

Client Name: FPL Page 1 of 157Project Name: PORT EVERGLADES MODERNIZATION Project No.: 174101Calculation Title: POST-DEVELOPMENT STORM WATER MANAGEMENT PLANCalculation No./File No.: 52.5406.1101.03Verification Method: ☒ Check and Review ☐ Alternate Calculations

Objective THE OBJECTIVE IS TO DEVELOP A POST-DEVELOPMENT SITE STORM WATER MANAGEMENT SYSTEM FOR THE FUTURE PLANT WHICH MEETS THE REQUIREMENTS OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT.

Unverified Assumptions Requiring Subsequent Verification

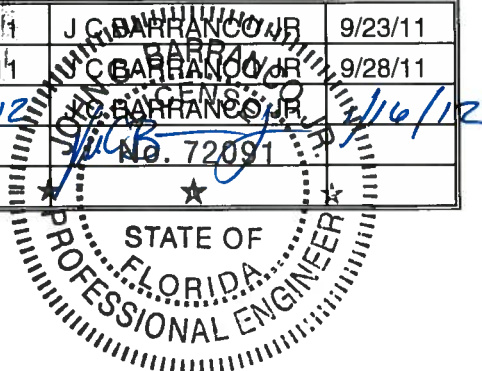
No.	Assumption	Verified By	Date
NA	NONE	NA	NA

Refer to Page NA of this calculation for additional assumptions.**This Section Used for Software-Generated Calculations**Program Name/Number: TRIMBLE TERRAMODEL; Version: 10.43; 8.00
HYDROCADStandard B&V Application Used? ☒ Yes ☐ No

If no, list approved deviation permit number below and attach approved deviation permit.

Review and Approval

Rev	Prepared By	Date	Verified By	Date	Approved By	Date
0	D L WILLIAMS	9/22/11	J C BARRANCO JR	9/23/11	J C BARRANCO JR	9/23/11
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Owner: FPL
Project: Port Everglades Modernization
Project No: 174101
File No:52.5406.1101.03 Rev2
Title: Post-Development Storm Water
Management Plan

Prepared By: D L Williams
Date: 1/13/2012
Verified By: *YB*
Date: *1/16/12*
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1.0 Purpose

The Florida Power & Light Company (FPL) is proposing to modernize their existing Port Everglades Plant Units 1 - 4 in Broward County, Florida, to a new more efficient facility. The project certification area covers 57.04 acres. The objective of these calculations is to develop a post-development site stormwater management system for the future power plant which meets the requirements of the South Florida Water Management District (SFWMD).

2.0 References

1. South Florida Water Management District, Environment Resource Permit Information Manual, Volume IV, September 2011
2. Florida Power & Light Drawing PPE1-COO12-ZZ for Aerial Topographic Survey With Contours, Sheet 1, Rev 1
3. Florida Power & Light Drawing PPE1-COO12-ZZ for Aerial Topographic Survey With Contours, Sheet 2, Rev 1
4. Florida Power & Light, "Site Drainage Plan," Port Everglades Plant and Terminal Figure II-12a
5. Florida Power & Light, "Site Drainage Plan," Port Everglades Plant and Terminal Figure II-12b
6. Florida Power & Light, "Site Drainage Plan," Port Everglades Plant and Terminal Figure II-12c
7. Florida Power & Light, "Site Drainage Plan," Port Everglades Plant and Terminal Figure II-12d
8. Black & Veatch Drawing 174101-DS-0001 for Site - Arrangements Overall Site Plot Plan, Rev 0
9. Trimble Terramodel version 10.43
10. HydroCAD, HydroCAD Software Solutions, LLC, version 8.00
11. Black & Veatch Calculation, 52.5406.1101.01, "Port Everglades Pre-Development Storm Water Analysis"
12. Florida Department of Environmental Protection (FDEP) LABINS Database for Tidal Information

3.0 Conclusions

The future site storm water management system will include two dry detention ponds with outfall structures. Basin 4 is a small vegetative area which discharges directly into the north canal via overland flow. Sub-basin SB-2B discharges to the south canal via overland flow. Details are summarized below:

PORT EVERGLADES PLANT STORM WATER MANAGEMENT SYSTEM SUMMARY								
DETENTION AREA / SW BASIN	SW DISCHARGE POINT	POND AREA (ACRE)	POND DEPTH (FT)	TOTAL POND CAPACITY (AC-FT)	MAX DESIGN DISCHARGE RATE (CFS)	MAX ALLOWABLE DISCHARGE RATE (CFS)	TREATMENT VOLUME (AC-FT)	24HR TREATMENT DISCHARGE (AC-FT / Day)
POND 1	NORTH CANAL	3.19	5.90	16.331	80.51	98.21	2.924	1.304
BASIN 4	NORTH CANAL	-	-	-	2.88		-	-
POND 2	SOUTH CANAL	1.18	5.40	5.228	67.02	220.36	1.488	0.564
SB-2B	SOUTH CANAL	-	-	-	7.21		-	-
TOTAL	-	4.37	-	21.559	157.62	318.57	4.412	1.868
REQUIRED	-	-	-	-	-	-	4.359	-
ALLOWED	-	-	-	-	-	-	-	2.377

4.0 Design Methodology

The existing site conditions regarding storm water runoff and discharge were analyzed in a previous Black & Veatch calculation record (REF 11). This information was then used in determining the necessary Storm Water Management System (SWMS) for post-development plant operations. The post-development drainage basins were mapped in Terramodel (REF 9) to determine new basin areas. These areas and the corresponding National Resources Conservation Service (NRCS) curve numbers were input into HydroCAD (REF 10) with which analyses were performed using the Santa Barbara Urban Hydrograph (SBUH) to design necessary dry detention ponds and outfall structures to facilitate storm water treatment volumes and meet discharge volume and rate criteria as required in the SFWMD Environmental Resource Permit (ERP) Information Manual Volume IV, Basis of Review (BOR) (REF 1).



5.0 Assumptions

NONE

6.0 Definitions of Units and Constants

$El_{MHHW} := 2.08\text{ft}$ Elevation of the local Mean High High Water level according to the Florida Department of Environmental Protection (FDEP) LABINS Database (REF 12)

$Area_{SWMS} := 57.04\text{acre}$ Area covered by Site Certification Boundary

$Area_{Pervious} := 14.74\text{acre}$ Area of impervious space onsite

$Area_{Impervious} := 26.55\text{acre}$ Area of pervious space onsite

$Area_{Water} := 13.65\text{acre}$ Area of water surface onsite

$Area_{Roof} := 2.10\text{acre}$ Onsite roof surface area used for water quality calculation.

$WQ_{Dry.Reduction.Factor} := 0.75$ Dry Detention Water Quality Treatment Volume Reduction

CN = NRCS Curve Number



7.0 Analysis

General Drainage Design Criteria

Applicable Regulations:

The project is located in Port Everglades, FL and therefore the storm water management system (SWMS) is governed by the Florida Department of Environmental Protection (FDEP) regulations for Storm Water Discharge (Chapter 62-25, F.A.C.) and Environmental Resource Permitting (ERP) (Chapter 62-330, F.A.C.). According to these regulations, the rules of the local water management district are adopted by reference for FDEP ERP requirements. The South Florida Water Management District (SFWMD) oversees projects in Broward County. Therefore, the SWMS for this project has been designed to meet or exceed the criteria set forth in the SFWMD ERP Information Manual, Volume IV (REF 1).

Rainfall Depth, Duration, and Distribution:

The design rainfall depths for the project site have been obtained from the SFWMD (REF 1, Surface Water Management Design Aides). The rainfall depths are summarized in Table 1 below. The rainfall maps are provided in Appendix 1 of this calculation record. Storm events were modeled using HydroCAD analysis software (REF 10). The SFWMD 24-hour rainfall distribution has been used to develop the 24-hour storm event hydrograph. The SFWMD 72-hour rainfall distribution has been used to develop the 72-hour storm event hydrograph. The site is located within an urbanized area. Therefore, the Santa Barbara Unit Hydrograph (SBUH) has been used in the analysis to more accurately model the site conditions.

Table 1

Storm Event	Design Purpose	Depth (in)
24HR - 5 YR	Minimum Road Crown Elevation	7.4
72HR - 25 YR	Allowable Discharge / Minimum Perimeter Berm Elevation	14.3
72HR - 100YR	Minimum Finished Floors Elevation	17.5

Site Soil Conditions:

Site soil conditions were obtained from the National Resources Conservation Service (NRCS) web soil survey which is provided in Appendix 2. The power block area of the site and some surrounding areas are classified as an urban soil. The areas north, east, and south of the power block which border the canals and extend to Eisenhower Blvd. are composed of Udortents, marly-substratum-Urban land complex and have a hydrologic soil rating of A. Group A hydrologic soil groups are considered to have a high infiltration and low runoff potential when thoroughly wet. These soils are typically deep, well drained to excessively drained sands or gravelly sands.

Due to the limitations of distance between grade elevations and ground water levels and in order to provide a more conservative SWMS design the site soil water storage capacity is considered to be negligible. Also, to provide a more conservative design hydrologic soil groups will be modeled as class B soils.



Tailwater:

The site has historically discharged into the canal south of the power block. This canal discharges into the intracoastal waterway. There are two tide stations which were referenced for the tailwater elevations. Tide station 872-2951, located near the mouth of the north canal, and tide station 872-2956, located at a docking facility near the outflow of the south canal. The downstream tailwater boundary condition has been set at the MHHW elevation of 2.08ft (NGVD-29). This information was obtained from the FDEP LABINS database (REF 13) and is provided in Appendix 5.

Allowable Discharge Rate: (REF 1, BOR Sec 6)

The maximum allowable storm water discharge rate for the proposed site is set as the value obtained from a model analysis of the pre-development site discharge rate for a 72-hour / 25-year storm event. Post-development discharge rates will be at or below this maximum value.

Water Quality:

The proposed SWMS will provide water quality treatment for the project site according to the regulatory criteria set forth by the SFWMD. The criteria requires that water quality treatment be met for a storm water volume that is the greater of one inch over the project area of 2.5 inches times the percentage of imperviousness on site (excluding roof areas). Also, because the site is an industrial site a dry pretreatment volume of one half inch is required. (REF 1, BOR Sec 5)



Post-Development Conditions

Project Description:

The proposed project will begin with the demolition of the existing plant and plant support facilities. A new plant and support infrastructure will be built at the site. A SWMS will be constructed as part of the proposed infrastructure. The SWMS will provide onsite water quality (WQ) treatment and flood attenuation.

The proposed SWMS for the new plant facility has been conceptualized as two basins which collect runoff in two unique dry detention areas with outfall structures which will provide WQ treatment. Also, a third basin has been proposed which will remain in its current condition and discharge via overland flow to the north canal. WQ treatment for the entire site will be provided for in the two dry detention areas. A land use summary for the proposed site is provided below in Table 2. Runoff will be treated and then discharged into either the north (intake canal) or south (discharge canal) canal at a rate less than the allowable (pre-development) discharge rate. A more detailed description of each of these basins, proposed land use assumptions, and the proposed WQ treatment method is presented below. A post-development basin map has been provided in Appendix 4 .

Table 2

Site Land Use Summary					
Basin	Land Classification				Total Area (acre)
	Pervious (acre)	Impervious (acre)	Building (acre)	Water (acre)	
Basin 1	12.43	16.24	1.55	6.56	36.78
Basin 2	1.93	10.00	0.55	7.09	19.57
Basin 4	0.38	-	-	-	0.38
ROAD/DOCK	-	0.31	-	-	0.31
Total	14.74	26.55	2.10	13.65	57.04



Basin Summary

Basin 1:

Basin 1 is composed of areas which discharge runoff to the north dry detention pond (SB-1POND). The basin contains 30.22 acres of onsite land which contributes to the SWMS, 6.56 acres of the north canal surface, and 2.00 acres of offsite areas which contribute runoff to the onsite SWMS. The areas onsite which contribute runoff to the SWMS are proposed to include the power block area and supporting equipment, fuel storage tank, fire response equipment and storage, auxiliary boiler, air compressors and receivers, a portion of the demineralized water tank, dry storage, buildings near the entrance road, plant roads, open space, existing fuel gas yard, existing administration building, and the north dry detention pond.

The basin varies in elevation from 3.10 to 18.5-ft NGVD29. Because of the critical importance of the power block area to plant operations the concrete pads and structure areas within the units have been set at 18.5-ft NGVD29 for modeling purposes and are based on existing site conditions.

The basin has been further divided according to slope of grade and common drainage points into twelve onsite sub-basins and three offsite sub-basins. These sub-basins are summarized in Table 3 and Table 4 below.

Table 3

SITE - STORM WATER MANAGEMENT BASINS INFORMATION			
PROJECT BASIN	BASIN AREA (acre)	SWMS CONTRIBUTING AREA (acre)	DESCRIPTION
BASIN 1	36.78	30.22	SB-1A: POWER BLOCK
			SB-1B: NORTH DETENTION POND, PLANT ROAD, OPEN SPACE
			SB-1C: FUEL STORAGE TANK
			SB-1D: FIRE PUMP & TANK, AUX BOILER
			SB-1E: AIR COMPRESSORS & RECEIVERS, BUILDING
			SB-1F: DEMIN TANK & TRAILER PARKING
			SB-1G: DRY STORAGE, BUILDING, OPEN SPACE
			SB-1H: GAS COMPRESSOR AREA
			SB-1I: DRIVEWAY AREA SOUTHWEST OF POWERBLOCK
			SB-1J: ADMINISTRATION BUILDING AREA WEST OF POWERBLOCK
			SB-1K: EXISTING FUEL GAS YARD
			SB-1CANAL: NORTH CANAL
OFFSITE BASINS CONTRIBUTING TO ONSITE RUNOFF INFORMATION			
PROJECT BASIN	BASIN AREA (acre)	SWMS CONTRIBUTING AREA (acre)	DESCRIPTION
OFFSITE BASIN 1	2.00	2.00	OSB-1A: GAS GENERATORS
			OSB-1B: DRIVEWAY AREA NORTH OF SUB BASIN 1G
			OSB-1C: OCTAGONAL TANK FARM



Table 4

Post-Development Basin 1 Areas					
Onsite					
Basin	Area (ac)	CN	ELEV. MAX (ft. NGVD29)	ELEV. MIN (ft NGVD29)	AVG Slope (%)
SB-1A	8.25	98	18.5	16.3	-
SB-1B	9.39	73	11.5	9.0	0.48
SB-1C	1.76	94	12.0	10.7	0.51
SB-1D	1.48	98	14.0	10.9	0.65
SB-1E	0.97	98	15.0	11.5	1.17
SB-1F	0.48	88	18.5	15.5	1.87
SB-1G	1.38	94	16.5	13.9	1.00
SB-1H	1.77	98	14.8	14.2	0.20
SB-1I	0.30	98	16.2	13.1	1.75
SB-1J	0.75	98	14.1	12.3	0.68
SB-1K	0.50	98	16.0	15.4	0.37
SB-1CANAL	6.56	-	2.08	2.08	-
SB-1POND	3.19	100	9.0	3.1	-
TOTAL	36.78	-	-	-	-
Offsite					
Basin	Area (ac)	CN	ELEV. MAX (ft. NGVD29)	ELEV. MIN (ft NGVD29)	AVG Slope (%)
OSB-1A	1.12	98	17.5	17.4	-
OSB-1B	0.34	98	17.3	15.7	0.52
OSB-1C	0.54	98	14.7	13.5	-
TOTAL	2.00	-	-	-	-
COMBINED NET	38.78				

Storm water runoff from this basin primarily collects in a series of local inlets which convey runoff to the north dry detention pond, however the sub-basin (SB-1B) immediately surrounding the dry detention area conveys water via overland flow to the detention pond.

The runoff from Basin 1 will collect in a dry detention pond (SB-1POND) located north of the the power block and east of the the north canal (SB-1CANAL). The dry detention pond will cover an area of 3.19 acres, have a depth of 5.90-ft with side slopes at a 4:1 grade. The proposed dry detention pond will provide 2.924 ac-ft of WQ treatment volume, have a maximum capacity of 16.331 ac-ft, and limit the discharge rate to a maximum of 80.51 cfs. The maximum daily WQ discharge volume is limited to 1.304 ac-ft.

The control structure for Basin 1 has been conceptualized as a 6-ft sharp crested rectangular weir set at 6.10-ft NGVD29, a sharp crested 100 degree "V-notch" weir set at 4.30-ft NGVD29, and three 3-in circular bleeder orifices set at 3.10-ft NGVD29. In concept the control structure will discharge runoff to three 36-in diameter culverts with an inlet invert set at 3.10-ft NGVD29 and an outlet invert set at 2.08-ft NGVD29.



Basin 2:

Basin 2 contains the areas which generally discharge runoff to the south dry detention pond (SB-2POND), sub-basin SB-2B discharges directly via overland flow to the south canal (SB-2CANAL). The basin contains 12.48 acres of onsite land which contribute runoff to the SWMS, 7.09 acres of the south canal surface, and 1.17 acres of offsite land which discharges runoff into the site. The areas onsite which contribute runoff to the SWMS are proposed to include aggregate open space, 0.55 acres of the demineralized water storage tank, a portion of the entrance road, and the south dry detention pond.

The basin varies in elevation from 3.10 to 17.0-ft NGVD29. For modeling purposes the elevation of the demineralized water storage tank pad has been set at 11.0-ft NGVD29.

The basin has been further divided according to the slope of grade and common drainage points into four onsite sub-basins and one offsite sub-basin. These basins are summarized in Table 5 and Table 6 below.

Table 5

SITE - STORM WATER MANAGEMENT BASIN 2 INFORMATION			
PROJECT BASIN	BASIN AREA (acre)	SWMS CONTRIBUTING AREA (acre)	DESCRIPTION
BASIN 2	19.57	12.48	SB-2A: CONSTRUCTION LAYDOWN AREA, ENTRANCE ROAD, OPEN SPACE
			SB-2B: SOUTH CANAL POWER BLOCK BANK
			SB-2CANAL: SOUTH CANAL
OFFSITE BASIN 2 CONTRIBUTING TO ONSITE RUNOFF INFORMATION			
PROJECT BASIN	BASIN AREA (acre)	SWMS CONTRIBUTING AREA (acre)	DESCRIPTION
OFFSITE BASIN 2	1.17	1.17	OSB-2A: EASTERN BORDER OF SITE CERTIFICATION BOUNDARY

Table 6

Post-Development Basin2 Areas					
Onsite					
Basin	Area (ac)	CN	ELEV. MAX (ft. NGVD29)	ELEV. MIN (ft NGVD29)	AVG Slope (%)
SB-2A	10.33	98	12.7	8.5	0.59
SB-2B	0.97	69	17.0	10.0	5.83
SB-2CANAL	7.09	-	2.08	2.08	-
SB-2POND	1.18	100	8.6	3.1	-
TOTAL	19.57	-	-	-	-
Offsite					
Basin	Area (ac)	CN	ELEV. MAX (ft. NGVD29)	ELEV. MIN (ft NVGD29)	AVG Slope (%)
OSB-2A	1.17	88	10.7	9.3	0.43
TOTAL	1.17	-	-	-	-
COMBINED NET	20.74				



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Storm water runoff from this basin primarily collects in the south dry detention pond (SB-2POND) via overland flow. Sub-basin SB-2B discharges runoff at a peak rate of 7.21 cfs to the south canal; WQ treatment for this area is facilitated in SB-2POND. The proposed dry detention pond will be located in the southeast area of the site and along the bank of the south canal (SB-2CANAL). The dry detention pond will cover 1.18 acres, have a depth of 5.40-ft with sides at a 4:1 slope. The dry detention pond will provide 1.488 ac-ft of WQ treatment volume, have a maximum capacity of 5.228 ac-ft, and limit the discharge rate to a maximum of 67.02 cfs. The combined discharge rate for this basin is 74.23 cfs. The maximum daily WQ discharge volume is 0.564 ac-ft.

The control structure for Basin 2 has been conceptualized as an 8-ft sharp crested rectangular weir set at an elevation of 6.00-ft NGVD29, a 120 degree sharp crested "V notch" weir set at 4.90-ft NGVD29, and one 3-in circular bleeder orifice set at 3.10-ft NGVD29. Conceptually the control structure will discharge runoff to two 36-in diameter culverts with an inlet invert set at 3.10-ft NGVD29 and an outlet invert set at 2.08-ft NGVD29.

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Basin 4:

Basin 4 is composed of the area north of Basin 1 along the bank of the north canal (SB-1CANAL). This basin will remain in its current condition of grass covered open space and vegetative growth. The basin slopes away from the proposed plant road and discharges runoff to the north canal via overland flow. Basin 4 does not contribute runoff to the proposed SWMS but is still considered in the comprehensive storm water analysis as having offsite discharge. WQ treatment for this basin is accommodated by the Basin 1 dry detention pond (SB-1POND).

This basin varies in elevation from 8.0 to 10.0 ft sloping northward to the north canal (SB-1CANAL) where the slope greatly increases towards the water surface. The storm water discharge rate to the canal has been determined to be 2.88 cfs. HydroCAD (REF 10) reports are available in Appendix 7. The basin is summarized in Table 9 and Table 10 below.

Table 9

SITE - STORM WATER MANAGEMENT BASIN 4 INFORMATION			
PROJECT BASIN	BASIN AREA (acre)	SWMS CONTRIBUTING AREA (acre)	DESCRIPTION
BASIN 4	0.38	0.00	NORTH CANAL BANK

Table 10

Post-Development Basin 4 Areas					
Onsite					
Basin	Area (ac)	CN	ELEV. MAX (ft. NGVD29)	ELEV. MIN (ft NGVD29)	AVG Slope (%)
B-4	0.38	61	10	8	12.83
TOTAL	0.38	-	-	-	-



Non-Contributing Basins:

This basin is composed of two areas which are not located within the plant site, but are contained within the site certification boundary. This basin is divided into two sub-basins ROAD (0.24 acres) and DOCK (0.07 acres). Sub-basin ROAD is a segment of Eisenhower Boulevard and sub-basin DOCK is a portion of the intracoastal dock facility located immediately adjacent to ROAD. These areas currently discharge runoff to offsite locations. No changes have been proposed for these areas. These areas have been considered in determining the required WQ treatment volume for the site. WQ treatment volumes are accommodated by the proposed onsite SWMS.

These areas are summarized in Table 11 and Table 12 below.

Table 11

SITE - NON-CONTRIBUTING BASINS INFORMATION			
PROJECT BASIN	BASIN AREA (acre)	SWS CONTRIBUTING AREA (acre)	DESCRIPTION
ROAD/DOCK	0.31	0.00	EISENHOWER BLVD SEGMENT, INTRACOASTAL DOCK FACILITY

Table 12

Post-Development Non-Contributing Basin Areas					
Onsite					
Basin	Area (ac)	CN	ELEV. MAX (ft. NGVD29)	ELEV. MIN (ft NGVD29)	AVG Slope (%)
ROAD	0.24	-	-	-	-
DOCK	0.07	-	-	-	-
TOTAL	0.31	-	-	-	-



Water Quality Calculations

Requirements:

The proposed SWMS will provide the required WQ treatment for the proposed project per the requirements of the SFWMD criteria. The WQ treatment criteria is based upon the greater of 1-in over the project area or 2.5-in over the percentage of imperviousness excluding the water and roof surface areas. The project is an industrial site with a high percentage of impervious area (excluding water surfaces the site is approximately 64% impervious), thus the latter criterion governs. Since the proposed project is an industrial site a dry pretreatment volume of 0.5-in is required. (REF 1, BOR Sec 5).

The proposed SWMS utilizes only dry detention for WQ treatment. Since the proposed SWMS is dry detention SFWMD regulations allow for a 25% reduction in WQ treatment volume (REF 1, BOR Sec 5). Also, dry pretreatment volume requirements are provided within the overall WQ volume (REF 1, BOR Sec 5). The required WQ treatment volumes are provided in the two proposed onsite dry detention ponds. Basin 4, ROAD, and DOCK WQ volume requirements shall be met by the two dry detention ponds.

Calculation of WQ Volume:

Required WQ treatment volumes were determined based upon SFWMD criteria (REF 1, BOR Sec 5). WQ volumes were determined using the following method:

Determine the Greater of 1-in Over Project Site or 2.5-in Over Percent Impervious:

1-in Over Site:

$$\text{Volume}_{\text{WQ.1inch}} := 1 \text{ in} \cdot (\text{Area}_{\text{SWMS}})$$

$$\text{Volume}_{\text{WQ.1inch}} = 4.753 \cdot \text{acre} \cdot \text{ft}$$



2.5-in Over Percent Impervious:

$$\text{Volume}_{\text{WQ}, 2.5\text{inch}} := 2.5\text{in} \cdot \left(\frac{\text{Area}_{\text{Impervious}}}{\text{Area}_{\text{Impervious}} + \text{Area}_{\text{Pervious}}} \right) \cdot (\text{Area}_{\text{SWMS}} - \text{Area}_{\text{Water}})$$

$$\text{Volume}_{\text{WQ}, 2.5\text{inch}} = 5.813 \cdot \text{acre} \cdot \text{ft}$$

$$\text{Volume}_{\text{WQ}, 2.5\text{inch}} > \text{Volume}_{\text{WQ}, 1\text{inch}}$$

Thus the 2.5-in times the percent impervious governs.

Reduce Required WQ Volume By 25% for Dry Detention:

$$\text{Volume}_{\text{WQ}, \text{Required}} := \text{WQ}_{\text{Dry.Reduction.Factor}} \cdot \text{Volume}_{\text{WQ}, 2.5\text{inch}}$$

$$\text{Volume}_{\text{WQ}, \text{Required}} = 4.359 \cdot \text{acre} \cdot \text{ft}$$

Thus, the required WQ treatment volume for the proposed site SWMS is 4.359 ac-ft.

Calculate Maximum WQ Treatment Volume Discharge Per 24 Hours:

The SFWMD also requires that no more than 0.5-in of the WQ treatment volume be discharged in a 24 hour period (REF 1, BOR Sec 7.2a). The method of calculation is shown below:

$$\text{Volume}_{24\text{HR}, \text{MaxDischarge}} := 0.5\text{in} \cdot \text{Area}_{\text{SWMS}}$$

$$\text{Volume}_{24\text{HR}, \text{MaxDischarge}} = 2.377 \cdot \text{acre} \cdot \text{ft}$$

Thus a maximum of 2.377 ac-ft of WQ treatment volume may be released in a 24 hour period of time.



Detention Pond Design:

Dry detention ponds with outfall structures are the proposed mechanisms by which WQ treatment and flood attenuation will be facilitated. The dry detention areas and outfall mechanisms have been designed according to the requirements of the SFWMD (REF 1, BOR Sec. 5, 6, & 7). The dry detention ponds will have bottom elevations set approximately 1.00-ft above the ground water level (GWL), taken as the local MHHW level of 2.08-ft NGVD29, as determined from tidal information (Appendix 5) acquired from the FDEP LABINS Database (REF 13).

The proposed dry detention ponds were designed using HydroCAD software (REF 10). The previously described site basins information were input into HydroCAD to develop the runoff volume and rate information needed to size the ponds. The ponds were input as prismatic in shape with bottom length and width dimensions. The ponds were set to a depth determined from local grade elevations and GWL elevation. SB-1POND was set to a depth of 5.90-ft and SB-2POND was set to 5.40-ft deep. The elevation of the pond bottoms are set at 3.10-ft NGVD29. The sides of the ponds are sloped to 4:1 per SFWMD requirements (REF 1, BOR Sec. 7). The bottom dimensions of the ponds were altered through iterations until a size was reached which met volumetric and discharge requirements as well as the desire to conserve site land for future development.

Pond discharge structures were designed to provide WQ treatment volumes and discharge rates which meet or exceed the requirements of the SFWMD (REF 1, BOR).

A summary of the design and required WQ treatment volumes, treatment methods, and 24 hour treatment volume discharge amounts for the proposed SWMS is provided below in Table 13. More detailed information, including HydroCAD model reports are provided in Appendix 7.

Table 13

WATER QUALITY SUMMARY			
BASIN	TREATMENT METHOD	TREATMENT VOLUME (AC-FT)	24HR TREATMENT DISCHARGE (AC-FT / DAY)
BASIN 1	Dry Detention	2.924	1.304
BASIN 2	Dry Detention	1.488	0.564
TOTAL	-	4.412	1.868
REQUIRED	-	4.359	-
ALLOWED	-	-	2.377



Summary of Results

The previously described areas have been modeled in HydroCAD (REF 10) to determine the necessary SWMS mechanisms to accommodate the required WQ treatment volumes and provide discharge limitations as required by the SFWMD. The design discharge rates to the north canal, 83.39 cfs, and the south canal, 74.23, are below the maximum allowable discharge rates for the north and south canals. The total combined peak discharge rate is 157.62 cfs which is well below the maximum allowable rate of 318.57 cfs. A nodal diagram of the HydroCAD model is provided in Appendix 7. The results of the post-development model are summarized below in Table 14. Model input and output reports are provided for in Appendix 7.

Table 14

PORT EVERGLADES PLANT STORM WATER MANAGEMENT SYSTEM SUMMARY								
DETENTION AREA / SW BASIN	SW DISCHARGE POINT	POND AREA (ACRE)	POND DEPTH (FT)	TOTAL POND CAPACITY (AC-FT)	MAX DESIGN DISCHARGE RATE (CFS)	MAX ALLOWABLE DISCHARGE RATE (CFS)	TREATMENT VOLUME (AC-FT)	24HR TREATMENT DISCHARGE (AC-FT / Day)
POND 1	NORTH CANAL	3.19	5.90	16.331	80.51	98.21	2.924	1.304
BASIN 4	NORTH CANAL	-	-	-	2.88		-	-
POND 2	SOUTH CANAL	1.18	5.40	5.228	67.02	220.36	1.488	0.564
SB-2B	SOUTH CANAL	-	-	-	7.21		-	-
TOTAL	-	4.37	-	21.559	157.62	318.57	4.412	1.868
REQUIRED	-	-	-	-	-	-	4.359	-
ALLOWED	-	-	-	-	-	-	-	2.377



Owner: FPL
Project: Port Everglades Modernization
Project No: 174101
File No: 52.5406.1101.03 Rev2
Title: Post-Development Storm Water
Management Plan

Prepared By: D L Williams
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Verified By: *YB* 1/14/12
Date:
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Appendix



Owner: FPL
Project: Port Everglades Modernization
Project No: 174101
File No: 52.5406.1101.03 Rev2
Title: Post-Development Storm Water
Management Plan

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Date: 1/13/2012
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Date:
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Appendix 1

SITE AERIAL MAP WITH 100 YEAR FLOOD ZONES

Owner: FPL
Project: Port Everglades Modernization
Project No: 174101
File No: 52.5406.1101.03 Rev 2
Title: Post-Development Storm Water Management Plan

Prepared by: D L Williams

Date: 1/13/2012

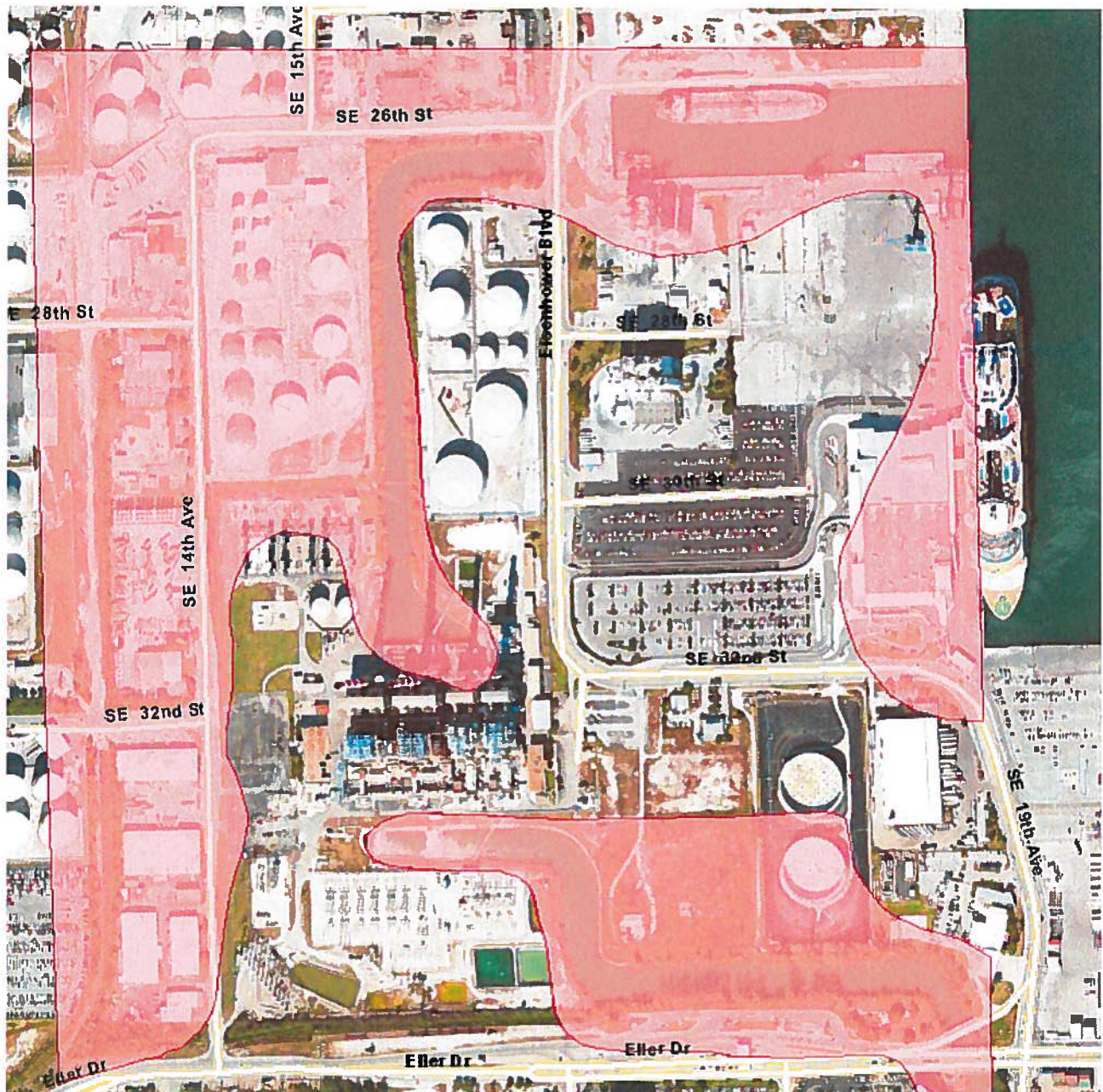
Verified by:

Date:

Page: 20 of 157

js
1/14/12

SITE AERIAL MAP WITH 100 YEAR FLOOD ZONES





Owner: FPL
Project: Port Everglades Modernization
Project No: 174101
File No: 52.5406.1101.03 Rev2
Title: Post-Development Storm Water
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Prepared By: D L Williams
Date: 1/13/2012
Verified By: *P. Williams*
Date:
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Appendix 2

RAINFALL MAPS

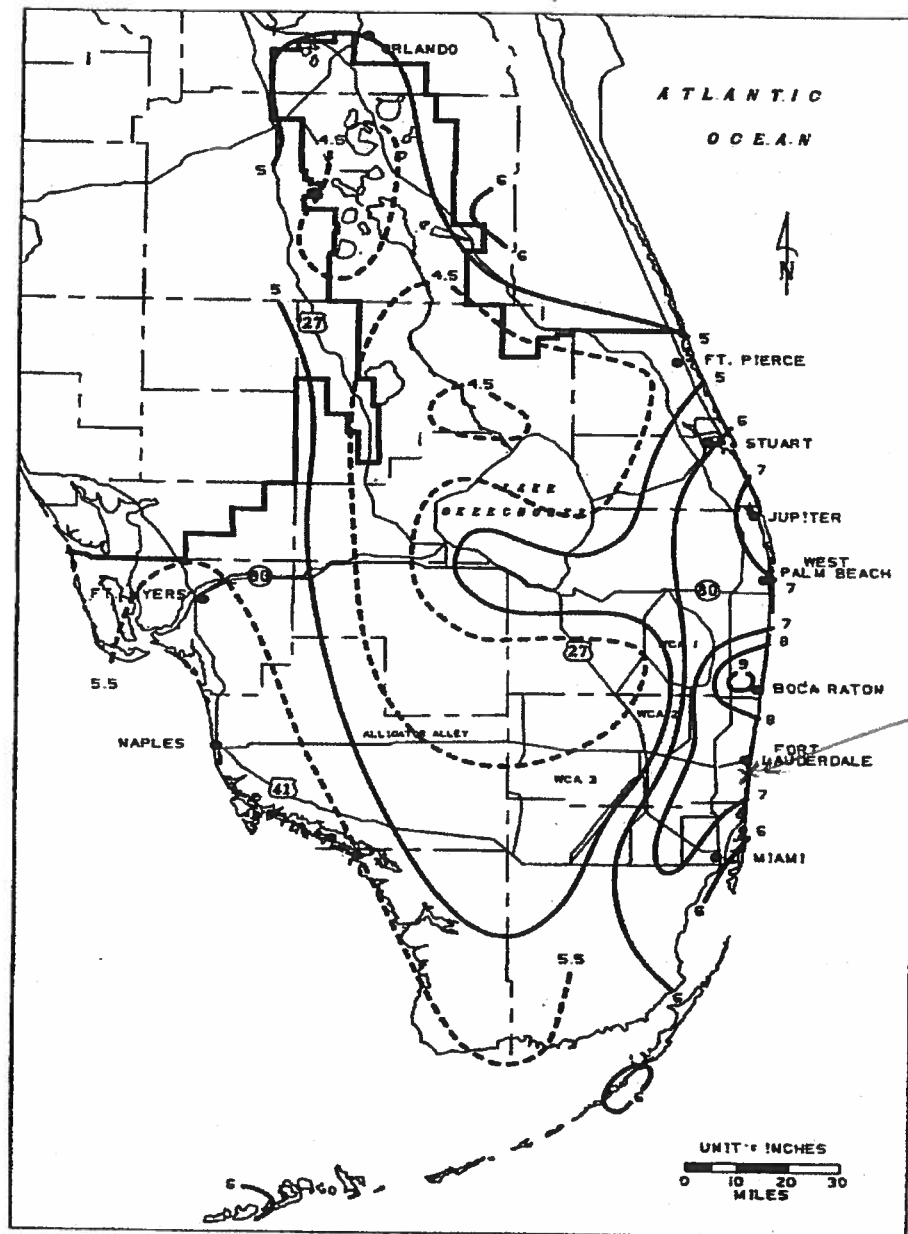


FIGURE C-3. 1-DAY RAINFALL: 5-YEAR RETURN PERIOD

Figure C-3

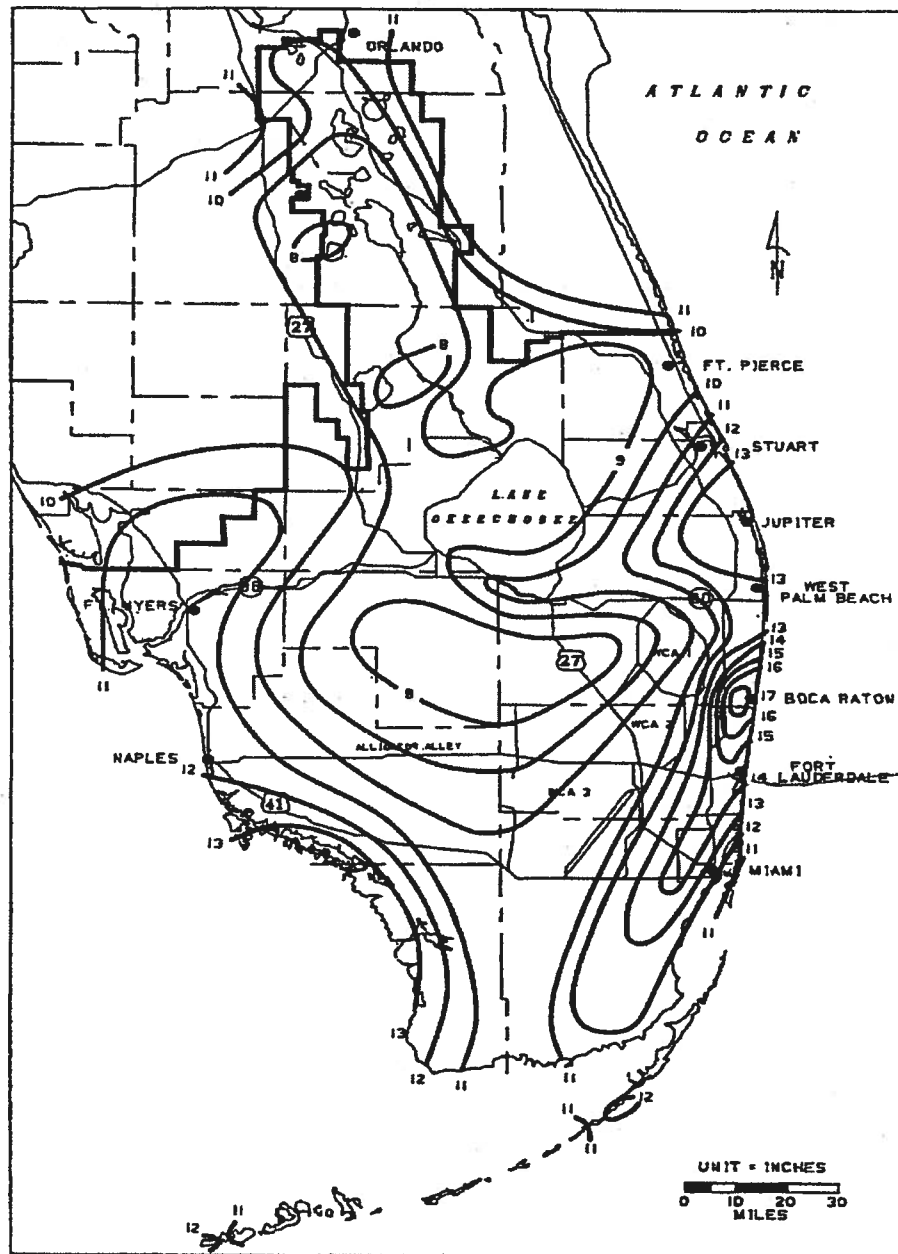


FIGURE C-8. 3-DAY RAINFALL: 25-YEAR RETURN PERIOD

C-10

Figure C-8

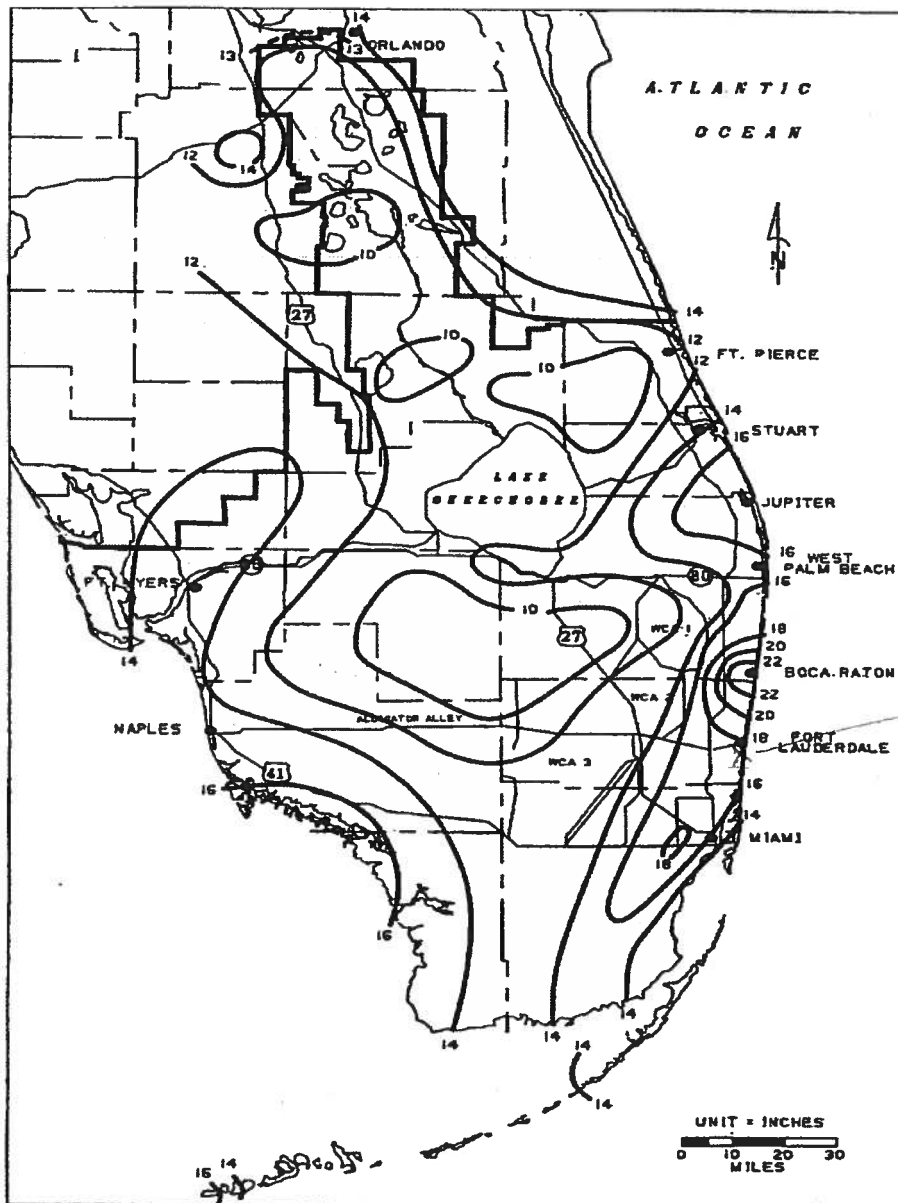


FIGURE C-9. 3-DAY RAINFALL: 100-YEAR RETURN PERIOD

C-11

Figure C-9



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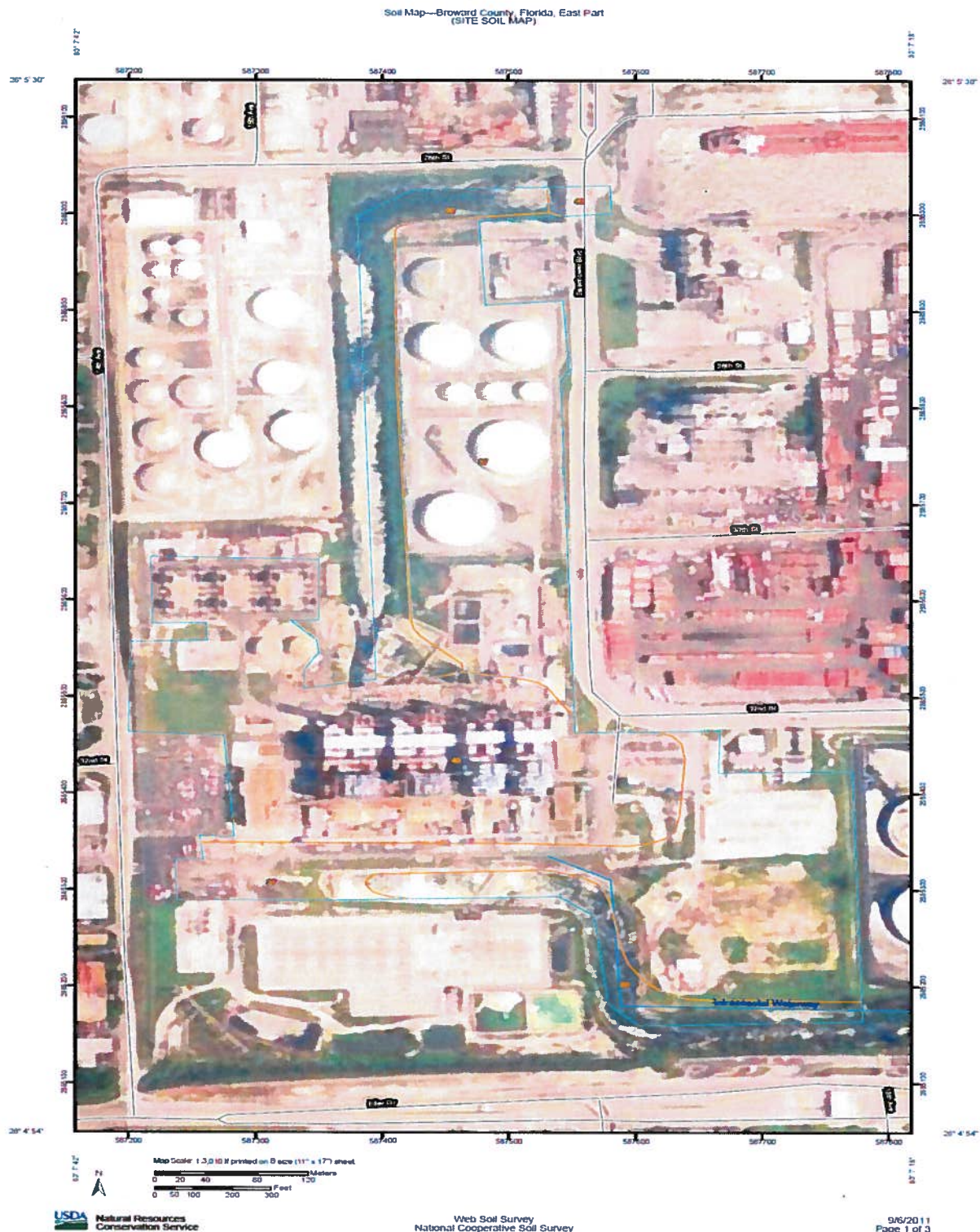
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Appendix 3

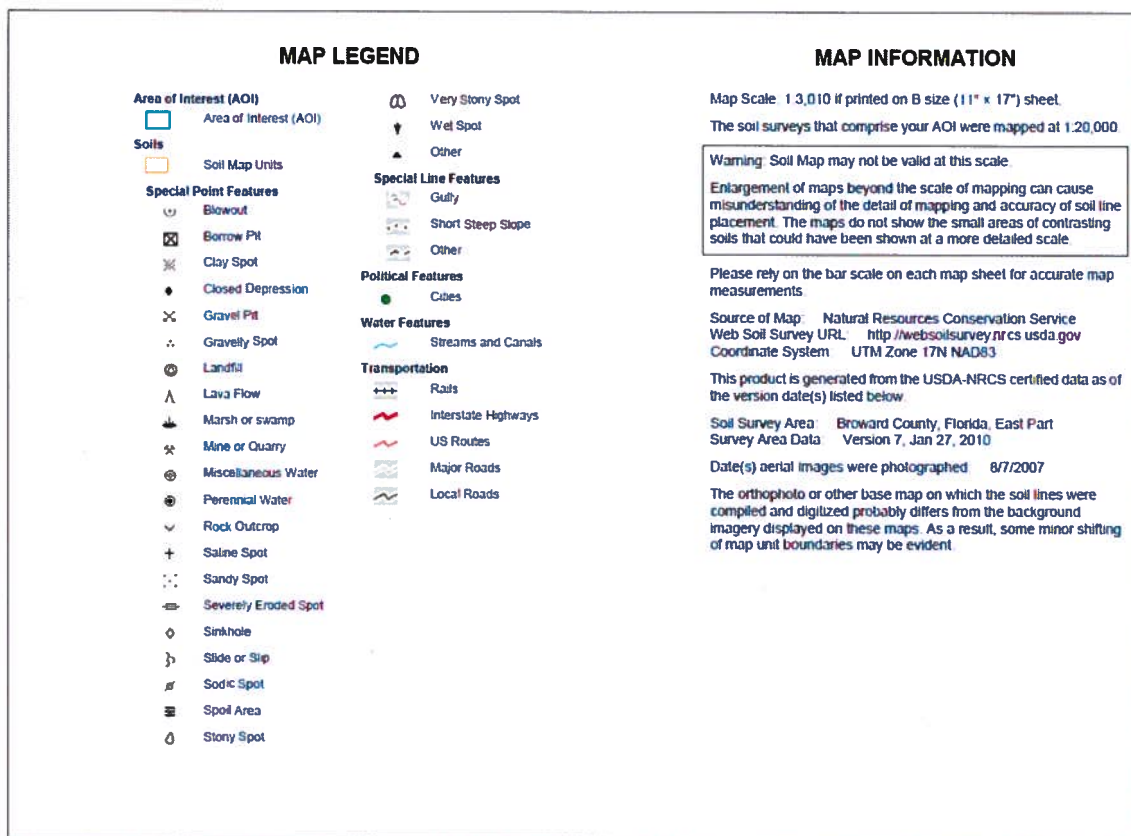
NRCS SOIL MAP

Owner: FPL
Project: Port Everglades Modernization
Project No: 174101
File No: 52.5406.1101.03 Rev 2
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Prepared by: D L Williams
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Soil Map-Broward County, Florida, East Part
 (SITE SOIL MAP)



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Date: *1/16/12*
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Soil Map—Broward County, Florida, East Part

SITE SOIL MAP

Map Unit Legend

Broward County, Florida, East Part (FL606)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
37	Udorthents, marly substratum-Urban land complex	27.7	51.0%
40	Urban land	19.1	35.1%
99	Water	7.5	13.9%
Totals for Area of Interest		54.4	100.0%



Owner: FPL
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Prepared By: D L Williams
Date: 1/13/2012
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Date: *1/14/12*
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Appendix 4

OPERATION STORM WATER MANAGEMENT PLAN DRAWING



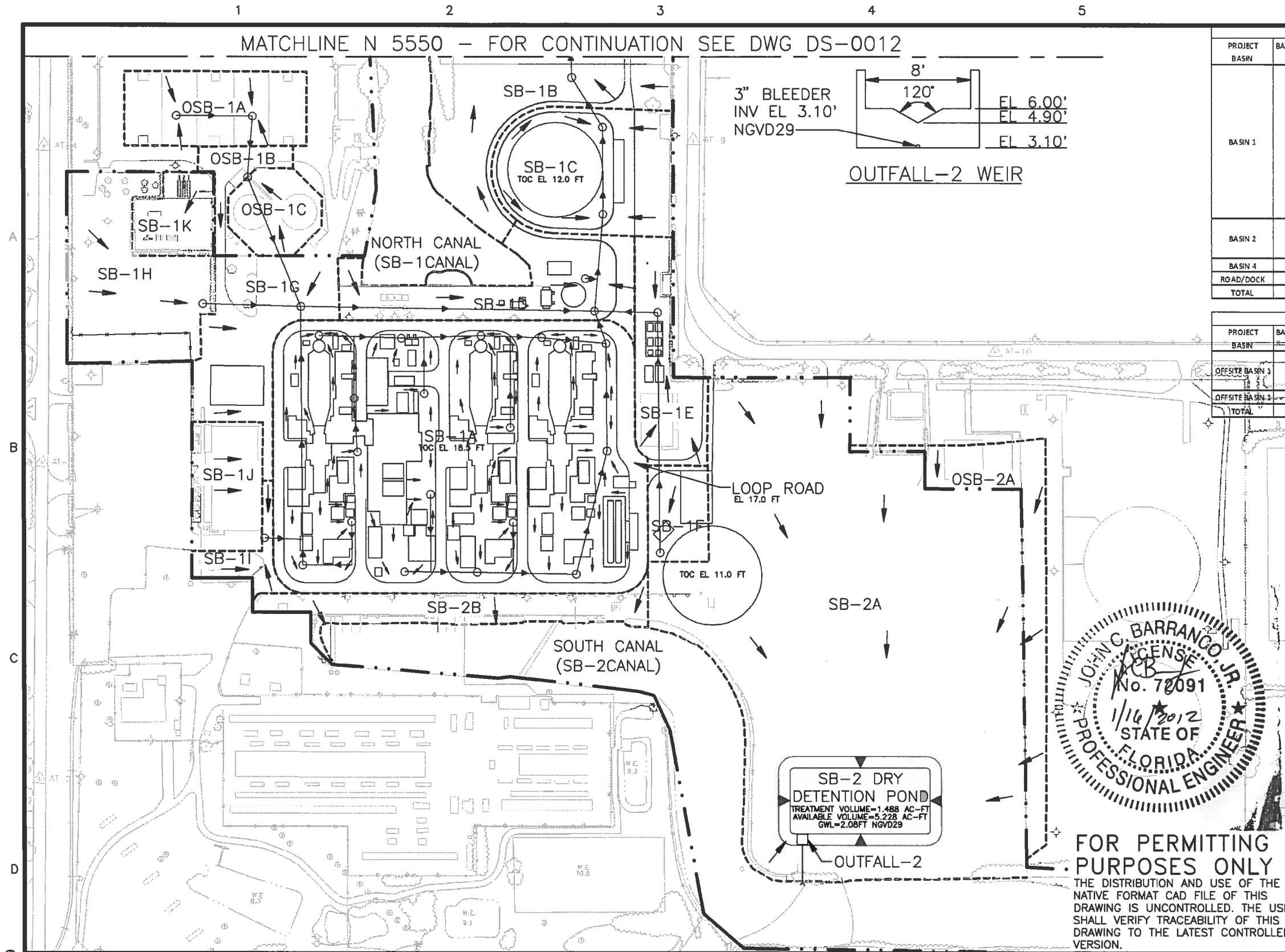
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Project: Port Everglades Modernization
Project No: 174101
File No: 52.5406.1101.03 Rev2
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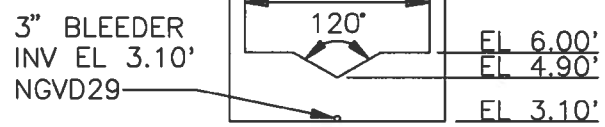
Reference Black & Veatch Drawing 174101-DS-0011 Rev 0

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MATCHLINE N 5550 - FOR CONTINUATION SEE DWG_DS-0012

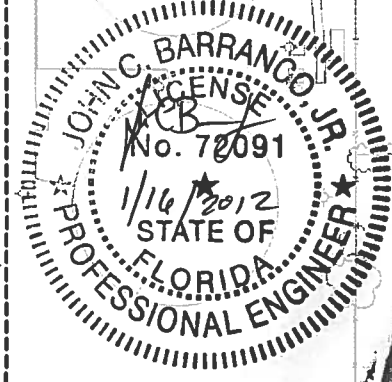


OUTFALL-2 WEIR

LOOP ROAD
EL. 17.0 FT

SB-2 DRY
DETENTION POND
TREATMENT VOLUME=1,488 AC-FT
AVAILABLE VOLUME=5,228 AC-FT
GWL=2.08FT NGVD29

OUTFALL-2



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VERSION.

