin 9 Peak Elev=849.00' Storage=6,676 cf Inflow=5.46 cfs 1.422 af
Outflow=3.56 cfs 1.421 af

Pond Ex SD: Tract #1632 **Ex. 36" SD Outlet** Peak Elev=837.33' Inflow=11.90 cfs 9.989 af
36.0" Round Culvert n=0.012 L=150.0' S=0.0133 '/' Outflow=11.90 cfs 9.989 af

Pond MC Q: SD System Peak Elev=845.96' Storage=0.526 af Inflow=33.79 cfs 6.138 af
Discarded=0.12 cfs 0.372 af Primary=16.26 cfs 2.664 af Secondary=17.22 cfs 2.821 af Outflow=33.60 cfs 5.857 af

Pond SD: 42" HDPE SD Peak Elev=845.86' Inflow=19.61 cfs 9.453 af
42.0" Round Culvert n=0.012 L=840.0' S=0.0062 '/' Outflow=19.61 cfs 9.453 af

Summary for Pond 1P: SD Inlet with Bypass SD

Inflow Area = 108.566 ac, 6.93% Impervious, Inflow Depth = 1.34" for 25 Year event
Inflow = 57.87 cfs @ 9.98 hrs, Volume= 12.093 af
Outflow = 57.87 cfs @ 9.98 hrs, Volume= 12.093 af, Atten= 0%, Lag= 0.0 min
Primary = 57.87 cfs @ 9.98 hrs, Volume= 12.093 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

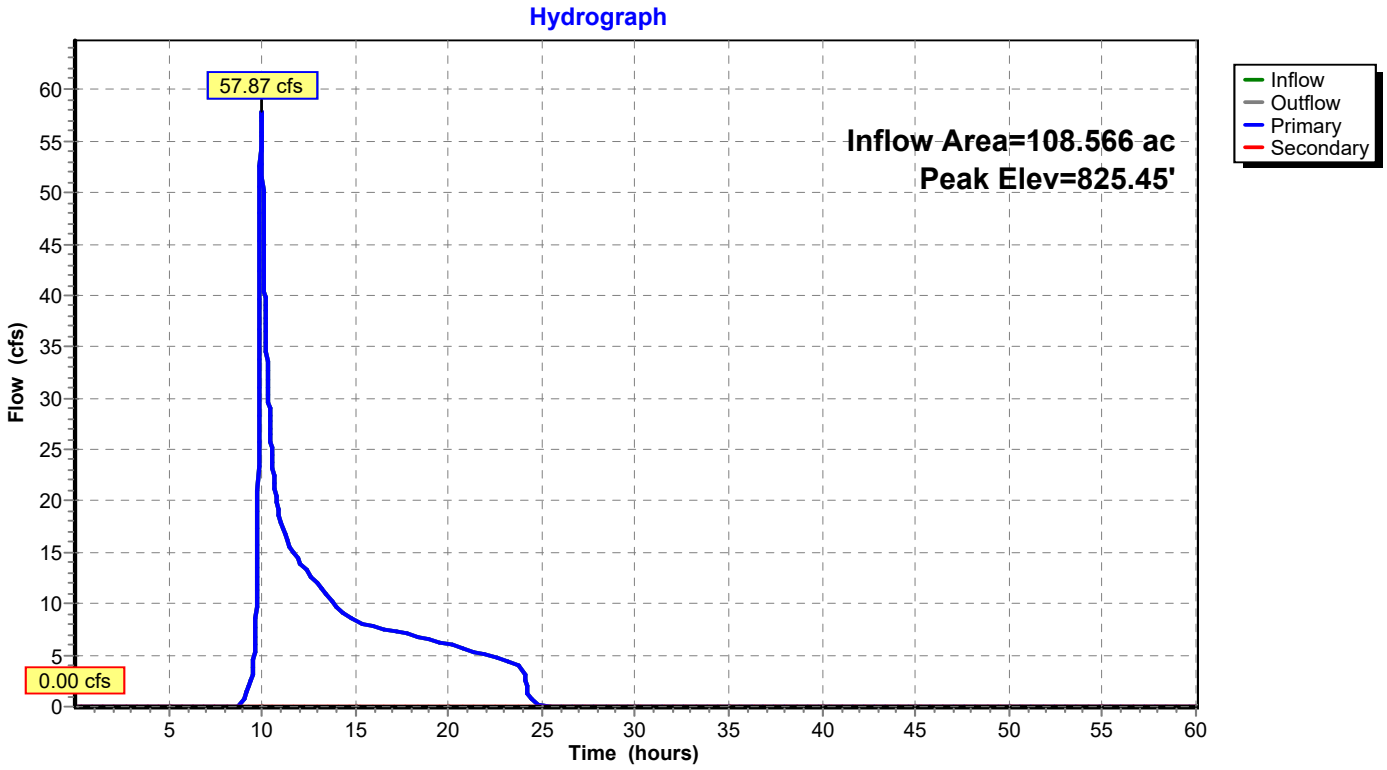
Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 825.45' @ 9.98 hrs
Flood Elev= 826.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	820.00'	**48.0" Round Culvert** L= 990.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 820.00' / 814.11' S= 0.0059 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	824.50'	**78.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	825.90'	**Special & User-Defined** Head (feet) 0.00 0.50 0.67 0.83 Disch. (cfs) 0.000 200.000 450.000 1,200.000

Primary OutFlow Max=57.85 cfs @ 9.98 hrs HW=825.45' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 57.85 cfs of 112.44 cfs potential flow)
└─**2=Orifice/Grate** (Weir Controls 57.85 cfs @ 3.19 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=820.00' TW=0.00' (Dynamic Tailwater)
└─**3=Special & User-Defined** (Controls 0.00 cfs)

Pond 1P: SD Inlet with Bypass SD



Summary for Pond 2P: 60" SD MH

Inflow Area = 21.500 ac, 80.00% Impervious, Inflow Depth = 1.49" for 25 Year event
Inflow = 16.26 cfs @ 9.99 hrs, Volume= 2.664 af
Outflow = 16.26 cfs @ 9.99 hrs, Volume= 2.664 af, Atten= 0%, Lag= 0.0 min
Primary = 16.26 cfs @ 9.99 hrs, Volume= 2.664 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

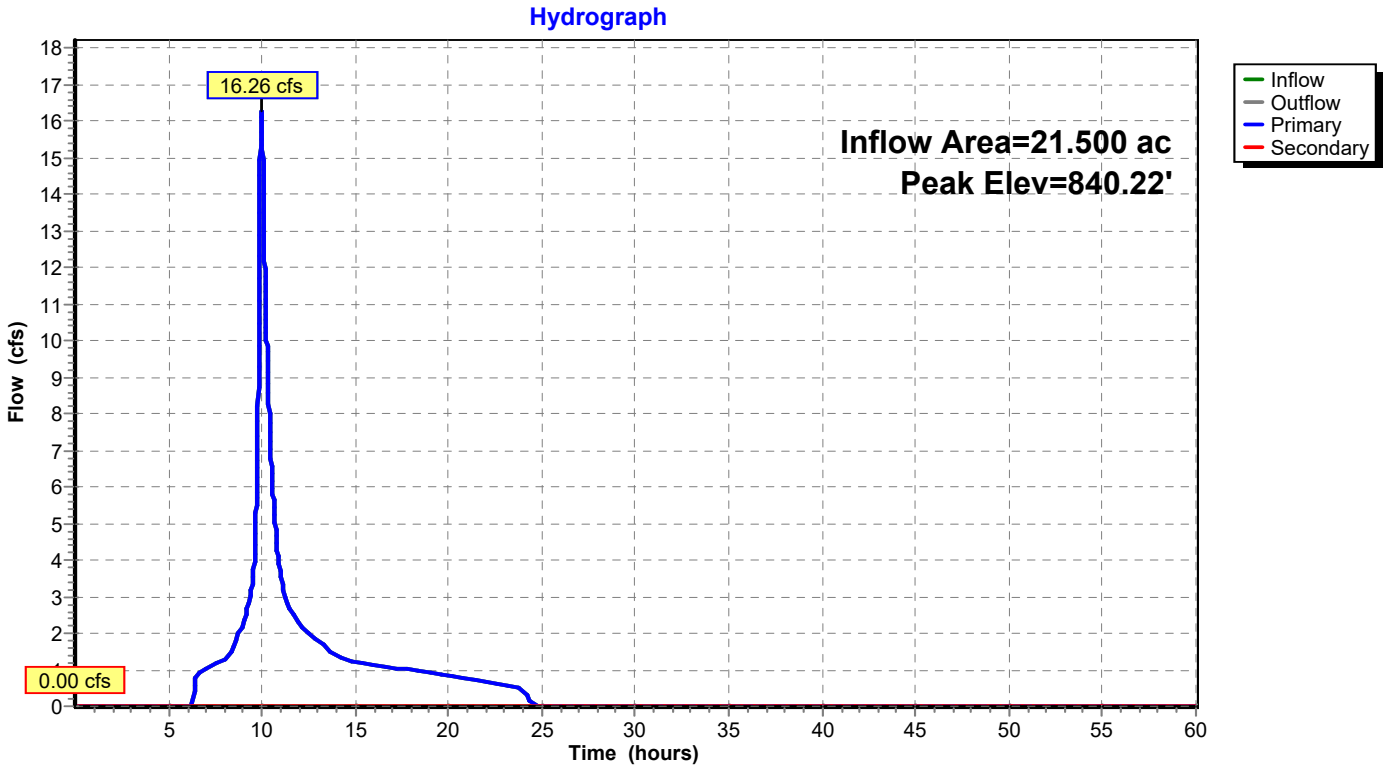
Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 840.22' @ 9.99 hrs
Flood Elev= 845.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	838.50'	**36.0" Round Culvert** L= 500.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 838.50' / 836.50' S= 0.0040 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf
#2	Secondary	844.25'	**69.6" W x 9.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=16.25 cfs @ 9.99 hrs HW=840.22' TW=835.44' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 16.25 cfs @ 5.58 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=838.50' TW=826.50' (Dynamic Tailwater)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: 60" SD MH



Summary for Pond 15P: SD System 42" HDPE

2 - 6 foot long curb openings (one on both sides of Linne Rd)
with 25 foot x 12 inch wide channel drain in Conc C&G

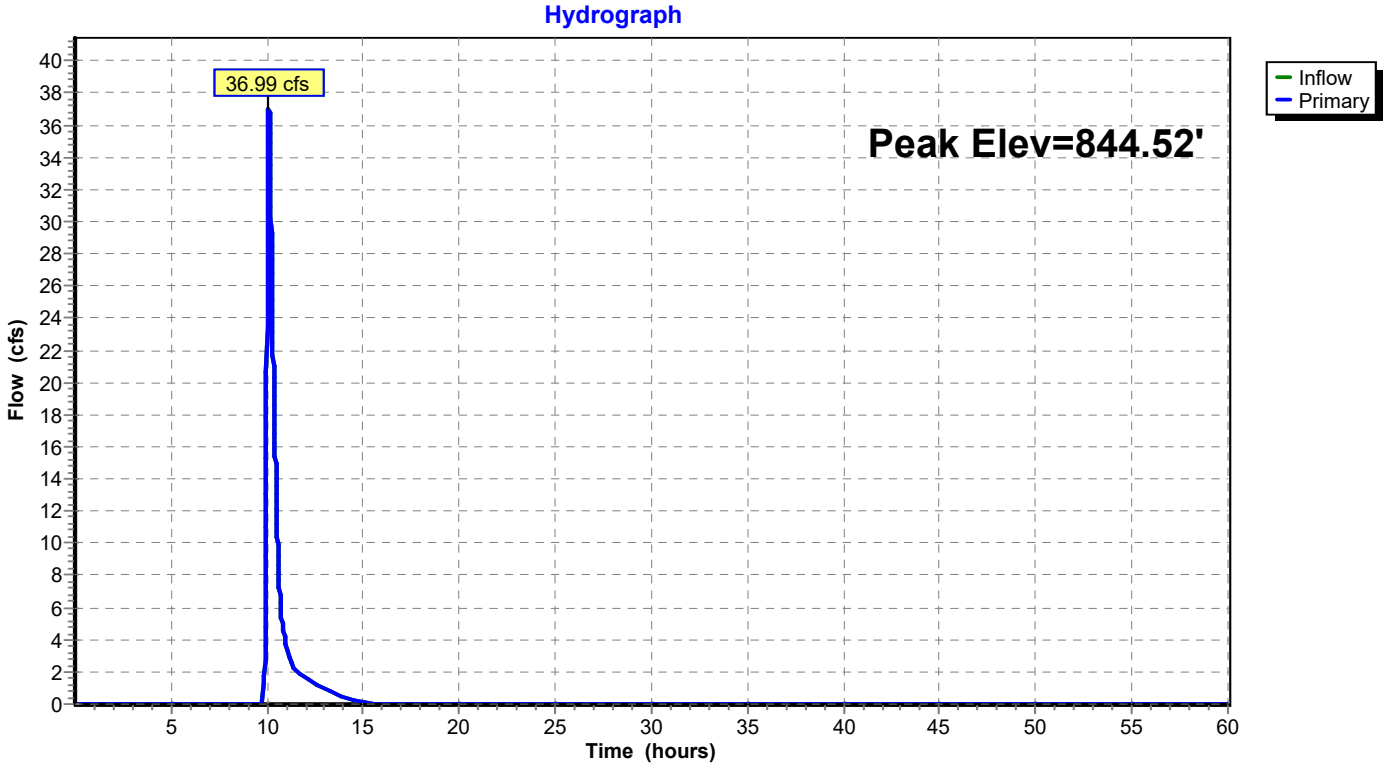
Inflow	=	36.99 cfs @	10.09 hrs,	Volume=	1.833 af
Outflow	=	36.99 cfs @	10.09 hrs,	Volume=	1.833 af, Atten= 0%, Lag= 0.0 min
Primary	=	36.99 cfs @	10.09 hrs,	Volume=	1.833 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 844.52' @ 10.09 hrs
Flood Elev= 845.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	839.75'	**42.0" Round Culvert** L= 1,370.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 839.75' / 833.60' S= 0.0045 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf
#2	Device 1	844.17'	**72.0" W x 9.0" H Vert. Orifice/Grate X 2.00** C= 0.600
#3	Device 1	844.25'	**12.0" x 180.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=36.98 cfs @ 10.09 hrs HW=844.52' TW=836.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 36.98 cfs of 74.35 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 7.91 cfs @ 1.89 fps)
  └─**3=Orifice/Grate** (Weir Controls 29.06 cfs @ 1.69 fps)

Pond 15P: SD System 42" HDPE



Summary for Pond 16P: Dbl Conc. Arch Culvert (37x23)

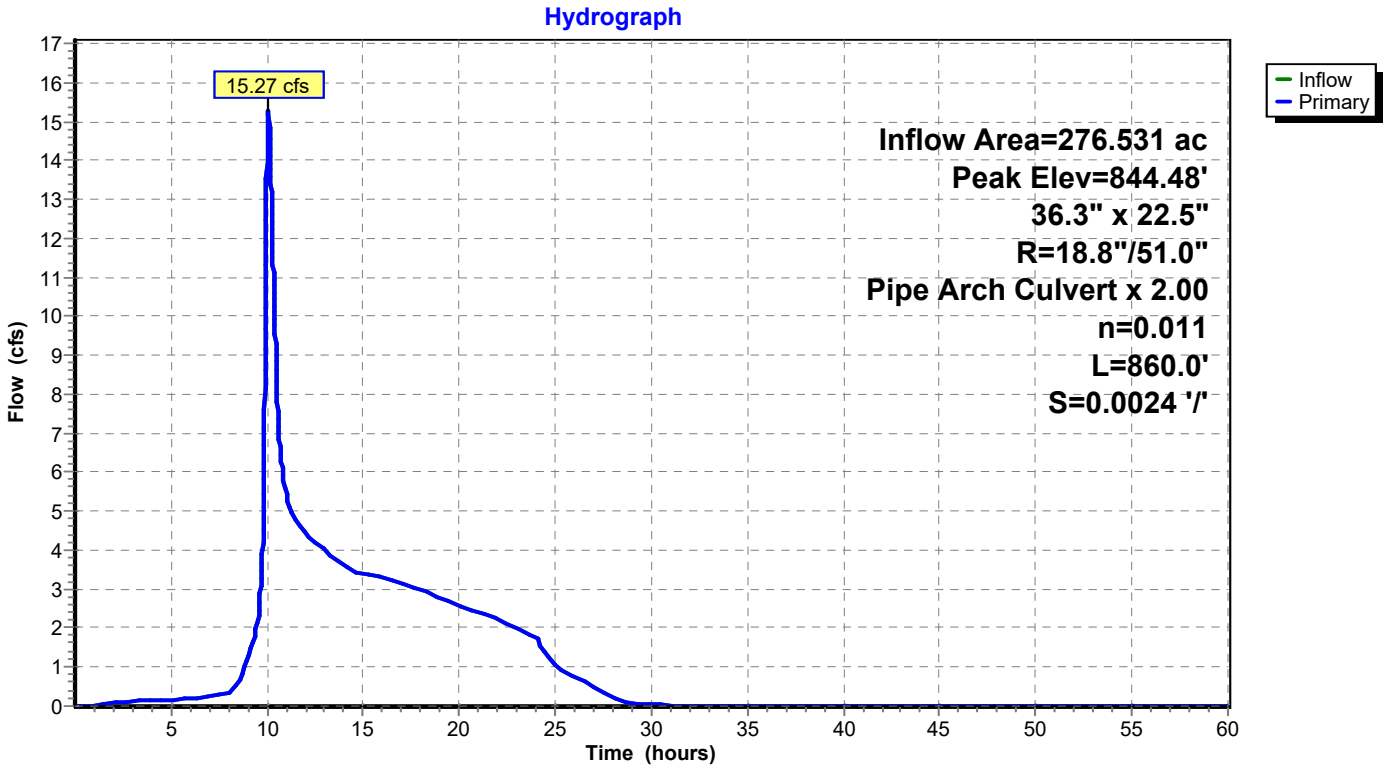
Inflow Area = 276.531 ac, 1.60% Impervious, Inflow Depth = 0.21" for 25 Year event
Inflow = 15.27 cfs @ 10.07 hrs, Volume= 4.839 af
Outflow = 15.27 cfs @ 10.07 hrs, Volume= 4.839 af, Atten= 0%, Lag= 0.0 min
Primary = 15.27 cfs @ 10.07 hrs, Volume= 4.839 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 844.48' @ 10.07 hrs
Flood Elev= 846.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	843.50'	**36.3" W x 22.5" H, R=18.8"/51.0" Pipe Arch RCP_Arch 37x23 X 2.00** L= 860.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 843.50' / 841.40' S= 0.0024 '/' Cc= 0.900 n= 0.011, Flow Area= 4.43 sf

Primary OutFlow Max=15.27 cfs @ 10.07 hrs HW=844.48' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Arch 37x23** (Barrel Controls 15.27 cfs @ 4.04 fps)

Pond 16P: Dbl Conc. Arch Culvert (37x23)



Summary for Pond 17P: Gran Cielo Dwy

[58] Hint: Peaked 0.54' above defined flood level

Inflow Area = 166.738 ac, 0.91% Impervious, Inflow Depth = 2.22" for 25 Year event
Inflow = 161.34 cfs @ 9.98 hrs, Volume= 30.903 af
Outflow = 161.03 cfs @ 9.99 hrs, Volume= 30.903 af, Atten= 0%, Lag= 0.5 min
Primary = 104.80 cfs @ 9.99 hrs, Volume= 29.304 af
Secondary = 0.01 cfs @ 9.99 hrs, Volume= 0.000 af
Tertiary = 56.21 cfs @ 9.99 hrs, Volume= 1.599 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 855.00' @ 9.99 hrs Surf.Area= 8,086 sf Storage= 11,009 cf
Flood Elev= 854.46' Surf.Area= 6,947 sf Storage= 6,934 cf

Plug-Flow detention time= 1.8 min calculated for 30.898 af (100% of inflow)
Center-of-Mass det. time= 1.8 min (820.1 - 818.2)

Volume	Invert	Avail.Storage	Storage Description
#1	852.84'	22,270 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.84	0	0	0
853.14	2,586	388	388
854.14	6,275	4,431	4,818
855.14	8,376	7,326	12,144
856.14	11,876	10,126	22,270

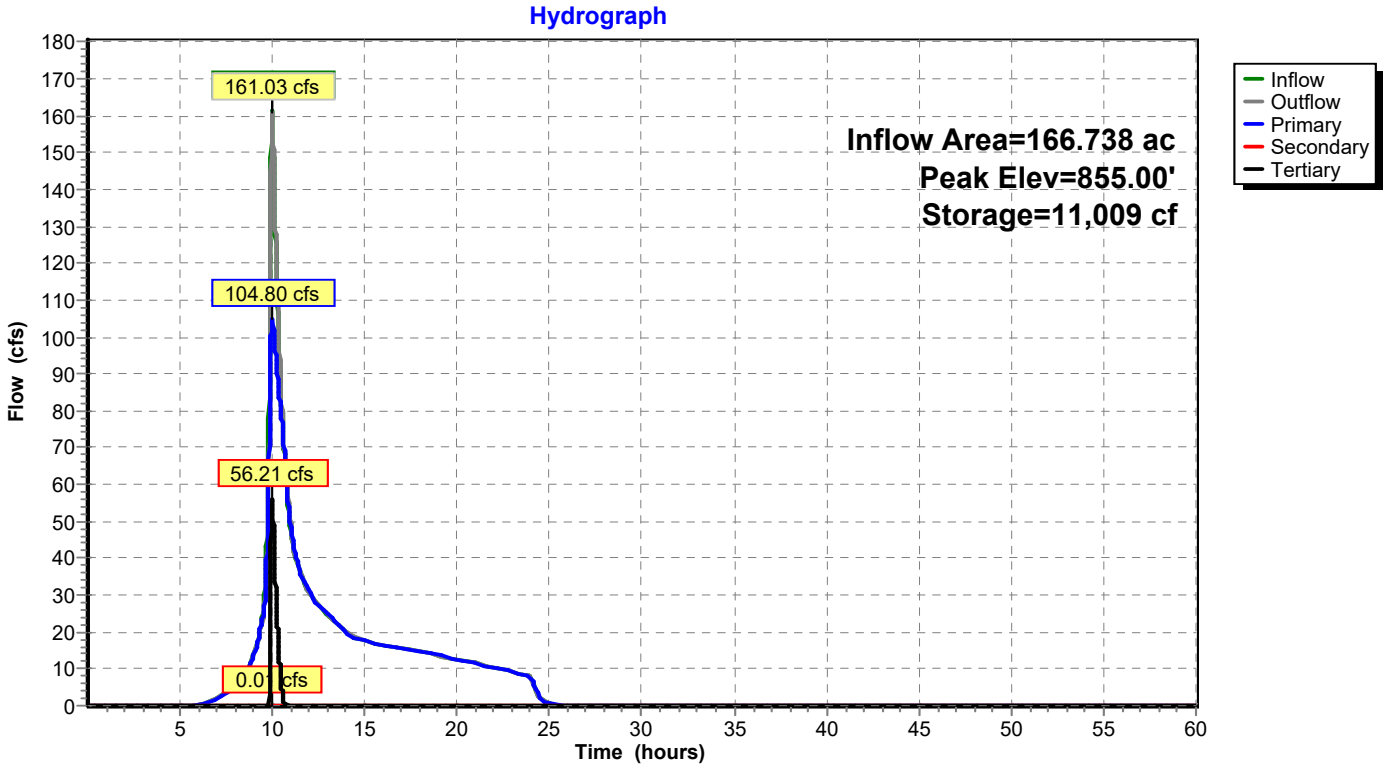
Device	Routing	Invert	Outlet Devices
#1	Primary	852.84'	**30.0" Round Culvert X 6.00** L= 77.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 852.84' / 851.76' S= 0.0140 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Secondary	854.90'	**Special & User-Defined** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 Disch. (cfs) 0.000 0.010 0.200 0.710 1.580 2.700 4.030 5.690 7.620 9.790 12.320 15.140 18.190 21.460 24.930 28.580 32.420 36.420 40.580 44.900 49.360 53.970
#3	Tertiary	854.40'	**Special & User-Defined** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 Disch. (cfs) 0.000 0.080 3.470 10.790 21.890 36.810 55.720 78.890 106.600 138.580 174.620 214.630 258.590 306.440 358.240 413.470 471.810 533.060 597.050 663.650 732.760 804.270 878.100 954.180 1,032.440 1,112.810 1,195.240

Primary OutFlow Max=104.78 cfs @ 9.99 hrs HW=855.00' TW=849.47' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 104.78 cfs @ 5.18 fps)

Secondary OutFlow Max=0.01 cfs @ 9.99 hrs HW=855.00' TW=849.47' (Dynamic Tailwater)
└─**2=Special & User-Defined** (Custom Controls 0.01 cfs)

Tertiary OutFlow Max=56.16 cfs @ 9.99 hrs HW=855.00' TW=854.13' (Dynamic Tailwater)
└─**3=Special & User-Defined** (Custom Controls 56.16 cfs)

Pond 17P: Gran Cielo Dwy



Summary for Pond 18P: GC-CkD1

Inflow Area = 240.622 ac, 1.05% Impervious, Inflow Depth = 2.19" for 25 Year event
Inflow = 181.92 cfs @ 9.98 hrs, Volume= 43.852 af
Outflow = 175.31 cfs @ 10.02 hrs, Volume= 43.818 af, Atten= 4%, Lag= 2.3 min
Primary = 0.60 cfs @ 9.92 hrs, Volume= 0.025 af
Secondary = 25.90 cfs @ 10.01 hrs, Volume= 0.677 af
Tertiary = 149.04 cfs @ 10.03 hrs, Volume= 43.115 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 849.52' @ 10.03 hrs Surf.Area= 12,369 sf Storage= 13,468 cf
Flood Elev= 850.17' Surf.Area= 18,446 sf Storage= 23,434 cf

Plug-Flow detention time= 1.7 min calculated for 43.810 af (100% of inflow)
Center-of-Mass det. time= 1.2 min (826.1 - 824.9)

Volume	Invert	Avail.Storage	Storage Description
#1	844.56'	70,294 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.56	10	0	0
845.00	200	46	46
846.00	600	400	446
847.00	1,500	1,050	1,496
848.00	2,166	1,833	3,329
849.00	7,688	4,927	8,256
850.00	16,694	12,191	20,447
851.00	27,000	21,847	42,294
852.00	29,000	28,000	70,294

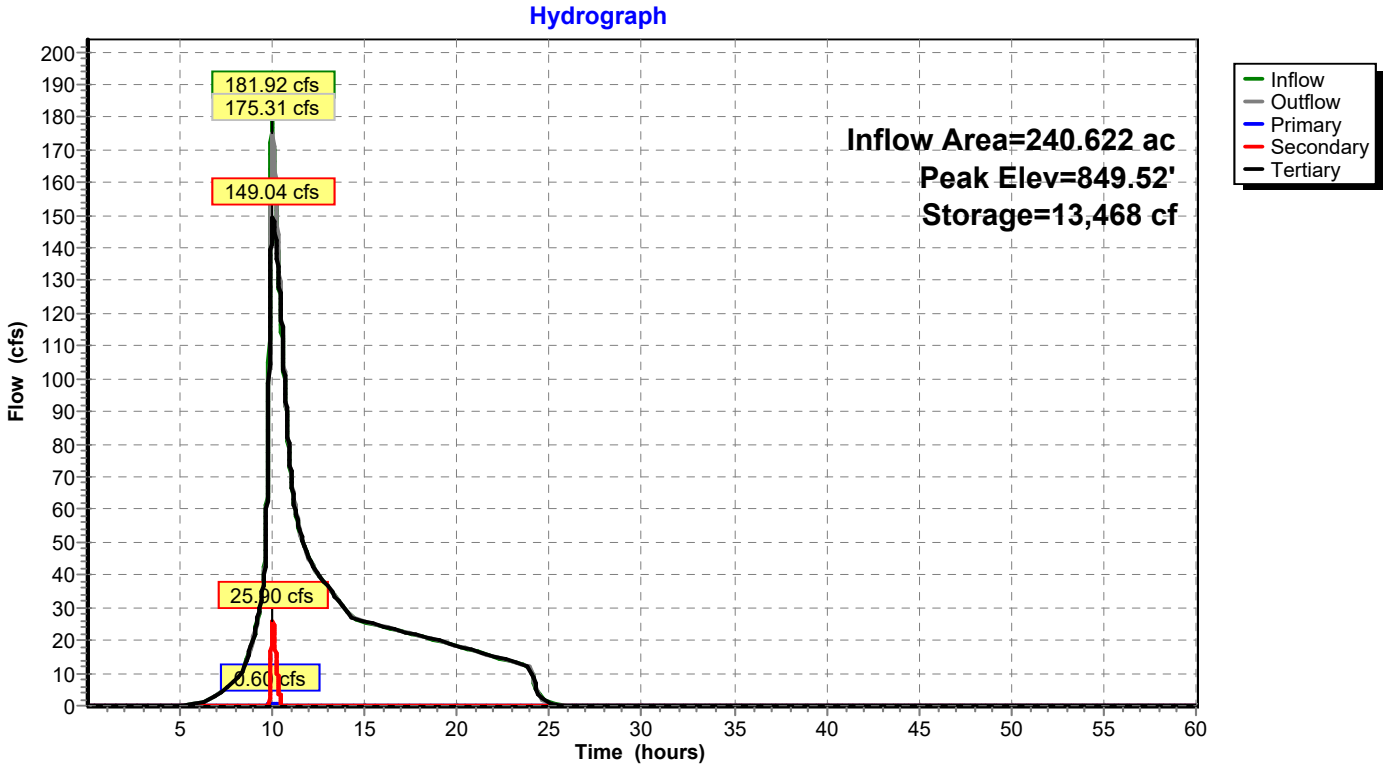
Device	Routing	Invert	Outlet Devices
#1	Primary	847.69'	**6.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 847.69' / 847.67' S= 0.0008 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Secondary	848.50'	**9.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59
#3	Tertiary	843.15'	**58.5" W x 36.0" H, R=30.0"/84.0" Pipe Arch RCP_Arch 59x36 X 2.00** L= 960.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 843.15' / 840.75' S= 0.0025 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 11.40 sf
#4	Device 3	847.00'	**78.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Tertiary	850.00'	**Special & User-Defined (CkD1-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 Disch. (cfs) 0.000 0.030 0.560 1.900 4.120 7.220 11.180 15.770 20.900 26.530 32.600 39.090 45.970 53.220 60.820 68.750 77.000 85.570 94.430 103.580 113.010

Primary OutFlow Max=0.57 cfs @ 9.92 hrs HW=849.13' TW=848.54' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.57 cfs @ 2.91 fps)

Secondary OutFlow Max=25.42 cfs @ 10.01 hrs HW=849.51' TW=849.05' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 25.42 cfs @ 2.80 fps)

Tertiary OutFlow Max=149.02 cfs @ 10.03 hrs HW=849.52' TW=841.72' (Dynamic Tailwater)
├─**3=RCP_Arch 59x36** (Passes 149.02 cfs of 171.50 cfs potential flow)
│ └─**4=Orifice/Grate** (Orifice Controls 149.02 cfs @ 7.64 fps)
└─**5=Special & User-Defined (CkD1-S)** (Controls 0.00 cfs)

Pond 18P: GC-CkD1



Summary for Pond 19P: GC-CkD2

[58] Hint: Peaked 0.46' above defined flood level
[80] Warning: Exceeded Pond 18P by 0.65' @ 24.35 hrs (0.02 cfs 0.177 af)
[80] Warning: Exceeded Pond 18P by 0.03' @ 10.55 hrs (0.02 cfs 0.000 af)

Inflow Area =	260.311 ac,	0.99% Impervious,	Inflow Depth =	0.18"	for 25 Year event
Inflow =	45.55 cfs @	10.00 hrs,	Volume=	3.943 af	
Outflow =	39.95 cfs @	10.08 hrs,	Volume=	3.942 af,	Atten= 12%, Lag= 4.6 min
Primary =	1.23 cfs @	10.08 hrs,	Volume=	1.419 af	
Secondary =	33.35 cfs @	10.08 hrs,	Volume=	2.431 af	
Tertiary =	5.36 cfs @	10.08 hrs,	Volume=	0.092 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 849.11' @ 10.08 hrs Surf.Area= 16,679 sf Storage= 20,913 cf
Flood Elev= 848.65' Surf.Area= 11,850 sf Storage= 14,787 cf

Plug-Flow detention time= 51.0 min calculated for 3.942 af (100% of inflow)
Center-of-Mass det. time= 50.7 min (837.8 - 787.2)

Volume	Invert	Avail.Storage	Storage Description
#1	846.00'	46,430 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
846.00	267	0	0
847.00	4,055	2,161	2,161
848.00	8,178	6,117	8,278
849.00	13,828	11,003	19,281
850.00	40,470	27,149	46,430

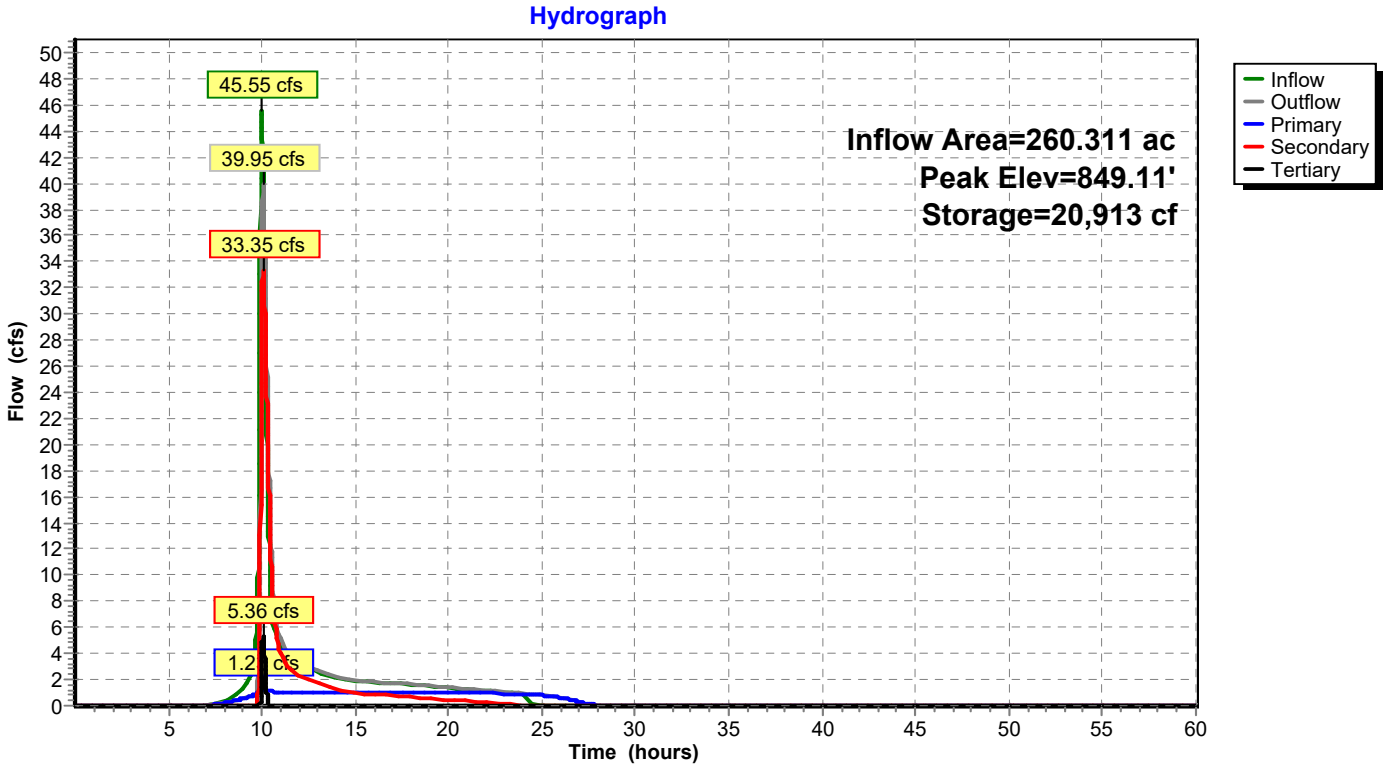
Device	Routing	Invert	Outlet Devices
#1	Primary	846.12'	**6.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 846.12' / 845.98' S= 0.0054 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Tertiary	848.70'	**Special & User-Defined (CkD2-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 Disch. (cfs) 0.000 0.130 0.970 2.640 5.120 8.550 13.010 18.440 24.620 31.430 38.830 46.770 55.210 64.120
#3	Secondary	847.80'	**Special & User-Defined (CkD2-W)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 Disch. (cfs) 0.000 0.020 0.480 1.430 2.780 4.430 6.490 8.950 12.010 15.510 19.390 23.590 28.100 32.980 38.270 43.910 49.850 56.080 62.580 69.340 76.350 83.590 91.070

Primary OutFlow Max=1.23 cfs @ 10.08 hrs HW=849.11' TW=845.79' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.23 cfs @ 6.29 fps)

Secondary OutFlow Max=33.34 cfs @ 10.08 hrs HW=849.11' TW=845.79' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD2-W)** (Custom Controls 33.34 cfs)

Tertiary OutFlow Max=5.35 cfs @ 10.08 hrs HW=849.11' TW=0.00' (Dynamic Tailwater)
└─**2=Special & User-Defined (CkD2-S)** (Custom Controls 5.35 cfs)

Pond 19P: GC-CkD2



Summary for Pond 20P: GC-CkD3

[58] Hint: Peaked 0.77' above defined flood level

Inflow Area = 274.094 ac, 0.94% Impervious, Inflow Depth = 0.26" for 25 Year event
Inflow = 45.11 cfs @ 10.06 hrs, Volume= 5.938 af
Outflow = 43.97 cfs @ 10.10 hrs, Volume= 5.927 af, Atten= 3%, Lag= 2.6 min
Primary = 5.62 cfs @ 10.10 hrs, Volume= 3.513 af
Secondary = 6.57 cfs @ 10.10 hrs, Volume= 0.672 af
Tertiary = 31.77 cfs @ 10.10 hrs, Volume= 1.741 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 845.79' @ 10.10 hrs Surf.Area= 13,577 sf Storage= 13,254 cf
Flood Elev= 845.02' Surf.Area= 8,229 sf Storage= 4,852 cf

Plug-Flow detention time= 25.0 min calculated for 5.926 af (100% of inflow)
Center-of-Mass det. time= 23.6 min (864.2 - 840.6)

Volume	Invert	Avail.Storage	Storage Description
#1	844.00'	24,632 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.00	1,288	0	0
845.00	8,090	4,689	4,689
846.50	18,500	19,943	24,632

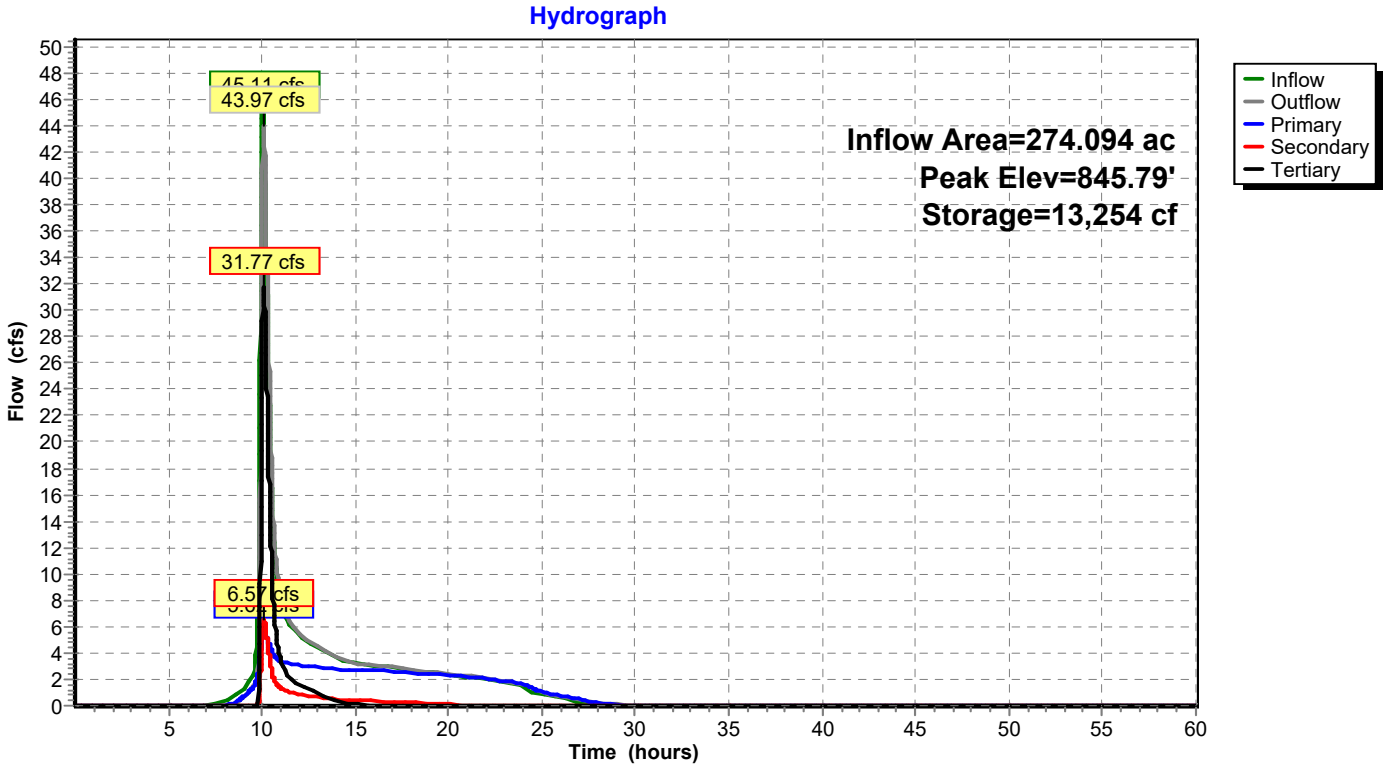
Device	Routing	Invert	Outlet Devices
#1	Primary	844.22'	**18.0" Round Culvert** L= 26.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 844.22' / 843.98' S= 0.0092 '/' Cc= 0.900 n= 0.021 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	845.00'	**Special & User-Defined (CkD3-W)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 Disch. (cfs) 0.000 0.050 0.390 0.970 1.710 2.600 3.780 5.170 6.720 8.570 11.140 14.290 17.880 21.830 26.120 30.880 36.030 41.520 47.330 53.420 59.790
#3	Tertiary	845.10'	**Special & User-Defined (CkD3-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 Disch. (cfs) 0.000 0.050 1.930 5.420 10.370 16.490 23.960 32.580 42.550 53.770 66.380 80.510 96.280 113.770 132.840 153.630 175.910 199.510 224.310 250.260

Primary OutFlow Max=5.62 cfs @ 10.10 hrs HW=845.79' TW=844.47' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 5.62 cfs @ 3.78 fps)

Secondary OutFlow Max=6.57 cfs @ 10.10 hrs HW=845.79' TW=844.47' (Dynamic Tailwater)
└─**2=Special & User-Defined (CkD3-W)** (Custom Controls 6.57 cfs)

Tertiary OutFlow Max=31.76 cfs @ 10.10 hrs HW=845.79' TW=0.00' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD3-S)** (Custom Controls 31.76 cfs)

Pond 20P: GC-CkD3



Summary for Pond B1: Basin 1

Inflow Area = 47.388 ac, 67.98% Impervious, Inflow Depth = 3.28" for 25 Year event
Inflow = 93.80 cfs @ 10.04 hrs, Volume= 12.965 af
Outflow = 30.26 cfs @ 10.60 hrs, Volume= 12.581 af, Atten= 68%, Lag= 33.6 min
Discarded = 1.09 cfs @ 10.60 hrs, Volume= 3.116 af
Primary = 29.18 cfs @ 10.60 hrs, Volume= 9.465 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 837.00' @ 10.60 hrs Surf.Area= 1.365 ac Storage= 5.171 af

Plug-Flow detention time= 352.1 min calculated for 12.579 af (97% of inflow)
Center-of-Mass det. time= 332.1 min (1,063.2 - 731.2)

Volume	Invert	Avail.Storage	Storage Description
#1	826.50'	8.466 af	**Custom Stage Data (Prismatic)** Listed below (Recalc) 8.789 af Overall - 0.323 af Embedded = 8.466 af
#2	826.50'	0.129 af	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 0.323 af Overall x 40.0% Voids
		8.595 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
826.50	0.081	0.000	0.000
827.00	0.081	0.040	0.040
828.00	0.081	0.081	0.121
829.00	0.081	0.081	0.202
830.00	0.081	0.081	0.283
831.00	0.081	0.081	0.365
832.00	0.203	0.142	0.506
833.00	0.376	0.289	0.796
834.00	1.171	0.774	1.569
835.00	1.234	1.202	2.772
836.00	1.299	1.267	4.038
837.00	1.365	1.332	5.370
838.00	1.432	1.399	6.769
839.00	1.500	1.466	8.235
839.35	1.665	0.554	8.789

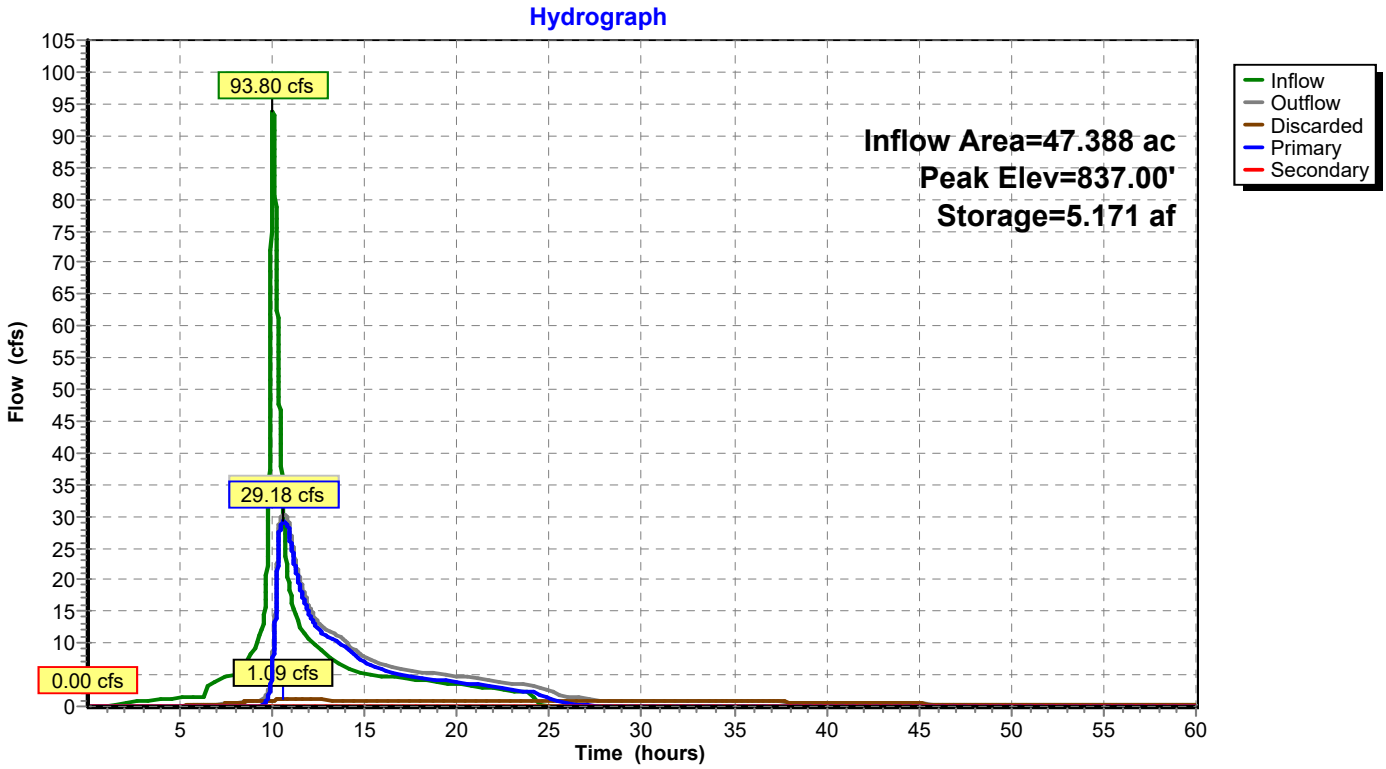
Device	Routing	Invert	Outlet Devices
#1	Primary	833.12'	**36.0" Round Culvert** L= 385.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 833.12' / 831.20' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Discarded	826.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	834.33'	**16.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	834.33'	**12.0" W x 8.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	835.33'	**30.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	836.17'	**24.0" Horiz. Orifice/Grate** C= 0.600 in 78.0" x 36.0" Grate (16% open area) Limited to weir flow at low heads
#7	Secondary	838.35'	**30.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=1.09 cfs @ 10.60 hrs HW=837.00' (Free Discharge)
└─**2=Exfiltration** (Controls 1.09 cfs)

Primary OutFlow Max=29.18 cfs @ 10.60 hrs HW=837.00' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 29.18 cfs of 50.64 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 3.38 cfs @ 7.61 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 4.90 cfs @ 7.35 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 7.15 cfs @ 5.72 fps)
  └─**6=Orifice/Grate** (Orifice Controls 13.74 cfs @ 4.37 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=826.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B1: Basin 1



Summary for Pond B10: Basin 10

Inflow Area = 30.685 ac, 61.94% Impervious, Inflow Depth = 2.80" for 25 Year event
Inflow = 32.90 cfs @ 9.98 hrs, Volume= 7.171 af
Outflow = 7.40 cfs @ 11.45 hrs, Volume= 6.710 af, Atten= 78%, Lag= 87.9 min
Discarded = 0.84 cfs @ 11.45 hrs, Volume= 2.797 af
Primary = 6.57 cfs @ 11.45 hrs, Volume= 3.913 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 817.99' @ 11.45 hrs Surf.Area= 45,453 sf Storage= 139,204 cf

Plug-Flow detention time= 590.2 min calculated for 6.709 af (94% of inflow)
Center-of-Mass det. time= 547.8 min (1,287.4 - 739.6)

Volume	Invert	Avail.Storage	Storage Description
#1	808.50'	230,693 cf	**Custom Stage Data (Conic)** Listed below (Recalc) 244,773 cf Overall - 14,080 cf Embedded = 230,693 cf
#2	808.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		236,325 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
808.50	3,520	0	0	3,520
809.00	3,520	1,760	1,760	3,625
810.00	3,520	3,520	5,280	3,835
811.00	3,520	3,520	8,800	4,046
812.00	3,520	3,520	12,320	4,256
813.00	3,520	3,520	15,840	4,466
814.00	8,931	6,019	21,859	9,884
815.00	17,294	12,884	34,744	18,257
816.00	40,146	27,930	62,673	41,116
817.00	42,792	41,462	104,135	43,859
818.00	45,490	44,134	148,269	46,658
819.00	48,243	46,860	195,129	49,516
820.00	51,058	49,644	244,773	52,440

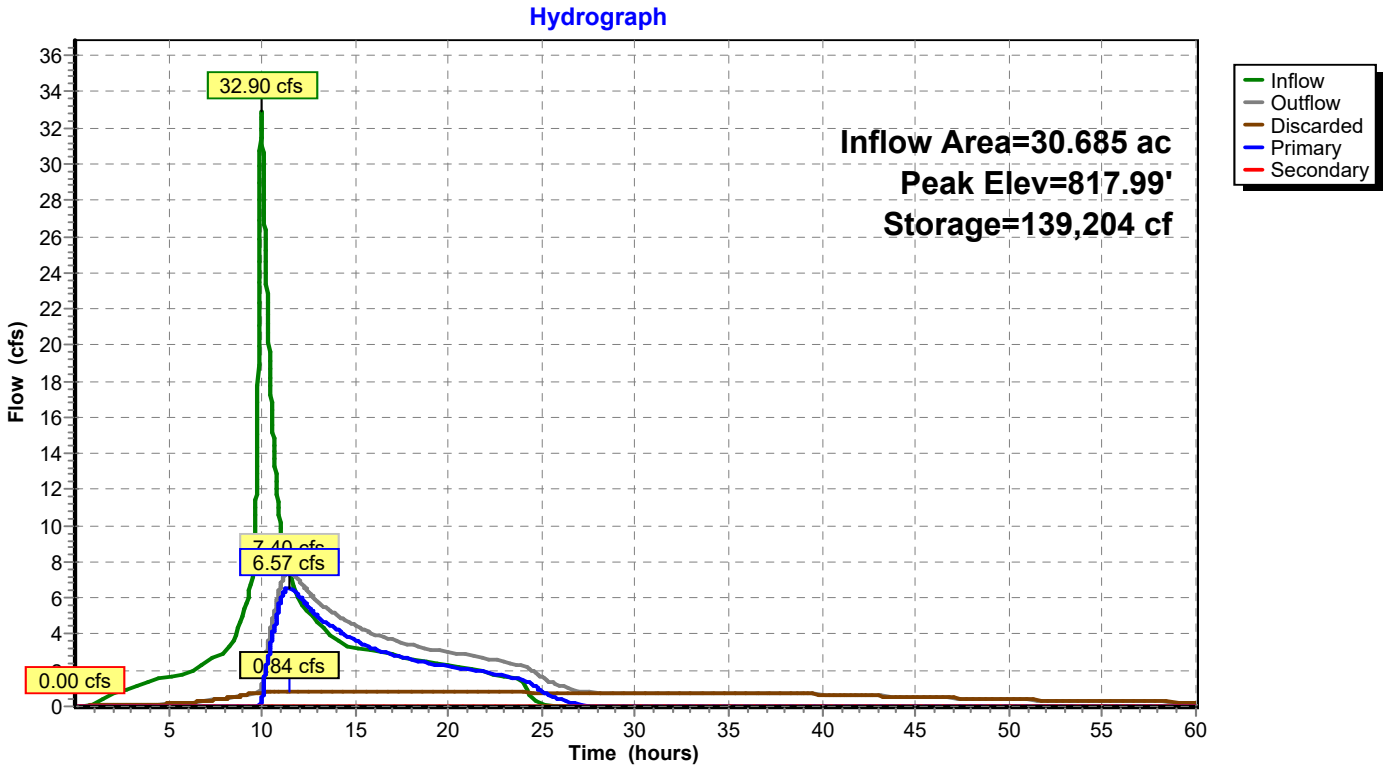
Device	Routing	Invert	Outlet Devices
#1	Primary	816.00'	**30.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 816.00' / 815.10' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	808.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	816.67'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	817.33'	**15.0" W x 18.0" H Vert. Orifice/Grate** X 2 rows with 8.0" cc spacing C= 0.600
#5	Device 1	817.83'	**60.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	819.00'	**78.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Secondary	819.33'	**36.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.84 cfs @ 11.45 hrs HW=817.99' (Free Discharge)
└─**2=Exfiltration** (Controls 0.84 cfs)

Primary OutFlow Max=6.57 cfs @ 11.45 hrs HW=817.99' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 6.57 cfs of 20.07 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 3.44 cfs @ 5.16 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 2.13 cfs @ 2.60 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 0.99 cfs @ 1.27 fps)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=808.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B10: Basin 10



Summary for Pond B11: Basin 11

Inflow Area = 14.461 ac, 52.00% Impervious, Inflow Depth = 2.64" for 25 Year event
Inflow = 20.25 cfs @ 9.96 hrs, Volume= 3.183 af
Outflow = 5.50 cfs @ 10.55 hrs, Volume= 2.921 af, Atten= 73%, Lag= 35.2 min
Discarded = 0.26 cfs @ 10.55 hrs, Volume= 0.785 af
Primary = 5.24 cfs @ 10.55 hrs, Volume= 2.136 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 833.60' @ 10.55 hrs Surf.Area= 13,196 sf Storage= 51,986 cf

Plug-Flow detention time= 423.5 min calculated for 2.921 af (92% of inflow)
Center-of-Mass det. time= 370.7 min (1,111.8 - 741.1)

Volume	Invert	Avail.Storage	Storage Description
#1	823.50'	83,101 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 97,181 cf Overall - 14,080 cf Embedded = 83,101 cf
#2	823.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		88,733 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
823.50	3,520	0	0
824.00	3,520	1,760	1,760
825.00	3,520	3,520	5,280
826.00	3,520	3,520	8,800
827.00	3,520	3,520	12,320
828.00	3,520	3,520	15,840
829.00	2,800	3,160	19,000
830.00	6,900	4,850	23,850
831.00	8,919	7,910	31,760
832.00	10,515	9,717	41,477
833.00	12,169	11,342	52,819
834.00	13,879	13,024	65,843
835.00	15,655	14,767	80,610
836.00	17,488	16,572	97,181

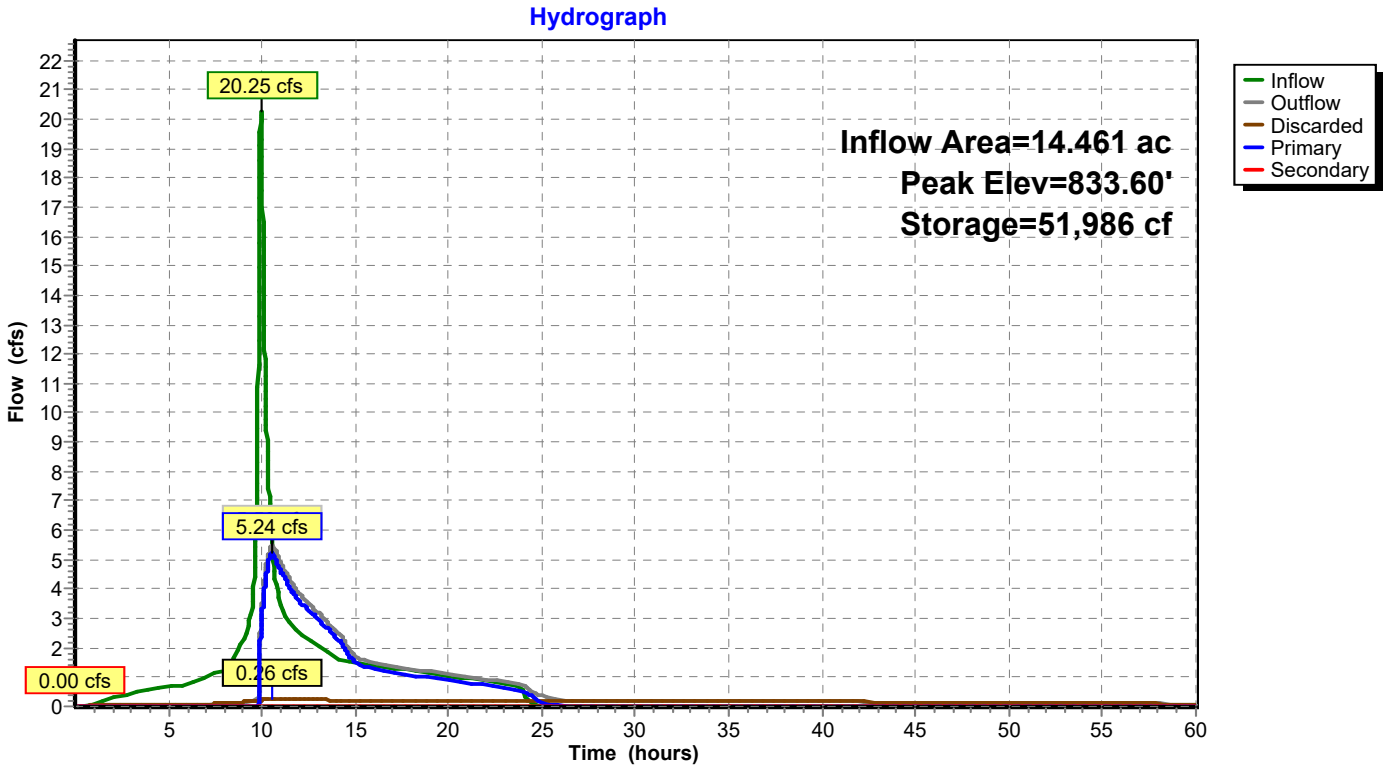
Device	Routing	Invert	Outlet Devices
#1	Primary	831.67'	**24.0" Round Culvert** L= 165.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 831.67' / 820.50' S= 0.0677 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Discarded	823.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	831.67'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	833.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	833.50'	**27.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	834.50'	**48.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Secondary	834.83'	**16.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.26 cfs @ 10.55 hrs HW=833.60' (Free Discharge)
└─**2=Exfiltration** (Controls 0.26 cfs)

Primary OutFlow Max=5.24 cfs @ 10.55 hrs HW=833.60' TW=825.04' (Dynamic Tailwater)
└─**1=Culvert** (Passes 5.24 cfs of 14.70 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 4.26 cfs @ 6.39 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.75 cfs @ 2.49 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 0.23 cfs @ 1.02 fps)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=823.50' TW=820.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B11: Basin 11



Summary for Pond B12: Basin 12

Inflow Area = 20.201 ac, 44.06% Impervious, Inflow Depth = 2.44" for 25 Year event
Inflow = 26.91 cfs @ 9.96 hrs, Volume= 4.105 af
Outflow = 3.20 cfs @ 12.16 hrs, Volume= 3.831 af, Atten= 88%, Lag= 131.7 min
Discarded = 0.49 cfs @ 12.16 hrs, Volume= 1.514 af
Primary = 2.71 cfs @ 12.16 hrs, Volume= 2.317 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 838.07' @ 12.16 hrs Surf.Area= 26,220 sf Storage= 78,816 cf

Plug-Flow detention time= 553.8 min calculated for 3.830 af (93% of inflow)
Center-of-Mass det. time= 511.0 min (1,261.2 - 750.2)

Volume	Invert	Avail.Storage	Storage Description
#1	828.50'	160,016 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 174,096 cf Overall - 14,080 cf Embedded = 160,016 cf
#2	828.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		165,648 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
828.50	3,520	0	0
829.00	3,520	1,760	1,760
830.00	3,520	3,520	5,280
831.00	3,520	3,520	8,800
832.00	3,520	3,520	12,320
833.00	3,520	3,520	15,840
834.00	2,600	3,060	18,900
835.00	8,000	5,300	24,200
836.00	20,849	14,425	38,625
837.00	23,415	22,132	60,757
838.00	26,037	24,726	85,483
839.00	28,717	27,377	112,860
840.00	31,383	30,050	142,910
841.00	30,990	31,187	174,096

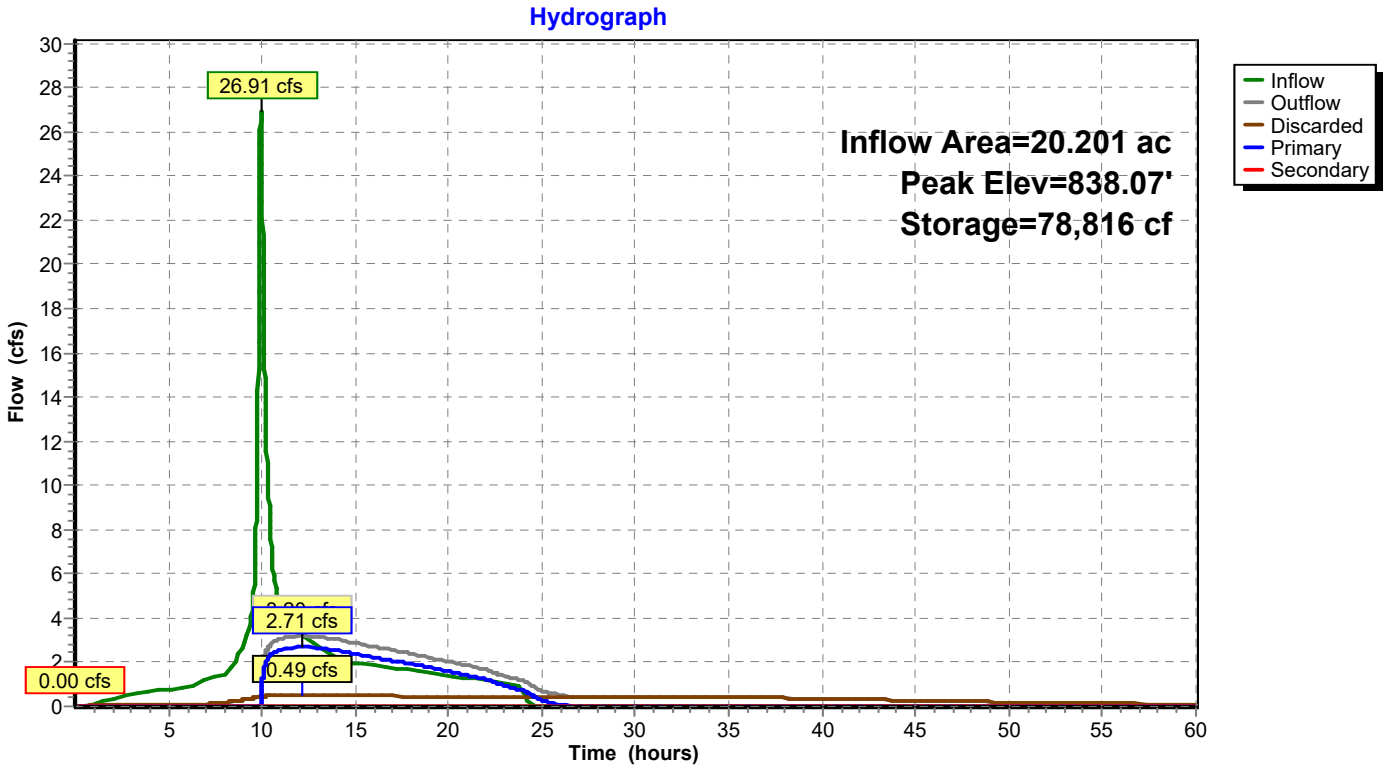
Device	Routing	Invert	Outlet Devices
#1	Primary	836.67'	**30.0" Round Culvert** L= 130.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.67' / 832.50' S= 0.0321 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	828.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	836.67'	**18.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	838.00'	**8.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	838.50'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	839.50'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Secondary	840.00'	**18.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.49 cfs @ 12.16 hrs HW=838.07' (Free Discharge)
└─**2=Exfiltration** (Controls 0.49 cfs)

Primary OutFlow Max=2.71 cfs @ 12.16 hrs HW=838.07' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.71 cfs of 11.37 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 2.67 cfs @ 5.34 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.04 cfs @ 0.84 fps)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=828.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B12: Basin 12



Summary for Pond B13: Basin 13

Inflow Area = 64.115 ac, 22.11% Impervious, Inflow Depth = 2.42" for 25 Year event
Inflow = 89.20 cfs @ 9.96 hrs, Volume= 12.943 af
Outflow = 62.52 cfs @ 10.09 hrs, Volume= 12.522 af, Atten= 30%, Lag= 7.7 min
Discarded = 0.46 cfs @ 10.09 hrs, Volume= 1.355 af
Primary = 62.05 cfs @ 10.09 hrs, Volume= 11.167 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 843.86' @ 10.09 hrs Surf.Area= 0.549 ac Storage= 2.981 af

Plug-Flow detention time= 223.5 min calculated for 12.520 af (97% of inflow)
Center-of-Mass det. time= 202.7 min (979.2 - 776.5)

Volume	Invert	Avail.Storage	Storage Description
#1	830.50'	4.138 af	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4.461 af Overall - 0.323 af Embedded = 4.138 af
#2	830.50'	0.129 af	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 0.323 af Overall x 40.0% Voids
		4.267 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
830.50	0.081	0.000	0.000
831.00	0.081	0.040	0.040
832.00	0.081	0.081	0.121
833.00	0.081	0.081	0.202
834.00	0.081	0.081	0.283
835.00	0.081	0.081	0.364
836.00	0.059	0.070	0.433
837.00	0.139	0.099	0.532
838.00	0.287	0.213	0.745
839.00	0.329	0.308	1.053
840.00	0.372	0.350	1.403
841.00	0.416	0.394	1.797
842.00	0.461	0.439	2.236
843.00	0.508	0.484	2.720
844.00	0.555	0.531	3.251
845.00	0.605	0.580	3.831
846.00	0.655	0.630	4.461

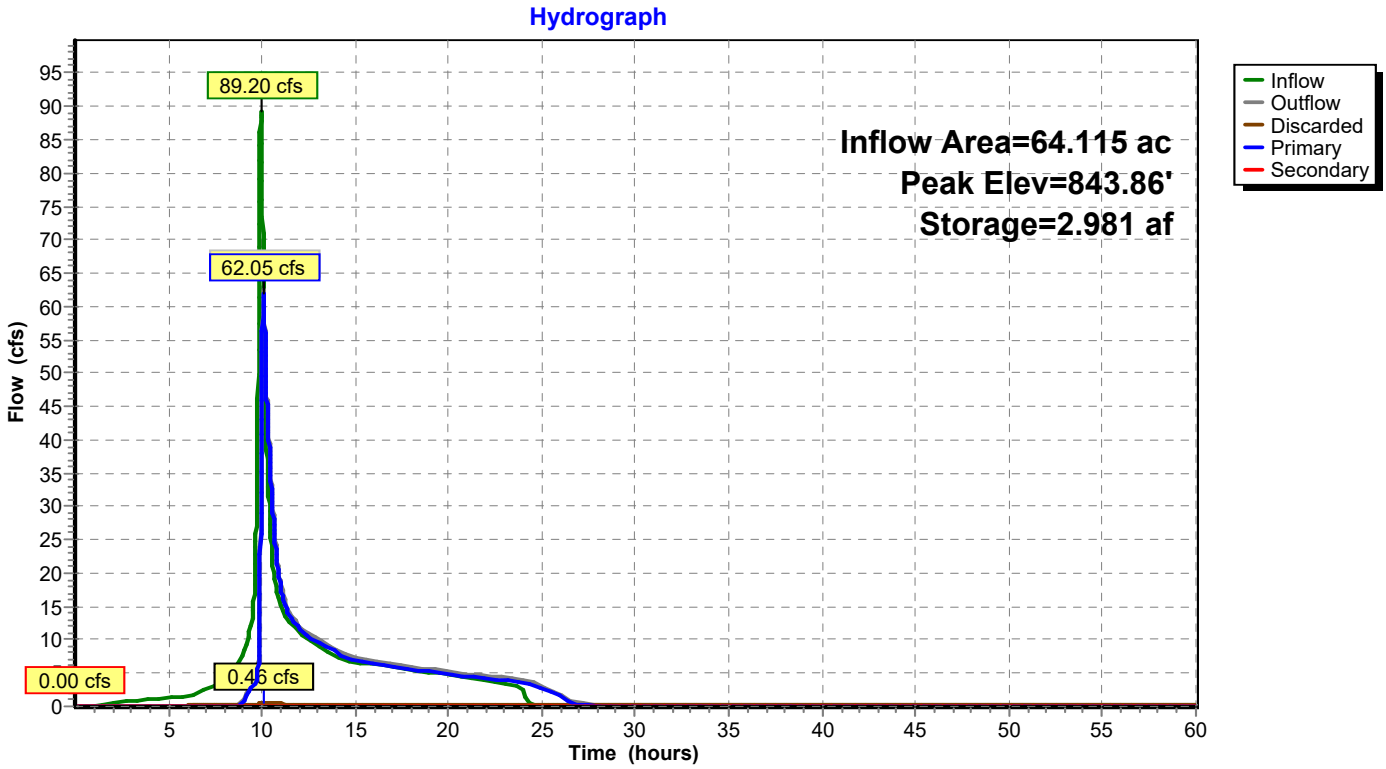
Device	Routing	Invert	Outlet Devices
#1	Primary	834.25'	**48.0" Round Culvert** L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 834.25' / 832.50' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Discarded	830.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	839.67'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	841.50'	**15.0" W x 18.0" H Vert. Orifice/Grate** X 2 rows with 8.0" cc spacing C= 0.600
#5	Device 1	842.50'	**60.0" W x 8.0" H Vert. Orifice/Grate** X 2 rows with 8.0" cc spacing C= 0.600
#6	Device 1	843.67'	**78.0" x 36.0" Horiz. Orifice/Grate** X 2 rows C= 0.600 Limited to weir flow at low heads
#7	Secondary	844.67'	**36.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.46 cfs @ 10.09 hrs HW=843.86' (Free Discharge)
└─**2=Exfiltration** (Controls 0.46 cfs)

Primary OutFlow Max=62.05 cfs @ 10.09 hrs HW=843.86' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 62.05 cfs of 166.92 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 6.44 cfs @ 9.66 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 19.85 cfs @ 5.29 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 25.40 cfs @ 3.81 fps)
  └─**6=Orifice/Grate** (Weir Controls 10.35 cfs @ 1.43 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=830.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B13: Basin 13



Summary for Pond B4: Basin 4

Inflow Area = 38.712 ac, 55.38% Impervious, Inflow Depth = 2.73" for 25 Year event
Inflow = 50.91 cfs @ 9.97 hrs, Volume= 8.821 af
Outflow = 20.05 cfs @ 10.46 hrs, Volume= 8.559 af, Atten= 61%, Lag= 29.1 min
Discarded = 0.57 cfs @ 10.46 hrs, Volume= 1.674 af
Primary = 19.48 cfs @ 10.46 hrs, Volume= 6.886 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 839.49' @ 10.46 hrs Surf.Area= 28,324 sf Storage= 126,212 cf

Plug-Flow detention time= 352.0 min calculated for 8.559 af (97% of inflow)
Center-of-Mass det. time= 331.7 min (1,072.0 - 740.3)

Volume	Invert	Avail.Storage	Storage Description
#1	827.50'	218,652 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 232,732 cf Overall - 14,080 cf Embedded = 218,652 cf
#2	827.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		224,284 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
827.50	3,520	0	0
828.00	3,520	1,760	1,760
829.00	3,520	3,520	5,280
830.00	3,520	3,520	8,800
831.00	3,520	3,520	12,320
832.00	3,520	3,520	15,840
833.00	1,064	2,292	18,132
834.00	6,719	3,892	22,024
835.00	16,858	11,789	33,812
836.00	19,297	18,078	51,890
837.00	21,780	20,539	72,428
838.00	24,350	23,065	95,493
839.00	27,007	25,679	121,172
840.00	29,708	28,358	149,529
841.00	32,452	31,080	180,609
842.00	35,196	33,824	214,433
842.50	38,000	18,299	232,732

