From: Justin Gostnell
Sent: Friday, April 3, 2020 11:34 AM
To: 'SCO' <SCO@dep.state.fl.us>
Subject: PA78-10 ~~Amendment to Cert~~ification: SCCF ERP Design Modifications

Ms. Mulkey,

Seminole is requesting an amendment to the certification for modifications of the Environmental Resource Permit. These modifications are the result of differences from the permitting stage drawings and final design. A summary of changes is attached to this email and the supporting documents have been placed on the Siting Office FTP site.

Please feel free to contact me with any questions regarding this submission. I am currently working away from the office and can be reached by phone at 813 244 4877.

Sincerely,

Justin Gostnell
Senior Environmental Regulatory Specialist
Seminole Electric Cooperative, Inc.
813-739-1375

SCCF - Storm Drainage Update Per Detail Design

Dt: 04/01/2020

Seminole Combined-Cycle Facility is currently undergoing detailed engineering design as part of ECP contract. Input from construction counter partner, updated vendor information, and detail design information from multiple disciplines require changes to the preliminary site layout, and finally to the preliminary storm drainage system that was submitted previously (July 30, 2019) for Site Certification permit approval. This submittal includes the updated plans and design calculations, as listed below, to furnish the most current site and stormwater design; and to confirm that the basic design concept remained unchanged from the approved plans.
A summary of all changes are explained in the table below.

Attachments:

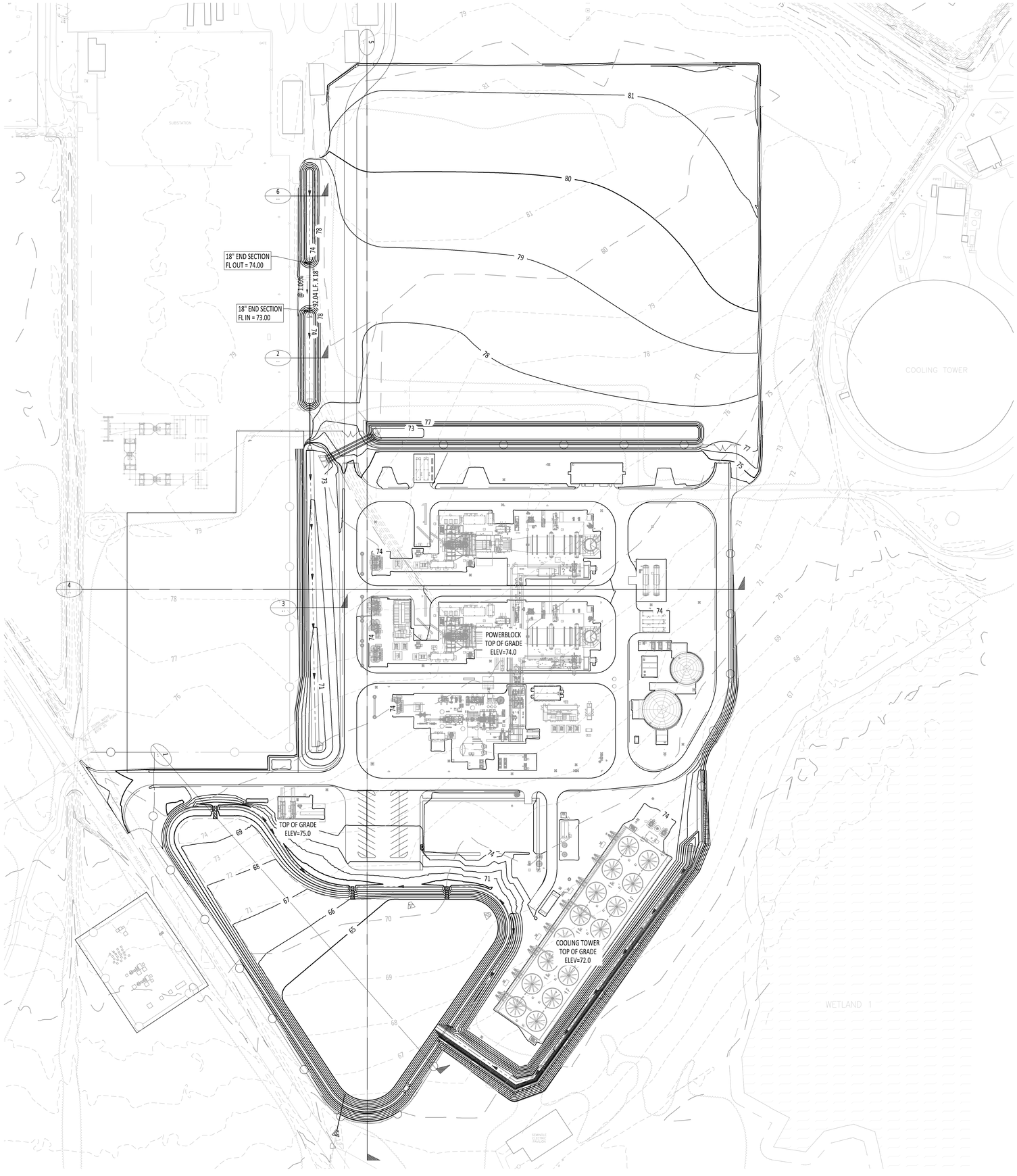
1. Updated Plans (Seminole Permit Plan Update - 20200401.pdf)
2. Current Stormwater Calculations (88.15.81-Stormwater Calculations.pdf)
3. Pond #2 Design Review (88.15.81-Stormwater - Pond 2 Analysis.pdf)

Summary of Changes:

Item No.	Item Reference	Description of change	Comment / Explanation
1	Grading - Sheet CG-001	Ditch shape changed for laydown ditch, north of power block area; got smaller	Previous submittal showed temporary laydown ditch with overall plant finish grading. In current submittal, per detail design, a smaller ditch is required as permanent (during plant operation) to collect discharge from grass surface area, and to convey the runoff to the ditch east of power block.
2	Grading - Sheet CG-002	Ditch east and south of cooling tower got bigger	Storm pipe network is changed to allow runoff from east part of the plant to discharge into this ditch. This ditch is redesigned for additional flow. See item no. 11 below.
3	Surfacing/ Permanent Facilities Plan - Sheet CS-001, Post Development (during plant operation)	Sheet titles updated	Previous submittal did not show temporary condition (during construction work) and permanent condition (post development - during plant operation) clearly/separately. In current submittal, temporary condition and permanent condition are shown in different drawings, and the sheet titles are updated based on content for clarity. Separate storm drainage analysis for each condition is also performed and included in calculation report.
4	Permanent Facilities Plan - Sheet CS-001	Sheet layout and scale changed	Previous plan did not show north part of the laydown area. Current plan shows the entire work area, which includes the construction area and the laydown area. Current plan also shows the calculation tables which relate to the permanent surfacing condition during plant operation.
5	Permanent Facilities Plan - Sheet CS-001 (Not covered in previous submittal sheet CS-001)	Rail unloading/laydown area added	SCCF team needs to use the area south of the railway spurs for unloading and storage area for heavy equipment coming through rail. This area will receive gravel surfacing during construction, and will be left as gravel surface after construction for future use by Seminole. The runoff from this area goes into existing ditch, and then flows into existing Pond #2, located northeast. Refer to "Pond 2 Analysis" for details.

Item No.	Item Reference	Description of change	Comment / Explanation
6	Permanent Facilities Plan - Sheet CS-001 (Not covered in previous submittal sheet CS-001)	Existing parking area will be used as laydown during construction	This area was initially planned for craft parking during construction. SCCF team decided to move craft parking closer to the construction area, and use this area for laydown. Additional gravel will be added to this existing gravel surface area, and will be left as gravel surface after construction for future use by Seminole. The runoff from this area goes into existing ditch (on west side), and then flows into existing Pond #2, located northeast. Refer to "Pond 2 Analysis" for details.
7	Temporary - During Construction Site Use Plan - Sheet CS-002	Sheet titles updated	Same as item no. 3.
8	Temporary - During Construction Site Use Plan - Sheet CS-002	Surfacing area change	The sheet CS-002 in previous submittal showed both permanent surfacing for plant area, and temporary surfacing for laydown during construction, including the temporary ditch, located north of the plant area. Current sheet CS-002 shows only temporary during construction condition. Active construction areas (excavated & exposed areas are shown with no hatch (white), northeast access road is removed as the existing west road will be used for access, Temporary Craft Parking Area Pond (in previous submittal) is removed as this area discharges into existing ditch (see item no. 6) to west. Plant equipment, foundations, and finish surfacing are not shown in current edition.
9	Temporary - During Construction Site Use Plan - Sheet CS-002	Calculation tables updated	In current edition, Site Acreage & Surfacing table shows numbers related to temporary construction phase surfacing. It also shows pond stage storage data for Temporary SB-1 Pond and SB-2 Pond; whereas the previous version shows Operation Phase Acreage & Surfacing, and Temporary Craft Parking Pond Stage Data (this pond is eliminated from detail design). Refer to storm drainage calculations for details.
10	Main laydown area (north of plant area) - Sheet CS-002 and CS-001	Arrangement changed- east part will be used as craft parking	Craft parking is moved from north (existing parking area) to the main laydown (east part), and the rest of the area is used as laydown. The road layout in laydown area is changed. Refer to sheet CS-002. Post construction, during plant operation phase, this main laydown area will be reclaimed and grass seeding will be installed. East and west road will be maintained for access to the new plant from existing plant area.

Item No.	Item Reference	Description of change	Comment / Explanation
11	Storm pipe network - Storm Water Plan - Sheet CW-001	Storm pipe network updated per detail design	Storm pipe network is updated to allow proper drainage of the entire plant area, and to avoid conflict with underground utilities. U/G utilities (electrical duct bank and mechanical piping) are the major driver for most of the changes, the information for which was not available during previous submittal (preliminary design). The trunk line along east road is updated to discharge into the ditch, northeast of the cooling tower. This ditch is design to handle the resulting additional flow and got bigger. Inlets and pipes added to drain the plant area north of the loop road. Smaller ditch is required for the area north of the plant area when the main laydown is transformed into grass surface. Missing culvert added to connect the north ditches (between SB-1 and OSB-1) with the south ditch (between SB-2 and SB-3). These north ditches were connected in original B&V plan DS-1102 and calculations. Refer to Stormwater Calculations for detail design information.
12	Storm water calculation tables - Storm Water Plan - Sheet CW-001	All calculation tables updated per detailed design	Retention Pond (P-1) Stage - Storage Data remained unchanged. Pre-development Phase Site Acreage & Surfacing remained unchanged. Operational Phase Site Acreage & Surfacing table changed as follows: 1. A column added to show semi-impervious - gravel surface 2. Impervious/ Semi-impervious area reduced from 55% to 12% in SB-1 as internal roadways are removed 3. Impervious/ Semi-impervious area reduced from 77% to 42% in SB-4 per detail design (note: 77% seems incorrect per old plan CS-001 rev. B) 4. Impervious/ Semi-impervious area reduced from 61% to 55% in SB-5 per detail design 5. The area for SB-3 is increased from 6.46-ac to 6.59-ac as the loop roads are moved away (north, east and south) to allow required space in the power block area. As a result, areas for SB-4 and SB-5 are reduced. 6. SB-2, SB-6 and OSB-1remained unchanged. Refer to Stormwater Calculations for detail design. Page 39 of 260 shows a drainage area map.
13	Emergency Discharge Structure from Retention Pond - Storm Water Plan - Sheet CW-001	Emergency discharge structure configuration updated to a more permanent type	A concrete discharge structure with trash rack is added at the upstream end of the discharge pipe, at pond side. Refer to sheet CM-001 rev. D for details.
14	Sections And Details - Sheet CM-001	Updated cross-sections per current grading design, added emergency discharge structure detail	All cross sections updated per current grading design - no significant change. All section lines are on grading plan CG-001 rev. D, except Section 7. A new section, Section 7, is added to show grades at North Laydown Area (LD1) and Rail Unloading/ Laydown Area (RUA). The section line for this is on sheet CS-002 rev. D.



NOTES:

1. REFER TO PLOT PLAN (PP-001) FOR EQUIPMENT LAYOUT.
2. SEE P0015690-CS-001 FOR SITE SURFACING PLAN.
3. SEE P0015690-CW-001 FOR STORM WATER PLAN.
4. ALL ELEVATIONS SHOWN ON THIS SHEET IN FEET, AND ARE BASED ON NAVD 88 DATUM.
5. REFER TO SHEET CD-001 FOR STORM WATER STRUCTURE DETAILS.
6. TOP OF CONCRETE ELEVATION (FOR ALL STRUCTURES)=74.50, AND ADJACENT GRADE ELEVATION=74.00.

80 0 80 160
SCALE IN FEET
HORIZONTAL SCALE: 1" = 80'-0"

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REV	DESIGN BY	DRAWN BY	CHECKED BY	DATE
D	RE-ISSUED FOR PERMIT - UPDATED			
	A. PITCHFORD	F. SMOCKS	A. GHOSH	03-26-20
C	RE-ISSUED FOR PERMIT - UPDATED			
	A. PITCHFORD	F. SMOCKS	A. GHOSH	07-17-19
B	RE-ISSUED FOR PERMIT - UPDATED			
	A. GHOSH	D. LEWIS	A. GHOSH	06-26-19
A	ISSUED FOR BID PERMIT			
	D. LEWIS	D. LEWIS	T. POSSON	11-30-16

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SEMINOLE ELECTRIC COOPERATIVE INC.

P2021 COMBINED CYCLE PROJECT

Kiewit
Kiewit Power
9401 Renner Boulevard
Lenexa, Kansas 66219

ASHISH GHOSH
LICENSE
No 88228
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Ashish Ghosh, PE on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

OVERALL GRADING PLAN
POST DEVELOPMENT

ENGINEER/DESIGN ORIGINATOR	D. LEWIS
LEAD ENG	T. POSSON
ENG MGR	F. BUSCH
PROJ MGR	C. ANDERSON

DRAWING NUMBER
P0015690-CIV_CG-001

Mar 26, 2020 - 3:08pm Plotted By: Alexis.Pitchford R:\PGEN\2001\5690-Seminole_Project\DES\CIV\Permit\P0015690-Civ_CG-001.dwg Layout: Overall Grading Plan

Operational Phase Site Acreage & Surfacing							
Sub Basin	Total Area (Acres)	Total Area (% Impervious/ Semi-Impervious)	Pervious (acres)	Semi-Impervious - Gravel (acres)	Impervious - Road & Sidewalk (acres)	Impervious - Building (acres)	Impervious - Water Surface (Acres)
SB-1	18.31	12%	16.08	0.00	1.21	0.00	1.02
SB-2	6.53	93%	0.43	5.45	0.00	0.00	0.65
SB-3	6.59	100%	0.00	2.36	1.46	2.77	0.00
SB-4	4.10	42%	2.37	0.55	0.71	0.47	0.00
SB-5	13.69	55%	6.21	0.48	1.10	1.83	4.07
SB-6	0.83	100%	0.00	0.00	0.83	0.00	0.00
Total Site	50.05	50%	25.09	8.84	5.31	5.07	5.74
OSB-1	5.63	95%	0.28	0.00	5.35	0.00	0.00
Total Basin	55.68	54%	25.37	8.84	10.66	5.07	5.74

*OSB-1 is an offsite basin that contributes to the onsite stormwater system. It is outside of the limits of disturbance. The surfacing is unchanged from pre-development conditions. *

RETENTION POND (P-1) STAGE - STORAGE DATA							
ELEV. RANGE			INCREMENT CF	INCREMENT AC-FT	TOTAL CF	TOTAL AC-FT	TREATMENT AC-FT
	65.00						
		66.00	105,134	2.41	105,134	2.41	
	66.00						
		67.00	125,488	2.88	230,622	5.29	2.23
	67.00						
		68.00	140,135	3.22	370,757	8.51	5.45
	68.00						
		69.00	152,028	3.49	522,785	12.00	8.94
	69.00						
		70.00	161,660	3.71	684,445	15.71	12.65
WEIR	70.00						
TOP OF BANK		71.00	168,646	3.87	853,090	19.58	

NOTES

1. ELEVATIONS ARE REPORTED AS NAVD88, AND IN FEET.
2. TOP OF CONCRETE/FINISHED FLOOR ELEVATION IS 74.50 NAVD 88. UNLESS NOTED OTHERWISE.
3. WETLANDS SHOWN ON THESE DRAWINGS ARE FOR REFERENCE ONLY.
4. ALL AREAS WITHIN LOOP ROAD OF EQUIPMENT AND BUILDING AREAS TO BE AGGREGATE SURFACED. ALL OTHER AREAS NOT INDICATED WITH SURFACING SHALL BE SEEDED/SODDED WITH BAHIA.
5. ENERGY DISSIPATERS TO BE DESIGNED BY EPC CONTRACTOR TO NON-ERODIBLE DISCHARGE VELOCITIES.
6. TEMPORARY CRAFT PARKING AND LAYDOWN AREAS WILL BE AGGREGATE SURFACED DURING CONSTRUCTION AND WILL BE RESTORED TO A PRE-DEVELOPMENT CONDITION (GRASS/AGGREGATE) OR GRASS SURFACE (AS SHOWN ON THIS PLAN) AFTER CONSTRUCTION.
7. TEMPORARY VISUAL BARRIER SYSTEM SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR TO PROTECT THE FLORIDA OUTSTANDING WETLANDS AS REQUIRED BY THE SITE CERTIFICATION APPLICATION.
8. AT THE END OF CONSTRUCTION THE CONTRACTOR SHALL REMOVE ALL SEDIMENT BUILDUP FROM THE STORMWATER RETENTION POND. IN ADDITION, THE CONTRACTOR SHALL TEST THE POND TO CONFIRM THE FINAL INFILTRATION RATE.

LEGEND

- SB-X — STORM WATER SUB BASIN AREA
- WETLAND BUFFER
- CHAIN LINK FENCE
- EXISTING FENCE
- DITCH FLOW INDICATOR
- DRAINAGE AREA BOUNDARY
- ASPHALT
- GRASS
- GRAVEL
- WETLANDS

EXISTING PARKING AREA TO BE USED AS LAYDOWN DURING CONSTRUCTION

EXISTING GRAVEL SURFACING REMAINS UNCHANGED OR TO BE RESTORED TO ORIGINAL CONDITION AT THE END OF CONSTRUCTION

GRAVEL SURFACING TO REMAIN FOR FUTURE USE

25' WETLAND BUFFER

REMOVE TEMPORARY GRAVEL SURFACE INSTALL GRASS SEEDING

SB-1

SB-2

SB-3

SB-4

SB-5

SB-6

OSB-1

RETENTION POND (P-1)

DITCH-1

DITCH-2

POND (LP-2)

DITCH-3

PERMANENT SB-1 POND STAGE - STORAGE DATA						
ELEV. RANGE			INCREMENT CF	INCREMENT AC-FT	TOTAL CF	TOTAL AC-FT
	73.00					
		74.00	7,313.03	0.17	7,313.03	0.17
	74.00					
		75.00	17,029.44	0.39	24,342.47	0.56
	75.00					
		76.00	21,005.96	0.48	45,348.43	1.04
	76.00					
		77.00	25,044.95	0.57	70,393.38	1.62
	77.00					
TOP OF POND		77.50	9,417.79	0.22	79,811.17	1.83

SB-2 POND STAGE - STORAGE DATA					
ELEV. RANGE		INCREMENT CF	INCREMENT AC-FT	TOTAL CF	TOTAL AC-FT
71.00					
	72.00	10,815.06	0.25	10,815.06	0.25
72.00					
	73.00	21,318.02	0.49	32,133.08	0.74

120 0 120 240
SCALE IN FEET
SCALE: 1" = 120'-0"

— PRELIMINARY —
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REV	DESIGN BY	DRAWN BY	CHECKED BY	DATE
C	RE-ISSUED FOR PERMIT - UPDATED	A. PITCHFORD	F. SMOCKS	A. GHOSH	03-26-20
B	RE-ISSUED FOR PERMIT - NO CHANGES	A. GHOSH	D. LEWIS	A. GHOSH	06-26-19
A	ISSUED FOR BID PERMIT	A. ROSS	A. ROSS	T. POSSON	06-03-19

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SEMINOLE ELECTRIC COOPERATIVE INC.

P2021 COMBINED CYCLE PROJECT

Kiewit

Kiewit Power
9401 Renner Boulevard
Lenexa, Kansas 66219

ASHISH GHOSH LICENSE No 88228 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Ashish Ghosh, PE on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

POST - DEVELOPMENT PERMANENT FACILITIES PLAN

ENGINEER/DESIGN ORIGINATOR	D. LEWIS
LEAD ENG	T. POSSON
ENG MGR	F. BUSCH
PROJ MGR	C. ANDERSON

DRAWING NUMBER

P0015690-CS-001

Mar 26, 2020 - 3:20pm Plotted By: Alexis.Pitchford R:\PGEN\2001\5690-Seminole_Project\DESIGN\Permit\P0015690-CS-001.dwg Layout: 001

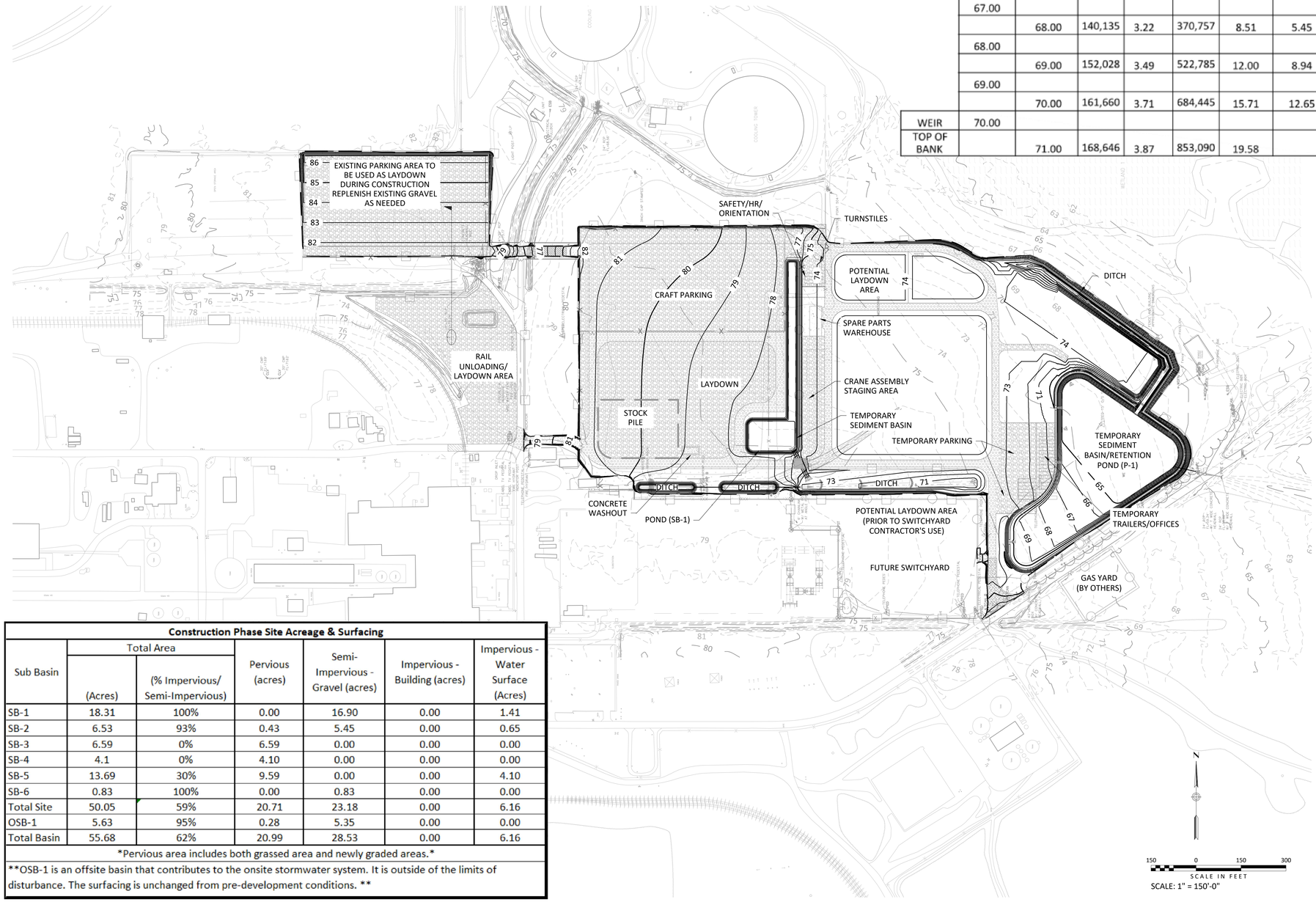
RETENTION POND (P-1) STAGE - STORAGE DATA						
ELEV. RANGE		INCREMENT		TOTAL	TOTAL	TREATMENT
		CF	AC-FT	CF	AC-FT	AC-FT
65.00						
	66.00	105,134	2.41	105,134	2.41	
66.00						
	67.00	125,488	2.88	230,622	5.29	2.23
67.00						
	68.00	140,135	3.22	370,757	8.51	5.45
68.00						
	69.00	152,028	3.49	522,785	12.00	8.94
69.00						
	70.00	161,660	3.71	684,445	15.71	12.65
WEIR	70.00					
TOP OF BANK						
	71.00	168,646	3.87	853,090	19.58	

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4. ENERGY DISSIPATERS TO BE DESIGNED BY EPC CONTRACTOR TO NON-ERODIBLE DISCHARGE VELOCITIES.
5. TEMPORARY PARKING AND LAYDOWN WILL BE AGGREGATE SURFACED DURING CONSTRUCTION AND WILL BE RESTORED TO A PRE-DEVELOPMENT CONDITION (GRASS/AGGREGATE) AFTER CONSTRUCTION, AS SHOWN ON PLAN CS-001.
6. TEMPORARY VISUAL BARRIER SYSTEM SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR TO PROTECT THE FLORIDA OUTSTANDING WETLANDS AS REQUIRED BY THE SITE CERTIFICATION APPLICATION.
7. AT THE END OF CONSTRUCTION THE CONTRACTOR SHALL REMOVE ALL SEDIMENT BUILDUP FROM THE STORMWATER RETENTION POND. IN ADDITION, THE CONTRACTOR SHALL TEST THE POND TO CONFIRM THE FINAL INFILTRATION RATE.

LEGEND

- GRASS AREA
- GENERAL LAYDOWN AREA SURFACING
- HEAVY HAUL ROAD
- CRAFT PARKING AREA SURFACING
- RAIL UNLOADING AREA SURFACING
- ELEVATED WALKWAY
- CONCRETE SURFACING
- CRANE MAT SURFACING
- NEWLY GRADED AREA
- 150 — PROPOSED MAJOR CONTOUR
- 149 — PROPOSED MINOR CONTOUR
- 50 — EXISTING MAJOR CONTOUR
- 49 — EXISTING MINOR CONTOUR
- LIMITS OF GRADING
- PROPOSED SILT FENCE
- EXISTING CHAIN-LINK FENCE



SCALE: 1" = 150'-0"

Construction Phase Site Acreage & Surfacing						
Sub Basin	Total Area		Pervious (acres)	Semi-Impervious - Gravel (acres)	Impervious - Building (acres)	Impervious - Water Surface (Acres)
	(Acres)	(% Impervious/ Semi-Impervious)				
SB-1	18.31	100%	0.00	16.90	0.00	1.41
SB-2	6.53	93%	0.43	5.45	0.00	0.65
SB-3	6.59	0%	6.59	0.00	0.00	0.00
SB-4	4.1	0%	4.10	0.00	0.00	0.00
SB-5	13.69	30%	9.59	0.00	0.00	4.10
SB-6	0.83	100%	0.00	0.83	0.00	0.00
Total Site	50.05	59%	20.71	23.18	0.00	6.16
OSB-1	5.63	95%	0.28	5.35	0.00	0.00
Total Basin	55.68	62%	20.99	28.53	0.00	6.16

Pervious area includes both grassed area and newly graded areas.

**OSB-1 is an offsite basin that contributes to the onsite stormwater system. It is outside of the limits of disturbance. The surfacing is unchanged from pre-development conditions. **

TEMPORARY SB-1 POND STAGE - STORAGE DATA					
ELEV. RANGE		INCREMENT		TOTAL	
		CF	AC-FT	CF	AC-FT
73.00					
	74.00	21,633.70	0.50	21,633.70	0.50
74.00					
	75.00	31,419.46	0.72	53,053.16	1.22
75.00					
	76.00	36,159.72	0.83	89,212.88	2.05
76.00					
	77.00	40,955.88	0.94	130,168.76	2.99
77.00					
TOP OF POND	77.50	22,300.53	0.51	152,469.30	3.50

SB-2 POND STAGE - STORAGE DATA					
ELEV. RANGE		INCREMENT		TOTAL	
		CF	AC-FT	CF	AC-FT
71.00					
	72.00	10,815.06	0.25	10,815.06	0.25
72.00					
	73.00	21,318.02	0.49	32,133.08	0.74

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C	RE-ISSUED FOR PERMIT - UPDATED	A. PITCHFORD	F. SMOCKS	A. GHOSH	07-29-19
B	RE-ISSUED FOR PERMIT - UPDATED	A. PITCHFORD	F. SMOCKS	A. GHOSH	07-17-19
A	ISSUED FOR BID PROPOSAL	D. LEWIS	D. LEWIS	T. POSSON	11-30-16

SEMINOLE ELECTRIC COOPERATIVE INC.

P2021 COMBINED CYCLE PROJECT

Kiewit Power
9401 Renner Boulevard
Lenexa, Kansas 66219

ASHISH GHOSH LICENSE No 88228 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Ashish Ghosh, PE on the date adjacent to the seal.

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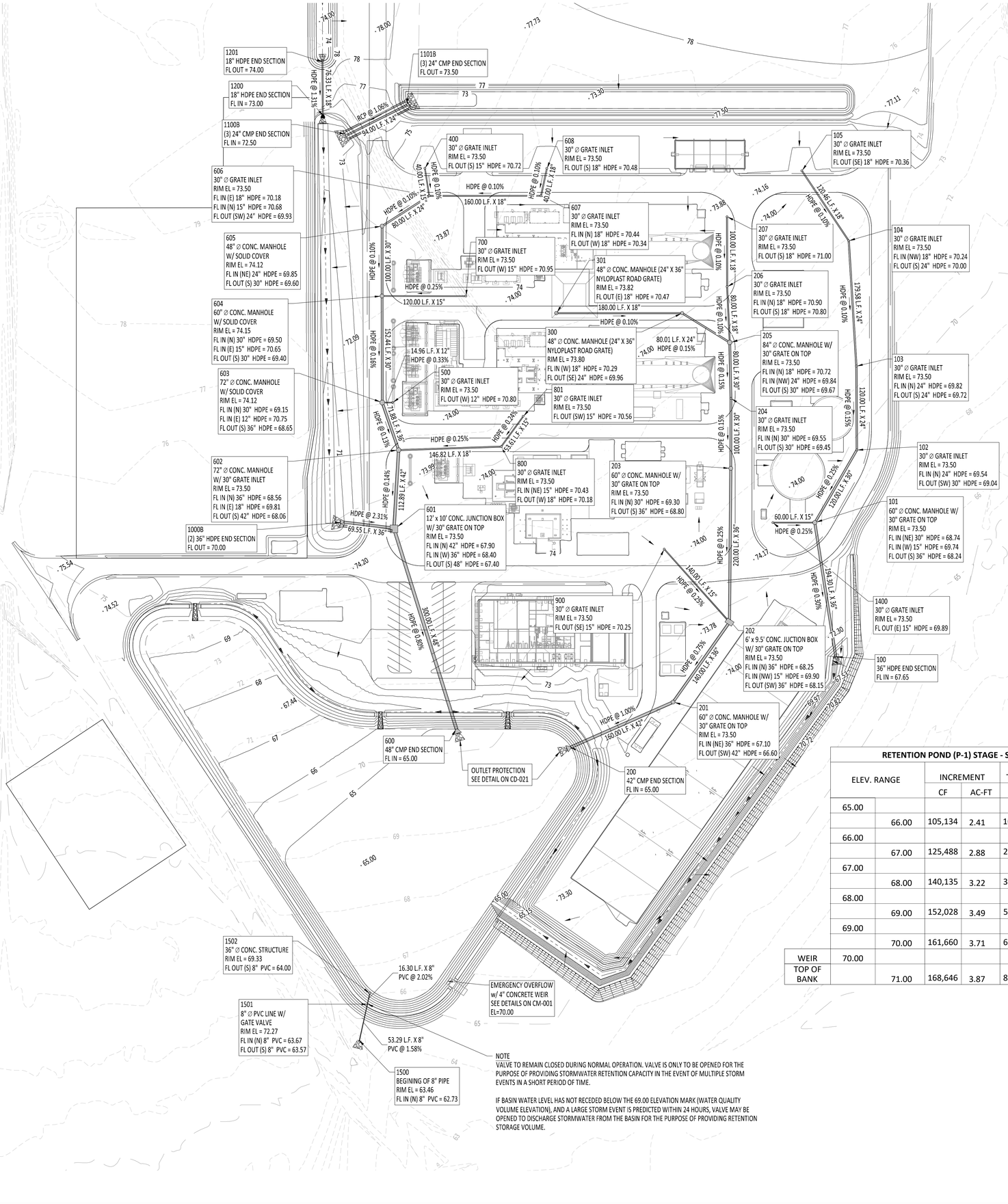
TEMPORARY - DURING CONSTRUCTION SITE USE PLAN

ENGINEER/DESIGN ORIGINATOR	D. LEWIS
LEAD ENG	T. POSSON
ENG MGR	F. BUSCH
PROJ MGR	C. ANDERSON

DRAWING NUMBER

P0015690-CS-002

Mar 26, 2020 - 1:55pm Plotted By: Alexis.Pitchford R:\PGEN\2001\6900-Seminole_Project\DESIGN\Permit\P0015690-CS-002.dwg Layout: 100



Pre Development Phase Site Acreage & Surfacing

Sub Basin	Total Area		Pervious	Impervious - other	Impervious - Building	Impervious - Water Surface
	(Acres)	(% Impervious)*	(Acres)	(Acres)	(Acres)	(Acres)
SB-1	5.69	0%	5.69	0	0	0
SB-2	26.64	0%	26.64	0	0	0
SB-3	16.9	2%	16.64	0.26	0	0
SB-4	0.83	0%	0.83	0	0	0
Total Site	50.06	1%	49.8	0.26	0	0
OSB-1**	5.63	95%	0.28	5.35	0	0
Total Basin	55.69	10%	50.08	5.61	0	0

*% Impervious includes Impervious - Other, Impervious-Building, and Impervious-Water Surfaces.

**OSB-1 is an offsite basin that contributes to the onsite stormwater system. It is outside of the disturbed limits.

Operational Phase Site Acreage & Surfacing

Sub Basin	Total Area		Pervious (acres)	Semi-Impervious - Gravel (acres)	Impervious - Road & Sidewalk (acres)	Impervious - Building (acres)	Impervious - Water Surface (Acres)
	(Acres)	(% Impervious/ Semi-Impervious)					
SB-1	18.31	12%	16.08	0.00	1.21	0.00	1.02
SB-2	6.53	93%	0.43	5.45	0.00	0.00	0.65
SB-3	6.59	100%	0.00	2.36	1.46	2.77	0.00
SB-4	4.10	42%	2.37	0.55	0.71	0.47	0.00
SB-5	13.69	55%	6.21	0.48	1.10	1.83	4.07
SB-6	0.83	100%	0.00	0.00	0.83	0.00	0.00
Total Site	50.05	50%	25.09	8.84	5.31	5.07	5.74
OSB-1	5.63	95%	0.28	0.00	5.35	0.00	0.00
Total Basin	55.68	54%	25.37	8.84	10.66	5.07	5.74

*OSB-1 is an offsite basin that contributes to the onsite stormwater system. It is outside of the limits of disturbance. The surfacing is unchanged from pre-development conditions. *

RETENTION POND (P-1) STAGE - STORAGE DATA

ELEV. RANGE		INCREMENT CF	INCREMENT AC-FT	TOTAL CF	TOTAL AC-FT	TREATMENT AC-FT
65.00						
	66.00	105,134	2.41	105,134	2.41	
66.00						
	67.00	125,488	2.88	230,622	5.29	2.23
67.00						
	68.00	140,135	3.22	370,757	8.51	5.45
68.00						
	69.00	152,028	3.49	522,785	12.00	8.94
69.00						
	70.00	161,660	3.71	684,445	15.71	12.65
WEIR	70.00					
TOP OF BANK						
	71.00	168,646	3.87	853,090	19.58	

NOTES
1. REFER TO SHEET CD-001 FOR STORM WATER STRUCTURE DETAILS.
2. REFER TO SHEET CG-001 FOR OVER ALL GRADING PLAN.
3. ALL ELEVATIONS SHOWN ON THIS SHEET ARE IN FEET, AND BASED ON NAVD 88 DATUM.
4. TOP OF CONCRETE ELEVATION (FOR ALL STRUCTURES)=74.50, AND ADJACENT GRADE ELEVATION=74.00.

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	A. PITCHFORD	F. SMOCKS	A. GHOSH	03-26-20
C	RE-ISSUED FOR PERMIT - UPDATED			
	A. PITCHFORD	F. SMOCKS	A. GHOSH	07-17-19
B	RE-ISSUED FOR PERMIT - UPDATED			
	A. GHOSH	D. LEWIS	A. GHOSH	06-27-19
A	ISSUED FOR BID PROPOSAL			
	D. LEWIS	D. LEWIS	T. POSSON	11-30-16

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SEMINOLE ELECTRIC COOPERATIVE INC.

P2021 COMBINED CYCLE PROJECT

Kiewit
Kiewit Power
9401 Renner Boulevard
Lenexa, Kansas 66219

ASHISH GHOSH LICENSE No 88228 STATE OF FLORIDA PROFESSIONAL ENGINEER

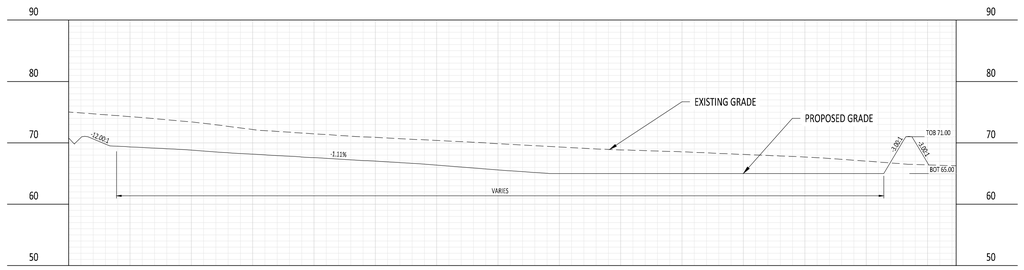
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STORM WATER PLAN

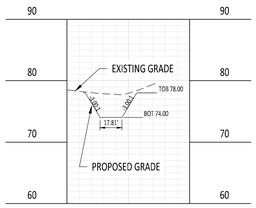
ENGINEER/DESIGN ORIGINATOR	D. LEWIS
LEAD ENG	T. POSSON
ENG MGR	F. BUSCH
PROJ MGR	C. ANDERSON

DRAWING NUMBER
P0015690-CW-001

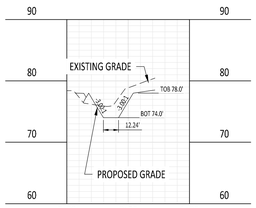
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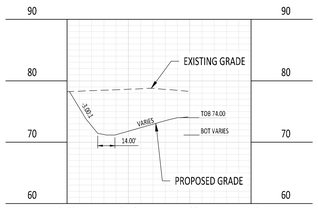
POND 1 - SECTION 1



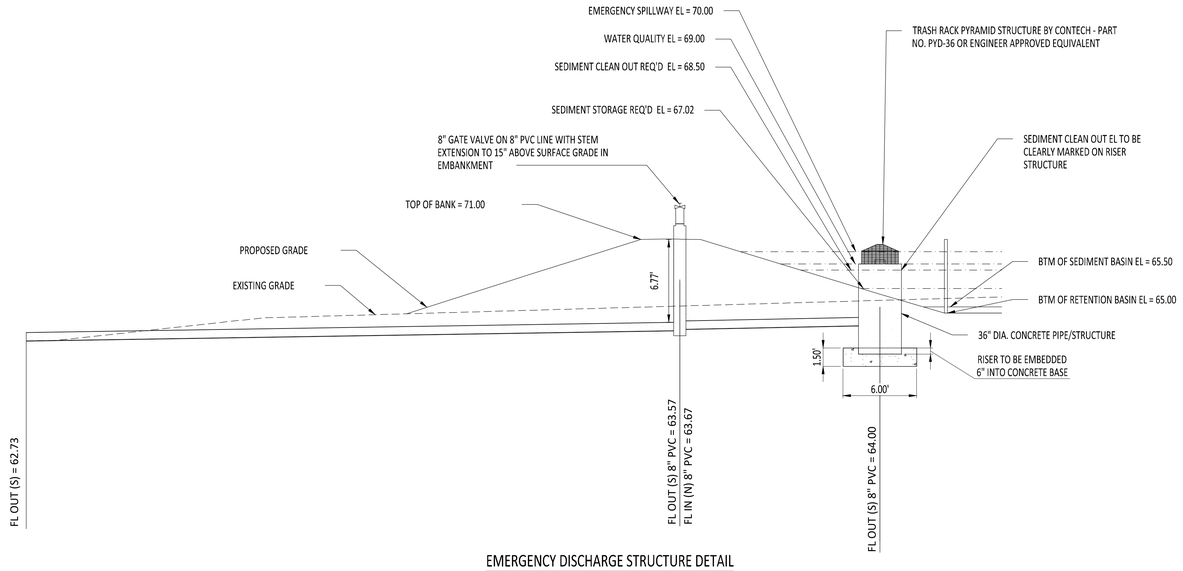
SOUTH LAYDOWN DITCH - SECTION 2



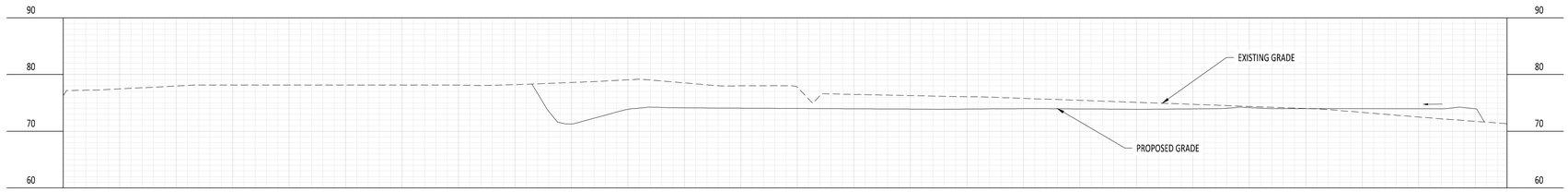
NORTH LAYDOWN DITCH - SECTION 6



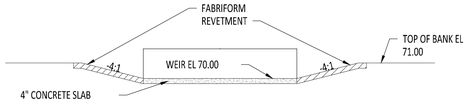
STORM WATER MANAGEMENT DITCH - SECTION 3



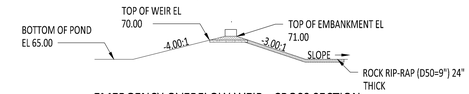
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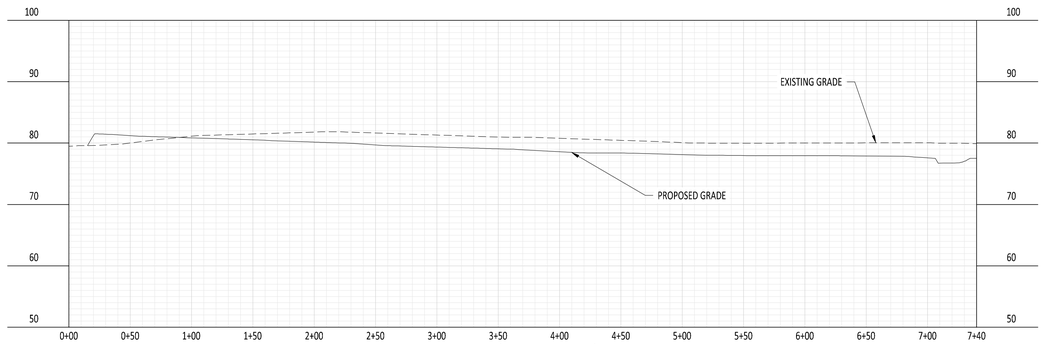
EAST - WEST SITE - SECTION 4



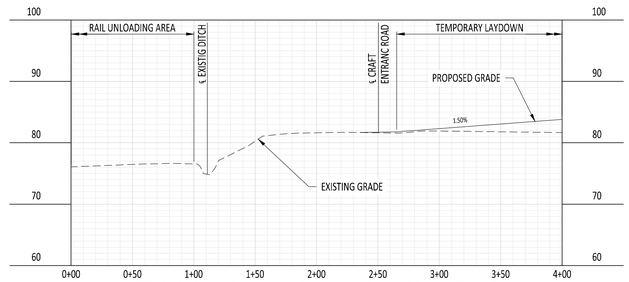
EMERGENCY OVERFLOW WEIR - PROFILE
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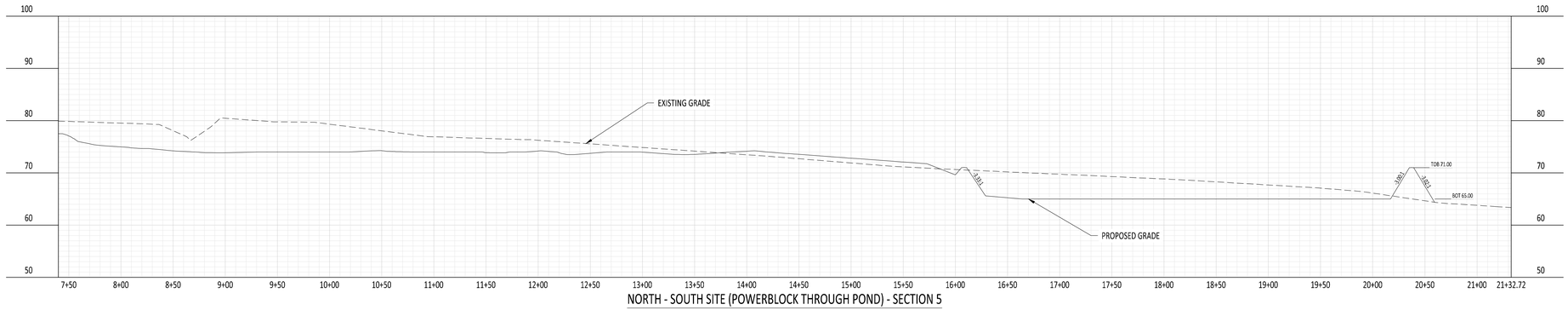
EMERGENCY OVERFLOW WEIR - CROSS SECTION
NTS



NORTH - SOUTH SITE (LAYDOWN AREA) - SECTION 5



TEMPORARY LAYDOWN AND RAIL UNLOADING AREA - SECTION 7



NORTH - SOUTH SITE (POWERBLOCK THROUGH POND) - SECTION 5

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B	RE-ISSUED FOR PERMIT - NO CHANGES	A. GHOSH	D. LEWIS	A. GHOSH	06-26-19
A	ISSUED FOR BID PROPOSAL	D. LEWIS	D. LEWIS	T. POSSON	11-30-16

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SEMINOLE ELECTRIC COOPERATIVE INC.

P2021 COMBINED CYCLE PROJECT

Kiewit

Kiewit Power
9401 Renner Boulevard
Lenexa, Kansas 66219

ASHISH GHOSH LICENSE No 88228 STATE OF FLORIDA PROFESSIONAL ENGINEER

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SECTIONS AND DETAILS

ENGINEER/DESIGN ORIGINATOR	D. LEWIS
LEAD ENG	T. POSSON
ENG MGR	F. BUSCH
PROJ MGR	C. ANDERSON

DRAWING NUMBER

P0015690-CM-001

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STORMWATER CALCULATIONS

88.15.81

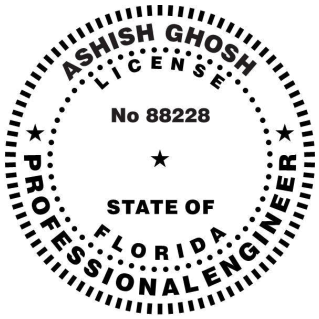
SEMINOLE COMBINED-CYCLE FACILITY
PALATKA, FLORIDA

KIEWIT PROJECT NO. 20015690

ISSUED: MARCH 12, 2020

REVISION A – ISSUED FOR REVIEW

RE-ISSUED FOR PERMIT AMMENDMENT:
APRIL 1, 2020



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KIEWIT
9401 Renner Blvd., Lenexa, KS 66219
913-928-7000 913-689-4000 fax

STORMWATER CALCULATIONS

TABLE OF CONTENTS

TITLE	Pages	Revision
Narrative	5 Pages	A
APPENDIX A – REFERENCES		
NOAA Atlas 14 Rainfall Depths	4 Pages	A
Relevant SCCF EPC Sections	1 Page	A
FDEP Sediment Basin Guidelines	14 Pages	A
SJRWMD Water Quality Guidelines	3 Pages	A
SCS Rainfall Distribution Map	1 Page	A
NRCS Soil Map	4 Pages	A
Flood Map – FEMA FIRM 12107C0185C	1 Page	A
APPENDIX B – EXHIBITS & HAND CALCULATIONS		
Stormwater System Plans/Profiles & Details	13 Pages	A
General Sub-Basin Map	1 Page	A
Inlet Drainage Area Map	1 Page	A
Curve Number Summary Table	2 Pages	A
Treatment Volume Calculation	1 Page	A
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APPENDIX C – STORMWATER MODEL OUTPUT		
SSA Results: 25-Year Rainfall	93 Pages	A
SSA Results: 25-Year Hydraulic Grade Lines	14 Pages	A
SSA Results: 100-Year Rainfall	91 Pages	A
SSA Results: 100-Year Hydraulic Grade Lines	14 Pages	A

SEMINOLE COMBINED-CYCLE FACILITY
STORMWATER NARRATIVE

1.0 OBJECTIVES

1. To adequately size the storm sewer pipe network to handle the design storm.

2. To adequately size and configure the stormwater retention basin to act as a sediment basin during the construction phase of the project.

3. To adequately size the retention pond to retain the design storm and meet recovery time and treatment volume requirements.

4. To adequately size the retention pond emergency outlet structures to prevent flooding of the plant in the event of subsequent large storm events or storms greater than the 100-year event.

2.0 REFERENCES *(See **Appendix A** for References)*

1. B&V Calculation, 190285.58.5406.1101 Seminole Electric Cooperative, Inc. "P2021 Combined Cycle Pre-Development Storm Water Analysis"

2. B&V Calculation, 190285.58.5406.1102 Seminole Electric Cooperative, Inc. "P2021 Combined Cycle Post-Development Storm Water Analysis"

3. Rainfall Depth in Inches for Palatka, FL (Lat: 29.7449, Lon: -81.6424), NOAA Atlas 14 Point Precipitation Frequency, Hydrometeorological Design Studies Center, Precipitation Frequency Data Server.

4. Rainfall Distribution Map and Runoff Curve Numbers, Urban Hydrology for Small Watersheds, USDA, NRCS, Technical Release 55 (TR-55), June 1986.

5. Soils Map for Putnam County Area, Florida, USDA, NRCS, Web Soil Survey.

6. United States Federal Emergency Management Agency, and U.S National Flood Insurance Program. FIRM - *Flood Insurance Rate Map* "*Putnam County, Florida and Incorporated Areas – Panel 185 of 530", Map No. 12107C0185C*, February 2, 2012.

7. Environmental Resource Permit Applicant's Handbook, Volume II: Permit Information Manual, St. Johns River Water Management District, June 1, 2018.

8. Geotechnical Engineering Report – Seminole Combined Cycle Plant, Prepared by Terracon Consultants, Inc., August 7, 2018.

9. Florida Stormwater Erosion and Sedimentation Control Inspectors Manual, Florida Department of Environmental Protection, October, 2018.

3.0 DESIGN BASIS

1. The underground storm sewer pipe network shall be designed to convey the 25-year, 24-hour storm with the HGL contained within the system and safely convey the 100-year, 24-hour storm without flooding the plant.

2. The minimum sediment basin storage volume shall be based on the storage requirement of 3600 cubic feet per acre draining to the basin.

3. The retention basin shall be designed to retain the 100-year, 24-hour storm and recover within 72 hours through the use of infiltration.

4. The retention basin shall be designed to maintain the requirement for water quality treatment volume + 20% to capture pollutants.

5. The emergency discharge structure shall be designed to discharge at a rate less than or equal to the 25-year, 24-hour storm pre-development rate in the event it is used.

4.0 ANALYSIS *(See **Appendix B** for Exhibits & Calculations)*
*(See **Appendix C** for Stormwater Model Output)*

The following data will be used as the basis for the stormwater design on this project:

Storm Distribution: SCS Type II, 24-hour
Rainfall Depths: D_{25} = 7.68", D_{100} = 10.30"
Hydrologic Soil Group "A"
CN = 39 (>75% Grass Cover, Good)
CN = 76 (Gravel Surfacing)
CN = 89 (Limerock Base)
CN = 98 (Paved Surface)
CN = 98 (Buildings/Roofs)
CN = 98 (Water Surface)

Runoff and peak discharges will be determined utilizing the hydrologic methodology outlined in Technical Release 55 (TR-55) "Urban Hydrology for Small Watersheds".

Autodesk Storm and Sanitary Analysis (SSA) was used as the modeling software for determining stormwater runoff volume, peak runoff rate and water surface elevations.

4.1 STORM SEWER PIPE NETWORK

The storm sewer pipe network was designed utilizing the SCS Curve Number Method (TR-55) and a Type II, 24-hour storm distribution. Due to the influence of stormwater retention on the lower reaches of the pipe network, the SCS Curve Number Method was chosen over the Rational Method to allow a seamless transition between the design of the pipe network and the proposed downstream retention basin. The SCS Curve Number Method requires both a curve number and time of concentration for each drainage area which in effect captures their surface properties. A summary of curve numbers used can be found in ***Appendix B***. Time of concentrations used in the analysis can be found within the SSA Output included in ***Appendix C***. A majority of these time of concentrations have been manually set at 6 minutes (the minimum allowed by the SCS Curve Number Method) to be conservative for analysis purposes. Where a 6 minute time of concentration was not practical, an exact time of concentration was calculated and is shown in ***Appendix C***. Exhibits furnishing general sub-basin drainage areas and more detailed drainage areas to each inlet can be found in ***Appendix B***, along with a set of plans and detail sheets showing the proposed storm sewer system layout which provides pipe sizes, flowlines, slopes, and inlet/junction structure configuration. On the detailed drainage area plan, areas with blue boundaries represent containment structures (slabs with curbs around the perimeter), which contain any precipitation that falls on these areas, and directs it into a below grade sump. So, the precipitation from these containment structures does not enter the storm drainage system. The cooling tower basin also contains water that lands in that area and will enter the cooling tower instead of the storm sewer system. Therefore, these areas have been subtracted from their respective drainage areas for the purpose of analysis.

4.2 SEDIMENT BASIN

The sediment basin was designed following the requirements of the "*Florida Stormwater Erosion and Sedimentation Control Inspectors Manual (2018)*" provided by the Florida Department of Environmental Protection, Section 3.7 "Temporary Sediment Basin" (Ref. 9). The sediment basin configuration for the project is described below and calculations shown in ***Appendix B***.

4.2.1 SEDIMENT BASIN CONFIGURATION

During construction of the plant, the proposed retention basin located towards the southern extents of the project site will be dug out and utilized as a sediment basin for the 50.06 acres of disturbed project area. While the sediment basin is being excavated, the permanent emergency discharge riser structure will be installed to act as a temporary structure during the construction phase of the project. This basin was designed to capture runoff during both

the construction and operational phase of the project. The bottom of the sediment basin will be left 6 inches above the final design elevation for the permanent basin to prevent fines from locking up the basin by preventing infiltration. The sediment basin was designed to meet the requirements of the Florida Department of Environmental Protection's "*Florida Stormwater Erosion and Sedimentation Control Inspectors Manual (2018)*" (Ref. 9) and the basin configuration requirements of the St. Johns River Water Management Districts' "*Environmental Resource Permit Applicant's Handbook, Volume II: Permit Information Manual*" (Ref. 7). A summary of the sediment basin sizing can be found below:

Disturbed Project Area = 50.06 acres
Sediment Storage Required = 180,216.00 cu. ft.

Bottom of Sediment Basin EL = 65.50
Sediment Basin Maximum Depth (excluding 1 ft freeboard) = 4.50 ft.
Sediment Storage Provided @ EL 67.02 = 180,216.00 cu. ft.
Total Sediment Basin Volume Provided @ EL 70.00 = 631,878.00 cu. ft.

4.3 RETENTION BASIN: WATER QUALITY

The retention basin was designed following the requirements of the St. Johns River Water Management Districts' *Environmental Resource Permit Applicant's Handbook, Volume II: Permit Information Manual* (Ref. 7). The retention basin (shown in ***Appendix B***) consists of a basin that drains through infiltration and includes both an emergency overflow spillway and emergency overflow riser structure. The use of these structures is not anticipated, however in the event of subsequent large storm events or an event larger than the 100-year storm, they may be utilized. The emergency discharge riser structure has been outfitted with a gate valve to allow for the release of water in the event of several large events in a short time period or poor infiltration performance requiring maintenance activities. A summary of the water quality portion of the retention basin design can be found below:

Contributing Drainage Area = 55.69 acres
Imperviousness = 50%
Water Quality Volume Required = 323,214.70 cu. ft.
Water Quality Volume Required (+20%) = 387.857.66 cu. ft.

Bottom of Basin EL = 65.00
Top of Basin EL = 71.00
Water Quality Volume EL = 69.00
Water Quality Maximum Depth = 4.00 ft
Water Quality Volume Provided @ EL 69.00 = 417,740.40 cu. ft.

The Water Quality Volume will be released through infiltration through the floor of the retention basin in the time required by the St. Johns River Water Management Districts' *Environmental Resource Permit Applicant's Handbook, Volume II: Permit Information Manual* (Ref. 7). See ***Appendix B*** for the calculation showing the recovery time of the basin.

Water Quality Recovery Time Required = 72.00 hours
Water Quality Recovery Time Provided = 23.41 hours

4.4 RETENTION BASIN: DESIGN STORMS

The retention basin was designed to provide adequate storage to retain the 100-year, 24-hour storm such that no regular discharge occurs. In the event of subsequent large storm events, the retention basin (shown in ***Appendix B***) has been designed with an emergency overflow spillway and overflow riser structure to safely discharge excess volume. A summary of the retention basin design can be found below:

Bottom of Basin EL = 65.00

25-Year WSE = 66.71
25-Year Infiltration Outflow = 28.66 cfs

100-Year WSE = 67.56
100-Year Infiltration Outflow = 30.59 cfs

Emergency Overflow Riser Structure Crest EL = 69.00
100-Year Emergency Overflow Riser Structure Outflow = 0.00 cfs

Emergency Overflow Weir EL = 70.00
100-Year Emergency Overflow Weir Outflow = 0.00 cfs
Top of Basin EL = 71.00

5.0 CONCLUSIONS

The results of this analysis confirm that the storm sewer network, ditches, and sediment/retention basin are designed to treat and safely manage the required rainfall events in accordance with the design standards and requirements of both the St. Johns River Water Management District and the Florida Department of Environmental Protection.

APPENDIX A

REFERENCES

NOAA Atlas 14, Volume 9, Version 2
Location name: Palatka, Florida, USA*
Latitude: 29.7449°, Longitude: -81.6424°
Elevation: 54.54 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.527** (0.427-0.643)	**0.595** (0.482-0.726)	**0.702** (0.566-0.859)	**0.787** (0.631-0.966)	**0.898** (0.695-1.12)	**0.979** (0.743-1.24)	**1.06** (0.777-1.37)	**1.13** (0.800-1.50)	**1.23** (0.834-1.66)	**1.29** (0.861-1.78)
10-min	**0.772** (0.626-0.942)	**0.871** (0.705-1.06)	**1.03** (0.829-1.26)	**1.15** (0.925-1.41)	**1.32** (1.02-1.64)	**1.43** (1.09-1.82)	**1.55** (1.14-2.00)	**1.66** (1.17-2.19)	**1.79** (1.22-2.43)	**1.89** (1.26-2.61)
15-min	**0.941** (0.763-1.15)	**1.06** (0.860-1.30)	**1.25** (1.01-1.53)	**1.41** (1.13-1.73)	**1.60** (1.24-2.00)	**1.75** (1.33-2.21)	**1.89** (1.39-2.44)	**2.02** (1.43-2.67)	**2.19** (1.49-2.96)	**2.30** (1.54-3.18)
30-min	**1.42** (1.15-1.73)	**1.61** (1.31-1.97)	**1.91** (1.54-2.34)	**2.15** (1.72-2.64)	**2.45** (1.90-3.06)	**2.68** (2.03-3.39)	**2.89** (2.12-3.73)	**3.09** (2.19-4.08)	**3.34** (2.28-4.52)	**3.52** (2.35-4.85)
60-min	**1.82** (1.48-2.22)	**2.08** (1.69-2.54)	**2.51** (2.03-3.07)	**2.87** (2.30-3.52)	**3.36** (2.62-4.24)	**3.75** (2.86-4.78)	**4.14** (3.05-5.39)	**4.54** (3.22-6.04)	**5.08** (3.47-6.91)	**5.49** (3.66-7.56)
2-hr	**2.23** (1.82-2.69)	**2.55** (2.08-3.09)	**3.11** (2.53-3.77)	**3.59** (2.90-4.37)	**4.27** (3.36-5.37)	**4.82** (3.71-6.12)	**5.39** (4.01-6.99)	**5.99** (4.29-7.94)	**6.81** (4.69-9.23)	**7.45** (5.00-10.2)
3-hr	**2.42** (1.98-2.91)	**2.78** (2.28-3.35)	**3.41** (2.79-4.12)	**3.98** (3.24-4.83)	**4.83** (3.84-6.08)	**5.54** (4.29-7.04)	**6.29** (4.71-8.15)	**7.10** (5.11-9.40)	**8.23** (5.71-11.2)	**9.15** (6.16-12.5)
6-hr	**2.80** (2.32-3.35)	**3.20** (2.65-3.82)	**3.94** (3.25-4.71)	**4.63** (3.80-5.57)	**5.72** (4.61-7.20)	**6.65** (5.21-8.44)	**7.67** (5.81-9.93)	**8.80** (6.40-11.6)	**10.4** (7.30-14.1)	**11.8** (7.97-15.9)
12-hr	**3.31** (2.77-3.92)	**3.72** (3.11-4.42)	**4.52** (3.76-5.37)	**5.30** (4.38-6.32)	**6.54** (5.33-8.20)	**7.62** (6.04-9.62)	**8.83** (6.75-11.4)	**10.2** (7.47-13.4)	**12.1** (8.56-16.3)	**13.8** (9.39-18.5)
24-hr	**3.85** (3.25-4.52)	**4.35** (3.67-5.12)	**5.31** (4.46-6.25)	**6.23** (5.20-7.36)	**7.68** (6.30-9.55)	**8.95** (7.14-11.2)	**10.3** (7.97-13.2)	**11.9** (8.79-15.5)	**14.2** (10.1-18.9)	**16.0** (11.0-21.4)
2-day	**4.39** (3.74-5.11)	**5.09** (4.33-5.94)	**6.38** (5.40-7.45)	**7.58** (6.38-8.88)	**9.41** (7.76-11.6)	**11.0** (8.81-13.6)	**12.7** (9.82-16.0)	**14.5** (10.8-18.8)	**17.2** (12.3-22.8)	**19.4** (13.4-25.8)
3-day	**4.83** (4.13-5.59)	**5.63** (4.81-6.52)	**7.08** (6.03-8.22)	**8.42** (7.13-9.82)	**10.5** (8.67-12.8)	**12.2** (9.84-15.0)	**14.1** (11.0-17.7)	**16.1** (12.0-20.8)	**19.1** (13.7-25.1)	**21.5** (14.9-28.4)
4-day	**5.24** (4.50-6.05)	**6.06** (5.20-7.01)	**7.57** (6.47-8.77)	**8.97** (7.63-10.4)	**11.1** (9.24-13.5)	**12.9** (10.5-15.9)	**14.9** (11.6-18.7)	**17.1** (12.8-21.9)	**20.2** (14.5-26.5)	**22.7** (15.8-30.0)
7-day	**6.35** (5.50-7.28)	**7.15** (6.18-8.21)	**8.63** (7.43-9.93)	**10.0** (8.58-11.6)	**12.2** (10.2-14.7)	**14.0** (11.4-17.1)	**16.0** (12.6-20.0)	**18.2** (13.7-23.3)	**21.4** (15.5-28.0)	**24.0** (16.8-31.6)
10-day	**7.31** (6.36-8.35)	**8.13** (7.06-9.28)	**9.62** (8.32-11.0)	**11.0** (9.46-12.6)	**13.1** (11.0-15.8)	**14.9** (12.2-18.1)	**16.9** (13.3-20.9)	**19.1** (14.4-24.2)	**22.1** (16.1-28.8)	**24.7** (17.3-32.3)
20-day	**9.93** (8.71-11.2)	**11.0** (9.65-12.5)	**12.8** (11.2-14.6)	**14.4** (12.5-16.4)	**16.6** (14.0-19.6)	**18.4** (15.1-21.9)	**20.3** (16.0-24.7)	**22.2** (16.8-27.7)	**24.8** (18.1-31.8)	**26.9** (19.0-34.9)
30-day	**12.1** (10.7-13.7)	**13.5** (11.9-15.2)	**15.7** (13.8-17.7)	**17.5** (15.2-19.8)	**19.9** (16.7-23.1)	**21.7** (17.8-25.6)	**23.5** (18.6-28.3)	**25.3** (19.2-31.3)	**27.6** (20.1-35.1)	**29.3** (20.8-38.0)
45-day	**15.0** (13.3-16.8)	**16.7** (14.8-18.7)	**19.3** (17.0-21.7)	**21.4** (18.7-24.1)	**24.0** (20.2-27.6)	**25.9** (21.4-30.3)	**27.7** (22.1-33.2)	**29.5** (22.4-36.2)	**31.5** (23.0-39.8)	**33.0** (23.5-42.5)
60-day	**17.6** (15.6-19.6)	**19.5** (17.3-21.7)	**22.4** (19.9-25.1)	**24.7** (21.7-27.7)	**27.6** (23.3-31.5)	**29.6** (24.5-34.4)	**31.5** (25.1-37.4)	**33.2** (25.3-40.5)	**35.2** (25.7-44.2)	**36.5** (26.1-46.9)

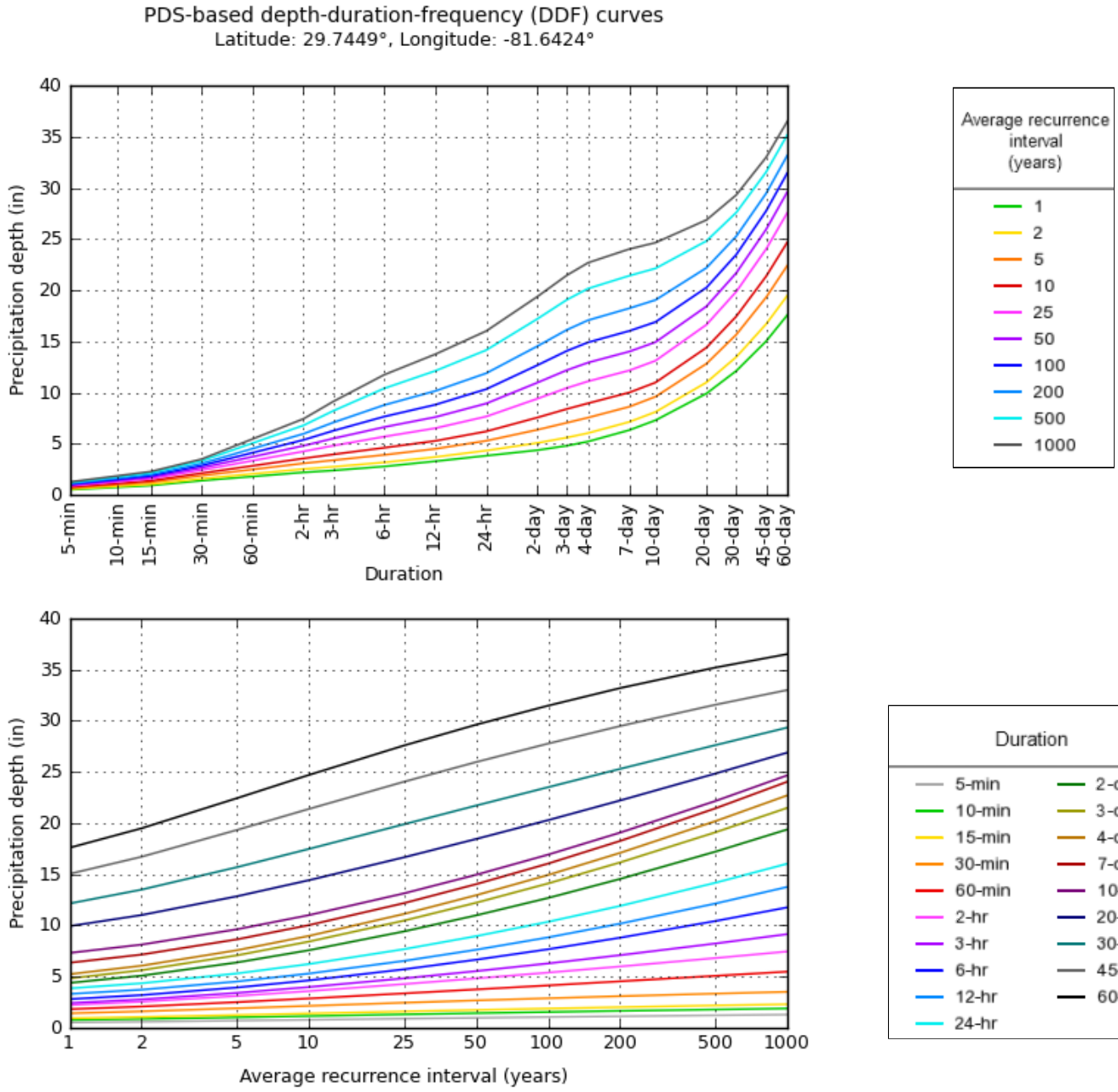
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



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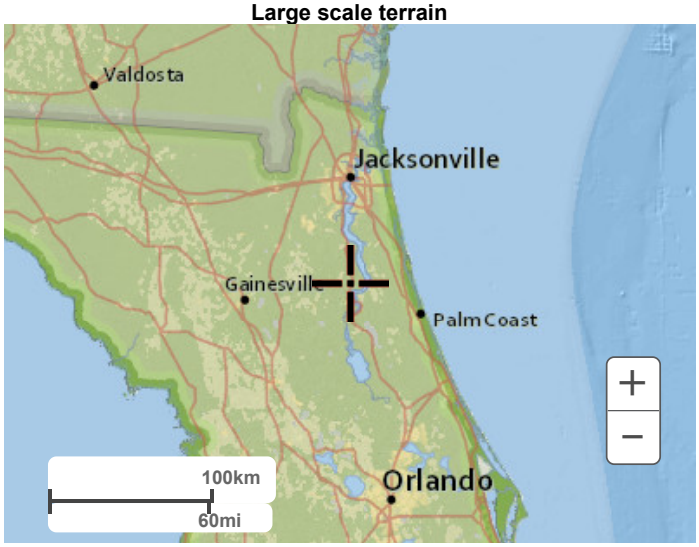
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Maps & aerials

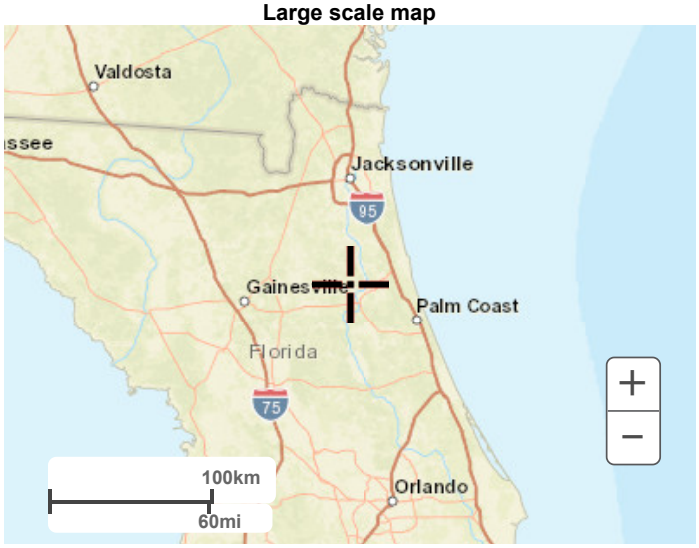
Small scale terrain



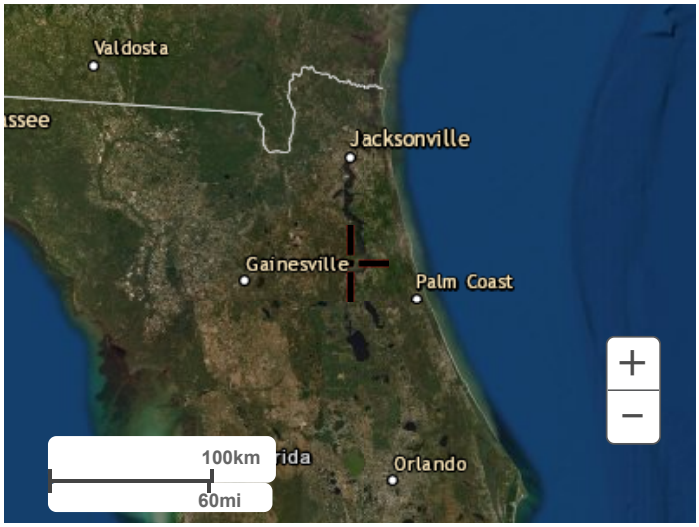
Large scale terrain



Large scale map



Large scale aerial



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National Weather Service
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Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

The Site shall be graded to convey storm water runoff away from permanent facilities (Note: Drainage piping from the natural gas pipeline contractor's gas yard to the retention pond is excluded from Contractor's scope). Minimum slopes shall be based on surface type. In the main Facility complex area, a minimum 1-percent overall slope shall be provided. Storm water inside the power block loop road shall be conveyed via catch basins and underground storm sewer block; use of ditches shall be limited to outside the power block loop road. Maximum earth slopes shall be set based on slope stability and maintainability requirements. The steepest unimproved slope shall be limited to 3h:1v. Culvert and Storm Pipe entrances and outfalls shall be designed to prevent erosion.

Site drainage facilities shall be designed to convey the runoff from a 4-percent probability (25-year) – 24-hour storm event unless specific federal, state, or local regulations are more stringent. The Site should also be designed to prevent flooding of equipment foundations and buildings from a 100-year – 24-hour event. Stormwater from site will be discharged through the on-site detention basin and spreader swale.

Channels and ditches shall be designed and shown on the Drawings. Culverts and storm sewer pipe shall generally be reinforced concrete, smooth-lined corrugated PVC pipes, or smooth-lined corrugated HDPE pipes. Grating and guards shall be provided for fall protection at channels and ditches as required by the 2017 Florida Building Code.

01621.8.2 Compaction

Earth compaction requirements shall be as listed below:

	Minimum Compaction in Accordance with ASTM D698 Standard Proctor, percent
Unauthorized excavation	95
Fills and embankments	90
Trench subgrades	90
Trench subgrades beneath roads	95
Subgrades beneath roads	95
Structure backfill (around walls and structures)	90
Compacted sand fill	95
Trench backfill (crushed rock)	75 (relative density)
Trench backfill (cohesive and sand material)	90
Trench backfill (traversing paved areas)	95
Compacted rock fill	75 (relative density)
Structural fill (beneath structures)	98

Earth Compaction requirements identified in the final geotechnical report issued during the design phase of the project shall take precedence over the above values.

01621.8.3 Roads and Parking

A system of roads shall be included to provide access within the Facility Site as shown on the Site Plans in Appendix A, as a minimum. Facility roads including the power block loop road, and parking areas identified on the Site Plan Drawings shall be asphalt concrete paved. Concrete paving shall be provided in front of all roll up doors, unloading areas, and maintenance pads. Finish striping for parking shall be

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION - TEMP. SEDIMENT BASIN

3.7 Temporary Sediment Basin

Definition

A temporary basin with a controlled stormwater release structure, formed by constructing an embankment of compacted soil across a drainageway.

Purpose

To detain sediment-laden runoff from disturbed areas long enough for most of the sediment to settle out.

Applications

According to the 2015 CGP requirements, drainage basins with 10 or more disturbed acres at one time, a temporary (or permanent) sediment or wet detention basin providing 3,600 cubic feet of storage per acre drained must be provided until the final stabilization of the site. Also, the *2013 Florida Designer and Reviewer Manual* should be reviewed as required by the CGP.

There must be sufficient space and appropriate topography for the construction of a temporary impoundment. These structures are limited to a useful life of 18 months unless they are designed as permanent ponds by a qualified professional engineer.

Planning Considerations

Effectiveness

Sediment basins are at best only 70 % to 80 % effective in trapping the sediment that flows into them. Therefore, they should be used together with erosion control practices such as temporary seeding, mulching, diversion berms, etc., to reduce the amount of sediment. Anionic polyacrylamides used with jute fabric panels can be used to enhance sediment removal. Faircloth skimmers can be attached to the overflow structure to remove only the cleanest water at the surface, increasing the removal of sediments prior to discharge.

Location

To improve the effectiveness of the basin, it should be located to intercept the largest possible amount of runoff from the disturbed area. The best locations are generally low areas and natural drainageways below disturbed areas. Drainage into the basin can be improved using diversion berms and ditches. The basin must not be installed in a live stream but should be located to trap sediment-laden runoff **BEFORE** it enters the stream. The basin should not be located where its failure would result in the loss of life, damage to adjacent properties, or interruption of the use of public utilities or roads.

Multiple Use

Sediment basins may be designed as permanent structures to remain in place after construction is completed. Always leave the bottom of a sediment basin 6 to 12 inches higher than the eventual bottom of a retention basin. This will ensure the removal of accumulated fine sediments that could prematurely clog the retention basin. Wherever these structures are to become permanent,

or if they exceed the size limitations of the design criteria, they must be designed as permanent ponds by a qualified professional engineer. Permanent ponds are beyond the scope of this BMP.

Design Criteria

Maximum Drainage Area

Unless the structure is designed as a permanent pond by a Florida-licensed Professional Engineer, the maximum allowable drainage area into the basin shall be 150 acres (61 ha).

Basin Capacity

The design capacity of the basin must be at least 134 cubic yards or 3,600 cubic feet per acre (252 m^3/ha) of drainage area measured from the bottom of the basin to the crest of the principal spillway (riser pipe). Sediment should be removed from the basin when the volume of the basin has been reduced to 55 cubic yards per acre (104 m^3/ha) of drainage area. The elevation of the sediment cleanout level should be calculated and clearly marked on the riser. In no case shall the sediment cleanout level be higher than 1 foot (30 cm) below the top of the riser (see **Figure 3.7a**).

Basin Shape and Baffles

To improve the sediment-trapping efficiency of the basin, the effective flow length must be twice the effective flow width. This basin shape may be attained by properly selecting the site of the basin, excavating, or using baffles (see **Figure 3.7b)**, as referenced in the *2013 Designer and Reviewer Manual*.