SITE - STORM WATER MANAGEMENT BASINS INFORMATION			
PROJECT BASIN	BASIN AREA (acre)	SWMS CONTRIBUTING AREA (acre)	DESCRIPTION
BASIN 1	26.79	30.22	SB-1A: POWER BLOCK
			SB-1B: NORTH DETENTION POND, PLANT ROAD, OPEN SPACE
			SB-1C: FUEL STORAGE TANK
			SB-1D: FIRE PUMP & TANK, AUX BOILER
			SB-1E: AIR COMPRESSORS & RECEIVERS BUILDING
			SB-1F: DEMIN TANK & TRAILER PARKING
			SB-1G: DRY STORAGE BUILDING, OPEN SPACE
			SB-1H: GAS COMPRESSOR AREA
			SB-1I: DRIVEWAY AREA SOUTH-WEST OF POWER BLOCK
			SB-1J: ADMINISTRATION BUILDING AREA WEST OF POWER BLOCK
			SB-1K: EXISTING FUEL GAS YARD
			SB-1CANAL: NORTH CANAL
			SB-1CANAL: SOUTH CANAL
BASIN 2	19.57	12.45	SB-2A: CONSTRUCTION LAYDOWN AREA, ENTRANCE ROAD, OPEN SPACE
BASIN 4	0.35	0.00	SB-2CANAL: SOUTH CANAL
ROAD/DOCK	0.31	0.00	SB-2CANAL: NORTH CANAL
TOTAL	57.04	42.70*	*CONTRIBUTING AREA IS NOT SAME AS TREATMENT AREA (43.39 AC)

OFFSITE BASINS CONTRIBUTING TO ONSITE RUNOFF INFORMATION			
PROJECT BASIN	BASIN AREA (acre)	SWMS CONTRIBUTING AREA (acre)	DESCRIPTION
OFFSITE BASIN 1	2.00	2.00	OSB-1A: GAS GENERATORS
OFFSITE BASIN 2	1.17	1.17	OSB-1B: DRIVEWAY AREA NORTH OF SUB BASIN 1G
OFFSITE BASIN 3	1.17	1.17	OSB-1C: OCTAGONAL TANK FARM
OFFSITE BASIN 4	1.17	1.17	OSB-1D: EASTERN BORDER OF SITE CERTIFICATION BOUNDARY
TOTAL	5.51	5.51	

SITE - DRY DETENTION AREA INFORMATION				
DETENTION AREA ID	TOBEL (ft - NGVD29)	TOB AREA (acre)	TOE EL (ft - NGVD29)	TOE AREA (acre)
SB-1 POND	9.00	3.19	3.10	2.35
SB-2 POND	8.50	1.18	3.10	0.76

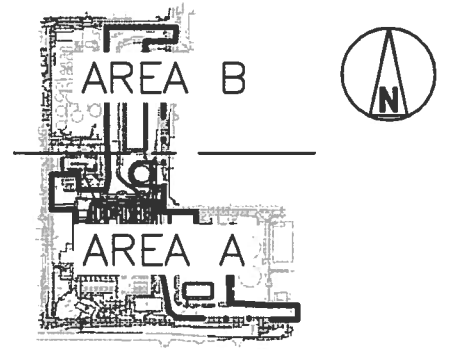
NOTES

1. ELEVATIONS ARE REPORTED AS NGVD29, SUBTRACT 1.58 TO CONVERT TO NAVD88.

LEGEND

- PROPERTY BOUNDARY
- BASIN DIVIDE
- CERTIFICATION BOUNDARY
- STORM SEWER SYSTEM

KEY PLAN



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	174101-DS-0011	0

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRN	DES	CHK	PDE	APP
0	09/JAN/12	FOR PERMITTING PURPOSES ONLY	DAS	DLW		JCB	

DESIGNER	DLW	DRAWN	SLJ
CHECKED		DATE	

OPERATION STORMWATER MANAGEMENT PLAN
AREA A

CODE	FIGURE 4.8.3-1A
AREA	



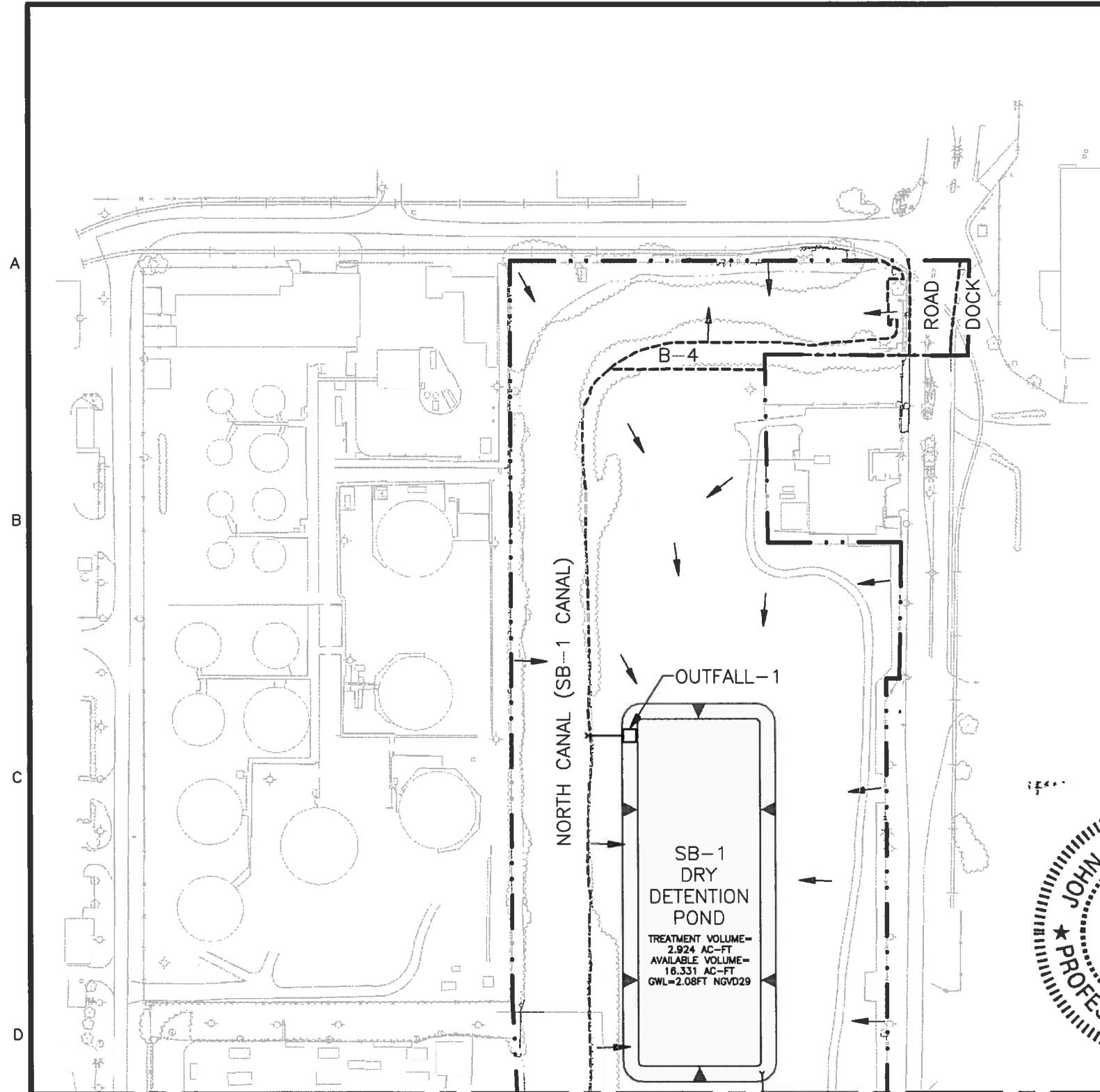
Owner: FPL
Project: Port Everglades Modernization
Project No: 174101
File No: 52.5406.1101.03 Rev2
Title: Post-Development Storm Water
Management Plan

Prepared By: D L Williams
Date: 1/13/2012
Verified By: *[Signature]*
Date: *1/14/12*
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Reference Black & Veatch Drawing 174101-DS-0012 Rev 0

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B1 1=1



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SITE - STORM WATER MANAGEMENT BASINS INFORMATION			
PROJECT BASIN	BASIN AREA (acre)	SWMS CONTRIBUTING AREA (acre)	DESCRIPTION
BASIN 1	36.75	30.22	SB-1A POWER BLOCK
			SB-1B NORTH DETENTION POND PLANT ROAD OPEN SPACE
			SB-1C FUEL STORAGE TANK
			SB-1D FIRE FIGHT & TANK, ALK BOILER
			SB-1E AIR COMPRESSORS & RECEIVERS BUILDING
			SB-1F DETENTION TANK & TRAILER PARKING
			SB-1G DR. STORAGE BUILDING OPEN SPACE
			SB-1H GAS COMPRESSOR AREA
			SB-1I DRIVEWAY AREA SOUTH-WEST OFF POWER BLOCK
			SB-1J ADMINISTRATION BUILDING AREA WEST OFF POWER BLOCK
			SB-1K EXISTING FUEL GAS -ARD
			SB-1 CANAL NORTH CANAL
BASIN 2	19.57	12.45	SB-2A CONSTRUCTION LAYDOWN AREA, ENTRANCE ROAD OPEN SPACE
			SB-2B SOUTH CANAL OFF POWER BLOCK BANK
			SB-2 CANAL SOUTH CANAL
BASIN 4	0.35	0.00	NORTH CANAL BANK
ROAD/DOCK	0.31	0.00	EISENHOWER BLVD SEGUIN - INTRACASTAL DOCK FACILITY
TOTAL	57.04	42.72	CONTRIBUTING AREA TO SITE AS TREATMENT AREA - 33.35-CFE

OFFSITE BASINS CONTRIBUTING TO ONSITE RUNOFF INFORMATION			
PROJECT BASIN	BASIN AREA (acre)	SWMS CONTRIBUTING AREA (acre)	DESCRIPTION
OFFSITE BASIN 1	2.00	2.00	OSB-1A GAS GENERATORS
			OSB-1B DRIVEWAY AREA NORTH OF SUB BASIN 1G
			OSB-1C OCTAGONAL TANK FARM
OFFSITE BASIN 2	1.17	1.17	OSB-2A EASTERN BORDER OF SITE CERTIFICATION BOUNDARY
TOTAL	3.17	3.17	

SITE - DRY DETENTION AREA INFORMATION				
DETENTION AREA ID	TOB EL (ft - NGVD29)	TOB AREA (acre)	TOE EL (ft - NGVD29)	TOE AREA (acre)
SB-1 POND	9.00	3.19	3.10	2.35
SB-2 POND	8.50	1.18	3.10	0.76

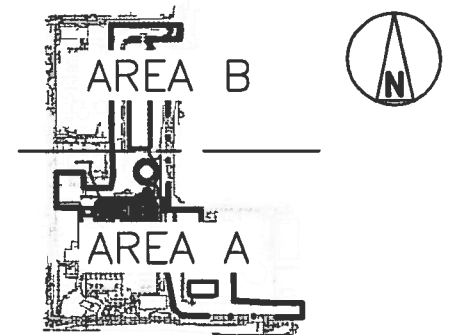
NOTES

1. ELEVATIONS ARE REPORTED AS NGVD29, SUBTRACT 1.58 TO CONVERT TO NAVD88.

LEGEND

- PROPERTY BOUNDARY
- BASIN DIVIDE
- CERTIFICATION BOUNDARY
- STORM SEWER SYSTEM

KEY PLAN



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CHECKED		DATE	

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AREA B

PROJECT	DRAWING NUMBER	REV
	174101-DS-0012	0
CODE	FIGURE 4.8.3-1B	
AREA		



Owner: FPL
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Management Plan

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Date: 1/13/2012
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Appendix 5

FDEP TIDAL INFORMATION

Owner: FPL
 Project: Port Everglades Modernization
 Project No: 174101
 File No: 52.5406.1101.03 Rev 2
 Title: Post-Development Storm Water Management Plan

Prepared by: D L Williams
 Date: 1/13/2012
 Verified by: *yes 1/16/12*
 Date:
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BENCHMARK & DATUM ELEVATIONS
 TIDE STATION NUMBER: 872-2956
 DATE: 09-21-2007

STA. NAME	BENCH MARK ELEVATIONS			
	NGVD 29 FEET	NGVD 29 METERS	NAVD 88 FEET	NAVD 88 METERS
X 235 1965	+10.84	+3.303	+9.25	+2.820
Y 235 1965	+9.47	+2.886	+7.88	+2.403
2956 A 2007	+12.18	+3.711	+10.59	+3.228
2956 B 2007	+9.67	+2.947	+8.08	+2.464
NO 3 1973	+7.70	+2.348	+6.12	+1.865
NO 4 1973	+7.71	+2.349	+6.12	+1.866
NO 5 1973	+7.63	+2.327	+6.05	+1.844

DATE: 09-21-2007
 TIDE STATION NUMBER: 872-2956
 TIDE STATION NAME: SOUTH PORT EVERGLADES FLORIDA
 TIDAL EPOCH: 1983-2001

ELEV OF TIDAL DATUMS BASED ON 1929 & 1988 DATUMS

TIDAL DATUM	NGVD 29 FEET	NGVD 29 METERS	NAVD 88 FEET	NAVD 88 METERS
MHHW	+2.08	+0.634	+0.50	+0.151
MHW	+1.97	+0.600	+0.38	+0.117
MSL	+0.73	+0.224	-0.85	-0.259
MTL	+0.73	+0.222	-0.86	-0.261
MLW	-0.51	-0.156	-2.10	-0.639
MLLW	-0.70	-0.212	-2.28	-0.695
MR =	2.48 29/ft	0.756 29/m	2.48 88/ft	0.756 88/m



Owner: FPL
Project: Port Everglades Modernization
Project No: 174101
File No: 52.5406.1101.03 Rev2
Title: Post-Development Storm Water
Management Plan

Prepared By: D L Williams
Date: 1/13/2012
Verified By: *[Signature]*
Date: 1/14/12
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Appendix 6

TERRAMODEL BASIN AREA REPORT

Owner: FPL
 Project: Port Everglades Modernization
 Project No: 174101
 File No: 52.5406.1101.03 Rev 2
 Title: Post-Development Storm Water Management Plan

Prepared by: D L Williams
 Date: 1/13/2012
 Verified by: *yes*
 Date: 1/14/12
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Trimble
 5475 Kellenburger Road
 Dayton, Ohio 45424-1099, USA
 1-937-233-8921
 Monday, December 19, 2011 11:03:45 AM

PROJECT: 174101 PORT EVERGLADES POST-DEVELOPMENT BASINS

Perimeter / Area Measurements of Selected Lines

Object Name	Layer	Perimeter Length (ft)	Enclosed Area (Sq. Ft.)
OSB-1B	C-NEW BASIN AREA	1030.65	14840.39
SB-1D	C-NEW BASIN AREA	1656.44	64643.23
SB-2B	C-NEW BASIN AREA	1816.03	42239.52
OSB-1A	C-NEW BASIN AREA	971.51	48862.38
SB-1K	C-NEW BASIN AREA	648.79	21597.36
SB-1A	C-NEW BASIN AREA	2339.76	359234.65
SB-1F	C-NEW BASIN AREA	595.18	20999.36
SB-2POND	C-NEW BASIN AREA	905.44	51476.50
SB-1CANAL	C-NEW BASIN AREA	5019.40	285806.21
B-4	C-NEW BASIN AREA	1343.16	16615.26
SB-1G	C-NEW BASIN AREA	1639.29	59907.49
SB-1H	C-NEW BASIN AREA	1167.17	77309.12
OSB-1C	C-NEW BASIN AREA	558.37	23454.47
OSB-2A	C-NEW BASIN AREA	2295.94	50876.48
SB-2A	C-NEW BASIN AREA	3215.34	450062.17
SB-1E	C-NEW BASIN AREA	1009.11	42036.42
SB-1C	C-NEW BASIN AREA	1024.43	76735.20
SB-1POND	C-NEW BASIN AREA	1600.50	139171.43
SB-1B	C-NEW BASIN AREA	3876.50	409242.39
ROAD	C-NEW BASIN AREA	426.22	10308.03
DOCK	C-NEW BASIN AREA	384.72	3053.19
SB-2CANAL	C-NEW BASIN AREA	4910.88	308942.08
SB-1I	C-NEW BASIN AREA	819.28	12907.26
SB-1J	C-NEW BASIN AREA	753.88	32541.26

Total perimeter length = 40007.99 ft
 Total enclosed area = 2622861.85 Sq. Ft.

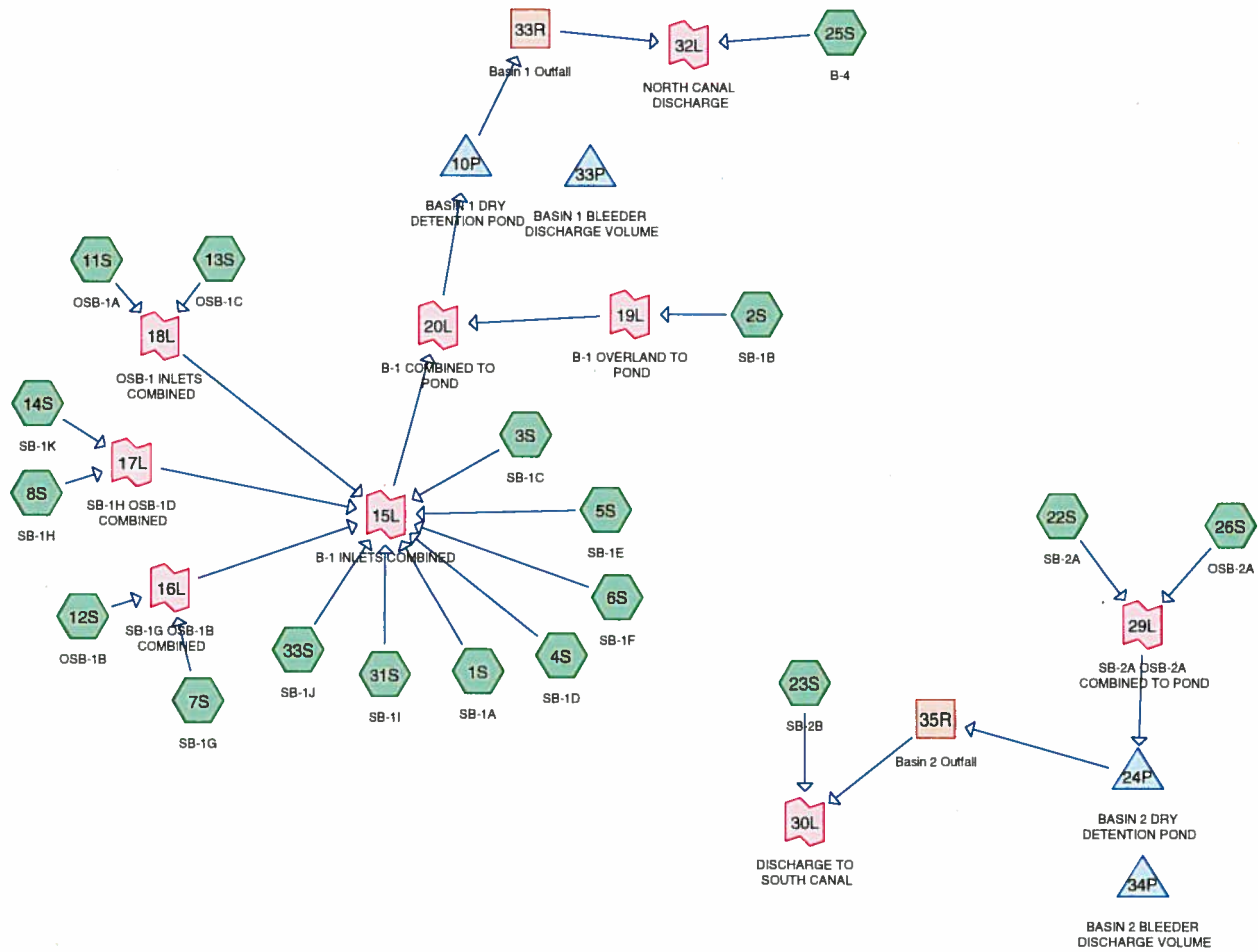


Owner: FPL
Project: Port Everglades Modernization
Project No: 174101
File No: 52.5406.1101.03 Rev2
Title: Post-Development Storm Water
Management Plan

Prepared By: D L Williams
Date: 1/13/2012
Verified By: *WJ*
Date: *1/14/12*
Page 36 of 157 *for pgs 36 to 157*

Appendix 7

HYDROCAD NODAL DIAGRAM AND OUTPUT REPORTS



Drainage Diagram for 52.5406.1101.03 Rev 2

Appendix 7

Prepared by Black & Veatch

HydroCAD® 8.00 s/n 005108 © 2006 HydroCAD Software Solutions LLC

Area Listing (all nodes)

<u>Area (acres)</u>	<u>CN</u>	<u>Description (subcats)</u>
9.060	61	>75% Grass cover, Good, HSG B (2S,7S,25S)
0.970	69	50-75% Grass cover, Fair, HSG B (23S)
2.460	88	Urban industrial, 72% imp, HSG B (3S,6S,26S)
29.383	98	Paved parking & roofs (1S,2S,3S,4S,5S,7S,8S,11S,12S,13S,14S,22S,22S,31S,33S)
4.370	100	DETENTION POND (2S,22S)
46.243		

Time span=0.00-150.00 hrs, dt=0.01 hrs, 15001 points

Runoff by SBUH method, Split Pervious/Imperv.

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

Subcatchment 1S: SB-1ARunoff Area=8.250 ac Runoff Depth=7.16"
Tc=5.0 min CN=0/98 Runoff=50.17 cfs 4.923 af**Subcatchment 2S: SB-1B**Runoff Area=12.580 ac Runoff Depth=4.41"
Flow Length=520' Tc=33.4 min CN=61/100 Runoff=25.34 cfs 4.618 af**Subcatchment 3S: SB-1C**Runoff Area=1.760 ac Runoff Depth=6.64"
Flow Length=256' Tc=4.8 min CN=62/98 Runoff=10.04 cfs 0.973 af**Subcatchment 4S: SB-1D**Runoff Area=1.480 ac Runoff Depth=7.16"
Flow Length=487' Tc=5.7 min CN=0/98 Runoff=8.80 cfs 0.883 af**Subcatchment 5S: SB-1E**Runoff Area=0.970 ac Runoff Depth=7.16"
Flow Length=297' Tc=3.6 min CN=0/98 Runoff=6.17 cfs 0.579 af**Subcatchment 6S: SB-1F**Runoff Area=0.480 ac Runoff Depth=6.02"
Flow Length=160' Slope=0.0187 '/' Tc=1.3 min CN=62/98 Runoff=2.79 cfs 0.241 af**Subcatchment 7S: SB-1G**Runoff Area=1.380 ac Runoff Depth=6.77"
Flow Length=261' Tc=2.8 min CN=61/98 Runoff=8.54 cfs 0.778 af**Subcatchment 8S: SB-1H**Runoff Area=1.770 ac Runoff Depth=7.16"
Flow Length=307' Tc=6.6 min CN=0/98 Runoff=10.22 cfs 1.056 af**Subcatchment 11S: OSB-1A**Runoff Area=1.120 ac Runoff Depth=7.16"
Tc=5.0 min CN=0/98 Runoff=6.81 cfs 0.668 af**Subcatchment 12S: OSB-1B**Runoff Area=0.340 ac Runoff Depth=7.16"
Flow Length=310' Tc=4.7 min CN=0/98 Runoff=2.09 cfs 0.203 af**Subcatchment 13S: OSB-1C**Runoff Area=0.540 ac Runoff Depth=7.16"
Tc=5.0 min CN=0/98 Runoff=3.28 cfs 0.322 af**Subcatchment 14S: SB-1K**Runoff Area=0.496 ac Runoff Depth=7.16"
Flow Length=219' Slope=0.0069 '/' Tc=2.6 min CN=0/98 Runoff=3.26 cfs 0.296 af**Subcatchment 22S: SB-2A**Runoff Area=11.510 ac Runoff Depth=7.16"
Flow Length=706' Tc=9.5 min CN=0/98 Runoff=60.85 cfs 6.868 af**Subcatchment 23S: SB-2B**Runoff Area=0.970 ac Runoff Depth=3.84"
Flow Length=120' Slope=0.0583 '/' Tc=5.4 min CN=69/0 Runoff=3.56 cfs 0.311 af**Subcatchment 25S: B-4**Runoff Area=0.380 ac Runoff Depth=2.99"
Flow Length=16' Slope=0.1283 '/' Tc=1.7 min CN=61/0 Runoff=1.19 cfs 0.095 af

Subcatchment 26S: OSB-2A

Runoff Area=1.170 ac Runoff Depth=6.02"
Flow Length=329' Tc=14.1 min CN=62/98 Runoff=4.66 cfs 0.587 af

Subcatchment 31S: SB-1I

Runoff Area=0.300 ac Runoff Depth=7.16"
Flow Length=139' Slope=0.0058 '/' Tc=1.9 min CN=0/98 Runoff=2.01 cfs 0.179 af

Subcatchment 33S: SB-1J

Runoff Area=0.747 ac Runoff Depth=7.16"
Flow Length=300' Slope=0.0100 '/' Tc=2.8 min CN=0/98 Runoff=4.87 cfs 0.446 af

Reach 33R: Basin 1 Outfall

Avg. Depth=0.65' Max Vel=7.28 fps Inflow=24.83 cfs 10.143 af
D=36.0" n=0.011 L=100.0' S=0.0102 '/' Capacity=238.83 cfs Outflow=24.83 cfs 10.143 af

Reach 35R: Basin 2 Outfall

Avg. Depth=1.04' Max Vel=8.30 fps Inflow=36.22 cfs 5.117 af
D=36.0" n=0.011 L=130.0' S=0.0078 '/' Capacity=139.64 cfs Outflow=36.21 cfs 5.117 af

Pond 10P: BASIN 1 DRY DETENTION PON

Peak Elev=6.58' Storage=9.020 af Inflow=138.20 cfs 16.166 af
Primary=24.83 cfs 10.143 af Secondary=1.30 cfs 5.842 af Outflow=26.13 cfs 15.985 af

Pond 24P: BASIN 2 DRY DETENTION POND

Peak Elev=6.96' Storage=3.498 af Inflow=65.44 cfs 7.455 af
Primary=36.22 cfs 5.117 af Secondary=0.46 cfs 2.266 af Outflow=36.68 cfs 7.383 af

Pond 33P: BASIN 1 BLEEDER DISCHARGE VO

Peak Elev=4.30' Storage=2.924 af Inflow=0.00 cfs 0.000 af
Outflow=0.74 cfs 2.830 af

Pond 34P: BASIN 2 BLEEDER DISCHARGE VO

Peak Elev=4.90' Storage=1.488 af Inflow=0.00 cfs 0.000 af
Outflow=0.31 cfs 1.448 af

Link 15L: B-1 INLETS COMBINED

Inflow=118.51 cfs 11.548 af
Primary=118.51 cfs 11.548 af

Link 16L: SB-1G OSB-1B COMBINED

Inflow=10.61 cfs 0.981 af
Primary=10.61 cfs 0.981 af

Link 17L: SB-1H OSB-1D COMBINED

Inflow=13.36 cfs 1.352 af
Primary=13.36 cfs 1.352 af

Link 18L: OSB-1 INLETS COMBINED

Inflow=10.09 cfs 0.991 af
Primary=10.09 cfs 0.991 af

Link 19L: B-1 OVERLAND TO POND

Inflow=25.34 cfs 4.618 af
Primary=25.34 cfs 4.618 af

Link 20L: B-1 COMBINED TO POND

Inflow=138.20 cfs 16.166 af
Primary=138.20 cfs 16.166 af

Link 29L: SB-2A OSB-2A COMBINED TO POND

Inflow=65.44 cfs 7.455 af
Primary=65.44 cfs 7.455 af

Link 30L: DISCHARGE TO SOUTH CANAL

Inflow=37.64 cfs 5.428 af
Primary=37.64 cfs 5.428 af

Link 32L: NORTH CANAL DISCHARGE

Inflow=24.96 cfs 10.238 af

Primary=24.96 cfs 10.238 af

Total Runoff Area = 46.243 ac Runoff Volume = 24.027 af Average Runoff Depth = 6.24"
23.18% Pervious Area = 10.719 ac 76.82% Impervious Area = 35.524 ac

Subcatchment 1S: SB-1A

Runoff = 50.17 cfs @ 11.81 hrs, Volume= 4.923 af, Depth= 7.16"

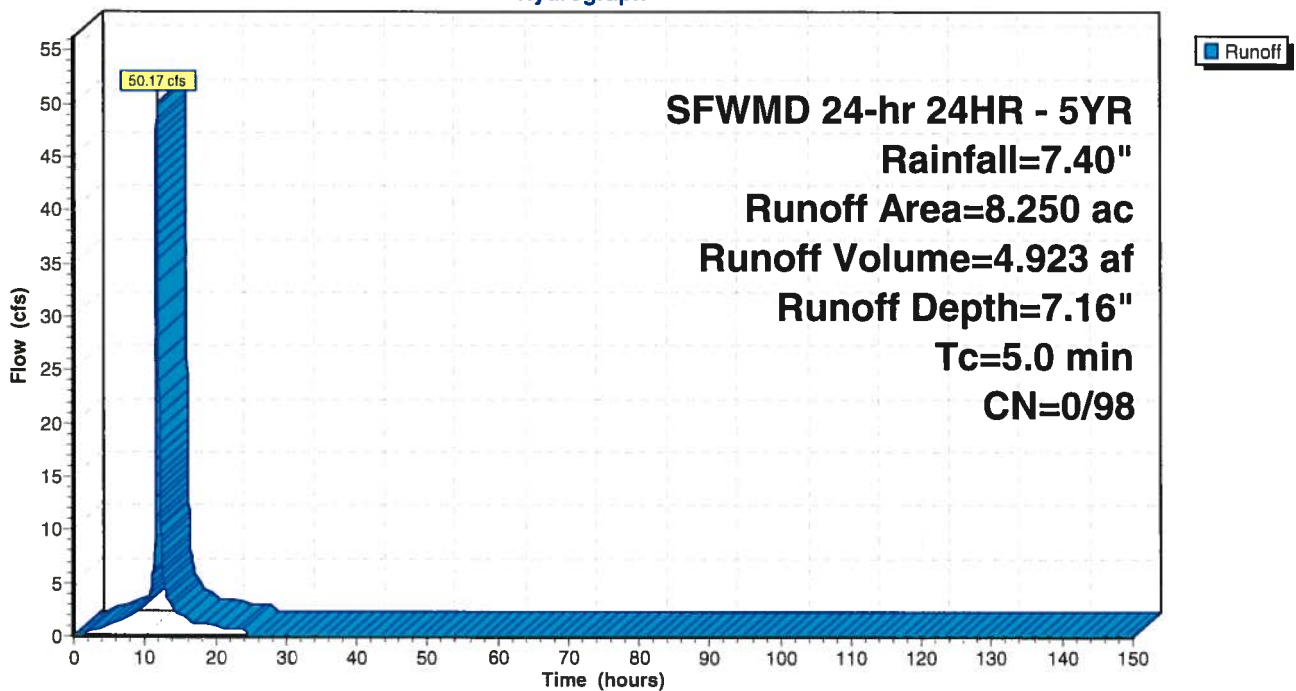
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 24-hr 24HR - 5YR Rainfall=7.40"

Area (ac)	CN	Description
8.250	98	Paved parking & roofs
8.250	98	Impervious Area

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

Subcatchment 1S: SB-1A

Hydrograph



Subcatchment 2S: SB-1B

Runoff = 25.34 cfs @ 12.00 hrs, Volume= 4.618 af, Depth= 4.41"

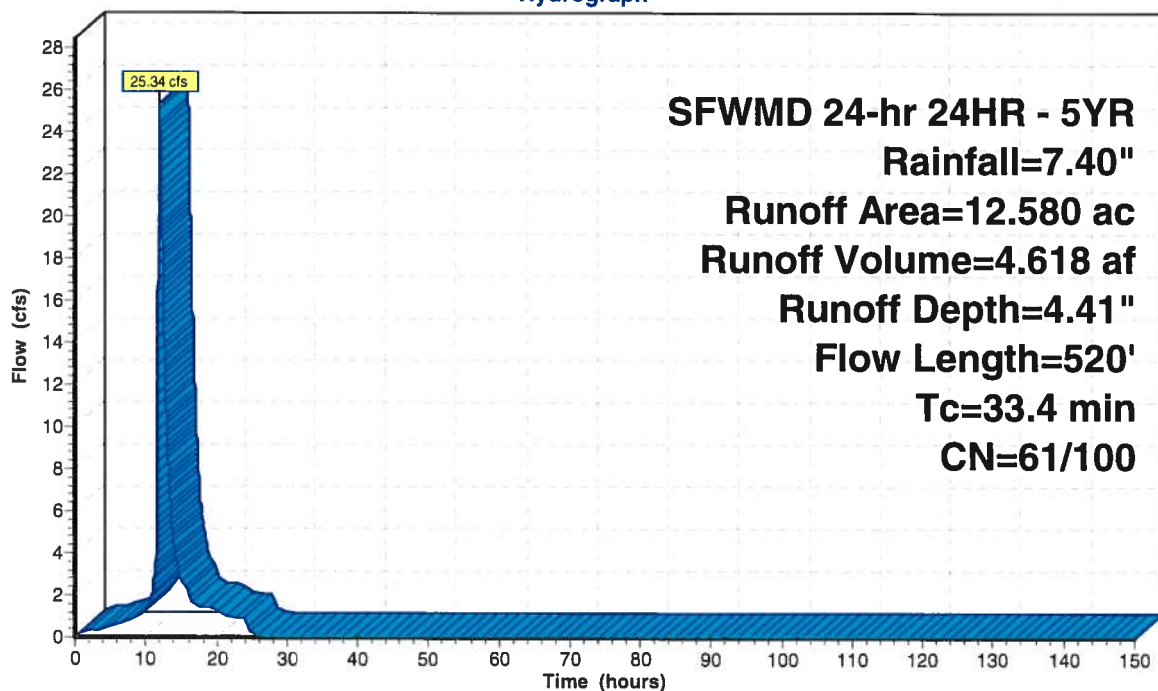
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 24-hr 24HR - 5YR Rainfall=7.40"

Area (ac)	CN	Description
8.550	61	>75% Grass cover, Good, HSG B
3.190	100	DETENTION POND
0.840	98	Paved parking & roofs
12.580	73	Weighted Average
8.550	61	Pervious Area
4.030	100	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	40	0.0200	1.56		Sheet Flow, OVERLAND 1 Smooth surfaces n= 0.011 P2= 5.90"
29.5	260	0.0040	0.15		Sheet Flow, OVERLAND TO SCF Grass: Short n= 0.150 P2= 5.90"
3.5	220	0.0050	1.06		Shallow Concentrated Flow, SCF TO DETENTION POND Grassed Waterway Kv= 15.0 fps
33.4	520	Total			

Subcatchment 2S: SB-1B

Hydrograph



Subcatchment 3S: SB-1C

Runoff = 10.04 cfs @ 11.81 hrs, Volume= 0.973 af, Depth= 6.64"

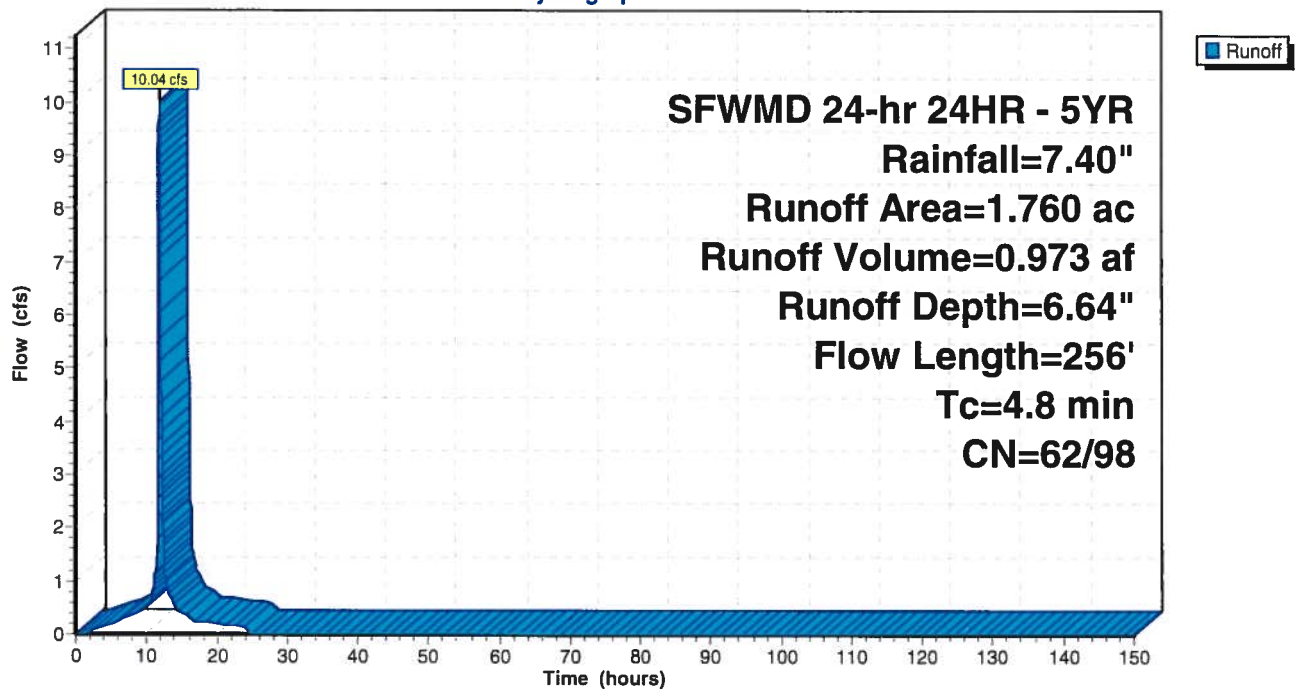
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 24-hr 24HR - 5YR Rainfall=7.40"

Area (ac)	CN	Description
0.950	98	Paved parking & roofs
0.810	88	Urban industrial, 72% imp, HSG B
1.760	93	Weighted Average
0.227	62	Pervious Area
1.533	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	22	0.0090	1.00		Sheet Flow, OVERLAND FROM ROAD Smooth surfaces n= 0.011 P2= 5.90"
1.4	68	0.0029	0.80		Sheet Flow, OVERLAND 2 Smooth surfaces n= 0.011 P2= 5.90"
0.2	52	0.2900	4.78		Sheet Flow, OVERLAND 3 Smooth surfaces n= 0.011 P2= 5.90"
1.8	74	0.0020	0.70		Sheet Flow, OVERLAND 4 Smooth surfaces n= 0.011 P2= 5.90"
1.0	40	0.0025	0.68		Sheet Flow, OVERLAND TO INLET Smooth surfaces n= 0.011 P2= 5.90"
4.8	256	Total			

Subcatchment 3S: SB-1C

Hydrograph



Subcatchment 4S: SB-1D

Runoff = 8.80 cfs @ 11.82 hrs, Volume= 0.883 af, Depth= 7.16"

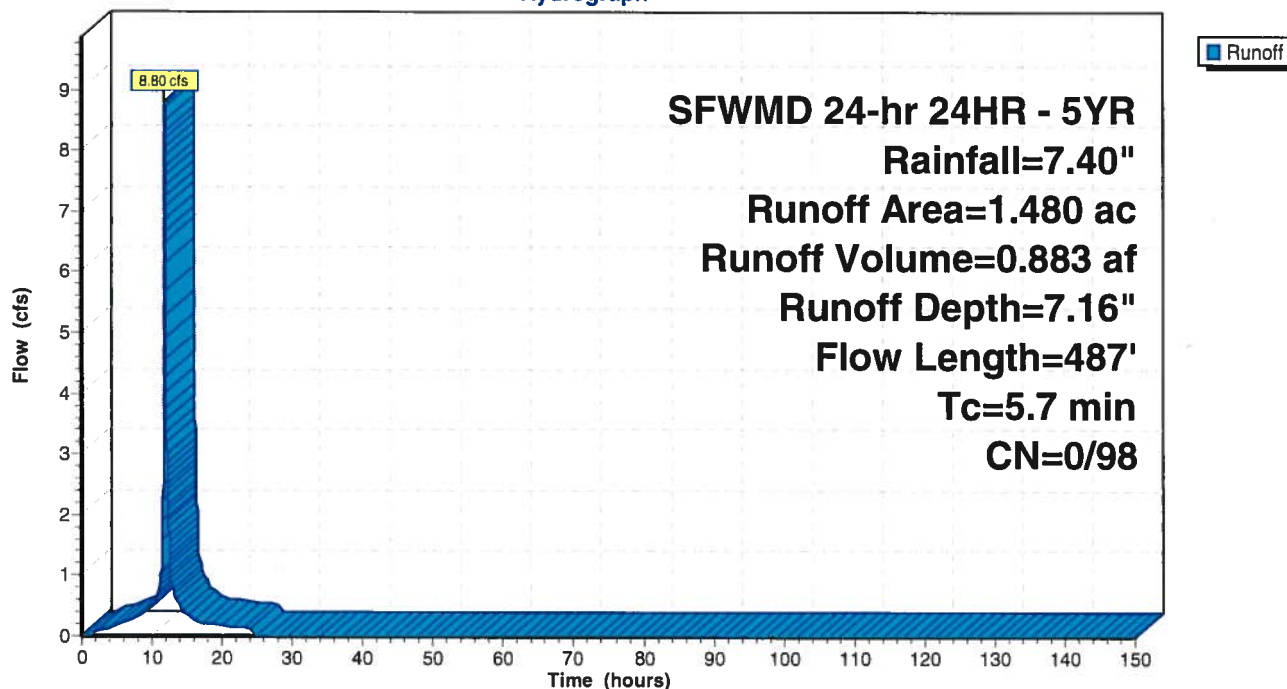
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 24-hr 24HR - 5YR Rainfall=7.40"

Area (ac)	CN	Description
1.480	98	Paved parking & roofs
1.480	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	54	0.0056	0.99		Sheet Flow, OVERLAND 1 Smooth surfaces n= 0.011 P2= 5.90"
2.9	246	0.0065	1.43		Sheet Flow, OVERLAND TO SCF Smooth surfaces n= 0.011 P2= 5.90"
1.9	187	0.0064	1.62		Shallow Concentrated Flow, SCF TO INLET Paved Kv= 20.3 fps
5.7	487	Total			

Subcatchment 4S: SB-1D

Hydrograph



Subcatchment 5S: SB-1E

Runoff = 6.17 cfs @ 11.79 hrs, Volume= 0.579 af, Depth= 7.16"

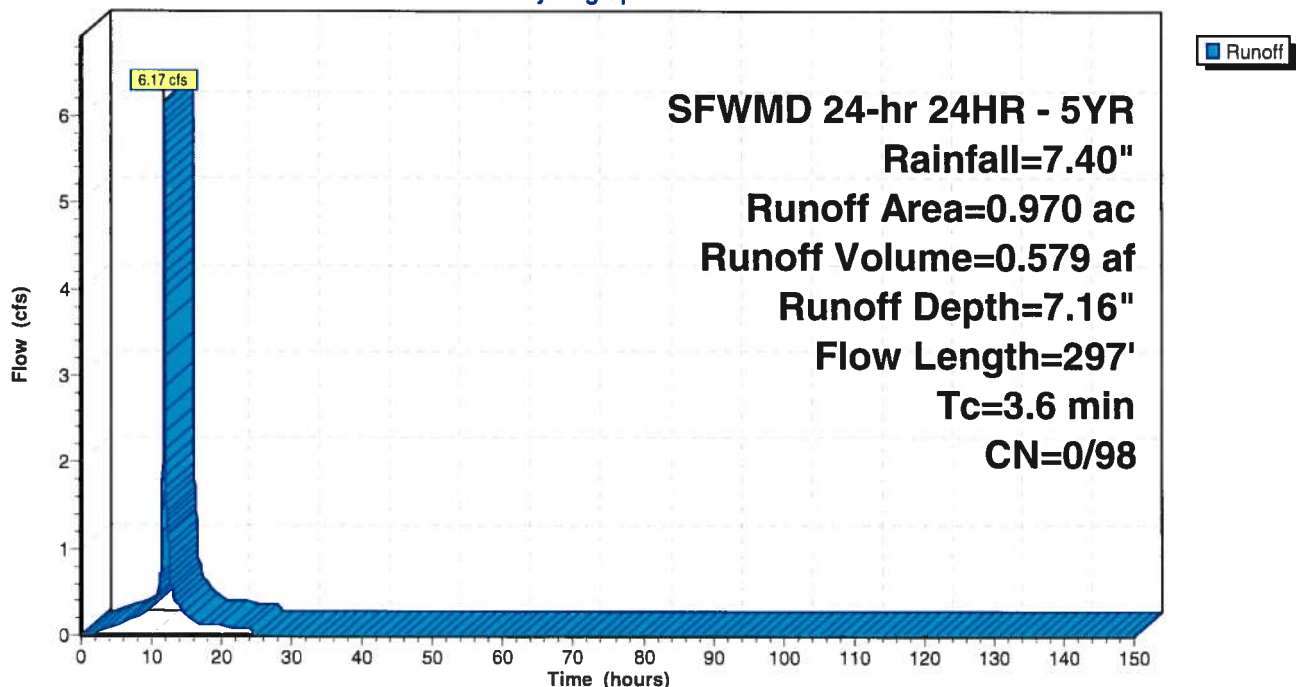
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 24-hr 24HR - 5YR Rainfall=7.40"

Area (ac)	CN	Description
0.970	98	Paved parking & roofs
0.970	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	137	0.0182	1.92		Sheet Flow, OVERLAND 1 Smooth surfaces n= 0.011 P2= 5.90"
1.1	72	0.0069	1.14		Sheet Flow, OVERLAND 2 Smooth surfaces n= 0.011 P2= 5.90"
1.3	88	0.0057	1.10		Sheet Flow, OVERLAND TO INLET Smooth surfaces n= 0.011 P2= 5.90"
3.6	297	Total			

Subcatchment 5S: SB-1E

Hydrograph



Subcatchment 6S: SB-1F

Runoff = 2.79 cfs @ 11.77 hrs, Volume= 0.241 af, Depth= 6.02"

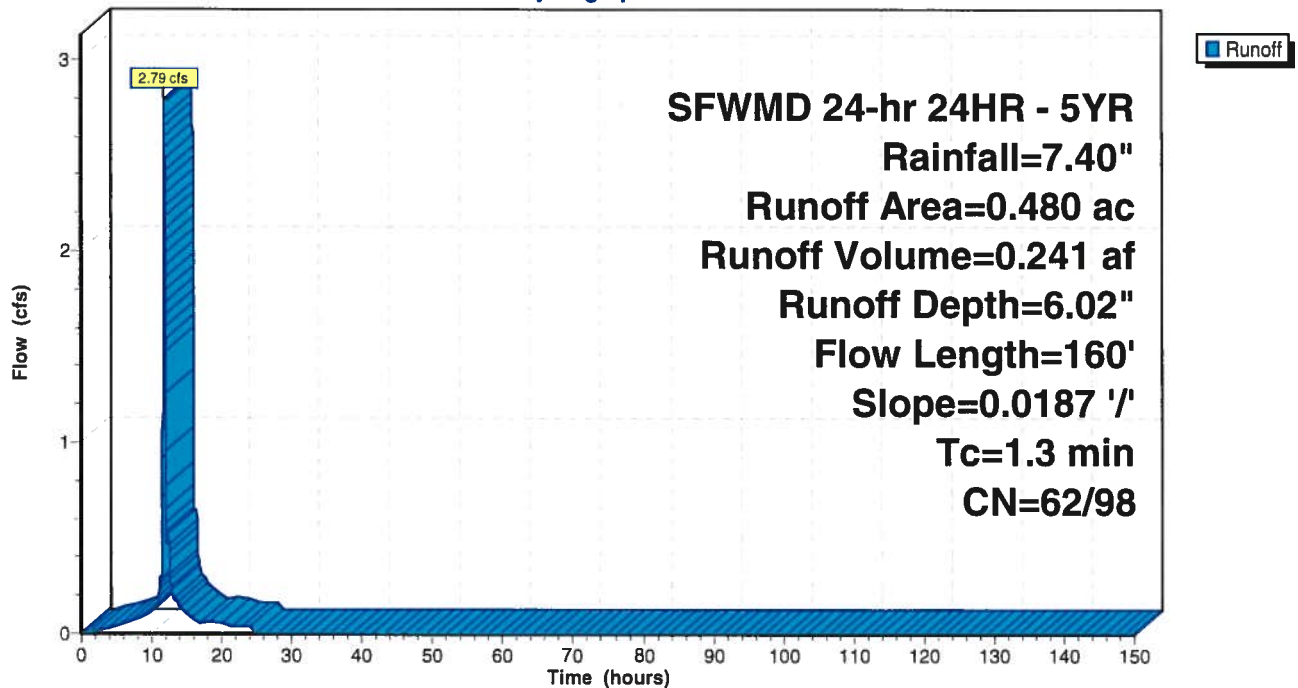
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 24-hr 24HR - 5YR Rainfall=7.40"

Area (ac)	CN	Description
0.480	88	Urban industrial, 72% imp, HSG B
0.134	62	Pervious Area
0.346	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	160	0.0187	2.00		Sheet Flow, OVERLAND TO INLET Smooth surfaces n= 0.011 P2= 5.90"

Subcatchment 6S: SB-1F

Hydrograph



Subcatchment 7S: SB-1G

Runoff = 8.54 cfs @ 11.78 hrs, Volume= 0.778 af, Depth= 6.77"

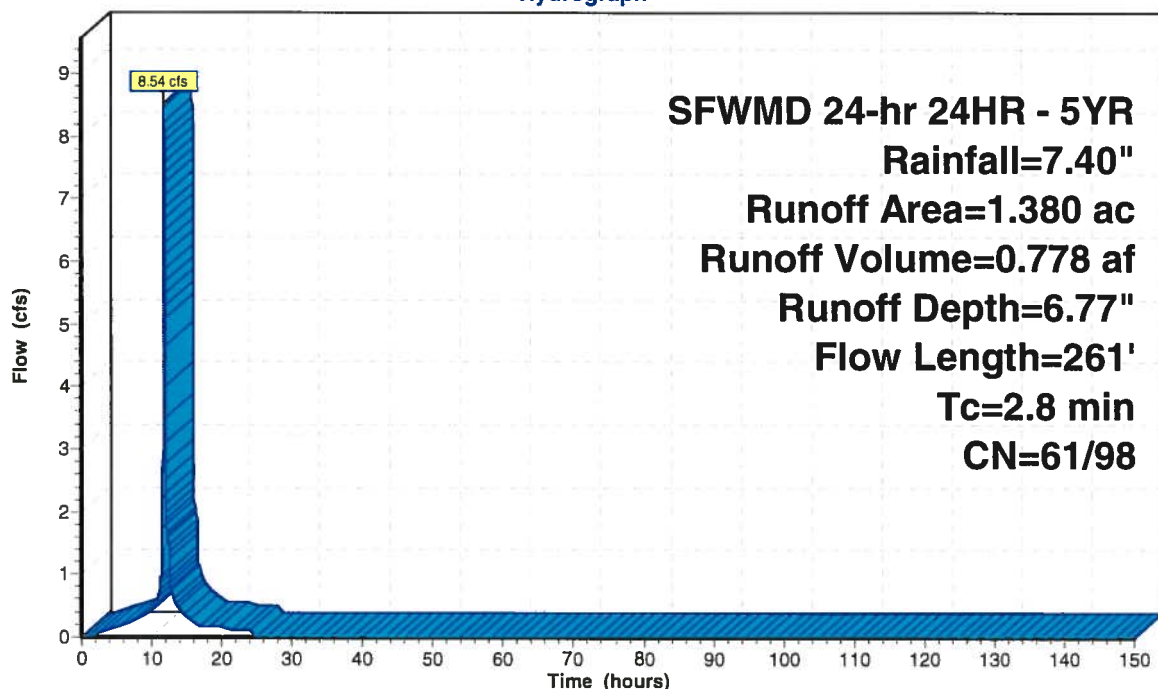
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 24-hr 24HR - 5YR Rainfall=7.40"