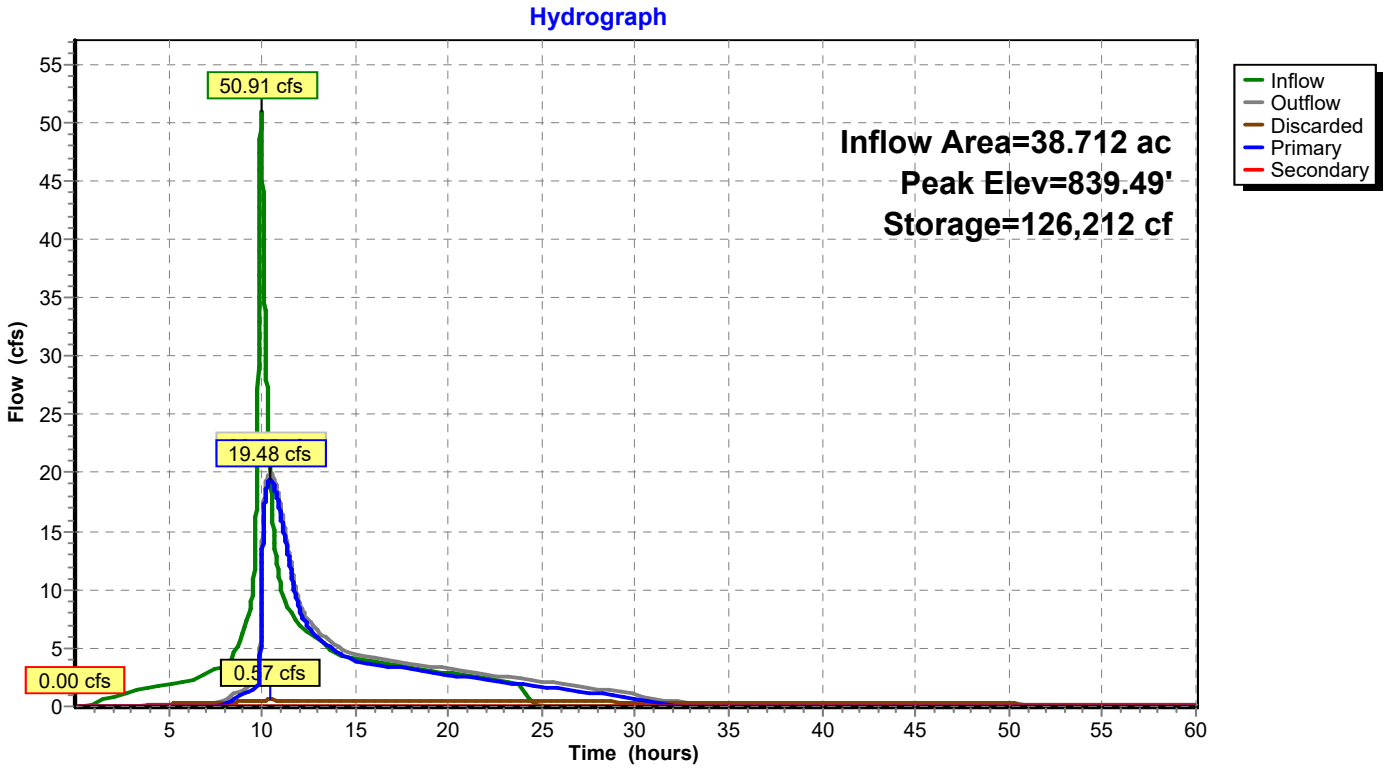
Device	Routing	Invert	Outlet Devices
#1	Primary	835.67'	**30.0" Round Culvert** L= 210.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 835.67' / 834.20' S= 0.0070 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	827.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	835.67'	**10.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	837.67'	**18.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	838.17'	**42.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	839.75'	**48.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 in 78.0" x 36.0" Grate (62% open area) Limited to weir flow at low heads
#7	Secondary	841.12'	**40.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.57 cfs @ 10.46 hrs HW=839.49' (Free Discharge)
└─**2=Exfiltration** (Controls 0.57 cfs)

Primary OutFlow Max=19.48 cfs @ 10.46 hrs HW=839.49' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 19.48 cfs of 37.02 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 2.56 cfs @ 9.20 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 8.24 cfs @ 5.49 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 8.69 cfs @ 4.96 fps)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=827.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B4: Basin 4



Summary for Pond B5: Basin 5

Inflow Area = 32.696 ac, 30.34% Impervious, Inflow Depth = 1.84" for 25 Year event
Inflow = 21.35 cfs @ 9.99 hrs, Volume= 5.016 af
Outflow = 7.52 cfs @ 10.91 hrs, Volume= 5.016 af, Atten= 65%, Lag= 55.5 min
Discarded = 0.39 cfs @ 10.91 hrs, Volume= 1.221 af
Primary = 7.13 cfs @ 10.91 hrs, Volume= 3.796 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 847.51' @ 10.91 hrs Surf.Area= 21,282 sf Storage= 64,298 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 301.0 min (1,083.7 - 782.8)

Volume	Invert	Avail.Storage	Storage Description
#1	844.00'	178,542 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.00	15,500	0	0
845.00	17,076	16,288	16,288
846.00	18,708	17,892	34,180
847.00	20,397	19,553	53,733
848.00	22,143	21,270	75,003
849.00	23,945	23,044	98,047
850.00	25,804	24,875	122,921
851.00	27,719	26,762	149,683
852.00	30,000	28,860	178,542

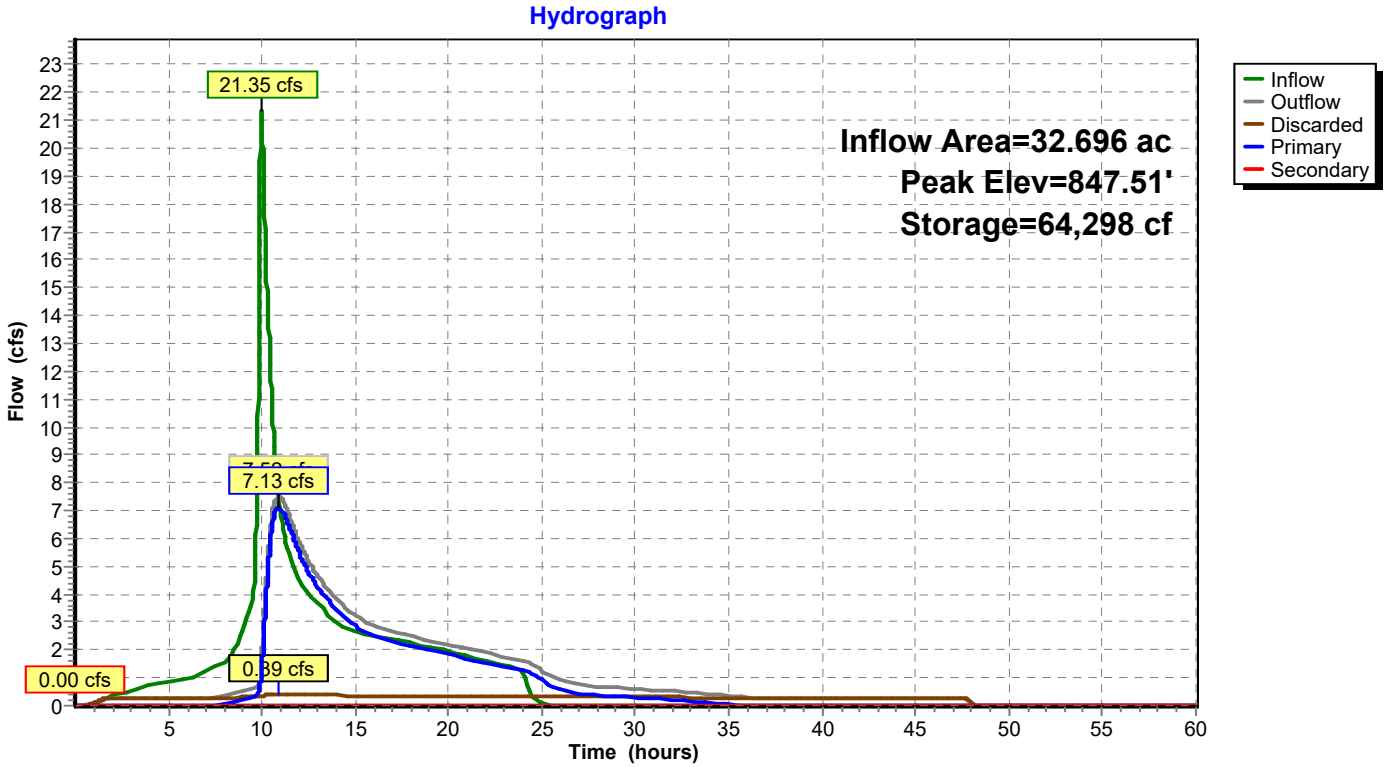
Device	Routing	Invert	Outlet Devices
#1	Primary	844.67'	**30.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 844.67' / 844.17' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	844.00'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#3	Device 1	844.67'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	845.67'	**6.0" W x 37.0" H Vert. Orifice/Grate** X 3 rows with 8.0" cc spacing C= 0.600
#5	Device 1	849.75'	**36.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 in 36.0" x 24.0" Grate (100% open area) Limited to weir flow at low heads
#6	Secondary	851.00'	**12.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.39 cfs @ 10.91 hrs HW=847.51' (Free Discharge)
└─**2=Exfiltration** (Controls 0.39 cfs)

Primary OutFlow Max=7.13 cfs @ 10.91 hrs HW=847.51' TW=845.86' (Dynamic Tailwater)
└─**1=Culvert** (Passes 7.13 cfs of 27.05 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 0.54 cfs @ 6.18 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 6.59 cfs @ 3.75 fps)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=844.00' (Free Discharge)
└─**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B5: Basin 5



Summary for Pond B6: Basin 6

Inflow Area = 34.039 ac, 52.56% Impervious, Inflow Depth = 2.72" for 25 Year event
Inflow = 37.81 cfs @ 9.98 hrs, Volume= 7.705 af
Outflow = 23.80 cfs @ 10.32 hrs, Volume= 7.412 af, Atten= 37%, Lag= 20.3 min
Discarded = 0.38 cfs @ 10.32 hrs, Volume= 1.034 af
Primary = 23.43 cfs @ 10.32 hrs, Volume= 6.379 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 851.40' @ 10.32 hrs Surf.Area= 0.450 ac Storage= 2.036 af

Plug-Flow detention time= 262.2 min calculated for 7.411 af (96% of inflow)
Center-of-Mass det. time= 236.8 min (986.9 - 750.1)

Volume	Invert	Avail.Storage	Storage Description
#1	839.50'	3.469 af	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3.792 af Overall - 0.323 af Embedded = 3.469 af
#2	839.50'	0.129 af	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 0.323 af Overall x 40.0% Voids
		3.598 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
839.50	0.081	0.000	0.000
840.00	0.081	0.040	0.040
841.00	0.081	0.081	0.121
842.00	0.081	0.081	0.202
843.00	0.081	0.081	0.283
844.00	0.081	0.081	0.364
845.00	0.061	0.071	0.435
846.00	0.133	0.097	0.532
847.00	0.260	0.196	0.729
848.00	0.292	0.276	1.005
849.00	0.325	0.309	1.313
850.00	0.360	0.343	1.656
851.00	0.434	0.397	2.053
852.00	0.474	0.454	2.507
854.40	0.597	1.285	3.792

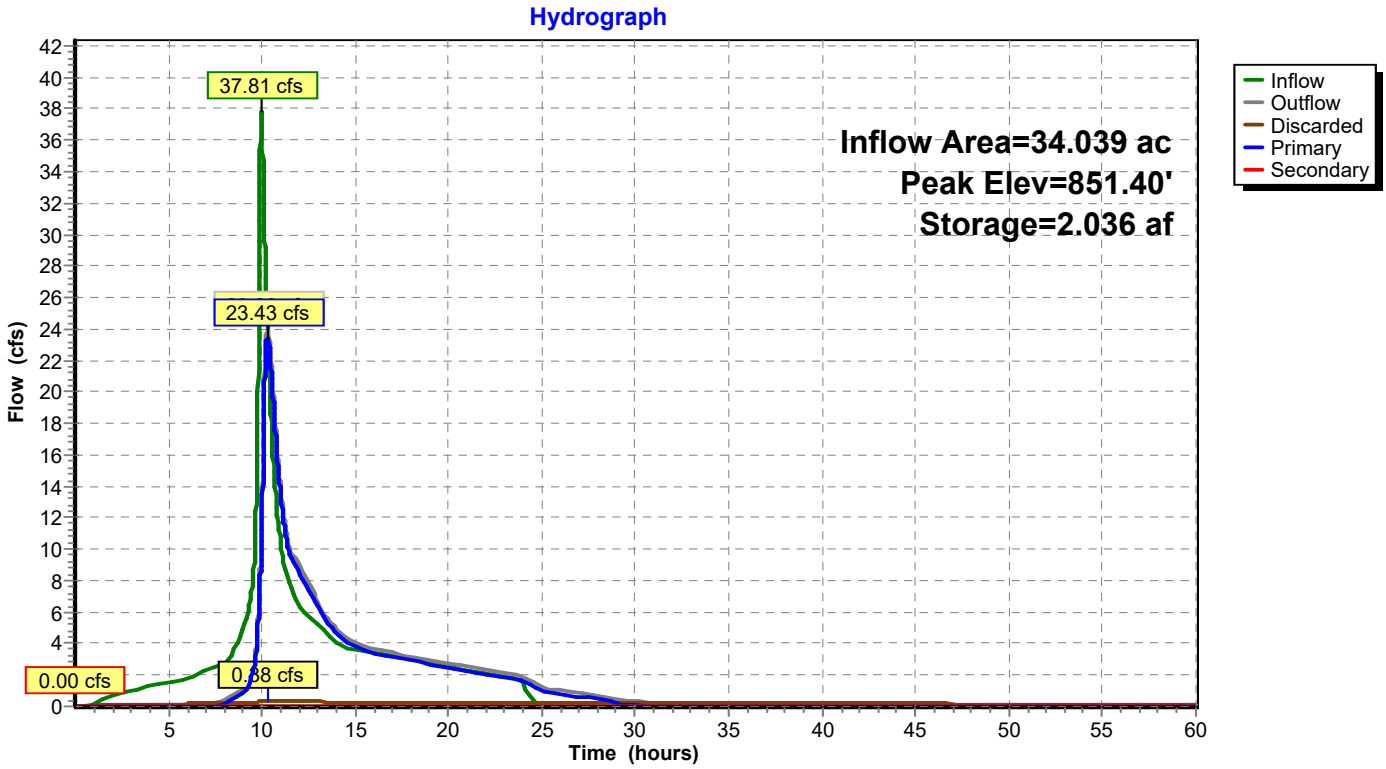
Device	Routing	Invert	Outlet Devices
#1	Primary	843.65'	**24.0" Round Culvert** L= 150.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 843.65' / 842.90' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Discarded	839.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	847.67'	**9.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	848.75'	**12.0" W x 9.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	849.50'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	850.67'	**69.6" W x 9.0" H Vert. Orifice/Grate** C= 0.600
#7	Secondary	852.88'	**40.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.38 cfs @ 10.32 hrs HW=851.40' (Free Discharge)
└─**2=Exfiltration** (Controls 0.38 cfs)

Primary OutFlow Max=23.43 cfs @ 10.32 hrs HW=851.40' TW=842.50' (Dynamic Tailwater)
└─**1=Culvert** (Passes 23.43 cfs of 36.55 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 1.71 cfs @ 9.14 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 5.44 cfs @ 7.26 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 4.64 cfs @ 6.18 fps)
  └─**6=Orifice/Grate** (Orifice Controls 11.64 cfs @ 2.74 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=839.50' TW=842.50' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B6: Basin 6



Summary for Pond B7: Basin 7

Inflow Area = 108.754 ac, 33.30% Impervious, Inflow Depth = 1.60" for 25 Year event
Inflow = 28.12 cfs @ 10.77 hrs, Volume= 14.500 af
Outflow = 13.10 cfs @ 13.10 hrs, Volume= 14.381 af, Atten= 53%, Lag= 139.9 min
Discarded = 1.20 cfs @ 13.10 hrs, Volume= 4.392 af
Primary = 11.90 cfs @ 13.10 hrs, Volume= 9.989 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 842.46' @ 13.10 hrs Surf.Area= 64,394 sf Storage= 178,348 cf

Plug-Flow detention time= 382.5 min calculated for 14.381 af (99% of inflow)
Center-of-Mass det. time= 369.7 min (1,302.9 - 933.3)

Volume	Invert	Avail.Storage	Storage Description
#1	839.00'	516,122 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
839.00	10,000	0	0
840.00	54,515	32,258	32,258
841.00	58,335	56,425	88,683
842.00	62,211	60,273	148,956
843.00	66,912	64,562	213,517
844.00	71,188	69,050	282,567
845.00	75,535	73,362	355,929
846.00	79,981	77,758	433,687
847.00	84,890	82,436	516,122

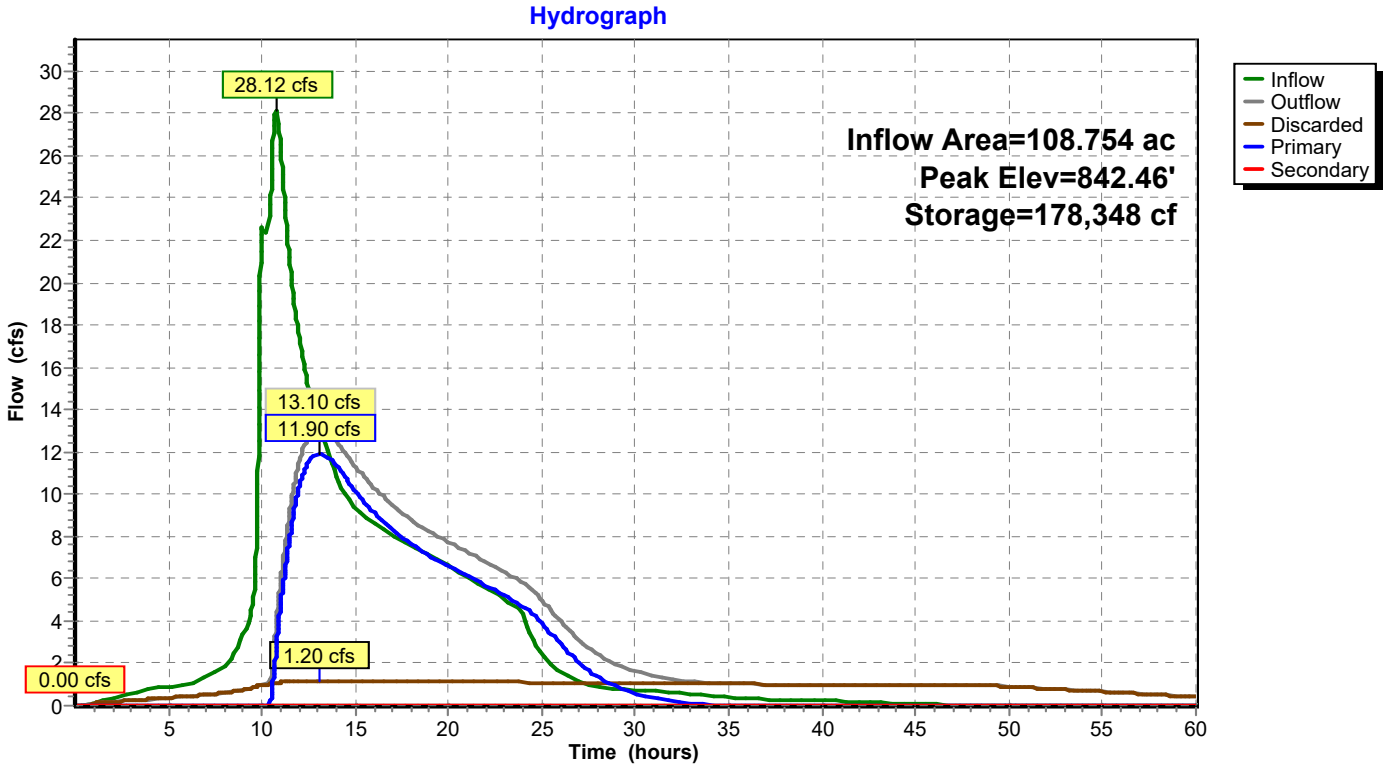
Device	Routing	Invert	Outlet Devices
#1	Primary	836.67'	**36.0" Round Culvert** L= 63.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.67' / 836.00' S= 0.0106 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Discarded	839.00'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#3	Device 1	840.75'	**26.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	841.25'	**12.0" W x 36.0" H Vert. Orifice/Grate** X 3 rows with 8.0" cc spacing C= 0.600
#5	Device 1	844.50'	**48.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 in 48.0" x 36.0" Grate (100% open area) Limited to weir flow at low heads
#6	Secondary	845.50'	**12.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=1.20 cfs @ 13.10 hrs HW=842.46' (Free Discharge)
└─**2=Exfiltration** (Controls 1.20 cfs)

Primary OutFlow Max=11.90 cfs @ 13.10 hrs HW=842.46' TW=837.33' (Dynamic Tailwater)
└─**1=Culvert** (Passes 11.90 cfs of 70.53 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 6.30 cfs @ 5.82 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 5.60 cfs @ 3.18 fps)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=839.00' (Free Discharge)
└─**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B7: Basin 7



Summary for Pond B8: Basin 8

Inflow Area = 44.689 ac, 35.47% Impervious, Inflow Depth = 2.02" for 25 Year event
Inflow = 28.75 cfs @ 9.99 hrs, Volume= 7.533 af
Outflow = 13.01 cfs @ 10.87 hrs, Volume= 7.533 af, Atten= 55%, Lag= 52.6 min
Discarded = 0.53 cfs @ 10.87 hrs, Volume= 1.876 af
Primary = 12.49 cfs @ 10.87 hrs, Volume= 5.657 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 857.57' @ 10.87 hrs Surf.Area= 28,347 sf Storage= 104,516 cf

Plug-Flow detention time= 429.7 min calculated for 7.531 af (100% of inflow)
Center-of-Mass det. time= 430.0 min (1,208.6 - 778.6)

Volume	Invert	Avail.Storage	Storage Description
#1	853.00'	147,517 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
853.00	17,554	0	0
854.00	19,812	18,683	18,683
855.00	22,126	20,969	39,652
856.00	24,497	23,312	62,964
857.00	26,924	25,711	88,674
858.00	29,407	28,166	116,840
859.00	31,948	30,678	147,517

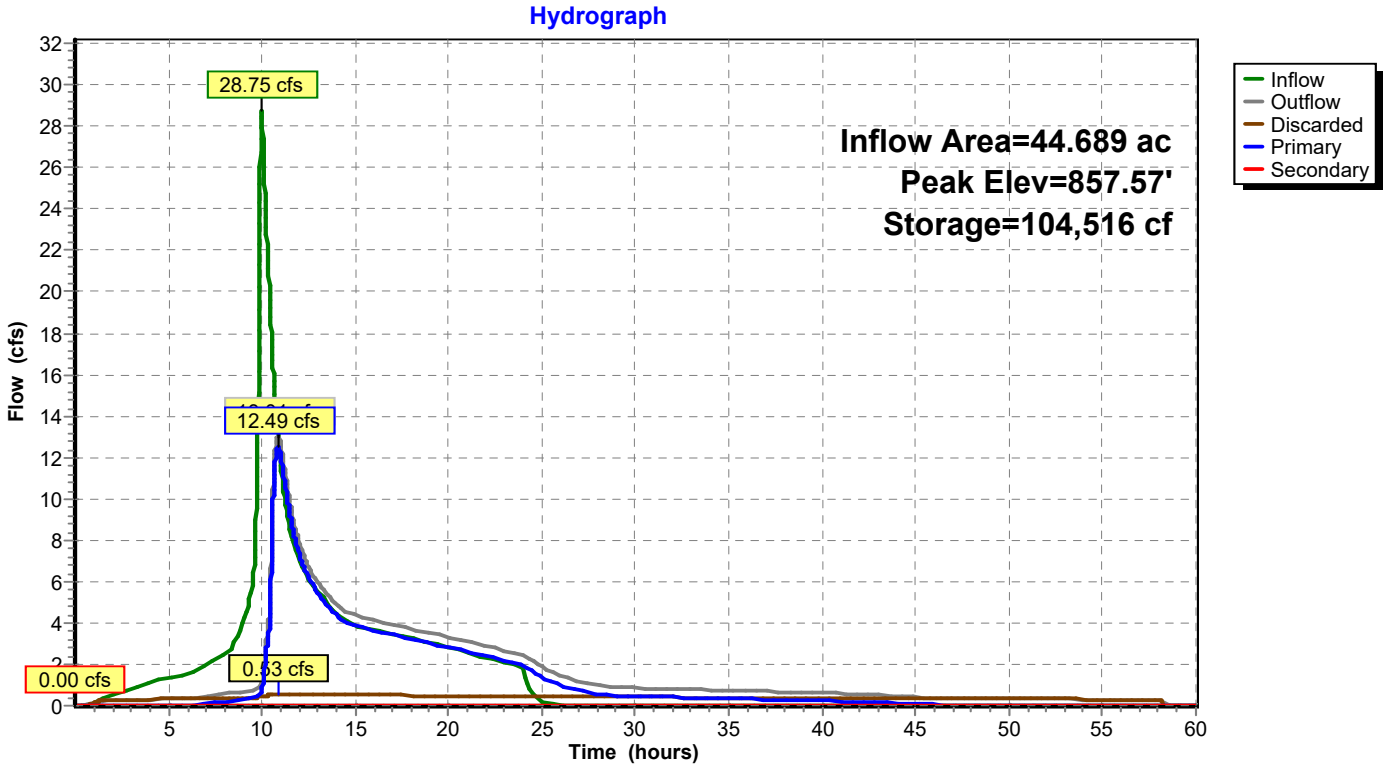
Device	Routing	Invert	Outlet Devices
#1	Primary	853.00'	**30.0" Round Culvert** L= 1,200.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 853.00' / 844.17' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	853.00'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#3	Device 1	853.58'	**2.0" W x 5.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	855.67'	**5.0" W x 12.0" H Vert. Orifice/Grate** X 4 rows with 8.0" cc spacing C= 0.600
#5	Device 1	857.25'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 in 36.0" x 36.0" Grate (100% open area) Limited to weir flow at low heads
#6	Secondary	858.75'	**16.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.53 cfs @ 10.87 hrs HW=857.57' (Free Discharge)
└─**2=Exfiltration** (Controls 0.53 cfs)

Primary OutFlow Max=12.49 cfs @ 10.87 hrs HW=857.57' TW=845.85' (Dynamic Tailwater)
└─**1=Culvert** (Passes 12.49 cfs of 39.28 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 0.65 cfs @ 9.37 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 4.62 cfs @ 4.32 fps)
  └─**5=Orifice/Grate** (Weir Controls 7.21 cfs @ 1.86 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=853.00' (Free Discharge)
└─**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B8: Basin 8



Summary for Pond B9: Basin 9

Inflow Area = 11.446 ac, 17.36% Impervious, Inflow Depth = 1.49" for 25 Year event
Inflow = 5.46 cfs @ 9.99 hrs, Volume= 1.422 af
Outflow = 3.56 cfs @ 10.42 hrs, Volume= 1.421 af, Atten= 35%, Lag= 25.8 min
Primary = 3.56 cfs @ 10.42 hrs, Volume= 1.421 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 849.00' @ 10.42 hrs Surf.Area= 7,411 sf Storage= 6,676 cf

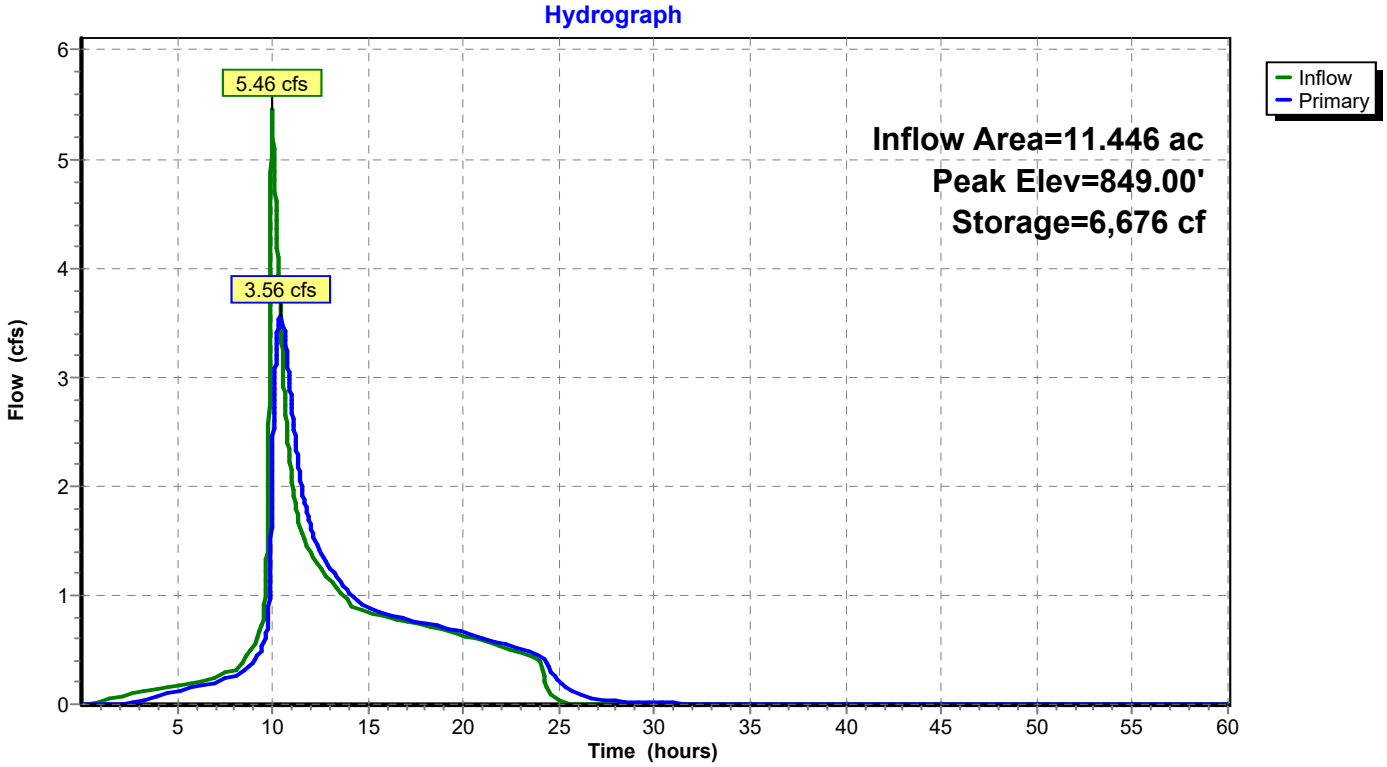
Plug-Flow detention time= 55.5 min calculated for 1.421 af (100% of inflow)
Center-of-Mass det. time= 55.1 min (874.2 - 819.1)

Volume	Invert	Avail.Storage	Storage Description
#1	848.00'	48,750 cf	**30.00'W x 200.00'L x 5.00'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	848.00'	**18.0" Round Culvert** L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 848.00' / 847.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	848.00'	**15.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=3.56 cfs @ 10.42 hrs HW=849.00' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.56 cfs of 4.24 cfs potential flow)
└─**2=Orifice/Grate** (Orifice Controls 3.56 cfs @ 3.40 fps)

Pond B9: Basin 9



Summary for Pond Ex SD: Tract #1632 Ex. 36" SD Outlet

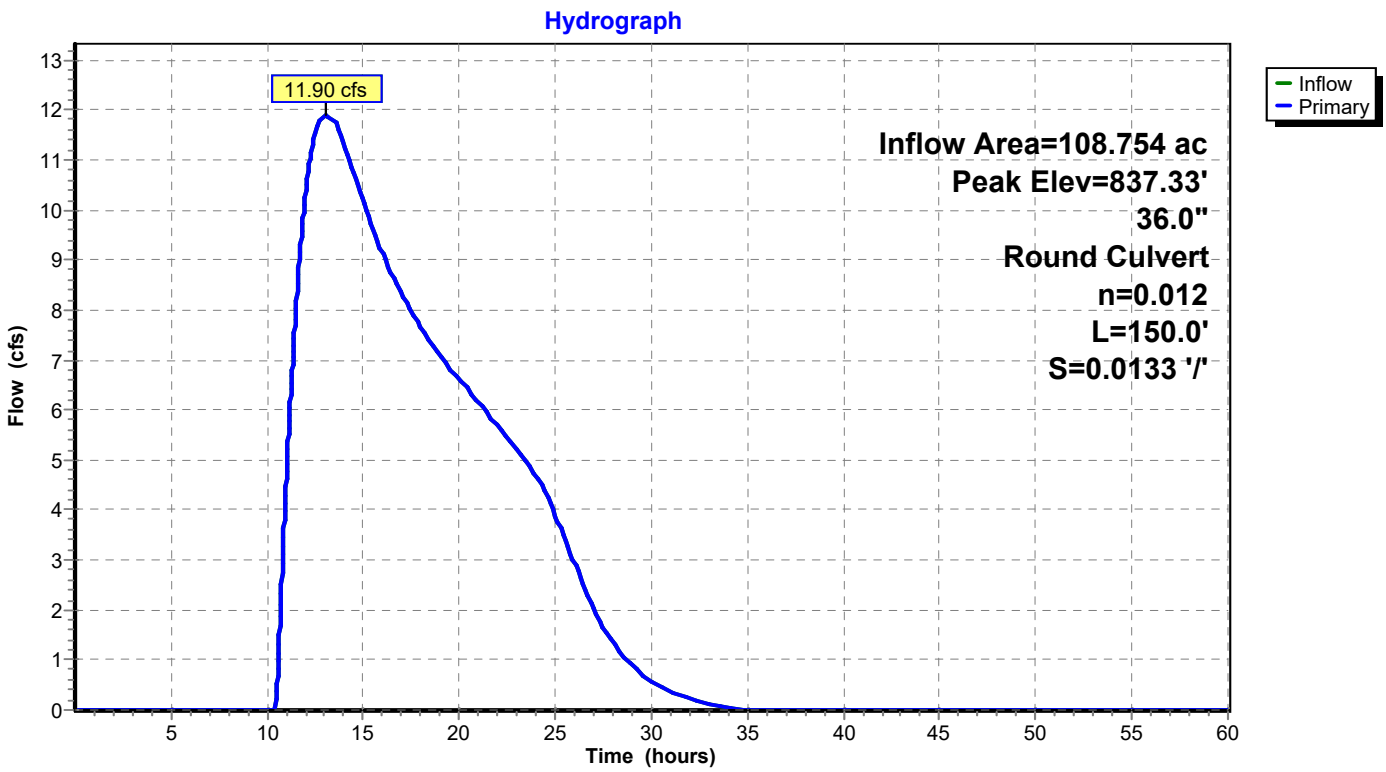
Inflow Area = 108.754 ac, 33.30% Impervious, Inflow Depth = 1.10" for 25 Year event
Inflow = 11.90 cfs @ 13.10 hrs, Volume= 9.989 af
Outflow = 11.90 cfs @ 13.10 hrs, Volume= 9.989 af, Atten= 0%, Lag= 0.0 min
Primary = 11.90 cfs @ 13.10 hrs, Volume= 9.989 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 837.33' @ 13.10 hrs
Flood Elev= 843.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	836.00'	**36.0" Round Culvert** L= 150.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.00' / 834.00' S= 0.0133 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=11.90 cfs @ 13.10 hrs HW=837.33' TW=835.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 11.90 cfs @ 3.93 fps)

Pond Ex SD: Tract #1632 Ex. 36" SD Outlet



Summary for Pond MC Q: SD System

[58] Hint: Peaked 0.46' above defined flood level

Inflow Area =	21.500 ac, 80.00% Impervious, Inflow Depth = 3.43" for 25 Year event				
Inflow =	33.79 cfs @	9.97 hrs,	Volume=	6.138 af	
Outflow =	33.60 cfs @	9.99 hrs,	Volume=	5.857 af,	Atten= 1%, Lag= 0.8 min
Discarded =	0.12 cfs @	9.99 hrs,	Volume=	0.372 af	
Primary =	16.26 cfs @	9.99 hrs,	Volume=	2.664 af	
Secondary =	17.22 cfs @	9.99 hrs,	Volume=	2.821 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 845.96' @ 9.99 hrs Surf.Area= 0.130 ac Storage= 0.526 af
Flood Elev= 845.50' Surf.Area= 0.097 ac Storage= 0.474 af

Plug-Flow detention time= 129.5 min calculated for 5.857 af (95% of inflow)
Center-of-Mass det. time= 98.1 min (819.5 - 721.4)

Volume	Invert	Avail.Storage	Storage Description
#1	839.50'	0.607 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
839.50	0.081	0.000	0.000
840.00	0.081	0.040	0.040
841.00	0.081	0.081	0.121
842.00	0.081	0.081	0.202
843.00	0.081	0.081	0.283
844.00	0.081	0.081	0.364
845.00	0.061	0.071	0.434
846.00	0.133	0.097	0.531
846.50	0.172	0.076	0.607

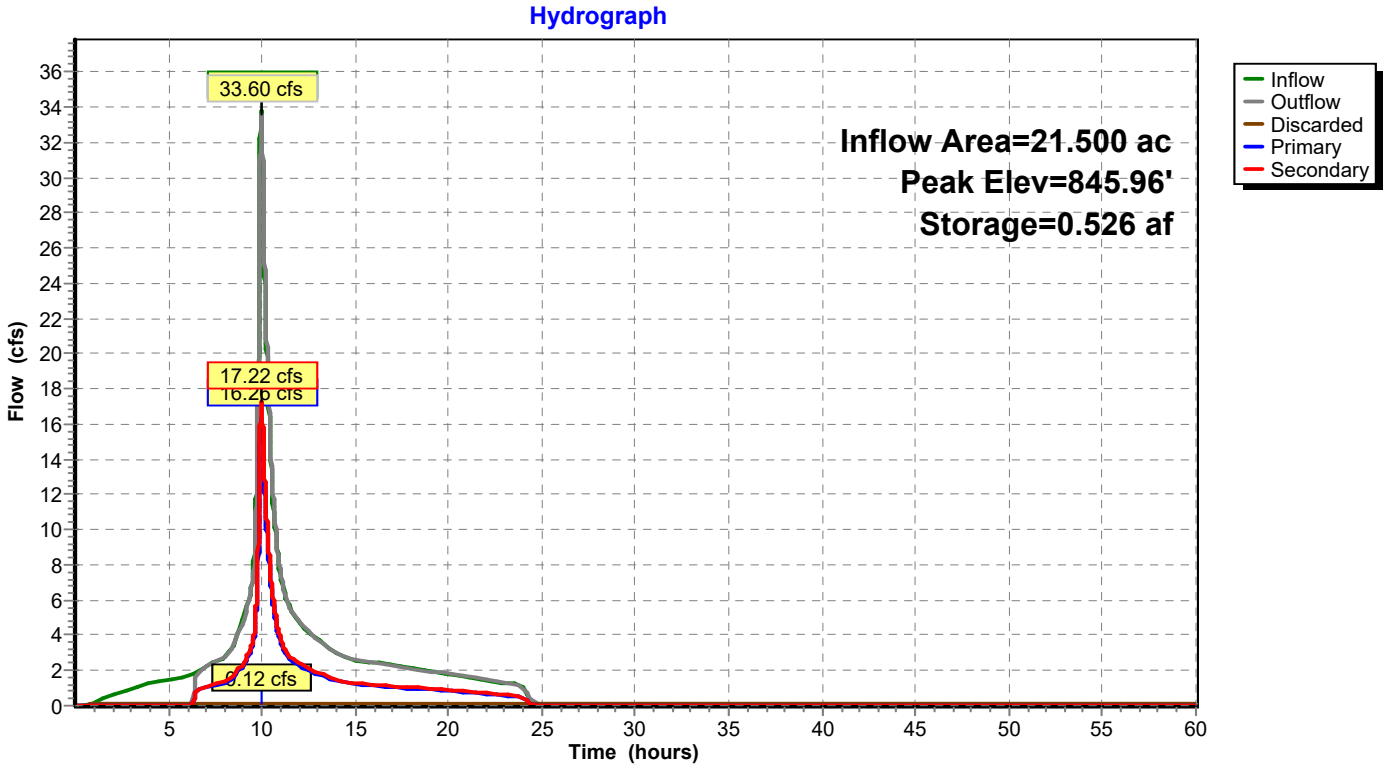
Device	Routing	Invert	Outlet Devices
#1	Primary	841.50'	**36.0" Round Culvert** L= 585.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 841.50' / 838.50' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	845.50'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	839.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 750.00'
#4	Secondary	845.50'	**20.0' long (Profile 4) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.77 2.97 3.21

Discarded OutFlow Max=0.12 cfs @ 9.99 hrs HW=845.96' (Free Discharge)
└─**3=Exfiltration** (Controls 0.12 cfs)

Primary OutFlow Max=16.25 cfs @ 9.99 hrs HW=845.96' TW=840.22' (Dynamic Tailwater)
└─**1=Culvert** (Passes 16.25 cfs of 52.94 cfs potential flow)
  └─**2=Orifice/Grate** (Weir Controls 16.25 cfs @ 2.21 fps)

Secondary OutFlow Max=17.21 cfs @ 9.99 hrs HW=845.96' TW=835.44' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 17.21 cfs @ 1.88 fps)

Pond MC Q: SD System



Summary for Pond SD: 42" HDPE SD

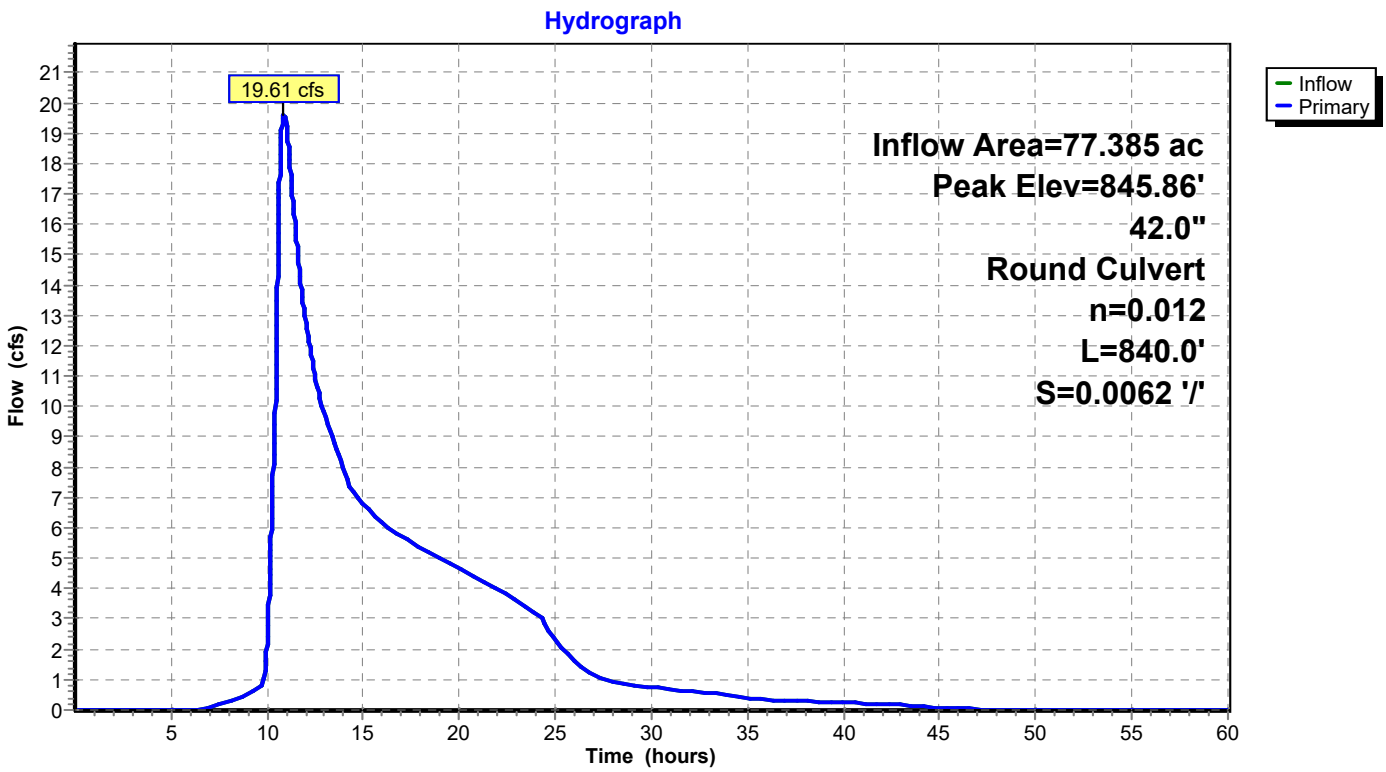
Inflow Area = 77.385 ac, 33.30% Impervious, Inflow Depth = 1.47" for 25 Year event
Inflow = 19.61 cfs @ 10.87 hrs, Volume= 9.453 af
Outflow = 19.61 cfs @ 10.87 hrs, Volume= 9.453 af, Atten= 0%, Lag= 0.0 min
Primary = 19.61 cfs @ 10.87 hrs, Volume= 9.453 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 845.86' @ 10.93 hrs
Flood Elev= 853.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	844.17'	**42.0" Round Culvert** L= 840.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 844.17' / 839.00' S= 0.0062 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=19.57 cfs @ 10.87 hrs HW=845.85' TW=841.43' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 19.57 cfs @ 6.26 fps)

Pond SD: 42" HDPE SD



Time span=0.01-60.00 hrs, dt=0.01 hrs, 6000 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Pond 1P: SD Inlet with Bypass SD Peak Elev=825.62' Inflow=73.26 cfs 14.523 af
Primary=73.26 cfs 14.523 af Secondary=0.00 cfs 0.000 af Outflow=73.26 cfs 14.523 af

Pond 2P: 60" SD MH Peak Elev=840.33' Inflow=18.03 cfs 2.986 af
Primary=18.03 cfs 2.986 af Secondary=0.00 cfs 0.000 af Outflow=18.03 cfs 2.986 af

Pond 15P: SD System 42" HDPE Peak Elev=844.59' Inflow=51.10 cfs 2.683 af
Outflow=51.10 cfs 2.683 af

Pond 16P: Dbl Conc. Arch Culvert (37x23) Peak Elev=844.57' Inflow=17.74 cfs 5.377 af
36.3" x 22.5", R=18.8"/51.0" Pipe Arch Culvert x 2.00 n=0.011 L=860.0' S=0.0024 '/' Outflow=17.74 cfs 5.377 af

Pond 17P: Gran Cielo Dwy Peak Elev=855.09' Storage=11,735 cf Inflow=188.40 cfs 35.620 af
Primary=111.11 cfs 33.164 af Secondary=0.18 cfs 0.002 af Tertiary=76.79 cfs 2.454 af Outflow=188.08 cfs 35.620 af

Pond 18P: GC-CkD1 Peak Elev=849.76' Storage=16,732 cf Inflow=200.71 cfs 49.854 af
Primary=0.59 cfs 0.031 af Secondary=35.96 cfs 1.101 af Tertiary=156.05 cfs 48.688 af Outflow=192.48 cfs 49.820 af

Pond 19P: GC-CkD2 Peak Elev=849.25' Storage=23,653 cf Inflow=58.68 cfs 4.902 af
Primary=1.27 cfs 1.460 af Secondary=41.32 cfs 3.201 af Tertiary=10.96 cfs 0.240 af Outflow=53.55 cfs 4.901 af

Pond 20P: GC-CkD3 Peak Elev=845.88' Storage=14,445 cf Inflow=55.32 cfs 7.106 af
Primary=6.01 cfs 3.774 af Secondary=8.13 cfs 0.878 af Tertiary=40.20 cfs 2.444 af Outflow=54.35 cfs 7.095 af

Pond B1: Basin 1 Peak Elev=837.56' Storage=5.949 af Inflow=115.89 cfs 15.158 af
Discarded=1.12 cfs 3.177 af Primary=35.49 cfs 11.591 af Secondary=0.00 cfs 0.000 af Outflow=36.61 cfs 14.768 af

Pond B10: Basin 10 Peak Elev=818.15' Storage=146,516 cf Inflow=36.90 cfs 8.017 af
Discarded=0.85 cfs 2.841 af Primary=9.72 cfs 4.707 af Secondary=0.00 cfs 0.000 af Outflow=10.57 cfs 7.548 af

Pond B11: Basin 11 Peak Elev=833.87' Storage=55,671 cf Inflow=22.92 cfs 3.580 af
Discarded=0.27 cfs 0.793 af Primary=7.55 cfs 2.524 af Secondary=0.00 cfs 0.000 af Outflow=7.82 cfs 3.317 af

Pond B12: Basin 12 Peak Elev=838.38' Storage=87,046 cf Inflow=30.70 cfs 4.642 af
Discarded=0.51 cfs 1.546 af Primary=3.48 cfs 2.819 af Secondary=0.00 cfs 0.000 af Outflow=3.99 cfs 4.365 af

Pond B13: Basin 13 Peak Elev=844.03' Storage=3.076 af Inflow=102.50 cfs 14.744 af
Discarded=0.47 cfs 1.375 af Primary=84.13 cfs 12.945 af Secondary=0.00 cfs 0.000 af Outflow=84.60 cfs 14.320 af

Pond B4: Basin 4 Peak Elev=839.85' Storage=136,770 cf Inflow=57.43 cfs 9.900 af
Discarded=0.59 cfs 1.698 af Primary=23.63 cfs 7.938 af Secondary=0.00 cfs 0.000 af Outflow=24.21 cfs 9.636 af

Pond B5: Basin 5 Peak Elev=847.79' Storage=70,408 cf Inflow=25.03 cfs 5.762 af
Discarded=0.41 cfs 1.238 af Primary=9.31 cfs 4.524 af Secondary=0.00 cfs 0.000 af Outflow=9.72 cfs 5.762 af

Pond B6: Basin 6 Peak Elev=851.60' Storage=2.127 af Inflow=42.75 cfs 8.660 af
Discarded=0.38 cfs 1.047 af Primary=27.62 cfs 7.319 af Secondary=0.00 cfs 0.000 af Outflow=28.00 cfs 8.366 af

Pond B7: Basin 7 Peak Elev=842.80' Storage=200,494 cf Inflow=38.88 cfs 16.997 af
Discarded=1.23 cfs 4.463 af Primary=16.23 cfs 12.404 af Secondary=0.00 cfs 0.000 af Outflow=17.47 cfs 16.867 af

Pond B8: Basin 8 Peak Elev=857.70' Storage=108,148 cf Inflow=33.51 cfs 8.595 af
Discarded=0.53 cfs 1.899 af Primary=17.63 cfs 6.696 af Secondary=0.00 cfs 0.000 af Outflow=18.16 cfs 8.596 af

Pond B9: Basin 9 Peak Elev=849.15' Storage=7,800 cf Inflow=6.65 cfs 1.667 af
Outflow=4.29 cfs 1.665 af

Pond Ex SD: Tract #1632 **Ex. 36" SD Outlet** Peak Elev=837.58' Inflow=16.23 cfs 12.404 af
36.0" Round Culvert n=0.012 L=150.0' S=0.0133 '/' Outflow=16.23 cfs 12.404 af

Pond MC Q: SD System Peak Elev=845.99' Storage=0.530 af Inflow=37.43 cfs 6.803 af
Discarded=0.12 cfs 0.374 af Primary=18.03 cfs 2.986 af Secondary=19.09 cfs 3.162 af Outflow=37.24 cfs 6.522 af

Pond SD: 42" HDPE SD Peak Elev=846.18' Inflow=26.80 cfs 11.220 af
42.0" Round Culvert n=0.012 L=840.0' S=0.0062 '/' Outflow=26.80 cfs 11.220 af

Summary for Pond 1P: SD Inlet with Bypass SD

Inflow Area = 108.566 ac, 6.93% Impervious, Inflow Depth = 1.61" for 50 Year event
Inflow = 73.26 cfs @ 9.98 hrs, Volume= 14.523 af
Outflow = 73.26 cfs @ 9.98 hrs, Volume= 14.523 af, Atten= 0%, Lag= 0.0 min
Primary = 73.26 cfs @ 9.98 hrs, Volume= 14.523 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

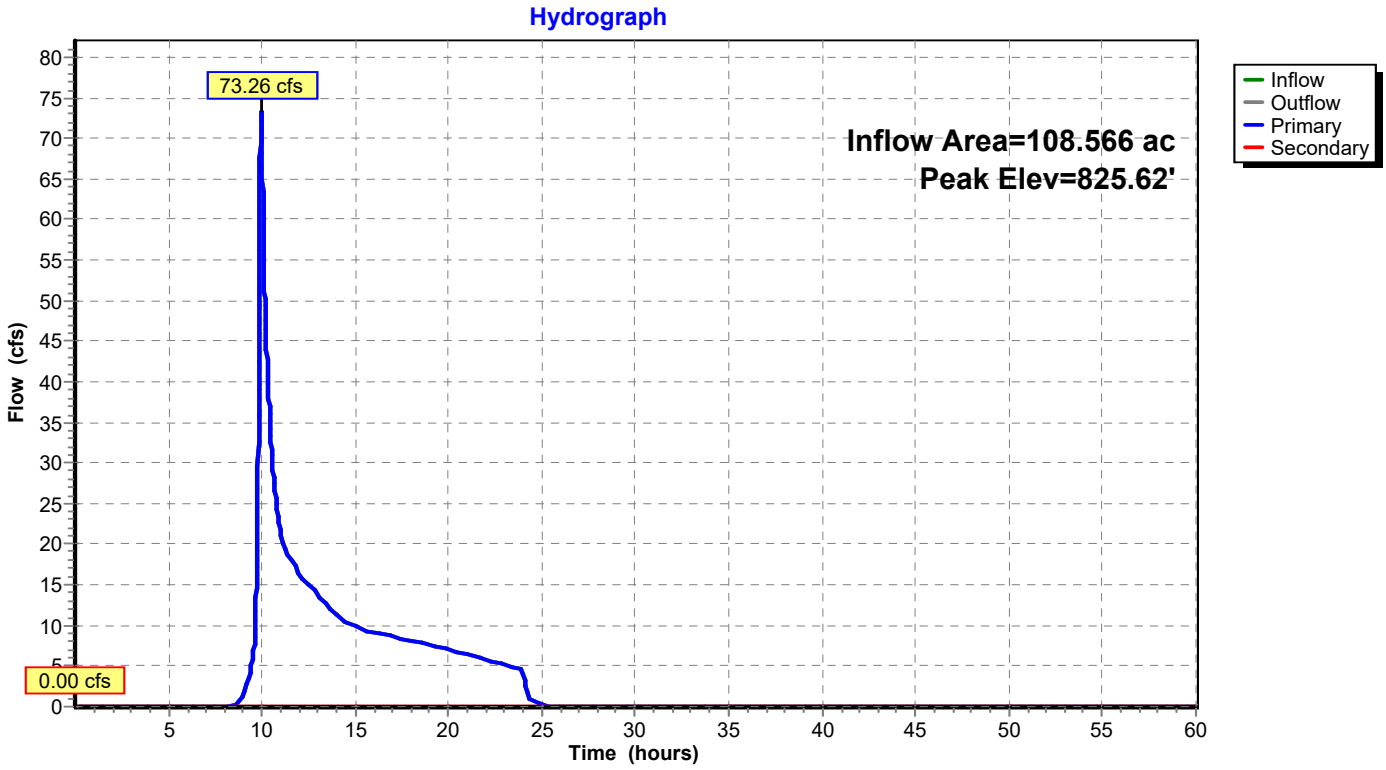
Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 825.62' @ 9.98 hrs
Flood Elev= 826.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	820.00'	**48.0" Round Culvert** L= 990.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 820.00' / 814.11' S= 0.0059 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	824.50'	**78.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	825.90'	**Special & User-Defined** Head (feet) 0.00 0.50 0.67 0.83 Disch. (cfs) 0.000 200.000 450.000 1,200.000

Primary OutFlow Max=73.19 cfs @ 9.98 hrs HW=825.62' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 73.19 cfs of 115.05 cfs potential flow)
└─**2=Orifice/Grate** (Weir Controls 73.19 cfs @ 3.45 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=820.00' TW=0.00' (Dynamic Tailwater)
└─**3=Special & User-Defined** (Controls 0.00 cfs)

Pond 1P: SD Inlet with Bypass SD



Summary for Pond 2P: 60" SD MH

Inflow Area = 21.500 ac, 80.00% Impervious, Inflow Depth = 1.67" for 50 Year event
Inflow = 18.03 cfs @ 9.99 hrs, Volume= 2.986 af
Outflow = 18.03 cfs @ 9.99 hrs, Volume= 2.986 af, Atten= 0%, Lag= 0.0 min
Primary = 18.03 cfs @ 9.99 hrs, Volume= 2.986 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

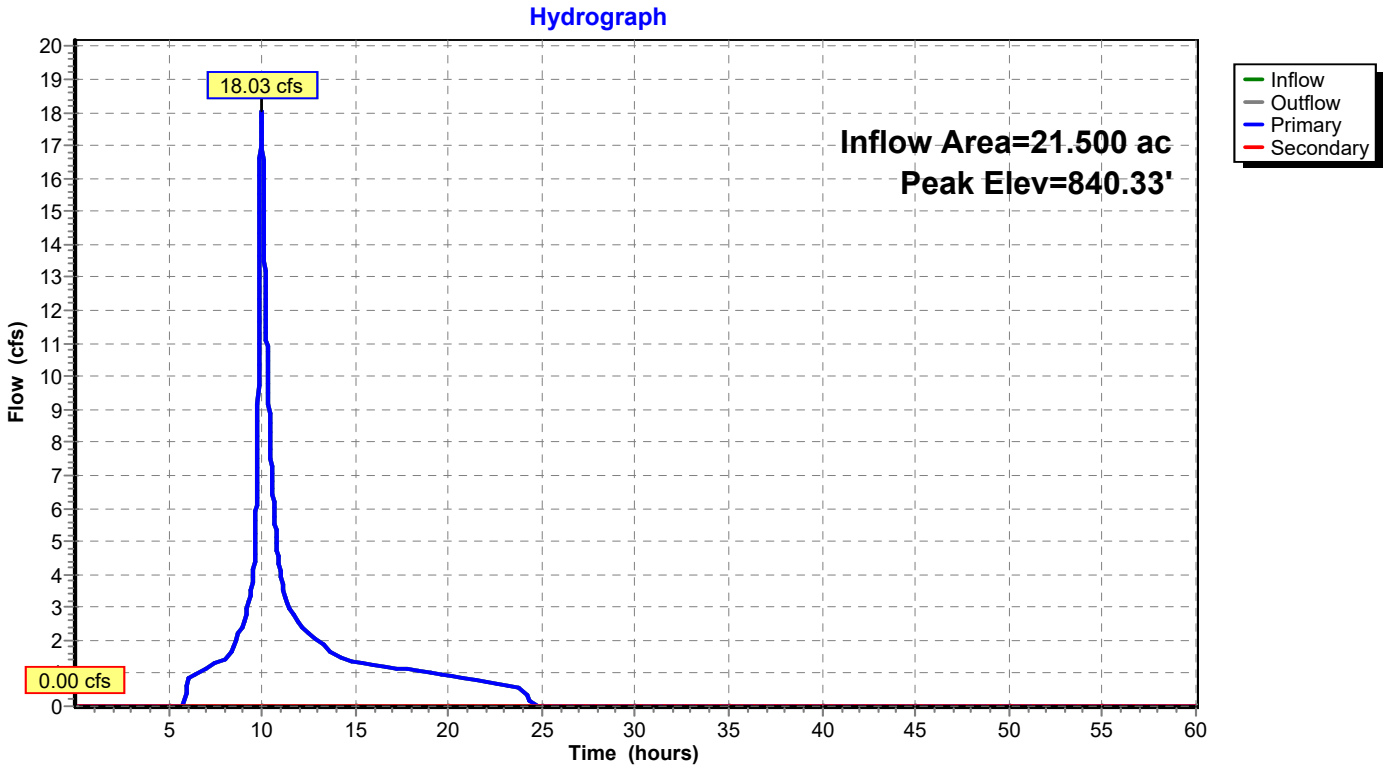
Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 840.33' @ 9.99 hrs
Flood Elev= 845.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	838.50'	**36.0" Round Culvert** L= 500.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 838.50' / 836.50' S= 0.0040 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf
#2	Secondary	844.25'	**69.6" W x 9.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=18.02 cfs @ 9.99 hrs HW=840.33' TW=835.80' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 18.02 cfs @ 5.72 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=838.50' TW=826.50' (Dynamic Tailwater)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: 60" SD MH



Summary for Pond 15P: SD System 42" HDPE

2 - 6 foot long curb openings (one on both sides of Linne Rd)
with 25 foot x 12 inch wide channel drain in Conc C&G

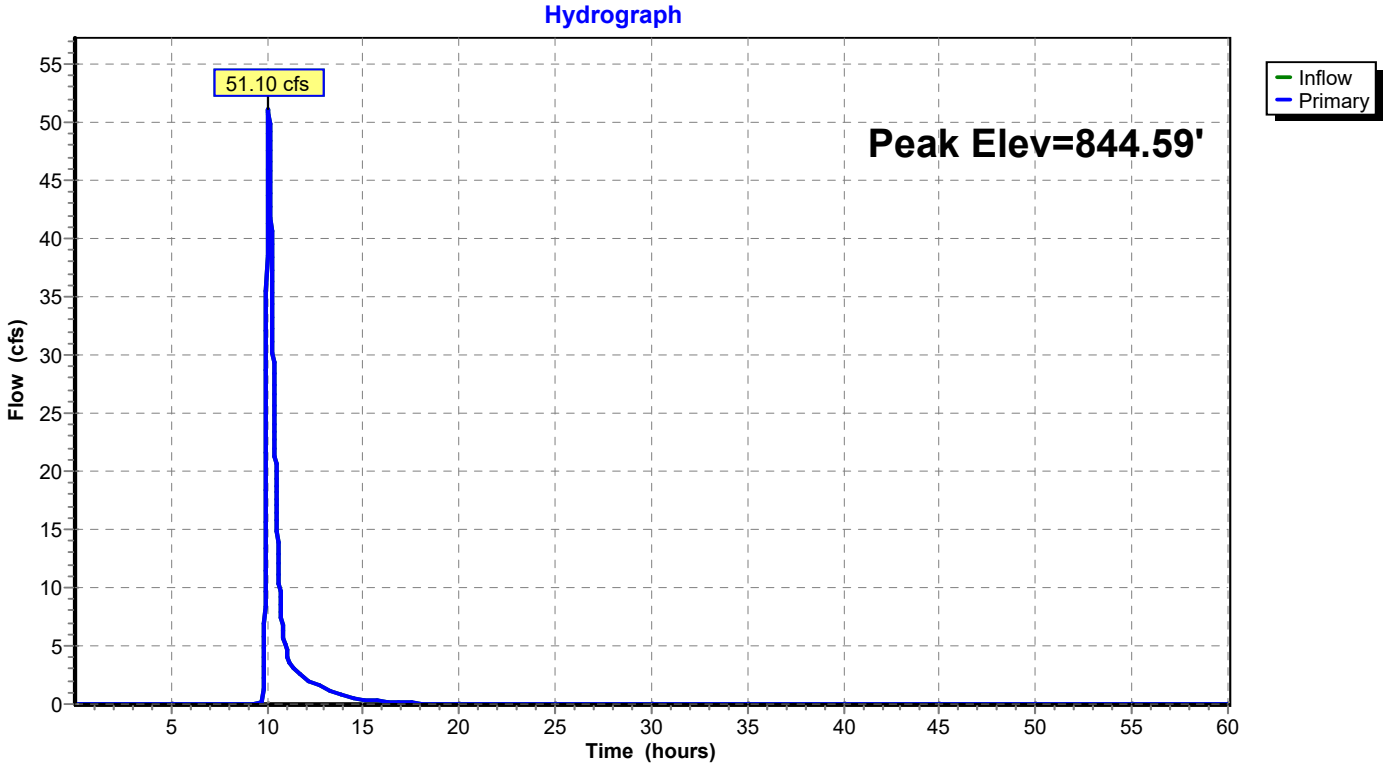
Inflow	=	51.10 cfs @	10.08 hrs,	Volume=	2.683 af
Outflow	=	51.10 cfs @	10.08 hrs,	Volume=	2.683 af, Atten= 0%, Lag= 0.0 min
Primary	=	51.10 cfs @	10.08 hrs,	Volume=	2.683 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 844.59' @ 10.08 hrs
Flood Elev= 845.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	839.75'	**42.0" Round Culvert** L= 1,370.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 839.75' / 833.60' S= 0.0045 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf
#2	Device 1	844.17'	**72.0" W x 9.0" H Vert. Orifice/Grate X 2.00** C= 0.600
#3	Device 1	844.25'	**12.0" x 180.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=51.08 cfs @ 10.08 hrs HW=844.59' TW=836.42' (Dynamic Tailwater)
└─**1=Culvert** (Passes 51.08 cfs of 74.69 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 10.33 cfs @ 2.07 fps)
  └─**3=Orifice/Grate** (Weir Controls 40.75 cfs @ 1.90 fps)

Pond 15P: SD System 42" HDPE



Summary for Pond 16P: Dbl Conc. Arch Culvert (37x23)

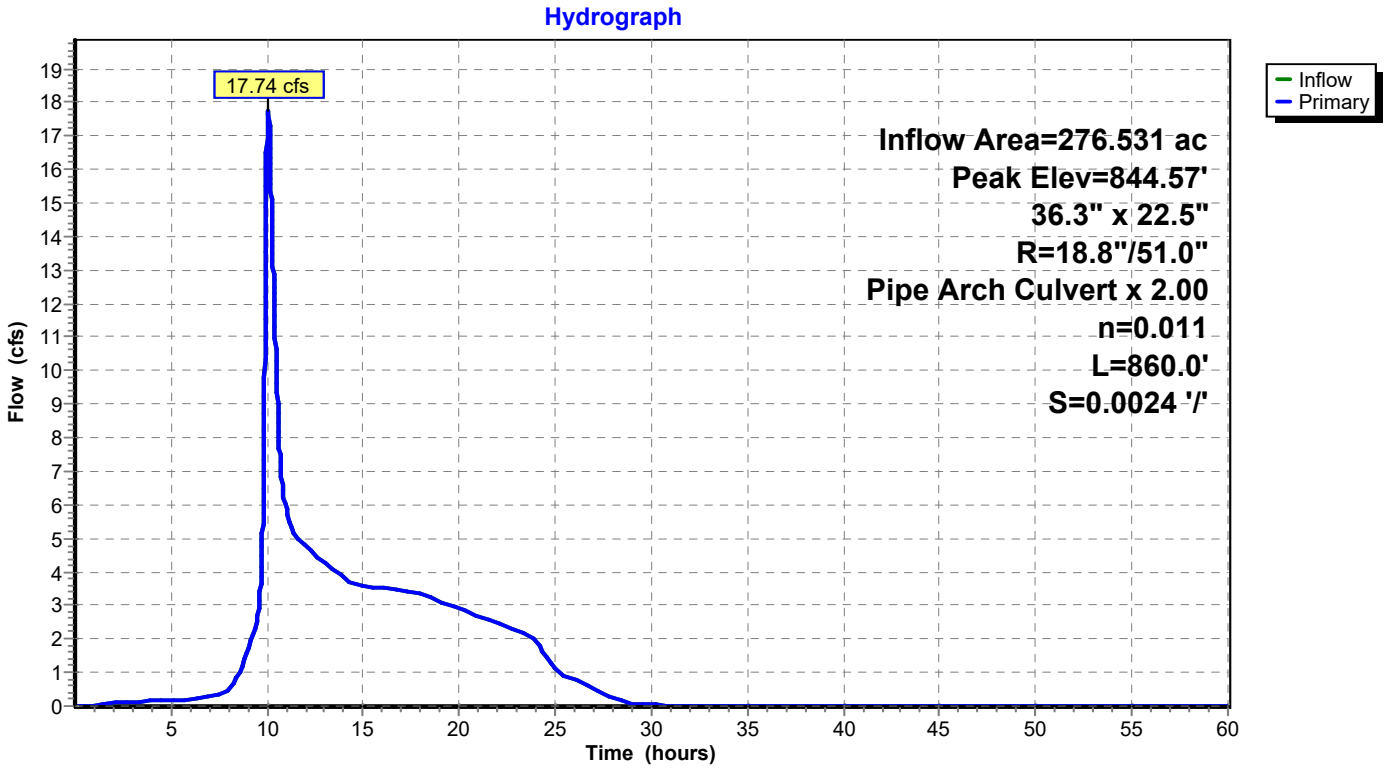
Inflow Area = 276.531 ac, 1.60% Impervious, Inflow Depth = 0.23" for 50 Year event
Inflow = 17.74 cfs @ 10.05 hrs, Volume= 5.377 af
Outflow = 17.74 cfs @ 10.05 hrs, Volume= 5.377 af, Atten= 0%, Lag= 0.0 min
Primary = 17.74 cfs @ 10.05 hrs, Volume= 5.377 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 844.57' @ 10.05 hrs
Flood Elev= 846.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	843.50'	**36.3" W x 22.5" H, R=18.8"/51.0" Pipe Arch RCP_Arch 37x23 X 2.00** L= 860.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 843.50' / 841.40' S= 0.0024 '/' Cc= 0.900 n= 0.011, Flow Area= 4.43 sf

Primary OutFlow Max=17.74 cfs @ 10.05 hrs HW=844.57' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Arch 37x23** (Barrel Controls 17.74 cfs @ 4.22 fps)

Pond 16P: Dbl Conc. Arch Culvert (37x23)



Summary for Pond 17P: Gran Cielo Dwy

[58] Hint: Peaked 0.63' above defined flood level

Inflow Area =	166.738 ac,	0.91% Impervious,	Inflow Depth =	2.56"	for 50 Year event
Inflow =	188.40 cfs @	9.98 hrs,	Volume=	35.620 af	
Outflow =	188.08 cfs @	9.99 hrs,	Volume=	35.620 af,	Atten= 0%, Lag= 0.4 min
Primary =	111.11 cfs @	9.99 hrs,	Volume=	33.164 af	
Secondary =	0.18 cfs @	9.99 hrs,	Volume=	0.002 af	
Tertiary =	76.79 cfs @	9.99 hrs,	Volume=	2.454 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 855.09' @ 9.99 hrs Surf.Area= 8,273 sf Storage= 11,735 cf
Flood Elev= 854.46' Surf.Area= 6,947 sf Storage= 6,934 cf

Plug-Flow detention time= 1.8 min calculated for 35.614 af (100% of inflow)
Center-of-Mass det. time= 1.8 min (813.8 - 812.0)

Volume	Invert	Avail.Storage	Storage Description
#1	852.84'	22,270 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.84	0	0	0
853.14	2,586	388	388
854.14	6,275	4,431	4,818
855.14	8,376	7,326	12,144
856.14	11,876	10,126	22,270

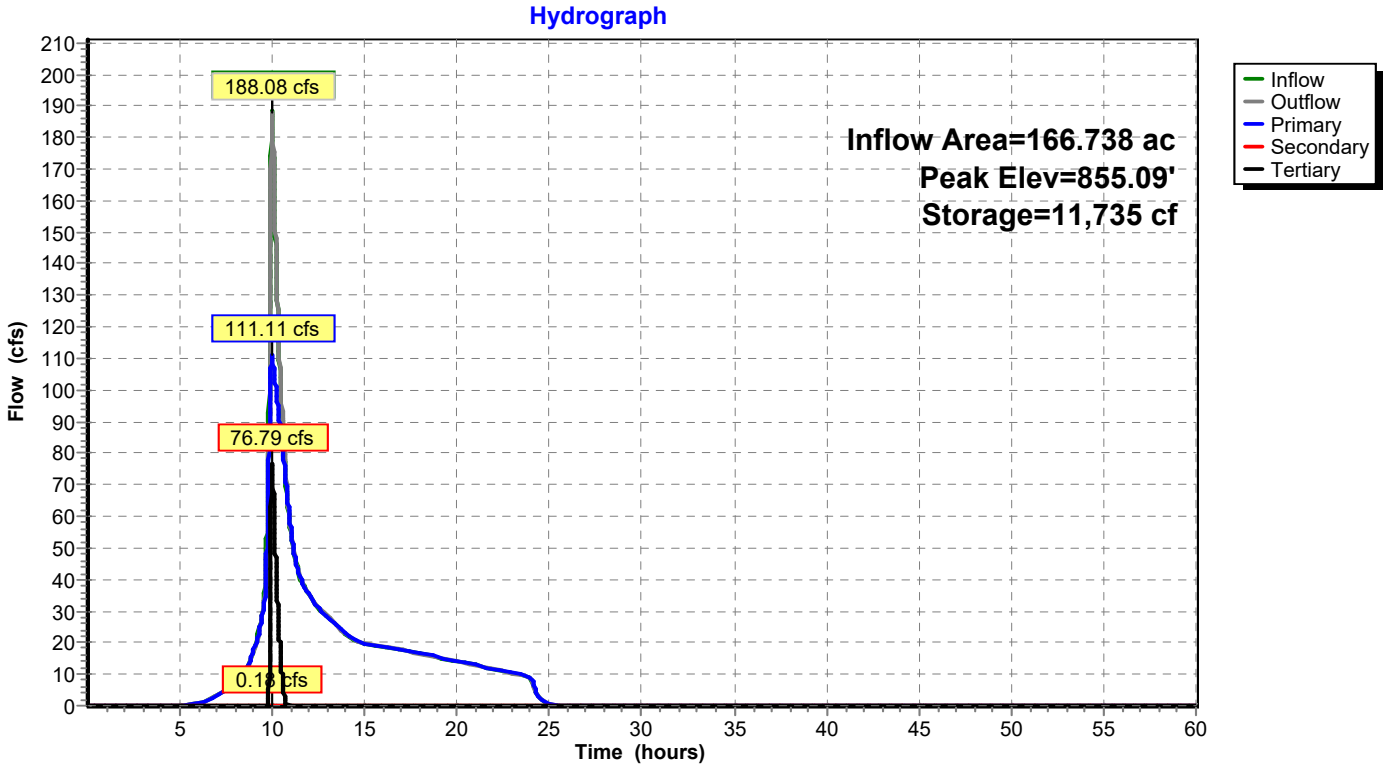
Device	Routing	Invert	Outlet Devices
#1	Primary	852.84'	**30.0" Round Culvert X 6.00** L= 77.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 852.84' / 851.76' S= 0.0140 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Secondary	854.90'	**Special & User-Defined** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 Disch. (cfs) 0.000 0.010 0.200 0.710 1.580 2.700 4.030 5.690 7.620 9.790 12.320 15.140 18.190 21.460 24.930 28.580 32.420 36.420 40.580 44.900 49.360 53.970
#3	Tertiary	854.40'	**Special & User-Defined** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 Disch. (cfs) 0.000 0.080 3.470 10.790 21.890 36.810 55.720 78.890 106.600 138.580 174.620 214.630 258.590 306.440 358.240 413.470 471.810 533.060 597.050 663.650 732.760 804.270 878.100 954.180 1,032.440 1,112.810 1,195.240