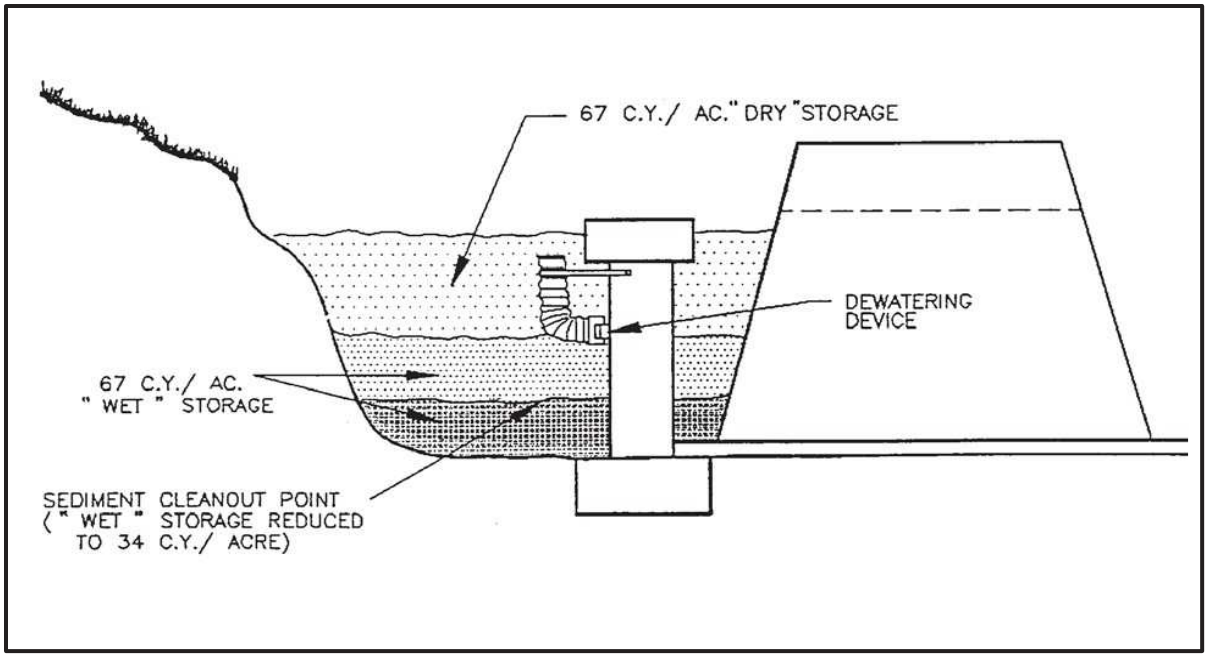


Figure 3.7a. Sediment basin storage volumes

Source: Virginia DSWC

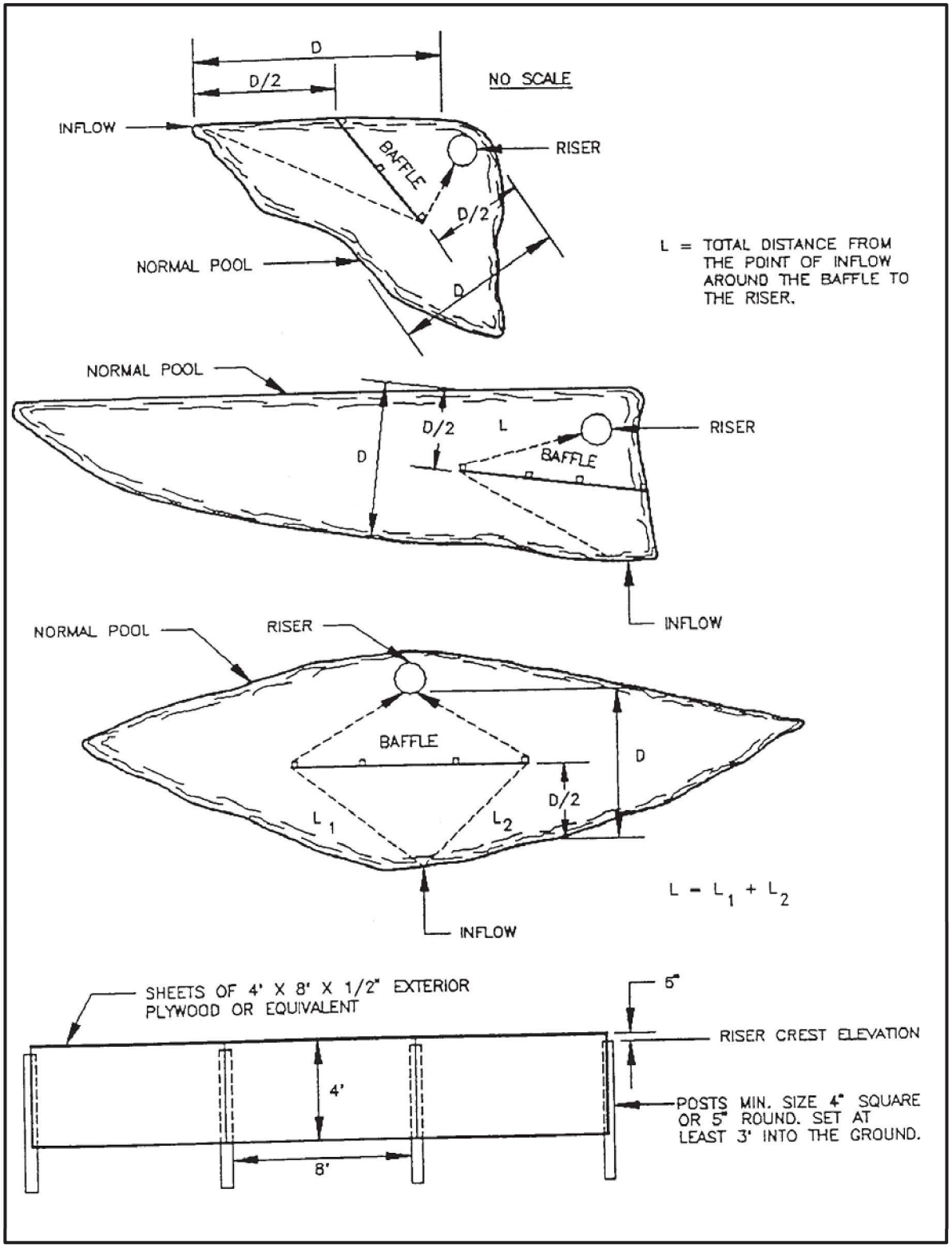


Figure 3.7b. Sample plan view of baffle locations in sediment basins

Embankment Cross-Section

The embankment must have a minimum top width of 8 feet (2.5 m). The side slopes must be 2:1 or flatter. The embankment may have a maximum height of 10 feet (3 m) if the side slopes are 2:1. If the side slopes are 2.5:1 or flatter, the embankment may have a maximum height of 15 feet (4.5 m).

Spillway Design

The outlets for the basin may consist of a combination of principal and emergency spillways or a principal spillway alone. In either case, the outlet(s) must pass the peak runoff expected from the drainage area for a 10-year storm without damage to the embankment of the basin. Runoff computations shall be based on the soil cover conditions expected to prevail during the life of the basin.

The spillways designed by the procedures contained in this BMP will **NOT** necessarily result in any reduction in the peak rate of runoff. If a reduction in peak runoff is needed, the appropriate hydrographs should be generated to choose the basin and outlet sizes.

To increase the efficiency of the basin, the spillway(s) must be designed to maintain a permanent pool of water between storm events.

Principal Spillway

The principal spillway shall consist of a solid (nonperforated), vertical pipe or box of corrugated metal or reinforced concrete joined by a watertight connection to a horizontal pipe (barrel) extending through the embankment, with an outlet beyond the downstream toe of the fill. If the principal spillway is used in conjunction with an emergency spillway, the principal spillway shall have a minimum capacity of 0.2 cfs per acre (0.015 m^3/sec per ha) of drainage area when the water surface is at the crest of the emergency spillway. If no emergency spillway is used, the principal spillway must be designed to pass the entire peak flow expected from a 10-year storm. See the *2013 Florida Designer and Reviewer Manual* for design details.

Design Elevations

If the principal spillway is used together with an emergency spillway, the crest of the principal spillway shall be a minimum of 1 foot (30 cm) below the crest of the emergency spillway. If no emergency spillway is used, the crest of the principal spillway shall be a minimum of 3 feet (90 cm) below the top of the embankment (see **Figure 3.7c**). In either case, a minimum freeboard of 1 foot (30 cm) shall be provided between the design high water and the top of the embankment.



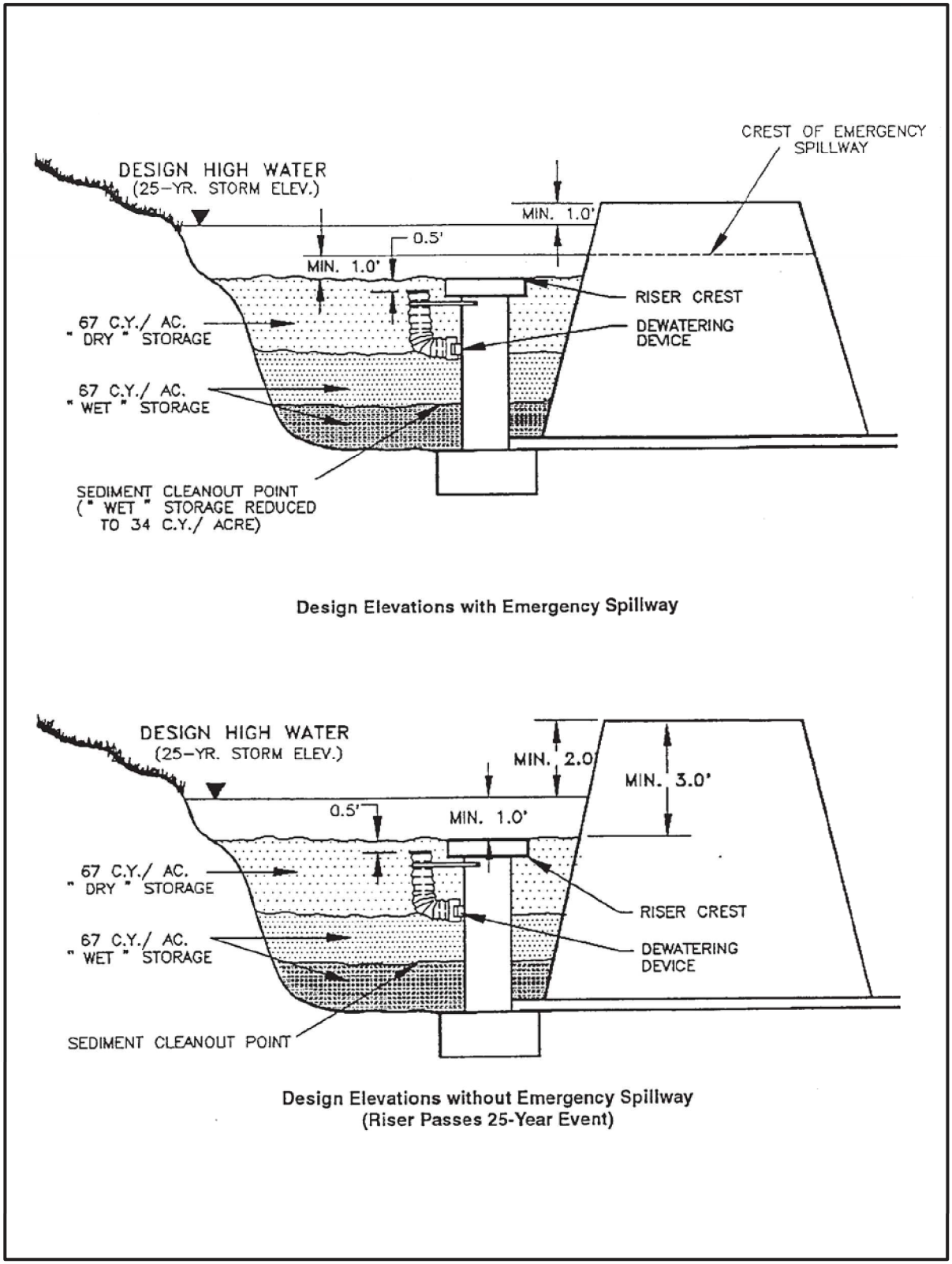


Figure 3.7c. Sediment basin schematic elevations

Source: Virginia DSWC

Antivortex Device and Trash Rack

An antivortex device and trash rack shall be attached to the top of the principal spillway to improve the flow of water into the spillway and prevent floating debris from being carried out of the basin. The antivortex device shall be of the concentric type (see **Figure 3.7c**).

Dewatering

Dewatering shall be done in a way that removes the relatively clean water without removing any of the sediment that has settled out and without removing any appreciable quantities of floating debris. As a minimum, provisions shall be made to dewater the basin down to the sediment cleanout elevation. This can be accomplished by providing a hole at the maximum sediment retention elevation (see **Figure 3.7c**). The dewatering hole shall be no larger than 4 inches (10 cm) in diameter. **Chapter 5** outlines other means of dewatering.

It is also advantageous (but not required) to provide for the dewatering of trapped sediment before cleanout. Basin underdrains are generally installed for this purpose.

Base

The base of the principal spillway must be firmly anchored to prevent it from floating. If the riser of the spillway is greater than 10 feet (3 m) in height, computations must be made to determine the anchoring requirements. As a minimum, a factor of safety of 1.25 shall be used (downward forces = 1.25 x upward forces).

For risers 10 feet (3 m) or less in height, the anchoring may be done in one of the two following ways:

1. *A concrete base 18 inches (45 cm) thick and twice the width of the riser diameter shall be used and the riser embedded 6 inches (15 cm) into the concrete (see **Figure 3.7e** and the 2013 Florida Designer and Reviewer Manual).*

2. *A square steel plate, being a minimum of 1/4 inch (6.5 mm) thick and having a width equal to twice the diameter of the riser, shall be welded to the base of the riser. The plate shall then be covered with 2 1/2 feet (76 cm) of stone, gravel, or compacted soil to prevent flotation.*

Barrel

The barrel of the principal spillway, which extends through the embankment, shall be designed to carry the flow provided by the riser of the principal spillway with the water level at the crest of the emergency spillway. The connection between the riser and the barrel must be watertight. The outlet of the barrel must be protected to prevent the erosion or scour of downstream areas.

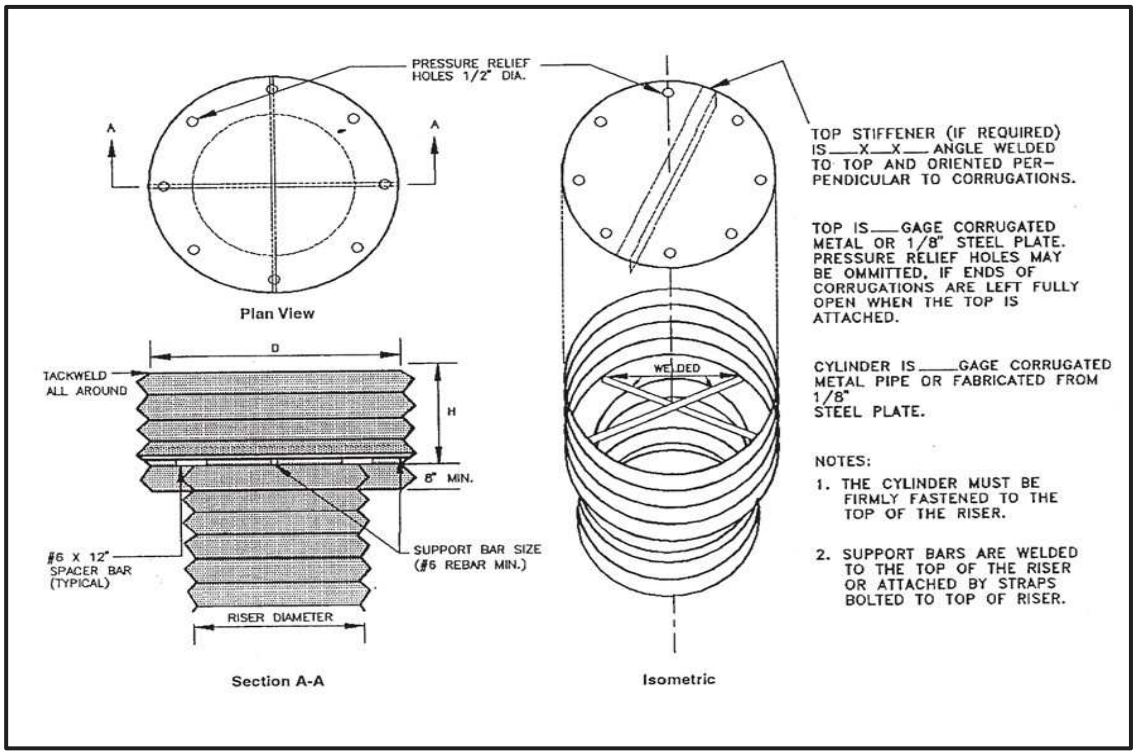


Figure 3.7d. Antivortex device design

Source: NRCS

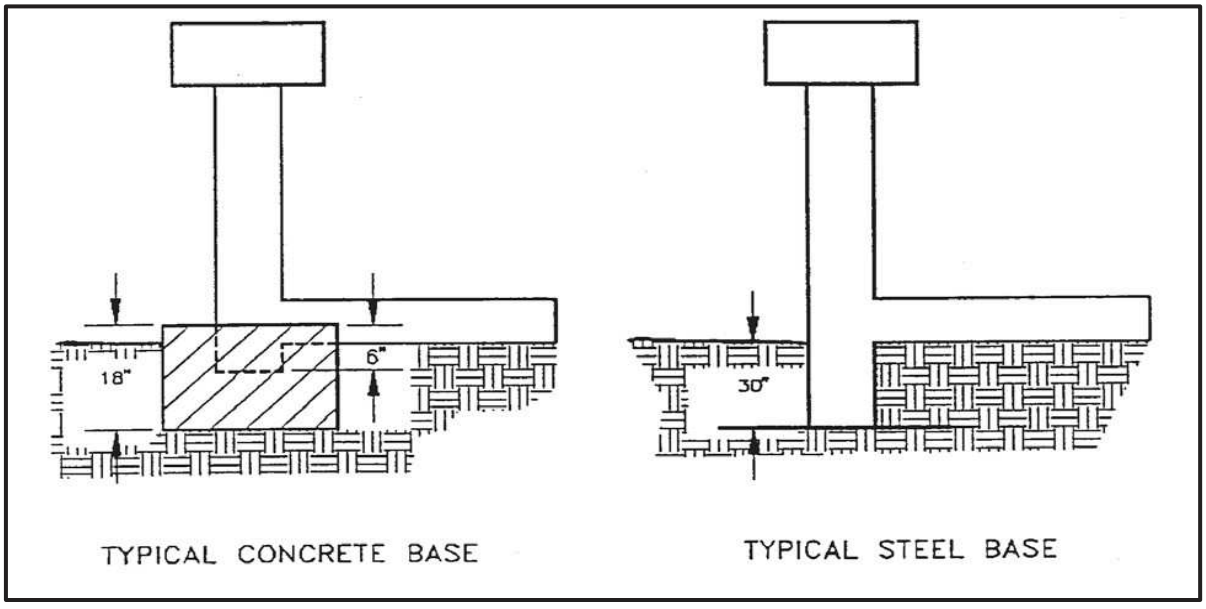


Figure 3.7e. Riser pipe conditions

Source: Virginia DSWC

Floating Skimmer

The floating skimmer, or "Faircloth Skimmer," is widely used throughout the southeastern U.S. and is approved by the EPA and many southeastern states. If correctly installed and sized, it improves sediment trapping efficiency by regulating the filling and draining of the basin better than conventional methods using perforated risers or stone. A floating skimmer works best on small basins sized for the entire catchment, less than half or three quarters of an acre (preferably less), because of the difficulty and expense of construction and maintenance—particularly sediment removal in large basins requiring equipment (usually a dragline) that can reach into a wide area. The skimmer orifice has a constant head that causes the basin to fill—creating conditions for gravity settling—and then drain slowly at a constant rate from near the surface. If possible, locate the basin outside a watercourse or stream to avoid disturbing the natural channel (and avoiding restabilization) and reduce the drainage area to the basin and therefore the size of the basin.

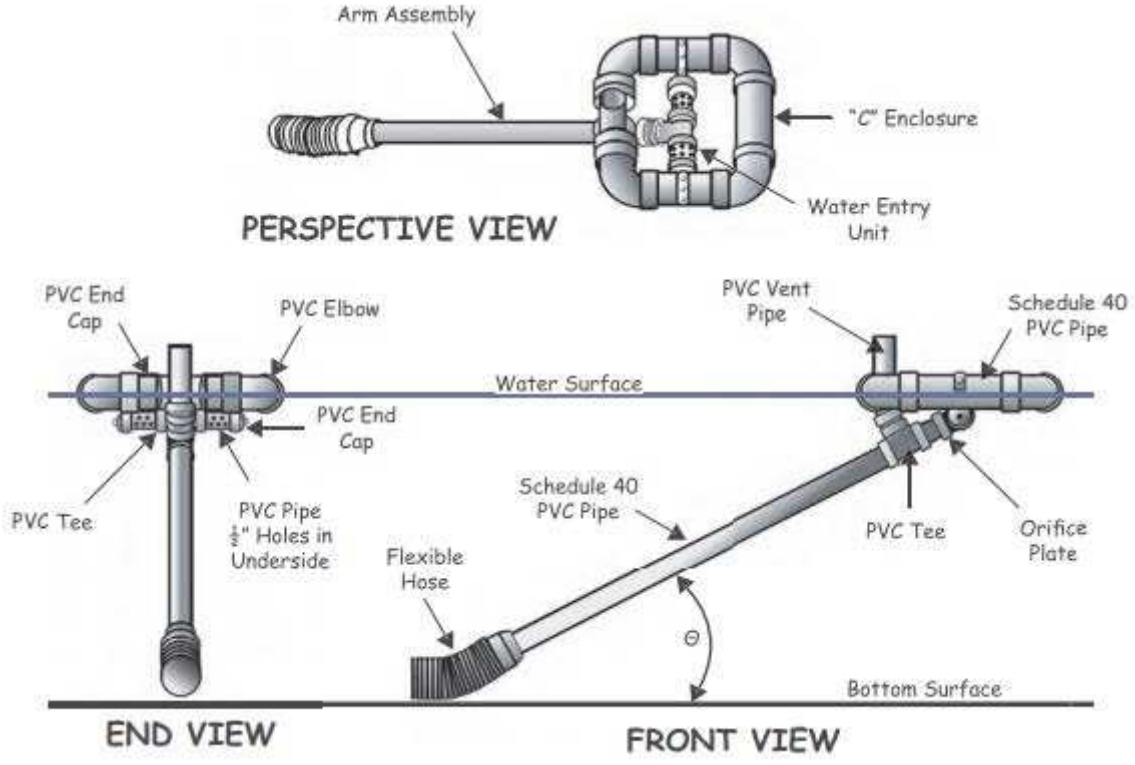


Figure 3.7f. Floating Skimmer

Source: Schematic from Pennsylvania Erosion and Sediment Control Manual 2000

Antiseep Collars

Antiseep collars shall be used on the barrel of the principal spillway within the normal saturation zone of the embankment to increase the seepage length by at least 10 %, if either of the following two conditions is met:

1. *The settled height of the embankment exceeds 10 feet (3 m).*

2. *The embankment has a low silt-clay content (Unified Soil Classes SM or GM) and the barrel is greater than 10 inches (25 cm) in diameter.*

The antiseep collars shall be installed within the saturated zone. The maximum spacing between collars shall be 14 times the projection of the collar above the barrel. Collars shall not be closer than 2 feet (60 cm) to a pipe joint. Collars should be placed sufficiently far apart to allow space for hauling and compacting equipment. Connections between the collars and the barrel shall be watertight (see **Figure 3.7g** and the *2013 Florida Designer and Reviewer Manual*).



Source: Auburn University

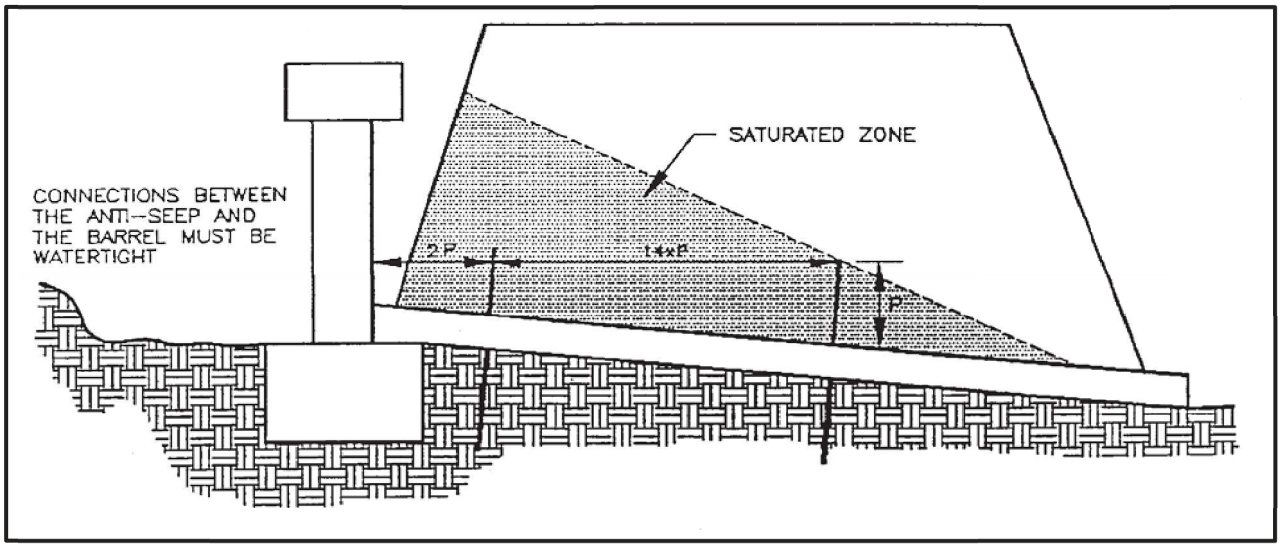


Figure 3.7g. Location of antiseep collars

Source: Virginia DSWC

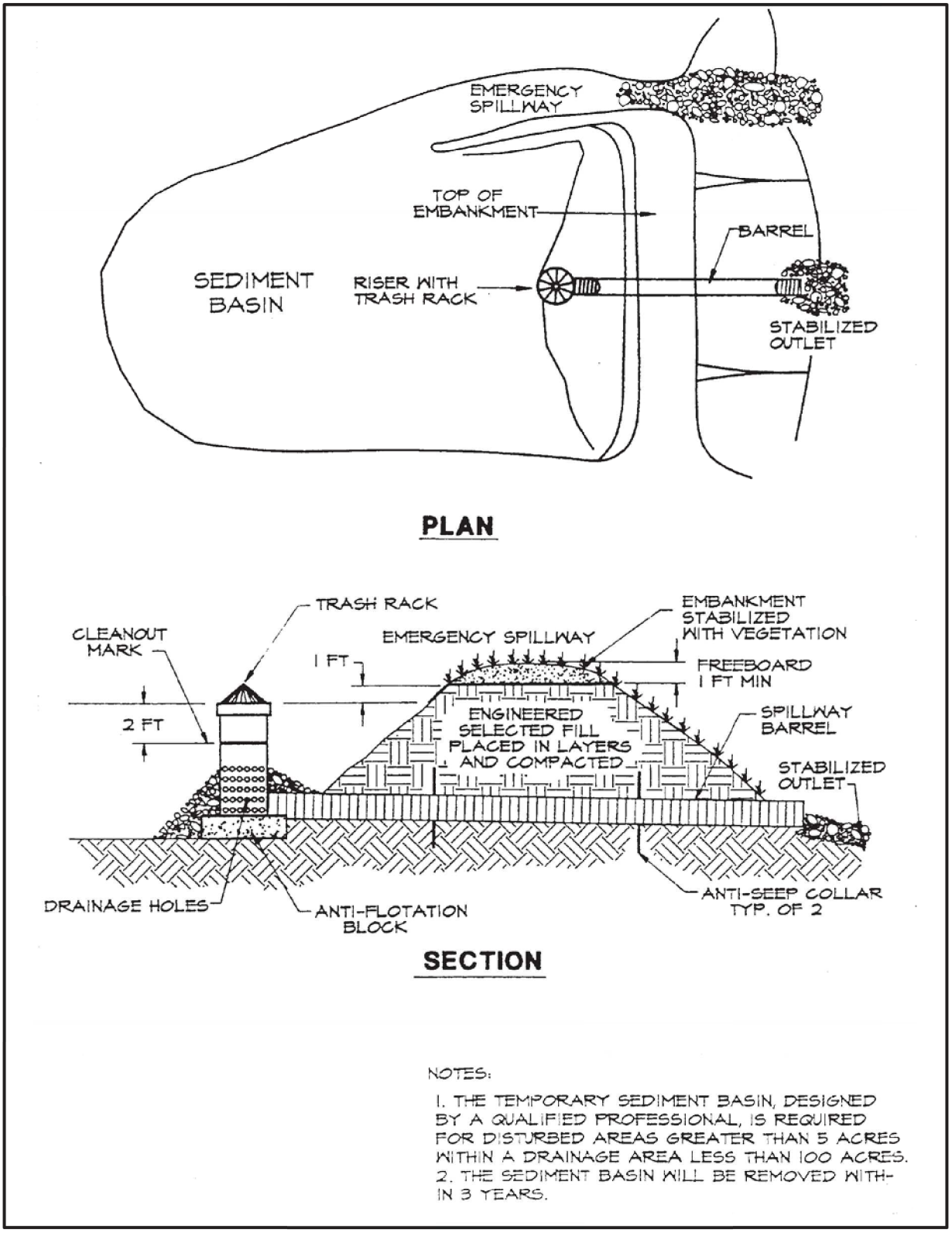


Figure 3.7h. Sediment basin

Source: Erosion Draw

Emergency Spillway

The emergency spillway shall consist of an open channel constructed next to the embankment over undisturbed material or properly compacted fill. The spillway shall have a control section at least 20 feet (6 m) in length. The control section is a level portion of the spillway channel at the highest elevation in the channel (see **Figure 3.7h**). The primary spillway and the emergency spillway shall both discharge to stabilized outlets (see **Figure 3.7i**).

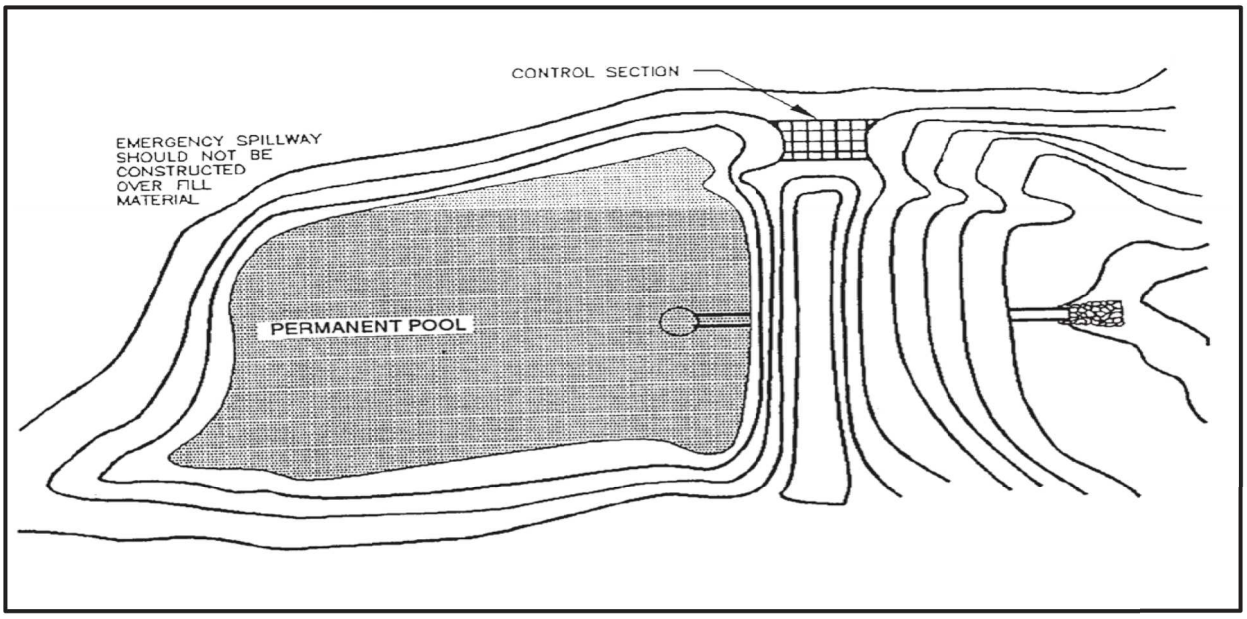


Figure 3.7i. Emergency spillway

Source: Virginia DSWC

Capacity

The emergency spillway shall be designed to carry the peak rate of runoff expected from a 10-year storm, minus any reduction because of the flow through the principal spillway.

Design Elevations

The design high water through the emergency spillway shall be at least 1 foot (30 cm) below the top of the embankment. The crest of the emergency spillway channel shall be at least 1 foot (30 cm) above the crest of the principal spillway.

Location

The emergency spillway channel shall be located to avoid fill material. If constructed on fill, the fill will be properly compacted in lifts. The channel shall be located to avoid sharp turns or bends. The channel shall return the flow of water to a defined channel downstream from the embankment.

Maximum Velocities

The maximum allowable velocity in the emergency spillway channel depends on the type of lining used. For nonerodible linings, such as concrete or asphalt paving and riprap, design velocities may be increased. However, the emergency spillway channel shall return the flow to the natural channel at a noneroding velocity.

Stabilization of the Embankment and Basin

The embankment of the sediment basin shall be temporarily seeded within 15 days after its completion, as described in **TEMPORARY SEEDING** (see **Chapter 4**). If excavation is required in the basin, side slopes should not be steeper than 2:1 (based on the 2013 *Florida Designer and Reviewer Manual*).

Cleanout

Sediment shall be removed from the basin when the capacity is half full or reduced to 55 cubic yards per acre (104 m^3/ha) of drainage area. This elevation should be clearly marked, preferably on the riser. Plans for the sediment basin shall state the methods for disposing of sediment removed from the basin. Possible alternatives include the use of the material in fill areas onsite or removal to an approved offsite dump.

Final Removal

Sediment basin plans shall show the final disposition of the sediment basin after the upstream drainage area is stabilized. The plans shall specify methods for the removal of excess water lying over the sediment, the stabilization of the basin site, and the disposal of any excess material. Sediment shall not be flushed into the stream or drainageway.

Safety

Sediment basins are attractive to children and can be very dangerous. Therefore, they should be fenced or otherwise made inaccessible to people or animals unless this is deemed unnecessary because of the remoteness of the site or other circumstances. Strategically placed signs around the impoundment reading "**DANGER—QUICKSAND**" should also be installed. In any case, local ordinances and regulations regarding health and safety must be adhered to.

Construction Specifications

Site Preparation

Areas under the embankment and any structural works shall be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, roots, or other objectionable material. To facilitate cleanout and restoration, the pool area (measured at the top of the principal spillway) shall be cleared of all brush and trees.

Cutoff Trench

For earth fill embankments, a cutoff trench shall be excavated along the center line of the dam. The minimum depth shall be 2 feet (60 cm). The cutoff trench shall extend up both abutments to the riser crest elevation. The minimum bottom width shall be 4 feet (1.2 m), but wide enough to allow the operation of compaction equipment. The side slopes shall be no steeper than 1:1. Compaction requirements shall be the same as those for the embankment. The trench shall be drained during the backfilling and compacting operations.

Embankment

The fill material shall be taken from approved borrow areas. It shall be clean mineral soil, free of roots, woody vegetation, oversized stones, rocks, or other objectionable material. Areas on which the fill is to be placed shall be scarified prior to the placement of fill. The fill material should contain sufficient moisture so that it can be formed by hand into a ball without crumbling. If water can be squeezed out of the ball, it is too wet for proper compaction. Fill material will be placed in 6- to 8-inch (15 to 20 cm) continuous layers over the entire length of the fill. Compaction shall be obtained by routing the hauling equipment over the fill so that the entire surface of the fill is traversed by at least 1 wheel or tread track of the equipment, or by using a compactor. The embankment shall be constructed to an elevation 10 % higher than the design height to allow for settlement if compaction is obtained with hauling equipment. If compactors are used for compaction, the overbuild may be reduced to not less than 5 %.

Principal Spillway

The riser of the principal spillway shall be securely attached to the barrel by a watertight connection. The barrel and riser shall be placed on a firm, compacted soil foundation. The base of the riser shall be firmly anchored according to design criteria to prevent floating. Pervious material such as sand, gravel, or crushed stone shall not be used as backfill around the barrel or antiseep collars. Fill material shall be placed around the pipe in 4-inch (10 cm) layers and compacted by hand at least to the same density as the embankment. A minimum of 2 feet (60 cm) of fill shall be hand compacted over the barrel before crossing it with construction equipment.

Emergency Spillway

The emergency spillway should not be constructed over fill material. Design elevations, widths, and entrance and exit channel slopes are critical to the successful operation of the spillway and should be adhered to closely during construction.

Vegetative Stabilization

The embankment and emergency spillway of the sediment basin shall be stabilized with temporary vegetation within seven days of the completion of the basin, as described in **TEMPORARY SEEDING** (see **Chapter 4**).

Erosion and Sediment Control

The construction of the sediment basin shall be carried out so that erosion and water pollution are minimized downstream.

Final Disposal

When **temporary** structures have served their intended purpose and the contributing drainage area has been properly stabilized, the embankment and resulting sediment deposits should be leveled or otherwise disposed of according to the approved pollution control plan.

Maintenance

The embankment of the basin should be checked regularly to ensure that it is structurally sound and has not been damaged by erosion or construction equipment. The emergency spillway should be checked regularly to ensure that its lining is well established and erosion resistant. The basin shall be checked after each runoff-producing rainfall for sediment cleanout. When the sediment reaches the cleanout level mark, it shall be removed and properly disposed of.

Information to Be Submitted for Approval

Sediment basin designs and construction plans submitted for review to the appropriate regulatory agency shall include the following:

1. *Specific location of the dam.*
2. *Plan view of the dam, storage basin, and emergency spillway.*
3. *Cross-sections and profiles of the dam, principal spillway, and emergency spillway.*
4. *Details of pipe connections, riser to pipe connection, riser base, antiseep collars, trash rack, and antivortex device.*
5. *Runoff calculations for a 10-year frequency storm.*
6. *Storage computations:*
    a. Total required.
    b. Total available.
    c. Level of sediment at which cleanout shall be required, to be stated as the distance from the riser crest to the sediment surface.
7. *Calculations showing the design of the pipe and emergency spillway.*

5.2 Treatment Volume

5.2.1

The first flush of runoff should be routed to the retention basin and percolated into the ground. Retention systems that discharge to Class III receiving water bodies shall provide for one of the following:

(a) *Off-line* retention of the first one-half inch of runoff or 1.25 inches of runoff from the impervious area, whichever is greater.

(b) *On-line* retention of an additional one half inch of runoff from the drainage area over that volume specified for off-line treatment.

(c) *On-line* retention that provides for percolation of the runoff from the three year, one-hour storm.

(d) *On-line* retention of the runoff from one inch of rainfall or 1.25 inches of runoff from the impervious area, whichever is greater, for systems which serve an area with less than 40 percent impervious surface and that contain only U.S. Department of Agriculture Natural Resources Conservation Service (SCS) hydrologic group "A" soils.

5.2.2

For direct discharges to Class I, Class II, OFWs, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting the applicant shall provide retention for one of the following:

(a) At least an additional fifty percent of the applicable treatment volume specified for off-line retention in (a), above. *Off-line* retention must be provided for at least the first one-half inch of runoff or 1.25 inches of runoff from the impervious area, whichever is greater, of the total amount of runoff required to be treated.

(b) *On-line* retention of an additional fifty percent of the treatment volume specified in (b), above.

(c) *On-line* retention of the runoff from the three-year, one-hour storm.

(d) *On-line* retention that provides at least an additional 50 percent of the runoff volume specified in (d), above, for systems which serve an area with less that 40 percent impervious surface and that contain only U.S. Department of

Agriculture Natural Resources Conservation Service (SCS) hydrologic group "A" soils.

5.3 Recovery Time

The retention system must provide the capacity for the appropriate treatment volume of stormwater specified in section 5.2 within 72 hours following a storm event assuming average antecedent moisture conditions. In retention systems, the stormwater is drawn down by natural soil infiltration and dissipation into the ground water table, evaporation, or evapotranspiration, as opposed to underdrain systems which rely on artificial methods like drainage pipes.

Antecedent moisture condition (AMC) refers to the amount of moisture and storage in the soil profile prior to a storm event. Antecedent soil moisture is an indicator of wetness and availability of soil to infiltrate water. The AMC can vary from dry to saturated depending on the amount of rainfall received prior to a given point in time. Therefore, "average AMC" means the soil is neither dry or saturated, but at an average moisture condition at the beginning of a storm event when calculating recovery time for retention systems.

The antecedent condition has a significant effect on runoff rate, runoff volume, infiltration rate, and infiltration volume. The infiltration volume is also known as the upper soil zone storage. Both the infiltration rate and upper soil zone storage are used to calculate the recovery time of retention systems and should be estimated using any generally accepted and well documented method with appropriate parameters to reflect drainage practices, seasonal high water table elevation, the AMC, and any underlying soil characteristics which would limit or prevent percolation of storm water into the soil column.

5.4 Basin Stabilization

The retention basin should be stabilized with pervious material or permanent vegetative cover. To provide proper treatment of the runoff in very permeable soils, permanent vegetative cover must be utilized when U.S. Department of Agriculture Natural Resources Conservation Service (SCS) hydrologic group "A" soils underlie the retention basin, except for pervious pavement systems.

5.5 Retention Basin Construction

5.5.1 Overview

Retention basin construction procedures and the overall sequence of site construction are two key factors that can control the effectiveness of retention basins. Sub-standard construction methods or construction sequence can render the basin inoperable prior to completion of site development.

5.5.2 Construction Requirements

The following construction procedures are recommended to avoid degradation of retention basin infiltration capacity due to construction practices (Andreyev and Wiseman 1989):

(a) Initially construct the retention basin to rough grade by under-excavating the basin bottom and sides by approximately 12 inches.

(b) After the drainage area contributing to the basin has been fully stabilized, the interior side slopes and basin bottom should be excavated to final design specifications. The excess soil and undesirable material should be carefully excavated and removed from the pond so that all accumulated silts, clays, organics, and other fine sediment material has been removed from the pond area. The excavated material should be disposed of beyond the limits of the drainage area of the basin.

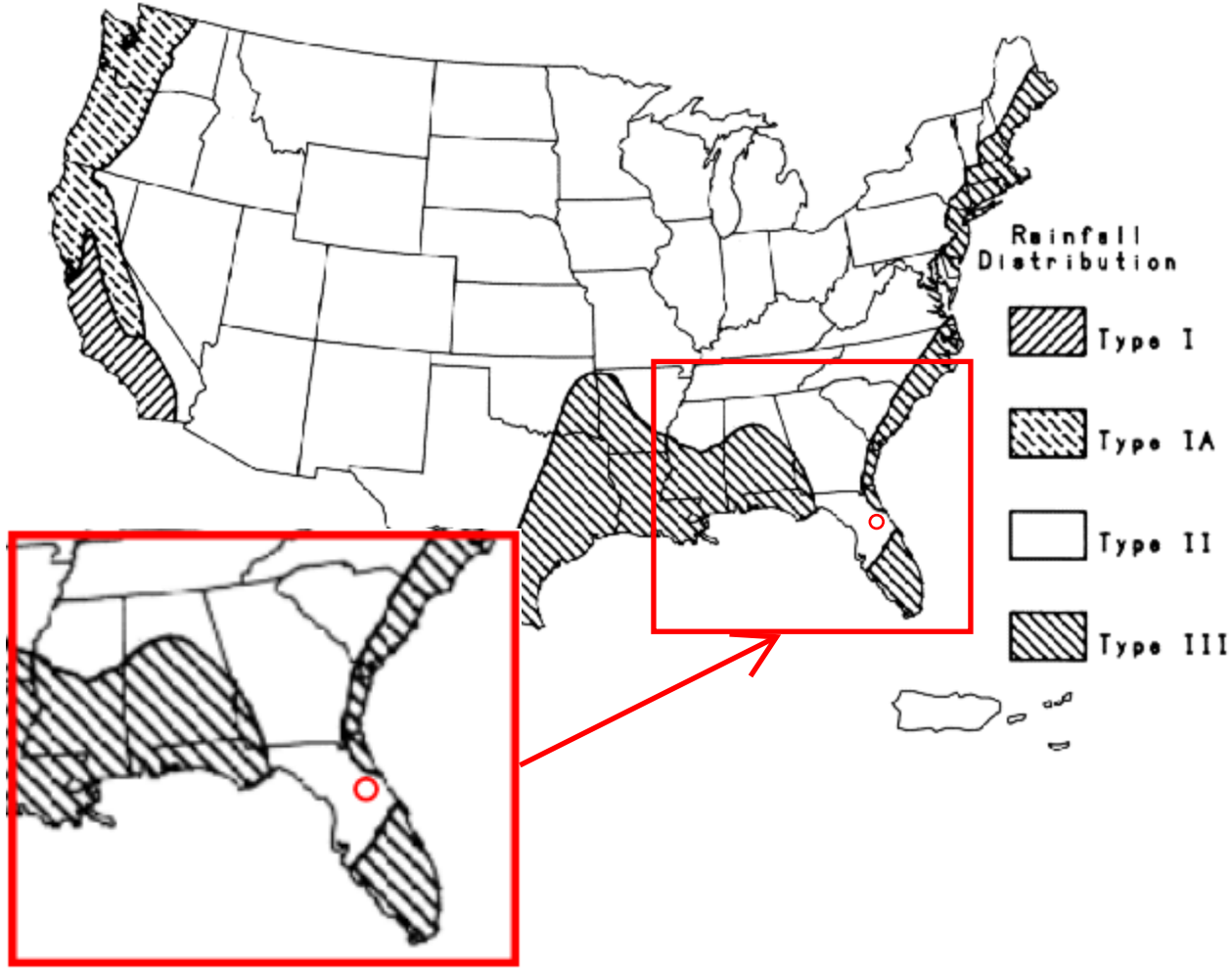
(c) Once the basin has been excavated to final grade, the entire basin bottom should be deep raked and loosened for optimal infiltration.

(d) Finally, the basin should be stabilized according to section 5.4, above.

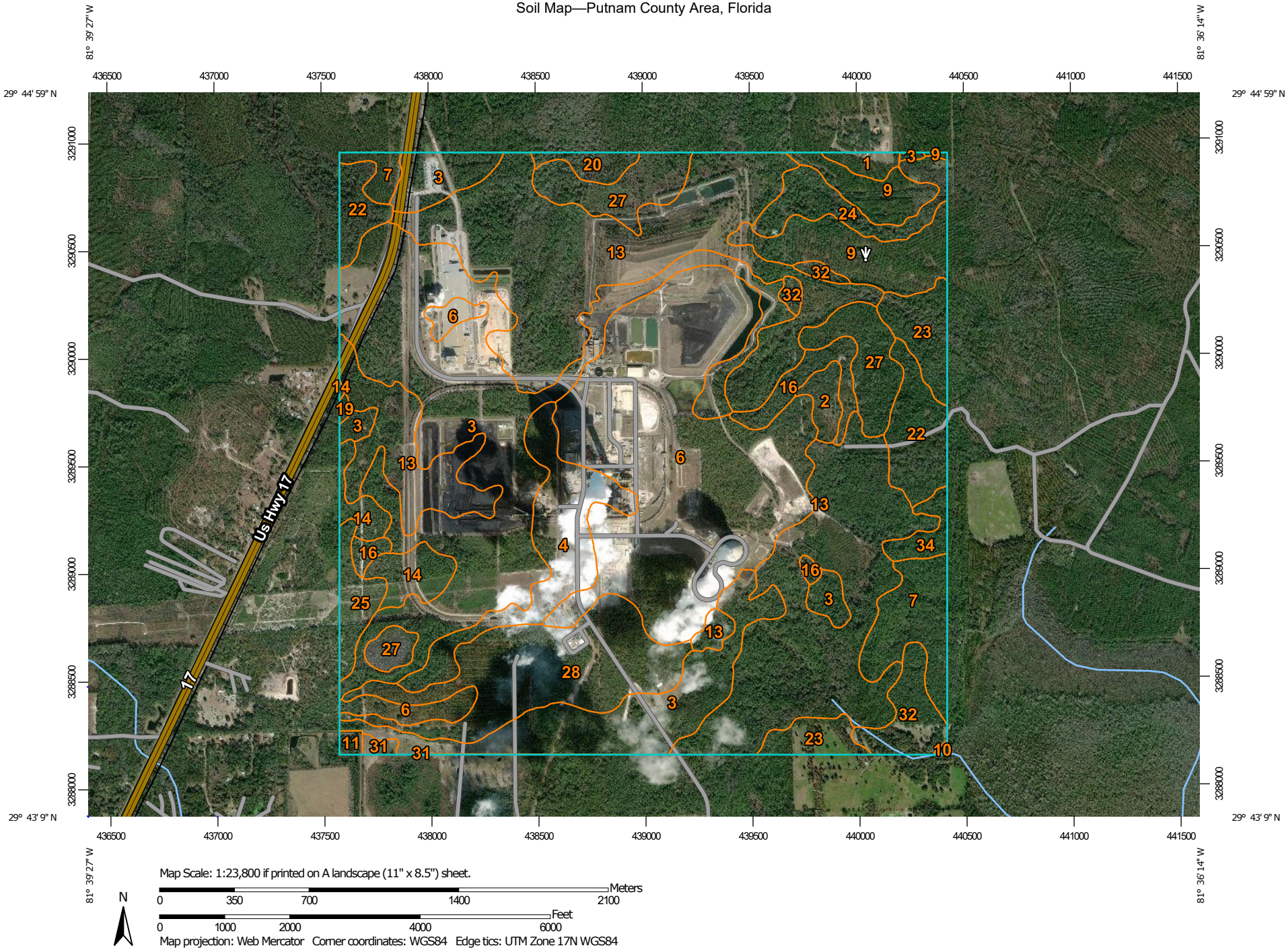
5.6 References

Andreyev, N.E., and L.P. Wiseman. 1989. *Stormwater Retention Pond Infiltration Analysis in Unconfined Aquifers*. Prepared for Southwest Florida Water Management District, Brooksville, Florida.

SEMINOLE - SCS RAINFALL DISTRIBUTION



Soil Map—Putnam County Area, Florida



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Putnam County Area, Florida
Survey Area Data: Version 17, Sep 17, 2019

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

Date(s) aerial images were photographed: Nov 13, 2014—Nov 12, 2017

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Candler fine sand, 0 to 5 percent slopes	7.6	0.4%
2	Candler fine sand, 5 to 8 percent slopes	11.6	0.6%
3	Myakka-Myakka, wet, fine sands, 0 to 2 percent slopes	429.4	21.8%
4	Zolfo fine sand, 0 to 2 percent slopes	72.8	3.7%
6	Tavares fine sand, 0 to 5 percent slopes	340.0	17.2%
7	Immokalee fine sand	52.8	2.7%
9	Pomona fine sand	78.8	4.0%
10	Pompano fine sand	0.6	0.0%
11	Udorthents, excavated	3.0	0.1%
13	St. Johns fine sand, depressional	502.6	25.5%
14	Cassia fine sand, 0 to 2 percent slopes	31.4	1.6%
16	Adamsville sand, 0 to 2 percent slopes	28.2	1.4%
19	Pomona fine sand, depressional, 0 to 2 percent slopes	1.4	0.1%
20	Bluff sandy clay loam, 0 to 2 percent slopes, frequently flooded	11.0	0.6%
22	Tomoka muck, frequently ponded, 0 to 1 percent slopes	54.4	2.8%
23	Palmetto fine sand	42.6	2.2%
24	Holopaw fine sand, frequently flooded	35.1	1.8%
25	Narcoossee fine sand, 0 to 2 percent slopes	19.8	1.0%
27	Samsula muck, frequently ponded, 0 to 1 percent slopes	78.0	4.0%
28	Centenary fine sand	119.9	6.1%
31	Myakka fine sand, frequently ponded, 0 to 1 percent slopes	3.3	0.2%
32	Sparr sand, 0 to 5 percent slopes	34.6	1.8%
34	Riviera fine sand	12.1	0.6%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Totals for Area of Interest		**1,970.9**	**100.0%**

NOTES TO USERS

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

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

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

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

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

The **projection** used in the preparation of this map was Florida State Plane Coordinate System, (FIPS Zone 0901), Lambert Conformal Conic. The **horizontal datum** was the North American Datum of 1983 (NAD 83), GRS1980 Spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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

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

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

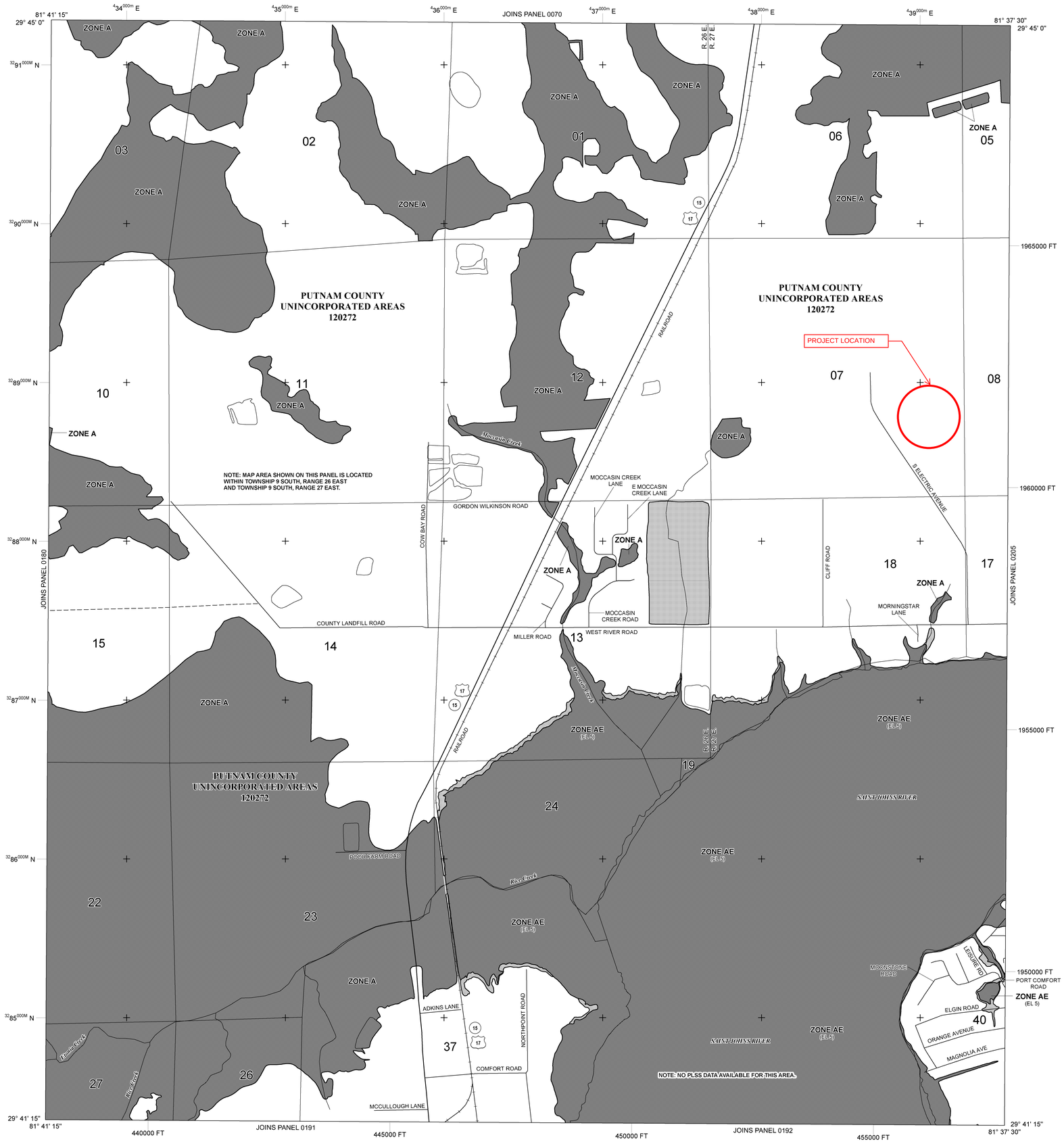
Base Map information shown on this FIRM was provided in digital format by the Putnam County. Florida Property Appraiser's Office at a scale of 1:24,000 or better from photography dated 2006 or later.

This map may reflect more detailed or up to date stream channel configurations than those shown on the previous FIRM. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations and improved topographic data. The profile baselines depicted on this map represent the hydraulic modeling baselines that match the flood profiles and Floodway Data Tables if applicable, in the FIS report. As a result, the profile baselines may deviate significantly from the new base map channel representation and may appear outside of the floodplain.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.



LEGEND

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

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

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

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

OTHER FLOOD AREAS

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

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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

- Floodplain Boundary
- Floodway Boundary
- Zone D Boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Limit of Moderate Wave Action
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- Cross section line
- Transect line
- Culvert
- Bridge
- Footbridge
- 45° 02' 08", 93° 02' 12" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
- 4989000m N — 1000-meter Universal Transverse Mercator grid ticks, zone 17
- 4989000FT — 5000-foot grid values: Florida State Plane Coordinate System, (FIPS Zone 0901), Lambert Conformal Conic
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
FEBRUARY 2, 2012
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0185C

FIRM
FLOOD INSURANCE RATE MAP

PUTNAM COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 185 OF 530
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
PUTNAM COUNTY	120272	0185	C

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

MAP NUMBER
12107C0185C
EFFECTIVE DATE
FEBRUARY 2, 2012

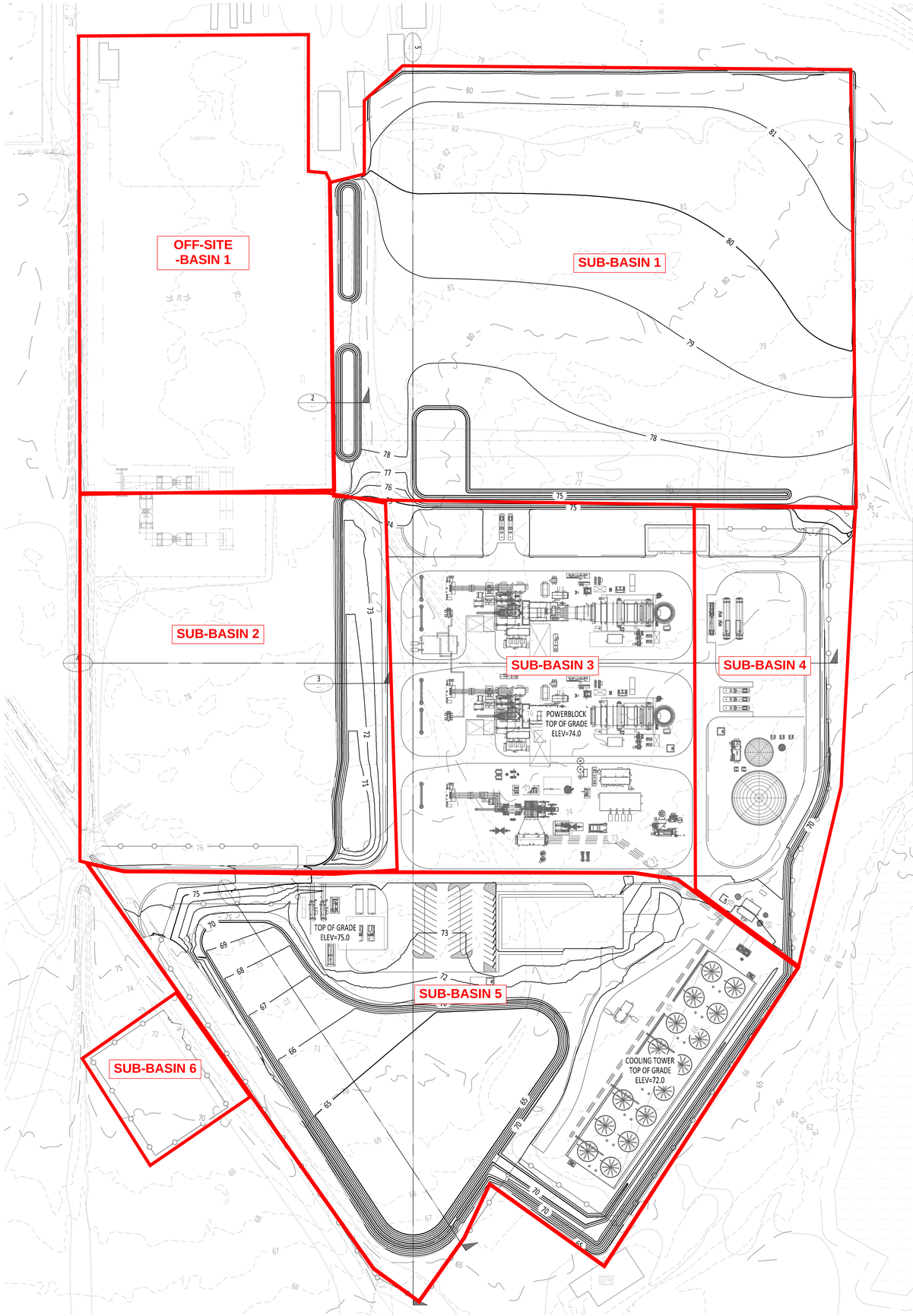
Federal Emergency Management Agency

APPENDIX B

EXHIBITS AND HAND CALCULATIONS

[SEE SHEETS CW-101 THROUGH CW-111 FOR STORMWATER PLANS & PROFILES]

[SEE CD-001 & CD-002 FOR STORMWATER DETAILS]



NOTES:

1. REFER TO PLOT PLAN (PP-001) FOR EQUIPMENT LAYOUT.
2. SEE P0015690-CS-001 FOR SITE SURFACING PLAN.
3. SEE P0015690-CW-001 FOR STORM WATER PLAN.
4. ALL ELEVATIONS SHOWN ON THIS SHEET IN FEET, AND ARE BASED ON NAVD 88 DATUM.
5. REFER TO SHEET CD-001 FOR STORM WATER STRUCTURE DETAILS.
6. TOP OF CONCRETE ELEVATION (FOR ALL STRUCTURES)=74.50, AND ADJACENT GRADE ELEVATION=74.00.

Operational Phase Site Acreage & Surfacing

Sub Basin	Total Area (Acres)	Total Area (% Impervious/ Semi-Impervious)	Pervious (acres)	Semi-Impervious - Gravel (acres)	Impervious - Road & Sidewalk (acres)	Impervious - Building (acres)	Impervious - Water Surface (Acres)
SB-1	18.31	12%	16.08	0.00	1.21	0.00	1.02
SB-2	6.53	93%	0.43	5.45	0.00	0.00	0.65
SB-3	6.59	100%	0.00	2.36	1.46	2.77	0.00
SB-4	4.10	42%	2.37	0.55	0.71	0.47	0.00
SB-5	13.69	55%	6.21	0.48	1.10	1.83	4.07
SB-6	0.83	100%	0.00	0.00	0.83	0.00	0.00
Total Site	50.05	50%	25.09	8.84	5.31	5.07	5.74
OSB-1	5.63	95%	0.28	0.00	5.35	0.00	0.00
Total Basin	55.68	54%	25.37	8.84	10.66	5.07	5.74

*OSB-1 is an offsite basin that contributes to the onsite stormwater system. It is outside of the limits of disturbance. The surfacing is unchanged from pre-development conditions. *

Pre Development Phase Site Acreage & Surfacing

Sub Basin	Total Area (Acres)	Total Area (% Impervious)*	Pervious (Acres)	Impervious - other (Acres)	Impervious - Building (Acres)	Impervious - Water Surface (Acres)
SB-1	5.69	0%	5.69	0	0	0
SB-2	26.64	0%	26.64	0	0	0
SB-3	16.9	2%	16.64	0.26	0	0
SB-4	0.83	0%	0.83	0	0	0
Total Site	50.06	1%	49.8	0.26	0	0
OSB-1**	5.63	95%	0.28	5.35	0	0
Total Basin	55.69	10%	50.08	5.61	0	0

*% Impervious includes Impervious - Other, Impervious-Building, and Impervious-Water Surfaces.

**OSB-1 is an offsite basin that contributes to the onsite stormwater system. It is outside of the disturbed limits

ISSUED FOR PERMIT

CONFIDENTIAL

THESE DRAWINGS ARE CONFIDENTIAL IN NATURE. ANY MISUSE OR UNAUTHORIZED DISTRIBUTION OF THE DRAWINGS CONTAINED HEREIN WILL BE A VIOLATION OF THIS CONFIDENTIALITY REQUIREMENT AND SUBJECT THE VIOLATOR TO LIABILITY. REVIEW OF THESE MATERIALS BY RECIPIENT SHALL CONSTITUTE AN ACCEPTANCE OF THESE TERMS AND THE TERMS OF ANY UNDERLYING CONFIDENTIALITY AGREEMENT WE MAY HAVE EXECUTED IN OBTAINING THIS INFORMATION FROM A THIRD PARTY. IF THE RECIPIENT IS NOT IN AGREEMENT WITH THE OBLIGATION OF CONFIDENTIALITY THEN THE DRAWINGS SHALL BE RETURNED TO THE ORIGINATOR.

REV	DESIGN BY	DRAWN BY	CHECKED BY	DATE
B	RE-ISSUED FOR PERMIT - UPDATED	A. GHOSH	D. LEWIS	A. GHOSH	OPEN
A	ISSUED FOR PERMIT	A. ROSS	A. ROSS	T. POSSON	06-03-19

N

80 0 80 160
SCALE IN FEET
HORIZONTAL SCALE: 1" = 80'-0"

TIC Powered By People

SEMINOLE ELECTRIC COOPERATIVE INC.

P2021 COMBINED CYCLE PROJECT

Kiewit

Kiewit Power
9401 Renner Boulevard
Lenexa, Kansas 66219

OVERALL GRADING PLAN

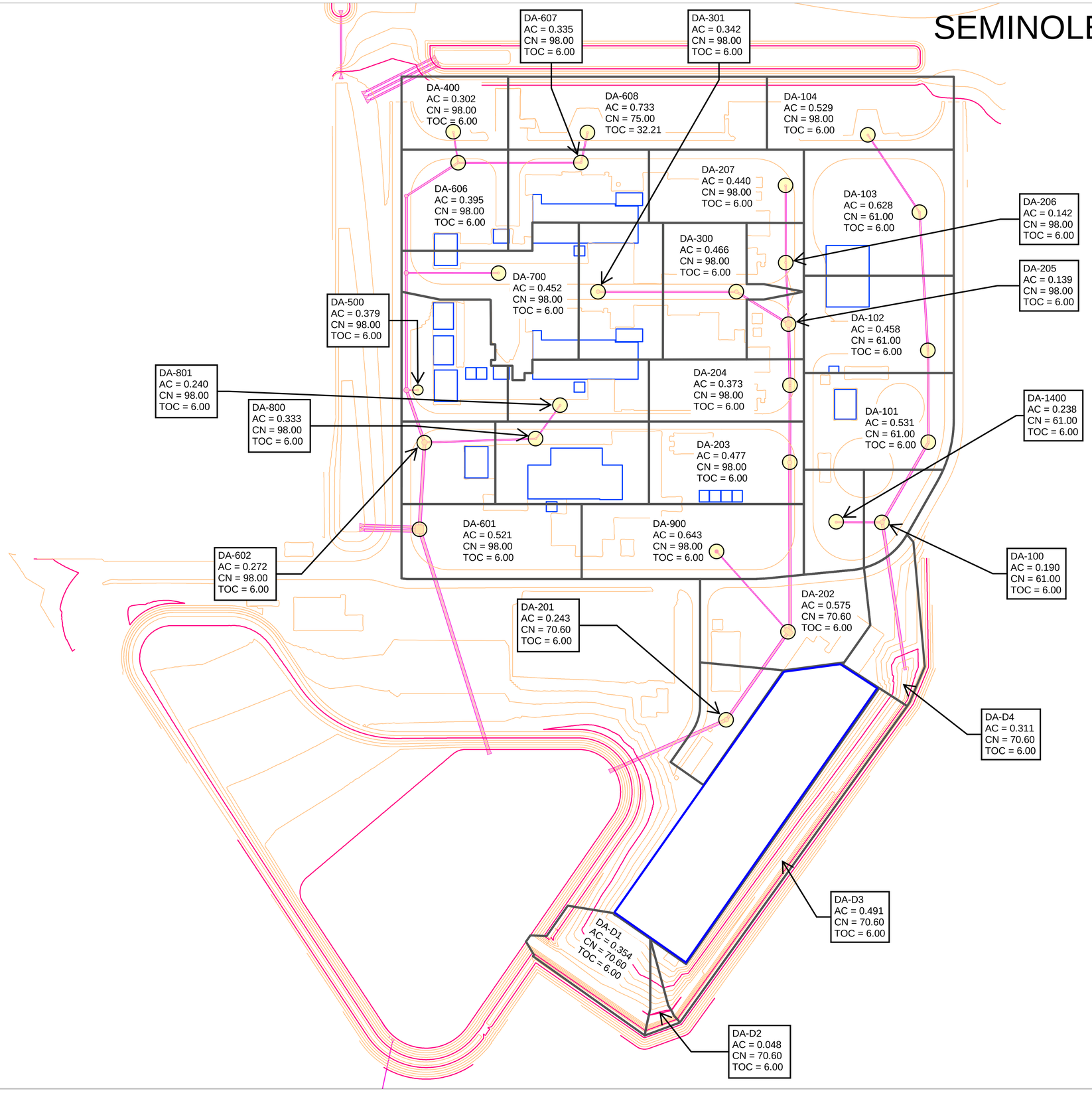
ENGINEER/DESIGN ORIGINATOR	A. ROSS
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DRAWING NUMBER

P0015690-CIV_CG-001

Jun 25, 2019 - 4:22pm Plotted By: Duane.Lewis J:\200\15690-Seminole_Gen\1B\0\CIV\Temp\ARI\CG-Grading\P0015690-Civ_CG-001.dwg Layout: Overall Grading Plan

SEMINOLE - INLET DRAINAGE AREAS



NOTES:

1. AREAS SHOWN WITH BLUE OUTLINE REPRESENT CURBED FOUNDATIONS AND WERE REMOVED FROM THE DRAINAGE AREA THEY FALL IN.

2. ALL AREAS NEAR THE SOUTH OF THE PROJECT SITE NOT SHOWN DRAINING TO AN INLET WILL DRAIN DIRECTLY TO THE RETENTION POND

3. THE COOLING TOWER AREA NORTHWEST OF THE DITCH HAS BEEN REMOVED FOR THE PURPOSE OF ANALYSIS AS WATER THAT LANDS ON THE COOLING TOWER WILL NOT END UP IN THE RETENTION BASIN

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

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

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

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

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

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

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

RUNOFF CURVE NUMBERS BY SUB-BASIN

SB-1 Curve Number - Operational Phase							
Water Surface Area (sf)	44,341.38		*Water Surface Area (ac)*	1.02		*Water Surface Curve Number*	98
Road Area (sf)	52,850.27		*Road Area (ac)*	1.21		*Road Curve Number*	98
Grassed Area (sf)	700,391.95		*Grassed Area (ac)*	16.08		*Grassed Curve Number*	39
Total Area (sf)	797,583.60		***Total Area (ac)***	18.31		***Composite Curve Number***	46.19

SB-3 Curve Number - Operational Phase							
Building Area (sf)	120,460.01		*Building Area (ac)*	2.77		*Buildings Curve Number*	98
Road Area (sf)	63,612.87		*Road Area (ac)*	1.46		*Road Curve Number*	98
Gravel Area (sf)	102,987.52		*Gravel Area (ac)*	2.36		*Gravel Curve Number*	76
Total Area (sf)	287,060.40		***Total Area (ac)***	6.59		***Composite Curve Number***	90.11

SB-4 Curve Number - Operational Phase							
Building Area (sf)	20,649.85		*Building Area (ac)*	0.47		*Buildings Curve Number*	98
Road Area (sf)	31,110.10		*Road Area (ac)*	0.71		*Road Curve Number*	98
Gravel Area (sf)	23,952.81		*Gravel Area (ac)*	0.55		*Gravel Curve Number*	76
Grass Area (sf)	103,318.85		*Grass Area (ac)*	2.37		*Grass Curve Number*	39
Total Area (sf)	179,031.60		***Total Area (ac)***	4.11		***Composite Curve Number***	61.01

SB-5 Curve Number - Operational Phase							
Building Area (sf)	79,783.15		*Building Area (ac)*	1.83		*Buildings Curve Number*	98
Road Area (sf)	44,973.91		*Road Area (ac)*	1.03		*Road Curve Number*	98
Grass Area (sf)	269,157.88		*Grass Area (ac)*	6.18		*Grass Curve Number*	39
Gravel Area (sf)	20,753.40		*Gravel Area (ac)*	0.48		*Gravel Curve Number*	76
Water Surface Area (sf)	178,596.00		*Water Surface Area (ac)*	4.10		*Water Surface Curve Number*	98
Sidewalk Area (sf)	3,072.07		*Sidewalk Area (ac)*	0.07		*Sidewalk Curve Number*	98
Total Area (sf)	596,336.40		***Total Area (ac)***	13.69		***Composite Curve Number***	70.60

While the table above shows a calculated curve number of 90 for SB-3, a curve number of 98 was used for this sub-basin in analysis based on the conservative assumption that this area is completely impervious.

OSB-1 Curve Number - Operational Phase (B&V Calculation)							
Grass Area (sf)	12,196.80		*Grass Area (ac)*	0.28		*Grass Curve Number*	39
Gravel Area (sf)	233,046.00		*Gravel Area (ac)*	5.35		*Gravel Curve Number*	98
Total Area (sf)	245,242.80		***Total Area (ac)***	5.63		***Composite Curve Number***	95

SB-2 Curve Number - Operational Phase (B&V Calculation)							
Grass Area (sf)	18,774.36		*Grass Area (ac)*	0.43		*Grass Curve Number*	39
Gravel Area (sf)	237,402.00		*Gravel Area (ac)*	5.45		*Gravel Curve Number*	98
Water Surface Area (sf)	28,270.44		*Water Surface Area (ac)*	0.65		*Water Surface Curve Number*	98
Total Area (sf)	284,446.80		***Total Area (ac)***	6.53		***Composite Curve Number***	94

SB-6 Curve Number - Operational Phase (B&V Calculation)							
Gravel Area (sf)	36,154.80		*Gravel Area (ac)*	0.83		*Gravel Curve Number*	98
Total Area (sf)	36,154.80		***Total Area (ac)***	0.83		***Composite Curve Number***	98

Because the conditions in sub-basins OSB-1, SB-2, and SB-6 have been left unchanged, the curve numbers for design will come from B&V Calculation 190285.58.5406.1102 Seminole Electric Cooperative, Inc. “P2021 Combined Cycle Post-Development Storm Water Analysis” which has been summarized in the table above. You will note a CN equal to 98 was used in the B&V Calculation for gravel surfaces, which is quite conservative and more typical of asphalt or concrete pavements. For the basins that have been updated, a CN of 76 was selected from TR-55 and used in analysis to represent gravel surfacing.

TREATMENT VOLUME CALCULATION

For discharges to Class III receiving water bodies, the retention system shall provide on-line retention of the first 1 inch of runoff over the entire site or 1.75 inches of runoff from the impervious area, whichever is greater. [Ref. 7]

Treatment Volume Option A - 1 inch over the entire drainage area (excluding the pond)

TV = one inch of runoff over drainage area

DA = Drainage Area excluding the pond

CF = Conversion Factor

RO = Runoff

$RetentionPondArea := 4.10acre$

$DA := 55.69acre - RetentionPondArea$

DA = 55.69 ac - 4.10 ac

$DA = 51.59 \cdot acre$

$CF := 12 \frac{in}{ft}$

$RO := 1in$

$TVa := \left(RO \cdot \frac{DA}{CF} \right)$

TV = (1 * (51.59 ac/12 in/ft))

$TVa = 4.299 \cdot ft \cdot acre$

Treatment Volume Option B - 1.75 inch over the impervious area (excluding the pond)

TV = 1.75 in * IA

IA = Impervious Area

RO1 = Runoff Depth over Impervious Area

RetentionPondArea = 4.10 acre

$GrassedAreaInOSB1 := 0.28acre$

$GrassedAreaInSB2 := 0.43acre$

$IA_ConstructionPhase := 55.69acre - RetentionPondArea - GrassedAreaInOSB1 - GrassedAreaInSB2$

IA_ConstructionPhase = 55.69 acres - 4.10 acres - 0.28 acres - 0.43 acres = 50.88 acres

$IA_ConstructionPhase = 50.88 \cdot acre$

$GravelArea := 8.84acre$

$RoadArea := 10.66acre$

$BuildingArea := 5.07acre$

RetentionPondArea = 4.10 acre

$IA_OperationalPhase := GravelArea + RoadArea + BuildingArea + RetentionPondArea$

IA_OperationalPhase = 8.84 acres + 10.66 acres + 5.07 acres + 4.10 acres

$IA_OperationalPhase = 28.67 acre$

To provide the most conservative value of water treatment volume required, the greater impervious area found above will be used which occurs during the construction phase of the project.

IA_ConstructionPhase (50.88 acres) > IA_OperationalPhase (28.67 acres)

$IA_Controlling := IA_ConstructionPhase$

$IA_Controlling = 50.88\,acre$

$RO1 := 1.75in$

$TVb := RO1 \cdot \frac{IA_Controlling}{CF}$ TVb = 1.75 in * (50.88 acre/12 in/ft)

$TVb = 7.42\,ft \cdot acre$

The largest volume from Option A & Option B was used as the required treatment volume in the retention pond.

Treatment Volume Required - Option B (7.42 acre-ft) > Treatment Volume Required - Option A (4.299 acre-ft)

$TV_Required := TVb = 7.42\,acre \cdot ft$

To be conservative, an additional 20% of the required volume will be provided.

$TV_WithTwentyPercentAdded := TV_Required \cdot 1.2$ = 7.42 acre-ft * 1.2

$TV_WithTwentyPercentAdded = 8.904\,acre \cdot ft$

At elevation 69 the retention pond provides a treatment volume of 8.94 acre-ft, which is where we will set our water quality elevation.

$WaterQualityElevation := 69$

$TreatmentVolumeProvidedAtEL_69 := 8.94acre \cdot ft$ 8.94 acre-ft > 8.904 acre-ft

At elevation 70, which is the invert elevation of the emergency spillway, the pond provides 12.65 acre-ft of treatment volume.

$TreatmentVolumeProvidedAtEL_70 := 12.65acre \cdot ft$ 12.65 acre-ft > 8.904 acre-ft

RETENTION POND RECOVERY TIME

$BottomAreaOfPond := 95735\,ft^2$

$BottomAreaOfPond = 2.198 \cdot acre$

$Total_Inflow_To_Pond := 1029045.77\,ft^3$

$Total_Inflow_To_Pond = 23.624 \cdot acre \cdot ft$

$Exfiltration_Rate := 5.51\,\frac{in}{hr}$

$Exfiltration_Rate = 0.459 \cdot \frac{ft}{hr}$

$$RecoveryTime := \frac{Total_Inflow_To_Pond}{BottomAreaOfPond \cdot Exfiltration_Rate}$$

$RecoveryTime = 23.41 \cdot hr$

SEDIMENT BASIN SIZING CALCULATION

The Florida Department of Environmental Protection (FDEP) mandates that sediment basins be designed to a capacity of 3,600 cubic feet per acre of drainage area (Ref. 9).

$$\text{RequiredBasinCapacity} := 3600\,\frac{\text{ft}^3}{\text{acre}}$$

$$\text{DisturbedProjectArea} := 50.06\,\text{acre}$$

$$\text{RequiredBasinVolume} := \text{RequiredBasinCapacity}\cdot\text{DisturbedProjectArea}$$

RequiredBasinVolume = 3600 cf/ac x 50.06 ac

$$\text{RequiredBasinVolume} = 180216\cdot\text{ft}^3$$

During construction, the permanent retention will be dug as designed (leaving the bottom of the basin 6 inches higher than final grade) for use as a sediment basin. The following tables show the stage storage information for both the permanent phase and sediment basin phase of the retention basin.

	TIC/KIEWIT RETENTION POND DATA DURING OPERATION (UPDATED 03/02/2020						
	ELEV. RANGE		INCREMENT		TOTAL	TOTAL	TREATMENT
			CF	AC-FT	CF	AC-FT	AC-FT
	65.00						
		66.00	105,134	2.41	105,134	2.41	
	66.00						
		67.00	125,488	2.88	230,622	5.29	2.88
	67.00						
		68.00	140,135	3.22	370,757	8.51	6.10
	68.00						
		69.00	152,028	3.49	522,785	12.00	9.59
	69.00						
WEIR		70.00	161,660	3.71	684,445	15.71	13.30
	70.00						
TOP OF BANK		71.00	168,646	3.87	853,091	19.58	

	TIC/KIEWIT SEDIMENT POND DATA DURING CONSTRUCTION (UPDATED 03/02/2020						
	ELEV. RANGE		INCREMENT		TOTAL	TOTAL	TREATMENT
			CF	AC-FT	CF	AC-FT	AC-FT
	65.50						
		66.00	52,567	1.21	52,567	1.21	
	66.00						
		67.00	125,488	2.88	178,055	4.09	2.88
	67.00						
		68.00	140,135	3.22	318,190	7.30	6.10
	68.00						
		69.00	152,028	3.49	470,218	10.79	9.59
	69.00						
WEIR		70.00	161,660	3.71	631,878	14.51	13.30
	70.00						
TOP OF BANK		71.00	168,646	3.87	800,524	18.38	

$$\text{ElevationWhereStorageRequirementMet} := 67 + \frac{\left(\text{RequiredBasinVolume} - 178055\text{ft}^3\right)}{\left(318190\text{ft}^3 - 178055\text{ft}^3\right)}$$

ElevationWhereStorageRequirementMet = 67+((180,216 cf - 178,055 cf)/(318,190 cf -178,055 cf))

$$\text{ElevationWhereStorageRequirementMet} = 67.02$$

FDEP also requires that sediment should be cleaned from the basin once storage has been reduced to 55 cubic yards per acre of drainage area (Ref. 9).

$$\text{CleanoutRequiredCapacity} := 55\,\frac{\text{yd}^3}{\text{acre}}$$

$$\text{CleanoutRequiredVolume} := \text{CleanoutRequiredCapacity} \cdot \text{DisturbedProjectArea}$$

CleanoutRequiredVolume = 55 cy/ac x 27 cf/cy x 50.06 ac

$$\text{CleanoutRequiredVolume} = 74339.1 \cdot \text{ft}^3$$

$$\text{CleanoutNecessaryElevation} := 69 + \frac{\left[\left(631878\text{ft}^3 - \text{CleanoutRequiredVolume}\right) - \left(470218\text{ft}^3\right)\right]}{631878\text{ft}^3 - 470218\text{ft}^3}$$

$$\text{CleanoutNecessaryElevation} = 69.54$$

Since the crest of the riser structure is at the water quality treatment elevation of 69.00, the sediment cleanout level will be set 6 inches below this point at 68.50, well above the required elevation.