Area (ac)	CN	Description
1.250	98	Paved parking & roofs
0.130	61	>75% Grass cover, Good, HSG B
1.380	95	Weighted Average
0.130	61	Pervious Area
1.250	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	232	0.0103	1.69		Sheet Flow, OVERLAND 1 Smooth surfaces n= 0.011 P2= 5.90"
0.5	29	0.0069	0.95		Sheet Flow, OVERLAND TO INLET Smooth surfaces n= 0.011 P2= 5.90"
2.8	261	Total			

Subcatchment 7S: SB-1G

Hydrograph



Runoff

Subcatchment 8S: SB-1H

Runoff = 10.22 cfs @ 11.83 hrs, Volume= 1.056 af, Depth= 7.16"

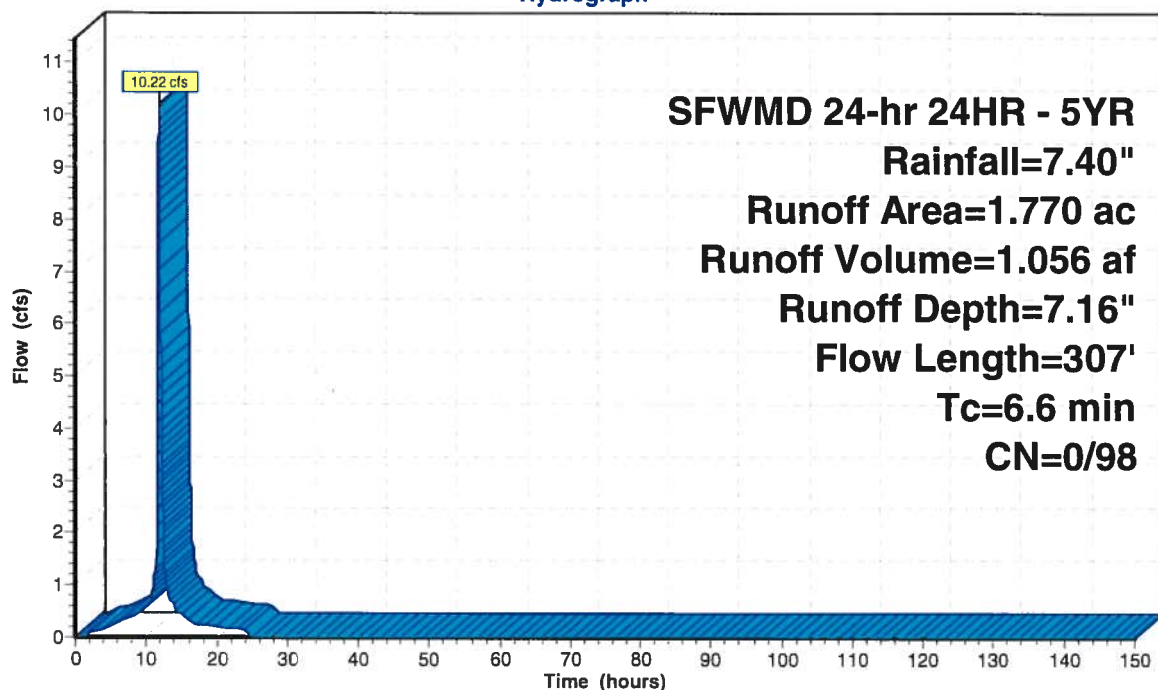
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 24-hr 24HR - 5YR Rainfall=7.40"

Area (ac)	CN	Description
1.770	98	Paved parking & roofs
1.770	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	142	0.0014	0.69		Sheet Flow, OVERLAND 1 Smooth surfaces n= 0.011 P2= 5.90"
3.1	158	0.0023	0.86		Sheet Flow, OVERLAND TO SCF Smooth surfaces n= 0.011 P2= 5.90"
0.1	7	0.0054	1.18		Shallow Concentrated Flow, SCF TO INLET Unpaved Kv= 16.1 fps
6.6	307	Total			

Subcatchment 8S: SB-1H

Hydrograph



Subcatchment 11S: OSB-1A

Runoff = 6.81 cfs @ 11.81 hrs, Volume= 0.668 af, Depth= 7.16"

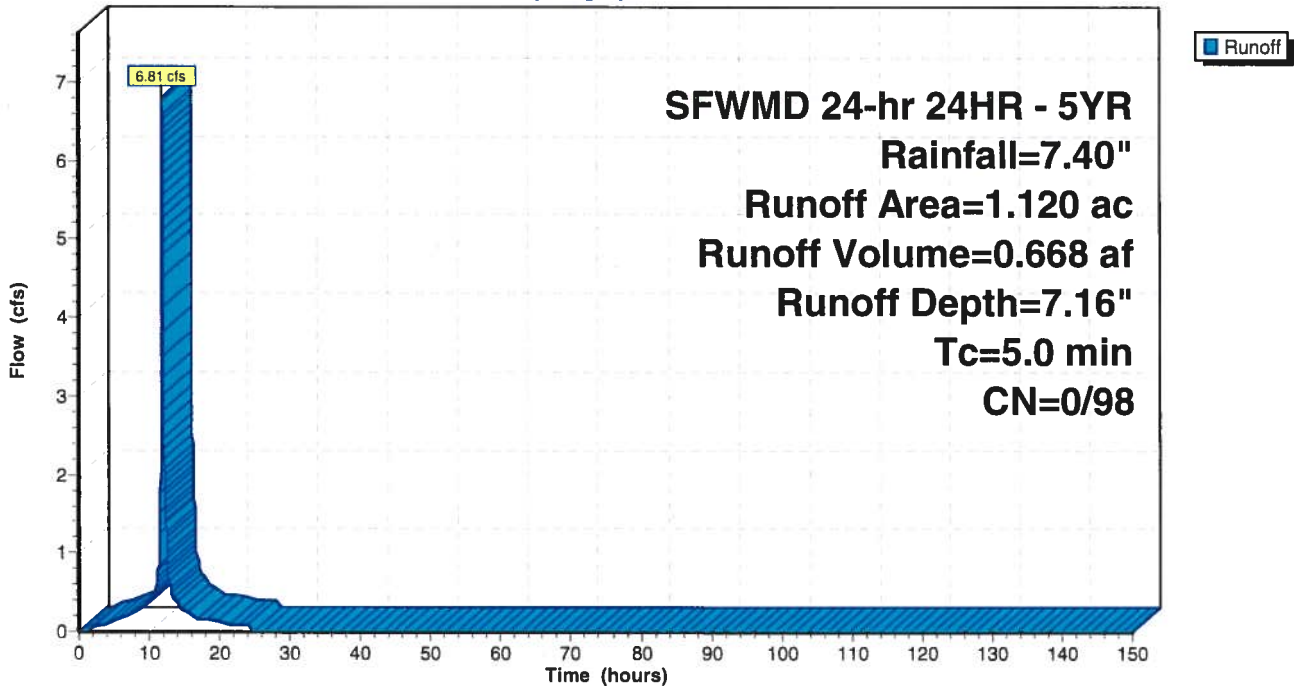
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 24-hr 24HR - 5YR Rainfall=7.40"

Area (ac)	CN	Description
1.120	98	Paved parking & roofs
1.120	98	Impervious Area

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

Subcatchment 11S: OSB-1A

Hydrograph



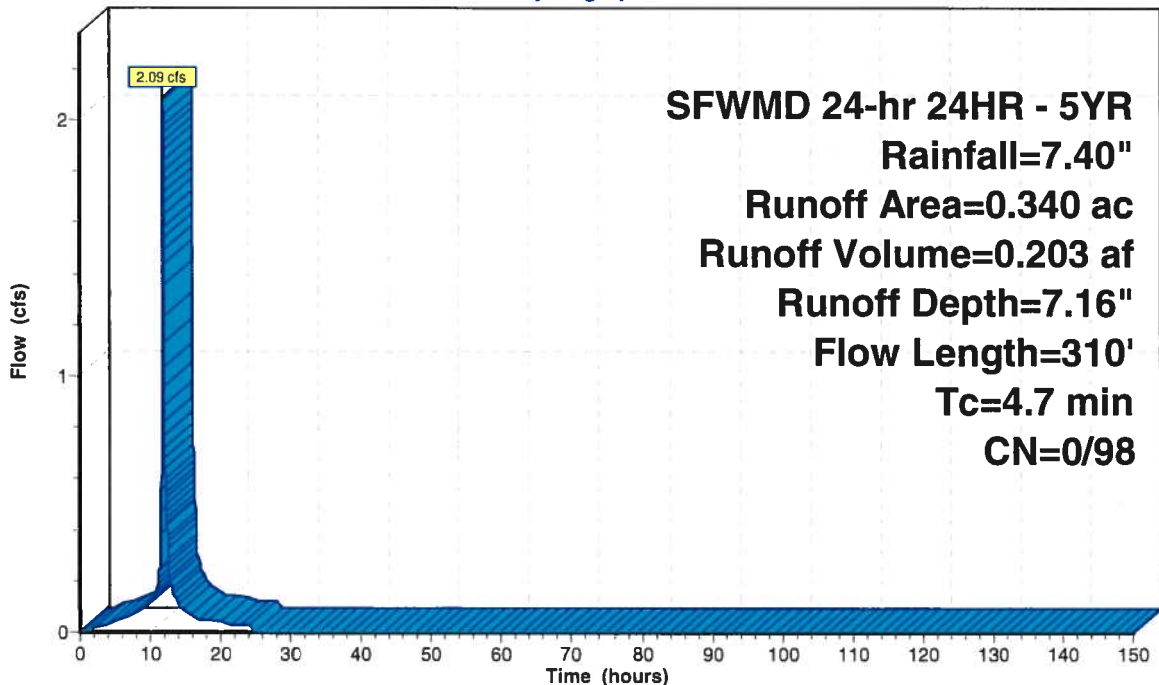
Subcatchment 12S: OSB-1B

Runoff = 2.09 cfs @ 11.81 hrs, Volume= 0.203 af, Depth= 7.16"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 24-hr 24HR - 5YR Rainfall=7.40"

Area (ac)	CN	Description
0.340	98	Paved parking & roofs
0.340	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	138	0.0051	1.15		Sheet Flow, OVERLAND 1 Smooth surfaces n= 0.011 P2= 5.90"
2.6	161	0.0037	1.05		Sheet Flow, OVERLAND TO SCF Smooth surfaces n= 0.011 P2= 5.90"
0.1	11	0.0271	3.34		Shallow Concentrated Flow, SCF TO SB-1G Paved Kv= 20.3 fps
4.7	310	Total			

Subcatchment 12S: OSB-1B**Hydrograph**

Subcatchment 13S: OSB-1C

Runoff = 3.28 cfs @ 11.81 hrs, Volume= 0.322 af, Depth= 7.16"

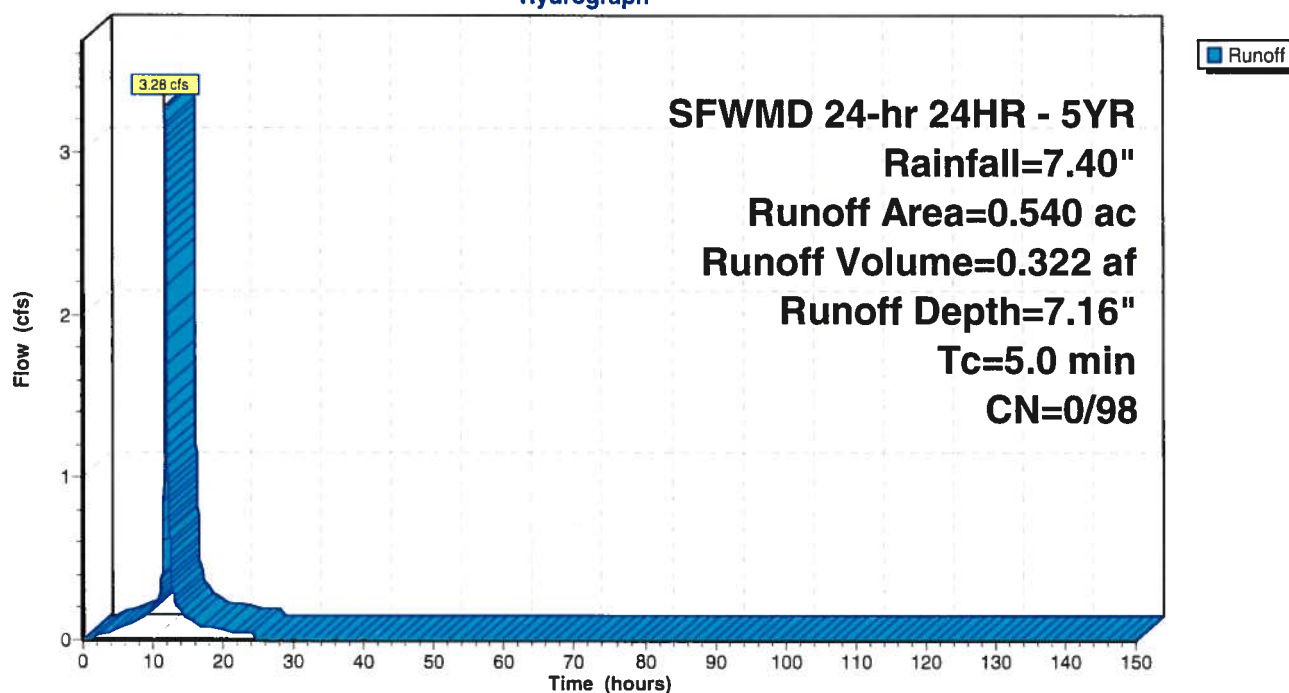
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 24-hr 24HR - 5YR Rainfall=7.40"

Area (ac)	CN	Description
0.540	98	Paved parking & roofs
0.540	98	Impervious Area

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

Subcatchment 13S: OSB-1C

Hydrograph



Subcatchment 14S: SB-1K

Runoff = 3.26 cfs @ 11.78 hrs, Volume= 0.296 af, Depth= 7.16"

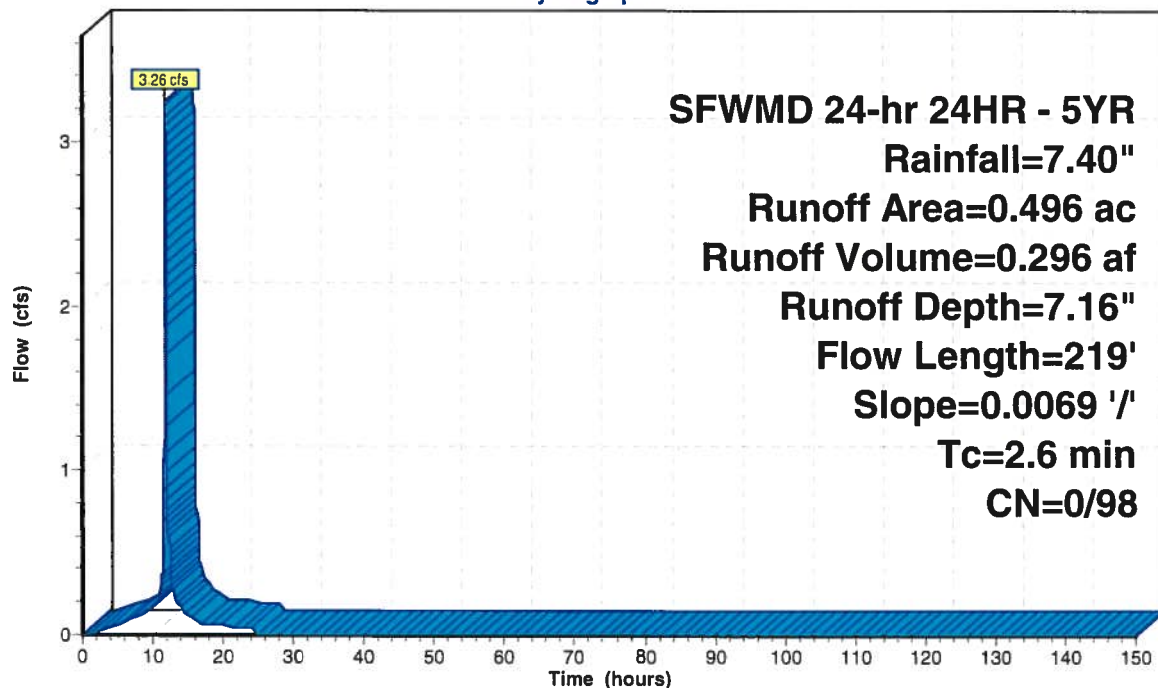
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 24-hr 24HR - 5YR Rainfall=7.40"

Area (ac)	CN	Description
0.496	98	Paved parking & roofs
0.496	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	219	0.0069	1.43		Sheet Flow, OVERLAND TO SB-1H Smooth surfaces n= 0.011 P2= 5.90"

Subcatchment 14S: SB-1K

Hydrograph



Subcatchment 22S: SB-2A

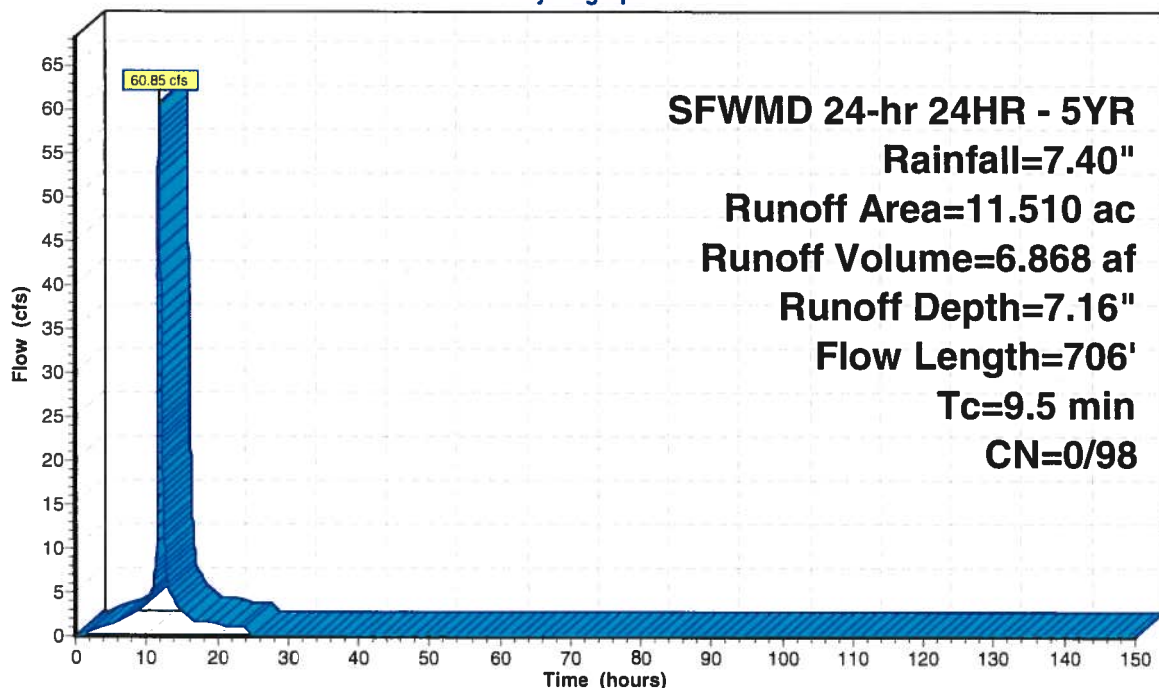
NOTE LINE ITEM 3 IS SOUTH DRY DETENTION POND AREA.

Runoff = 60.85 cfs @ 11.86 hrs, Volume= 6.868 af, Depth= 7.16"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 24-hr 24HR - 5YR Rainfall=7.40"

Area (ac)	CN	Description
10.290	98	Paved parking & roofs
1.180	100	DETENTION POND
0.040	98	Paved parking & roofs
11.510	98	Weighted Average
11.510	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	14	0.0141	1.10		Sheet Flow, OVERLAND FROM ROAD Smooth surfaces n= 0.011 P2= 5.90"
3.0	286	0.0077	1.57		Sheet Flow, OVERLAND TO SCF Smooth surfaces n= 0.011 P2= 5.90"
6.3	406	0.0044	1.07		Shallow Concentrated Flow, SCF TO POND Unpaved Kv= 16.1 fps
9.5	706	Total			

Subcatchment 22S: SB-2A**Hydrograph**

Runoff

Subcatchment 23S: SB-2B

Runoff = 3.56 cfs @ 11.85 hrs, Volume= 0.311 af, Depth= 3.84"

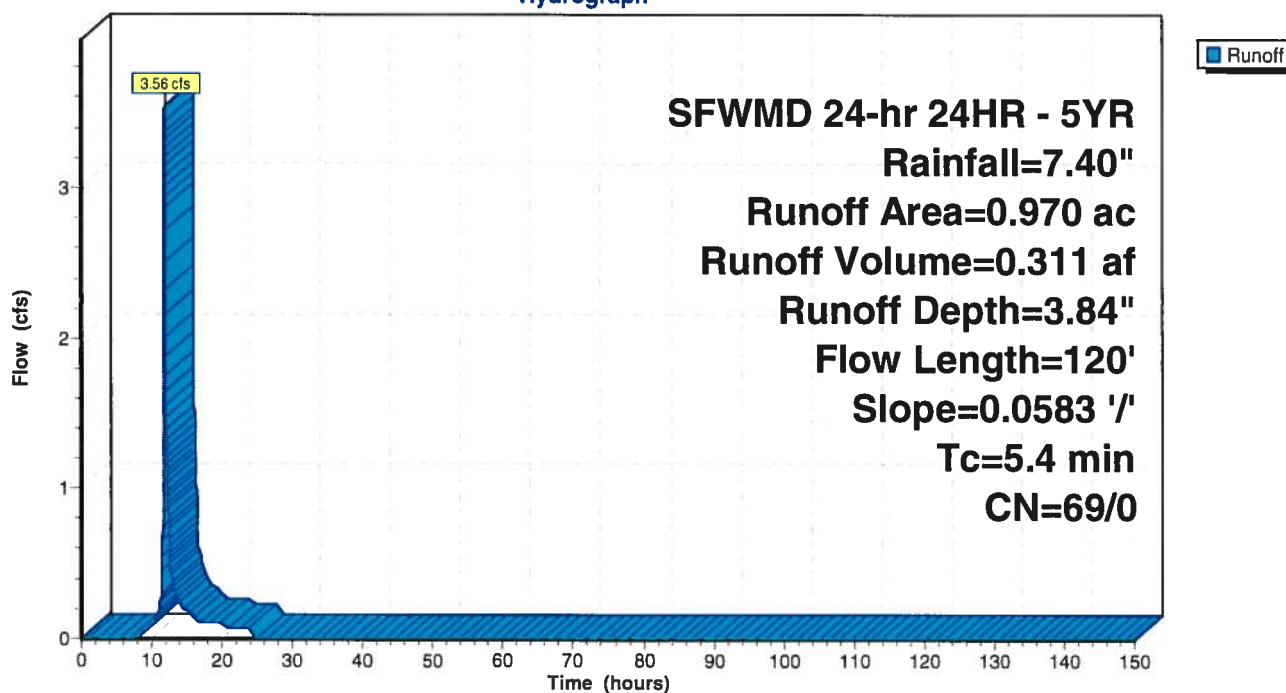
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 24-hr 24HR - 5YR Rainfall=7.40"

Area (ac)	CN	Description
0.970	69	50-75% Grass cover, Fair, HSG B
0.970	69	Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	120	0.0583	0.37		Sheet Flow, OVERLAND TO SOUTH CANAL Grass: Short n= 0.150 P2= 5.90"

Subcatchment 23S: SB-2B

Hydrograph



Subcatchment 25S: B-4

Runoff = 1.19 cfs @ 11.80 hrs, Volume= 0.095 af, Depth= 2.99"

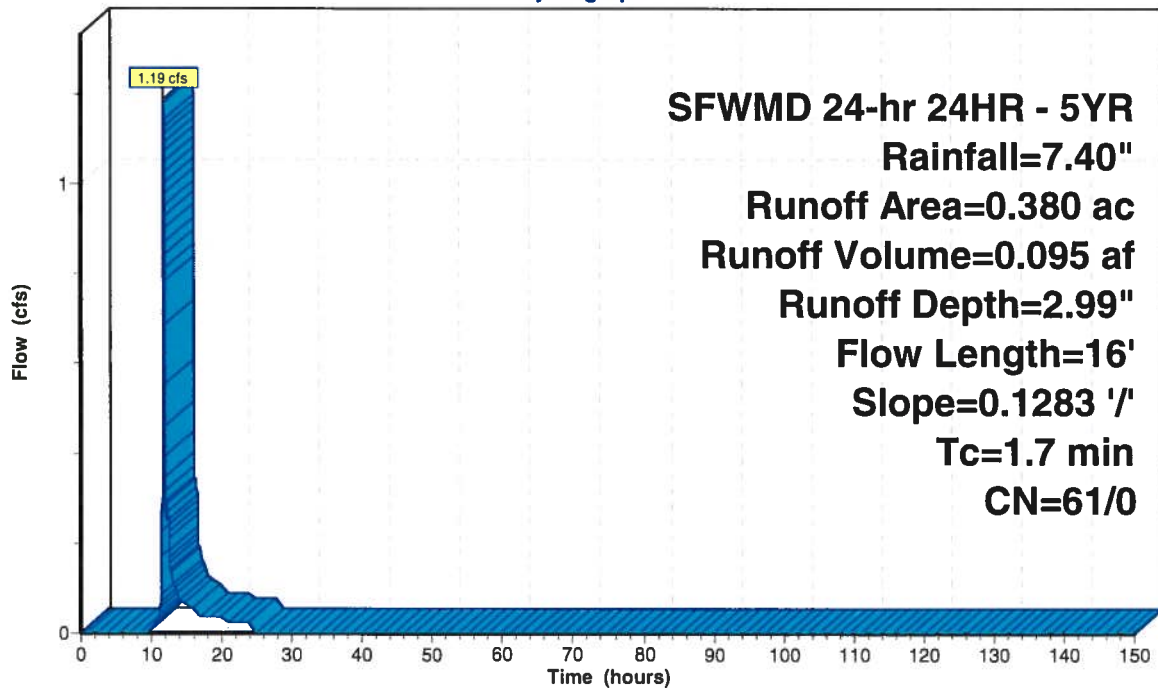
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 24-hr 24HR - 5YR Rainfall=7.40"

Area (ac)	CN	Description
0.380	61	>75% Grass cover, Good, HSG B
0.380	61	Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	16	0.1283	0.15		Sheet Flow, OVERLAND TO NORTH CANAL Woods: Light underbrush n= 0.400 P2= 5.90"

Subcatchment 25S: B-4

Hydrograph



Subcatchment 26S: OSB-2A

Runoff = 4.66 cfs @ 11.91 hrs, Volume= 0.587 af, Depth= 6.02"

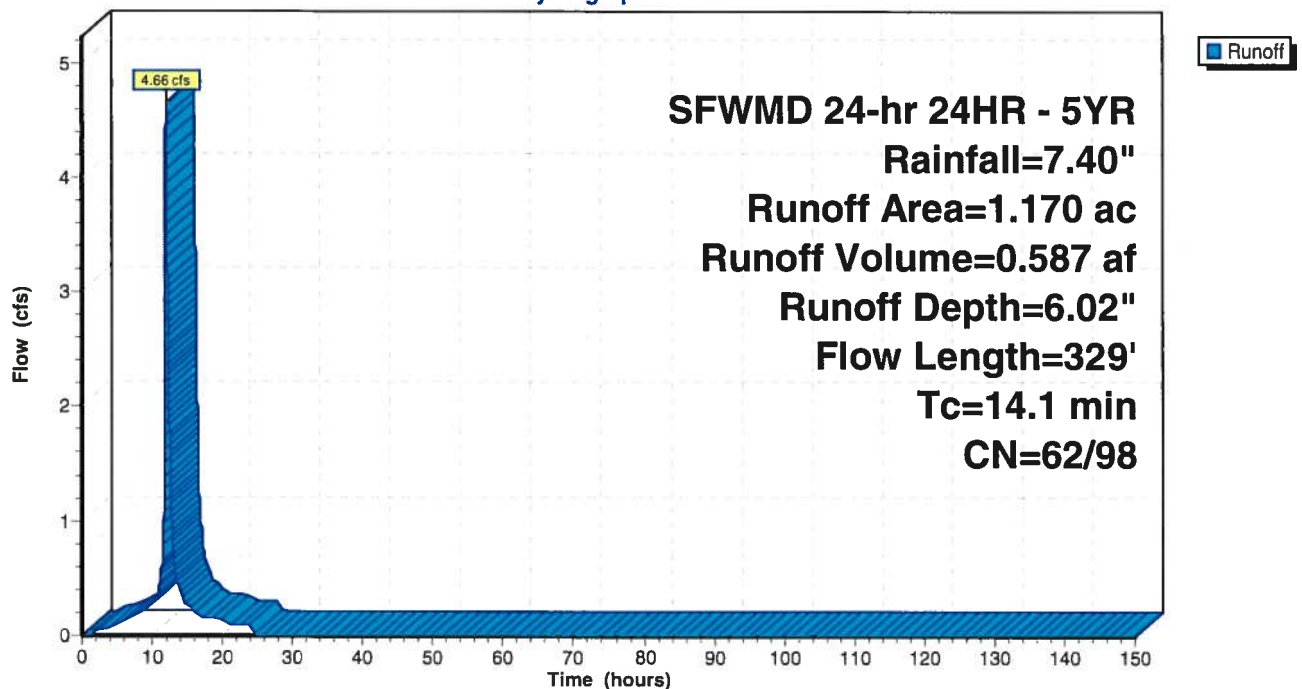
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 24-hr 24HR - 5YR Rainfall=7.40"

Area (ac)	CN	Description
1.170	88	Urban industrial, 72% imp, HSG B
0.328	62	Pervious Area
0.842	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	300	0.0040	0.36		Sheet Flow, OVERLAND TO SCF Fallow n= 0.050 P2= 5.90"
0.4	29	0.0069	1.25		Shallow Concentrated Flow, SCF TO SB-2A Grassed Waterway Kv= 15.0 fps
14.1	329	Total			

Subcatchment 26S: OSB-2A

Hydrograph



Subcatchment 31S: SB-1I

Runoff = 2.01 cfs @ 11.77 hrs, Volume= 0.179 af, Depth= 7.16"

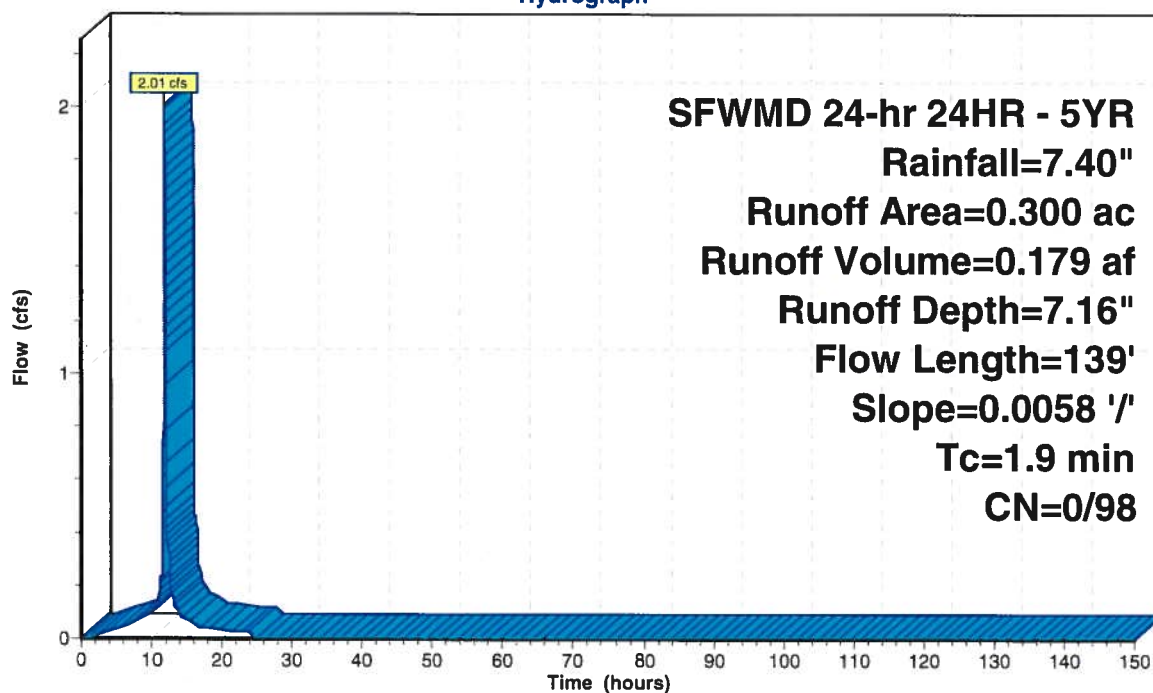
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 24-hr 24HR - 5YR Rainfall=7.40"

Area (ac)	CN	Description
0.300	98	Paved parking & roofs
0.300	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	139	0.0058	1.22		Sheet Flow, OVERLAND TO INLET Smooth surfaces n= 0.011 P2= 5.90"

Subcatchment 31S: SB-1I

Hydrograph



Subcatchment 33S: SB-1J

Runoff = 4.87 cfs @ 11.78 hrs, Volume= 0.446 af, Depth= 7.16"

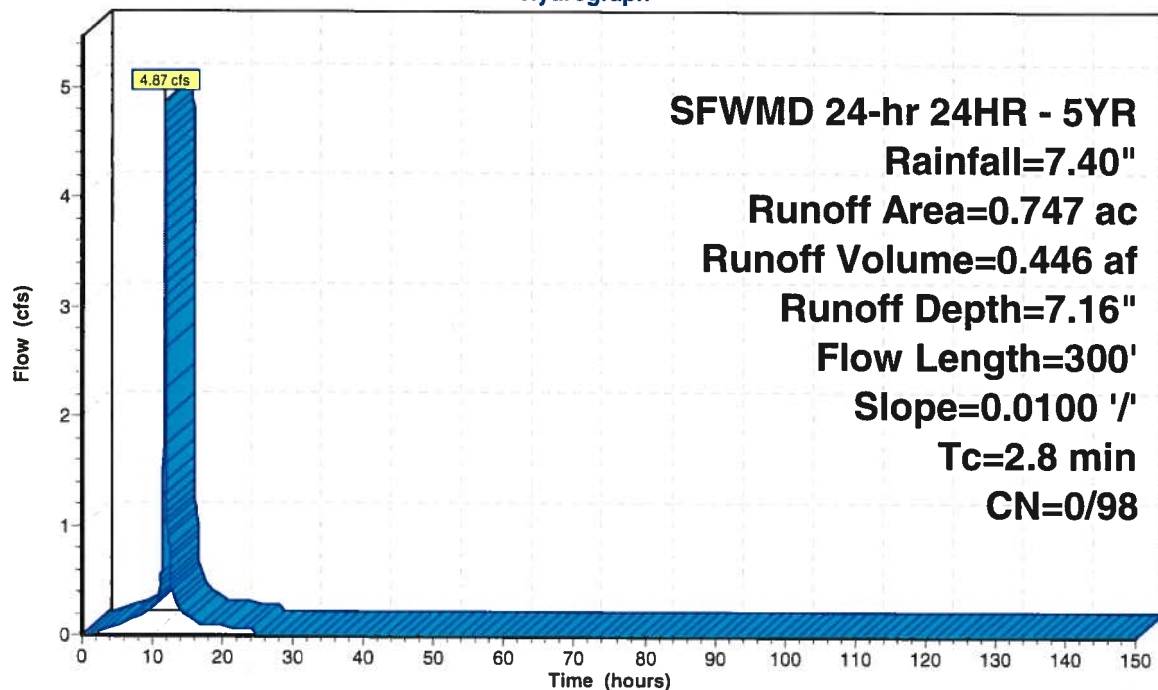
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 24-hr 24HR - 5YR Rainfall=7.40"

Area (ac)	CN	Description
0.747	98	Paved parking & roofs
0.747	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	300	0.0100	1.76		Sheet Flow, Smooth surfaces n= 0.011 P2= 5.90"

Subcatchment 33S: SB-1J

Hydrograph



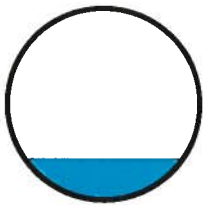
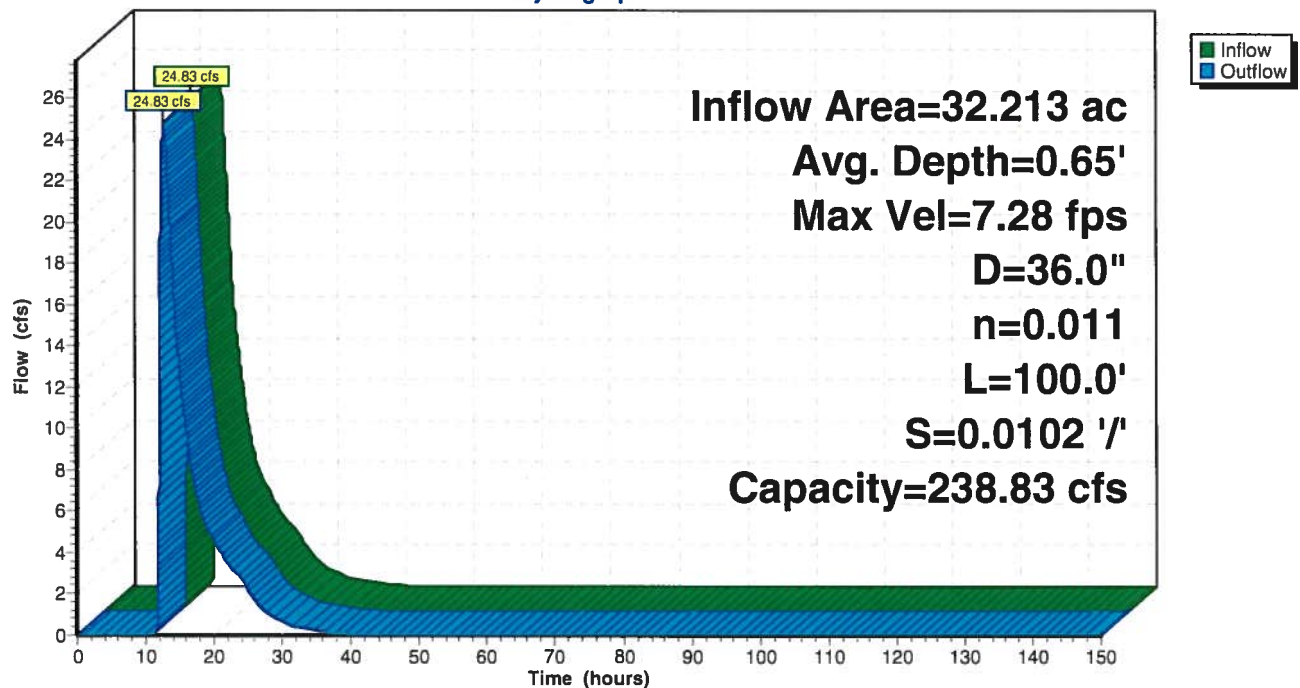
Reach 33R: Basin 1 Outfall

Inflow Area = 32.213 ac, Inflow Depth = 3.78" for 24HR - 5YR event
Inflow = 24.83 cfs @ 12.65 hrs, Volume= 10.143 af
Outflow = 24.83 cfs @ 12.66 hrs, Volume= 10.143 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.28 fps, Min. Travel Time= 0.2 min
Avg. Velocity= 2.95 fps, Avg. Travel Time= 0.6 min

Peak Storage= 341 cf @ 12.65 hrs, Average Depth at Peak Storage= 0.65'
Bank-Full Depth= 3.00', Capacity at Bank-Full= 238.83 cfs

A factor of 3.00 has been applied to the storage and discharge capacity
36.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 100.0' Slope= 0.0102 '/'
Inlet Invert= 3.10', Outlet Invert= 2.08'

**Reach 33R: Basin 1 Outfall****Hydrograph**

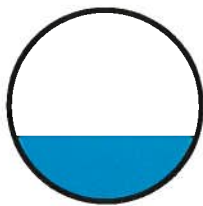
Reach 35R: Basin 2 Outfall

Inflow Area = 12.680 ac, Inflow Depth = 4.84" for 24HR - 5YR event
 Inflow = 36.22 cfs @ 12.11 hrs, Volume= 5.117 af
 Outflow = 36.21 cfs @ 12.11 hrs, Volume= 5.117 af, Atten= 0%, Lag= 0.5 min

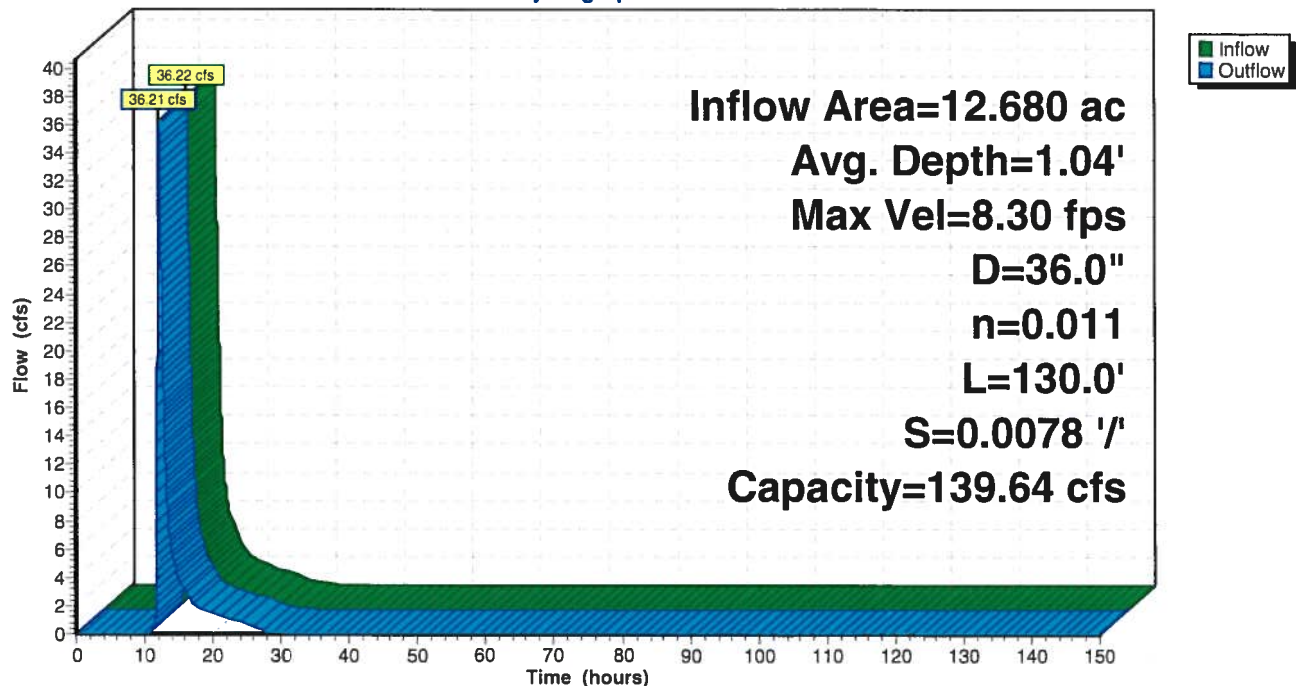
Routing by Stor-Ind+Trans method, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
 Max. Velocity= 8.30 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 2.71 fps, Avg. Travel Time= 0.8 min

Peak Storage= 568 cf @ 12.11 hrs, Average Depth at Peak Storage= 1.04'
 Bank-Full Depth= 3.00', Capacity at Bank-Full= 139.64 cfs

A factor of 2.00 has been applied to the storage and discharge capacity
 36.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
 Length= 130.0' Slope= 0.0078 '/
 Inlet Invert= 3.10', Outlet Invert= 2.08'

**Reach 35R: Basin 2 Outfall**

Hydrograph



Pond 10P: BASIN 1 DRY DETENTION POND

Inflow Area = 32.213 ac, Inflow Depth = 6.02" for 24HR - 5YR event
 Inflow = 138.20 cfs @ 11.82 hrs, Volume= 16.166 af
 Outflow = 26.13 cfs @ 12.65 hrs, Volume= 15.985 af, Atten= 81%, Lag= 49.8 min
 Primary = 24.83 cfs @ 12.65 hrs, Volume= 10.143 af
 Secondary = 1.30 cfs @ 12.65 hrs, Volume= 5.842 af

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
 Peak Elev= 6.58' @ 12.65 hrs Surf.Area= 2.839 ac Storage= 9.020 af

Plug-Flow detention time= 1,004.8 min calculated for 15.985 af (99% of inflow)
 Center-of-Mass det. time= 997.0 min (1,749.0 - 752.0)

Volume	Invert	Avail.Storage	Storage Description
#1	3.10'	16.331 af	190.00'W x 540.00'L x 5.90'H Prismatic Z=4.0

Device	Routing	Invert	Outlet Devices
#1	Primary	6.10'	6.0' long x 2.90' rise Sharp-Crested Rectangular Weir 2 End Contraction(s) 3.0' Crest Height
#2	Primary	4.30'	100.0 deg x 1.80' rise Sharp-Crested Vee/Trap Weir C= 2.49
#3	Secondary	3.10'	3.0" Vert. Orifice/Grate X 3.00 C= 0.600

Primary OutFlow Max=24.83 cfs @ 12.65 hrs HW=6.58' TW=3.10' (Fixed TW Elev= 3.10')

└─1=Sharp-Crested Rectangular Weir (Weir Controls 6.48 cfs @ 2.30 fps)

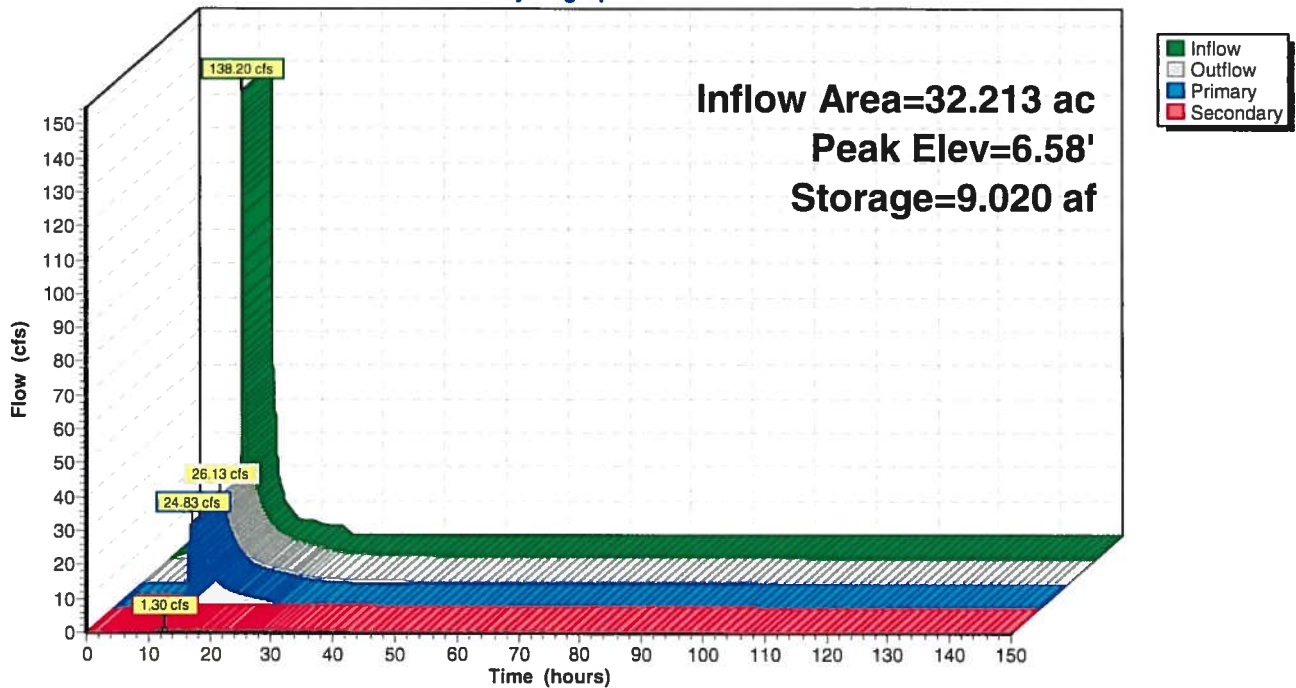
└─2=Sharp-Crested Vee/Trap Weir (Orifice Controls 18.35 cfs @ 4.75 fps)

Secondary OutFlow Max=1.30 cfs @ 12.65 hrs HW=6.58' (Free Discharge)

└─3=Orifice/Grate (Orifice Controls 1.30 cfs @ 8.82 fps)

Pond 10P: BASIN 1 DRY DETENTION POND

Hydrograph



Pond 24P: BASIN 2 DRY DETENTION POND

Inflow Area = 12.680 ac, Inflow Depth = 7.06" for 24HR - 5YR event
 Inflow = 65.44 cfs @ 11.86 hrs, Volume= 7.455 af
 Outflow = 36.68 cfs @ 12.11 hrs, Volume= 7.383 af, Atten= 44%, Lag= 14.4 min
 Primary = 36.22 cfs @ 12.11 hrs, Volume= 5.117 af
 Secondary = 0.46 cfs @ 12.11 hrs, Volume= 2.266 af

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
 Peak Elev= 6.96' @ 12.11 hrs Surf.Area= 1.059 ac Storage= 3.498 af

Plug-Flow detention time= 872.9 min calculated for 7.383 af (99% of inflow)
 Center-of-Mass det. time= 866.6 min (1,603.5 - 736.9)

Volume	Invert	Avail.Storage	Storage Description
#1	3.10'	5.228 af	125.00'W x 265.00'L x 5.40'H Prismatic Z=4.0

Device	Routing	Invert	Outlet Devices
#1	Primary	6.00'	8.0' long x 2.50' rise Sharp-Crested Rectangular Weir 2 End Contraction(s) 2.9' Crest Height
#2	Primary	4.90'	120.0 deg x 1.10' rise Sharp-Crested Vee/Trap Weir C= 2.48
#3	Secondary	3.10'	3.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=36.21 cfs @ 12.11 hrs HW=6.96' TW=2.08' (Fixed TW Elev= 2.08')

└─1=Sharp-Crested Rectangular Weir (Weir Controls 25.03 cfs @ 3.34 fps)

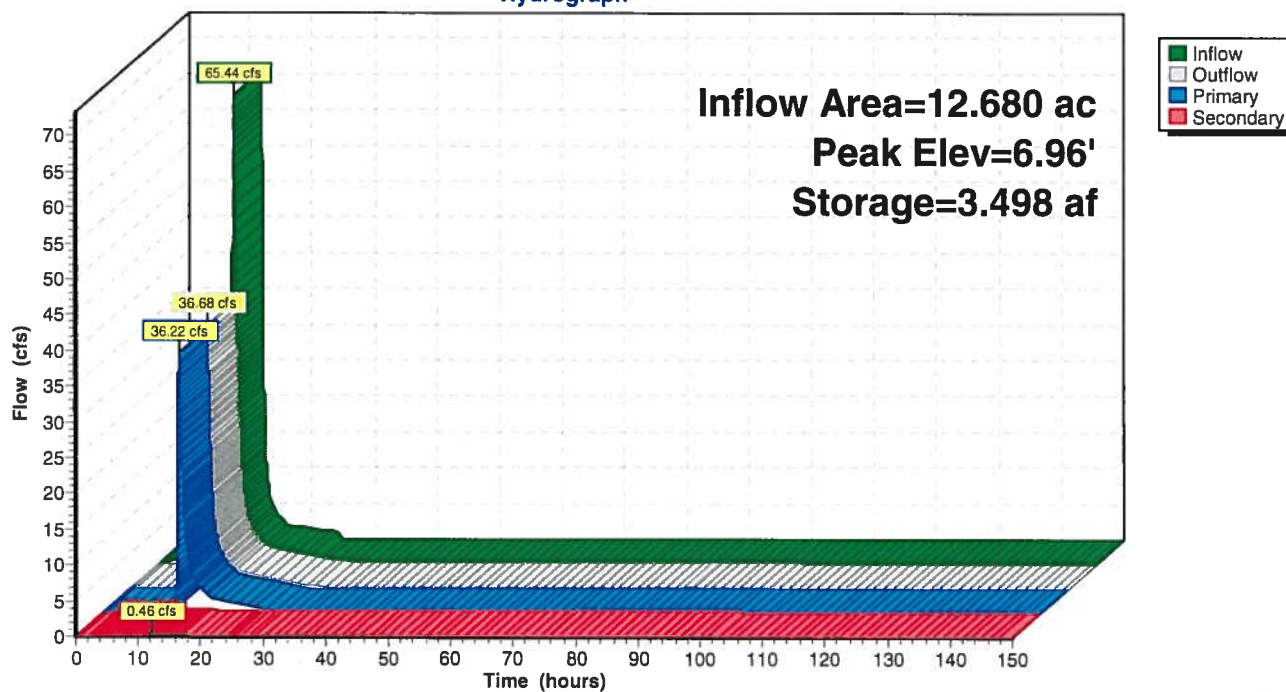
└─2=Sharp-Crested Vee/Trap Weir (Orifice Controls 11.18 cfs @ 5.33 fps)

Secondary OutFlow Max=0.46 cfs @ 12.11 hrs HW=6.96' TW=2.08' (Fixed TW Elev= 2.08')

└─3=Orifice/Grate (Orifice Controls 0.46 cfs @ 9.31 fps)

Pond 24P: BASIN 2 DRY DETENTION POND

Hydrograph



Pond 33P: BASIN 1 BLEEDER DISCHARGE VOLUME

NODE USED TO DETERMINE THE VOLUME OF DISCHARGE IN A 24 HOUR PERIOD THROUGH A BLEED DOWN ORIFICE.