Primary OutFlow Max=111.11 cfs @ 9.99 hrs HW=855.09' TW=849.70' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 111.11 cfs @ 5.25 fps)

Secondary OutFlow Max=0.18 cfs @ 9.99 hrs HW=855.09' TW=849.70' (Dynamic Tailwater)
└─**2=Special & User-Defined** (Custom Controls 0.18 cfs)

Tertiary OutFlow Max=76.79 cfs @ 9.99 hrs HW=855.09' TW=854.21' (Dynamic Tailwater)
└─**3=Special & User-Defined** (Custom Controls 76.79 cfs)

Pond 17P: Gran Cielo Dwy



Summary for Pond 18P: GC-CkD1

Inflow Area = 240.622 ac, 1.05% Impervious, Inflow Depth = 2.49" for 50 Year event
Inflow = 200.71 cfs @ 9.98 hrs, Volume= 49.854 af
Outflow = 192.48 cfs @ 10.03 hrs, Volume= 49.820 af, Atten= 4%, Lag= 2.7 min
Primary = 0.59 cfs @ 9.91 hrs, Volume= 0.031 af
Secondary = 35.96 cfs @ 10.02 hrs, Volume= 1.101 af
Tertiary = 156.05 cfs @ 10.04 hrs, Volume= 48.688 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 849.76' @ 10.04 hrs Surf.Area= 14,552 sf Storage= 16,732 cf
Flood Elev= 850.17' Surf.Area= 18,446 sf Storage= 23,434 cf

Plug-Flow detention time= 1.6 min calculated for 49.820 af (100% of inflow)
Center-of-Mass det. time= 1.1 min (822.2 - 821.1)

Volume	Invert	Avail.Storage	Storage Description
#1	844.56'	70,294 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.56	10	0	0
845.00	200	46	46
846.00	600	400	446
847.00	1,500	1,050	1,496
848.00	2,166	1,833	3,329
849.00	7,688	4,927	8,256
850.00	16,694	12,191	20,447
851.00	27,000	21,847	42,294
852.00	29,000	28,000	70,294

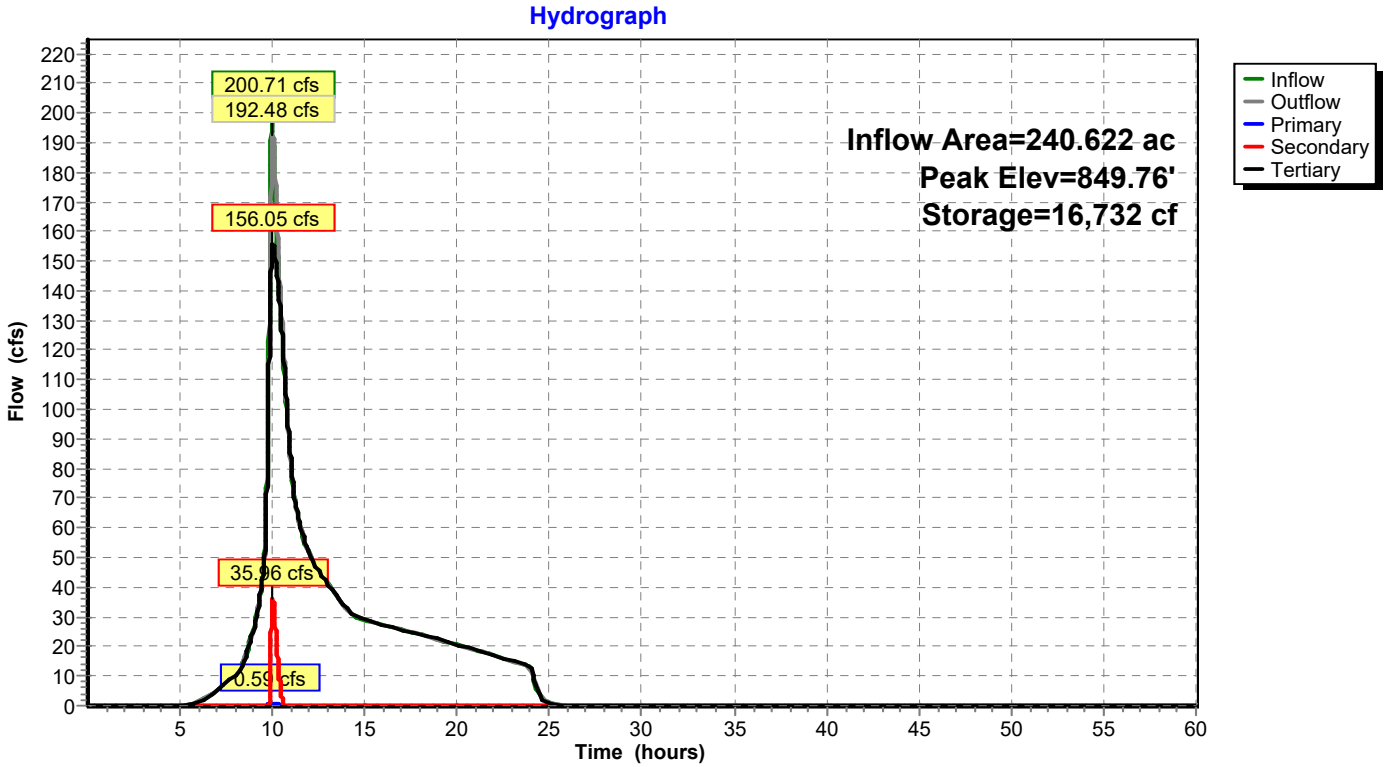
Device	Routing	Invert	Outlet Devices
#1	Primary	847.69'	**6.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 847.69' / 847.67' S= 0.0008 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Secondary	848.50'	**9.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59
#3	Tertiary	843.15'	**58.5" W x 36.0" H, R=30.0"/84.0" Pipe Arch RCP_Arch 59x36 X 2.00** L= 960.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 843.15' / 840.75' S= 0.0025 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 11.40 sf
#4	Device 3	847.00'	**78.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Tertiary	850.00'	**Special & User-Defined (CkD1-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 Disch. (cfs) 0.000 0.030 0.560 1.900 4.120 7.220 11.180 15.770 20.900 26.530 32.600 39.090 45.970 53.220 60.820 68.750 77.000 85.570 94.430 103.580 113.010

Primary OutFlow Max=0.56 cfs @ 9.91 hrs HW=849.32' TW=848.77' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.56 cfs @ 2.84 fps)

Secondary OutFlow Max=35.58 cfs @ 10.02 hrs HW=849.76' TW=849.22' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 35.58 cfs @ 3.14 fps)

Tertiary OutFlow Max=156.03 cfs @ 10.04 hrs HW=849.76' TW=841.73' (Dynamic Tailwater)
├─**3=RCP_Arch 59x36** (Passes 156.03 cfs of 175.07 cfs potential flow)
│ └─**4=Orifice/Grate** (Orifice Controls 156.03 cfs @ 8.00 fps)
└─**5=Special & User-Defined (CkD1-S)** (Controls 0.00 cfs)

Pond 18P: GC-CkD1



Summary for Pond 19P: GC-CkD2

[58] Hint: Peaked 0.60' above defined flood level
[80] Warning: Exceeded Pond 18P by 0.66' @ 24.38 hrs (0.03 cfs 0.195 af)
[80] Warning: Exceeded Pond 18P by 0.02' @ 10.66 hrs (0.00 cfs 0.000 af)

Inflow Area =	260.311 ac,	0.99% Impervious,	Inflow Depth =	0.23"	for 50 Year event
Inflow =	58.68 cfs @	10.01 hrs,	Volume=	4.902 af	
Outflow =	53.55 cfs @	10.07 hrs,	Volume=	4.901 af,	Atten= 9%, Lag= 4.1 min
Primary =	1.27 cfs @	10.07 hrs,	Volume=	1.460 af	
Secondary =	41.32 cfs @	10.07 hrs,	Volume=	3.201 af	
Tertiary =	10.96 cfs @	10.07 hrs,	Volume=	0.240 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 849.25' @ 10.07 hrs Surf.Area= 20,596 sf Storage= 23,653 cf
Flood Elev= 848.65' Surf.Area= 11,850 sf Storage= 14,787 cf

Plug-Flow detention time= 43.1 min calculated for 4.901 af (100% of inflow)
Center-of-Mass det. time= 42.9 min (813.4 - 770.5)

Volume	Invert	Avail.Storage	Storage Description
#1	846.00'	46,430 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
846.00	267	0	0
847.00	4,055	2,161	2,161
848.00	8,178	6,117	8,278
849.00	13,828	11,003	19,281
850.00	40,470	27,149	46,430

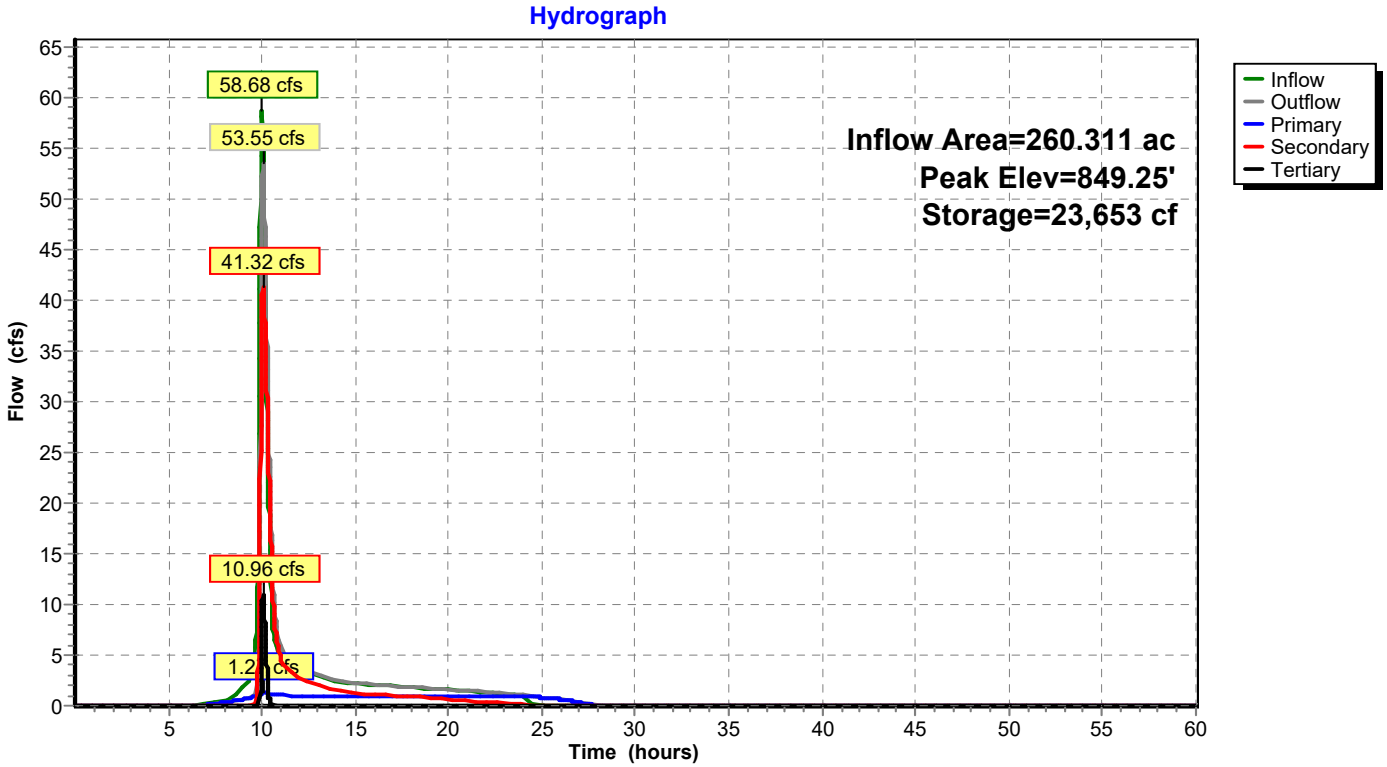
Device	Routing	Invert	Outlet Devices
#1	Primary	846.12'	**6.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 846.12' / 845.98' S= 0.0054 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Tertiary	848.70'	**Special & User-Defined (CkD2-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 Disch. (cfs) 0.000 0.130 0.970 2.640 5.120 8.550 13.010 18.440 24.620 31.430 38.830 46.770 55.210 64.120
#3	Secondary	847.80'	**Special & User-Defined (CkD2-W)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 Disch. (cfs) 0.000 0.020 0.480 1.430 2.780 4.430 6.490 8.950 12.010 15.510 19.390 23.590 28.100 32.980 38.270 43.910 49.850 56.080 62.580 69.340 76.350 83.590 91.070

Primary OutFlow Max=1.27 cfs @ 10.07 hrs HW=849.25' TW=845.87' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.27 cfs @ 6.46 fps)

Secondary OutFlow Max=41.31 cfs @ 10.07 hrs HW=849.25' TW=845.87' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD2-W)** (Custom Controls 41.31 cfs)

Tertiary OutFlow Max=10.95 cfs @ 10.07 hrs HW=849.25' TW=0.00' (Dynamic Tailwater)
└─**2=Special & User-Defined (CkD2-S)** (Custom Controls 10.95 cfs)

Pond 19P: GC-CkD2



Summary for Pond 20P: GC-CkD3

[58] Hint: Peaked 0.86' above defined flood level

Inflow Area =	274.094 ac,	0.94% Impervious,	Inflow Depth =	0.31"	for 50 Year event
Inflow =	55.32 cfs @	10.05 hrs,	Volume=	7.106 af	
Outflow =	54.35 cfs @	10.09 hrs,	Volume=	7.095 af,	Atten= 2%, Lag= 2.4 min
Primary =	6.01 cfs @	10.09 hrs,	Volume=	3.774 af	
Secondary =	8.13 cfs @	10.09 hrs,	Volume=	0.878 af	
Tertiary =	40.20 cfs @	10.09 hrs,	Volume=	2.444 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 845.88' @ 10.09 hrs Surf.Area= 14,173 sf Storage= 14,445 cf
Flood Elev= 845.02' Surf.Area= 8,229 sf Storage= 4,852 cf

Plug-Flow detention time= 22.2 min calculated for 7.094 af (100% of inflow)
Center-of-Mass det. time= 21.1 min (846.4 - 825.4)

Volume	Invert	Avail.Storage	Storage Description
#1	844.00'	24,632 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.00	1,288	0	0
845.00	8,090	4,689	4,689
846.50	18,500	19,943	24,632

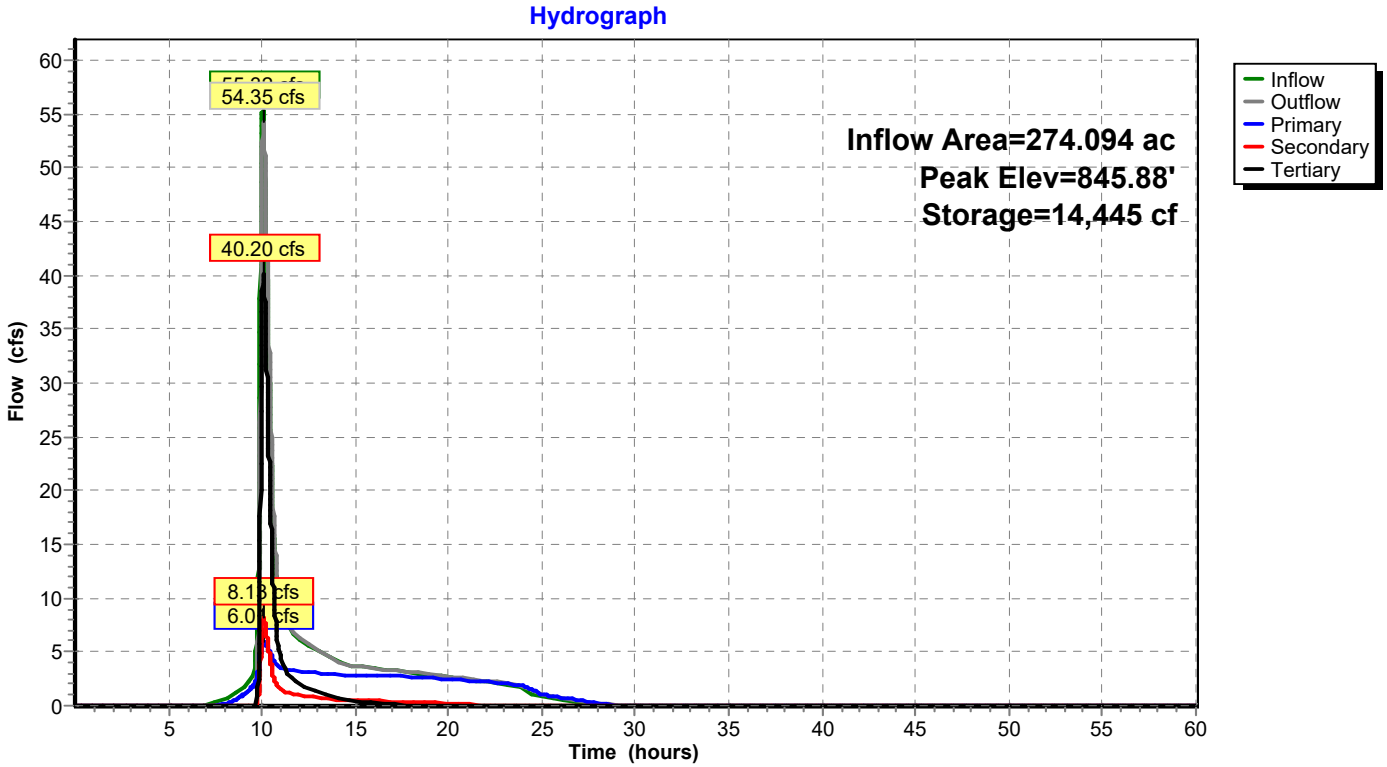
Device	Routing	Invert	Outlet Devices
#1	Primary	844.22'	**18.0" Round Culvert** L= 26.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 844.22' / 843.98' S= 0.0092 '/' Cc= 0.900 n= 0.021 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	845.00'	**Special & User-Defined (CkD3-W)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 Disch. (cfs) 0.000 0.050 0.390 0.970 1.710 2.600 3.780 5.170 6.720 8.570 11.140 14.290 17.880 21.830 26.120 30.880 36.030 41.520 47.330 53.420 59.790
#3	Tertiary	845.10'	**Special & User-Defined (CkD3-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 Disch. (cfs) 0.000 0.050 1.930 5.420 10.370 16.490 23.960 32.580 42.550 53.770 66.380 80.510 96.280 113.770 132.840 153.630 175.910 199.510 224.310 250.260

Primary OutFlow Max=6.01 cfs @ 10.09 hrs HW=845.88' TW=844.56' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 6.01 cfs @ 3.84 fps)

Secondary OutFlow Max=8.13 cfs @ 10.09 hrs HW=845.88' TW=844.56' (Dynamic Tailwater)
└─**2=Special & User-Defined (CkD3-W)** (Custom Controls 8.13 cfs)

Tertiary OutFlow Max=40.20 cfs @ 10.09 hrs HW=845.88' TW=0.00' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD3-S)** (Custom Controls 40.20 cfs)

Pond 20P: GC-CkD3



Summary for Pond B1: Basin 1

Inflow Area = 47.388 ac, 67.98% Impervious, Inflow Depth = 3.84" for 50 Year event
Inflow = 115.89 cfs @ 10.03 hrs, Volume= 15.158 af
Outflow = 36.61 cfs @ 10.60 hrs, Volume= 14.768 af, Atten= 68%, Lag= 34.0 min
Discarded = 1.12 cfs @ 10.60 hrs, Volume= 3.177 af
Primary = 35.49 cfs @ 10.60 hrs, Volume= 11.591 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 837.56' @ 10.60 hrs Surf.Area= 1.402 ac Storage= 5.949 af

Plug-Flow detention time= 316.7 min calculated for 14.765 af (97% of inflow)
Center-of-Mass det. time= 299.2 min (1,025.9 - 726.7)

Volume	Invert	Avail.Storage	Storage Description
#1	826.50'	8.466 af	**Custom Stage Data (Prismatic)** Listed below (Recalc) 8.789 af Overall - 0.323 af Embedded = 8.466 af
#2	826.50'	0.129 af	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 0.323 af Overall x 40.0% Voids
		8.595 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
826.50	0.081	0.000	0.000
827.00	0.081	0.040	0.040
828.00	0.081	0.081	0.121
829.00	0.081	0.081	0.202
830.00	0.081	0.081	0.283
831.00	0.081	0.081	0.365
832.00	0.203	0.142	0.506
833.00	0.376	0.289	0.796
834.00	1.171	0.774	1.569
835.00	1.234	1.202	2.772
836.00	1.299	1.267	4.038
837.00	1.365	1.332	5.370
838.00	1.432	1.399	6.769
839.00	1.500	1.466	8.235
839.35	1.665	0.554	8.789

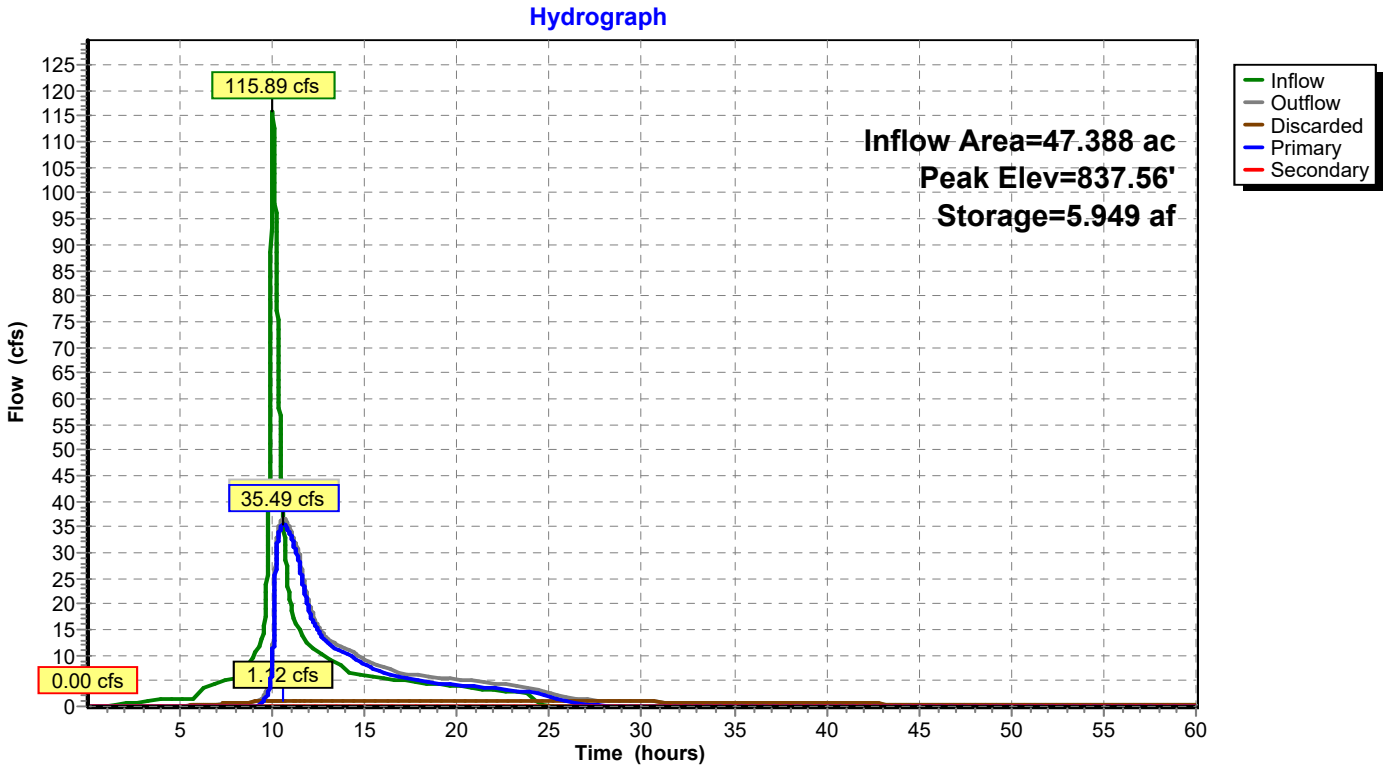
Device	Routing	Invert	Outlet Devices
#1	Primary	833.12'	**36.0" Round Culvert** L= 385.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 833.12' / 831.20' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Discarded	826.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	834.33'	**16.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	834.33'	**12.0" W x 8.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	835.33'	**30.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	836.17'	**24.0" Horiz. Orifice/Grate** C= 0.600 in 78.0" x 36.0" Grate (16% open area) Limited to weir flow at low heads
#7	Secondary	838.35'	**30.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=1.12 cfs @ 10.60 hrs HW=837.56' (Free Discharge)
└─**2=Exfiltration** (Controls 1.12 cfs)

Primary OutFlow Max=35.49 cfs @ 10.60 hrs HW=837.56' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 35.49 cfs of 52.74 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 3.74 cfs @ 8.42 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 5.46 cfs @ 8.19 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 8.46 cfs @ 6.77 fps)
  └─**6=Orifice/Grate** (Orifice Controls 17.82 cfs @ 5.67 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=826.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B1: Basin 1



Summary for Pond B10: Basin 10

Inflow Area = 30.685 ac, 61.94% Impervious, Inflow Depth = 3.14" for 50 Year event
Inflow = 36.90 cfs @ 9.98 hrs, Volume= 8.017 af
Outflow = 10.57 cfs @ 11.07 hrs, Volume= 7.548 af, Atten= 71%, Lag= 65.4 min
Discarded = 0.85 cfs @ 11.07 hrs, Volume= 2.841 af
Primary = 9.72 cfs @ 11.07 hrs, Volume= 4.707 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 818.15' @ 11.07 hrs Surf.Area= 45,888 sf Storage= 146,516 cf

Plug-Flow detention time= 542.9 min calculated for 7.548 af (94% of inflow)
Center-of-Mass det. time= 503.8 min (1,242.7 - 739.0)

Volume	Invert	Avail.Storage	Storage Description
#1	808.50'	230,693 cf	**Custom Stage Data (Conic)** Listed below (Recalc) 244,773 cf Overall - 14,080 cf Embedded = 230,693 cf
#2	808.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		236,325 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
808.50	3,520	0	0	3,520
809.00	3,520	1,760	1,760	3,625
810.00	3,520	3,520	5,280	3,835
811.00	3,520	3,520	8,800	4,046
812.00	3,520	3,520	12,320	4,256
813.00	3,520	3,520	15,840	4,466
814.00	8,931	6,019	21,859	9,884
815.00	17,294	12,884	34,744	18,257
816.00	40,146	27,930	62,673	41,116
817.00	42,792	41,462	104,135	43,859
818.00	45,490	44,134	148,269	46,658
819.00	48,243	46,860	195,129	49,516
820.00	51,058	49,644	244,773	52,440

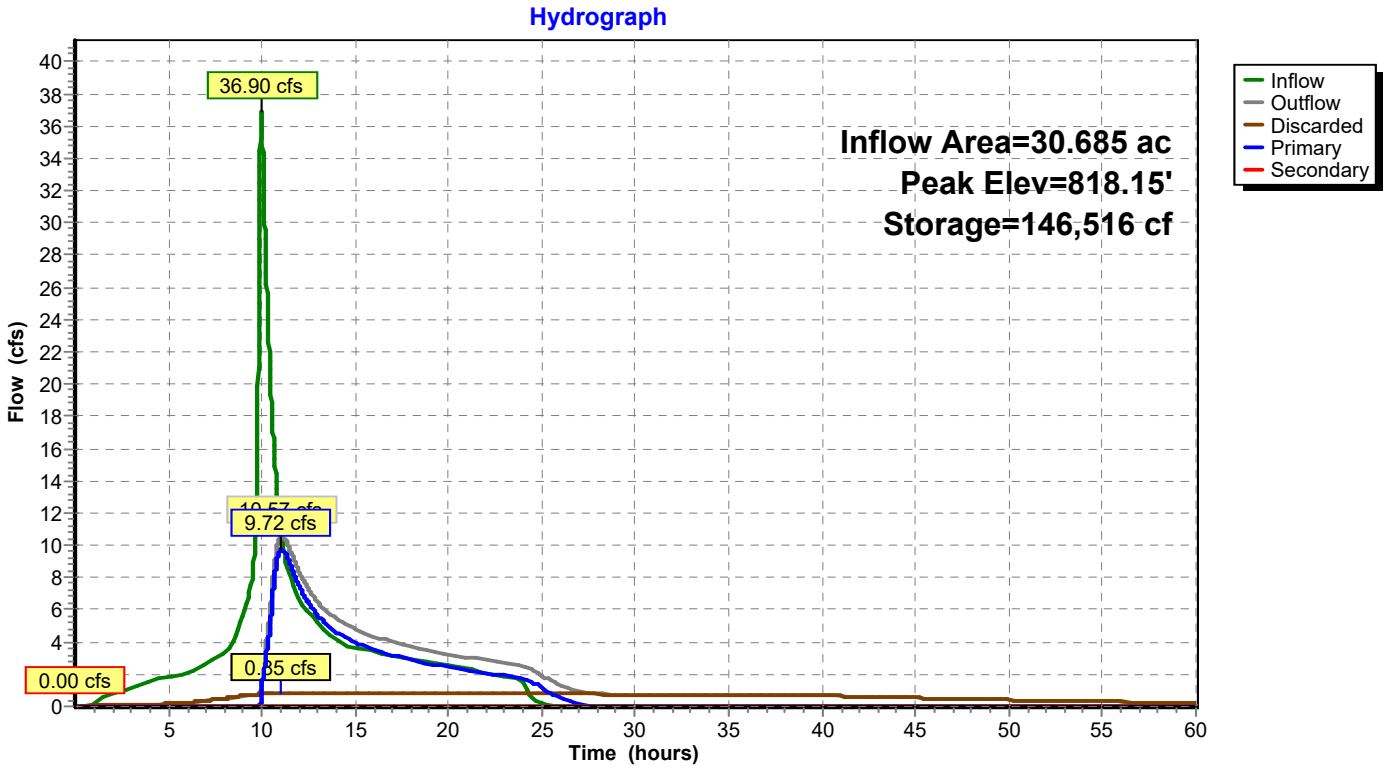
Device	Routing	Invert	Outlet Devices
#1	Primary	816.00'	**30.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 816.00' / 815.10' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	808.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	816.67'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	817.33'	**15.0" W x 18.0" H Vert. Orifice/Grate** X 2 rows with 8.0" cc spacing C= 0.600
#5	Device 1	817.83'	**60.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	819.00'	**78.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Secondary	819.33'	**36.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.85 cfs @ 11.07 hrs HW=818.15' (Free Discharge)
└─**2=Exfiltration** (Controls 0.85 cfs)

Primary OutFlow Max=9.72 cfs @ 11.07 hrs HW=818.15' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 9.72 cfs of 22.37 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 3.67 cfs @ 5.51 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 3.19 cfs @ 2.64 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 2.86 cfs @ 1.81 fps)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=808.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B10: Basin 10



Summary for Pond B11: Basin 11

Inflow Area = 14.461 ac, 52.00% Impervious, Inflow Depth = 2.97" for 50 Year event
Inflow = 22.92 cfs @ 9.96 hrs, Volume= 3.580 af
Outflow = 7.82 cfs @ 10.42 hrs, Volume= 3.317 af, Atten= 66%, Lag= 27.6 min
Discarded = 0.27 cfs @ 10.42 hrs, Volume= 0.793 af
Primary = 7.55 cfs @ 10.42 hrs, Volume= 2.524 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 833.87' @ 10.42 hrs Surf.Area= 13,665 sf Storage= 55,671 cf

Plug-Flow detention time= 383.8 min calculated for 3.316 af (93% of inflow)
Center-of-Mass det. time= 336.6 min (1,076.8 - 740.2)

Volume	Invert	Avail.Storage	Storage Description
#1	823.50'	83,101 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 97,181 cf Overall - 14,080 cf Embedded = 83,101 cf
#2	823.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		88,733 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
823.50	3,520	0	0
824.00	3,520	1,760	1,760
825.00	3,520	3,520	5,280
826.00	3,520	3,520	8,800
827.00	3,520	3,520	12,320
828.00	3,520	3,520	15,840
829.00	2,800	3,160	19,000
830.00	6,900	4,850	23,850
831.00	8,919	7,910	31,760
832.00	10,515	9,717	41,477
833.00	12,169	11,342	52,819
834.00	13,879	13,024	65,843
835.00	15,655	14,767	80,610
836.00	17,488	16,572	97,181

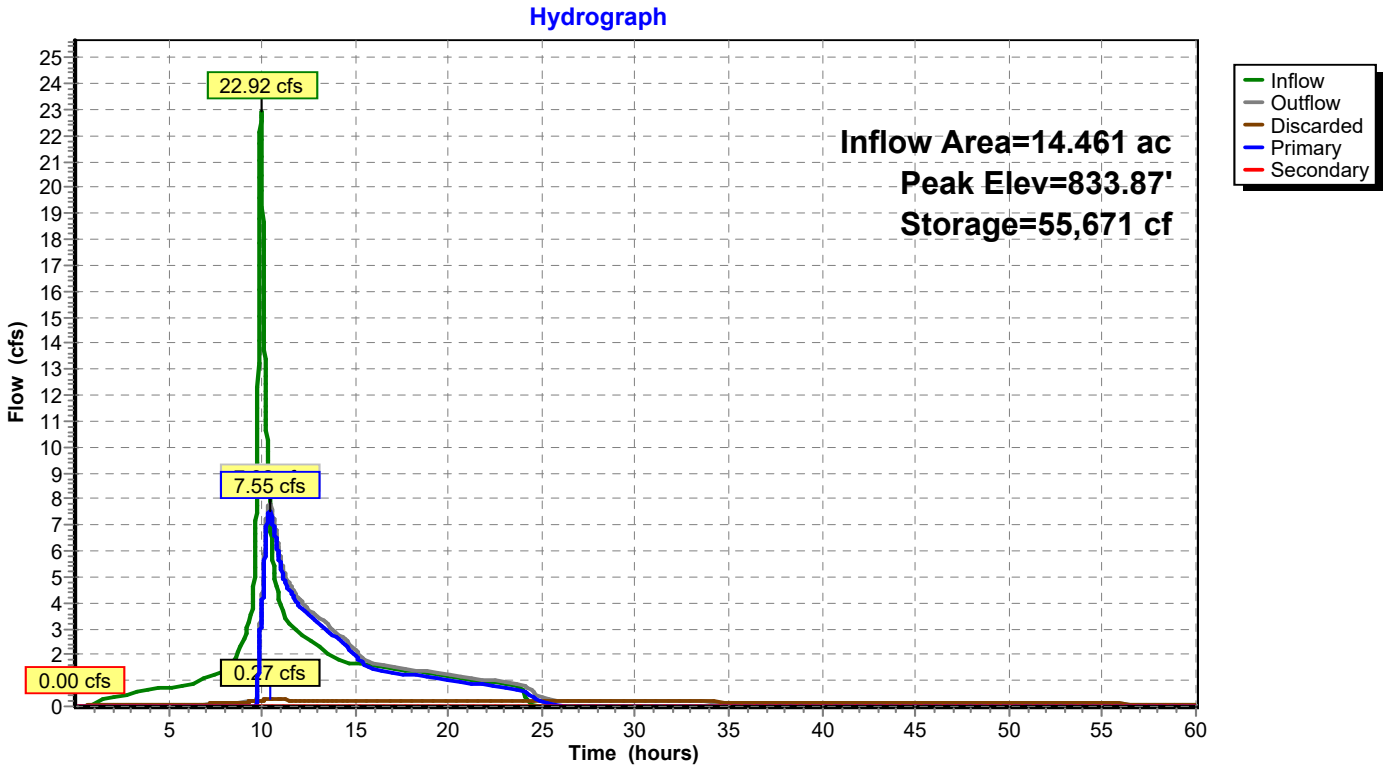
Device	Routing	Invert	Outlet Devices
#1	Primary	831.67'	**24.0" Round Culvert** L= 165.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 831.67' / 820.50' S= 0.0677 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Discarded	823.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	831.67'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	833.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	833.50'	**27.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	834.50'	**48.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Secondary	834.83'	**16.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.27 cfs @ 10.42 hrs HW=833.87' (Free Discharge)
└─**2=Exfiltration** (Controls 0.27 cfs)

Primary OutFlow Max=7.55 cfs @ 10.42 hrs HW=833.87' TW=825.20' (Dynamic Tailwater)
└─**1=Culvert** (Passes 7.55 cfs of 16.60 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 4.58 cfs @ 6.87 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.31 cfs @ 3.00 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 1.66 cfs @ 1.97 fps)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=823.50' TW=820.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B11: Basin 11



Summary for Pond B12: Basin 12

Inflow Area = 20.201 ac, 44.06% Impervious, Inflow Depth = 2.76" for 50 Year event
Inflow = 30.70 cfs @ 9.96 hrs, Volume= 4.642 af
Outflow = 3.99 cfs @ 11.75 hrs, Volume= 4.365 af, Atten= 87%, Lag= 107.5 min
Discarded = 0.51 cfs @ 11.75 hrs, Volume= 1.546 af
Primary = 3.48 cfs @ 11.75 hrs, Volume= 2.819 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 838.38' @ 11.75 hrs Surf.Area= 27,048 sf Storage= 87,046 cf

Plug-Flow detention time= 517.4 min calculated for 4.365 af (94% of inflow)
Center-of-Mass det. time= 478.9 min (1,228.1 - 749.2)

Volume	Invert	Avail.Storage	Storage Description
#1	828.50'	160,016 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 174,096 cf Overall - 14,080 cf Embedded = 160,016 cf
#2	828.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		165,648 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
828.50	3,520	0	0
829.00	3,520	1,760	1,760
830.00	3,520	3,520	5,280
831.00	3,520	3,520	8,800
832.00	3,520	3,520	12,320
833.00	3,520	3,520	15,840
834.00	2,600	3,060	18,900
835.00	8,000	5,300	24,200
836.00	20,849	14,425	38,625
837.00	23,415	22,132	60,757
838.00	26,037	24,726	85,483
839.00	28,717	27,377	112,860
840.00	31,383	30,050	142,910
841.00	30,990	31,187	174,096

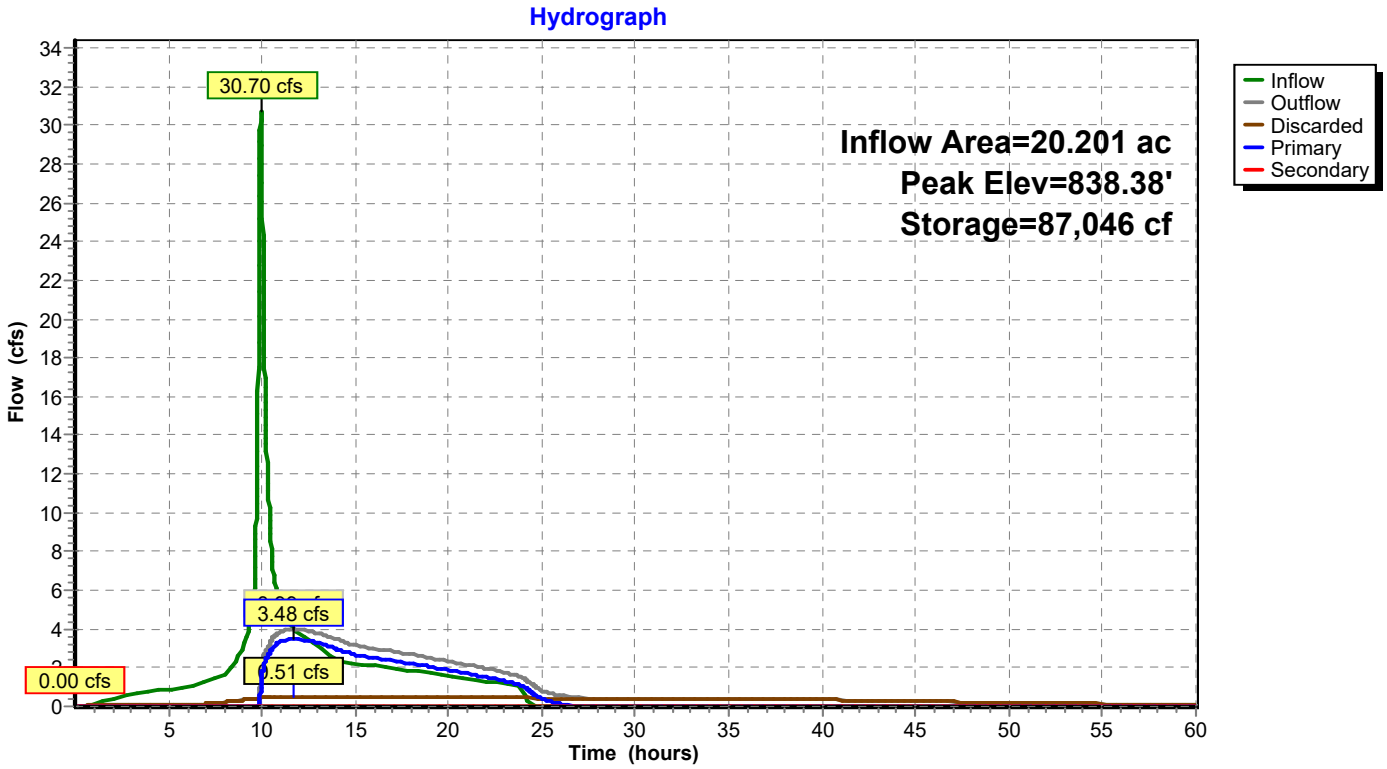
Device	Routing	Invert	Outlet Devices
#1	Primary	836.67'	**30.0" Round Culvert** L= 130.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.67' / 832.50' S= 0.0321 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	828.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	836.67'	**18.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	838.00'	**8.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	838.50'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	839.50'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Secondary	840.00'	**18.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.51 cfs @ 11.75 hrs HW=838.38' (Free Discharge)
└─**2=Exfiltration** (Controls 0.51 cfs)

Primary OutFlow Max=3.48 cfs @ 11.75 hrs HW=838.38' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.48 cfs of 15.89 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 2.99 cfs @ 5.97 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.50 cfs @ 1.97 fps)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=828.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B12: Basin 12



Summary for Pond B13: Basin 13

Inflow Area = 64.115 ac, 22.11% Impervious, Inflow Depth = 2.76" for 50 Year event
Inflow = 102.50 cfs @ 9.96 hrs, Volume= 14.744 af
Outflow = 84.60 cfs @ 10.04 hrs, Volume= 14.320 af, Atten= 17%, Lag= 4.7 min
Discarded = 0.47 cfs @ 10.04 hrs, Volume= 1.375 af
Primary = 84.13 cfs @ 10.04 hrs, Volume= 12.945 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 844.03' @ 10.04 hrs Surf.Area= 0.557 ac Storage= 3.076 af

Plug-Flow detention time= 202.3 min calculated for 14.317 af (97% of inflow)
Center-of-Mass det. time= 183.9 min (956.9 - 773.1)

Volume	Invert	Avail.Storage	Storage Description
#1	830.50'	4.138 af	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4.461 af Overall - 0.323 af Embedded = 4.138 af
#2	830.50'	0.129 af	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 0.323 af Overall x 40.0% Voids
		4.267 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
830.50	0.081	0.000	0.000
831.00	0.081	0.040	0.040
832.00	0.081	0.081	0.121
833.00	0.081	0.081	0.202
834.00	0.081	0.081	0.283
835.00	0.081	0.081	0.364
836.00	0.059	0.070	0.433
837.00	0.139	0.099	0.532
838.00	0.287	0.213	0.745
839.00	0.329	0.308	1.053
840.00	0.372	0.350	1.403
841.00	0.416	0.394	1.797
842.00	0.461	0.439	2.236
843.00	0.508	0.484	2.720
844.00	0.555	0.531	3.251
845.00	0.605	0.580	3.831
846.00	0.655	0.630	4.461

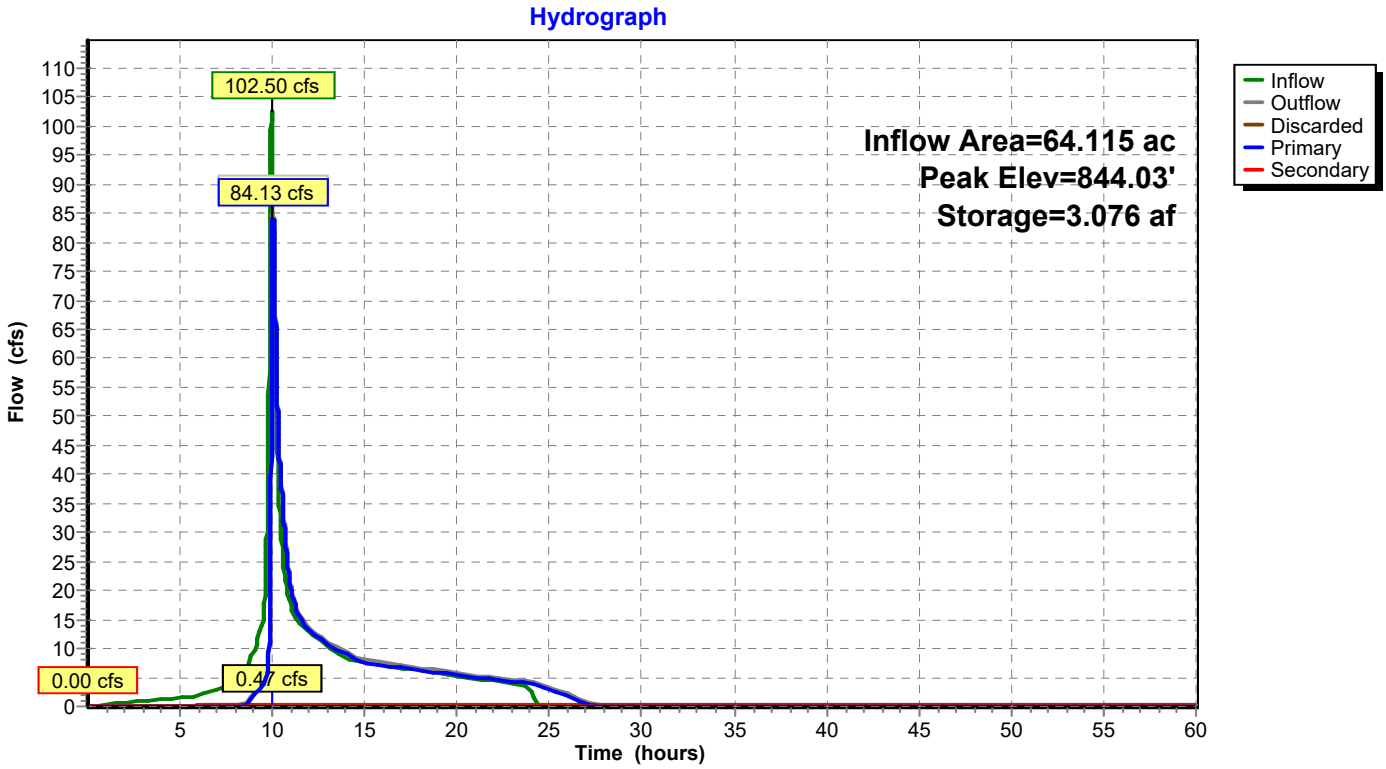
Device	Routing	Invert	Outlet Devices
#1	Primary	834.25'	**48.0" Round Culvert** L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 834.25' / 832.50' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Discarded	830.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	839.67'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	841.50'	**15.0" W x 18.0" H Vert. Orifice/Grate** X 2 rows with 8.0" cc spacing C= 0.600
#5	Device 1	842.50'	**60.0" W x 8.0" H Vert. Orifice/Grate** X 2 rows with 8.0" cc spacing C= 0.600
#6	Device 1	843.67'	**78.0" x 36.0" Horiz. Orifice/Grate** X 2 rows C= 0.600 Limited to weir flow at low heads
#7	Secondary	844.67'	**36.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.47 cfs @ 10.04 hrs HW=844.03' (Free Discharge)
└─**2=Exfiltration** (Controls 0.47 cfs)

Primary OutFlow Max=84.11 cfs @ 10.04 hrs HW=844.03' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 84.11 cfs of 168.80 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 6.58 cfs @ 9.86 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 21.31 cfs @ 5.68 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 29.04 cfs @ 4.36 fps)
  └─**6=Orifice/Grate** (Weir Controls 27.19 cfs @ 1.97 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=830.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B13: Basin 13



Summary for Pond B4: Basin 4

Inflow Area = 38.712 ac, 55.38% Impervious, Inflow Depth = 3.07" for 50 Year event
Inflow = 57.43 cfs @ 9.97 hrs, Volume= 9.900 af
Outflow = 24.21 cfs @ 10.42 hrs, Volume= 9.636 af, Atten= 58%, Lag= 26.7 min
Discarded = 0.59 cfs @ 10.42 hrs, Volume= 1.698 af
Primary = 23.63 cfs @ 10.42 hrs, Volume= 7.938 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 839.85' @ 10.42 hrs Surf.Area= 29,313 sf Storage= 136,770 cf

Plug-Flow detention time= 322.9 min calculated for 9.634 af (97% of inflow)
Center-of-Mass det. time= 304.9 min (1,044.3 - 739.4)

Volume	Invert	Avail.Storage	Storage Description
#1	827.50'	218,652 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 232,732 cf Overall - 14,080 cf Embedded = 218,652 cf
#2	827.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		224,284 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
827.50	3,520	0	0
828.00	3,520	1,760	1,760
829.00	3,520	3,520	5,280
830.00	3,520	3,520	8,800
831.00	3,520	3,520	12,320
832.00	3,520	3,520	15,840
833.00	1,064	2,292	18,132
834.00	6,719	3,892	22,024
835.00	16,858	11,789	33,812
836.00	19,297	18,078	51,890
837.00	21,780	20,539	72,428
838.00	24,350	23,065	95,493
839.00	27,007	25,679	121,172
840.00	29,708	28,358	149,529
841.00	32,452	31,080	180,609
842.00	35,196	33,824	214,433
842.50	38,000	18,299	232,732

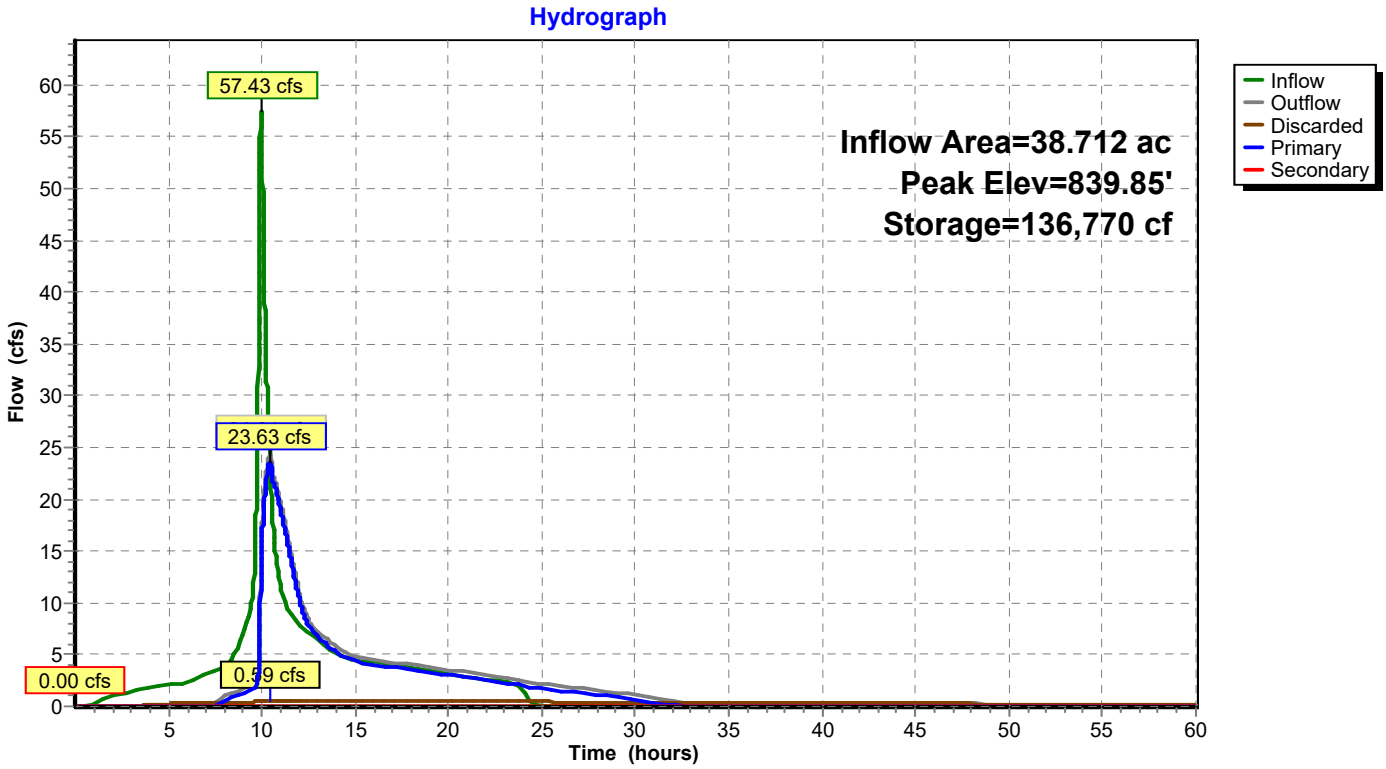
Device	Routing	Invert	Outlet Devices
#1	Primary	835.67'	**30.0" Round Culvert** L= 210.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 835.67' / 834.20' S= 0.0070 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	827.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	835.67'	**10.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	837.67'	**18.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	838.17'	**42.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	839.75'	**48.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 in 78.0" x 36.0" Grate (62% open area) Limited to weir flow at low heads
#7	Secondary	841.12'	**40.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.59 cfs @ 10.42 hrs HW=839.85' (Free Discharge)
└─**2=Exfiltration** (Controls 0.59 cfs)

Primary OutFlow Max=23.63 cfs @ 10.42 hrs HW=839.85' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 23.63 cfs of 39.38 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 2.68 cfs @ 9.65 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 9.34 cfs @ 6.22 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 10.08 cfs @ 5.76 fps)
  └─**6=Orifice/Grate** (Weir Controls 1.53 cfs @ 1.05 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=827.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B4: Basin 4



Summary for Pond B5: Basin 5

Inflow Area = 32.696 ac, 30.34% Impervious, Inflow Depth = 2.11" for 50 Year event
Inflow = 25.03 cfs @ 9.99 hrs, Volume= 5.762 af
Outflow = 9.72 cfs @ 10.80 hrs, Volume= 5.762 af, Atten= 61%, Lag= 49.0 min
Discarded = 0.41 cfs @ 10.80 hrs, Volume= 1.238 af
Primary = 9.31 cfs @ 10.80 hrs, Volume= 4.524 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 847.79' @ 10.80 hrs Surf.Area= 21,778 sf Storage= 70,408 cf

Plug-Flow detention time= 275.3 min calculated for 5.761 af (100% of inflow)
Center-of-Mass det. time= 275.5 min (1,057.9 - 782.5)

Volume	Invert	Avail.Storage	Storage Description
#1	844.00'	178,542 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.00	15,500	0	0
845.00	17,076	16,288	16,288
846.00	18,708	17,892	34,180
847.00	20,397	19,553	53,733
848.00	22,143	21,270	75,003
849.00	23,945	23,044	98,047
850.00	25,804	24,875	122,921
851.00	27,719	26,762	149,683
852.00	30,000	28,860	178,542

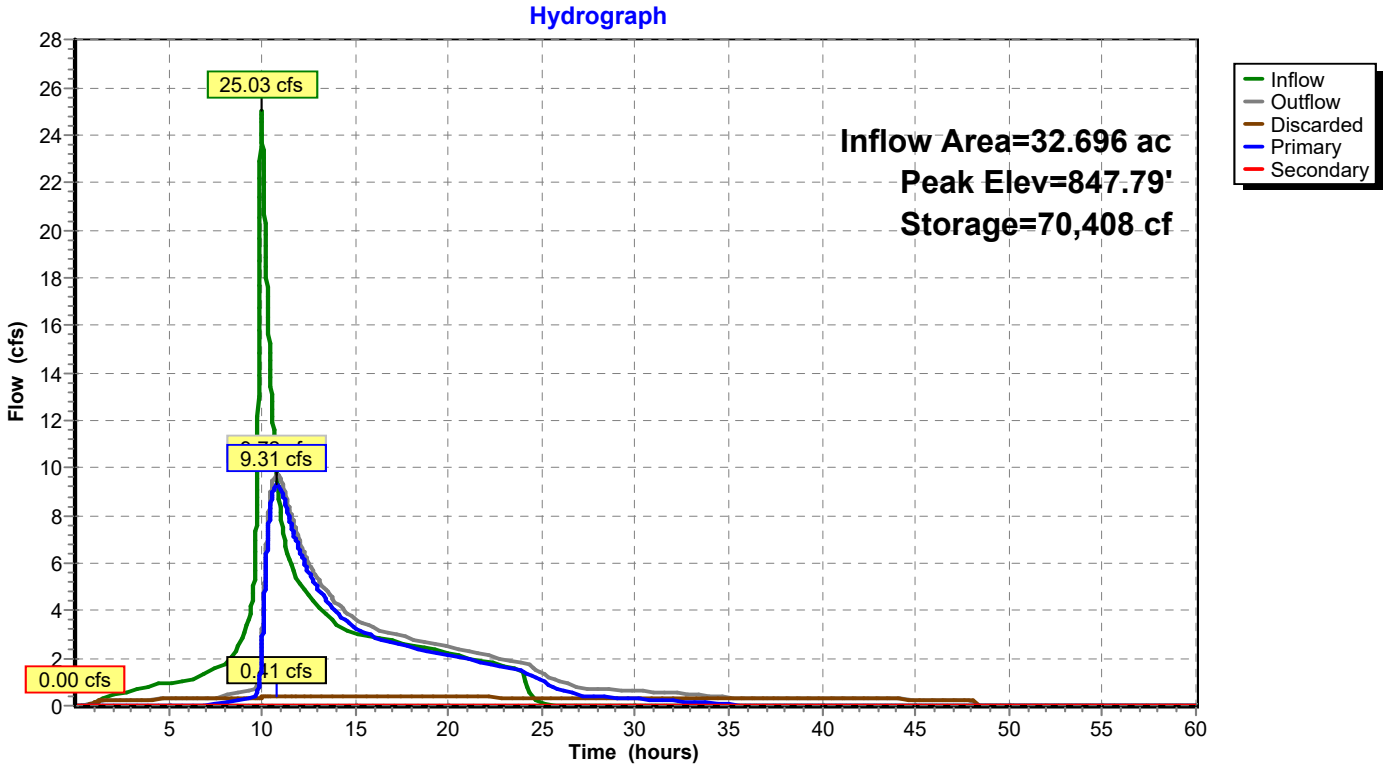
Device	Routing	Invert	Outlet Devices
#1	Primary	844.67'	**30.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 844.67' / 844.17' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	844.00'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#3	Device 1	844.67'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	845.67'	**6.0" W x 37.0" H Vert. Orifice/Grate** X 3 rows with 8.0" cc spacing C= 0.600
#5	Device 1	849.75'	**36.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 in 36.0" x 24.0" Grate (100% open area) Limited to weir flow at low heads
#6	Secondary	851.00'	**12.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.41 cfs @ 10.80 hrs HW=847.79' (Free Discharge)
└─**2=Exfiltration** (Controls 0.41 cfs)

Primary OutFlow Max=9.31 cfs @ 10.80 hrs HW=847.79' TW=846.17' (Dynamic Tailwater)
└─**1=Culvert** (Passes 9.31 cfs of 29.61 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 0.53 cfs @ 6.13 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 8.78 cfs @ 4.03 fps)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=844.00' (Free Discharge)
└─**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B5: Basin 5



Summary for Pond B6: Basin 6

Inflow Area = 34.039 ac, 52.56% Impervious, Inflow Depth = 3.05" for 50 Year event
Inflow = 42.75 cfs @ 9.98 hrs, Volume= 8.660 af
Outflow = 28.00 cfs @ 10.29 hrs, Volume= 8.366 af, Atten= 34%, Lag= 18.5 min
Discarded = 0.38 cfs @ 10.29 hrs, Volume= 1.047 af
Primary = 27.62 cfs @ 10.29 hrs, Volume= 7.319 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 851.60' @ 10.29 hrs Surf.Area= 0.458 ac Storage= 2.127 af

Plug-Flow detention time= 239.8 min calculated for 8.364 af (97% of inflow)
Center-of-Mass det. time= 217.0 min (966.0 - 749.0)

Volume	Invert	Avail.Storage	Storage Description
#1	839.50'	3.469 af	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3.792 af Overall - 0.323 af Embedded = 3.469 af
#2	839.50'	0.129 af	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 0.323 af Overall x 40.0% Voids
		3.598 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
839.50	0.081	0.000	0.000
840.00	0.081	0.040	0.040
841.00	0.081	0.081	0.121
842.00	0.081	0.081	0.202
843.00	0.081	0.081	0.283
844.00	0.081	0.081	0.364
845.00	0.061	0.071	0.435
846.00	0.133	0.097	0.532
847.00	0.260	0.196	0.729
848.00	0.292	0.276	1.005
849.00	0.325	0.309	1.313
850.00	0.360	0.343	1.656
851.00	0.434	0.397	2.053
852.00	0.474	0.454	2.507
854.40	0.597	1.285	3.792

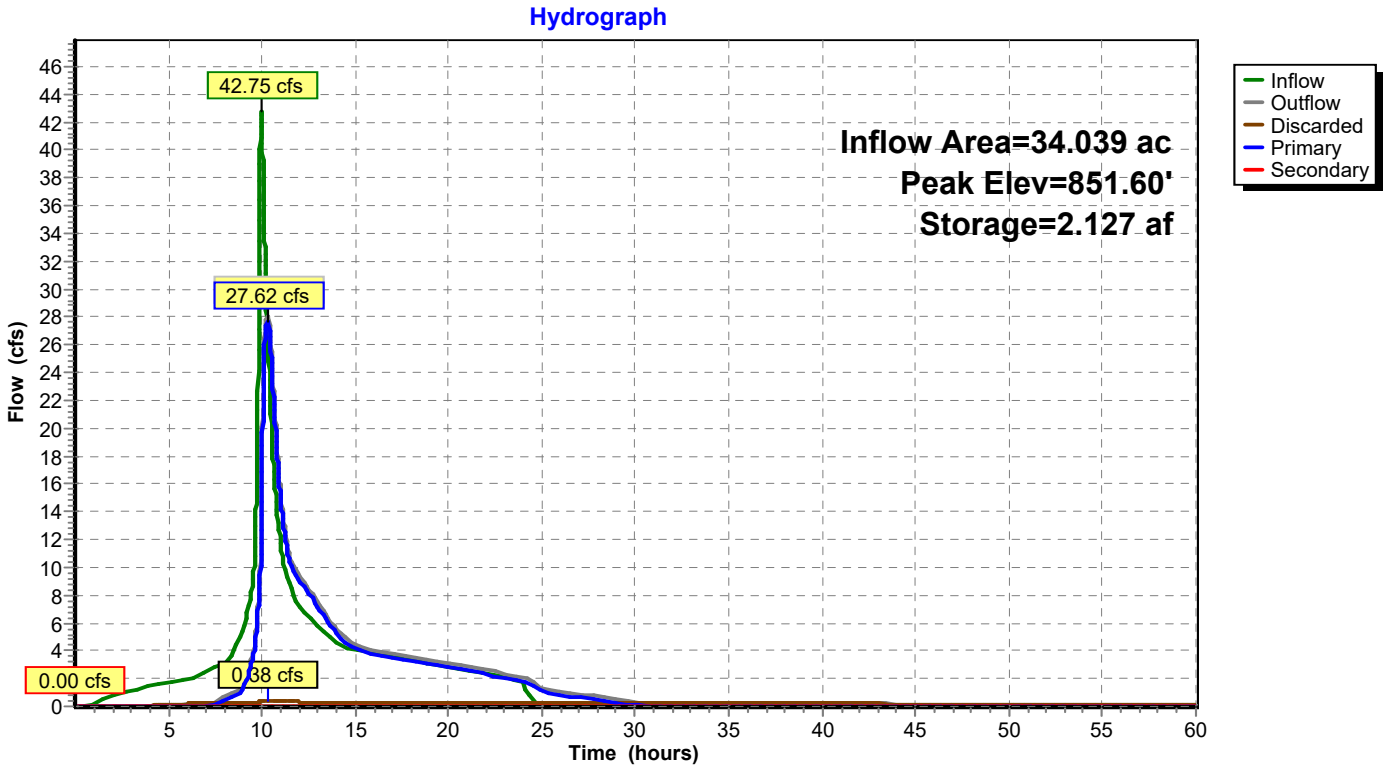
Device	Routing	Invert	Outlet Devices
#1	Primary	843.65'	**24.0" Round Culvert** L= 150.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 843.65' / 842.90' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Discarded	839.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	847.67'	**9.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	848.75'	**12.0" W x 9.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	849.50'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	850.67'	**69.6" W x 9.0" H Vert. Orifice/Grate** C= 0.600
#7	Secondary	852.88'	**40.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.38 cfs @ 10.29 hrs HW=851.60' (Free Discharge)
└─**2=Exfiltration** (Controls 0.38 cfs)

Primary OutFlow Max=27.62 cfs @ 10.29 hrs HW=851.60' TW=842.50' (Dynamic Tailwater)
└─**1=Culvert** (Passes 27.62 cfs of 37.11 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 1.76 cfs @ 9.39 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 5.68 cfs @ 7.57 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 4.91 cfs @ 6.54 fps)
  └─**6=Orifice/Grate** (Orifice Controls 15.28 cfs @ 3.51 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=839.50' TW=842.50' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B6: Basin 6



Summary for Pond B7: Basin 7

Inflow Area = 108.754 ac, 33.30% Impervious, Inflow Depth = 1.88" for 50 Year event
Inflow = 38.88 cfs @ 10.57 hrs, Volume= 16.997 af
Outflow = 17.47 cfs @ 12.48 hrs, Volume= 16.867 af, Atten= 55%, Lag= 115.1 min
Discarded = 1.23 cfs @ 12.48 hrs, Volume= 4.463 af
Primary = 16.23 cfs @ 12.48 hrs, Volume= 12.404 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 842.80' @ 12.48 hrs Surf.Area= 65,991 sf Storage= 200,494 cf

Plug-Flow detention time= 345.2 min calculated for 16.864 af (99% of inflow)
Center-of-Mass det. time= 333.2 min (1,252.5 - 919.3)

Volume	Invert	Avail.Storage	Storage Description
#1	839.00'	516,122 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
839.00	10,000	0	0
840.00	54,515	32,258	32,258
841.00	58,335	56,425	88,683
842.00	62,211	60,273	148,956
843.00	66,912	64,562	213,517
844.00	71,188	69,050	282,567
845.00	75,535	73,362	355,929
846.00	79,981	77,758	433,687
847.00	84,890	82,436	516,122

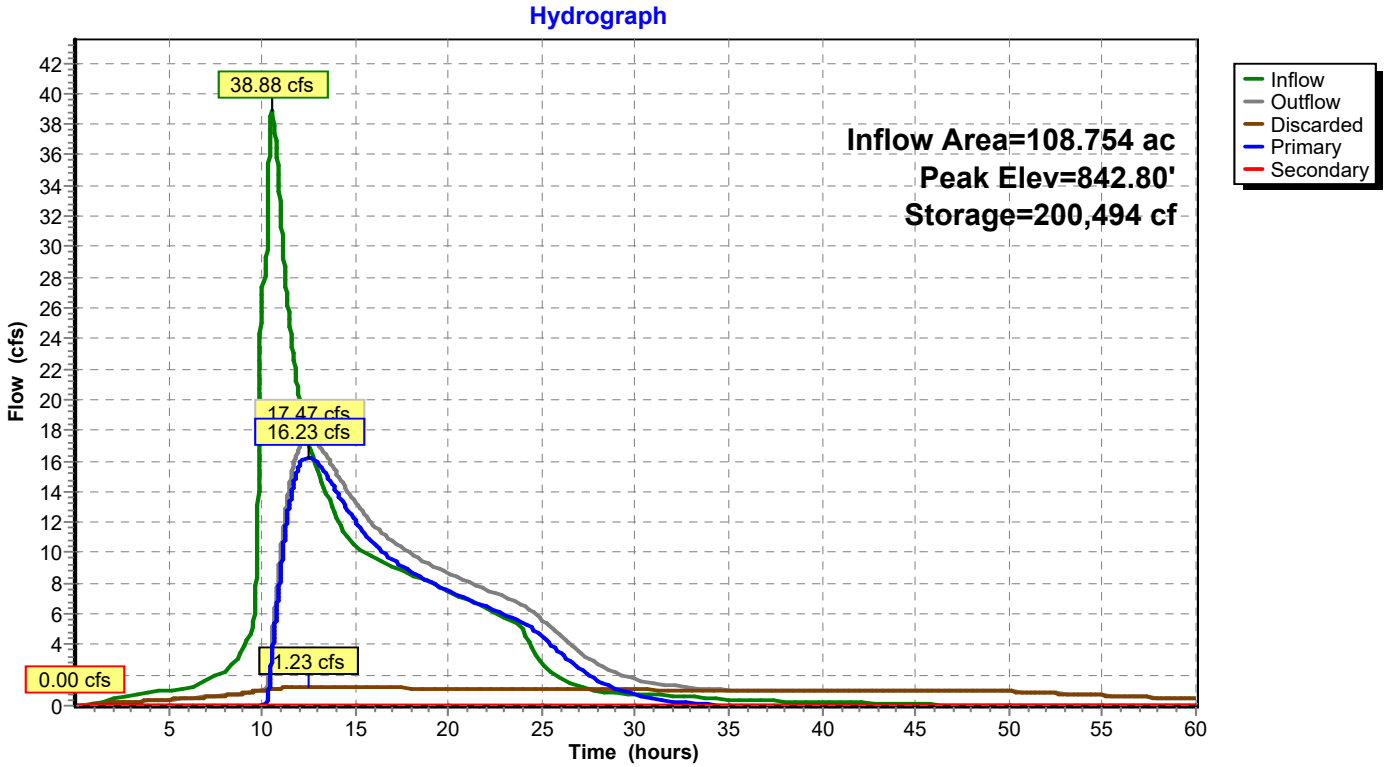
Device	Routing	Invert	Outlet Devices
#1	Primary	836.67'	**36.0" Round Culvert** L= 63.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.67' / 836.00' S= 0.0106 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Discarded	839.00'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#3	Device 1	840.75'	**26.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	841.25'	**12.0" W x 36.0" H Vert. Orifice/Grate** X 3 rows with 8.0" cc spacing C= 0.600
#5	Device 1	844.50'	**48.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 in 48.0" x 36.0" Grate (100% open area) Limited to weir flow at low heads
#6	Secondary	845.50'	**12.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=1.23 cfs @ 12.48 hrs HW=842.80' (Free Discharge)
└─**2=Exfiltration** (Controls 1.23 cfs)

Primary OutFlow Max=16.23 cfs @ 12.48 hrs HW=842.80' TW=837.58' (Dynamic Tailwater)
└─**1=Culvert** (Passes 16.23 cfs of 73.27 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 7.00 cfs @ 6.46 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 9.23 cfs @ 3.47 fps)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=839.00' (Free Discharge)
└─**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B7: Basin 7



Summary for Pond B8: Basin 8

Inflow Area = 44.689 ac, 35.47% Impervious, Inflow Depth = 2.31" for 50 Year event
Inflow = 33.51 cfs @ 9.99 hrs, Volume= 8.595 af
Outflow = 18.16 cfs @ 10.65 hrs, Volume= 8.596 af, Atten= 46%, Lag= 39.5 min
Discarded = 0.53 cfs @ 10.65 hrs, Volume= 1.899 af
Primary = 17.63 cfs @ 10.65 hrs, Volume= 6.696 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 857.70' @ 10.65 hrs Surf.Area= 28,664 sf Storage= 108,148 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 389.8 min (1,168.0 - 778.2)

Volume	Invert	Avail.Storage	Storage Description
#1	853.00'	147,517 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
853.00	17,554	0	0
854.00	19,812	18,683	18,683
855.00	22,126	20,969	39,652
856.00	24,497	23,312	62,964
857.00	26,924	25,711	88,674
858.00	29,407	28,166	116,840
859.00	31,948	30,678	147,517

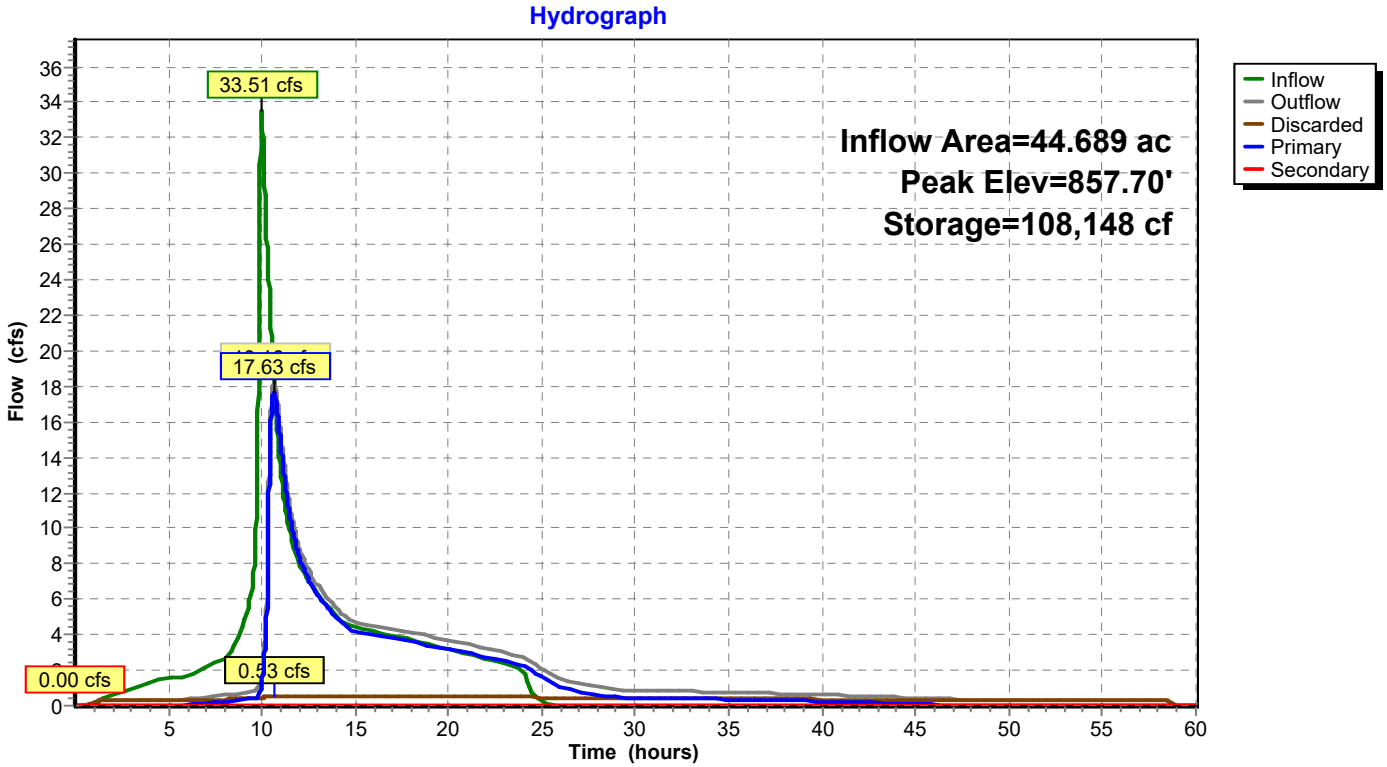
Device	Routing	Invert	Outlet Devices
#1	Primary	853.00'	**30.0" Round Culvert** L= 1,200.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 853.00' / 844.17' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	853.00'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#3	Device 1	853.58'	**2.0" W x 5.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	855.67'	**5.0" W x 12.0" H Vert. Orifice/Grate** X 4 rows with 8.0" cc spacing C= 0.600
#5	Device 1	857.25'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 in 36.0" x 36.0" Grate (100% open area) Limited to weir flow at low heads
#6	Secondary	858.75'	**16.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.53 cfs @ 10.65 hrs HW=857.70' (Free Discharge)
└─**2=Exfiltration** (Controls 0.53 cfs)