APPENDIX C

STORMWATER MODEL OUTPUT

Project Description

File Name	Seminole - Operational.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	SCS TR-55
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	YES

Analysis Options

Start Analysis On	Jul 08, 2019	00:00:00
End Analysis On	Jul 11, 2019	00:00:00
Start Reporting On	Jul 08, 2019	00:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	1
Subbasins	39
Nodes	40
Junctions	33
Outfalls	3
Flow Diversions	0
Inlets	0
Storage Nodes	4
Links	38
Channels	4
Pipes	32
Pumps	0
Orifices	0
Weirs	2
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

SN	Rain Gage ID	Data Source	Data Source ID	Rainfall Type	Rain Units	State	County	Return Period (years)	Rainfall Depth (inches)	Rainfall Distribution
1	SEMINOLE	Time Series	TWENTY-FIVE YEAR	Cumulative	inches	Florida	Putnam	25	7.67	SCS Type II 24-hr

Subbasin Summary

SN	Subbasin ID	Area (ac)	Weighted Curve Number	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	DA-100	0.19	61.00	7.67	3.19	0.61	0.94	0 00:06:00
2	DA-101	0.53	61.00	7.67	3.20	1.70	2.59	0 00:06:00
3	DA-102	0.46	61.00	7.67	3.20	1.46	2.25	0 00:06:00
4	DA-103	0.63	61.00	7.67	3.20	2.01	3.06	0 00:06:00
5	DA-104	0.53	98.00	7.67	7.43	3.93	5.22	0 00:06:00
6	DA-1400	0.24	61.00	7.67	3.20	0.76	1.16	0 00:06:00
7	DA-201	0.24	70.60	7.67	4.25	1.03	1.59	0 00:06:00
8	DA-202	0.58	70.60	7.67	4.25	2.44	3.77	0 00:06:00
9	DA-203	0.48	98.00	7.67	7.43	3.54	4.72	0 00:06:00
10	DA-204	0.37	98.00	7.67	7.43	2.77	3.65	0 00:06:00
11	DA-205	0.14	98.00	7.67	7.43	1.03	1.38	0 00:06:00
12	DA-206	0.14	98.00	7.67	7.43	1.06	1.38	0 00:06:00
13	DA-207	0.44	98.00	7.67	7.43	3.27	4.34	0 00:06:00
14	DA-300	0.47	98.00	7.67	7.43	3.46	4.59	0 00:06:00
15	DA-301	0.34	98.00	7.67	7.43	2.54	3.33	0 00:06:00
16	DA-400	0.30	98.00	7.67	7.43	2.24	2.96	0 00:06:00
17	DA-500	0.38	98.00	7.67	7.43	2.82	3.71	0 00:06:00
18	DA-601	0.52	98.00	7.67	7.43	3.87	5.09	0 00:06:00
19	DA-602	0.27	98.00	7.67	7.43	2.02	2.64	0 00:06:00
20	DA-606	0.40	98.00	7.67	7.43	2.93	3.90	0 00:06:00
21	DA-607	0.34	98.00	7.67	7.43	2.49	3.27	0 00:06:00
22	DA-608	0.73	75.00	7.67	4.75	3.48	2.96	0 00:32:12
23	DA-700	0.45	98.00	7.67	7.43	3.36	4.46	0 00:06:00
24	DA-800	0.33	98.00	7.67	7.43	2.47	3.27	0 00:06:00
25	DA-801	0.24	98.00	7.67	7.43	1.78	2.39	0 00:06:00
26	DA-900	0.64	98.00	7.67	7.43	4.78	6.29	0 00:06:00
27	DA-D1	0.35	70.60	7.67	4.25	1.50	2.31	0 00:06:00
28	DA-D2	0.05	70.60	7.67	4.24	0.20	0.34	0 00:06:00
29	DA-D3	0.49	70.60	7.67	4.25	2.09	3.23	0 00:06:00
30	DA-D4	0.31	70.60	7.67	4.25	1.32	2.05	0 00:06:00
31	DA-P1	11.00	70.60	7.67	4.25	46.74	72.06	0 00:06:00
32	POST-OSB1	5.63	95.00	7.67	7.07	39.82	54.03	0 00:06:24
33	POST-SB1	18.31	47.00	7.67	1.76	32.17	32.90	0 00:17:55
34	POST-SB2	6.53	94.00	7.67	6.95	45.41	61.88	0 00:06:36
35	PRE-OSB1	5.63	95.00	7.67	7.07	39.82	54.03	0 00:06:24
36	PRE-SB1	5.69	41.00	7.67	1.20	6.81	1.73	0 01:47:42
37	PRE-SB2	26.64	37.00	7.67	0.85	22.75	4.92	0 01:48:42
38	PRE-SB3	16.90	37.00	7.67	0.85	14.43	3.93	0 01:15:00
39	PRE-SB4	0.83	36.00	7.67	0.77	0.64	0.20	0 00:52:18

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	100	Junction	68.24	73.50	0.00	74.00	0.00	14.57	69.64	0.00	3.86	0 00:00	0.00	0.00
2	101	Junction	69.04	73.50	0.00	74.00	0.00	12.59	70.61	0.00	2.89	0 00:00	0.00	0.00
3	102	Junction	69.72	73.50	0.00	74.00	0.00	10.21	71.34	0.00	2.16	0 00:00	0.00	0.00
4	103	Junction	70.00	73.50	0.00	74.00	0.00	8.17	71.67	0.00	1.83	0 00:00	0.00	0.00
5	104	Junction	70.37	73.50	0.00	74.00	0.00	5.20	72.01	0.00	1.49	0 00:00	0.00	0.00
6	201	Junction	66.60	71.83	0.00	71.83	0.00	33.51	68.19	0.00	3.64	0 00:00	0.00	0.00
7	202	Junction	68.15	73.50	0.00	74.00	0.00	32.03	69.95	0.00	3.55	0 00:00	0.00	0.00
8	203	Junction	68.80	73.50	0.00	74.00	0.00	22.56	70.94	0.00	2.56	0 00:00	0.00	0.00
9	204	Junction	69.45	73.50	0.00	74.00	0.00	18.11	71.49	0.00	2.01	0 00:00	0.00	0.00
10	205	Junction	69.67	73.50	0.00	74.00	0.00	14.67	71.73	0.00	1.77	0 00:00	0.00	0.00
11	206	Junction	70.80	73.50	0.00	74.00	0.00	5.62	72.18	0.00	1.32	0 00:00	0.00	0.00
12	207	Junction	71.00	73.50	0.00	74.00	0.00	4.31	72.39	0.00	1.11	0 00:00	0.00	0.00
13	300	Junction	69.96	73.50	0.00	74.00	0.00	7.98	71.93	0.00	1.57	0 00:00	0.00	0.00
14	301	Junction	70.47	73.50	0.00	74.00	0.00	3.32	72.16	0.00	1.34	0 00:00	0.00	0.00
15	400	Junction	70.72	73.50	0.00	74.00	0.00	2.95	72.06	0.00	1.44	0 00:00	0.00	0.00
16	500	Junction	70.80	73.50	0.00	74.00	0.00	3.69	72.14	0.00	1.36	0 00:00	0.00	0.00
17	601	Junction	67.40	73.50	0.00	74.00	0.00	80.38	70.40	0.00	3.10	0 00:00	0.00	0.00
18	602	Junction	68.06	73.50	0.00	74.00	0.00	26.58	70.67	0.00	2.83	0 00:00	0.00	0.00
19	603	Junction	68.65	73.50	0.00	74.00	0.00	18.66	70.95	0.00	2.55	0 00:00	0.00	0.00
20	604	Junction	69.40	73.50	0.00	74.00	0.00	15.26	71.42	0.00	2.08	0 00:00	0.00	0.00
21	605	Junction	69.60	73.50	0.00	74.00	0.00	11.09	71.57	0.00	1.93	0 00:00	0.00	0.00
22	606	Junction	69.93	73.50	0.00	74.00	0.00	11.27	71.91	0.00	1.59	0 00:00	0.00	0.00
23	607	Junction	70.34	73.50	0.00	74.00	0.00	4.46	72.27	0.00	1.23	0 00:00	0.00	0.00
24	608	Junction	70.48	73.50	0.00	74.00	0.00	2.92	72.31	0.00	1.19	0 00:00	0.00	0.00
25	700	Junction	70.95	73.50	0.00	74.00	0.00	4.45	72.36	0.00	1.14	0 00:00	0.00	0.00
26	800	Junction	70.18	73.50	0.00	74.00	0.00	5.58	71.44	0.00	2.06	0 00:00	0.00	0.00
27	801	Junction	70.56	73.50	0.00	74.00	0.00	2.38	71.56	0.00	1.94	0 00:00	0.00	0.00
28	900	Junction	70.25	73.50	0.00	74.00	0.00	6.26	72.44	0.00	1.06	0 00:00	0.00	0.00
29	1400	Junction	69.89	73.50	0.00	74.00	0.00	1.12	70.41	0.00	3.09	0 00:00	0.00	0.00
30	D1	Junction	66.05	71.00	0.00	0.00	0.00	20.97	67.00	0.00	4.01	0 00:00	0.00	0.00
31	D2	Junction	66.15	71.00	0.00	0.00	0.00	19.42	67.34	0.00	3.66	0 00:00	0.00	0.00
32	D3	Junction	67.54	71.00	0.00	0.00	0.00	19.31	68.88	0.00	2.12	0 00:00	0.00	0.00
33	D4	Junction	67.65	71.00	0.00	0.00	0.00	16.52	68.97	0.00	2.03	0 00:00	0.00	0.00
34	EMRG_OF	Outfall	65.00					0.00	65.00					
35	EMRG-OF-2	Outfall	62.78					0.00	62.78					
36	Out-14	Outfall	0.00					53.50	0.00					
37	P1	Storage Node	65.00	71.00	0.00		0.00	197.16	66.71				0.00	0.00
38	SB1-DITCH	Storage Node	73.00	77.50	0.00		0.00	32.58	74.81				0.00	0.00
39	SB2-DITCH	Storage Node	70.00	73.00	0.00		0.00	70.51	71.35				0.00	0.00
40	SWYD	Storage Node	74.00	78.00	0.00		0.00	53.43	75.92				0.00	0.00

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/ Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged (min)
1	100	Pipe	100	D4	194.39	68.24	67.65	0.3000	36.000	0.0120	14.58	39.72	0.37	4.73	1.34	0.45	0.00
2	100-101	Pipe	101	100	120.00	69.04	68.74	0.2500	30.000	0.0120	12.58	22.22	0.57	4.53	1.33	0.55	0.00
3	100-1400	Pipe	1400	100	60.00	69.89	69.74	0.2500	15.000	0.0120	1.11	3.50	0.32	2.64	0.46	0.38	0.00
4	101-102	Pipe	102	101	120.00	69.72	69.54	0.1500	24.000	0.0120	10.12	9.49	1.07	4.37	1.34	0.69	0.00
5	102-103	Pipe	103	102	180.00	70.00	69.82	0.1000	24.000	0.0120	8.06	7.75	1.04	3.00	1.56	0.80	0.00
6	103-104	Pipe	104	103	120.00	70.37	70.25	0.1000	18.000	0.0120	5.20	3.60	1.45	2.97	1.45	0.98	0.00
7	1100-1101	Pipe	SB1-DITCH	SB2-DITCH	94.00	74.00	73.00	1.0600	24.000	0.0150	17.92	60.67	0.30	5.28	0.78	0.39	0.00
8	1200-1201	Pipe	SWYD	SB2-DITCH	76.33	74.00	73.00	1.3100	18.000	0.0150	11.23	10.42	1.08	6.57	1.39	0.93	0.00
9	200-201	Pipe	201	P1	160.00	66.60	65.00	1.0000	42.000	0.0120	33.58	108.99	0.31	10.30	1.33	0.38	0.00
10	201-202	Pipe	202	201	140.00	68.15	67.10	0.7500	36.000	0.0120	32.01	62.58	0.51	7.97	1.60	0.55	0.00
11	202-203	Pipe	203	202	220.00	68.80	68.25	0.2500	36.000	0.0150	22.45	28.90	0.78	4.70	1.85	0.64	0.00
12	202-900	Pipe	900	202	140.00	70.25	69.90	0.2500	15.000	0.0120	6.26	3.50	1.79	5.37	1.13	0.90	0.00
13	203-204	Pipe	204	203	100.00	69.45	69.30	0.1500	30.000	0.0120	17.99	17.21	1.05	4.65	1.76	0.74	0.00
14	204-205	Pipe	205	204	80.00	69.67	69.55	0.1500	30.000	0.0120	14.55	17.21	0.85	3.47	1.93	0.80	0.00
15	205-206	Pipe	206	205	80.00	70.80	70.72	0.1000	18.000	0.0120	5.55	3.60	1.54	3.81	1.14	0.80	0.00
16	205-300	Pipe	300	205	80.00	69.96	69.84	0.1500	24.000	0.0150	7.76	7.59	1.02	2.51	1.86	0.97	0.00
17	206-207	Pipe	207	206	100.00	71.00	70.90	0.1000	18.000	0.0120	4.26	3.60	1.18	2.58	1.31	0.89	0.00
18	300-301	Pipe	301	300	180.00	70.47	70.29	0.1000	18.000	0.0120	3.43	3.60	0.95	1.94	1.50	1.00	4.00
19	600-601	Pipe	601	P1	300.00	67.40	65.00	0.8000	48.000	0.0150	80.74	111.23	0.73	12.37	2.08	0.52	0.00
20	601-1000	Pipe	SB2-DITCH	601	70.39	70.00	68.40	2.2800	36.000	0.0120	53.50	218.22	0.25	9.65	1.65	0.55	0.00
21	601-602	Pipe	602	601	113.00	68.06	67.90	0.1500	42.000	0.0120	26.22	42.21	0.62	3.64	2.52	0.73	0.00
22	602-603	Pipe	603	602	71.88	68.65	68.56	0.1300	36.000	0.0120	18.55	25.57	0.73	3.44	2.15	0.73	0.00
23	602-800	Pipe	800	602	145.00	70.18	69.81	0.2500	18.000	0.0120	5.49	5.69	0.96	4.01	1.06	0.72	0.00
24	603-500	Pipe	500	603	14.96	70.80	70.75	0.3300	12.000	0.0120	3.69	2.23	1.65	4.92	0.91	0.91	0.00
25	603-604	Pipe	604	603	152.44	69.40	69.15	0.1600	30.000	0.0120	15.15	17.91	0.85	3.80	1.84	0.76	0.00
26	604-605	Pipe	605	604	100.00	69.60	69.50	0.1000	30.000	0.0120	10.92	14.05	0.78	2.72	1.87	0.78	0.00
27	604-700	Pipe	604	700	120.00	70.65	70.95	-0.2500	15.000	0.0120	4.52	3.50	1.29	4.09	1.05	0.84	0.00
28	605-606	Pipe	606	605	80.00	69.93	69.85	0.1000	24.000	0.0120	11.09	7.75	1.43	3.72	1.78	0.92	0.00
29	606-400	Pipe	400	606	40.00	70.72	70.68	0.1000	15.000	0.0120	2.98	2.21	1.35	2.68	1.21	0.99	0.00
30	606-607	Pipe	607	606	160.00	70.34	70.18	0.1000	18.000	0.0120	4.47	3.60	1.24	2.87	1.50	1.00	8.00
31	607-608	Pipe	608	607	40.00	70.48	70.44	0.1000	18.000	0.0120	2.93	3.60	0.81	2.16	1.50	1.00	8.00
32	800-801	Pipe	801	800	54.00	70.56	70.43	0.2500	15.000	0.0120	2.35	3.50	0.67	2.30	0.99	0.81	0.00
33	D0-D1	Channel	D1	P1	189.00	66.05	65.50	0.2900	59.520	0.0320	21.24	521.88	0.04	2.20	0.94	0.19	0.00
34	D1-D2	Channel	D2	D1	35.00	66.15	66.05	0.2900	58.200	0.0320	19.15	333.82	0.06	2.71	1.07	0.22	0.00
35	D2-D3	Channel	D3	D2	508.00	67.54	66.15	0.2700	41.520	0.0320	19.13	156.43	0.12	2.22	1.26	0.36	0.00
36	D3-D4	Channel	D4	D3	35.77	67.65	67.54	0.2900	40.200	0.0320	16.28	170.37	0.10	1.65	1.32	0.40	0.00
37	EMERGENCY-DISCHARGE-RISER	Weir	P1	EMRG-OF-2		65.00	62.78				0.00						
38	EMERGENCY-OVERFLOW-SPILLWAY	Weir	P1	EMRG_OF		65.00	65.00				0.00						

Subbasin Hydrology

Subbasin : DA-100

Input Data

Area (ac) 0.19
Weighted Curve Number 61.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.19	-	61.00
Composite Area & Weighted CN	0.19		61.00

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation :

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where :

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's roughness

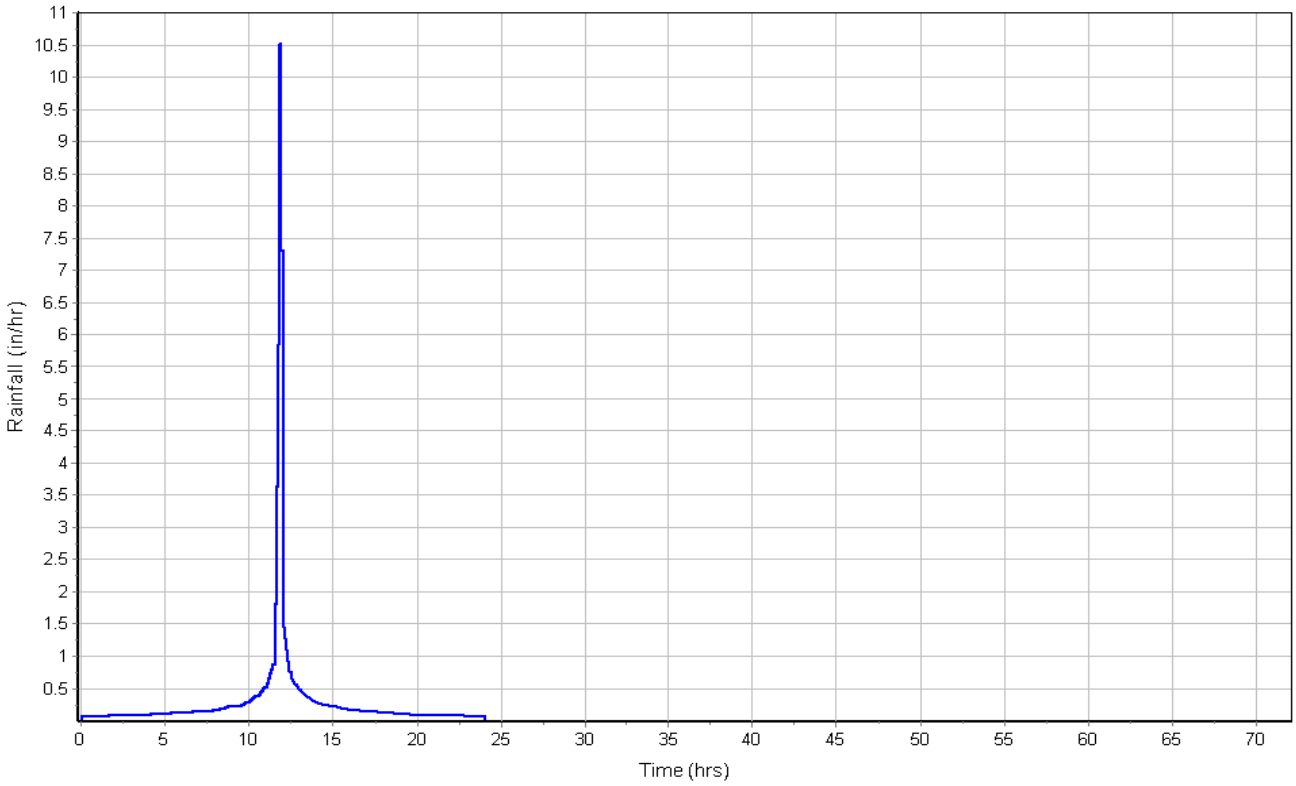
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

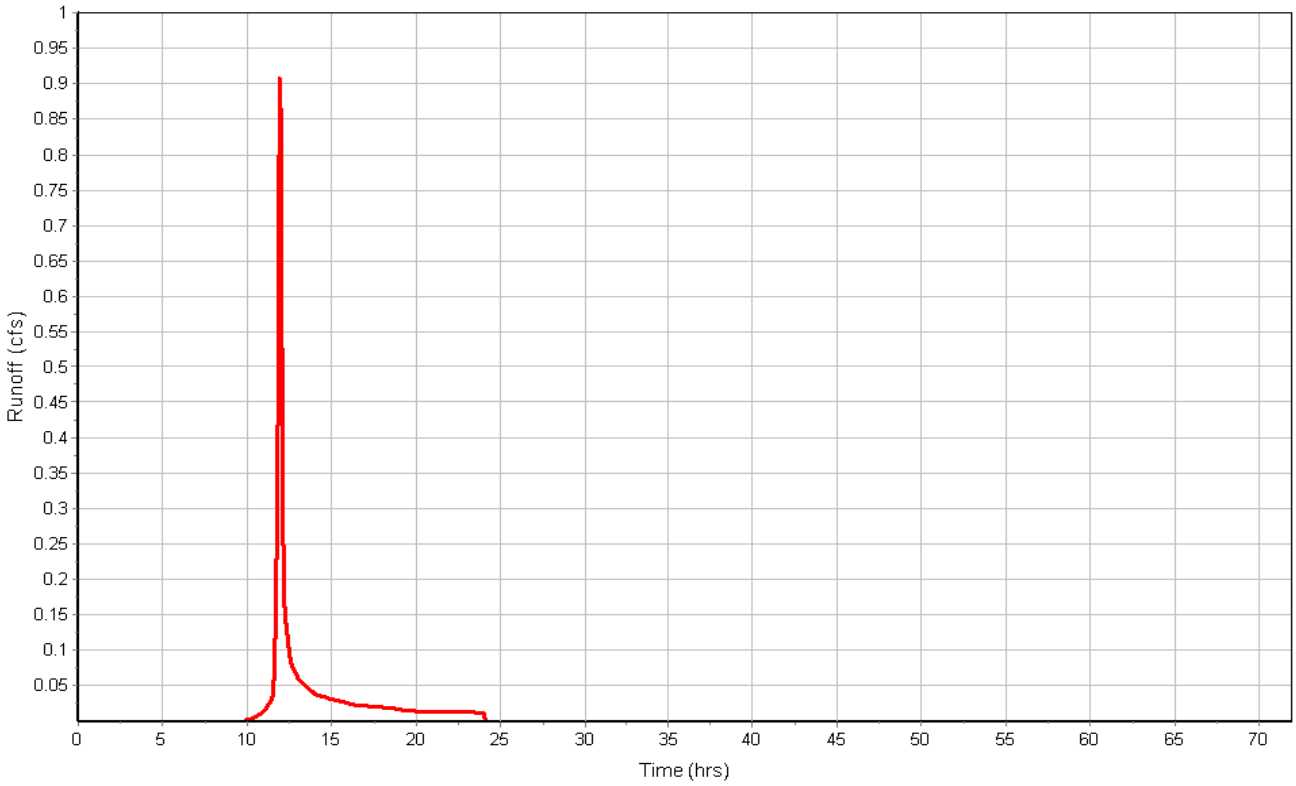
Total Rainfall (in) 7.67
Total Runoff (in) 3.19
Peak Runoff (cfs) 0.94
Weighted Curve Number 61.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-100

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-101

Input Data

Area (ac) 0.53
Weighted Curve Number 61.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.56	-	61.00
Composite Area & Weighted CN	0.56		61.00

Time of Concentration

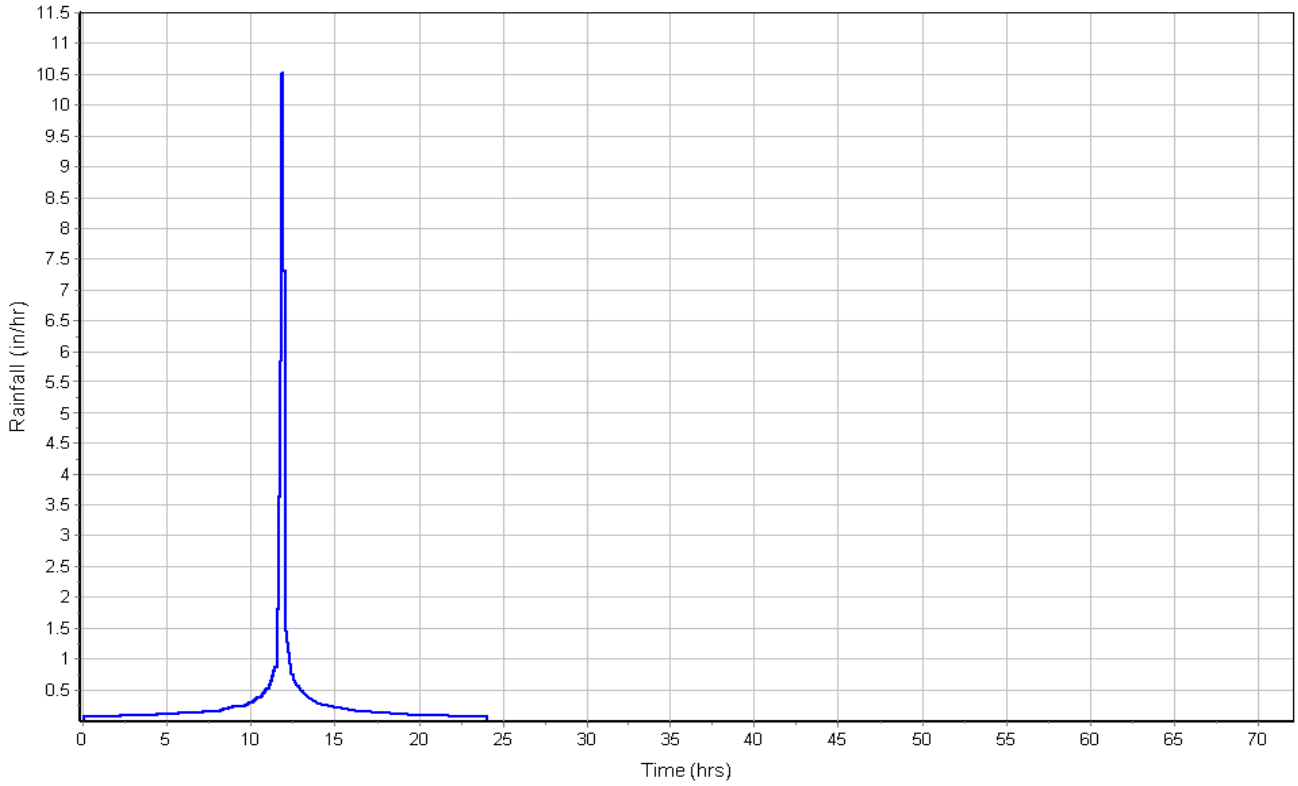
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Subbasin Runoff Results

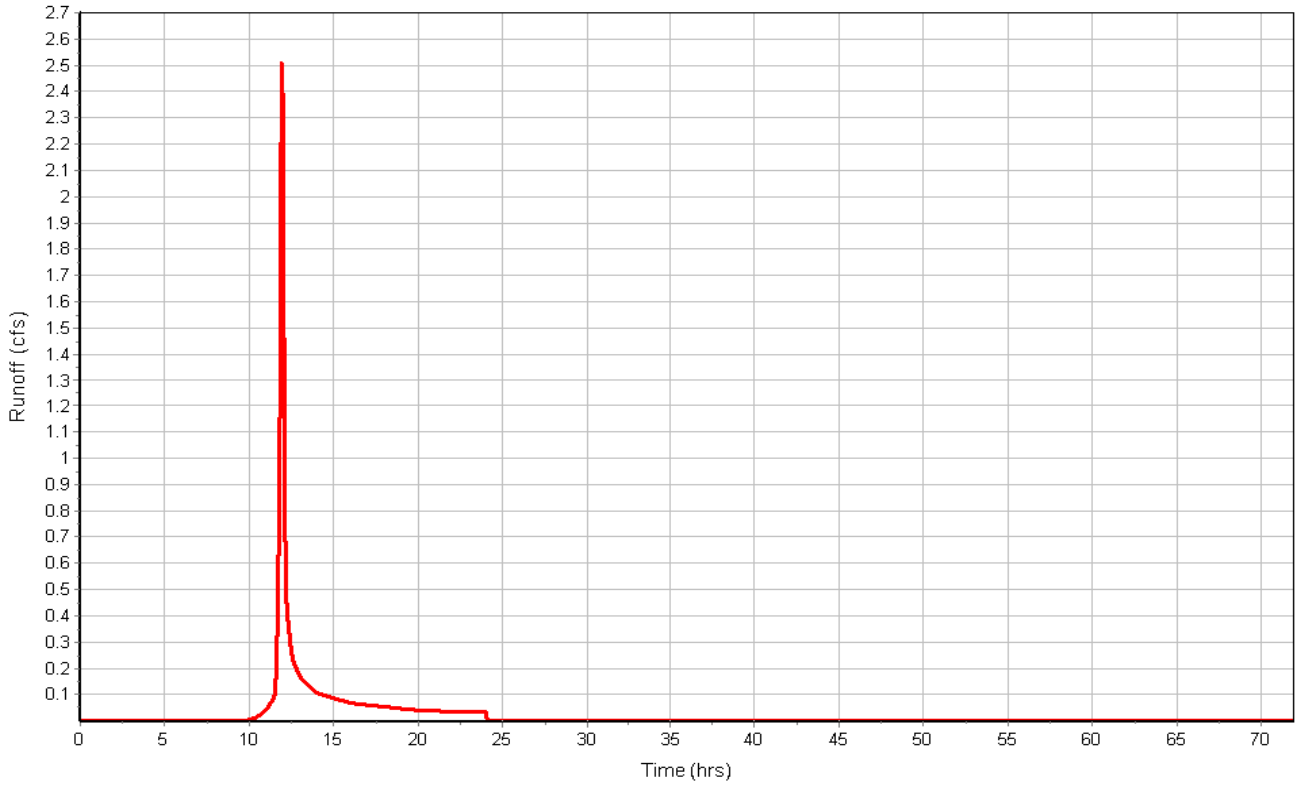
Total Rainfall (in) 7.67
Total Runoff (in) 3.20
Peak Runoff (cfs) 2.59
Weighted Curve Number 61.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-101

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-102

Input Data

Area (ac) 0.46
Weighted Curve Number 61.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.57	-	61.00
Composite Area & Weighted CN	0.57		61.00

Time of Concentration

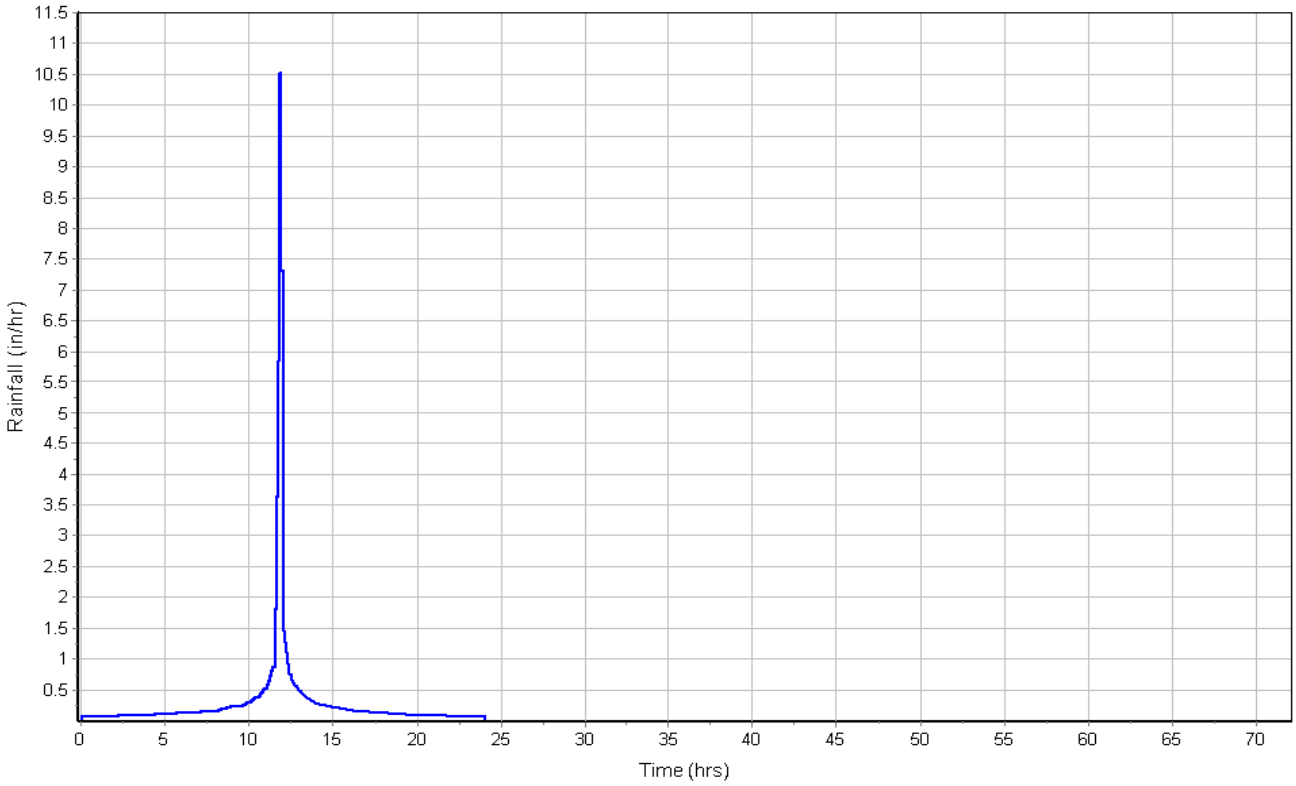
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Subbasin Runoff Results

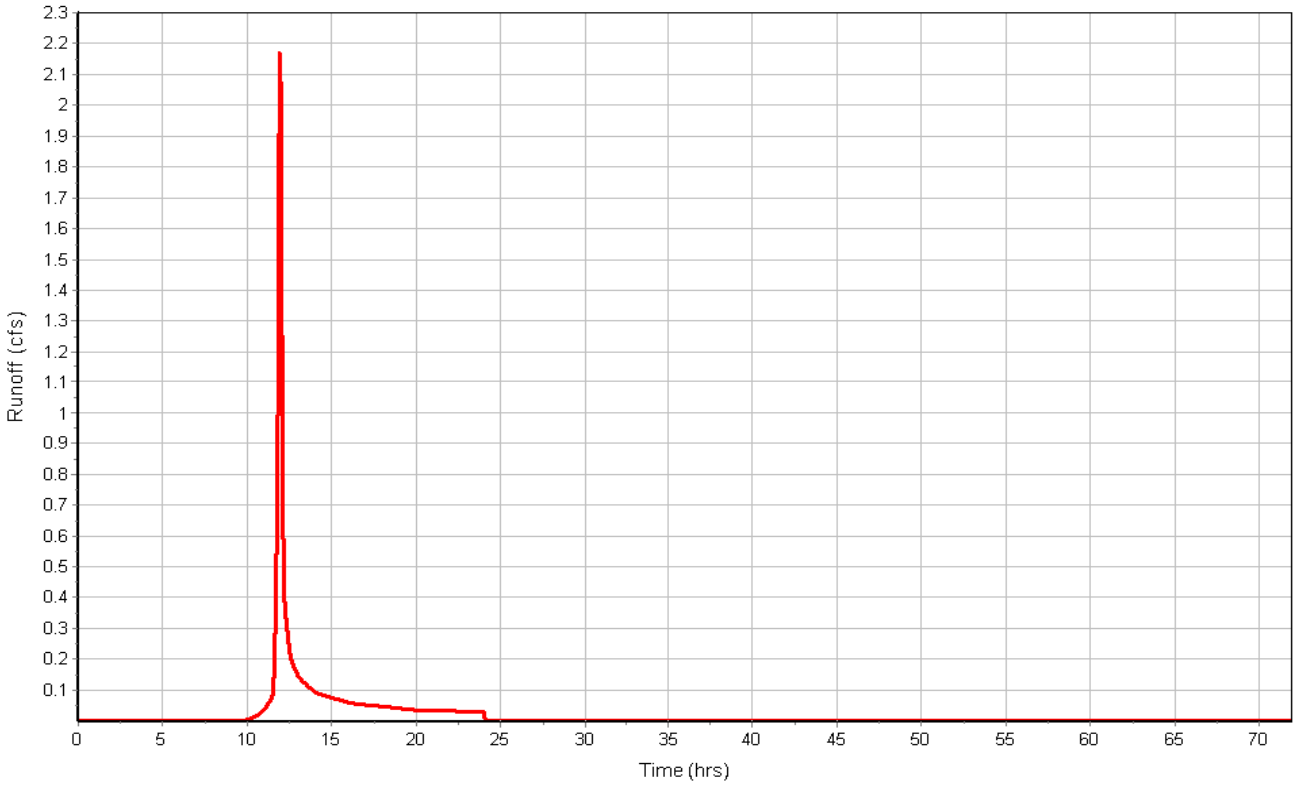
Total Rainfall (in) 7.67
Total Runoff (in) 3.20
Peak Runoff (cfs) 2.25
Weighted Curve Number 61.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-102

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-103

Input Data

Area (ac) 0.63
Weighted Curve Number 61.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.73	-	61.00
Composite Area & Weighted CN	0.73		61.00

Time of Concentration

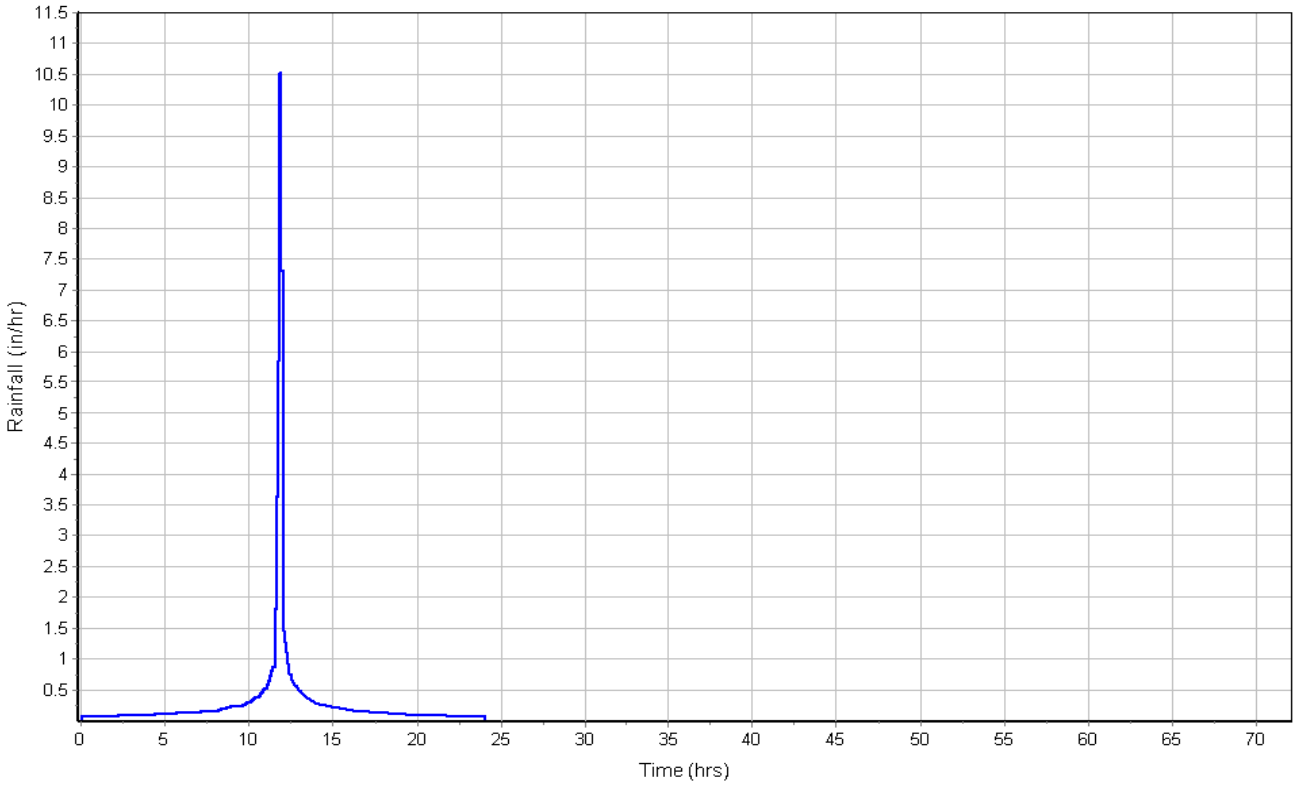
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

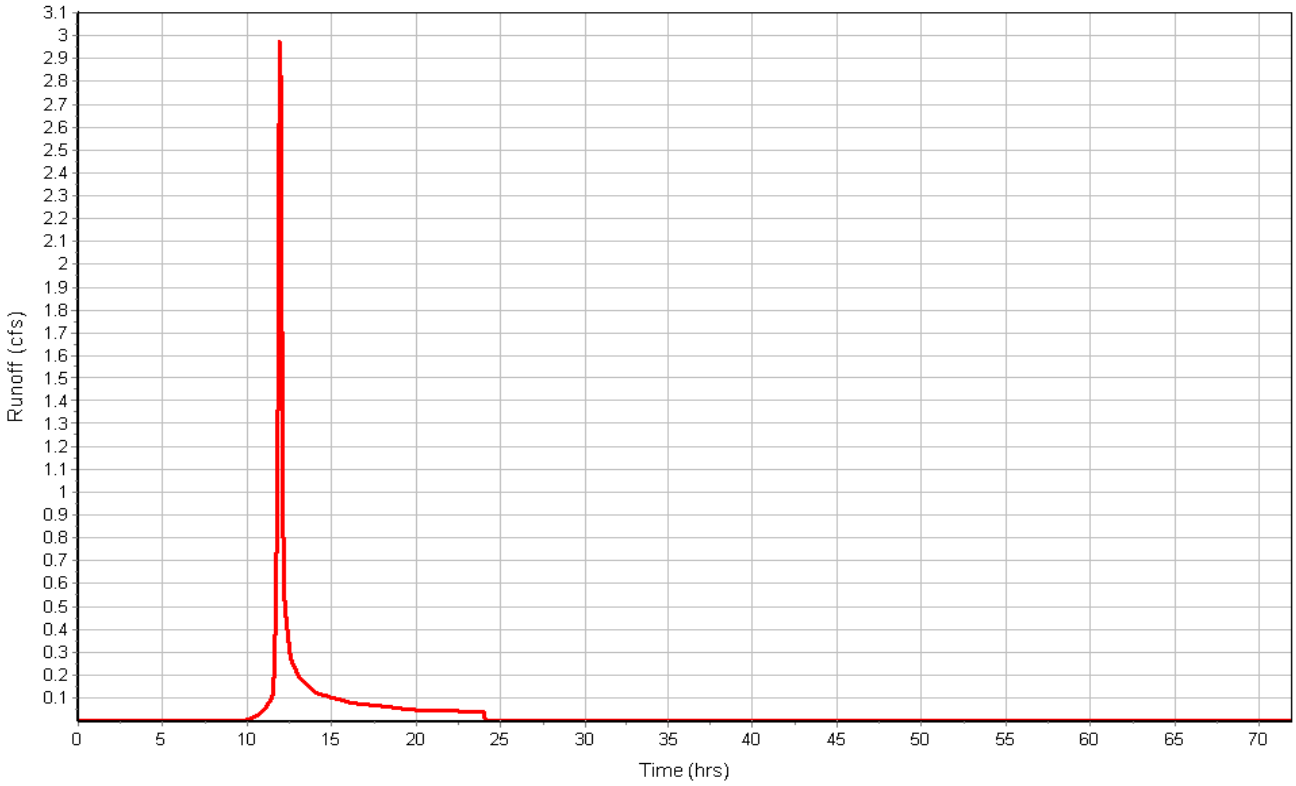
Total Rainfall (in) 7.67
Total Runoff (in) 3.20
Peak Runoff (cfs) 3.06
Weighted Curve Number 61.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-103

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-104

Input Data

Area (ac) 0.53
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.53	-	98.00
Composite Area & Weighted CN	0.53		98.00

Time of Concentration

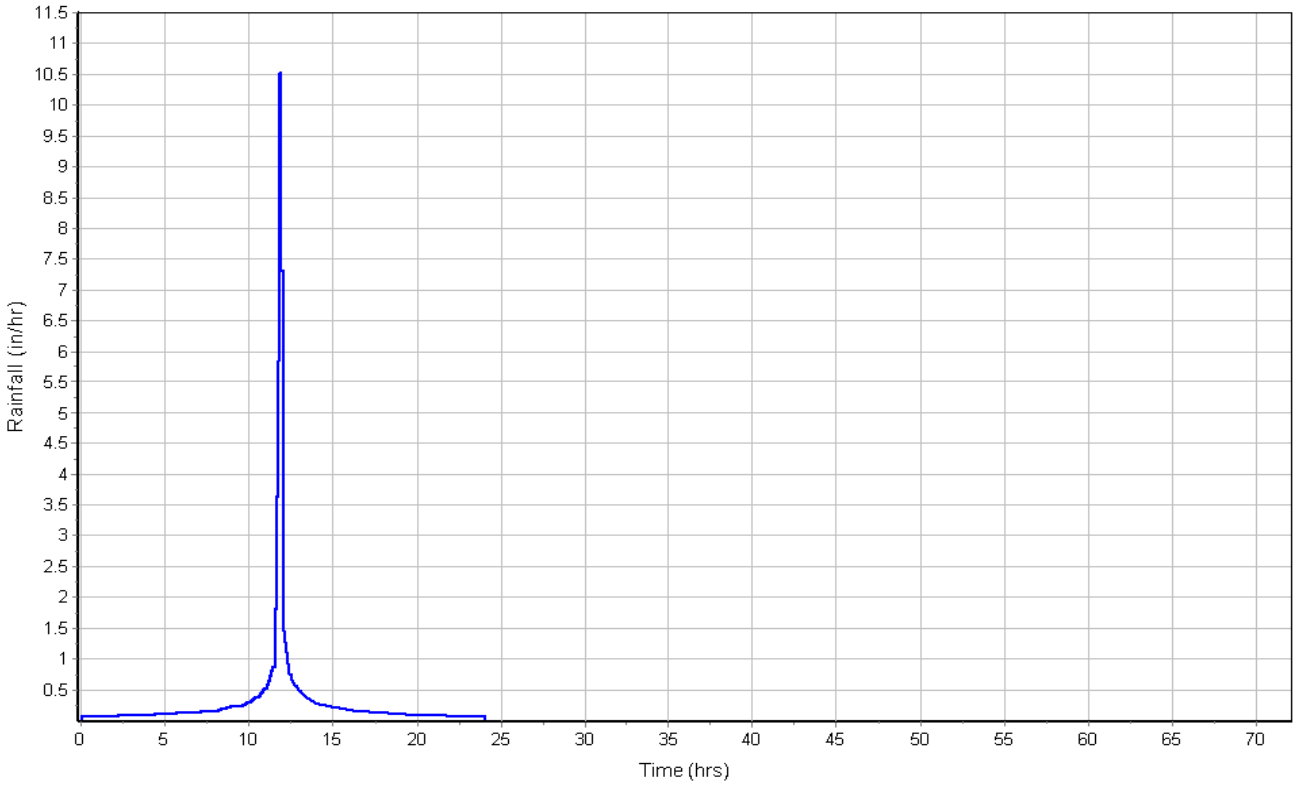
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

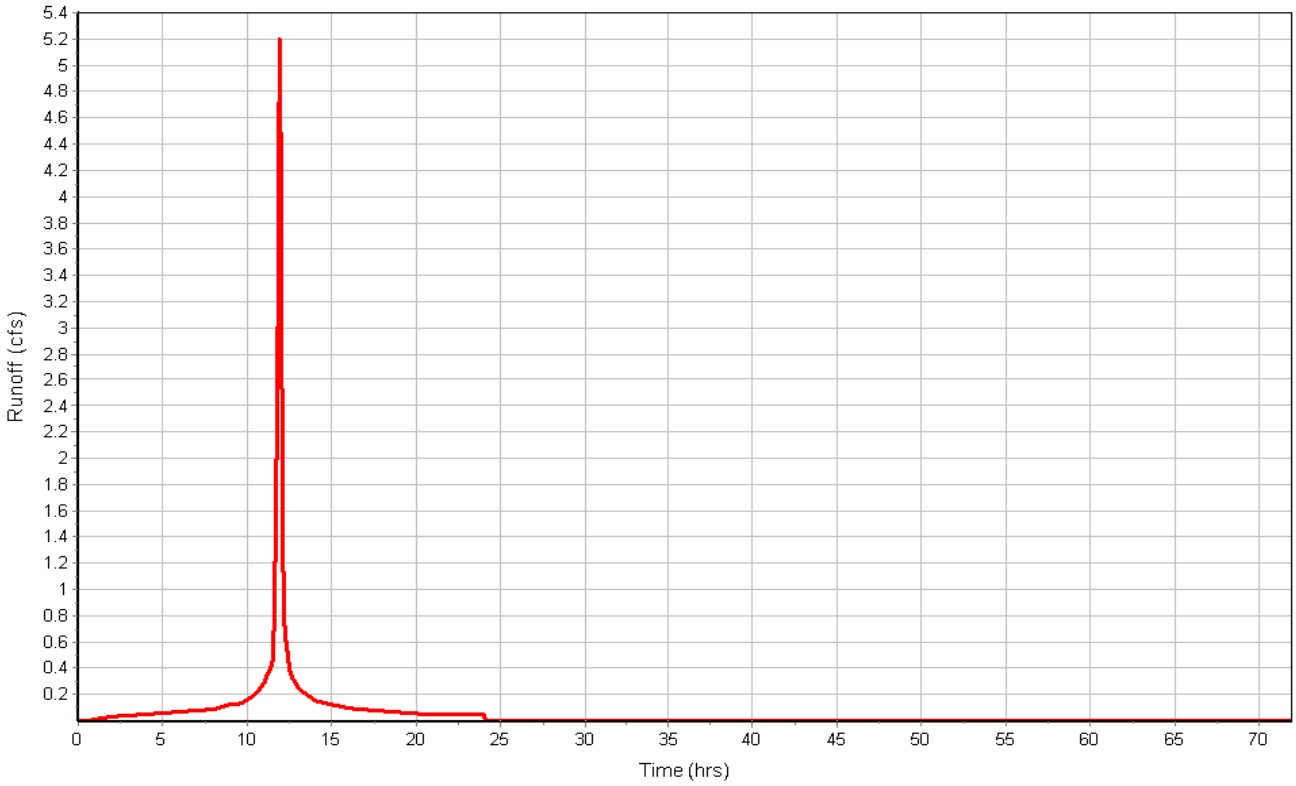
Total Rainfall (in) 7.67
Total Runoff (in) 7.43
Peak Runoff (cfs) 5.22
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-104

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-1400

Input Data

Area (ac) 0.24
Weighted Curve Number 61.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.24	-	61.00
Composite Area & Weighted CN	0.24		61.00

Time of Concentration

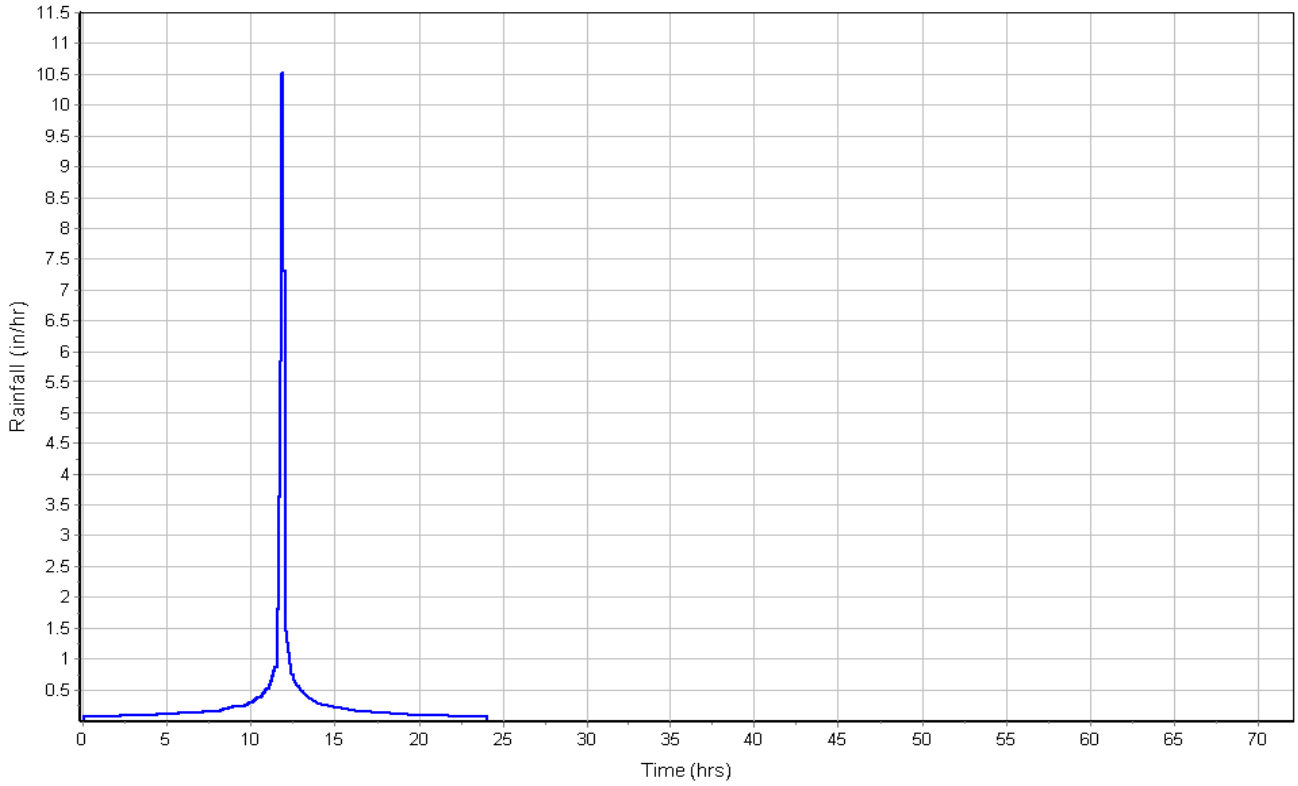
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

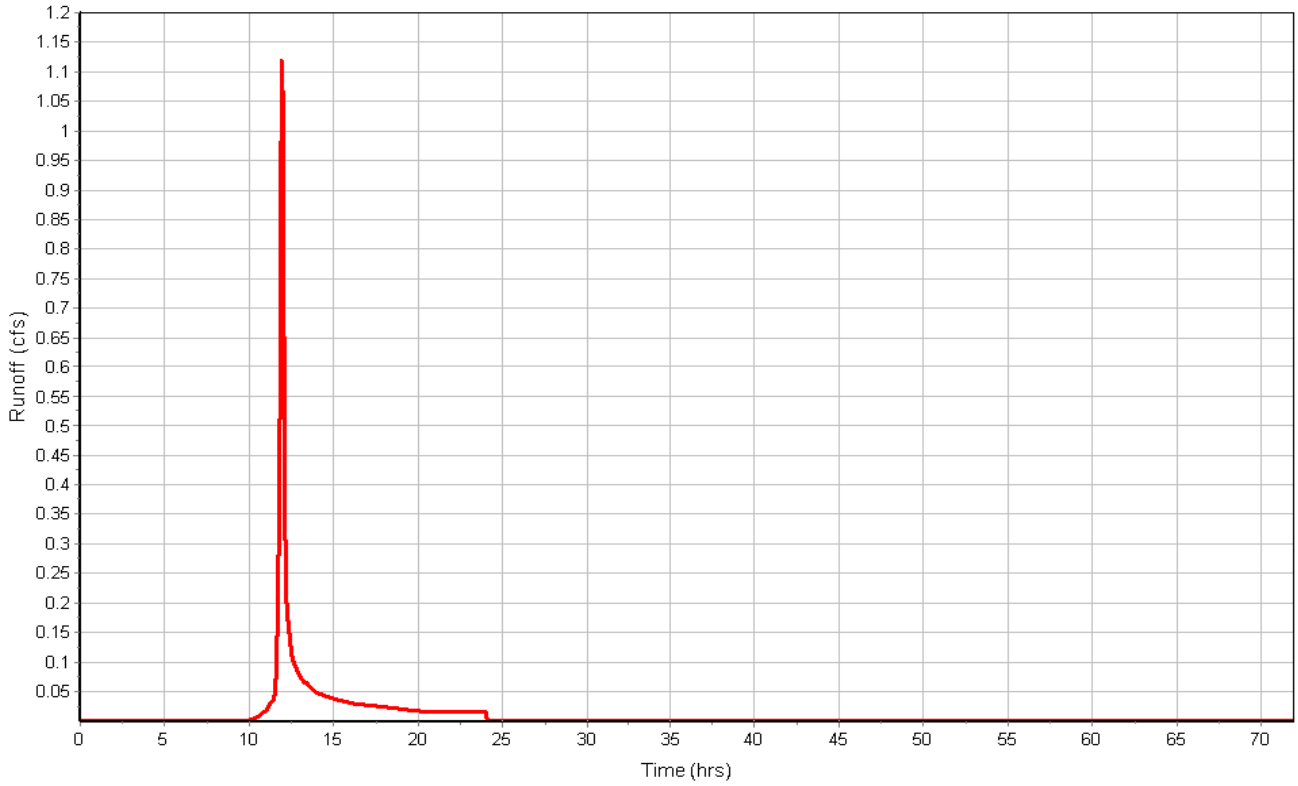
Total Rainfall (in) 7.67
Total Runoff (in) 3.20
Peak Runoff (cfs) 1.16
Weighted Curve Number 61.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-1400

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-201

Input Data

Area (ac) 0.24
Weighted Curve Number 70.60
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.52	-	70.60
Composite Area & Weighted CN	0.52		70.60

Time of Concentration

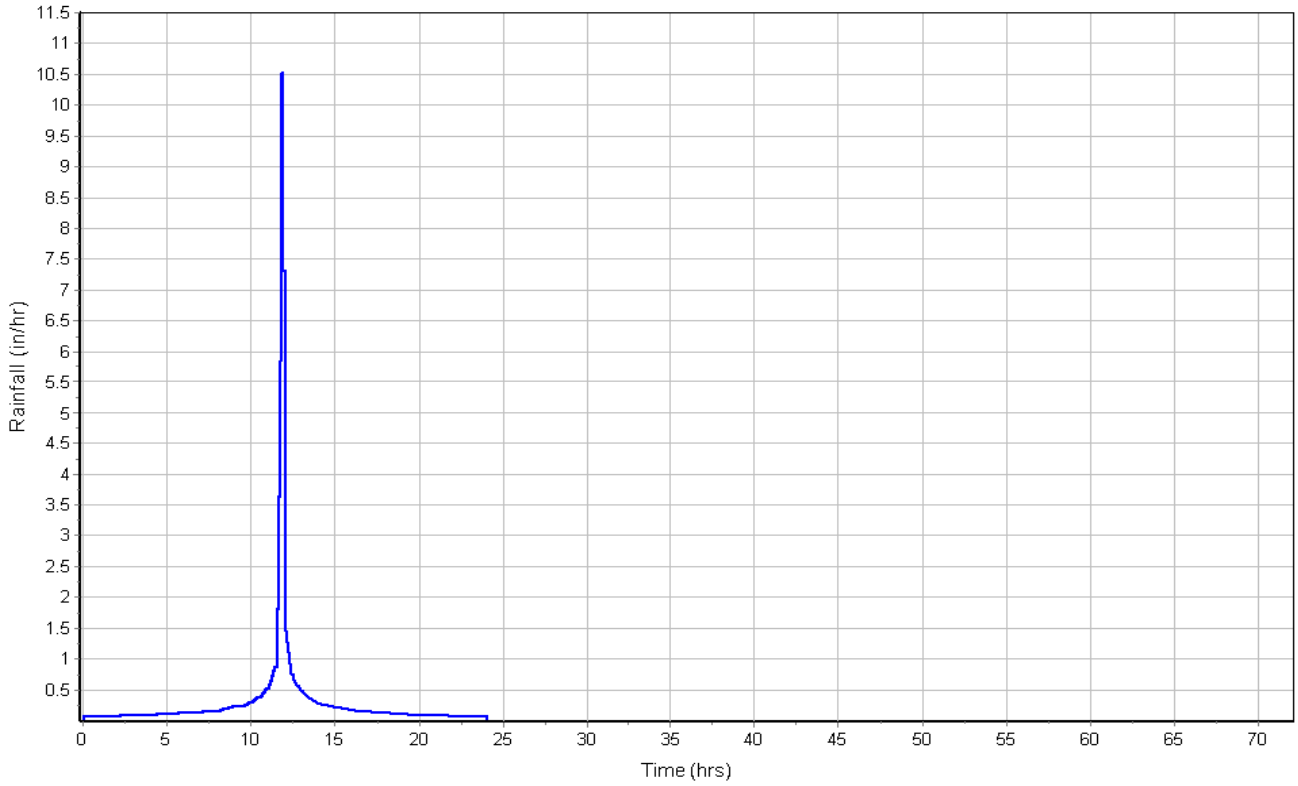
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Subbasin Runoff Results

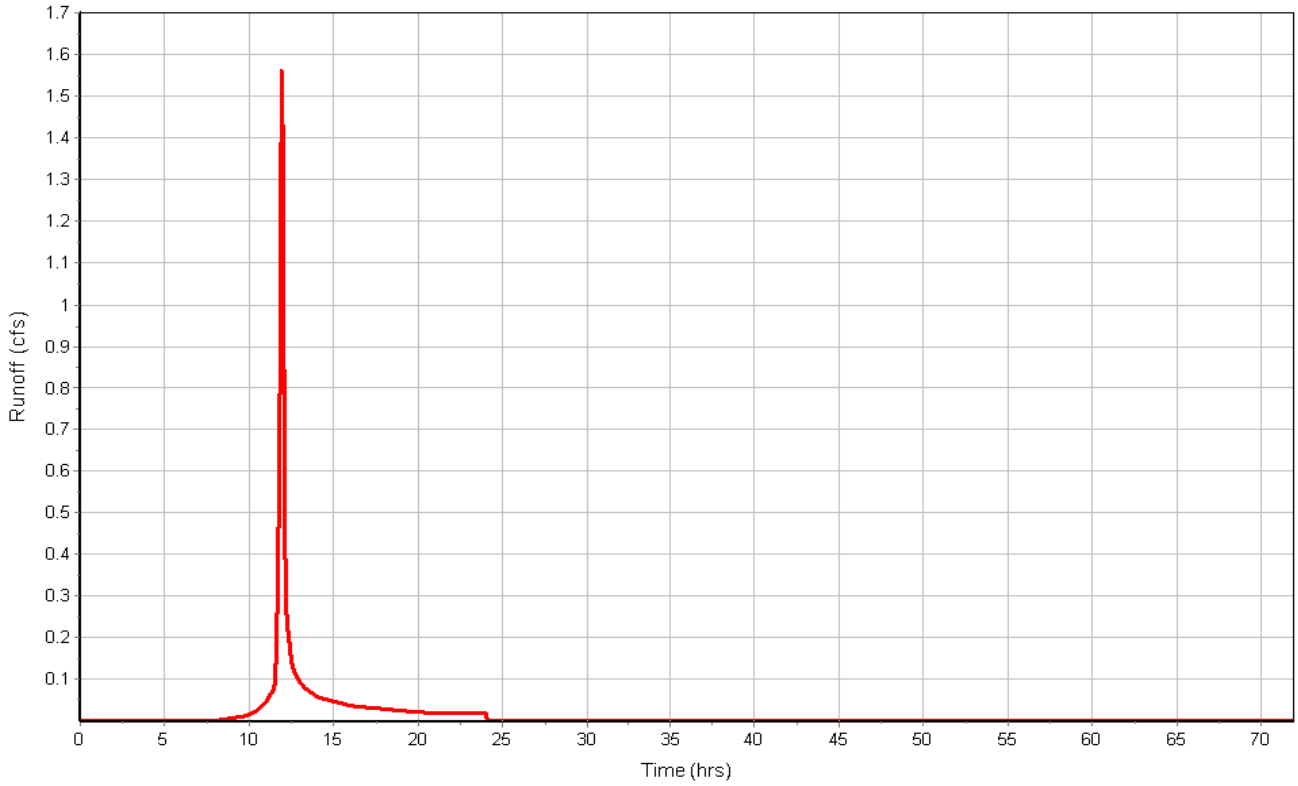
Total Rainfall (in) 7.67
Total Runoff (in) 4.25
Peak Runoff (cfs) 1.59
Weighted Curve Number 70.60
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-201

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-202

Input Data

Area (ac) 0.58
Weighted Curve Number 70.60
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.58	-	70.60
Composite Area & Weighted CN	0.58		70.60

Time of Concentration

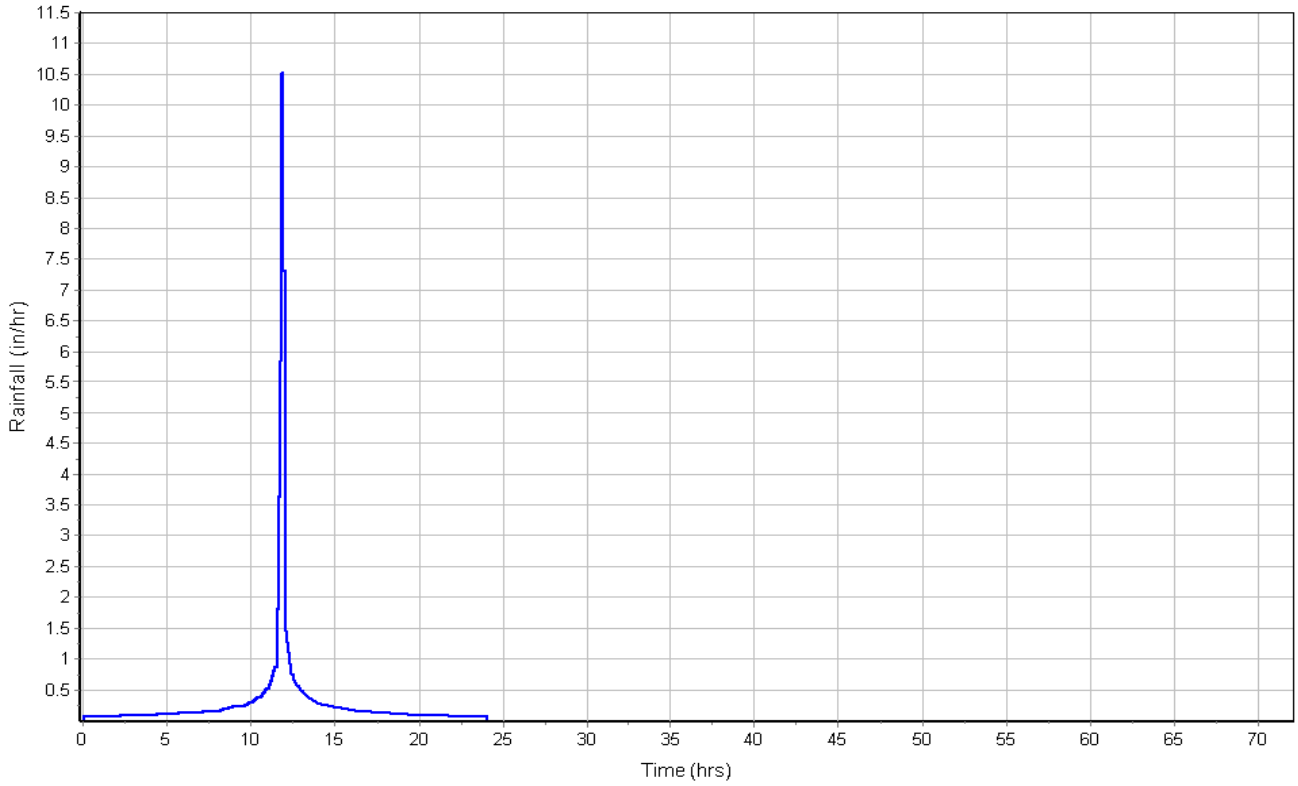
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

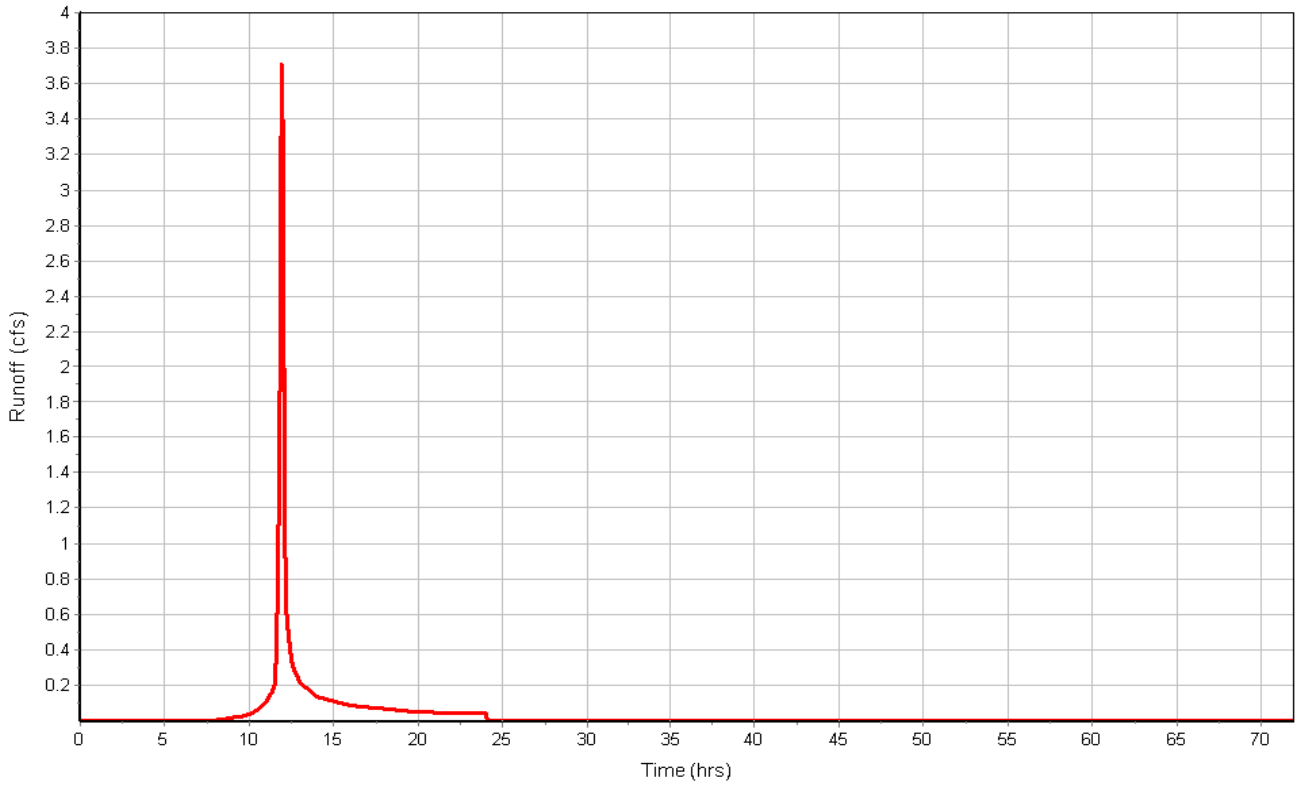
Total Rainfall (in) 7.67
Total Runoff (in) 4.25
Peak Runoff (cfs) 3.77
Weighted Curve Number 70.60
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-202

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-203

Input Data

Area (ac) 0.48
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.50	-	98.00
Composite Area & Weighted CN	0.50		98.00

Time of Concentration

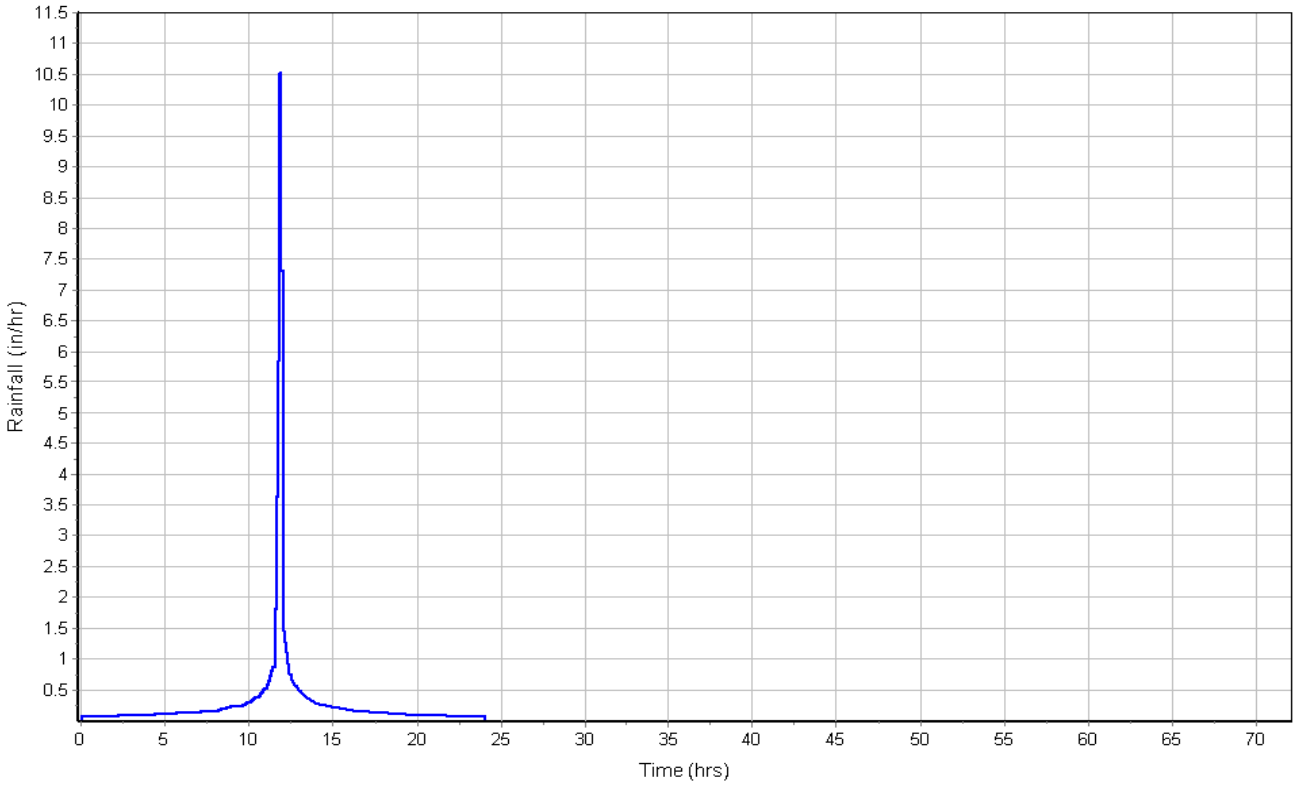
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

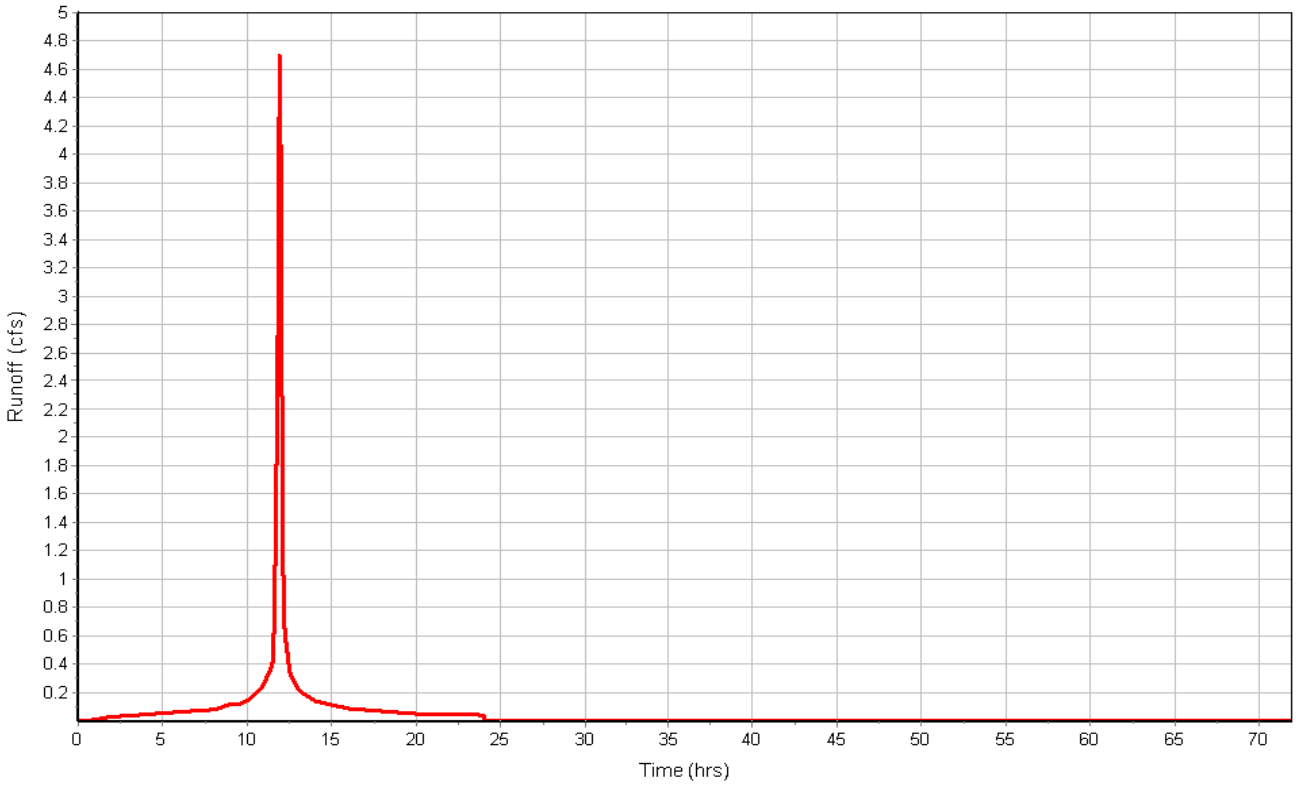
Total Rainfall (in) 7.67
Total Runoff (in) 7.43
Peak Runoff (cfs) 4.72
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-203

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-204

Input Data

Area (ac) 0.37
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.37	-	98.00
Composite Area & Weighted CN	0.37		98.00

Time of Concentration

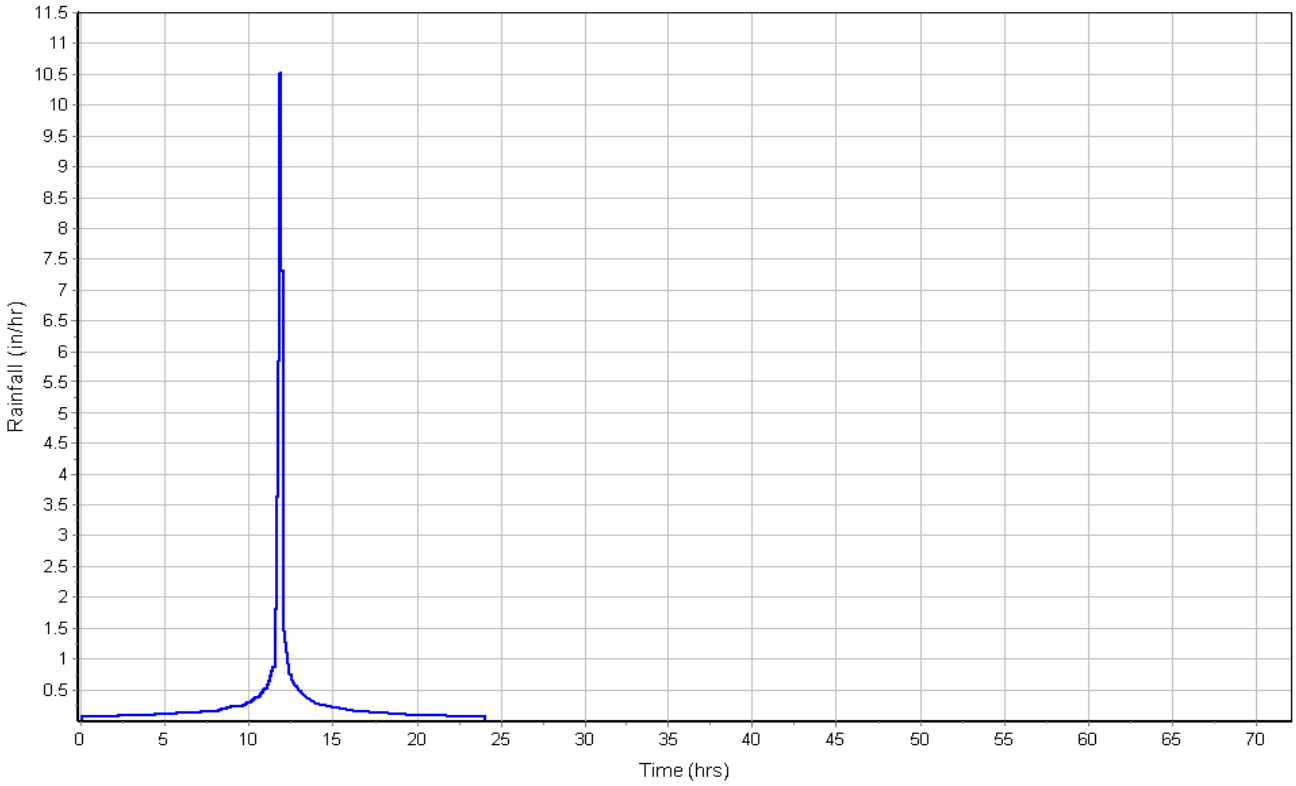
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