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.74 cfs @ 0.00 hrs, Volume= 2.830 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.74 cfs @ 0.00 hrs, Volume= 2.830 af

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Starting Elev= 4.30' Surf.Area= 2.518 ac Storage= 2.924 af

Peak Elev= 4.30' @ 0.00 hrs Surf.Area= 2.518 ac Storage= 2.924 af

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

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

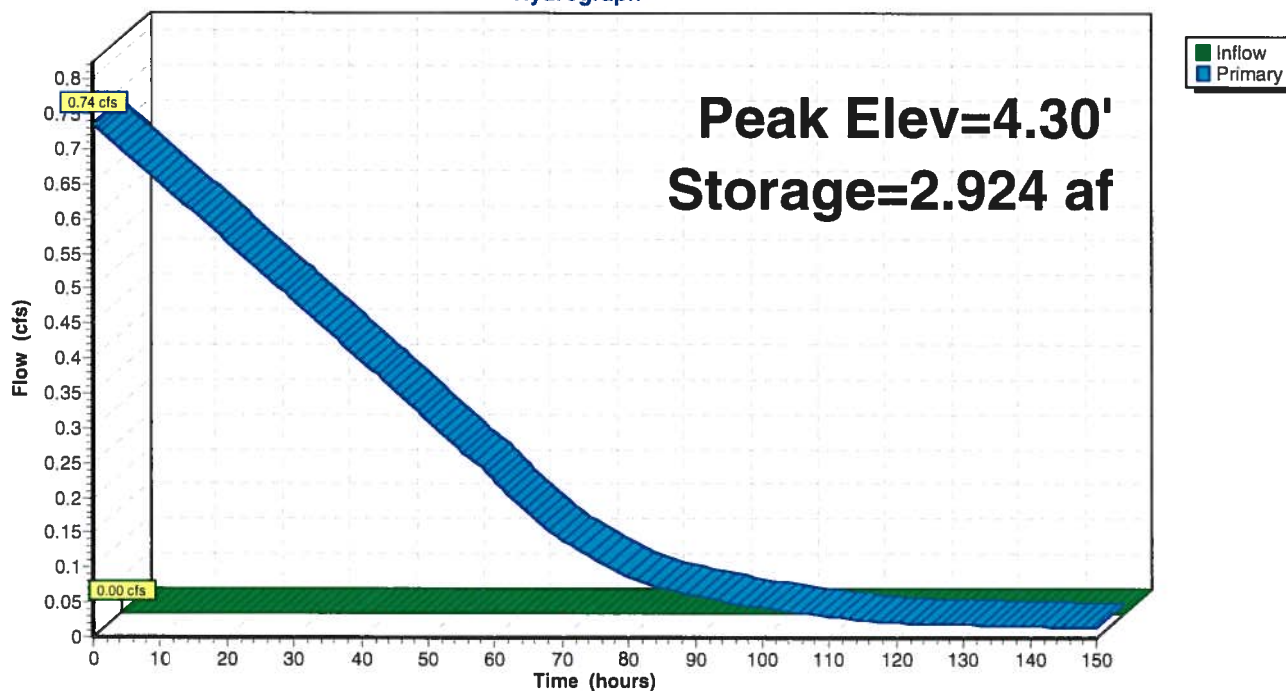
Volume	Invert	Avail.Storage	Storage Description
#1	3.10'	16.331 af	190.00'W x 540.00'L x 5.90'H Prismatic Z=4.0

Device	Routing	Invert	Outlet Devices
#1	Primary	3.10'	3.0" Vert. Orifice/Grate X 3.00 C= 0.600

Primary OutFlow Max=0.74 cfs @ 0.00 hrs HW=4.30' TW=2.08' (Fixed TW Elev= 2.08')
 ↳ **1=Orifice/Grate** (Orifice Controls 0.74 cfs @ 4.99 fps)

Pond 33P: BASIN 1 BLEEDER DISCHARGE VOLUME

Hydrograph



Pond 34P: BASIN 2 BLEEDER DISCHARGE VOLUME

THIS NODE IS USED TO DETERMINE DISCHARGE VOLUMES IN A 24 HOUR PERIOD THROUGH A BLEEDER ORIFICE.

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.31 cfs @ 0.00 hrs, Volume= 1.448 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.31 cfs @ 0.00 hrs, Volume= 1.448 af

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
 Starting Elev= 4.90' Surf.Area= 0.894 ac Storage= 1.488 af
 Peak Elev= 4.90' @ 0.00 hrs Surf.Area= 0.894 ac Storage= 1.488 af

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

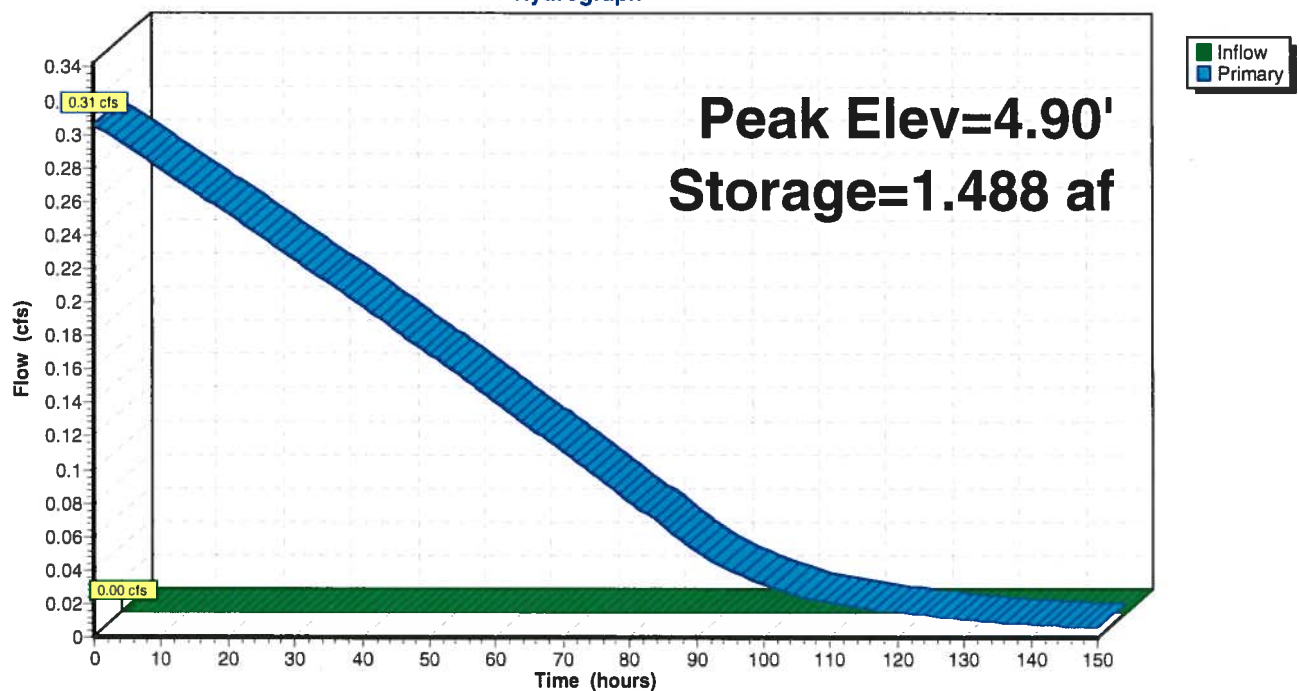
Volume	Invert	Avail.Storage	Storage Description
#1	3.10'	5.228 af	125.00'W x 265.00'L x 5.40'H Prismatic Z=4.0

Device	Routing	Invert	Outlet Devices
#1	Primary	3.10'	3.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.31 cfs @ 0.00 hrs HW=4.90' TW=2.08' (Fixed TW Elev= 2.08')
 ↳1=Orifice/Grate (Orifice Controls 0.31 cfs @ 6.23 fps)

Pond 34P: BASIN 2 BLEEDER DISCHARGE VOLUME

Hydrograph



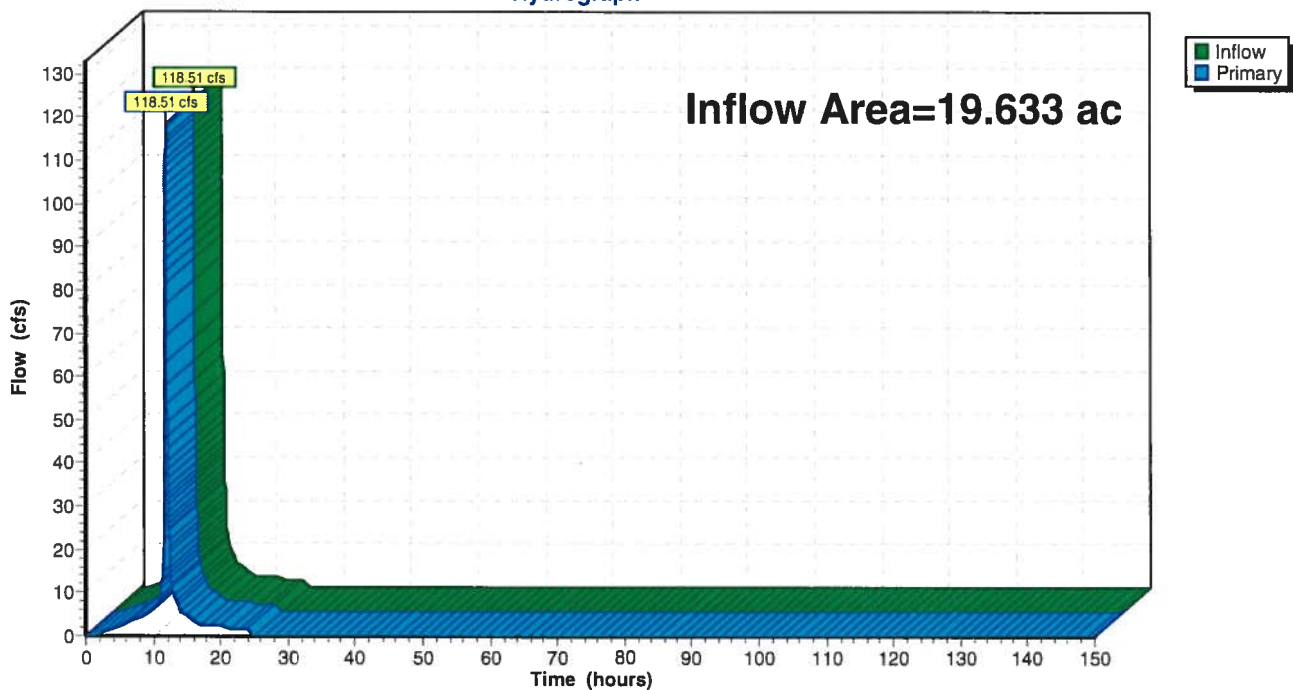
Link 15L: B-1 INLETS COMBINED

Inflow Area = 19.633 ac, Inflow Depth = 7.06" for 24HR - 5YR event
Inflow = 118.51 cfs @ 11.81 hrs, Volume= 11.548 af
Primary = 118.51 cfs @ 11.81 hrs, Volume= 11.548 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 15L: B-1 INLETS COMBINED

Hydrograph



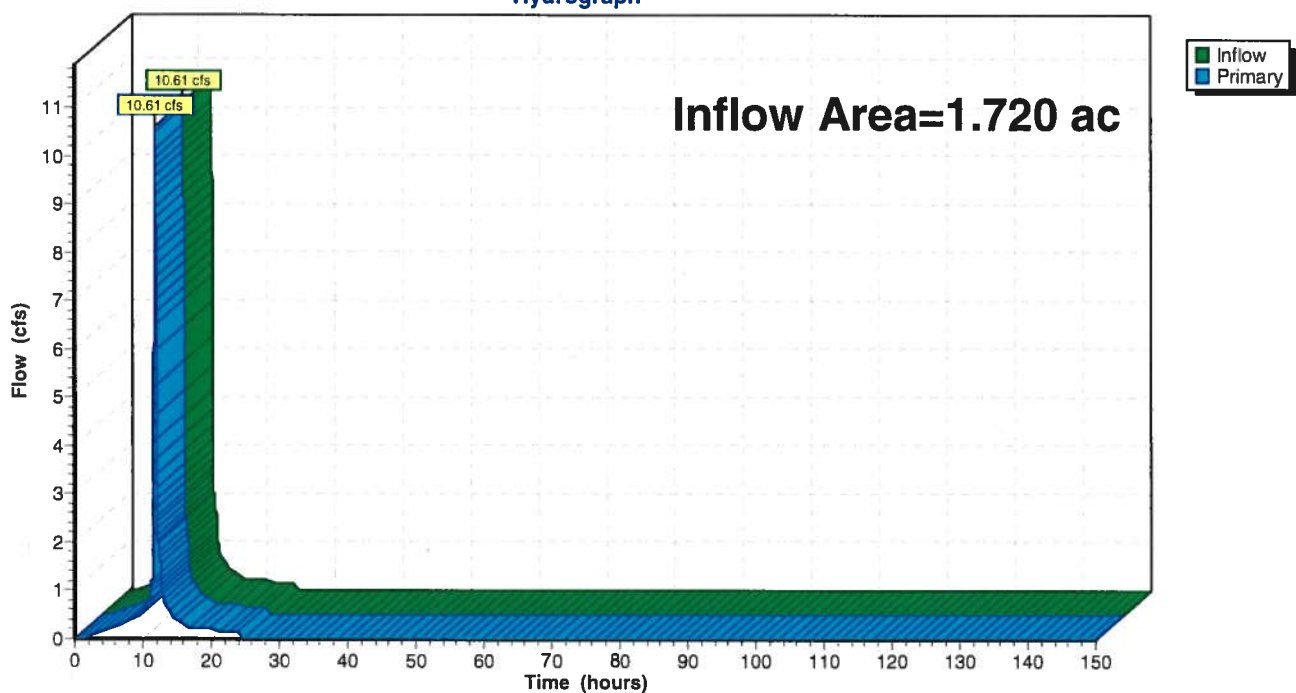
Link 16L: SB-1G OSB-1B COMBINED

Inflow Area = 1.720 ac, Inflow Depth = 6.85" for 24HR - 5YR event
Inflow = 10.61 cfs @ 11.79 hrs, Volume= 0.981 af
Primary = 10.61 cfs @ 11.79 hrs, Volume= 0.981 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 16L: SB-1G OSB-1B COMBINED

Hydrograph



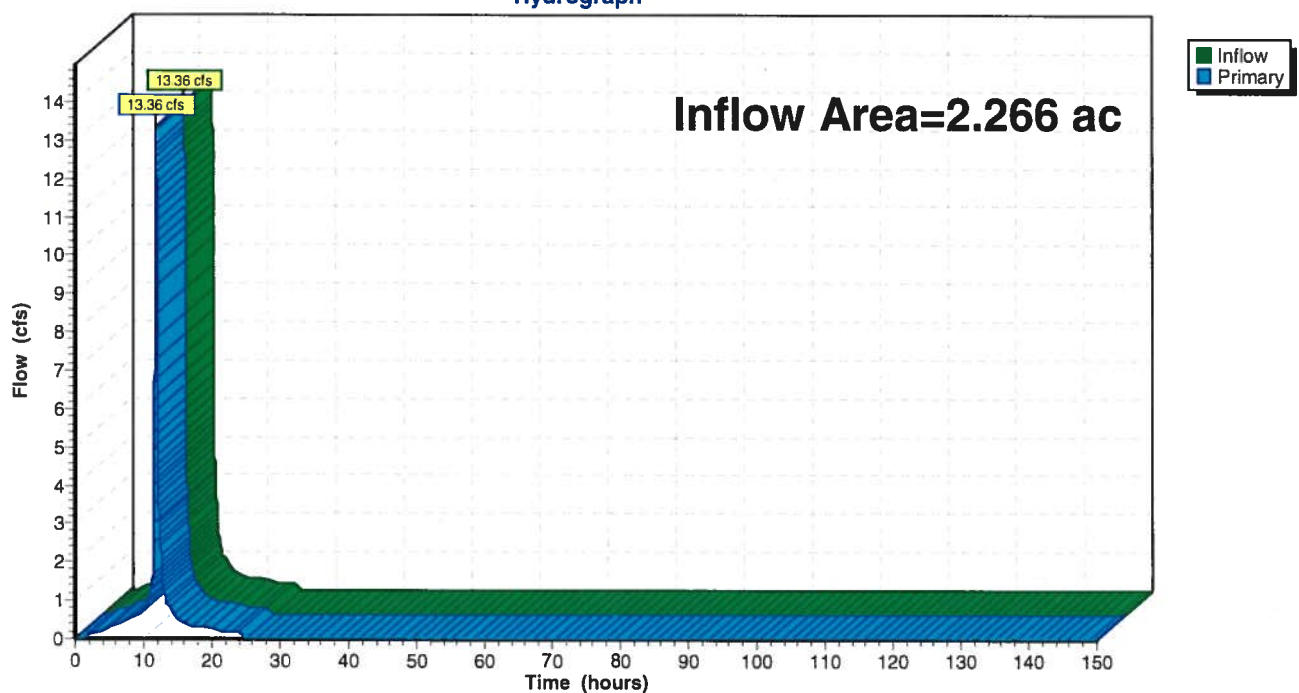
Link 17L: SB-1H OSB-1D COMBINED

Inflow Area = 2.266 ac, Inflow Depth = 7.16" for 24HR - 5YR event
Inflow = 13.36 cfs @ 11.82 hrs, Volume= 1.352 af
Primary = 13.36 cfs @ 11.82 hrs, Volume= 1.352 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 17L: SB-1H OSB-1D COMBINED

Hydrograph



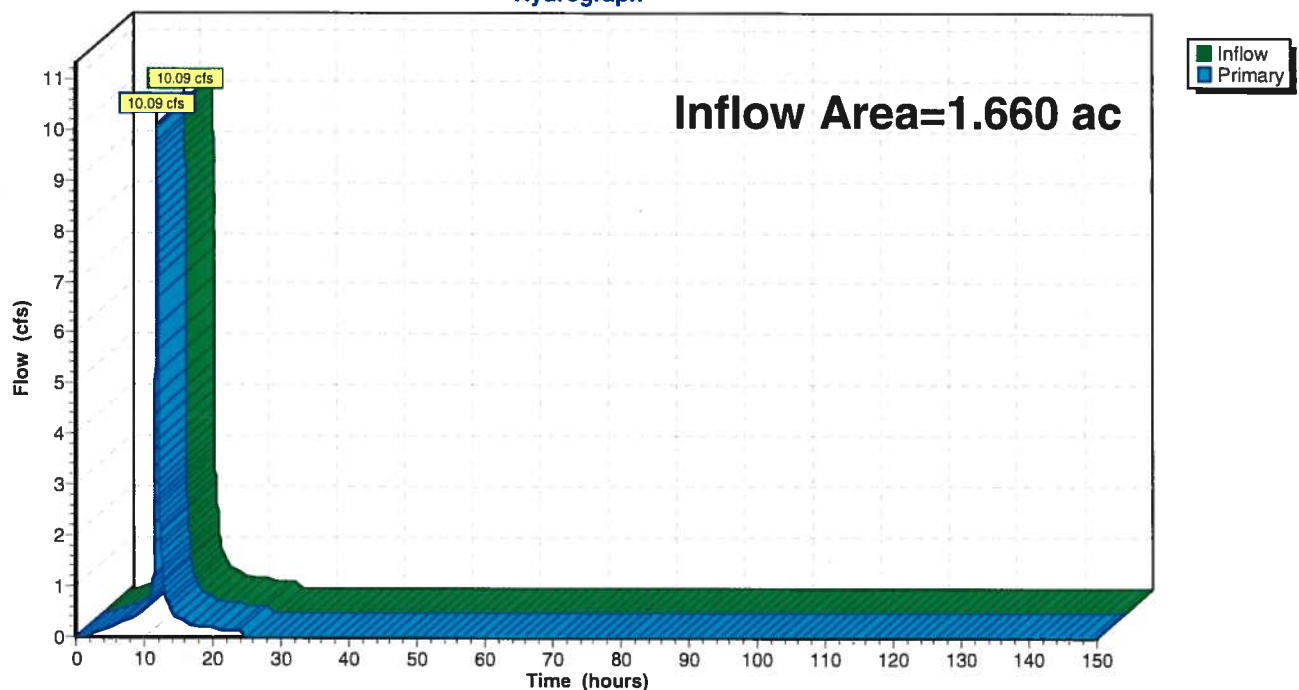
Link 18L: OSB-1 INLETS COMBINED

Inflow Area = 1.660 ac, Inflow Depth = 7.16" for 24HR - 5YR event
Inflow = 10.09 cfs @ 11.81 hrs, Volume= 0.991 af
Primary = 10.09 cfs @ 11.81 hrs, Volume= 0.991 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 18L: OSB-1 INLETS COMBINED

Hydrograph



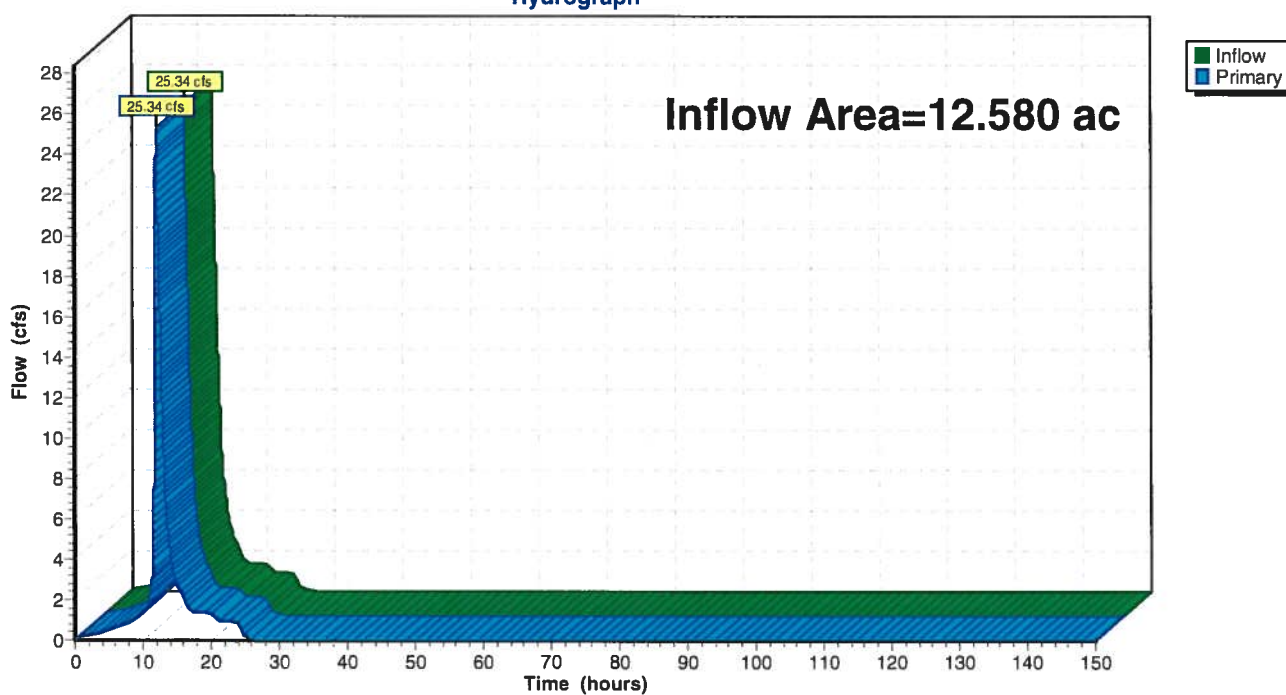
Link 19L: B-1 OVERLAND TO POND

Inflow Area = 12.580 ac, Inflow Depth = 4.41" for 24HR - 5YR event
Inflow = 25.34 cfs @ 12.00 hrs, Volume= 4.618 af
Primary = 25.34 cfs @ 12.00 hrs, Volume= 4.618 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 19L: B-1 OVERLAND TO POND

Hydrograph



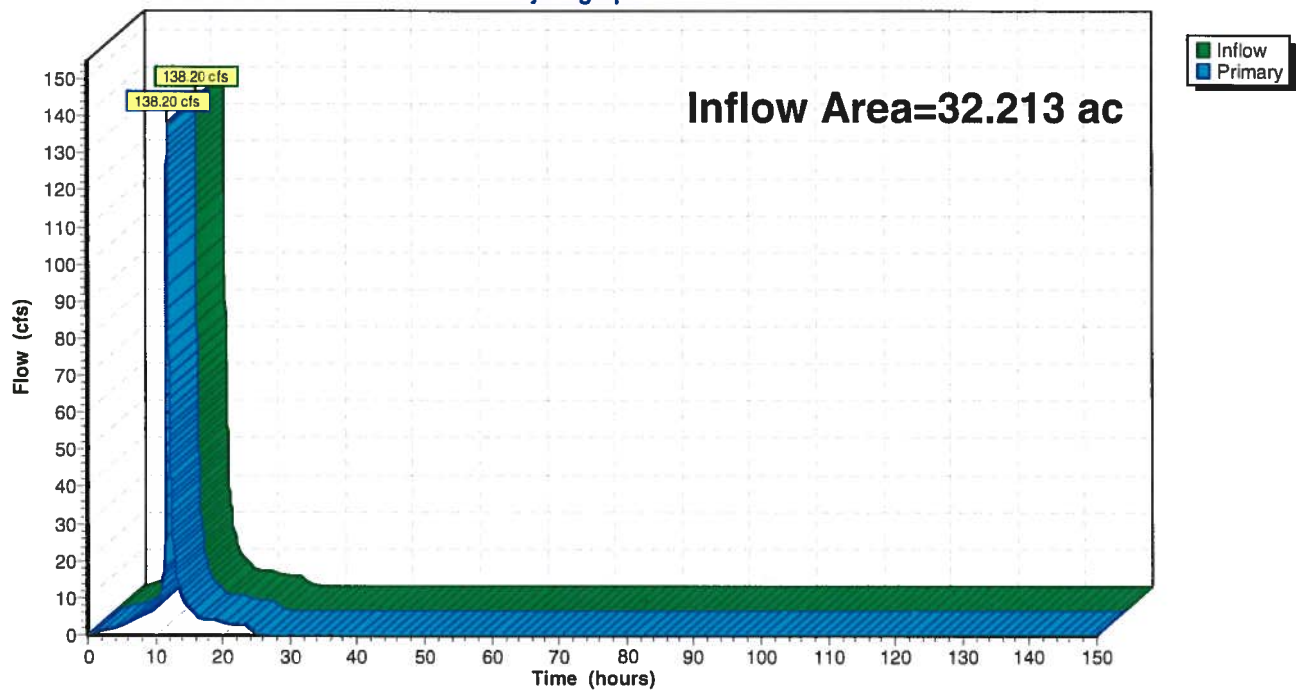
Link 20L: B-1 COMBINED TO POND

Inflow Area = 32.213 ac, Inflow Depth = 6.02" for 24HR - 5YR event
Inflow = 138.20 cfs @ 11.82 hrs, Volume= 16.166 af
Primary = 138.20 cfs @ 11.82 hrs, Volume= 16.166 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 20L: B-1 COMBINED TO POND

Hydrograph



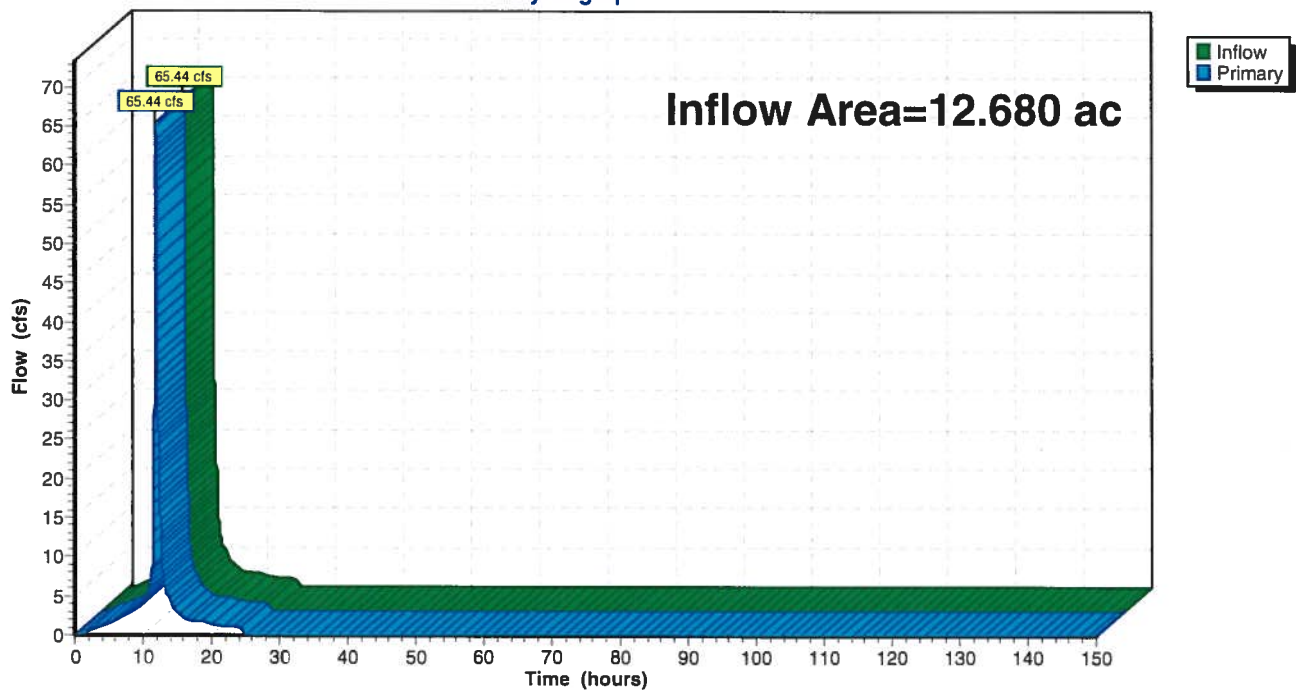
Link 29L: SB-2A OSB-2A COMBINED TO POND

Inflow Area = 12.680 ac, Inflow Depth = 7.06" for 24HR - 5YR event
Inflow = 65.44 cfs @ 11.86 hrs, Volume= 7.455 af
Primary = 65.44 cfs @ 11.86 hrs, Volume= 7.455 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 29L: SB-2A OSB-2A COMBINED TO POND

Hydrograph



Link 30L: DISCHARGE TO SOUTH CANAL

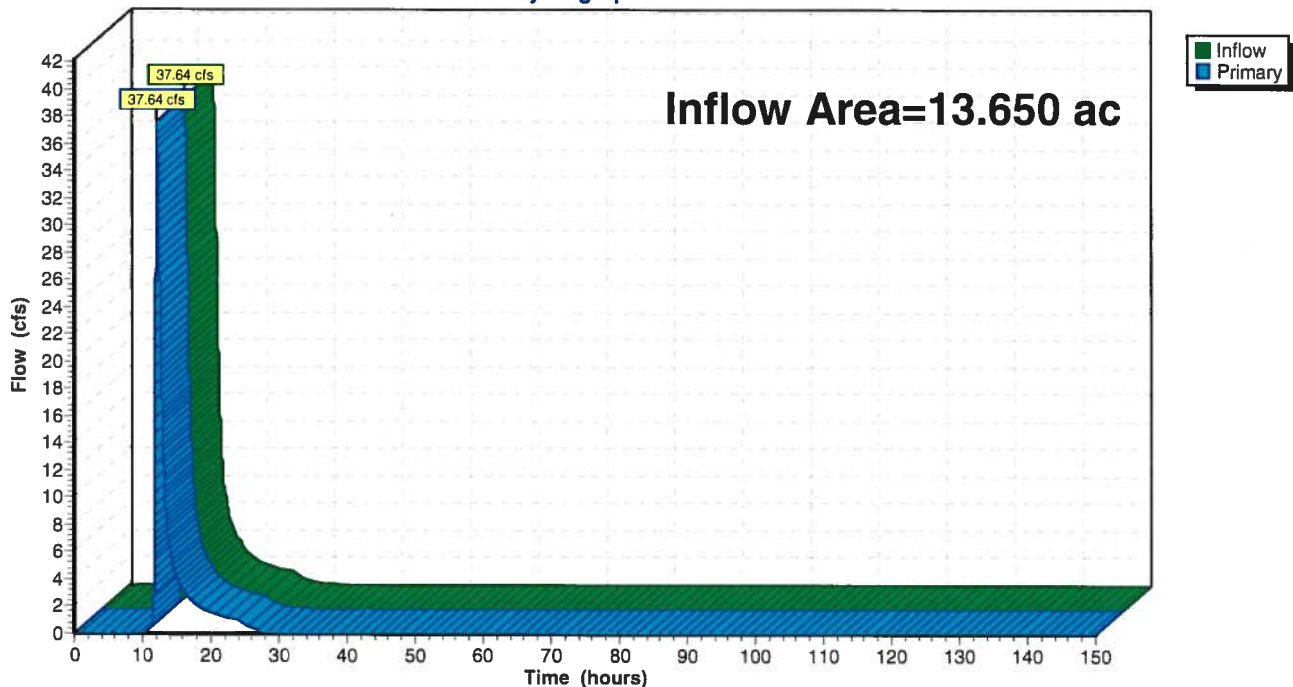
Inflow Area = 13.650 ac, Inflow Depth = 4.77" for 24HR - 5YR event
Inflow = 37.64 cfs @ 12.10 hrs, Volume= 5.428 af
Primary = 37.64 cfs @ 12.10 hrs, Volume= 5.428 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 2.08'

Link 30L: DISCHARGE TO SOUTH CANAL

Hydrograph



Link 32L: NORTH CANAL DISCHARGE

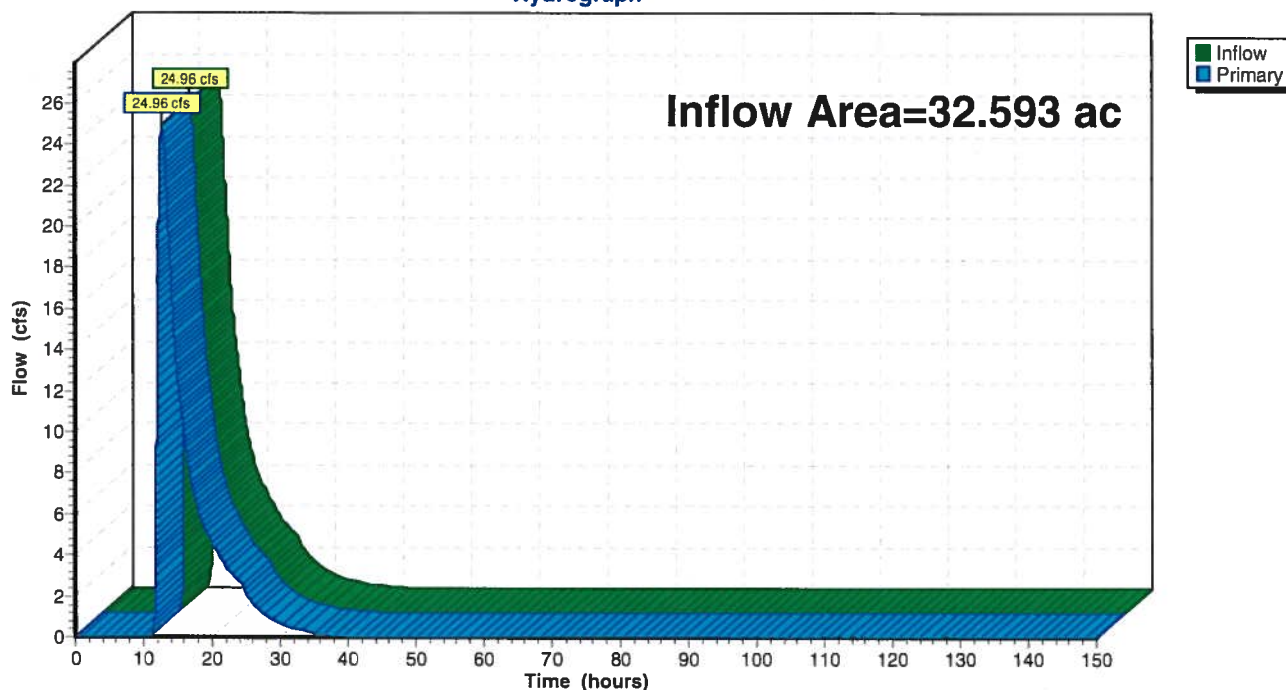
Inflow Area = 32.593 ac, Inflow Depth = 3.77" for 24HR - 5YR event
Inflow = 24.96 cfs @ 12.66 hrs, Volume= 10.238 af
Primary = 24.96 cfs @ 12.66 hrs, Volume= 10.238 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 2.08'

Link 32L: NORTH CANAL DISCHARGE

Hydrograph



Area Listing (all nodes)

<u>Area (acres)</u>	<u>CN</u>	<u>Description (subcats)</u>
9.060	61	>75% Grass cover, Good, HSG B (2S,7S,25S)
0.970	69	50-75% Grass cover, Fair, HSG B (23S)
2.460	88	Urban industrial, 72% imp, HSG B (3S,6S,26S)
29.383	98	Paved parking & roofs (1S,2S,3S,4S,5S,7S,8S,11S,12S,13S,14S,22S,22S,31S,33S)
4.370	100	DETENTION POND (2S,22S)
46.243		

Time span=0.00-150.00 hrs, dt=0.01 hrs, 15001 points

Runoff by SBUH method, Split Pervious/Imperv.

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

Subcatchment 1S: SB-1ARunoff Area=8.250 ac Runoff Depth=14.06"
Tc=5.0 min CN=0/98 Runoff=71.46 cfs 9.668 af**Subcatchment 2S: SB-1B**Runoff Area=12.580 ac Runoff Depth=10.52"
Flow Length=520' Tc=33.4 min CN=61/100 Runoff=49.27 cfs 11.025 af**Subcatchment 3S: SB-1C**Runoff Area=1.760 ac Runoff Depth=13.40"
Flow Length=256' Tc=4.8 min CN=62/98 Runoff=14.95 cfs 1.965 af**Subcatchment 4S: SB-1D**Runoff Area=1.480 ac Runoff Depth=14.06"
Flow Length=487' Tc=5.7 min CN=0/98 Runoff=12.53 cfs 1.734 af**Subcatchment 5S: SB-1E**Runoff Area=0.970 ac Runoff Depth=14.06"
Flow Length=297' Tc=3.6 min CN=0/98 Runoff=8.79 cfs 1.137 af**Subcatchment 6S: SB-1F**Runoff Area=0.480 ac Runoff Depth=12.62"
Flow Length=160' Slope=0.0187 '/' Tc=1.3 min CN=62/98 Runoff=4.41 cfs 0.505 af**Subcatchment 7S: SB-1G**Runoff Area=1.380 ac Runoff Depth=13.56"
Flow Length=261' Tc=2.8 min CN=61/98 Runoff=12.57 cfs 1.560 af**Subcatchment 8S: SB-1H**Runoff Area=1.770 ac Runoff Depth=14.06"
Flow Length=307' Tc=6.6 min CN=0/98 Runoff=14.56 cfs 2.074 af**Subcatchment 11S: OSB-1A**Runoff Area=1.120 ac Runoff Depth=14.06"
Tc=5.0 min CN=0/98 Runoff=9.70 cfs 1.312 af**Subcatchment 12S: OSB-1B**Runoff Area=0.340 ac Runoff Depth=14.06"
Flow Length=310' Tc=4.7 min CN=0/98 Runoff=2.97 cfs 0.398 af**Subcatchment 13S: OSB-1C**Runoff Area=0.540 ac Runoff Depth=14.06"
Tc=5.0 min CN=0/98 Runoff=4.68 cfs 0.633 af**Subcatchment 14S: SB-1K**Runoff Area=0.496 ac Runoff Depth=14.06"
Flow Length=219' Slope=0.0069 '/' Tc=2.6 min CN=0/98 Runoff=4.64 cfs 0.581 af**Subcatchment 22S: SB-2A**Runoff Area=11.510 ac Runoff Depth=14.06"
Flow Length=706' Tc=9.5 min CN=0/98 Runoff=86.70 cfs 13.484 af**Subcatchment 23S: SB-2B**Runoff Area=0.970 ac Runoff Depth=10.04"
Flow Length=120' Slope=0.0583 '/' Tc=5.4 min CN=69/0 Runoff=7.21 cfs 0.811 af**Subcatchment 25S: B-4**Runoff Area=0.380 ac Runoff Depth=8.73"
Flow Length=16' Slope=0.1283 '/' Tc=1.7 min CN=61/0 Runoff=2.88 cfs 0.277 af

Subcatchment 26S: OSB-2A

Runoff Area=1.170 ac Runoff Depth=12.61"
Flow Length=329' Tc=14.1 min CN=62/98 Runoff=7.35 cfs 1.230 af

Subcatchment 31S: SB-1I

Runoff Area=0.300 ac Runoff Depth=14.07"
Flow Length=139' Slope=0.0058 '/' Tc=1.9 min CN=0/98 Runoff=2.86 cfs 0.352 af

Subcatchment 33S: SB-1J

Runoff Area=0.747 ac Runoff Depth=14.06"
Flow Length=300' Slope=0.0100 '/' Tc=2.8 min CN=0/98 Runoff=6.94 cfs 0.875 af

Reach 33R: Basin 1 Outfall

Avg. Depth=1.19' Max Vel=10.11 fps Inflow=78.97 cfs 24.702 af
D=36.0" n=0.011 L=100.0' S=0.0102 '/' Capacity=238.83 cfs Outflow=78.97 cfs 24.702 af

Reach 35R: Basin 2 Outfall

Avg. Depth=1.46' Max Vel=9.76 fps Inflow=66.53 cfs 11.188 af
D=36.0" n=0.011 L=130.0' S=0.0078 '/' Capacity=139.64 cfs Outflow=66.51 cfs 11.188 af

Pond 10P: BASIN 1 DRY DETENTION PON

Peak Elev=7.97' Storage=13.124 af Inflow=210.80 cfs 33.819 af
Primary=78.97 cfs 24.702 af Secondary=1.54 cfs 8.444 af Outflow=80.51 cfs 33.146 af

Pond 24P: BASIN 2 DRY DETENTION POND

Peak Elev=7.58' Storage=4.164 af Inflow=93.96 cfs 14.714 af
Primary=66.53 cfs 11.188 af Secondary=0.49 cfs 3.207 af Outflow=67.02 cfs 14.395 af

Pond 33P: BASIN 1 BLEEDER DISCHARGE VO

Peak Elev=4.30' Storage=2.924 af Inflow=0.00 cfs 0.000 af
Outflow=0.74 cfs 2.830 af

Pond 34P: BASIN 2 BLEEDER DISCHARGE VO

Peak Elev=4.90' Storage=1.488 af Inflow=0.00 cfs 0.000 af
Outflow=0.31 cfs 1.448 af

Link 15L: B-1 INLETS COMBINED

Inflow=170.23 cfs 22.794 af
Primary=170.23 cfs 22.794 af

Link 16L: SB-1G OSB-1B COMBINED

Inflow=15.51 cfs 1.958 af
Primary=15.51 cfs 1.958 af

Link 17L: SB-1H OSB-1D COMBINED

Inflow=19.03 cfs 2.655 af
Primary=19.03 cfs 2.655 af

Link 18L: OSB-1 INLETS COMBINED

Inflow=14.38 cfs 1.945 af
Primary=14.38 cfs 1.945 af

Link 19L: B-1 OVERLAND TO POND

Inflow=49.27 cfs 11.025 af
Primary=49.27 cfs 11.025 af

Link 20L: B-1 COMBINED TO POND

Inflow=210.80 cfs 33.819 af
Primary=210.80 cfs 33.819 af

Link 29L: SB-2A OSB-2A COMBINED TO POND

Inflow=93.96 cfs 14.714 af
Primary=93.96 cfs 14.714 af

Link 30L: DISCHARGE TO SOUTH CANAL

Inflow=70.47 cfs 11.999 af
Primary=70.47 cfs 11.999 af

Link 32L: NORTH CANAL DISCHARGE

Inflow=79.47 cfs 24.978 af

Primary=79.47 cfs 24.978 af

Total Runoff Area = 46.243 ac Runoff Volume = 49.621 af Average Runoff Depth = 12.88"
23.18% Pervious Area = 10.719 ac 76.82% Impervious Area = 35.524 ac

Subcatchment 1S: SB-1A

Runoff = 71.46 cfs @ 59.81 hrs, Volume= 9.668 af, Depth=14.06"

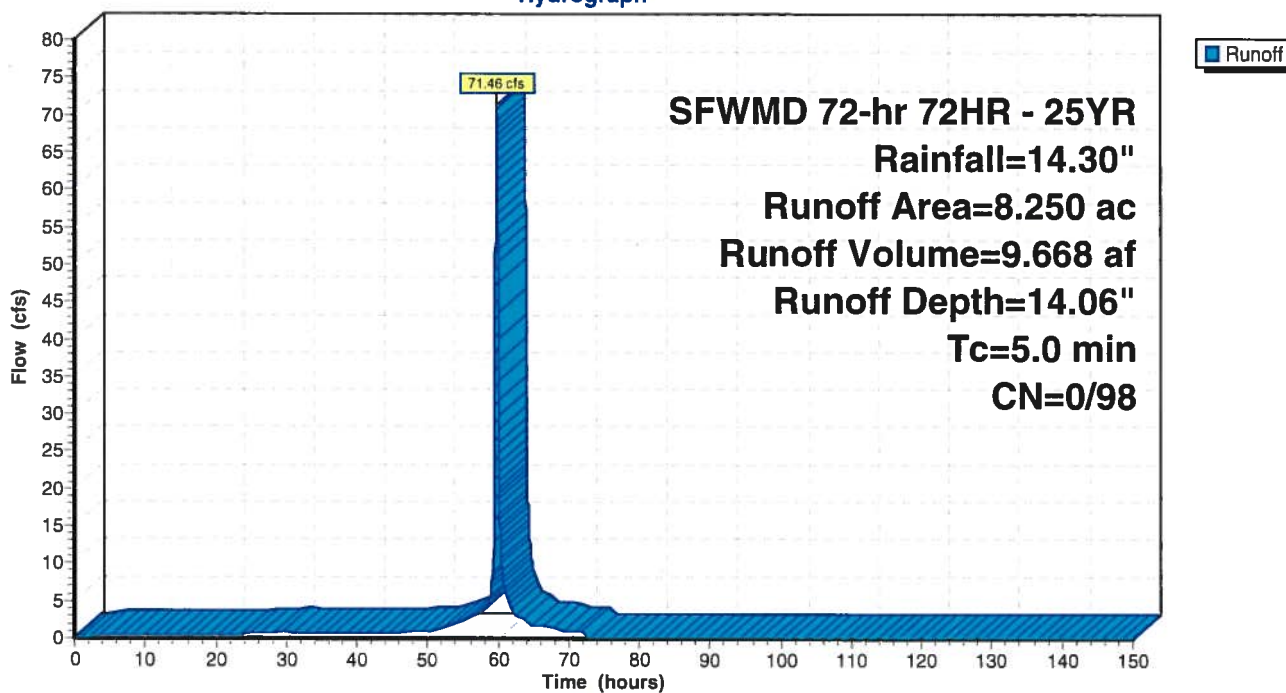
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 25YR Rainfall=14.30"

Area (ac)	CN	Description
8.250	98	Paved parking & roofs
8.250	98	Impervious Area

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

Subcatchment 1S: SB-1A

Hydrograph



Subcatchment 2S: SB-1B

Runoff = 49.27 cfs @ 60.00 hrs, Volume= 11.025 af, Depth=10.52"

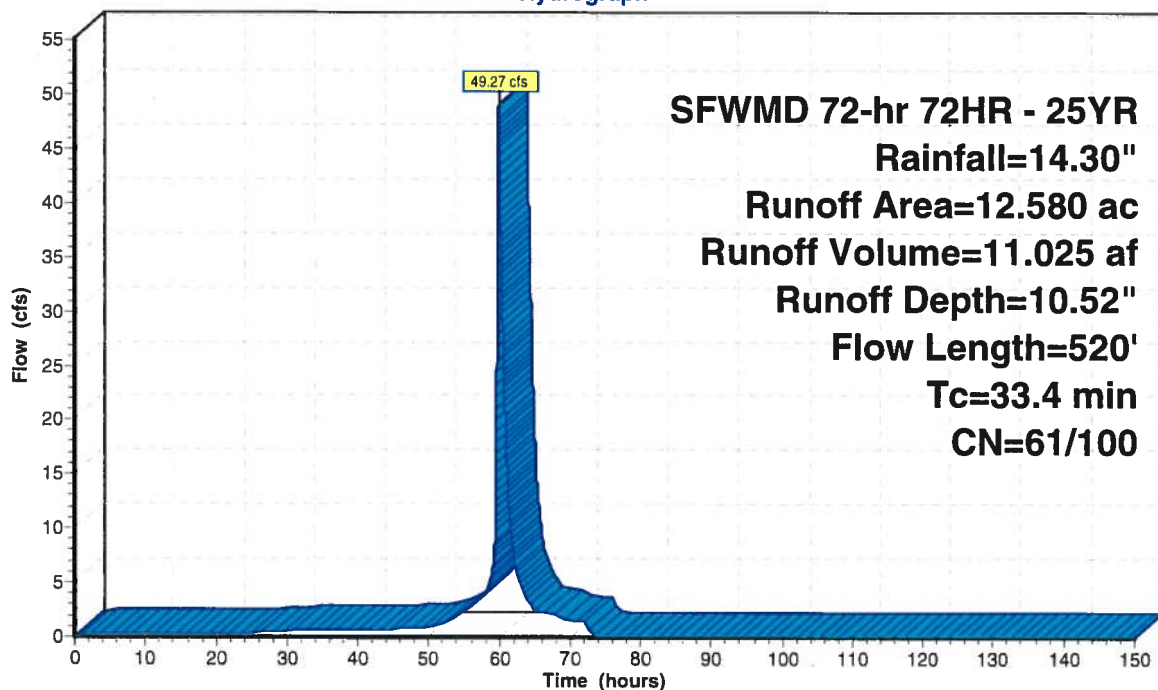
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 25YR Rainfall=14.30"

Area (ac)	CN	Description
8.550	61	>75% Grass cover, Good, HSG B
3.190	100	DETENTION POND
0.840	98	Paved parking & roofs
12.580	73	Weighted Average
8.550	61	Pervious Area
4.030	100	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	40	0.0200	1.56		Sheet Flow, OVERLAND 1 Smooth surfaces n= 0.011 P2= 5.90"
29.5	260	0.0040	0.15		Sheet Flow, OVERLAND TO SCF Grass: Short n= 0.150 P2= 5.90"
3.5	220	0.0050	1.06		Shallow Concentrated Flow, SCF TO DETENTION POND Grassed Waterway Kv= 15.0 fps
33.4	520	Total			

Subcatchment 2S: SB-1B

Hydrograph



Subcatchment 3S: SB-1C

Runoff = 14.95 cfs @ 59.81 hrs, Volume= 1.965 af, Depth=13.40"

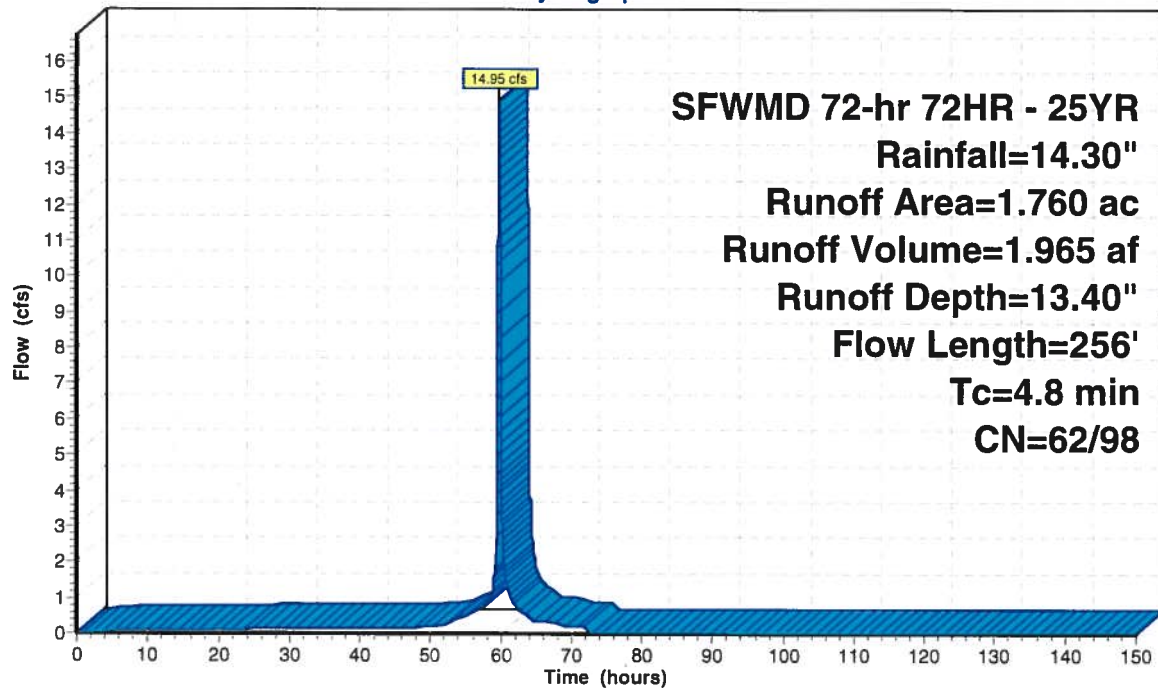
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 25YR Rainfall=14.30"

Area (ac)	CN	Description
0.950	98	Paved parking & roofs
0.810	88	Urban industrial, 72% imp, HSG B
1.760	93	Weighted Average
0.227	62	Pervious Area
1.533	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	22	0.0090	1.00		Sheet Flow, OVERLAND FROM ROAD Smooth surfaces n= 0.011 P2= 5.90"
1.4	68	0.0029	0.80		Sheet Flow, OVERLAND 2 Smooth surfaces n= 0.011 P2= 5.90"
0.2	52	0.2900	4.78		Sheet Flow, OVERLAND 3 Smooth surfaces n= 0.011 P2= 5.90"
1.8	74	0.0020	0.70		Sheet Flow, OVERLAND 4 Smooth surfaces n= 0.011 P2= 5.90"
1.0	40	0.0025	0.68		Sheet Flow, OVERLAND TO INLET Smooth surfaces n= 0.011 P2= 5.90"
4.8	256	Total			

Subcatchment 3S: SB-1C

Hydrograph



Subcatchment 4S: SB-1D

Runoff = 12.53 cfs @ 59.82 hrs, Volume= 1.734 af, Depth=14.06"

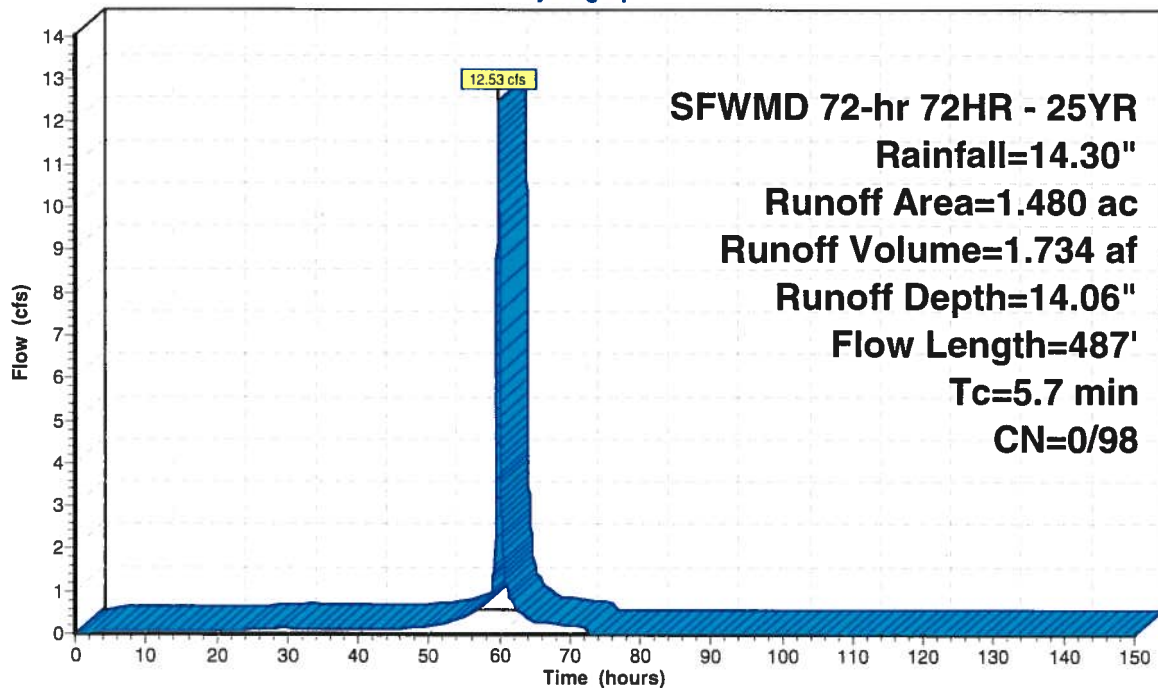
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 25YR Rainfall=14.30"