Primary OutFlow Max=17.63 cfs @ 10.65 hrs HW=857.70' TW=846.16' (Dynamic Tailwater)
└─**1=Culvert** (Passes 17.63 cfs of 39.51 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 0.66 cfs @ 9.52 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 5.09 cfs @ 4.48 fps)
  └─**5=Orifice/Grate** (Weir Controls 11.87 cfs @ 2.20 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=853.00' (Free Discharge)
└─**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B8: Basin 8



Summary for Pond B9: Basin 9

Inflow Area = 11.446 ac, 17.36% Impervious, Inflow Depth = 1.75" for 50 Year event
Inflow = 6.65 cfs @ 9.99 hrs, Volume= 1.667 af
Outflow = 4.29 cfs @ 10.42 hrs, Volume= 1.665 af, Atten= 35%, Lag= 25.8 min
Primary = 4.29 cfs @ 10.42 hrs, Volume= 1.665 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 849.15' @ 10.42 hrs Surf.Area= 7,629 sf Storage= 7,800 cf

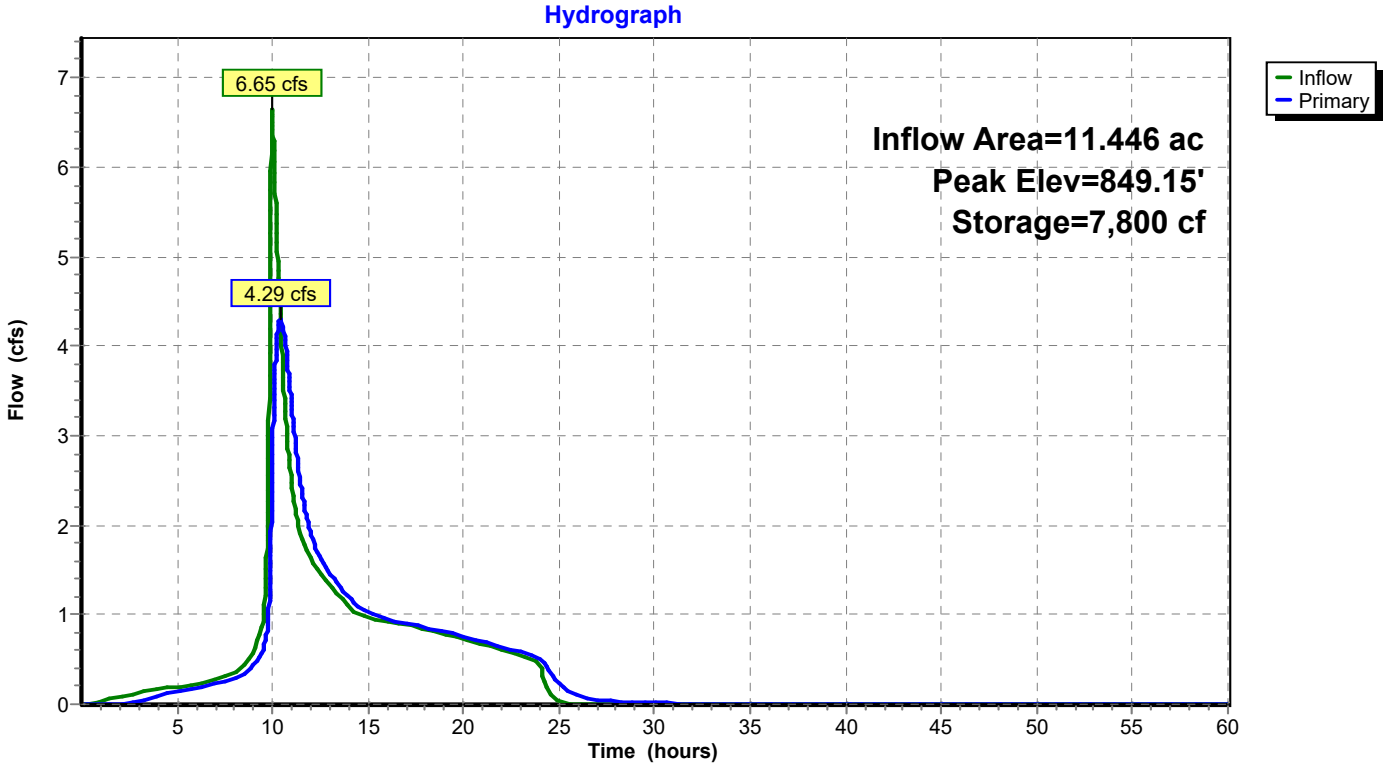
Plug-Flow detention time= 52.0 min calculated for 1.665 af (100% of inflow)
Center-of-Mass det. time= 51.4 min (868.5 - 817.1)

Volume	Invert	Avail.Storage	Storage Description
#1	848.00'	48,750 cf	**30.00'W x 200.00'L x 5.00'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	848.00'	**18.0" Round Culvert** L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 848.00' / 847.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	848.00'	**15.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=4.29 cfs @ 10.42 hrs HW=849.15' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 4.29 cfs of 5.28 cfs potential flow)
└─**2=Orifice/Grate** (Orifice Controls 4.29 cfs @ 3.64 fps)

Pond B9: Basin 9



Summary for Pond Ex SD: Tract #1632 Ex. 36" SD Outlet

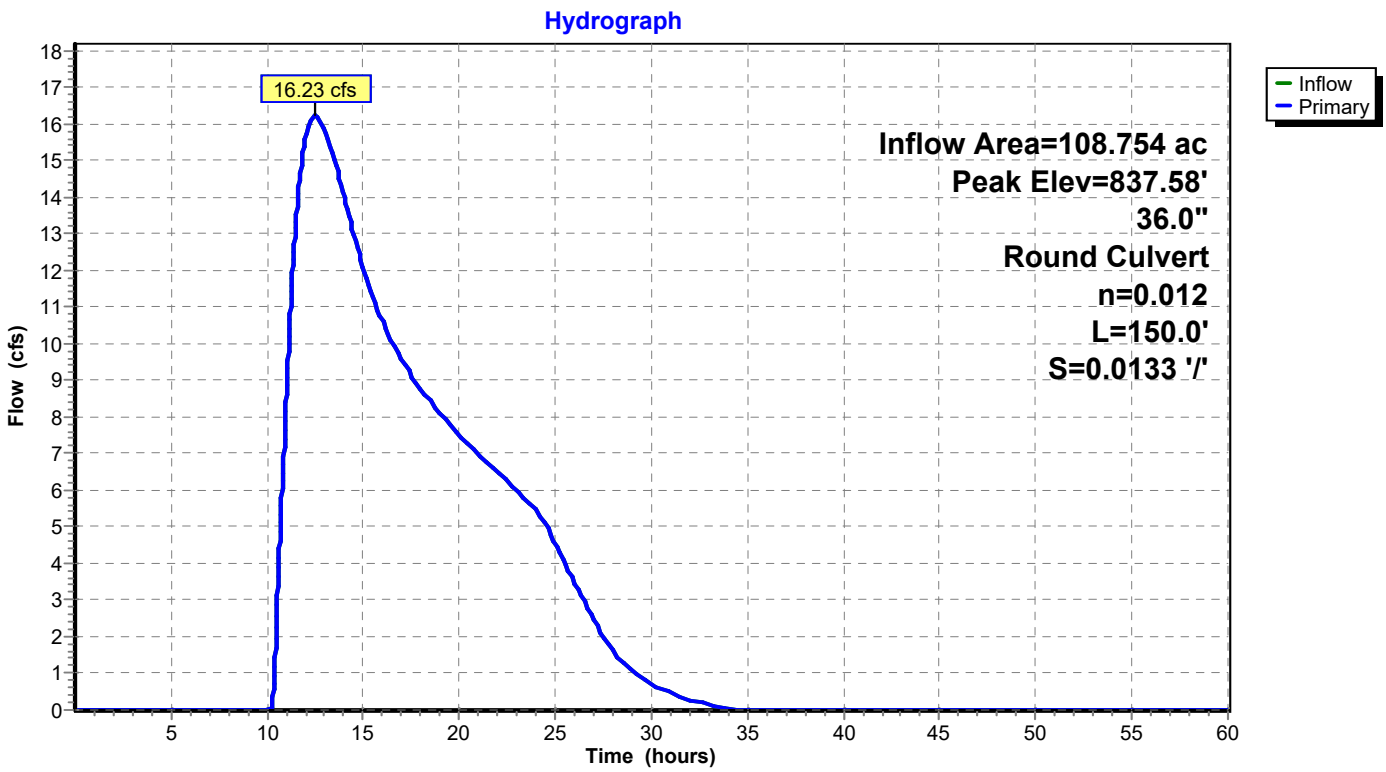
Inflow Area = 108.754 ac, 33.30% Impervious, Inflow Depth = 1.37" for 50 Year event
Inflow = 16.23 cfs @ 12.48 hrs, Volume= 12.404 af
Outflow = 16.23 cfs @ 12.48 hrs, Volume= 12.404 af, Atten= 0%, Lag= 0.0 min
Primary = 16.23 cfs @ 12.48 hrs, Volume= 12.404 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 837.58' @ 12.48 hrs
Flood Elev= 843.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	836.00'	**36.0" Round Culvert** L= 150.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.00' / 834.00' S= 0.0133 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=16.23 cfs @ 12.48 hrs HW=837.58' TW=835.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 16.23 cfs @ 4.29 fps)

Pond Ex SD: Tract #1632 Ex. 36" SD Outlet



Summary for Pond MC Q: SD System

[58] Hint: Peaked 0.49' above defined flood level

Inflow Area =	21.500 ac, 80.00% Impervious, Inflow Depth = 3.80" for 50 Year event				
Inflow =	37.43 cfs @	9.97 hrs,	Volume=	6.803 af	
Outflow =	37.24 cfs @	9.99 hrs,	Volume=	6.522 af,	Atten= 1%, Lag= 0.8 min
Discarded =	0.12 cfs @	9.99 hrs,	Volume=	0.374 af	
Primary =	18.03 cfs @	9.99 hrs,	Volume=	2.986 af	
Secondary =	19.09 cfs @	9.99 hrs,	Volume=	3.162 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 845.99' @ 9.99 hrs Surf.Area= 0.132 ac Storage= 0.530 af
Flood Elev= 845.50' Surf.Area= 0.097 ac Storage= 0.474 af

Plug-Flow detention time= 117.7 min calculated for 6.521 af (96% of inflow)
Center-of-Mass det. time= 89.5 min (809.5 - 720.0)

Volume	Invert	Avail.Storage	Storage Description
#1	839.50'	0.607 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
839.50	0.081	0.000	0.000
840.00	0.081	0.040	0.040
841.00	0.081	0.081	0.121
842.00	0.081	0.081	0.202
843.00	0.081	0.081	0.283
844.00	0.081	0.081	0.364
845.00	0.061	0.071	0.434
846.00	0.133	0.097	0.531
846.50	0.172	0.076	0.607

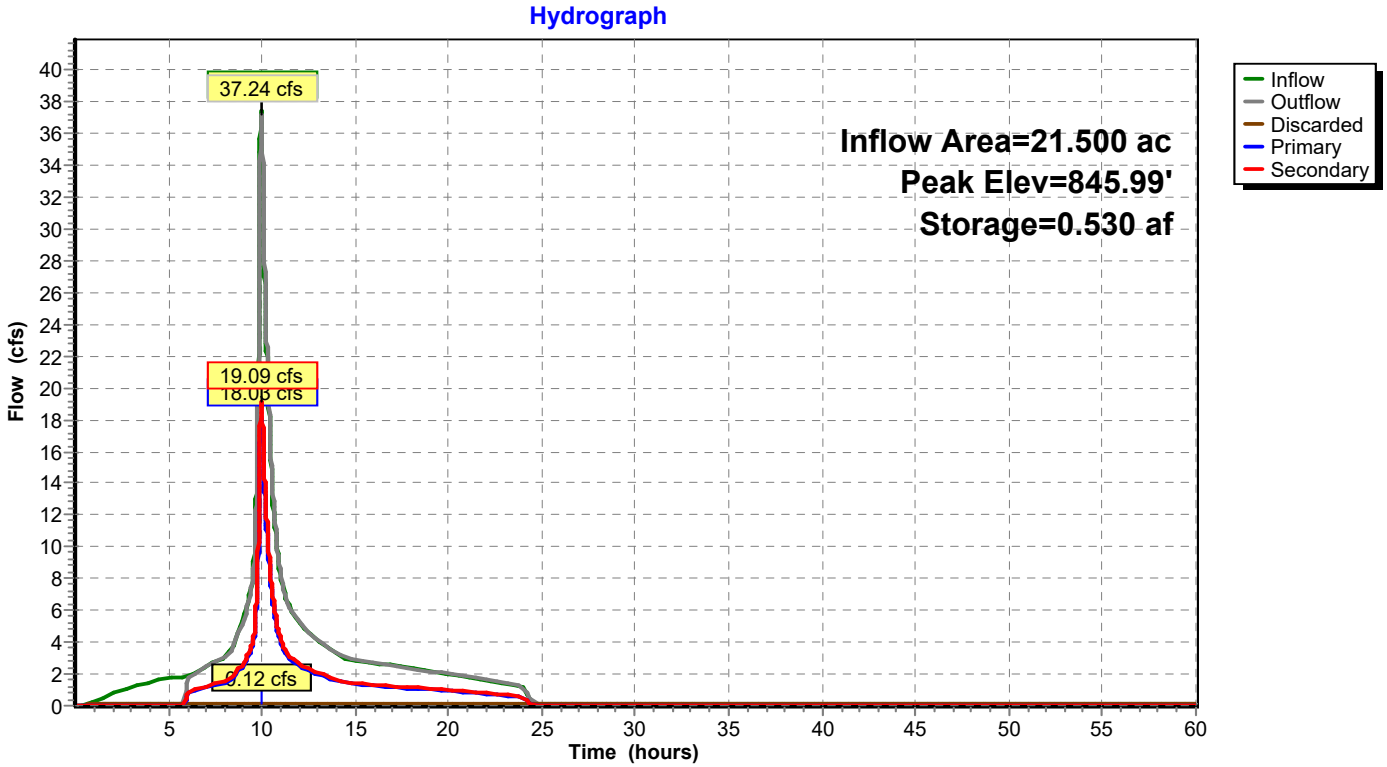
Device	Routing	Invert	Outlet Devices
#1	Primary	841.50'	**36.0" Round Culvert** L= 585.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 841.50' / 838.50' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	845.50'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	839.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 750.00'
#4	Secondary	845.50'	**20.0' long (Profile 4) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.77 2.97 3.21

Discarded OutFlow Max=0.12 cfs @ 9.99 hrs HW=845.99' (Free Discharge)
└─**3=Exfiltration** (Controls 0.12 cfs)

Primary OutFlow Max=18.02 cfs @ 9.99 hrs HW=845.99' TW=840.33' (Dynamic Tailwater)
└─**1=Culvert** (Passes 18.02 cfs of 53.14 cfs potential flow)
  └─**2=Orifice/Grate** (Weir Controls 18.02 cfs @ 2.29 fps)

Secondary OutFlow Max=19.08 cfs @ 9.99 hrs HW=845.99' TW=835.80' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 19.08 cfs @ 1.94 fps)

Pond MC Q: SD System



Summary for Pond SD: 42" HDPE SD

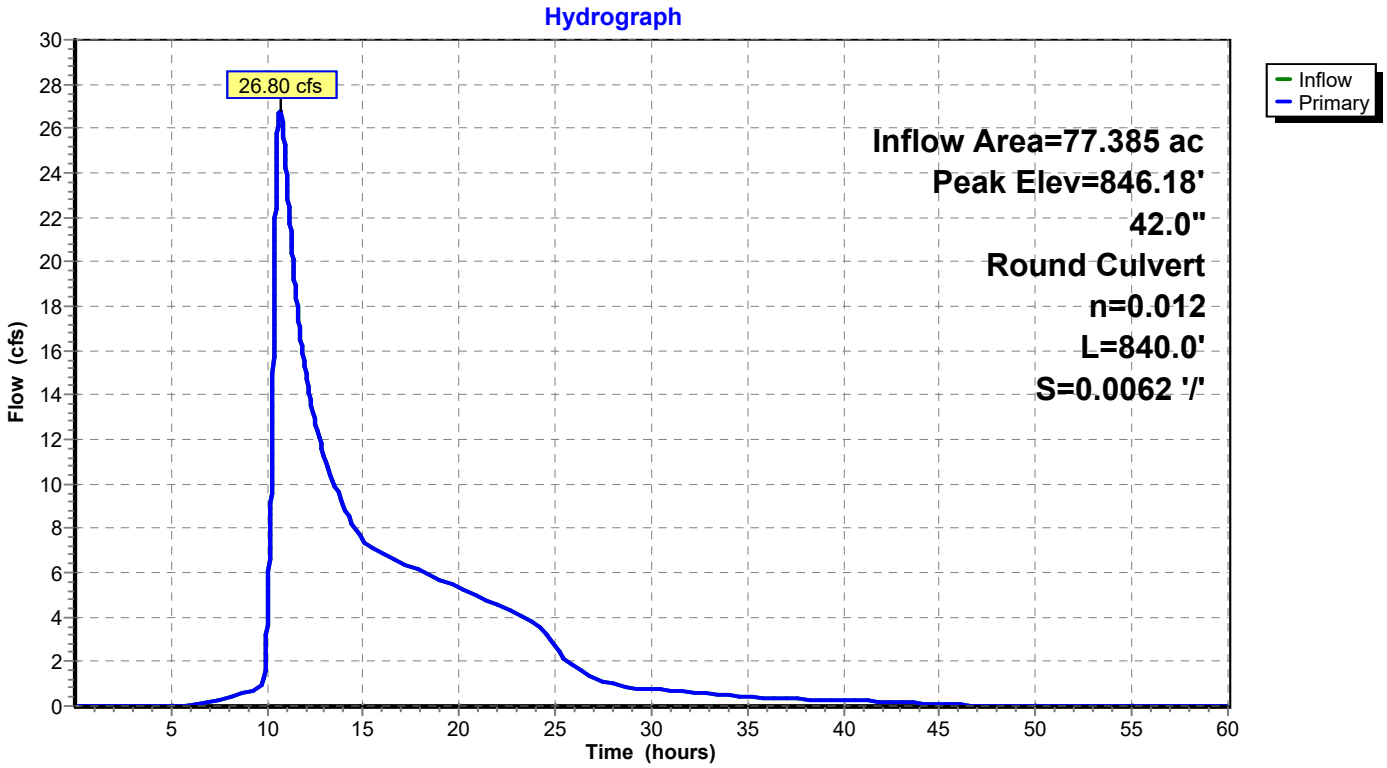
Inflow Area = 77.385 ac, 33.30% Impervious, Inflow Depth = 1.74" for 50 Year event
Inflow = 26.80 cfs @ 10.67 hrs, Volume= 11.220 af
Outflow = 26.80 cfs @ 10.67 hrs, Volume= 11.220 af, Atten= 0%, Lag= 0.0 min
Primary = 26.80 cfs @ 10.67 hrs, Volume= 11.220 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 846.18' @ 10.74 hrs
Flood Elev= 853.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	844.17'	**42.0" Round Culvert** L= 840.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 844.17' / 839.00' S= 0.0062 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=26.74 cfs @ 10.67 hrs HW=846.17' TW=841.60' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 26.74 cfs @ 6.80 fps)

Pond SD: 42" HDPE SD



Time span=0.01-60.00 hrs, dt=0.01 hrs, 6000 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Pond 1P: SD Inlet with Bypass SD Peak Elev=825.82' Inflow=93.81 cfs 17.708 af
Primary=93.81 cfs 17.708 af Secondary=0.00 cfs 0.000 af Outflow=93.81 cfs 17.708 af

Pond 2P: 60" SD MH Peak Elev=840.46' Inflow=20.20 cfs 3.392 af
Primary=20.20 cfs 3.392 af Secondary=0.00 cfs 0.000 af Outflow=20.20 cfs 3.392 af

Pond 15P: SD System 42" HDPE Peak Elev=844.66' Inflow=68.70 cfs 3.916 af
Outflow=68.70 cfs 3.916 af

Pond 16P: Dbl Conc. Arch Culvert (37x23) Peak Elev=844.69' Inflow=20.76 cfs 6.013 af
36.3" x 22.5", R=18.8"/51.0" Pipe Arch Culvert x 2.00 n=0.011 L=860.0' S=0.0024 '/' Outflow=20.76 cfs 6.013 af

Pond 17P: Gran Cielo Dwy Peak Elev=855.19' Storage=12,570 cf Inflow=222.96 cfs 41.649 af
Primary=118.06 cfs 37.935 af Secondary=0.66 cfs 0.009 af Tertiary=103.94 cfs 3.705 af Outflow=222.66 cfs 41.649 af

Pond 18P: GC-CkD1 Peak Elev=850.03' Storage=21,023 cf Inflow=223.80 cfs 57.362 af
Primary=0.62 cfs 0.037 af Secondary=49.36 cfs 1.730 af Tertiary=163.56 cfs 55.561 af Outflow=213.46 cfs 57.328 af

Pond 19P: GC-CkD2 Peak Elev=849.41' Storage=27,160 cf Inflow=76.40 cfs 6.218 af
Primary=1.30 cfs 1.510 af Secondary=50.40 cfs 4.202 af Tertiary=18.98 cfs 0.506 af Outflow=70.68 cfs 6.217 af

Pond 20P: GC-CkD3 Peak Elev=845.96' Storage=15,712 cf Inflow=67.10 cfs 8.618 af
Primary=6.37 cfs 4.056 af Secondary=10.21 cfs 1.141 af Tertiary=49.73 cfs 3.410 af Outflow=66.32 cfs 8.607 af

Pond B1: Basin 1 Peak Elev=838.35' Storage=7.075 af Inflow=143.08 cfs 18.094 af
Discarded=1.18 cfs 3.251 af Primary=42.68 cfs 14.446 af Secondary=0.00 cfs 0.000 af Outflow=43.86 cfs 17.698 af

Pond B10: Basin 10 Peak Elev=818.33' Storage=154,822 cf Inflow=42.03 cfs 9.094 af
Discarded=0.86 cfs 2.890 af Primary=14.28 cfs 5.727 af Secondary=0.00 cfs 0.000 af Outflow=15.14 cfs 8.617 af

Pond B11: Basin 11 Peak Elev=834.16' Storage=59,695 cf Inflow=26.34 cfs 4.086 af
Discarded=0.28 cfs 0.803 af Primary=10.23 cfs 3.020 af Secondary=0.00 cfs 0.000 af Outflow=10.51 cfs 3.823 af

Pond B12: Basin 12 Peak Elev=838.70' Storage=95,925 cf Inflow=35.58 cfs 5.330 af
Discarded=0.53 cfs 1.585 af Primary=5.12 cfs 3.464 af Secondary=0.00 cfs 0.000 af Outflow=5.64 cfs 5.049 af

Pond B13: Basin 13 Peak Elev=844.19' Storage=3.165 af Inflow=119.46 cfs 17.044 af
Discarded=0.48 cfs 1.396 af Primary=108.10 cfs 15.220 af Secondary=0.00 cfs 0.000 af Outflow=108.58 cfs 16.616 af

Pond B4: Basin 4 Peak Elev=840.12' Storage=144,637 cf Inflow=65.77 cfs 11.274 af
Discarded=0.60 cfs 1.723 af Primary=34.06 cfs 9.285 af Secondary=0.00 cfs 0.000 af Outflow=34.66 cfs 11.007 af

Pond B5: Basin 5 Peak Elev=848.15' Storage=78,258 cf Inflow=29.91 cfs 6.733 af
Discarded=0.42 cfs 1.257 af Primary=12.28 cfs 5.476 af Secondary=0.00 cfs 0.000 af Outflow=12.70 cfs 6.733 af

Pond B6: Basin 6 Peak Elev=851.88' Storage=2.255 af Inflow=49.06 cfs 9.876 af
Discarded=0.39 cfs 1.062 af Primary=32.02 cfs 8.518 af Secondary=0.00 cfs 0.000 af Outflow=32.41 cfs 9.581 af

Pond B7: Basin 7 Peak Elev=843.21' Storage=227,792 cf Inflow=53.39 cfs 20.246 af
Discarded=1.28 cfs 4.541 af Primary=22.91 cfs 15.562 af Secondary=0.00 cfs 0.000 af Outflow=24.18 cfs 20.103 af

Pond B8: Basin 8 Peak Elev=857.85' Storage=112,464 cf Inflow=39.82 cfs 9.971 af
Discarded=0.54 cfs 1.926 af Primary=24.66 cfs 8.046 af Secondary=0.00 cfs 0.000 af Outflow=25.20 cfs 9.971 af

Pond B9: Basin 9 Peak Elev=849.37' Storage=9,543 cf Inflow=8.24 cfs 1.988 af
Outflow=5.10 cfs 1.986 af

Pond Ex SD: Tract #1632 **Ex. 36" SD Outlet** Peak Elev=837.94' Inflow=22.91 cfs 15.562 af
36.0" Round Culvert n=0.012 L=150.0' S=0.0133 '/' Outflow=22.91 cfs 15.562 af

Pond MC Q: SD System Peak Elev=846.03' Storage=0.535 af Inflow=42.04 cfs 7.642 af
Discarded=0.12 cfs 0.377 af Primary=20.20 cfs 3.392 af Secondary=21.51 cfs 3.592 af Outflow=41.83 cfs 7.360 af

Pond SD: 42" HDPE SD Peak Elev=846.57' Inflow=36.40 cfs 13.522 af
42.0" Round Culvert n=0.012 L=840.0' S=0.0062 '/' Outflow=36.40 cfs 13.522 af

Summary for Pond 1P: SD Inlet with Bypass SD

Inflow Area = 108.566 ac, 6.93% Impervious, Inflow Depth = 1.96" for 100 Year event
Inflow = 93.81 cfs @ 9.98 hrs, Volume= 17.708 af
Outflow = 93.81 cfs @ 9.98 hrs, Volume= 17.708 af, Atten= 0%, Lag= 0.0 min
Primary = 93.81 cfs @ 9.98 hrs, Volume= 17.708 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

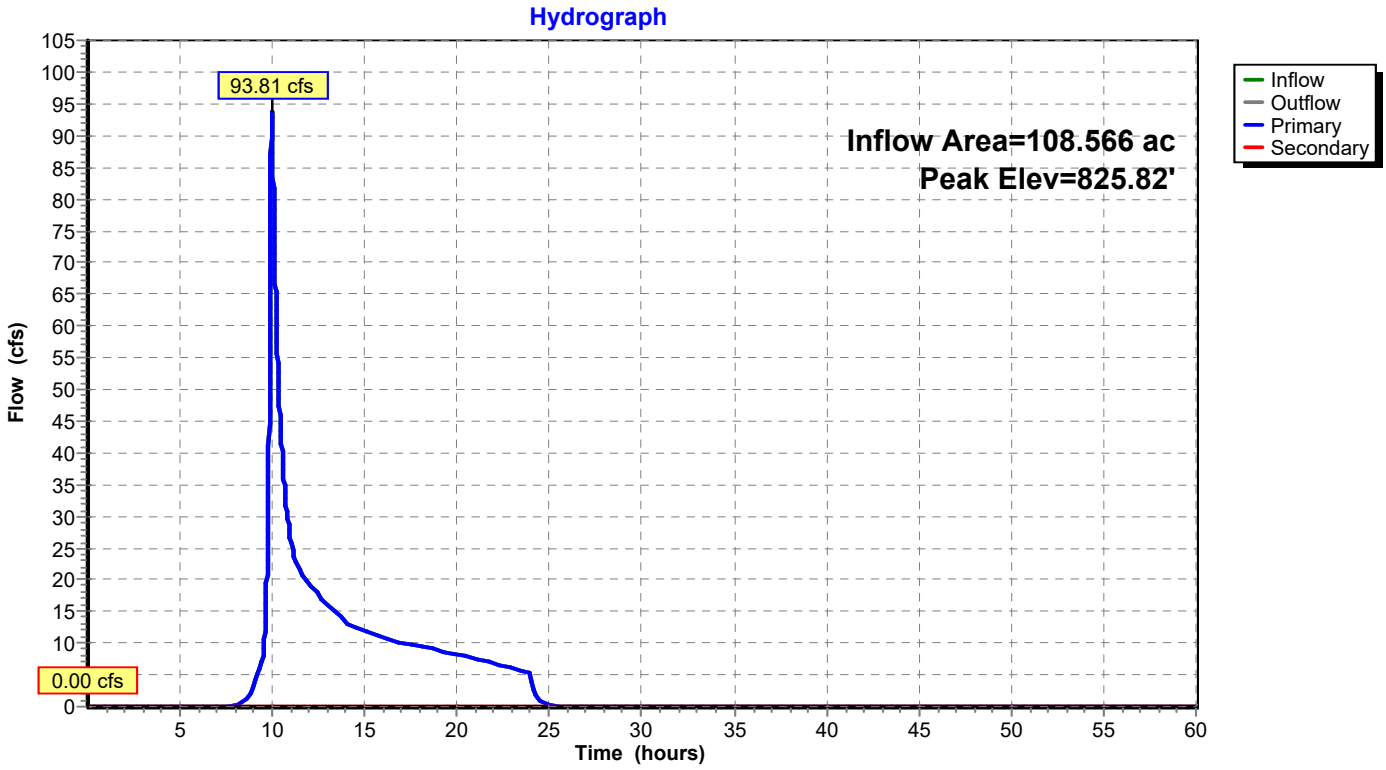
Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 825.82' @ 9.98 hrs
Flood Elev= 826.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	820.00'	**48.0" Round Culvert** L= 990.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 820.00' / 814.11' S= 0.0059 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	824.50'	**78.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	825.90'	**Special & User-Defined** Head (feet) 0.00 0.50 0.67 0.83 Disch. (cfs) 0.000 200.000 450.000 1,200.000

Primary OutFlow Max=93.72 cfs @ 9.98 hrs HW=825.82' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 93.72 cfs of 117.53 cfs potential flow)
└─**2=Orifice/Grate** (Weir Controls 93.72 cfs @ 3.75 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=820.00' TW=0.00' (Dynamic Tailwater)
└─**3=Special & User-Defined** (Controls 0.00 cfs)

Pond 1P: SD Inlet with Bypass SD



Summary for Pond 2P: 60" SD MH

Inflow Area = 21.500 ac, 80.00% Impervious, Inflow Depth = 1.89" for 100 Year event
Inflow = 20.20 cfs @ 9.99 hrs, Volume= 3.392 af
Outflow = 20.20 cfs @ 9.99 hrs, Volume= 3.392 af, Atten= 0%, Lag= 0.0 min
Primary = 20.20 cfs @ 9.99 hrs, Volume= 3.392 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

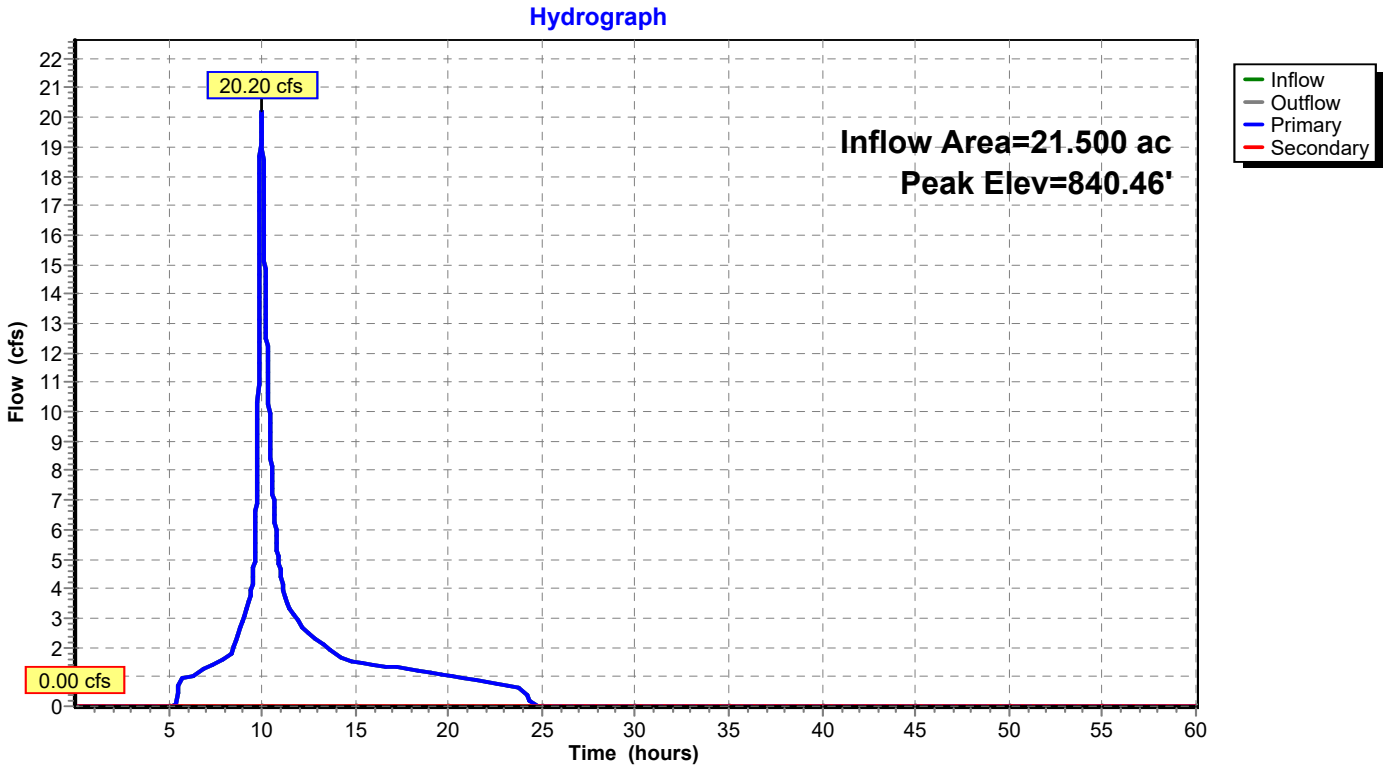
Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 840.46' @ 9.99 hrs
Flood Elev= 845.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	838.50'	**36.0" Round Culvert** L= 500.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 838.50' / 836.50' S= 0.0040 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf
#2	Secondary	844.25'	**69.6" W x 9.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=20.18 cfs @ 9.99 hrs HW=840.46' TW=836.26' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 20.18 cfs @ 5.87 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=838.50' TW=826.50' (Dynamic Tailwater)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: 60" SD MH



Summary for Pond 15P: SD System 42" HDPE

2 - 6 foot long curb openings (one on both sides of Linne Rd)
with 25 foot x 12 inch wide channel drain in Conc C&G

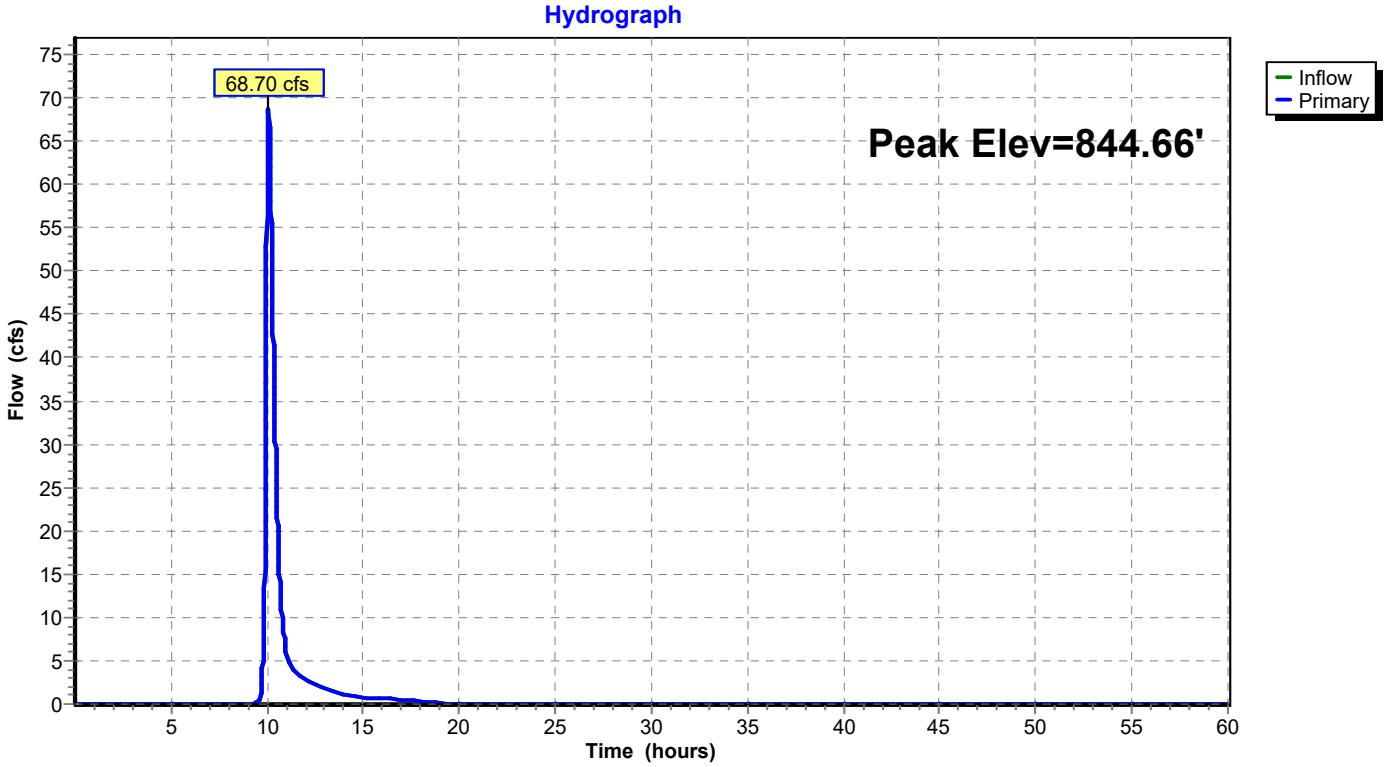
Inflow	=	68.70 cfs @	10.08 hrs,	Volume=	3.916 af
Outflow	=	68.70 cfs @	10.08 hrs,	Volume=	3.916 af, Atten= 0%, Lag= 0.0 min
Primary	=	68.70 cfs @	10.08 hrs,	Volume=	3.916 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 844.66' @ 10.08 hrs
Flood Elev= 845.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	839.75'	**42.0" Round Culvert** L= 1,370.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 839.75' / 833.60' S= 0.0045 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf
#2	Device 1	844.17'	**72.0" W x 9.0" H Vert. Orifice/Grate X 2.00** C= 0.600
#3	Device 1	844.25'	**12.0" x 180.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=68.68 cfs @ 10.08 hrs HW=844.66' TW=836.94' (Dynamic Tailwater)
└─**1=Culvert** (Passes 68.68 cfs of 75.07 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 13.30 cfs @ 2.25 fps)
  └─**3=Orifice/Grate** (Weir Controls 55.38 cfs @ 2.10 fps)

Pond 15P: SD System 42" HDPE



Summary for Pond 16P: Dbl Conc. Arch Culvert (37x23)

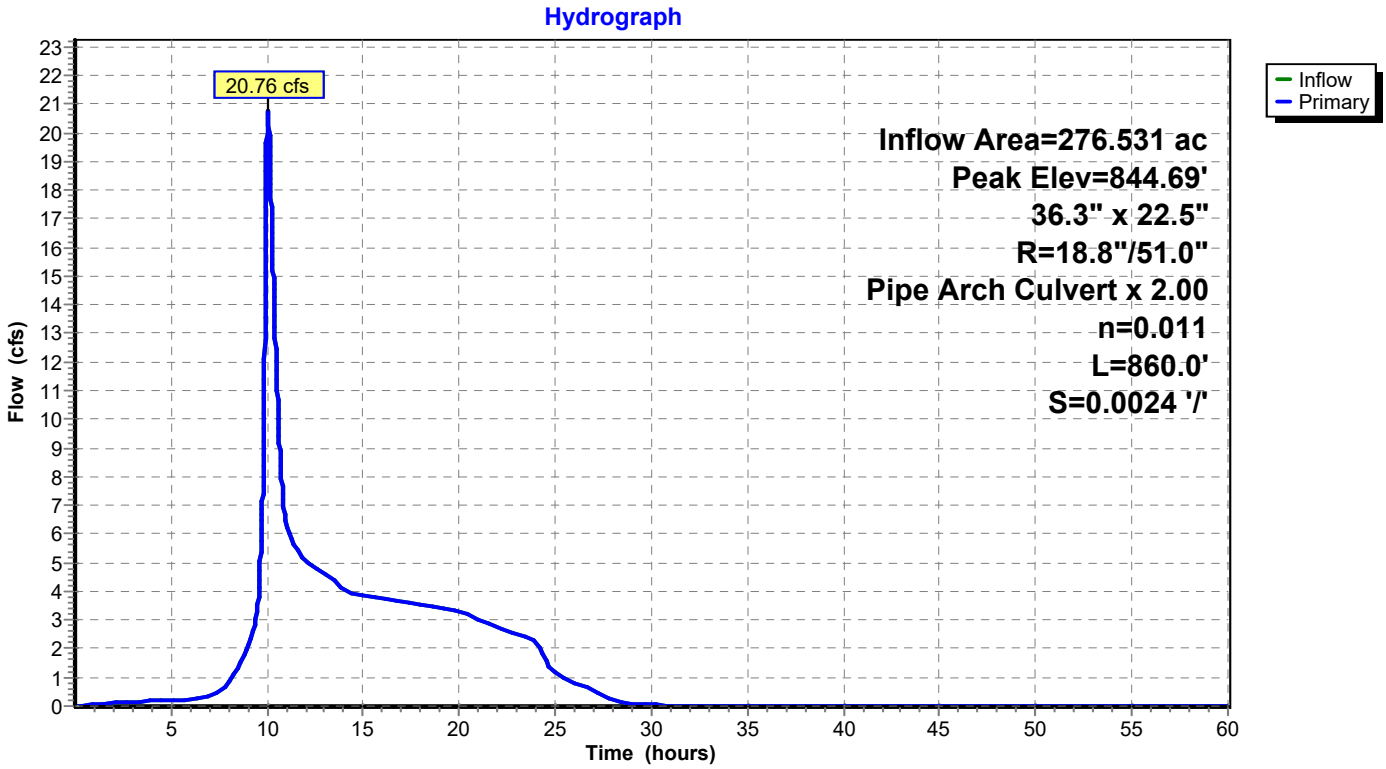
Inflow Area = 276.531 ac, 1.60% Impervious, Inflow Depth = 0.26" for 100 Year event
Inflow = 20.76 cfs @ 10.04 hrs, Volume= 6.013 af
Outflow = 20.76 cfs @ 10.04 hrs, Volume= 6.013 af, Atten= 0%, Lag= 0.0 min
Primary = 20.76 cfs @ 10.04 hrs, Volume= 6.013 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 844.69' @ 10.04 hrs
Flood Elev= 846.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	843.50'	**36.3" W x 22.5" H, R=18.8"/51.0" Pipe Arch RCP_Arch 37x23 X 2.00** L= 860.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 843.50' / 841.40' S= 0.0024 '/' Cc= 0.900 n= 0.011, Flow Area= 4.43 sf

Primary OutFlow Max=20.76 cfs @ 10.04 hrs HW=844.69' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Arch 37x23** (Barrel Controls 20.76 cfs @ 4.40 fps)

Pond 16P: Dbl Conc. Arch Culvert (37x23)



Summary for Pond 17P: Gran Cielo Dwy

[58] Hint: Peaked 0.73' above defined flood level

Inflow Area =	166.738 ac,	0.91% Impervious,	Inflow Depth =	3.00"	for 100 Year event
Inflow =	222.96 cfs @	9.98 hrs,	Volume=	41.649 af	
Outflow =	222.66 cfs @	9.99 hrs,	Volume=	41.649 af,	Atten= 0%, Lag= 0.4 min
Primary =	118.06 cfs @	9.99 hrs,	Volume=	37.935 af	
Secondary =	0.66 cfs @	9.99 hrs,	Volume=	0.009 af	
Tertiary =	103.94 cfs @	9.99 hrs,	Volume=	3.705 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 855.19' @ 9.99 hrs Surf.Area= 8,552 sf Storage= 12,570 cf
Flood Elev= 854.46' Surf.Area= 6,947 sf Storage= 6,934 cf

Plug-Flow detention time= 1.7 min calculated for 41.642 af (100% of inflow)
Center-of-Mass det. time= 1.7 min (806.9 - 805.2)

Volume	Invert	Avail.Storage	Storage Description
#1	852.84'	22,270 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.84	0	0	0
853.14	2,586	388	388
854.14	6,275	4,431	4,818
855.14	8,376	7,326	12,144
856.14	11,876	10,126	22,270

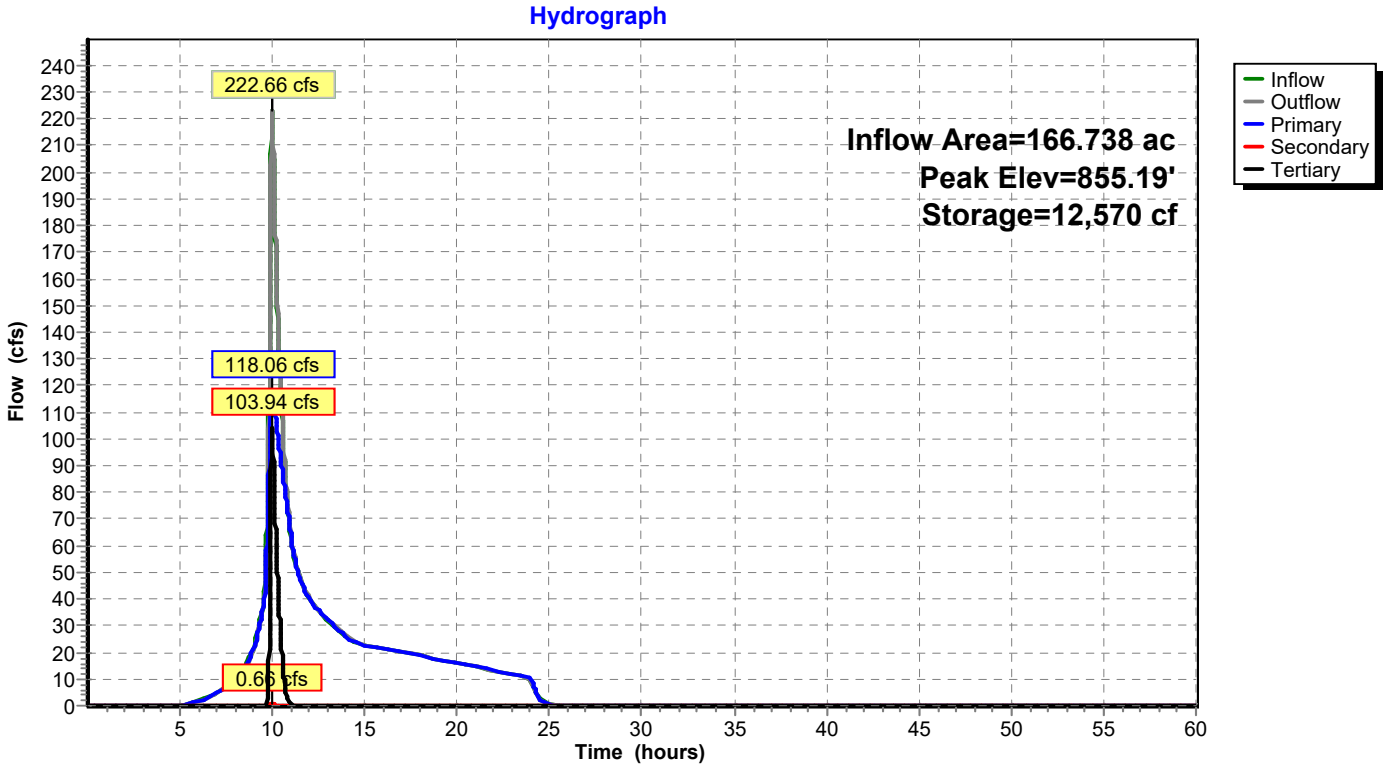
Device	Routing	Invert	Outlet Devices
#1	Primary	852.84'	**30.0" Round Culvert X 6.00** L= 77.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 852.84' / 851.76' S= 0.0140 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Secondary	854.90'	**Special & User-Defined** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 Disch. (cfs) 0.000 0.010 0.200 0.710 1.580 2.700 4.030 5.690 7.620 9.790 12.320 15.140 18.190 21.460 24.930 28.580 32.420 36.420 40.580 44.900 49.360 53.970
#3	Tertiary	854.40'	**Special & User-Defined** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 Disch. (cfs) 0.000 0.080 3.470 10.790 21.890 36.810 55.720 78.890 106.600 138.580 174.620 214.630 258.590 306.440 358.240 413.470 471.810 533.060 597.050 663.650 732.760 804.270 878.100 954.180 1,032.440 1,112.810 1,195.240

Primary OutFlow Max=118.05 cfs @ 9.99 hrs HW=855.19' TW=849.96' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 118.05 cfs @ 5.32 fps)

Secondary OutFlow Max=0.66 cfs @ 9.99 hrs HW=855.19' TW=849.96' (Dynamic Tailwater)
└─**2=Special & User-Defined** (Custom Controls 0.66 cfs)

Tertiary OutFlow Max=103.87 cfs @ 9.99 hrs HW=855.19' TW=854.30' (Dynamic Tailwater)
└─**3=Special & User-Defined** (Custom Controls 103.87 cfs)

Pond 17P: Gran Cielo Dwy



Summary for Pond 18P: GC-CkD1

Inflow Area = 240.622 ac, 1.05% Impervious, Inflow Depth = 2.86" for 100 Year event
Inflow = 223.80 cfs @ 9.98 hrs, Volume= 57.362 af
Outflow = 213.46 cfs @ 10.03 hrs, Volume= 57.328 af, Atten= 5%, Lag= 2.9 min
Primary = 0.62 cfs @ 9.99 hrs, Volume= 0.037 af
Secondary = 49.36 cfs @ 10.03 hrs, Volume= 1.730 af
Tertiary = 163.56 cfs @ 10.04 hrs, Volume= 55.561 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 850.03' @ 10.04 hrs Surf.Area= 17,046 sf Storage= 21,023 cf
Flood Elev= 850.17' Surf.Area= 18,446 sf Storage= 23,434 cf

Plug-Flow detention time= 1.5 min calculated for 57.318 af (100% of inflow)
Center-of-Mass det. time= 1.1 min (818.0 - 816.9)

Volume	Invert	Avail.Storage	Storage Description
#1	844.56'	70,294 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.56	10	0	0
845.00	200	46	46
846.00	600	400	446
847.00	1,500	1,050	1,496
848.00	2,166	1,833	3,329
849.00	7,688	4,927	8,256
850.00	16,694	12,191	20,447
851.00	27,000	21,847	42,294
852.00	29,000	28,000	70,294

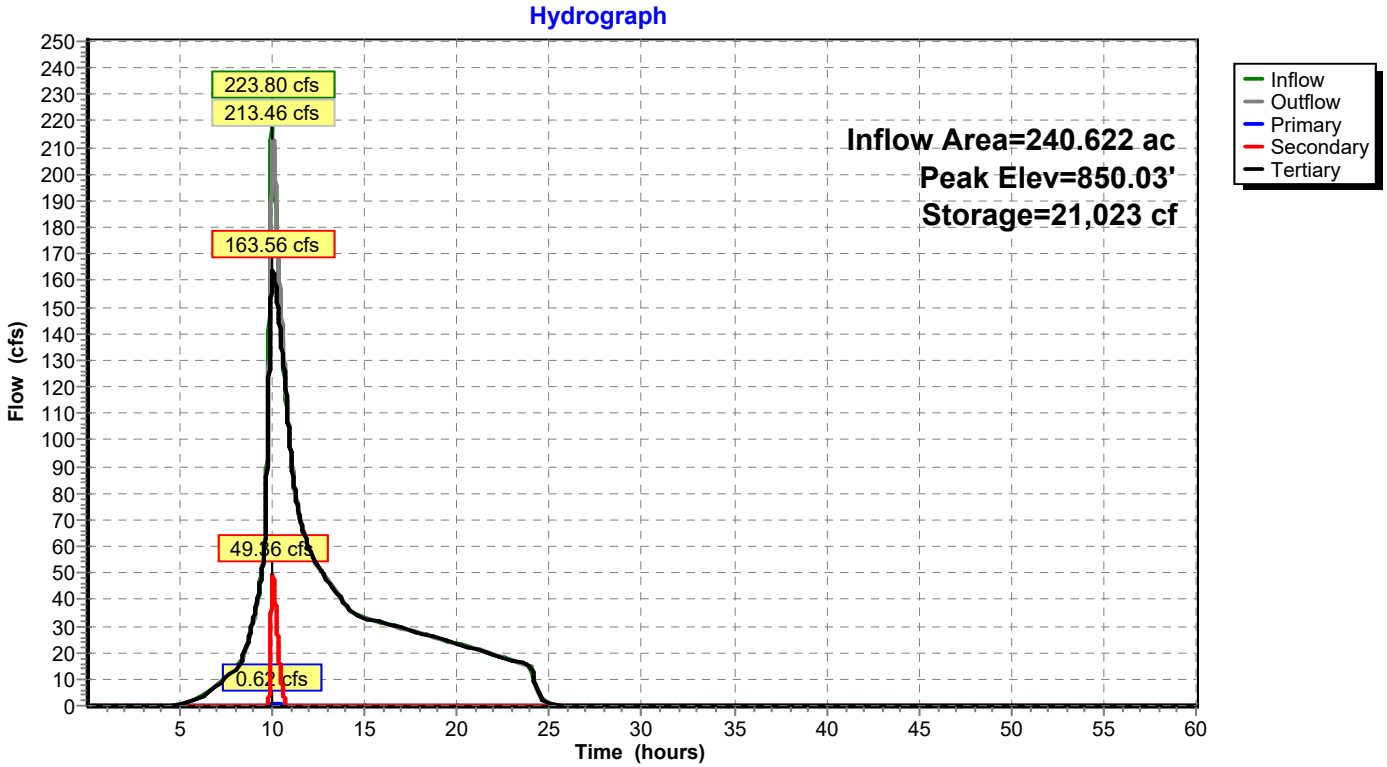
Device	Routing	Invert	Outlet Devices
#1	Primary	847.69'	**6.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 847.69' / 847.67' S= 0.0008 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Secondary	848.50'	**9.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59
#3	Tertiary	843.15'	**58.5" W x 36.0" H, R=30.0"/84.0" Pipe Arch RCP_Arch 59x36 X 2.00** L= 960.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 843.15' / 840.75' S= 0.0025 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 11.40 sf
#4	Device 3	847.00'	**78.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Tertiary	850.00'	**Special & User-Defined (CkD1-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 Disch. (cfs) 0.000 0.030 0.560 1.900 4.120 7.220 11.180 15.770 20.900 26.530 32.600 39.090 45.970 53.220 60.820 68.750 77.000 85.570 94.430 103.580 113.010

Primary OutFlow Max=0.60 cfs @ 9.99 hrs HW=849.97' TW=849.32' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.60 cfs @ 3.07 fps)

Secondary OutFlow Max=48.99 cfs @ 10.03 hrs HW=850.03' TW=849.38' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 48.99 cfs @ 3.56 fps)

Tertiary OutFlow Max=163.55 cfs @ 10.04 hrs HW=850.03' TW=841.75' (Dynamic Tailwater)
├─**3=RCP_Arch 59x36** (Passes 163.54 cfs of 178.99 cfs potential flow)
│ └─**4=Orifice/Grate** (Orifice Controls 163.54 cfs @ 8.39 fps)
└─**5=Special & User-Defined (CkD1-S)** (Custom Controls 0.01 cfs)

Pond 18P: GC-CkD1



Summary for Pond 19P: GC-CkD2

[58] Hint: Peaked 0.76' above defined flood level
[80] Warning: Exceeded Pond 18P by 0.68' @ 24.42 hrs (0.04 cfs 0.217 af)
[80] Warning: Exceeded Pond 18P by 0.01' @ 10.78 hrs (0.00 cfs 0.000 af)

Inflow Area =	260.311 ac,	0.99% Impervious,	Inflow Depth =	0.29"	for 100 Year event
Inflow =	76.40 cfs @	10.01 hrs,	Volume=	6.218 af	
Outflow =	70.68 cfs @	10.07 hrs,	Volume=	6.217 af,	Atten= 7%, Lag= 4.1 min
Primary =	1.30 cfs @	10.07 hrs,	Volume=	1.510 af	
Secondary =	50.40 cfs @	10.07 hrs,	Volume=	4.202 af	
Tertiary =	18.98 cfs @	10.07 hrs,	Volume=	0.506 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 849.41' @ 10.07 hrs Surf.Area= 24,720 sf Storage= 27,160 cf
Flood Elev= 848.65' Surf.Area= 11,850 sf Storage= 14,787 cf

Plug-Flow detention time= 35.9 min calculated for 6.216 af (100% of inflow)
Center-of-Mass det. time= 35.9 min (790.1 - 754.2)

Volume	Invert	Avail.Storage	Storage Description
#1	846.00'	46,430 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
846.00	267	0	0
847.00	4,055	2,161	2,161
848.00	8,178	6,117	8,278
849.00	13,828	11,003	19,281
850.00	40,470	27,149	46,430

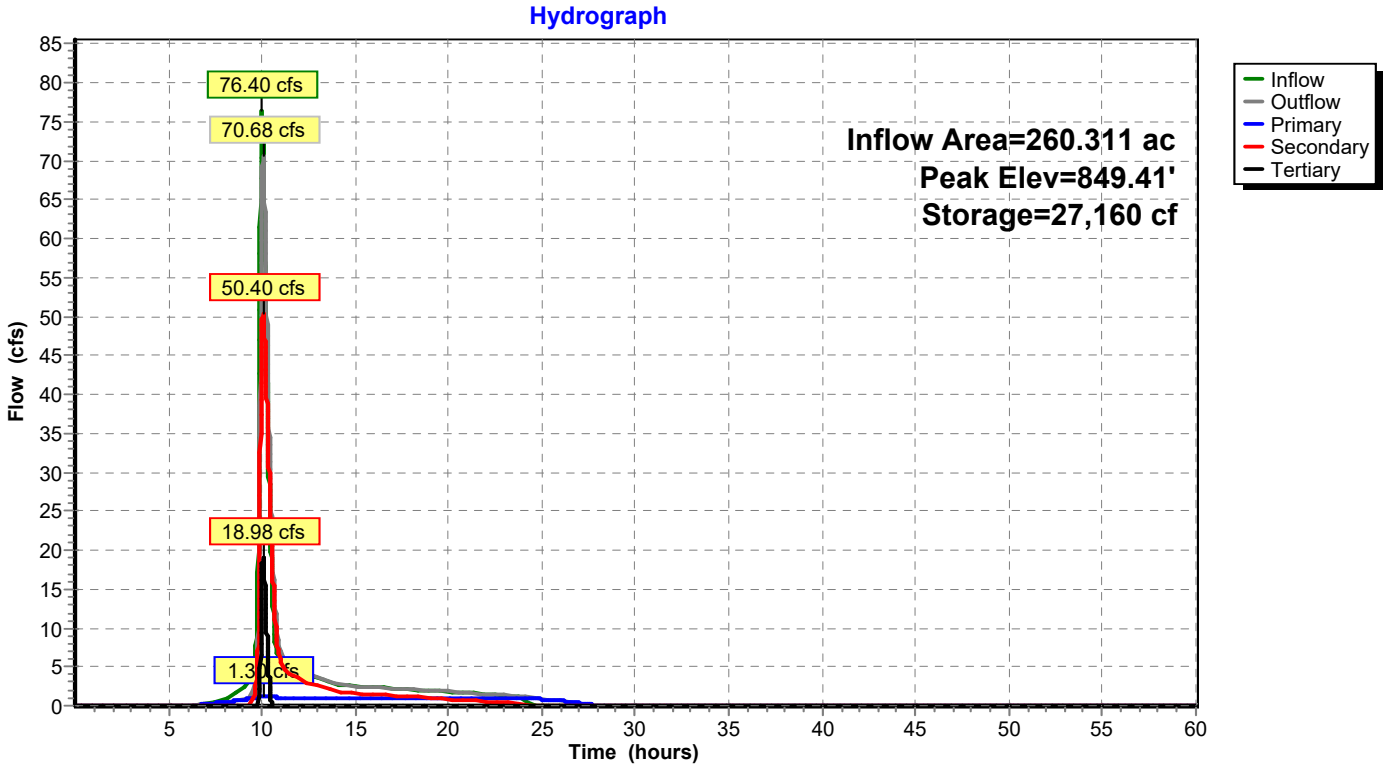
Device	Routing	Invert	Outlet Devices
#1	Primary	846.12'	**6.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 846.12' / 845.98' S= 0.0054 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Tertiary	848.70'	**Special & User-Defined (CkD2-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 Disch. (cfs) 0.000 0.130 0.970 2.640 5.120 8.550 13.010 18.440 24.620 31.430 38.830 46.770 55.210 64.120
#3	Secondary	847.80'	**Special & User-Defined (CkD2-W)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 Disch. (cfs) 0.000 0.020 0.480 1.430 2.780 4.430 6.490 8.950 12.010 15.510 19.390 23.590 28.100 32.980 38.270 43.910 49.850 56.080 62.580 69.340 76.350 83.590 91.070

Primary OutFlow Max=1.30 cfs @ 10.07 hrs HW=849.41' TW=845.96' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.30 cfs @ 6.63 fps)

Secondary OutFlow Max=50.38 cfs @ 10.07 hrs HW=849.41' TW=845.96' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD2-W)** (Custom Controls 50.38 cfs)

Tertiary OutFlow Max=18.97 cfs @ 10.07 hrs HW=849.41' TW=0.00' (Dynamic Tailwater)
└─**2=Special & User-Defined (CkD2-S)** (Custom Controls 18.97 cfs)

Pond 19P: GC-CkD2



Summary for Pond 20P: GC-CkD3

[58] Hint: Peaked 0.94' above defined flood level

Inflow Area = 274.094 ac, 0.94% Impervious, Inflow Depth = 0.38" for 100 Year event
Inflow = 67.10 cfs @ 10.05 hrs, Volume= 8.618 af
Outflow = 66.32 cfs @ 10.08 hrs, Volume= 8.607 af, Atten= 1%, Lag= 2.1 min
Primary = 6.37 cfs @ 10.08 hrs, Volume= 4.056 af
Secondary = 10.21 cfs @ 10.08 hrs, Volume= 1.141 af
Tertiary = 49.73 cfs @ 10.08 hrs, Volume= 3.410 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 845.96' @ 10.08 hrs Surf.Area= 14,780 sf Storage= 15,712 cf
Flood Elev= 845.02' Surf.Area= 8,229 sf Storage= 4,852 cf

Plug-Flow detention time= 19.5 min calculated for 8.605 af (100% of inflow)
Center-of-Mass det. time= 18.6 min (829.5 - 810.9)

Volume	Invert	Avail.Storage	Storage Description
#1	844.00'	24,632 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.00	1,288	0	0
845.00	8,090	4,689	4,689
846.50	18,500	19,943	24,632

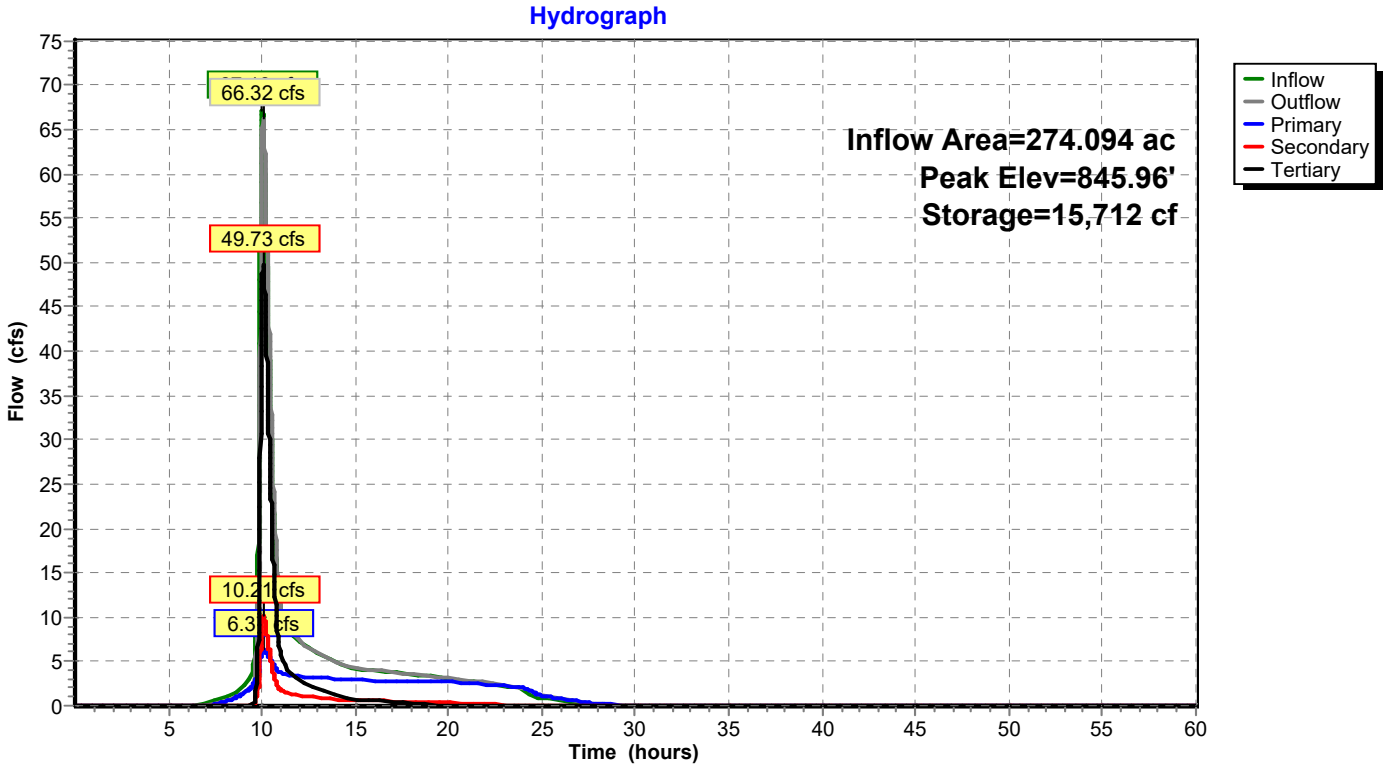
Device	Routing	Invert	Outlet Devices
#1	Primary	844.22'	**18.0" Round Culvert** L= 26.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 844.22' / 843.98' S= 0.0092 '/' Cc= 0.900 n= 0.021 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	845.00'	**Special & User-Defined (CkD3-W)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 Disch. (cfs) 0.000 0.050 0.390 0.970 1.710 2.600 3.780 5.170 6.720 8.570 11.140 14.290 17.880 21.830 26.120 30.880 36.030 41.520 47.330 53.420 59.790
#3	Tertiary	845.10'	**Special & User-Defined (CkD3-S)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 Disch. (cfs) 0.000 0.050 1.930 5.420 10.370 16.490 23.960 32.580 42.550 53.770 66.380 80.510 96.280 113.770 132.840 153.630 175.910 199.510 224.310 250.260

Primary OutFlow Max=6.37 cfs @ 10.08 hrs HW=845.96' TW=844.68' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 6.37 cfs @ 3.90 fps)

Secondary OutFlow Max=10.21 cfs @ 10.08 hrs HW=845.96' TW=844.68' (Dynamic Tailwater)
└─**2=Special & User-Defined (CkD3-W)** (Custom Controls 10.21 cfs)

Tertiary OutFlow Max=49.73 cfs @ 10.08 hrs HW=845.96' TW=0.00' (Dynamic Tailwater)
└─**3=Special & User-Defined (CkD3-S)** (Custom Controls 49.73 cfs)

Pond 20P: GC-CkD3



Summary for Pond B1: Basin 1

Inflow Area = 47.388 ac, 67.98% Impervious, Inflow Depth = 4.58" for 100 Year event
Inflow = 143.08 cfs @ 10.02 hrs, Volume= 18.094 af
Outflow = 43.86 cfs @ 10.61 hrs, Volume= 17.698 af, Atten= 69%, Lag= 35.3 min
Discarded = 1.18 cfs @ 10.61 hrs, Volume= 3.251 af
Primary = 42.68 cfs @ 10.61 hrs, Volume= 14.446 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 838.35' @ 10.61 hrs Surf.Area= 1.456 ac Storage= 7.075 af

Plug-Flow detention time= 283.5 min calculated for 17.695 af (98% of inflow)
Center-of-Mass det. time= 268.5 min (991.2 - 722.7)

Volume	Invert	Avail.Storage	Storage Description
#1	826.50'	8.466 af	**Custom Stage Data (Prismatic)** Listed below (Recalc) 8.789 af Overall - 0.323 af Embedded = 8.466 af
#2	826.50'	0.129 af	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 0.323 af Overall x 40.0% Voids
		8.595 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
826.50	0.081	0.000	0.000
827.00	0.081	0.040	0.040
828.00	0.081	0.081	0.121
829.00	0.081	0.081	0.202
830.00	0.081	0.081	0.283
831.00	0.081	0.081	0.365
832.00	0.203	0.142	0.506
833.00	0.376	0.289	0.796
834.00	1.171	0.774	1.569
835.00	1.234	1.202	2.772
836.00	1.299	1.267	4.038
837.00	1.365	1.332	5.370
838.00	1.432	1.399	6.769
839.00	1.500	1.466	8.235
839.35	1.665	0.554	8.789

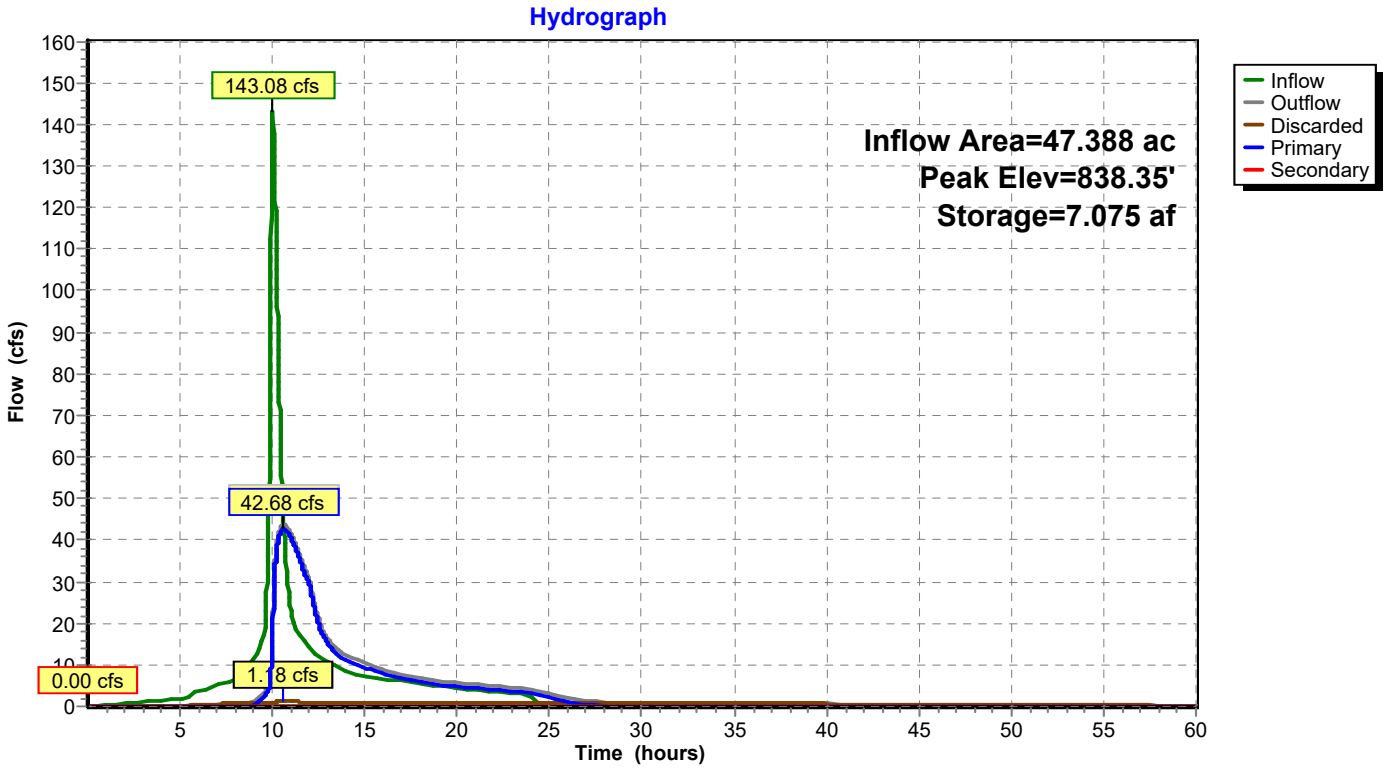
Device	Routing	Invert	Outlet Devices
#1	Primary	833.12'	**36.0" Round Culvert** L= 385.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 833.12' / 831.20' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Discarded	826.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	834.33'	**16.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	834.33'	**12.0" W x 8.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	835.33'	**30.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	836.17'	**24.0" Horiz. Orifice/Grate** C= 0.600 in 78.0" x 36.0" Grate (16% open area) Limited to weir flow at low heads
#7	Secondary	838.35'	**30.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=1.18 cfs @ 10.61 hrs HW=838.35' (Free Discharge)
└─**2=Exfiltration** (Controls 1.18 cfs)