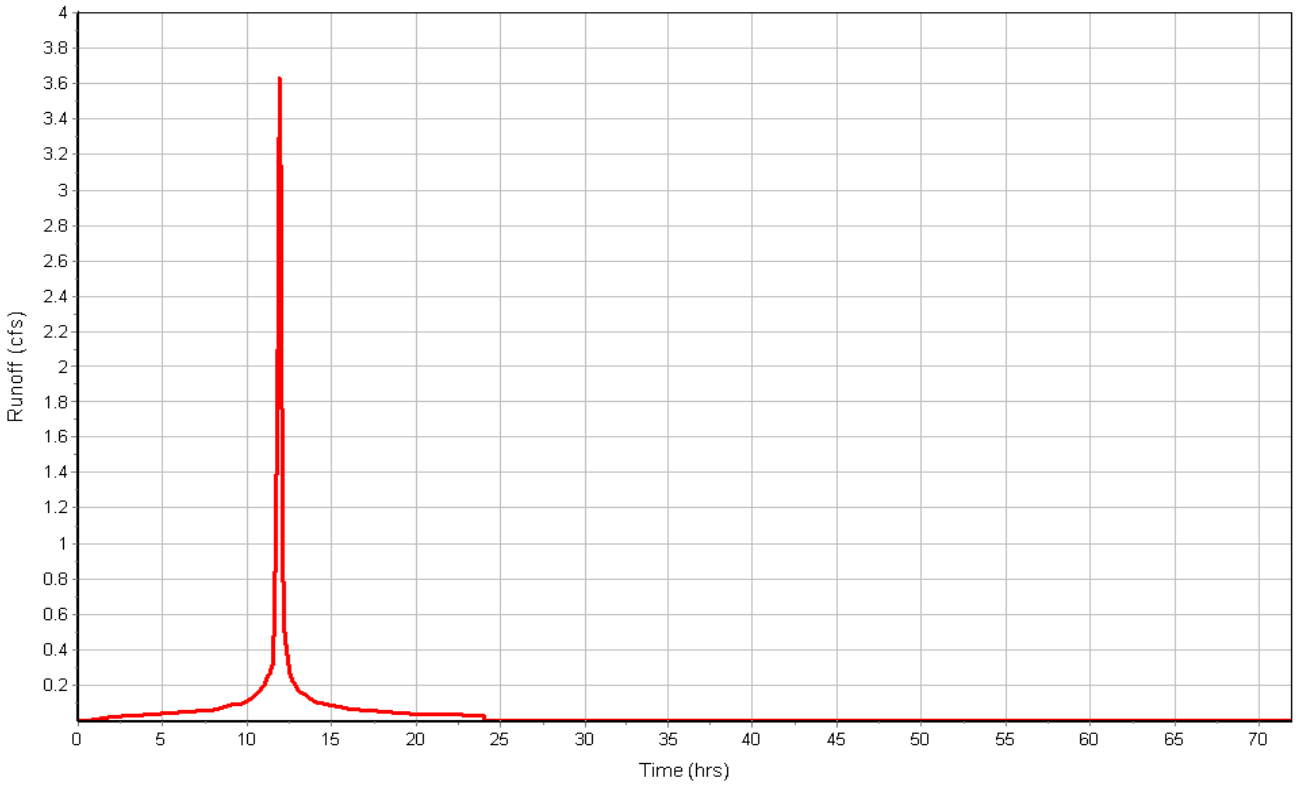
Total Rainfall (in) 7.67
Total Runoff (in) 7.43
Peak Runoff (cfs) 3.65
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-204

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-205

Input Data

Area (ac) 0.14
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.14	-	98.00
Composite Area & Weighted CN	0.14		98.00

Time of Concentration

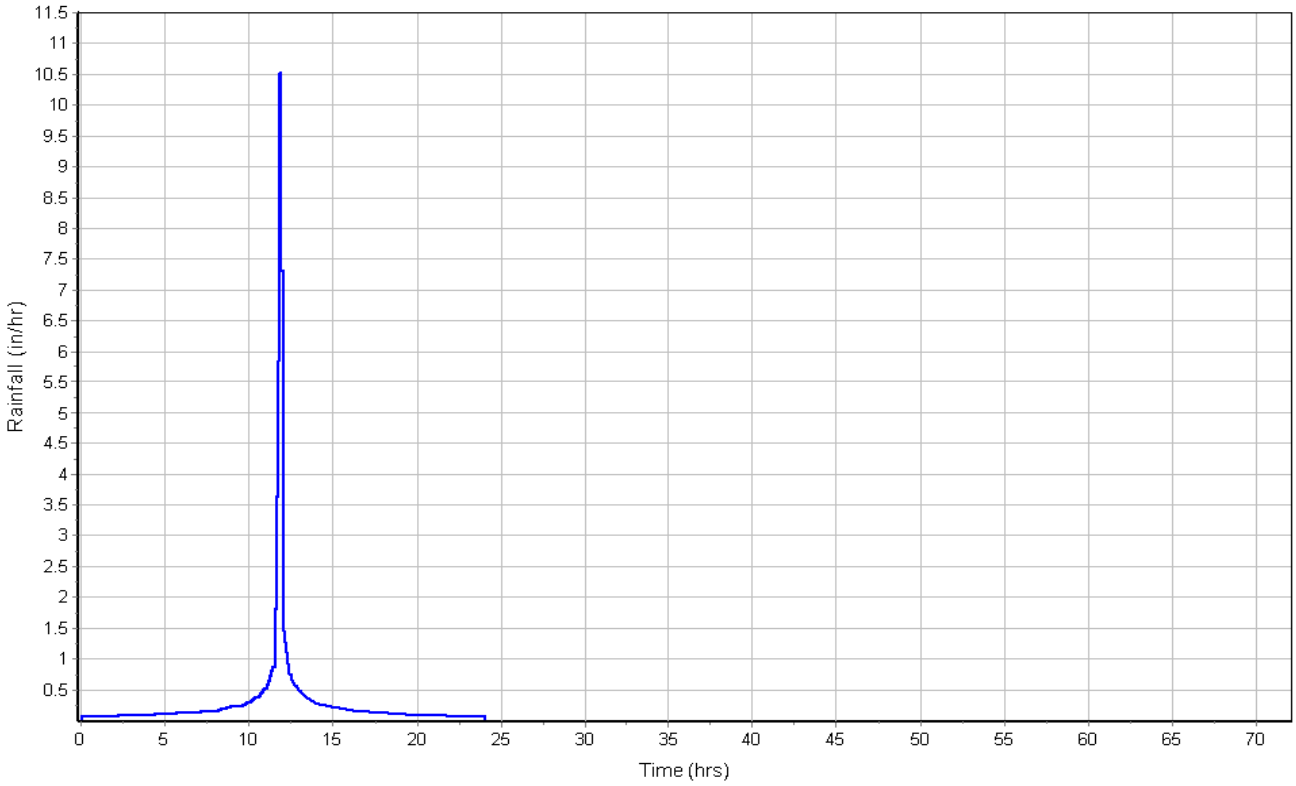
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

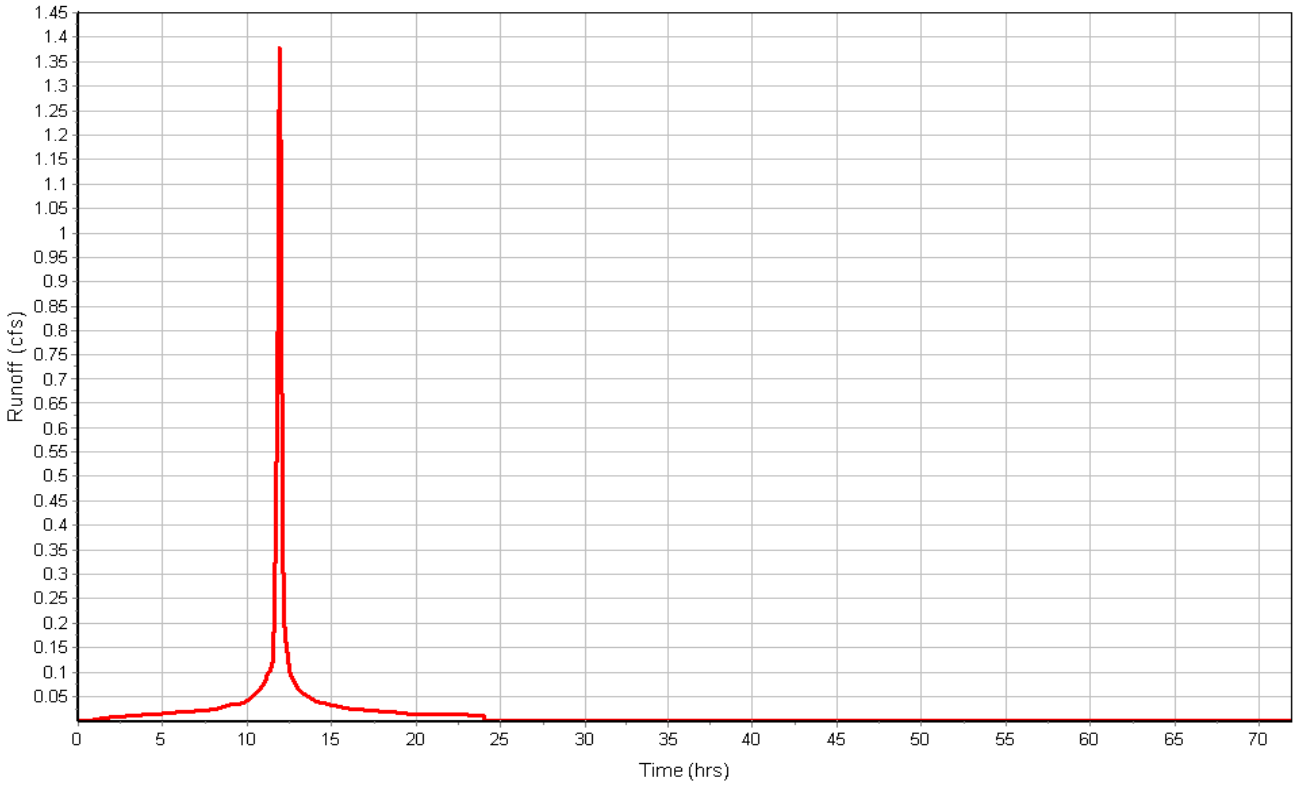
Total Rainfall (in) 7.67
Total Runoff (in) 7.43
Peak Runoff (cfs) 1.38
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-205

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-206

Input Data

Area (ac) 0.14
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.14	-	98.00
Composite Area & Weighted CN	0.14		98.00

Time of Concentration

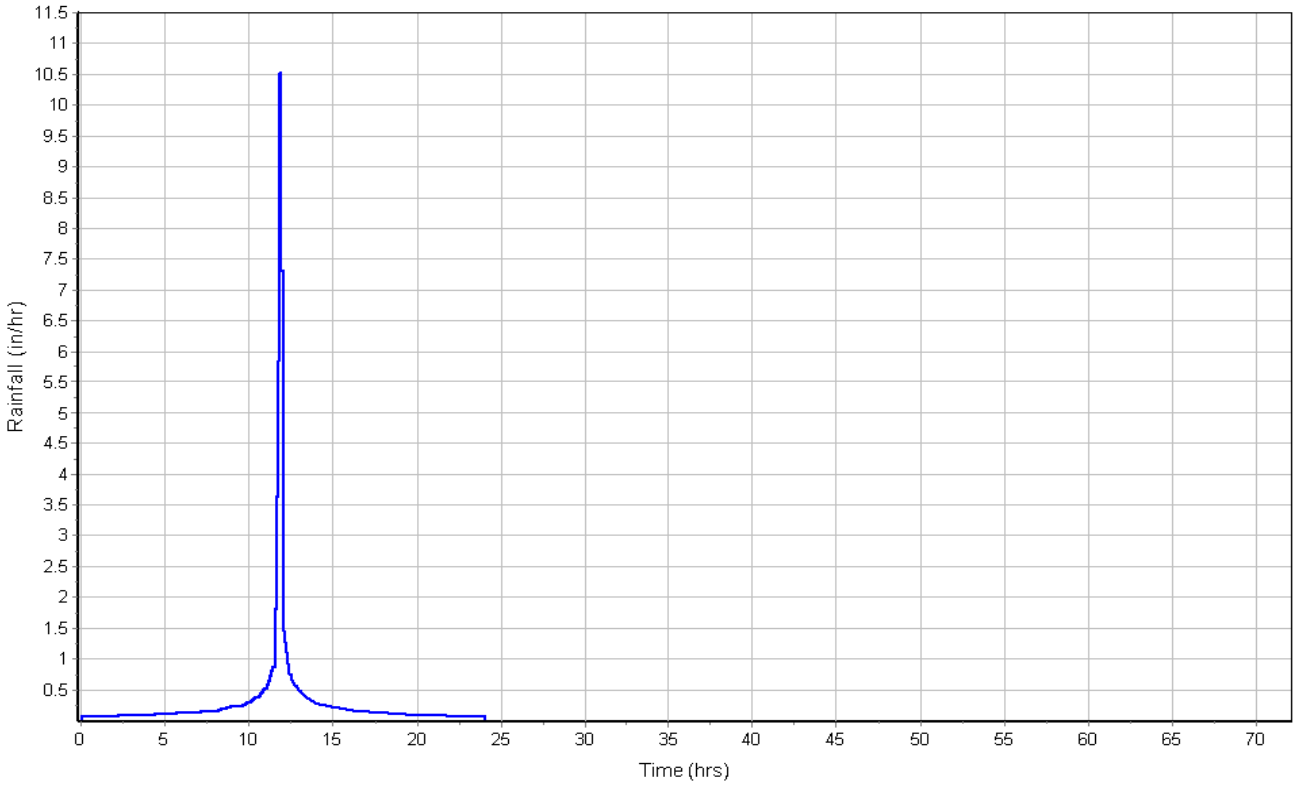
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

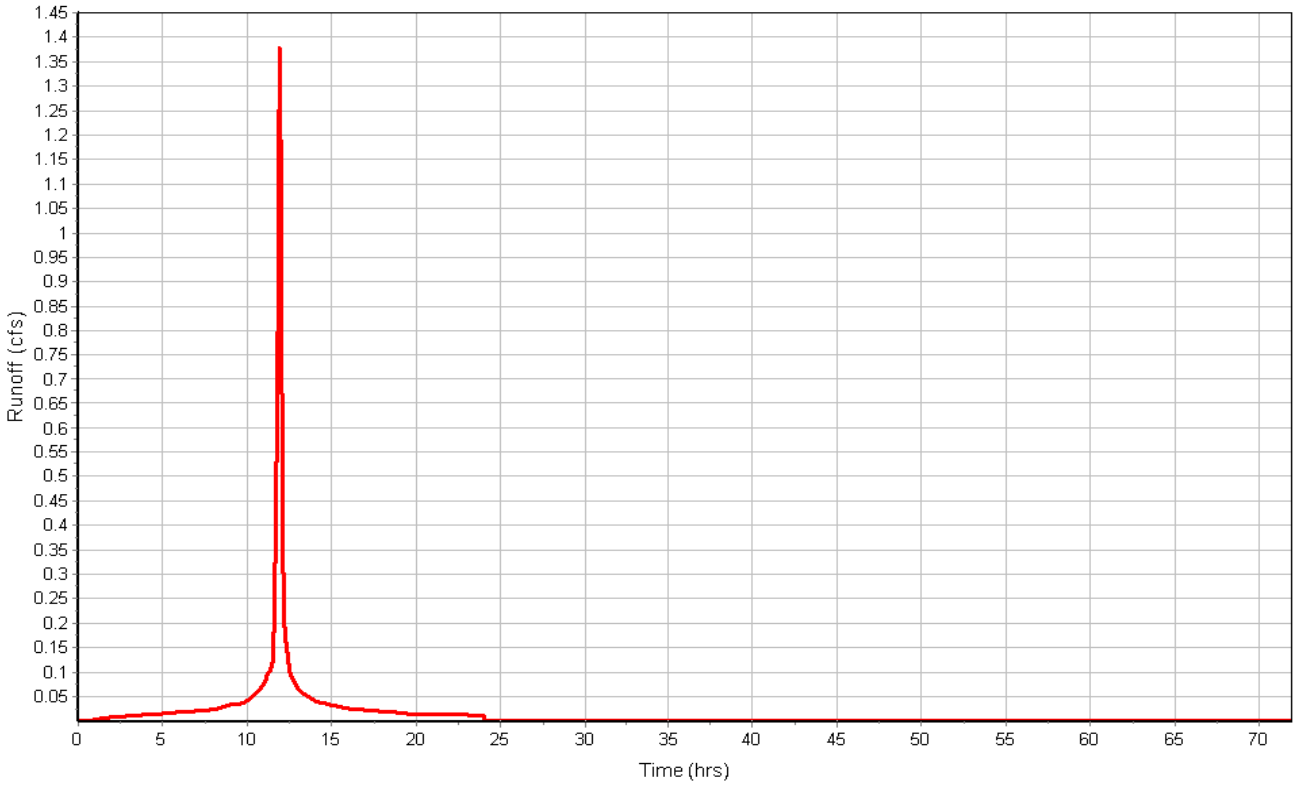
Total Rainfall (in) 7.67
Total Runoff (in) 7.43
Peak Runoff (cfs) 1.38
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-206

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-207

Input Data

Area (ac) 0.44
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.44	-	98.00
Composite Area & Weighted CN	0.44		98.00

Time of Concentration

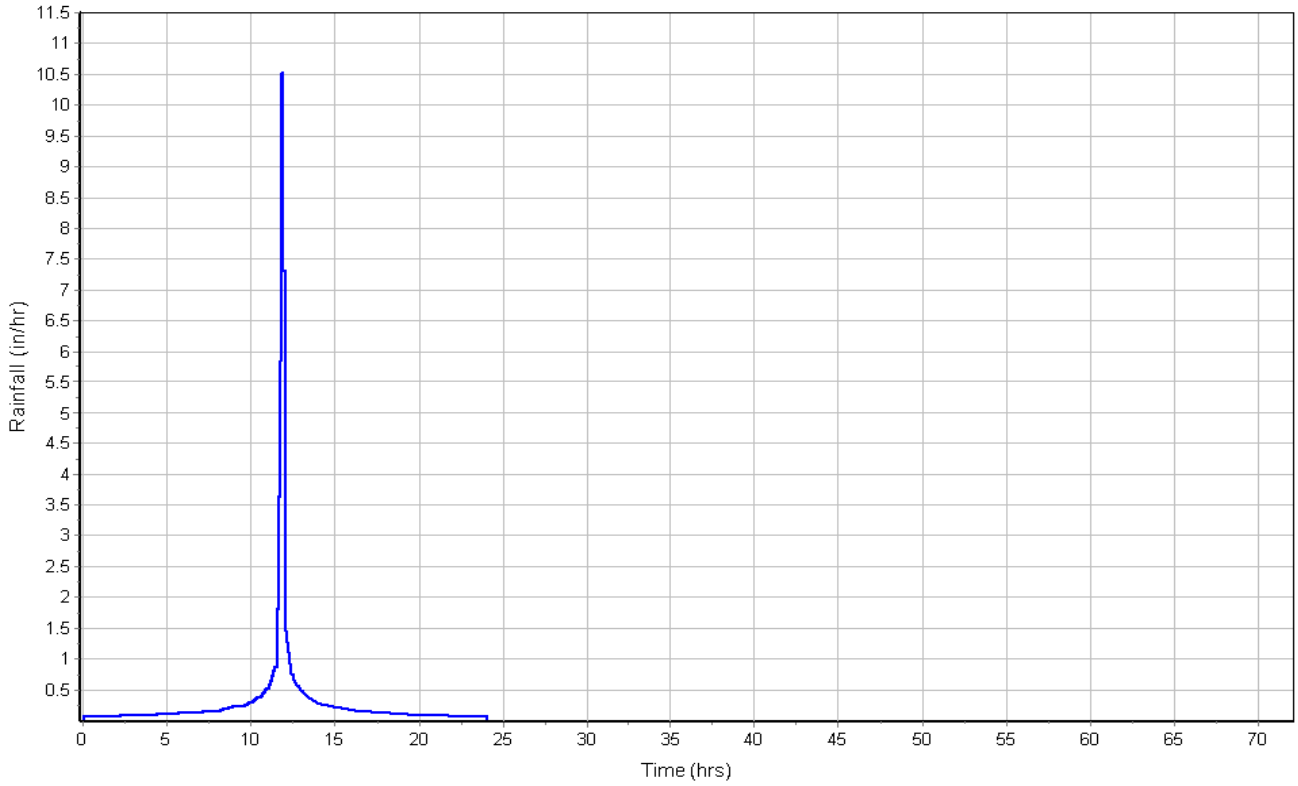
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

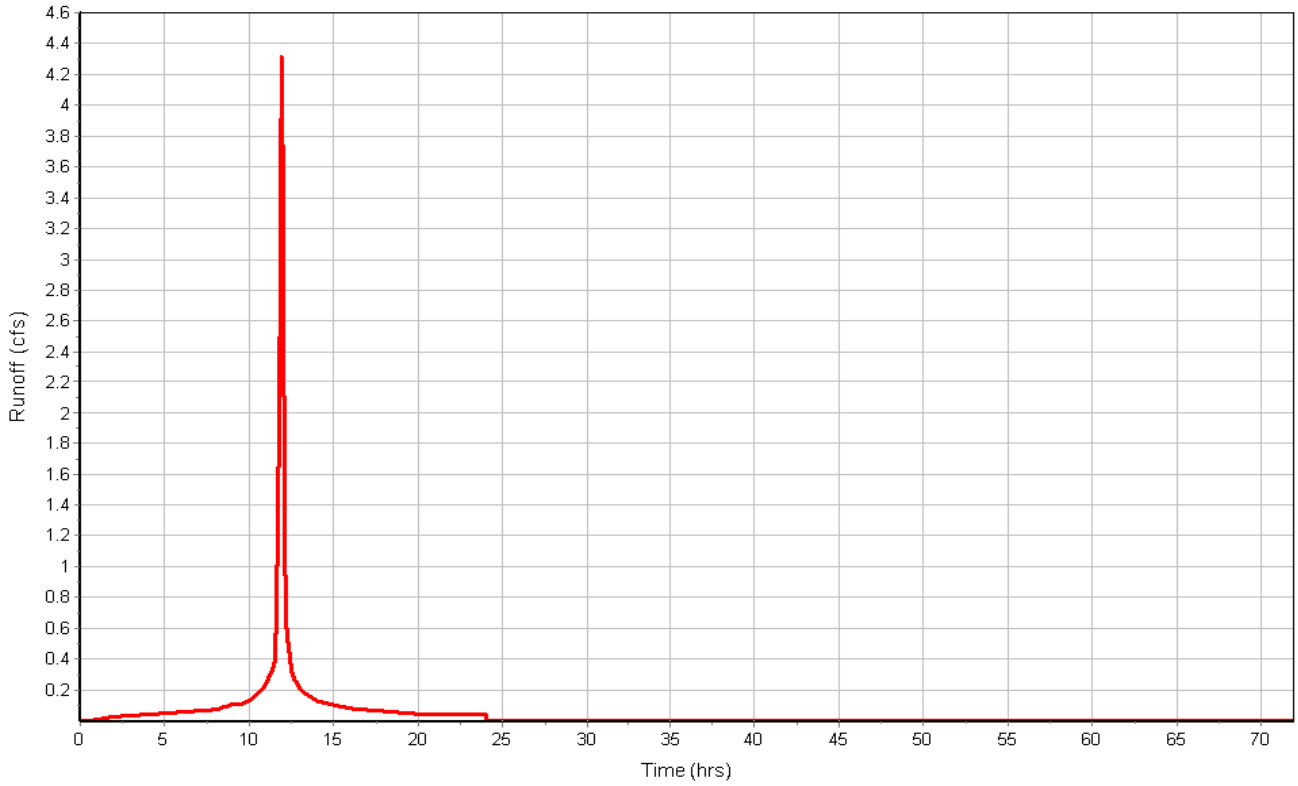
Total Rainfall (in) 7.67
Total Runoff (in) 7.43
Peak Runoff (cfs) 4.34
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-207

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-300

Input Data

Area (ac) 0.47
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.47	-	98.00
Composite Area & Weighted CN	0.47		98.00

Time of Concentration

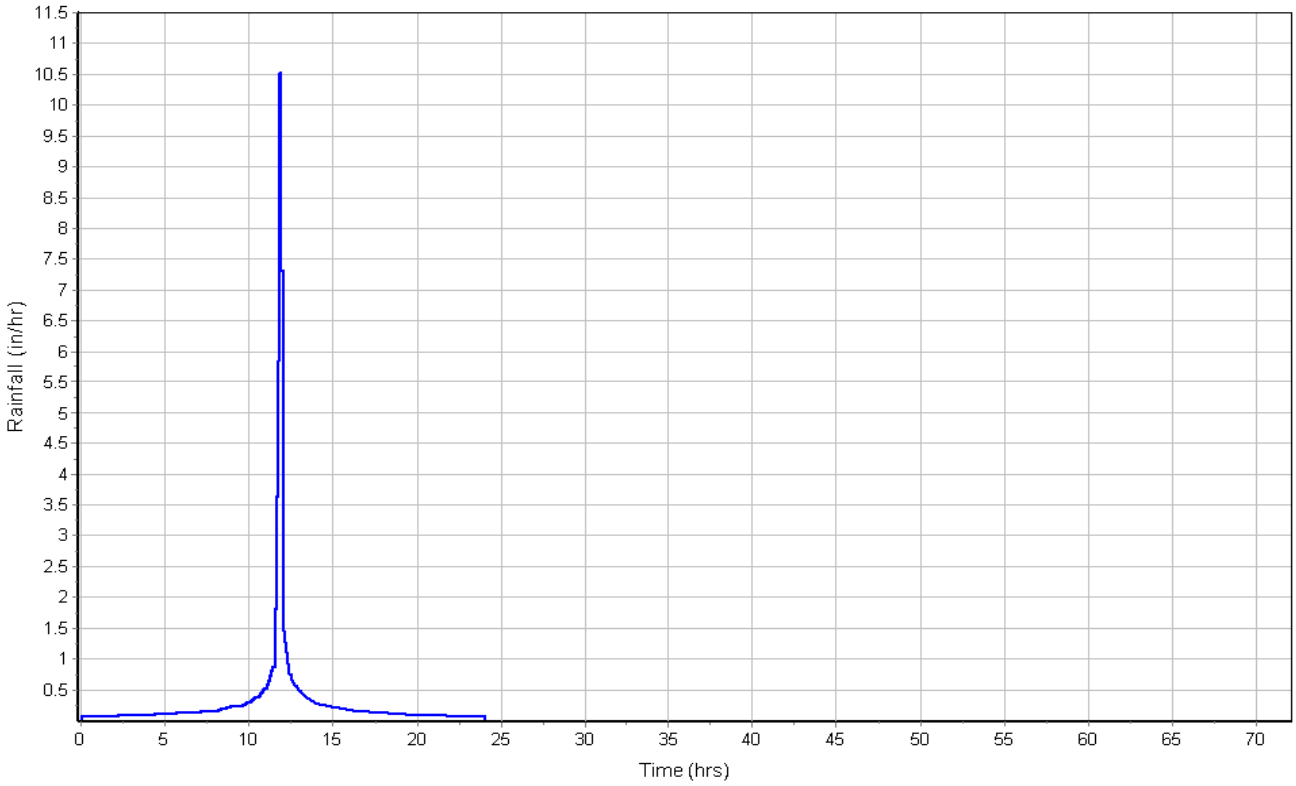
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

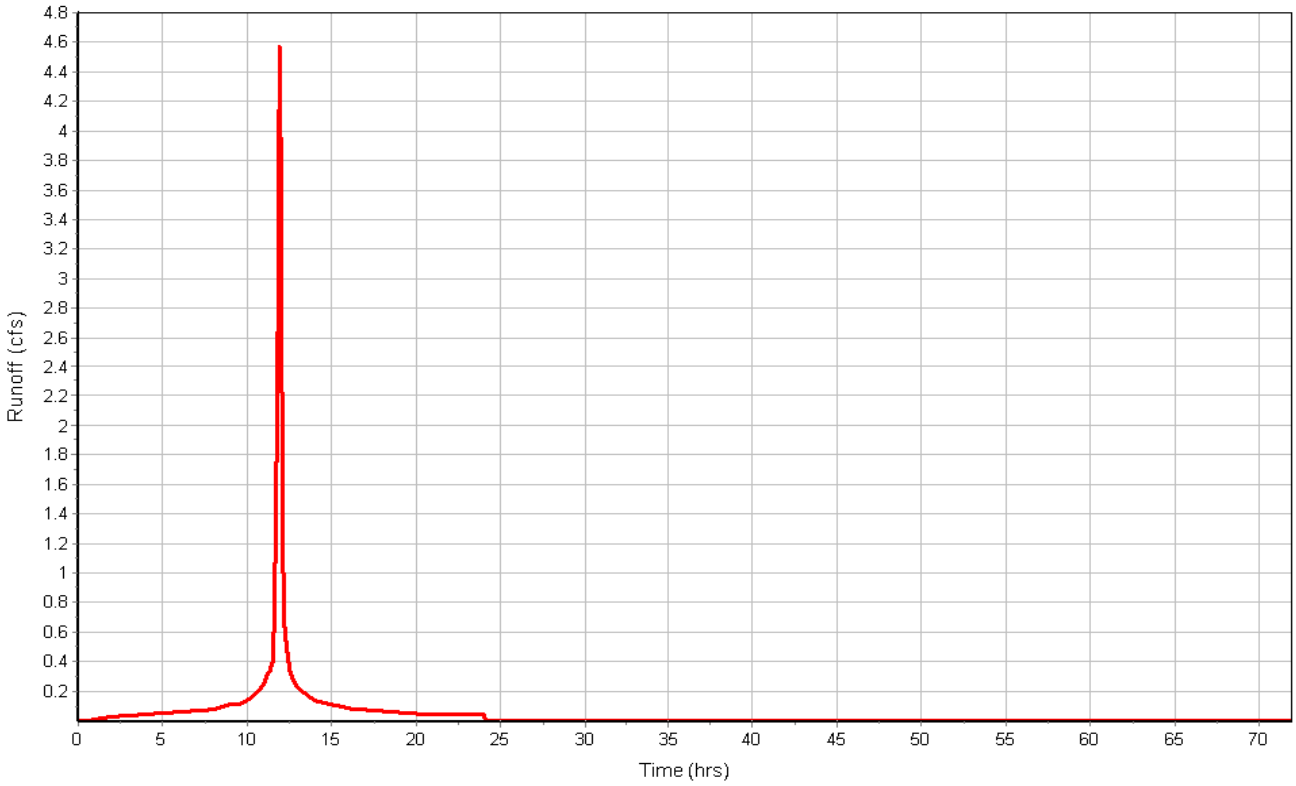
Total Rainfall (in) 7.67
Total Runoff (in) 7.43
Peak Runoff (cfs) 4.59
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-300

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-301

Input Data

Area (ac) 0.34
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.45	-	98.00
Composite Area & Weighted CN	0.45		98.00

Time of Concentration

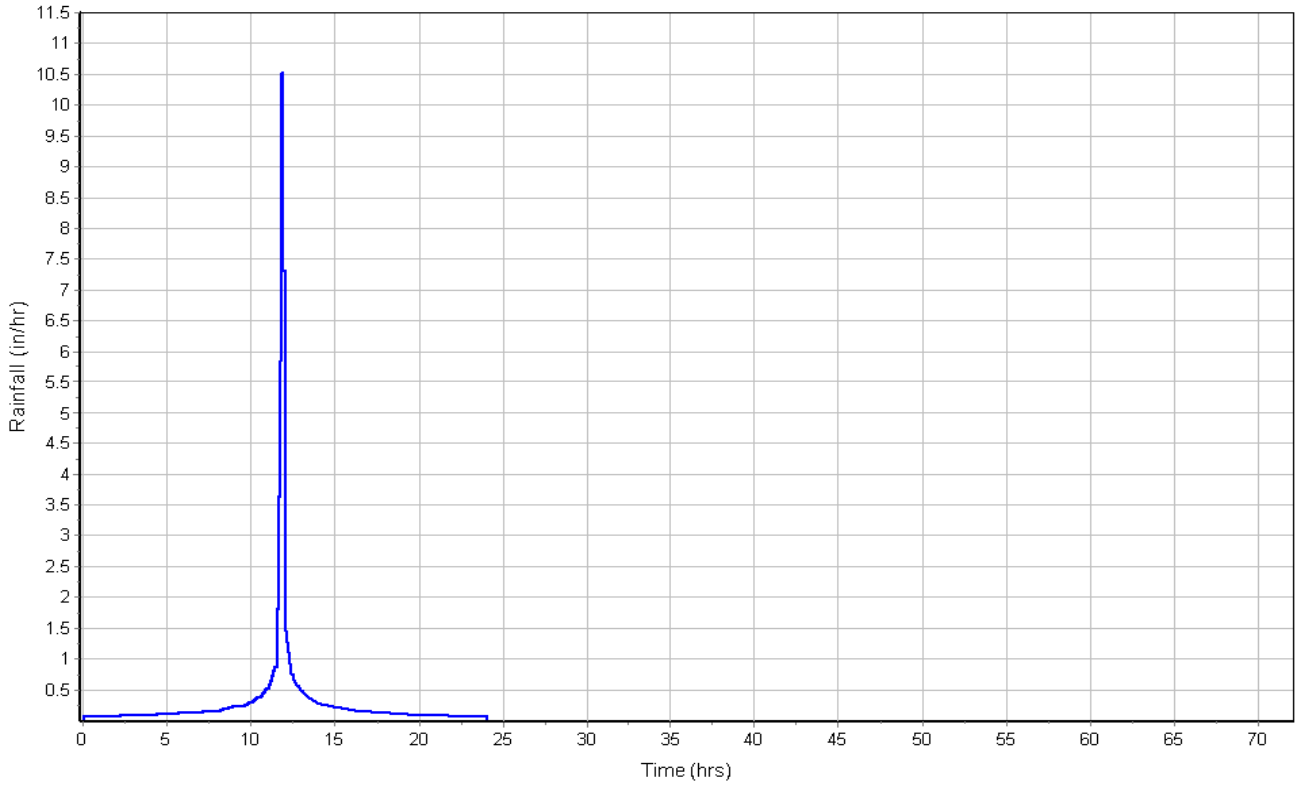
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

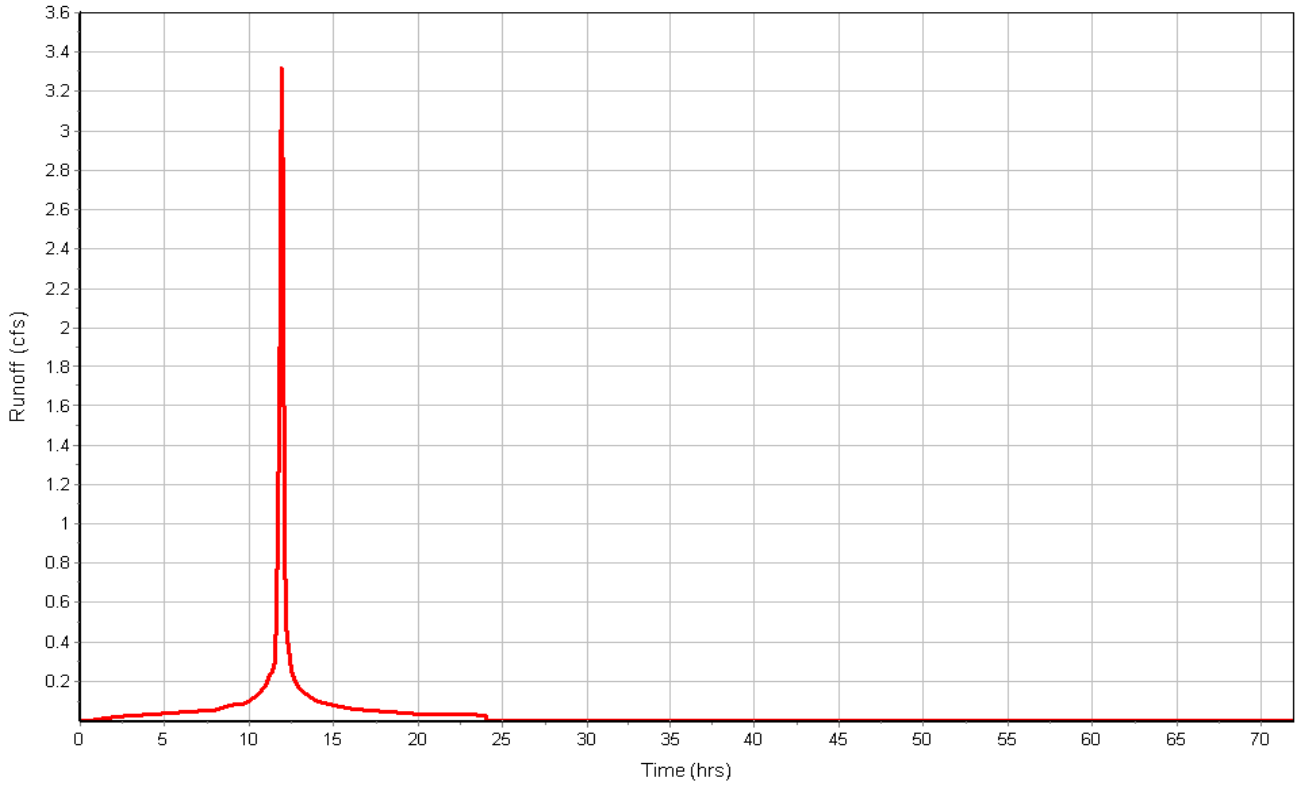
Total Rainfall (in) 7.67
Total Runoff (in) 7.43
Peak Runoff (cfs) 3.33
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-301

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-400

Input Data

Area (ac) 0.30
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.30	-	98.00
Composite Area & Weighted CN	0.30		98.00

Time of Concentration

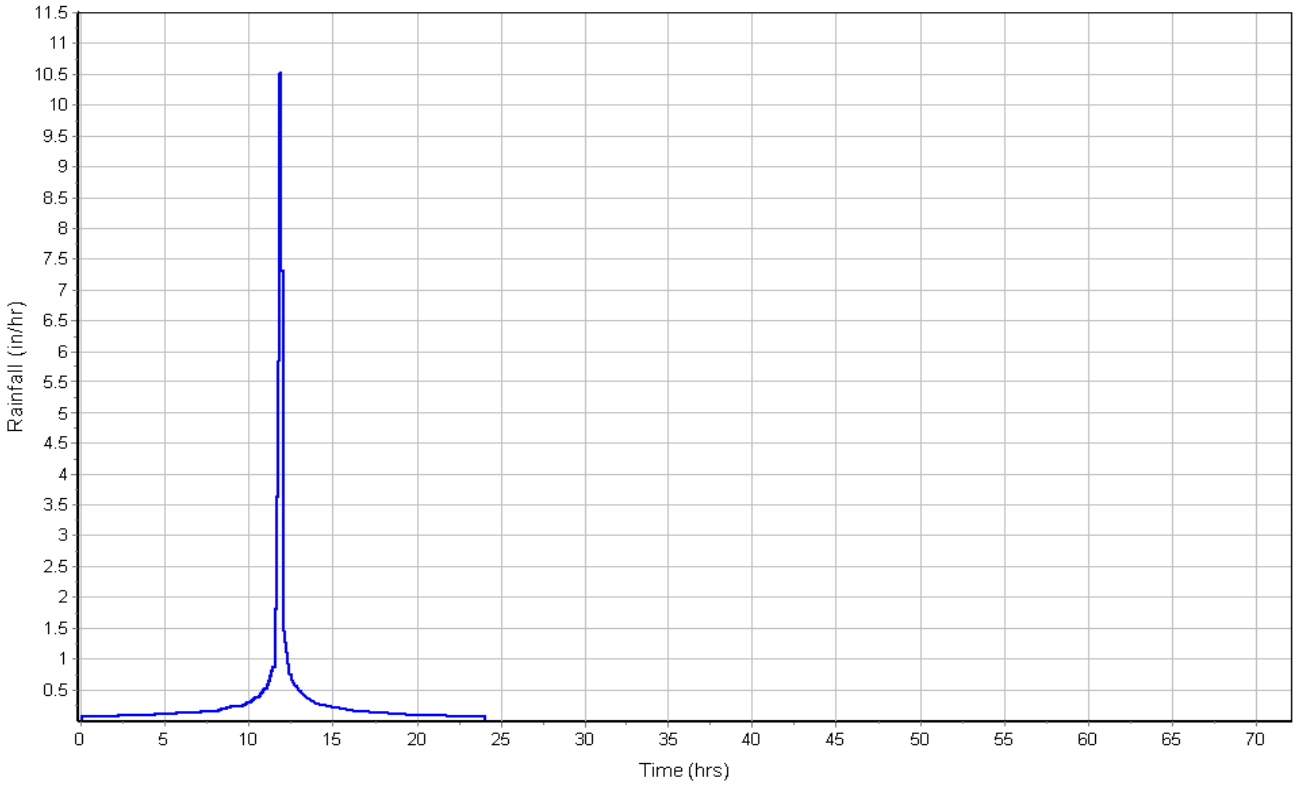
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

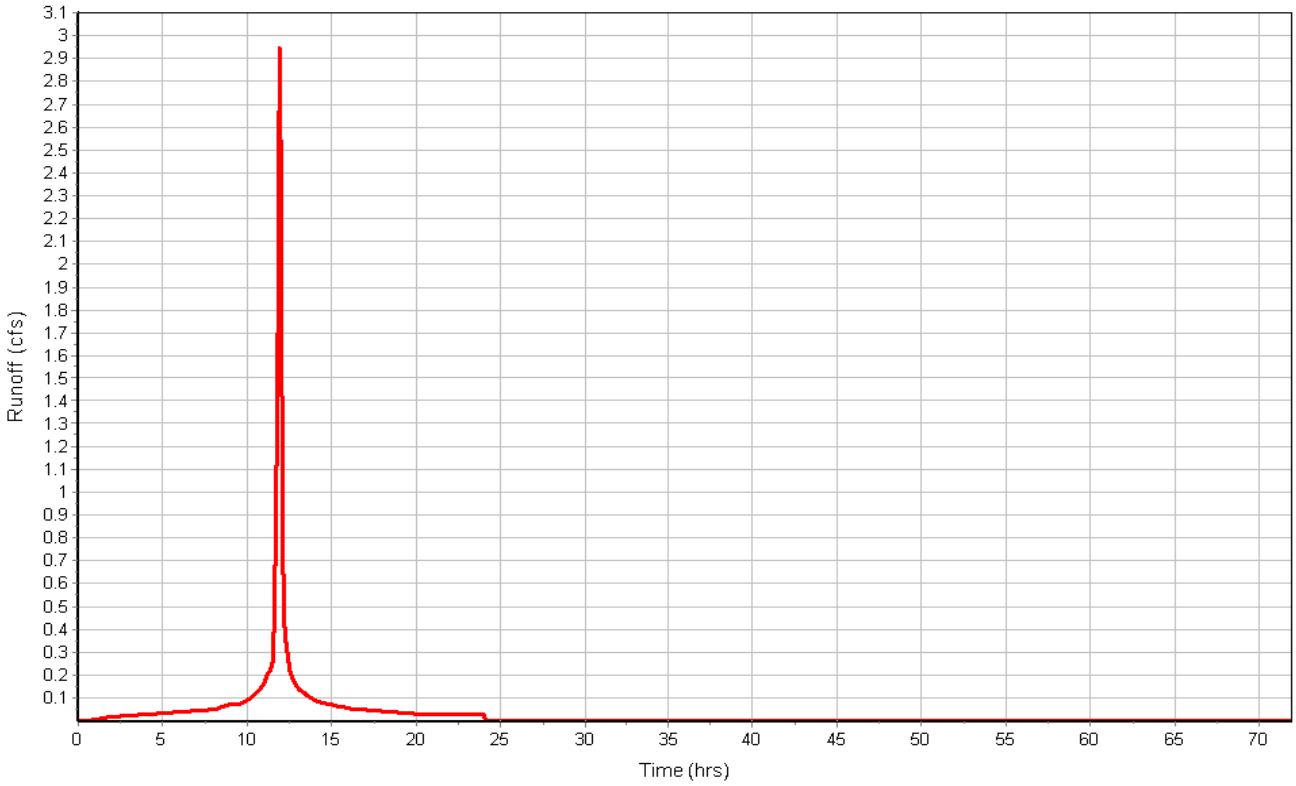
Total Rainfall (in) 7.67
Total Runoff (in) 7.43
Peak Runoff (cfs) 2.96
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-400

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-500

Input Data

Area (ac) 0.38
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.47	-	98.00
Composite Area & Weighted CN	0.47		98.00

Time of Concentration

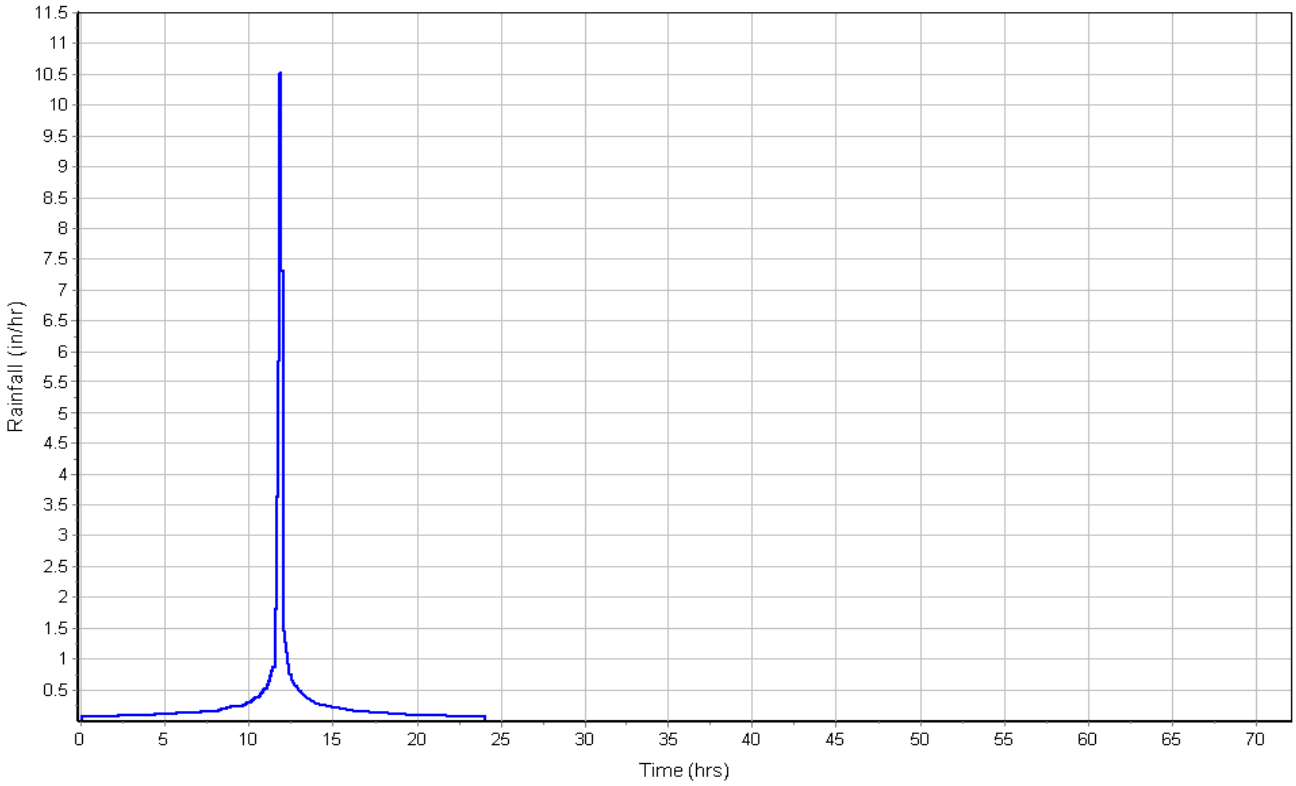
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

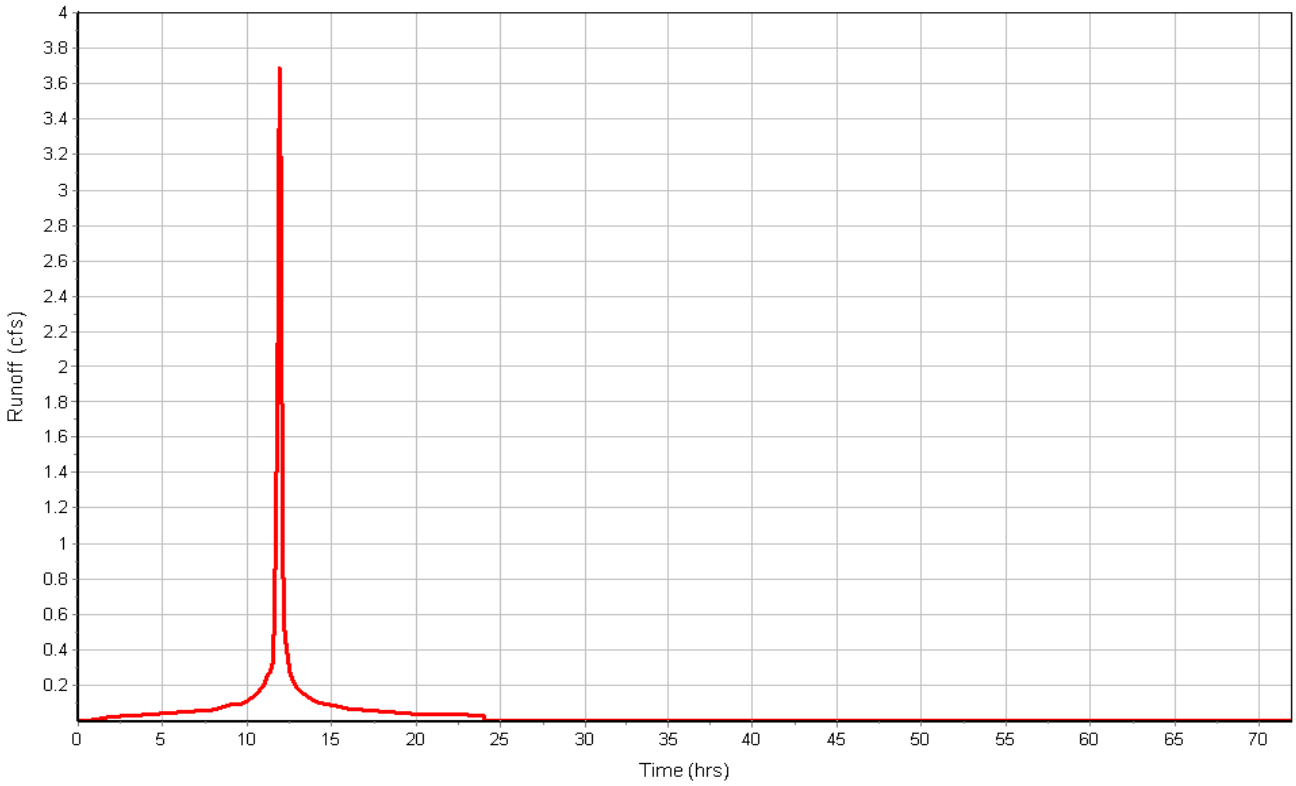
Total Rainfall (in) 7.67
Total Runoff (in) 7.43
Peak Runoff (cfs) 3.71
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-500

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-601

Input Data

Area (ac) 0.52
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.52	-	98.00
Composite Area & Weighted CN	0.52		98.00

Time of Concentration

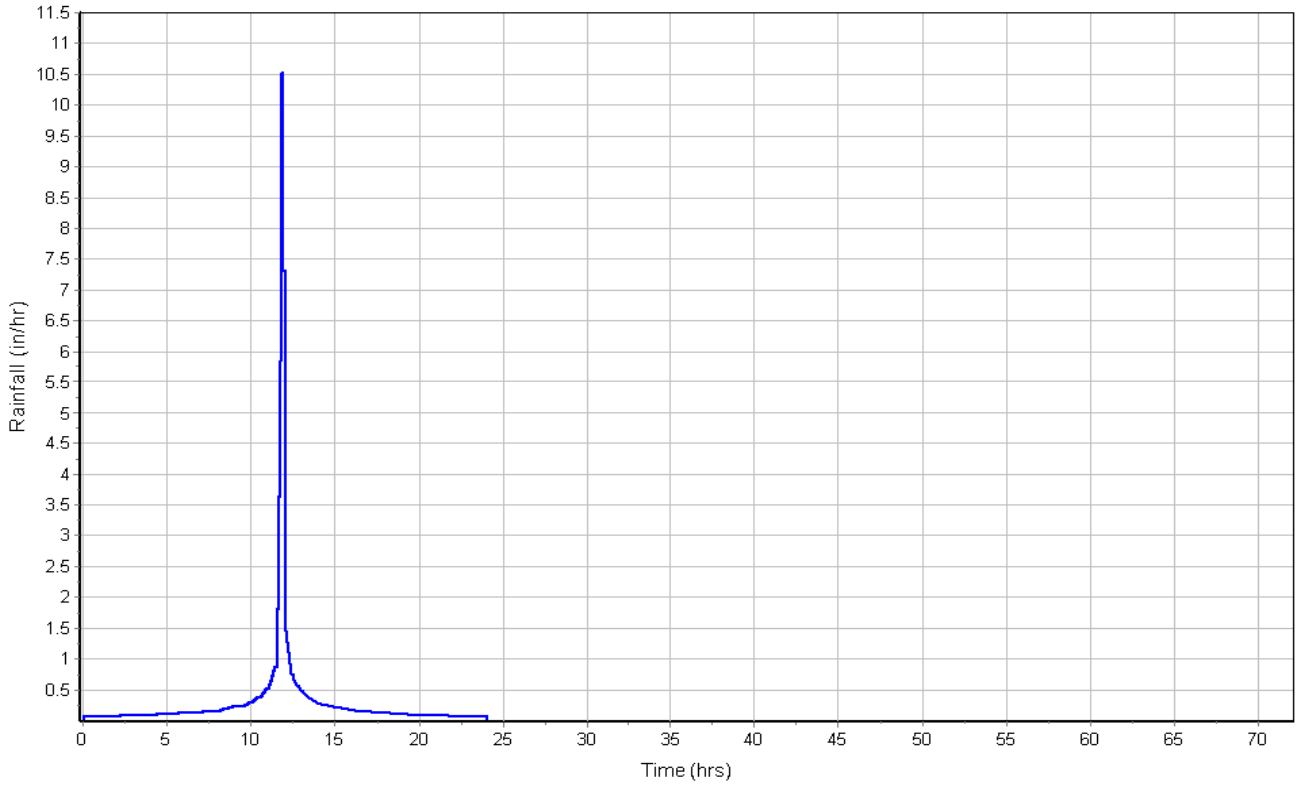
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

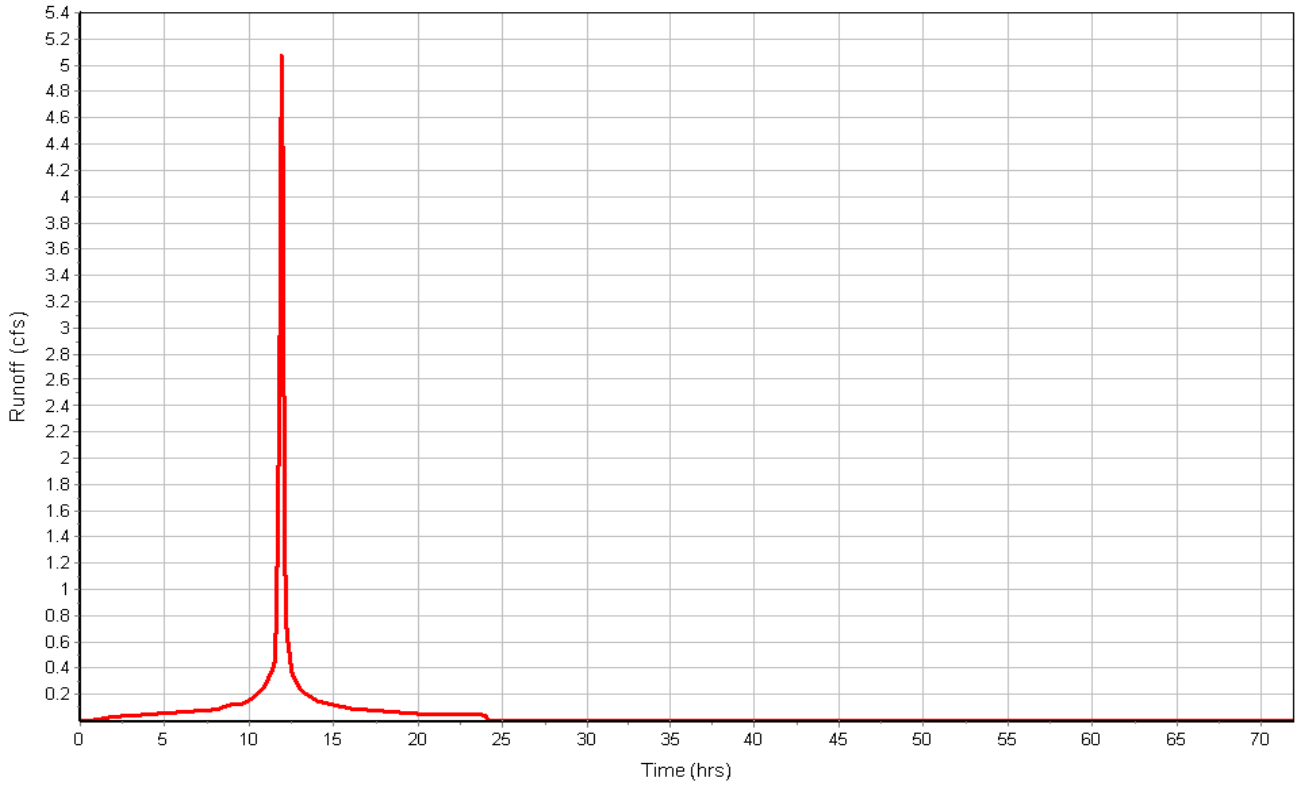
Total Rainfall (in) 7.67
Total Runoff (in) 7.43
Peak Runoff (cfs) 5.09
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-601

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-602

Input Data

Area (ac) 0.27
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.30	-	98.00
Composite Area & Weighted CN	0.30		98.00

Time of Concentration

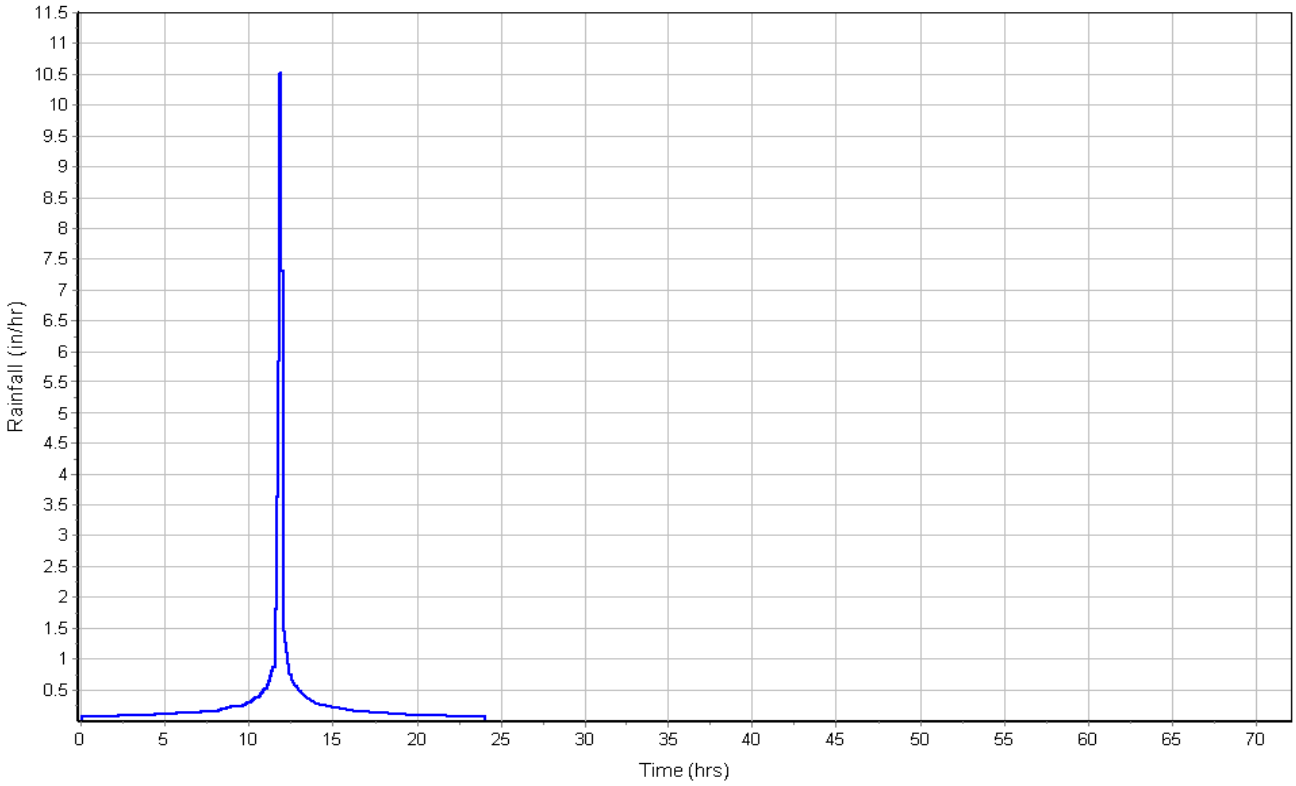
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

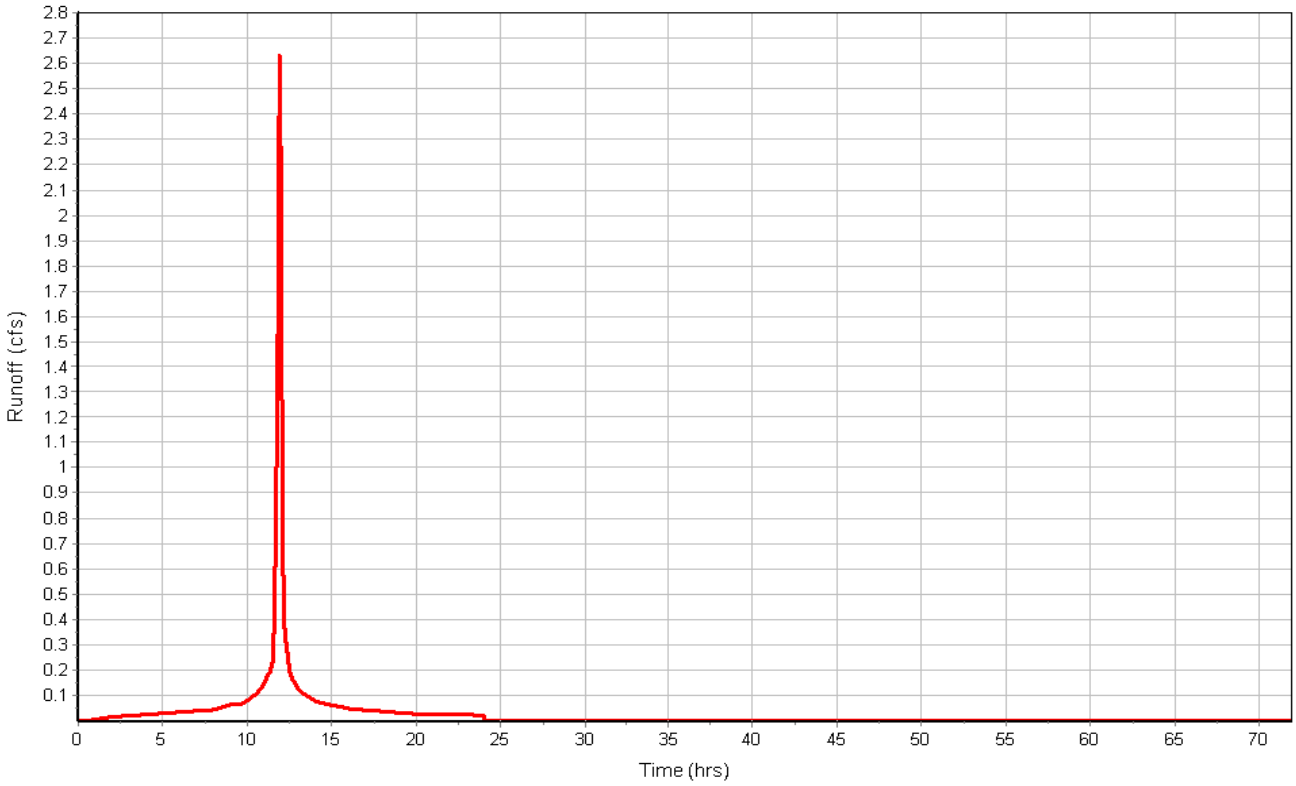
Total Rainfall (in) 7.67
Total Runoff (in) 7.43
Peak Runoff (cfs) 2.64
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-602

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-606

Input Data

Area (ac) 0.40
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.42	-	98.00
Composite Area & Weighted CN	0.42		98.00

Time of Concentration

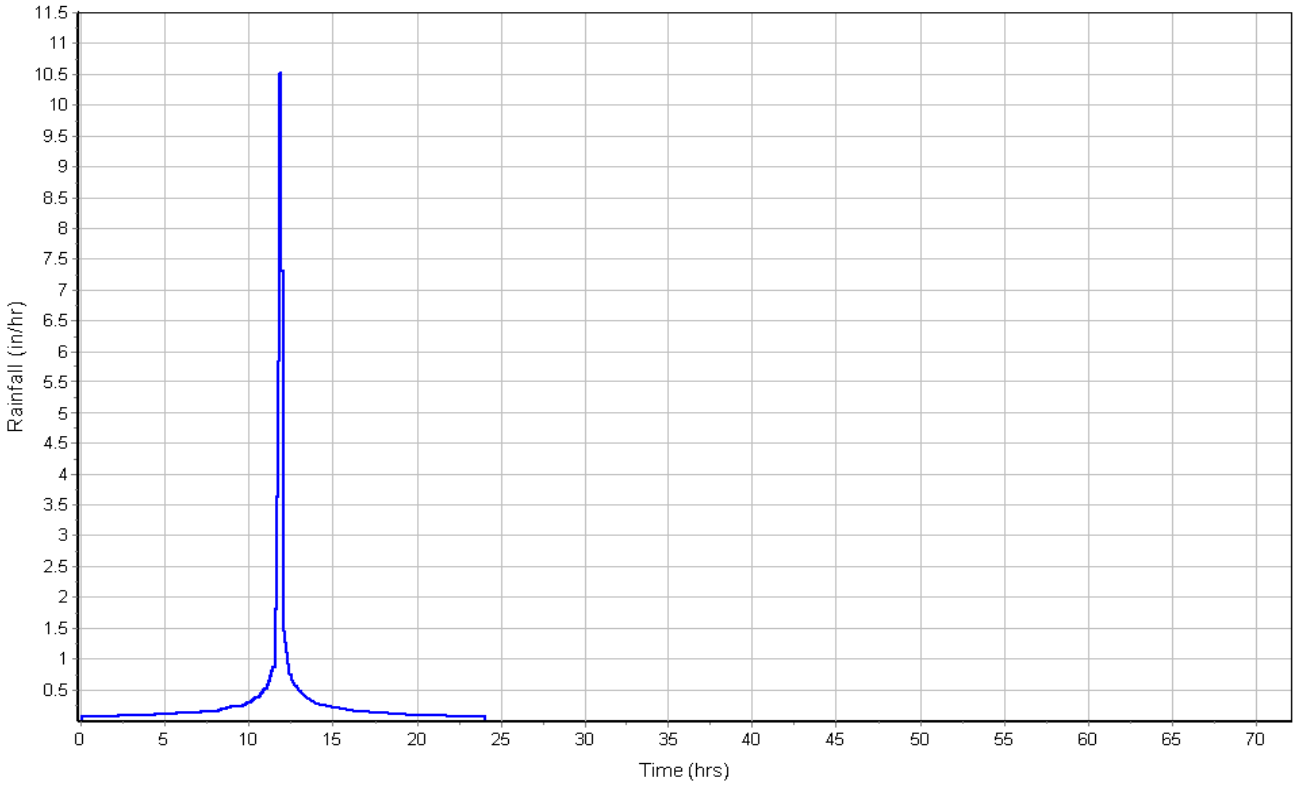
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

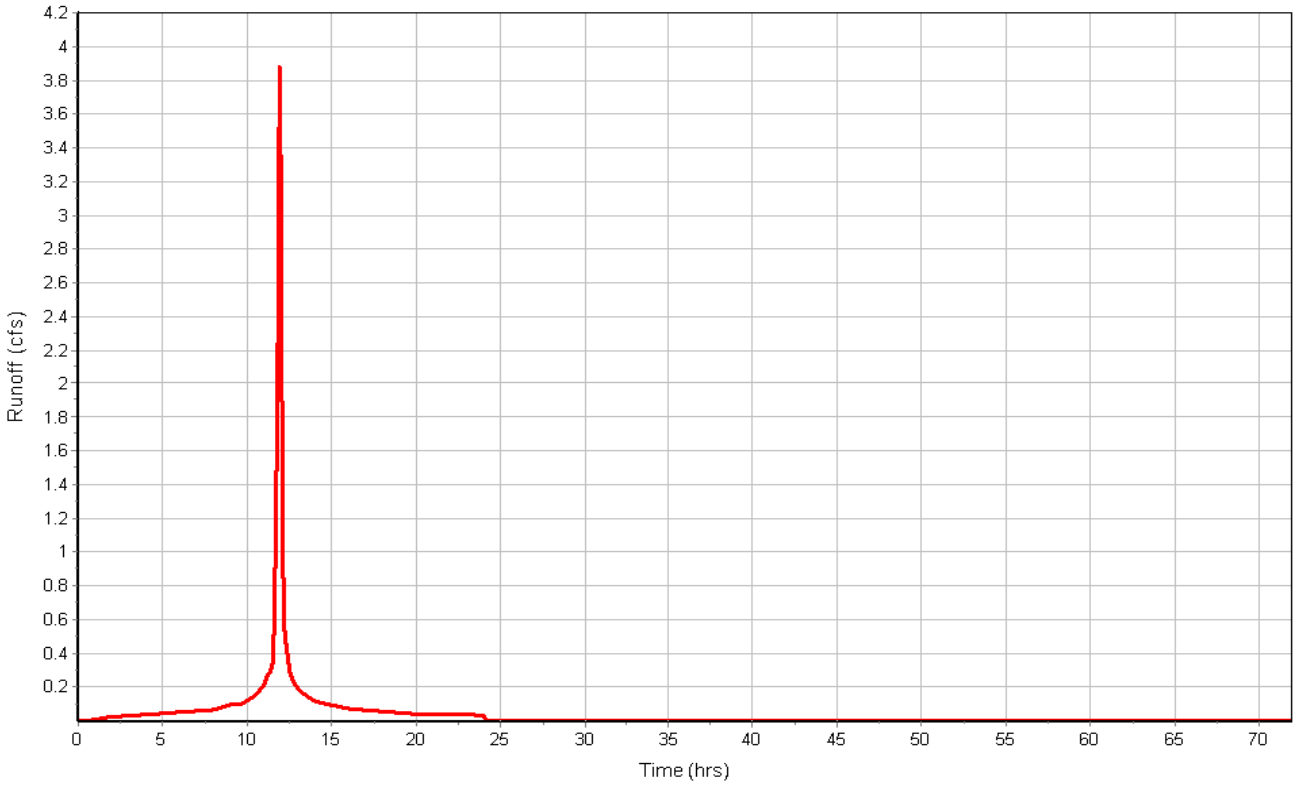
Total Rainfall (in) 7.67
Total Runoff (in) 7.43
Peak Runoff (cfs) 3.90
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-606

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-607

Input Data

Area (ac) 0.34
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.43	-	98.00
Composite Area & Weighted CN	0.43		98.00

Time of Concentration

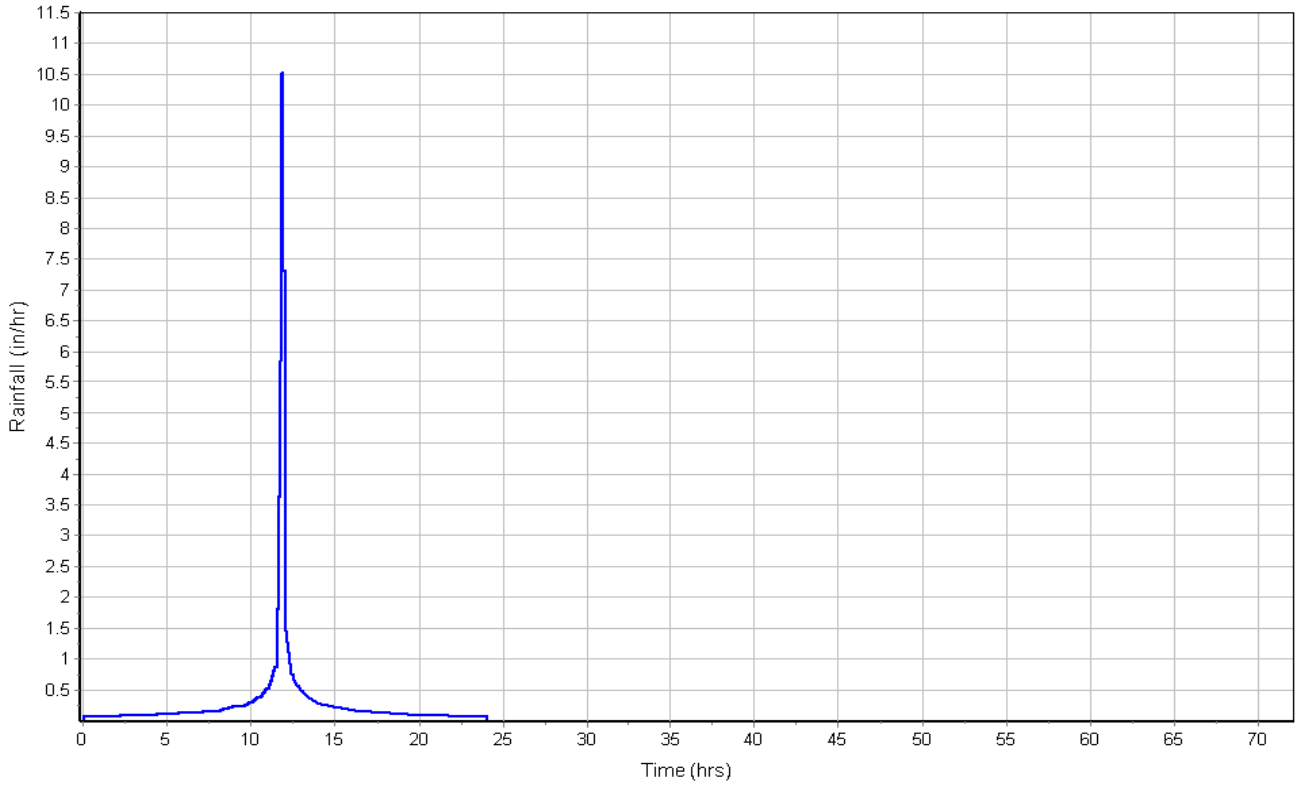
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

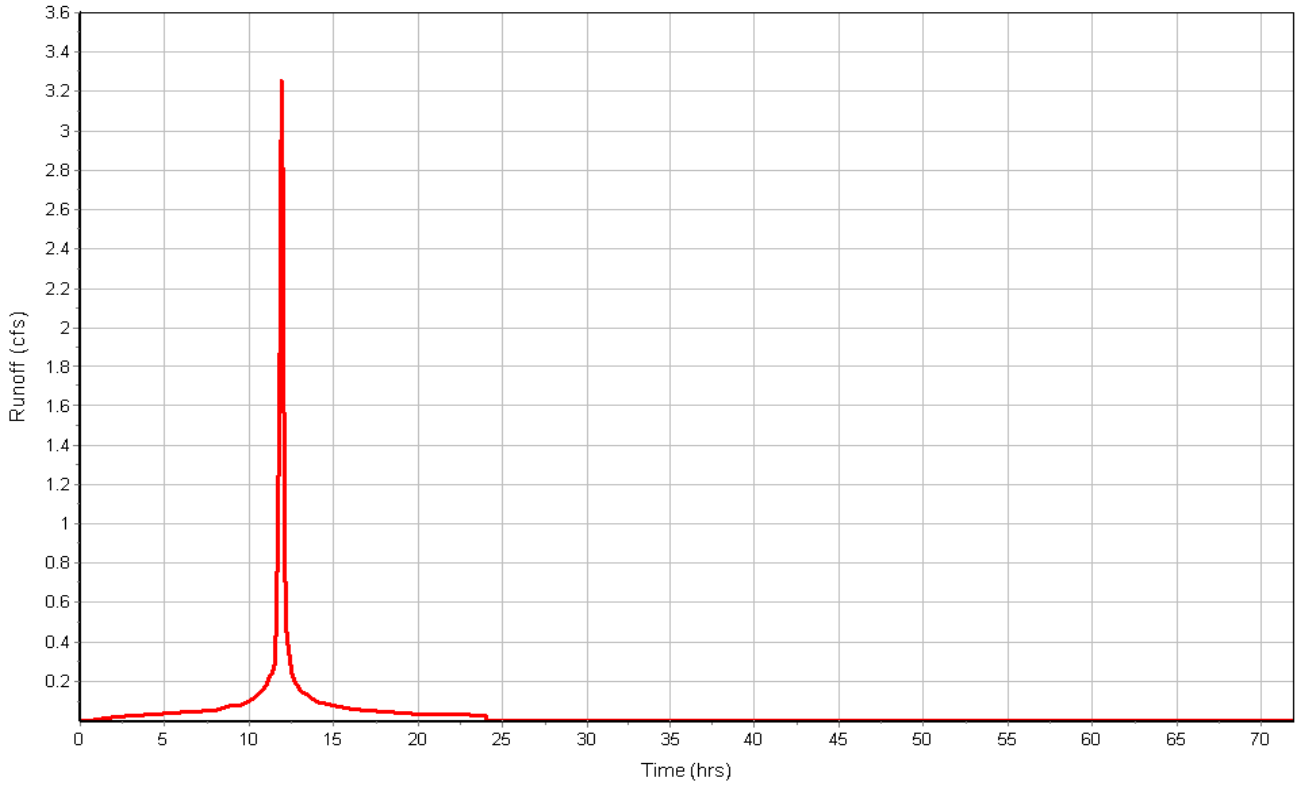
Total Rainfall (in) 7.67
Total Runoff (in) 7.43
Peak Runoff (cfs) 3.27
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-607

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-608

Input Data

Area (ac) 0.73
Weighted Curve Number 75.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.73	-	75.00
Composite Area & Weighted CN	0.73		75.00

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.30	0.00	0.00
Flow Length (ft) :	245	0.00	0.00
Slope (%) :	1.6	0.00	0.00
2 yr, 24 hr Rainfall (in) :	4.50	0.00	0.00
Velocity (ft/sec) :	0.13	0.00	0.00
Computed Flow Time (min) :	32.21	0.00	0.00