Area (ac)	CN	Description
1.480	98	Paved parking & roofs
1.480	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	54	0.0056	0.99		Sheet Flow, OVERLAND 1 Smooth surfaces n= 0.011 P2= 5.90"
2.9	246	0.0065	1.43		Sheet Flow, OVERLAND TO SCF Smooth surfaces n= 0.011 P2= 5.90"
1.9	187	0.0064	1.62		Shallow Concentrated Flow, SCF TO INLET Paved Kv= 20.3 fps
5.7	487	Total			

Subcatchment 4S: SB-1D

Hydrograph



Subcatchment 5S: SB-1E

Runoff = 8.79 cfs @ 59.79 hrs, Volume= 1.137 af, Depth=14.06"

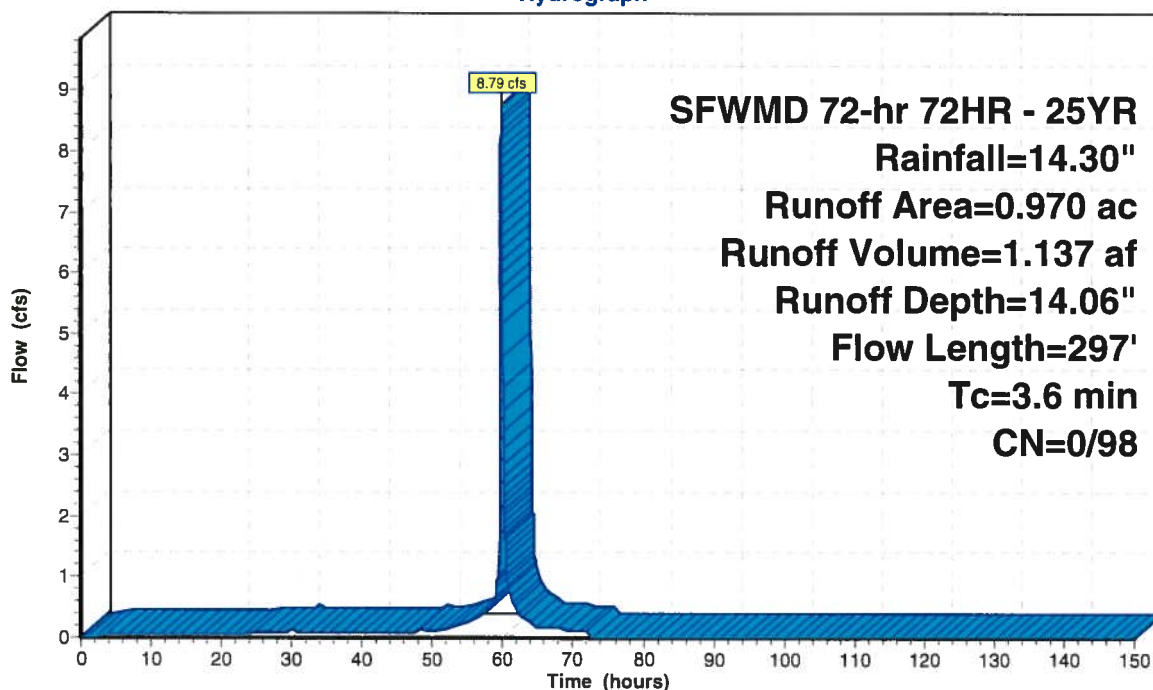
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 25YR Rainfall=14.30"

Area (ac)	CN	Description
0.970	98	Paved parking & roofs
0.970	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	137	0.0182	1.92		Sheet Flow, OVERLAND 1 Smooth surfaces n= 0.011 P2= 5.90"
1.1	72	0.0069	1.14		Sheet Flow, OVERLAND 2 Smooth surfaces n= 0.011 P2= 5.90"
1.3	88	0.0057	1.10		Sheet Flow, OVERLAND TO INLET Smooth surfaces n= 0.011 P2= 5.90"
3.6	297	Total			

Subcatchment 5S: SB-1E

Hydrograph



Subcatchment 6S: SB-1F

Runoff = 4.41 cfs @ 59.76 hrs, Volume= 0.505 af, Depth=12.62"

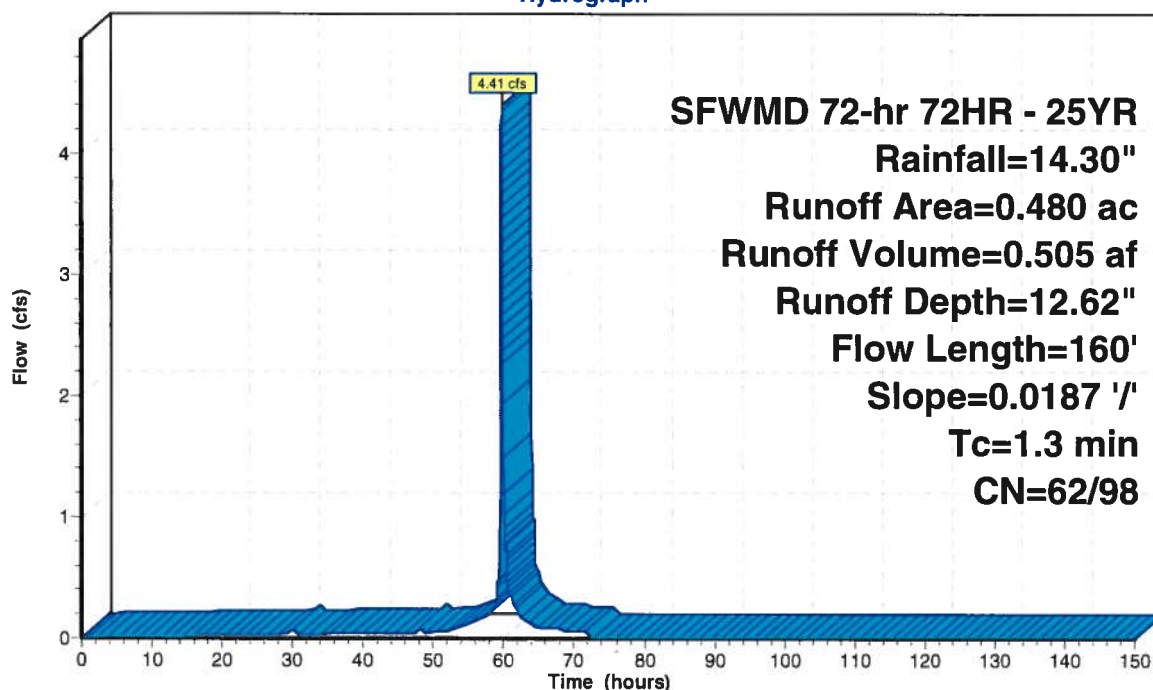
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 25YR Rainfall=14.30"

Area (ac)	CN	Description
0.480	88	Urban industrial, 72% imp, HSG B
0.134	62	Pervious Area
0.346	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	160	0.0187	2.00		Sheet Flow, OVERLAND TO INLET Smooth surfaces n= 0.011 P2= 5.90"

Subcatchment 6S: SB-1F

Hydrograph



Subcatchment 7S: SB-1G

Runoff = 12.57 cfs @ 59.78 hrs, Volume= 1.560 af, Depth=13.56"

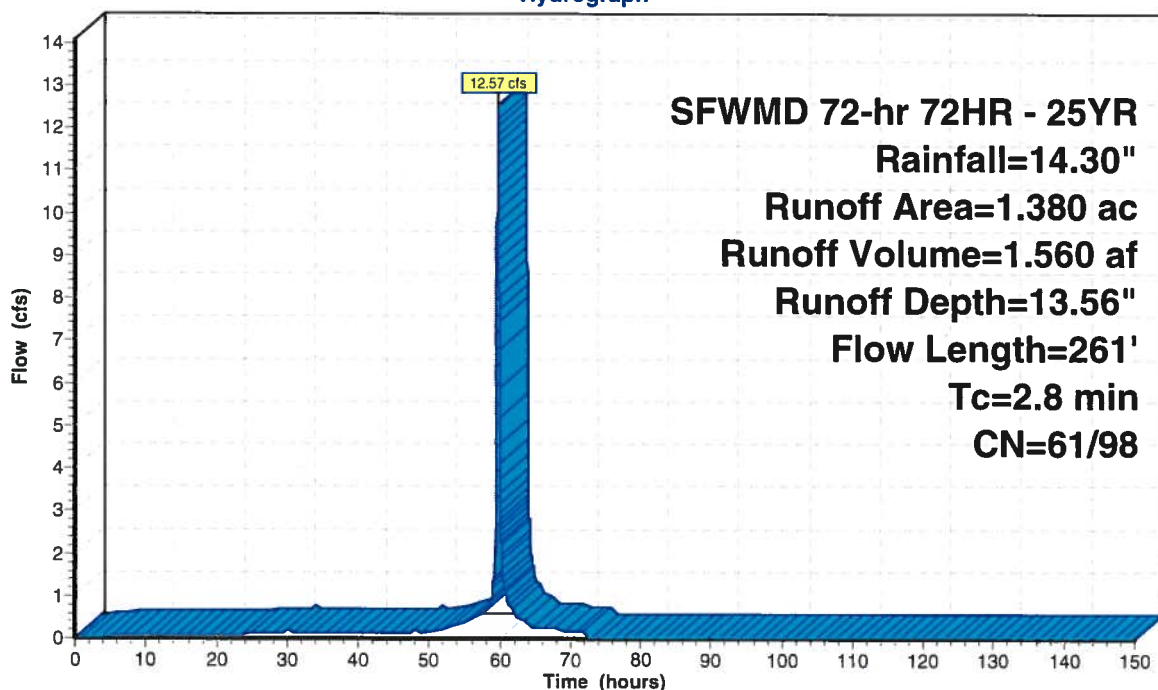
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 25YR Rainfall=14.30"

Area (ac)	CN	Description
1.250	98	Paved parking & roofs
0.130	61	>75% Grass cover, Good, HSG B
1.380	95	Weighted Average
0.130	61	Pervious Area
1.250	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	232	0.0103	1.69		Sheet Flow, OVERLAND 1 Smooth surfaces n= 0.011 P2= 5.90"
0.5	29	0.0069	0.95		Sheet Flow, OVERLAND TO INLET Smooth surfaces n= 0.011 P2= 5.90"
2.8	261	Total			

Subcatchment 7S: SB-1G

Hydrograph



Subcatchment 8S: SB-1H

Runoff = 14.56 cfs @ 59.83 hrs, Volume= 2.074 af, Depth=14.06"

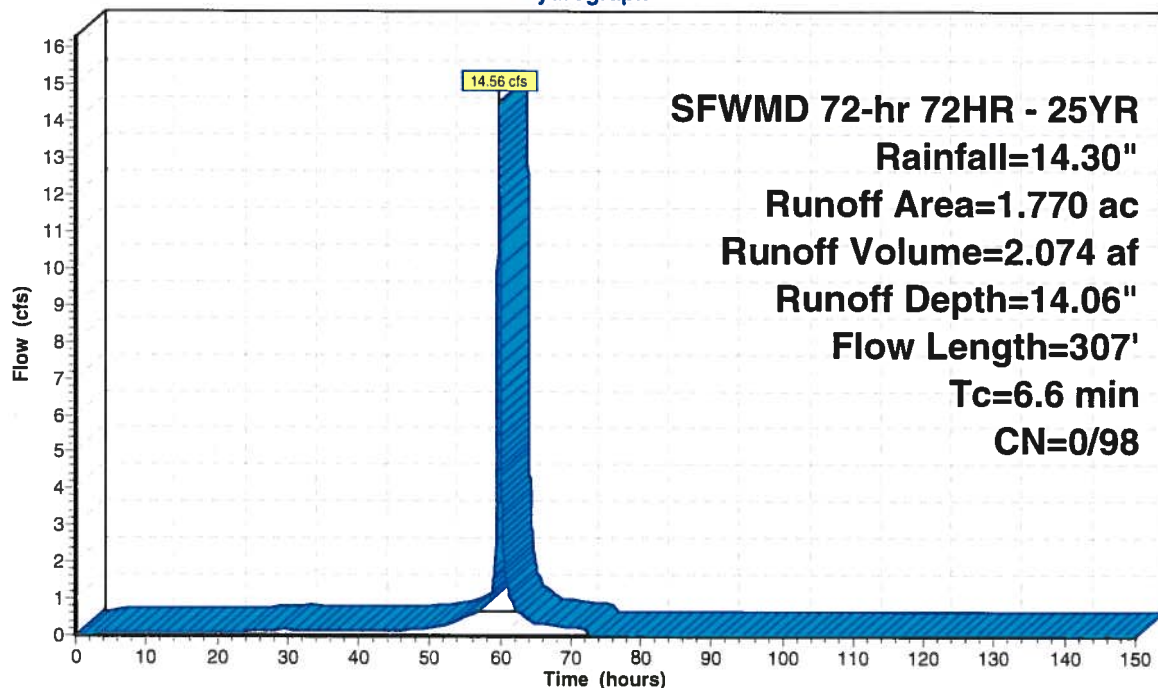
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 25YR Rainfall=14.30"

Area (ac)	CN	Description
1.770	98	Paved parking & roofs
1.770	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	142	0.0014	0.69		Sheet Flow, OVERLAND 1 Smooth surfaces n= 0.011 P2= 5.90"
3.1	158	0.0023	0.86		Sheet Flow, OVERLAND TO SCF Smooth surfaces n= 0.011 P2= 5.90"
0.1	7	0.0054	1.18		Shallow Concentrated Flow, SCF TO INLET Unpaved Kv= 16.1 fps
6.6	307	Total			

Subcatchment 8S: SB-1H

Hydrograph



Subcatchment 11S: OSB-1A

Runoff = 9.70 cfs @ 59.81 hrs, Volume= 1.312 af, Depth=14.06"

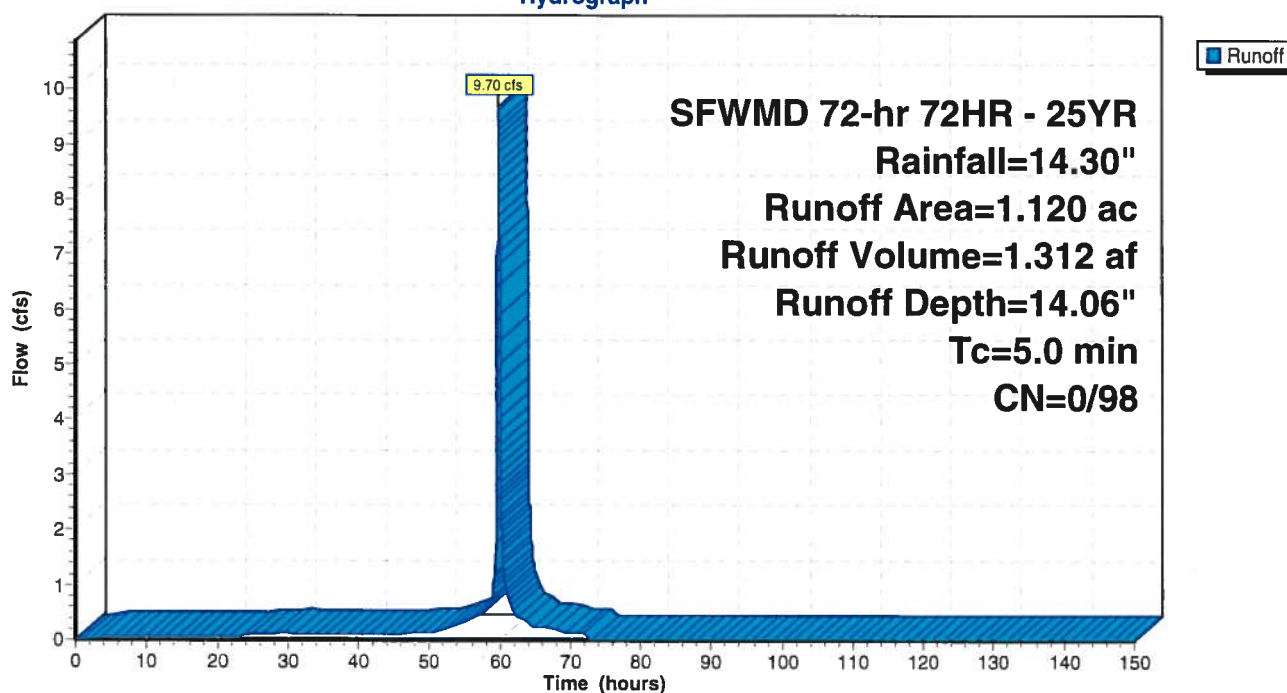
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 25YR Rainfall=14.30"

Area (ac)	CN	Description
1.120	98	Paved parking & roofs
1.120	98	Impervious Area

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

Subcatchment 11S: OSB-1A

Hydrograph



Subcatchment 12S: OSB-1B

Runoff = 2.97 cfs @ 59.81 hrs, Volume= 0.398 af, Depth=14.06"

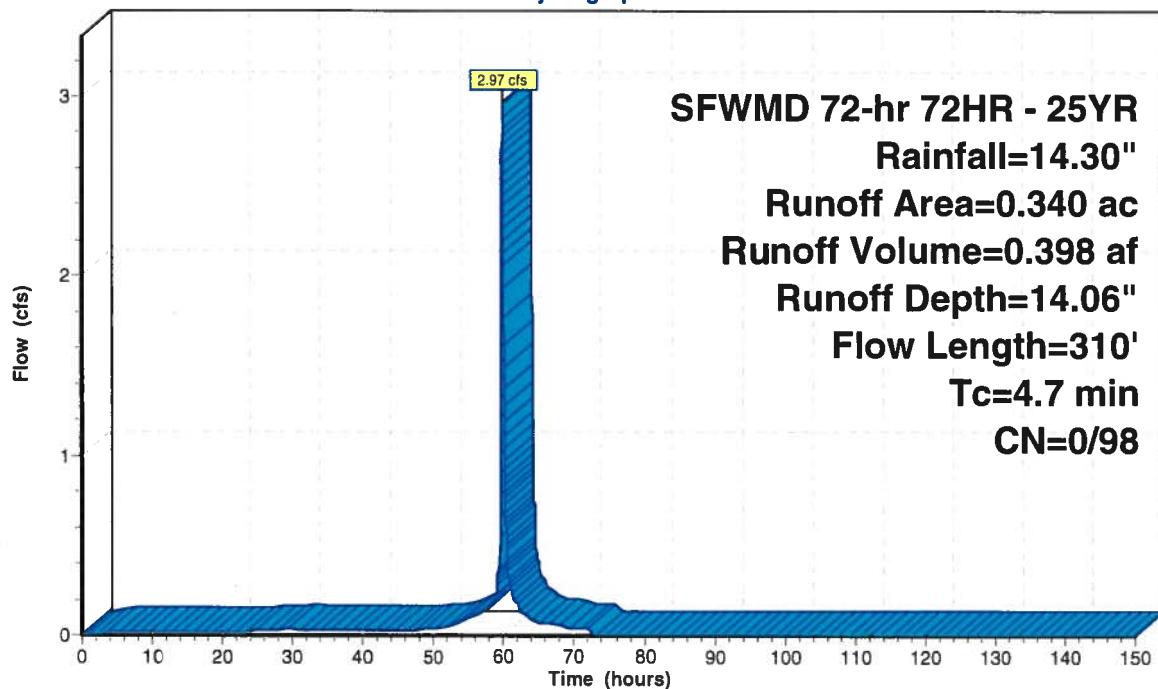
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 25YR Rainfall=14.30"

Area (ac)	CN	Description
0.340	98	Paved parking & roofs
0.340	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	138	0.0051	1.15		Sheet Flow, OVERLAND 1 Smooth surfaces n= 0.011 P2= 5.90"
2.6	161	0.0037	1.05		Sheet Flow, OVERLAND TO SCF Smooth surfaces n= 0.011 P2= 5.90"
0.1	11	0.0271	3.34		Shallow Concentrated Flow, SCF TO SB-1G Paved Kv= 20.3 fps
4.7	310	Total			

Subcatchment 12S: OSB-1B

Hydrograph



Subcatchment 13S: OSB-1C

Runoff = 4.68 cfs @ 59.81 hrs, Volume= 0.633 af, Depth=14.06"

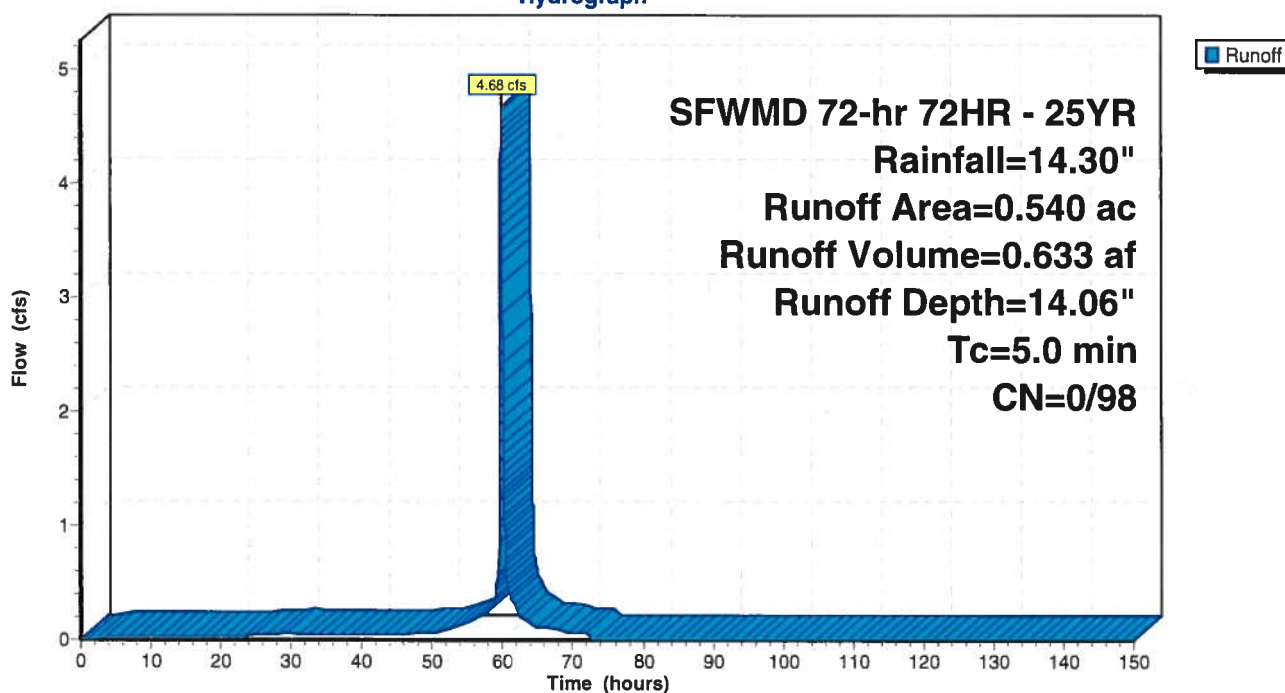
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 25YR Rainfall=14.30"

Area (ac)	CN	Description
0.540	98	Paved parking & roofs
0.540	98	Impervious Area

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

Subcatchment 13S: OSB-1C

Hydrograph



Subcatchment 14S: SB-1K

Runoff = 4.64 cfs @ 59.78 hrs, Volume= 0.581 af, Depth=14.06"

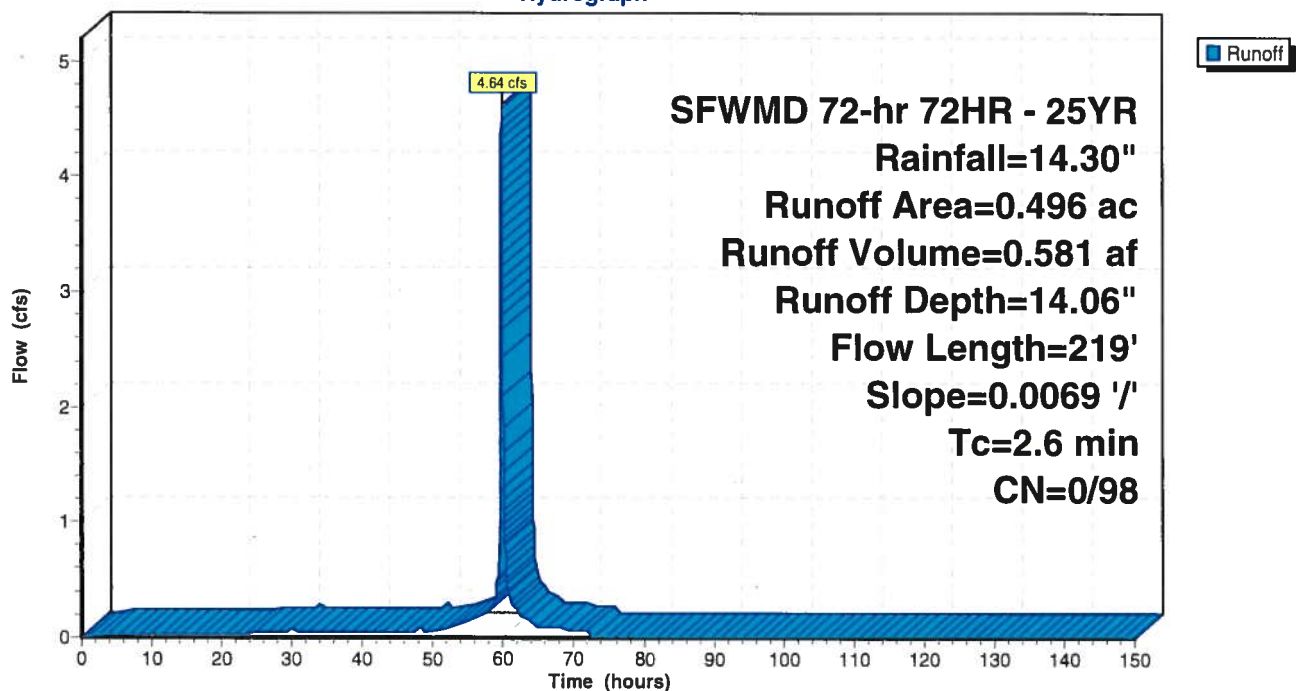
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 25YR Rainfall=14.30"

Area (ac)	CN	Description
0.496	98	Paved parking & roofs
0.496	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	219	0.0069	1.43		Sheet Flow, OVERLAND TO SB-1H Smooth surfaces n= 0.011 P2= 5.90"

Subcatchment 14S: SB-1K

Hydrograph



Subcatchment 22S: SB-2A

NOTE LINE ITEM 3 IS SOUTH DRY DETENTION POND AREA.

Runoff = 86.70 cfs @ 59.86 hrs, Volume= 13.484 af, Depth=14.06"

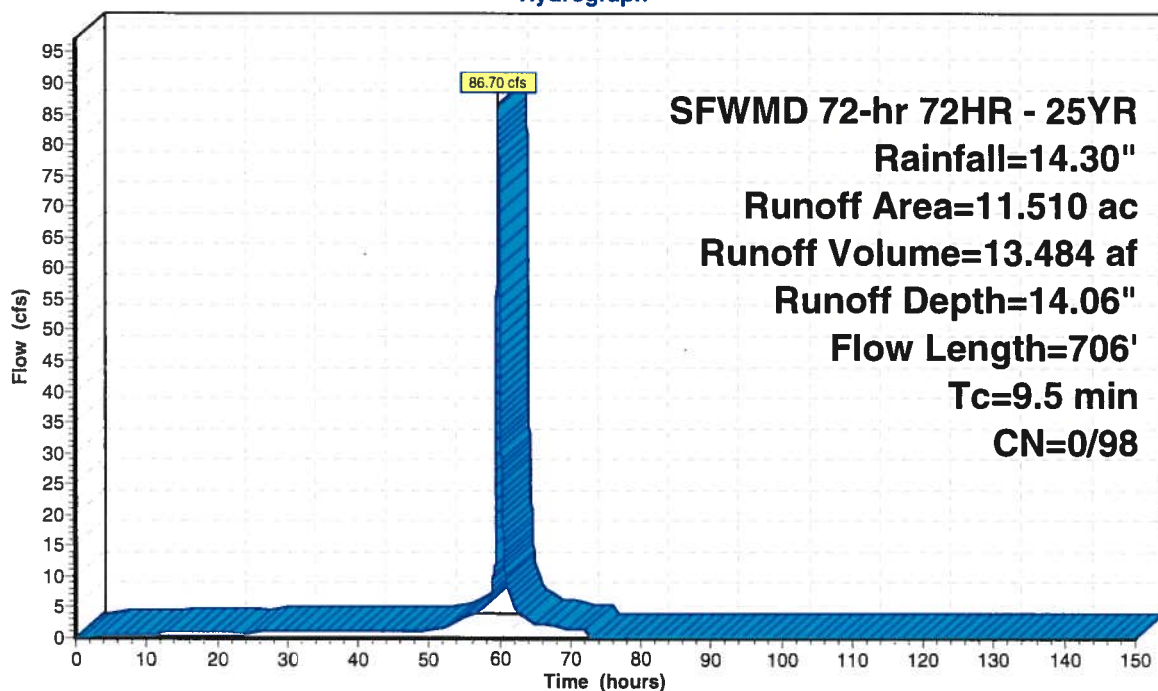
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 25YR Rainfall=14.30"

Area (ac)	CN	Description
10.290	98	Paved parking & roofs
1.180	100	DETENTION POND
0.040	98	Paved parking & roofs
11.510	98	Weighted Average
11.510	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	14	0.0141	1.10		Sheet Flow, OVERLAND FROM ROAD Smooth surfaces n= 0.011 P2= 5.90"
3.0	286	0.0077	1.57		Sheet Flow, OVERLAND TO SCF Smooth surfaces n= 0.011 P2= 5.90"
6.3	406	0.0044	1.07		Shallow Concentrated Flow, SCF TO POND Unpaved Kv= 16.1 fps
9.5	706	Total			

Subcatchment 22S: SB-2A

Hydrograph



Subcatchment 23S: SB-2B

Runoff = 7.21 cfs @ 59.82 hrs, Volume= 0.811 af, Depth=10.04"

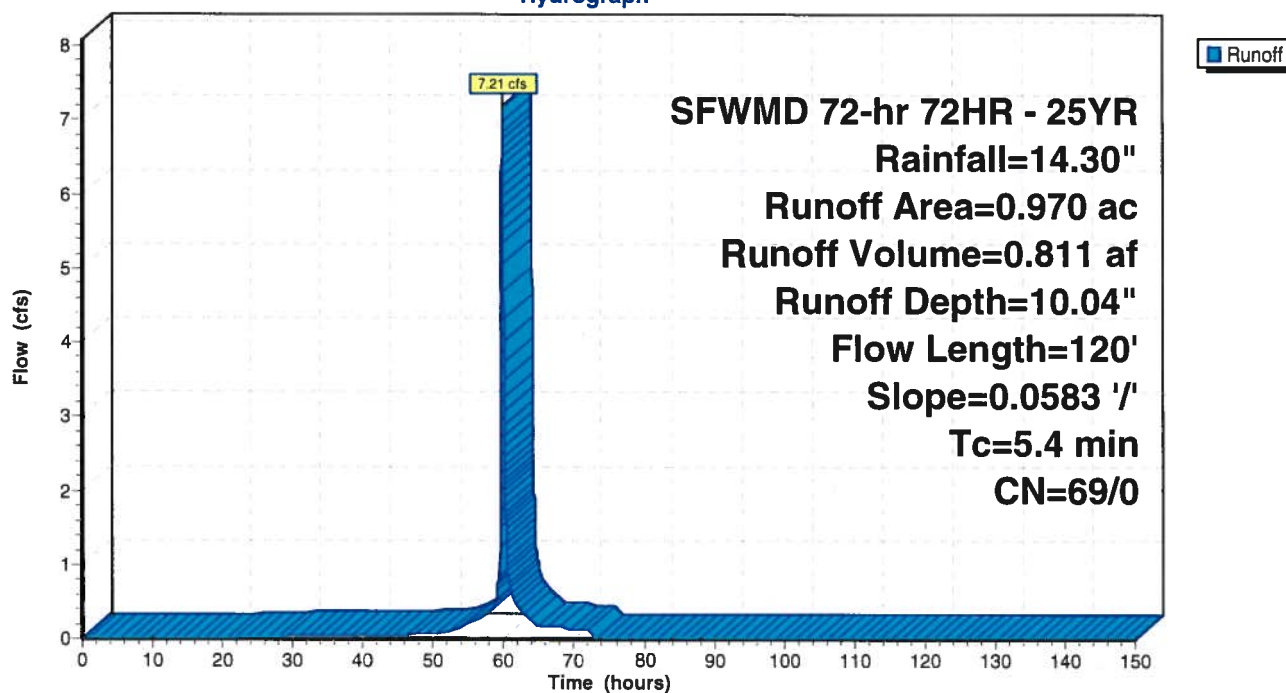
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 25YR Rainfall=14.30"

Area (ac)	CN	Description
0.970	69	50-75% Grass cover, Fair, HSG B
0.970	69	Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	120	0.0583	0.37		Sheet Flow, OVERLAND TO SOUTH CANAL Grass: Short n= 0.150 P2= 5.90"

Subcatchment 23S: SB-2B

Hydrograph



Subcatchment 25S: B-4

Runoff = 2.88 cfs @ 59.77 hrs, Volume= 0.277 af, Depth= 8.73"

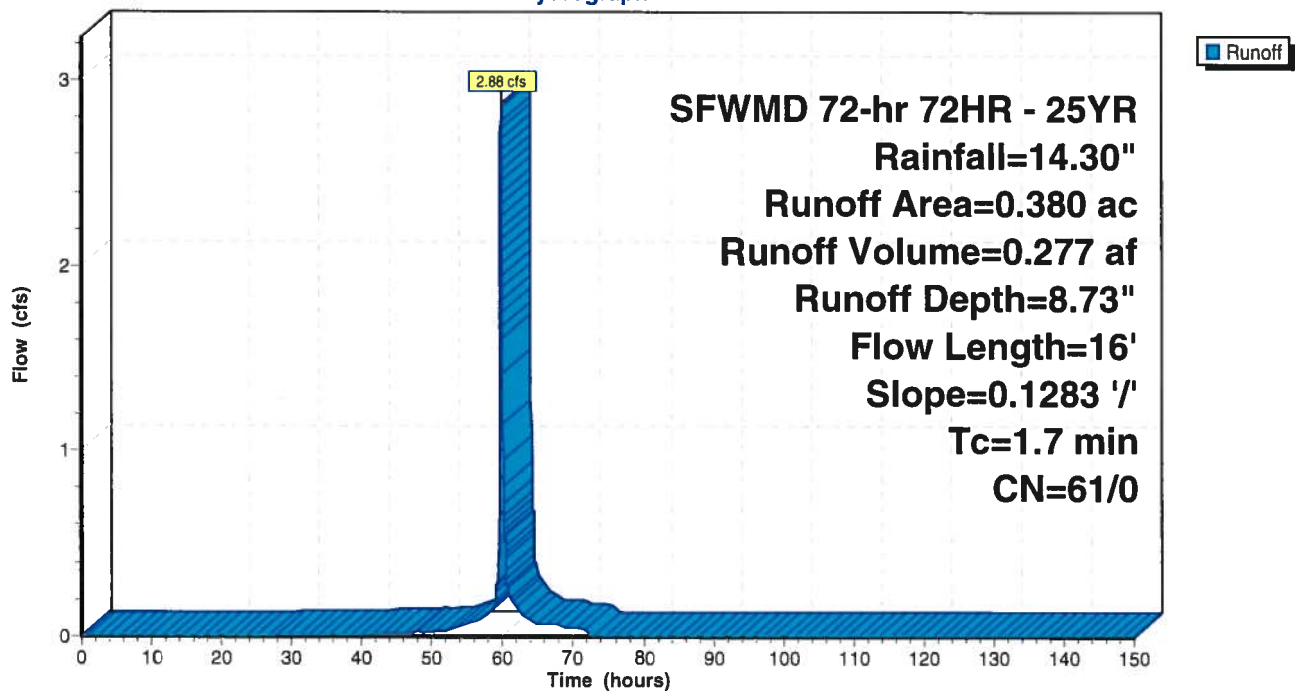
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 25YR Rainfall=14.30"

Area (ac)	CN	Description
0.380	61	>75% Grass cover, Good, HSG B
0.380	61	Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	16	0.1283	0.15		Sheet Flow, OVERLAND TO NORTH CANAL Woods: Light underbrush n= 0.400 P2= 5.90"

Subcatchment 25S: B-4

Hydrograph



Subcatchment 26S: OSB-2A

Runoff = 7.35 cfs @ 59.90 hrs, Volume= 1.230 af, Depth=12.61"

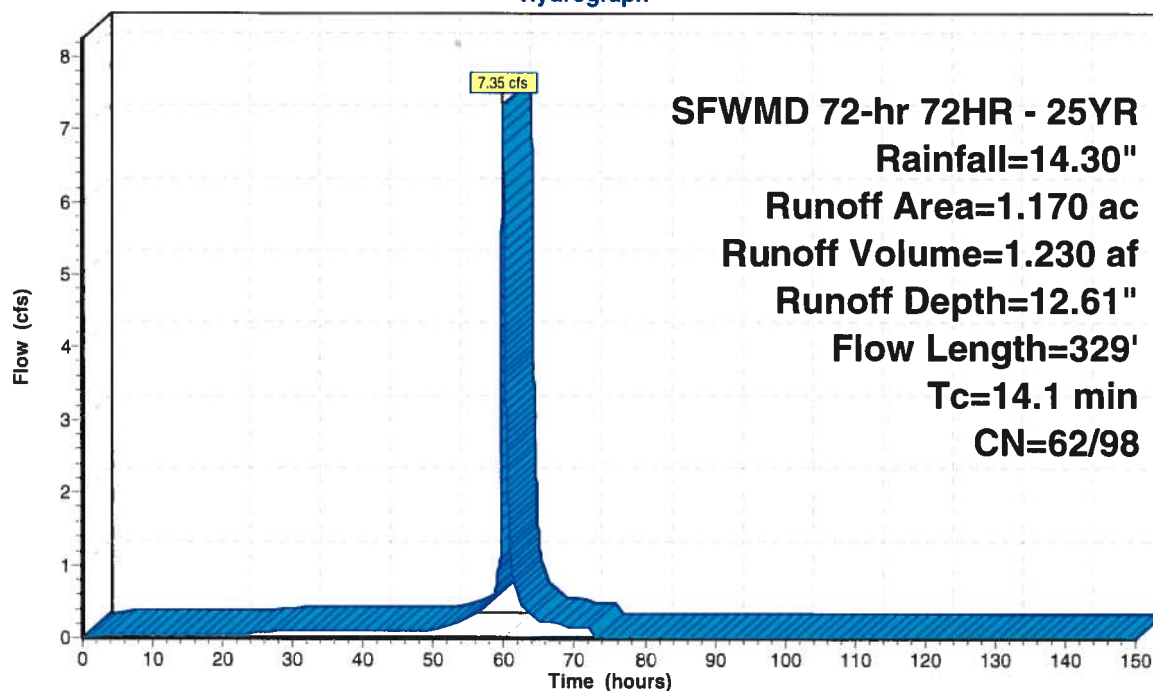
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 25YR Rainfall=14.30"

Area (ac)	CN	Description
1.170	88	Urban industrial, 72% imp, HSG B
0.328	62	Pervious Area
0.842	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	300	0.0040	0.36		Sheet Flow, OVERLAND TO SCF Fallow n= 0.050 P2= 5.90"
0.4	29	0.0069	1.25		Shallow Concentrated Flow, SCF TO SB-2A Grassed Waterway Kv= 15.0 fps
14.1	329	Total			

Subcatchment 26S: OSB-2A

Hydrograph



Subcatchment 31S: SB-1I

Runoff = 2.86 cfs @ 59.77 hrs, Volume= 0.352 af, Depth=14.07"

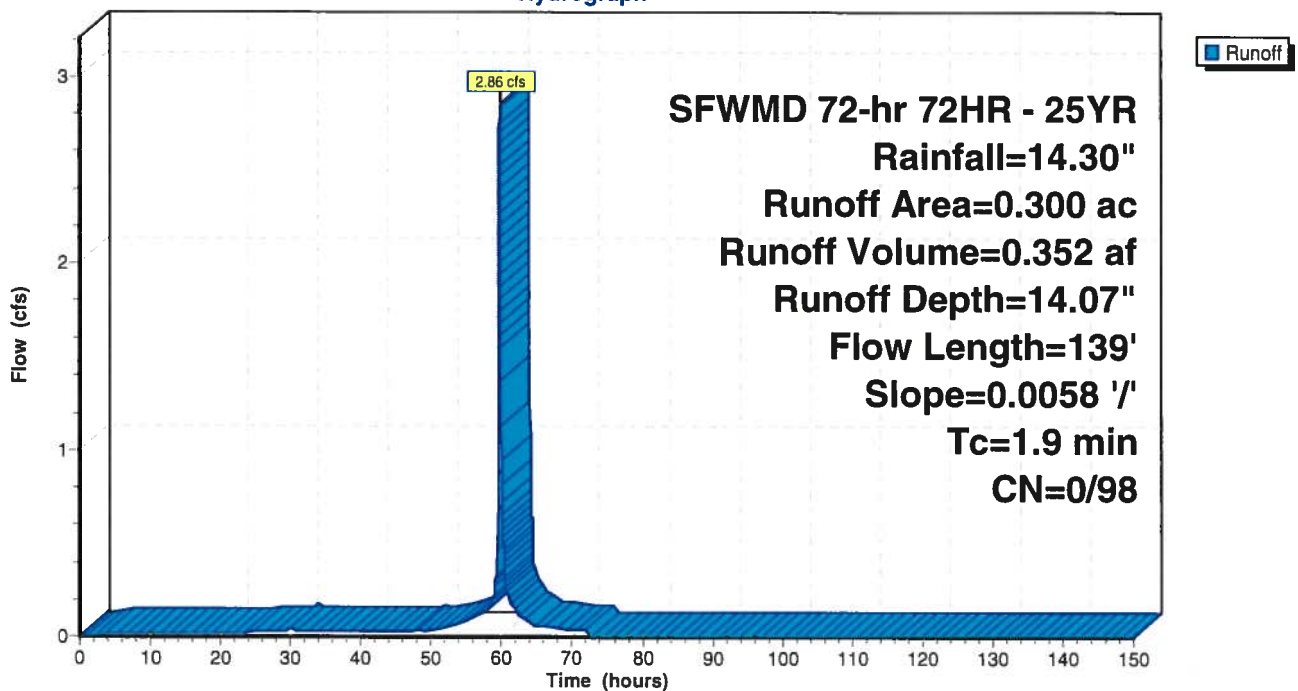
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 25YR Rainfall=14.30"

Area (ac)	CN	Description
0.300	98	Paved parking & roofs
0.300	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	139	0.0058	1.22		Sheet Flow, OVERLAND TO INLET Smooth surfaces n= 0.011 P2= 5.90"

Subcatchment 31S: SB-1I

Hydrograph



Subcatchment 33S: SB-1J

Runoff = 6.94 cfs @ 59.78 hrs, Volume= 0.875 af, Depth=14.06"

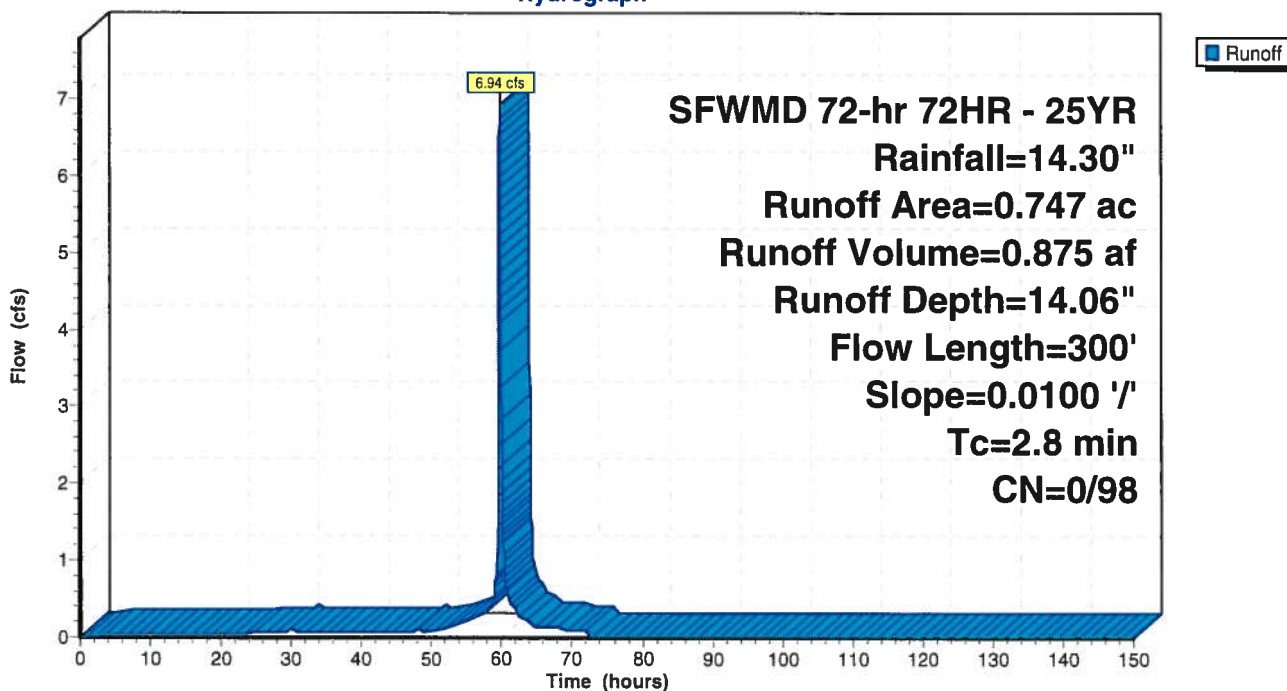
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 25YR Rainfall=14.30"

Area (ac)	CN	Description
0.747	98	Paved parking & roofs
0.747	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	300	0.0100	1.76		Sheet Flow, Smooth surfaces n= 0.011 P2= 5.90"

Subcatchment 33S: SB-1J

Hydrograph



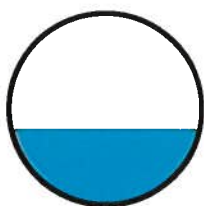
Reach 33R: Basin 1 Outfall

Inflow Area = 32.213 ac, Inflow Depth = 9.20" for 72HR - 25YR event
Inflow = 78.97 cfs @ 60.18 hrs, Volume= 24.702 af
Outflow = 78.97 cfs @ 60.19 hrs, Volume= 24.702 af, Atten= 0%, Lag= 0.3 min

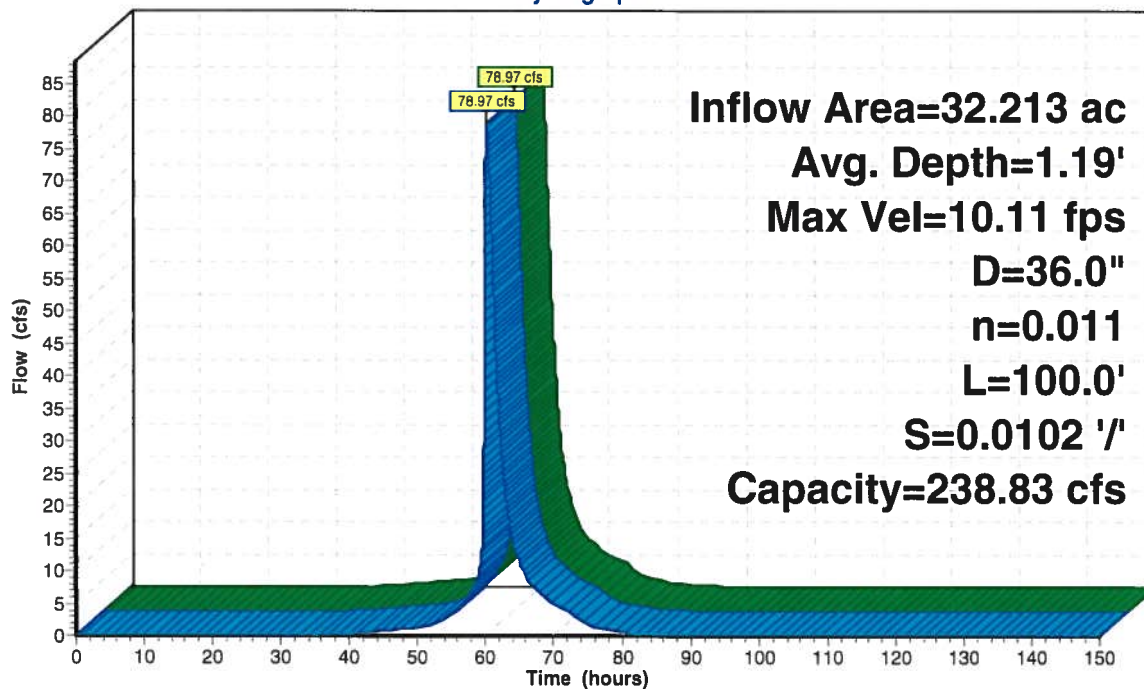
Routing by Stor-Ind+Trans method, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
Max. Velocity= 10.11 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.08 fps, Avg. Travel Time= 0.5 min

Peak Storage= 781 cf @ 60.19 hrs, Average Depth at Peak Storage= 1.19'
Bank-Full Depth= 3.00', Capacity at Bank-Full= 238.83 cfs

A factor of 3.00 has been applied to the storage and discharge capacity
36.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 100.0' Slope= 0.0102 '/'
Inlet Invert= 3.10', Outlet Invert= 2.08'

**Reach 33R: Basin 1 Outfall**

Hydrograph



Reach 35R: Basin 2 Outfall

Inflow Area = 12.680 ac, Inflow Depth = 10.59" for 72HR - 25YR event
 Inflow = 66.53 cfs @ 60.05 hrs, Volume= 11.188 af
 Outflow = 66.51 cfs @ 60.05 hrs, Volume= 11.188 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 9.76 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 2.86 fps, Avg. Travel Time= 0.8 min

Peak Storage= 886 cf @ 60.05 hrs, Average Depth at Peak Storage= 1.46'

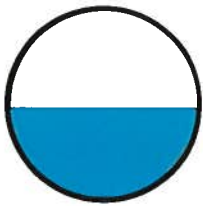
Bank-Full Depth= 3.00', Capacity at Bank-Full= 139.64 cfs

A factor of 2.00 has been applied to the storage and discharge capacity

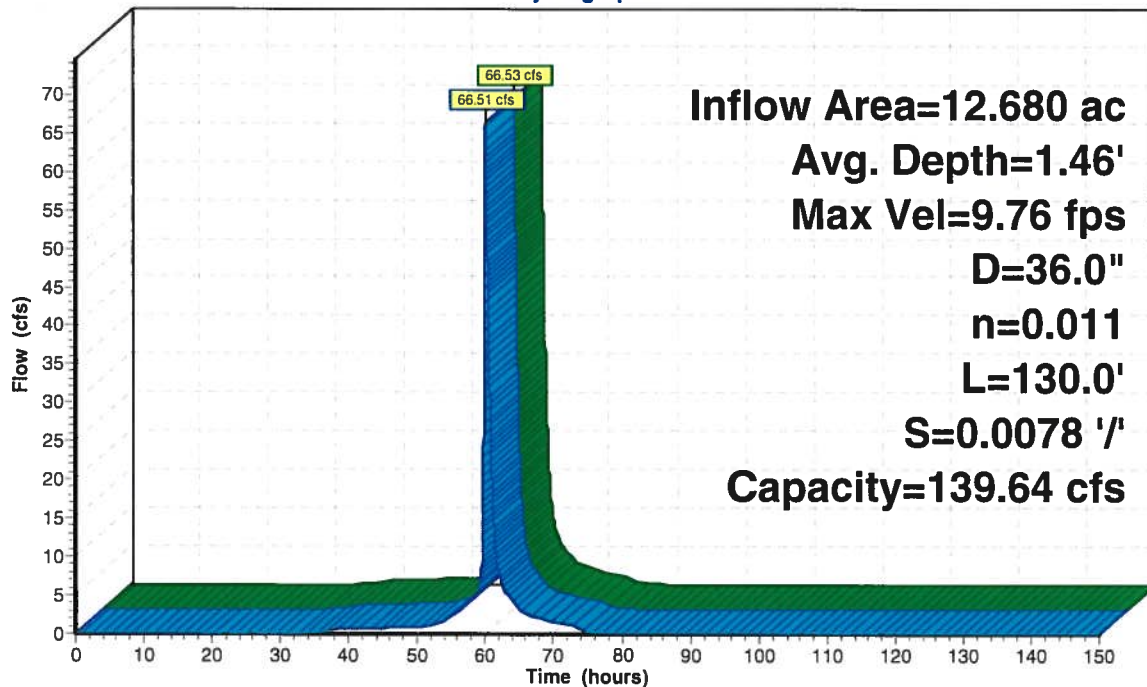
36.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean

Length= 130.0' Slope= 0.0078 '/'

Inlet Invert= 3.10', Outlet Invert= 2.08'

**Reach 35R: Basin 2 Outfall**

Hydrograph



■ Inflow
 ■ Outflow

Pond 10P: BASIN 1 DRY DETENTION POND

Inflow Area = 32.213 ac, Inflow Depth = 12.60" for 72HR - 25YR event
 Inflow = 210.80 cfs @ 59.82 hrs, Volume= 33.819 af
 Outflow = 80.51 cfs @ 60.18 hrs, Volume= 33.146 af, Atten= 62%, Lag= 21.7 min
 Primary = 78.97 cfs @ 60.18 hrs, Volume= 24.702 af
 Secondary = 1.54 cfs @ 60.18 hrs, Volume= 8.444 af

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
 Peak Elev= 7.97' @ 60.18 hrs Surf.Area= 3.043 ac Storage= 13.124 af

Plug-Flow detention time= 722.2 min calculated for 33.144 af (98% of inflow)
 Center-of-Mass det. time= 700.4 min (3,890.2 - 3,189.8)

Volume	Invert	Avail.Storage	Storage Description
#1	3.10'	16.331 af	190.00'W x 540.00'L x 5.90'H Prismatic Z=4.0