Primary OutFlow Max=42.68 cfs @ 10.61 hrs HW=838.35' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 42.68 cfs of 58.61 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 4.20 cfs @ 9.45 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 6.16 cfs @ 9.24 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 10.01 cfs @ 8.01 fps)
  └─**6=Orifice/Grate** (Orifice Controls 22.32 cfs @ 7.10 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=826.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B1: Basin 1



Summary for Pond B10: Basin 10

Inflow Area = 30.685 ac, 61.94% Impervious, Inflow Depth = 3.56" for 100 Year event
Inflow = 42.03 cfs @ 9.98 hrs, Volume= 9.094 af
Outflow = 15.14 cfs @ 10.82 hrs, Volume= 8.617 af, Atten= 64%, Lag= 50.5 min
Discarded = 0.86 cfs @ 10.82 hrs, Volume= 2.890 af
Primary = 14.28 cfs @ 10.82 hrs, Volume= 5.727 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 818.33' @ 10.82 hrs Surf.Area= 46,380 sf Storage= 154,822 cf

Plug-Flow detention time= 493.0 min calculated for 8.615 af (95% of inflow)
Center-of-Mass det. time= 457.8 min (1,196.1 - 738.2)

Volume	Invert	Avail.Storage	Storage Description
#1	808.50'	230,693 cf	**Custom Stage Data (Conic)** Listed below (Recalc) 244,773 cf Overall - 14,080 cf Embedded = 230,693 cf
#2	808.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		236,325 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
808.50	3,520	0	0	3,520
809.00	3,520	1,760	1,760	3,625
810.00	3,520	3,520	5,280	3,835
811.00	3,520	3,520	8,800	4,046
812.00	3,520	3,520	12,320	4,256
813.00	3,520	3,520	15,840	4,466
814.00	8,931	6,019	21,859	9,884
815.00	17,294	12,884	34,744	18,257
816.00	40,146	27,930	62,673	41,116
817.00	42,792	41,462	104,135	43,859
818.00	45,490	44,134	148,269	46,658
819.00	48,243	46,860	195,129	49,516
820.00	51,058	49,644	244,773	52,440

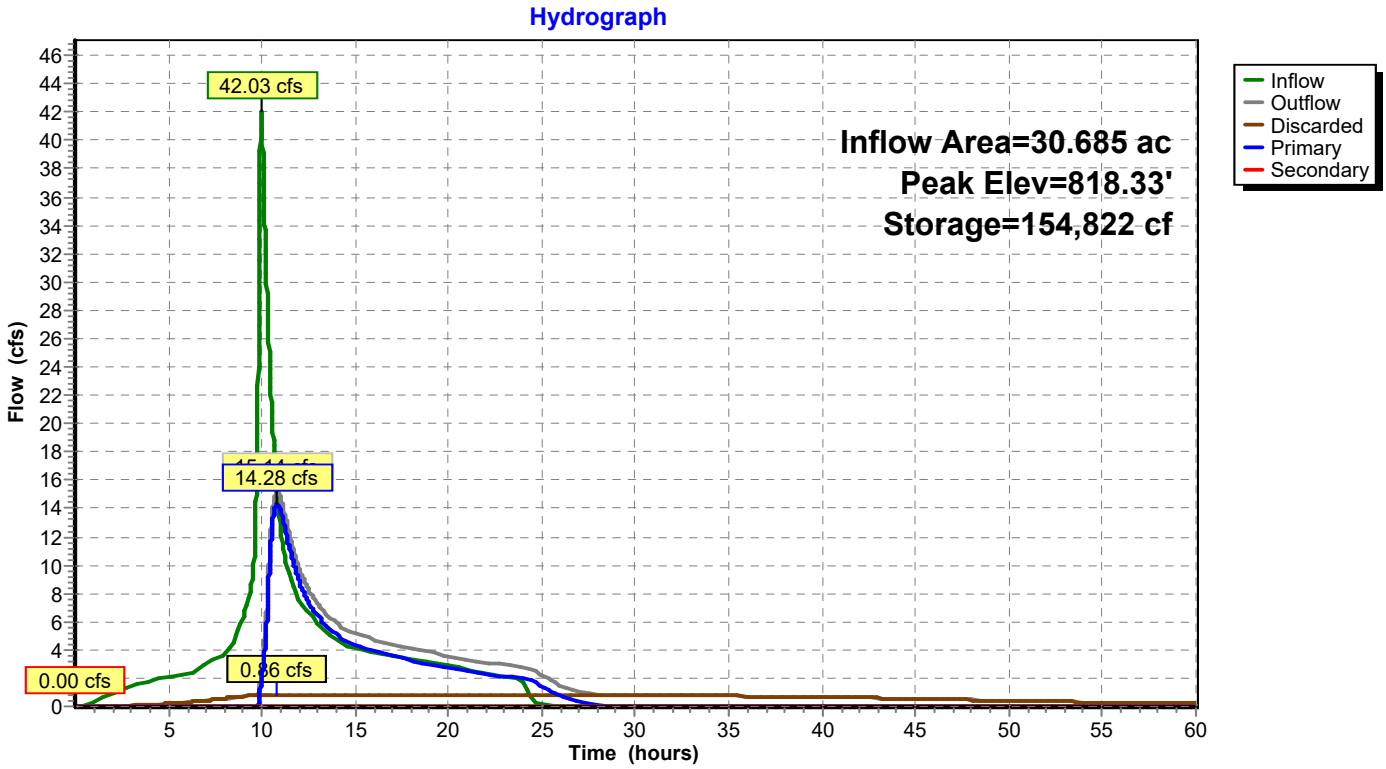
Device	Routing	Invert	Outlet Devices
#1	Primary	816.00'	**30.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 816.00' / 815.10' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	808.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	816.67'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	817.33'	**15.0" W x 18.0" H Vert. Orifice/Grate** X 2 rows with 8.0" cc spacing C= 0.600
#5	Device 1	817.83'	**60.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	819.00'	**78.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Secondary	819.33'	**36.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.86 cfs @ 10.82 hrs HW=818.33' (Free Discharge)
└─**2=Exfiltration** (Controls 0.86 cfs)

Primary OutFlow Max=14.28 cfs @ 10.82 hrs HW=818.33' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 14.28 cfs of 24.72 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 3.92 cfs @ 5.87 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 4.75 cfs @ 2.87 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 5.62 cfs @ 2.26 fps)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=808.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B10: Basin 10



Summary for Pond B11: Basin 11

Inflow Area = 14.461 ac, 52.00% Impervious, Inflow Depth = 3.39" for 100 Year event
Inflow = 26.34 cfs @ 9.96 hrs, Volume= 4.086 af
Outflow = 10.51 cfs @ 10.34 hrs, Volume= 3.823 af, Atten= 60%, Lag= 22.6 min
Discarded = 0.28 cfs @ 10.34 hrs, Volume= 0.803 af
Primary = 10.23 cfs @ 10.34 hrs, Volume= 3.020 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 834.16' @ 10.34 hrs Surf.Area= 14,170 sf Storage= 59,695 cf

Plug-Flow detention time= 344.1 min calculated for 3.822 af (94% of inflow)
Center-of-Mass det. time= 302.3 min (1,041.3 - 739.1)

Volume	Invert	Avail.Storage	Storage Description
#1	823.50'	83,101 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 97,181 cf Overall - 14,080 cf Embedded = 83,101 cf
#2	823.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		88,733 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
823.50	3,520	0	0
824.00	3,520	1,760	1,760
825.00	3,520	3,520	5,280
826.00	3,520	3,520	8,800
827.00	3,520	3,520	12,320
828.00	3,520	3,520	15,840
829.00	2,800	3,160	19,000
830.00	6,900	4,850	23,850
831.00	8,919	7,910	31,760
832.00	10,515	9,717	41,477
833.00	12,169	11,342	52,819
834.00	13,879	13,024	65,843
835.00	15,655	14,767	80,610
836.00	17,488	16,572	97,181

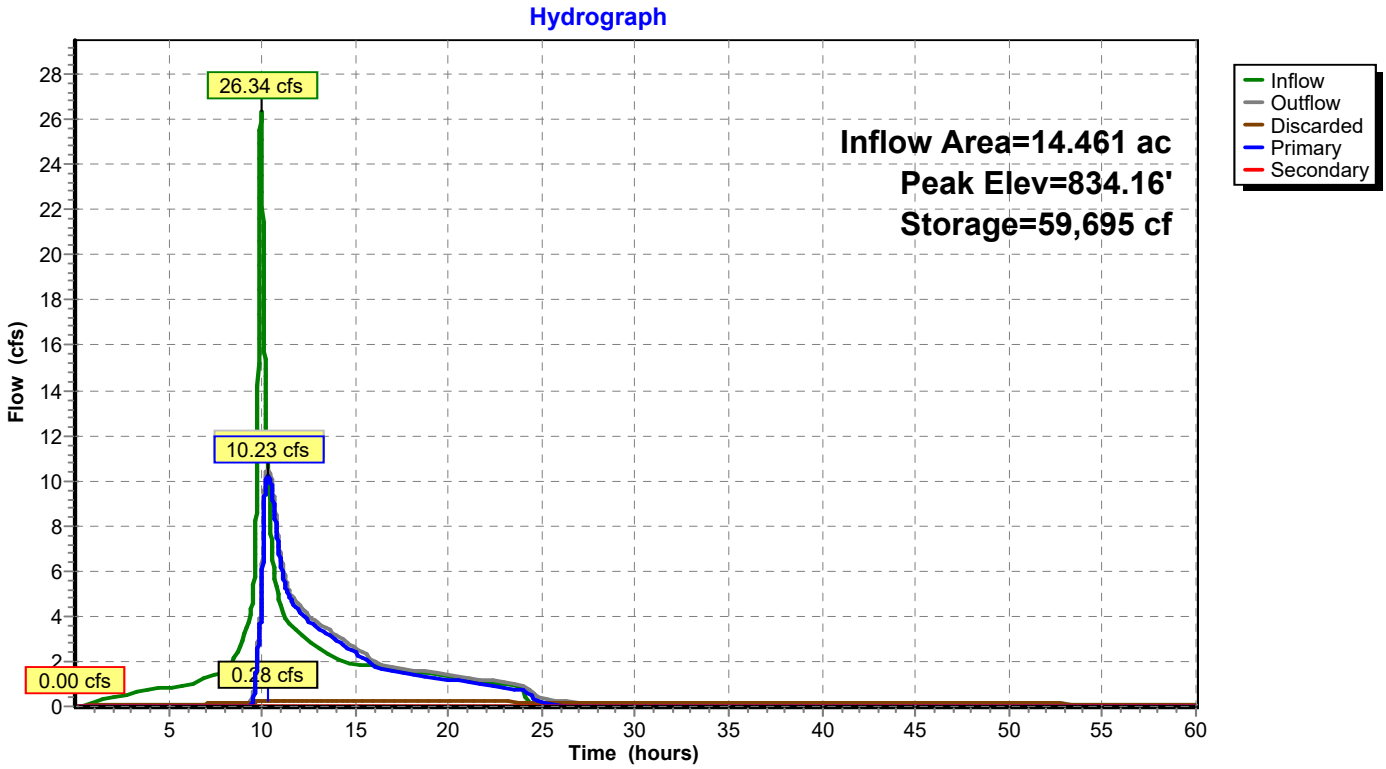
Device	Routing	Invert	Outlet Devices
#1	Primary	831.67'	**24.0" Round Culvert** L= 165.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 831.67' / 820.50' S= 0.0677 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Discarded	823.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	831.67'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	833.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	833.50'	**27.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	834.50'	**48.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Secondary	834.83'	**16.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.28 cfs @ 10.34 hrs HW=834.16' (Free Discharge)
└─**2=Exfiltration** (Controls 0.28 cfs)

Primary OutFlow Max=10.23 cfs @ 10.34 hrs HW=834.16' TW=825.37' (Dynamic Tailwater)
└─**1=Culvert** (Passes 10.23 cfs of 18.49 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 4.90 cfs @ 7.34 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.91 cfs @ 3.82 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 3.43 cfs @ 3.05 fps)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=823.50' TW=820.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B11: Basin 11



Summary for Pond B12: Basin 12

Inflow Area = 20.201 ac, 44.06% Impervious, Inflow Depth = 3.17" for 100 Year event
Inflow = 35.58 cfs @ 9.96 hrs, Volume= 5.330 af
Outflow = 5.64 cfs @ 11.06 hrs, Volume= 5.049 af, Atten= 84%, Lag= 65.9 min
Discarded = 0.53 cfs @ 11.06 hrs, Volume= 1.585 af
Primary = 5.12 cfs @ 11.06 hrs, Volume= 3.464 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 838.70' @ 11.06 hrs Surf.Area= 27,914 sf Storage= 95,925 cf

Plug-Flow detention time= 476.3 min calculated for 5.049 af (95% of inflow)
Center-of-Mass det. time= 442.0 min (1,189.9 - 747.9)

Volume	Invert	Avail.Storage	Storage Description
#1	828.50'	160,016 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 174,096 cf Overall - 14,080 cf Embedded = 160,016 cf
#2	828.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		165,648 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
828.50	3,520	0	0
829.00	3,520	1,760	1,760
830.00	3,520	3,520	5,280
831.00	3,520	3,520	8,800
832.00	3,520	3,520	12,320
833.00	3,520	3,520	15,840
834.00	2,600	3,060	18,900
835.00	8,000	5,300	24,200
836.00	20,849	14,425	38,625
837.00	23,415	22,132	60,757
838.00	26,037	24,726	85,483
839.00	28,717	27,377	112,860
840.00	31,383	30,050	142,910
841.00	30,990	31,187	174,096

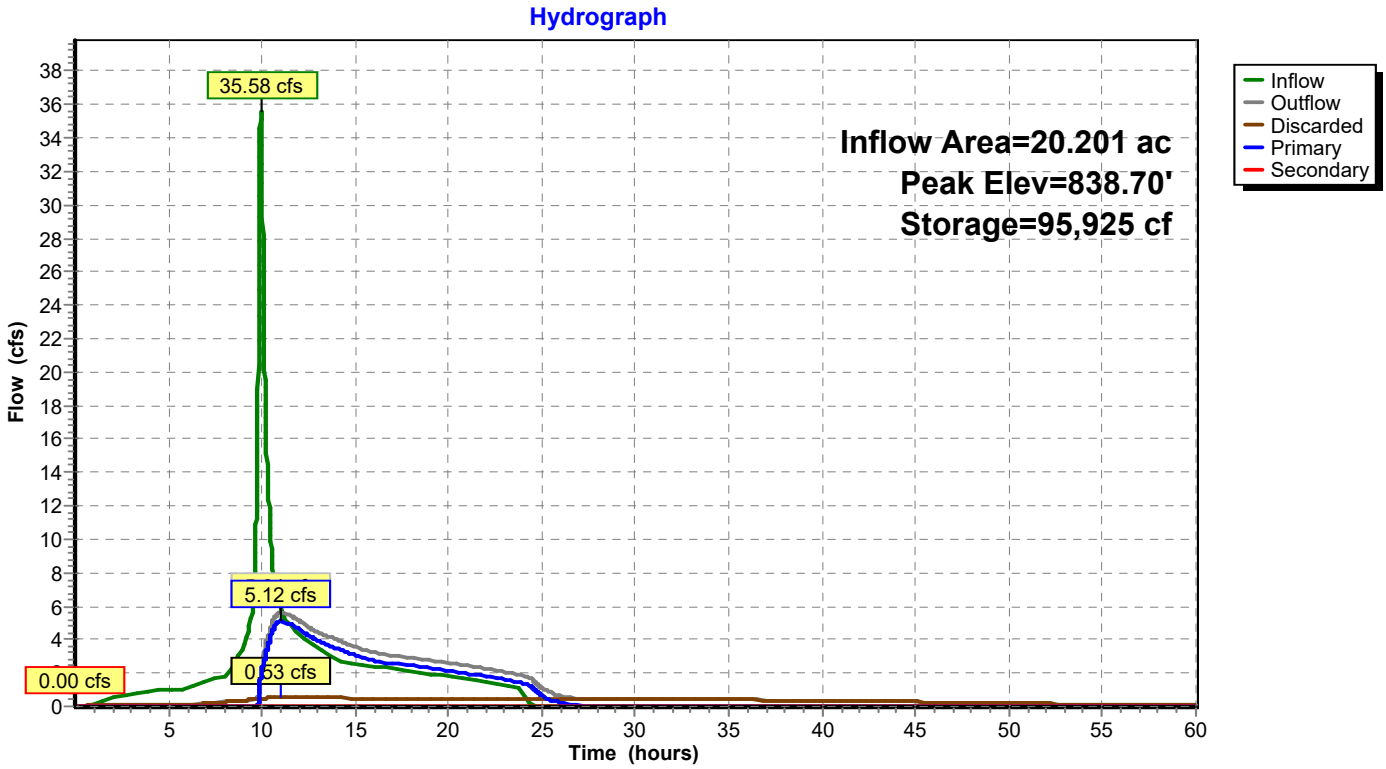
Device	Routing	Invert	Outlet Devices
#1	Primary	836.67'	**30.0" Round Culvert** L= 130.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.67' / 832.50' S= 0.0321 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	828.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	836.67'	**18.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	838.00'	**8.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	838.50'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	839.50'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Secondary	840.00'	**18.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.53 cfs @ 11.06 hrs HW=838.70' (Free Discharge)
└─**2=Exfiltration** (Controls 0.53 cfs)

Primary OutFlow Max=5.12 cfs @ 11.06 hrs HW=838.70' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 5.12 cfs of 20.71 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 3.29 cfs @ 6.57 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.25 cfs @ 2.69 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 0.58 cfs @ 1.44 fps)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=828.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B12: Basin 12



Summary for Pond B13: Basin 13

Inflow Area = 64.115 ac, 22.11% Impervious, Inflow Depth = 3.19" for 100 Year event
Inflow = 119.46 cfs @ 9.96 hrs, Volume= 17.044 af
Outflow = 108.58 cfs @ 10.01 hrs, Volume= 16.616 af, Atten= 9%, Lag= 3.0 min
Discarded = 0.48 cfs @ 10.01 hrs, Volume= 1.396 af
Primary = 108.10 cfs @ 10.01 hrs, Volume= 15.220 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 844.19' @ 10.01 hrs Surf.Area= 0.565 ac Storage= 3.165 af

Plug-Flow detention time= 181.0 min calculated for 16.613 af (97% of inflow)
Center-of-Mass det. time= 164.8 min (933.9 - 769.1)

Volume	Invert	Avail.Storage	Storage Description
#1	830.50'	4.138 af	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4.461 af Overall - 0.323 af Embedded = 4.138 af
#2	830.50'	0.129 af	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 0.323 af Overall x 40.0% Voids
		4.267 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
830.50	0.081	0.000	0.000
831.00	0.081	0.040	0.040
832.00	0.081	0.081	0.121
833.00	0.081	0.081	0.202
834.00	0.081	0.081	0.283
835.00	0.081	0.081	0.364
836.00	0.059	0.070	0.433
837.00	0.139	0.099	0.532
838.00	0.287	0.213	0.745
839.00	0.329	0.308	1.053
840.00	0.372	0.350	1.403
841.00	0.416	0.394	1.797
842.00	0.461	0.439	2.236
843.00	0.508	0.484	2.720
844.00	0.555	0.531	3.251
845.00	0.605	0.580	3.831
846.00	0.655	0.630	4.461

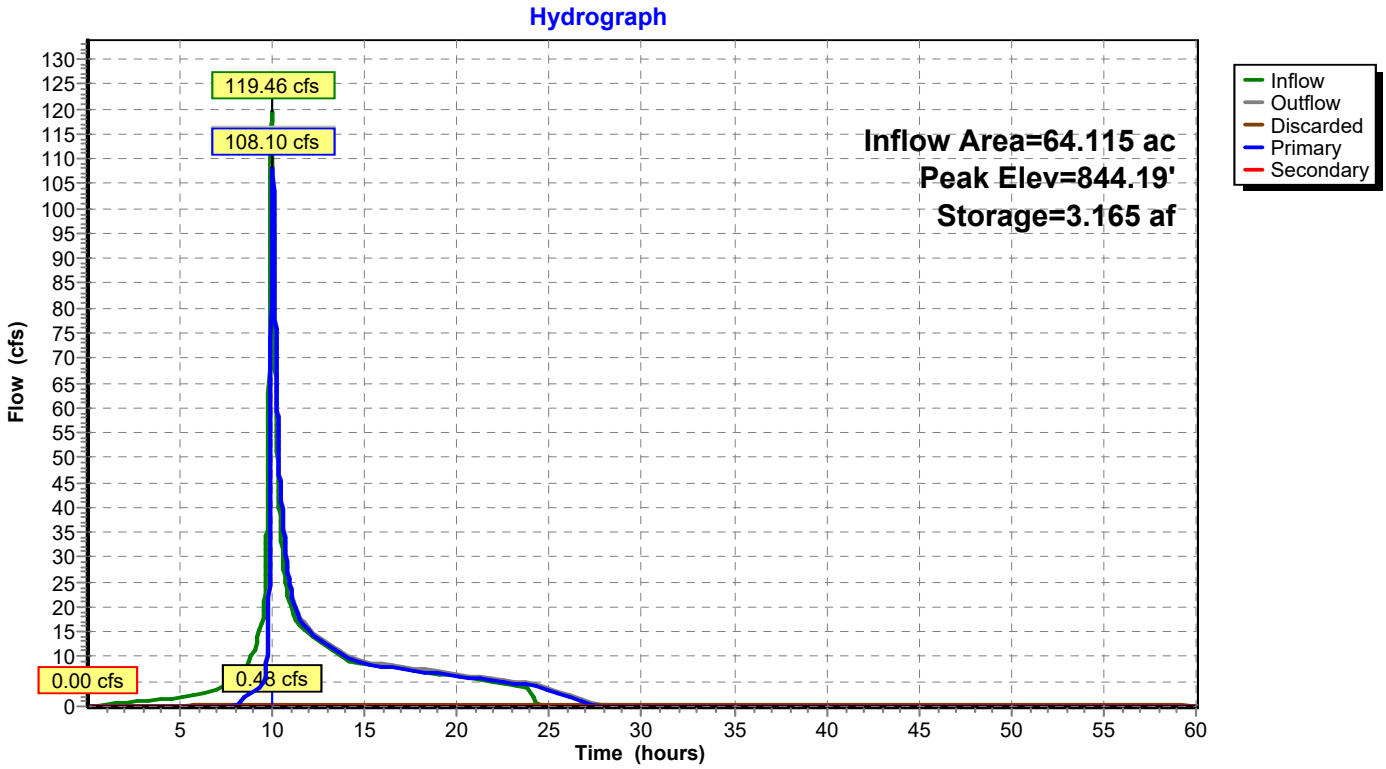
Device	Routing	Invert	Outlet Devices
#1	Primary	834.25'	**48.0" Round Culvert** L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 834.25' / 832.50' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Discarded	830.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	839.67'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	841.50'	**15.0" W x 18.0" H Vert. Orifice/Grate** X 2 rows with 8.0" cc spacing C= 0.600
#5	Device 1	842.50'	**60.0" W x 8.0" H Vert. Orifice/Grate** X 2 rows with 8.0" cc spacing C= 0.600
#6	Device 1	843.67'	**78.0" x 36.0" Horiz. Orifice/Grate** X 2 rows C= 0.600 Limited to weir flow at low heads
#7	Secondary	844.67'	**36.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.48 cfs @ 10.01 hrs HW=844.19' (Free Discharge)
└─**2=Exfiltration** (Controls 0.48 cfs)

Primary OutFlow Max=108.04 cfs @ 10.01 hrs HW=844.19' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 108.04 cfs of 170.52 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 6.70 cfs @ 10.05 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 22.54 cfs @ 6.01 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 31.88 cfs @ 4.78 fps)
  └─**6=Orifice/Grate** (Weir Controls 46.91 cfs @ 2.36 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=830.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B13: Basin 13



Summary for Pond B4: Basin 4

Inflow Area = 38.712 ac, 55.38% Impervious, Inflow Depth = 3.49" for 100 Year event
Inflow = 65.77 cfs @ 9.97 hrs, Volume= 11.274 af
Outflow = 34.66 cfs @ 10.29 hrs, Volume= 11.007 af, Atten= 47%, Lag= 19.2 min
Discarded = 0.60 cfs @ 10.29 hrs, Volume= 1.723 af
Primary = 34.06 cfs @ 10.29 hrs, Volume= 9.285 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 840.12' @ 10.29 hrs Surf.Area= 30,035 sf Storage= 144,637 cf

Plug-Flow detention time= 292.7 min calculated for 11.007 af (98% of inflow)
Center-of-Mass det. time= 276.3 min (1,014.6 - 738.3)

Volume	Invert	Avail.Storage	Storage Description
#1	827.50'	218,652 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 232,732 cf Overall - 14,080 cf Embedded = 218,652 cf
#2	827.50'	5,632 cf	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 14,080 cf Overall x 40.0% Voids
		224,284 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
827.50	3,520	0	0
828.00	3,520	1,760	1,760
829.00	3,520	3,520	5,280
830.00	3,520	3,520	8,800
831.00	3,520	3,520	12,320
832.00	3,520	3,520	15,840
833.00	1,064	2,292	18,132
834.00	6,719	3,892	22,024
835.00	16,858	11,789	33,812
836.00	19,297	18,078	51,890
837.00	21,780	20,539	72,428
838.00	24,350	23,065	95,493
839.00	27,007	25,679	121,172
840.00	29,708	28,358	149,529
841.00	32,452	31,080	180,609
842.00	35,196	33,824	214,433
842.50	38,000	18,299	232,732

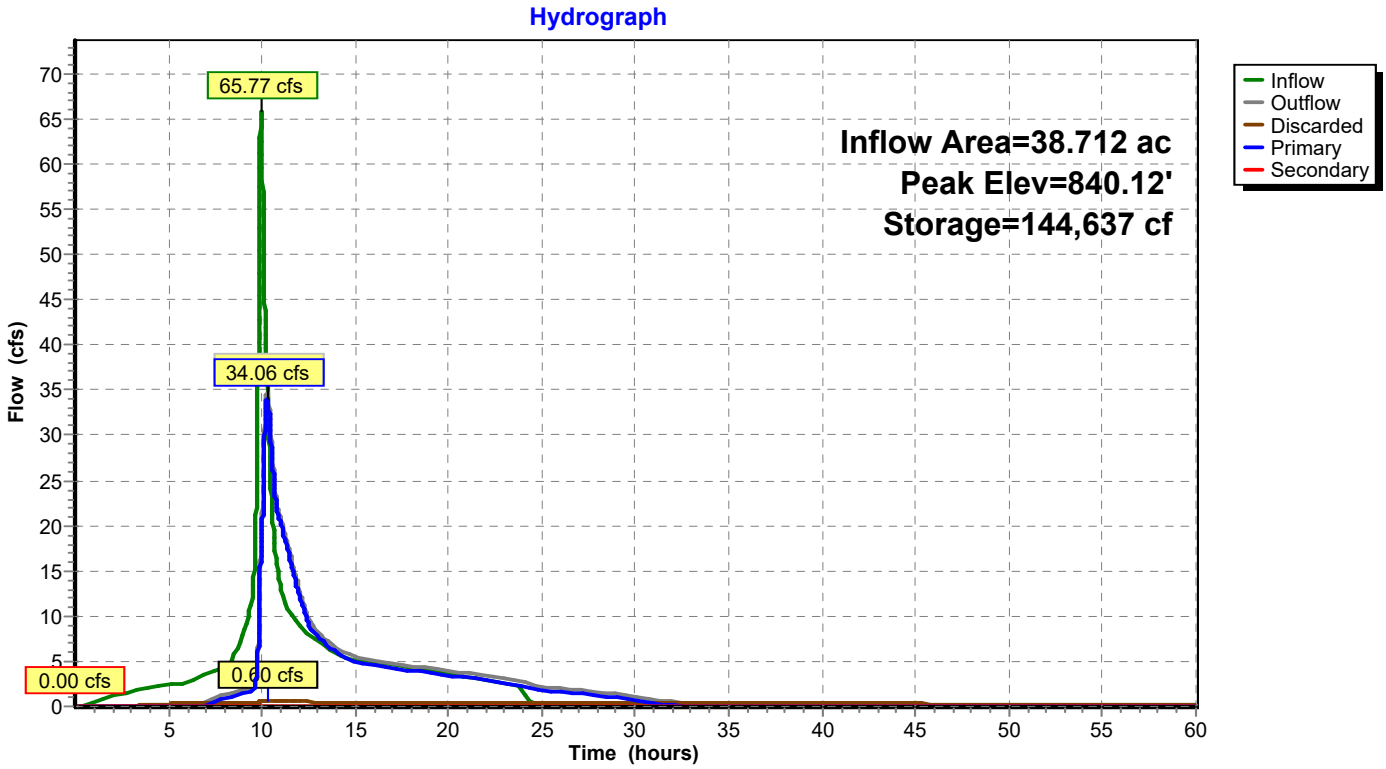
Device	Routing	Invert	Outlet Devices
#1	Primary	835.67'	**30.0" Round Culvert** L= 210.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 835.67' / 834.20' S= 0.0070 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	827.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	835.67'	**10.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	837.67'	**18.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	838.17'	**42.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	839.75'	**48.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 in 78.0" x 36.0" Grate (62% open area) Limited to weir flow at low heads
#7	Secondary	841.12'	**40.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.60 cfs @ 10.29 hrs HW=840.12' (Free Discharge)
└─**2=Exfiltration** (Controls 0.60 cfs)

Primary OutFlow Max=34.06 cfs @ 10.29 hrs HW=840.12' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 34.06 cfs of 41.00 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 2.77 cfs @ 9.96 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 10.06 cfs @ 6.70 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 10.97 cfs @ 6.27 fps)
  └─**6=Orifice/Grate** (Weir Controls 10.26 cfs @ 1.99 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=827.50' TW=0.00' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B4: Basin 4



Summary for Pond B5: Basin 5

Inflow Area =	32.696 ac,	30.34% Impervious,	Inflow Depth =	2.47"	for 100 Year event
Inflow =	29.91 cfs @	9.99 hrs,	Volume=	6.733 af	
Outflow =	12.70 cfs @	10.72 hrs,	Volume=	6.733 af,	Atten= 58%, Lag= 43.8 min
Discarded =	0.42 cfs @	10.70 hrs,	Volume=	1.257 af	
Primary =	12.28 cfs @	10.72 hrs,	Volume=	5.476 af	
Secondary =	0.00 cfs @	0.01 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 848.15' @ 10.70 hrs Surf.Area= 22,406 sf Storage= 78,258 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 249.2 min (1,030.9 - 781.7)

Volume	Invert	Avail.Storage	Storage Description
#1	844.00'	178,542 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
844.00	15,500	0	0
845.00	17,076	16,288	16,288
846.00	18,708	17,892	34,180
847.00	20,397	19,553	53,733
848.00	22,143	21,270	75,003
849.00	23,945	23,044	98,047
850.00	25,804	24,875	122,921
851.00	27,719	26,762	149,683
852.00	30,000	28,860	178,542

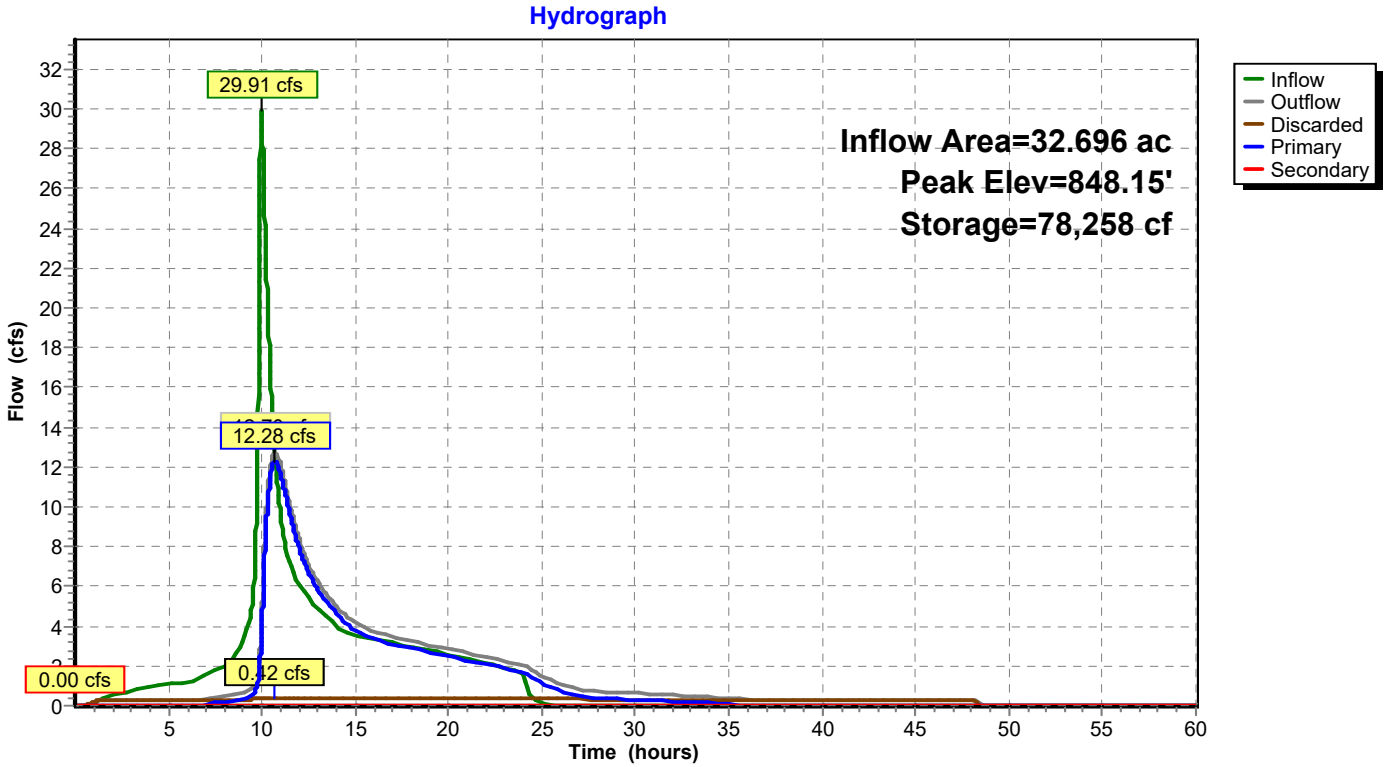
Device	Routing	Invert	Outlet Devices
#1	Primary	844.67'	**30.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 844.67' / 844.17' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	844.00'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#3	Device 1	844.67'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	845.67'	**6.0" W x 37.0" H Vert. Orifice/Grate** X 3 rows with 8.0" cc spacing C= 0.600
#5	Device 1	849.75'	**36.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 in 36.0" x 24.0" Grate (100% open area) Limited to weir flow at low heads
#6	Secondary	851.00'	**12.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.42 cfs @ 10.70 hrs HW=848.15' (Free Discharge)
└─**2=Exfiltration** (Controls 0.42 cfs)

Primary OutFlow Max=12.28 cfs @ 10.72 hrs HW=848.15' TW=846.55' (Dynamic Tailwater)
└─**1=Culvert** (Passes 12.28 cfs of 29.82 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 0.53 cfs @ 6.08 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 11.75 cfs @ 4.33 fps)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=844.00' (Free Discharge)
└─**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B5: Basin 5



Summary for Pond B6: Basin 6

Inflow Area = 34.039 ac, 52.56% Impervious, Inflow Depth = 3.48" for 100 Year event
Inflow = 49.06 cfs @ 9.98 hrs, Volume= 9.876 af
Outflow = 32.41 cfs @ 10.28 hrs, Volume= 9.581 af, Atten= 34%, Lag= 18.0 min
Discarded = 0.39 cfs @ 10.28 hrs, Volume= 1.062 af
Primary = 32.02 cfs @ 10.28 hrs, Volume= 8.518 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 851.88' @ 10.28 hrs Surf.Area= 0.469 ac Storage= 2.255 af

Plug-Flow detention time= 217.4 min calculated for 9.581 af (97% of inflow)
Center-of-Mass det. time= 197.0 min (944.6 - 747.6)

Volume	Invert	Avail.Storage	Storage Description
#1	839.50'	3.469 af	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3.792 af Overall - 0.323 af Embedded = 3.469 af
#2	839.50'	0.129 af	**16.00'W x 220.00'L x 4.00'H Prismatoid** Inside #1 0.323 af Overall x 40.0% Voids
		3.598 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
839.50	0.081	0.000	0.000
840.00	0.081	0.040	0.040
841.00	0.081	0.081	0.121
842.00	0.081	0.081	0.202
843.00	0.081	0.081	0.283
844.00	0.081	0.081	0.364
845.00	0.061	0.071	0.435
846.00	0.133	0.097	0.532
847.00	0.260	0.196	0.729
848.00	0.292	0.276	1.005
849.00	0.325	0.309	1.313
850.00	0.360	0.343	1.656
851.00	0.434	0.397	2.053
852.00	0.474	0.454	2.507
854.40	0.597	1.285	3.792

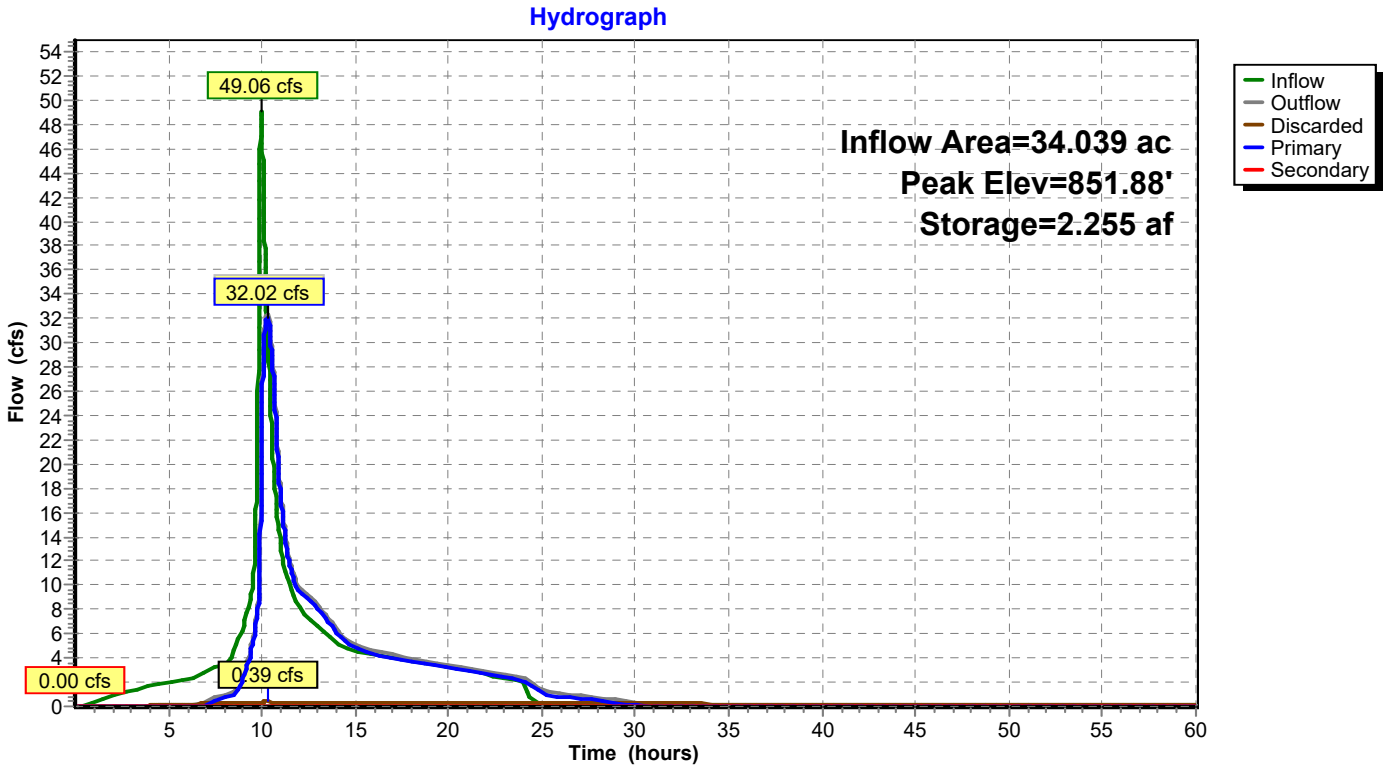
Device	Routing	Invert	Outlet Devices
#1	Primary	843.65'	**24.0" Round Culvert** L= 150.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 843.65' / 842.90' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Discarded	839.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 760.00'
#3	Device 1	847.67'	**9.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	848.75'	**12.0" W x 9.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	849.50'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 1	850.67'	**69.6" W x 9.0" H Vert. Orifice/Grate** C= 0.600
#7	Secondary	852.88'	**40.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.39 cfs @ 10.28 hrs HW=851.88' (Free Discharge)
└─**2=Exfiltration** (Controls 0.39 cfs)

Primary OutFlow Max=32.02 cfs @ 10.28 hrs HW=851.88' TW=842.50' (Dynamic Tailwater)
└─**1=Culvert** (Passes 32.02 cfs of 37.87 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 1.82 cfs @ 9.73 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 5.99 cfs @ 7.98 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 5.26 cfs @ 7.02 fps)
  └─**6=Orifice/Grate** (Orifice Controls 18.94 cfs @ 4.36 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=839.50' TW=842.50' (Dynamic Tailwater)
└─**7=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond B6: Basin 6



Summary for Pond B7: Basin 7

Inflow Area = 108.754 ac, 33.30% Impervious, Inflow Depth = 2.23" for 100 Year event
Inflow = 53.39 cfs @ 10.42 hrs, Volume= 20.246 af
Outflow = 24.18 cfs @ 11.97 hrs, Volume= 20.103 af, Atten= 55%, Lag= 92.8 min
Discarded = 1.28 cfs @ 11.97 hrs, Volume= 4.541 af
Primary = 22.91 cfs @ 11.97 hrs, Volume= 15.562 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 843.21' @ 11.97 hrs Surf.Area= 67,818 sf Storage= 227,792 cf

Plug-Flow detention time= 307.8 min calculated for 20.103 af (99% of inflow)
Center-of-Mass det. time= 296.5 min (1,201.2 - 904.6)

Volume	Invert	Avail.Storage	Storage Description
#1	839.00'	516,122 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
839.00	10,000	0	0
840.00	54,515	32,258	32,258
841.00	58,335	56,425	88,683
842.00	62,211	60,273	148,956
843.00	66,912	64,562	213,517
844.00	71,188	69,050	282,567
845.00	75,535	73,362	355,929
846.00	79,981	77,758	433,687
847.00	84,890	82,436	516,122

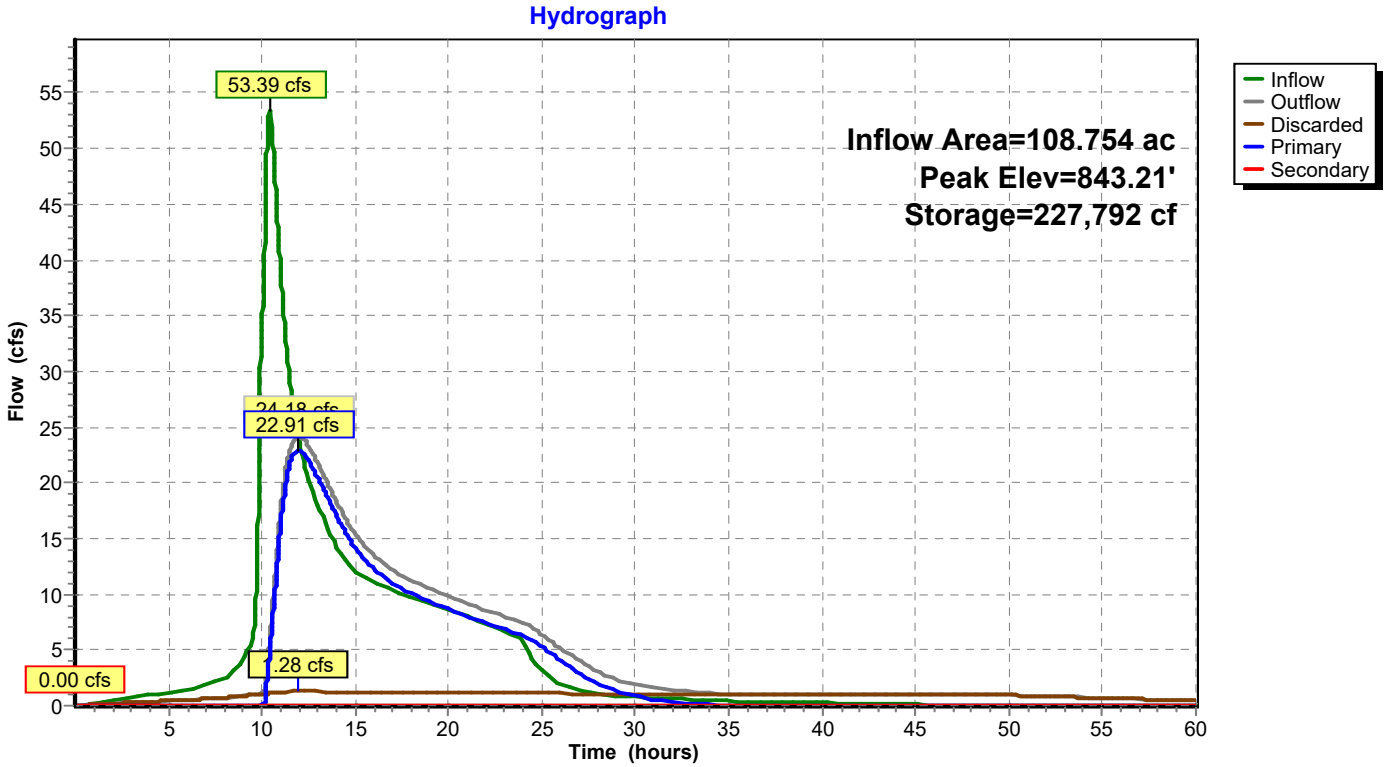
Device	Routing	Invert	Outlet Devices
#1	Primary	836.67'	**36.0" Round Culvert** L= 63.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.67' / 836.00' S= 0.0106 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Discarded	839.00'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#3	Device 1	840.75'	**26.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	841.25'	**12.0" W x 36.0" H Vert. Orifice/Grate** X 3 rows with 8.0" cc spacing C= 0.600
#5	Device 1	844.50'	**48.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 in 48.0" x 36.0" Grate (100% open area) Limited to weir flow at low heads
#6	Secondary	845.50'	**12.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=1.28 cfs @ 11.97 hrs HW=843.21' (Free Discharge)
└─**2=Exfiltration** (Controls 1.28 cfs)

Primary OutFlow Max=22.91 cfs @ 11.97 hrs HW=843.21' TW=837.94' (Dynamic Tailwater)
└─**1=Culvert** (Passes 22.91 cfs of 76.42 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 7.75 cfs @ 7.16 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 15.15 cfs @ 3.90 fps)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=839.00' (Free Discharge)
└─**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B7: Basin 7



Summary for Pond B8: Basin 8

Inflow Area = 44.689 ac, 35.47% Impervious, Inflow Depth = 2.68" for 100 Year event
Inflow = 39.82 cfs @ 9.99 hrs, Volume= 9.971 af
Outflow = 25.20 cfs @ 10.48 hrs, Volume= 9.971 af, Atten= 37%, Lag= 29.6 min
Discarded = 0.54 cfs @ 10.48 hrs, Volume= 1.926 af
Primary = 24.66 cfs @ 10.48 hrs, Volume= 8.046 af
Secondary = 0.00 cfs @ 0.01 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 857.85' @ 10.48 hrs Surf.Area= 29,035 sf Storage= 112,464 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 348.4 min (1,125.8 - 777.3)

Volume	Invert	Avail.Storage	Storage Description
#1	853.00'	147,517 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
853.00	17,554	0	0
854.00	19,812	18,683	18,683
855.00	22,126	20,969	39,652
856.00	24,497	23,312	62,964
857.00	26,924	25,711	88,674
858.00	29,407	28,166	116,840
859.00	31,948	30,678	147,517

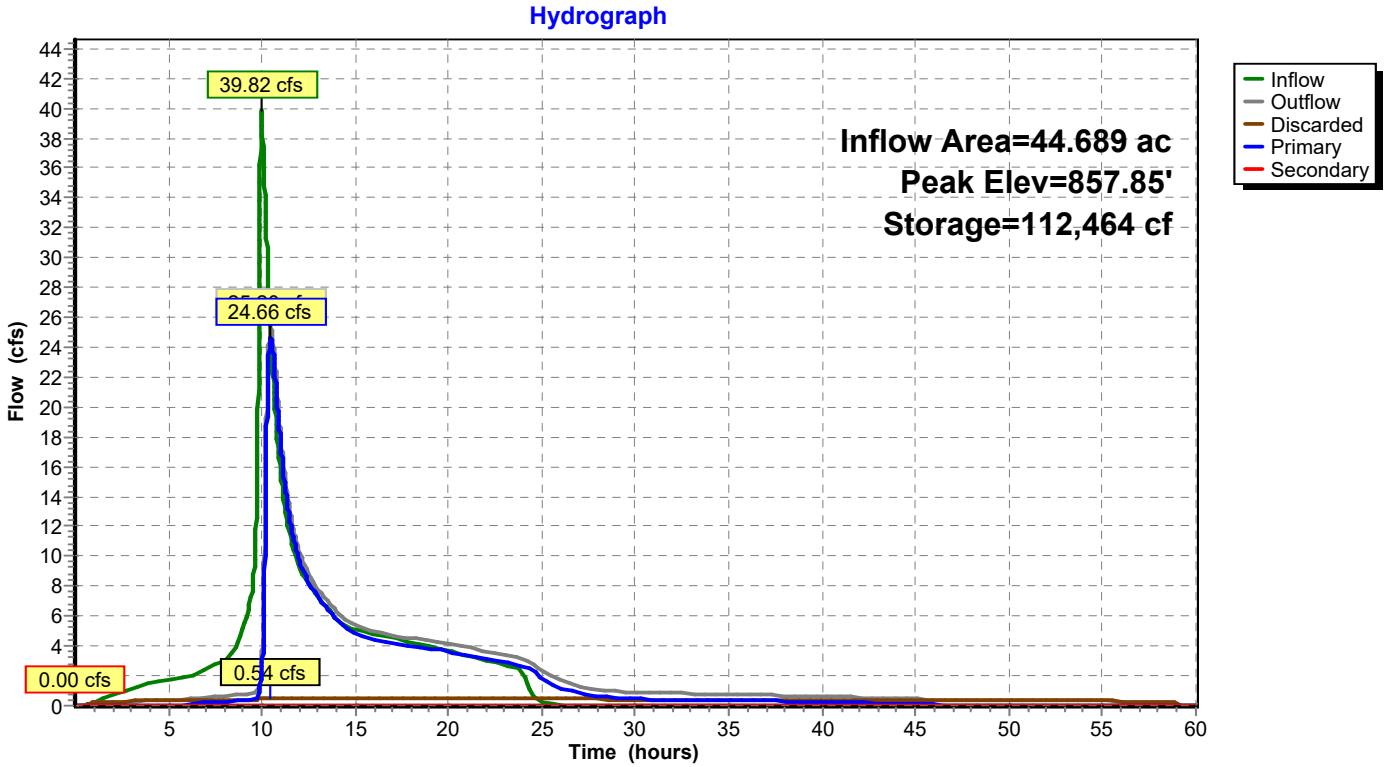
Device	Routing	Invert	Outlet Devices
#1	Primary	853.00'	**30.0" Round Culvert** L= 1,200.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 853.00' / 844.17' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Discarded	853.00'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#3	Device 1	853.58'	**2.0" W x 5.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	855.67'	**5.0" W x 12.0" H Vert. Orifice/Grate** X 4 rows with 8.0" cc spacing C= 0.600
#5	Device 1	857.25'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 in 36.0" x 36.0" Grate (100% open area) Limited to weir flow at low heads
#6	Secondary	858.75'	**16.0' long (Profile 5) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.79 2.93 3.06

Discarded OutFlow Max=0.54 cfs @ 10.48 hrs HW=857.85' (Free Discharge)
└─**2=Exfiltration** (Controls 0.54 cfs)

Primary OutFlow Max=24.66 cfs @ 10.48 hrs HW=857.85' TW=846.54' (Dynamic Tailwater)
└─**1=Culvert** (Passes 24.66 cfs of 39.78 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 0.67 cfs @ 9.70 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 5.73 cfs @ 4.55 fps)
  └─**5=Orifice/Grate** (Weir Controls 18.25 cfs @ 2.53 fps)

Secondary OutFlow Max=0.00 cfs @ 0.01 hrs HW=853.00' (Free Discharge)
└─**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B8: Basin 8



Summary for Pond B9: Basin 9

Inflow Area = 11.446 ac, 17.36% Impervious, Inflow Depth = 2.08" for 100 Year event
Inflow = 8.24 cfs @ 9.99 hrs, Volume= 1.988 af
Outflow = 5.10 cfs @ 10.45 hrs, Volume= 1.986 af, Atten= 38%, Lag= 27.5 min
Primary = 5.10 cfs @ 10.45 hrs, Volume= 1.986 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 849.37' @ 10.45 hrs Surf.Area= 7,958 sf Storage= 9,543 cf

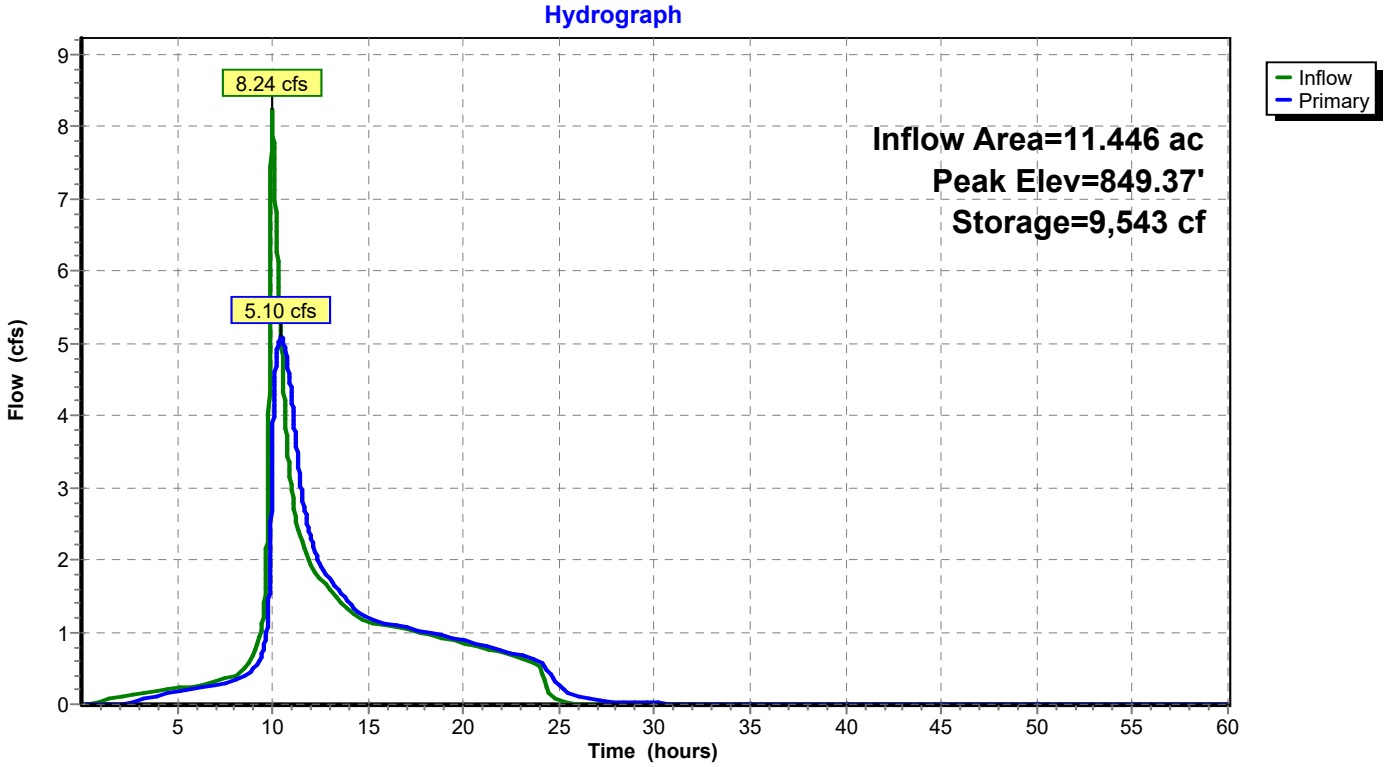
Plug-Flow detention time= 48.2 min calculated for 1.986 af (100% of inflow)
Center-of-Mass det. time= 47.9 min (862.3 - 814.3)

Volume	Invert	Avail.Storage	Storage Description
#1	848.00'	48,750 cf	**30.00'W x 200.00'L x 5.00'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	848.00'	**18.0" Round Culvert** L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 848.00' / 847.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	848.00'	**15.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=5.10 cfs @ 10.45 hrs HW=849.37' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 5.10 cfs of 6.74 cfs potential flow)
└─**2=Orifice/Grate** (Orifice Controls 5.10 cfs @ 4.16 fps)

Pond B9: Basin 9



Summary for Pond Ex SD: Tract #1632 Ex. 36" SD Outlet

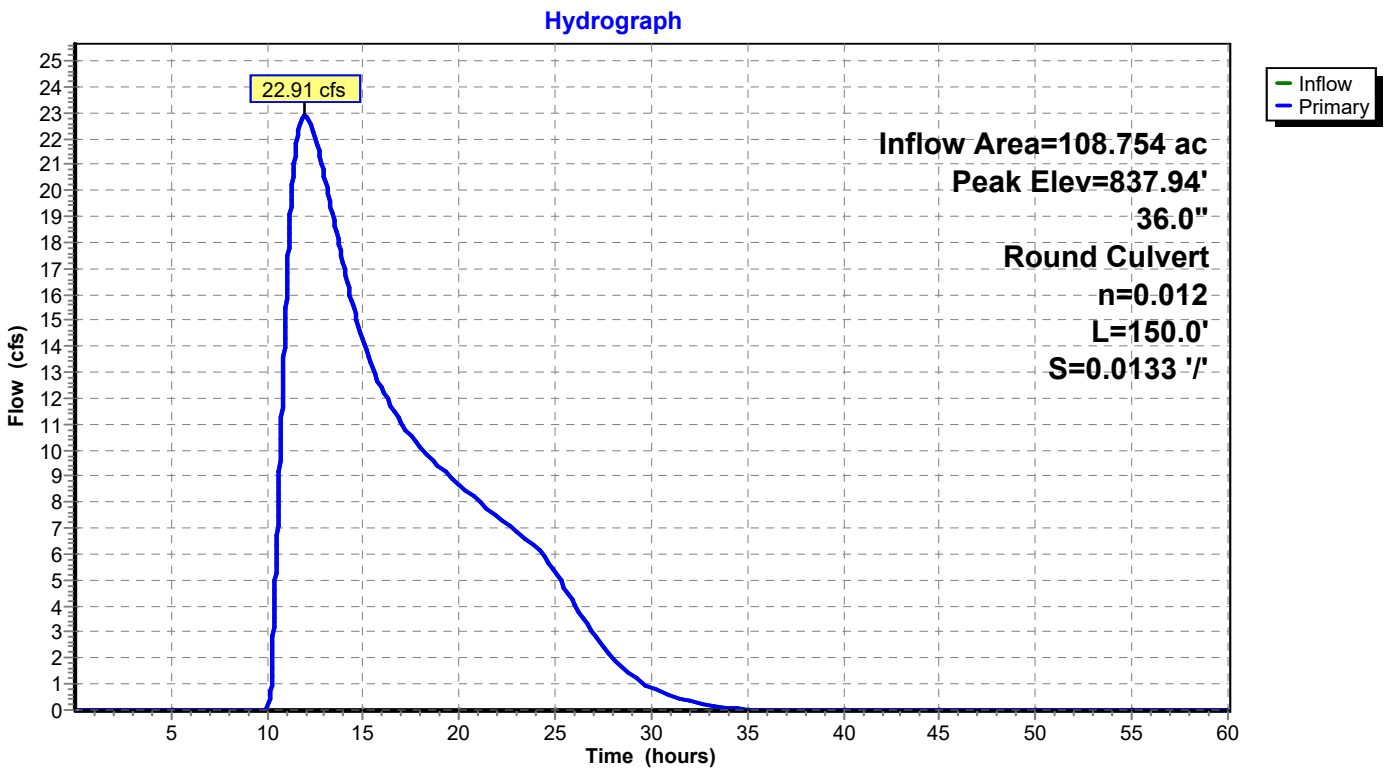
Inflow Area = 108.754 ac, 33.30% Impervious, Inflow Depth = 1.72" for 100 Year event
Inflow = 22.91 cfs @ 11.97 hrs, Volume= 15.562 af
Outflow = 22.91 cfs @ 11.97 hrs, Volume= 15.562 af, Atten= 0%, Lag= 0.0 min
Primary = 22.91 cfs @ 11.97 hrs, Volume= 15.562 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 837.94' @ 11.97 hrs
Flood Elev= 843.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	836.00'	**36.0" Round Culvert** L= 150.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.00' / 834.00' S= 0.0133 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=22.91 cfs @ 11.97 hrs HW=837.94' TW=835.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 22.91 cfs @ 4.74 fps)

Pond Ex SD: Tract #1632 Ex. 36" SD Outlet



Summary for Pond MC Q: SD System

[58] Hint: Peaked 0.53' above defined flood level

Inflow Area =	21.500 ac, 80.00% Impervious, Inflow Depth = 4.27" for 100 Year event				
Inflow =	42.04 cfs @	9.97 hrs,	Volume=	7.642 af	
Outflow =	41.83 cfs @	9.99 hrs,	Volume=	7.360 af,	Atten= 0%, Lag= 0.8 min
Discarded =	0.12 cfs @	9.99 hrs,	Volume=	0.377 af	
Primary =	20.20 cfs @	9.99 hrs,	Volume=	3.392 af	
Secondary =	21.51 cfs @	9.99 hrs,	Volume=	3.592 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 846.03' @ 9.99 hrs Surf.Area= 0.135 ac Storage= 0.535 af
Flood Elev= 845.50' Surf.Area= 0.097 ac Storage= 0.474 af

Plug-Flow detention time= 106.0 min calculated for 7.359 af (96% of inflow)
Center-of-Mass det. time= 80.6 min (799.1 - 718.5)

Volume	Invert	Avail.Storage	Storage Description
#1	839.50'	0.607 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
839.50	0.081	0.000	0.000
840.00	0.081	0.040	0.040
841.00	0.081	0.081	0.121
842.00	0.081	0.081	0.202
843.00	0.081	0.081	0.283
844.00	0.081	0.081	0.364
845.00	0.061	0.071	0.434
846.00	0.133	0.097	0.531
846.50	0.172	0.076	0.607

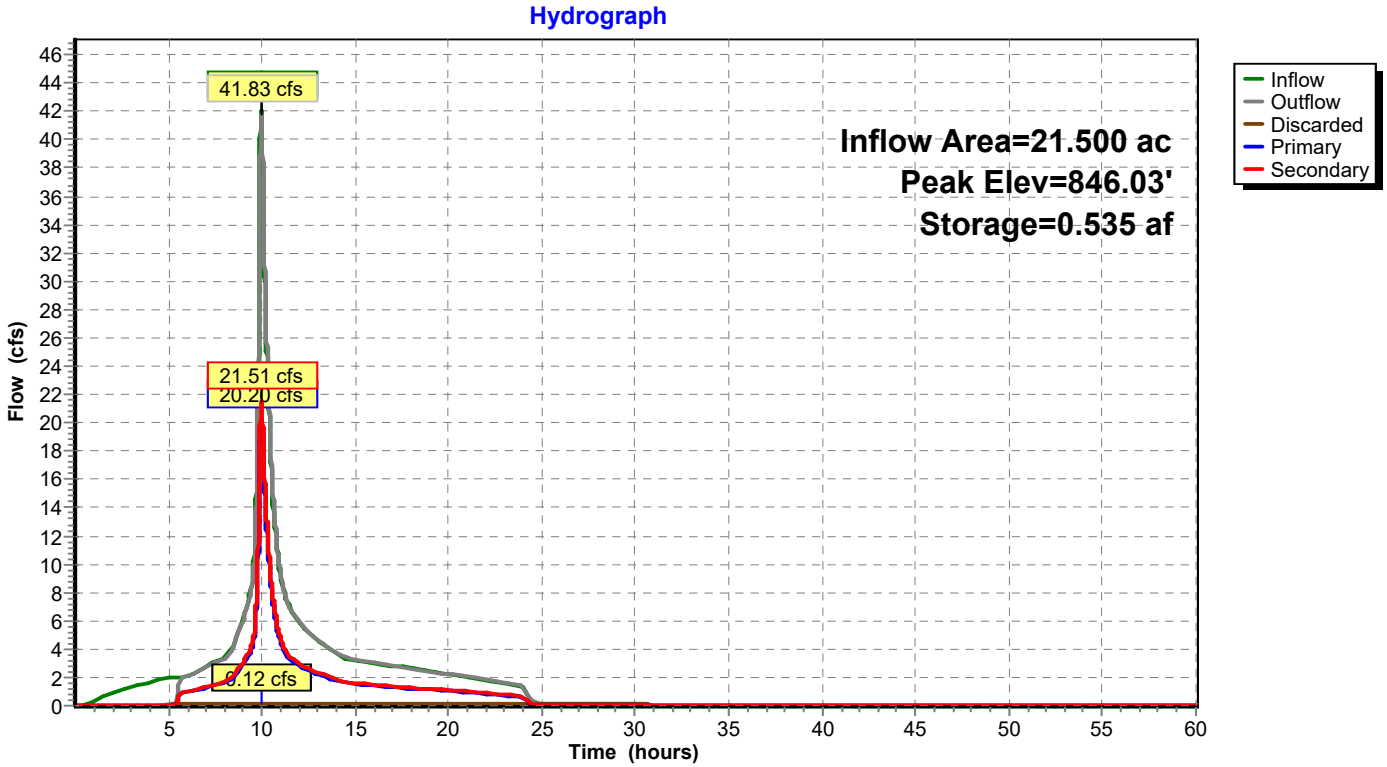
Device	Routing	Invert	Outlet Devices
#1	Primary	841.50'	**36.0" Round Culvert** L= 585.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 841.50' / 838.50' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	845.50'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	839.50'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 750.00'
#4	Secondary	845.50'	**20.0' long (Profile 4) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.77 2.97 3.21

Discarded OutFlow Max=0.12 cfs @ 9.99 hrs HW=846.03' (Free Discharge)
└─**3=Exfiltration** (Controls 0.12 cfs)

Primary OutFlow Max=20.18 cfs @ 9.99 hrs HW=846.03' TW=840.46' (Dynamic Tailwater)
└─**1=Culvert** (Passes 20.18 cfs of 53.36 cfs potential flow)
  └─**2=Orifice/Grate** (Weir Controls 20.18 cfs @ 2.38 fps)

Secondary OutFlow Max=21.50 cfs @ 9.99 hrs HW=846.03' TW=836.26' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 21.50 cfs @ 2.03 fps)

Pond MC Q: SD System



Summary for Pond SD: 42" HDPE SD

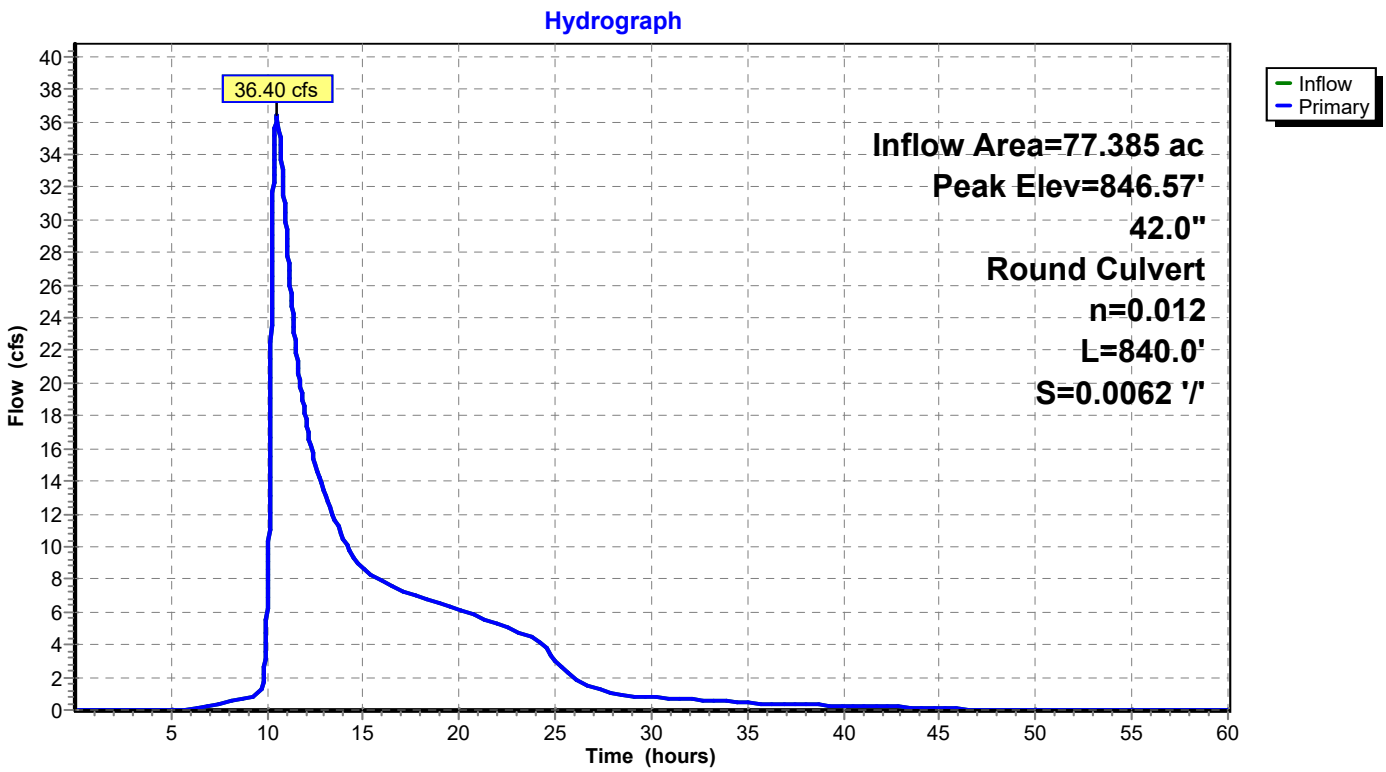
Inflow Area = 77.385 ac, 33.30% Impervious, Inflow Depth = 2.10" for 100 Year event
Inflow = 36.40 cfs @ 10.52 hrs, Volume= 13.522 af
Outflow = 36.40 cfs @ 10.52 hrs, Volume= 13.522 af, Atten= 0%, Lag= 0.0 min
Primary = 36.40 cfs @ 10.52 hrs, Volume= 13.522 af

Routing by Dyn-Stor-Ind method, Time Span= 0.01-60.00 hrs, dt= 0.01 hrs
Peak Elev= 846.57' @ 10.60 hrs
Flood Elev= 853.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	844.17'	**42.0" Round Culvert** L= 840.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 844.17' / 839.00' S= 0.0062 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=36.30 cfs @ 10.52 hrs HW=846.56' TW=841.86' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 36.30 cfs @ 7.32 fps)

Pond SD: 42" HDPE SD



HYDRAULIC ANALYSIS
OF
TURTLE CREEK THROUGH OLSEN PROPERTY

Prepared for

Olsen 212, LLC

Submitted by

WALLACE GROUP

July 19, 2019

CERTIFICATION

Preparation of this report included efforts by the following persons:
In accordance with the provisions of Section 6700 of the Business and Professions Code of the State of California, this report was prepared by or under the direction of the following Civil Engineer, licensed in the State of California:

ENGINEER IN RESPONSIBLE CHARGE:

Byron J. Glenn, PE C51519 Senior Civil Engineer	Date

HYDRAULIC ANALYSIS
OF
TURTLE CREEK THROUGH OLSEN PROPERTY
VINEDO SPECIFIC PLAN AND VESTING TENTATIVE TRACT MAPS

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HYDRAULIC ANALYSIS
TURTLE CREEK THROUGH OLSEN PROPERTY
VINEDO SPECIFIC PLAN & VESTING TENTATIVE TRACT MAPS

INTRODUCTION

The purpose of this report is to present a hydraulic analysis of Turtle Creek within the Olsen property, as support for the corresponding Vinedo Specific Plan (SP) and Vesting Tentative Tract Maps (VTTM). Turtle Creek is referred to as "Unnamed Creek No. 1"[1] within the San Luis Obispo County Flood Insurance Study (FIS). The purpose of this analysis is to determine the creek's flow characteristics for both the undeveloped and developed conditions for the Vinedo Tentative Map configuration. These characteristics will include water surface elevations, velocity and top width at the project boundaries and within the creek through the Olsen Ranch property. Water surface elevations and velocities at the property's boundaries should not significantly change from the undeveloped to the developed condition.

BACKGROUND

Olsen Ranch lies within the proposed Vinedo Specific Plan area located in the southeastern portion of the City of Paso Robles. Vinedo encompasses an area of approximately 355 acres. The watershed within this area drains from the east and the northeast westward toward the Salinas River (Figure 1).