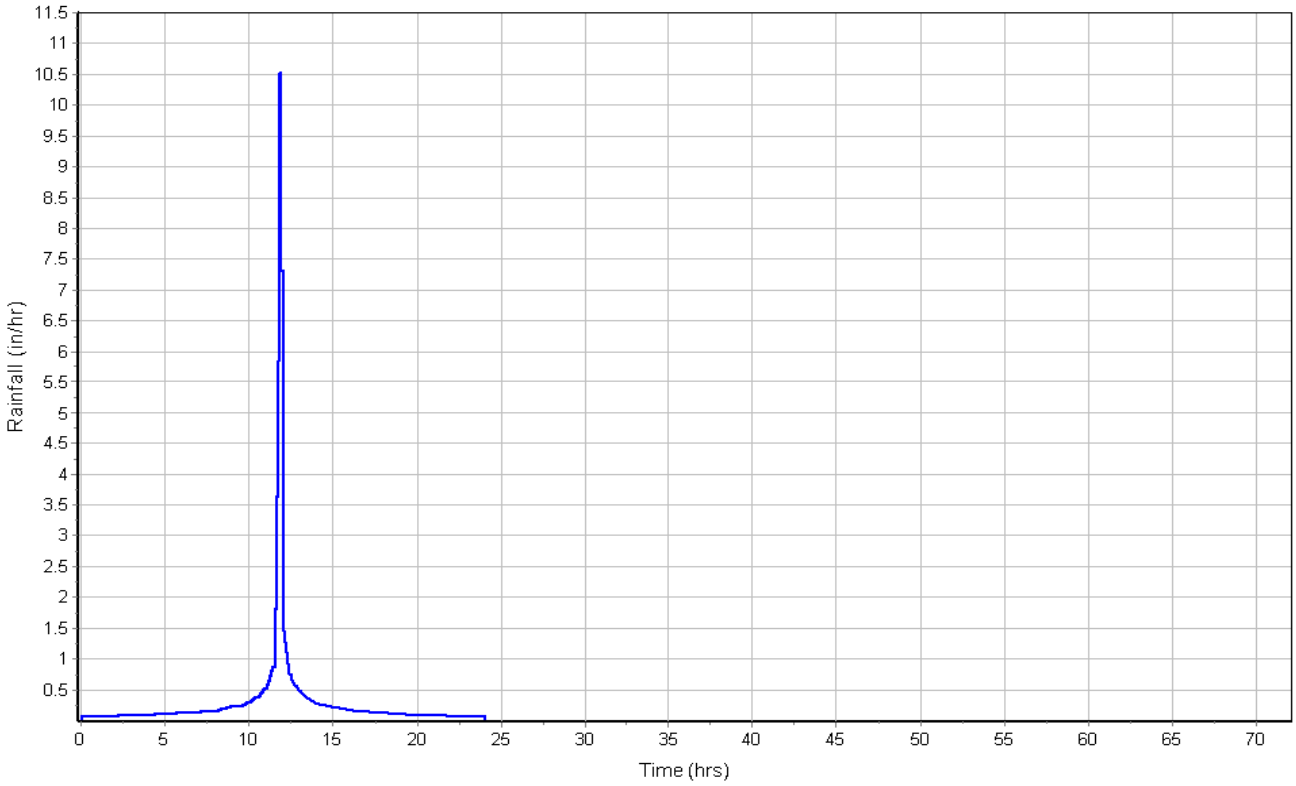
Total TOC (min) 32.21

Subbasin Runoff Results

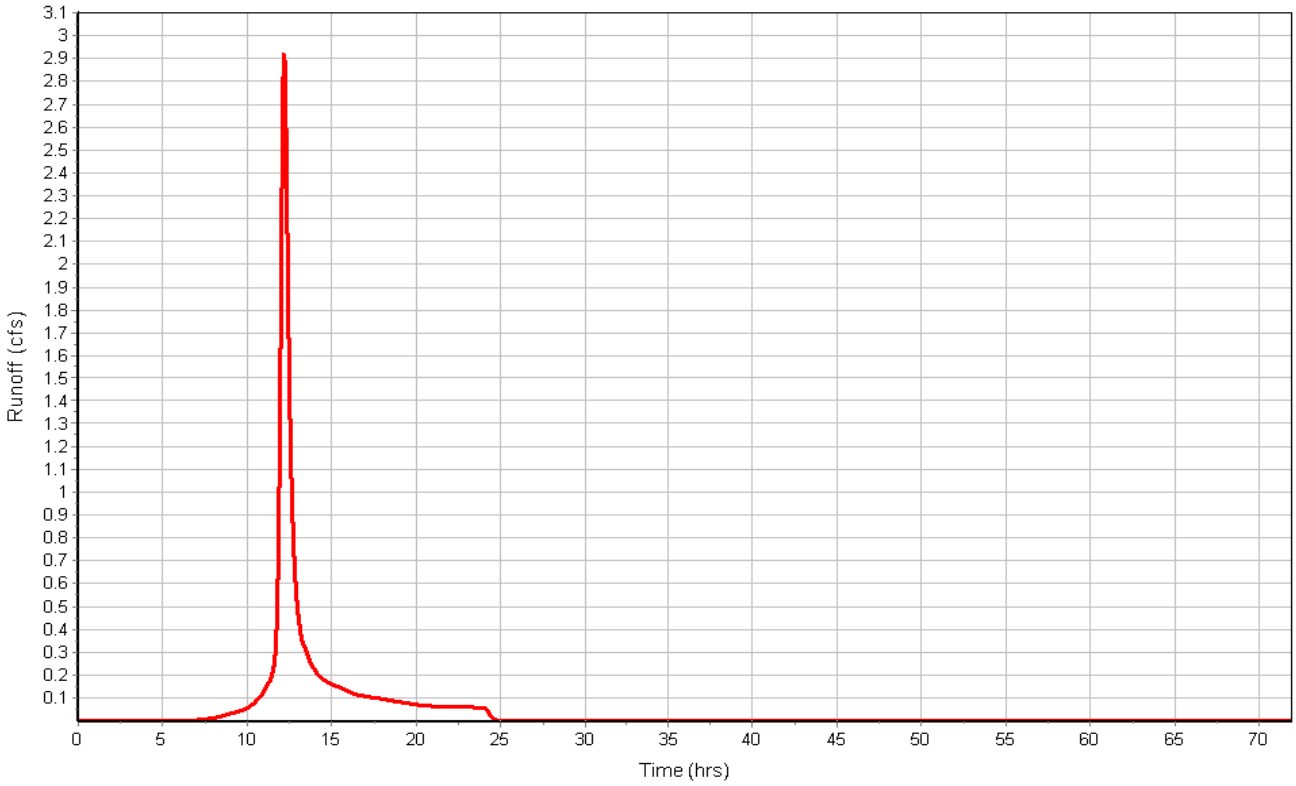
Total Rainfall (in) 7.67
Total Runoff (in) 4.75
Peak Runoff (cfs) 2.96
Weighted Curve Number 75.00
Time of Concentration (days hh:mm:ss) 0 00:32:13

Subbasin : DA-608

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-700

Input Data

Area (ac) 0.45
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.60	-	98.00
Composite Area & Weighted CN	0.60		98.00

Time of Concentration

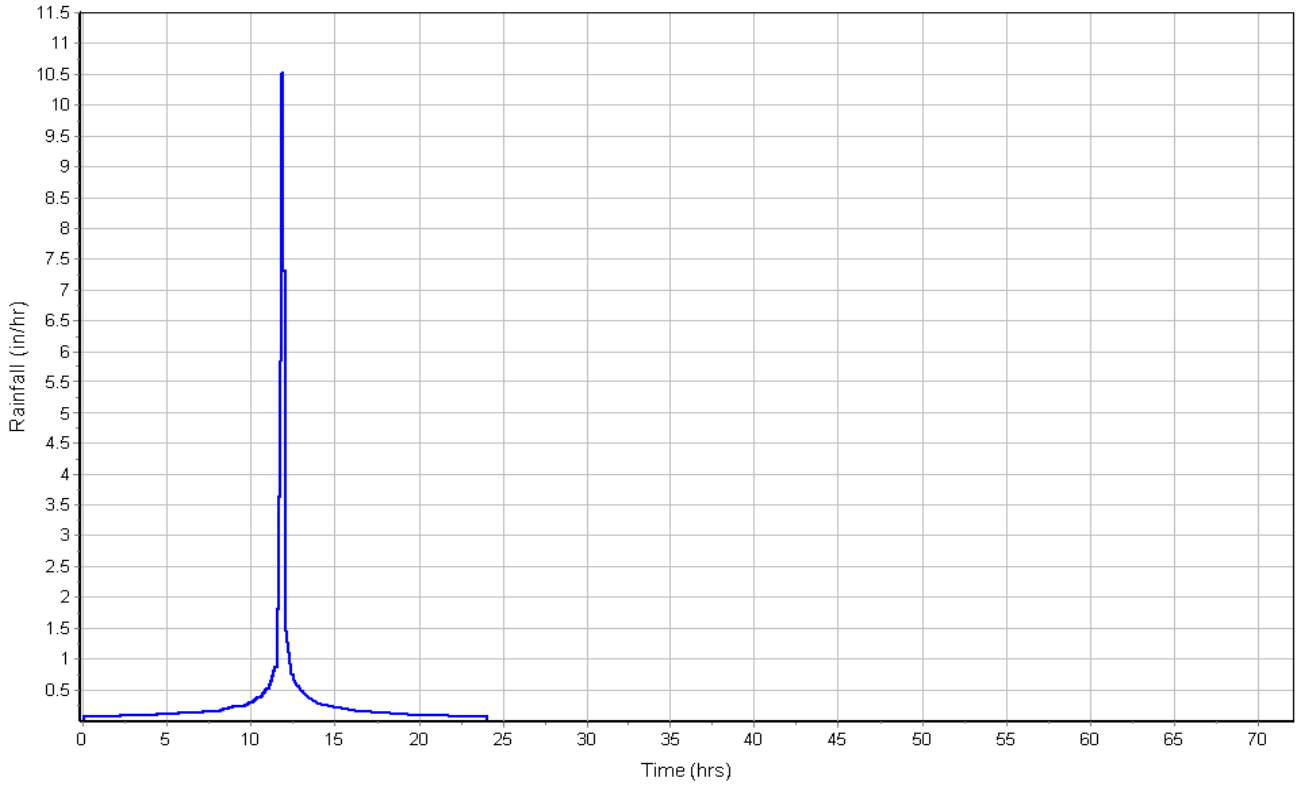
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

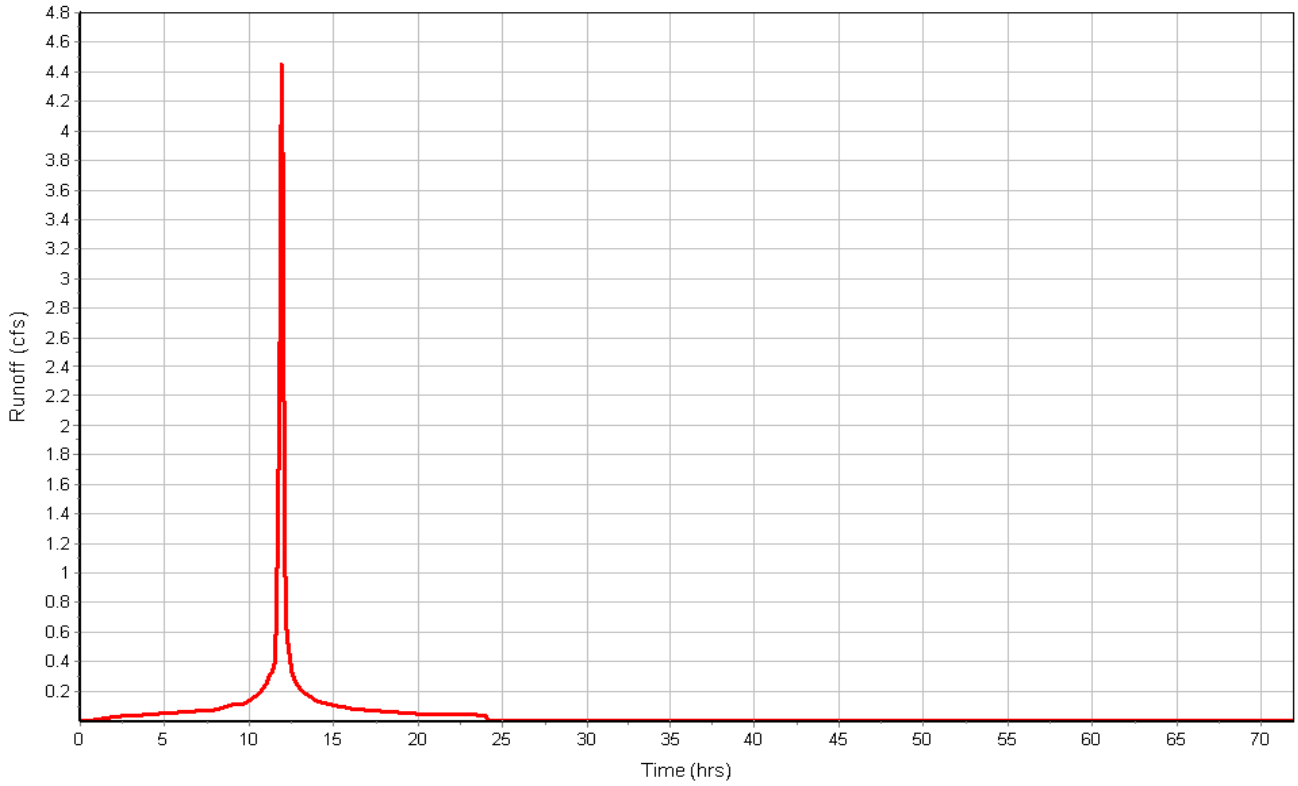
Total Rainfall (in) 7.67
Total Runoff (in) 7.43
Peak Runoff (cfs) 4.46
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-700

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-800

Input Data

Area (ac) 0.33
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.49	-	98.00
Composite Area & Weighted CN	0.49		98.00

Time of Concentration

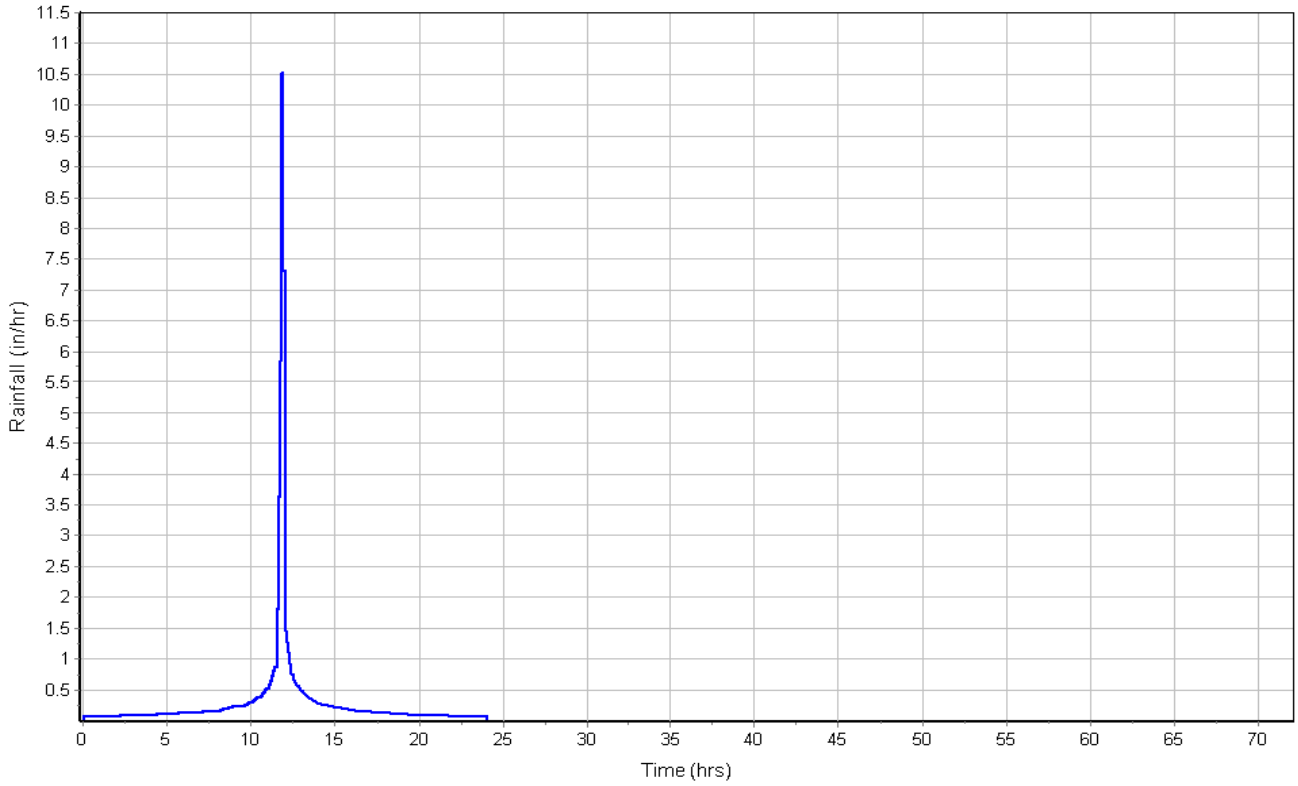
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

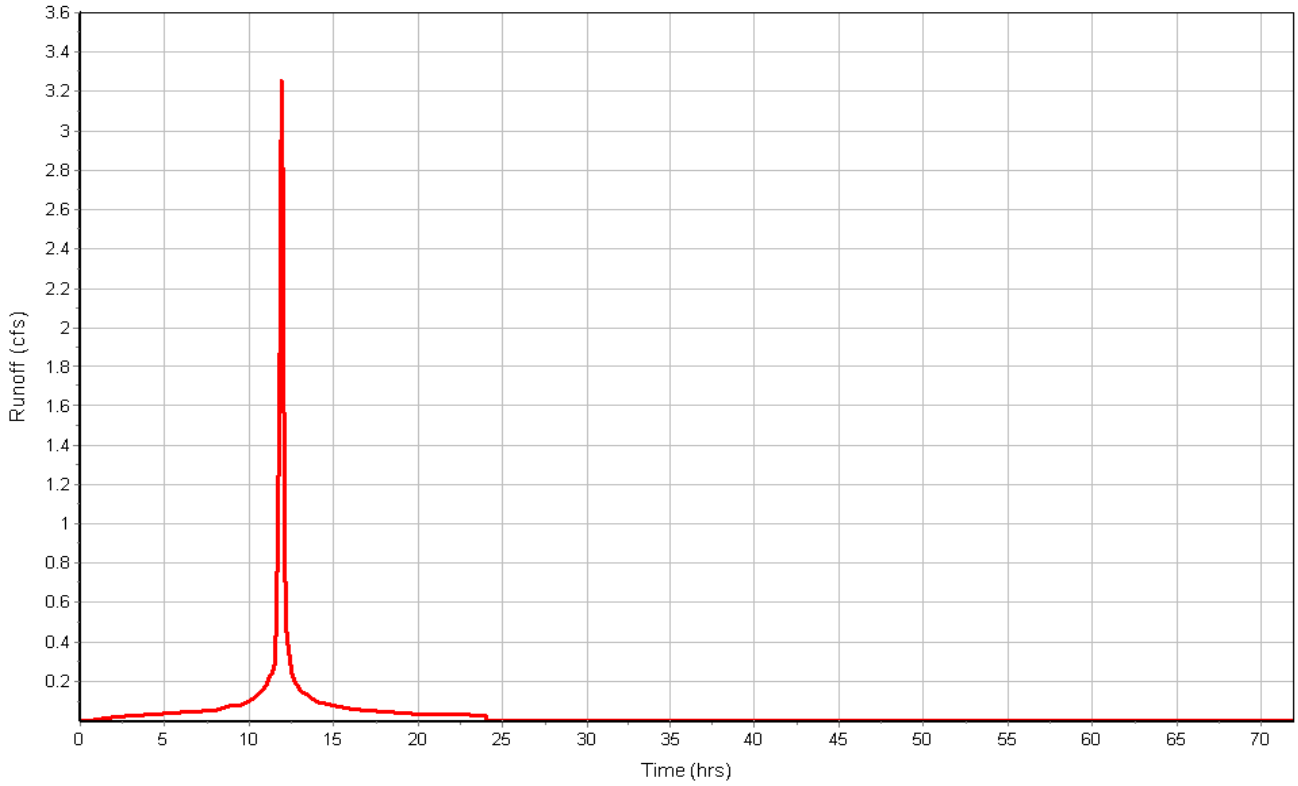
Total Rainfall (in) 7.67
Total Runoff (in) 7.43
Peak Runoff (cfs) 3.27
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-800

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-801

Input Data

Area (ac) 0.24
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.32	-	98.00
Composite Area & Weighted CN	0.32		98.00

Time of Concentration

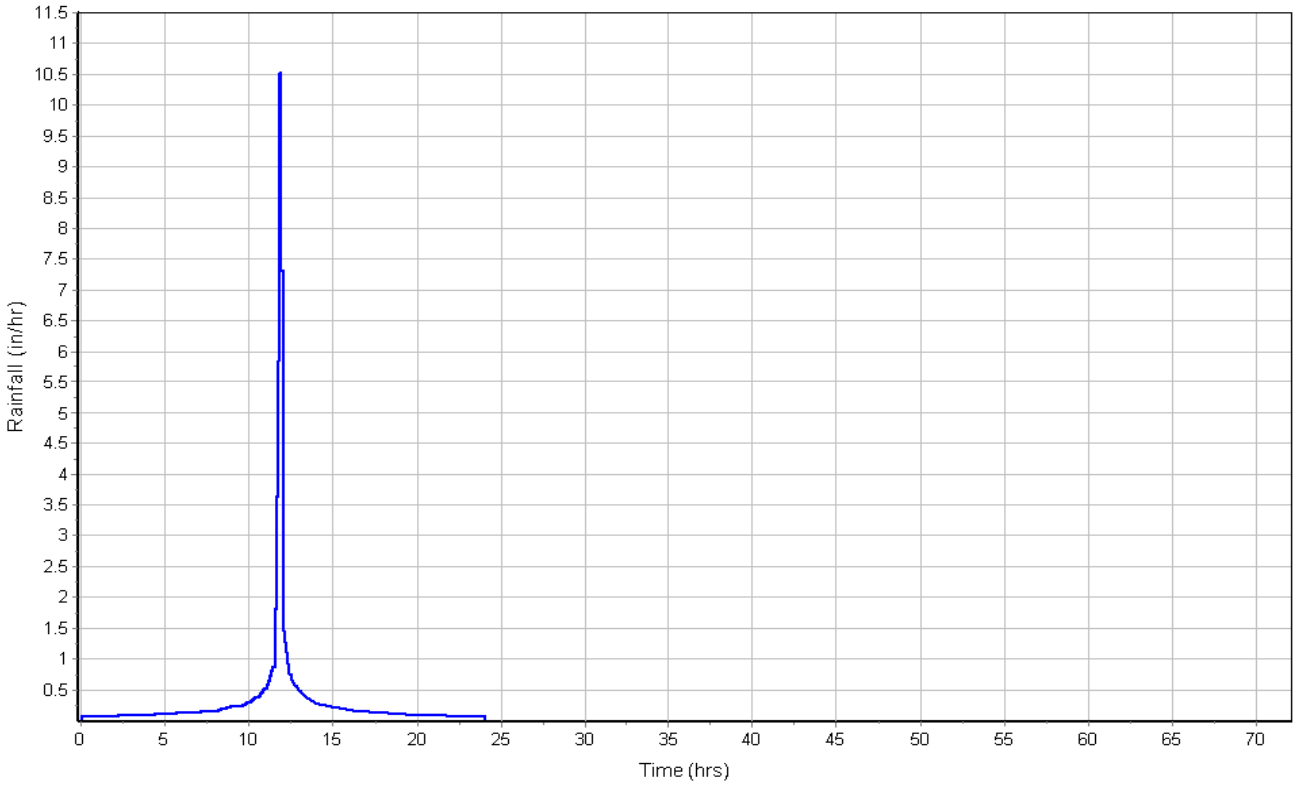
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

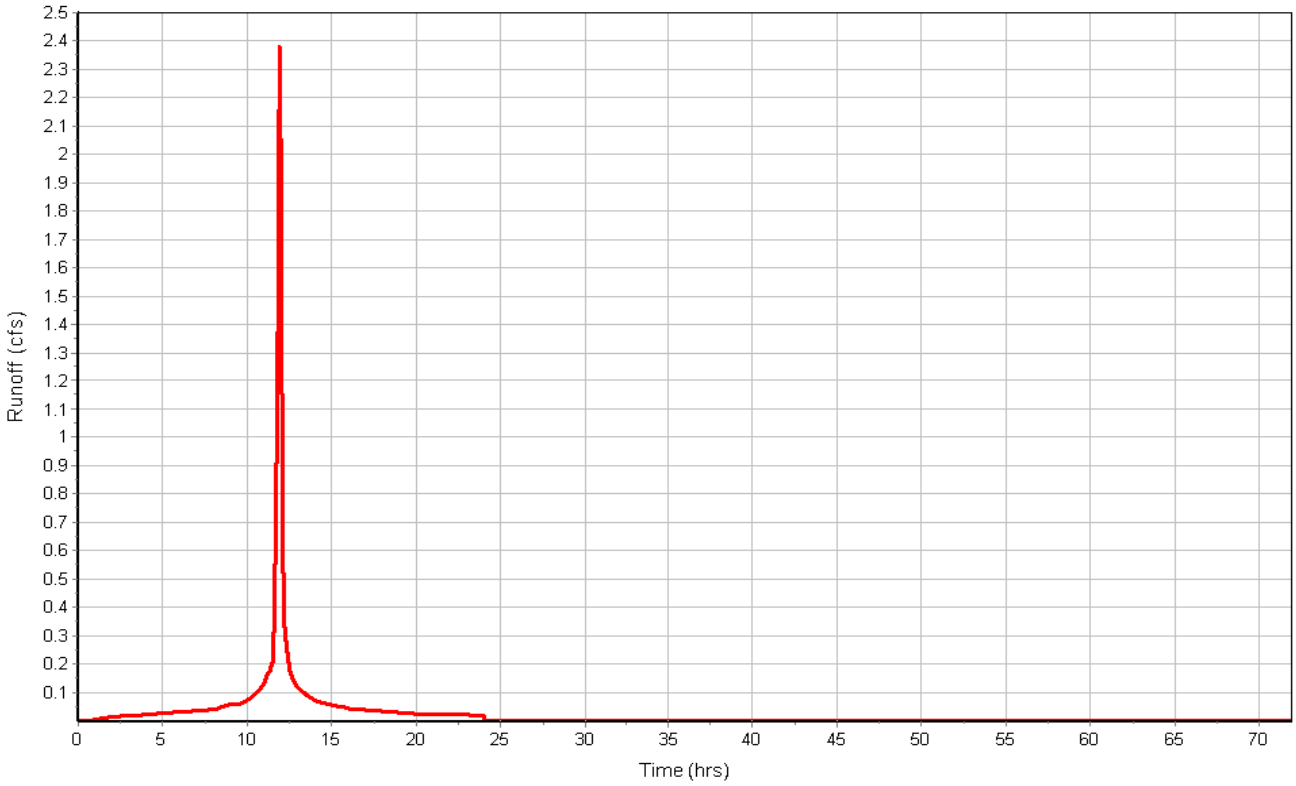
Total Rainfall (in) 7.67
Total Runoff (in) 7.43
Peak Runoff (cfs) 2.39
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-801

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-900

Input Data

Area (ac) 0.64
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.64	-	98.00
Composite Area & Weighted CN	0.64		98.00

Time of Concentration

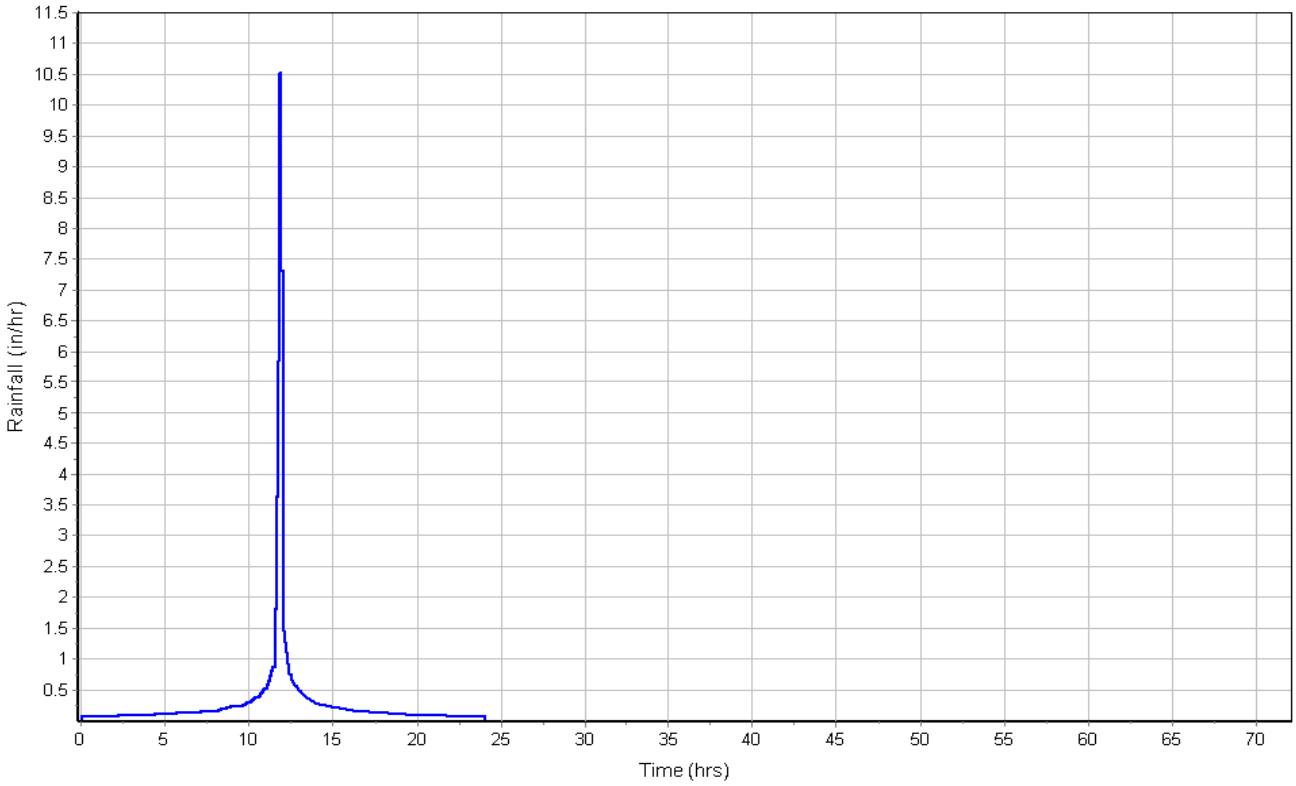
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

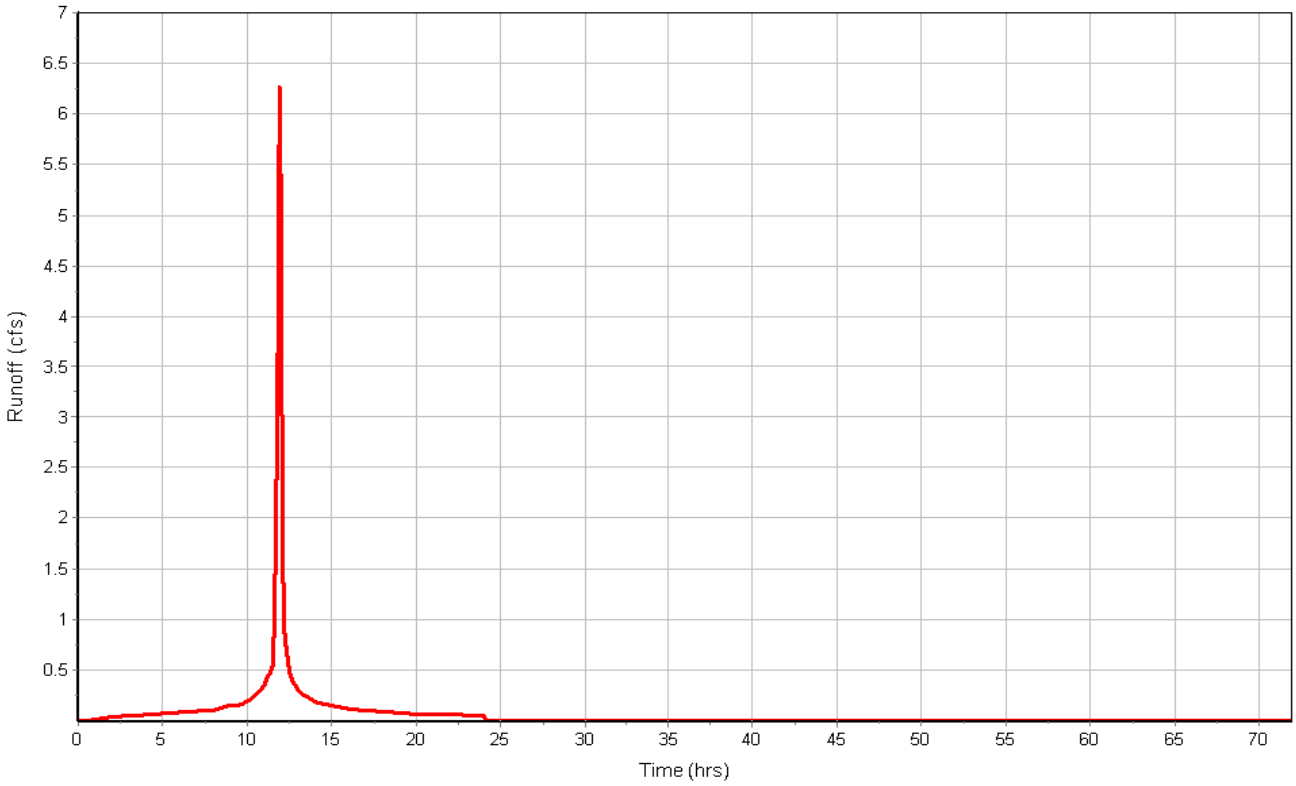
Total Rainfall (in) 7.67
Total Runoff (in) 7.43
Peak Runoff (cfs) 6.29
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-900

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-D1

Input Data

Area (ac) 0.35
Weighted Curve Number 70.60
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.35	-	70.60
Composite Area & Weighted CN	0.35		70.60

Time of Concentration

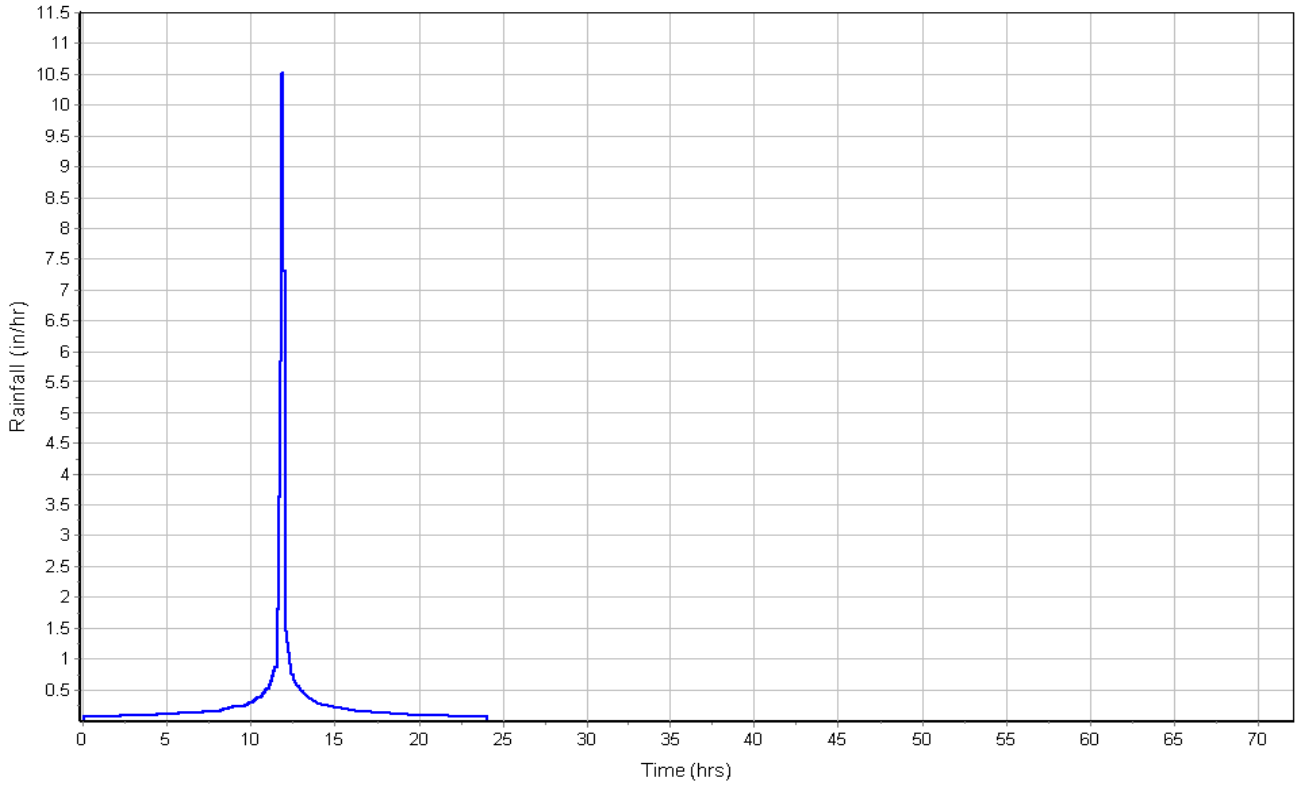
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

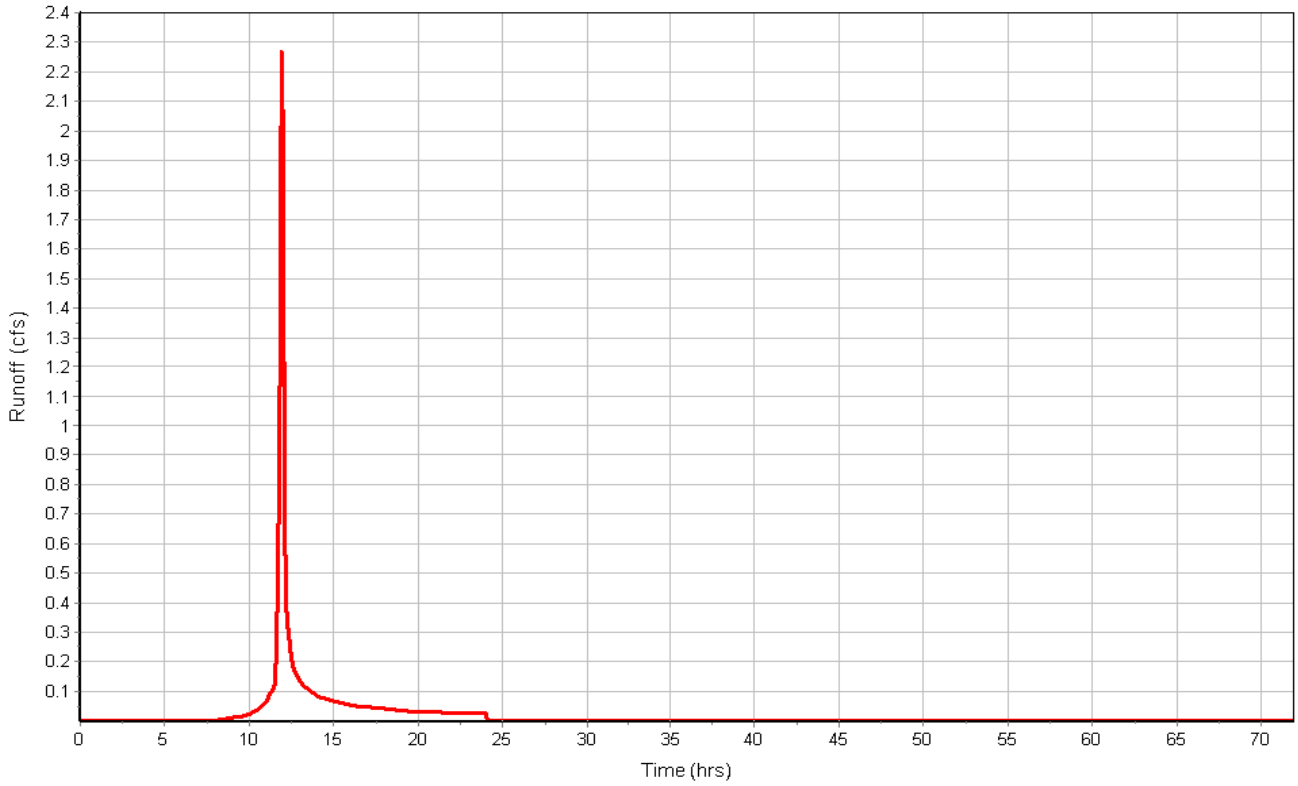
Total Rainfall (in) 7.67
Total Runoff (in) 4.25
Peak Runoff (cfs) 2.31
Weighted Curve Number 70.60
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-D1

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-D2

Input Data

Area (ac) 0.05
Weighted Curve Number 70.60
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.05	-	70.60
Composite Area & Weighted CN	0.05		70.60

Time of Concentration

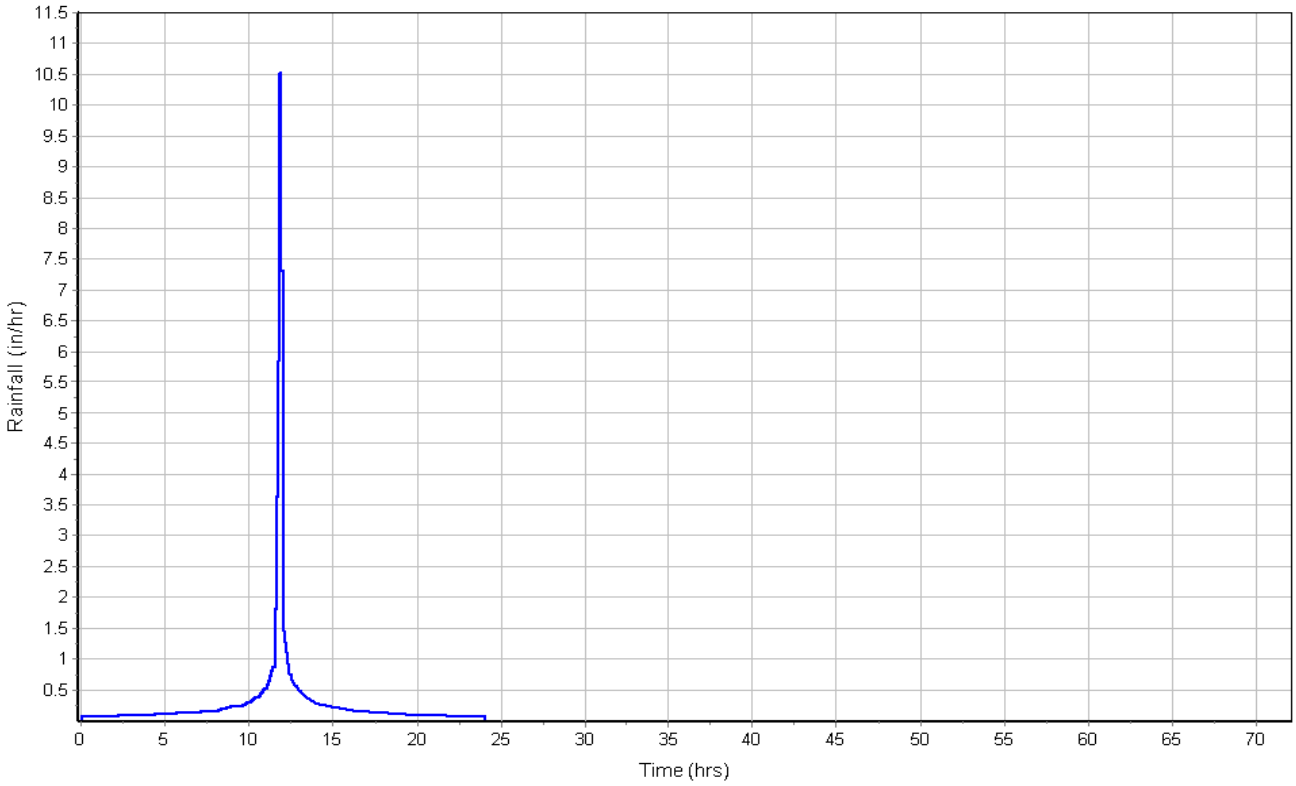
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

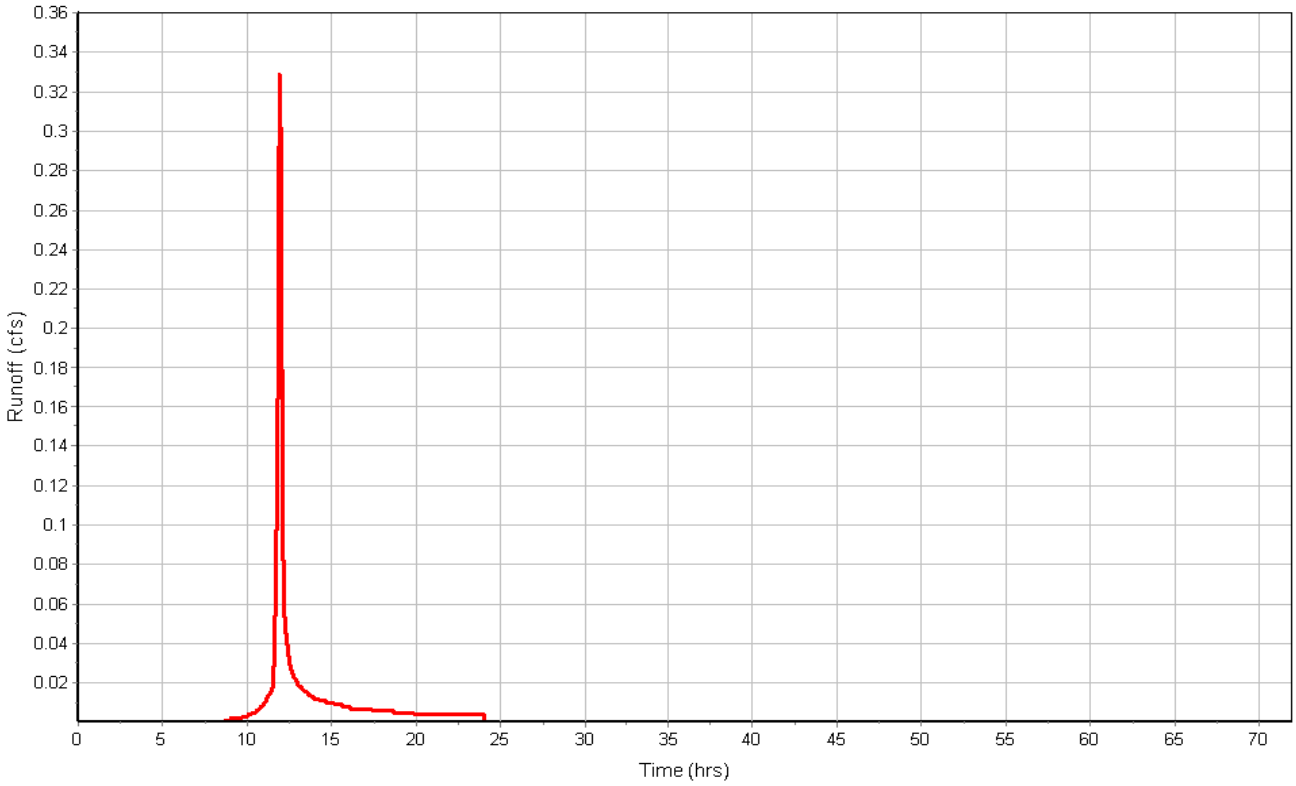
Total Rainfall (in) 7.67
Total Runoff (in) 4.24
Peak Runoff (cfs) 0.34
Weighted Curve Number 70.60
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-D2

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-D3

Input Data

Area (ac) 0.49
Weighted Curve Number 70.60
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	1.06	-	70.60
Composite Area & Weighted CN	1.06		70.60

Time of Concentration

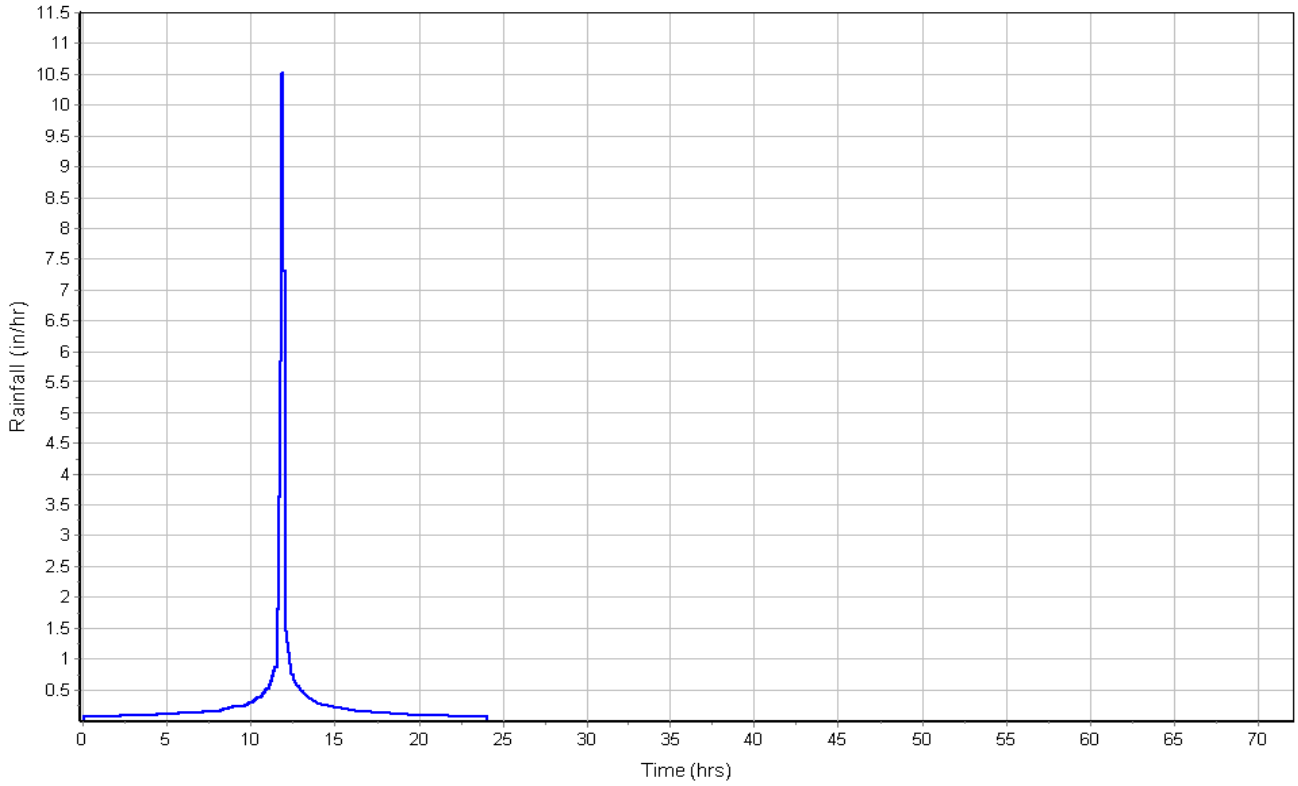
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

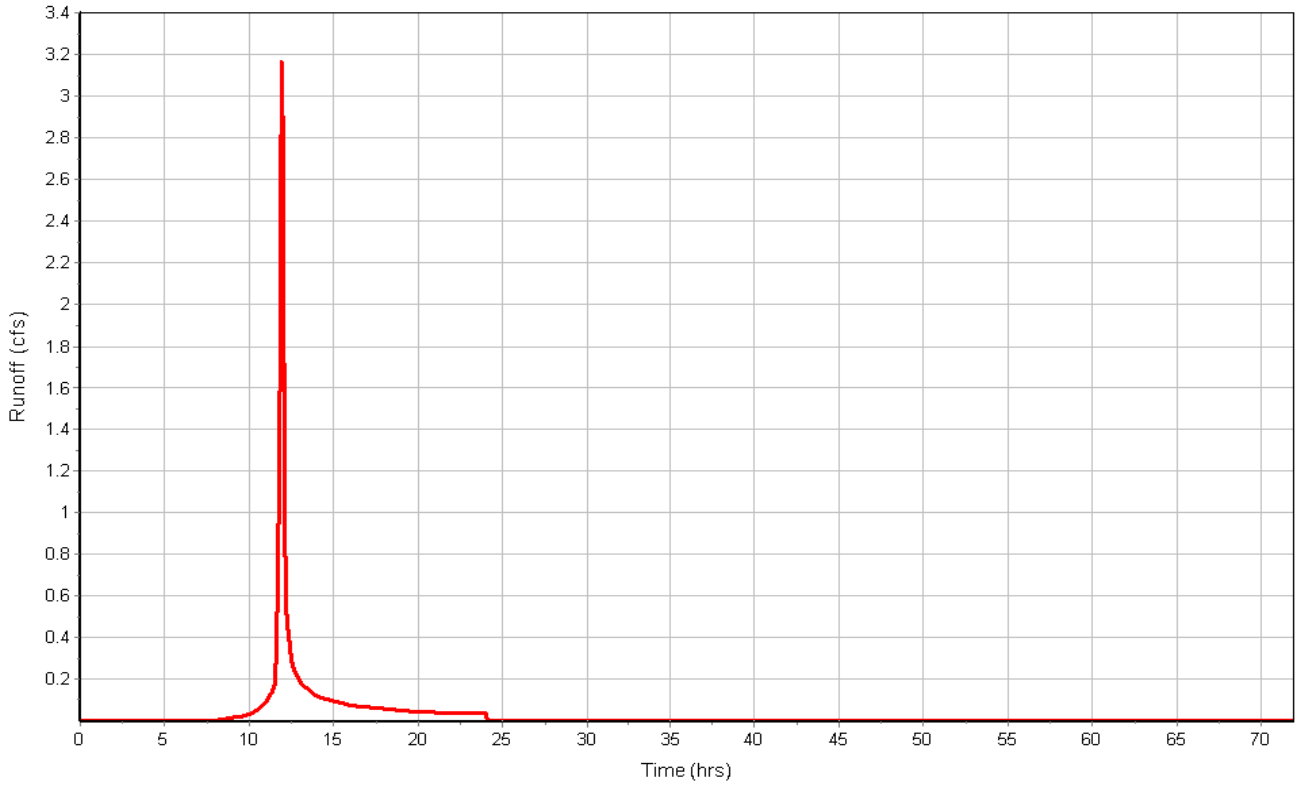
Total Rainfall (in) 7.67
Total Runoff (in) 4.25
Peak Runoff (cfs) 3.23
Weighted Curve Number 70.60
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-D3

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-D4

Input Data

Area (ac) 0.31
Weighted Curve Number 70.60
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.31	-	70.60
Composite Area & Weighted CN	0.31		70.60

Time of Concentration

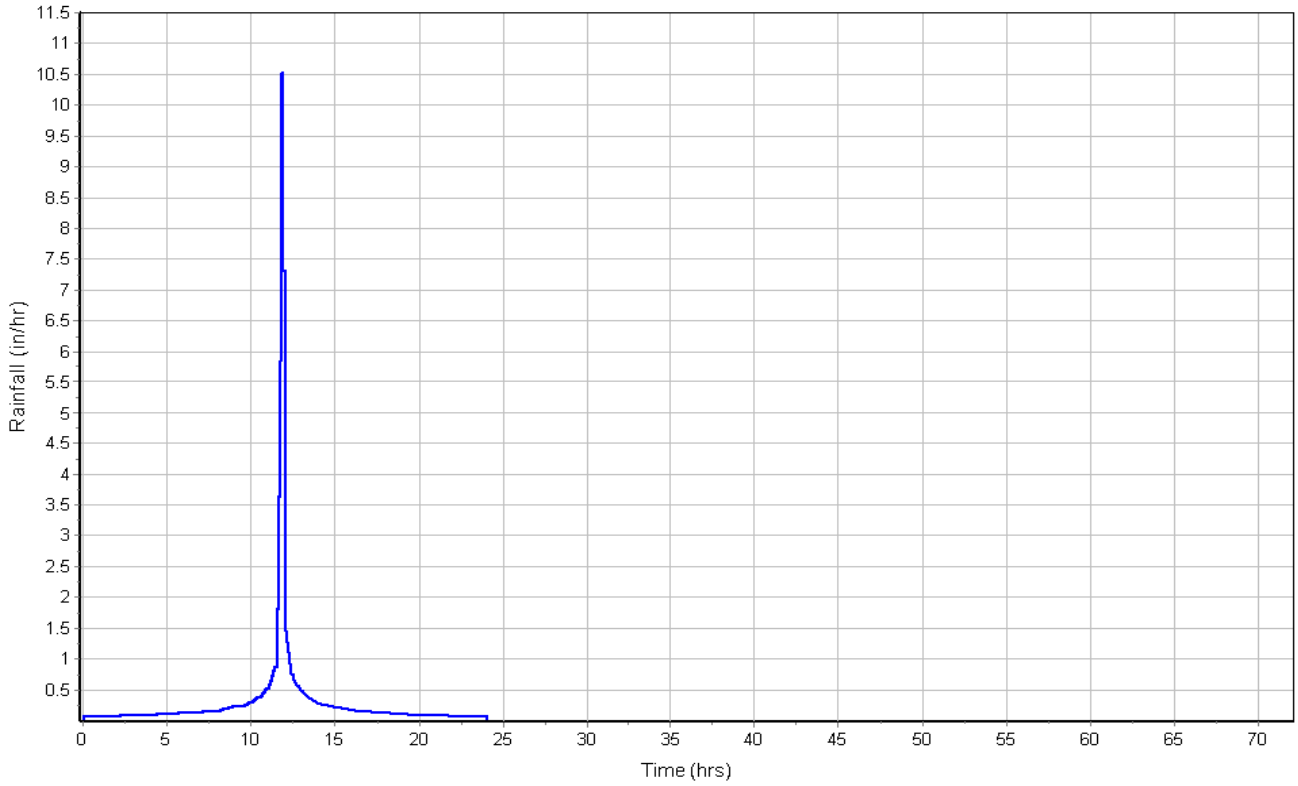
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

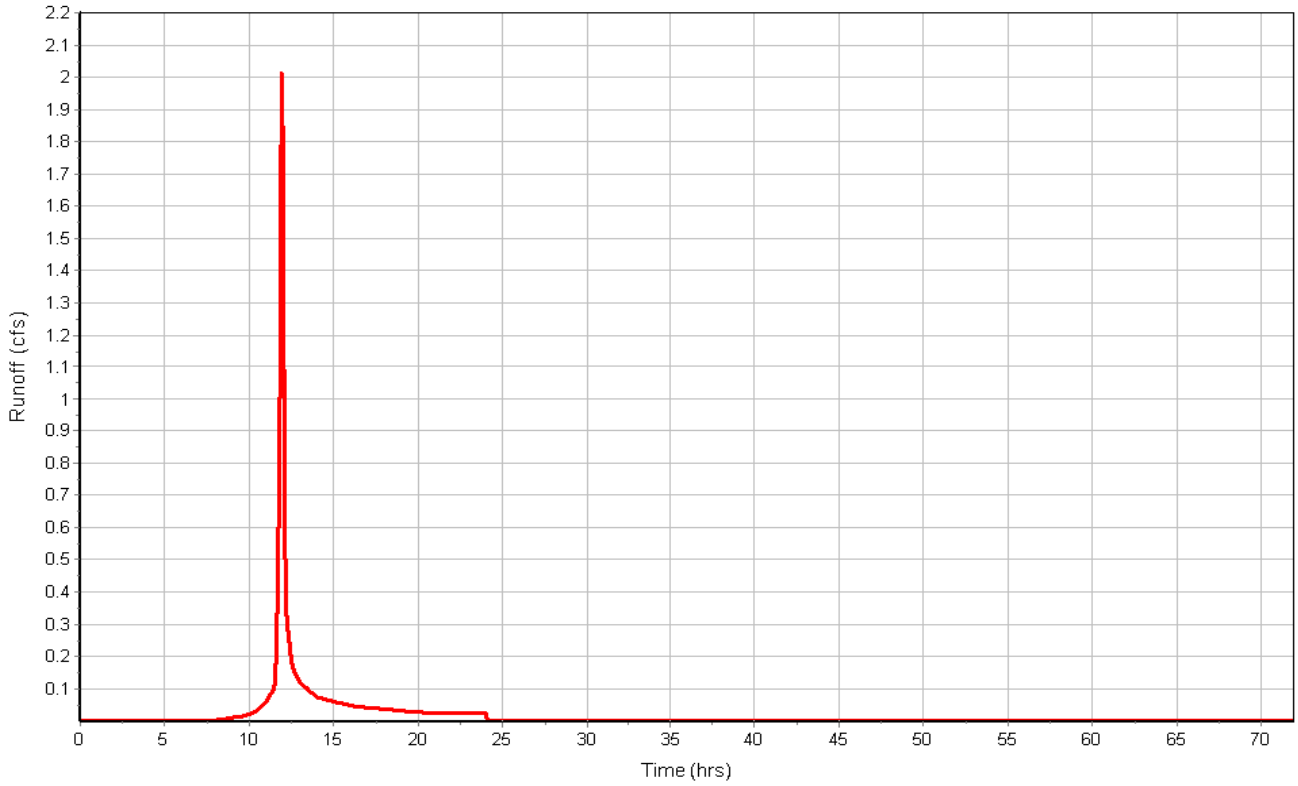
Total Rainfall (in) 7.67
Total Runoff (in) 4.25
Peak Runoff (cfs) 2.05
Weighted Curve Number 70.60
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-D4

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-P1

Input Data

Area (ac) 11.00
Weighted Curve Number 70.60
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	11.00	-	70.60
Composite Area & Weighted CN	11.00		70.60

Time of Concentration

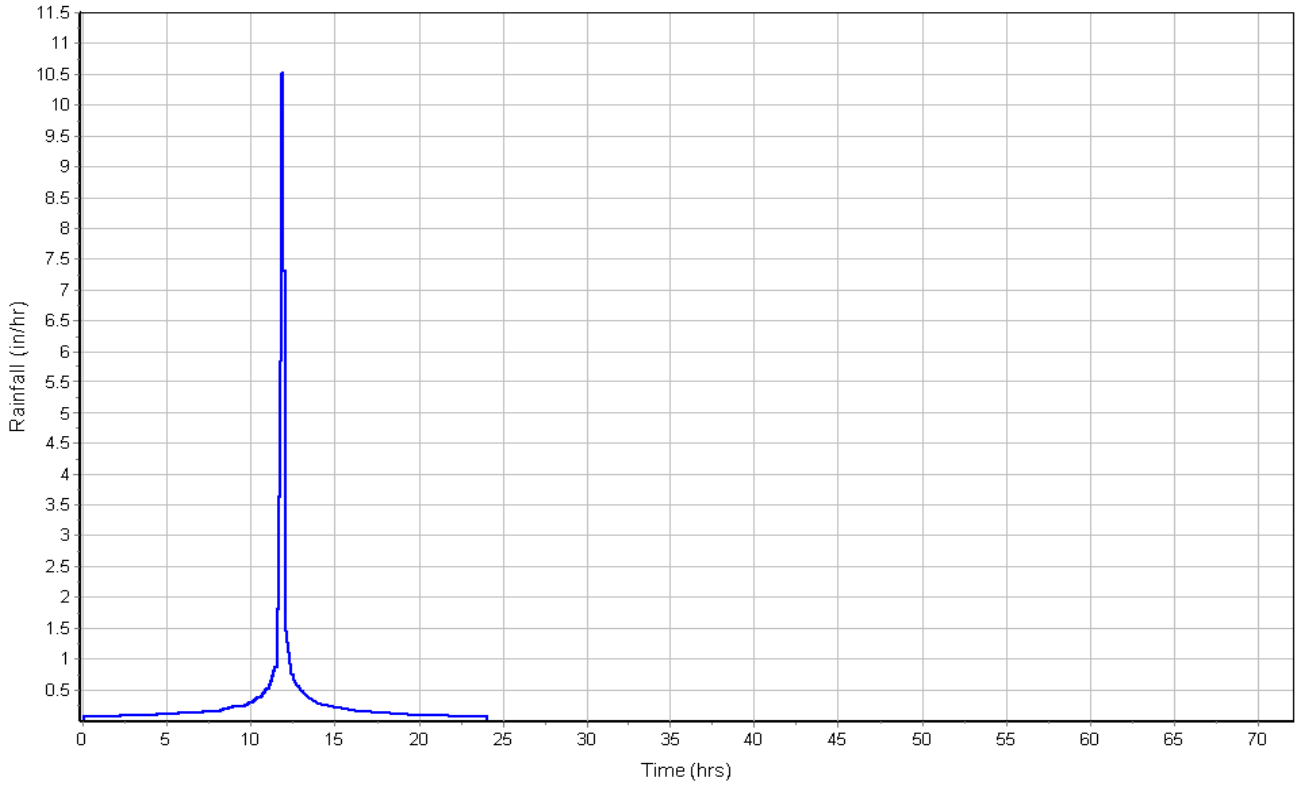
User-Defined TOC override (minutes): 6

Subbasin Runoff Results

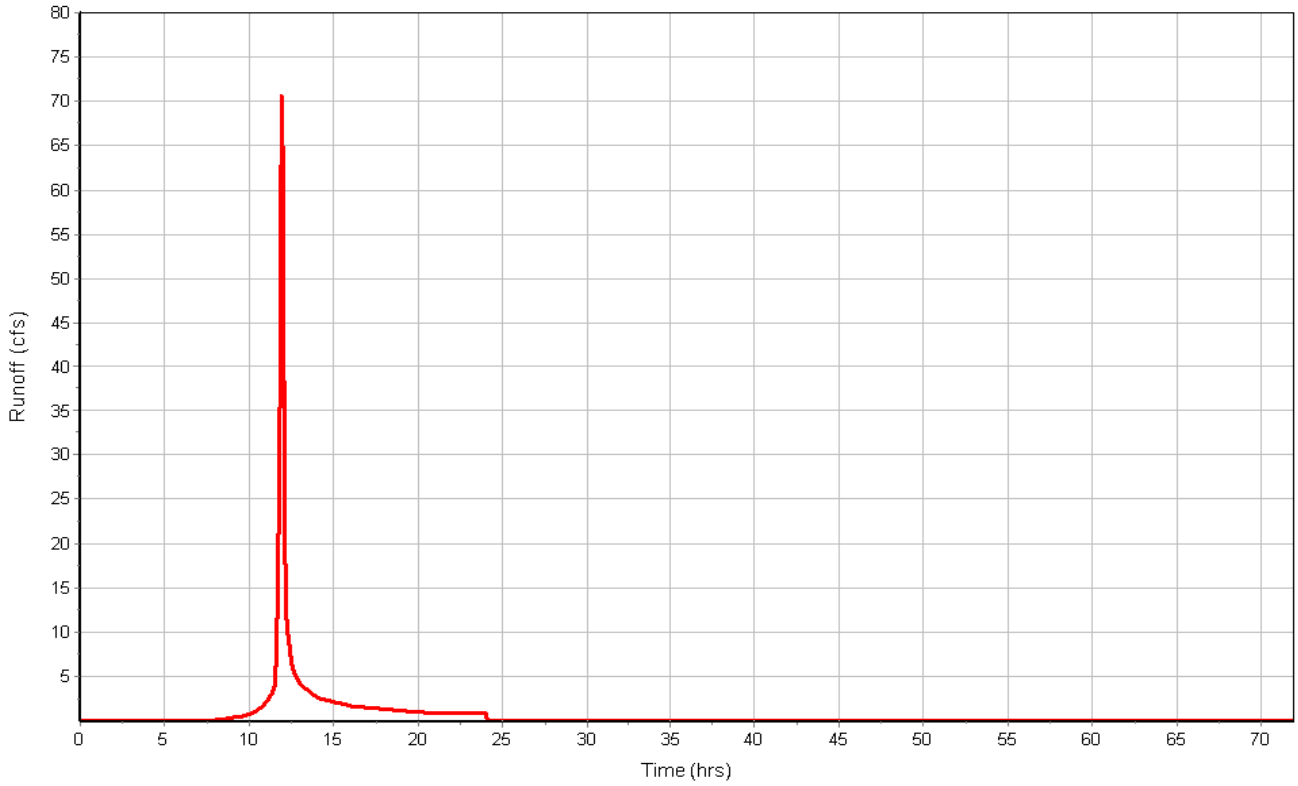
Total Rainfall (in) 7.67
Total Runoff (in) 4.25
Peak Runoff (cfs) 72.06
Weighted Curve Number 70.60
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-P1

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST-OSB1

Input Data

Area (ac) 5.63
Weighted Curve Number 95.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	5.63	-	95.00
Composite Area & Weighted CN	5.63		95.00

Time of Concentration

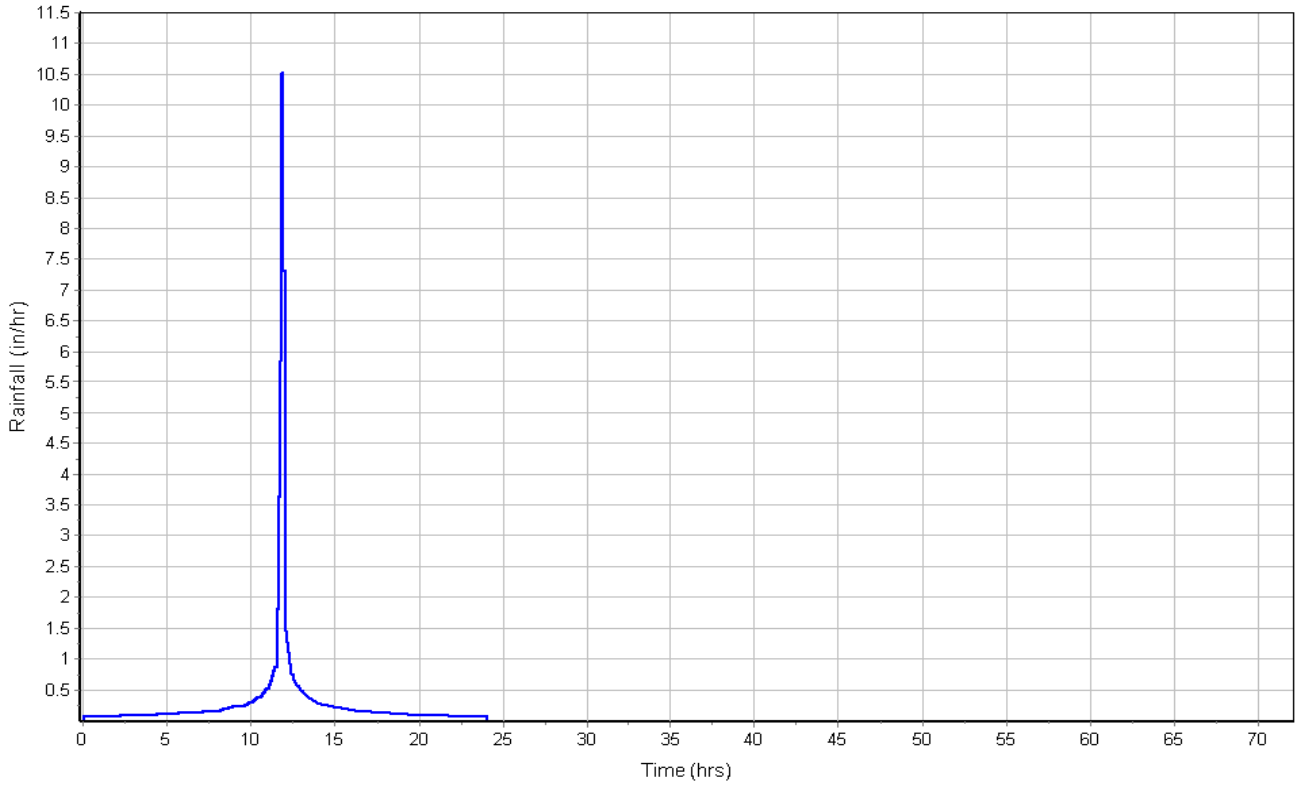
User-Defined TOC override (minutes): 6.4

Subbasin Runoff Results

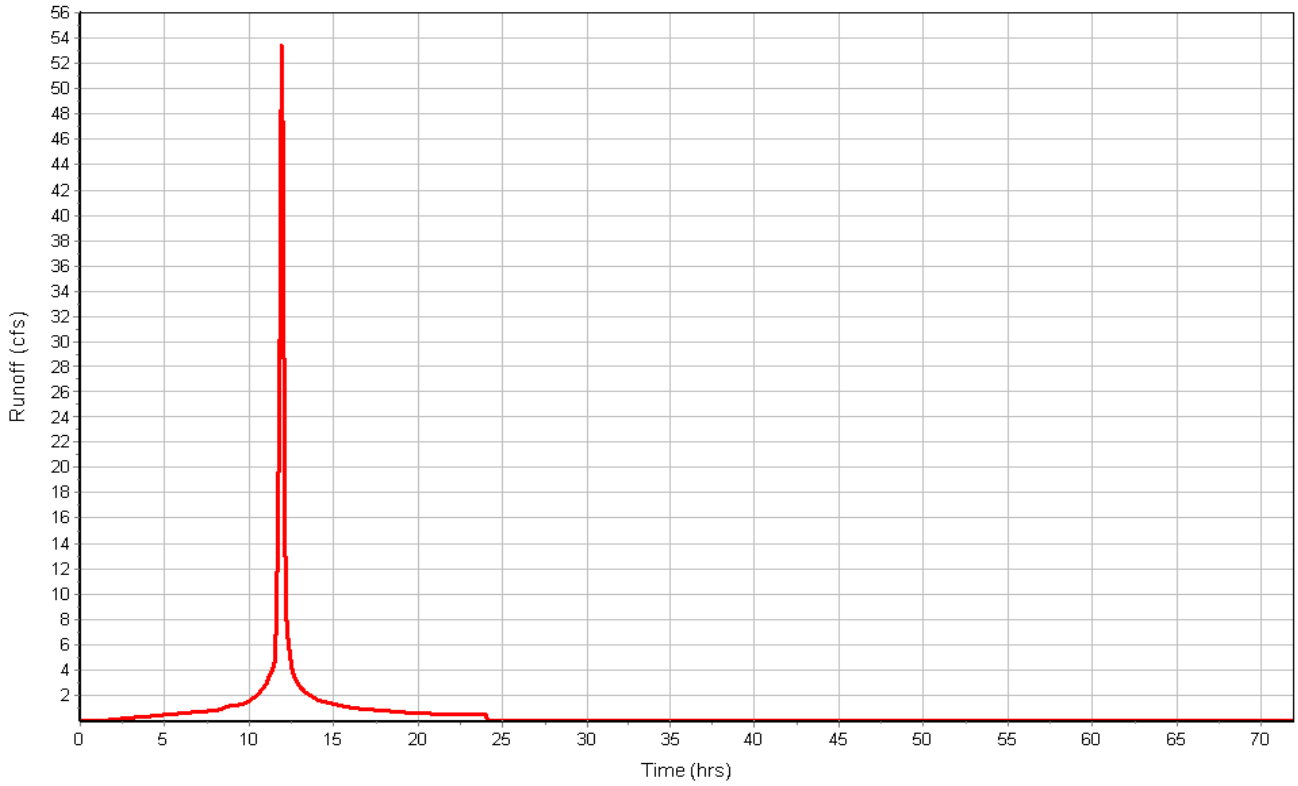
Total Rainfall (in) 7.67
Total Runoff (in) 7.07
Peak Runoff (cfs) 54.03
Weighted Curve Number 95.00
Time of Concentration (days hh:mm:ss) 0 00:06:24

Subbasin : POST-OSB1

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST-SB1

Input Data

Area (ac) 18.31
Weighted Curve Number 47.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	16.91	-	47.00
-	1.40	-	47.00
Composite Area & Weighted CN	18.31		47.00

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.01	0.00	0.00
Flow Length (ft) :	300	0.00	0.00
Slope (%) :	.033	0.00	0.00
2 yr, 24 hr Rainfall (in) :	4.35	0.00	0.00
Velocity (ft/sec) :	0.42	0.00	0.00
Computed Flow Time (min) :	11.98	0.00	0.00

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	500	0.00	0.00
Slope (%) :	0.4	0.00	0.00
Surface Type :	Paved	Unpaved	Unpaved
Velocity (ft/sec) :	1.40	0.00	0.00
Computed Flow Time (min) :	5.95	0.00	0.00

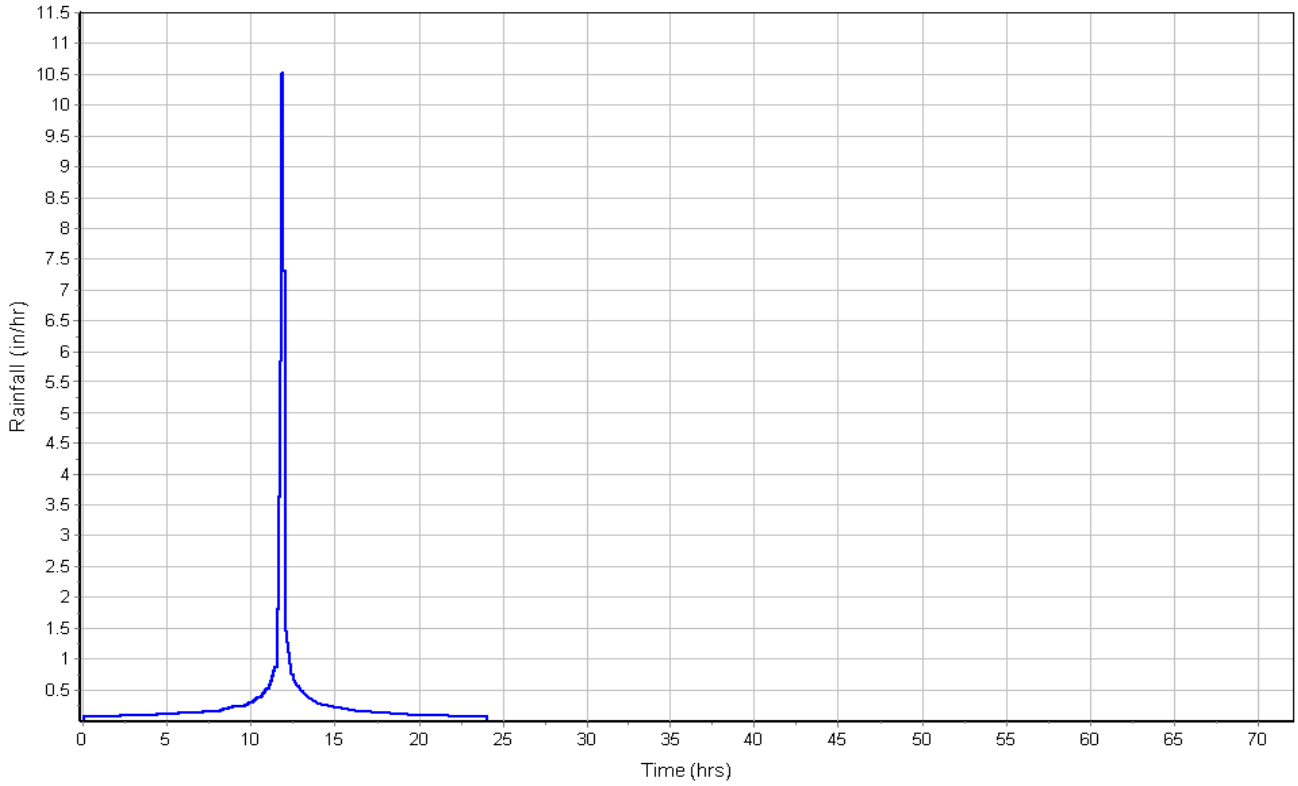
Total TOC (min) 17.93

Subbasin Runoff Results

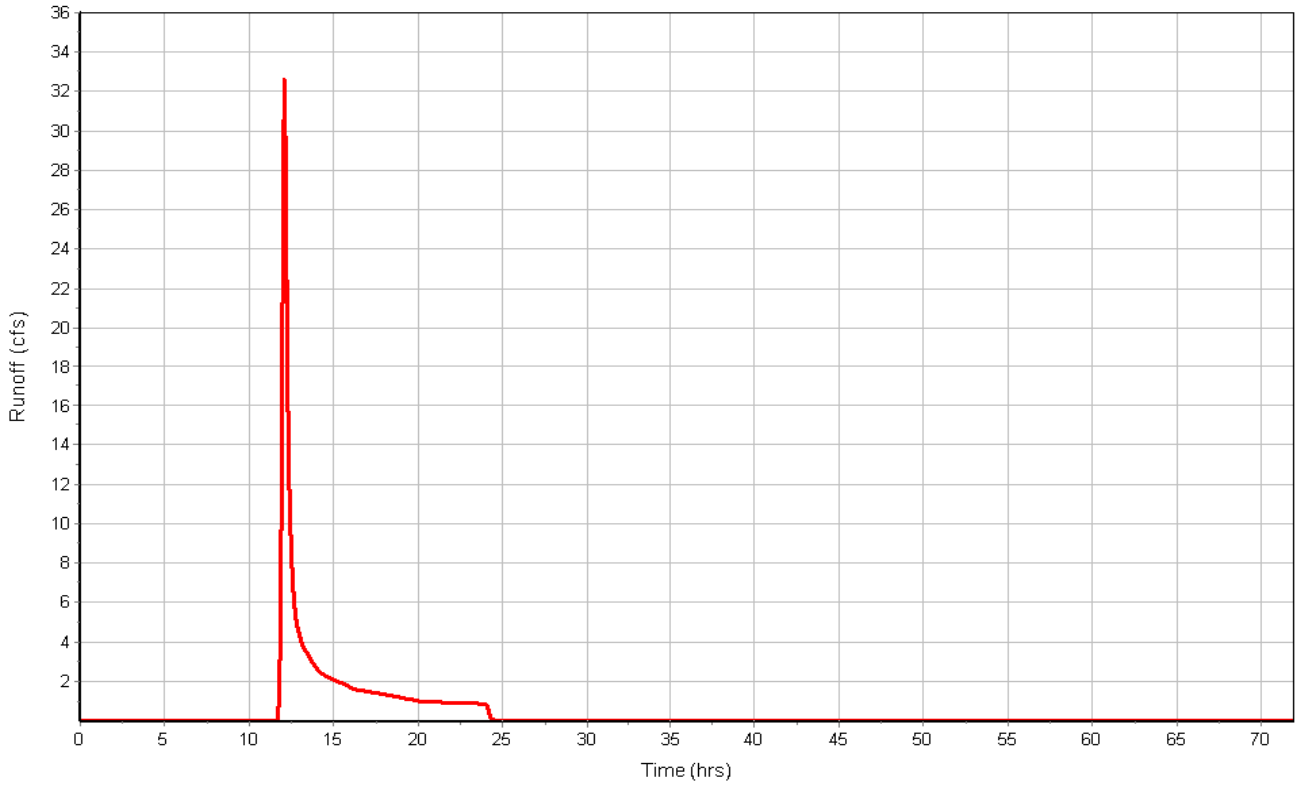
Total Rainfall (in) 7.67
Total Runoff (in) 1.76
Peak Runoff (cfs) 32.90
Weighted Curve Number 47.00
Time of Concentration (days hh:mm:ss) 0 00:17:56