Device	Routing	Invert	Outlet Devices
#1	Primary	6.10'	6.0' long x 2.90' rise Sharp-Crested Rectangular Weir 2 End Contraction(s) 3.0' Crest Height
#2	Primary	4.30'	100.0 deg x 1.80' rise Sharp-Crested Vee/Trap Weir C= 2.49
#3	Secondary	3.10'	3.0" Vert. Orifice/Grate X 3.00 C= 0.600

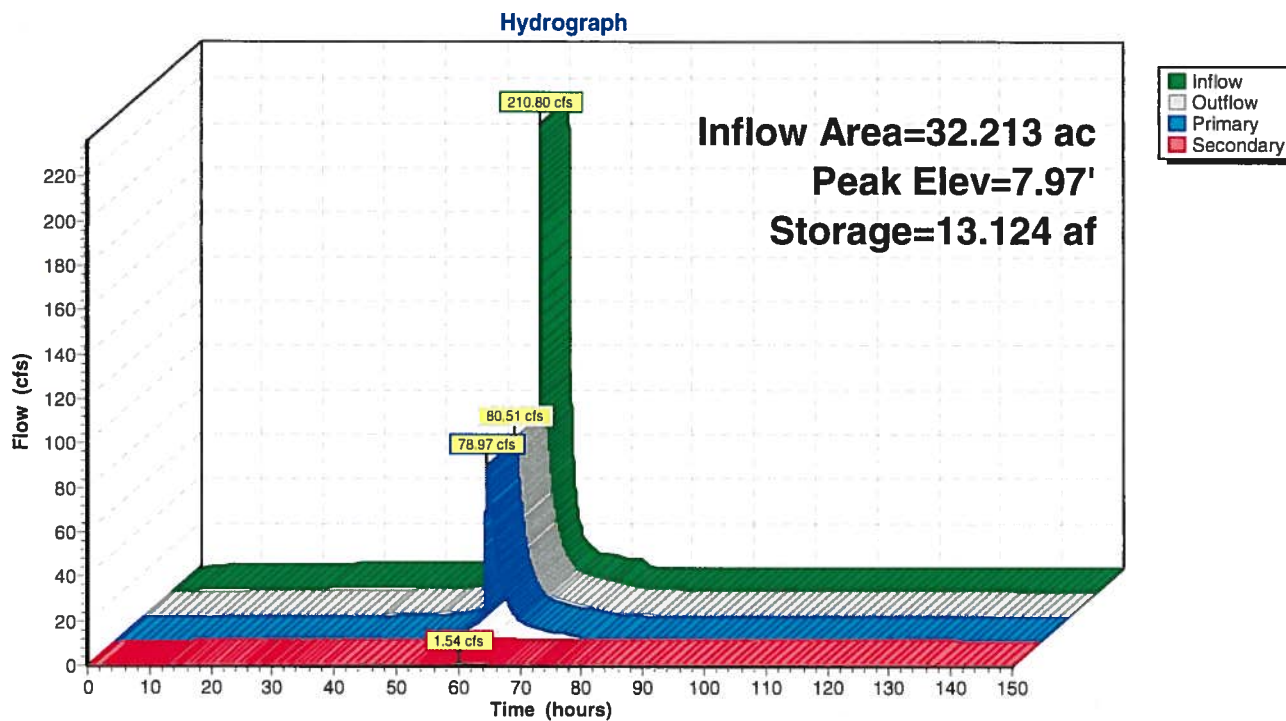
Primary OutFlow Max=78.96 cfs @ 60.18 hrs HW=7.97' TW=3.10' (Fixed TW Elev= 3.10')

└─1=Sharp-Crested Rectangular Weir (Weir Controls 50.72 cfs @ 4.82 fps)

└─2=Sharp-Crested Vee/Trap Weir (Orifice Controls 28.24 cfs @ 7.31 fps)

Secondary OutFlow Max=1.54 cfs @ 60.18 hrs HW=7.97' (Free Discharge)

└─3=Orifice/Grate (Orifice Controls 1.54 cfs @ 10.49 fps)

Pond 10P: BASIN 1 DRY DETENTION POND

Pond 24P: BASIN 2 DRY DETENTION POND

Inflow Area = 12.680 ac, Inflow Depth = 13.92" for 72HR - 25YR event
 Inflow = 93.96 cfs @ 59.86 hrs, Volume= 14.714 af
 Outflow = 67.02 cfs @ 60.05 hrs, Volume= 14.395 af, Atten= 29%, Lag= 11.0 min
 Primary = 66.53 cfs @ 60.05 hrs, Volume= 11.188 af
 Secondary = 0.49 cfs @ 60.05 hrs, Volume= 3.207 af

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
 Peak Elev= 7.58' @ 60.05 hrs Surf.Area= 1.110 ac Storage= 4.164 af

Plug-Flow detention time= 660.6 min calculated for 14.395 af (98% of inflow)
 Center-of-Mass det. time= 635.7 min (3,754.5 - 3,118.8)

Volume	Invert	Avail.Storage	Storage Description
#1	3.10'	5.228 af	125.00'W x 265.00'L x 5.40'H Prismatic Z=4.0

Device	Routing	Invert	Outlet Devices
#1	Primary	6.00'	8.0' long x 2.50' rise Sharp-Crested Rectangular Weir 2 End Contraction(s) 2.9' Crest Height
#2	Primary	4.90'	120.0 deg x 1.10' rise Sharp-Crested Vee/Trap Weir C= 2.48
#3	Secondary	3.10'	3.0" Vert. Orifice/Grate C= 0.600

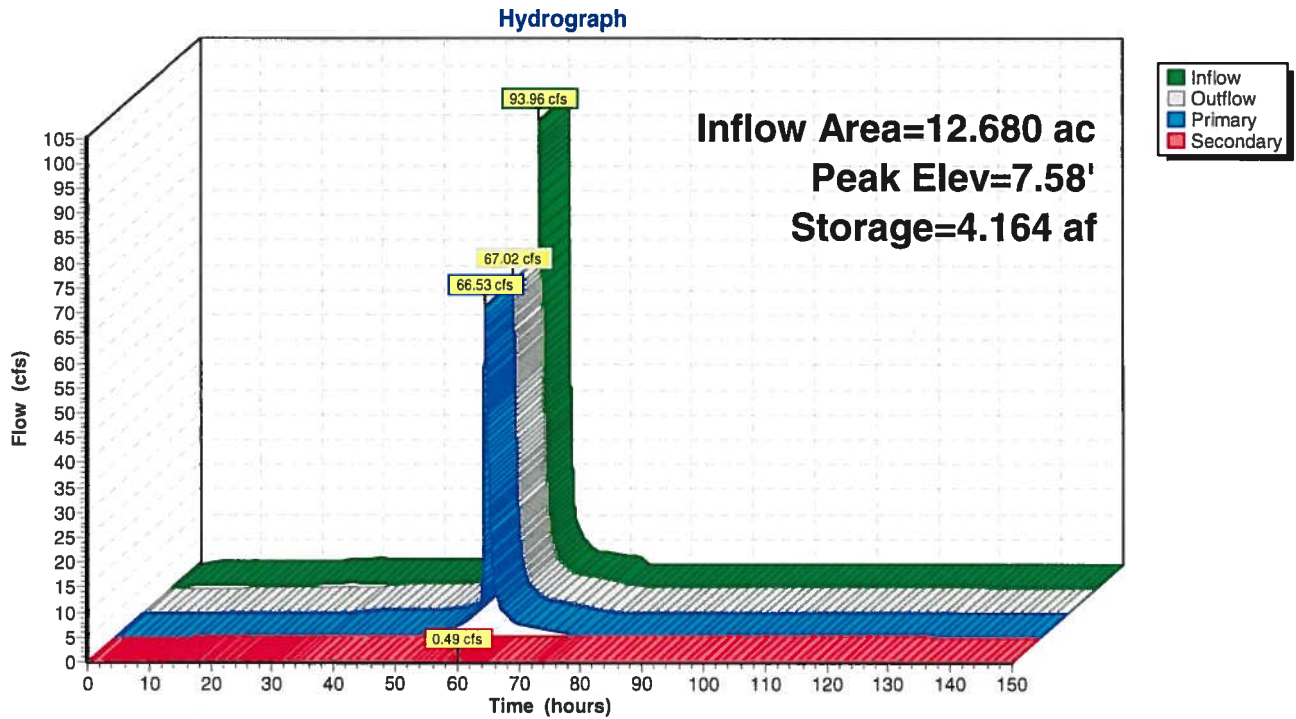
Primary OutFlow Max=66.52 cfs @ 60.05 hrs HW=7.57' TW=2.08' (Fixed TW Elev= 2.08')

↑ **1=Sharp-Crested Rectangular Weir** (Weir Controls 52.97 cfs @ 4.38 fps)

↑ **2=Sharp-Crested Vee/Trap Weir** (Orifice Controls 13.55 cfs @ 6.47 fps)

Secondary OutFlow Max=0.49 cfs @ 60.05 hrs HW=7.57' TW=2.08' (Fixed TW Elev= 2.08')

↑ **3=Orifice/Grate** (Orifice Controls 0.49 cfs @ 10.04 fps)

Pond 24P: BASIN 2 DRY DETENTION POND

Pond 33P: BASIN 1 BLEEDER DISCHARGE VOLUME

NODE USED TO DETERMINE THE VOLUME OF DISCHARGE IN A 24 HOUR PERIOD THROUGH A BLEED DOWN ORIFICE.

Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Outflow	=	0.74 cfs @	0.00 hrs,	Volume=	2.830 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.74 cfs @	0.00 hrs,	Volume=	2.830 af

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Starting Elev= 4.30' Surf.Area= 2.518 ac Storage= 2.924 af

Peak Elev= 4.30' @ 0.00 hrs Surf.Area= 2.518 ac Storage= 2.924 af

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

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

Volume	Invert	Avail.Storage	Storage Description
#1	3.10'	16.331 af	190.00'W x 540.00'L x 5.90'H Prismatic Z=4.0

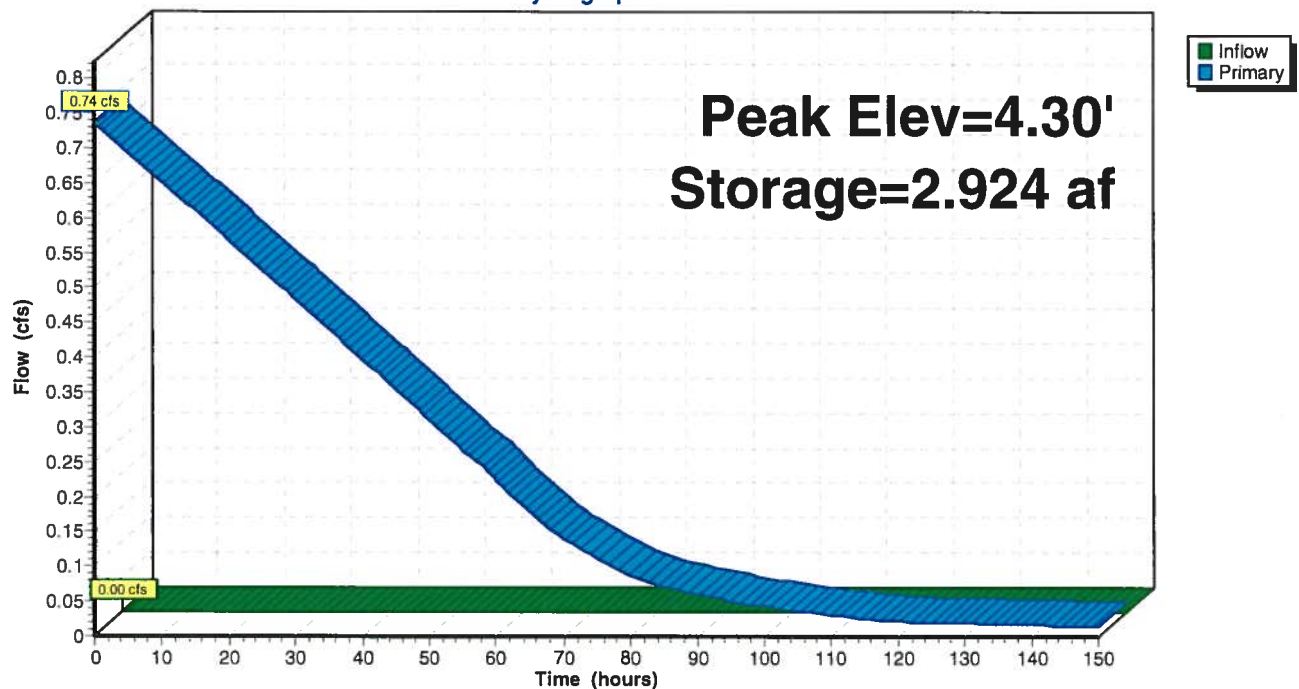
Device	Routing	Invert	Outlet Devices
#1	Primary	3.10'	3.0" Vert. Orifice/Grate X 3.00 C= 0.600

Primary OutFlow Max=0.74 cfs @ 0.00 hrs HW=4.30' TW=2.08' (Fixed TW Elev= 2.08')

1=Orifice/Grate (Orifice Controls 0.74 cfs @ 4.99 fps)

Pond 33P: BASIN 1 BLEEDER DISCHARGE VOLUME

Hydrograph



Pond 34P: BASIN 2 BLEEDER DISCHARGE VOLUME

THIS NODE IS USED TO DETERMINE DISCHARGE VOLUMES IN A 24 HOUR PERIOD THROUGH A BLEEDER ORIFICE.

Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Outflow	=	0.31 cfs @	0.00 hrs,	Volume=	1.448 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.31 cfs @	0.00 hrs,	Volume=	1.448 af

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
 Starting Elev= 4.90' Surf.Area= 0.894 ac Storage= 1.488 af
 Peak Elev= 4.90' @ 0.00 hrs Surf.Area= 0.894 ac Storage= 1.488 af

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

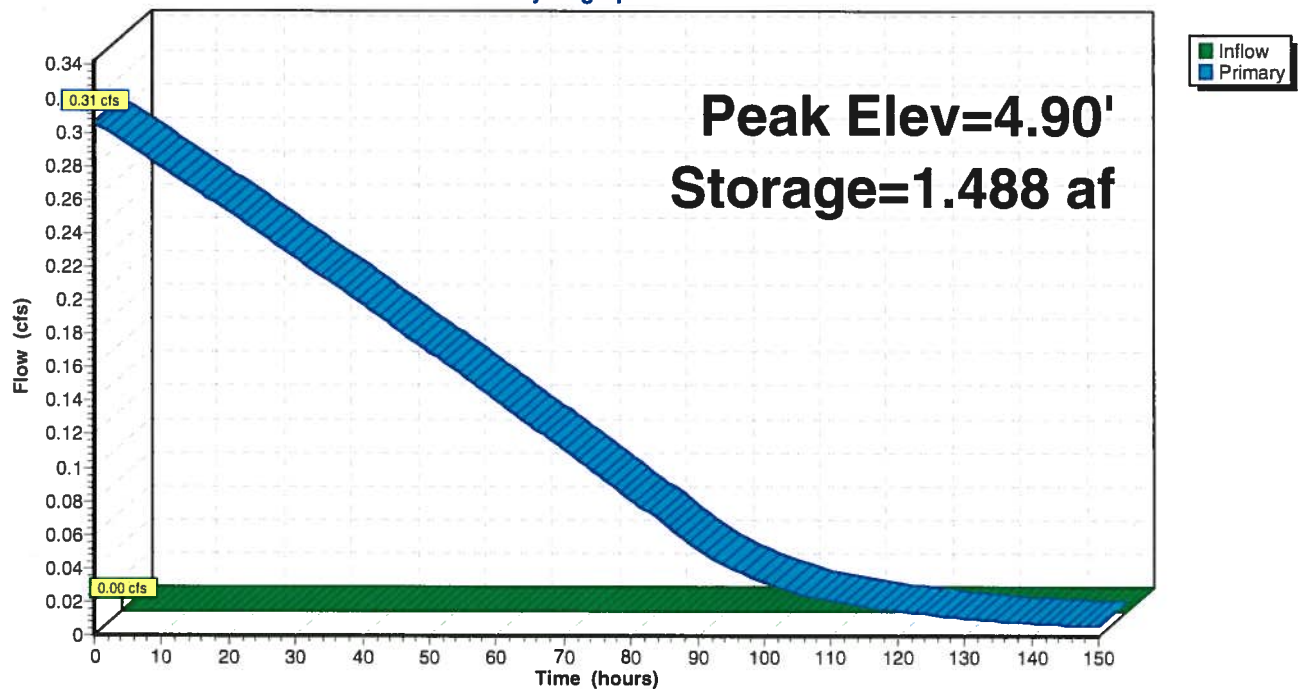
Volume	Invert	Avail.Storage	Storage Description
#1	3.10'	5.228 af	125.00'W x 265.00'L x 5.40'H Prismatic Z=4.0

Device	Routing	Invert	Outlet Devices
#1	Primary	3.10'	3.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.31 cfs @ 0.00 hrs HW=4.90' TW=2.08' (Fixed TW Elev= 2.08')
 1=Orifice/Grate (Orifice Controls 0.31 cfs @ 6.23 fps)

Pond 34P: BASIN 2 BLEEDER DISCHARGE VOLUME

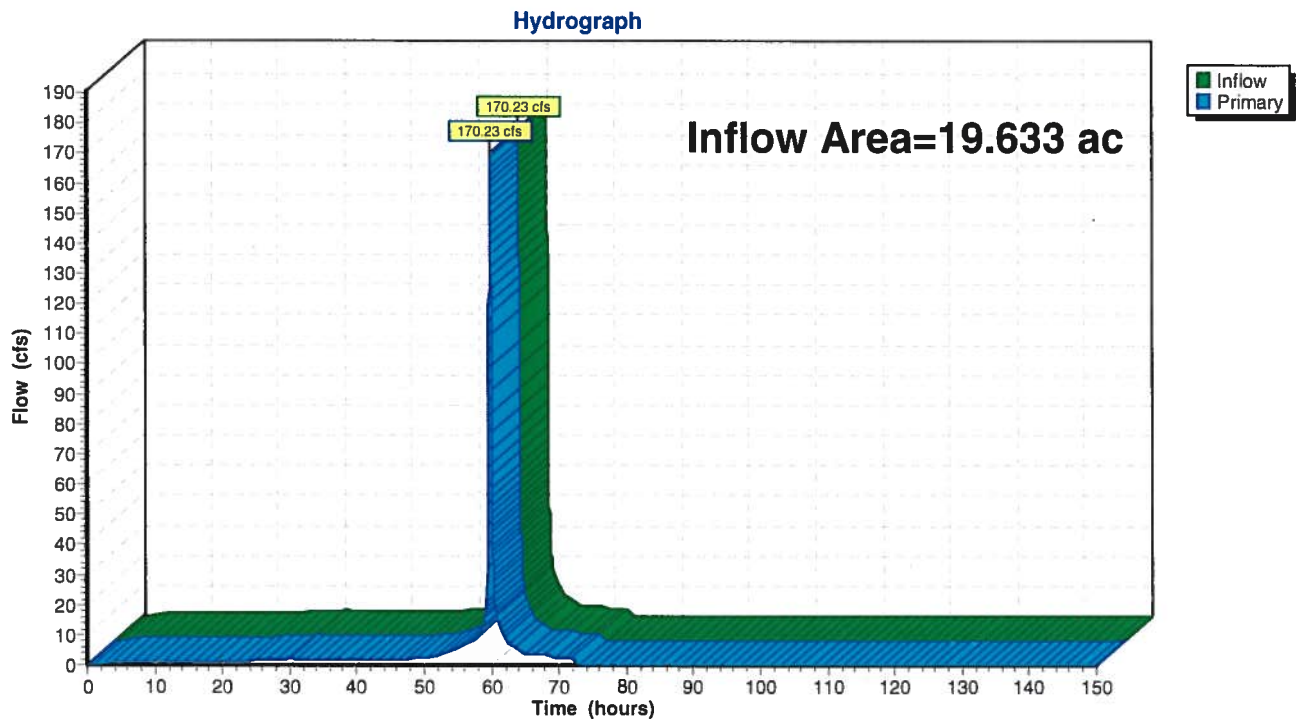
Hydrograph



Link 15L: B-1 INLETS COMBINED

Inflow Area = 19.633 ac, Inflow Depth = 13.93" for 72HR - 25YR event
Inflow = 170.23 cfs @ 59.80 hrs, Volume= 22.794 af
Primary = 170.23 cfs @ 59.80 hrs, Volume= 22.794 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 15L: B-1 INLETS COMBINED

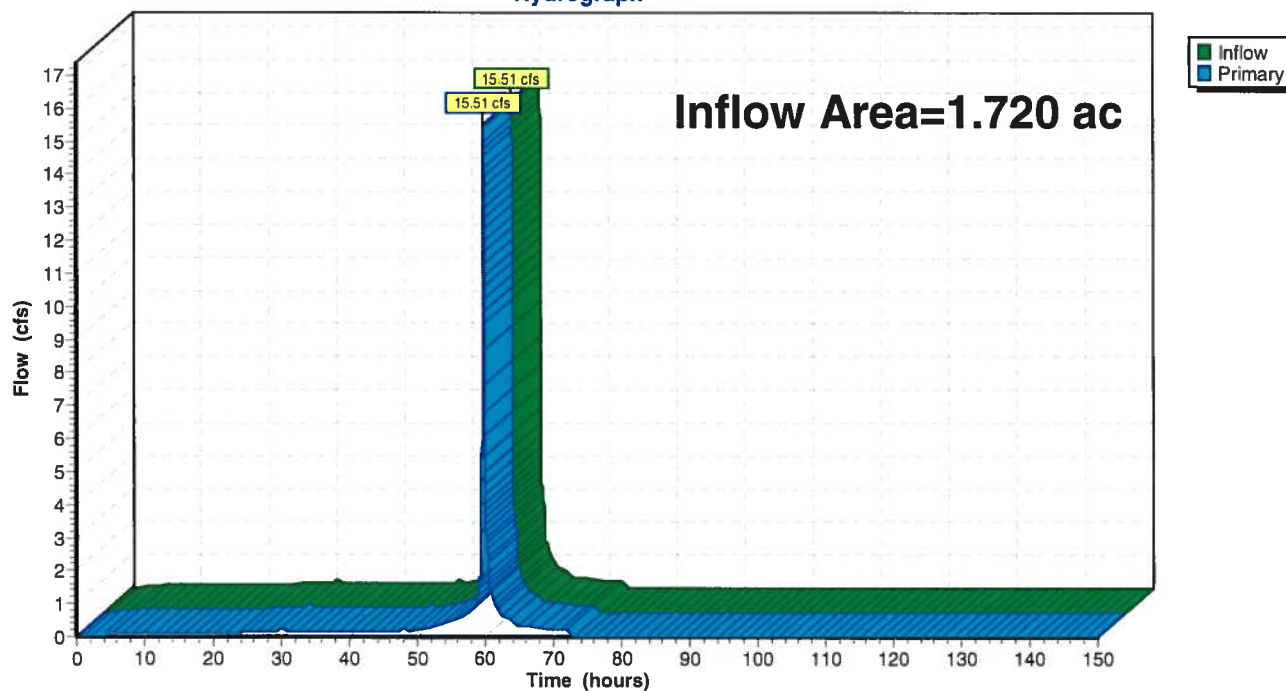
Link 16L: SB-1G OSB-1B COMBINED

Inflow Area = 1.720 ac, Inflow Depth = 13.66" for 72HR - 25YR event
Inflow = 15.51 cfs @ 59.79 hrs, Volume= 1.958 af
Primary = 15.51 cfs @ 59.79 hrs, Volume= 1.958 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 16L: SB-1G OSB-1B COMBINED

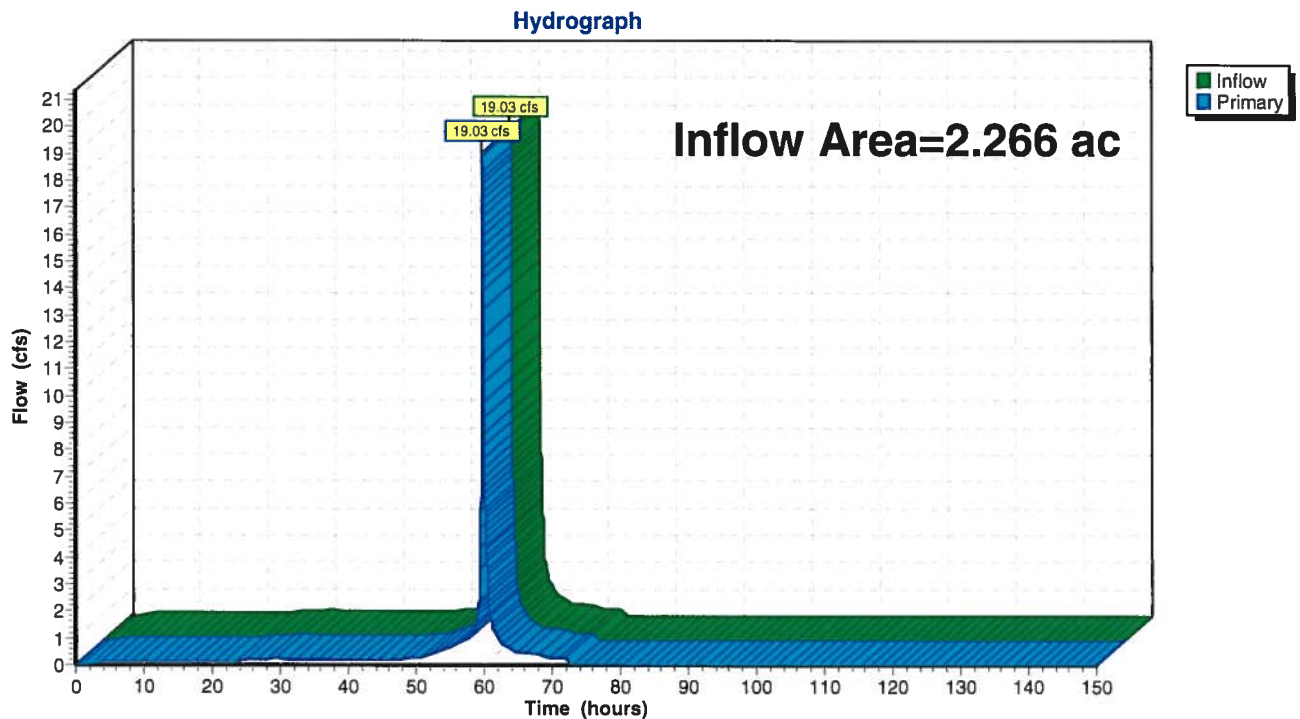
Hydrograph



Link 17L: SB-1H OSB-1D COMBINED

Inflow Area = 2.266 ac, Inflow Depth = 14.06" for 72HR - 25YR event
Inflow = 19.03 cfs @ 59.81 hrs, Volume= 2.655 af
Primary = 19.03 cfs @ 59.81 hrs, Volume= 2.655 af, Atten= 0%, Lag= 0.0 min

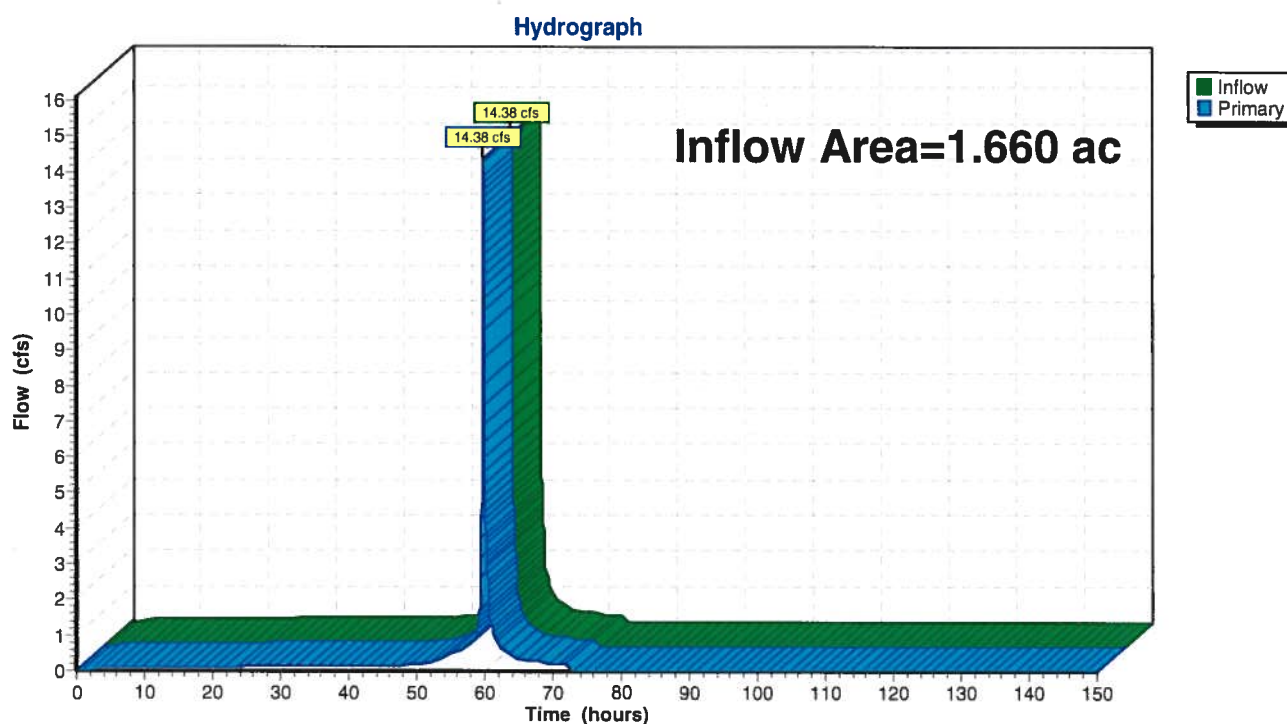
Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 17L: SB-1H OSB-1D COMBINED

Link 18L: OSB-1 INLETS COMBINED

Inflow Area = 1.660 ac, Inflow Depth = 14.06" for 72HR - 25YR event
Inflow = 14.38 cfs @ 59.81 hrs, Volume= 1.945 af
Primary = 14.38 cfs @ 59.81 hrs, Volume= 1.945 af, Atten= 0%, Lag= 0.0 min

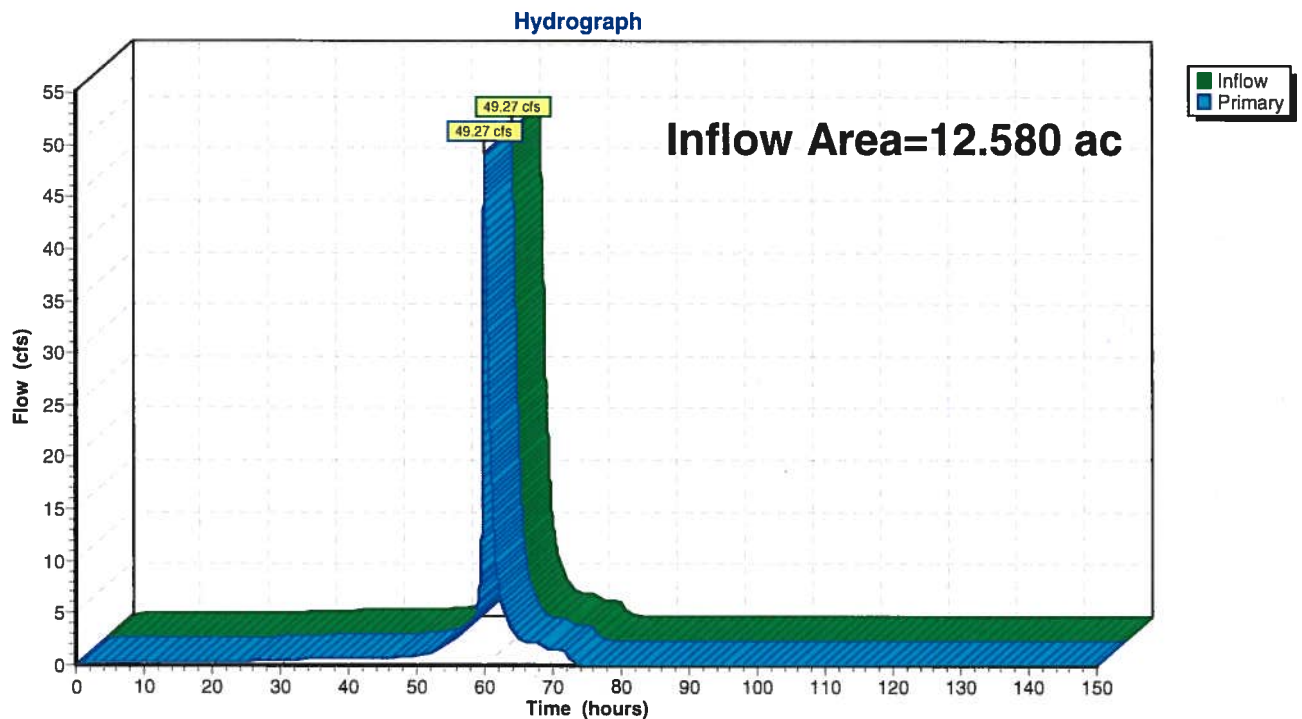
Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 18L: OSB-1 INLETS COMBINED

Link 19L: B-1 OVERLAND TO POND

Inflow Area = 12.580 ac, Inflow Depth = 10.52" for 72HR - 25YR event
Inflow = 49.27 cfs @ 60.00 hrs, Volume= 11.025 af
Primary = 49.27 cfs @ 60.00 hrs, Volume= 11.025 af, Atten= 0%, Lag= 0.0 min

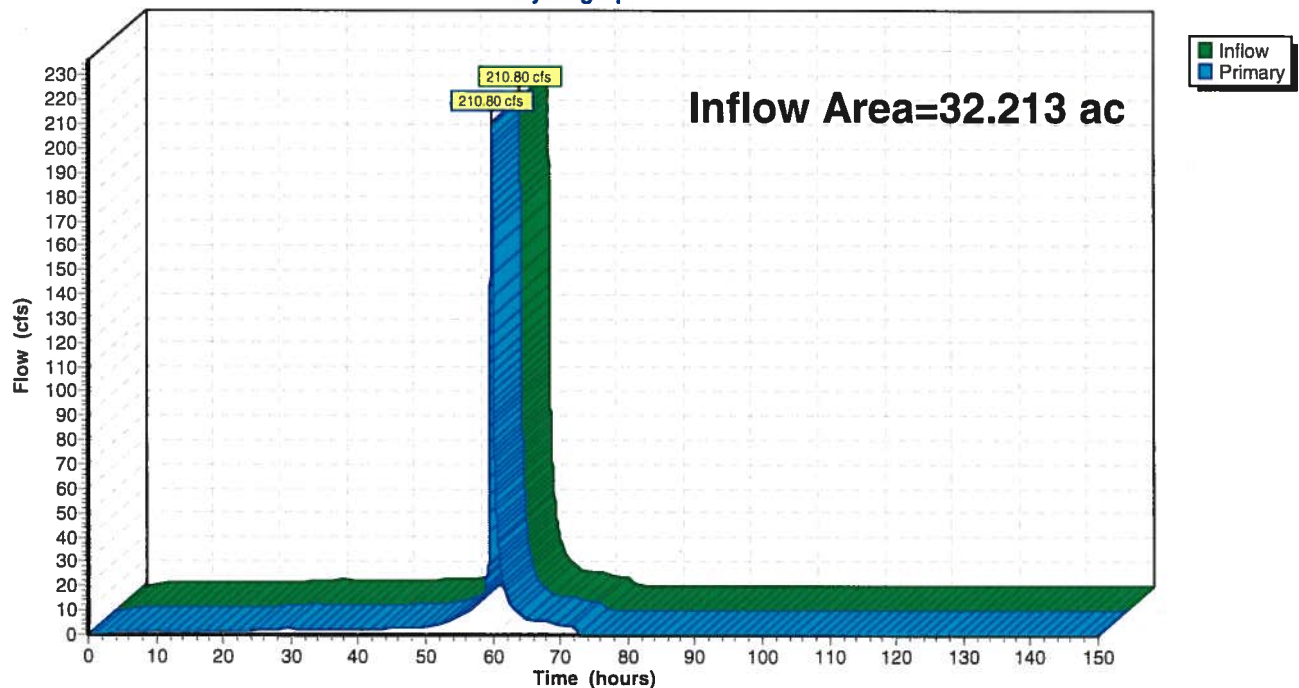
Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 19L: B-1 OVERLAND TO POND

Link 20L: B-1 COMBINED TO POND

Inflow Area = 32.213 ac, Inflow Depth = 12.60" for 72HR - 25YR event
Inflow = 210.80 cfs @ 59.82 hrs, Volume= 33.819 af
Primary = 210.80 cfs @ 59.82 hrs, Volume= 33.819 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 20L: B-1 COMBINED TO POND**Hydrograph**

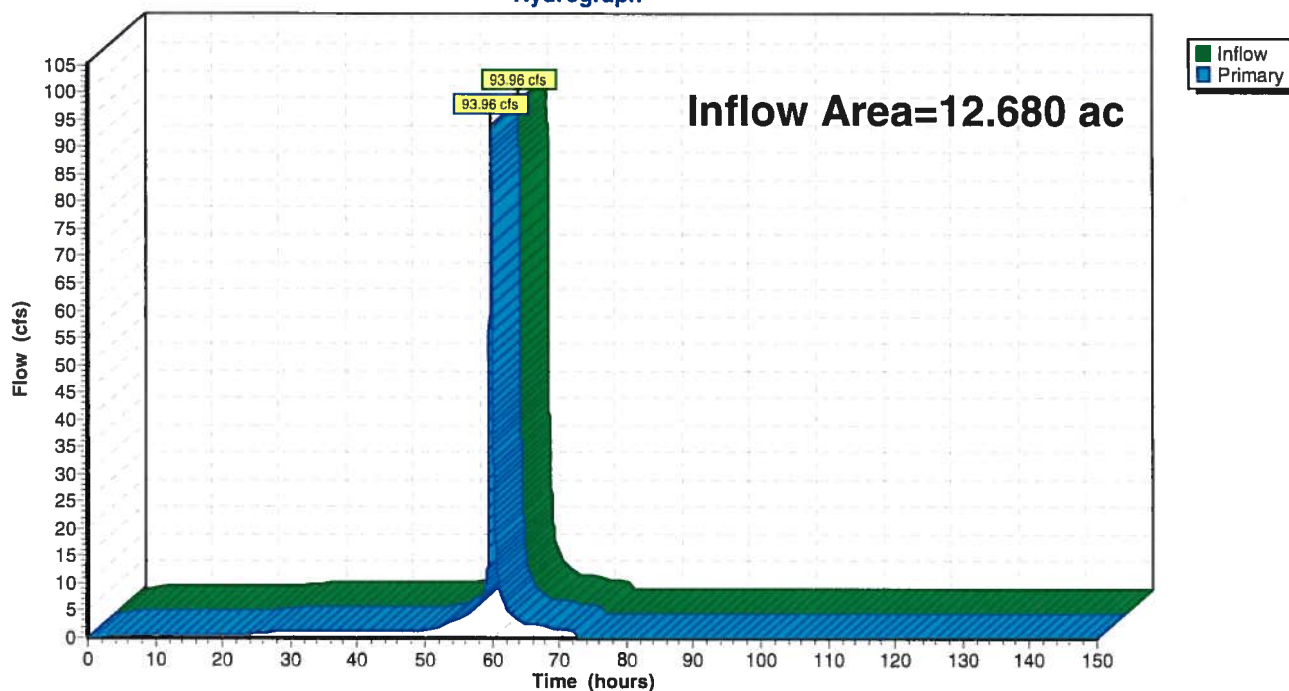
Link 29L: SB-2A OSB-2A COMBINED TO POND

Inflow Area = 12.680 ac, Inflow Depth = 13.92" for 72HR - 25YR event
Inflow = 93.96 cfs @ 59.86 hrs, Volume= 14.714 af
Primary = 93.96 cfs @ 59.86 hrs, Volume= 14.714 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 29L: SB-2A OSB-2A COMBINED TO POND

Hydrograph

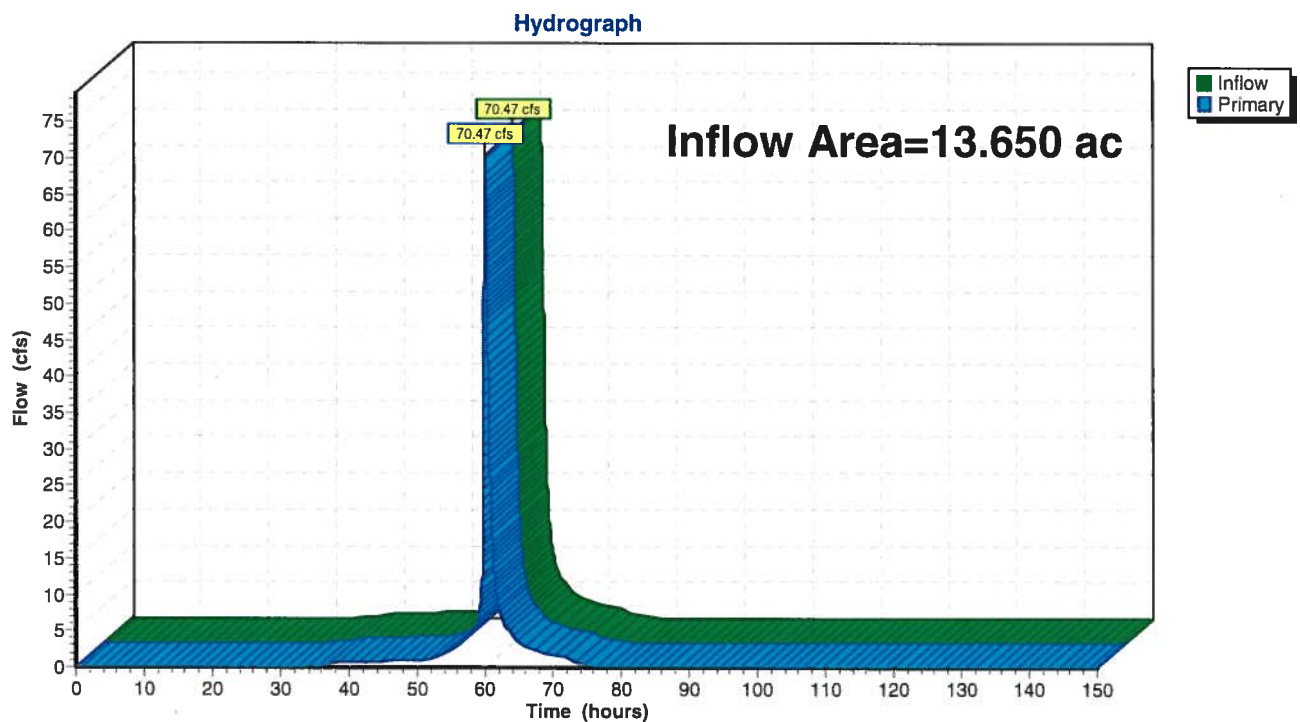


Link 30L: DISCHARGE TO SOUTH CANAL

Inflow Area = 13.650 ac, Inflow Depth = 10.55" for 72HR - 25YR event
Inflow = 70.47 cfs @ 60.03 hrs, Volume= 11.999 af
Primary = 70.47 cfs @ 60.03 hrs, Volume= 11.999 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 2.08'

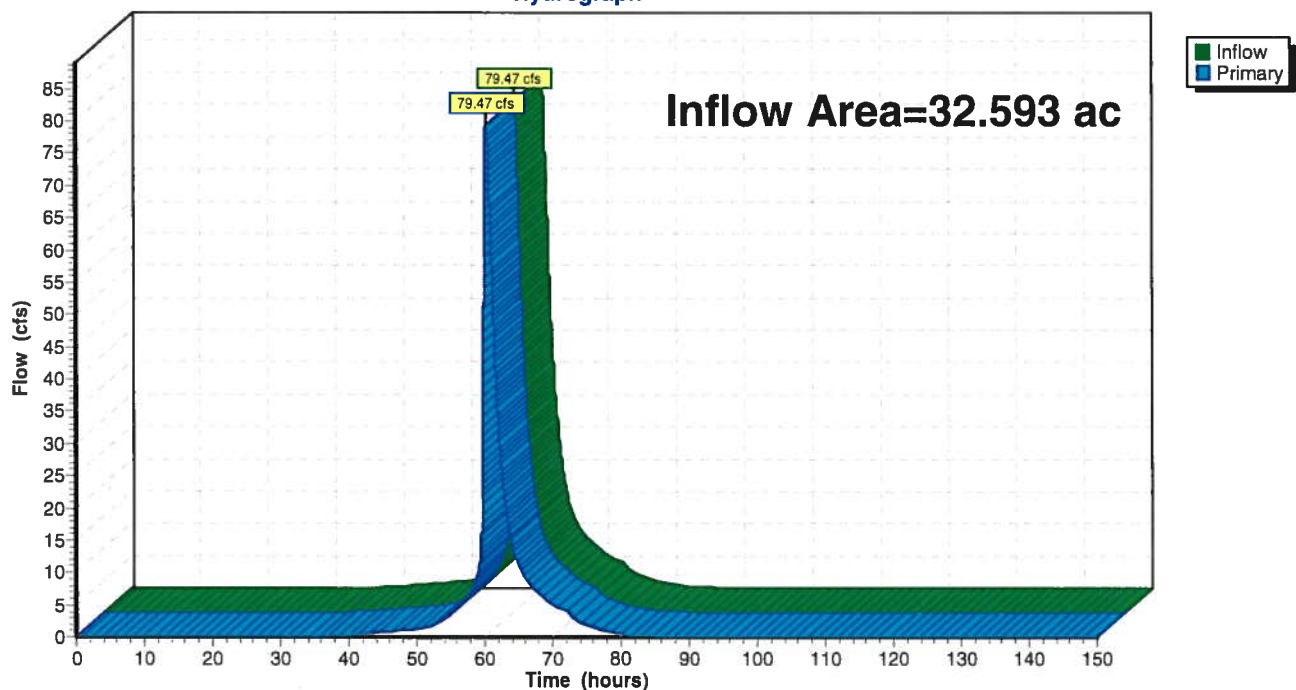
Link 30L: DISCHARGE TO SOUTH CANAL

Link 32L: NORTH CANAL DISCHARGE

Inflow Area = 32.593 ac, Inflow Depth = 9.20" for 72HR - 25YR event
Inflow = 79.47 cfs @ 60.19 hrs, Volume= 24.978 af
Primary = 79.47 cfs @ 60.19 hrs, Volume= 24.978 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 2.08'

Link 32L: NORTH CANAL DISCHARGE**Hydrograph**

Area Listing (all nodes)

<u>Area (acres)</u>	<u>CN</u>	<u>Description (subcats)</u>
9.060	61	>75% Grass cover, Good, HSG B (2S,7S,25S)
0.970	69	50-75% Grass cover, Fair, HSG B (23S)
2.460	88	Urban industrial, 72% imp, HSG B (3S,6S,26S)
29.383	98	Paved parking & roofs (1S,2S,3S,4S,5S,7S,8S,11S,12S,13S,14S,22S,22S,31S,33S)
4.370	100	DETENTION POND (2S,22S)
46.243		

Time span=0.00-150.00 hrs, dt=0.01 hrs, 15001 points

Runoff by SBUH method, Split Pervious/Imperv.