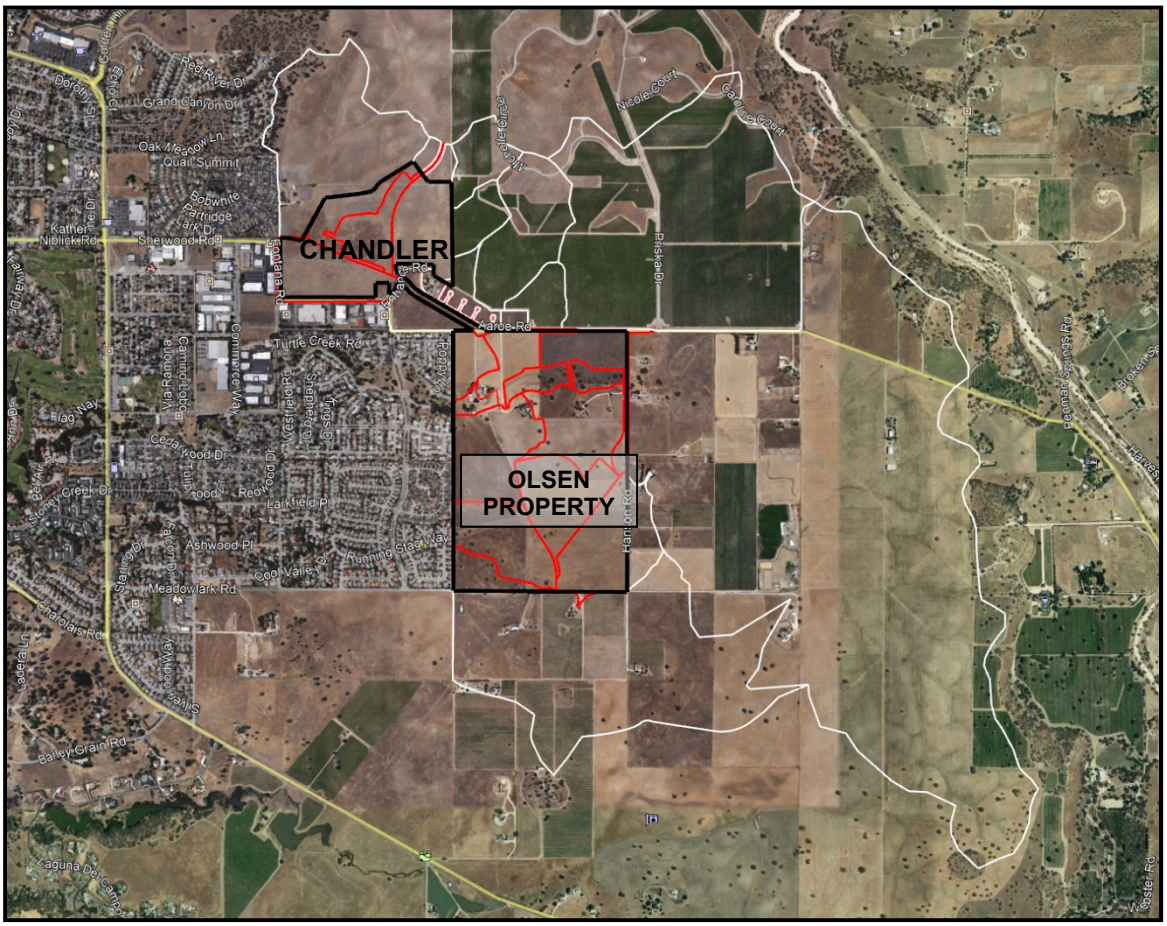


Figure 1 – Vicinity Map

[1] FEMA FLOOD INSURANCE STUDY REVISED: MAY 16, 2017 FLOOD INSURANCE STUDY NUMBER 06079CV001C Version Number 2.3.2.2

Olsen Ranch is located north of Meadowlark Road, west of Hanson Road, south of Linne Road and east of existing residential subdivisions. The project's primary access is at Linne Road, Meadowlark Road and Hanson Road. The property has been in agricultural use with three residential structures for many years. The property is bounded to the north by Vineyards, the Our Town subdivision to the northwest and existing residential subdivisions to the west (Figure 2).

Turtle Creek flows east to west through the northern portion of Olsen Ranch and conveys stormwater drainage from approximately two square miles. This analysis will study the river reach extending just upstream of Hanson Road on the east and terminating at the western boundary of Olsen Ranch. This analysis utilizes the stormwater flow rates as determined within the **Preliminary Drainage Report for Olsen-Chandler Ranch Specific Plan and Vesting Tentative Tract Map**, prepared by Wallace Group, January 31, 2019. Since the time of the Preliminary Drainage Report submittal, the name of the Specific Plan Area has been changed from Olsen-Chandler Ranch to Vinedo.

Figure 2 – Project Location Map

EXISTING SITE CONDITIONS

The Olsen Parcel consists of approximately 242.5 acres with rolling hills transitioning to a flatter area along the northern quarter of the property south of Linne Road. Vegetation on this portion of the project currently consists of scattered oak tree clusters and annual grasses. A natural drainage known as Turtle Creek ("Unnamed Creek No. 1) is located at the base of the hilly terrain and a broad plain exists northward to Linne Road. A large PG&E electrical easement crosses the southeast portion of the site from the southwest to the northeast.

Turtle Creek is a shallow drainage way with a wide flood plain area and transitions into a defined channel at the western boundary of Olsen Ranch. Flows are conveyed to the west ultimately discharging into the Salinas River.

PROPOSED SITE CONDITIONS

The proposed developed condition of the Vinedo Specific Plan will consist of approximately 1,233 dwelling units, consisting of 586 Low, 479 Medium and 168 High Density Residential units. A portion of Olsen Ranch will be a large recreation center with commercial areas, parks and open space areas.

DRAINAGE AREA DESCRIPTION

Turtle Creek drains an area of approximately two square miles. Two large watersheds contribute flows to the Creek and include the Northern and Central watersheds. The Northern Watershed encompasses approximately 537 acres including South Chandler Ranch. The Central Watershed encompasses approximately 863 acres including the northern two thirds of Olsen Ranch (see Figure 3).

The eastern portion of the Northern Watershed consists mostly of the Gran Cielo Vineyard development with some undeveloped property. According to the Drainage Study prepared for the Gran Cielo

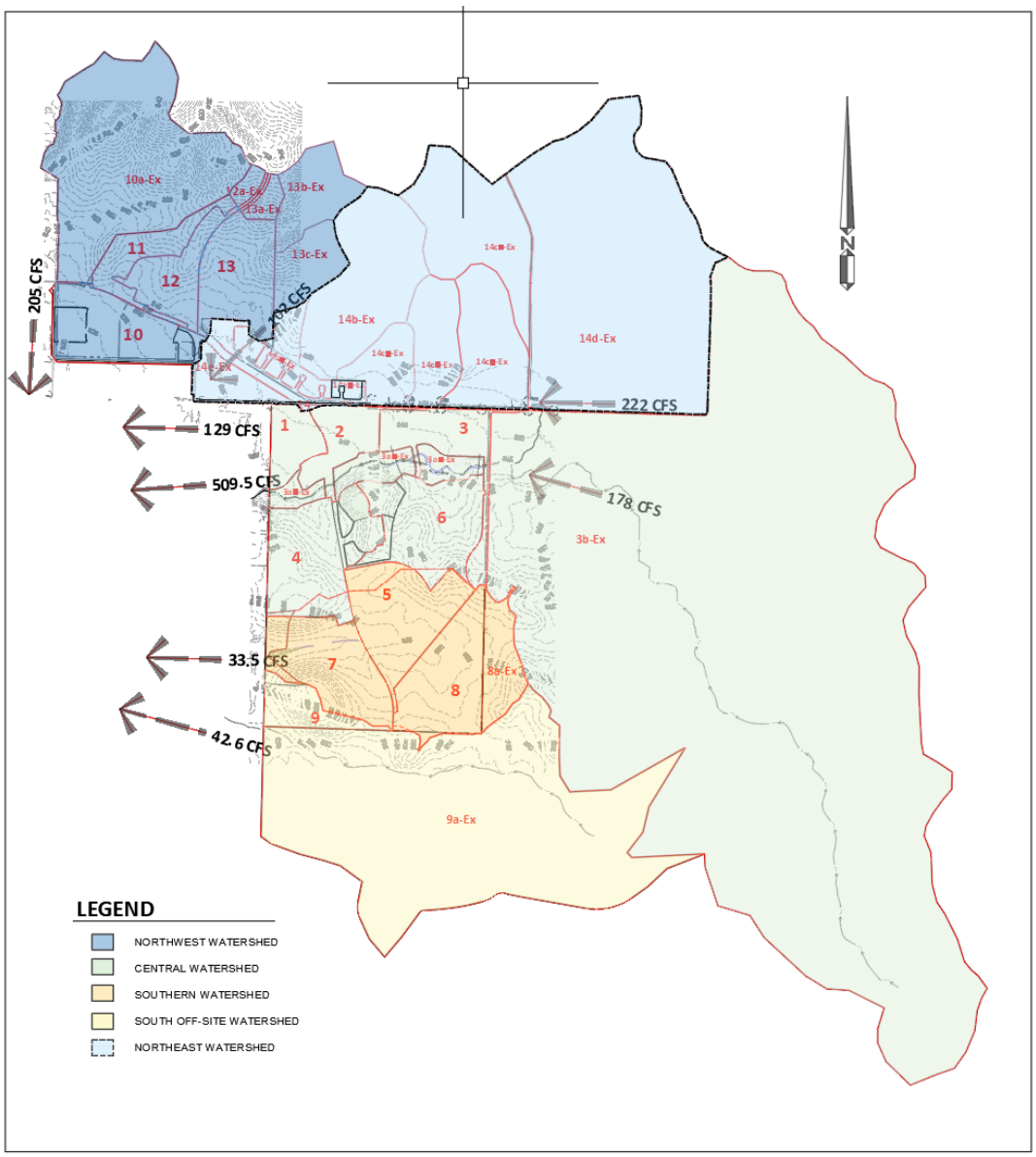


Figure 3 – Proposed Watershed Description

development entitled "**Tract No. 2526 Grading and Drainage Report Summary**", prepared by Vaughan Surveys, Inc, August 2003;

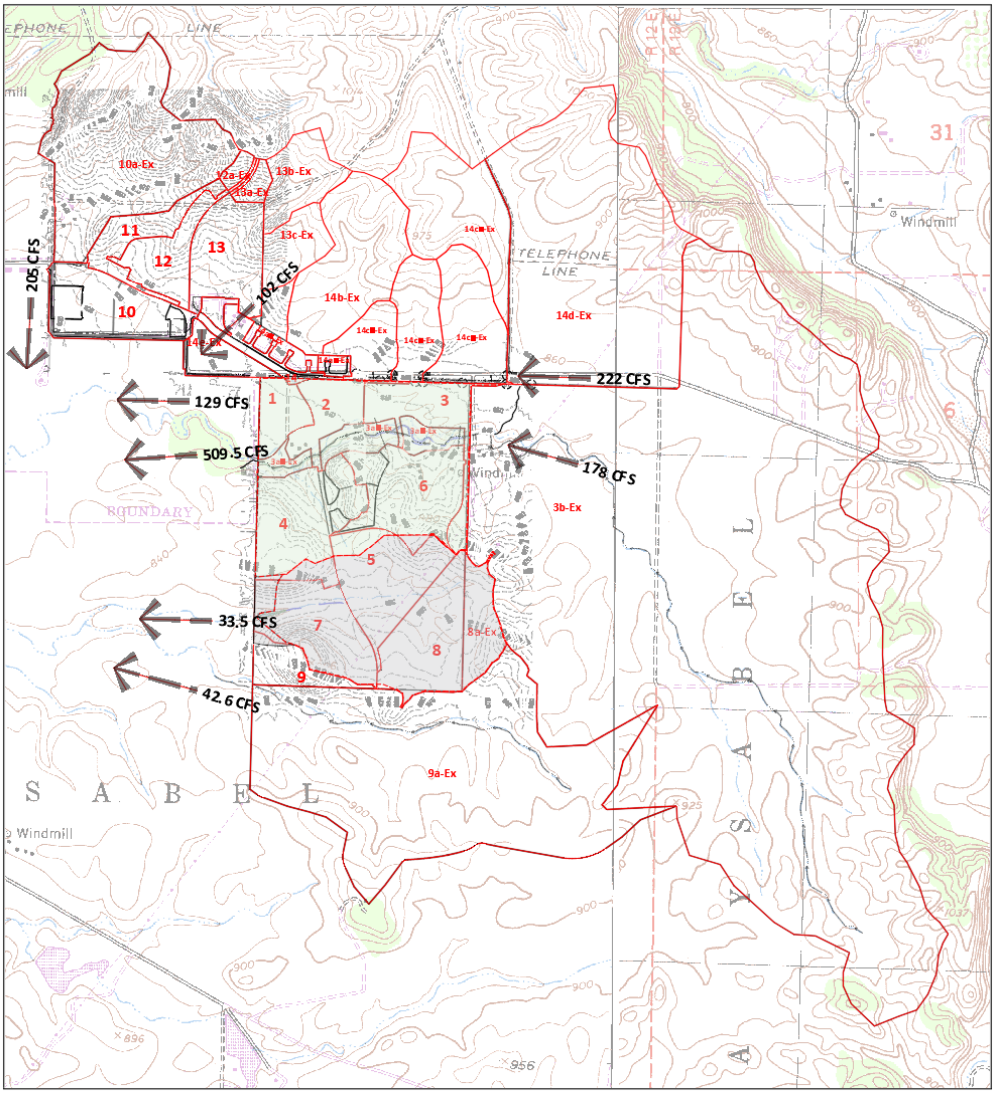


Figure 4 – Existing Watershed Areas

"Existing stormwater runoff currently flows along and over Linne Road to other properties south of Linne Road. The basin is designed to preserve existing flow patterns within the watershed in accordance with County Section 11-351.1500".

Stormwater runoff generated within the Easterly Sub-watershed of the Northern Watershed will, therefore, overtop Linne Road and flow into the Central Watershed as it has historically from major storm events. The report shows that stormwater runoff within the Gran Cielo development sheet flows overland and is routed through onsite roadways and culverts along Priska Drive (Gran Cielo entry) to Linne Road. Flows are then intercepted by small rectangular detention areas along the northern side of Linne Road.

Per the **Preliminary Drainage Report for Olsen-Chandler Ranch Specific Plan and Vesting Tentative Tract Map,** stormwater runoff along Linne Road is split with a large percentage of the flow spilling over the Linne Road centerline and to the south for all storm events and follows historic drainage paths

discharging into Turtle Creek along the northern portion of Olsen Ranch. The Central Watershed encompasses approximately 864 acres including the northern portion of Olsen Ranch. Stormwater runoff from this area is conveyed within Turtle Creek across the Olsen parcel to the western boundary, south of Parkview Drive.

FLOOD HAZARD

The portion of Turtle Creek located at the western edge of Olsen Ranch is within a FEMA Flood Hazard Zone A as shown on the **Flood Insurance Rate Map (FIRM) Panel No. 06079C0607G**, effective date November 16, 2012 (Figure 5). **The Flood Insurance Study (FIS) for San Luis Obispo County** including Unnamed Creek No. 1 (Turtle Creek) was revalidated in 2017.

The proposed land plan proposes lots that will be impacted by this current mapped flood zone, therefore modification of the Zone A area will be required. An application for a Letter of Map Revision (LOMR) will be submitted to FEMA to modify the creek's current flood zone for the existing un-development condition. Upon FEMA approval of this LOMR a Conditional Letter of Map Revision (CLOMR) will be submitted to FEMA which outlines the proposed land plan and development grading. Once the CLOMR has been accepted by FEMA and the grading completed and certified, a second LOMR will be submitted to FEMA for the final map revision.

Figure 5 – FEMA Floodplain Map

HYDRAULIC METHODOLOGY AND CRITERIA

A Geo HECRAS computer model was utilized to analyze the flow within the Un-Named Creek No.1 upstream of the Olsen Ranch western boundary. Geo HECRAS was created by CivilGEO, an engineering and environmental software developer, to use a GIS platform eliminating manual input of variables by automating the collection of data from disparate sources like GIS, CAD, and survey data.

Geo HECRAS is an AutoCAD compatible interactive 2D/3D graphical user interface data wrapper to the US Army Corps of Engineers HEC-RAS computer program. HEC-RAS was developed by the Army Corps of Engineers and is a program that models the hydraulics of water flow through natural rivers and other channels. The program is one dimensional, meaning that there is no direct modeling of the hydraulic effect of cross section shape changes, bends ad other two and three-dimensional aspects of flow.

The program allows the user to develop terrain models and compute water surface profiles for steady and unsteady flow models. An engineer can define bridges, culvert roadway crossings, FEMA floodplain encroachments, inline reservoir structures and other features in the HEC-RAS model. Complete HEC-RAS reporting is provided, including cross section plots, cross section tables, profile plots, profile tables, time series graphs, and more. Because the report data is derived directly from the HEC-RAS model.

Geo HECRAS was utilized to determine the limits of the 100-year flood plain for both the existing and proposed conditions. The development must not adversely impact the properties upstream or downstream, and therefore, the computed water surface elevations within Turtle Creek upstream of Hanson Road for the proposed developed conditions should not be significantly different from the water surface elevations computed for the existing condition. The proposed model incudes the effects of proposed grading along the creek as well as the proposed stream crossings and improvements to Hanson Road.

Hydraulic Analysis on Turtle Creek

The Geo HECRAS model requires input variables such as creek cross sectional geometry, cross section reach lengths, description of roadway crossings and type of structure, Manning's roughness coefficients, boundary conditions such as the starting water surface elevation and flow rates. Cross sectional geometry was taken directly from the digital terrain model developed from the latest aerial topography and proposed grading plan for Olsen Ranch through the AutoCAD Civil 3D interface.

Cross sections were spaced approximately 100 feet apart and perpendicular to the Creek's flowline. The overbank stations were placed at areas defining the ordinary high-water mark, or that water surface elevation established within the creek for the mean annual storm event. The existing analysis utilized cross sections created from the latest aerial topography created in October 2018. The proposed analysis utilized the same cross section locations digitized over the proposed grading plan. The proposed analysis also has modified cross section locations at proposed roadway crossings that define the bridge elements such as crossing type (bridge, culvert) size and area of opening.

Roadway crossings have been placed into the model at the proposed Niblick Road and a second arterial Road Bridge (Road XX) crossing. The crossing at Hanson Road has also been included as an improved facility to be constructed with the improvements to Hanson Road. The crossings were designed to accommodate a structure and opening that will not impact the limits of the resource agencies ordinary

high-water mark and wetland delineations. Permits from these agencies will not be required because these facilities will not impact the jurisdictional delineations.

The crossing at Niblick Road will consist of a 6-foot high by 20-foot wide reinforced concrete box culvert (RCB). The box culvert will be buried approximately two feet underneath the channel flowline to create a more natural channel bottom. The crossing at Road XX will be a 90-foot clear span bridge with near vertical abutments which will span over the existing creek ordinary high-water mark and delineated wetland areas. The existing triple reinforced concrete pipe culvert crossing (one 18-inch and two 42-inch RCP) at Hanson Road will be replaced by double, 2-foot high by 8-foot wide RCB.

Roughness coefficients were estimated for the overbank or flood plain areas as well as the channel area. A value of .04 was used for the overbank areas and a value of 0.03 was used for the main channel.

The starting water surface elevation at the western boundary was taken from the Flood Insurance Study for San Luis Obispo County, Unnamed Creek No. 1, renamed to Turtle Creek. The starting water surface elevation is 485.0 feet. The flowrates used were determined from the **Preliminary Drainage Report for Olsen-Chandler Ranch Specific Plan and Vesting Tentative Tract Map** as noted above. Levees were added to specific cross sections along the edge of the proposed Parkview Lane to prohibit the program from utilizing the roadway as part of the overall conveyance of the creek. The results show that the water surface elevations will not impede on the roadway except for that portion of Parkview Lane west of Niblick Drive. This portion of Parkview Lane will have minimal inundation from the 100-year storm event. Final design plans have the potential to raise the roadway section 0.5-fee to 1-foot to prevent any inundation of the roadway.

Hydraulic Modeling Results

The results of the analysis show that the estimated flowrate within the channel can be conveyed within the natural creek without inundating the proposed development. The results of the HEC-RAS analysis are outlined in Table 1.

TABLE 1: HEC RAS RESULTS EXISTING vs PROPOSED CONDITIONS

Cross Section	Discharge	Existing WSEL	Proposed WSEL	Existing Velocity	Proposed Velocity	Existing Top Width	Proposed Top Width
22304	265	847.08	846.99	1.05	2.85	328.86	137.63
22303	265	847.00	846.95	2.09	2.35	157.13	151.99
22302	265	846.97	846.91	1.67	2.15	209.49	207.2
Culvert							
22301	265	845.80	845.67	3.70	3.56	130.30	138.78
22300	265	845.67	845.15	3.13	5.93	166.47	109.42
22299	265	845.45	844.66	4.20	3.40	182.70	154.03
22298	265	844.42	841.58	4.92	1.63	382.60	309.48
22297	265	844.19	844.19	2.90	2.87	254.10	255.10
22296	265	843.82	843.81	3.11	3.14	203.49	202.63
22295	265	843.27	834.37	3.58	2.89	182.39	198.24
22294	265	843.04	842.68	1.87	4.26	298.59	234.38
22293	265	842.81	842.50	2.62	1.83	196.69	280.22
22290	265	842.21	841.92	2.42	1.69	184.91	192.29

22289	434	841.50	841.58	3.15	3.92	175.86	177.14
22288	434	841.26	841.35	3.42	3.32	194.50	199.03
22287	434	840.46	840.53	4.94	6.00	142.94	153.32
22286	434	839.79	839.84	3.32	3.50	154.02	159.35
22285	434	839.52	839.57	3.57	3.68	167.07	170.76
22284	434	839.32	839.38	2.95	2.98	253.25	229.79
22283	434	839.13	839.19	2.37	2.39	271.43	266.89
22282	434	838.71	838.74	3.46	3.79	205.00	226.43
22278	434	836.58	836.71	3.96	3.71	111.15	115.66
22277	434	835.92	835.78	6.49	7.04	136.34	75.61
22276	508	834.87	835.14	8.52	6.21	142.25	194.64
22275	508	833.59	834.42	7.05	4.17	79.61	109.04
22274	508	833.66	834.42	2.31	2.53	337.72	227.74
22273	508	833.11	834.35	5.85	3.43	191.48	198.32
22272	508	833.14	834.05	1.73	2.75	264.45	80.99
22271	508	832.61	833.11	5.96	7.19	117.80	60.05
22269	508		832.33		8.57		72.25

CONCLUSION AND RECOMMENDATIONS

Summary

The proposed Vinedo Specific Plan covers an area of approximately 355 acres in the City of Paso Robles, California. The proposed development will result in the construction of approximately 1,233 residential units. Roadway and utility infrastructure will be constructed to support the development. The overall drainage area from the SP impacting the existing City infrastructure is approximately 2.8 square miles. Stormwater runoff from the project area will be conveyed to four distinct areas.

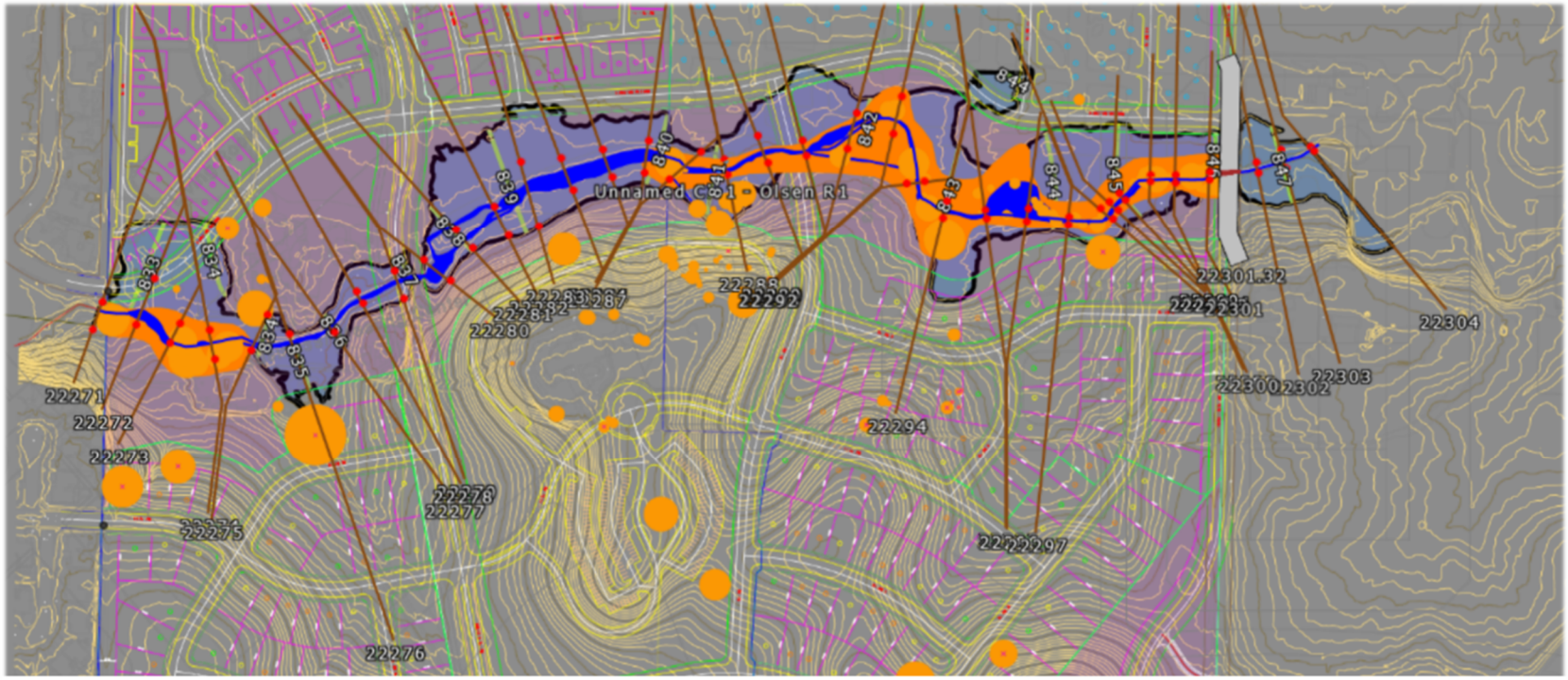
The Northern Easterly Sub-watershed will discharge historic flow rates to Linne Road, where flows will overtop the roadway and flow into Turtle Creek through the Central Watershed. For the proposed developed condition, stormwater runoff will be intercepted by storm drain systems prior to flows overtopping Linne Road and will be conveyed to Turtle Creek. A small amount of flow from the Easterly Sub-watershed will combine with flows from the Northern Westerly Sub-watershed and discharge at the intersections of Linne Road and Airport Road and Linne Road and Fontana Road.

Turtle Creek conveys stormwater flows from the Central Watershed through Olsen Ranch. The calculated water surface elevations within Turtle Creek Developed flows will be detained to historic levels for the 2- through the 100-year event before discharging into Turtle Creek or offsite into the City's stormwater conveyance system.

The proposed development's grading and roadway crossings have been designed to allow the creek to follow its natural defined course without creating adverse conditions upstream of Olsen Ranch. The creek's floodplain that lies outside of any jurisdictional limits should be regularly maintained to ensure the roughness coefficients assumed within this analysis remain effective. Overgrowth of the overbank areas may have a potential to increase water surface elevations and therefore minor flooding.

Existing Conditions Plan and Results:

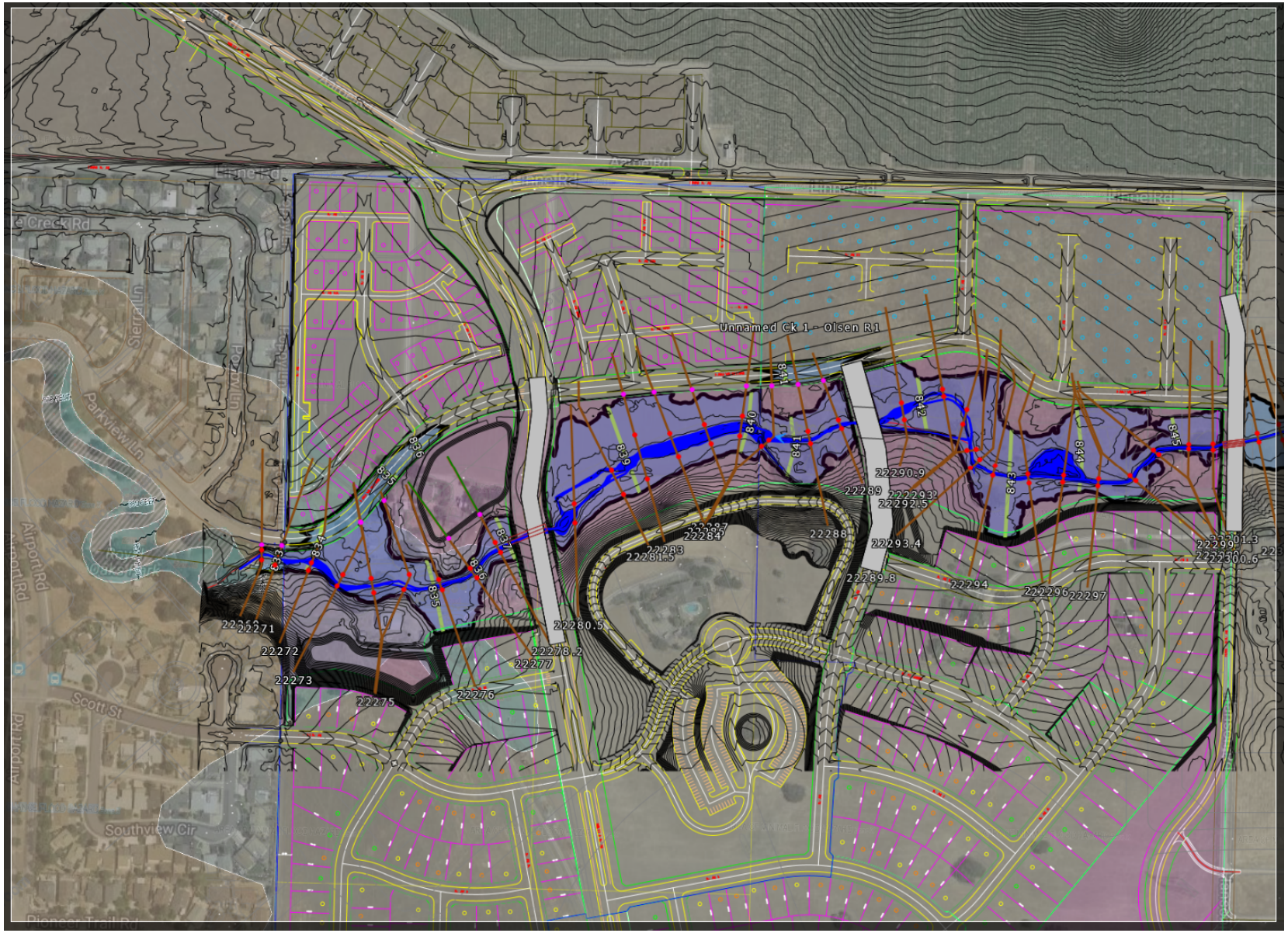
Existing Conditions Plan:



HEC RAS: 100 Year Event Existing Conditions Results

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Olsen R1	22304	100 Yr	265.00	843.58	847.08	845.68	847.08	0.000170	1.05	384.79	328.86	0.12
Olsen R1	22303	100 Yr	265.00	843.94	847.00		847.05	0.001050	2.09	161.49	157.13	0.27
Olsen R1	22302	100 Yr	265.00	843.44	846.97	845.96	846.99	0.000646	1.67	238.22	209.49	0.19
Olsen R1	22301.32		Culvert									
Olsen R1	22301	100 Yr	265.00	842.35	845.80		845.93	0.002075	3.70	128.50	130.30	0.44
Olsen R1	22300	100 Yr	265.00	841.63	845.67		845.76	0.001923	3.13	145.40	166.47	0.38
Olsen R1	22299	100 Yr	265.00	841.98	845.45	845.27	845.61	0.003007	4.20	130.42	182.70	0.49
Olsen R1	22298.4	100 Yr	265.00	842.85	844.99	844.99	845.21	0.007555	4.92	108.83	232.86	0.74
Olsen R1	22298.2	100 Yr	265.00	842.90	844.48	843.84	844.51	0.002103	1.69	188.11	275.04	0.35
Olsen R1	22298	100 Yr	265.00	842.76	844.42		844.45	0.002027	1.37	218.90	382.60	0.33
Olsen R1	22297	100 Yr	265.00	842.18	844.19		844.25	0.002604	2.90	176.52	254.10	0.43
Olsen R1	22296	100 Yr	265.00	841.68	843.82		843.89	0.005119	3.11	136.55	203.49	0.57
Olsen R1	22295	100 Yr	265.00	841.36	843.27		843.37	0.005852	3.58	120.09	182.39	0.62
Olsen R1	22294	100 Yr	265.00	841.06	843.04		843.08	0.001553	1.87	196.47	298.59	0.32
Olsen R1	22293	100 Yr	265.00	840.26	842.81		842.88	0.003224	2.62	132.42	196.69	0.43
Olsen R1	22292	100 Yr	265.00	841.27	842.21		842.29	0.003965	2.46	123.46	179.35	0.49
Olsen R1	22291	100 Yr	265.00	839.98	841.91		841.97	0.001908	2.18	135.29	146.34	0.36
Olsen R1	22290	100 Yr	434.00	839.00	841.73		841.79	0.001182	2.42	219.98	184.91	0.33
Olsen R1	22289	100 Yr	434.00	839.30	841.50		841.62	0.002383	3.15	169.90	175.86	0.45
Olsen R1	22288	100 Yr	434.00	838.75	841.26		841.38	0.002547	3.42	177.58	194.50	0.48
Olsen R1	22287	100 Yr	434.00	837.97	840.46	840.46	840.81	0.013059	4.94	95.02	142.94	0.96
Olsen R1	22286	100 Yr	434.00	836.59	839.79	839.14	839.95	0.002402	3.32	146.22	154.02	0.46
Olsen R1	22285	100 Yr	434.00	837.03	839.52		839.70	0.002816	3.57	142.47	167.07	0.50
Olsen R1	22284	100 Yr	434.00	837.22	839.32		839.43	0.002192	2.95	186.53	253.25	0.43
Olsen R1	22283	100 Yr	434.00	837.70	839.13		839.21	0.002272	2.37	203.29	271.43	0.42
Olsen R1	22282	100 Yr	434.00	837.34	838.71		838.86	0.005100	3.46	146.56	205.00	0.62
Olsen R1	22281	100 Yr	434.00	834.87	838.02	838.02	838.35	0.004549	4.86	119.70	297.00	0.74
Olsen R1	22280	100 Yr	434.00	833.65	837.22	835.88	837.36	0.000962	2.98	145.54	70.36	0.37
Olsen R1	22279	100 Yr	508.00	833.83	836.58	836.49	837.10	0.007165	5.83	87.58	77.37	0.92
Olsen R1	22278	100 Yr	508.00	833.18	836.58		836.76	0.001220	3.96	175.17	111.15	0.43
Olsen R1	22277	100 Yr	508.00	832.32	835.92	835.92	836.51	0.004185	6.49	104.07	136.34	0.77
Olsen R1	22276	100 Yr	508.00	832.38	834.87	835.25	835.83	0.012421	8.52	86.01	142.25	1.24
Olsen R1	22275	100 Yr	508.00	832.16	833.59	833.77	834.36	0.016118	7.05	72.04	79.61	1.31
Olsen R1	22274	100 Yr	508.00	831.23	833.66	833.09	833.72	0.001515	2.31	288.69	337.72	0.41
Olsen R1	22273	100 Yr	508.00	831.05	833.11	833.11	833.43	0.008175	5.85	128.21	191.48	0.96
Olsen R1	22272	100 Yr	508.00	830.46	833.14	832.00	833.18	0.000345	1.73	364.62	264.45	0.22
Olsen R1	22271	100 Yr	508.00	830.12	832.61	832.61	833.03	0.008942	5.96	103.94	117.80	1.00

Proposed Conditions Plan:

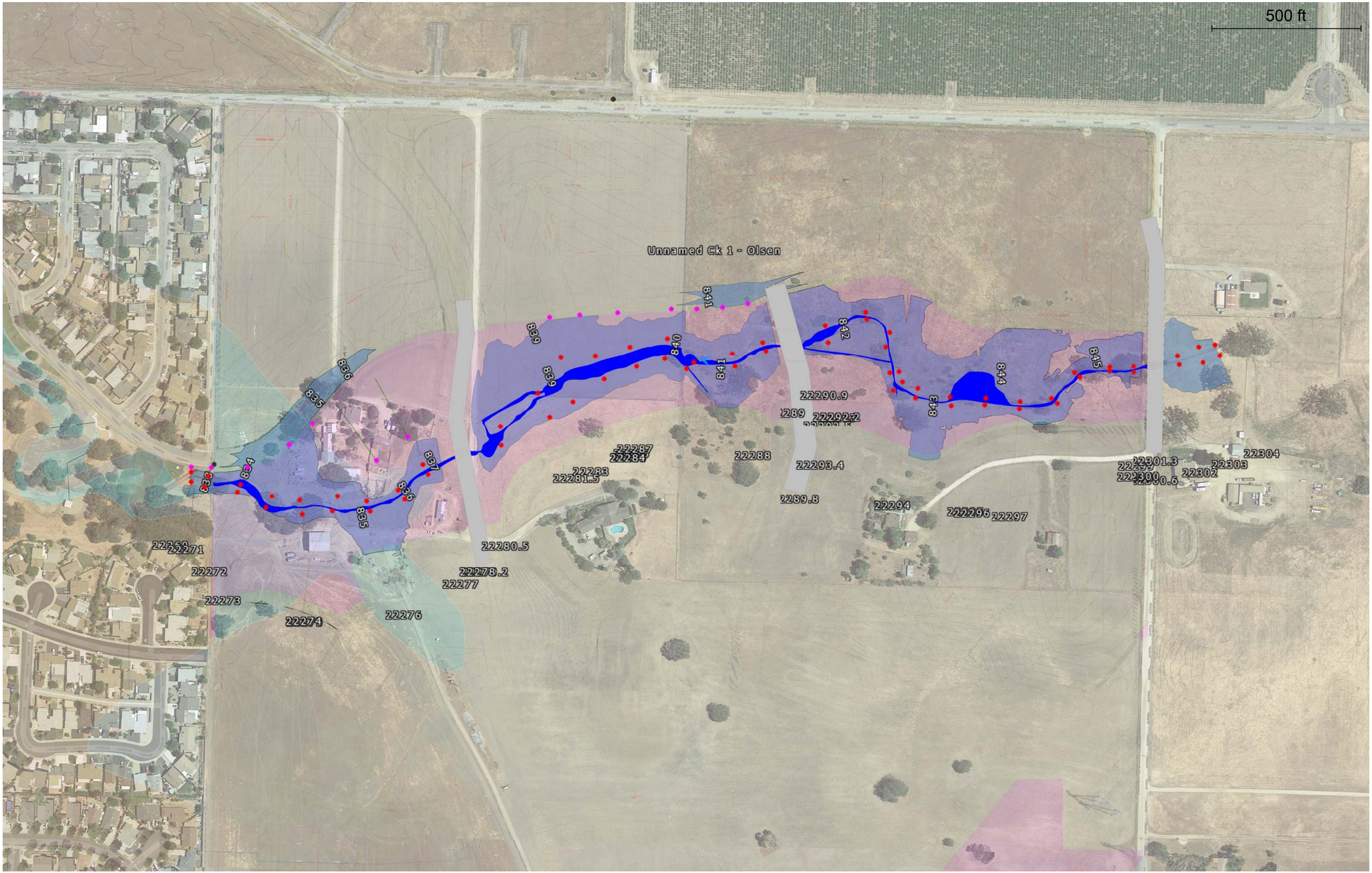


HEC RAS: 100 Year Event Proposed Conditions Results:

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Olsen R1	22305	100 Yr	265.00	843.39	847.09	845.73	847.10	0.000292	1.26	375.19	333.09	0.15
Olsen R1	22304	100 Yr	265.00	843.35	846.99		847.09	0.001417	2.85	135.09	137.63	0.35
Olsen R1	22303	100 Yr	265.00	843.98	846.95		847.02	0.001150	2.35	153.29	151.99	0.31
Olsen R1	22302	100 Yr	265.00	843.43	846.91	846.03	846.95	0.000695	2.15	226.73	207.20	0.25
Olsen R1	22301.3		Culvert									
Olsen R1	22300.6	100 Yr	265.00	842.03	845.67		845.79	0.002703	3.56	123.17	138.78	0.42
Olsen R1	22300	100 Yr	265.00	841.63	845.15	845.15	845.51	0.008030	5.93	78.42	109.42	0.70
Olsen R1	22299	100 Yr	265.00	841.80	844.66	844.28	844.75	0.003645	3.40	130.28	154.03	0.46
Olsen R1	22298	100 Yr	265.00	842.78	844.45		844.47	0.001938	1.63	215.32	309.48	0.32
Olsen R1	22297	100 Yr	265.00	842.18	844.19		844.25	0.002680	2.87	175.36	255.10	0.44
Olsen R1	22296	100 Yr	265.00	841.77	843.81		843.88	0.005280	3.14	135.08	202.63	0.58
Olsen R1	22295	100 Yr	265.00	841.36	843.37		843.44	0.003865	2.89	141.04	198.24	0.51
Olsen R1	22294	100 Yr	265.00	841.08	842.68		842.83	0.010953	4.26	102.03	234.38	0.83
Olsen R1	22293.4	100 Yr	265.00	839.04	842.52		842.60	0.001935	2.83	168.01	303.67	0.39
Olsen R1	22293	100 Yr	265.00	840.20	842.50		842.53	0.001403	1.83	214.55	280.22	0.31
Olsen R1	22292.5	100 Yr	265.00	840.50	842.35		842.39	0.001221	2.03	190.64	210.14	0.30
Olsen R1	22292.2	100 Yr	265.00	840.67	842.09		842.18	0.004817	3.32	123.53	182.48	0.57
Olsen R1	22290.9	100 Yr	265.00	840.38	841.92	841.17	841.95	0.000853	1.69	208.75	192.29	0.25
Olsen R1	22289.8		Bridge									
Olsen R1	22289	100 Yr	434.00	839.30	841.58	841.19	841.72	0.002818	3.92	181.88	177.14	0.49
Olsen R1	22288	100 Yr	434.00	838.75	841.35	840.93	841.45	0.002487	3.32	193.73	199.03	0.45
Olsen R1	22287	100 Yr	434.00	837.98	840.53	840.53	840.88	0.010912	6.00	112.03	153.32	0.90
Olsen R1	22286	100 Yr	434.00	836.56	839.84	839.14	840.02	0.002341	3.50	155.24	159.35	0.44
Olsen R1	22285	100 Yr	434.00	837.05	839.57	839.05	839.76	0.002875	3.68	151.54	170.76	0.48
Olsen R1	22284	100 Yr	434.00	837.22	839.38	838.95	839.49	0.002196	2.98	199.37	229.79	0.41
Olsen R1	22283	100 Yr	434.00	837.68	839.19	838.74	839.26	0.002180	2.39	218.71	266.89	0.39
Olsen R1	22281.5	100 Yr	434.00	837.35	838.74		838.90	0.006657	3.79	151.53	226.43	0.67
Olsen R1	22280.5	100 Yr	434.00	834.70	838.73	836.42	838.76	0.000224	1.63	428.71	339.99	0.15
Olsen R1	22279.2		Culvert									
Olsen R1	22278	100 Yr	508.00	833.19	836.71	835.81	836.87	0.001642	3.71	191.46	115.66	0.39
Olsen R1	22277	100 Yr	508.00	832.32	835.78	835.78	836.49	0.008820	7.04	85.36	75.61	0.86
Olsen R1	22276	100 Yr	508.00	832.38	835.14	835.20	835.57	0.007998	6.21	130.77	194.64	0.81
Olsen R1	22275	100 Yr	508.00	832.16	834.42	833.86	834.64	0.003389	4.17	148.47	109.04	0.53
Olsen R1	22274	100 Yr	508.00	831.26	834.35	833.69	834.41	0.001120	2.53	300.24	227.74	0.31
Olsen R1	22273	100 Yr	508.00	831.06	834.16	833.75	834.27	0.002065	3.43	229.11	198.32	0.42
Olsen R1	22272	100 Yr	508.00	830.45	834.05	832.20	834.14	0.000859	2.75	220.56	80.99	0.28
Olsen R1	22271	100 Yr	508.00	830.13	833.11	833.11	833.87	0.009617	7.19	79.21	60.05	0.89
Olsen R1	22269	100 Yr	508.00	829.69	832.33	832.59	833.28	0.017268	8.57	75.19	72.25	1.16

APPENDICES

A. Existing & Developed Watershed Mapping
B. Flood Insurance Rate Map with 100-Year Flood Boundary
C. Soils Survey Map & Soils Index
D. City of Paso Robles Rainfall Data
E. Runoff Curve Number Data
F. Time of Concentration Calculations
G. 2, 5, 10, 50 & 100-Year Storm Event Peak Flow Summary for Existing and Proposed Conditions
H. Existing Hydrograph Analysis
I. Proposed Hydrograph Modeling with Detention Basin Sizing


500 ft
Unnamed Ck 1 - Olsen
841
839
840
842
836
835
837
834
833
844
845
843
22290.9
22292.2
22287
22284
22288
22293.4
22283
22281.5
22289.8
22294
22296
22297
22301.3
22303
22304
22302
22280.5
22278.2
22277
22271
22272
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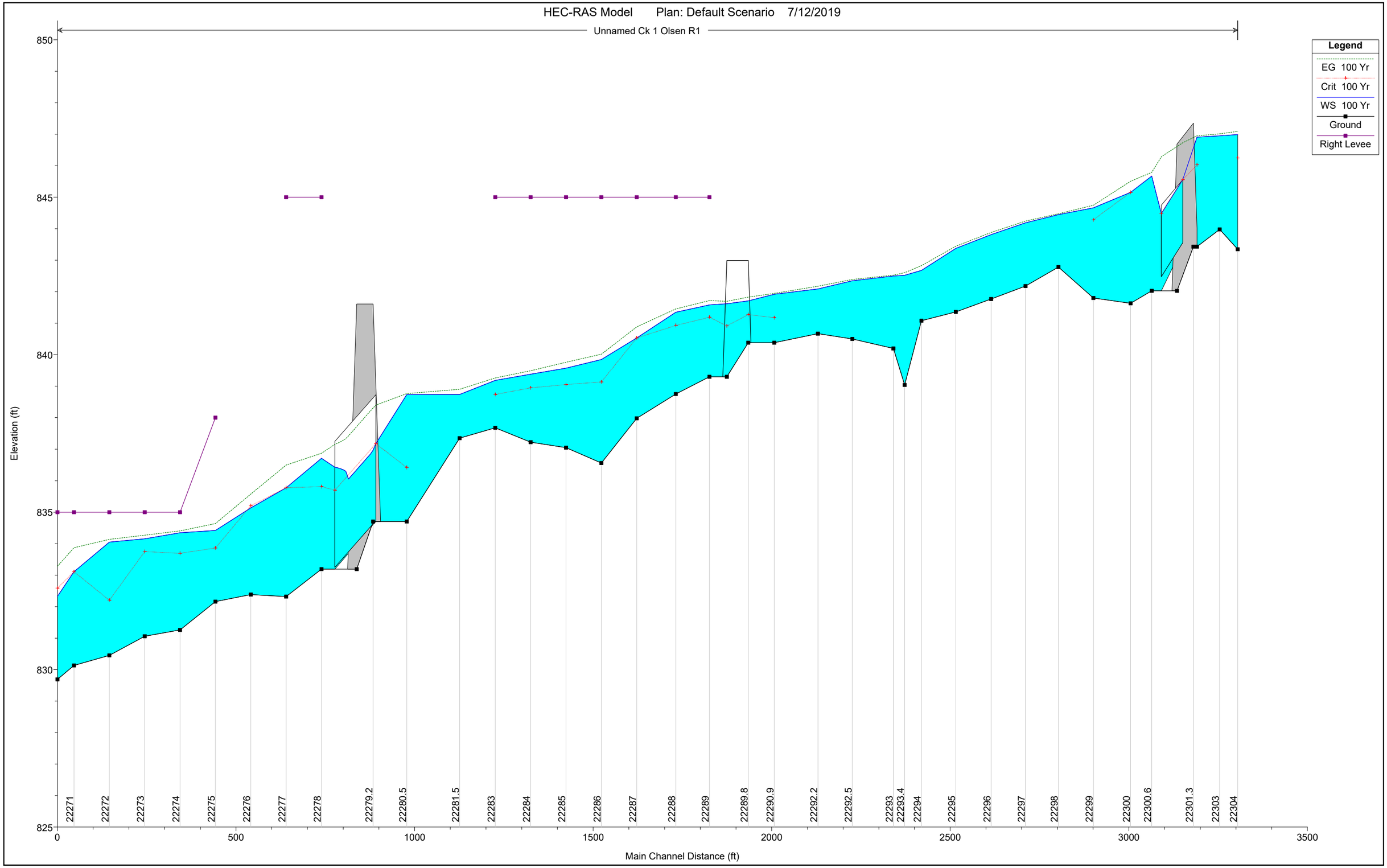
22274
22276


HEC-RAS Model Plan: Default Scenario 7/12/2019
Unnamed Ck 1 Olsen R1
Legend
EG 100 Yr
Crit 100 Yr
WS 100 Yr
Ground
Right Levee
Elevation (ft)
850
845
840
835
830
825
0
500
1000
1500
2000
2500
3000
3500
Main Channel Distance (ft)
22271
22272
22273
22274
22275
22276
22277
22278
22279.2
22280.5
22281.5
22283
22284
22285
22286
22287
22288
22289
22289.8
22290.9
22292.2
22292.5
22293
22293.4
22294
22295
22296
22297
22298
22299
22300
22300.6
22301.3
22303
22304

HEC-RAS Plan: Default Scenario River: Unnamed Ck 1 Reach: Olsen R1 Profile: 100 Yr

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Olsen R1	22304	100 Yr	265.00	843.35	846.99	846.25	847.09	0.001417	2.85	135.09	137.63	0.35
Olsen R1	22303	100 Yr	265.00	843.98	846.95		847.02	0.001150	2.35	153.29	151.99	0.31
Olsen R1	22302	100 Yr	265.00	843.43	846.91	846.03	846.95	0.000695	2.15	226.73	207.20	0.25
Olsen R1	22301.3		Culvert									
Olsen R1	22300.6	100 Yr	265.00	842.03	845.67		845.79	0.002703	3.56	123.17	138.78	0.42
Olsen R1	22300	100 Yr	265.00	841.63	845.15	845.15	845.51	0.008030	5.93	78.42	109.42	0.70
Olsen R1	22299	100 Yr	265.00	841.80	844.66	844.28	844.75	0.003645	3.40	130.28	154.03	0.46
Olsen R1	22298	100 Yr	265.00	842.78	844.45		844.47	0.001938	1.63	215.32	309.48	0.32
Olsen R1	22297	100 Yr	265.00	842.18	844.19		844.25	0.002680	2.87	175.36	255.10	0.44
Olsen R1	22296	100 Yr	265.00	841.77	843.81		843.88	0.005280	3.14	135.08	202.63	0.58
Olsen R1	22295	100 Yr	265.00	841.36	843.37		843.44	0.003865	2.89	141.04	198.24	0.51
Olsen R1	22294	100 Yr	265.00	841.08	842.68		842.83	0.010953	4.26	102.03	234.38	0.83
Olsen R1	22293.4	100 Yr	265.00	839.04	842.52		842.60	0.001935	2.83	168.01	303.67	0.39
Olsen R1	22293	100 Yr	265.00	840.20	842.50		842.53	0.001403	1.83	214.55	280.22	0.31
Olsen R1	22292.5	100 Yr	265.00	840.50	842.35		842.39	0.001221	2.03	190.64	210.14	0.30
Olsen R1	22292.2	100 Yr	265.00	840.67	842.09		842.18	0.004817	3.32	123.53	182.48	0.57
Olsen R1	22290.9	100 Yr	265.00	840.38	841.92	841.17	841.95	0.000853	1.69	208.75	192.29	0.25
Olsen R1	22289.8		Bridge									
Olsen R1	22289	100 Yr	434.00	839.30	841.58	841.19	841.72	0.002818	3.92	181.88	177.14	0.49
Olsen R1	22288	100 Yr	434.00	838.75	841.35	840.93	841.45	0.002487	3.32	193.73	199.03	0.45
Olsen R1	22287	100 Yr	434.00	837.98	840.53	840.53	840.88	0.010912	6.00	112.03	153.32	0.90
Olsen R1	22286	100 Yr	434.00	836.56	839.84	839.14	840.02	0.002341	3.50	155.24	159.35	0.44
Olsen R1	22285	100 Yr	434.00	837.05	839.57	839.05	839.76	0.002875	3.68	151.54	170.76	0.48
Olsen R1	22284	100 Yr	434.00	837.22	839.38	838.95	839.49	0.002196	2.98	199.37	229.79	0.41
Olsen R1	22283	100 Yr	434.00	837.68	839.19	838.74	839.26	0.002180	2.39	218.71	266.89	0.39
Olsen R1	22281.5	100 Yr	434.00	837.35	838.74		838.90	0.006657	3.79	151.53	226.43	0.67
Olsen R1	22280.5	100 Yr	434.00	834.70	838.73	836.42	838.76	0.000224	1.63	428.71	339.99	0.15
Olsen R1	22279.2		Culvert									
Olsen R1	22278	100 Yr	508.00	833.19	836.71	835.81	836.87	0.001642	3.71	191.46	115.66	0.39
Olsen R1	22277	100 Yr	508.00	832.32	835.78	835.78	836.49	0.008820	7.04	85.36	75.61	0.86
Olsen R1	22276	100 Yr	508.00	832.38	835.14	835.20	835.57	0.007998	6.21	130.77	194.64	0.81
Olsen R1	22275	100 Yr	508.00	832.16	834.42	833.86	834.64	0.003389	4.17	148.47	109.04	0.53
Olsen R1	22274	100 Yr	508.00	831.26	834.35	833.69	834.41	0.001120	2.53	300.24	227.74	0.31
Olsen R1	22273	100 Yr	508.00	831.06	834.16	833.75	834.27	0.002065	3.43	229.11	198.32	0.42
Olsen R1	22272	100 Yr	508.00	830.45	834.05	832.20	834.14	0.000859	2.75	220.56	80.99	0.28
Olsen R1	22271	100 Yr	508.00	830.13	833.11	833.11	833.87	0.009617	7.19	79.21	60.05	0.89
Olsen R1	22269	100 Yr	508.00	829.69	832.33	832.59	833.28	0.017268	8.57	75.19	72.25	1.16

HEC-RAS Plan: Default Scenario River: Unnamed Ck 1 Reach: Olsen R1 Profile: 100 Yr

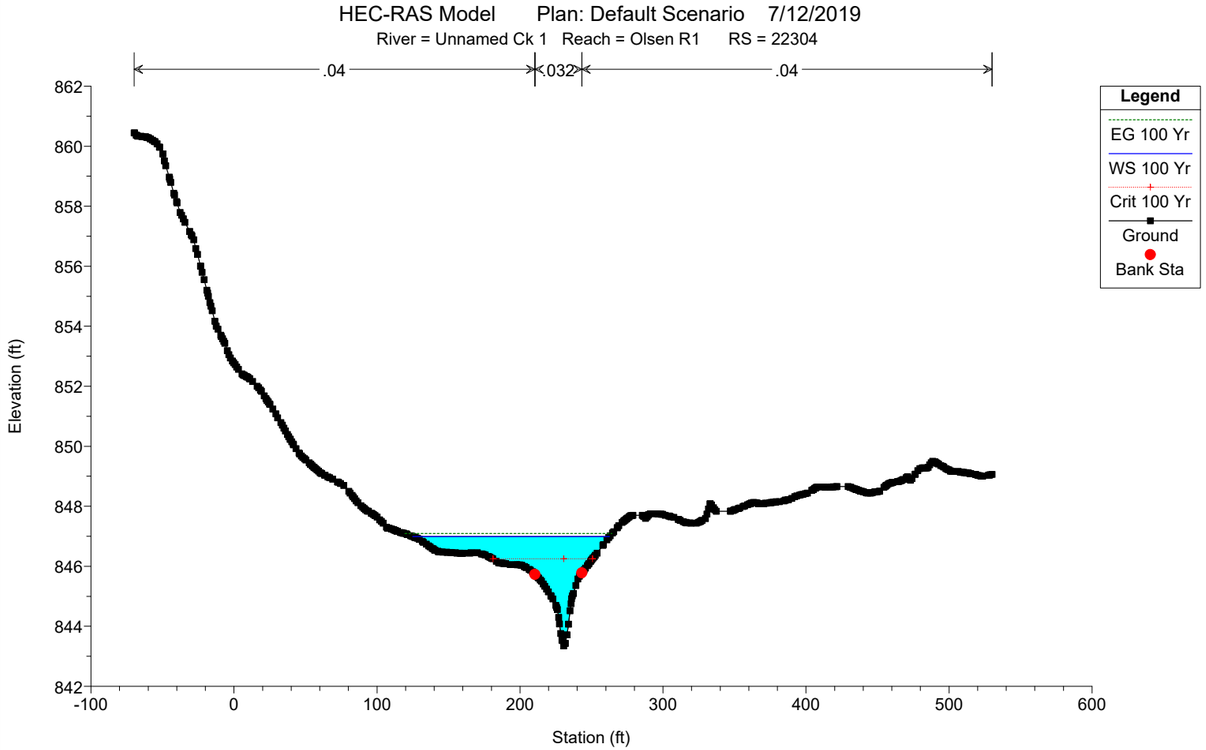
Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
Olsen R1	22304	100 Yr	847.09	846.99	0.10	0.06	0.01	55.44	197.98	11.59	137.63
Olsen R1	22303	100 Yr	847.02	846.95	0.07	0.06	0.01	61.01	195.09	8.90	151.99
Olsen R1	22302	100 Yr	846.95	846.91	0.04			59.05	126.93	79.02	207.20
Olsen R1	22301.3		Culvert								
Olsen R1	22300.6	100 Yr	845.79	845.67	0.12	0.26	0.02	2.57	130.33	132.10	138.78
Olsen R1	22300	100 Yr	845.51	845.15	0.35	0.52	0.08	2.24	158.96	103.81	109.42
Olsen R1	22299	100 Yr	844.75	844.66	0.08	0.26	0.02	0.03	68.63	196.34	154.03
Olsen R1	22298	100 Yr	844.47	844.45	0.02	0.22	0.00	3.91	28.88	232.20	309.48
Olsen R1	22297	100 Yr	844.25	844.19	0.05	0.36	0.00	7.71	76.82	180.47	255.10
Olsen R1	22296	100 Yr	843.88	843.81	0.07	0.44	0.00	20.37	52.71	191.92	202.63
Olsen R1	22295	100 Yr	843.44	843.37	0.07	0.60	0.01	19.30	75.47	170.22	198.24
Olsen R1	22294	100 Yr	842.83	842.68	0.15	0.20	0.02	42.81	100.11	122.08	234.38
Olsen R1	22293.4	100 Yr	842.60	842.52	0.08	0.06	0.02	6.00	167.37	91.63	303.67
Olsen R1	22293	100 Yr	842.53	842.50	0.03	0.13	0.00	5.88	52.45	206.68	280.22
Olsen R1	22292.5	100 Yr	842.39	842.35	0.04	0.21	0.00	48.46	120.23	96.31	210.14
Olsen R1	22292.2	100 Yr	842.18	842.09	0.09	0.21	0.02	138.32	70.71	55.96	182.48
Olsen R1	22290.9	100 Yr	841.95	841.92	0.03	0.11	0.01	34.55	112.32	118.13	192.29
Olsen R1	22289.8		Bridge								
Olsen R1	22289	100 Yr	841.72	841.58	0.14	0.26	0.01	89.59	199.68	144.73	177.14
Olsen R1	22288	100 Yr	841.45	841.35	0.11	0.55	0.02	211.47	200.51	22.02	199.03
Olsen R1	22287	100 Yr	840.88	840.53	0.35	0.41	0.05	44.90	224.76	164.34	153.32
Olsen R1	22286	100 Yr	840.02	839.84	0.17	0.25	0.00	32.39	384.63	16.98	159.35
Olsen R1	22285	100 Yr	839.76	839.57	0.19	0.25	0.02	18.79	379.19	36.02	170.76
Olsen R1	22284	100 Yr	839.49	839.38	0.11	0.22	0.01	29.54	330.82	73.64	229.79
Olsen R1	22283	100 Yr	839.26	839.19	0.08	0.35	0.01	18.20	359.71	56.09	266.89
Olsen R1	22281.5	100 Yr	838.90	838.74	0.17	0.10	0.04	1.11	287.41	145.49	226.43
Olsen R1	22280.5	100 Yr	838.76	838.73	0.03			37.69	313.48	82.83	339.99
Olsen R1	22279.2		Culvert								
Olsen R1	22278	100 Yr	836.87	836.71	0.16	0.32	0.06	42.07	330.01	135.92	115.66
Olsen R1	22277	100 Yr	836.49	835.78	0.72	0.75	0.11	29.95	471.79	6.26	75.61
Olsen R1	22276	100 Yr	835.57	835.14	0.44	0.84	0.08	146.68	350.86	10.46	194.64
Olsen R1	22275	100 Yr	834.64	834.42	0.22	0.18	0.05	5.86	368.53	133.61	109.04
Olsen R1	22274	100 Yr	834.41	834.35	0.06	0.13	0.01	37.80	216.28	253.92	227.74
Olsen R1	22273	100 Yr	834.27	834.16	0.11	0.12	0.01	0.57	257.85	249.58	198.32
Olsen R1	22272	100 Yr	834.14	834.05	0.09	0.20	0.07	4.55	185.08	318.37	80.99
Olsen R1	22271	100 Yr	833.87	833.11	0.76	0.43	0.05	29.57	476.68	1.76	60.05
Olsen R1	22269	100 Yr	833.28	832.33	0.96	0.57	0.02	99.22	407.96	0.82	72.25

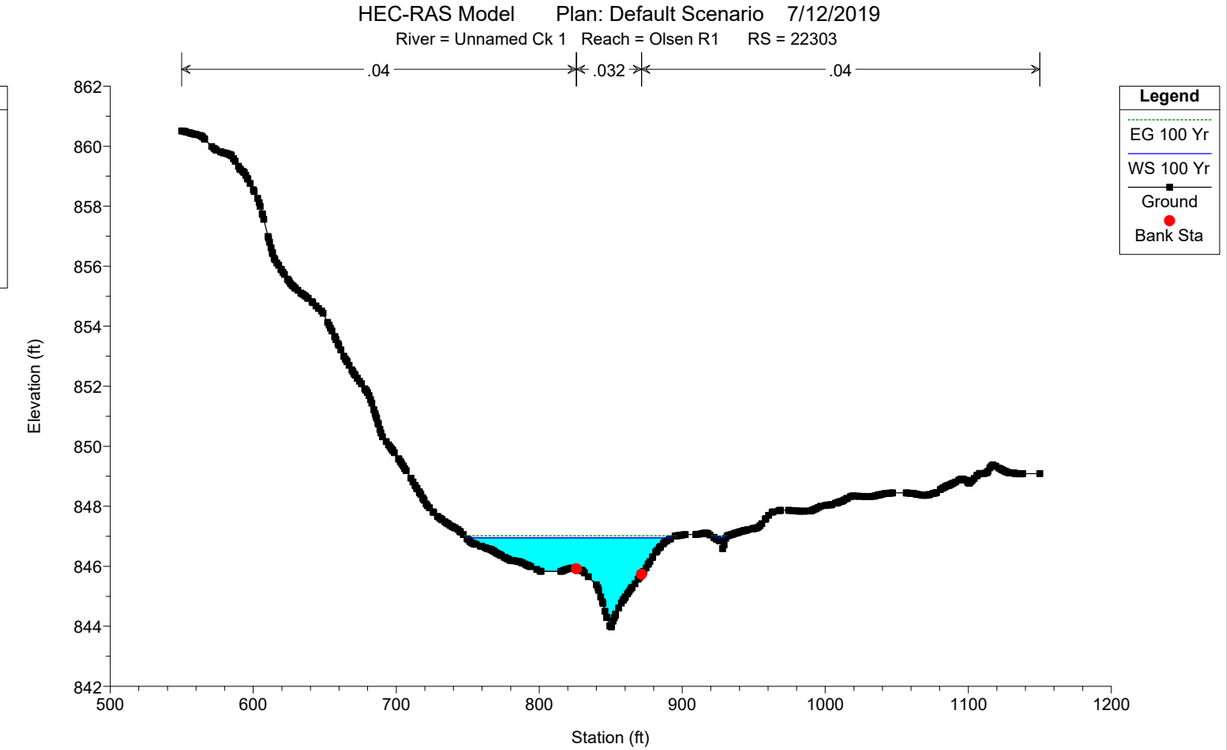
Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22289.8 Profile: 100 Yr

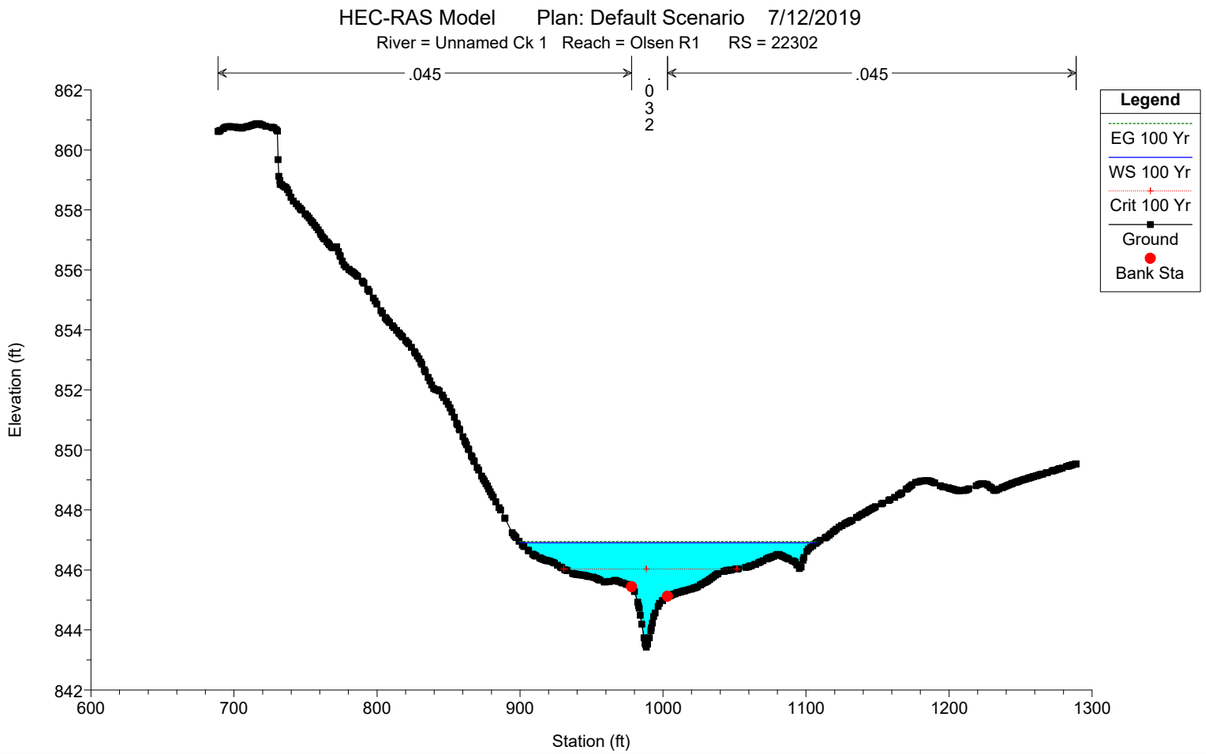
E.G. US. (ft)	841.95	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	841.92	E.G. Elev (ft)	841.83	841.70
Q Total (cfs)	265.00	W.S. Elev (ft)	841.71	841.62
Q Bridge (cfs)	264.15	Crit W.S. (ft)	841.28	840.91
Q Weir (cfs)	0.85	Max Chl Dpth (ft)	1.33	2.32
Weir Sta Lft (ft)	591.56	Vel Total (ft/s)	2.65	2.00
Weir Sta Rgt (ft)	602.13	Flow Area (sq ft)	99.57	131.75
Weir Submerg	0.00	Froude # Chl	0.42	0.26
Weir Max Depth (ft)	0.18	Specif Force (cu ft)	78.12	122.78
Min El Weir Flow (ft)	841.87	Hydr Depth (ft)	1.11	1.46
Min El Prs (ft)	842.99	W.P. Total (ft)	90.04	90.08
Delta EG (ft)	0.23	Conv. Total (cfs)	4557.3	7315.0
Delta WS (ft)	0.34	Top Width (ft)	90.00	90.00
BR Open Area (sq ft)	214.67	Frctn Loss (ft)	0.12	0.06
BR Open Vel (ft/s)	2.65	C & E Loss (ft)	0.01	0.01
Coef of Q		Shear Total (lb/sq ft)	0.23	0.12
Br Sel Method	Energy/Weir	Power Total (lb/ft s)	312.62	761.16

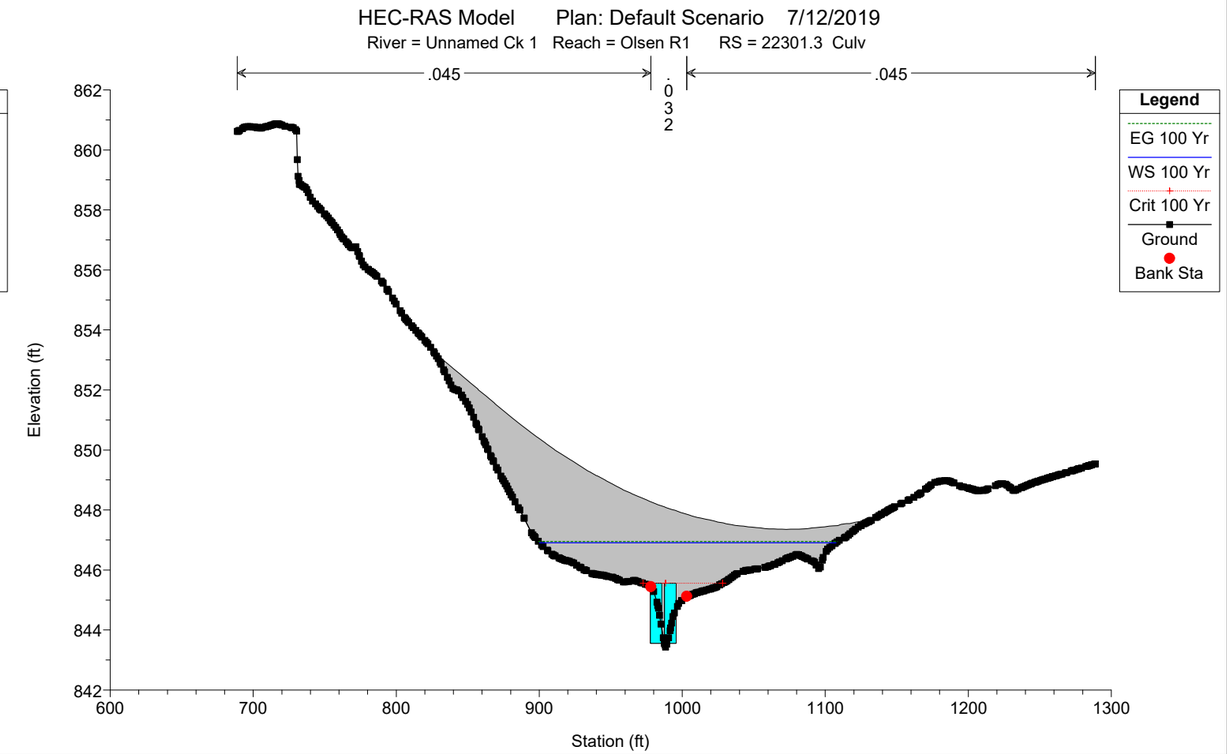
Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22301.3 Culv Group: Culvert #1 Profile: 100 Yr

Q Culv Group (cfs)	135.15	Culv Full Len (ft)	60.00
# Barrels	1	Culv Vel US (ft/s)	8.45
Q Barrel (cfs)	135.15	Culv Vel DS (ft/s)	8.45
E.G. US. (ft)	846.95	Culv Inv El Up (ft)	843.56
W.S. US. (ft)	846.91	Culv Inv El Dn (ft)	842.48
E.G. DS (ft)	845.79	Culv Frctn Ls (ft)	0.45
W.S. DS (ft)	845.67	Culv Exit Loss (ft)	0.50
Delta EG (ft)	1.16	Culv Entr Loss (ft)	0.22
Delta WS (ft)	1.24	Q Weir (cfs)	
E.G. IC (ft)	848.00	Weir Sta Lft (ft)	
E.G. OC (ft)	846.95	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	845.56	Weir Max Depth (ft)	
Culv WS Outlet (ft)	844.48	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	1.18	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	2.00	Min El Weir Flow (ft)	847.36


HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22304
.04
.032
.04
Legend
EG 100 Yr
WS 100 Yr
Crit 100 Yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

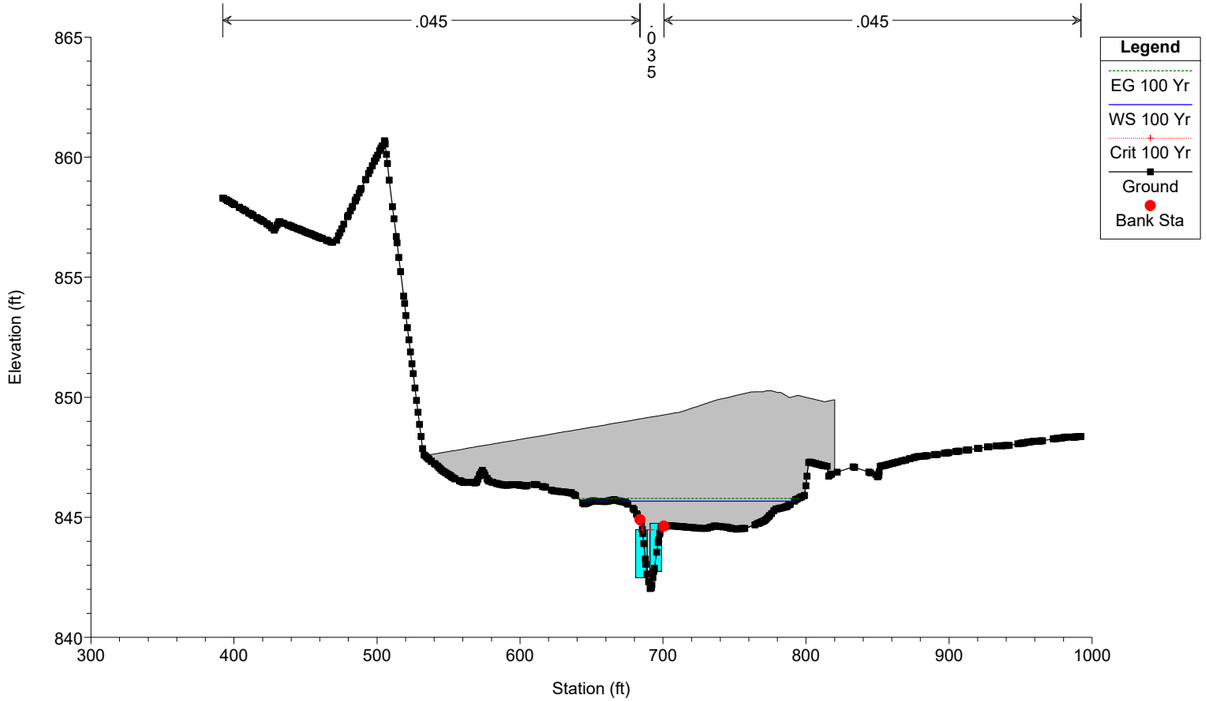

HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22303
.04
.032
.04
Legend
EG 100 Yr
WS 100 Yr
Ground
Bank Sta
Elevation (ft)
Station (ft)


HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22302
.045
.032
.045
Legend
EG 100 Yr
WS 100 Yr
Crit 100 Yr
Ground
Bank Sta
Elevation (ft)
Station (ft)


HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22301.3 Culv
.045
.032
.045
Legend
EG 100 Yr
WS 100 Yr
Crit 100 Yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

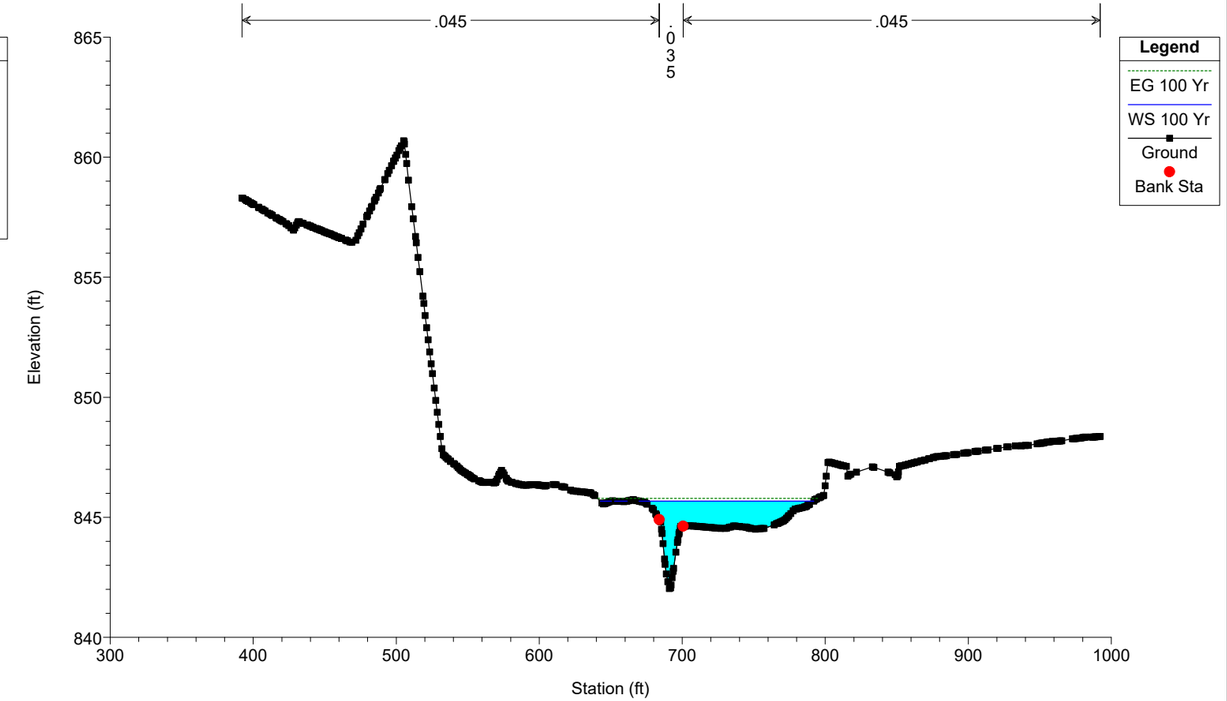
HEC-RAS Model Plan: Default Scenario 7/12/2019

River = Unnamed Ck 1 Reach = Olsen R1 RS = 22301.3 Culv



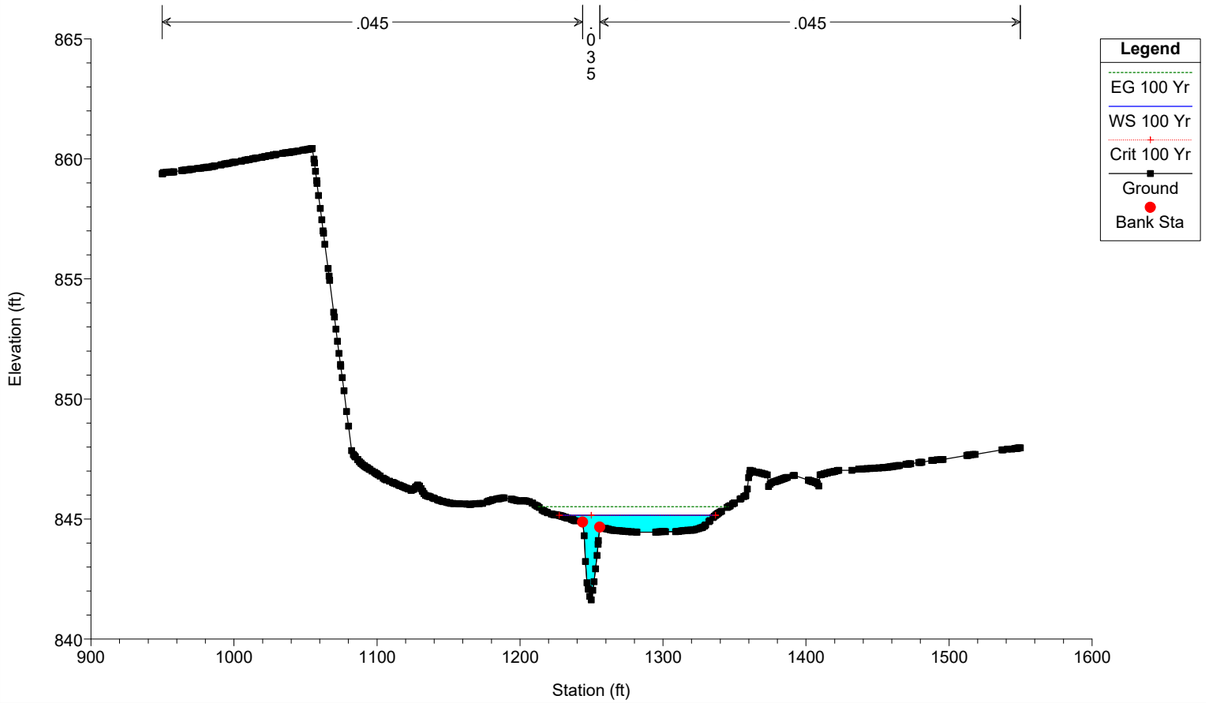
HEC-RAS Model Plan: Default Scenario 7/12/2019

River = Unnamed Ck 1 Reach = Olsen R1 RS = 22300.6



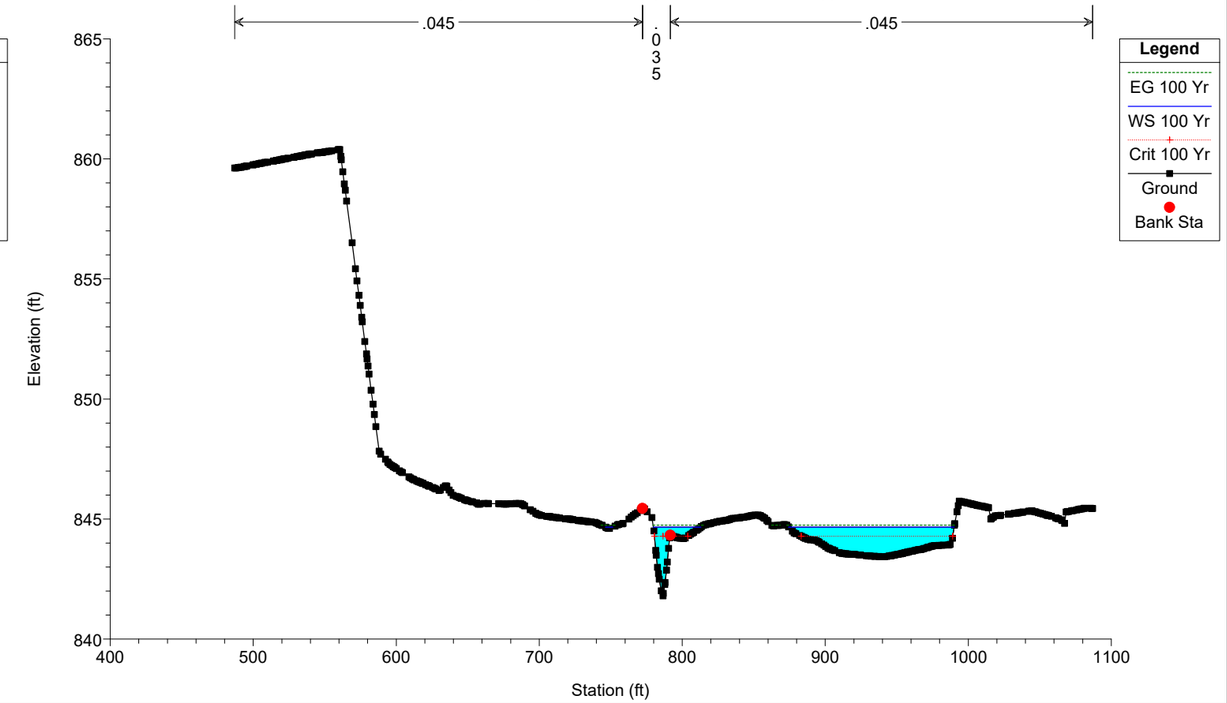
HEC-RAS Model Plan: Default Scenario 7/12/2019

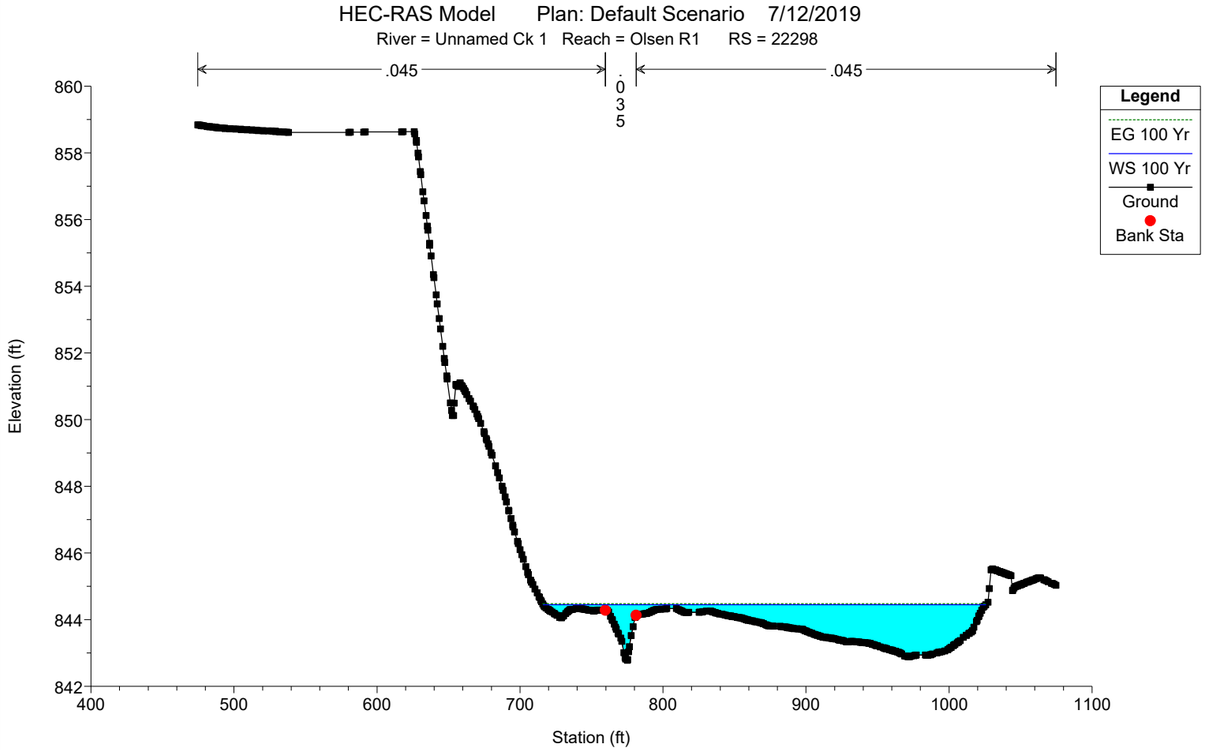
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22300

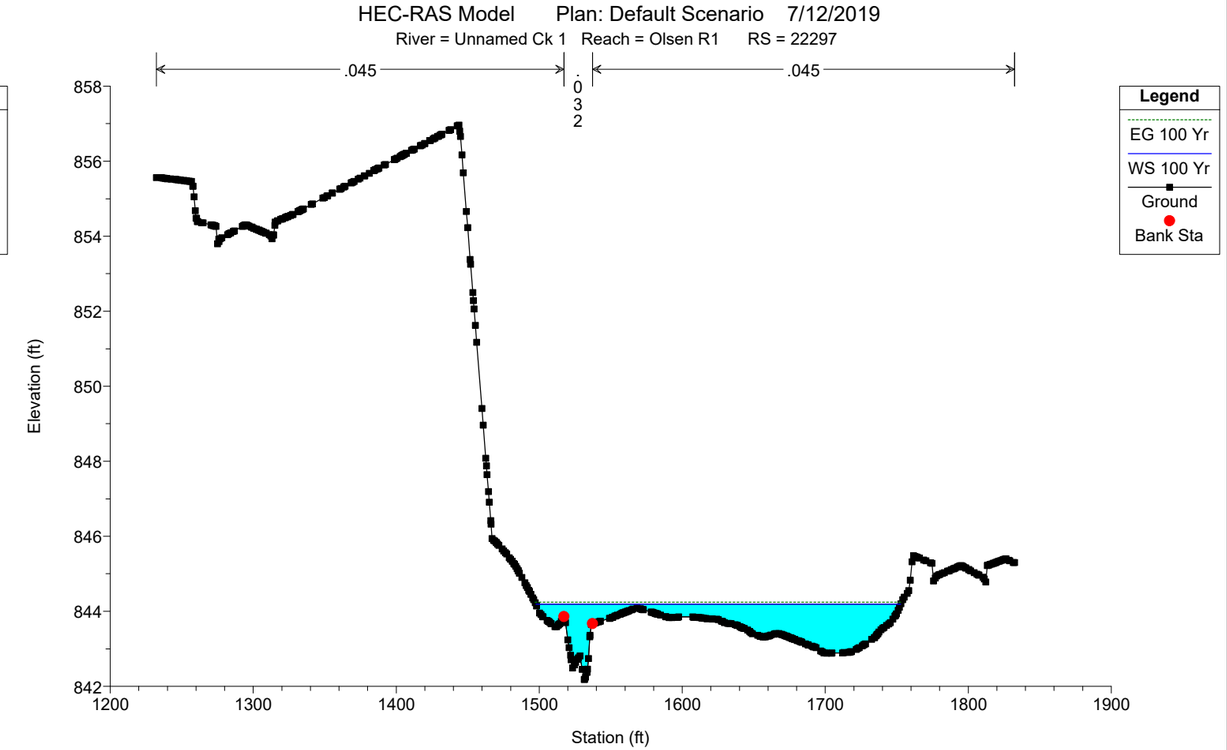


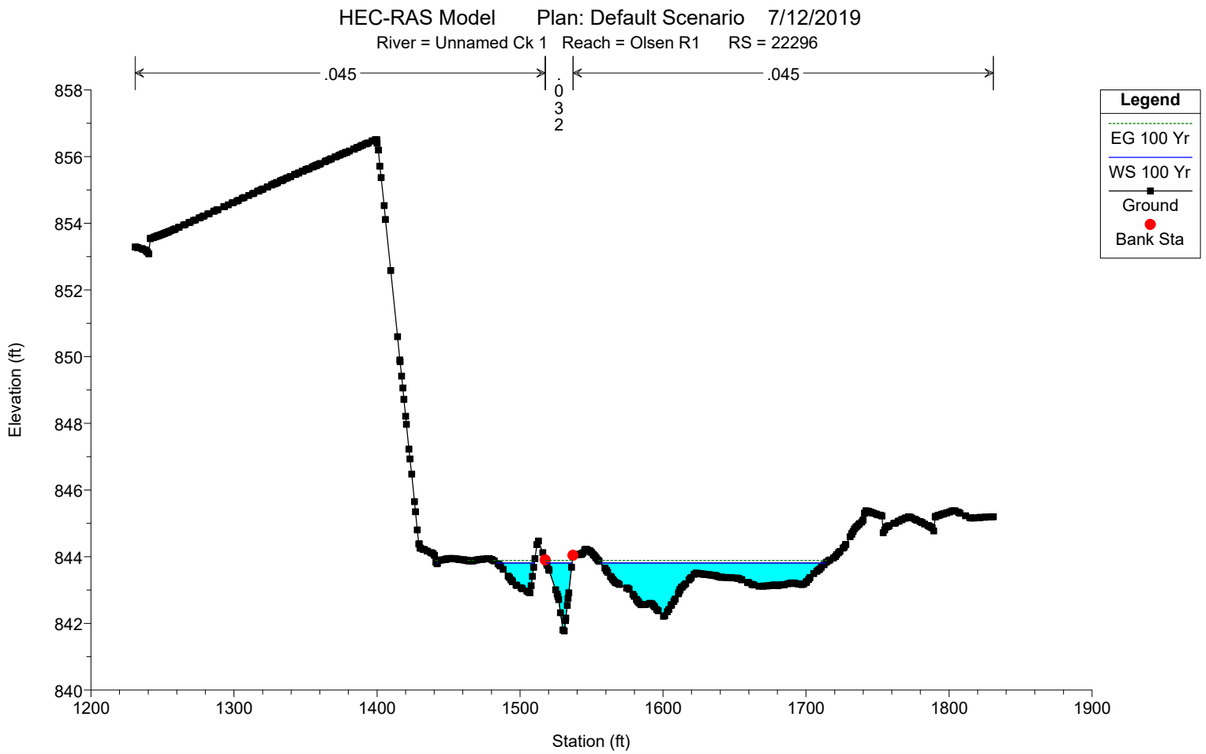
HEC-RAS Model Plan: Default Scenario 7/12/2019

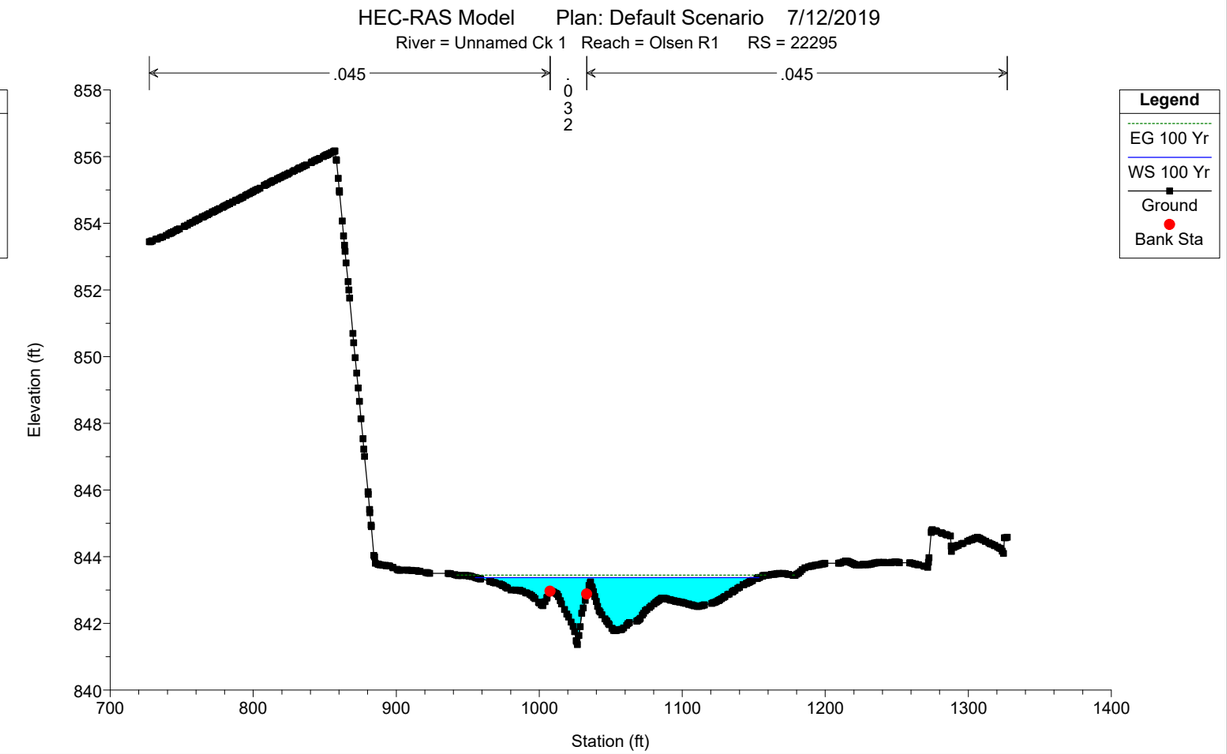
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22299




HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22298
.045
.035
.045
Legend
EG 100 Yr
WS 100 Yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

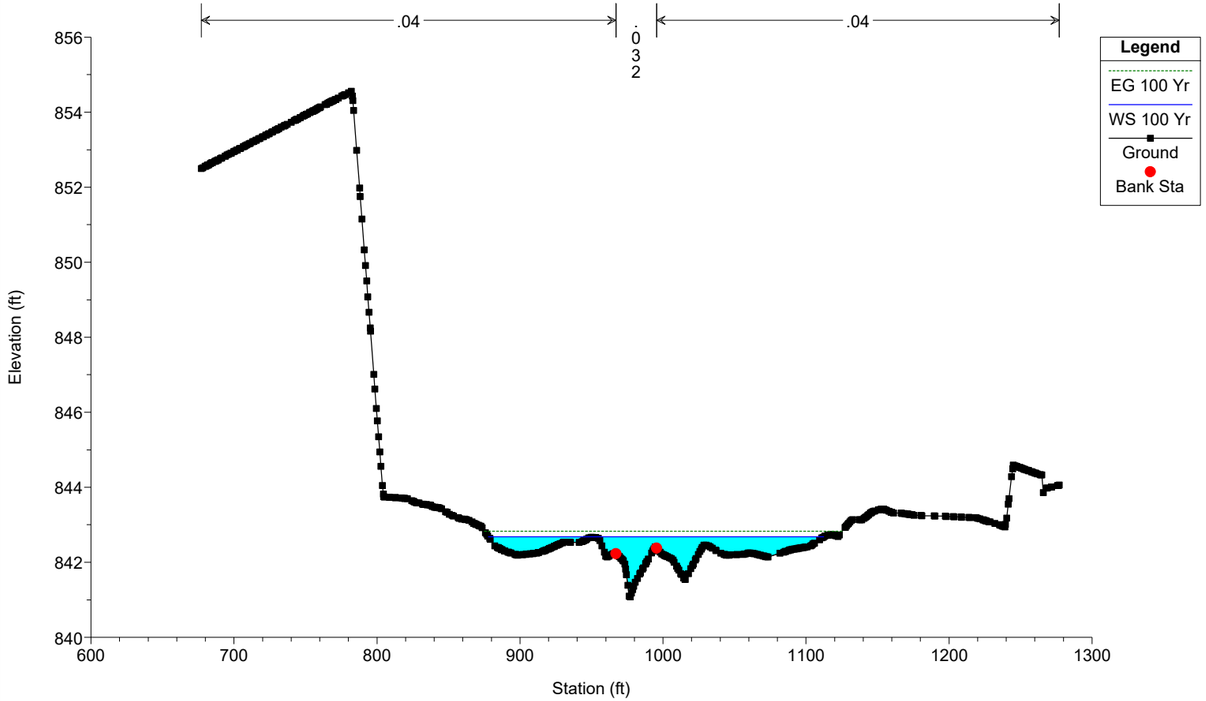

HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22297
.045
.032
.045
Legend
EG 100 Yr
WS 100 Yr
Ground
Bank Sta
Elevation (ft)
Station (ft)


HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22296
.045
.032
.045
Legend
EG 100 Yr
WS 100 Yr
Ground
Bank Sta
Elevation (ft)
Station (ft)


HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22295
.045
.032
.045
Legend
EG 100 Yr
WS 100 Yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

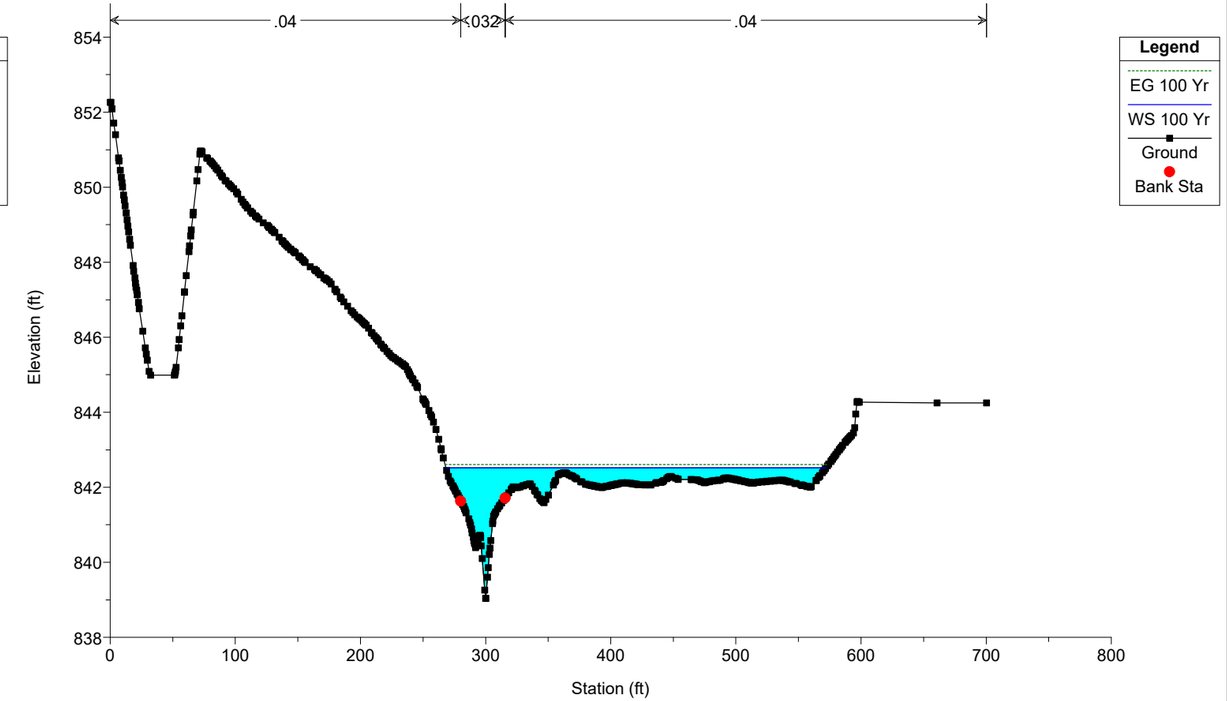
HEC-RAS Model Plan: Default Scenario 7/12/2019

River = Unnamed Ck 1 Reach = Olsen R1 RS = 22294



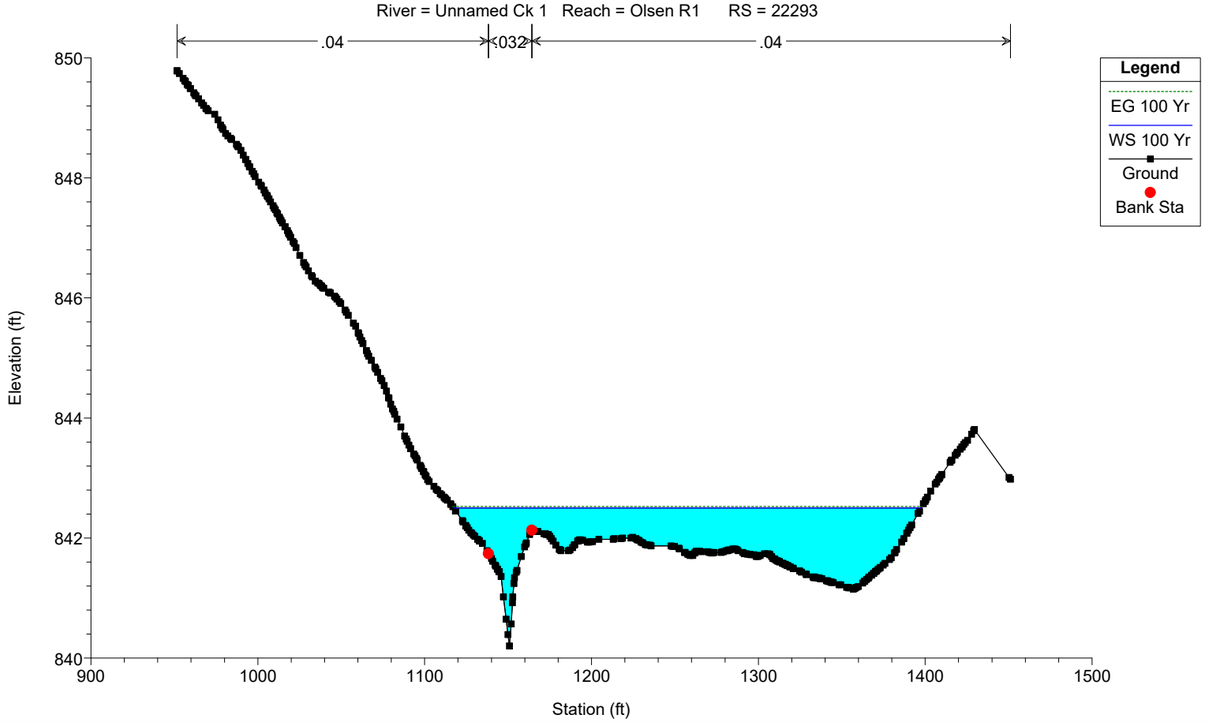
HEC-RAS Model Plan: Default Scenario 7/12/2019

River = Unnamed Ck 1 Reach = Olsen R1 RS = 22293.4



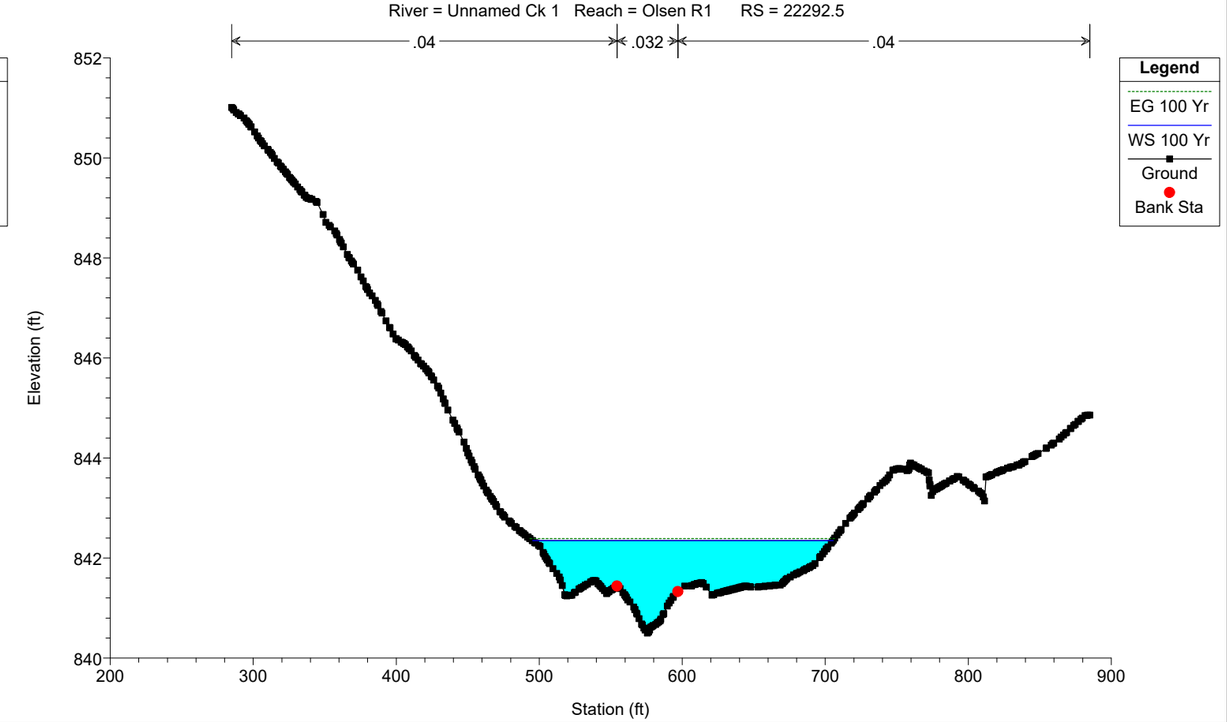
HEC-RAS Model Plan: Default Scenario 7/12/2019

River = Unnamed Ck 1 Reach = Olsen R1 RS = 22293

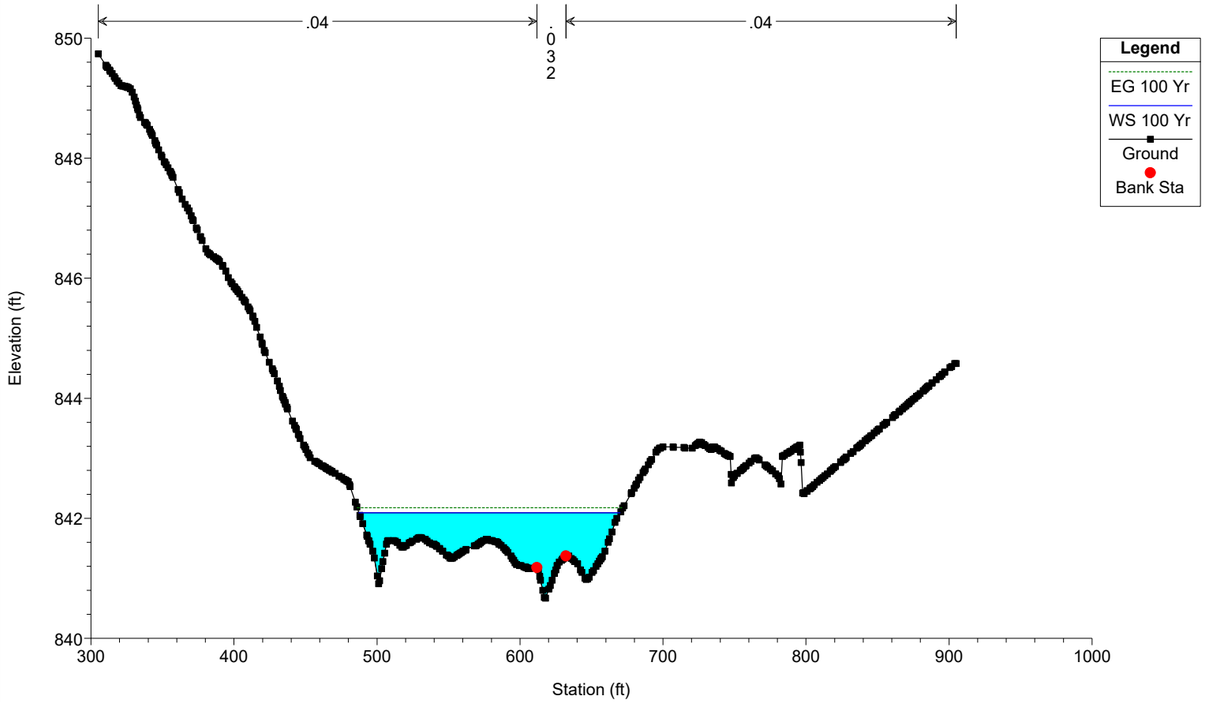


HEC-RAS Model Plan: Default Scenario 7/12/2019

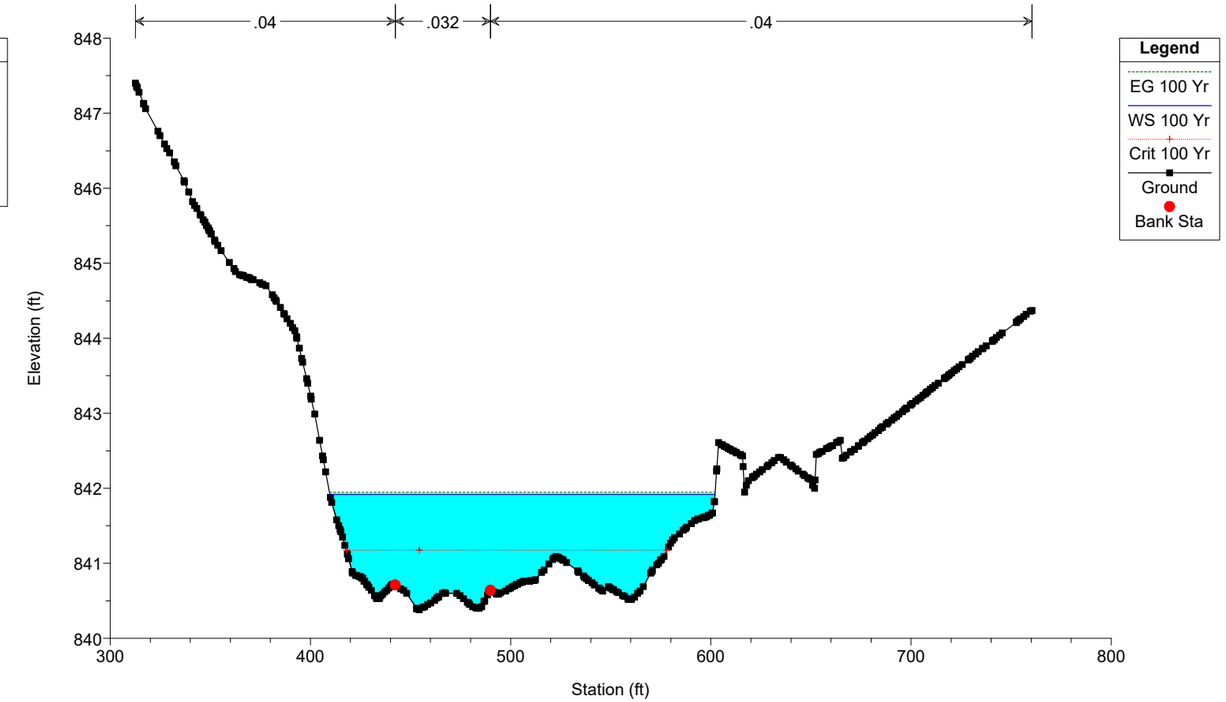
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22292.5



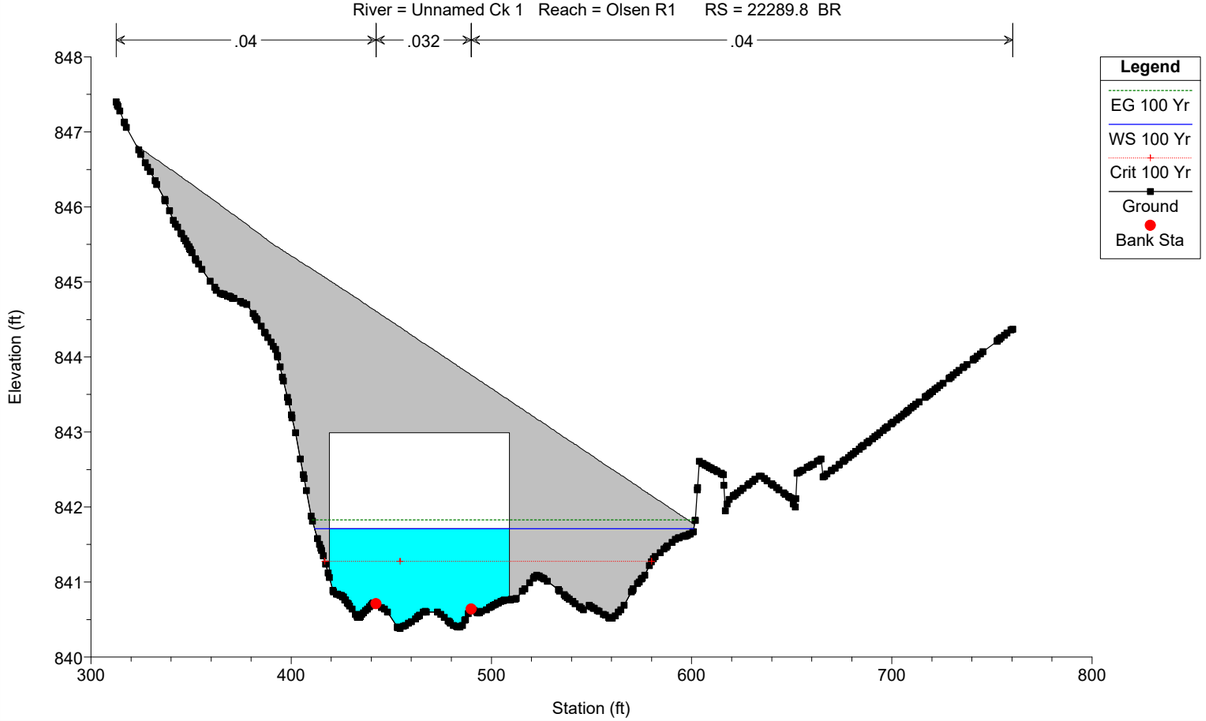
HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22292.2



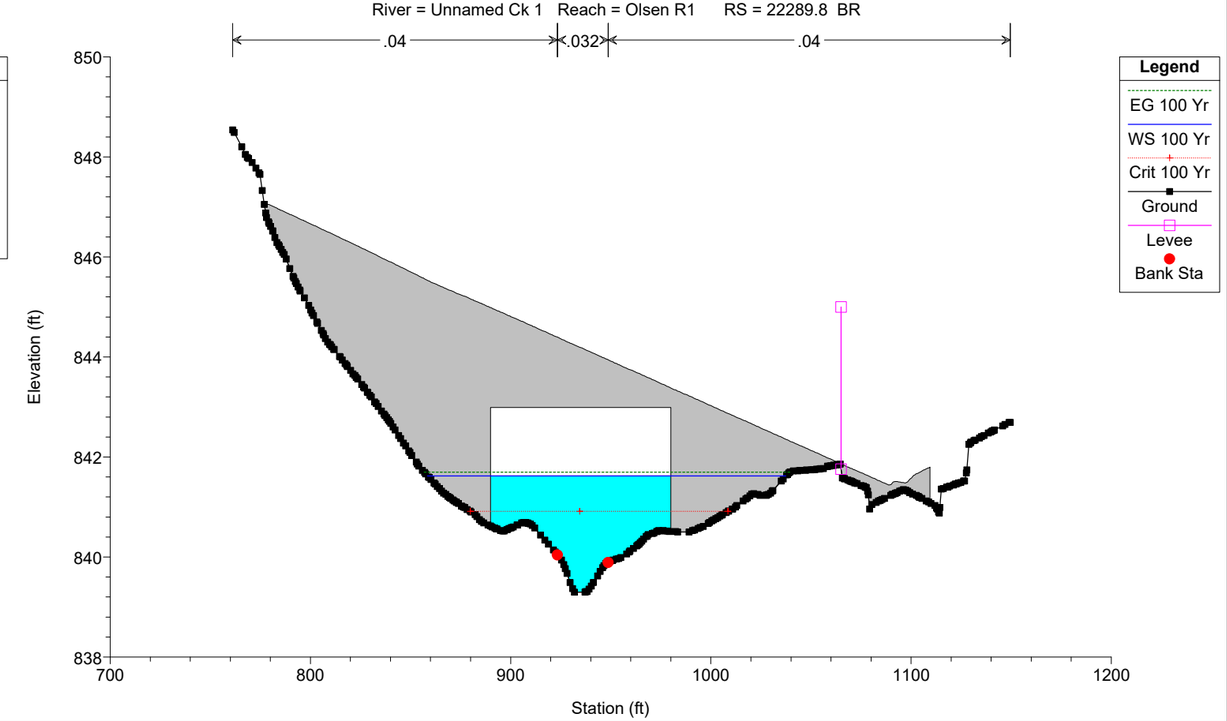
HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22290.9



HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22289.8 BR

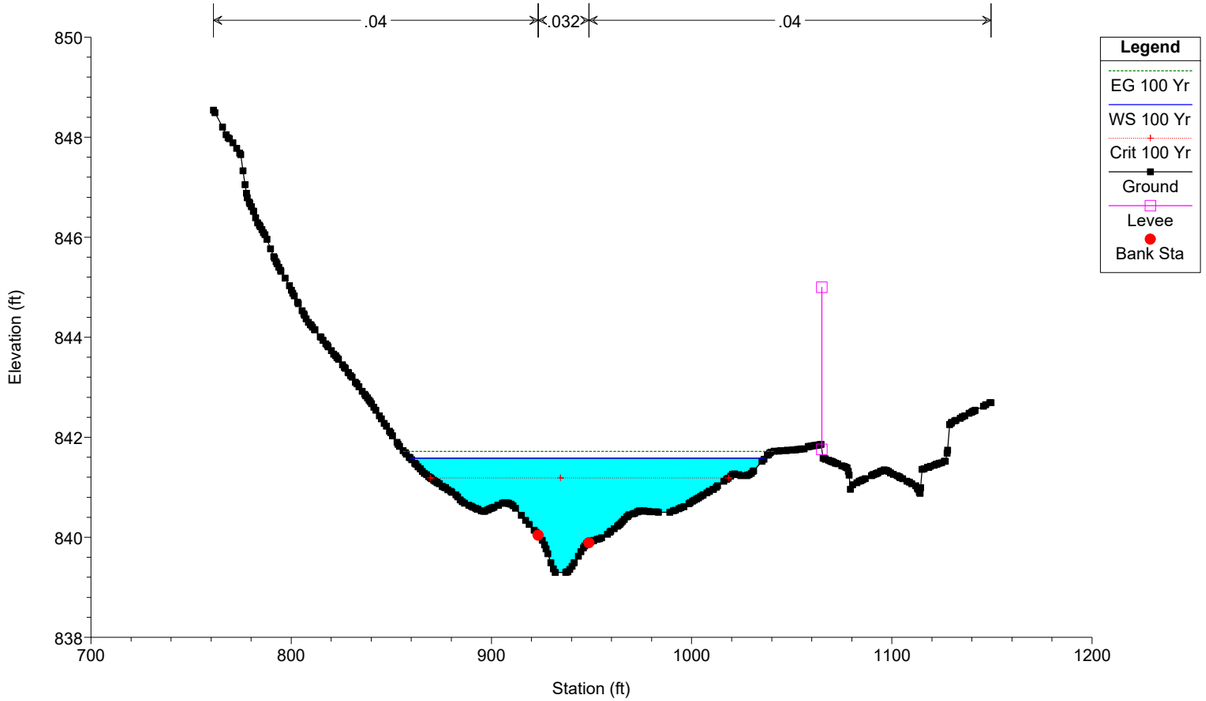


HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22289.8 BR



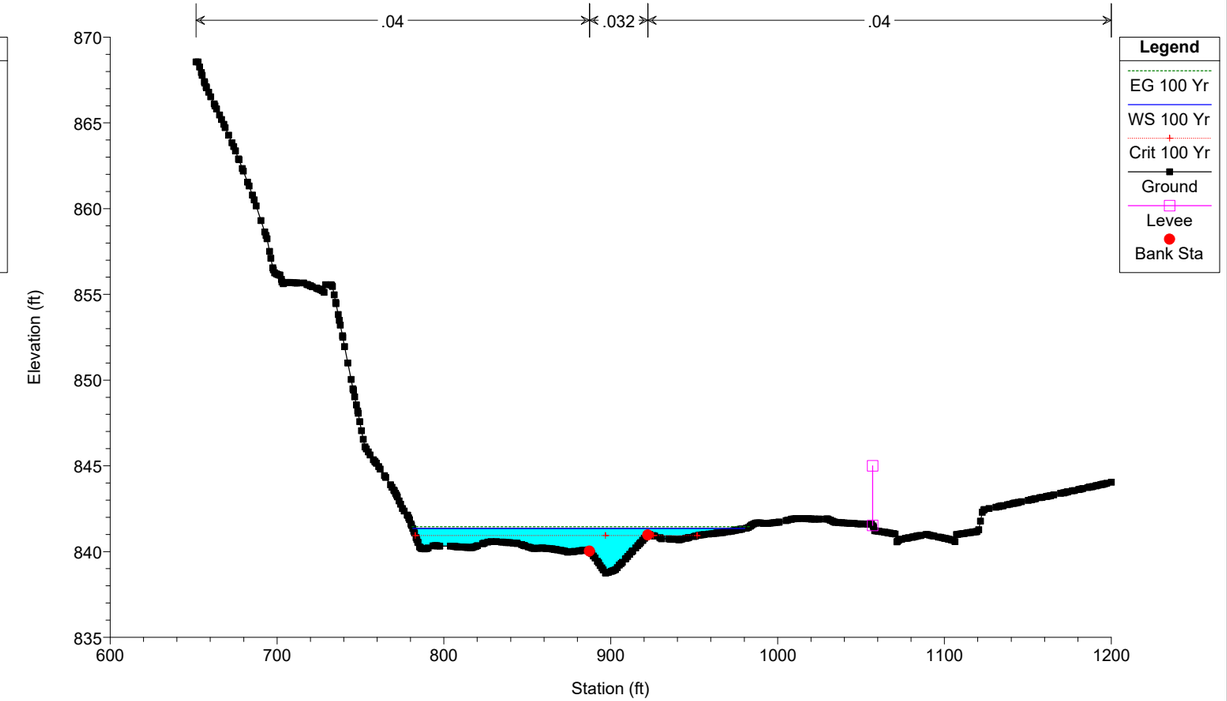
HEC-RAS Model Plan: Default Scenario 7/12/2019

River = Unnamed Ck 1 Reach = Olsen R1 RS = 22289



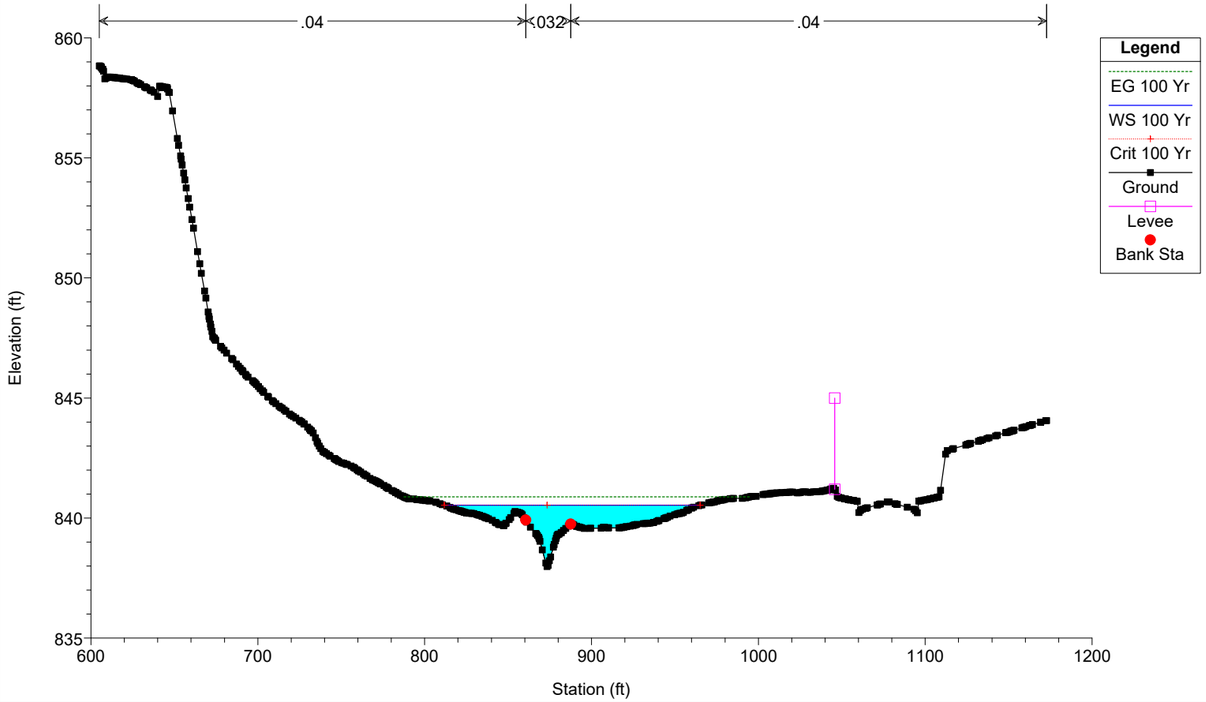
HEC-RAS Model Plan: Default Scenario 7/12/2019

River = Unnamed Ck 1 Reach = Olsen R1 RS = 22288



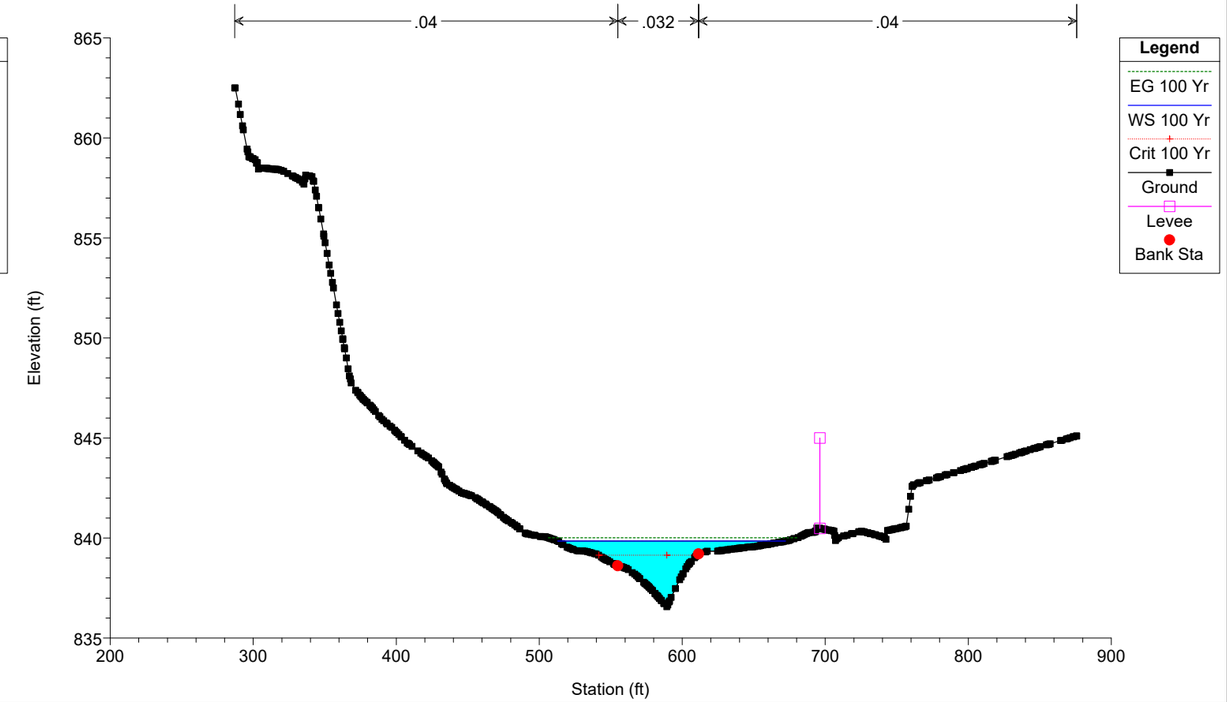
HEC-RAS Model Plan: Default Scenario 7/12/2019

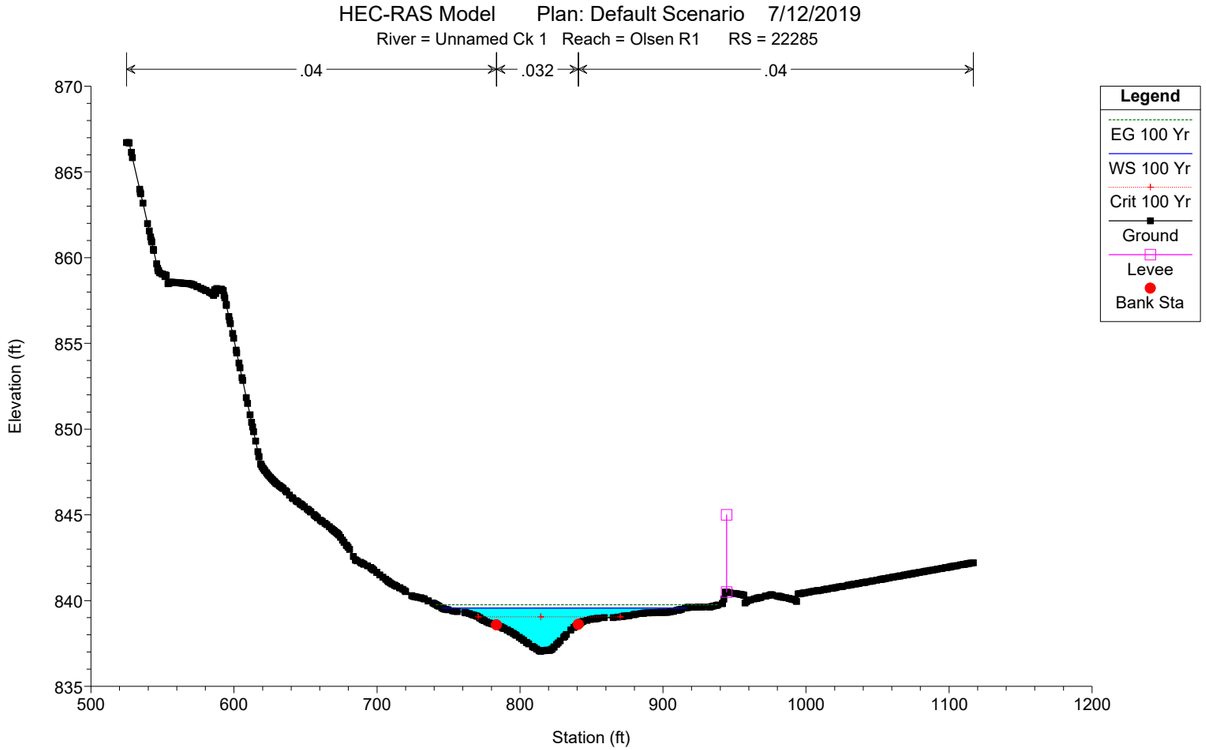
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22287

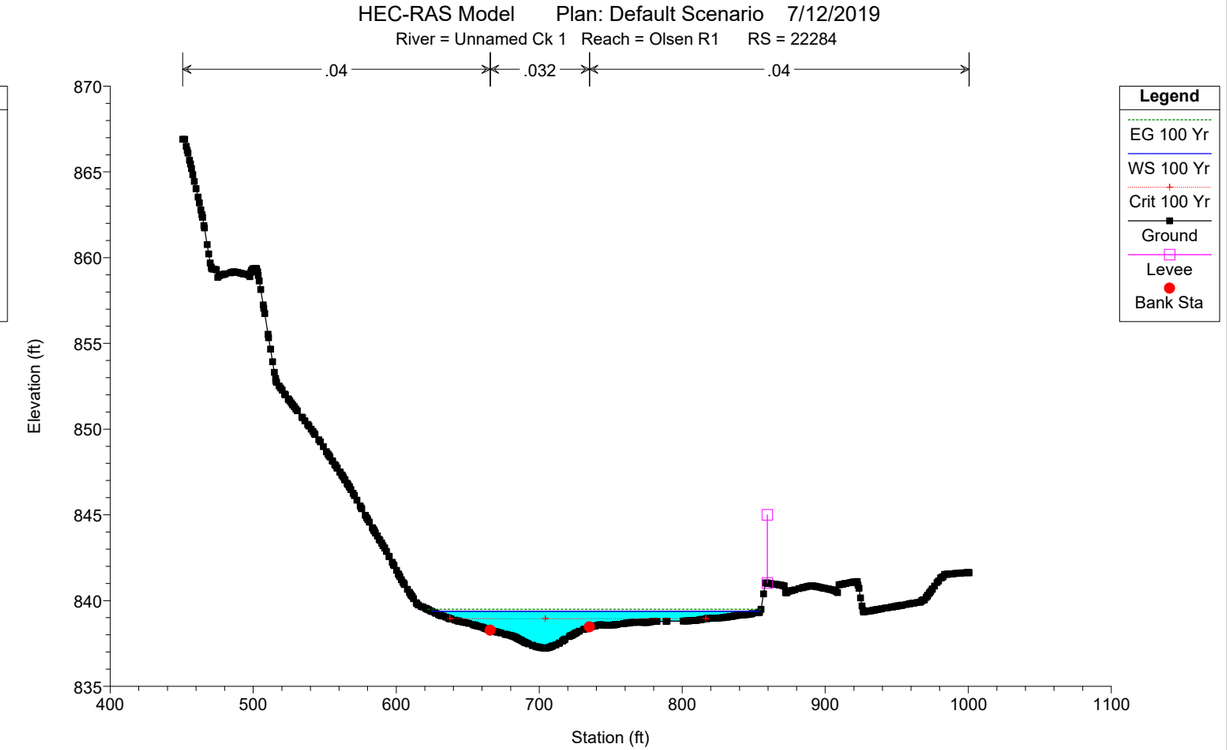


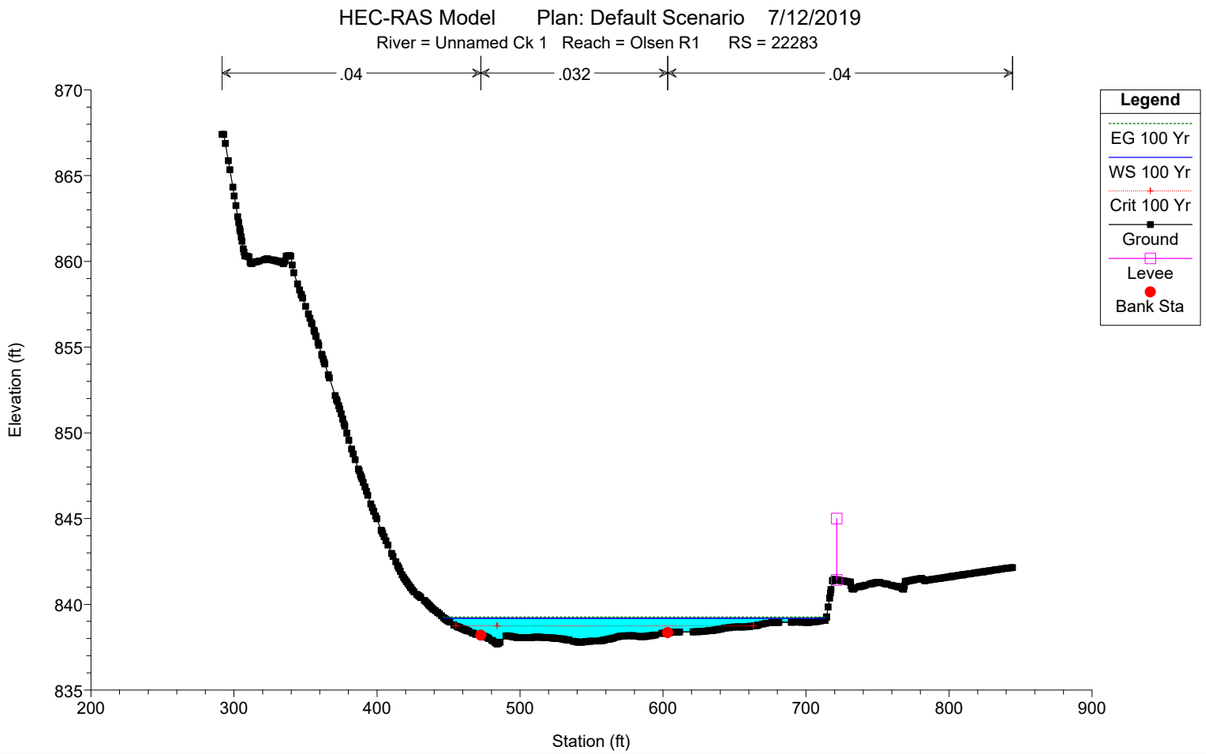
HEC-RAS Model Plan: Default Scenario 7/12/2019

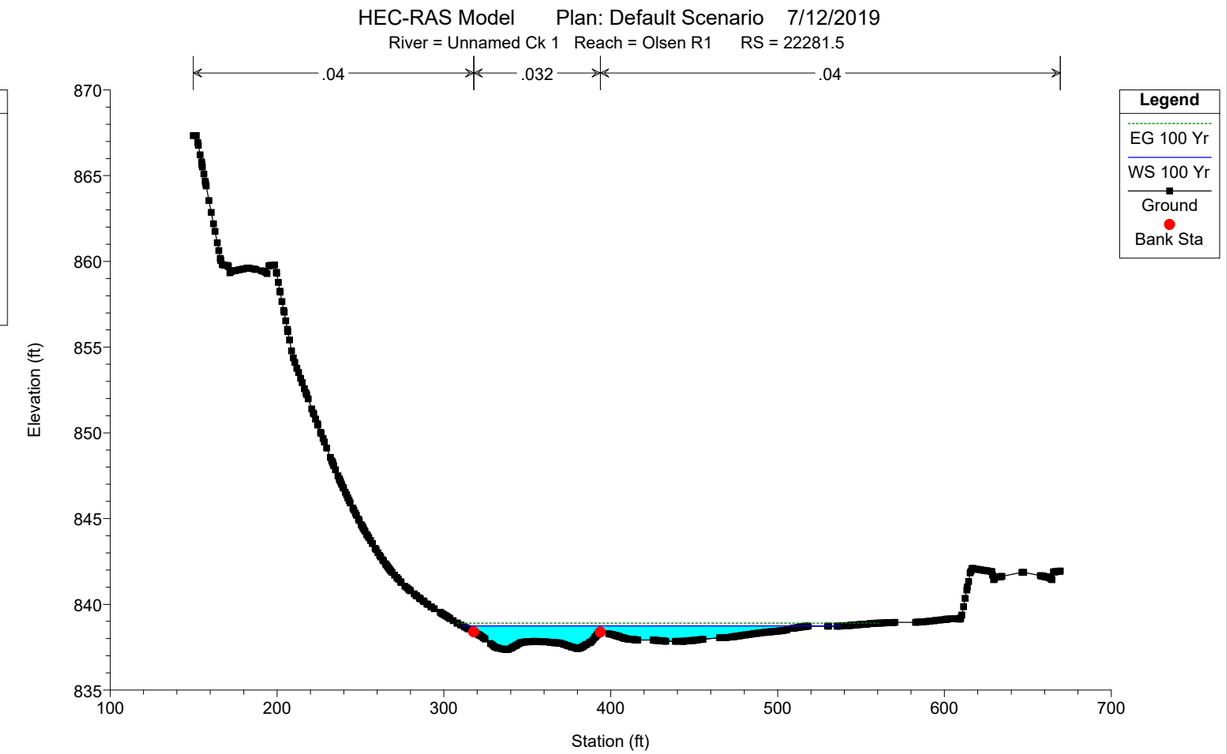
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22286

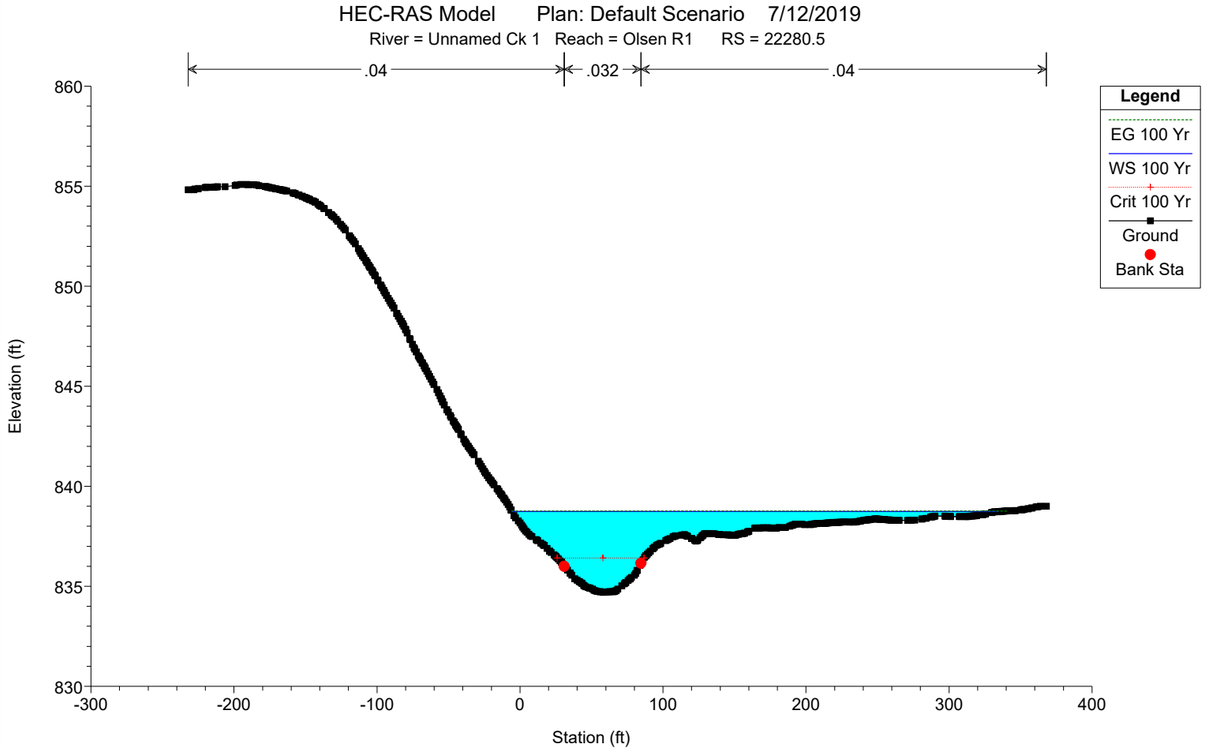


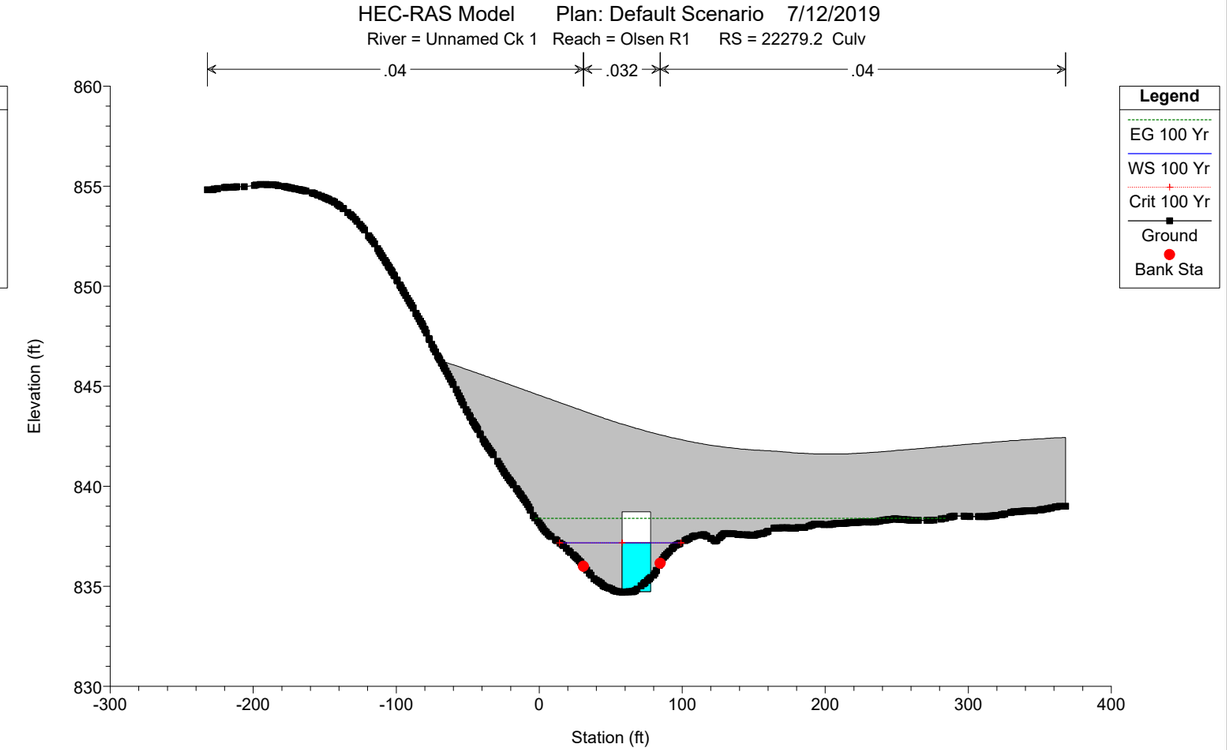

HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22285
.04
.032
.04
Legend
EG 100 Yr
WS 100 Yr
Crit 100 Yr
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