Subbasin : POST-SB1

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST-SB2

Input Data

Area (ac) 6.53
Weighted Curve Number 94.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	6.53	-	94.00
Composite Area & Weighted CN	6.53		94.00

Time of Concentration

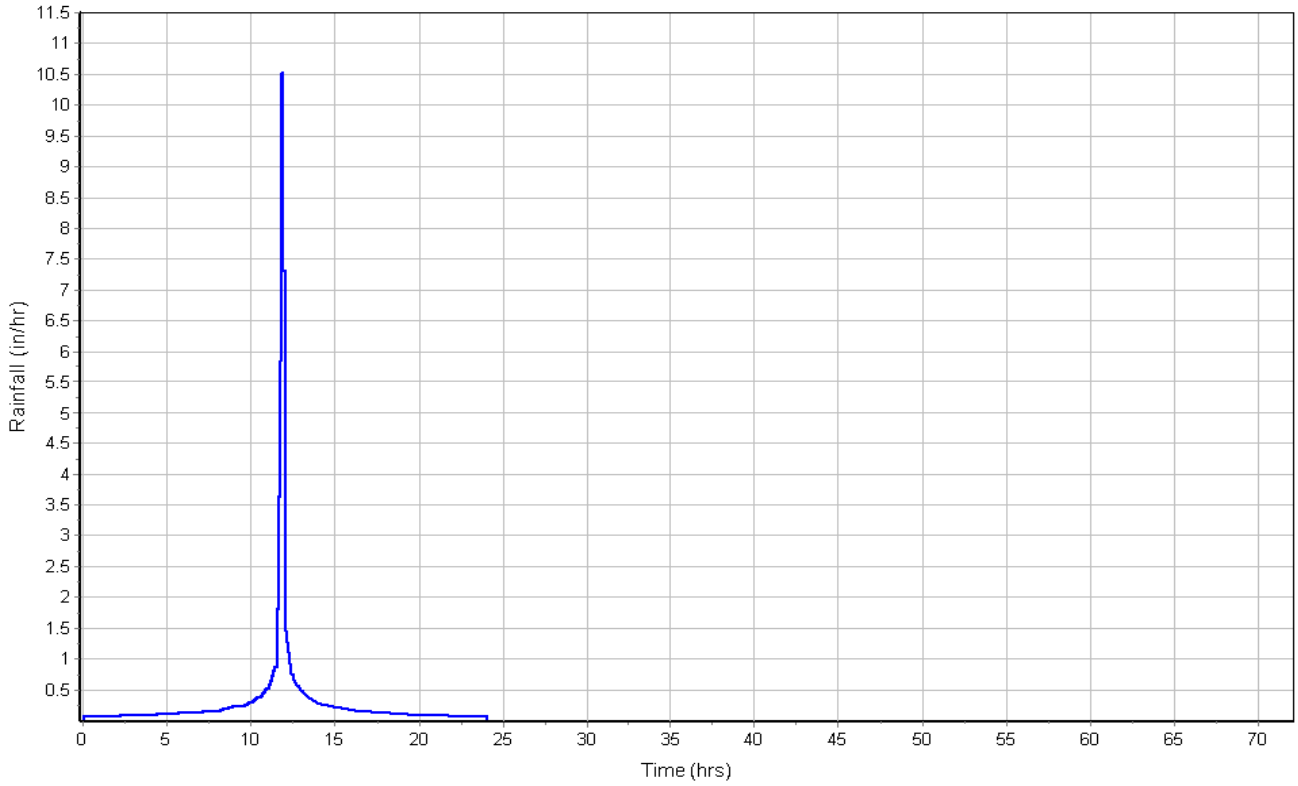
User-Defined TOC override (minutes): 6.6

Subbasin Runoff Results

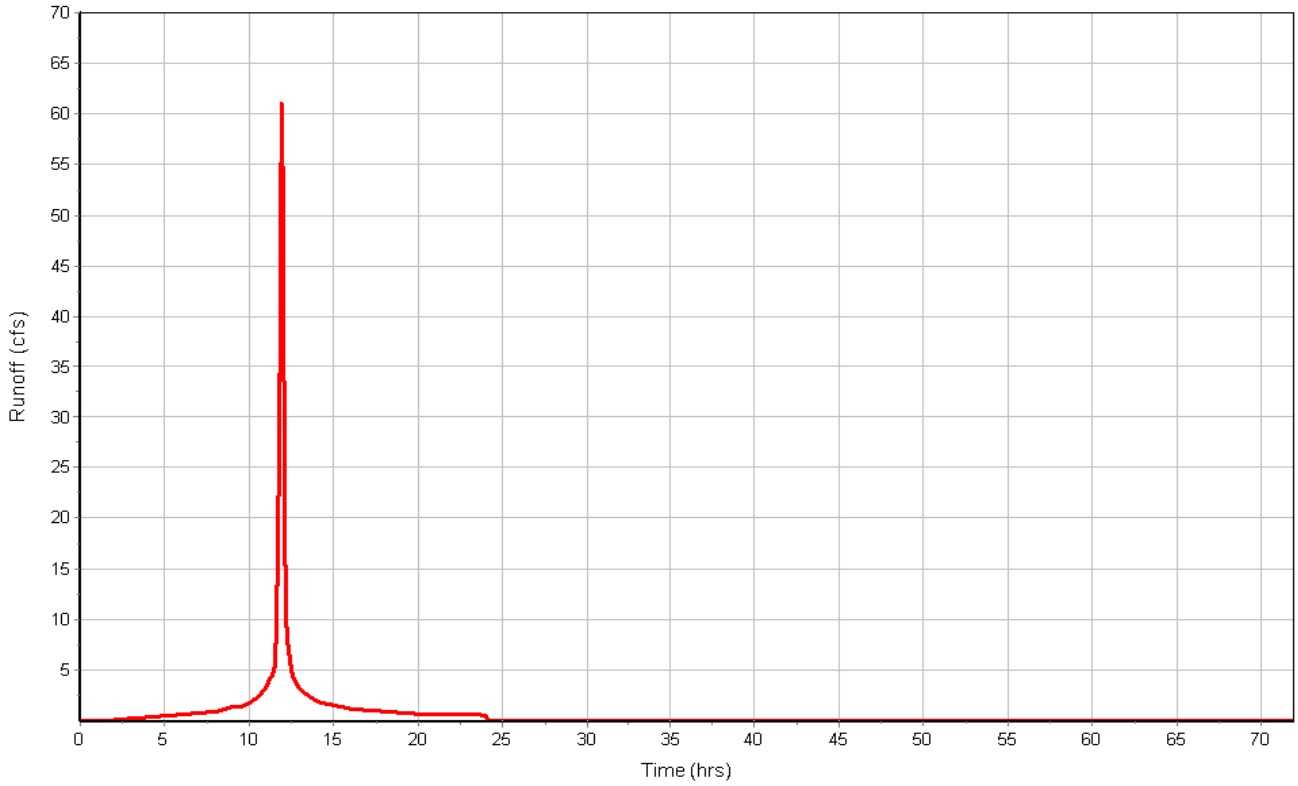
Total Rainfall (in) 7.67
Total Runoff (in) 6.95
Peak Runoff (cfs) 61.88
Weighted Curve Number 94.00
Time of Concentration (days hh:mm:ss) 0 00:06:36

Subbasin : POST-SB2

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-OSB1

Input Data

Area (ac) 5.63
Weighted Curve Number 95.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	5.63	-	95.00
Composite Area & Weighted CN	5.63		95.00

Time of Concentration

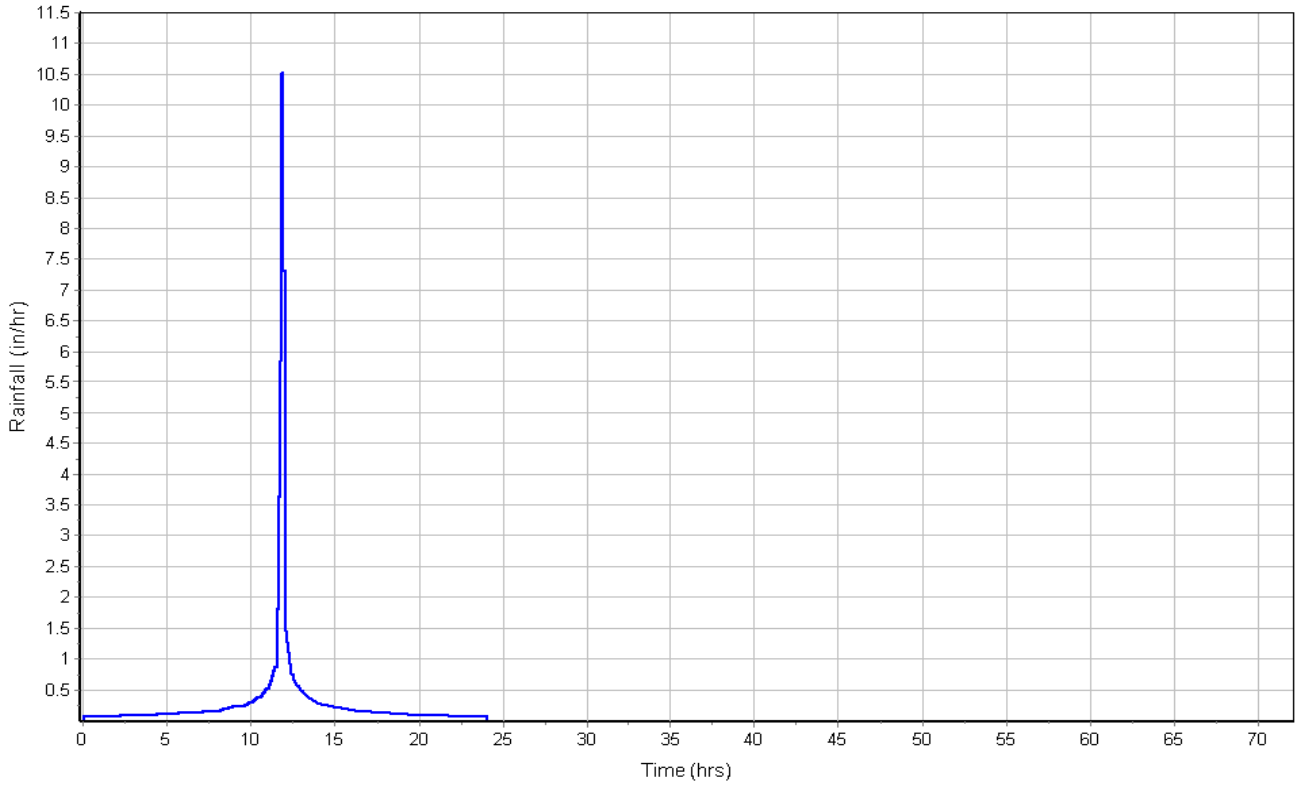
User-Defined TOC override (minutes): 6.4

Subbasin Runoff Results

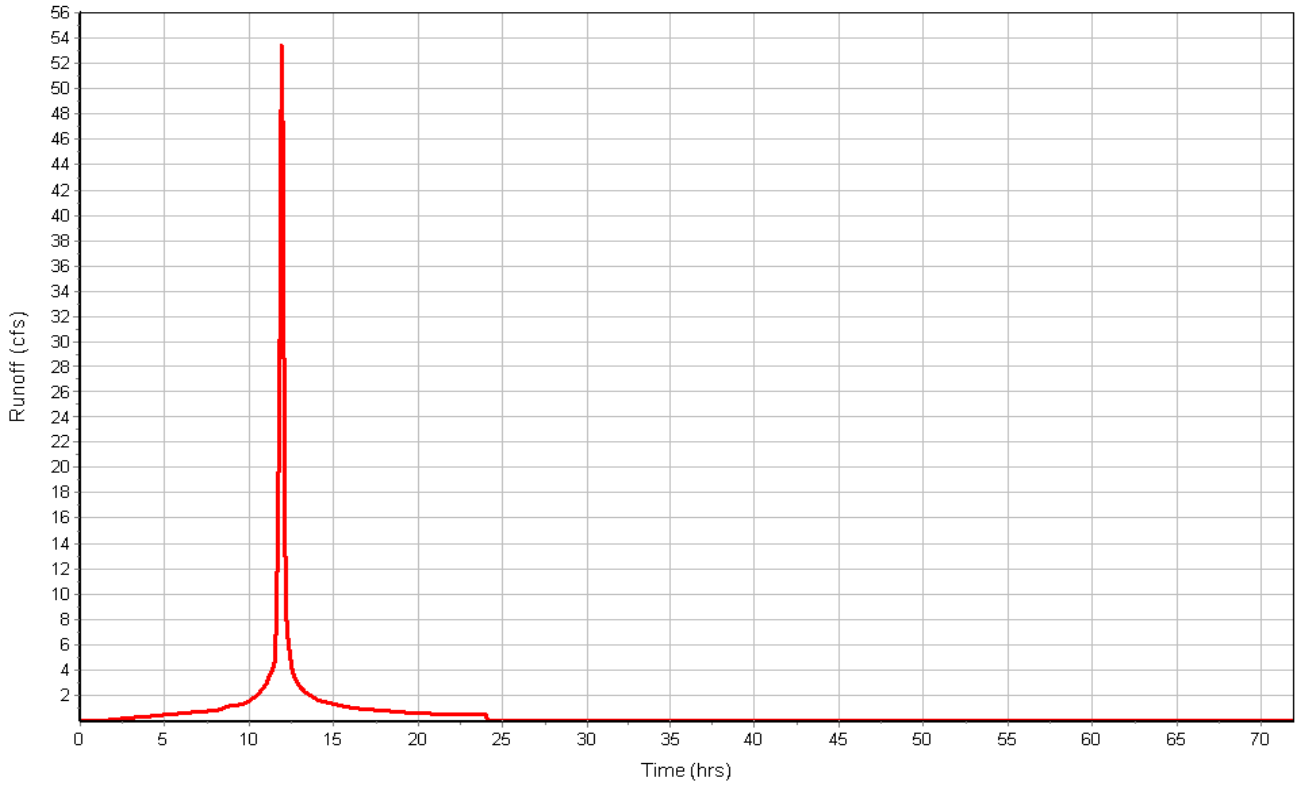
Total Rainfall (in) 7.67
Total Runoff (in) 7.07
Peak Runoff (cfs) 54.03
Weighted Curve Number 95.00
Time of Concentration (days hh:mm:ss) 0 00:06:24

Subbasin : PRE-OSB1

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-SB1

Input Data

Area (ac) 5.69
Weighted Curve Number 41.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	5.69	-	41.00
Composite Area & Weighted CN	5.69		41.00

Time of Concentration

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft^2)	Minimum Pipe Cover (in)
1	100	68.24	73.50	5.27	0.00	-68.24	74.00	0.50	0.00	0.00
2	101	69.04	73.50	4.47	0.00	-69.04	74.00	0.50	0.00	0.00
3	102	69.72	73.50	3.79	0.00	-69.72	74.00	0.50	0.00	0.00
4	103	70.00	73.50	3.51	0.00	-70.00	74.00	0.50	0.00	0.00
5	104	70.37	73.50	3.14	0.00	-70.37	74.00	0.50	0.00	0.00
6	201	66.60	71.83	5.23	0.00	-66.60	71.83	0.00	0.00	0.00
7	202	68.15	73.50	5.35	0.00	-68.15	74.00	0.50	0.00	0.00
8	203	68.80	73.50	4.70	0.00	-68.80	74.00	0.50	0.00	0.00
9	204	69.45	73.50	4.05	0.00	-69.45	74.00	0.50	0.00	0.00
10	205	69.67	73.50	3.83	0.00	-69.67	74.00	0.50	0.00	0.00
11	206	70.80	73.50	2.70	0.00	-70.80	74.00	0.50	0.00	0.00
12	207	71.00	73.50	2.50	0.00	-71.00	74.00	0.50	0.00	0.00
13	300	69.96	73.50	3.54	0.00	-69.96	74.00	0.50	0.00	0.00
14	301	70.47	73.50	3.03	0.00	-70.47	74.00	0.50	0.00	0.00
15	400	70.72	73.50	2.78	0.00	-70.72	74.00	0.50	0.00	0.00
16	500	70.80	73.50	2.70	0.00	-70.80	74.00	0.50	0.00	0.00
17	601	67.40	73.50	6.11	0.00	-67.40	74.00	0.50	0.00	0.00
18	602	68.06	73.50	5.44	0.00	-68.06	74.00	0.50	0.00	0.00
19	603	68.65	73.50	4.85	0.00	-68.65	74.00	0.50	0.00	0.00
20	604	69.40	73.50	4.10	0.00	-69.40	74.00	0.50	0.00	0.00
21	605	69.60	73.50	3.90	0.00	-69.60	74.00	0.50	0.00	0.00
22	606	69.93	73.50	3.57	0.00	-69.93	74.00	0.50	0.00	0.00
23	607	70.34	73.50	3.16	0.00	-70.34	74.00	0.50	0.00	0.00
24	608	70.48	73.50	3.02	0.00	-70.48	74.00	0.50	0.00	0.00
25	700	70.95	73.50	2.55	0.00	-70.95	74.00	0.50	0.00	0.00
26	800	70.18	73.50	3.32	0.00	-70.18	74.00	0.50	0.00	0.00
27	801	70.56	73.50	2.94	0.00	-70.56	74.00	0.50	0.00	0.00
28	900	70.25	73.50	3.25	0.00	-70.25	74.00	0.50	0.00	0.00
29	1400	69.89	73.50	3.62	0.00	-69.89	74.00	0.50	0.00	0.00
30	D1	66.05	71.00	4.95	0.00	-66.05	0.00	-71.00	0.00	0.00
31	D2	66.15	71.00	4.85	0.00	-66.15	0.00	-71.00	0.00	0.00
32	D3	67.54	71.00	3.46	0.00	-67.54	0.00	-71.00	0.00	0.00
33	D4	67.65	71.00	3.35	0.00	-67.65	0.00	-71.00	0.00	0.00

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	100	14.57	0.91	69.64	1.41	0.00	3.86	68.46	0.23	0 12:01	0 00:00	0.00	0.00
2	101	12.59	2.51	70.61	1.58	0.00	2.89	69.28	0.25	0 12:01	0 00:00	0.00	0.00
3	102	10.21	2.17	71.34	1.62	0.00	2.16	69.98	0.26	0 12:00	0 00:00	0.00	0.00
4	103	8.17	2.97	71.67	1.67	0.00	1.83	70.26	0.26	0 12:00	0 00:00	0.00	0.00
5	104	5.20	5.20	72.01	1.65	0.00	1.49	70.61	0.25	0 12:00	0 00:00	0.00	0.00
6	201	33.51	1.56	68.19	1.59	0.00	3.64	66.86	0.26	0 12:01	0 00:00	0.00	0.00
7	202	32.03	3.71	69.95	1.80	0.00	3.55	68.43	0.28	0 12:01	0 00:00	0.00	0.00
8	203	22.56	4.70	70.94	2.14	0.00	2.56	69.15	0.35	0 12:01	0 00:00	0.00	0.00
9	204	18.11	3.63	71.49	2.04	0.00	2.01	69.78	0.33	0 12:01	0 00:00	0.00	0.00
10	205	14.67	1.38	71.73	2.06	0.00	1.77	69.98	0.31	0 12:01	0 00:00	0.00	0.00
11	206	5.62	1.38	72.18	1.38	0.00	1.32	71.03	0.23	0 12:00	0 00:00	0.00	0.00
12	207	4.31	4.31	72.39	1.39	0.00	1.11	71.22	0.22	0 12:00	0 00:00	0.00	0.00
13	300	7.98	4.57	71.93	1.97	0.00	1.57	70.24	0.28	0 12:00	0 00:00	0.00	0.00
14	301	3.32	3.32	72.16	1.69	0.00	1.34	70.68	0.21	0 12:00	0 00:00	0.00	0.00
15	400	2.95	2.95	72.06	1.34	0.00	1.44	70.91	0.19	0 12:01	0 00:00	0.00	0.00
16	500	3.69	3.69	72.14	1.34	0.00	1.36	70.99	0.19	0 11:59	0 00:00	0.00	0.00
17	601	80.38	5.07	70.40	3.01	0.00	3.10	67.98	0.59	0 12:03	0 00:00	0.00	0.00
18	602	26.58	2.63	70.67	2.61	0.00	2.83	68.50	0.44	0 12:02	0 00:00	0.00	0.00
19	603	18.66	0.00	70.95	2.30	0.00	2.55	69.04	0.39	0 12:02	0 00:00	0.00	0.00
20	604	15.26	0.00	71.42	2.02	0.00	2.08	69.75	0.35	0 12:01	0 00:00	0.00	0.00
21	605	11.09	0.00	71.57	1.97	0.00	1.93	69.94	0.34	0 12:01	0 00:00	0.00	0.00
22	606	11.27	3.88	71.91	1.98	0.00	1.59	70.28	0.35	0 12:01	0 00:00	0.00	0.00
23	607	4.46	3.25	72.27	1.93	0.00	1.23	70.66	0.32	0 11:59	0 00:00	0.00	0.00
24	608	2.92	2.92	72.31	1.83	0.00	1.19	70.74	0.26	0 11:59	0 00:00	0.00	0.00
25	700	4.45	4.45	72.36	1.41	0.00	1.14	71.14	0.19	0 12:00	0 00:00	0.00	0.00
26	800	5.58	3.25	71.44	1.26	0.00	2.06	70.37	0.19	0 12:00	0 00:00	0.00	0.00
27	801	2.38	2.38	71.56	1.00	0.00	1.94	70.70	0.14	0 12:00	0 00:00	0.00	0.00
28	900	6.26	6.26	72.44	2.19	0.00	1.06	70.50	0.25	0 11:59	0 00:00	0.00	0.00
29	1400	1.12	1.12	70.41	0.52	0.00	3.09	69.97	0.08	0 12:00	0 00:00	0.00	0.00
30	D1	20.97	2.27	67.00	0.95	0.00	4.01	66.25	0.20	0 12:05	0 00:00	0.00	0.00
31	D2	19.42	0.33	67.34	1.19	0.00	3.66	66.36	0.21	0 12:05	0 00:00	0.00	0.00
32	D3	19.31	3.16	68.88	1.34	0.00	2.12	67.74	0.20	0 12:03	0 00:00	0.00	0.00
33	D4	16.52	2.01	68.97	1.32	0.00	2.03	67.84	0.19	0 12:03	0 00:00	0.00	0.00

Channel Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Shape	Height (ft)	Width (ft)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow (cfs)	Flap Gate
1	D0-D1	189.00	66.05	0.00	65.50	0.50	0.55	0.2900	Trapezoidal	4.960	29.840	0.0320	0.5000	0.5000	0.0000	0.00	No
2	D1-D2	35.00	66.15	0.00	66.05	0.00	0.10	0.2900	Trapezoidal	4.850	24.380	0.0320	0.5000	0.5000	0.0000	0.00	No
3	D2-D3	508.00	67.54	0.00	66.15	0.00	1.39	0.2700	Trapezoidal	3.460	19.920	0.0320	0.5000	0.5000	0.0000	0.00	No
4	D3-D4	35.77	67.65	0.00	67.54	0.00	0.10	0.2900	Trapezoidal	3.350	22.760	0.0320	0.5000	0.5000	0.0000	0.00	No

Channel Results

SN	Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/ Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged (min)	Froude Number	Reported Condition
1	D0-D1	21.24	0 12:06	521.88	0.04	2.20	1.43	0.94	0.19	0.00		
2	D1-D2	19.15	0 12:06	333.82	0.06	2.71	0.22	1.07	0.22	0.00		
3	D2-D3	19.13	0 12:04	156.43	0.12	2.22	3.81	1.26	0.36	0.00		
4	D3-D4	16.28	0 12:02	170.37	0.10	1.65	0.36	1.32	0.40	0.00		

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow (cfs)	Flap Gate	No. of Barrels
1	100	194.39	68.24	0.00	67.65	0.00	0.59	0.3000	CIRCULAR	36.000	36.000	0.0120	0.2000	0.5000	0.0000	0.00	No	1
2	100-101	120.00	69.04	0.00	68.74	0.50	0.30	0.2500	CIRCULAR	30.000	30.000	0.0120	0.5000	0.6000	0.0000	0.00	No	1
3	100-1400	60.00	69.89	0.00	69.74	1.50	0.15	0.2500	CIRCULAR	15.000	15.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
4	101-102	120.00	69.72	0.00	69.54	0.50	0.18	0.1500	CIRCULAR	24.000	24.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
5	102-103	180.00	70.00	0.00	69.82	0.10	0.18	0.1000	CIRCULAR	24.000	24.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
6	103-104	120.00	70.37	0.00	70.25	0.25	0.12	0.1000	CIRCULAR	18.000	18.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
7	1100-1101	94.00	74.00	1.00	73.00	3.00	1.00	1.0600	CIRCULAR	24.000	24.000	0.0150	0.2000	0.5000	0.0000	0.00	No	3
8	1200-1201	76.33	74.00	0.00	73.00	3.00	1.00	1.3100	CIRCULAR	18.000	18.000	0.0150	0.2000	0.5000	0.0000	0.00	No	1
9	200-201	160.00	66.60	0.00	65.00	0.00	1.60	1.0000	CIRCULAR	42.000	42.000	0.0120	0.2000	0.5000	0.0000	0.00	No	1
10	201-202	140.00	68.15	0.00	67.10	0.50	1.05	0.7500	CIRCULAR	36.000	36.000	0.0120	0.2000	0.5000	0.0000	0.00	No	1
11	202-203	220.00	68.80	0.00	68.25	0.10	0.55	0.2500	CIRCULAR	36.000	36.000	0.0150	0.2000	0.6000	0.0000	0.00	No	1
12	202-900	140.00	70.25	0.00	69.90	1.75	0.35	0.2500	CIRCULAR	15.000	15.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
13	203-204	100.00	69.45	0.00	69.30	0.50	0.15	0.1500	CIRCULAR	30.000	30.000	0.0120	0.2000	0.5000	0.0000	0.00	No	1
14	204-205	80.00	69.67	0.00	69.55	0.10	0.12	0.1500	CIRCULAR	30.000	30.000	0.0120	0.2000	0.5000	0.0000	0.00	No	1
15	205-206	80.00	70.80	0.00	70.72	1.05	0.08	0.1000	CIRCULAR	18.000	18.000	0.0120	0.2000	0.5000	0.0000	0.00	No	1
16	205-300	80.00	69.96	0.00	69.84	0.17	0.12	0.1500	CIRCULAR	24.000	24.000	0.0150	0.2000	0.7000	0.0000	0.00	No	1
17	206-207	100.00	71.00	0.00	70.90	0.10	0.10	0.1000	CIRCULAR	18.000	18.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
18	300-301	180.00	70.47	0.00	70.29	0.33	0.18	0.1000	CIRCULAR	18.000	18.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
19	600-601	300.00	67.40	0.00	65.00	0.00	2.40	0.8000	CIRCULAR	48.000	48.000	0.0150	0.2000	0.5000	0.0000	0.00	No	1
20	601-1000	70.39	70.00	0.00	68.40	1.00	1.61	2.2800	CIRCULAR	36.000	36.000	0.0120	0.2000	0.5000	0.0000	0.00	No	2
21	601-602	113.00	68.06	0.00	67.90	0.50	0.17	0.1500	CIRCULAR	42.000	42.000	0.0120	0.2000	0.8000	0.0000	0.00	No	1
22	602-603	71.88	68.65	0.00	68.56	0.50	0.09	0.1300	CIRCULAR	36.000	36.000	0.0120	0.2000	0.9000	0.0000	0.00	No	1
23	602-800	145.00	70.18	0.00	69.81	1.75	0.36	0.2500	CIRCULAR	18.000	18.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
24	603-500	14.96	70.80	0.00	70.75	2.10	0.05	0.3300	CIRCULAR	12.000	12.000	0.0120	0.2000	0.8000	0.0000	0.00	No	1
25	603-604	152.44	69.40	0.00	69.15	0.50	0.25	0.1600	CIRCULAR	30.000	30.000	0.0120	0.2000	0.8000	0.0000	0.00	No	1
26	604-605	100.00	69.60	0.00	69.50	0.10	0.10	0.1000	CIRCULAR	30.000	30.000	0.0120	0.2000	0.5000	0.0000	0.00	No	1
27	604-700	120.00	70.65	1.25	70.95	0.00	-0.30	-0.2500	CIRCULAR	15.000	15.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
28	605-606	80.00	69.93	0.00	69.85	0.25	0.08	0.1000	CIRCULAR	24.000	24.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
29	606-400	40.00	70.72	0.00	70.68	0.75	0.04	0.1000	CIRCULAR	15.000	15.000	0.0120	0.2000	0.9000	0.0000	0.00	No	1
30	606-607	160.00	70.34	0.00	70.18	0.25	0.16	0.1000	CIRCULAR	18.000	18.000	0.0120	0.2000	0.9000	0.0000	0.00	No	1
31	607-608	40.00	70.48	0.00	70.44	0.10	0.04	0.1000	CIRCULAR	18.000	18.000	0.0120	0.2000	0.8000	0.0000	0.00	No	1
32	800-801	54.00	70.56	0.00	70.43	0.25	0.13	0.2500	CIRCULAR	15.000	15.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1

Pipe Results

SN	Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/ Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged (min)	Froude Number	Reported Condition
1	100	14.58	0 12:01	39.72	0.37	4.73	0.68	1.34	0.45	0.00		Calculated
2	100-101	12.58	0 12:01	22.22	0.57	4.53	0.44	1.33	0.55	0.00		Calculated
3	100-1400	1.11	0 12:00	3.50	0.32	2.64	0.38	0.46	0.38	0.00		Calculated
4	101-102	10.12	0 12:01	9.49	1.07	4.37	0.46	1.34	0.69	0.00		> CAPACITY
5	102-103	8.06	0 12:00	7.75	1.04	3.00	1.00	1.56	0.80	0.00		> CAPACITY
6	103-104	5.20	0 12:00	3.60	1.45	2.97	0.67	1.45	0.98	0.00		> CAPACITY
7	1100-1101	17.92	0 12:20	60.67	0.30	5.28	0.30	0.78	0.39	0.00		Calculated
8	1200-1201	11.23	0 12:12	10.42	1.08	6.57	0.19	1.39	0.93	0.00		> CAPACITY
9	200-201	33.58	0 12:01	108.99	0.31	10.30	0.26	1.33	0.38	0.00		Calculated
10	201-202	32.01	0 12:01	62.58	0.51	7.97	0.29	1.60	0.55	0.00		Calculated
11	202-203	22.45	0 12:01	28.90	0.78	4.70	0.78	1.85	0.64	0.00		Calculated
12	202-900	6.26	0 12:00	3.50	1.79	5.37	0.43	1.13	0.90	0.00		> CAPACITY
13	203-204	17.99	0 12:00	17.21	1.05	4.65	0.36	1.76	0.74	0.00		> CAPACITY
14	204-205	14.55	0 12:00	17.21	0.85	3.47	0.38	1.93	0.80	0.00		Calculated
15	205-206	5.55	0 12:00	3.60	1.54	3.81	0.35	1.14	0.80	0.00		> CAPACITY
16	205-300	7.76	0 12:00	7.59	1.02	2.51	0.53	1.86	0.97	0.00		> CAPACITY
17	206-207	4.26	0 12:00	3.60	1.18	2.58	0.65	1.31	0.89	0.00		> CAPACITY
18	300-301	3.43	0 12:00	3.60	0.95	1.94	1.55	1.50	1.00	4.00		SURCHARGED
19	600-601	80.74	0 12:04	111.23	0.73	12.37	0.40	2.08	0.52	0.00		Calculated
20	601-1000	53.50	0 12:07	218.22	0.25	9.65	0.12	1.65	0.55	0.00		Calculated
21	601-602	26.22	0 12:01	42.21	0.62	3.64	0.52	2.52	0.73	0.00		Calculated
22	602-603	18.55	0 12:00	25.57	0.73	3.44	0.35	2.15	0.73	0.00		Calculated
23	602-800	5.49	0 12:00	5.69	0.96	4.01	0.60	1.06	0.72	0.00		Calculated
24	603-500	3.69	0 12:00	2.23	1.65	4.92	0.05	0.91	0.91	0.00		> CAPACITY
25	603-604	15.15	0 12:01	17.91	0.85	3.80	0.67	1.84	0.76	0.00		Calculated
26	604-605	10.92	0 12:01	14.05	0.78	2.72	0.61	1.87	0.78	0.00		Calculated
27	604-700	4.52	0 12:00	3.50	1.29	4.09	0.49	1.05	0.84	0.00		> CAPACITY
28	605-606	11.09	0 12:00	7.75	1.43	3.72	0.36	1.78	0.92	0.00		> CAPACITY
29	606-400	2.98	0 12:00	2.21	1.35	2.68	0.25	1.21	0.99	0.00		> CAPACITY
30	606-607	4.47	0 12:05	3.60	1.24	2.87	0.93	1.50	1.00	8.00		SURCHARGED
31	607-608	2.93	0 12:15	3.60	0.81	2.16	0.31	1.50	1.00	8.00		SURCHARGED
32	800-801	2.35	0 12:00	3.50	0.67	2.30	0.39	0.99	0.81	0.00		Calculated

Storage Nodes

Storage Node : P1

Input Data

Invert Elevation (ft)	65.00
Max (Rim) Elevation (ft)	71.00
Max (Rim) Offset (ft)	6.00
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-65.00
Ponded Area (ft²)	0.00
Evaporation Loss	0.00

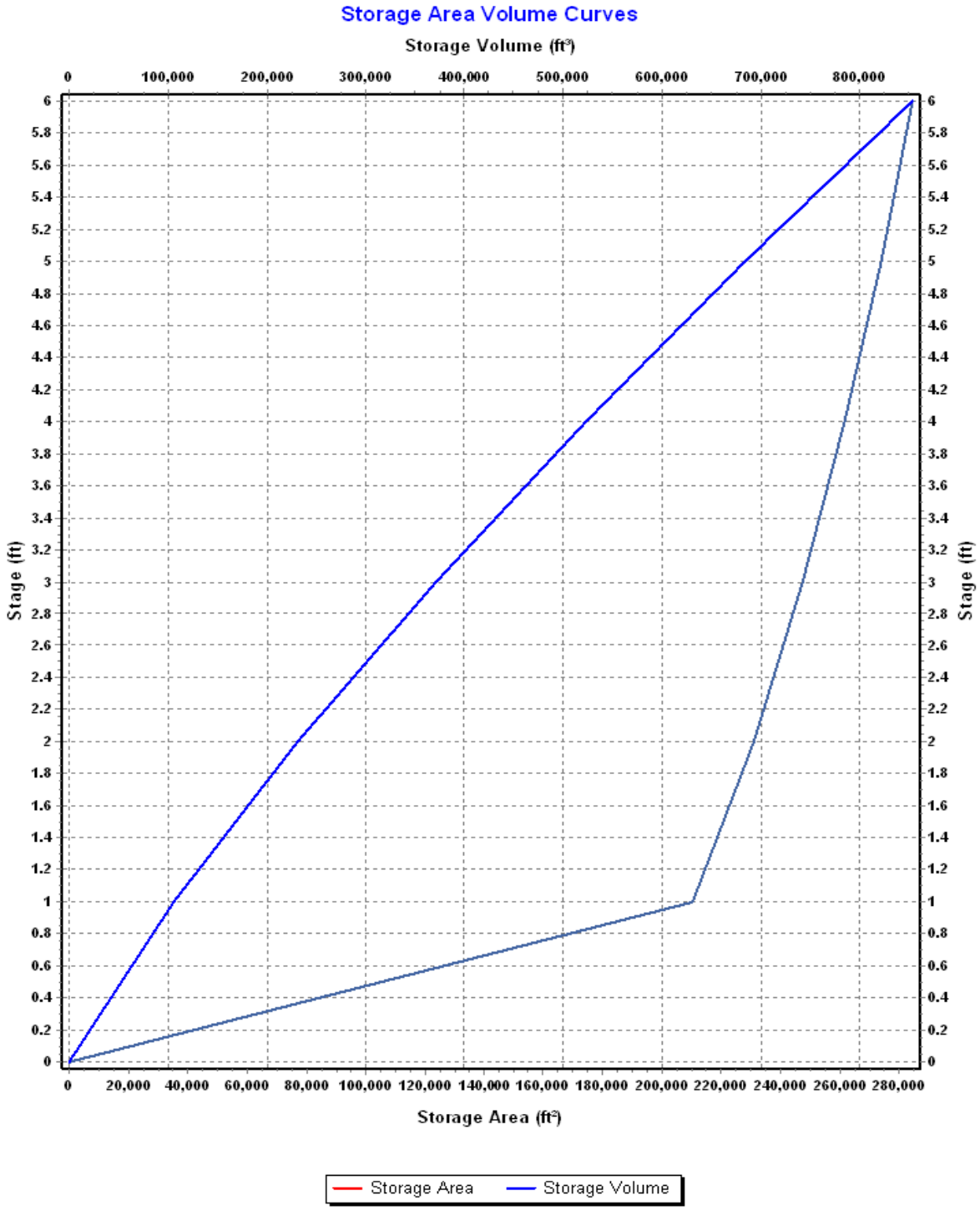
Infiltration/Exfiltration

Exfiltration Rate (in/hr)	5.5100

Storage Area Volume Curves

Storage Curve : NEW TIC/KIEWIT POND

Stage (ft)	Storage Area (ft²)	Storage Volume (ft³)
0	0	0
1	210268.00	105134
2	230622.00	230622
3	247171.33	370757
4	261392.50	522785
5	273778.00	684445
6	284363.33	853090


Storage Area Volume Curves
Storage Volume (ft³)
0
100,000
200,000
300,000
400,000
500,000
600,000
700,000
800,000
Stage (ft)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
3.2
3.4
3.6
3.8
4
4.2
4.4
4.6
4.8
5
5.2
5.4
5.6
5.8
6
0
20,000
40,000
60,000
80,000
100,000
120,000
140,000
160,000
180,000
200,000
220,000
240,000
260,000
280,000
Storage Area (ft²)
Storage Area
Storage Volume

Storage Node : P1 (continued)

Outflow Weirs

SN	Element ID	Weir Type	Flap Gate	Crest Elevation (ft)	Crest Offset (ft)	Length (ft)	Weir Total Height (ft)	Discharge Coefficient
1	EMERGENCY-DISCHARGE-RISER	Side Flow	No	69.00	4.00	9.45	2.00	0.61
2	EMERGENCY-OVERFLOW-SPILLWAY	Trapezoidal	No	70.00	5.00	10.00	1.00	3.33

Output Summary Results

Peak Inflow (cfs)	197.16
Peak Lateral Inflow (cfs)	70.65
Peak Outflow (cfs)	0.00
Peak Exfiltration Flow Rate (cfm)	1719.76
Max HGL Elevation Attained (ft)	66.71
Max HGL Depth Attained (ft)	1.71
Average HGL Elevation Attained (ft)	65.46
Average HGL Depth Attained (ft)	0.46
Time of Max HGL Occurrence (days hh:mm)	0 12:56
Total Exfiltration Volume (1000-ft³)	663.095
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00

Storage Node : SB1-DITCH

Input Data

Invert Elevation (ft)	73.00
Max (Rim) Elevation (ft)	77.50
Max (Rim) Offset (ft)	4.50
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-73.00
Ponded Area (ft²)	0.00
Evaporation Loss	0.00

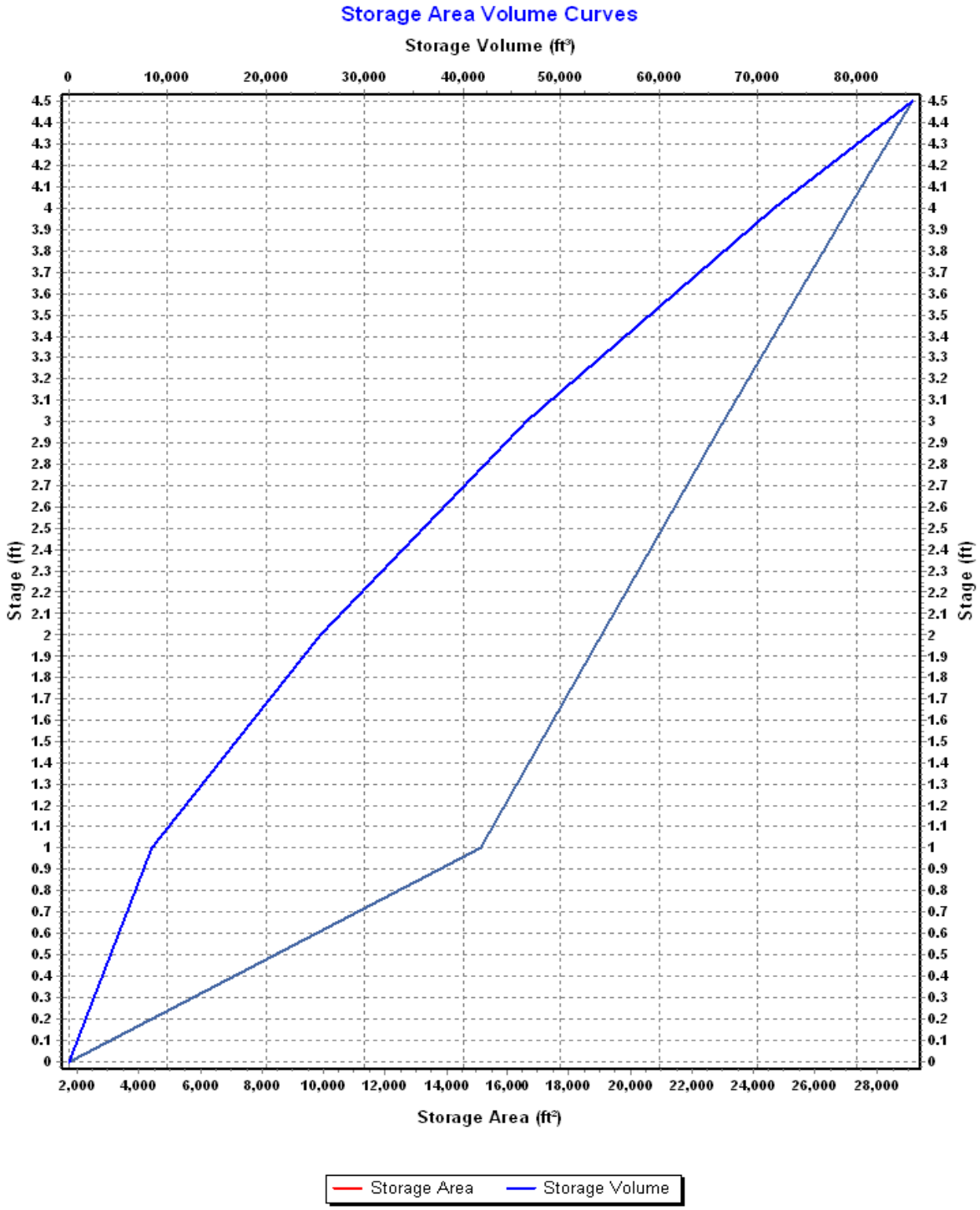
Infiltration/Exfiltration

Exfiltration Rate (in/hr)	5.5100

Storage Area Volume Curves

Storage Curve : SB-1_DITCH_PERM

Stage (ft)	Storage Area (ft²)	Storage Volume (ft³)
0	1729.969	0.000
1	15098.368	8414.17
2	19036.497	25481.60
3	23039.023	46519.36
4	27105.946	71591.84
4.5	29163.557	85659.22


Storage Area Volume Curves
Storage Volume (ft³)
0
10,000
20,000
30,000
40,000
50,000
60,000
70,000
80,000
Stage (ft)
Stage (ft)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
1.9
2
2.1
2.2
2.3
2.4
2.5
2.6
2.7
2.8
2.9
3
3.1
3.2
3.3
3.4
3.5
3.6
3.7
3.8
3.9
4
4.1
4.2
4.3
4.4
4.5
2,000
4,000
6,000
8,000
10,000
12,000
14,000
16,000
18,000
20,000
22,000
24,000
26,000
28,000
Storage Area (ft²)
Storage Area
Storage Volume

Storage Node : SB1-DITCH (continued)

Output Summary Results

Peak Inflow (cfs)	32.58
Peak Lateral Inflow (cfs)	32.58
Peak Outflow (cfs)	17.92
Peak Exfiltration Flow Rate (cfm)	140.09
Max HGL Elevation Attained (ft)	74.81
Max HGL Depth Attained (ft)	1.81
Average HGL Elevation Attained (ft)	73.38
Average HGL Depth Attained (ft)	0.38
Time of Max HGL Occurrence (days hh:mm)	0 12:19
Total Exfiltration Volume (1000-ft³)	72.664
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00

Storage Node : SB2-DITCH

Input Data

Invert Elevation (ft)	70.00
Max (Rim) Elevation (ft)	73.00
Max (Rim) Offset (ft)	3.00
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-70.00
Ponded Area (ft²)	0.00
Evaporation Loss	0.00

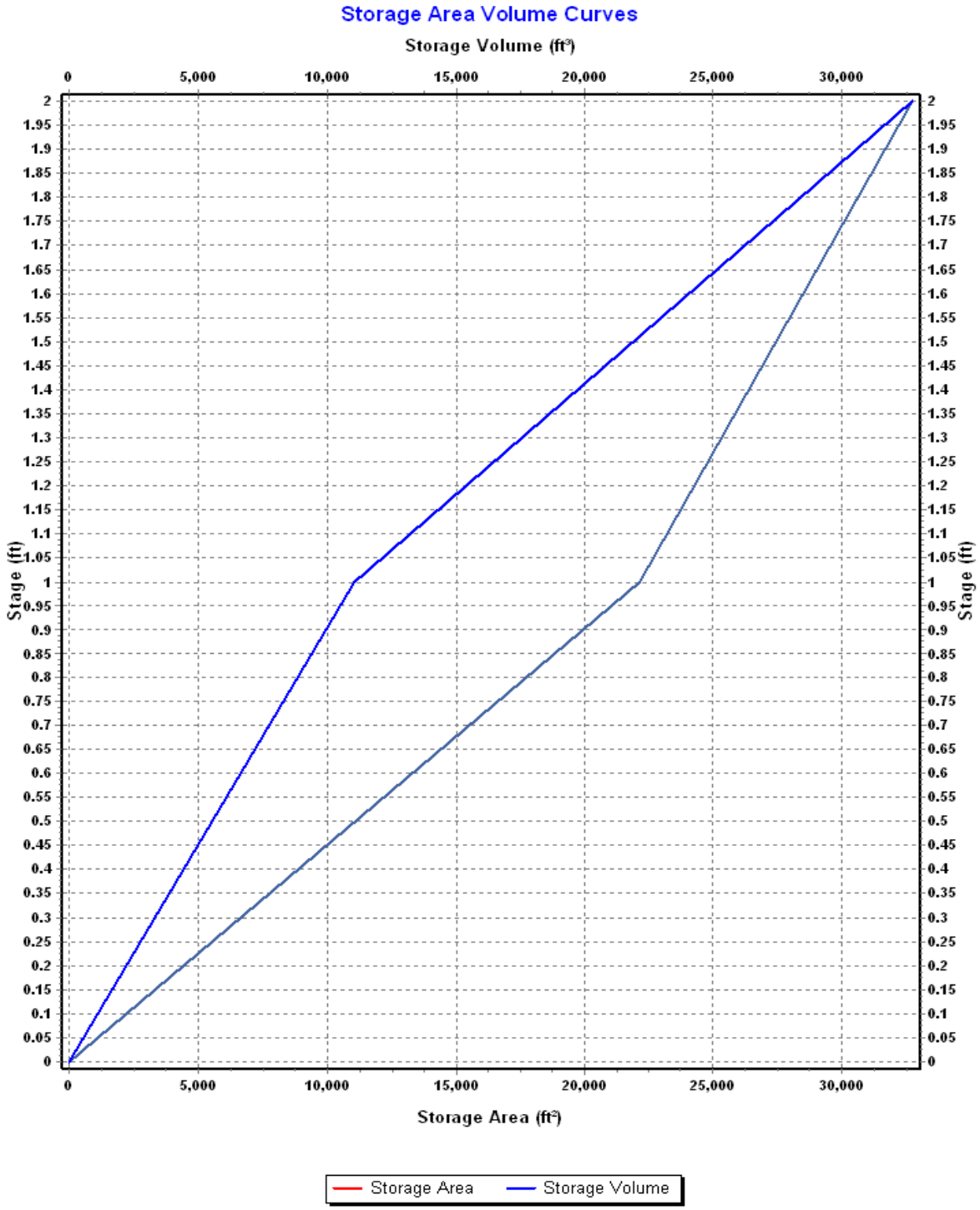
Infiltration/Exfiltration

Exfiltration Rate (in/hr)	5.5100

Storage Area Volume Curves

Storage Curve : SB-2-DITCH_BV

Stage (ft)	Storage Area (ft²)	Storage Volume (ft³)
0	0	0
1	22128.00	11064
2	32726.00	32726


Storage Area Volume Curves
Storage Volume (ft³)
0
5,000
10,000
15,000
20,000
25,000
30,000
Stage (ft)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
0.7
0.75
0.8
0.85
0.9
0.95
1
1.05
1.1
1.15
1.2
1.25
1.3
1.35
1.4
1.45
1.5
1.55
1.6
1.65
1.7
1.75
1.8
1.85
1.9
1.95
2
Storage Area (ft²)
Storage Area
Storage Volume

Storage Node : SB2-DITCH (continued)

Output Summary Results

Peak Inflow (cfs)	70.51
Peak Lateral Inflow (cfs)	60.99
Peak Outflow (cfs)	53.50
Peak Exfiltration Flow Rate (cfm)	197.40
Max HGL Elevation Attained (ft)	71.35
Max HGL Depth Attained (ft)	1.35
Average HGL Elevation Attained (ft)	70.27
Average HGL Depth Attained (ft)	0.27
Time of Max HGL Occurrence (days hh:mm)	0 12:06
Total Exfiltration Volume (1000-ft³)	43.132
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00

Storage Node : SWYD

Input Data

Invert Elevation (ft)	74.00
Max (Rim) Elevation (ft)	78.00
Max (Rim) Offset (ft)	4.00
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-74.00
Ponded Area (ft²)	0.00
Evaporation Loss	0.00

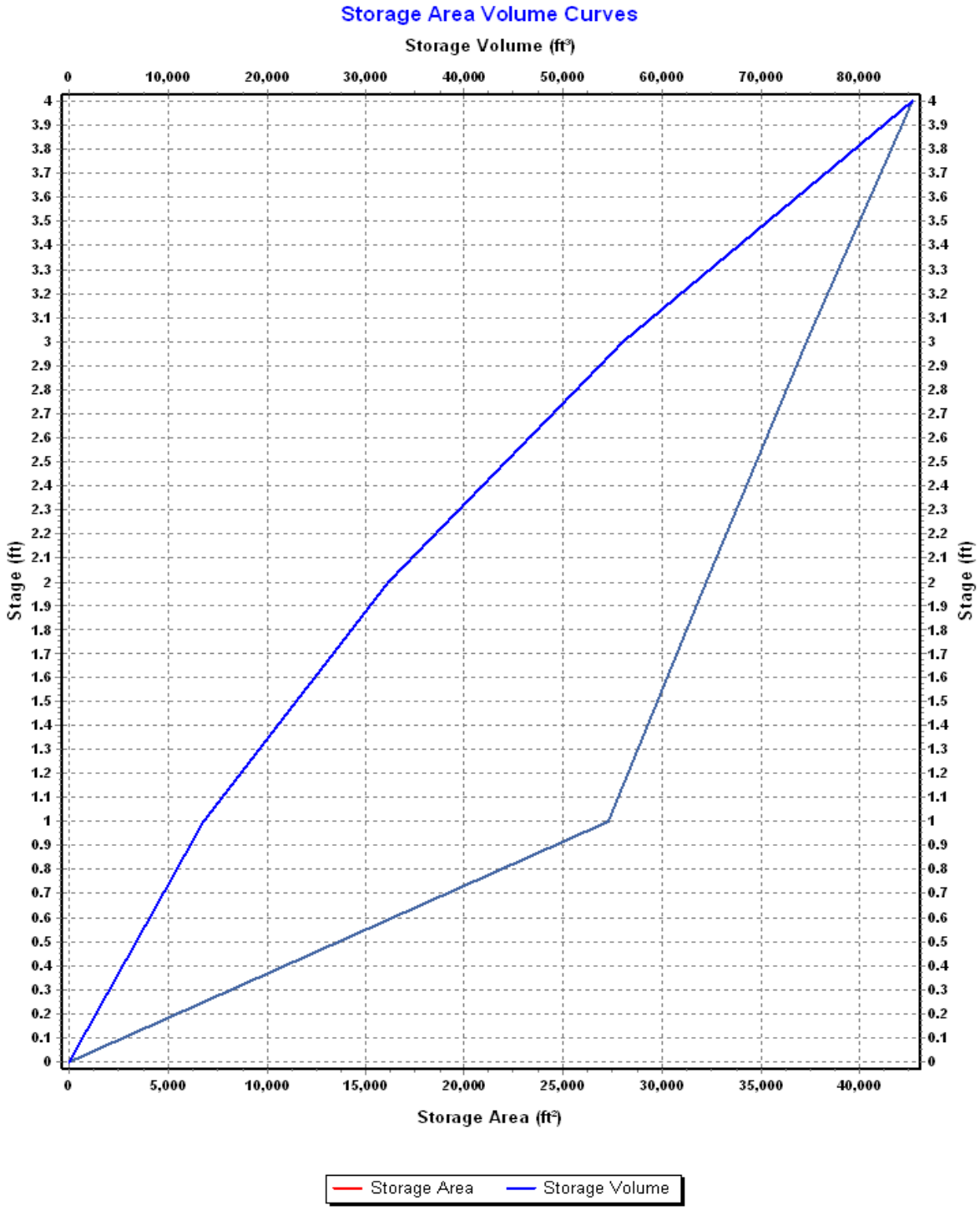
Infiltration/Exfiltration

Exfiltration Rate (in/hr)	5.5100

Storage Area Volume Curves

Storage Curve : SWYD-BV

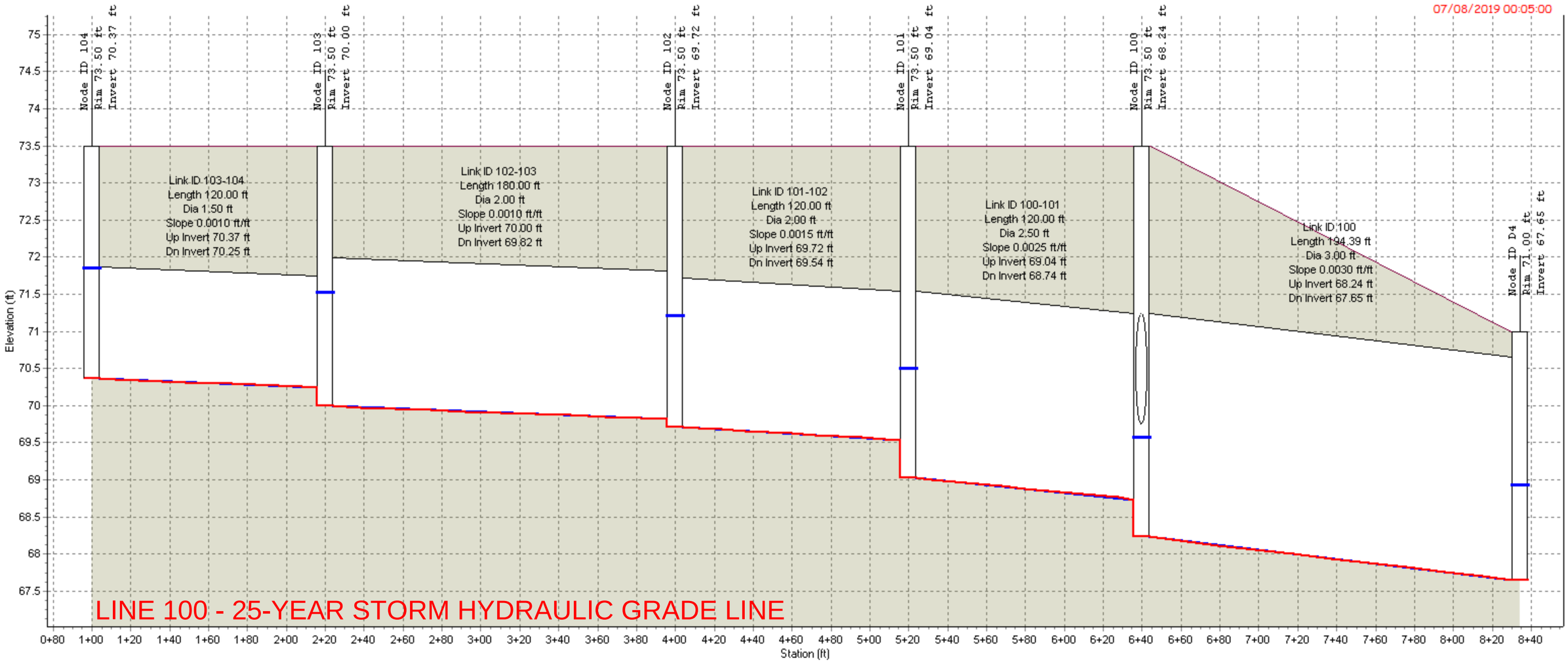
Stage (ft)	Storage Area (ft²)	Storage Volume (ft³)
0	0	0
1	27244.00	13622
2	32220.00	32220
3	37327.33	55991
4	42652.50	85305


Storage Area Volume Curves
Storage Volume (ft³)
0
10,000
20,000
30,000
40,000
50,000
60,000
70,000
80,000
Stage (ft)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
1.9
2
2.1
2.2
2.3
2.4
2.5
2.6
2.7
2.8
2.9
3
3.1
3.2
3.3
3.4
3.5
3.6
3.7
3.8
3.9
4
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
Storage Area (ft²)
Storage Area
Storage Volume

Storage Node : SWYD (continued)

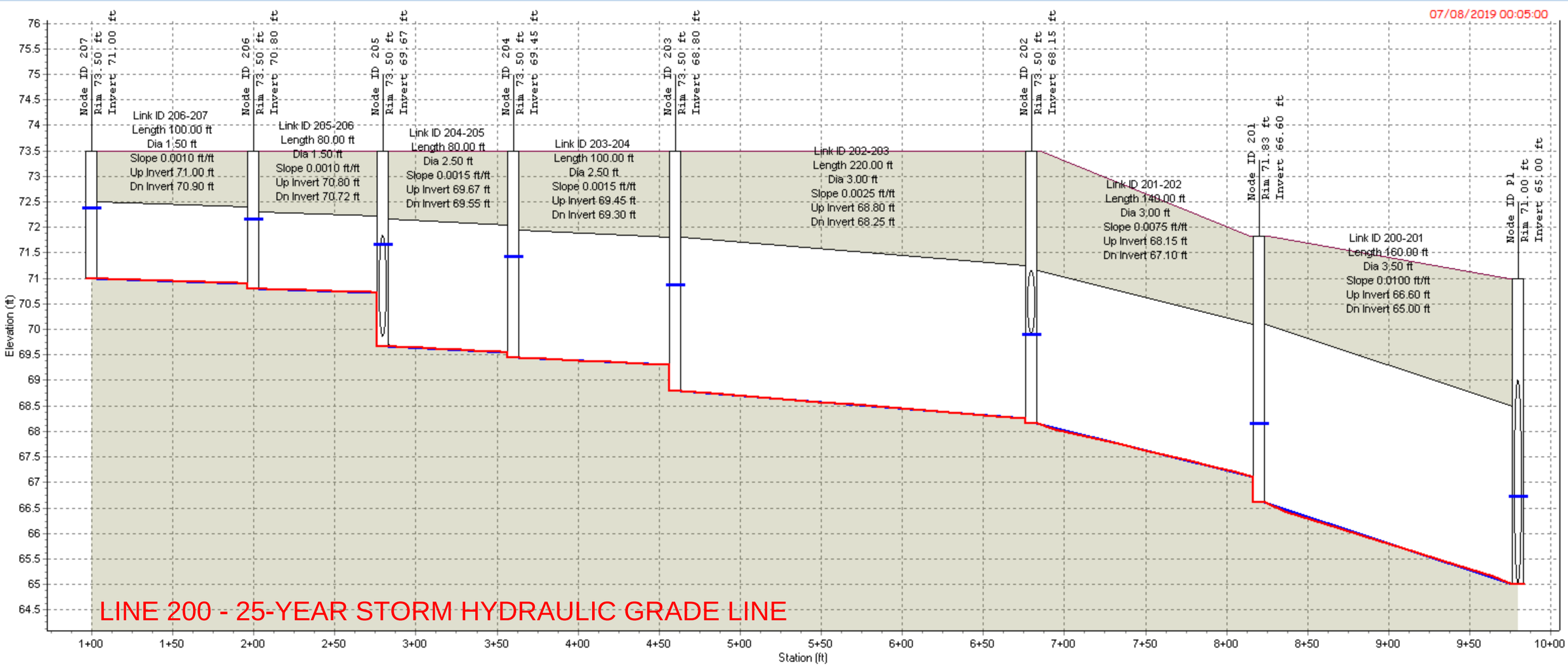
Output Summary Results

Peak Inflow (cfs)	53.43
Peak Lateral Inflow (cfs)	53.43
Peak Outflow (cfs)	11.23
Peak Exfiltration Flow Rate (cfm)	243.55
Max HGL Elevation Attained (ft)	75.92
Max HGL Depth Attained (ft)	1.92
Average HGL Elevation Attained (ft)	74.38
Average HGL Depth Attained (ft)	0.38
Time of Max HGL Occurrence (days hh:mm)	0 12:12
Total Exfiltration Volume (1000-ft³)	65.758
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00



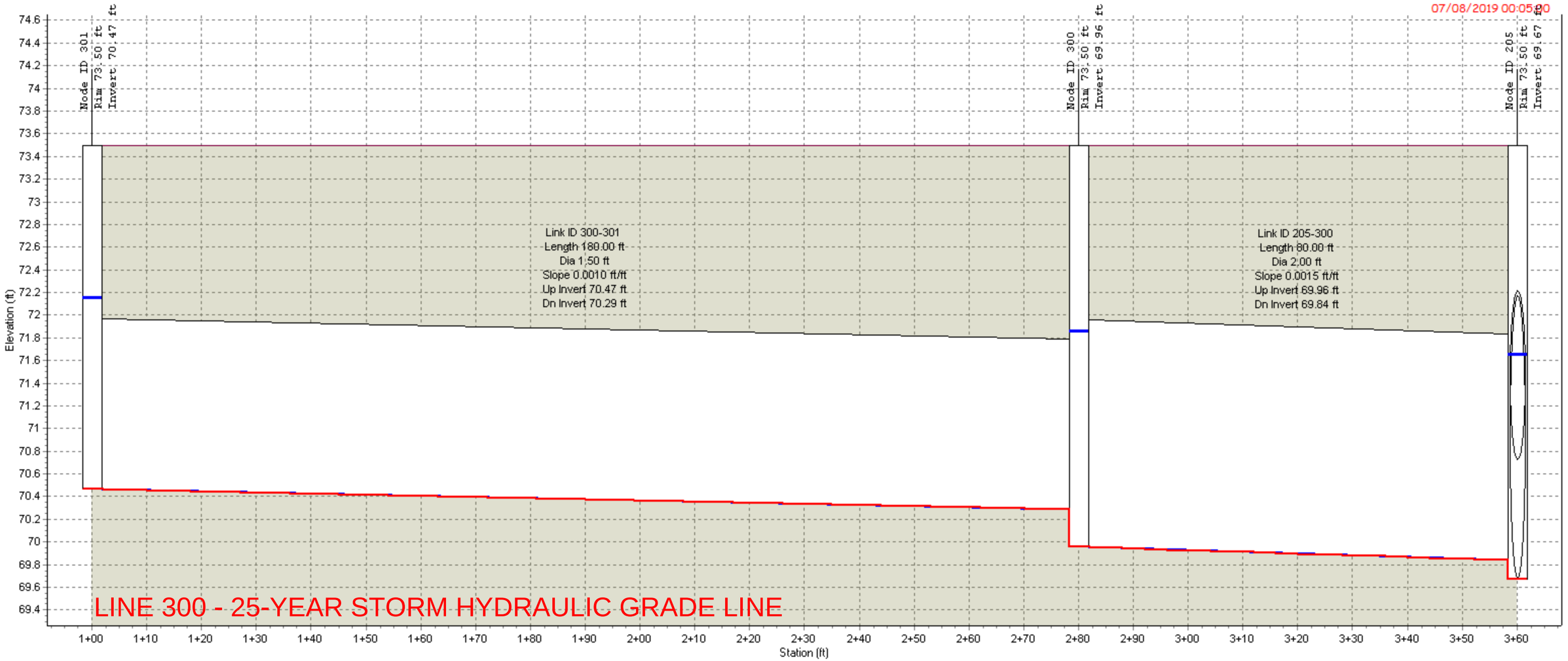
Node ID:	104	103	102	101	100	D4
Rim (ft):	73.50	73.50	73.50	73.50	73.50	71.00
Invert (ft):	70.37	70.00	69.72	69.04	68.24	67.65
Min Pipe Cover (ft):	1.63	1.51	1.69	1.97	2.26	0.00
Max HGL (ft):	71.86	71.53	71.23	70.52	69.58	68.93

Link ID:	103-104	102-103	101-102	100-101	100
Length (ft):	120.00	180.00	120.00	120.00	194.39
Dia (ft):	1.50	2.00	2.00	2.50	3.00
Slope (ft/ft):	0.0010	0.0010	0.0015	0.0025	0.0030
Up Invert (ft):	70.37	70.00	69.72	69.04	68.24
Dn Invert (ft):	70.25	69.82	69.54	68.74	67.65
Max Q (cfs):	5.15	6.96	9.08	11.53	13.51
Max Vel (ft/s):	3.04	2.80	4.22	4.42	4.59
Max Depth (ft):	1.36	1.46	1.28	1.30	1.31



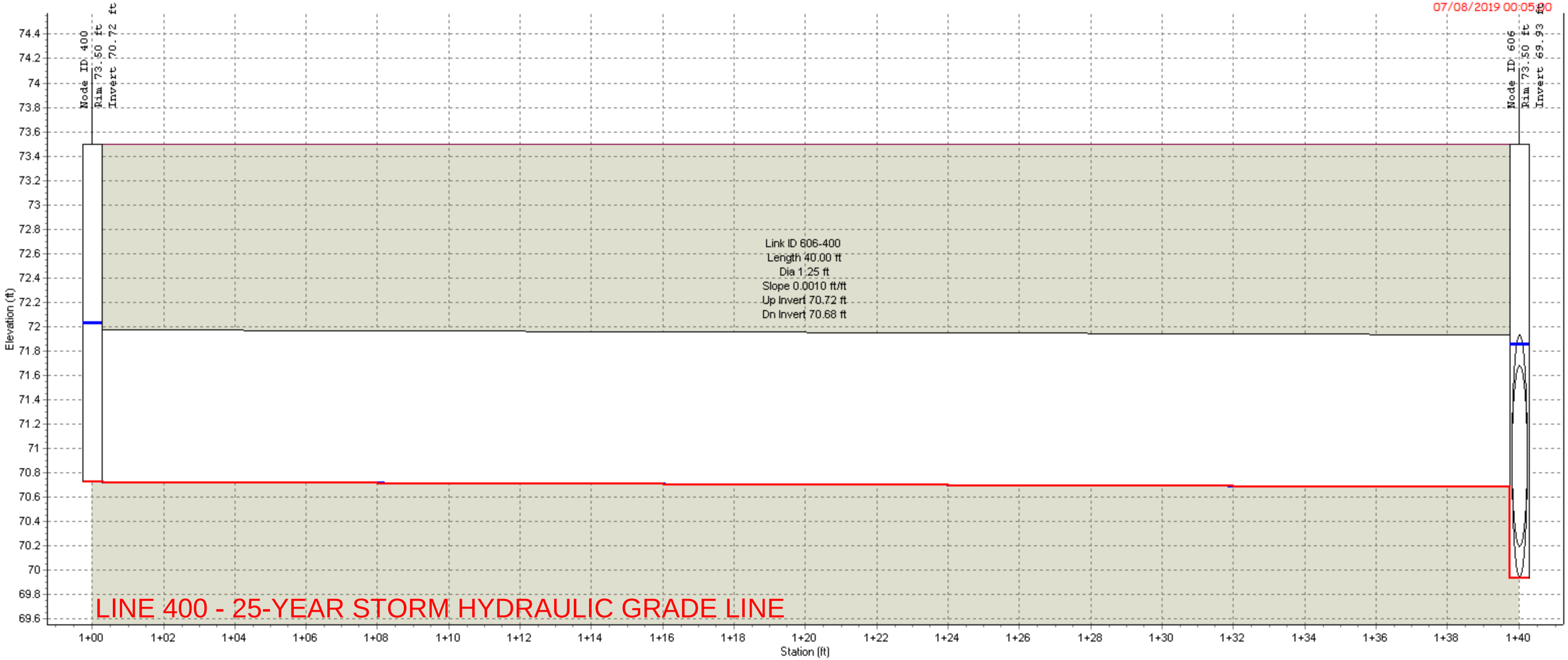
Node ID:	207	206	205	204	203	202	201	P1
Rim (ft):	73.50	73.50	73.50	73.50	73.50	73.50	71.83	71.00
Invert (ft):	71.00	70.80	69.67	69.45	68.80	68.15	66.60	65.00
Min Pipe Cover (ft):	1.00	1.10	1.28	1.45	1.70	2.25	1.73	
Max HGL (ft):	72.39	72.18	71.73	71.49	70.94	69.95	68.19	66.71

Link ID:	206-207	205-206	204-205	203-204	202-203	201-202	200-201
Length (ft):	100.00	80.00	80.00	100.00	220.00	140.00	160.00
Dia (ft):	1.50	1.50	2.50	2.50	3.00	3.00	3.50
Slope (ft/ft):	0.0010	0.0010	0.0015	0.0015	0.0025	0.0075	0.0100
Up Invert (ft):	71.00	70.80	69.67	69.45	68.80	68.15	66.60
Dn Invert (ft):	70.90	70.72	69.55	69.30	68.25	67.10	65.00
Max Q (cfs):	4.26	5.55	14.55	17.99	22.45	32.01	33.58
Max Vel (ft/s):	2.58	3.81	3.47	4.65	4.70	7.97	10.30
Max Depth (ft):	1.31	1.14	1.93	1.76	1.85	1.60	1.33



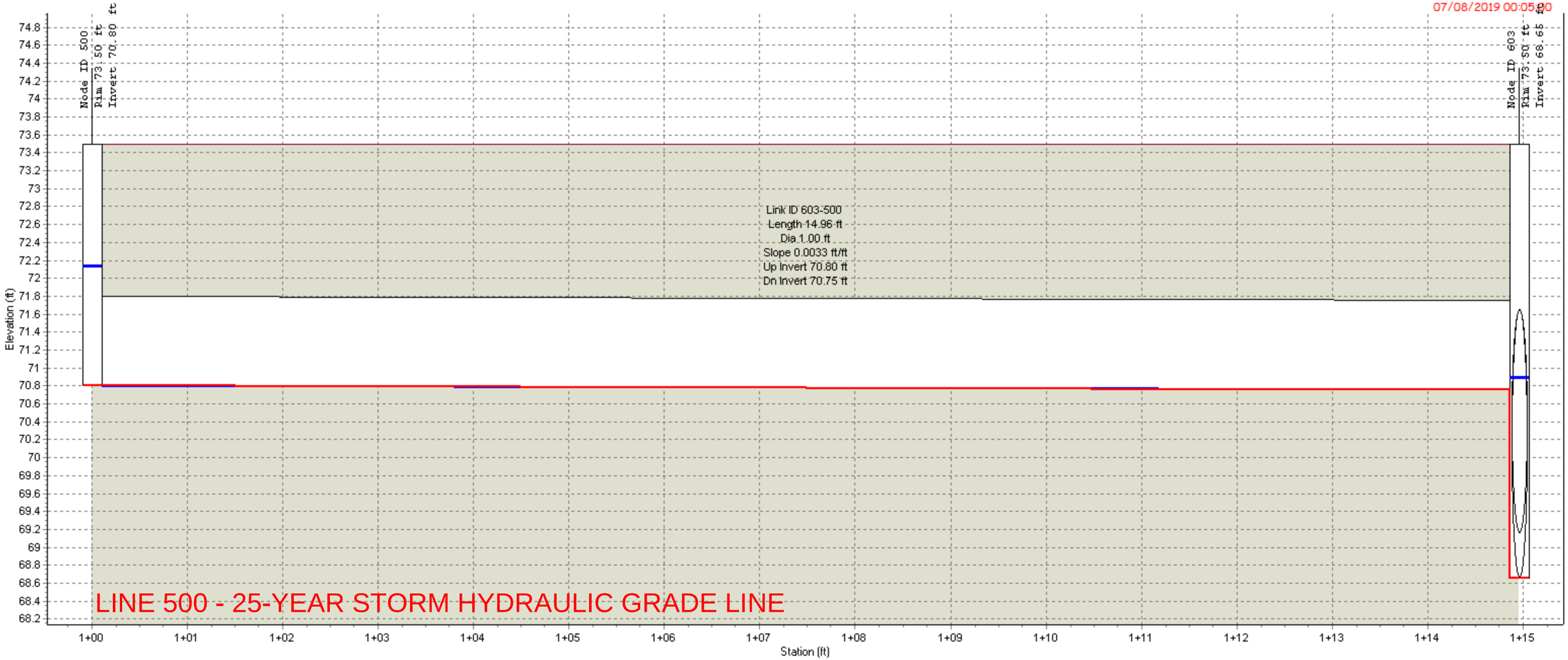
Node ID:	301	300	205
Rim (ft):	73.50	73.50	73.50
Invert (ft):	70.47	69.96	69.67
Min Pipe Cover (ft):	1.53	1.54	1.28
Max HGL (ft):	72.16	71.93	71.73

Link ID:	300-301	205-300
Length (ft):	180.00	80.00
Dia (ft):	1.50	2.00
Slope (ft/ft):	0.0010	0.0015
Up Invert (ft):	70.47	69.96
Dn Invert (ft):	70.29	69.84
Max Q (cfs):	3.43	7.76
Max Vel (ft/s):	1.94	2.51
Max Depth (ft):	1.50	1.86



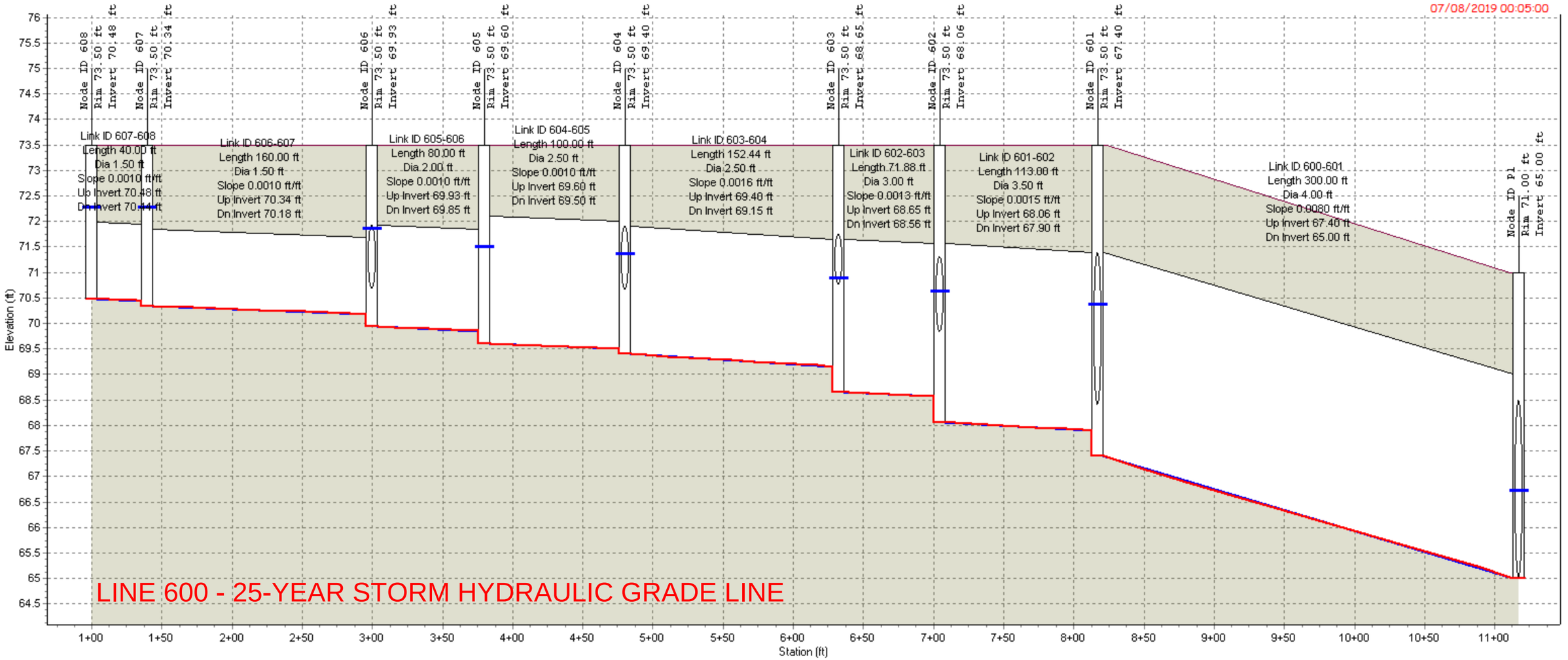
LINE 400 - 25-YEAR STORM HYDRAULIC GRADE LINE

Node ID:	400		606
Rim (ft):	73.50		73.50
Invert (ft):	70.72		69.93
Min Pipe Cover (ft):	1.53		1.57
Max HGL (ft):	72.06		71.91
Link ID:		606-400	
Length (ft):		40.00	
Dia (ft):		1.25	
Slope (ft/ft):		0.0010	
Up Invert (ft):		70.72	
Dn Invert (ft):		70.68	
Max Q (cfs):		2.98	
Max Vel (ft/s):		2.68	
Max Depth (ft):		1.21	



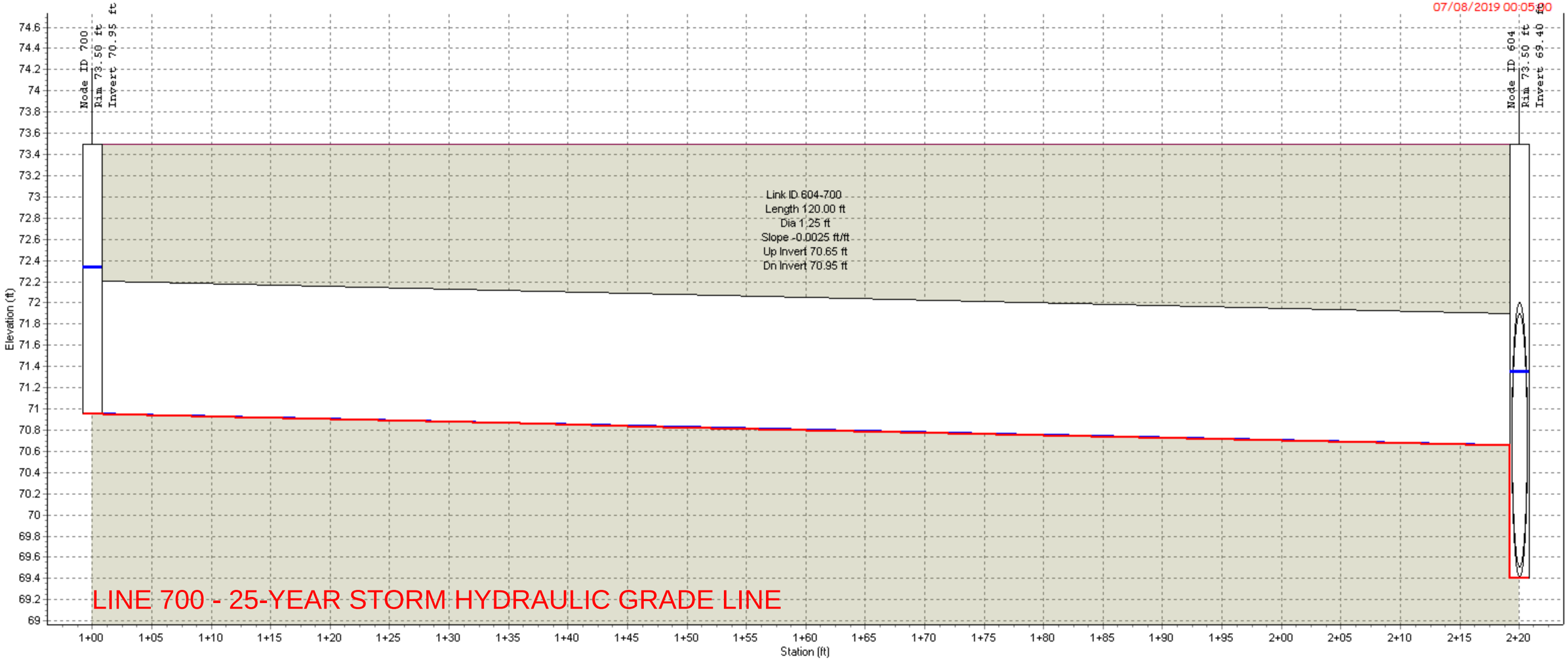
Node ID:	500		603
Rim (ft):	73.50		73.50
Invert (ft):	70.80		68.65
Min Pipe Cover (ft):	1.70		1.75
Max HGL (ft):	72.14		70.95