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

Subcatchment 1S: SB-1ARunoff Area=8.250 ac Runoff Depth=17.26"
Tc=5.0 min CN=0/98 Runoff=87.46 cfs 11.868 af**Subcatchment 2S: SB-1B**Runoff Area=12.580 ac Runoff Depth=13.51"
Flow Length=520' Tc=33.4 min CN=61/100 Runoff=62.64 cfs 14.167 af**Subcatchment 3S: SB-1C**Runoff Area=1.760 ac Runoff Depth=16.56"
Flow Length=256' Tc=4.8 min CN=62/98 Runoff=18.41 cfs 2.429 af**Subcatchment 4S: SB-1D**Runoff Area=1.480 ac Runoff Depth=17.26"
Flow Length=487' Tc=5.7 min CN=0/98 Runoff=15.34 cfs 2.129 af**Subcatchment 5S: SB-1E**Runoff Area=0.970 ac Runoff Depth=17.26"
Flow Length=297' Tc=3.6 min CN=0/98 Runoff=10.76 cfs 1.396 af**Subcatchment 6S: SB-1F**Runoff Area=0.480 ac Runoff Depth=15.74"
Flow Length=160' Slope=0.0187 '/' Tc=1.3 min CN=62/98 Runoff=5.47 cfs 0.630 af**Subcatchment 7S: SB-1G**Runoff Area=1.380 ac Runoff Depth=16.73"
Flow Length=261' Tc=2.8 min CN=61/98 Runoff=15.45 cfs 1.925 af**Subcatchment 8S: SB-1H**Runoff Area=1.770 ac Runoff Depth=17.26"
Flow Length=307' Tc=6.6 min CN=0/98 Runoff=17.83 cfs 2.546 af**Subcatchment 11S: OSB-1A**Runoff Area=1.120 ac Runoff Depth=17.26"
Tc=5.0 min CN=0/98 Runoff=11.87 cfs 1.611 af**Subcatchment 12S: OSB-1B**Runoff Area=0.340 ac Runoff Depth=17.26"
Flow Length=310' Tc=4.7 min CN=0/98 Runoff=3.64 cfs 0.489 af**Subcatchment 13S: OSB-1C**Runoff Area=0.540 ac Runoff Depth=17.26"
Tc=5.0 min CN=0/98 Runoff=5.72 cfs 0.777 af**Subcatchment 14S: SB-1K**Runoff Area=0.496 ac Runoff Depth=17.27"
Flow Length=219' Slope=0.0069 '/' Tc=2.6 min CN=0/98 Runoff=5.67 cfs 0.714 af**Subcatchment 22S: SB-2A**Runoff Area=11.510 ac Runoff Depth=17.26"
Flow Length=706' Tc=9.5 min CN=0/98 Runoff=106.12 cfs 16.553 af**Subcatchment 23S: SB-2B**Runoff Area=0.970 ac Runoff Depth=13.07"
Flow Length=120' Slope=0.0583 '/' Tc=5.4 min CN=69/0 Runoff=9.16 cfs 1.056 af**Subcatchment 25S: B-4**Runoff Area=0.380 ac Runoff Depth=11.64"
Flow Length=16' Slope=0.1283 '/' Tc=1.7 min CN=61/0 Runoff=3.74 cfs 0.369 af

Subcatchment 26S: OSB-2A

Runoff Area=1.170 ac Runoff Depth=15.74"
Flow Length=329' Tc=14.1 min CN=62/98 Runoff=9.12 cfs 1.534 af

Subcatchment 31S: SB-1I

Runoff Area=0.300 ac Runoff Depth=17.27"
Flow Length=139' Slope=0.0058 '/' Tc=1.9 min CN=0/98 Runoff=3.51 cfs 0.432 af

Subcatchment 33S: SB-1J

Runoff Area=0.747 ac Runoff Depth=17.27"
Flow Length=300' Slope=0.0100 '/' Tc=2.8 min CN=0/98 Runoff=8.49 cfs 1.075 af

Reach 33R: Basin 1 Outfall

Avg. Depth=1.39' Max Vel=10.90 fps Inflow=105.03 cfs 32.645 af
D=36.0" n=0.011 L=100.0' S=0.0102 '/' Capacity=238.83 cfs Outflow=105.02 cfs 32.645 af

Reach 35R: Basin 2 Outfall

Avg. Depth=1.68' Max Vel=10.33 fps Inflow=83.98 cfs 14.450 af
D=36.0" n=0.011 L=130.0' S=0.0078 '/' Capacity=139.64 cfs Outflow=83.96 cfs 14.450 af

Pond 10P: BASIN 1 DRY DETENTION PON

Peak Elev=8.50' Storage=14.763 af Inflow=260.41 cfs 42.186 af
Primary=105.03 cfs 32.645 af Secondary=1.63 cfs 8.855 af Outflow=106.66 cfs 41.500 af

Pond 24P: BASIN 2 DRY DETENTION PON

Peak Elev=7.88' Storage=4.507 af Inflow=115.13 cfs 18.087 af
Primary=83.98 cfs 14.450 af Secondary=0.51 cfs 3.315 af Outflow=84.49 cfs 17.765 af

Pond 33P: BASIN 1 BLEEDER DISCHARGE VO

Peak Elev=4.30' Storage=2.924 af Inflow=0.00 cfs 0.000 af
Outflow=0.74 cfs 2.830 af

Pond 34P: BASIN 2 BLEEDER DISCHARGE VO

Peak Elev=4.90' Storage=1.488 af Inflow=0.00 cfs 0.000 af
Outflow=0.31 cfs 1.448 af

Link 15L: B-1 INLETS COMBINED

Inflow=208.62 cfs 28.019 af
Primary=208.62 cfs 28.019 af

Link 16L: SB-1G OSB-1B COMBINED

Inflow=19.06 cfs 2.414 af
Primary=19.06 cfs 2.414 af

Link 17L: SB-1H OSB-1D COMBINED

Inflow=23.30 cfs 3.260 af
Primary=23.30 cfs 3.260 af

Link 18L: OSB-1 INLETS COMBINED

Inflow=17.60 cfs 2.388 af
Primary=17.60 cfs 2.388 af

Link 19L: B-1 OVERLAND TO POND

Inflow=62.64 cfs 14.167 af
Primary=62.64 cfs 14.167 af

Link 20L: B-1 COMBINED TO POND

Inflow=260.41 cfs 42.186 af
Primary=260.41 cfs 42.186 af

Link 29L: SB-2A OSB-2A COMBINED TO POND

Inflow=115.13 cfs 18.087 af
Primary=115.13 cfs 18.087 af

Link 30L: DISCHARGE TO SOUTH CANAL

Inflow=89.21 cfs 15.507 af
Primary=89.21 cfs 15.507 af

Link 32L: NORTH CANAL DISCHARGE

Inflow=105.67 cfs 33.014 af

Primary=105.67 cfs 33.014 af

Total Runoff Area = 46.243 ac Runoff Volume = 61.698 af Average Runoff Depth = 16.01"
23.18% Pervious Area = 10.719 ac 76.82% Impervious Area = 35.524 ac

Subcatchment 1S: SB-1A

Runoff = 87.46 cfs @ 59.81 hrs, Volume= 11.868 af, Depth=17.26"

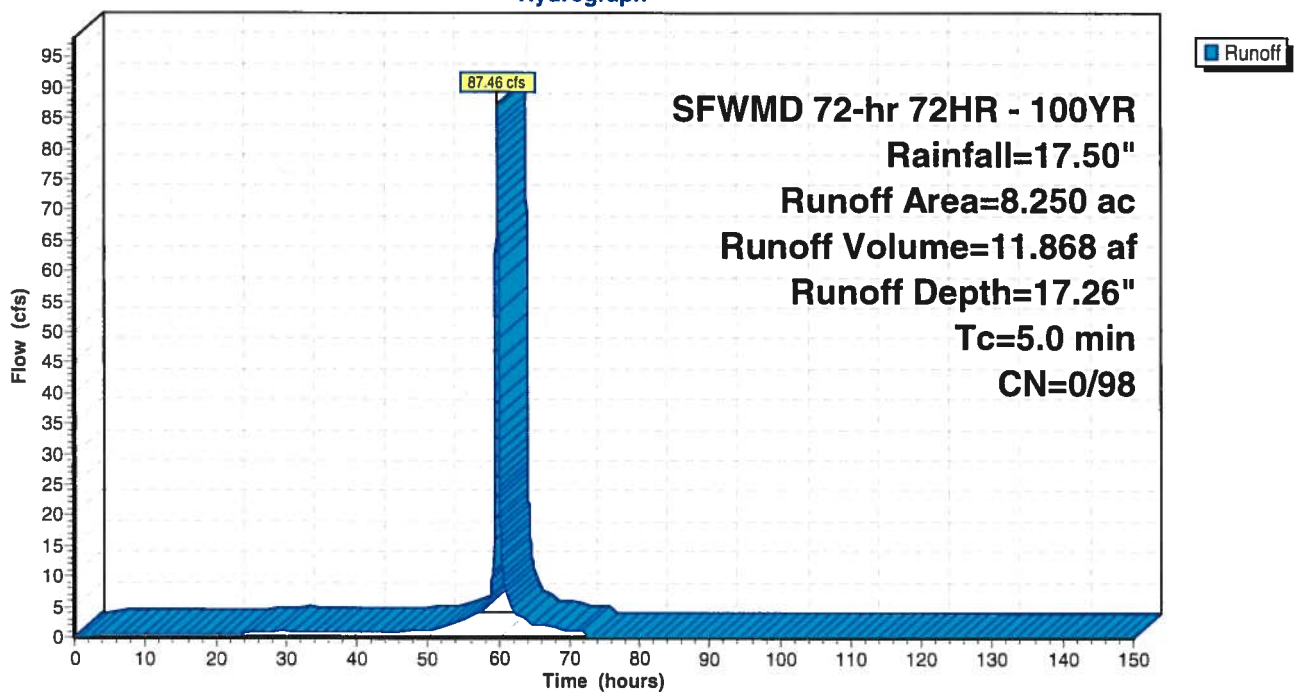
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 100YR Rainfall=17.50"

Area (ac)	CN	Description
8.250	98	Paved parking & roofs
8.250	98	Impervious Area

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

Subcatchment 1S: SB-1A

Hydrograph



Subcatchment 2S: SB-1B

Runoff = 62.64 cfs @ 60.00 hrs, Volume= 14.167 af, Depth=13.51"

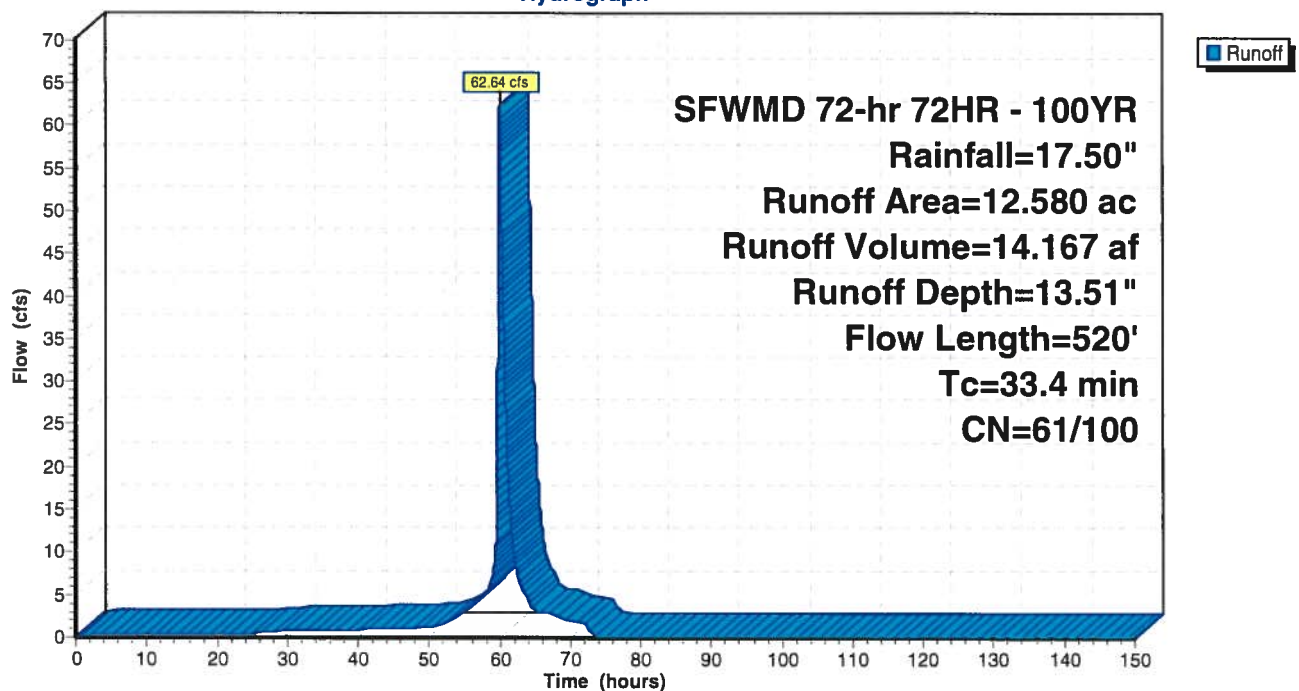
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 100YR Rainfall=17.50"

Area (ac)	CN	Description
8.550	61	>75% Grass cover, Good, HSG B
3.190	100	DETENTION POND
0.840	98	Paved parking & roofs
12.580	73	Weighted Average
8.550	61	Pervious Area
4.030	100	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	40	0.0200	1.56		Sheet Flow, OVERLAND 1 Smooth surfaces n= 0.011 P2= 5.90"
29.5	260	0.0040	0.15		Sheet Flow, OVERLAND TO SCF Grass: Short n= 0.150 P2= 5.90"
3.5	220	0.0050	1.06		Shallow Concentrated Flow, SCF TO DETENTION POND Grassed Waterway Kv= 15.0 fps
33.4	520	Total			

Subcatchment 2S: SB-1B

Hydrograph



Subcatchment 3S: SB-1C

Runoff = 18.41 cfs @ 59.81 hrs, Volume= 2.429 af, Depth=16.56"

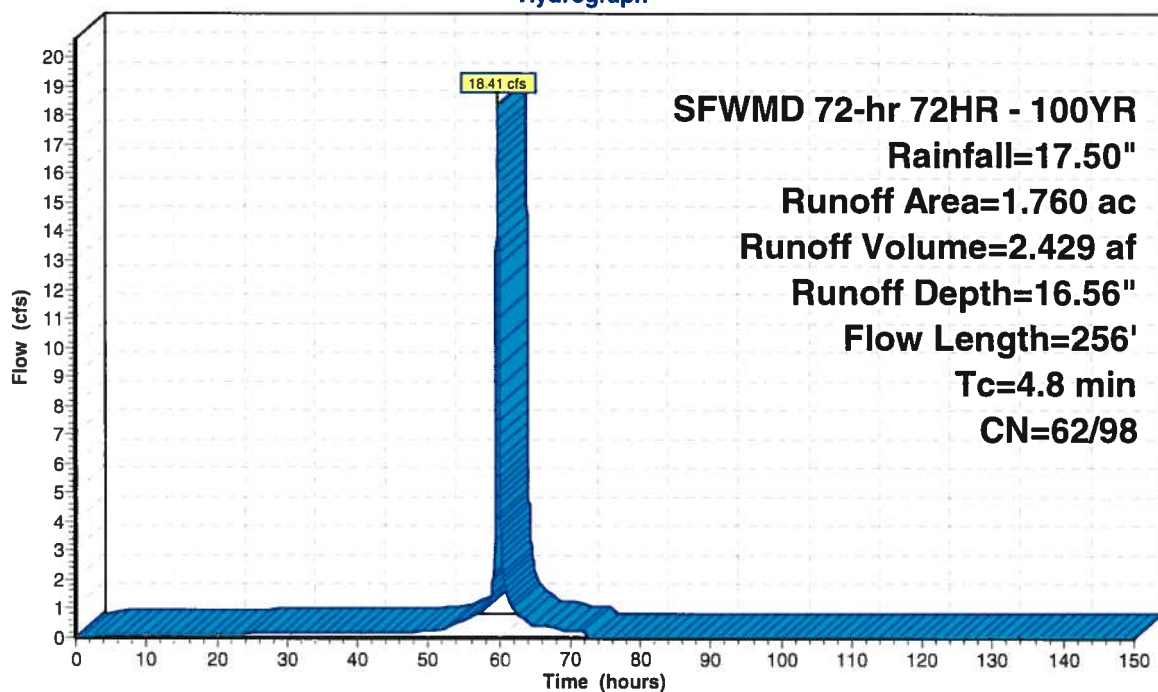
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 100YR Rainfall=17.50"

Area (ac)	CN	Description
0.950	98	Paved parking & roofs
0.810	88	Urban industrial, 72% imp, HSG B
1.760	93	Weighted Average
0.227	62	Pervious Area
1.533	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	22	0.0090	1.00		Sheet Flow, OVERLAND FROM ROAD Smooth surfaces n= 0.011 P2= 5.90"
1.4	68	0.0029	0.80		Sheet Flow, OVERLAND 2 Smooth surfaces n= 0.011 P2= 5.90"
0.2	52	0.2900	4.78		Sheet Flow, OVERLAND 3 Smooth surfaces n= 0.011 P2= 5.90"
1.8	74	0.0020	0.70		Sheet Flow, OVERLAND 4 Smooth surfaces n= 0.011 P2= 5.90"
1.0	40	0.0025	0.68		Sheet Flow, OVERLAND TO INLET Smooth surfaces n= 0.011 P2= 5.90"
4.8	256	Total			

Subcatchment 3S: SB-1C

Hydrograph



Subcatchment 4S: SB-1D

Runoff = 15.34 cfs @ 59.82 hrs, Volume= 2.129 af, Depth=17.26"

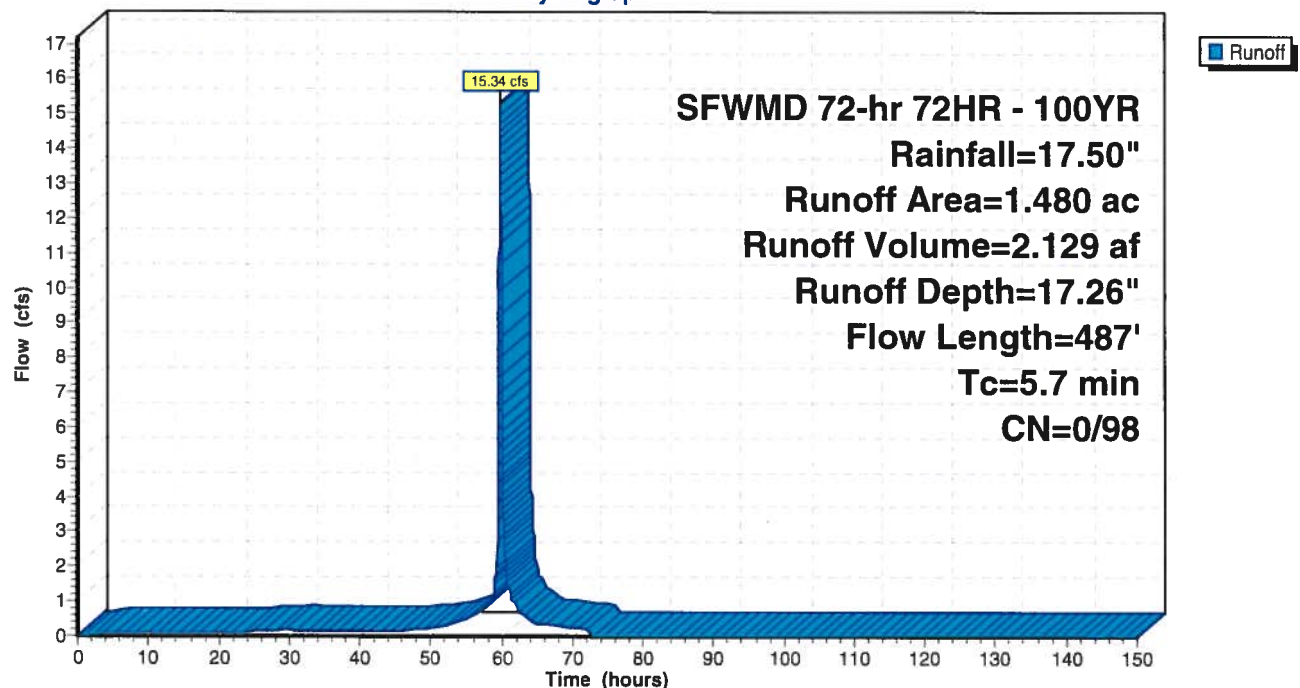
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 100YR Rainfall=17.50"

Area (ac)	CN	Description
1.480	98	Paved parking & roofs
1.480	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	54	0.0056	0.99		Sheet Flow, OVERLAND 1 Smooth surfaces n= 0.011 P2= 5.90"
2.9	246	0.0065	1.43		Sheet Flow, OVERLAND TO SCF Smooth surfaces n= 0.011 P2= 5.90"
1.9	187	0.0064	1.62		Shallow Concentrated Flow, SCF TO INLET Paved Kv= 20.3 fps
5.7	487	Total			

Subcatchment 4S: SB-1D

Hydrograph



Subcatchment 5S: SB-1E

Runoff = 10.76 cfs @ 59.79 hrs, Volume= 1.396 af, Depth=17.26"

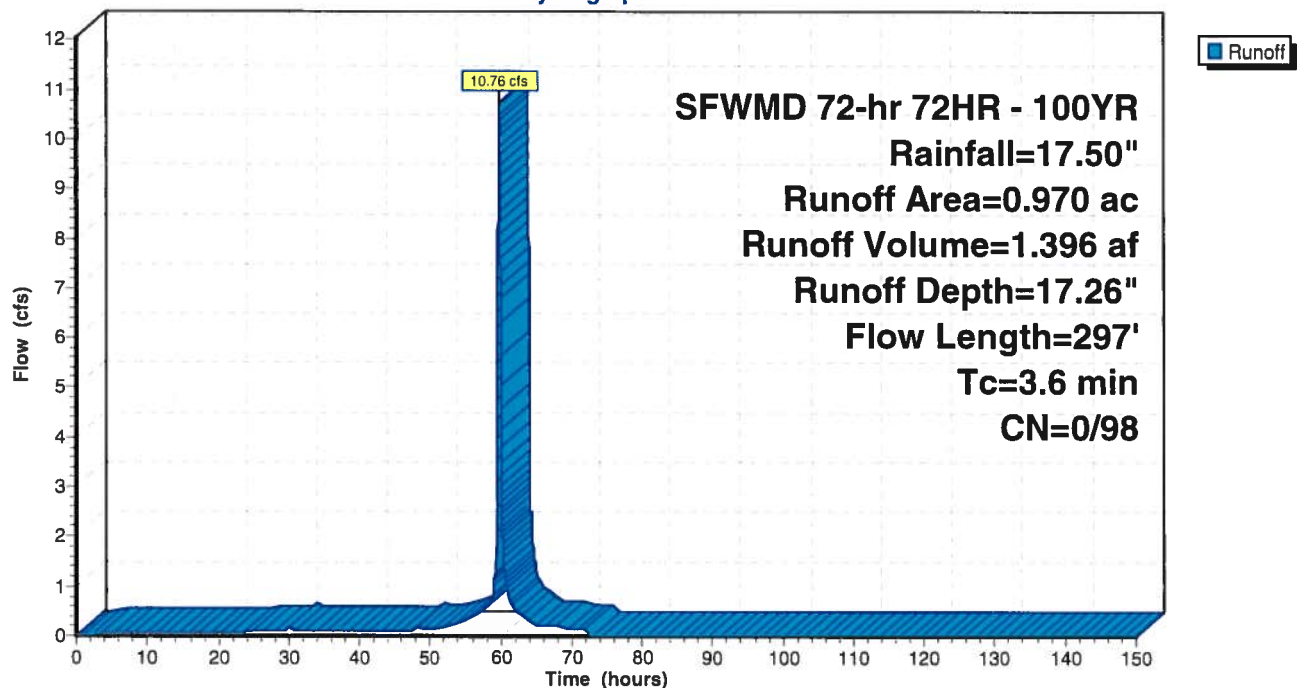
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 100YR Rainfall=17.50"

Area (ac)	CN	Description
0.970	98	Paved parking & roofs
0.970	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	137	0.0182	1.92		Sheet Flow, OVERLAND 1
					Smooth surfaces n= 0.011 P2= 5.90"
1.1	72	0.0069	1.14		Sheet Flow, OVERLAND 2
					Smooth surfaces n= 0.011 P2= 5.90"
1.3	88	0.0057	1.10		Sheet Flow, OVERLAND TO INLET
					Smooth surfaces n= 0.011 P2= 5.90"
3.6	297	Total			

Subcatchment 5S: SB-1E

Hydrograph



Subcatchment 6S: SB-1F

Runoff = 5.47 cfs @ 59.76 hrs, Volume= 0.630 af, Depth=15.74"

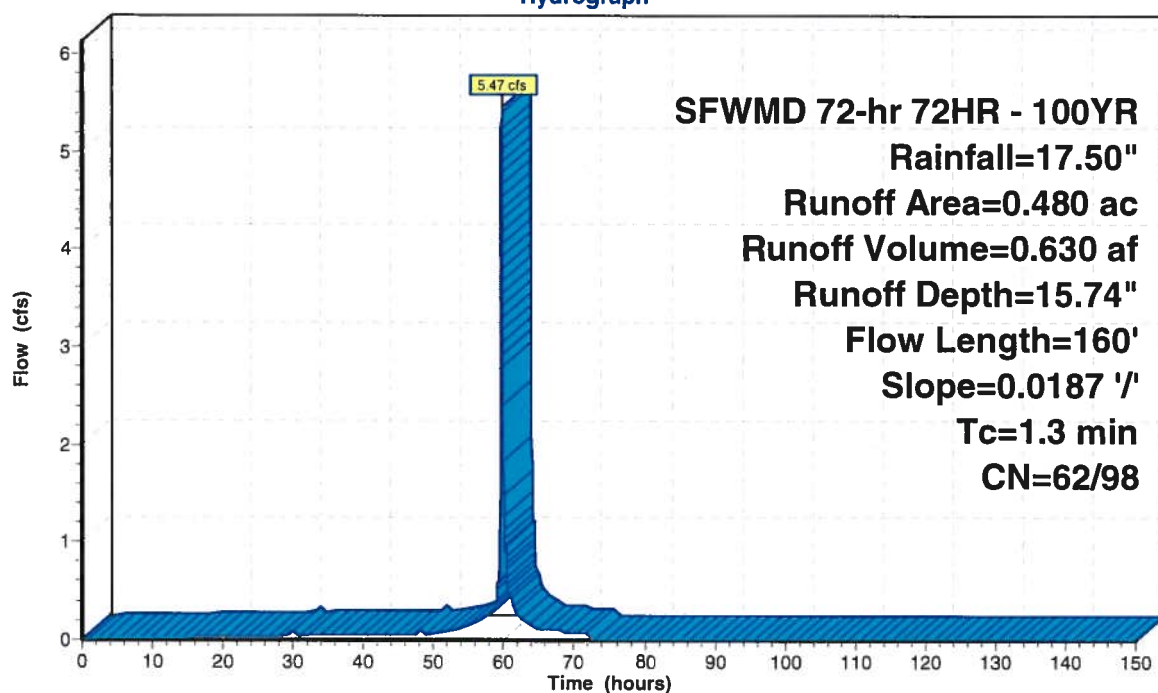
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 100YR Rainfall=17.50"

Area (ac)	CN	Description
0.480	88	Urban industrial, 72% imp, HSG B
0.134	62	Pervious Area
0.346	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	160	0.0187	2.00		Sheet Flow, OVERLAND TO INLET Smooth surfaces n= 0.011 P2= 5.90"

Subcatchment 6S: SB-1F

Hydrograph



Subcatchment 7S: SB-1G

Runoff = 15.45 cfs @ 59.78 hrs, Volume= 1.925 af, Depth=16.73"

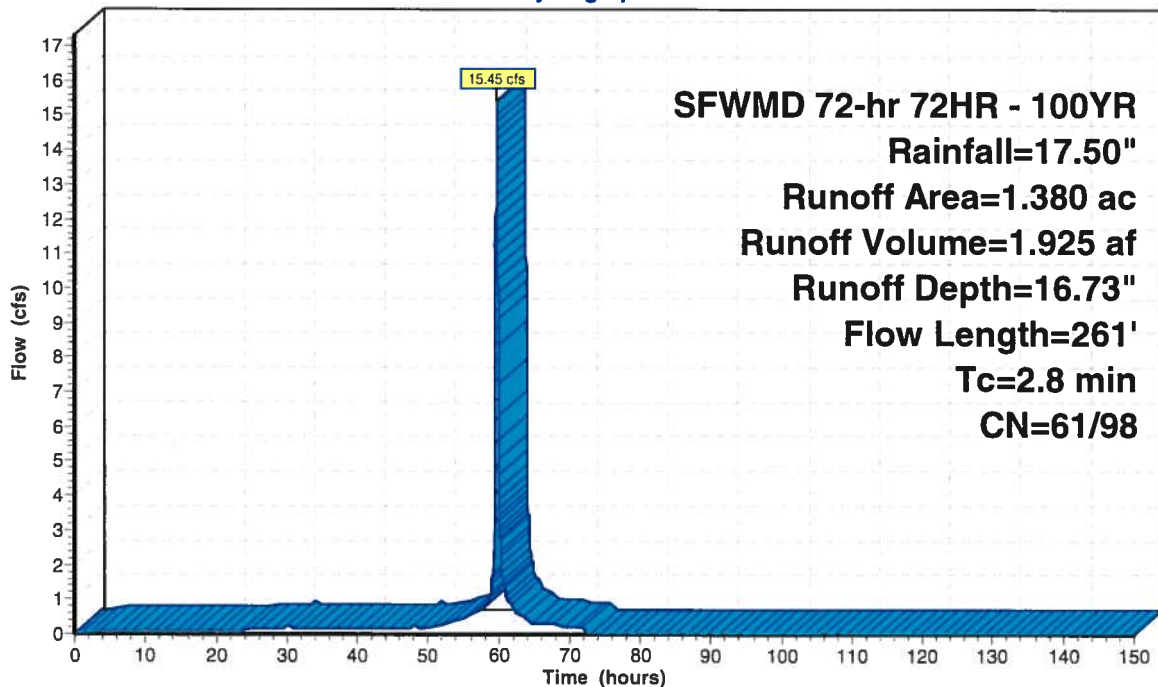
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 100YR Rainfall=17.50"

Area (ac)	CN	Description
1.250	98	Paved parking & roofs
0.130	61	>75% Grass cover, Good, HSG B
1.380	95	Weighted Average
0.130	61	Pervious Area
1.250	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	232	0.0103	1.69		Sheet Flow, OVERLAND 1 Smooth surfaces n= 0.011 P2= 5.90"
0.5	29	0.0069	0.95		Sheet Flow, OVERLAND TO INLET Smooth surfaces n= 0.011 P2= 5.90"
2.8	261	Total			

Subcatchment 7S: SB-1G

Hydrograph



Subcatchment 8S: SB-1H

Runoff = 17.83 cfs @ 59.83 hrs, Volume= 2.546 af, Depth=17.26"

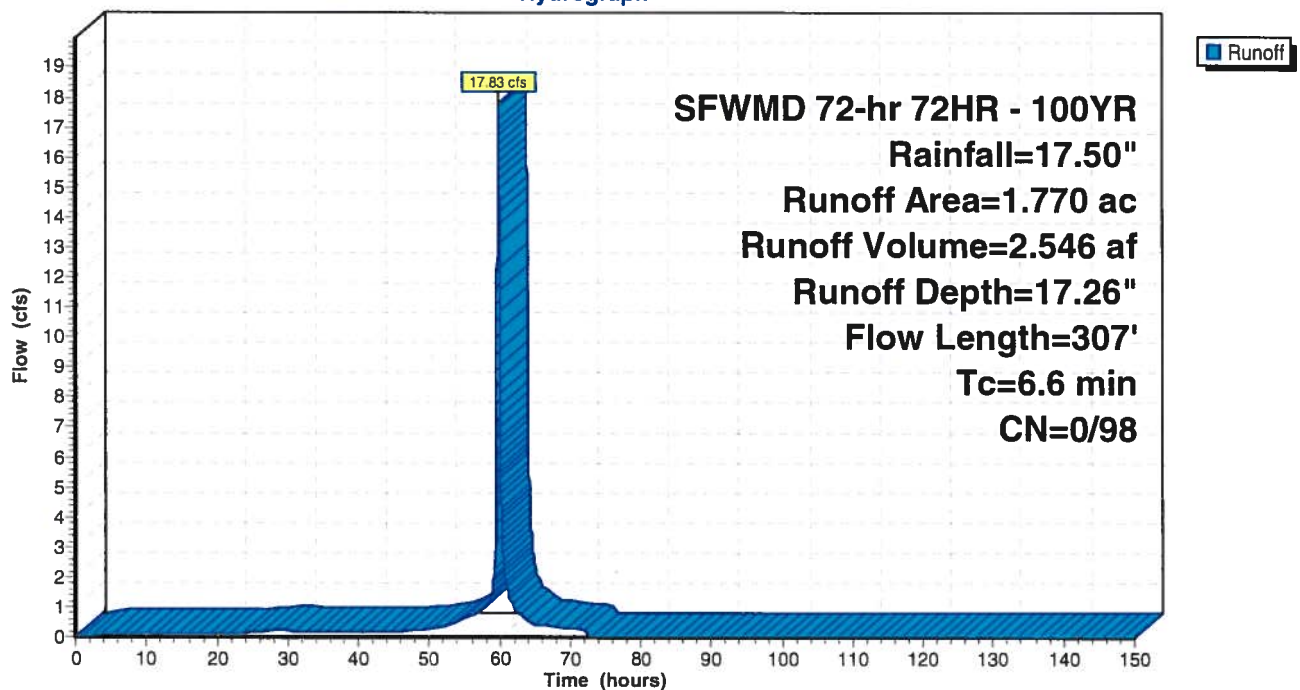
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 100YR Rainfall=17.50"

Area (ac)	CN	Description
1.770	98	Paved parking & roofs
1.770	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	142	0.0014	0.69		Sheet Flow, OVERLAND 1 Smooth surfaces n= 0.011 P2= 5.90"
3.1	158	0.0023	0.86		Sheet Flow, OVERLAND TO SCF Smooth surfaces n= 0.011 P2= 5.90"
0.1	7	0.0054	1.18		Shallow Concentrated Flow, SCF TO INLET Unpaved Kv= 16.1 fps
6.6	307	Total			

Subcatchment 8S: SB-1H

Hydrograph



Subcatchment 11S: OSB-1A

Runoff = 11.87 cfs @ 59.81 hrs, Volume= 1.611 af, Depth=17.26"

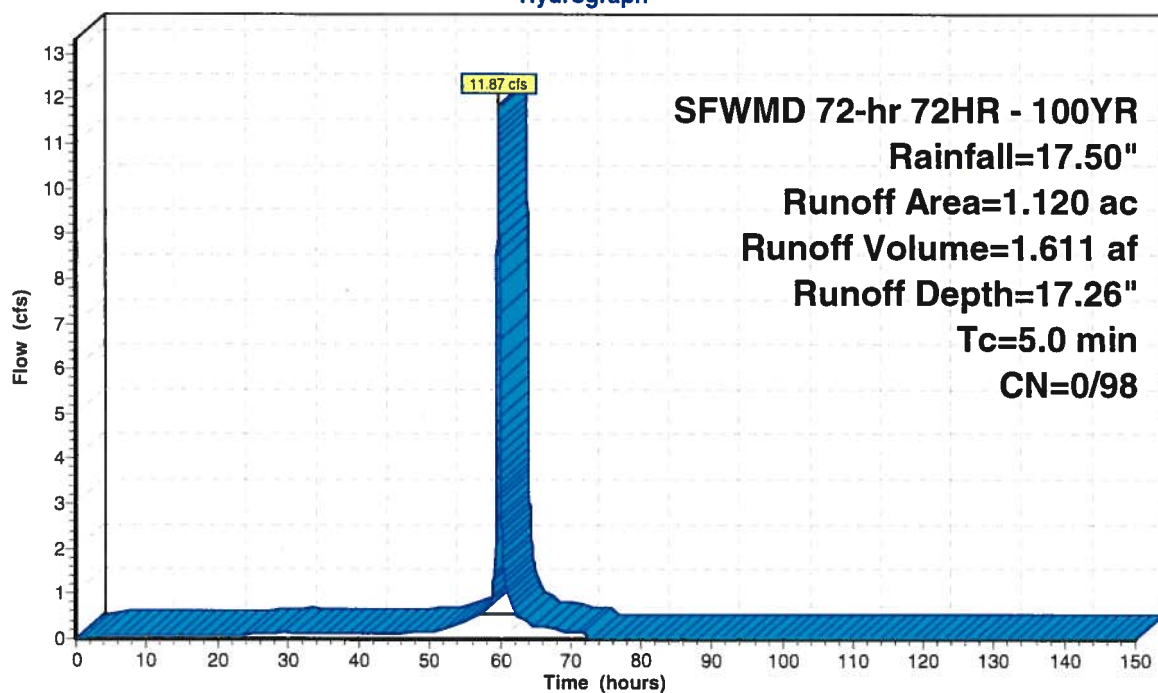
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 100YR Rainfall=17.50"

Area (ac)	CN	Description
1.120	98	Paved parking & roofs
1.120	98	Impervious Area

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

Subcatchment 11S: OSB-1A

Hydrograph



Subcatchment 12S: OSB-1B

Runoff = 3.64 cfs @ 59.81 hrs, Volume= 0.489 af, Depth=17.26"

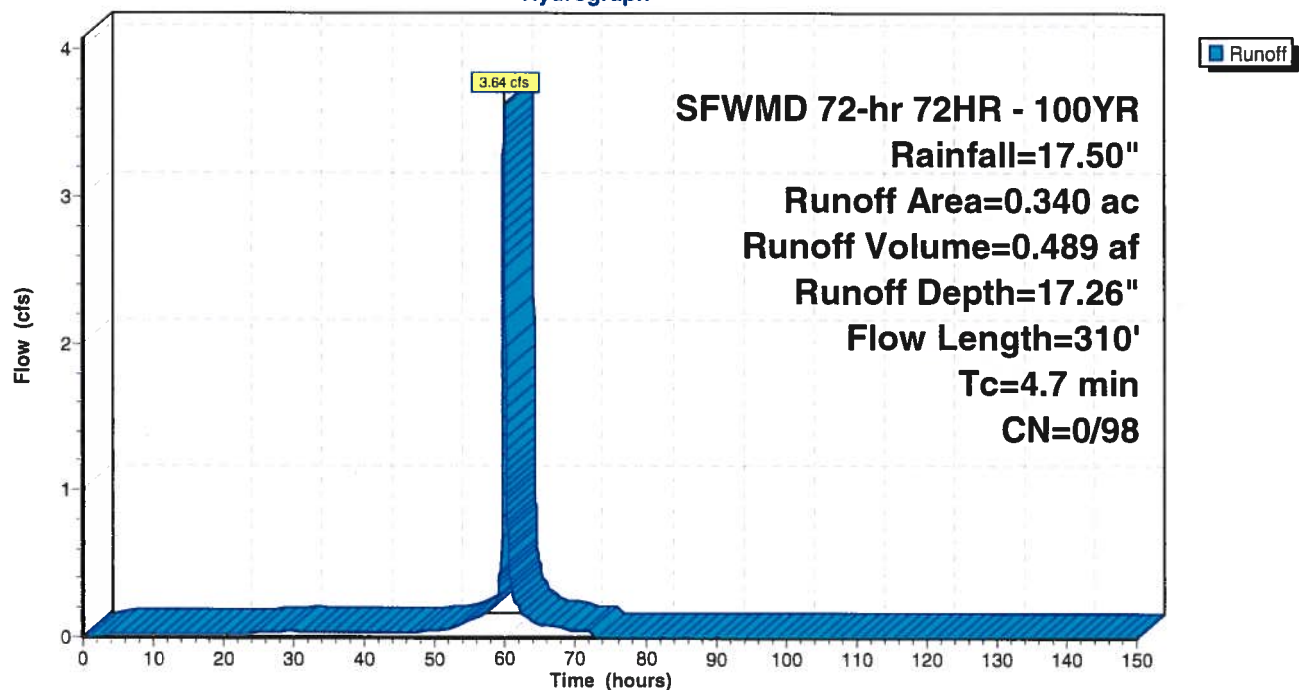
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 100YR Rainfall=17.50"

Area (ac)	CN	Description
0.340	98	Paved parking & roofs
0.340	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	138	0.0051	1.15		Sheet Flow, OVERLAND 1 Smooth surfaces n= 0.011 P2= 5.90"
2.6	161	0.0037	1.05		Sheet Flow, OVERLAND TO SCF Smooth surfaces n= 0.011 P2= 5.90"
0.1	11	0.0271	3.34		Shallow Concentrated Flow, SCF TO SB-1G Paved Kv= 20.3 fps
4.7	310	Total			

Subcatchment 12S: OSB-1B

Hydrograph



Subcatchment 13S: OSB-1C

Runoff = 5.72 cfs @ 59.81 hrs, Volume= 0.777 af, Depth=17.26"

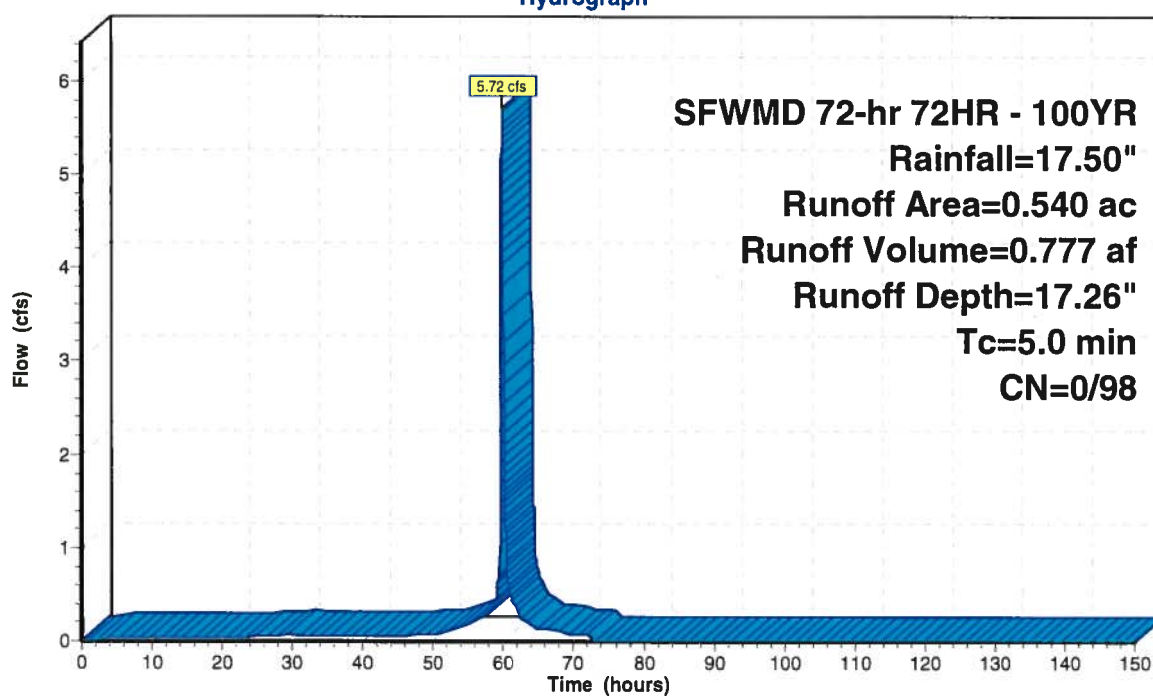
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 100YR Rainfall=17.50"

Area (ac)	CN	Description
0.540	98	Paved parking & roofs
0.540	98	Impervious Area

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

Subcatchment 13S: OSB-1C

Hydrograph



Runoff

Subcatchment 14S: SB-1K

Runoff = 5.67 cfs @ 59.78 hrs, Volume= 0.714 af, Depth=17.27"

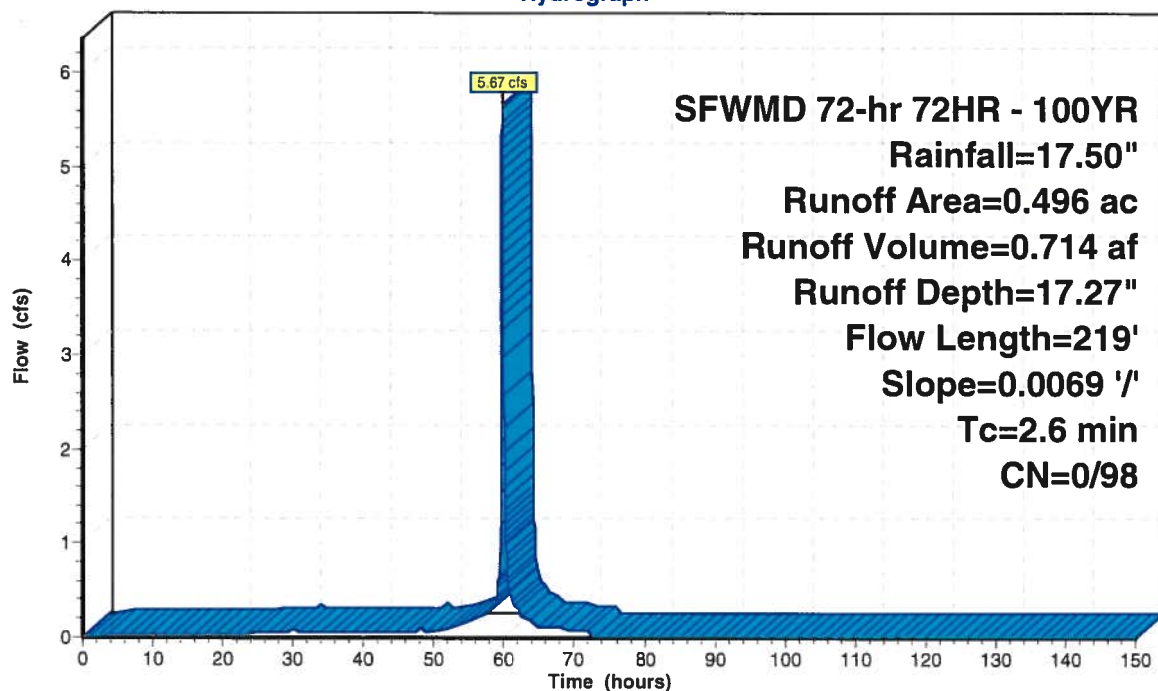
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 100YR Rainfall=17.50"

Area (ac)	CN	Description
0.496	98	Paved parking & roofs
0.496	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	219	0.0069	1.43		Sheet Flow, OVERLAND TO SB-1H Smooth surfaces n= 0.011 P2= 5.90"

Subcatchment 14S: SB-1K

Hydrograph



Subcatchment 22S: SB-2A

NOTE LINE ITEM 3 IS SOUTH DRY DETENTION POND AREA.

Runoff = 106.12 cfs @ 59.86 hrs, Volume= 16.553 af, Depth=17.26"

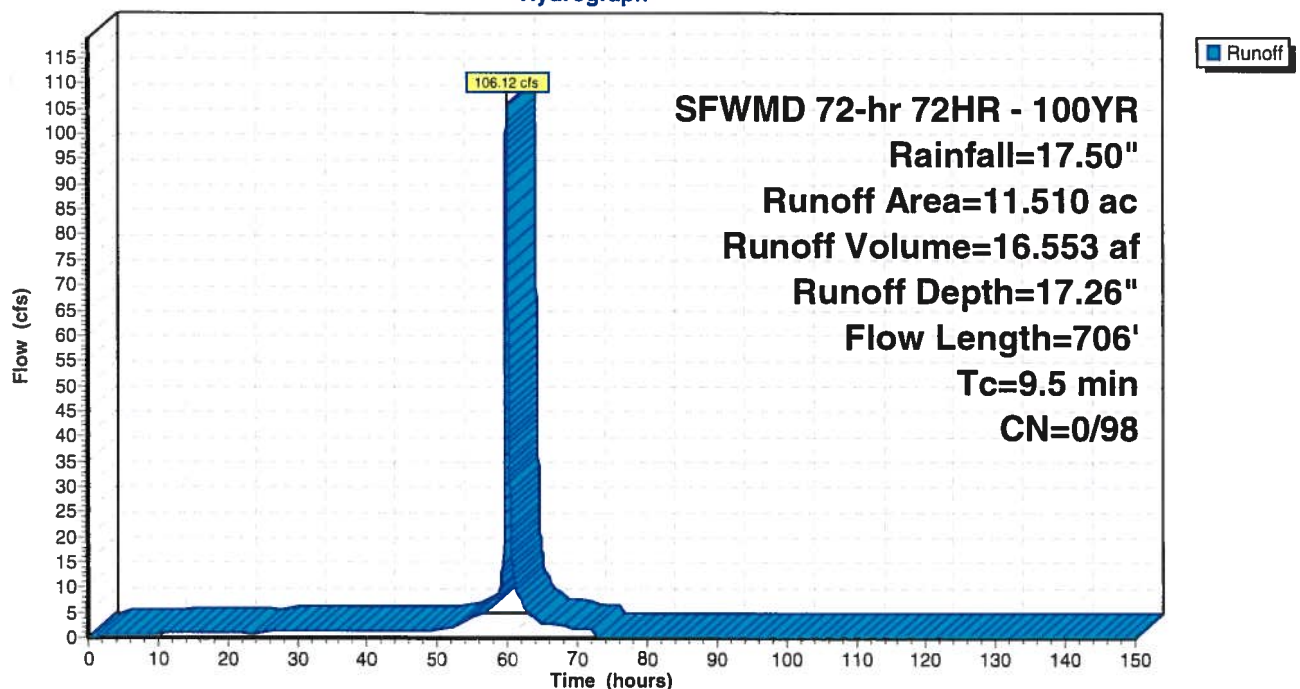
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 100YR Rainfall=17.50"

Area (ac)	CN	Description
10.290	98	Paved parking & roofs
1.180	100	DETENTION POND
0.040	98	Paved parking & roofs
11.510	98	Weighted Average
11.510	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	14	0.0141	1.10		Sheet Flow, OVERLAND FROM ROAD Smooth surfaces n= 0.011 P2= 5.90"
3.0	286	0.0077	1.57		Sheet Flow, OVERLAND TO SCF Smooth surfaces n= 0.011 P2= 5.90"
6.3	406	0.0044	1.07		Shallow Concentrated Flow, SCF TO POND Unpaved Kv= 16.1 fps
9.5	706	Total			

Subcatchment 22S: SB-2A

Hydrograph



Subcatchment 23S: SB-2B

Runoff = 9.16 cfs @ 59.82 hrs, Volume= 1.056 af, Depth=13.07"

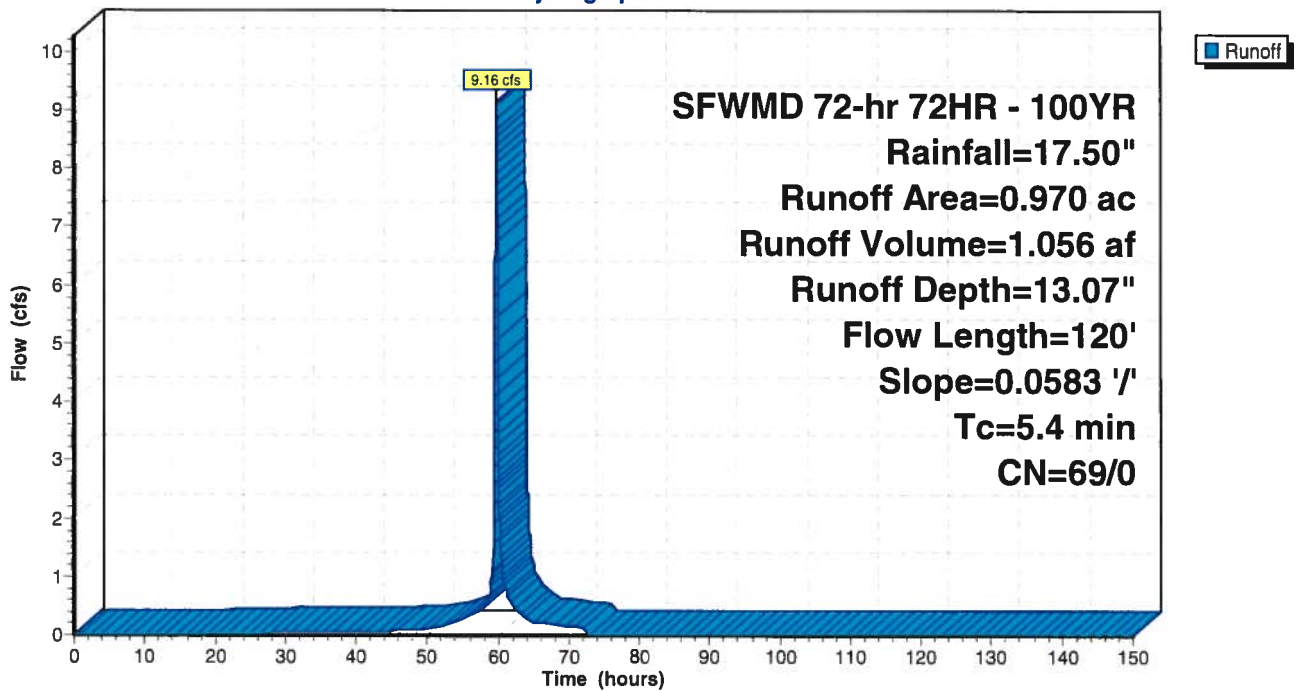
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
 SFWMD 72-hr 72HR - 100YR Rainfall=17.50"

Area (ac)	CN	Description
0.970	69	50-75% Grass cover, Fair, HSG B
0.970	69	Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	120	0.0583	0.37		Sheet Flow, OVERLAND TO SOUTH CANAL Grass: Short n= 0.150 P2= 5.90"

Subcatchment 23S: SB-2B

Hydrograph



Subcatchment 25S: B-4

Runoff = 3.74 cfs @ 59.77 hrs, Volume= 0.369 af, Depth=11.64"

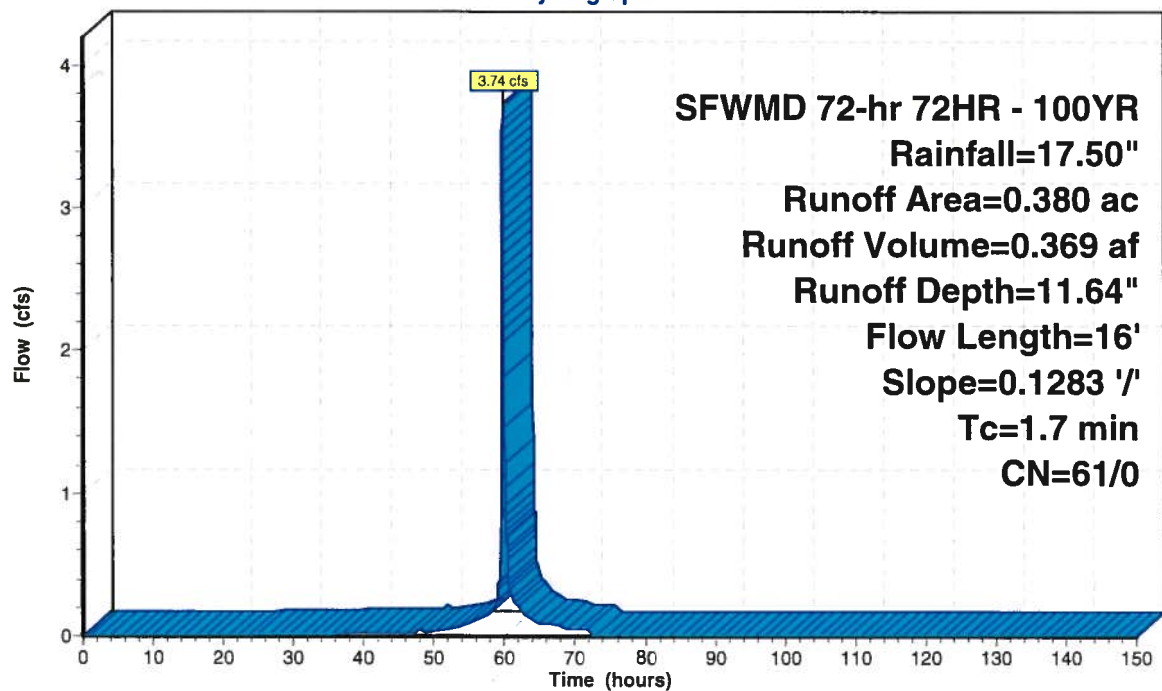
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 100YR Rainfall=17.50"

Area (ac)	CN	Description
0.380	61	>75% Grass cover, Good, HSG B
0.380	61	Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	16	0.1283	0.15		Sheet Flow, OVERLAND TO NORTH CANAL Woods: Light underbrush n= 0.400 P2= 5.90"

Subcatchment 25S: B-4

Hydrograph



Subcatchment 26S: OSB-2A

Runoff = 9.12 cfs @ 59.90 hrs, Volume= 1.534 af, Depth=15.74"

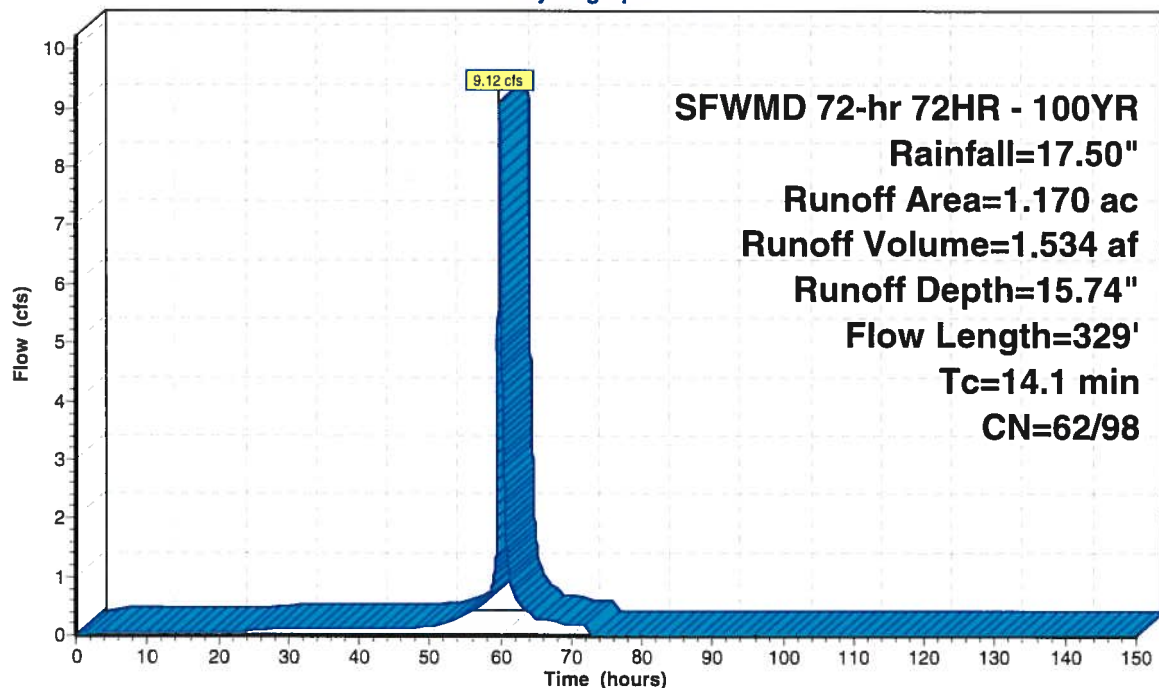
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 100YR Rainfall=17.50"

Area (ac)	CN	Description
1.170	88	Urban industrial, 72% imp, HSG B
0.328	62	Pervious Area
0.842	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	300	0.0040	0.36		Sheet Flow, OVERLAND TO SCF
					Fallow n= 0.050 P2= 5.90"
0.4	29	0.0069	1.25		Shallow Concentrated Flow, SCF TO SB-2A
					Grassed Waterway Kv= 15.0 fps
14.1	329	Total			

Subcatchment 26S: OSB-2A

Hydrograph



Subcatchment 31S: SB-1I

Runoff = 3.51 cfs @ 59.77 hrs, Volume= 0.432 af, Depth=17.27"

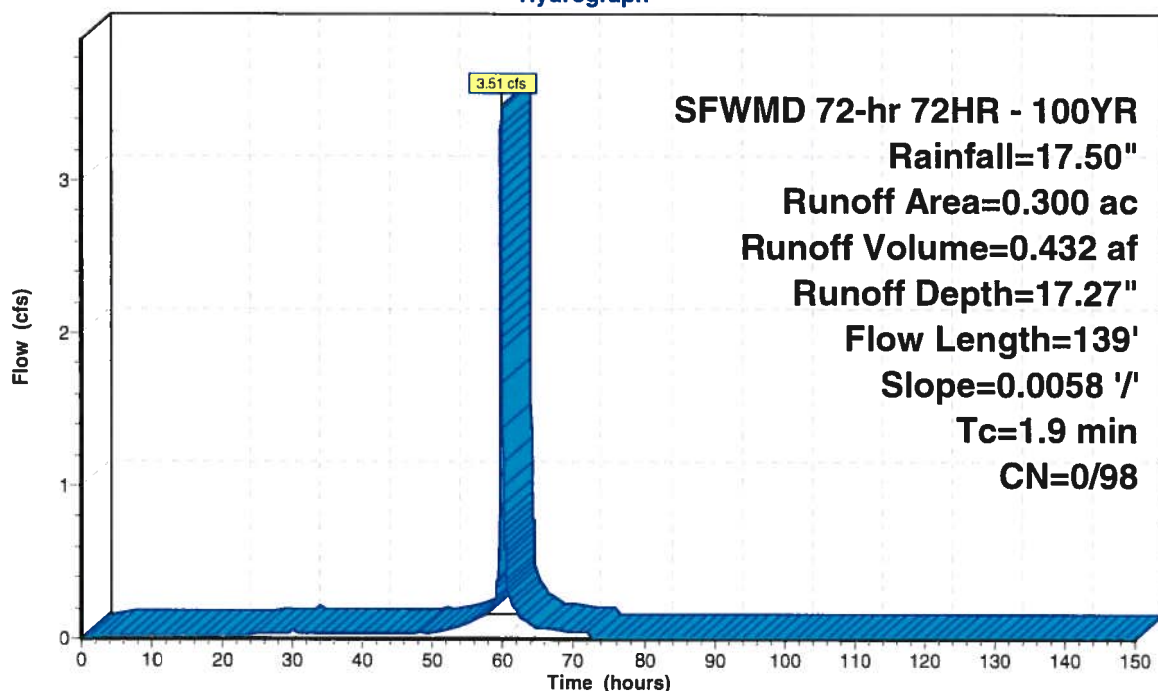
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 100YR Rainfall=17.50"