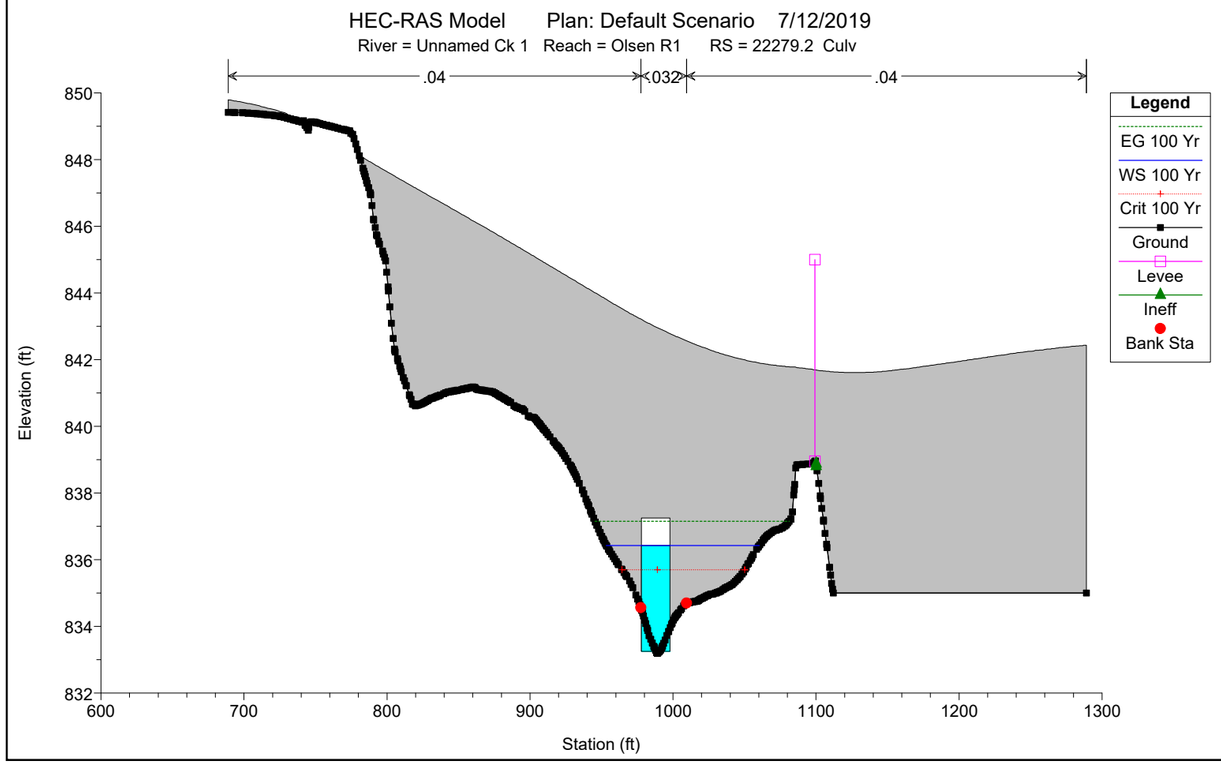

HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22284
.04
.032
.04
Legend
EG 100 Yr
WS 100 Yr
Crit 100 Yr
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

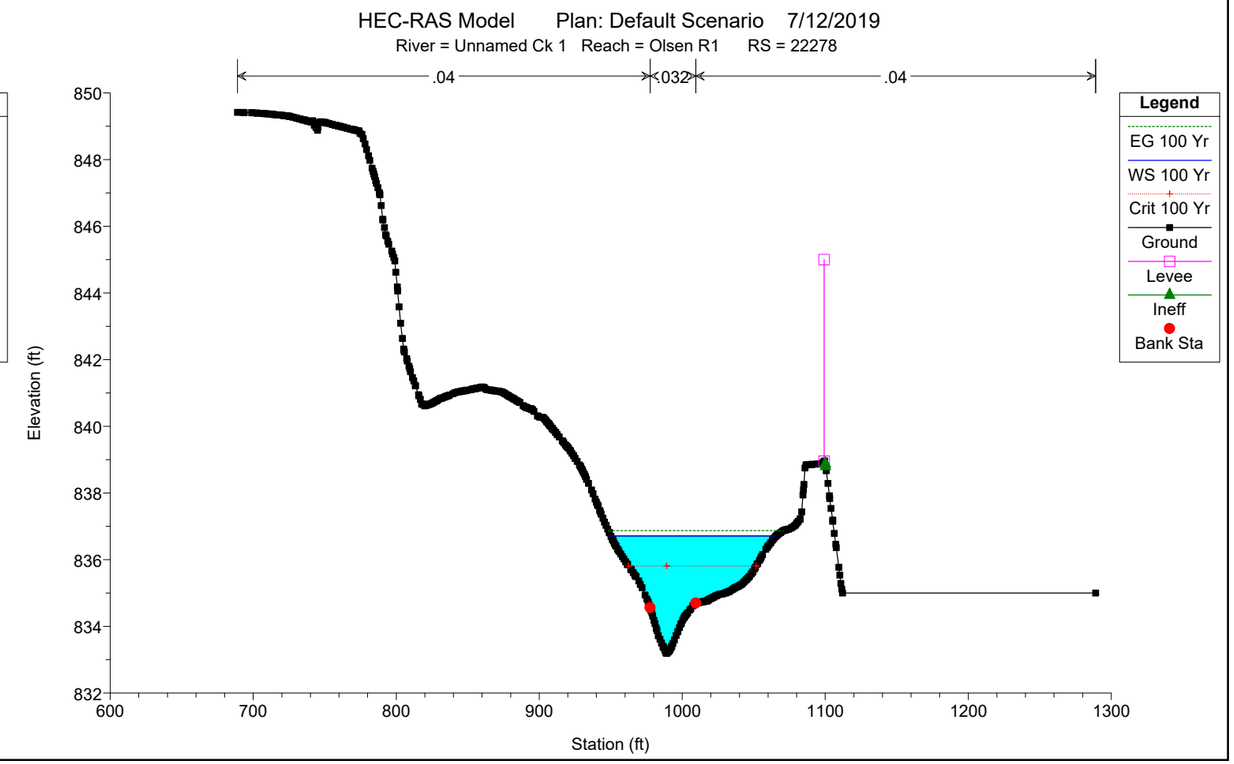

HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22283
.04
.032
.04
Legend
EG 100 Yr
WS 100 Yr
Crit 100 Yr
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)


HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22281.5
.04
.032
.04
Legend
EG 100 Yr
WS 100 Yr
Ground
Bank Sta
Elevation (ft)
Station (ft)


HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22280.5
.04
.032
.04
Legend
EG 100 Yr
WS 100 Yr
Crit 100 Yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

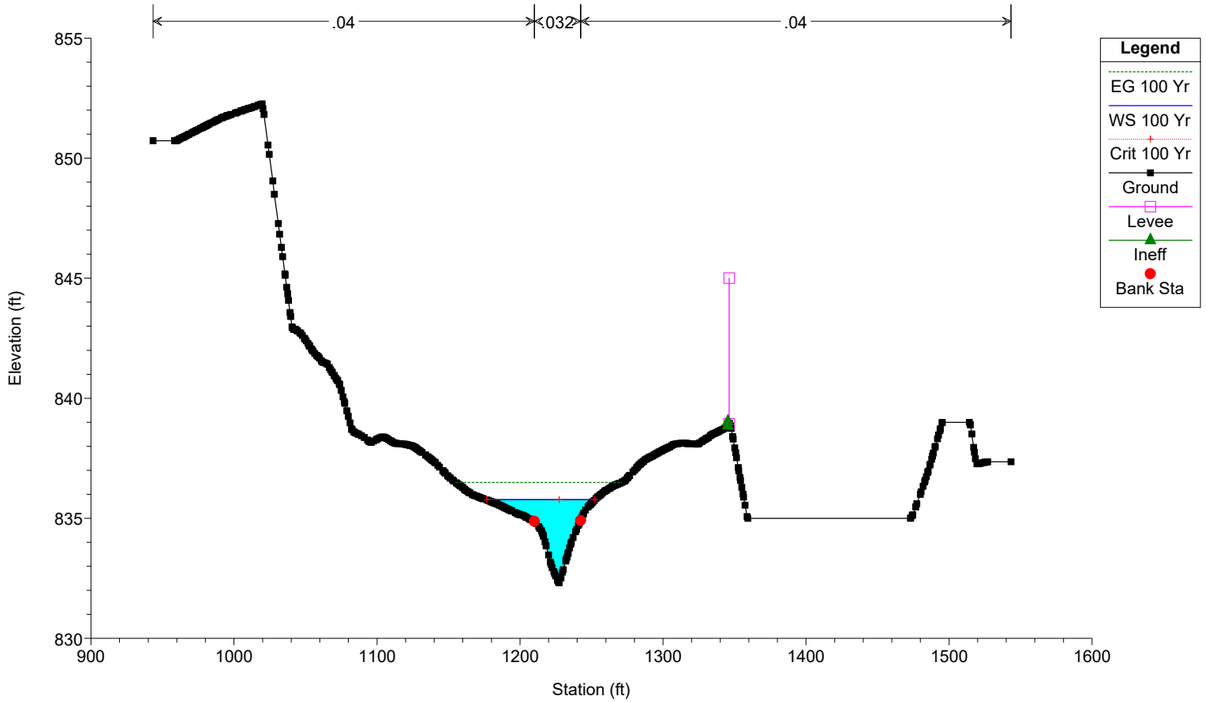

HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22279.2 Culv
.04
.032
.04
Legend
EG 100 Yr
WS 100 Yr
Crit 100 Yr
Ground
Bank Sta
Elevation (ft)
Station (ft)


HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22279.2 Culv
.04
.032
.04
Legend
EG 100 Yr
WS 100 Yr
Crit 100 Yr
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)


HEC-RAS Model Plan: Default Scenario 7/12/2019
River = Unnamed Ck 1 Reach = Olsen R1 RS = 22278
.04
.032
.04
Legend
EG 100 Yr
WS 100 Yr
Crit 100 Yr
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)

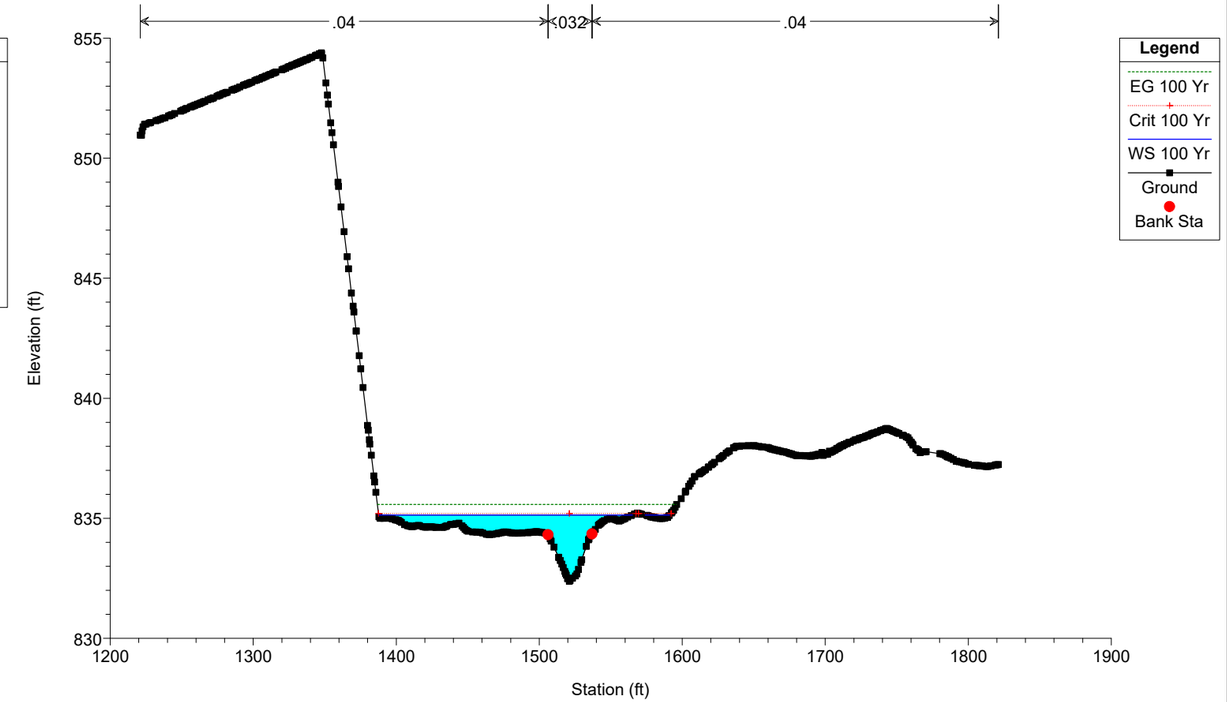
HEC-RAS Model Plan: Default Scenario 7/12/2019

River = Unnamed Ck 1 Reach = Olsen R1 RS = 22277



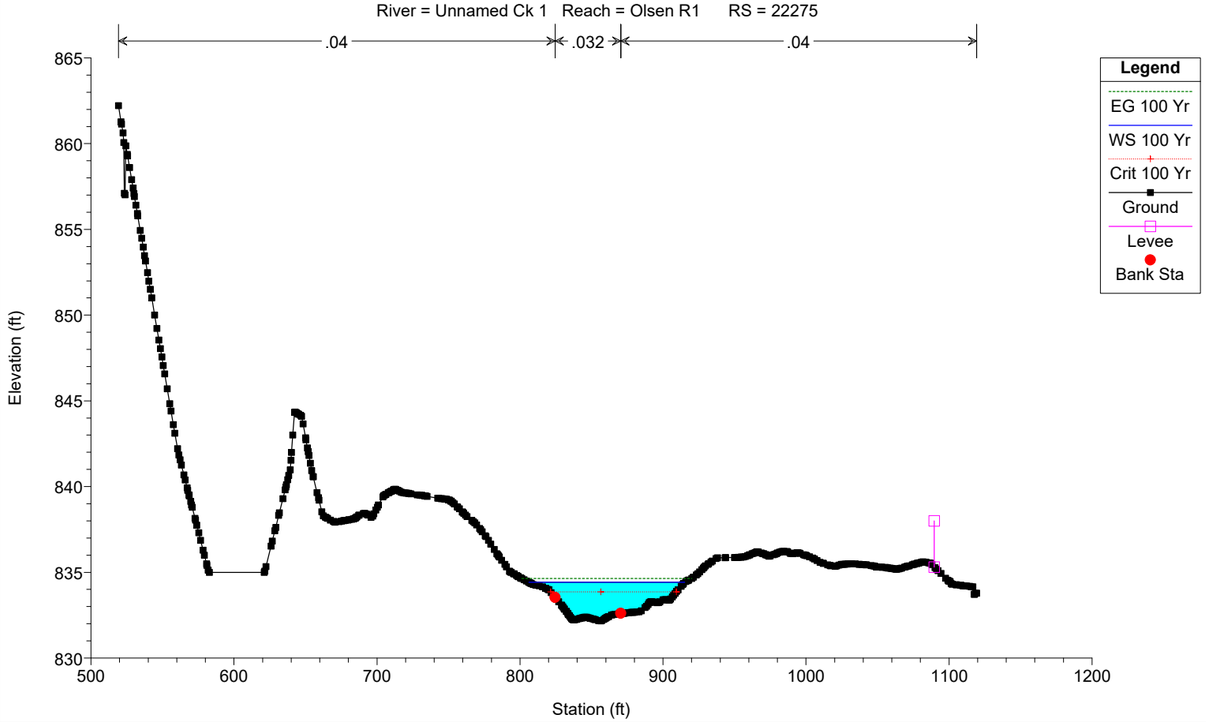
HEC-RAS Model Plan: Default Scenario 7/12/2019

River = Unnamed Ck 1 Reach = Olsen R1 RS = 22276



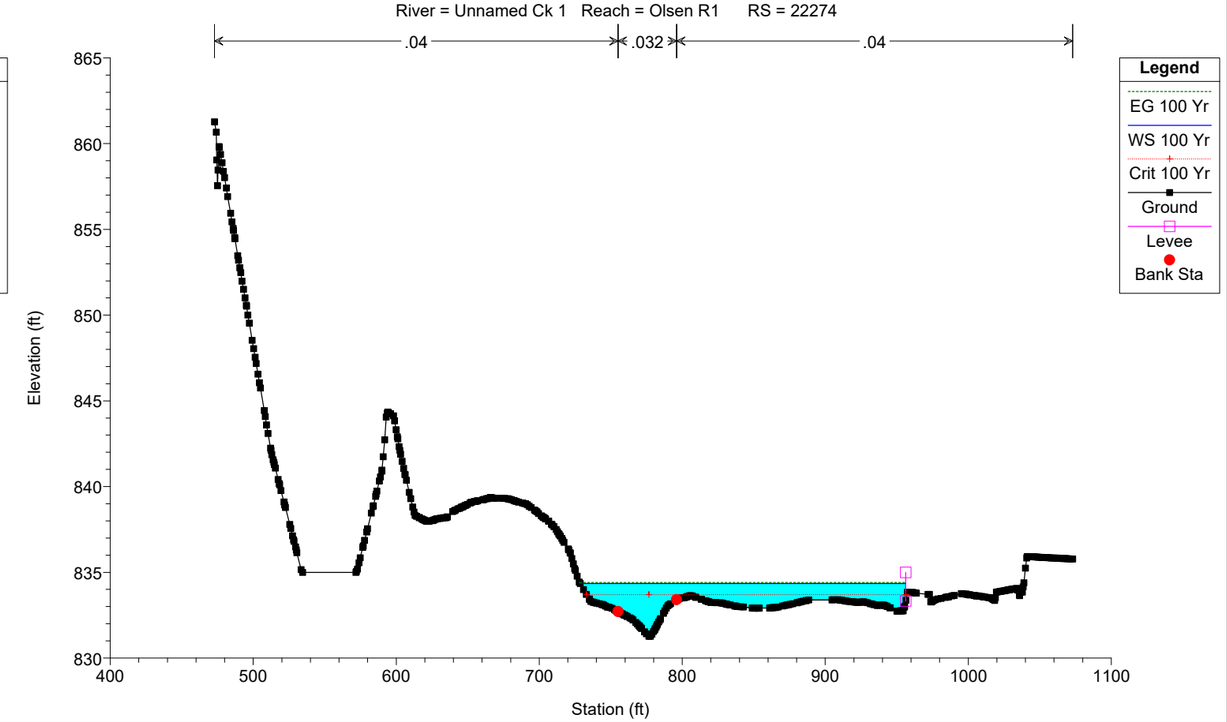
HEC-RAS Model Plan: Default Scenario 7/12/2019

River = Unnamed Ck 1 Reach = Olsen R1 RS = 22275



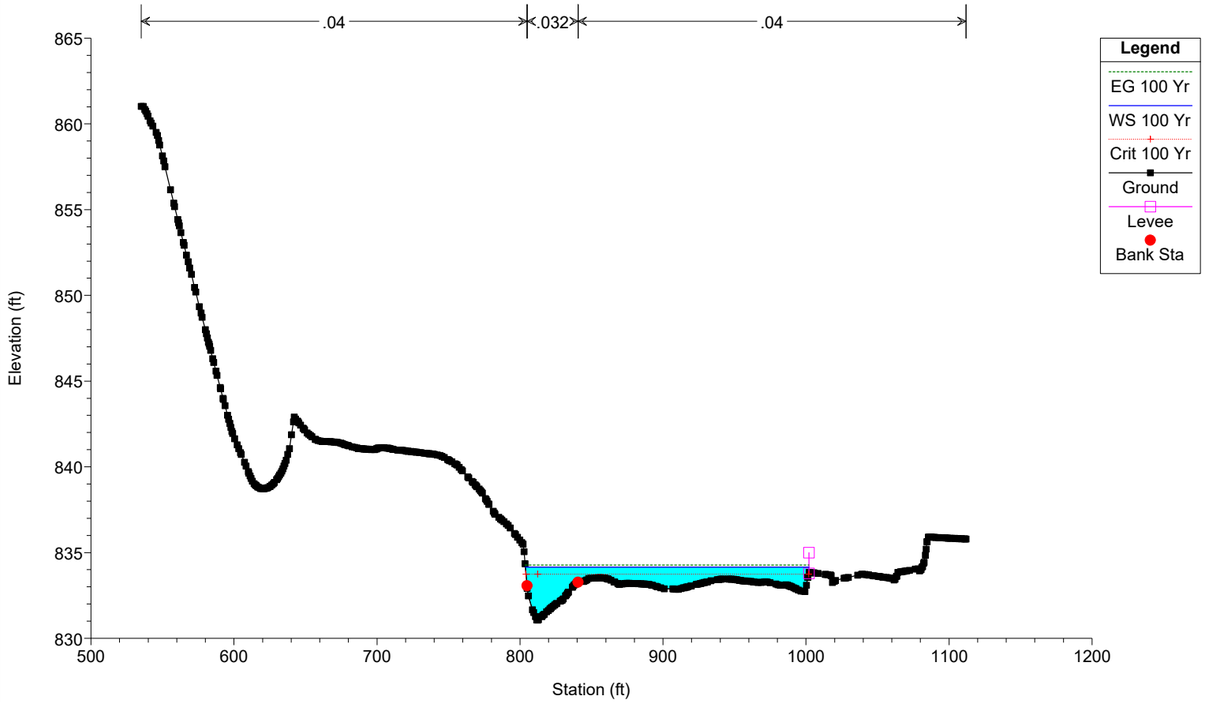
HEC-RAS Model Plan: Default Scenario 7/12/2019

River = Unnamed Ck 1 Reach = Olsen R1 RS = 22274



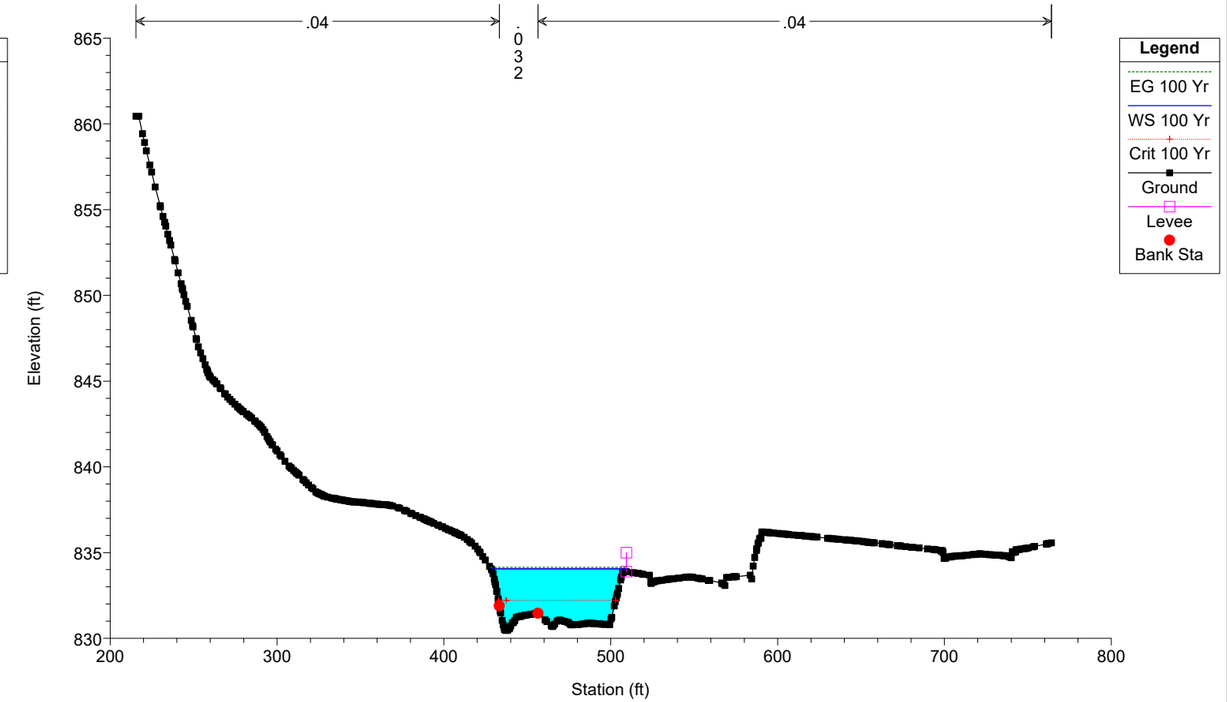
HEC-RAS Model Plan: Default Scenario 7/12/2019

River = Unnamed Ck 1 Reach = Olsen R1 RS = 22273



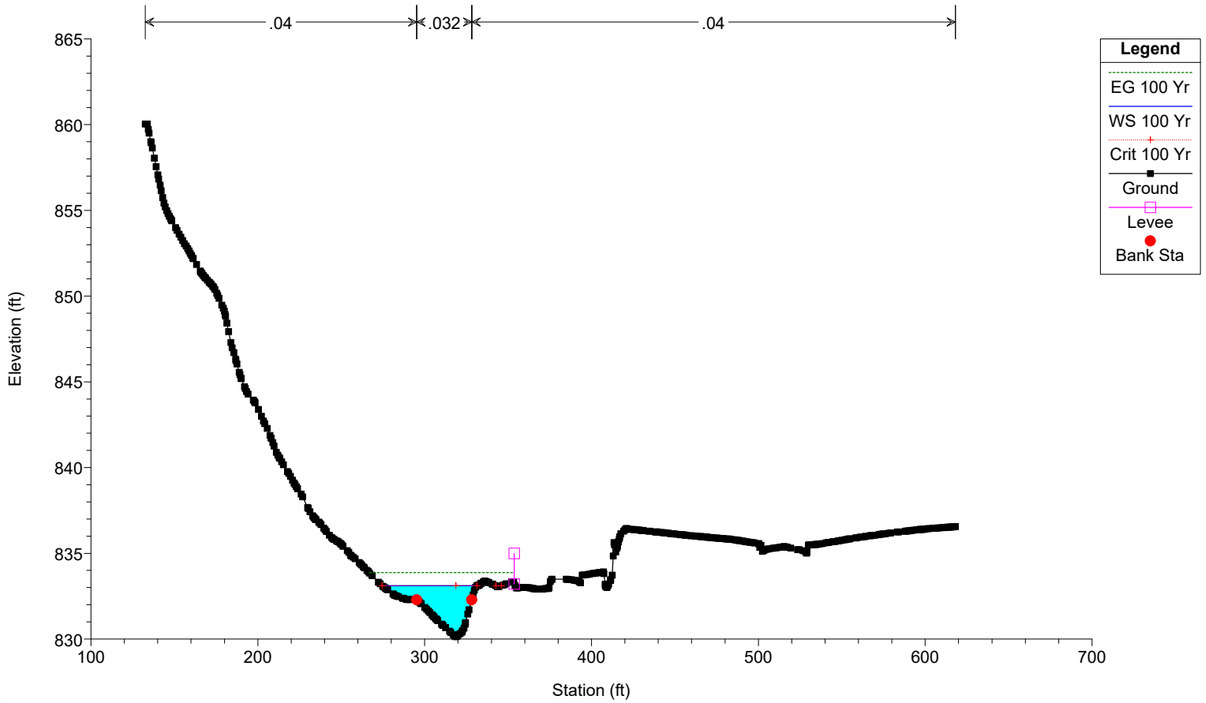
HEC-RAS Model Plan: Default Scenario 7/12/2019

River = Unnamed Ck 1 Reach = Olsen R1 RS = 22272



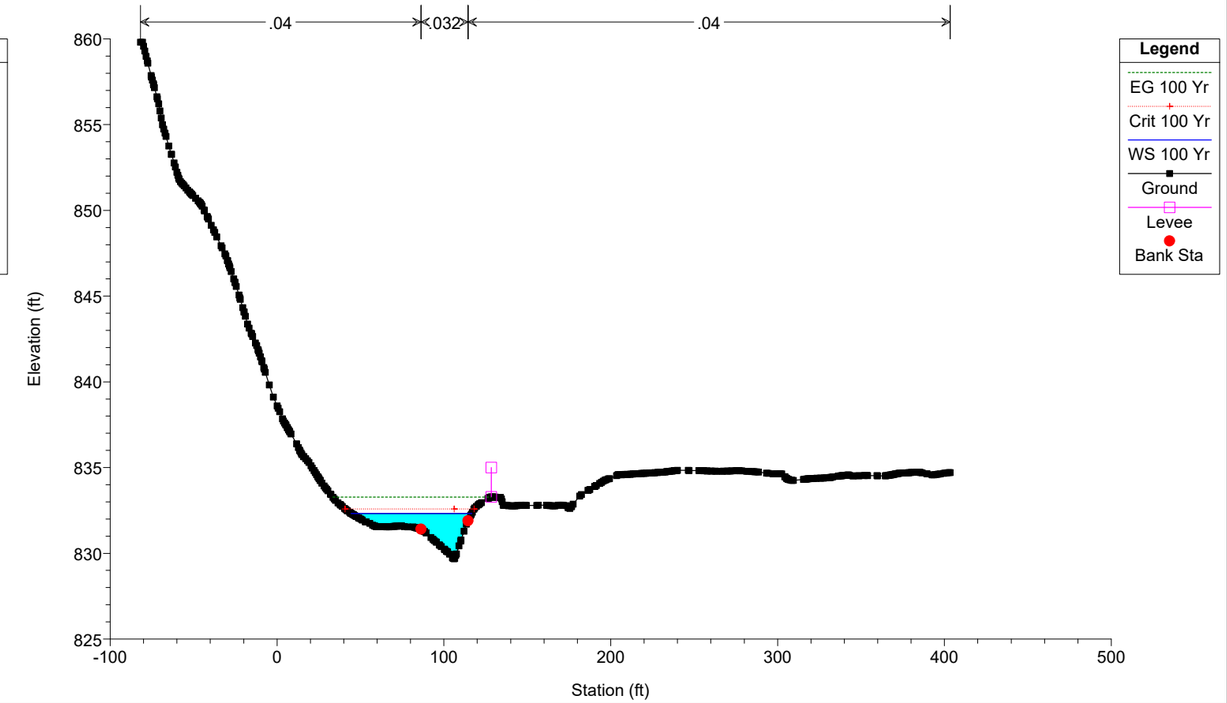
HEC-RAS Model Plan: Default Scenario 7/12/2019

River = Unnamed Ck 1 Reach = Olsen R1 RS = 22271



HEC-RAS Model Plan: Default Scenario 7/12/2019

River = Unnamed Ck 1 Reach = Olsen R1 RS = 22269



Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22304 Profile: 100 Yr

E.G. Elev (ft)	847.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	846.99	Reach Len. (ft)	51.15	50.26	50.43
Crit W.S. (ft)	846.25	Flow Area (sq ft)	53.90	69.56	11.62
E.G. Slope (ft/ft)	0.001417	Area (sq ft)	53.90	69.56	11.62
Q Total (cfs)	265.00	Flow (cfs)	55.44	197.98	11.59
Top Width (ft)	137.63	Top Width (ft)	85.43	32.94	19.26
Vel Total (ft/s)	1.96	Avg. Vel. (ft/s)	1.03	2.85	1.00
Max Chl Dpth (ft)	3.64	Hydr. Depth (ft)	0.63	2.11	0.60
Conv. Total (cfs)	7040.4	Conv. (cfs)	1472.8	5259.8	307.9
Length Wtd. (ft)	50.46	Wetted Per. (ft)	85.45	33.48	19.30
Min Ch El (ft)	843.35	Shear (lb/sq ft)	0.06	0.18	0.05
Alpha	1.64	Stream Power (lb/ft s)	530.15	0.00	0.00
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	1.86	5.68	5.27
C & E Loss (ft)	0.01	Cum SA (acres)	3.23	2.92	8.22

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22303 Profile: 100 Yr

E.G. Elev (ft)	847.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	846.95	Reach Len. (ft)	68.54	63.52	64.21
Crit W.S. (ft)		Flow Area (sq ft)	58.30	83.18	11.82
E.G. Slope (ft/ft)	0.001150	Area (sq ft)	58.30	83.18	11.82
Q Total (cfs)	265.00	Flow (cfs)	61.01	195.09	8.90
Top Width (ft)	151.99	Top Width (ft)	76.99	45.58	29.42
Vel Total (ft/s)	1.73	Avg. Vel. (ft/s)	1.05	2.35	0.75
Max Chl Dpth (ft)	2.97	Hydr. Depth (ft)	0.76	1.82	0.40
Conv. Total (cfs)	7812.9	Conv. (cfs)	1798.8	5751.7	262.5
Length Wtd. (ft)	64.77	Wetted Per. (ft)	77.01	45.77	29.51
Min Ch El (ft)	843.98	Shear (lb/sq ft)	0.05	0.13	0.03
Alpha	1.45	Stream Power (lb/ft s)	1150.00	0.00	0.00
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	1.79	5.59	5.26
C & E Loss (ft)	0.01	Cum SA (acres)	3.13	2.88	8.19

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22302 Profile: 100 Yr

E.G. Elev (ft)	846.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.045	0.032	0.045
W.S. Elev (ft)	846.91	Reach Len. (ft)	131.30	126.90	130.64
Crit W.S. (ft)	846.03	Flow Area (sq ft)	71.67	59.11	95.96
E.G. Slope (ft/ft)	0.000695	Area (sq ft)	71.67	59.11	95.96
Q Total (cfs)	265.00	Flow (cfs)	59.05	126.93	79.02
Top Width (ft)	207.20	Top Width (ft)	77.84	25.09	104.27
Vel Total (ft/s)	1.17	Avg. Vel. (ft/s)	0.82	2.15	0.82
Max Chl Dpth (ft)	3.48	Hydr. Depth (ft)	0.92	2.36	0.92
Conv. Total (cfs)	10048.9	Conv. (cfs)	2239.1	4813.3	2996.4
Length Wtd. (ft)	126.90	Wetted Per. (ft)	77.87	25.45	104.34
Min Ch El (ft)	843.43	Shear (lb/sq ft)	0.04	0.10	0.04
Alpha	1.88	Stream Power (lb/ft s)	1288.86	0.00	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)	1.69	5.49	5.18
C & E Loss (ft)		Cum SA (acres)	3.01	2.82	8.10

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22300.6 Profile: 100 Yr

E.G. Elev (ft)	845.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.045	0.035	0.045
W.S. Elev (ft)	845.67	Reach Len. (ft)	59.20	59.20	59.20
Crit W.S. (ft)		Flow Area (sq ft)	4.13	36.64	82.40
E.G. Slope (ft/ft)	0.002703	Area (sq ft)	4.13	36.64	82.40
Q Total (cfs)	265.00	Flow (cfs)	2.57	130.33	132.10
Top Width (ft)	138.78	Top Width (ft)	30.73	16.78	91.27
Vel Total (ft/s)	2.15	Avg. Vel. (ft/s)	0.62	3.56	1.60

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22300.6 Profile: 100 Yr (Continued)

Max Chl Dpth (ft)	3.64	Hydr. Depth (ft)	0.13	2.18	0.90
Conv. Total (cfs)	5097.6	Conv. (cfs)	49.5	2507.0	2541.1
Length Wtd. (ft)	59.20	Wetted Per. (ft)	30.76	17.91	91.30
Min Ch El (ft)	842.03	Shear (lb/sq ft)	0.02	0.35	0.15
Alpha	1.62	Stream Power (lb/ft s)	992.19	0.00	0.00
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	1.69	5.20	5.18
C & E Loss (ft)	0.02	Cum SA (acres)	2.85	2.76	7.80

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22300 Profile: 100 Yr

E.G. Elev (ft)	845.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.	0.045	0.035	0.045
W.S. Elev (ft)	845.15	Reach Len. (ft)	87.83	104.13	98.39
Crit W.S. (ft)	845.15	Flow Area (sq ft)	2.59	26.82	49.01
E.G. Slope (ft/ft)	0.008030	Area (sq ft)	2.59	26.82	49.01
Q Total (cfs)	265.00	Flow (cfs)	2.24	158.96	103.81
Top Width (ft)	109.42	Top Width (ft)	16.48	12.02	80.92
Vel Total (ft/s)	3.38	Avg. Vel. (ft/s)	0.86	5.93	2.12
Max Chl Dpth (ft)	3.52	Hydr. Depth (ft)	0.16	2.23	0.61
Conv. Total (cfs)	2957.3	Conv. (cfs)	24.9	1773.9	1158.4
Length Wtd. (ft)	100.81	Wetted Per. (ft)	16.49	13.79	80.93
Min Ch El (ft)	841.63	Shear (lb/sq ft)	0.08	0.97	0.30
Alpha	2.00	Stream Power (lb/ft s)	1549.81	0.00	0.00
Frctn Loss (ft)	0.52	Cum Volume (acre-ft)	1.68	5.16	5.09
C & E Loss (ft)	0.08	Cum SA (acres)	2.81	2.74	7.69

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22299 Profile: 100 Yr

E.G. Elev (ft)	844.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.045	0.035	0.045
W.S. Elev (ft)	844.66	Reach Len. (ft)	97.93	97.87	99.31
Crit W.S. (ft)	844.28	Flow Area (sq ft)	0.16	20.19	109.93
E.G. Slope (ft/ft)	0.003645	Area (sq ft)	0.16	20.19	109.93
Q Total (cfs)	265.00	Flow (cfs)	0.03	68.63	196.34
Top Width (ft)	154.03	Top Width (ft)	5.04	11.94	137.05
Vel Total (ft/s)	2.03	Avg. Vel. (ft/s)	0.20	3.40	1.79
Max Chl Dpth (ft)	2.86	Hydr. Depth (ft)	0.03	1.69	0.80
Conv. Total (cfs)	4389.6	Conv. (cfs)	0.6	1136.8	3252.3
Length Wtd. (ft)	99.03	Wetted Per. (ft)	5.04	13.21	137.20
Min Ch El (ft)	841.80	Shear (lb/sq ft)	0.01	0.35	0.18
Alpha	1.29	Stream Power (lb/ft s)	1086.99	0.00	0.00
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	1.68	5.11	4.91
C & E Loss (ft)	0.02	Cum SA (acres)	2.79	2.71	7.44

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22298 Profile: 100 Yr

E.G. Elev (ft)	844.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.045	0.035	0.045
W.S. Elev (ft)	844.45	Reach Len. (ft)	111.75	92.13	99.01
Crit W.S. (ft)		Flow Area (sq ft)	8.19	17.72	189.41
E.G. Slope (ft/ft)	0.001938	Area (sq ft)	8.19	17.72	189.41
Q Total (cfs)	265.00	Flow (cfs)	3.91	28.88	232.20
Top Width (ft)	309.48	Top Width (ft)	43.46	21.51	244.52
Vel Total (ft/s)	1.23	Avg. Vel. (ft/s)	0.48	1.63	1.23
Max Chl Dpth (ft)	1.67	Hydr. Depth (ft)	0.19	0.82	0.77
Conv. Total (cfs)	6019.2	Conv. (cfs)	88.9	656.1	5274.2
Length Wtd. (ft)	97.92	Wetted Per. (ft)	43.47	21.77	244.58
Min Ch El (ft)	842.78	Shear (lb/sq ft)	0.02	0.10	0.09
Alpha	1.06	Stream Power (lb/ft s)	1074.77	0.00	0.00
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	1.67	5.06	4.57
C & E Loss (ft)	0.00	Cum SA (acres)	2.74	2.68	7.00

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22297 Profile: 100 Yr

E.G. Elev (ft)	844.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.045	0.032	0.045
W.S. Elev (ft)	844.19	Reach Len. (ft)	99.38	96.13	99.44
Crit W.S. (ft)		Flow Area (sq ft)	8.13	26.79	140.44
E.G. Slope (ft/ft)	0.002680	Area (sq ft)	8.13	26.79	140.44
Q Total (cfs)	265.00	Flow (cfs)	7.71	76.82	180.47
Top Width (ft)	255.10	Top Width (ft)	19.64	20.04	215.42
Vel Total (ft/s)	1.51	Avg. Vel. (ft/s)	0.95	2.87	1.29
Max Chl Dpth (ft)	2.01	Hydr. Depth (ft)	0.41	1.34	0.65
Conv. Total (cfs)	5119.0	Conv. (cfs)	149.0	1483.9	3486.2
Length Wtd. (ft)	98.63	Wetted Per. (ft)	19.66	20.56	215.47
Min Ch El (ft)	842.18	Shear (lb/sq ft)	0.07	0.22	0.11
Alpha	1.55	Stream Power (lb/ft s)	1832.29	0.00	0.00
Frctn Loss (ft)	0.36	Cum Volume (acre-ft)	1.65	5.02	4.19
C & E Loss (ft)	0.00	Cum SA (acres)	2.66	2.63	6.48

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22296 Profile: 100 Yr

E.G. Elev (ft)	843.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.045	0.032	0.045
W.S. Elev (ft)	843.81	Reach Len. (ft)	94.62	99.01	98.23
Crit W.S. (ft)		Flow Area (sq ft)	13.36	16.76	104.96
E.G. Slope (ft/ft)	0.005280	Area (sq ft)	13.36	16.76	104.96
Q Total (cfs)	265.00	Flow (cfs)	20.37	52.71	191.92
Top Width (ft)	202.63	Top Width (ft)	26.91	18.06	157.66
Vel Total (ft/s)	1.96	Avg. Vel. (ft/s)	1.53	3.14	1.83
Max Chl Dpth (ft)	2.04	Hydr. Depth (ft)	0.50	0.93	0.67
Conv. Total (cfs)	3647.0	Conv. (cfs)	280.3	725.4	2641.2
Length Wtd. (ft)	98.15	Wetted Per. (ft)	27.05	18.63	157.76
Min Ch El (ft)	841.77	Shear (lb/sq ft)	0.16	0.30	0.22
Alpha	1.19	Stream Power (lb/ft s)	1830.97	0.00	0.00
Frctn Loss (ft)	0.44	Cum Volume (acre-ft)	1.63	4.97	3.91
C & E Loss (ft)	0.00	Cum SA (acres)	2.60	2.59	6.06

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22295 Profile: 100 Yr

E.G. Elev (ft)	843.44	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.045	0.032	0.045
W.S. Elev (ft)	843.37	Reach Len. (ft)	103.94	96.19	100.33
Crit W.S. (ft)		Flow Area (sq ft)	18.67	26.09	96.28
E.G. Slope (ft/ft)	0.003865	Area (sq ft)	18.67	26.09	96.28
Q Total (cfs)	265.00	Flow (cfs)	19.30	75.47	170.22
Top Width (ft)	198.24	Top Width (ft)	52.19	25.72	120.33
Vel Total (ft/s)	1.88	Avg. Vel. (ft/s)	1.03	2.89	1.77
Max Chl Dpth (ft)	2.01	Hydr. Depth (ft)	0.36	1.01	0.80
Conv. Total (cfs)	4262.3	Conv. (cfs)	310.5	1213.9	2737.9
Length Wtd. (ft)	99.38	Wetted Per. (ft)	52.22	26.01	120.47
Min Ch El (ft)	841.36	Shear (lb/sq ft)	0.09	0.24	0.19
Alpha	1.27	Stream Power (lb/ft s)	1327.30	0.00	0.00
Frctn Loss (ft)	0.60	Cum Volume (acre-ft)	1.59	4.92	3.69
C & E Loss (ft)	0.01	Cum SA (acres)	2.52	2.54	5.74

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22294 Profile: 100 Yr

E.G. Elev (ft)	842.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	842.68	Reach Len. (ft)	64.90	47.28	57.16
Crit W.S. (ft)		Flow Area (sq ft)	25.43	23.50	53.10
E.G. Slope (ft/ft)	0.010953	Area (sq ft)	25.43	23.50	53.10
Q Total (cfs)	265.00	Flow (cfs)	42.81	100.11	122.08
Top Width (ft)	234.38	Top Width (ft)	89.19	28.46	116.73
Vel Total (ft/s)	2.60	Avg. Vel. (ft/s)	1.68	4.26	2.30

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22294 Profile: 100 Yr (Continued)

Max Chl Dpth (ft)	1.60	Hydr. Depth (ft)	0.29	0.83	0.45
Conv. Total (cfs)	2532.0	Conv. (cfs)	409.1	956.5	1166.4
Length Wtd. (ft)	52.89	Wetted Per. (ft)	89.23	28.64	116.79
Min Ch El (ft)	841.08	Shear (lb/sq ft)	0.19	0.56	0.31
Alpha	1.45	Stream Power (lb/ft s)	1277.10	0.00	0.00
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)	1.54	4.86	3.51
C & E Loss (ft)	0.02	Cum SA (acres)	2.35	2.48	5.47

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22293.4 Profile: 100 Yr

E.G. Elev (ft)	842.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	842.52	Reach Len. (ft)	51.31	31.14	40.45
Crit W.S. (ft)		Flow Area (sq ft)	5.88	59.12	103.01
E.G. Slope (ft/ft)	0.001935	Area (sq ft)	5.88	59.12	103.01
Q Total (cfs)	265.00	Flow (cfs)	6.00	167.37	91.63
Top Width (ft)	303.67	Top Width (ft)	11.88	35.40	256.39
Vel Total (ft/s)	1.58	Avg. Vel. (ft/s)	1.02	2.83	0.89
Max Chl Dpth (ft)	3.48	Hydr. Depth (ft)	0.50	1.67	0.40
Conv. Total (cfs)	6024.6	Conv. (cfs)	136.5	3805.0	2083.1
Length Wtd. (ft)	36.83	Wetted Per. (ft)	11.92	36.22	256.46
Min Ch El (ft)	839.04	Shear (lb/sq ft)	0.06	0.20	0.05
Alpha	2.15	Stream Power (lb/ft s)	700.37	0.00	0.00
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	1.52	4.82	3.41
C & E Loss (ft)	0.02	Cum SA (acres)	2.27	2.45	5.23

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22293 Profile: 100 Yr

E.G. Elev (ft)	842.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	842.50	Reach Len. (ft)	73.65	115.12	101.71
Crit W.S. (ft)		Flow Area (sq ft)	8.00	28.62	177.92
E.G. Slope (ft/ft)	0.001403	Area (sq ft)	8.00	28.62	177.92
Q Total (cfs)	265.00	Flow (cfs)	5.88	52.45	206.68
Top Width (ft)	280.22	Top Width (ft)	20.87	26.09	233.26
Vel Total (ft/s)	1.24	Avg. Vel. (ft/s)	0.73	1.83	1.16
Max Chl Dpth (ft)	2.30	Hydr. Depth (ft)	0.38	1.10	0.76
Conv. Total (cfs)	7073.8	Conv. (cfs)	156.9	1400.0	5516.9
Length Wtd. (ft)	103.20	Wetted Per. (ft)	20.89	26.47	233.31
Min Ch El (ft)	840.20	Shear (lb/sq ft)	0.03	0.09	0.07
Alpha	1.13	Stream Power (lb/ft s)	1451.09	0.00	0.00
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)	1.51	4.79	3.28
C & E Loss (ft)	0.00	Cum SA (acres)	2.25	2.42	5.00

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22292.5 Profile: 100 Yr

E.G. Elev (ft)	842.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	842.35	Reach Len. (ft)	106.00	96.13	80.38
Crit W.S. (ft)		Flow Area (sq ft)	44.88	59.36	86.39
E.G. Slope (ft/ft)	0.001221	Area (sq ft)	44.88	59.36	86.39
Q Total (cfs)	265.00	Flow (cfs)	48.46	120.23	96.31
Top Width (ft)	210.14	Top Width (ft)	59.11	42.52	108.51
Vel Total (ft/s)	1.39	Avg. Vel. (ft/s)	1.08	2.03	1.11
Max Chl Dpth (ft)	1.85	Hydr. Depth (ft)	0.76	1.40	0.80
Conv. Total (cfs)	7584.3	Conv. (cfs)	1386.9	3440.9	2756.5
Length Wtd. (ft)	95.08	Wetted Per. (ft)	59.15	42.56	108.54
Min Ch El (ft)	840.50	Shear (lb/sq ft)	0.06	0.11	0.06
Alpha	1.31	Stream Power (lb/ft s)	884.99	0.00	0.00
Frctn Loss (ft)	0.21	Cum Volume (acre-ft)	1.46	4.67	2.97
C & E Loss (ft)	0.00	Cum SA (acres)	2.19	2.33	4.60

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22292.2 Profile: 100 Yr

E.G. Elev (ft)	842.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	842.09	Reach Len. (ft)	129.43	122.31	125.92
Crit W.S. (ft)		Flow Area (sq ft)	75.14	21.29	27.10
E.G. Slope (ft/ft)	0.004817	Area (sq ft)	75.14	21.29	27.10
Q Total (cfs)	265.00	Flow (cfs)	138.32	70.71	55.96
Top Width (ft)	182.48	Top Width (ft)	124.43	20.30	37.76
Vel Total (ft/s)	2.15	Avg. Vel. (ft/s)	1.84	3.32	2.07
Max Chl Dpth (ft)	1.42	Hydr. Depth (ft)	0.60	1.05	0.72
Conv. Total (cfs)	3818.3	Conv. (cfs)	1993.1	1018.9	806.4
Length Wtd. (ft)	125.82	Wetted Per. (ft)	124.54	20.35	37.79
Min Ch El (ft)	840.67	Shear (lb/sq ft)	0.18	0.31	0.22
Alpha	1.22	Stream Power (lb/ft s)	905.05	0.00	0.00
Frctn Loss (ft)	0.21	Cum Volume (acre-ft)	1.32	4.58	2.87
C & E Loss (ft)	0.02	Cum SA (acres)	1.96	2.26	4.46

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22290.9 Profile: 100 Yr

E.G. Elev (ft)	841.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	841.92	Reach Len. (ft)	73.00	73.00	73.00
Crit W.S. (ft)	841.17	Flow Area (sq ft)	32.18	66.39	110.18
E.G. Slope (ft/ft)	0.000853	Area (sq ft)	32.18	66.39	110.18
Q Total (cfs)	265.00	Flow (cfs)	34.55	112.32	118.13
Top Width (ft)	192.29	Top Width (ft)	32.63	47.61	112.06
Vel Total (ft/s)	1.27	Avg. Vel. (ft/s)	1.07	1.69	1.07
Max Chl Dpth (ft)	1.54	Hydr. Depth (ft)	0.99	1.39	0.98
Conv. Total (cfs)	9075.1	Conv. (cfs)	1183.1	3846.5	4045.5
Length Wtd. (ft)	73.00	Wetted Per. (ft)	32.69	47.63	112.12
Min Ch El (ft)	840.38	Shear (lb/sq ft)	0.05	0.07	0.05
Alpha	1.16	Stream Power (lb/ft s)	760.45	0.00	0.00
Frctn Loss (ft)	0.11	Cum Volume (acre-ft)	1.16	4.46	2.67
C & E Loss (ft)	0.01	Cum SA (acres)	1.73	2.17	4.25

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22289.8 BR U Profile: 100 Yr

E.G. Elev (ft)	841.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	841.71	Reach Len. (ft)	60.00	60.00	60.00
Crit W.S. (ft)	841.28	Flow Area (sq ft)	23.28	56.53	19.75
E.G. Slope (ft/ft)	0.003381	Area (sq ft)	23.28	56.53	19.75
Q Total (cfs)	265.00	Flow (cfs)	50.01	170.56	43.58
Top Width (ft)	90.00	Top Width (ft)	23.35	47.61	19.04
Vel Total (ft/s)	2.65	Avg. Vel. (ft/s)	2.15	3.02	2.21
Max Chl Dpth (ft)	1.33	Hydr. Depth (ft)	1.00	1.19	1.04
Conv. Total (cfs)	4557.3	Conv. (cfs)	862.8	2942.6	751.9
Length Wtd. (ft)	60.00	Wetted Per. (ft)	23.37	47.63	19.04
Min Ch El (ft)	840.38	Shear (lb/sq ft)	0.21	0.25	0.22
Alpha	1.07	Stream Power (lb/ft s)	760.45	0.00	0.00
Frctn Loss (ft)	0.12	Cum Volume (acre-ft)	1.11	4.36	2.56
C & E Loss (ft)	0.01	Cum SA (acres)	1.68	2.09	4.14

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22289.8 BR D Profile: 100 Yr

E.G. Elev (ft)	841.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	841.62	Reach Len. (ft)	48.50	48.50	48.50
Crit W.S. (ft)	840.91	Flow Area (sq ft)	37.25	51.84	42.67
E.G. Slope (ft/ft)	0.001312	Area (sq ft)	37.25	51.84	42.67
Q Total (cfs)	265.00	Flow (cfs)	53.70	140.11	70.35
Top Width (ft)	90.00	Top Width (ft)	33.41	25.28	31.31
Vel Total (ft/s)	2.00	Avg. Vel. (ft/s)	1.44	2.70	1.65

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22289.8 BR D Profile: 100 Yr (Continued)

Max Chl Dpth (ft)	2.32	Hydr. Depth (ft)	1.11	2.05	1.36
Conv. Total (cfs)	7315.0	Conv. (cfs)	1487.0	3879.9	1948.1
Length Wtd. (ft)	48.50	Wetted Per. (ft)	33.43	25.33	31.32
Min Ch El (ft)	839.30	Shear (lb/sq ft)	0.09	0.17	0.11
Alpha	1.25	Stream Power (lb/ft s)	1149.53	0.00	1064.99
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	1.07	4.28	2.52
C & E Loss (ft)	0.01	Cum SA (acres)	1.64	2.04	4.10

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22289 Profile: 100 Yr

E.G. Elev (ft)	841.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	841.58	Reach Len. (ft)	98.59	94.26	99.28
Crit W.S. (ft)	841.19	Flow Area (sq ft)	52.10	50.89	78.90
E.G. Slope (ft/ft)	0.002818	Area (sq ft)	52.10	50.89	78.90
Q Total (cfs)	434.00	Flow (cfs)	89.59	199.68	144.73
Top Width (ft)	177.14	Top Width (ft)	63.94	25.28	87.92
Vel Total (ft/s)	2.39	Avg. Vel. (ft/s)	1.72	3.92	1.83
Max Chl Dpth (ft)	2.28	Hydr. Depth (ft)	0.81	2.01	0.90
Conv. Total (cfs)	8175.8	Conv. (cfs)	1687.7	3761.6	2726.4
Length Wtd. (ft)	96.73	Wetted Per. (ft)	63.97	25.33	87.95
Min Ch El (ft)	839.30	Shear (lb/sq ft)	0.14	0.35	0.16
Alpha	1.55	Stream Power (lb/ft s)	1149.53	0.00	1064.99
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	1.02	4.23	2.45
C & E Loss (ft)	0.01	Cum SA (acres)	1.59	2.01	4.04

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22288 Profile: 100 Yr

E.G. Elev (ft)	841.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	841.35	Reach Len. (ft)	134.48	109.68	122.71
Crit W.S. (ft)	840.93	Flow Area (sq ft)	110.85	60.46	22.41
E.G. Slope (ft/ft)	0.002487	Area (sq ft)	110.85	60.46	22.41
Q Total (cfs)	434.00	Flow (cfs)	211.47	200.51	22.02
Top Width (ft)	199.03	Top Width (ft)	105.92	35.09	58.02
Vel Total (ft/s)	2.24	Avg. Vel. (ft/s)	1.91	3.32	0.98
Max Chl Dpth (ft)	2.60	Hydr. Depth (ft)	1.05	1.72	0.39
Conv. Total (cfs)	8702.3	Conv. (cfs)	4240.2	4020.5	441.6
Length Wtd. (ft)	119.80	Wetted Per. (ft)	106.08	35.29	58.04
Min Ch El (ft)	838.75	Shear (lb/sq ft)	0.16	0.27	0.06
Alpha	1.38	Stream Power (lb/ft s)	1200.00	0.00	1056.91
Frctn Loss (ft)	0.55	Cum Volume (acre-ft)	0.84	4.10	2.33
C & E Loss (ft)	0.02	Cum SA (acres)	1.40	1.95	3.87

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22287 Profile: 100 Yr

E.G. Elev (ft)	840.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	840.53	Reach Len. (ft)	68.14	99.00	83.63
Crit W.S. (ft)	840.53	Flow Area (sq ft)	20.59	37.49	53.95
E.G. Slope (ft/ft)	0.010912	Area (sq ft)	20.59	37.49	53.95
Q Total (cfs)	434.00	Flow (cfs)	44.90	224.76	164.34
Top Width (ft)	153.32	Top Width (ft)	48.82	26.94	77.56
Vel Total (ft/s)	3.87	Avg. Vel. (ft/s)	2.18	6.00	3.05
Max Chl Dpth (ft)	2.55	Hydr. Depth (ft)	0.42	1.39	0.70
Conv. Total (cfs)	4154.7	Conv. (cfs)	429.9	2151.6	1573.2
Length Wtd. (ft)	93.04	Wetted Per. (ft)	48.87	27.28	77.58
Min Ch El (ft)	837.98	Shear (lb/sq ft)	0.29	0.94	0.47
Alpha	1.51	Stream Power (lb/ft s)	1172.68	0.00	1045.79
Frctn Loss (ft)	0.41	Cum Volume (acre-ft)	0.63	3.98	2.23
C & E Loss (ft)	0.05	Cum SA (acres)	1.16	1.87	3.68

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22286 Profile: 100 Yr

E.G. Elev (ft)	840.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	839.84	Reach Len. (ft)	83.96	99.01	99.01
Crit W.S. (ft)	839.14	Flow Area (sq ft)	25.28	110.05	19.91
E.G. Slope (ft/ft)	0.002341	Area (sq ft)	25.28	110.05	19.91
Q Total (cfs)	434.00	Flow (cfs)	32.39	384.63	16.98
Top Width (ft)	159.35	Top Width (ft)	41.98	56.48	60.89
Vel Total (ft/s)	2.80	Avg. Vel. (ft/s)	1.28	3.50	0.85
Max Chl Dpth (ft)	3.28	Hydr. Depth (ft)	0.60	1.95	0.33
Conv. Total (cfs)	8969.7	Conv. (cfs)	669.3	7949.4	351.0
Length Wtd. (ft)	98.12	Wetted Per. (ft)	42.00	56.72	60.90
Min Ch El (ft)	836.56	Shear (lb/sq ft)	0.09	0.28	0.05
Alpha	1.40	Stream Power (lb/ft s)	875.83	0.00	696.16
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	0.60	3.81	2.15
C & E Loss (ft)	0.00	Cum SA (acres)	1.09	1.77	3.55

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22285 Profile: 100 Yr

E.G. Elev (ft)	839.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	839.57	Reach Len. (ft)	96.26	99.01	98.20
Crit W.S. (ft)	839.05	Flow Area (sq ft)	16.50	103.03	32.01
E.G. Slope (ft/ft)	0.002875	Area (sq ft)	16.50	103.03	32.01
Q Total (cfs)	434.00	Flow (cfs)	18.79	379.19	36.02
Top Width (ft)	170.76	Top Width (ft)	38.15	57.23	75.38
Vel Total (ft/s)	2.86	Avg. Vel. (ft/s)	1.14	3.68	1.13
Max Chl Dpth (ft)	2.52	Hydr. Depth (ft)	0.43	1.80	0.42
Conv. Total (cfs)	8093.6	Conv. (cfs)	350.4	7071.4	671.8
Length Wtd. (ft)	98.75	Wetted Per. (ft)	38.17	57.33	75.39
Min Ch El (ft)	837.05	Shear (lb/sq ft)	0.08	0.32	0.08
Alpha	1.46	Stream Power (lb/ft s)	1116.92	0.00	944.47
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	0.56	3.57	2.10
C & E Loss (ft)	0.02	Cum SA (acres)	1.01	1.64	3.39

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22284 Profile: 100 Yr

E.G. Elev (ft)	839.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	839.38	Reach Len. (ft)	109.35	99.01	99.01
Crit W.S. (ft)	838.95	Flow Area (sq ft)	24.19	111.16	64.02
E.G. Slope (ft/ft)	0.002196	Area (sq ft)	24.19	111.16	64.02
Q Total (cfs)	434.00	Flow (cfs)	29.54	330.82	73.64
Top Width (ft)	229.79	Top Width (ft)	41.17	69.45	119.17
Vel Total (ft/s)	2.18	Avg. Vel. (ft/s)	1.22	2.98	1.15
Max Chl Dpth (ft)	2.16	Hydr. Depth (ft)	0.59	1.60	0.54
Conv. Total (cfs)	9261.2	Conv. (cfs)	630.3	7059.5	1571.5
Length Wtd. (ft)	99.58	Wetted Per. (ft)	41.19	69.49	119.18
Min Ch El (ft)	837.22	Shear (lb/sq ft)	0.08	0.22	0.07
Alpha	1.49	Stream Power (lb/ft s)	1000.63	0.00	859.43
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	0.51	3.33	1.99
C & E Loss (ft)	0.01	Cum SA (acres)	0.92	1.50	3.17

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22283 Profile: 100 Yr

E.G. Elev (ft)	839.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	839.19	Reach Len. (ft)	75.56	99.60	101.97
Crit W.S. (ft)	838.74	Flow Area (sq ft)	15.02	150.81	52.88
E.G. Slope (ft/ft)	0.002180	Area (sq ft)	15.02	150.81	52.88
Q Total (cfs)	434.00	Flow (cfs)	18.20	359.71	56.09
Top Width (ft)	266.89	Top Width (ft)	25.69	130.66	110.54
Vel Total (ft/s)	1.98	Avg. Vel. (ft/s)	1.21	2.39	1.06

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22283 Profile: 100 Yr (Continued)

Max Chl Dpth (ft)	1.51	Hydr. Depth (ft)	0.58	1.15	0.48
Conv. Total (cfs)	9295.4	Conv. (cfs)	389.8	7704.2	1201.4
Length Wtd. (ft)	99.62	Wetted Per. (ft)	25.71	130.70	110.56
Min Ch El (ft)	837.68	Shear (lb/sq ft)	0.08	0.16	0.07
Alpha	1.25	Stream Power (lb/ft s)	844.31	0.00	721.52
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	0.46	3.03	1.85
C & E Loss (ft)	0.01	Cum SA (acres)	0.84	1.27	2.91

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22281.5 Profile: 100 Yr

E.G. Elev (ft)	838.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	838.74	Reach Len. (ft)	163.98	148.41	149.25
Crit W.S. (ft)		Flow Area (sq ft)	1.18	75.91	74.44
E.G. Slope (ft/ft)	0.006657	Area (sq ft)	1.18	75.91	74.44
Q Total (cfs)	434.00	Flow (cfs)	1.11	287.41	145.49
Top Width (ft)	226.43	Top Width (ft)	6.79	75.90	143.74
Vel Total (ft/s)	2.86	Avg. Vel. (ft/s)	0.94	3.79	1.95
Max Chl Dpth (ft)	1.39	Hydr. Depth (ft)	0.17	1.00	0.52
Conv. Total (cfs)	5319.2	Conv. (cfs)	13.6	3522.5	1783.1
Length Wtd. (ft)	149.33	Wetted Per. (ft)	6.80	75.99	143.76
Min Ch El (ft)	837.35	Shear (lb/sq ft)	0.07	0.42	0.22
Alpha	1.31	Stream Power (lb/ft s)	669.49	0.00	0.00
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	0.45	2.77	1.71
C & E Loss (ft)	0.04	Cum SA (acres)	0.81	1.04	2.61

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22280.5 Profile: 100 Yr

E.G. Elev (ft)	838.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	838.73	Reach Len. (ft)	222.97	238.55	246.39
Crit W.S. (ft)	836.42	Flow Area (sq ft)	52.98	192.66	183.07
E.G. Slope (ft/ft)	0.000224	Area (sq ft)	52.98	192.66	183.07
Q Total (cfs)	434.00	Flow (cfs)	37.69	313.48	82.83
Top Width (ft)	339.99	Top Width (ft)	36.55	53.75	249.69
Vel Total (ft/s)	1.01	Avg. Vel. (ft/s)	0.71	1.63	0.45
Max Chl Dpth (ft)	4.03	Hydr. Depth (ft)	1.45	3.58	0.73
Conv. Total (cfs)	28969.1	Conv. (cfs)	2515.8	20924.8	5528.5
Length Wtd. (ft)	238.55	Wetted Per. (ft)	36.67	53.86	249.78
Min Ch El (ft)	834.70	Shear (lb/sq ft)	0.02	0.05	0.01
Alpha	1.95	Stream Power (lb/ft s)	368.00	0.00	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)	0.35	2.31	1.26
C & E Loss (ft)		Cum SA (acres)	0.73	0.82	1.94

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22278 Profile: 100 Yr

E.G. Elev (ft)	836.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	836.71	Reach Len. (ft)	98.13	99.01	98.52
Crit W.S. (ft)	835.81	Flow Area (sq ft)	27.79	88.96	74.71
E.G. Slope (ft/ft)	0.001642	Area (sq ft)	27.79	88.96	74.71
Q Total (cfs)	508.00	Flow (cfs)	42.07	330.01	135.92
Top Width (ft)	115.66	Top Width (ft)	27.48	31.99	56.19
Vel Total (ft/s)	2.65	Avg. Vel. (ft/s)	1.51	3.71	1.82
Max Chl Dpth (ft)	3.52	Hydr. Depth (ft)	1.01	2.78	1.33
Conv. Total (cfs)	12534.7	Conv. (cfs)	1038.1	8142.9	3353.7
Length Wtd. (ft)	98.88	Wetted Per. (ft)	27.57	32.14	56.24
Min Ch El (ft)	833.19	Shear (lb/sq ft)	0.10	0.28	0.14
Alpha	1.42	Stream Power (lb/ft s)	1289.01	0.00	1099.27
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	0.35	1.24	1.26
C & E Loss (ft)	0.06	Cum SA (acres)	0.57	0.58	1.07

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22277 Profile: 100 Yr

E.G. Elev (ft)	836.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.72	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	835.78	Reach Len. (ft)	104.63	99.01	97.83
Crit W.S. (ft)	835.78	Flow Area (sq ft)	14.79	67.00	3.56
E.G. Slope (ft/ft)	0.008820	Area (sq ft)	14.79	67.00	3.56
Q Total (cfs)	508.00	Flow (cfs)	29.95	471.79	6.26
Top Width (ft)	75.61	Top Width (ft)	33.46	32.21	9.95
Vel Total (ft/s)	5.95	Avg. Vel. (ft/s)	2.02	7.04	1.76
Max Chl Dpth (ft)	3.46	Hydr. Depth (ft)	0.44	2.08	0.36
Conv. Total (cfs)	5409.1	Conv. (cfs)	318.9	5023.6	66.6
Length Wtd. (ft)	99.97	Wetted Per. (ft)	33.47	32.66	9.99
Min Ch El (ft)	832.32	Shear (lb/sq ft)	0.24	1.13	0.20
Alpha	1.31	Stream Power (lb/ft s)	1543.37	0.00	1346.16
Frctn Loss (ft)	0.75	Cum Volume (acre-ft)	0.30	1.06	1.18
C & E Loss (ft)	0.11	Cum SA (acres)	0.50	0.51	1.00

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22276 Profile: 100 Yr

E.G. Elev (ft)	835.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.44	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	835.14	Reach Len. (ft)	109.88	99.00	83.63
Crit W.S. (ft)	835.20	Flow Area (sq ft)	65.56	56.53	8.69
E.G. Slope (ft/ft)	0.007998	Area (sq ft)	65.56	56.53	8.69
Q Total (cfs)	508.00	Flow (cfs)	146.68	350.86	10.46
Top Width (ft)	194.64	Top Width (ft)	118.56	30.66	45.43
Vel Total (ft/s)	3.88	Avg. Vel. (ft/s)	2.24	6.21	1.20
Max Chl Dpth (ft)	2.76	Hydr. Depth (ft)	0.55	1.84	0.19
Conv. Total (cfs)	5680.4	Conv. (cfs)	1640.2	3923.3	116.9
Length Wtd. (ft)	98.53	Wetted Per. (ft)	118.60	30.93	45.46
Min Ch El (ft)	832.38	Shear (lb/sq ft)	0.28	0.91	0.10
Alpha	1.86	Stream Power (lb/ft s)	1821.01	0.00	0.00
Frctn Loss (ft)	0.84	Cum Volume (acre-ft)	0.20	0.92	1.16
C & E Loss (ft)	0.08	Cum SA (acres)	0.31	0.44	0.94

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22275 Profile: 100 Yr

E.G. Elev (ft)	834.64	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	834.42	Reach Len. (ft)	84.84	99.01	105.74
Crit W.S. (ft)	833.86	Flow Area (sq ft)	5.83	88.30	54.33
E.G. Slope (ft/ft)	0.003389	Area (sq ft)	5.83	88.30	54.33
Q Total (cfs)	508.00	Flow (cfs)	5.86	368.53	133.61
Top Width (ft)	109.04	Top Width (ft)	18.37	45.94	44.73
Vel Total (ft/s)	3.42	Avg. Vel. (ft/s)	1.01	4.17	2.46
Max Chl Dpth (ft)	2.26	Hydr. Depth (ft)	0.32	1.92	1.21
Conv. Total (cfs)	8726.7	Conv. (cfs)	100.7	6330.9	2295.2
Length Wtd. (ft)	100.97	Wetted Per. (ft)	18.40	46.02	44.81
Min Ch El (ft)	832.16	Shear (lb/sq ft)	0.07	0.41	0.26
Alpha	1.22	Stream Power (lb/ft s)	1119.24	0.00	1089.72
Frctn Loss (ft)	0.18	Cum Volume (acre-ft)	0.11	0.75	1.10
C & E Loss (ft)	0.05	Cum SA (acres)	0.14	0.35	0.85

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22274 Profile: 100 Yr

E.G. Elev (ft)	834.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	834.35	Reach Len. (ft)	107.84	99.01	79.40
Crit W.S. (ft)	833.69	Flow Area (sq ft)	28.83	85.54	185.88
E.G. Slope (ft/ft)	0.001120	Area (sq ft)	28.83	85.54	185.88
Q Total (cfs)	508.00	Flow (cfs)	37.80	216.28	253.92
Top Width (ft)	227.74	Top Width (ft)	26.53	41.01	160.20
Vel Total (ft/s)	1.69	Avg. Vel. (ft/s)	1.31	2.53	1.37

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22274 Profile: 100 Yr (Continued)

Max Chl Dpth (ft)	3.09	Hydr. Depth (ft)	1.09	2.09	1.16
Conv. Total (cfs)	15180.9	Conv. (cfs)	1129.6	6463.2	7588.1
Length Wtd. (ft)	89.63	Wetted Per. (ft)	26.62	41.21	161.35
Min Ch El (ft)	831.26	Shear (lb/sq ft)	0.08	0.15	0.08
Alpha	1.32	Stream Power (lb/ft s)	1072.94	0.00	956.26
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)	0.08	0.56	0.81
C & E Loss (ft)	0.01	Cum SA (acres)	0.10	0.25	0.60

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22273 Profile: 100 Yr

E.G. Elev (ft)	834.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	834.16	Reach Len. (ft)	95.47	99.01	97.21
Crit W.S. (ft)	833.75	Flow Area (sq ft)	0.63	75.14	153.34
E.G. Slope (ft/ft)	0.002065	Area (sq ft)	0.63	75.14	153.34
Q Total (cfs)	508.00	Flow (cfs)	0.57	257.85	249.58
Top Width (ft)	198.32	Top Width (ft)	1.15	35.80	161.37
Vel Total (ft/s)	2.22	Avg. Vel. (ft/s)	0.91	3.43	1.63
Max Chl Dpth (ft)	3.10	Hydr. Depth (ft)	0.55	2.10	0.95
Conv. Total (cfs)	11178.0	Conv. (cfs)	12.6	5673.6	5491.8
Length Wtd. (ft)	97.99	Wetted Per. (ft)	1.59	36.24	161.97
Min Ch El (ft)	831.06	Shear (lb/sq ft)	0.05	0.27	0.12
Alpha	1.48	Stream Power (lb/ft s)	1111.81	0.00	1002.06
Frctn Loss (ft)	0.12	Cum Volume (acre-ft)	0.04	0.37	0.50
C & E Loss (ft)	0.01	Cum SA (acres)	0.06	0.16	0.31

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22272 Profile: 100 Yr

E.G. Elev (ft)	834.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	834.05	Reach Len. (ft)	95.60	99.01	95.11
Crit W.S. (ft)	832.20	Flow Area (sq ft)	4.62	67.37	148.57
E.G. Slope (ft/ft)	0.000859	Area (sq ft)	4.62	67.37	148.57
Q Total (cfs)	508.00	Flow (cfs)	4.55	185.08	318.37
Top Width (ft)	80.99	Top Width (ft)	4.88	23.12	52.99
Vel Total (ft/s)	2.30	Avg. Vel. (ft/s)	0.99	2.75	2.14
Max Chl Dpth (ft)	3.60	Hydr. Depth (ft)	0.95	2.91	2.80
Conv. Total (cfs)	17332.4	Conv. (cfs)	155.2	6314.8	10862.4
Length Wtd. (ft)	97.67	Wetted Per. (ft)	5.36	23.49	53.81
Min Ch El (ft)	830.45	Shear (lb/sq ft)	0.05	0.15	0.15
Alpha	1.06	Stream Power (lb/ft s)	764.07	0.00	509.37
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)	0.04	0.21	0.16
C & E Loss (ft)	0.07	Cum SA (acres)	0.06	0.10	0.07

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22271 Profile: 100 Yr

E.G. Elev (ft)	833.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.76	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	833.11	Reach Len. (ft)	40.26	46.25	50.16
Crit W.S. (ft)	833.11	Flow Area (sq ft)	11.82	66.27	1.12
E.G. Slope (ft/ft)	0.009617	Area (sq ft)	11.82	66.27	1.12
Q Total (cfs)	508.00	Flow (cfs)	29.57	476.68	1.76
Top Width (ft)	60.05	Top Width (ft)	20.74	32.96	6.35
Vel Total (ft/s)	6.41	Avg. Vel. (ft/s)	2.50	7.19	1.57
Max Chl Dpth (ft)	2.98	Hydr. Depth (ft)	0.57	2.01	0.18
Conv. Total (cfs)	5180.2	Conv. (cfs)	301.5	4860.8	17.9
Length Wtd. (ft)	45.50	Wetted Per. (ft)	20.76	33.38	6.48
Min Ch El (ft)	830.13	Shear (lb/sq ft)	0.34	1.19	0.10
Alpha	1.19	Stream Power (lb/ft s)	618.17	0.00	353.75
Frctn Loss (ft)	0.43	Cum Volume (acre-ft)	0.02	0.06	0.00
C & E Loss (ft)	0.05	Cum SA (acres)	0.03	0.03	0.00

Plan: Default Scenario Unnamed Ck 1 Olsen R1 RS: 22269 Profile: 100 Yr

E.G. Elev (ft)	833.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.96	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	832.33	Reach Len. (ft)			
Crit W.S. (ft)	832.59	Flow Area (sq ft)	27.14	47.58	0.48
E.G. Slope (ft/ft)	0.017268	Area (sq ft)	27.14	47.58	0.48
Q Total (cfs)	508.00	Flow (cfs)	99.22	407.96	0.82
Top Width (ft)	72.25	Top Width (ft)	41.84	28.18	2.22
Vel Total (ft/s)	6.76	Avg. Vel. (ft/s)	3.66	8.57	1.73
Max Chl Dpth (ft)	2.64	Hydr. Depth (ft)	0.65	1.69	0.21
Conv. Total (cfs)	3865.9	Conv. (cfs)	755.1	3104.5	6.3
Length Wtd. (ft)		Wetted Per. (ft)	41.87	28.56	2.26
Min Ch El (ft)	829.69	Shear (lb/sq ft)	0.70	1.80	0.23
Alpha	1.35	Stream Power (lb/ft s)	403.36	0.00	128.42
Frctn Loss (ft)	0.57	Cum Volume (acre-ft)			
C & E Loss (ft)	0.02	Cum SA (acres)			