Link ID:	603-500
Length (ft):	14.96
Dia (ft):	1.00
Slope (ft/ft):	0.0033
Up Invert (ft):	70.80
Dn Invert (ft):	70.75
Max Q (cfs):	3.69
Max Vel (ft/s):	4.92
Max Depth (ft):	0.91



Node ID:	608	607	606	605	604	603	602	601	P1
Rim (ft):	73.50	73.50	73.50	73.50	73.50	73.50	73.50	73.50	71.00
Invert (ft):	70.48	70.34	69.93	69.60	69.40	68.65	68.06	67.40	65.00
Min Pipe Cover (ft):	1.52	1.56	1.57	1.40	1.50	1.75	1.94	2.11	
Max HGL (ft):	72.31	72.27	71.91	71.57	71.42	70.95	70.67	70.40	66.71

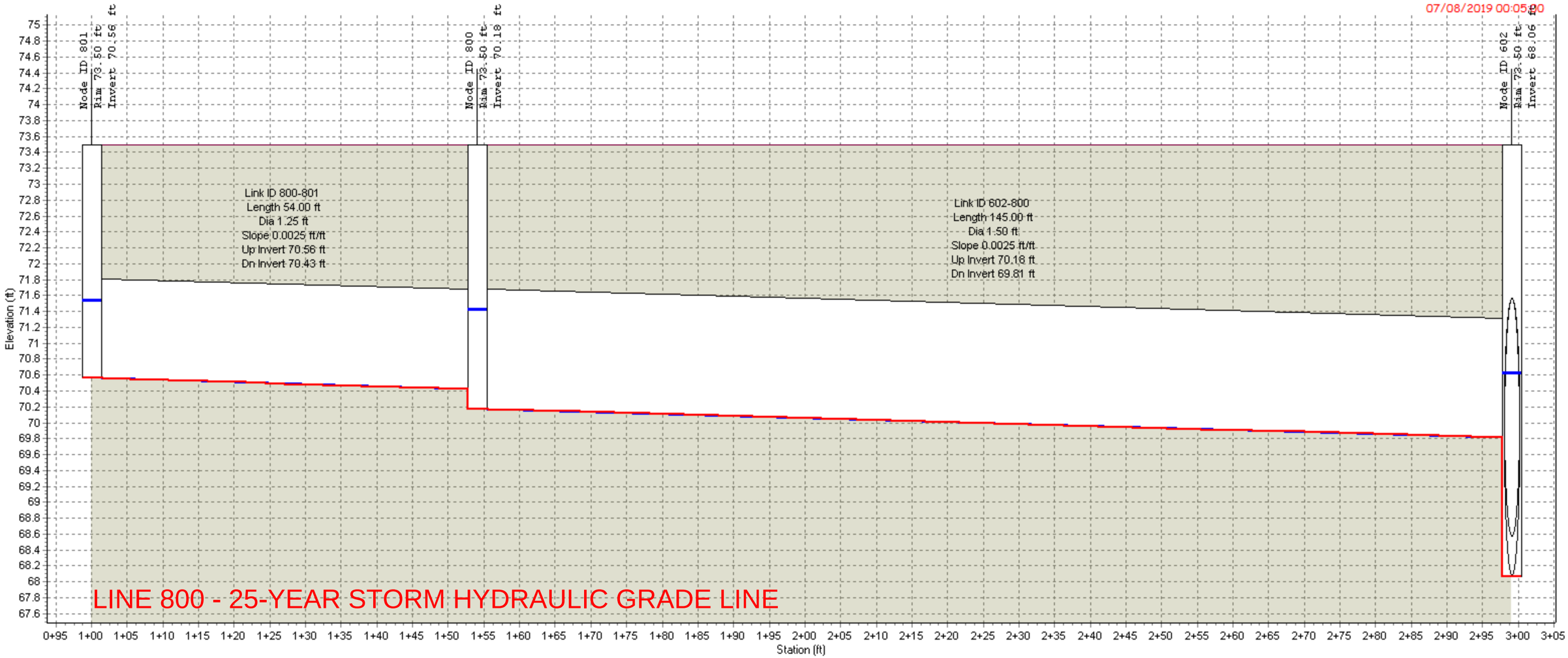
Link ID:	607-608	606-607	605-606	604-605	603-604	602-603	601-602	600-601
Length (ft):	40.00	160.00	80.00	100.00	152.44	71.88	113.00	300.00
Dia (ft):	1.50	1.50	2.00	2.50	2.50	3.00	3.50	4.00
Slope (ft/ft):	0.0010	0.0010	0.0010	0.0010	0.0016	0.0013	0.0015	0.0080
Up Invert (ft):	70.48	70.34	69.93	69.60	69.40	68.65	68.06	67.40
Dn Invert (ft):	70.44	70.18	69.85	69.50	69.15	68.56	67.90	65.00
Max Q (cfs):	2.93	4.47	11.09	10.92	15.15	18.55	26.21	80.75
Max Vel (ft/s):	2.16	2.87	3.72	2.72	3.80	3.44	3.64	12.37
Max Depth (ft):	1.50	1.50	1.78	1.87	1.84	2.15	2.52	2.08



LINE 700 - 25-YEAR STORM HYDRAULIC GRADE LINE

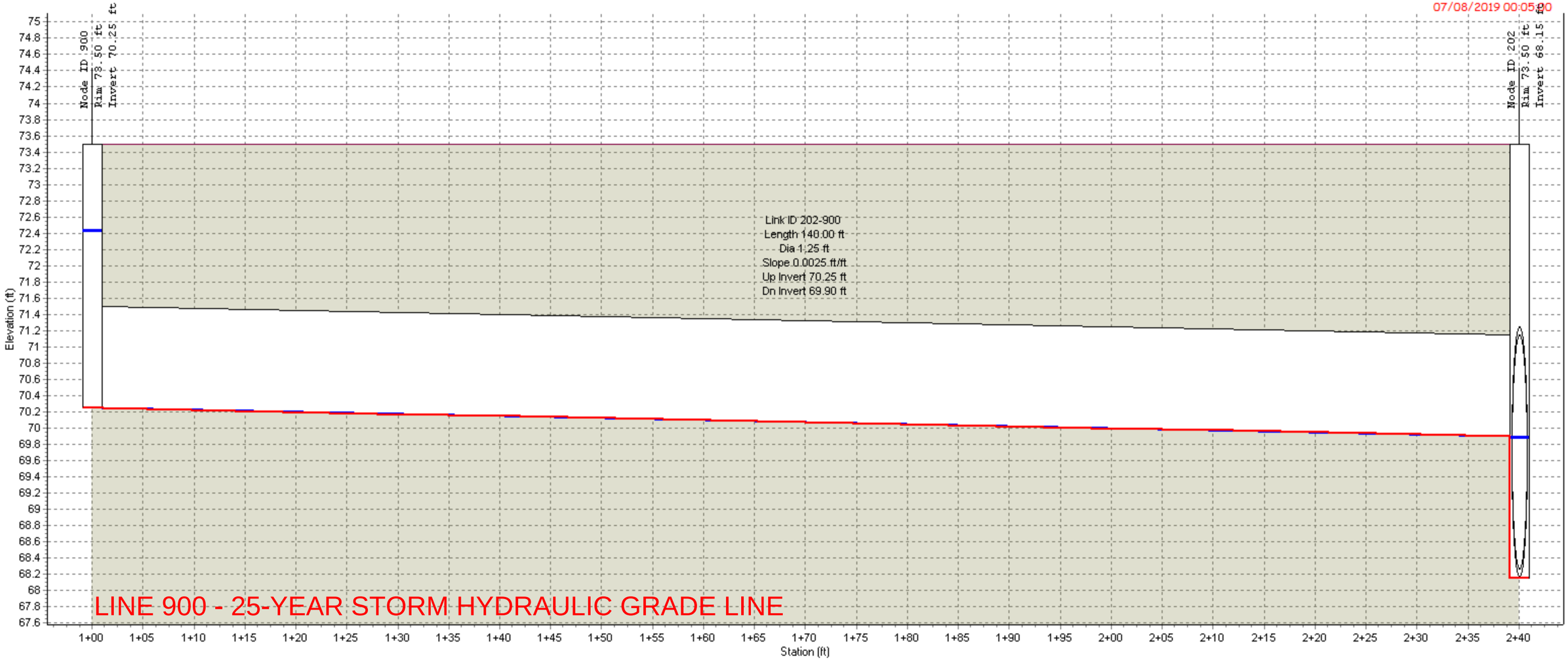
Node ID:	700		604
Rim (ft):	73.50		73.50
Invert (ft):	70.95		69.40
Min Pipe Cover (ft):	1.30		1.50
Max HGL (ft):	72.36		71.42

Link ID:	604-700
Length (ft):	120.00
Dia (ft):	1.25
Slope (ft/ft):	-0.0025
Up Invert (ft):	70.65
Dn Invert (ft):	70.95
Max Q (cfs):	4.52
Max Vel (ft/s):	4.09
Max Depth (ft):	1.05

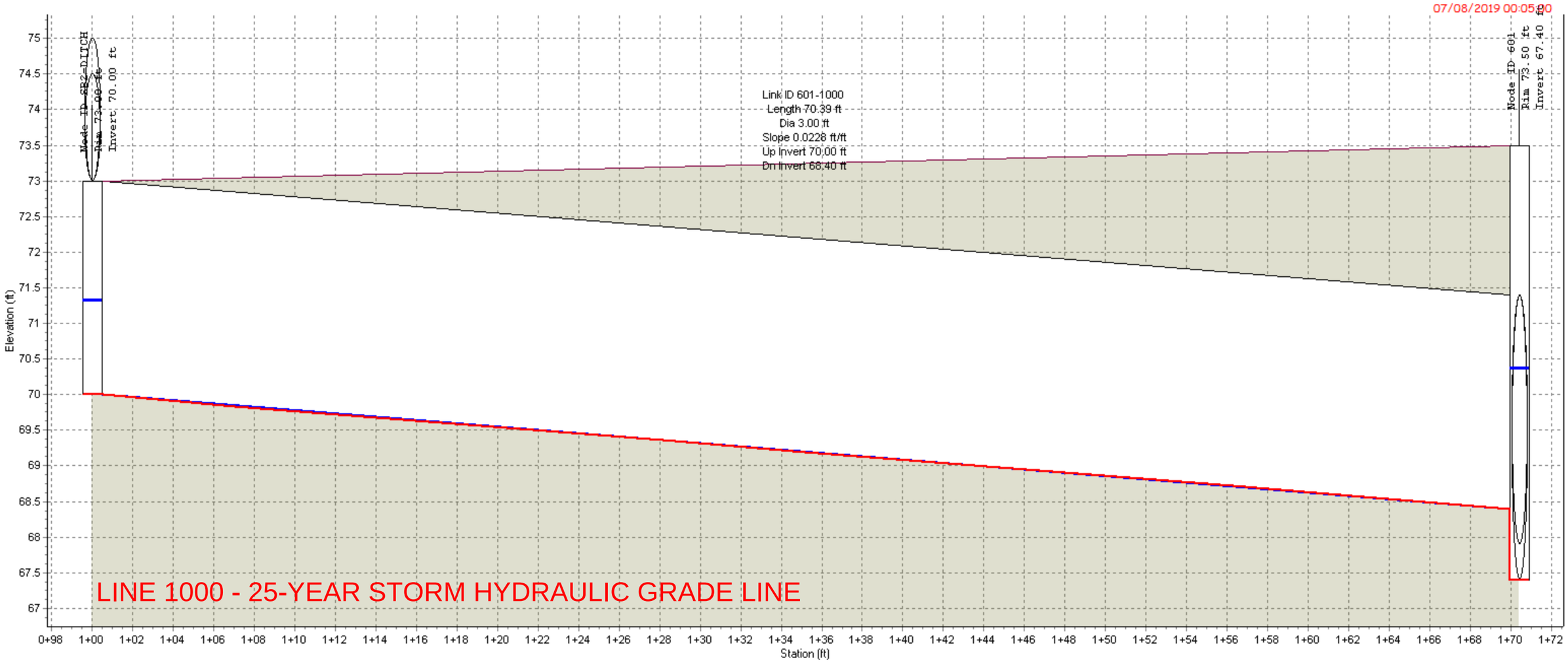


Node ID:	801	800	602
Rim (ft):	73.50	73.50	73.50
Invert (ft):	70.56	70.18	68.06
Min Pipe Cover (ft):	1.69	1.82	1.94
Max HGL (ft):	71.56	71.44	70.67

Link ID:	800-801	602-800
Length (ft):	54.00	145.00
Dia (ft):	1.25	1.50
Slope (ft/ft):	0.0025	0.0025
Up Invert (ft):	70.56	70.18
Dn Invert (ft):	70.43	69.81
Max Q (cfs):	2.35	5.49
Max Vel (ft/s):	2.30	4.01
Max Depth (ft):	0.99	1.06

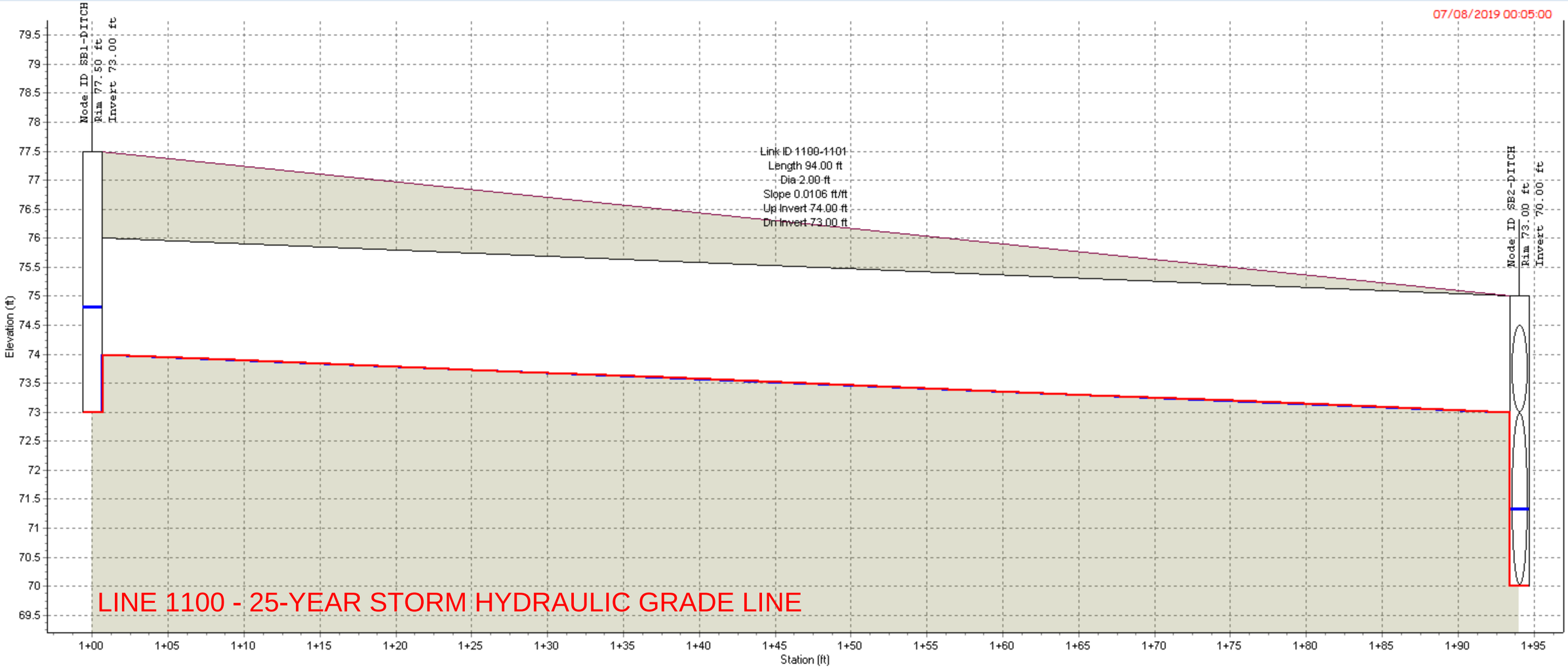


Node ID:	900		202
Rim (ft):	73.50		73.50
Invert (ft):	70.25		68.15
Min Pipe Cover (ft):	2.00		2.25
Max HGL (ft):	72.44		69.95
Link ID:		202-900	
Length (ft):		140.00	
Dia (ft):		1.25	
Slope (ft/ft):		0.0025	
Up Invert (ft):		70.25	
Dn Invert (ft):		69.90	
Max Q (cfs):		6.26	
Max Vel (ft/s):		5.37	
Max Depth (ft):		1.13	



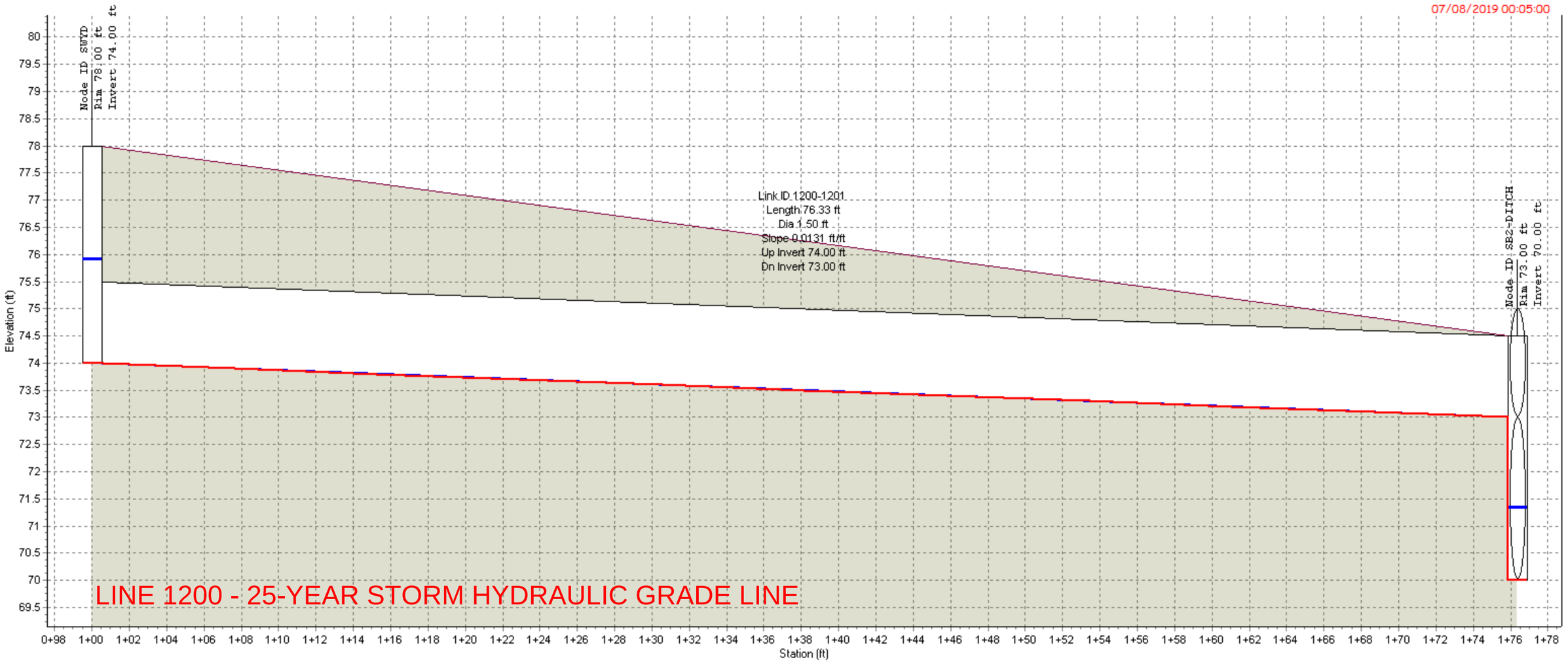
Node ID:	SB2-DITCH		601
Rim (ft):	73.00		73.50
Invert (ft):	70.00		67.40
Min Pipe Cover (ft):			2.11
Max HGL (ft):	71.35		70.40

Link ID:	601-1000
Length (ft):	70.39
Dia (ft):	3.00
Slope (ft/ft):	0.0228
Up Invert (ft):	70.00
Dn Invert (ft):	68.40
Max Q (cfs):	53.49
Max Vel (ft/s):	9.65
Max Depth (ft):	1.65



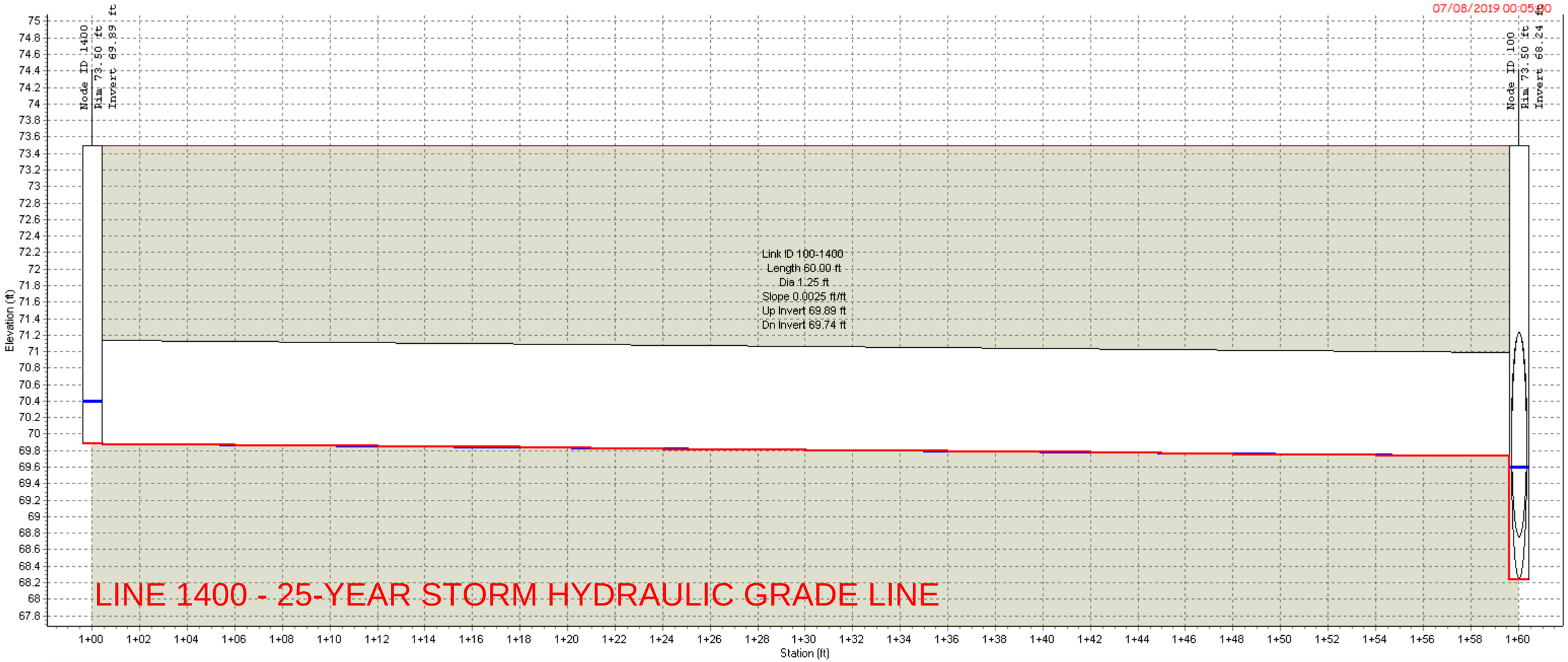
Node ID:	SB1-DITCH		SB2-DITCH
Rim (ft):	77.50		73.00
Invert (ft):	73.00		70.00
Min Pipe Cover (ft):			
Max HGL (ft):	74.81		71.35

Link ID:	1100-1101
Length (ft):	94.00
Dia (ft):	2.00
Slope (ft/ft):	0.0106
Up Invert (ft):	74.00
Dn Invert (ft):	73.00
Max Q (cfs):	17.92
Max Vel (ft/s):	5.28
Max Depth (ft):	0.78



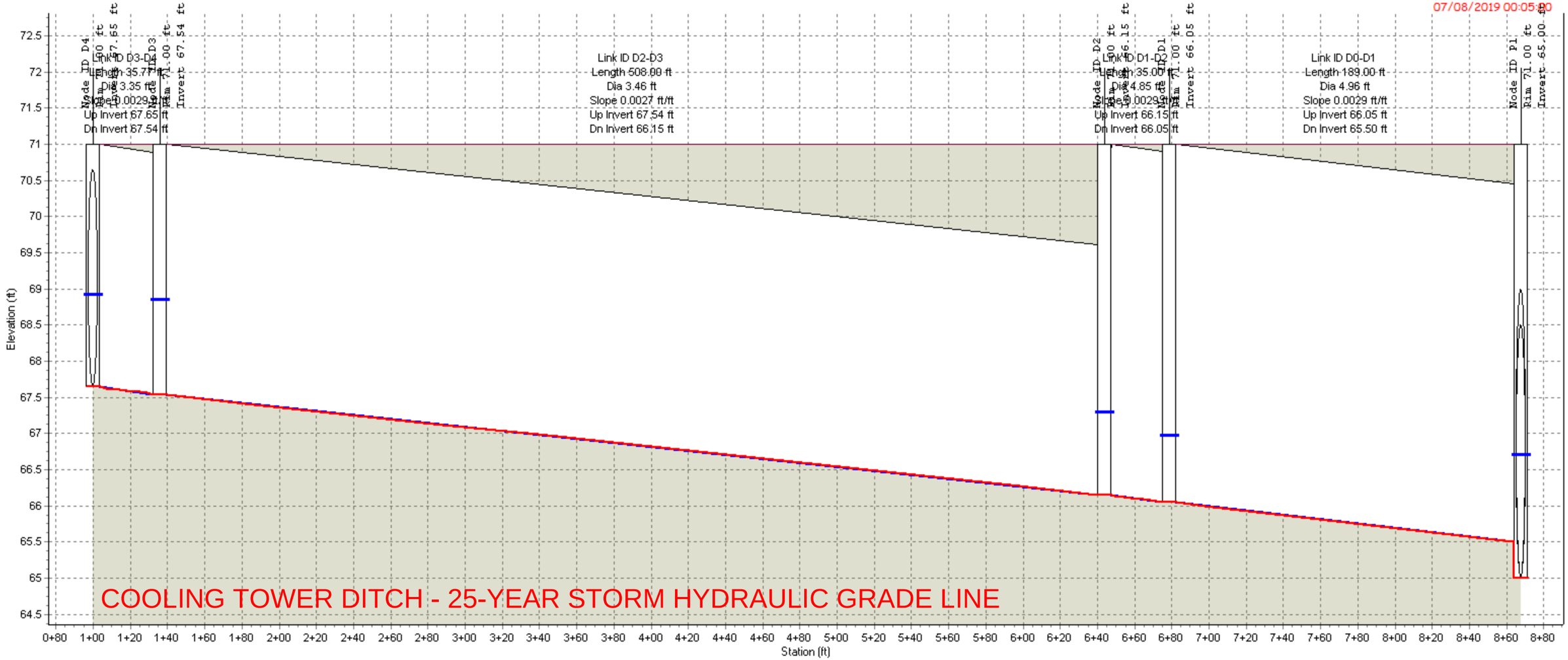
Node ID:	SWYD		SB2-DITCH
Rim (ft):	78.00		73.00
Invert (ft):	74.00		70.00
Min Pipe Cover (ft):			
Max HGL (ft):	75.92		71.35

Link ID:	1200-1201
Length (ft):	76.33
Dia (ft):	1.50
Slope (ft/ft):	0.0131
Up Invert (ft):	74.00
Dn Invert (ft):	73.00
Max Q (cfs):	11.23
Max Vel (ft/s):	6.57
Max Depth (ft):	1.39



Node ID:	1400	100
Rim (ft):	73.50	73.50
Invert (ft):	69.89	68.24
Min Pipe Cover (ft):	2.37	2.26
Max HGL (ft):	70.41	69.64

Link ID:	100-1400
Length (ft):	60.00
Dia (ft):	1.25
Slope (ft/ft):	0.0025
Up Invert (ft):	69.89
Dn Invert (ft):	69.74
Max Q (cfs):	1.11
Max Vel (ft/s):	2.64
Max Depth (ft):	0.46



Node ID:	D4	D3	D2	D1	P1
Rim (ft):	71.00	71.00	71.00	71.00	71.00
Invert (ft):	67.65	67.54	66.15	66.05	65.00
Min Pipe Cover (ft):	0.00	0.00	0.00	0.00	
Max HGL (ft):	68.93	68.85	67.31	66.97	66.71

Link ID:	D3-D4	D2-D3	D1-D2	D0-D1
Length (ft):	35.77	508.00	35.00	189.00
Dia (ft):	3.35	3.46	4.85	4.96
Slope (ft/ft):	0.0029	0.0027	0.0029	0.0029
Up Invert (ft):	67.65	67.54	66.15	66.05
Dn Invert (ft):	67.54	66.15	66.05	65.50
Max Q (cfs):	15.26	18.24	18.31	20.31
Max Vel (ft/s):	1.61	2.19	2.69	2.14
Max Depth (ft):	1.29	1.23	1.03	0.94

Project Description

File Name	Seminole - Operational.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	SCS TR-55
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	YES

Analysis Options

Start Analysis On	Jul 08, 2019	00:00:00
End Analysis On	Jul 11, 2019	00:00:00
Start Reporting On	Jul 08, 2019	00:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	1
Subbasins	39
Nodes	40
Junctions	33
Outfalls	3
Flow Diversions	0
Inlets	0
Storage Nodes	4
Links	38
Channels	4
Pipes	32
Pumps	0
Orifices	0
Weirs	2
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

SN	Rain Gage ID	Data Source	Data Source ID	Rainfall Type	Rain Units	State	County	Return Period (years)	Rainfall Depth (inches)	Rainfall Distribution
1	SEMINOLE	Time Series	ONE HUNDRED YEAR	Cumulative	inches	Florida	Putnam	100	10.30	SCS Type II 24-hr

Subbasin Summary

SN	Subbasin ID	Area (ac)	Weighted Curve Number	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	DA-100	0.19	61.00	10.30	5.28	1.00	1.56	0 00:06:00
2	DA-101	0.53	61.00	10.30	5.28	2.80	4.32	0 00:06:00
3	DA-102	0.46	61.00	10.30	5.28	2.42	3.75	0 00:06:00
4	DA-103	0.63	61.00	10.30	5.28	3.32	5.11	0 00:06:00
5	DA-104	0.53	98.00	10.30	10.06	5.32	7.01	0 00:06:00
6	DA-1400	0.24	61.00	10.30	5.28	1.26	1.93	0 00:06:00
7	DA-201	0.24	70.60	10.30	6.57	1.60	2.44	0 00:06:00
8	DA-202	0.58	70.60	10.30	6.58	3.78	5.79	0 00:06:00
9	DA-203	0.48	98.00	10.30	10.06	4.80	6.34	0 00:06:00
10	DA-204	0.37	98.00	10.30	10.06	3.75	4.90	0 00:06:00
11	DA-205	0.14	98.00	10.30	10.06	1.40	1.86	0 00:06:00
12	DA-206	0.14	98.00	10.30	10.06	1.43	1.86	0 00:06:00
13	DA-207	0.44	98.00	10.30	10.06	4.43	5.83	0 00:06:00
14	DA-300	0.47	98.00	10.30	10.06	4.69	6.17	0 00:06:00
15	DA-301	0.34	98.00	10.30	10.06	3.44	4.48	0 00:06:00
16	DA-400	0.30	98.00	10.30	10.06	3.04	3.97	0 00:06:00
17	DA-500	0.38	98.00	10.30	10.06	3.81	4.99	0 00:06:00
18	DA-601	0.52	98.00	10.30	10.06	5.24	6.85	0 00:06:00
19	DA-602	0.27	98.00	10.30	10.06	2.73	3.55	0 00:06:00
20	DA-606	0.40	98.00	10.30	10.06	3.97	5.24	0 00:06:00
21	DA-607	0.34	98.00	10.30	10.06	3.37	4.39	0 00:06:00
22	DA-608	0.73	75.00	10.30	7.16	5.25	4.43	0 00:32:12
23	DA-700	0.45	98.00	10.30	10.06	4.55	6.00	0 00:06:00
24	DA-800	0.33	98.00	10.30	10.06	3.35	4.39	0 00:06:00
25	DA-801	0.24	98.00	10.30	10.06	2.41	3.21	0 00:06:00
26	DA-900	0.64	98.00	10.30	10.06	6.47	8.45	0 00:06:00
27	DA-D1	0.35	70.60	10.30	6.58	2.33	3.54	0 00:06:00
28	DA-D2	0.05	70.60	10.30	6.56	0.32	0.51	0 00:06:00
29	DA-D3	0.49	70.60	10.30	6.58	3.23	4.95	0 00:06:00
30	DA-D4	0.31	70.60	10.30	6.58	2.04	3.15	0 00:06:00
31	DA-P1	11.00	70.60	10.30	6.58	72.33	110.55	0 00:06:00
32	POST-OSB1	5.63	95.00	10.30	9.69	54.58	73.01	0 00:06:24
33	POST-SB1	18.31	47.00	10.30	3.35	61.32	68.15	0 00:17:55
34	POST-SB2	6.53	94.00	10.30	9.57	62.51	83.88	0 00:06:36
35	PRE-OSB1	5.63	95.00	10.30	9.69	54.58	73.01	0 00:06:24
36	PRE-SB1	5.69	41.00	10.30	2.53	14.37	4.34	0 01:47:42
37	PRE-SB2	26.64	37.00	10.30	1.99	52.93	14.54	0 01:48:42
38	PRE-SB3	16.90	37.00	10.30	1.99	33.58	12.09	0 01:15:00
39	PRE-SB4	0.83	36.00	10.30	1.86	1.54	0.70	0 00:52:18

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	100	Junction	68.24	73.50	0.00	74.00	0.00	23.03	70.10	0.00	3.40	0 00:00	0.00	0.00
2	101	Junction	69.04	73.50	0.00	74.00	0.00	19.91	71.15	0.00	2.35	0 00:00	0.00	0.00
3	102	Junction	69.72	73.50	0.00	74.00	0.00	15.64	72.10	0.00	1.40	0 00:00	0.00	0.00
4	103	Junction	70.00	73.50	0.00	74.00	0.00	11.97	72.74	0.00	0.76	0 00:00	0.00	0.00
5	104	Junction	70.37	73.50	0.00	74.00	0.00	6.98	73.41	0.00	0.09	0 00:00	0.00	0.00
6	201	Junction	66.60	71.83	0.00	71.83	0.00	47.22	68.56	0.00	3.27	0 00:00	0.00	0.00
7	202	Junction	68.15	73.50	0.00	74.00	0.00	44.96	70.44	0.00	3.06	0 00:00	0.00	0.00
8	203	Junction	68.80	73.50	0.00	74.00	0.00	31.41	71.54	0.00	1.96	0 00:00	0.00	0.00
9	204	Junction	69.45	73.50	0.00	74.00	0.00	25.04	72.17	0.00	1.33	0 00:00	0.00	0.00
10	205	Junction	69.67	73.50	0.00	74.00	0.00	20.12	72.53	0.00	0.97	0 00:00	0.00	0.00
11	206	Junction	70.80	73.50	0.00	74.00	0.00	7.66	73.11	0.00	0.39	0 00:00	0.00	0.00
12	207	Junction	71.00	73.50	0.00	74.00	0.00	5.81	73.51	0.01	0.00	0 00:00	0.00	0.00
13	300	Junction	69.96	73.50	0.00	74.00	0.00	10.61	72.93	0.00	0.57	0 00:00	0.00	0.00
14	301	Junction	70.47	73.50	0.00	74.00	0.00	4.46	73.30	0.00	0.20	0 00:00	0.00	0.00
15	400	Junction	70.72	73.50	0.00	74.00	0.00	3.95	73.63	0.13	0.00	0 00:00	0.00	0.00
16	500	Junction	70.80	73.50	0.00	74.00	0.00	4.96	72.61	0.00	0.89	0 00:00	0.00	0.00
17	601	Junction	67.40	73.50	0.00	74.00	0.00	109.92	71.29	0.00	2.21	0 00:00	0.00	0.00
18	602	Junction	68.06	73.50	0.00	74.00	0.00	37.17	71.54	0.00	1.96	0 00:00	0.00	0.00
19	603	Junction	68.65	73.50	0.00	74.00	0.00	26.34	71.83	0.00	1.67	0 00:00	0.00	0.00
20	604	Junction	69.40	73.50	0.00	74.00	0.00	21.33	72.42	0.00	1.08	0 00:00	0.00	0.00
21	605	Junction	69.60	73.50	0.00	74.00	0.00	15.34	72.65	0.00	0.85	0 00:00	0.00	0.00
22	606	Junction	69.93	73.50	0.00	74.00	0.00	15.34	73.30	0.00	0.20	0 00:00	0.00	0.00
23	607	Junction	70.34	73.50	0.00	74.00	0.00	6.36	74.00	0.50	0.00	0 11:59	0.00	0.00
24	608	Junction	70.48	73.50	0.00	74.00	0.00	4.38	74.00	0.50	0.00	0 11:59	0.00	0.00
25	700	Junction	70.95	73.50	0.00	74.00	0.00	5.98	73.51	0.01	0.00	0 00:00	0.00	0.00
26	800	Junction	70.18	73.50	0.00	74.00	0.00	7.57	72.30	0.00	1.20	0 00:00	0.00	0.00
27	801	Junction	70.56	73.50	0.00	74.00	0.00	3.19	72.49	0.00	1.01	0 00:00	0.00	0.00
28	900	Junction	70.25	73.50	0.00	74.00	0.00	8.40	73.64	0.14	0.00	0 00:00	0.00	0.00
29	1400	Junction	69.89	73.50	0.00	74.00	0.00	1.88	70.59	0.00	2.91	0 00:00	0.00	0.00
30	D1	Junction	66.05	71.00	0.00	0.00	0.00	32.81	67.56	0.00	3.44	0 00:00	0.00	0.00
31	D2	Junction	66.15	71.00	0.00	0.00	0.00	30.27	67.63	0.00	3.37	0 00:00	0.00	0.00
32	D3	Junction	67.54	71.00	0.00	0.00	0.00	30.44	69.22	0.00	1.79	0 00:00	0.00	0.00
33	D4	Junction	67.65	71.00	0.00	0.00	0.00	26.13	69.31	0.00	1.69	0 00:00	0.00	0.00
34	EMRG_OF	Outfall	65.00					0.00	65.00					
35	EMRG-OF-2	Outfall	62.78					0.00	62.78					
36	Out-14	Outfall	0.00					72.88	0.00					
37	P1	Storage Node	65.00	71.00	0.00		0.00	283.88	67.56				0.00	0.00
38	SB1-DITCH	Storage Node	73.00	77.50	0.00		0.00	68.12	75.55				0.00	0.00
39	SB2-DITCH	Storage Node	70.00	73.00	0.00		0.00	100.29	71.81				0.00	0.00
40	SWYD	Storage Node	74.00	78.00	0.00		0.00	72.01	76.48				0.00	0.00

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/ Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged (min)
1	100	Pipe	100	D4	194.39	68.24	67.65	0.3000	36.000	0.0120	23.09	39.72	0.58	5.42	1.69	0.58	0.00
2	100-101	Pipe	101	100	120.00	69.04	68.74	0.2500	30.000	0.0120	19.65	22.22	0.88	5.17	1.78	0.72	0.00
3	100-1400	Pipe	1400	100	60.00	69.89	69.74	0.2500	15.000	0.0120	1.87	3.50	0.53	3.06	0.62	0.50	0.00
4	101-102	Pipe	102	101	120.00	69.72	69.54	0.1500	24.000	0.0120	15.68	9.49	1.65	5.27	1.79	0.90	0.00
5	102-103	Pipe	103	102	180.00	70.00	69.82	0.1000	24.000	0.0120	11.97	7.75	1.55	3.81	2.00	1.00	5.00
6	103-104	Pipe	104	103	120.00	70.37	70.25	0.1000	18.000	0.0120	6.98	3.60	1.94	3.95	1.50	1.00	11.00
7	1100-1101	Pipe	SB1-DITCH	SB2-DITCH	94.00	74.00	73.00	1.0600	24.000	0.0150	47.81	60.67	0.79	6.57	1.42	0.72	0.00
8	1200-1201	Pipe	SWYD	SB2-DITCH	76.33	74.00	73.00	1.3100	18.000	0.0150	12.99	10.42	1.25	7.50	1.42	0.95	0.00
9	200-201	Pipe	201	P1	160.00	66.60	65.00	1.0000	42.000	0.0120	47.37	108.99	0.43	10.93	1.77	0.50	0.00
10	201-202	Pipe	202	201	140.00	68.15	67.10	0.7500	36.000	0.0120	44.86	62.58	0.72	8.57	2.03	0.69	0.00
11	202-203	Pipe	203	202	220.00	68.80	68.25	0.2500	36.000	0.0150	30.99	28.90	1.07	5.00	2.42	0.82	0.00
12	202-900	Pipe	900	202	140.00	70.25	69.90	0.2500	15.000	0.0120	8.40	3.50	2.40	6.97	1.19	0.95	0.00
13	203-204	Pipe	204	203	100.00	69.45	69.30	0.1500	30.000	0.0120	25.11	17.21	1.46	5.23	2.35	0.95	0.00
14	204-205	Pipe	205	204	80.00	69.67	69.55	0.1500	30.000	0.0120	20.17	17.21	1.17	4.11	2.50	1.00	2.00
15	205-206	Pipe	206	205	80.00	70.80	70.72	0.1000	18.000	0.0120	7.66	3.60	2.13	4.34	1.50	1.00	4.00
16	205-300	Pipe	300	205	80.00	69.96	69.84	0.1500	24.000	0.0150	10.61	7.59	1.40	3.38	2.00	1.00	9.00
17	206-207	Pipe	207	206	100.00	71.00	70.90	0.1000	18.000	0.0120	5.81	3.60	1.62	3.29	1.50	1.00	7.00
18	300-301	Pipe	301	300	180.00	70.47	70.29	0.1000	18.000	0.0120	4.46	3.60	1.24	2.52	1.50	1.00	11.00
19	600-601	Pipe	601	P1	300.00	67.40	65.00	0.8000	48.000	0.0150	110.31	111.23	0.99	12.46	2.72	0.68	0.00
20	601-1000	Pipe	SB2-DITCH	601	70.39	70.00	68.40	2.2800	36.000	0.0120	80.43	218.22	0.37	9.93	2.28	0.76	0.00
21	601-602	Pipe	602	601	113.00	68.06	67.90	0.1500	42.000	0.0120	36.51	42.21	0.86	4.01	3.43	0.98	0.00
22	602-603	Pipe	603	602	71.88	68.65	68.56	0.1300	36.000	0.0120	26.14	25.57	1.02	3.76	2.99	1.00	0.00
23	602-800	Pipe	800	602	145.00	70.18	69.81	0.2500	18.000	0.0120	7.57	5.69	1.33	4.31	1.50	1.00	7.00
24	603-500	Pipe	500	603	14.96	70.80	70.75	0.3300	12.000	0.0120	4.97	2.23	2.23	6.42	1.00	1.00	5.00
25	603-604	Pipe	604	603	152.44	69.40	69.15	0.1600	30.000	0.0120	21.40	17.91	1.19	4.36	2.50	1.00	6.00
26	604-605	Pipe	605	604	100.00	69.60	69.50	0.1000	30.000	0.0120	15.37	14.05	1.09	3.13	2.50	1.00	7.00
27	604-700	Pipe	604	700	120.00	70.65	70.95	-0.2500	15.000	0.0120	5.98	3.50	1.71	4.87	1.25	1.00	8.00
28	605-606	Pipe	606	605	80.00	69.93	69.85	0.1000	24.000	0.0120	15.34	7.75	1.98	4.88	2.00	1.00	10.00
29	606-400	Pipe	400	606	40.00	70.72	70.68	0.1000	15.000	0.0120	3.95	2.21	1.79	3.22	1.25	1.00	12.00
30	606-607	Pipe	607	606	160.00	70.34	70.18	0.1000	18.000	0.0120	6.37	3.60	1.77	3.60	1.50	1.00	15.00
31	607-608	Pipe	608	607	40.00	70.48	70.44	0.1000	18.000	0.0120	4.39	3.60	1.22	2.50	1.50	1.00	18.00
32	800-801	Pipe	801	800	54.00	70.56	70.43	0.2500	15.000	0.0120	3.20	3.50	0.91	2.60	1.25	1.00	8.00
33	D0-D1	Channel	D1	P1	189.00	66.05	65.50	0.2900	59.520	0.0320	32.97	521.88	0.06	2.46	1.79	0.36	0.00
34	D1-D2	Channel	D2	D1	35.00	66.15	66.05	0.2900	58.200	0.0320	29.76	333.82	0.09	3.09	1.47	0.30	0.00
35	D2-D3	Channel	D3	D2	508.00	67.54	66.15	0.2700	41.520	0.0320	29.80	156.43	0.19	2.51	1.56	0.45	0.00
36	D3-D4	Channel	D4	D3	35.77	67.65	67.54	0.2900	40.200	0.0320	25.69	170.37	0.15	1.87	1.63	0.50	0.00
37	EMERGENCY-DISCHARGE-RISER	Weir	P1	EMRG-OF-2		65.00	62.78				0.00						
38	EMERGENCY-OVERFLOW-SPILLWAY	Weir	P1	EMRG_OF		65.00	65.00				0.00						

Subbasin Hydrology

Subbasin : DA-100

Input Data

Area (ac) 0.19
Weighted Curve Number 61.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.19	-	61.00
Composite Area & Weighted CN	0.19		61.00

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation :

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where :

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's roughness

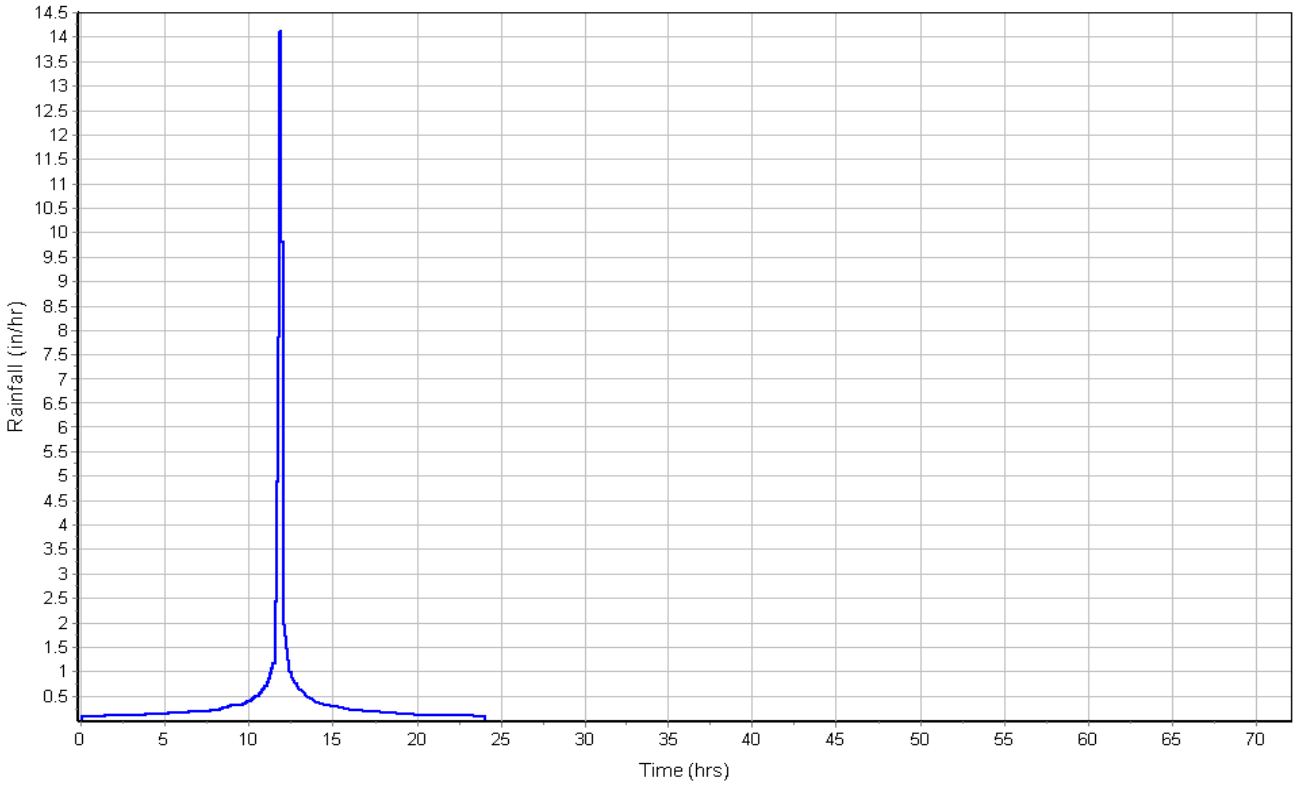
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

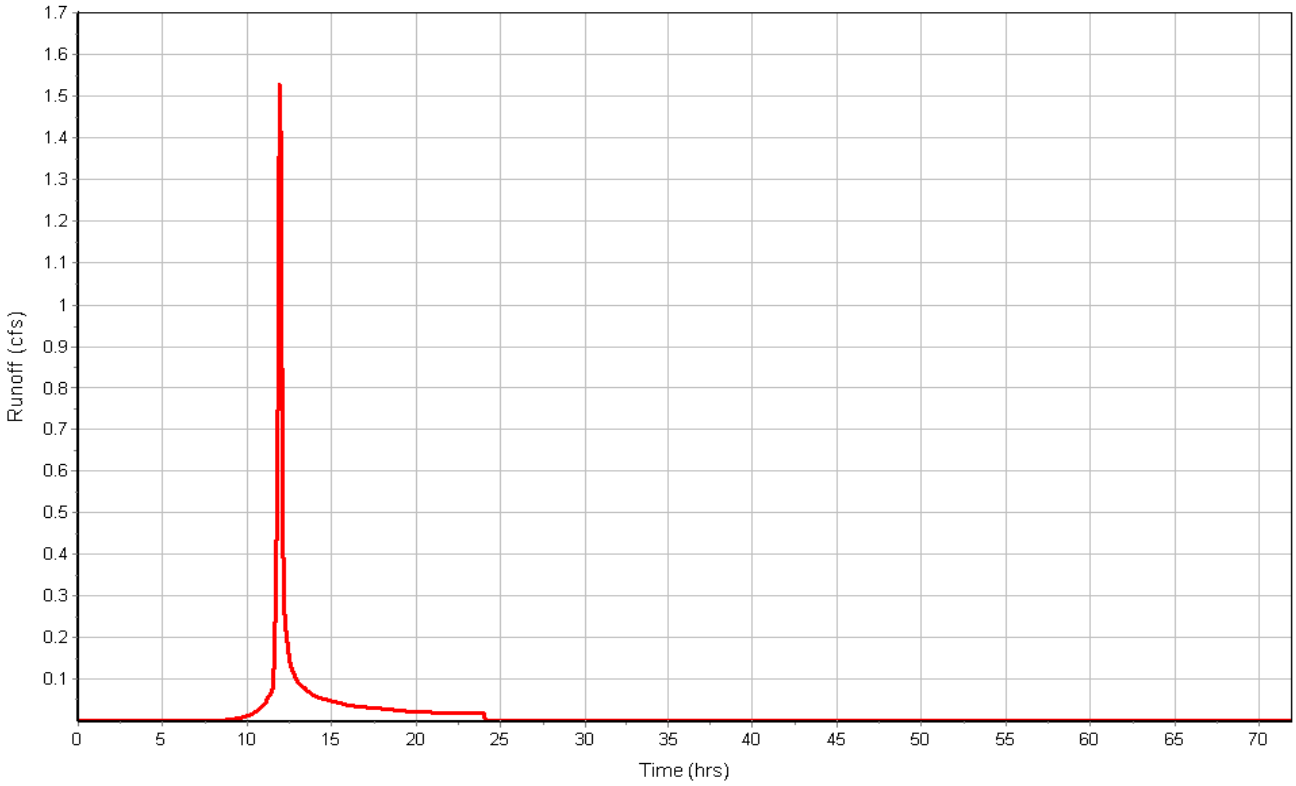
Total Rainfall (in) 10.30
Total Runoff (in) 5.28
Peak Runoff (cfs) 1.56
Weighted Curve Number 61.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-100

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-101

Input Data

Area (ac) 0.53
Weighted Curve Number 61.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.56	-	61.00
Composite Area & Weighted CN	0.56		61.00

Time of Concentration

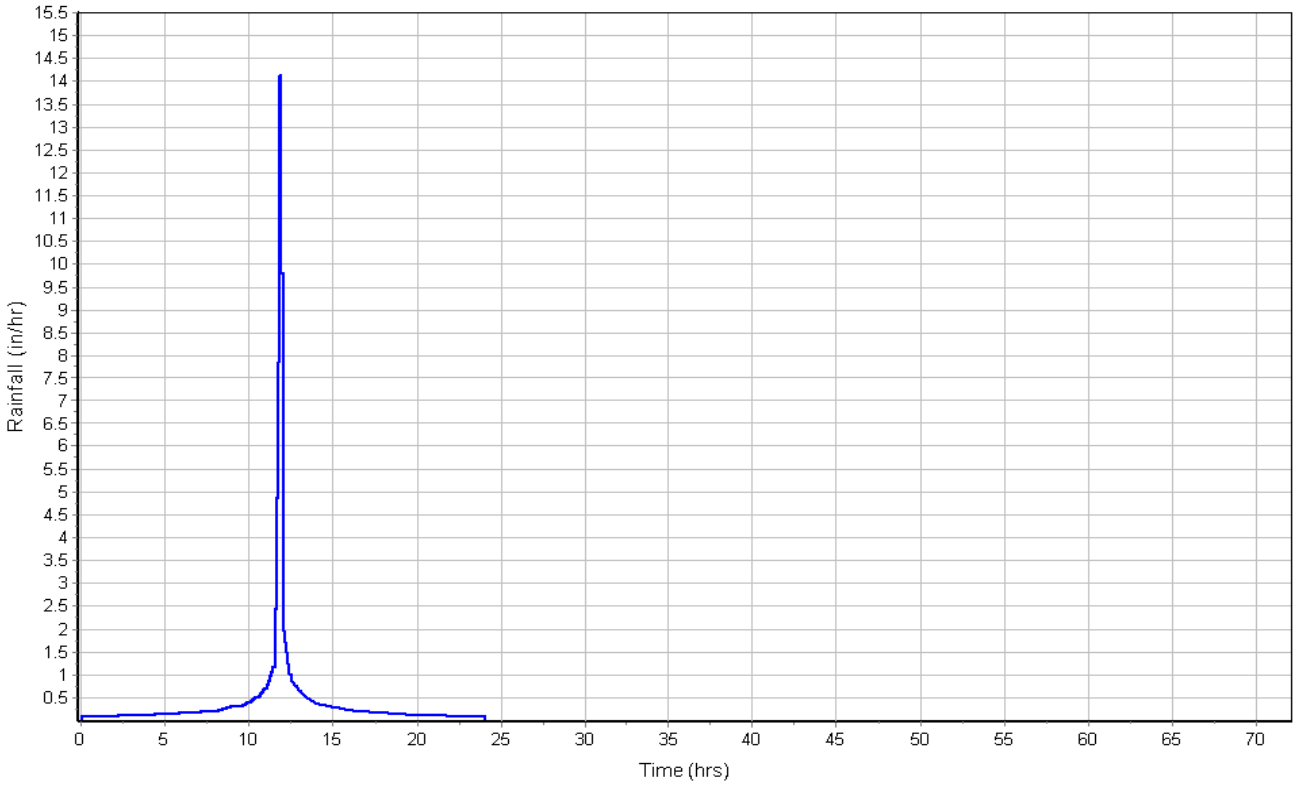
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Subbasin Runoff Results

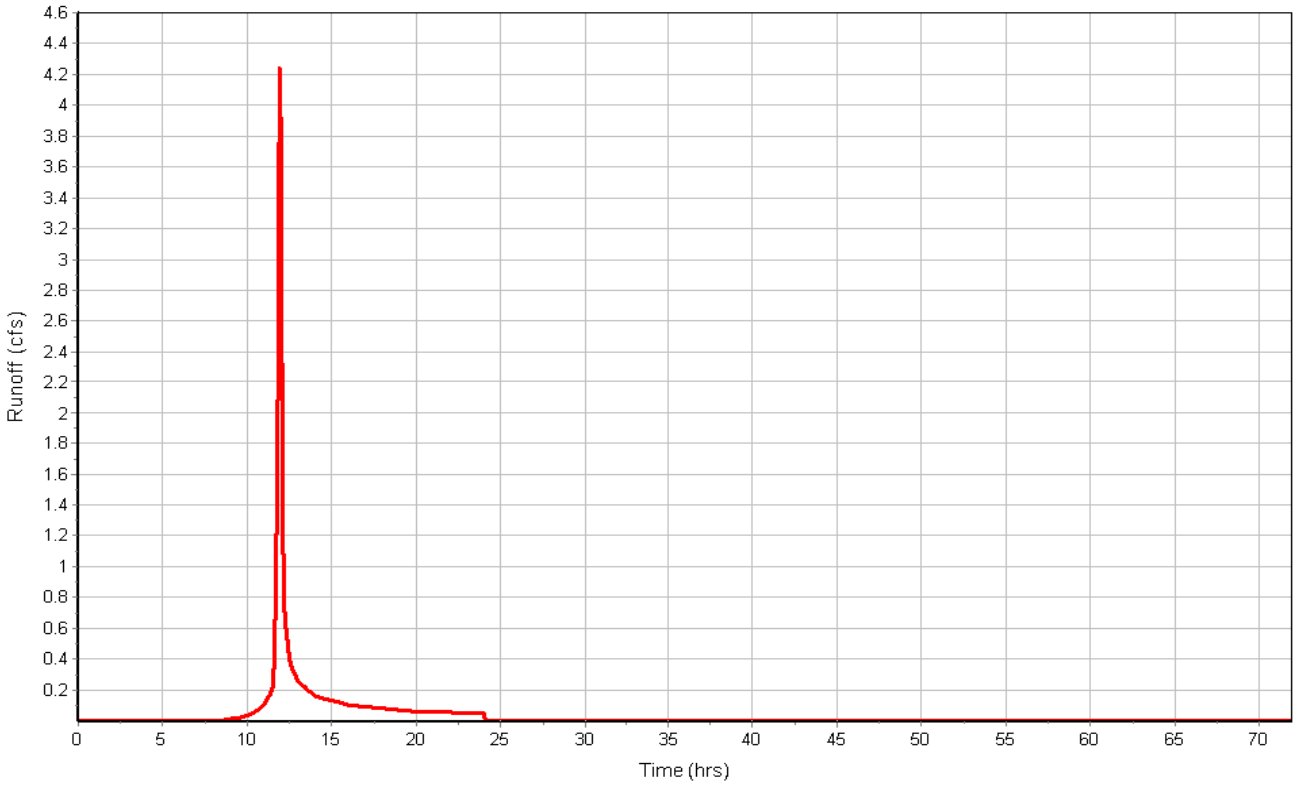
Total Rainfall (in) 10.30
Total Runoff (in) 5.28
Peak Runoff (cfs) 4.32
Weighted Curve Number 61.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-101

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-102

Input Data

Area (ac) 0.46
Weighted Curve Number 61.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.57	-	61.00
Composite Area & Weighted CN	0.57		61.00

Time of Concentration

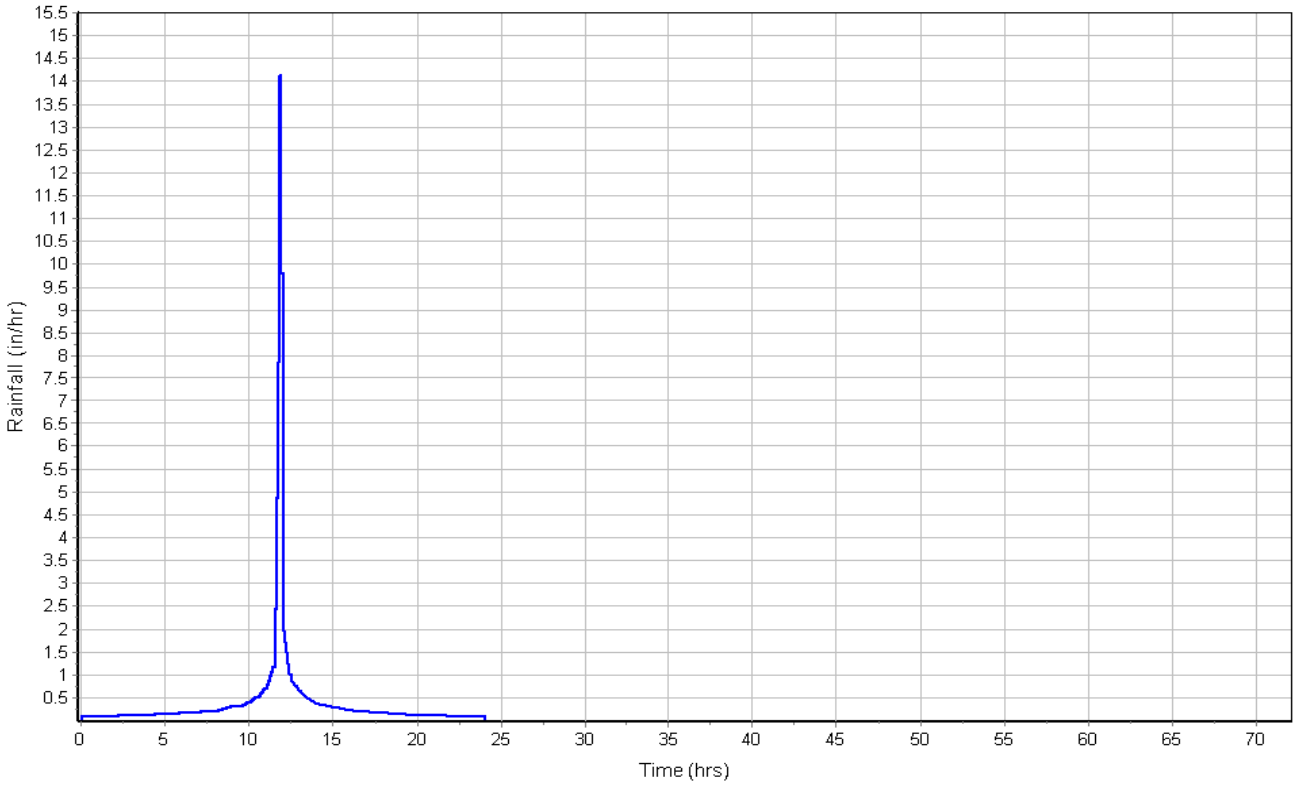
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

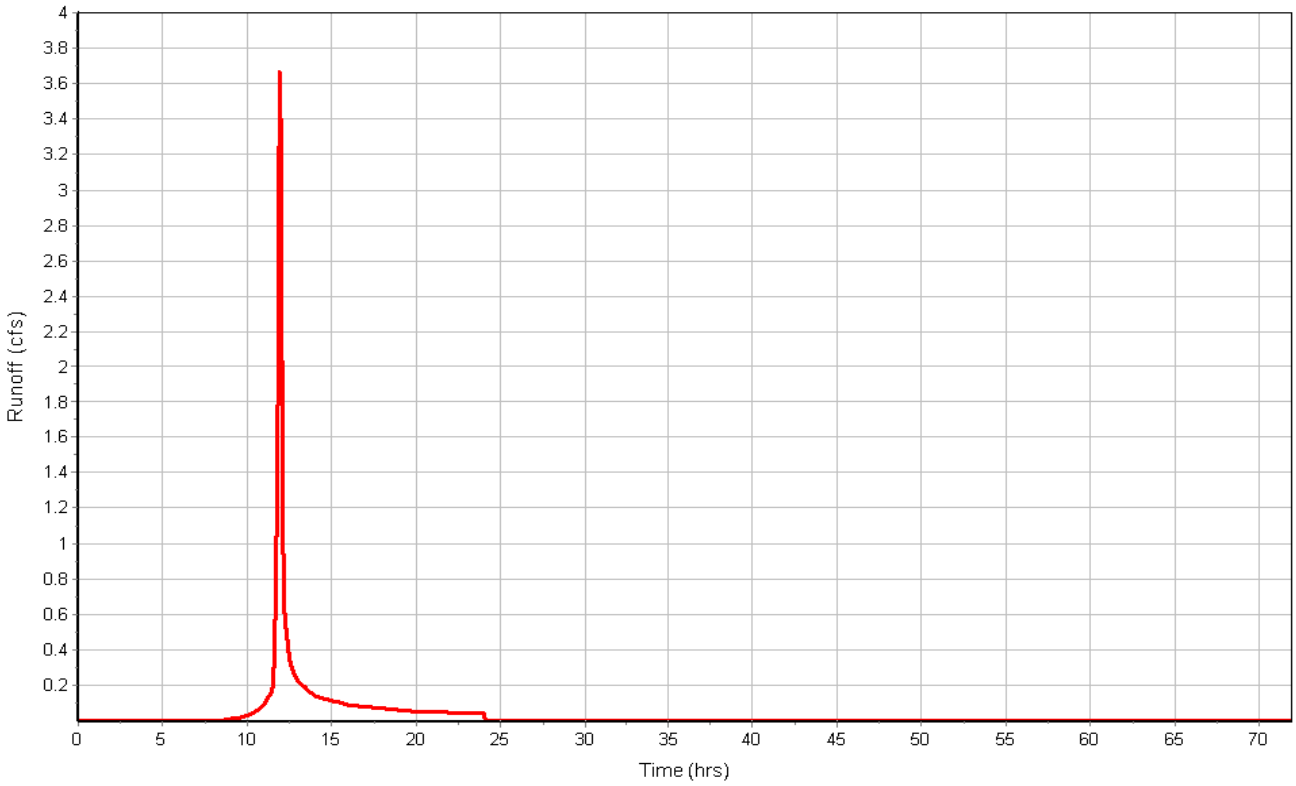
Total Rainfall (in) 10.30
Total Runoff (in) 5.28
Peak Runoff (cfs) 3.75
Weighted Curve Number 61.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-102

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-103

Input Data

Area (ac) 0.63
Weighted Curve Number 61.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.73	-	61.00
Composite Area & Weighted CN	0.73		61.00

Time of Concentration

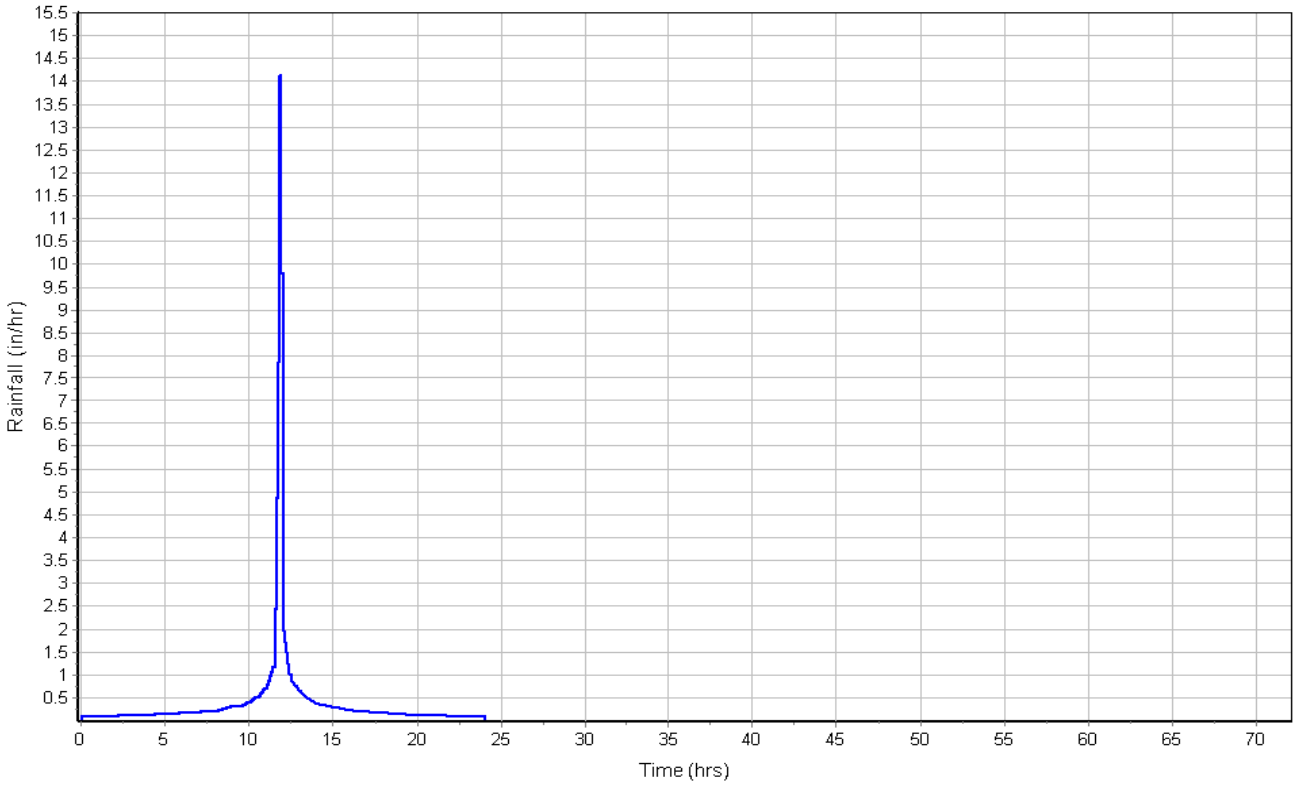
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

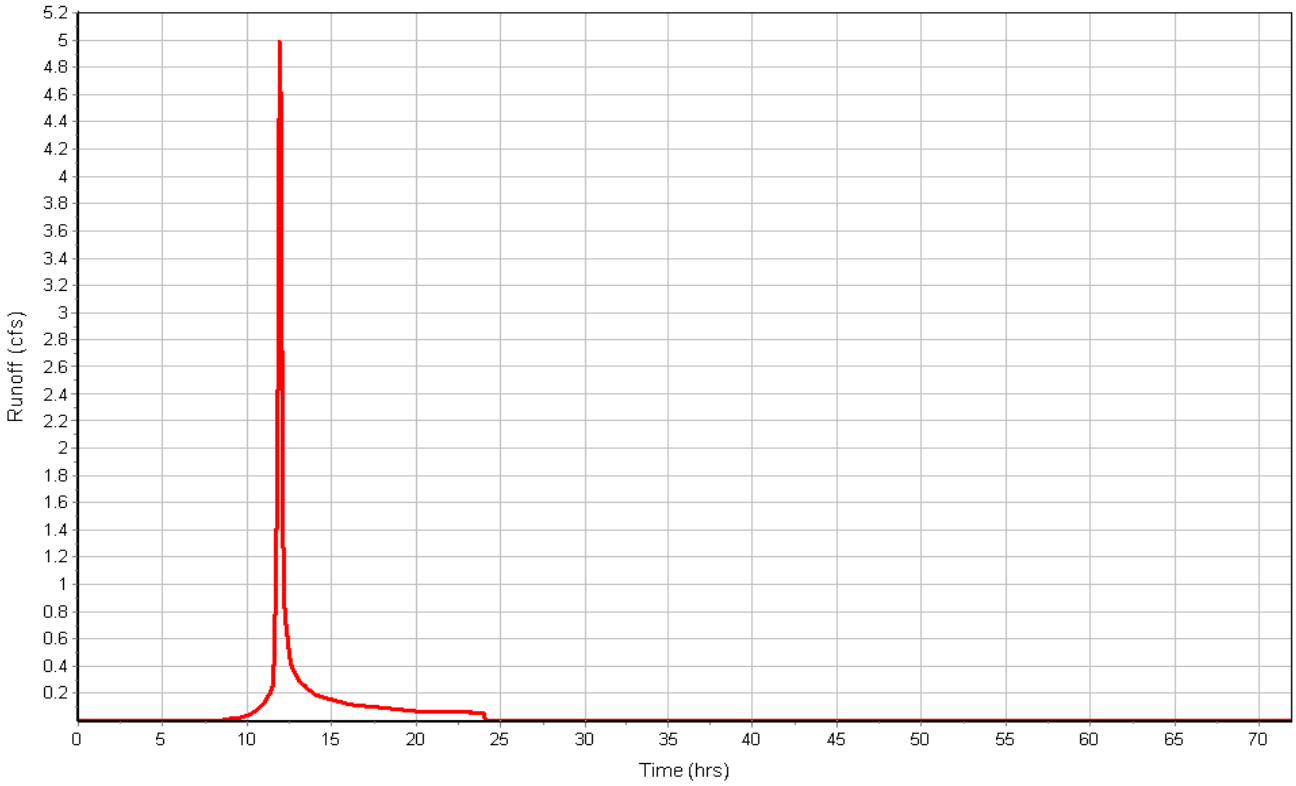
Total Rainfall (in) 10.30
Total Runoff (in) 5.28
Peak Runoff (cfs) 5.11
Weighted Curve Number 61.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-103

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-104

Input Data

Area (ac) 0.53
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.53	-	98.00
Composite Area & Weighted CN	0.53		98.00

Time of Concentration

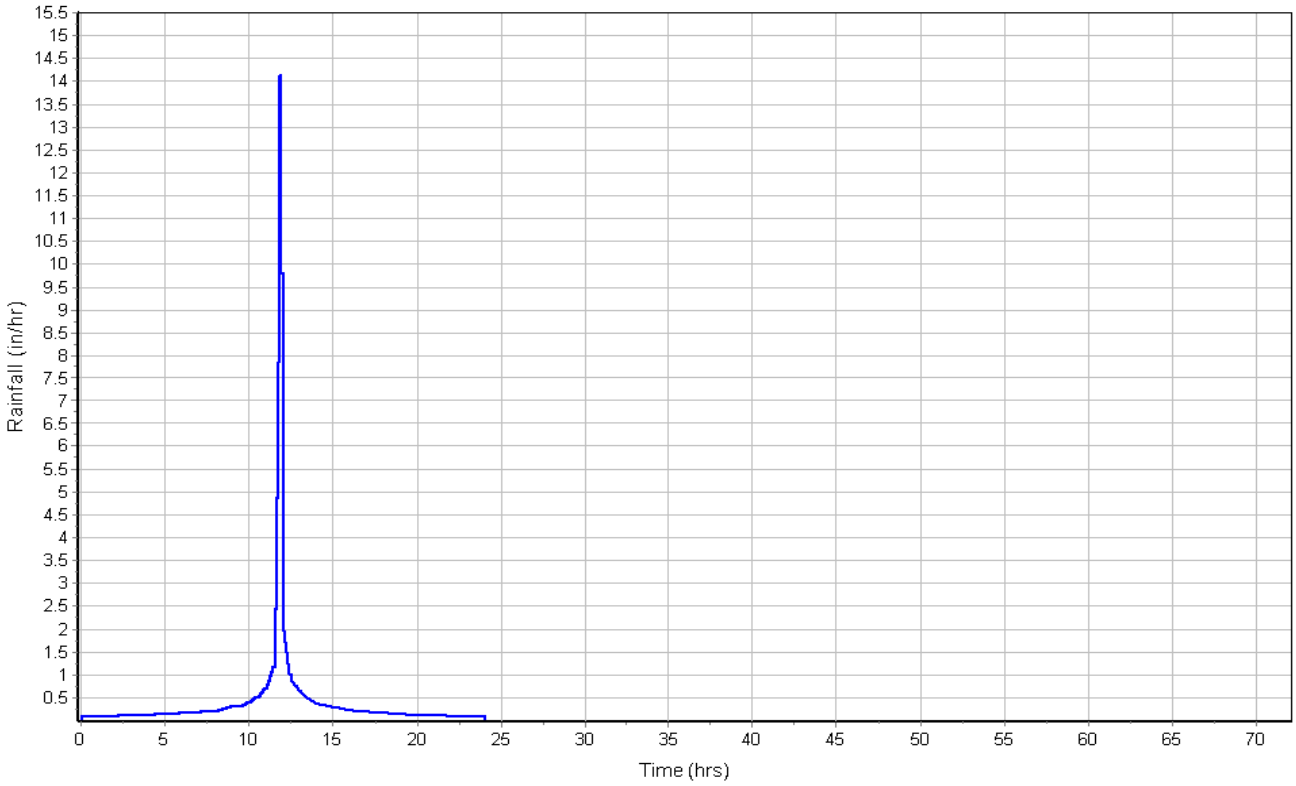
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

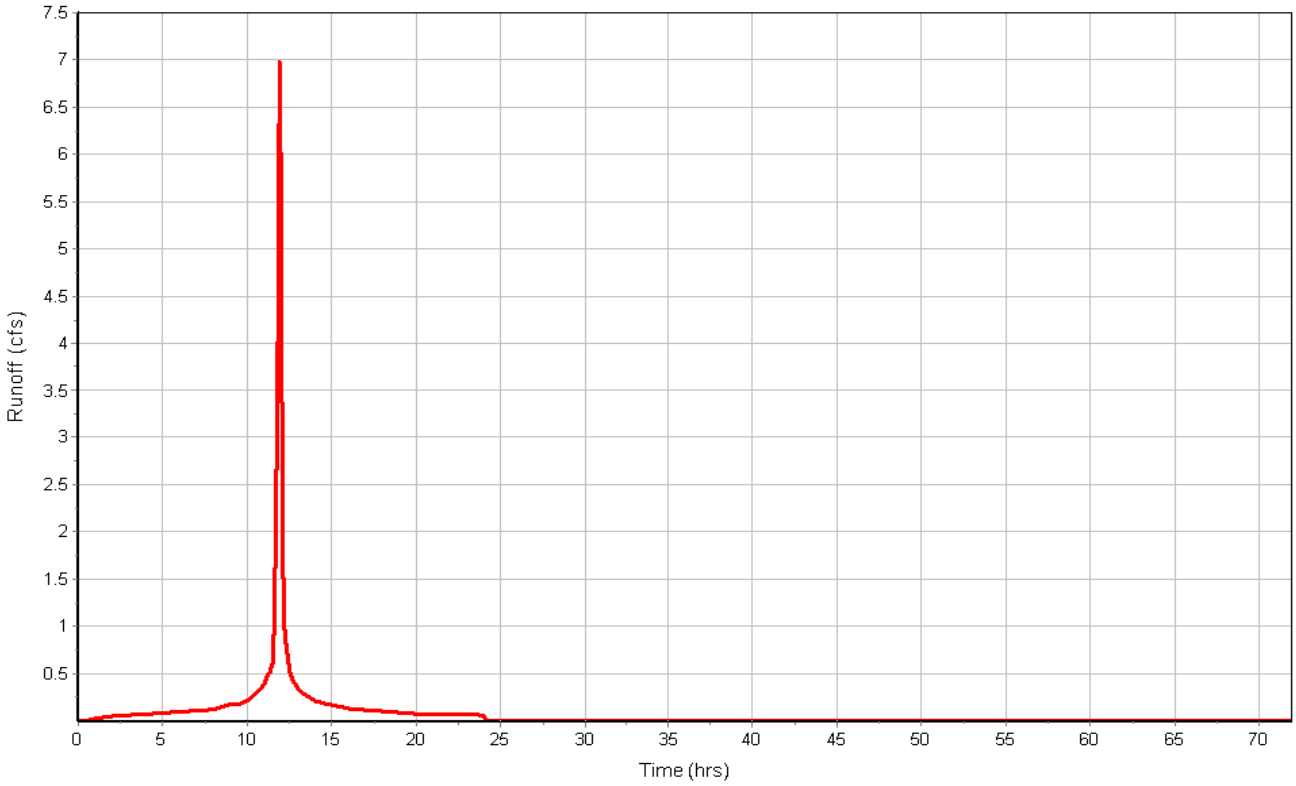
Total Rainfall (in) 10.30
Total Runoff (in) 10.06
Peak Runoff (cfs) 7.01
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-104

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-1400

Input Data

Area (ac) 0.24
Weighted Curve Number 61.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.24	-	61.00
Composite Area & Weighted CN	0.24		61.00