Area (ac)	CN	Description
0.300	98	Paved parking & roofs
0.300	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	139	0.0058	1.22		Sheet Flow, OVERLAND TO INLET Smooth surfaces n= 0.011 P2= 5.90"

Subcatchment 31S: SB-1I

Hydrograph



Subcatchment 33S: SB-1J

Runoff = 8.49 cfs @ 59.78 hrs, Volume= 1.075 af, Depth=17.27"

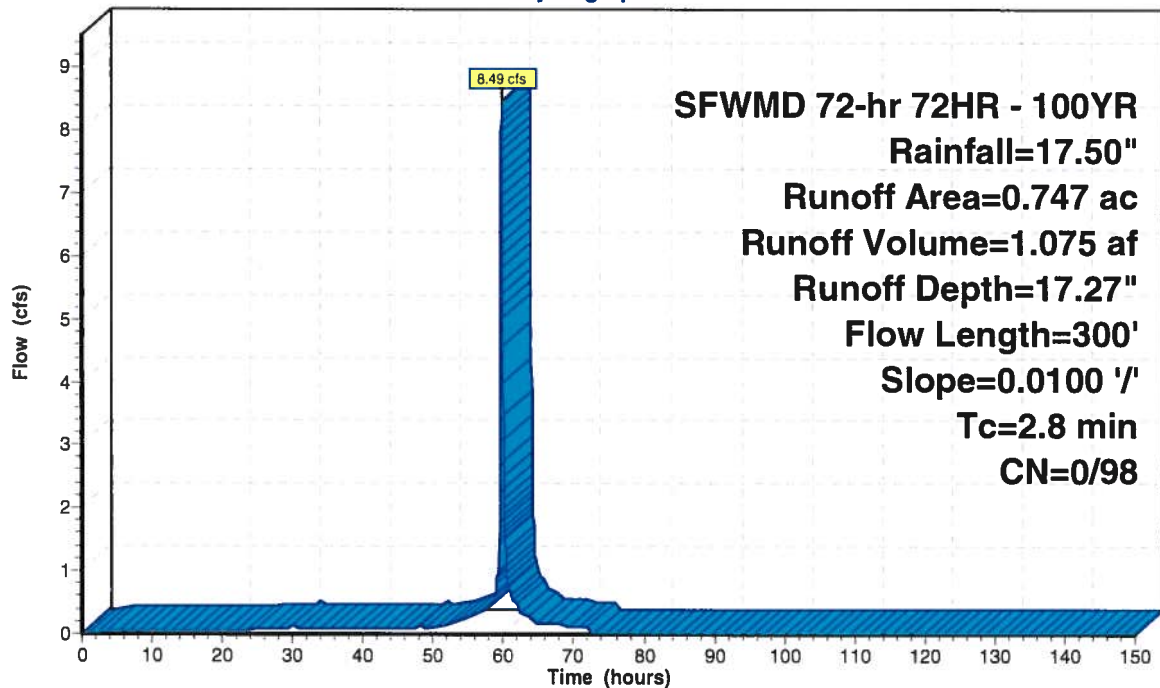
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 72HR - 100YR Rainfall=17.50"

Area (ac)	CN	Description
0.747	98	Paved parking & roofs
0.747	98	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	300	0.0100	1.76		Sheet Flow, Smooth surfaces n= 0.011 P2= 5.90"

Subcatchment 33S: SB-1J

Hydrograph



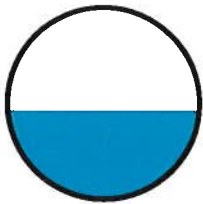
Reach 33R: Basin 1 Outfall

Inflow Area = 32.213 ac, Inflow Depth = 12.16" for 72HR - 100YR event
 Inflow = 105.03 cfs @ 60.15 hrs, Volume= 32.645 af
 Outflow = 105.02 cfs @ 60.16 hrs, Volume= 32.645 af, Atten= 0%, Lag= 0.3 min

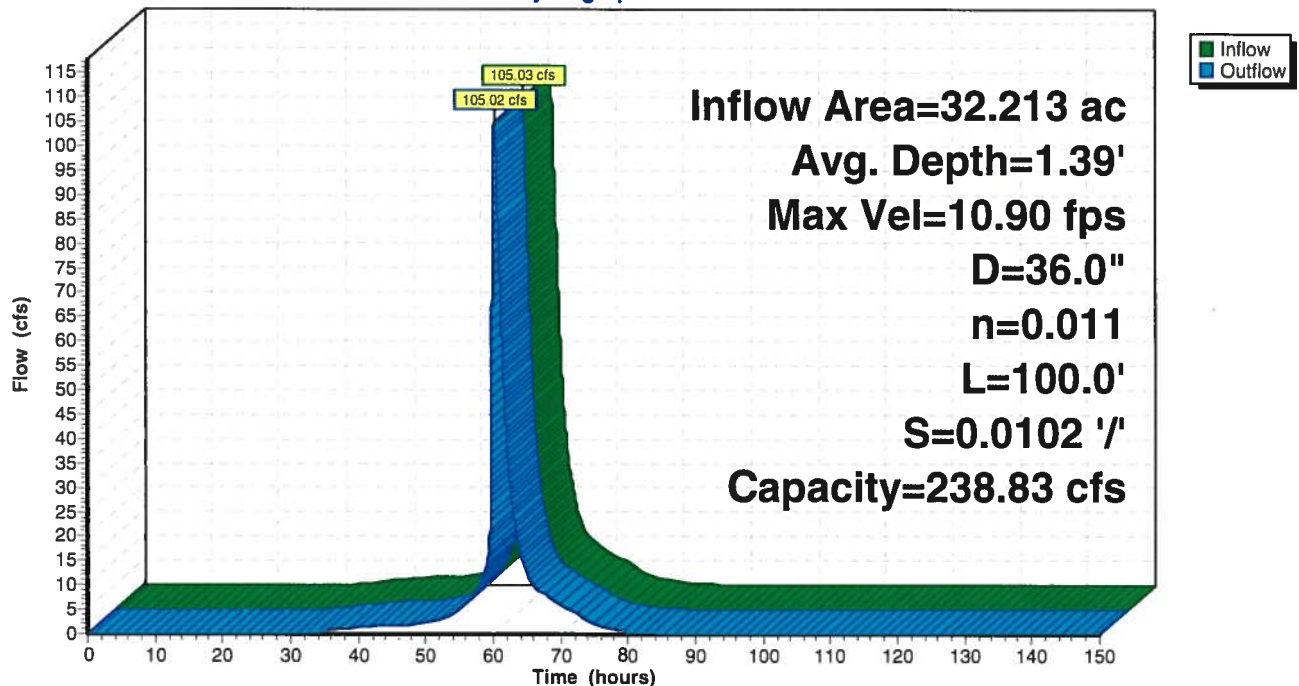
Routing by Stor-Ind+Trans method, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
 Max. Velocity= 10.90 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 3.34 fps, Avg. Travel Time= 0.5 min

Peak Storage= 963 cf @ 60.16 hrs, Average Depth at Peak Storage= 1.39'
 Bank-Full Depth= 3.00', Capacity at Bank-Full= 238.83 cfs

A factor of 3.00 has been applied to the storage and discharge capacity
 36.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
 Length= 100.0' Slope= 0.0102 '/'
 Inlet Invert= 3.10', Outlet Invert= 2.08'

**Reach 33R: Basin 1 Outfall**

Hydrograph



Reach 35R: Basin 2 Outfall

Inflow Area = 12.680 ac, Inflow Depth = 13.68" for 72HR - 100YR event
 Inflow = 83.98 cfs @ 60.04 hrs, Volume= 14.450 af
 Outflow = 83.96 cfs @ 60.05 hrs, Volume= 14.450 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 10.33 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 3.06 fps, Avg. Travel Time= 0.7 min

Peak Storage= 1,057 cf @ 60.04 hrs, Average Depth at Peak Storage= 1.68'

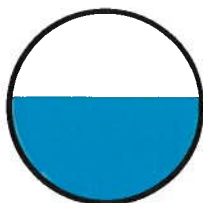
Bank-Full Depth= 3.00', Capacity at Bank-Full= 139.64 cfs

A factor of 2.00 has been applied to the storage and discharge capacity

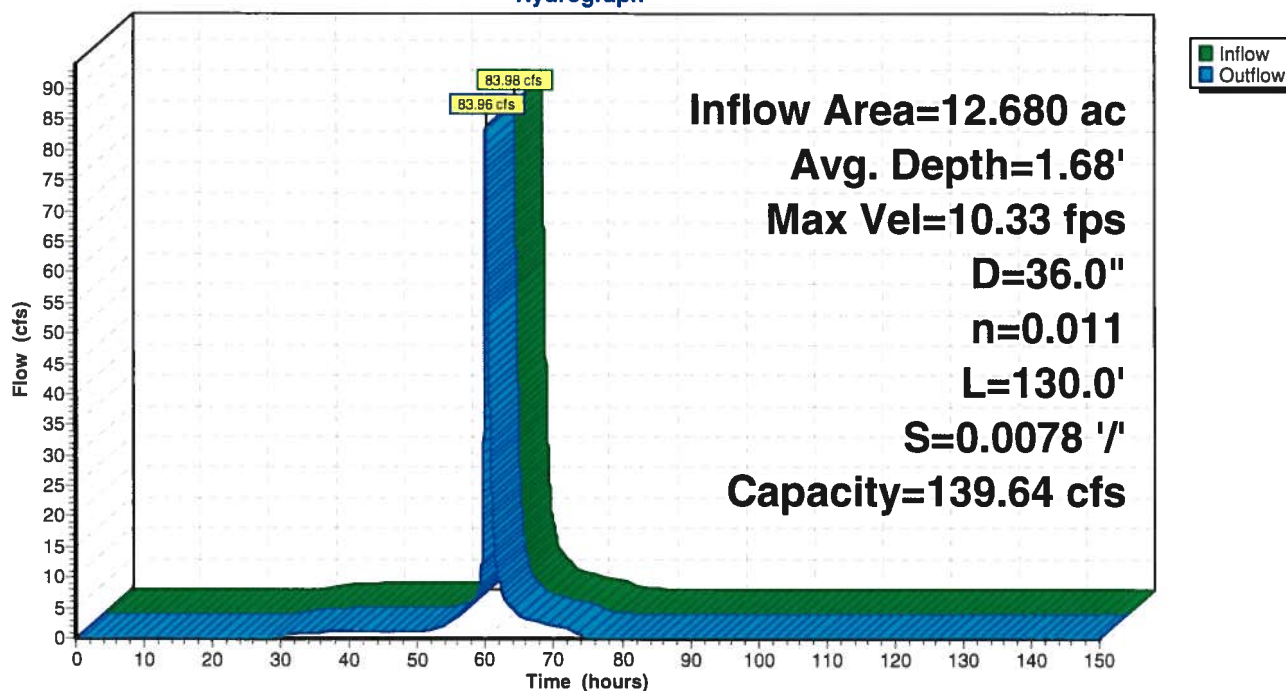
36.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean

Length= 130.0' Slope= 0.0078 '/

Inlet Invert= 3.10', Outlet Invert= 2.08'

**Reach 35R: Basin 2 Outfall**

Hydrograph



Pond 10P: BASIN 1 DRY DETENTION POND

Inflow Area = 32.213 ac, Inflow Depth = 15.72" for 72HR - 100YR event
 Inflow = 260.41 cfs @ 59.82 hrs, Volume= 42.186 af
 Outflow = 106.66 cfs @ 60.15 hrs, Volume= 41.500 af, Atten= 59%, Lag= 19.9 min
 Primary = 105.03 cfs @ 60.15 hrs, Volume= 32.645 af
 Secondary = 1.63 cfs @ 60.15 hrs, Volume= 8.855 af

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
 Peak Elev= 8.50' @ 60.15 hrs Surf.Area= 3.123 ac Storage= 14.763 af

Plug-Flow detention time= 631.7 min calculated for 41.497 af (98% of inflow)
 Center-of-Mass det. time= 613.7 min (3,796.9 - 3,183.2)

Volume	Invert	Avail.Storage	Storage Description
#1	3.10'	16.331 af	190.00'W x 540.00'L x 5.90'H Prismatic Z=4.0

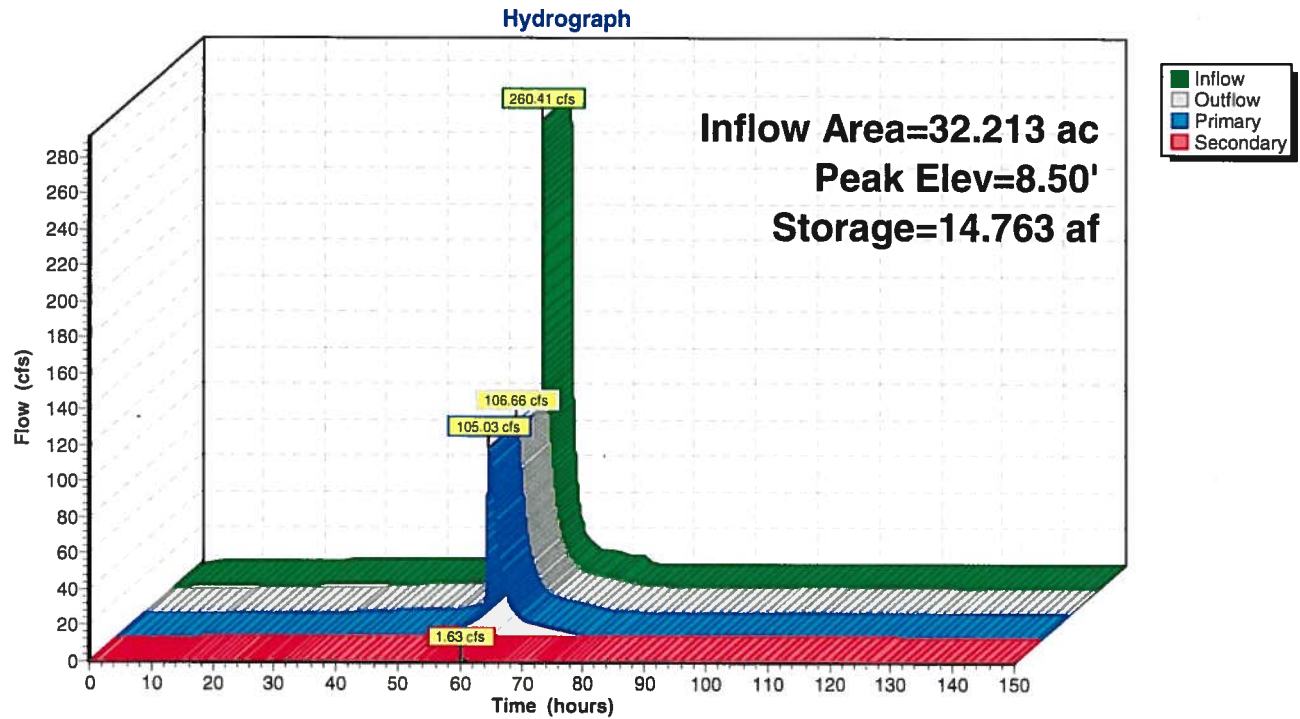
Device	Routing	Invert	Outlet Devices
#1	Primary	6.10'	6.0' long x 2.90' rise Sharp-Crested Rectangular Weir 2 End Contraction(s) 3.0' Crest Height
#2	Primary	4.30'	100.0 deg x 1.80' rise Sharp-Crested Vee/Trap Weir C= 2.49
#3	Secondary	3.10'	3.0" Vert. Orifice/Grate X 3.00 C= 0.600

Primary OutFlow Max=105.02 cfs @ 60.15 hrs HW=8.50' TW=3.10' (Fixed TW Elev= 3.10')

↑ **1=Sharp-Crested Rectangular Weir** (Weir Controls 73.85 cfs @ 5.57 fps)
 ↓ **2=Sharp-Crested Vee/Trap Weir** (Orifice Controls 31.17 cfs @ 8.07 fps)

Secondary OutFlow Max=1.63 cfs @ 60.15 hrs HW=8.50' (Free Discharge)

↑ **3=Orifice/Grate** (Orifice Controls 1.63 cfs @ 11.06 fps)

Pond 10P: BASIN 1 DRY DETENTION POND

Pond 24P: BASIN 2 DRY DETENTION POND

Inflow Area = 12.680 ac, Inflow Depth = 17.12" for 72HR - 100YR event
 Inflow = 115.13 cfs @ 59.86 hrs, Volume= 18.087 af
 Outflow = 84.49 cfs @ 60.04 hrs, Volume= 17.765 af, Atten= 27%, Lag= 10.6 min
 Primary = 83.98 cfs @ 60.04 hrs, Volume= 14.450 af
 Secondary = 0.51 cfs @ 60.04 hrs, Volume= 3.315 af

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs
 Peak Elev= 7.88' @ 60.04 hrs Surf.Area= 1.136 ac Storage= 4.507 af

Plug-Flow detention time= 571.3 min calculated for 17.765 af (98% of inflow)
 Center-of-Mass det. time= 550.3 min (3,661.7 - 3,111.5)

Volume	Invert	Avail.Storage	Storage Description
#1	3.10'	5.228 af	125.00'W x 265.00'L x 5.40'H Prismatic Z=4.0

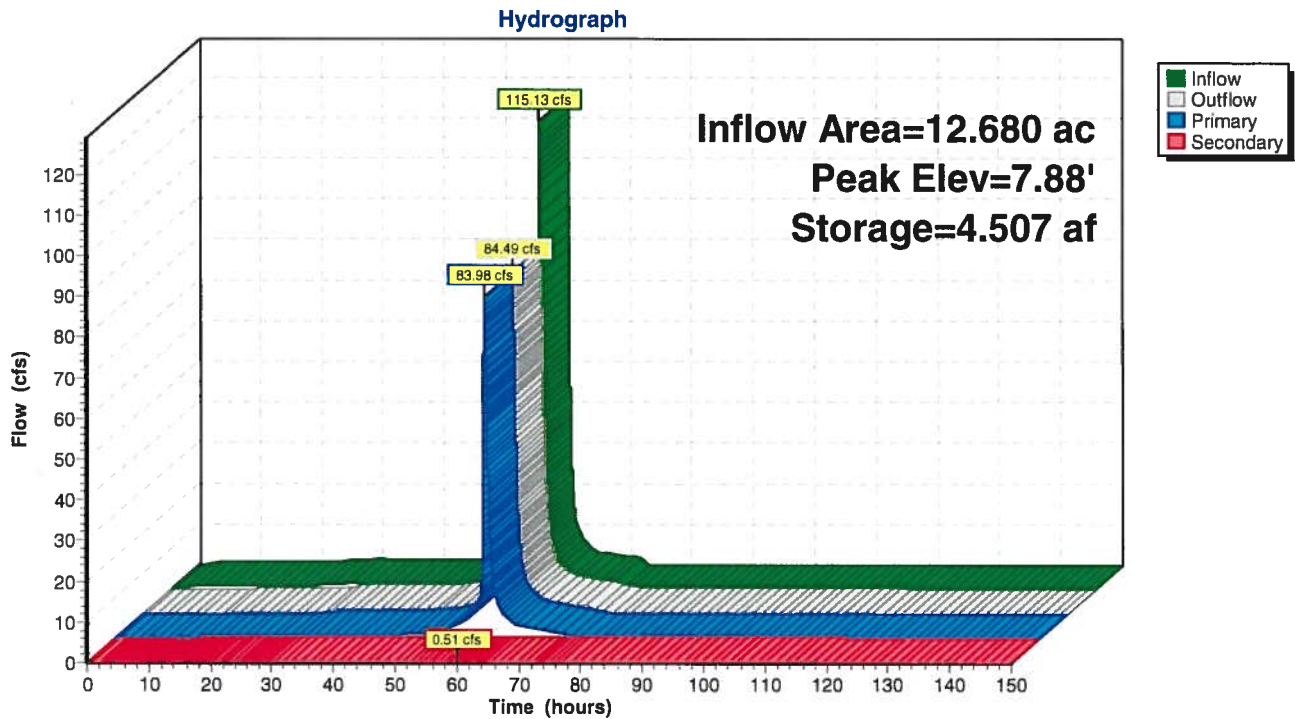
Device	Routing	Invert	Outlet Devices
#1	Primary	6.00'	8.0' long x 2.50' rise Sharp-Crested Rectangular Weir 2 End Contraction(s) 2.9' Crest Height
#2	Primary	4.90'	120.0 deg x 1.10' rise Sharp-Crested Vee/Trap Weir C= 2.48
#3	Secondary	3.10'	3.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=83.97 cfs @ 60.04 hrs HW=7.88' TW=2.08' (Fixed TW Elev= 2.08')

↑ 1=Sharp-Crested Rectangular Weir (Weir Controls 69.38 cfs @ 4.84 fps)
 ↓ 2=Sharp-Crested Vee/Trap Weir (Orifice Controls 14.58 cfs @ 6.96 fps)

Secondary OutFlow Max=0.51 cfs @ 60.04 hrs HW=7.88' TW=2.08' (Fixed TW Elev= 2.08')

↑ 3=Orifice/Grate (Orifice Controls 0.51 cfs @ 10.39 fps)

Pond 24P: BASIN 2 DRY DETENTION POND

Pond 33P: BASIN 1 BLEEDER DISCHARGE VOLUME

NODE USED TO DETERMINE THE VOLUME OF DISCHARGE IN A 24 HOUR PERIOD THROUGH A BLEED DOWN ORIFICE.

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.74 cfs @ 0.00 hrs, Volume= 2.830 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.74 cfs @ 0.00 hrs, Volume= 2.830 af

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Starting Elev= 4.30' Surf.Area= 2.518 ac Storage= 2.924 af

Peak Elev= 4.30' @ 0.00 hrs Surf.Area= 2.518 ac Storage= 2.924 af

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

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

Volume	Invert	Avail.Storage	Storage Description
#1	3.10'	16.331 af	190.00'W x 540.00'L x 5.90'H Prismatic Z=4.0

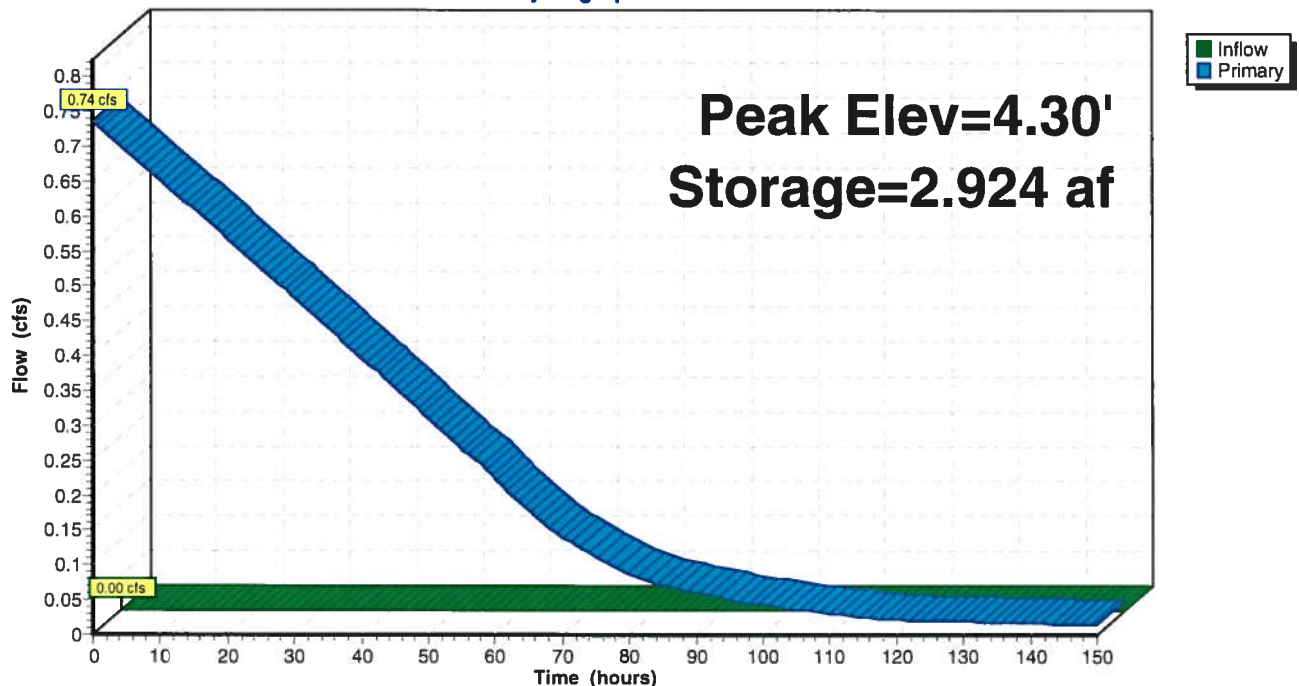
Device	Routing	Invert	Outlet Devices
#1	Primary	3.10'	3.0" Vert. Orifice/Grate X 3.00 C= 0.600

Primary OutFlow Max=0.74 cfs @ 0.00 hrs HW=4.30' TW=2.08' (Fixed TW Elev= 2.08')

1=Orifice/Grate (Orifice Controls 0.74 cfs @ 4.99 fps)

Pond 33P: BASIN 1 BLEEDER DISCHARGE VOLUME

Hydrograph



Pond 34P: BASIN 2 BLEEDER DISCHARGE VOLUME

THIS NODE IS USED TO DETERMINE DISCHARGE VOLUMES IN A 24 HOUR PERIOD THROUGH A BLEEDER ORIFICE.

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.31 cfs @ 0.00 hrs, Volume= 1.448 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.31 cfs @ 0.00 hrs, Volume= 1.448 af

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Starting Elev= 4.90' Surf.Area= 0.894 ac Storage= 1.488 af

Peak Elev= 4.90' @ 0.00 hrs Surf.Area= 0.894 ac Storage= 1.488 af

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

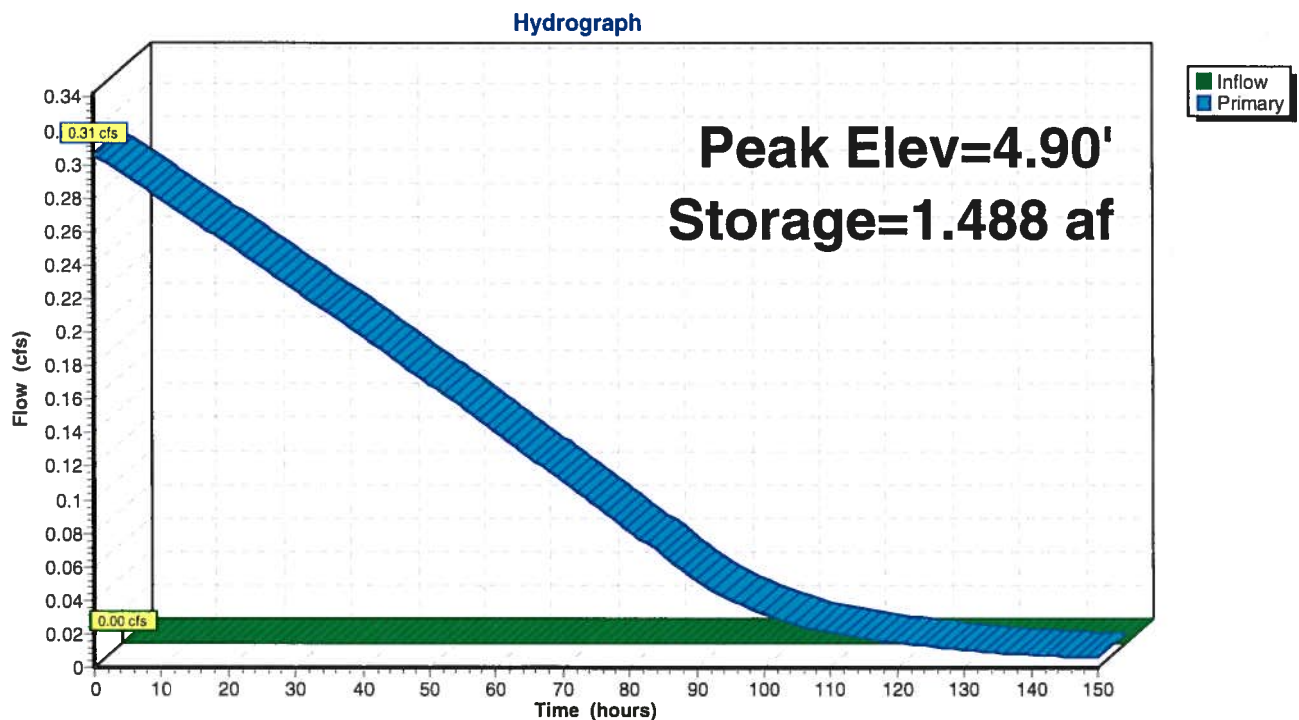
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	3.10'	5.228 af	125.00'W x 265.00'L x 5.40'H Prismatic Z=4.0

Device	Routing	Invert	Outlet Devices
#1	Primary	3.10'	3.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.31 cfs @ 0.00 hrs HW=4.90' TW=2.08' (Fixed TW Elev= 2.08')

1=Orifice/Grate (Orifice Controls 0.31 cfs @ 6.23 fps)

Pond 34P: BASIN 2 BLEEDER DISCHARGE VOLUME

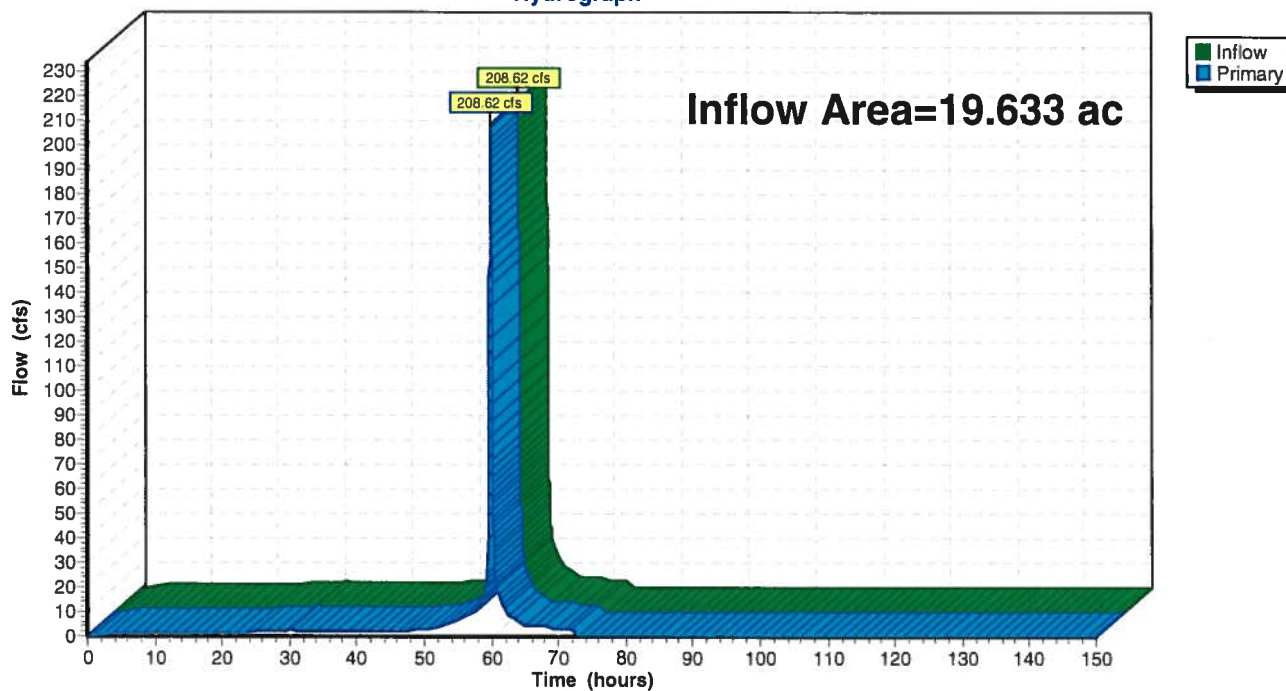
Link 15L: B-1 INLETS COMBINED

Inflow Area = 19.633 ac, Inflow Depth = 17.13" for 72HR - 100YR event
Inflow = 208.62 cfs @ 59.80 hrs, Volume= 28.019 af
Primary = 208.62 cfs @ 59.80 hrs, Volume= 28.019 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 15L: B-1 INLETS COMBINED

Hydrograph



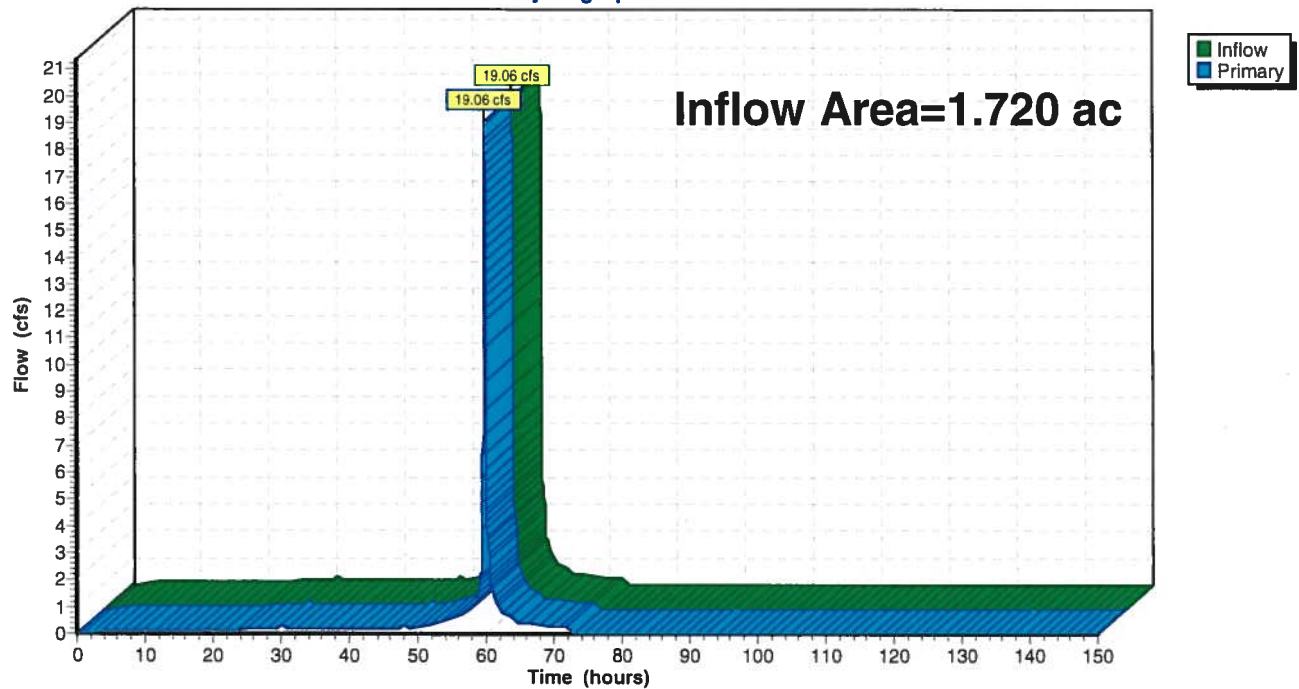
Link 16L: SB-1G OSB-1B COMBINED

Inflow Area = 1.720 ac, Inflow Depth = 16.84" for 72HR - 100YR event
Inflow = 19.06 cfs @ 59.79 hrs, Volume= 2.414 af
Primary = 19.06 cfs @ 59.79 hrs, Volume= 2.414 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 16L: SB-1G OSB-1B COMBINED

Hydrograph



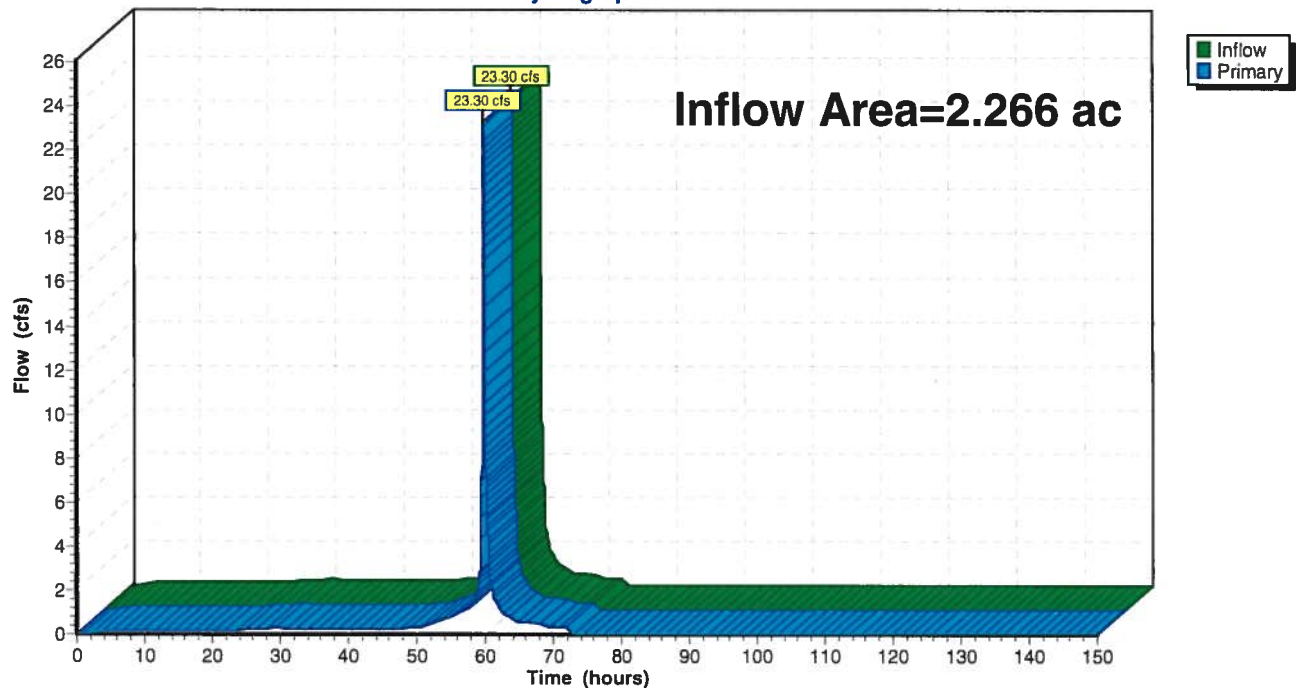
Link 17L: SB-1H OSB-1D COMBINED

Inflow Area = 2.266 ac, Inflow Depth = 17.26" for 72HR - 100YR event
Inflow = 23.30 cfs @ 59.81 hrs, Volume= 3.260 af
Primary = 23.30 cfs @ 59.81 hrs, Volume= 3.260 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 17L: SB-1H OSB-1D COMBINED

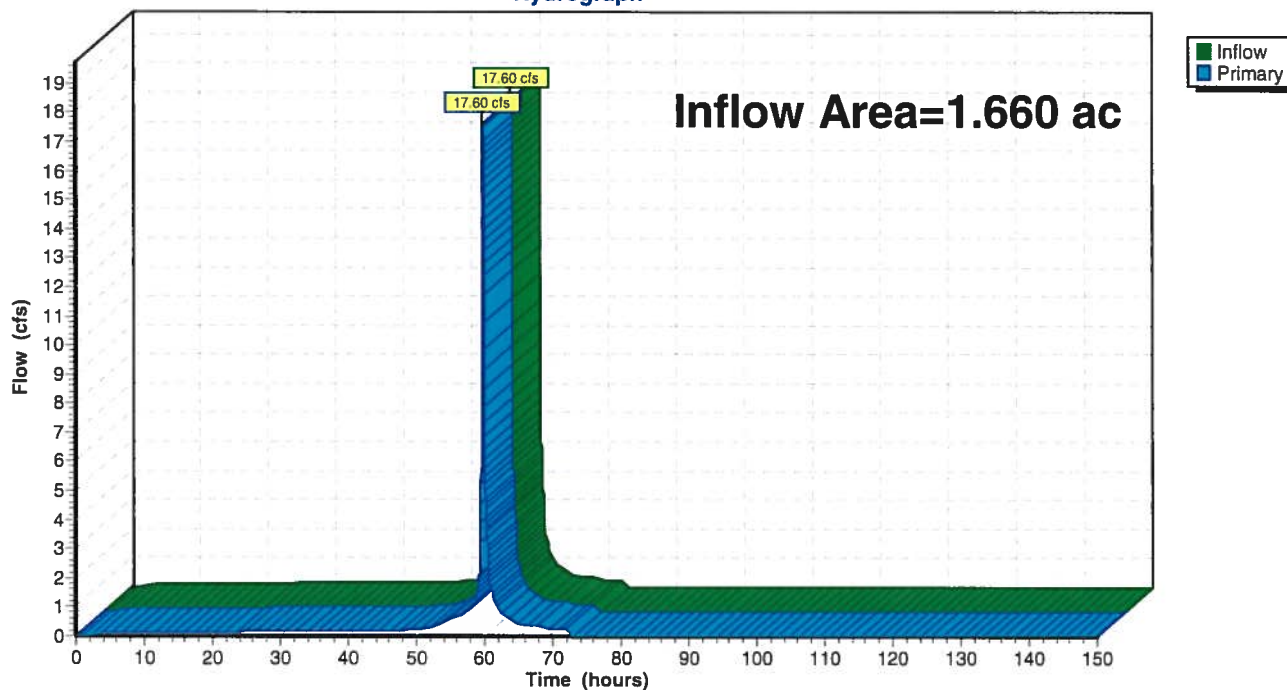
Hydrograph



Link 18L: OSB-1 INLETS COMBINED

Inflow Area = 1.660 ac, Inflow Depth = 17.26" for 72HR - 100YR event
Inflow = 17.60 cfs @ 59.81 hrs, Volume= 2.388 af
Primary = 17.60 cfs @ 59.81 hrs, Volume= 2.388 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 18L: OSB-1 INLETS COMBINED**Hydrograph**

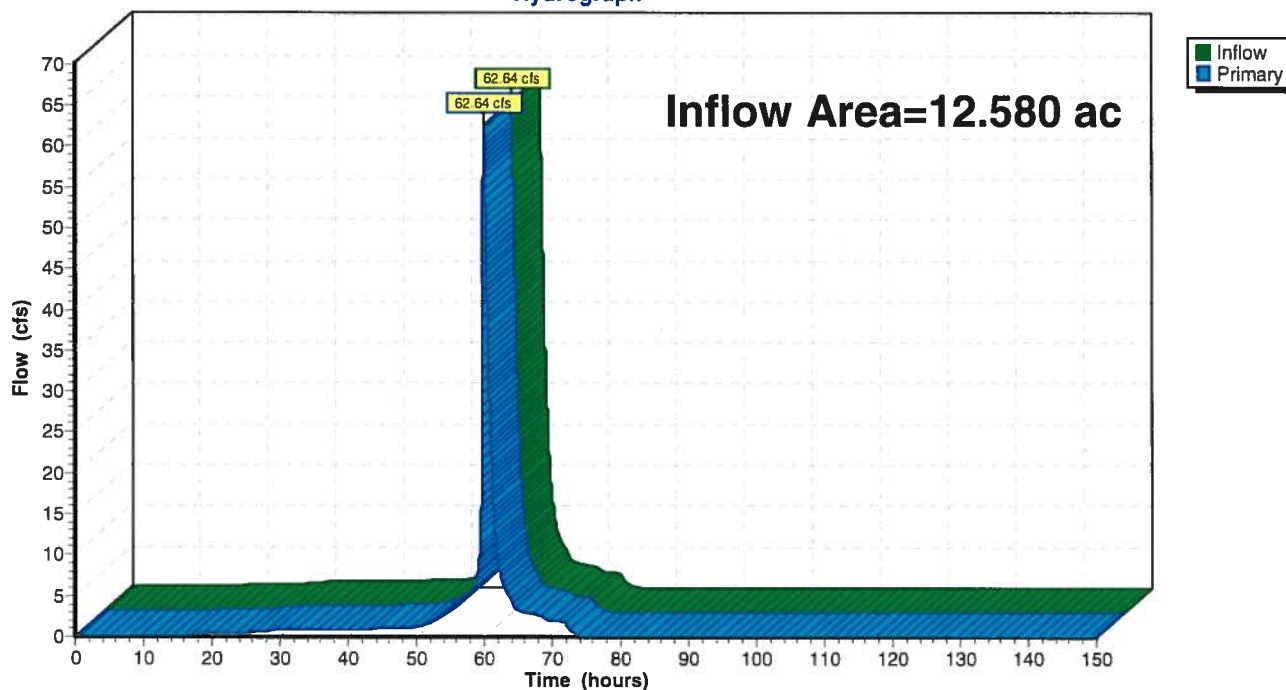
Link 19L: B-1 OVERLAND TO POND

Inflow Area = 12.580 ac, Inflow Depth = 13.51" for 72HR - 100YR event
Inflow = 62.64 cfs @ 60.00 hrs, Volume= 14.167 af
Primary = 62.64 cfs @ 60.00 hrs, Volume= 14.167 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 19L: B-1 OVERLAND TO POND

Hydrograph



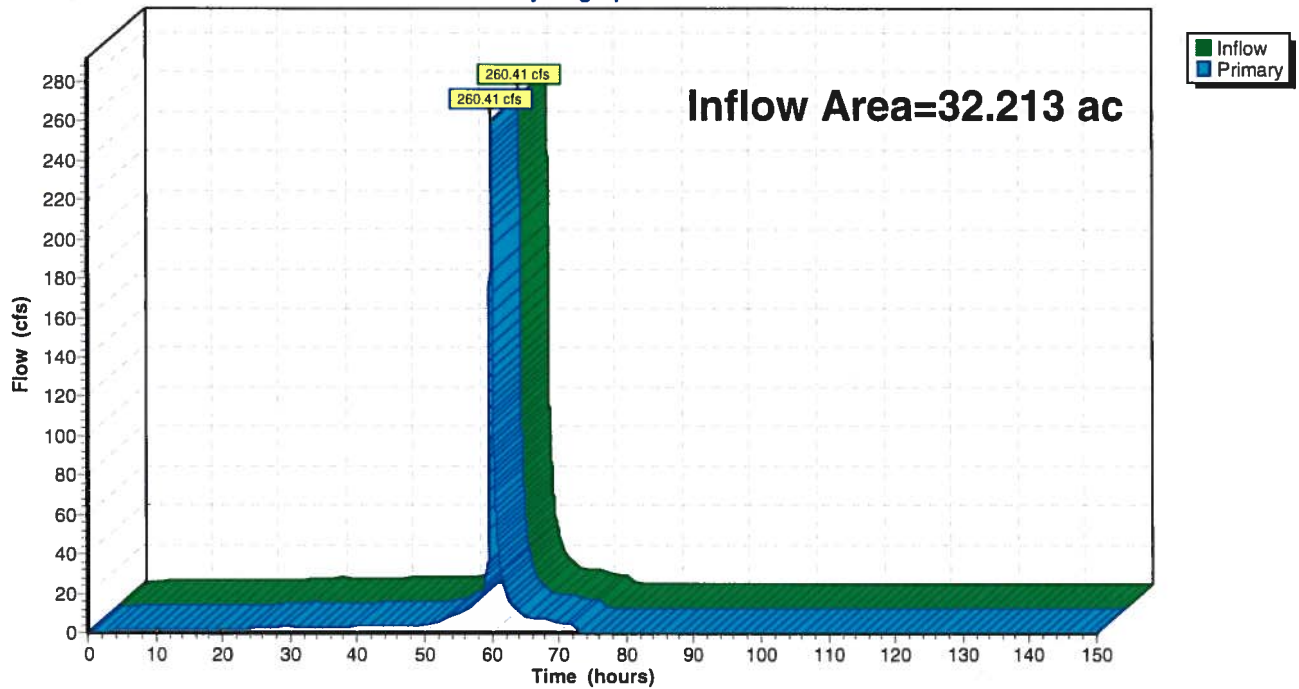
Link 20L: B-1 COMBINED TO POND

Inflow Area = 32.213 ac, Inflow Depth = 15.72" for 72HR - 100YR event
Inflow = 260.41 cfs @ 59.82 hrs, Volume= 42.186 af
Primary = 260.41 cfs @ 59.82 hrs, Volume= 42.186 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 20L: B-1 COMBINED TO POND

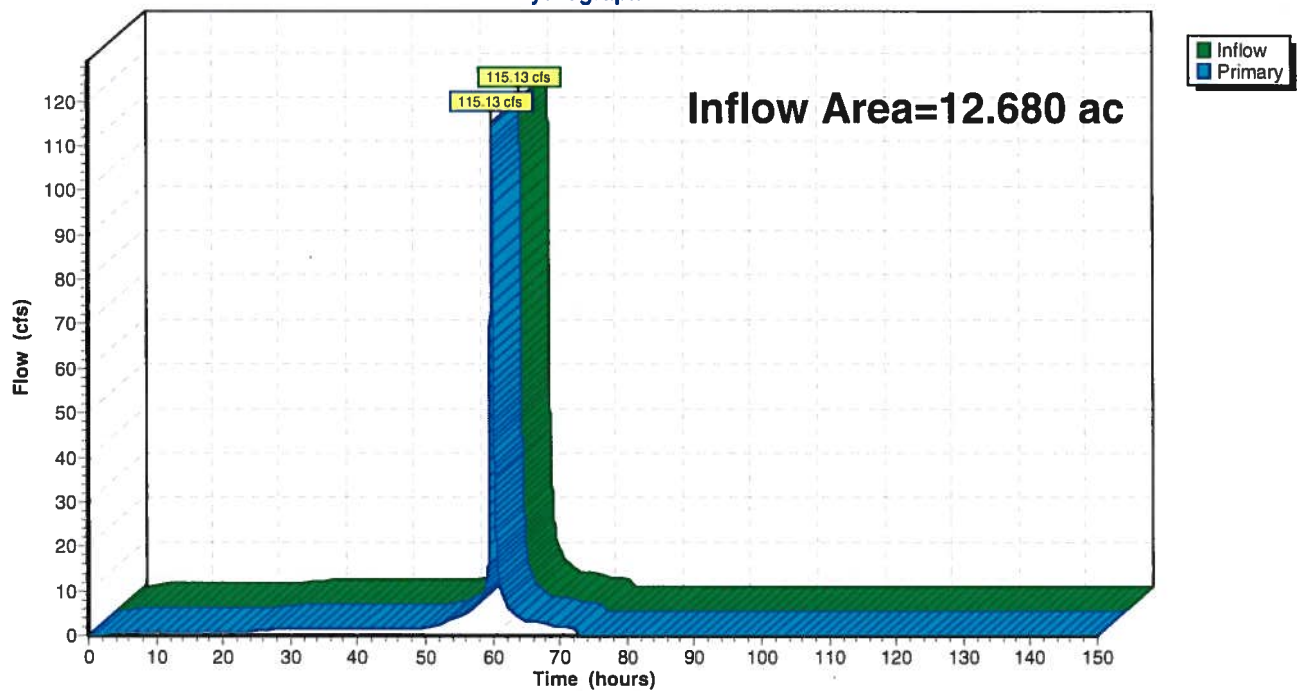
Hydrograph



Link 29L: SB-2A OSB-2A COMBINED TO POND

Inflow Area = 12.680 ac, Inflow Depth = 17.12" for 72HR - 100YR event
Inflow = 115.13 cfs @ 59.86 hrs, Volume= 18.087 af
Primary = 115.13 cfs @ 59.86 hrs, Volume= 18.087 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Link 29L: SB-2A OSB-2A COMBINED TO POND**Hydrograph**

Link 30L: DISCHARGE TO SOUTH CANAL

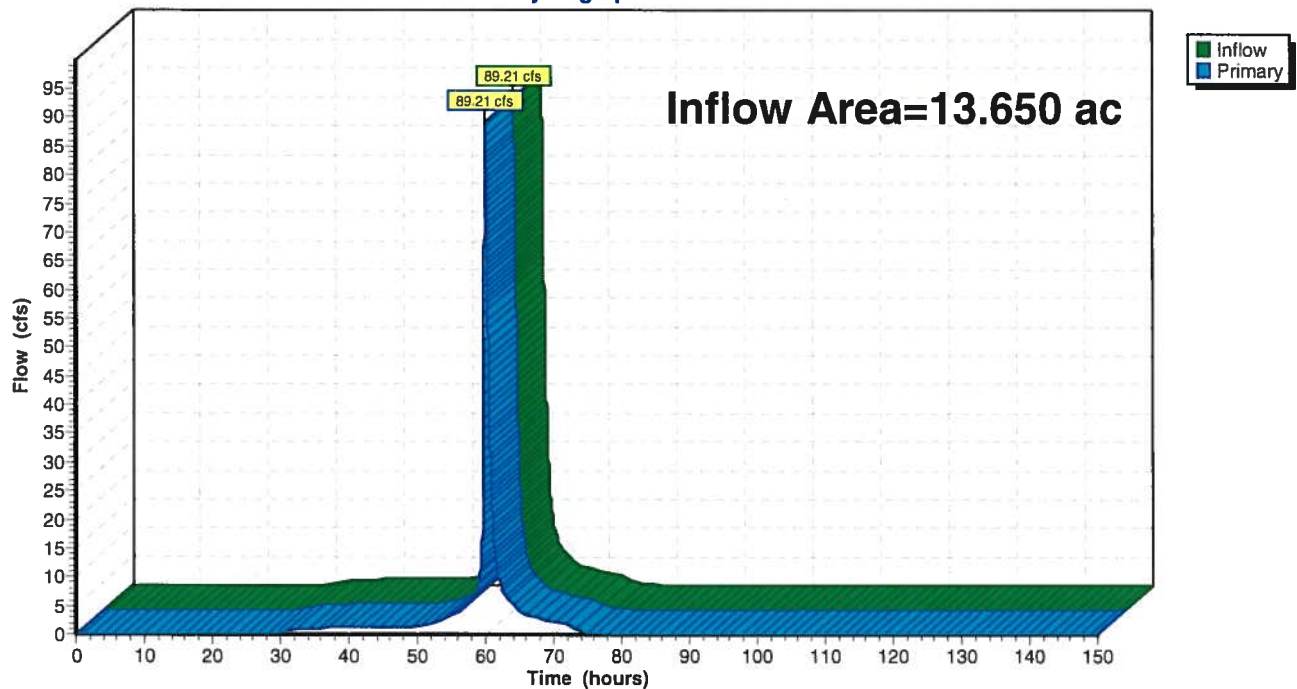
Inflow Area = 13.650 ac, Inflow Depth = 13.63" for 72HR - 100YR event
Inflow = 89.21 cfs @ 60.02 hrs, Volume= 15.507 af
Primary = 89.21 cfs @ 60.02 hrs, Volume= 15.507 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 2.08'

Link 30L: DISCHARGE TO SOUTH CANAL

Hydrograph



Link 32L: NORTH CANAL DISCHARGE

Inflow Area = 32.593 ac, Inflow Depth = 12.15" for 72HR - 100YR event
Inflow = 105.67 cfs @ 60.16 hrs, Volume= 33.014 af
Primary = 105.67 cfs @ 60.16 hrs, Volume= 33.014 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 2.08'

Link 32L: NORTH CANAL DISCHARGE

Hydrograph