Time of Concentration

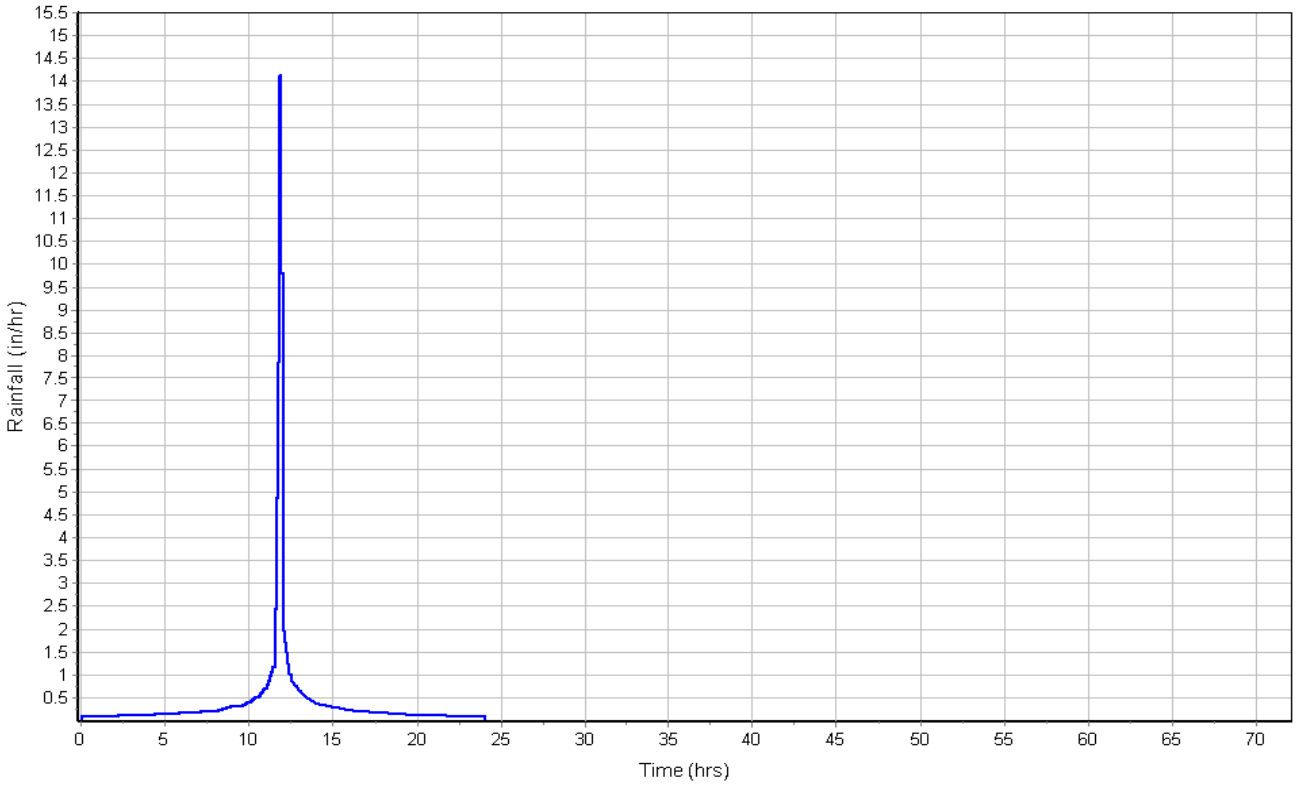
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

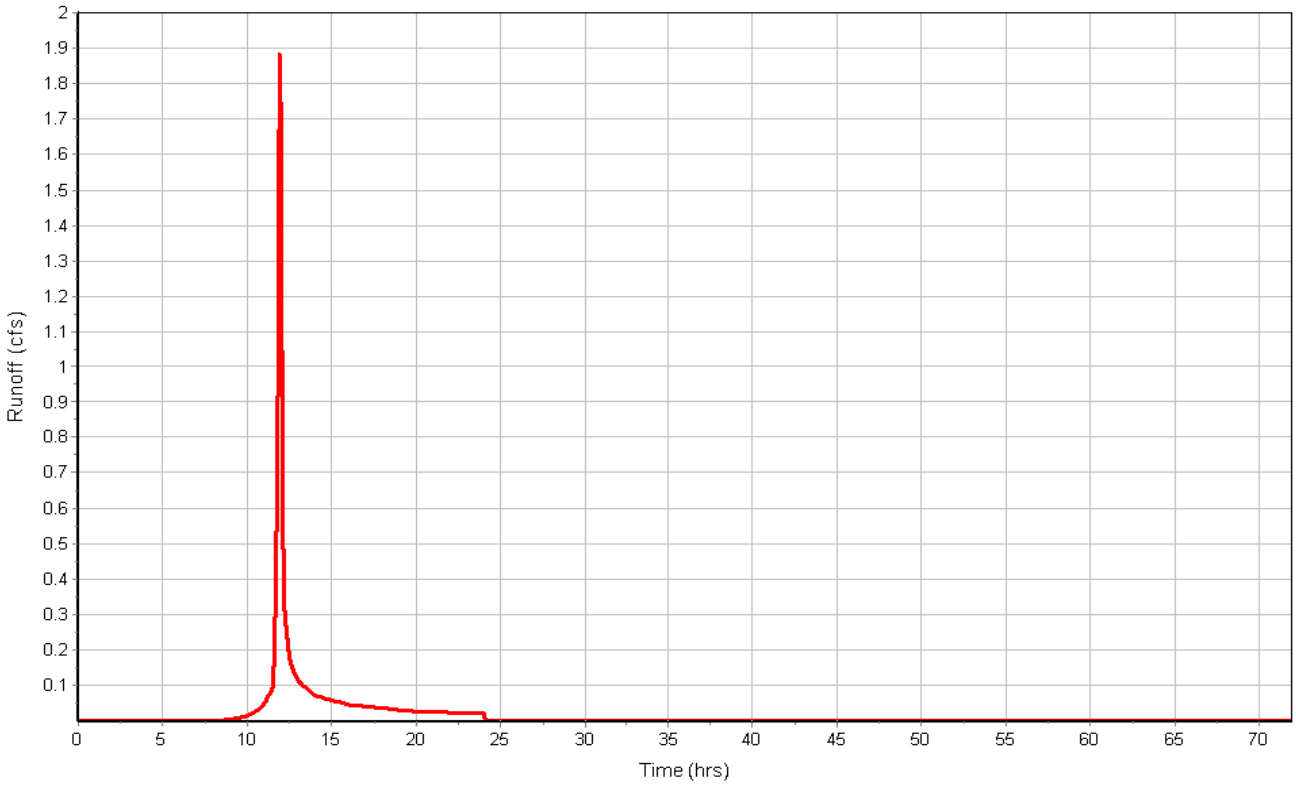
Total Rainfall (in) 10.30
Total Runoff (in) 5.28
Peak Runoff (cfs) 1.93
Weighted Curve Number 61.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-1400

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-201

Input Data

Area (ac) 0.24
Weighted Curve Number 70.60
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.52	-	70.60
Composite Area & Weighted CN	0.52		70.60

Time of Concentration

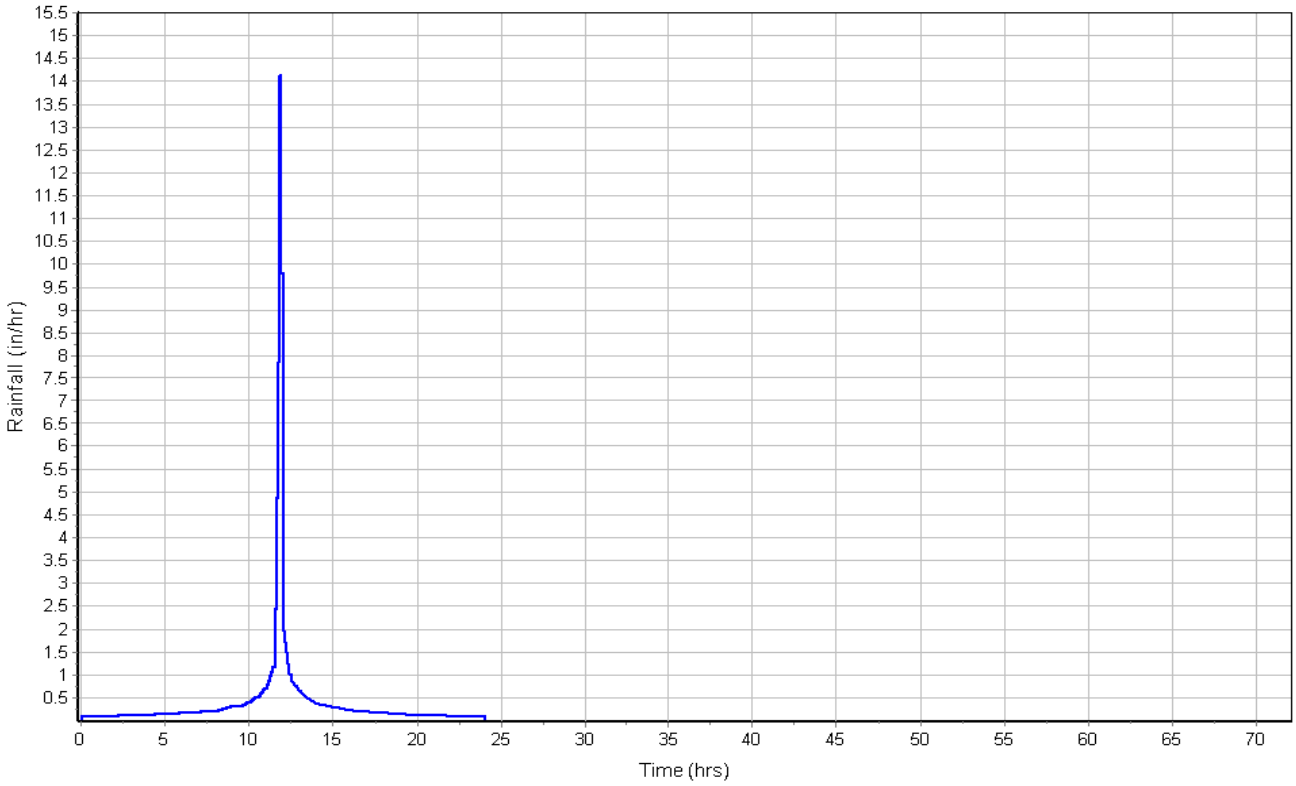
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

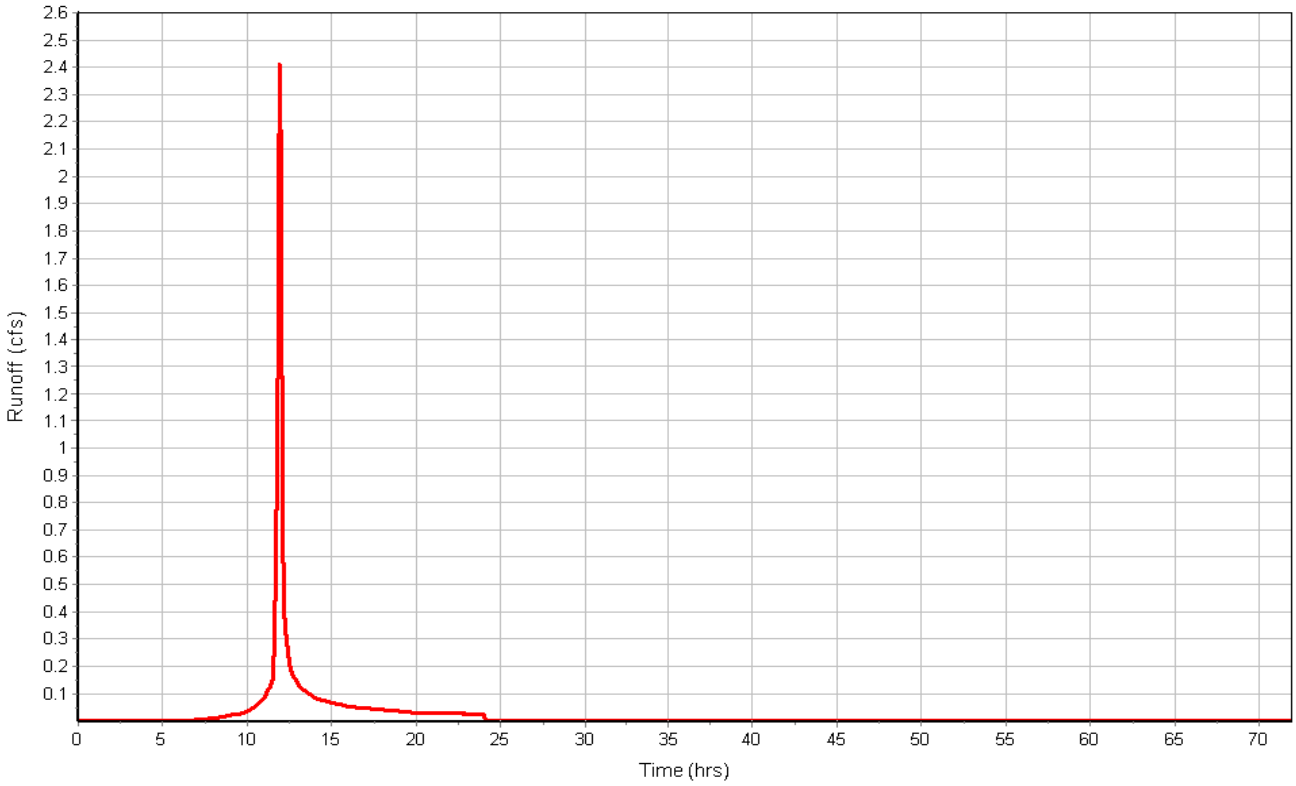
Total Rainfall (in) 10.30
Total Runoff (in) 6.57
Peak Runoff (cfs) 2.44
Weighted Curve Number 70.60
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-201

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-202

Input Data

Area (ac) 0.58
Weighted Curve Number 70.60
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.58	-	70.60
Composite Area & Weighted CN	0.58		70.60

Time of Concentration

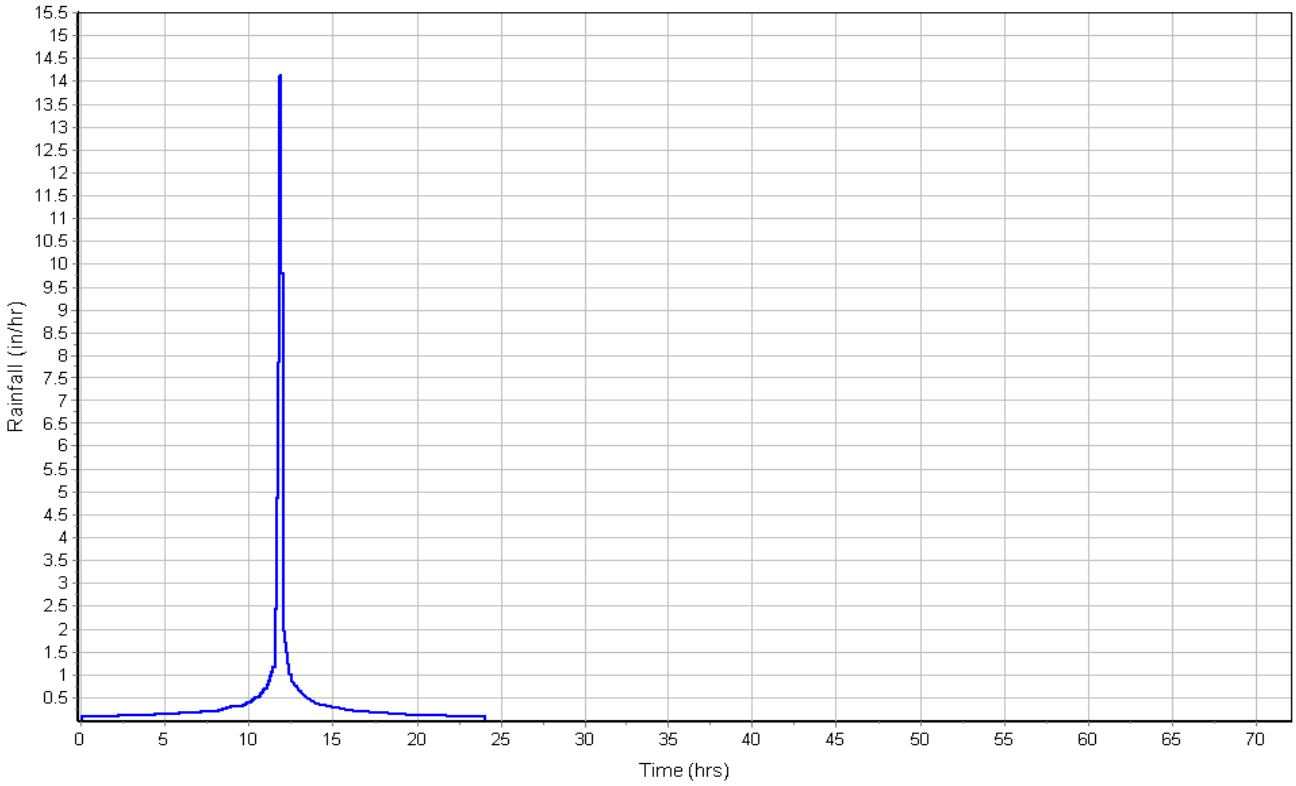
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

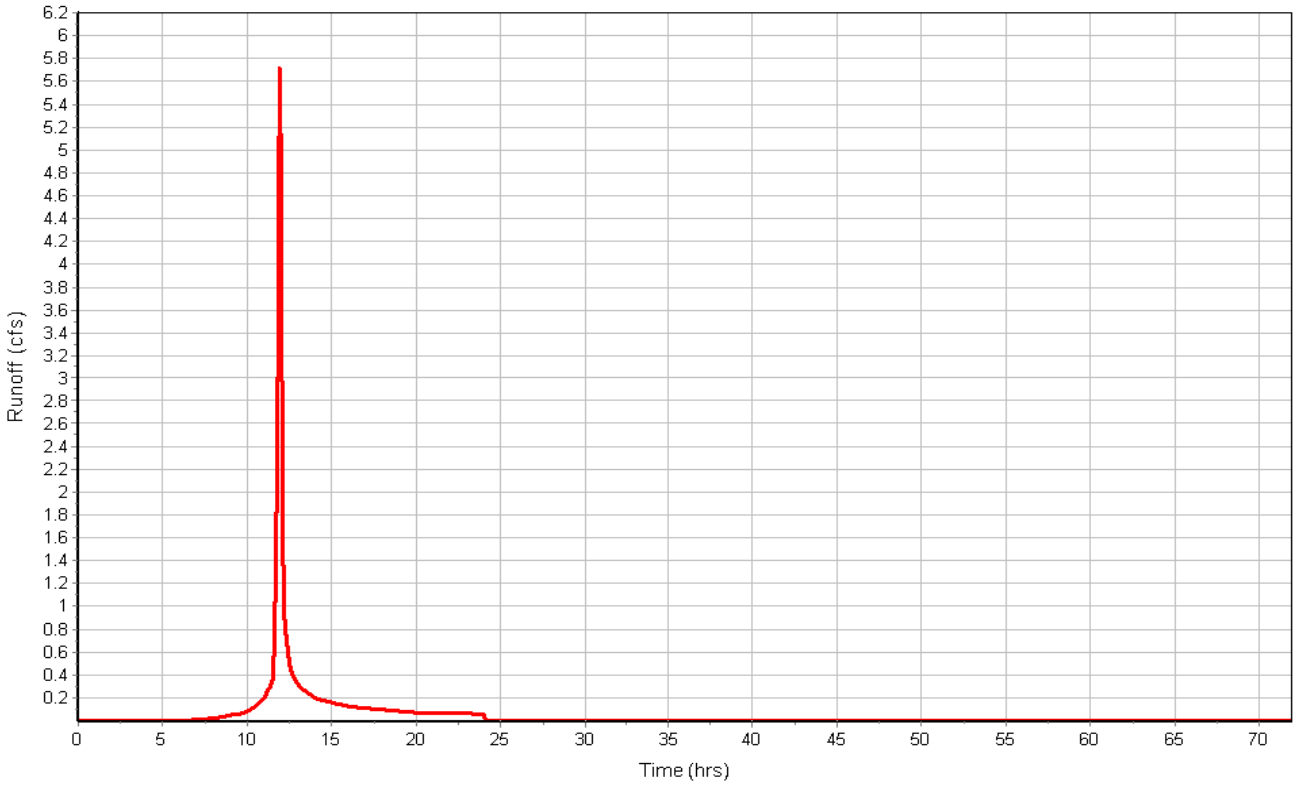
Total Rainfall (in) 10.30
Total Runoff (in) 6.58
Peak Runoff (cfs) 5.79
Weighted Curve Number 70.60
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-202

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-203

Input Data

Area (ac) 0.48
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.50	-	98.00
Composite Area & Weighted CN	0.50		98.00

Time of Concentration

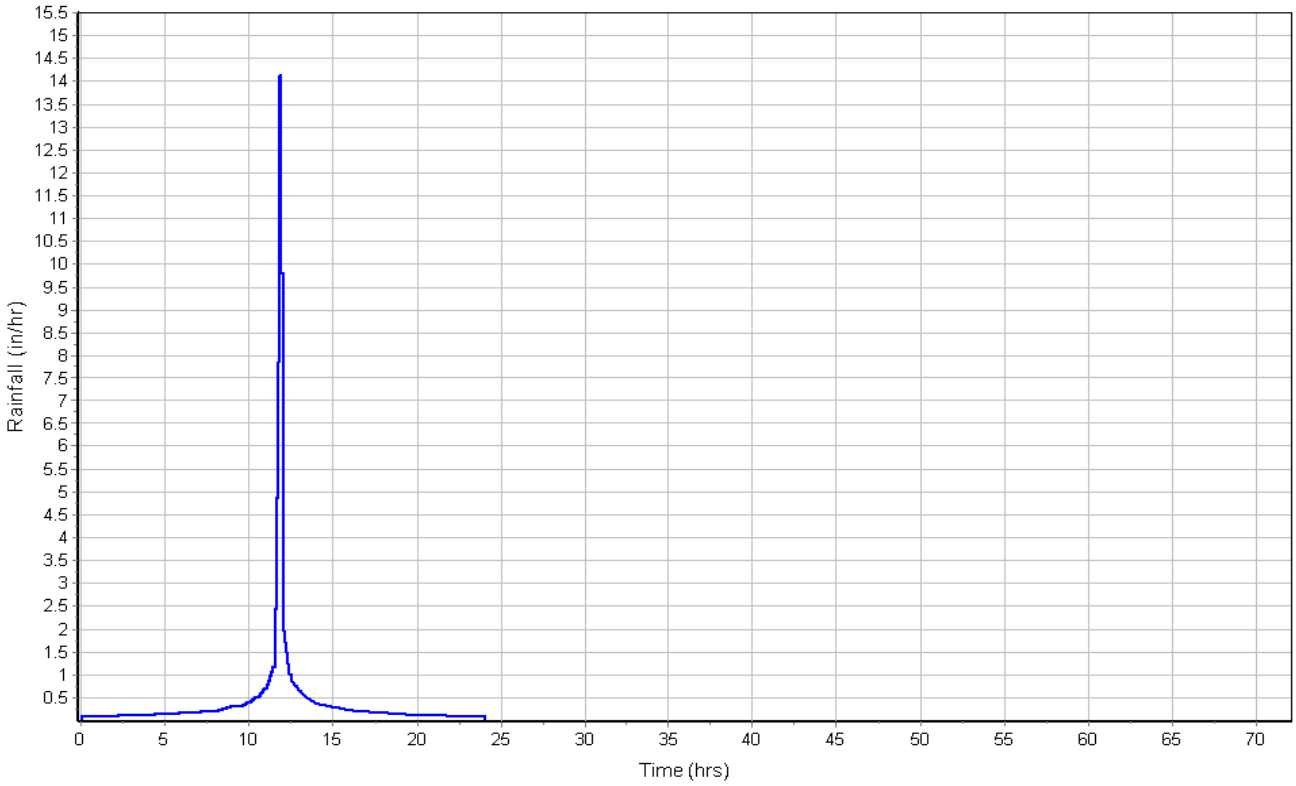
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

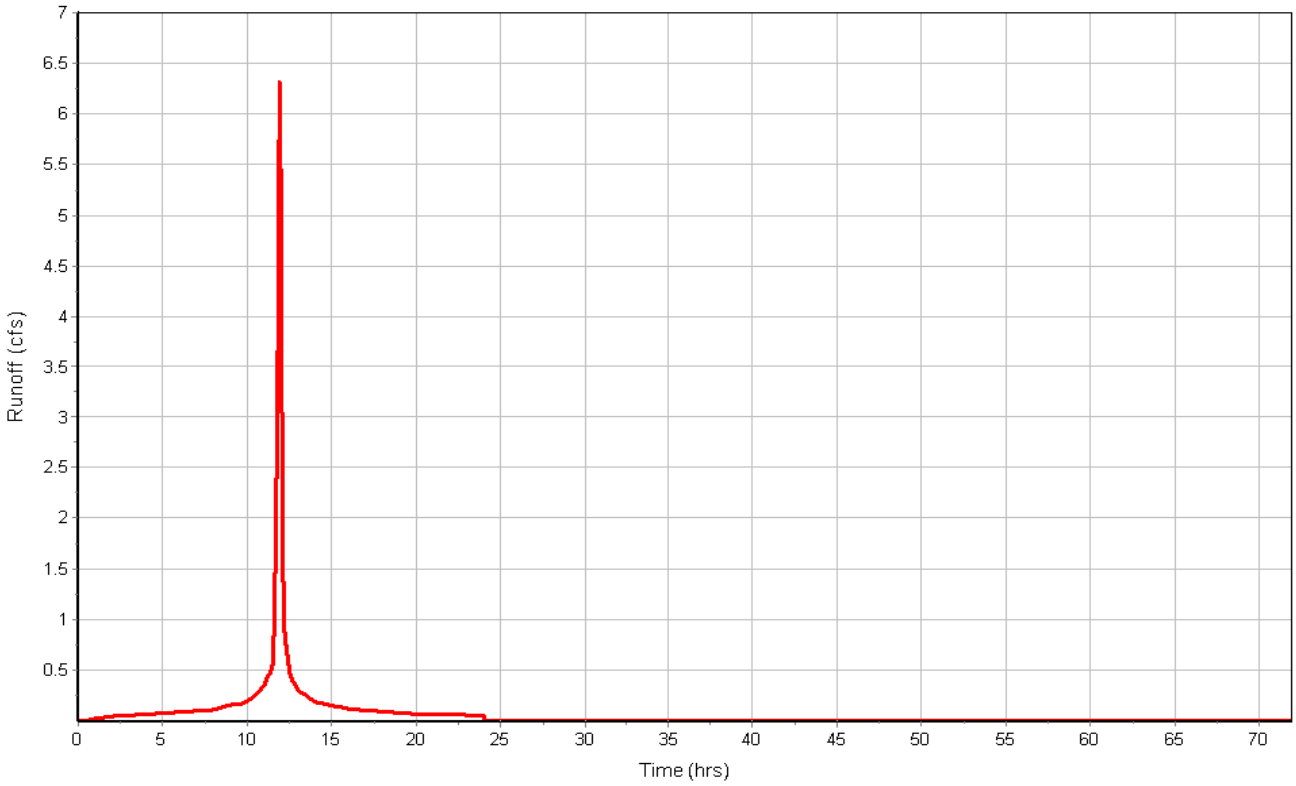
Total Rainfall (in) 10.30
Total Runoff (in) 10.06
Peak Runoff (cfs) 6.34
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-203

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-204

Input Data

Area (ac) 0.37
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.37	-	98.00
Composite Area & Weighted CN	0.37		98.00

Time of Concentration

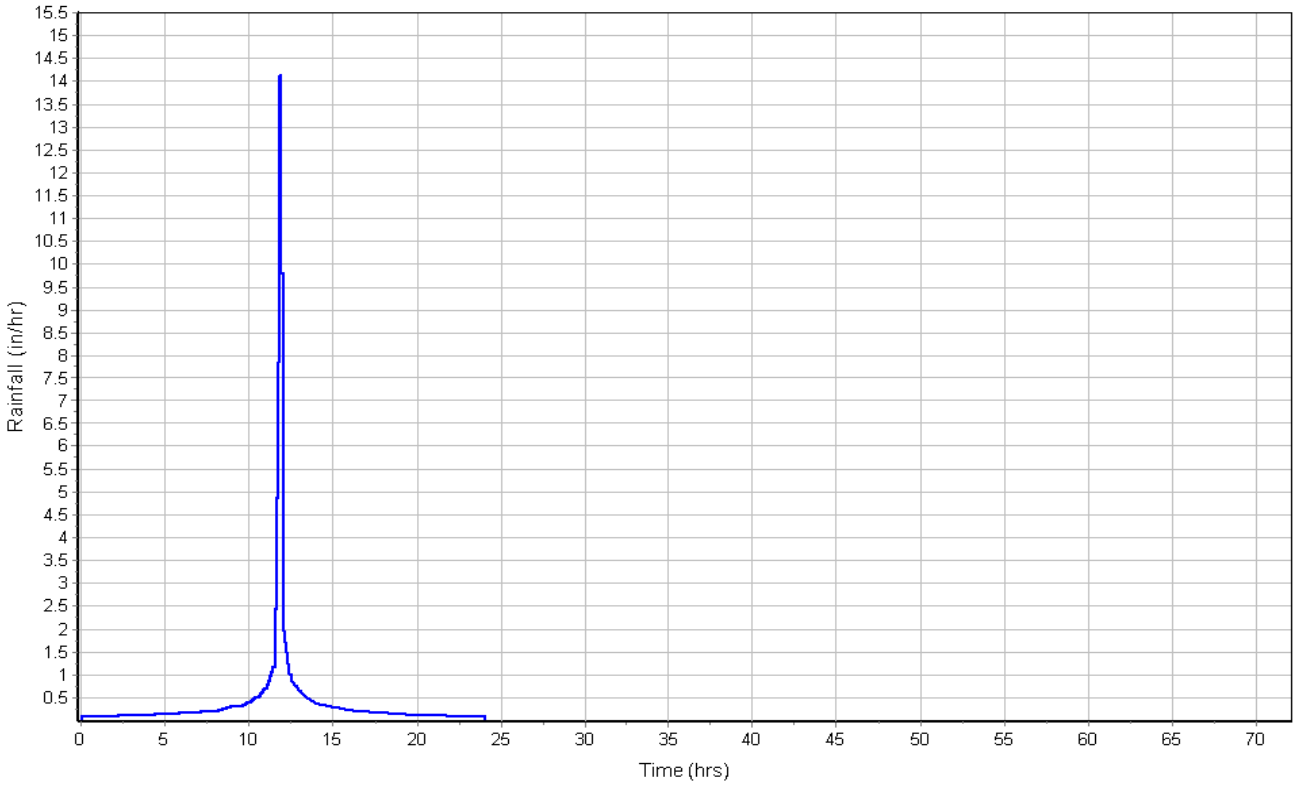
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

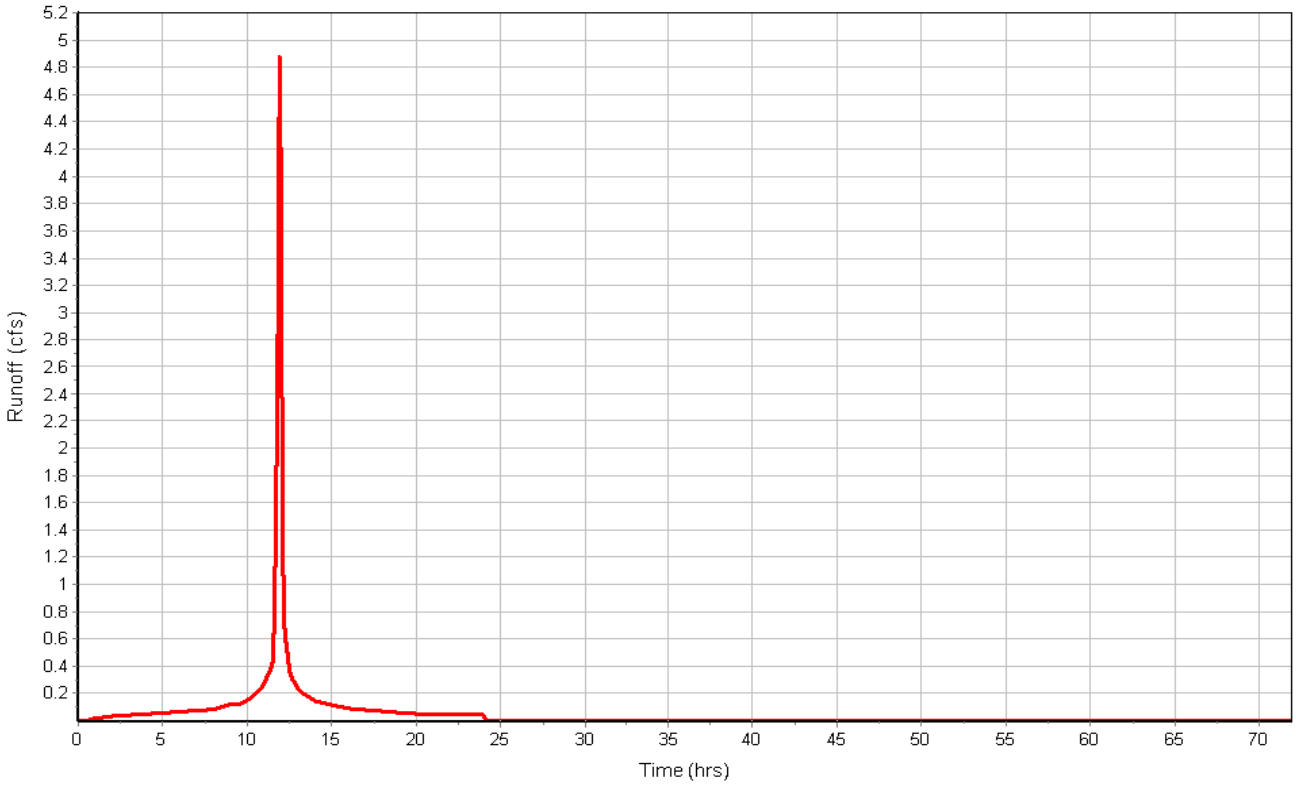
Total Rainfall (in) 10.30
Total Runoff (in) 10.06
Peak Runoff (cfs) 4.90
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-204

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-205

Input Data

Area (ac) 0.14
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.14	-	98.00
Composite Area & Weighted CN	0.14		98.00

Time of Concentration

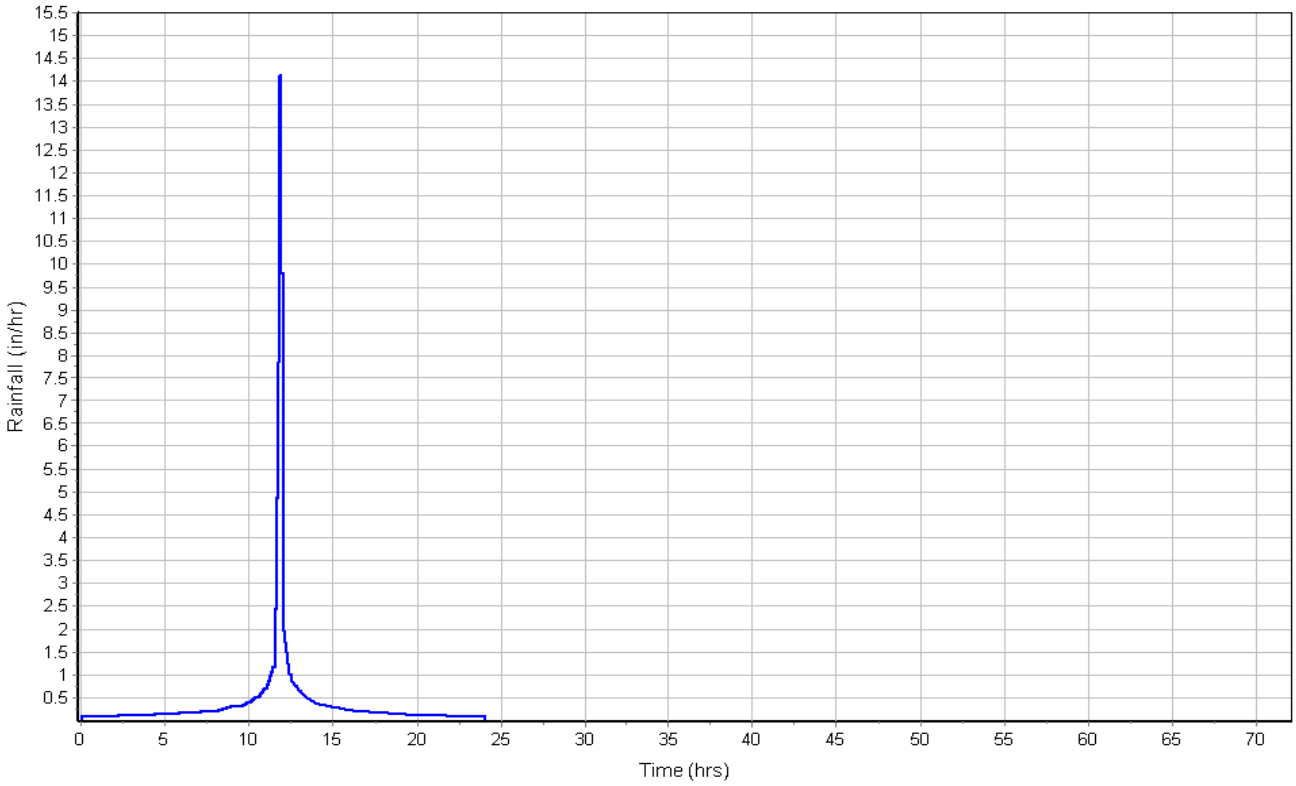
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

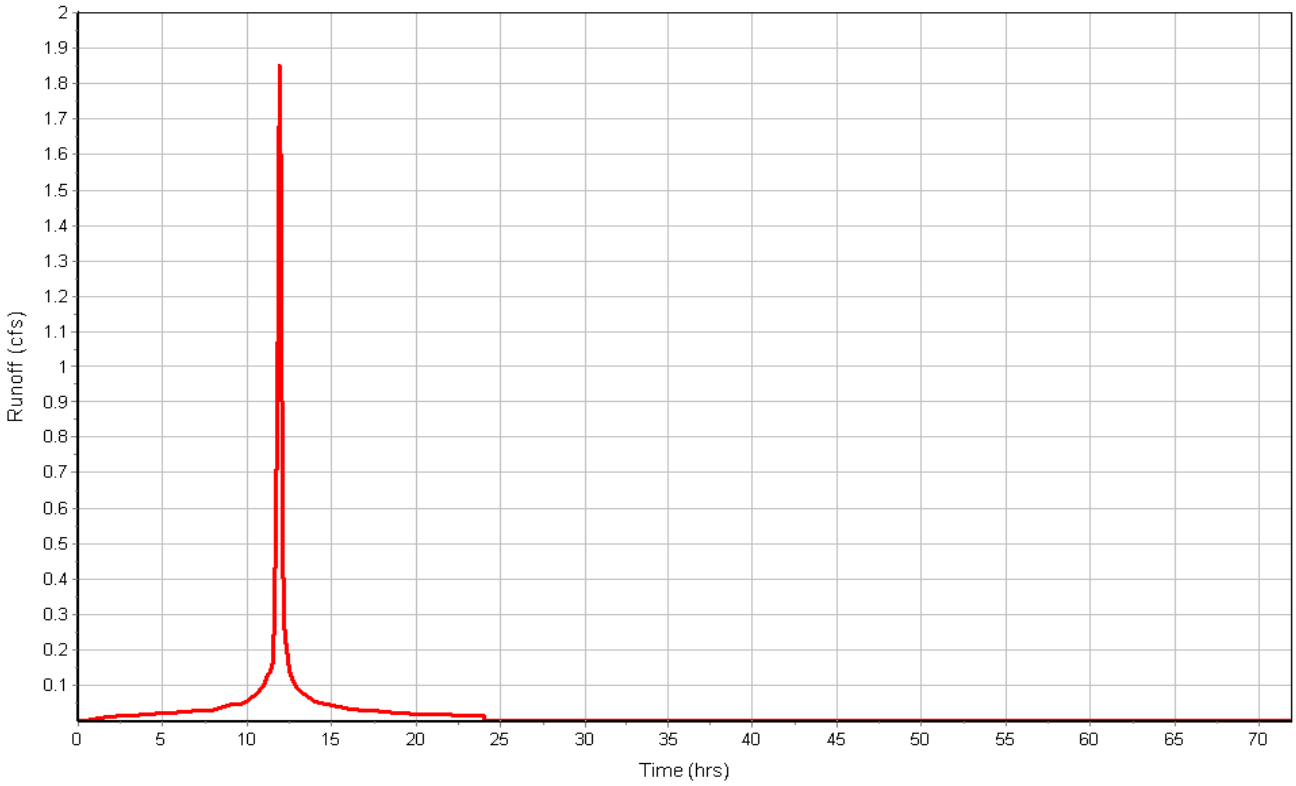
Total Rainfall (in) 10.30
Total Runoff (in) 10.06
Peak Runoff (cfs) 1.86
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-205

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-206

Input Data

Area (ac) 0.14
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.14	-	98.00
Composite Area & Weighted CN	0.14		98.00

Time of Concentration

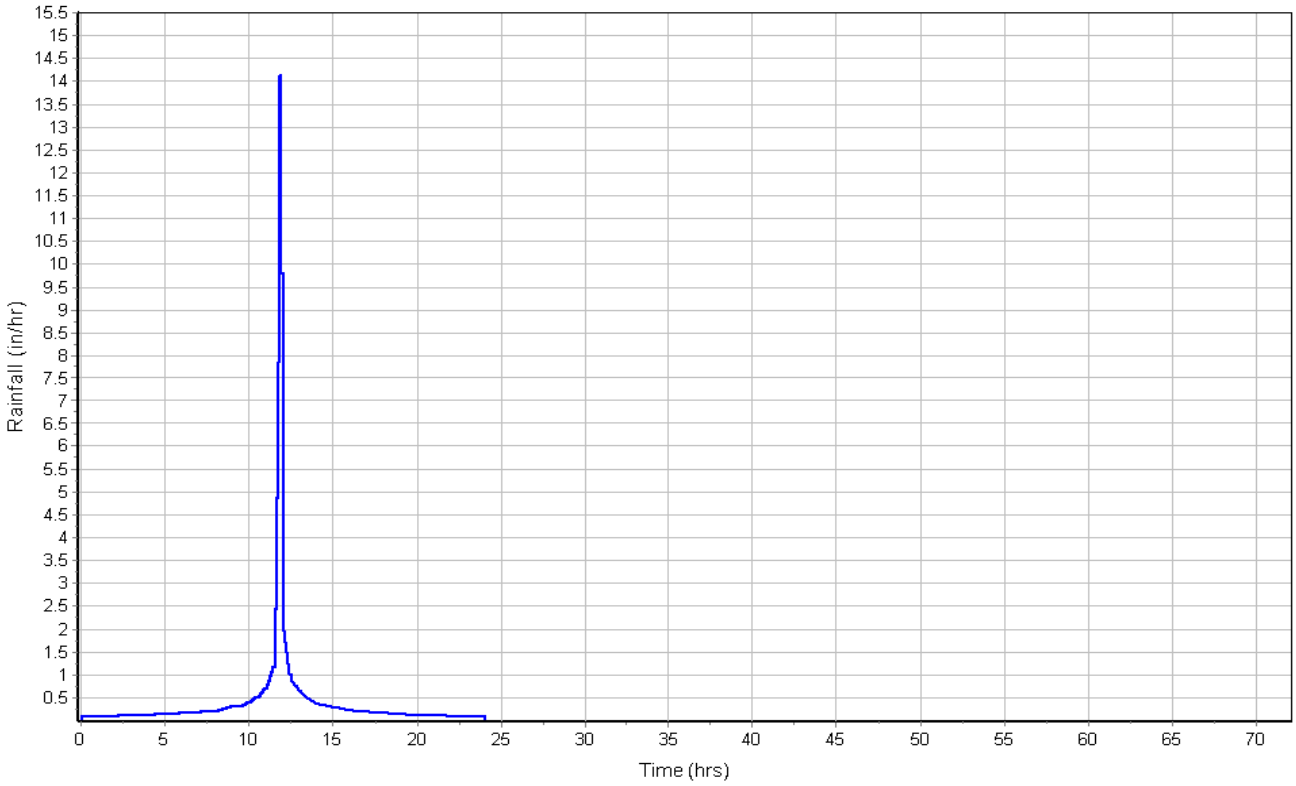
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

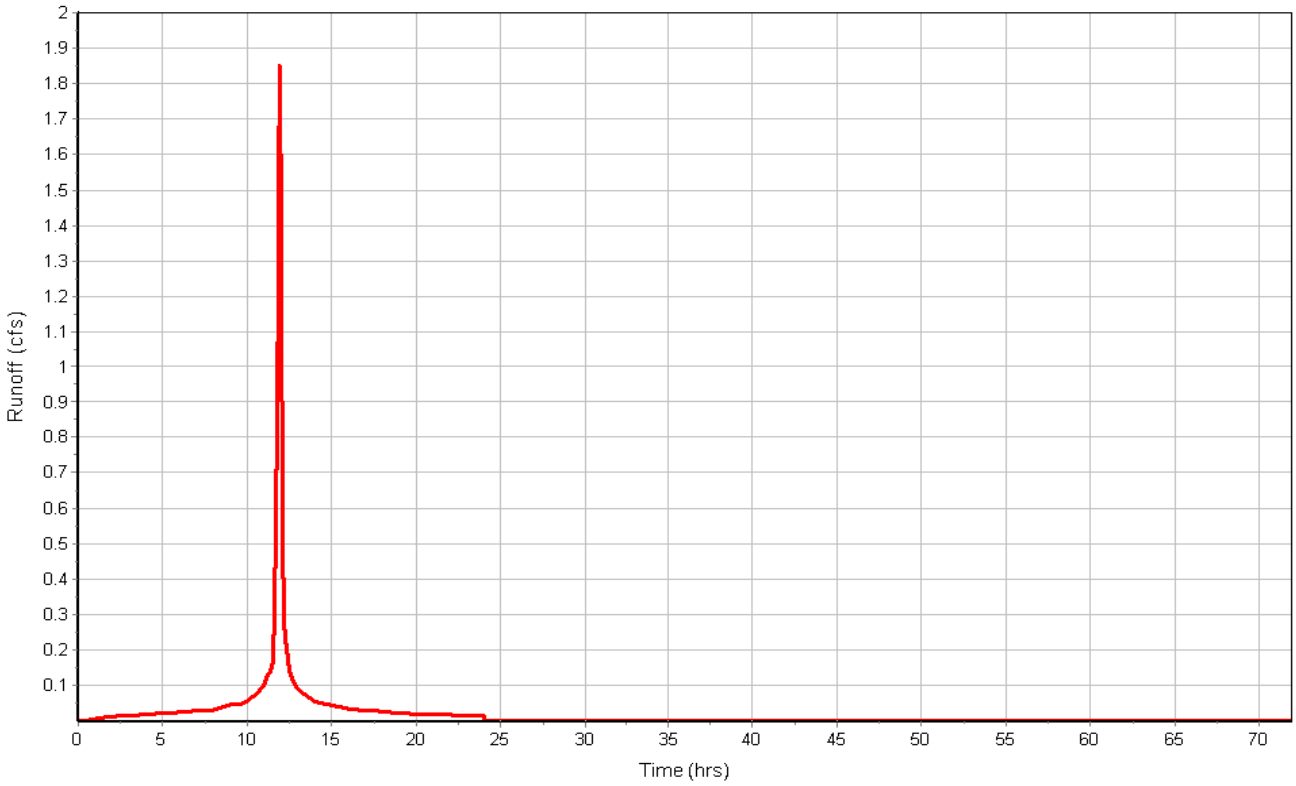
Total Rainfall (in) 10.30
Total Runoff (in) 10.06
Peak Runoff (cfs) 1.86
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-206

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-207

Input Data

Area (ac) 0.44
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.44	-	98.00
Composite Area & Weighted CN	0.44		98.00

Time of Concentration

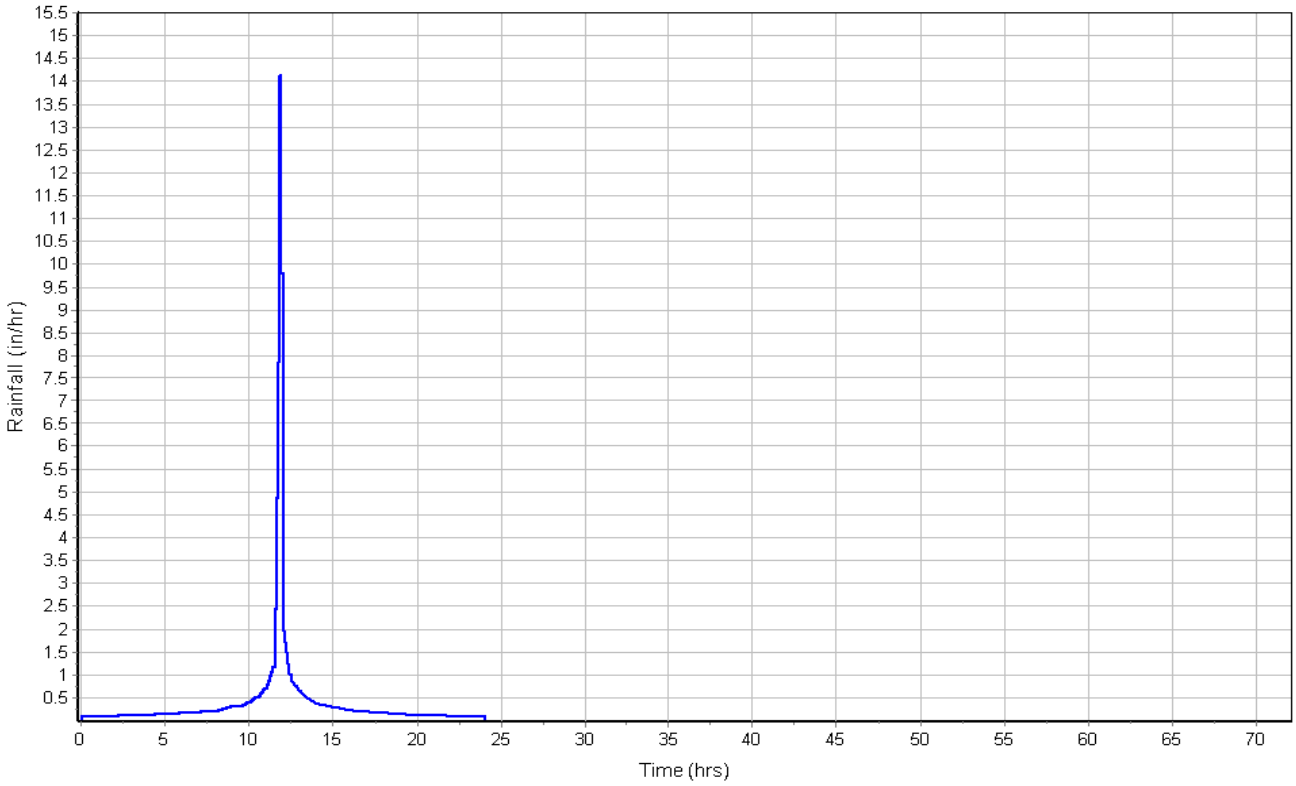
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

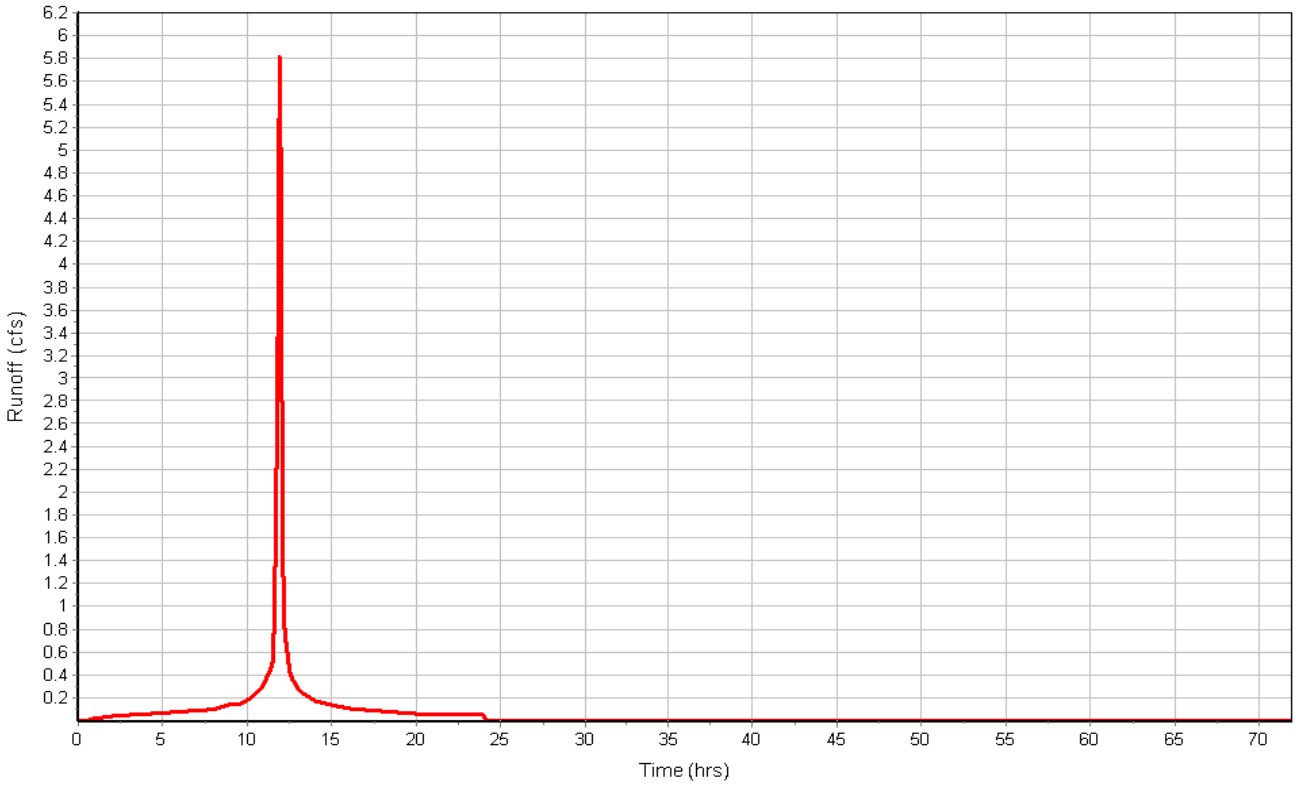
Total Rainfall (in) 10.30
Total Runoff (in) 10.06
Peak Runoff (cfs) 5.83
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-207

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-300

Input Data

Area (ac) 0.47
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.47	-	98.00
Composite Area & Weighted CN	0.47		98.00

Time of Concentration

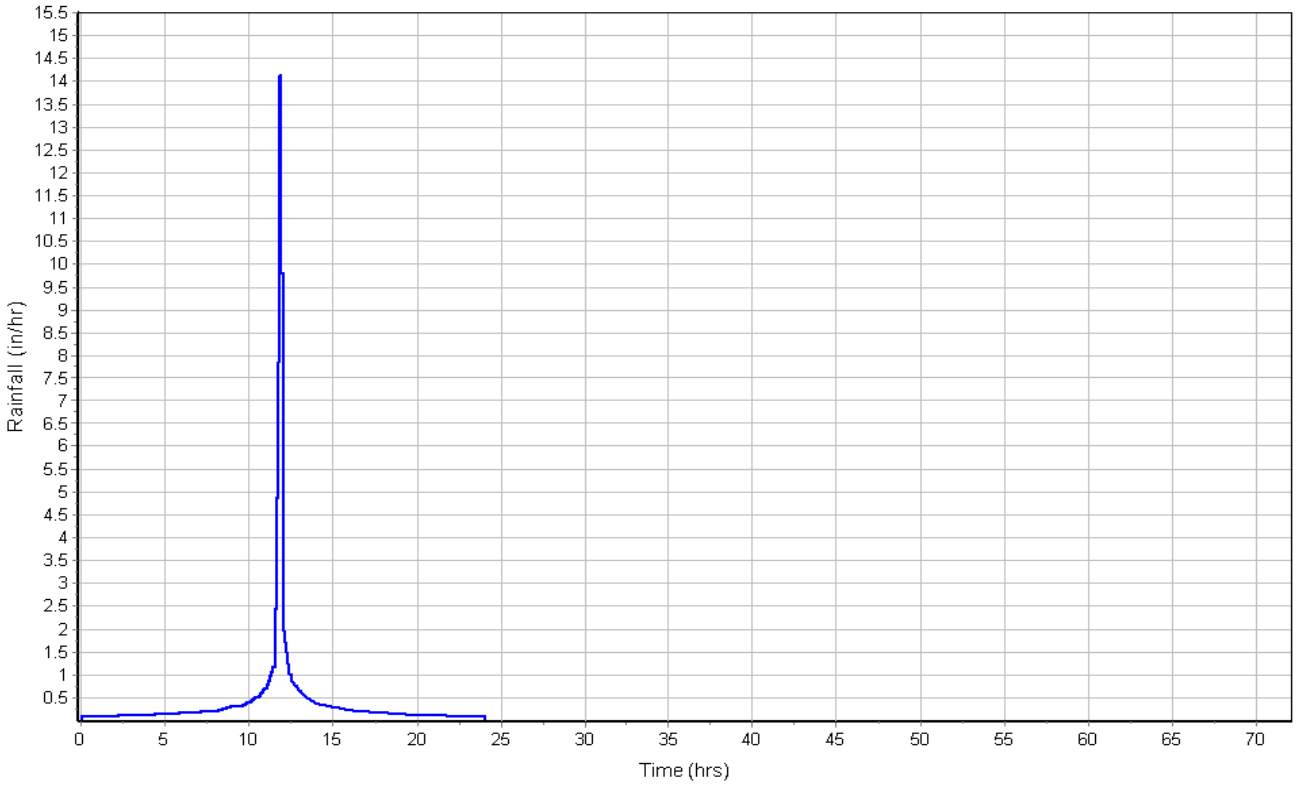
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

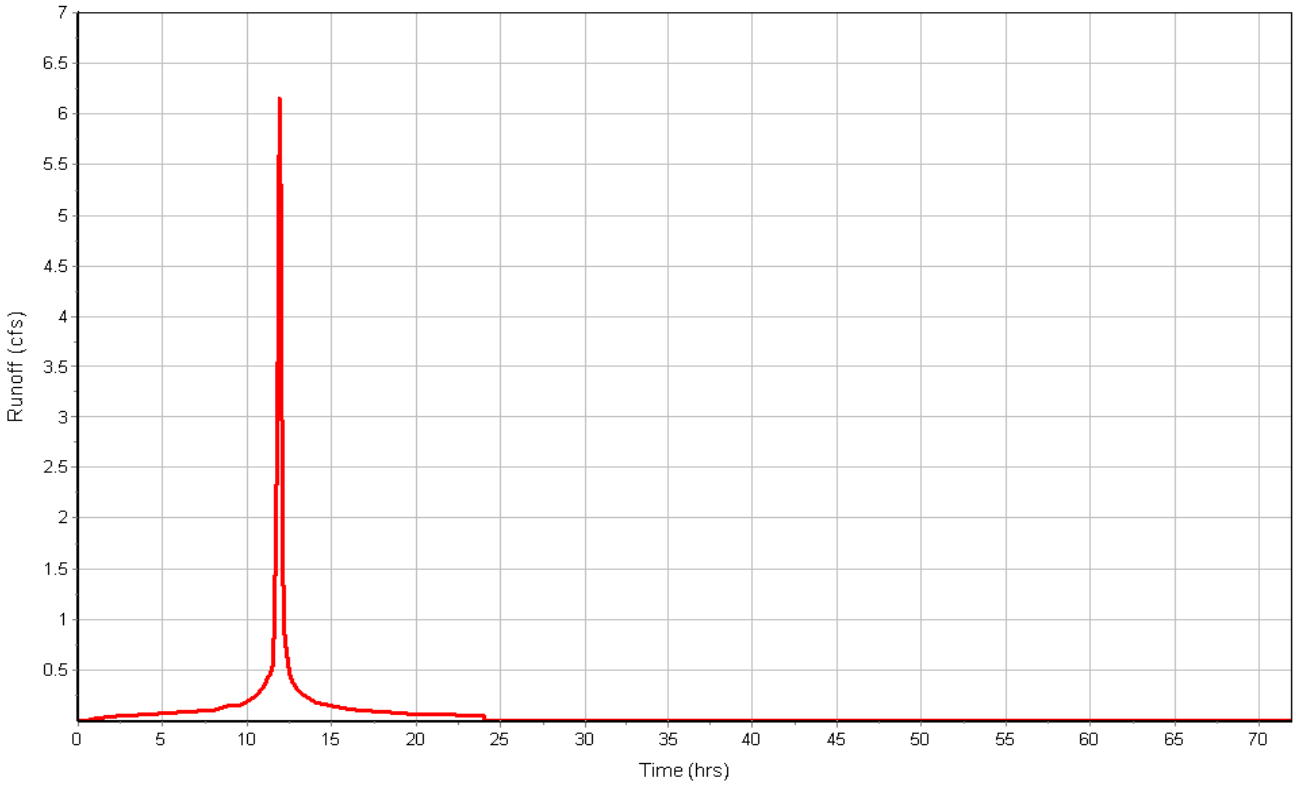
Total Rainfall (in) 10.30
Total Runoff (in) 10.06
Peak Runoff (cfs) 6.17
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-300

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-301

Input Data

Area (ac)	0.34
Weighted Curve Number	98.00
Rain Gage ID	SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.45	-	98.00
Composite Area & Weighted CN	0.45		98.00

Time of Concentration

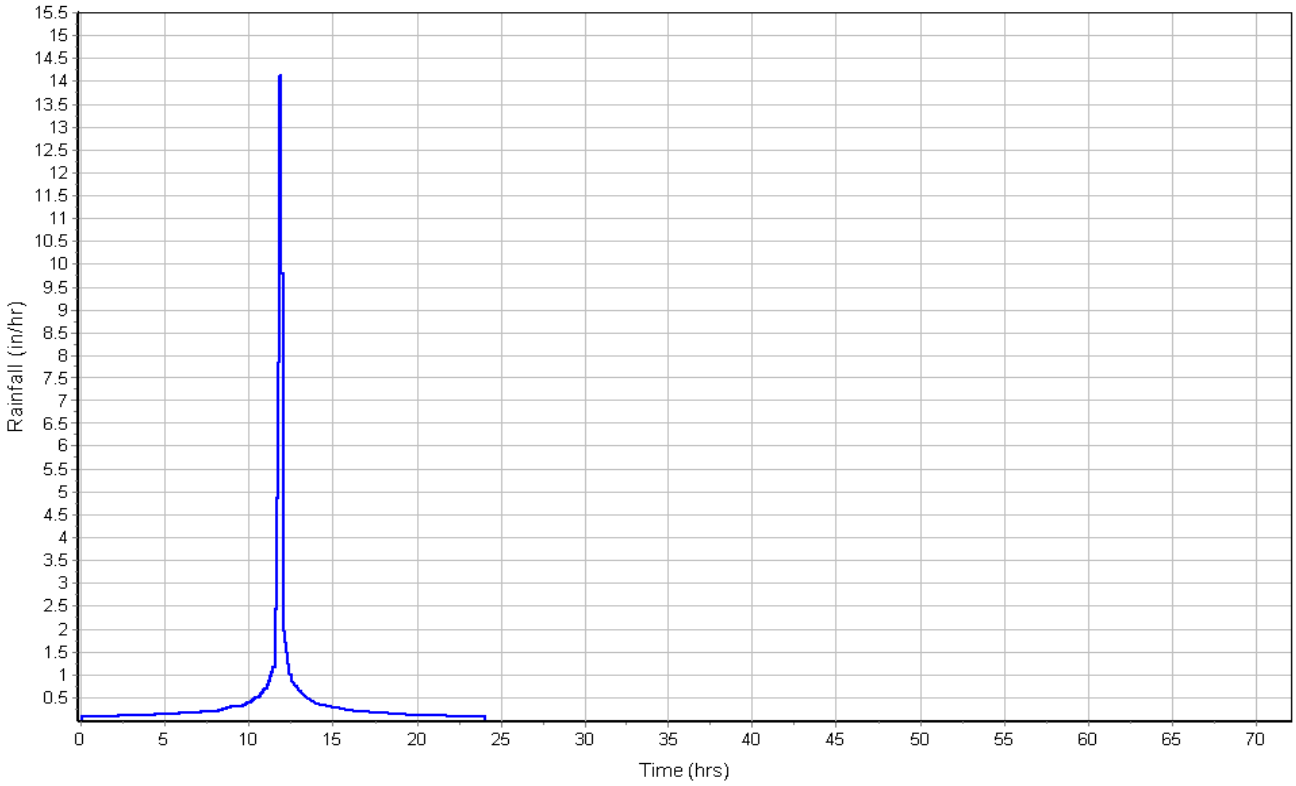
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

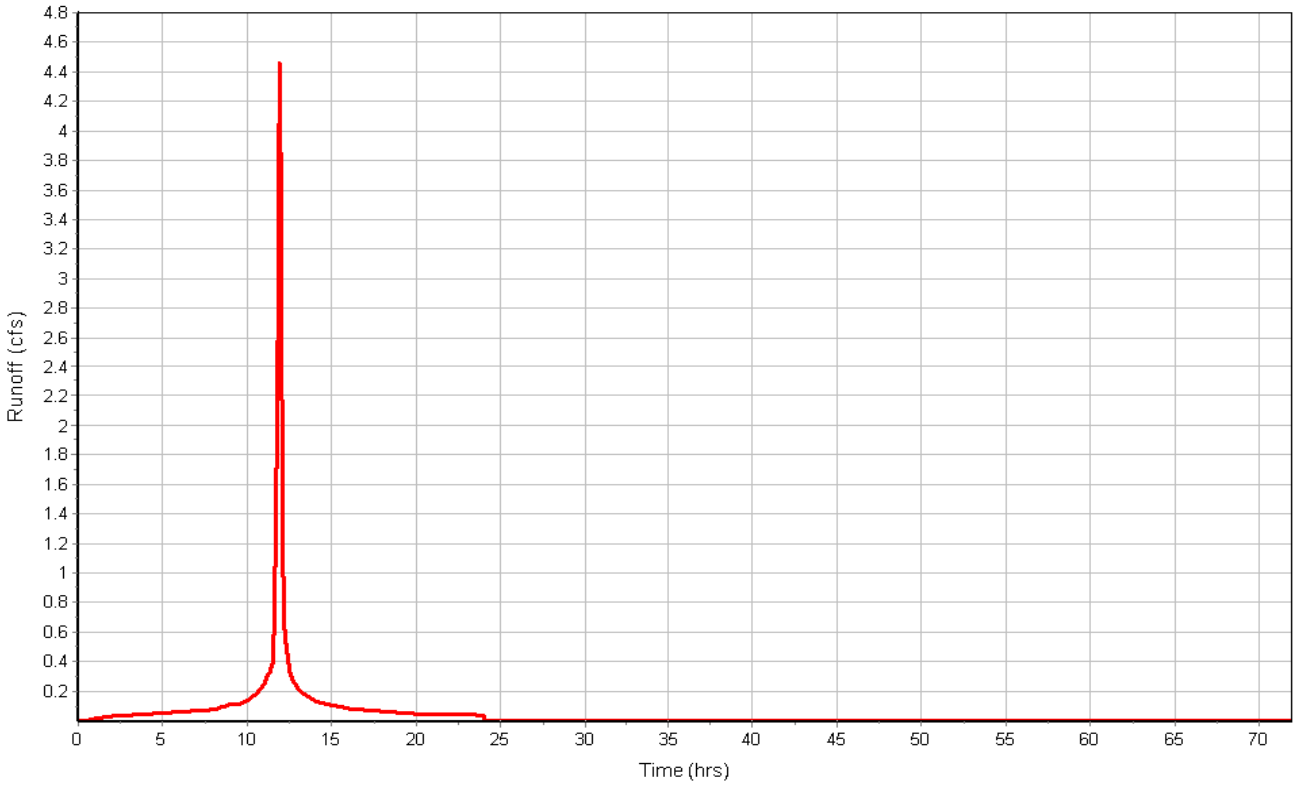
Total Rainfall (in)	10.30
Total Runoff (in)	10.06
Peak Runoff (cfs)	4.48
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : DA-301

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-400

Input Data

Area (ac) 0.30
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.30	-	98.00
Composite Area & Weighted CN	0.30		98.00

Time of Concentration

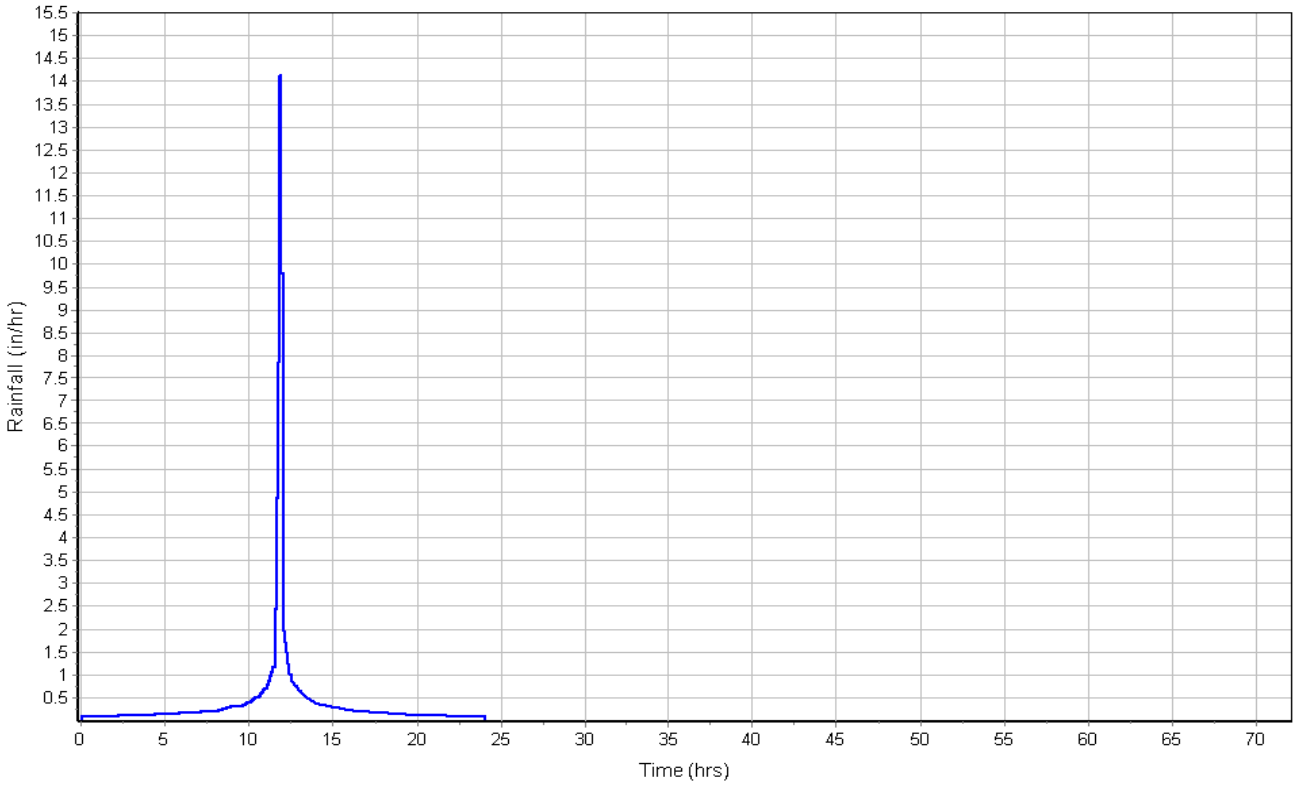
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

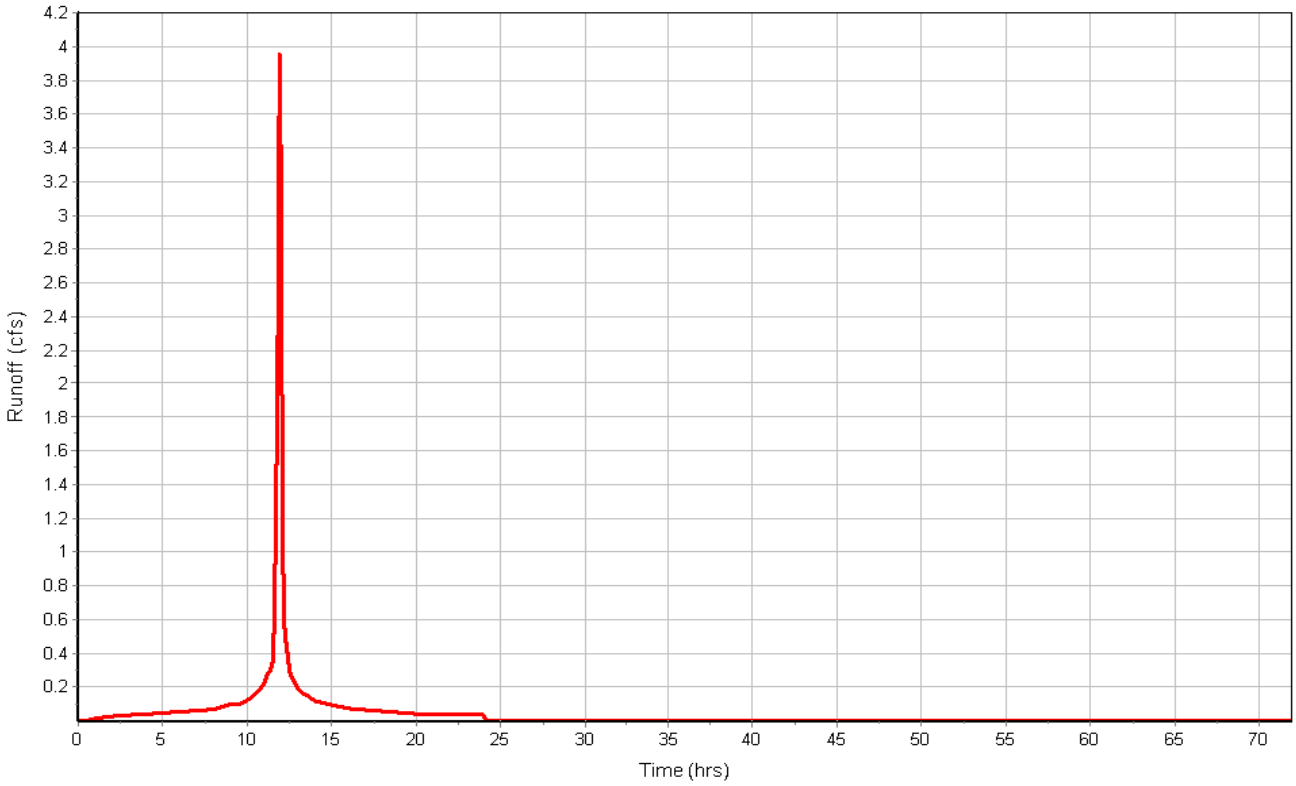
Total Rainfall (in) 10.30
Total Runoff (in) 10.06
Peak Runoff (cfs) 3.97
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-400

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-500

Input Data

Area (ac) 0.38
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.47	-	98.00
Composite Area & Weighted CN	0.47		98.00

Time of Concentration

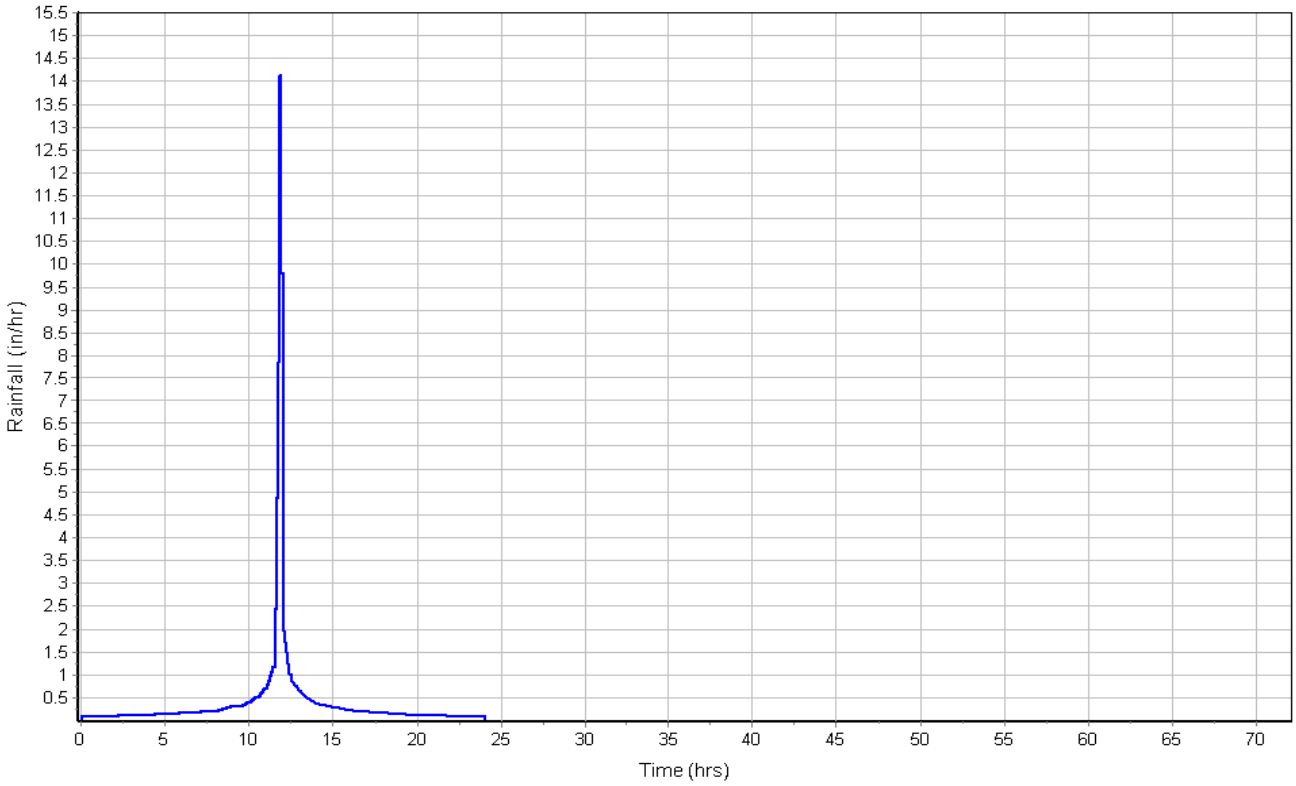
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

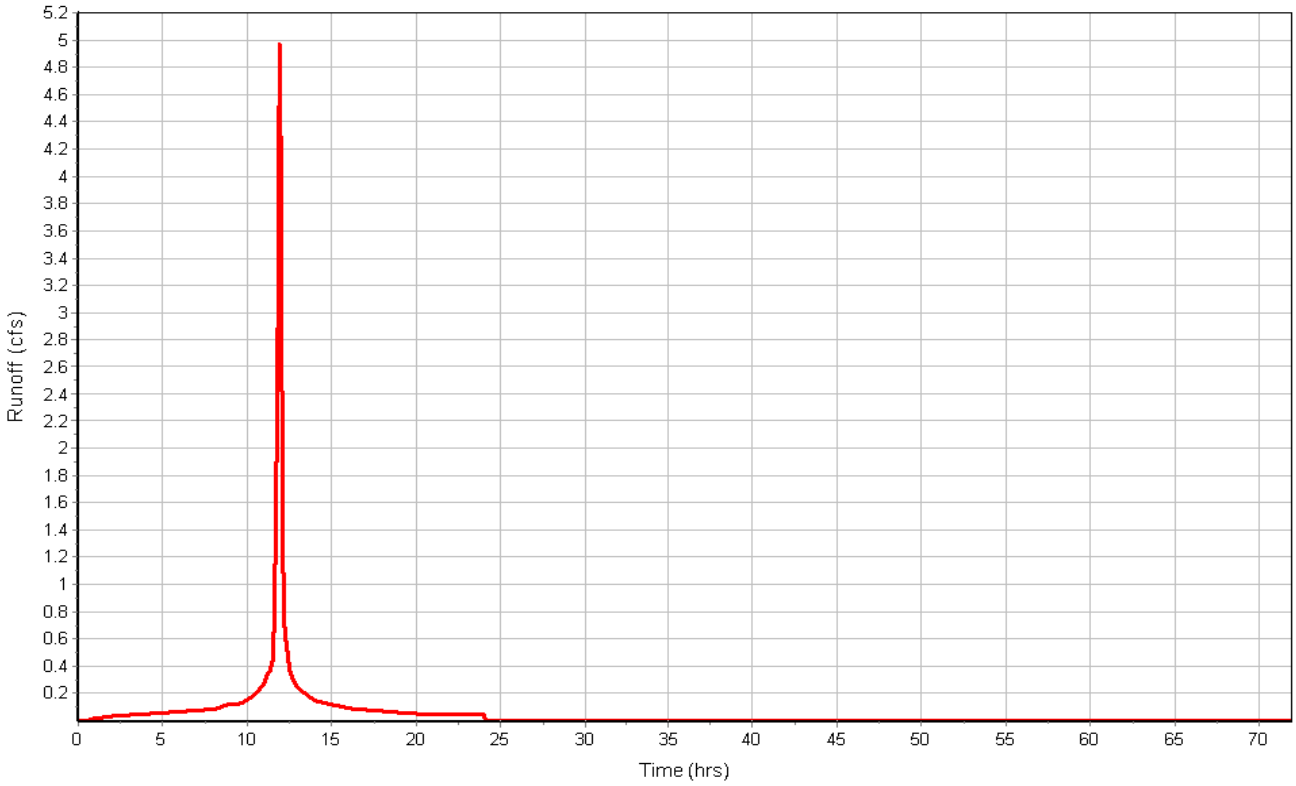
Total Rainfall (in) 10.30
Total Runoff (in) 10.06
Peak Runoff (cfs) 4.99
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-500

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-601

Input Data

Area (ac) 0.52
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.52	-	98.00
Composite Area & Weighted CN	0.52		98.00

Time of Concentration

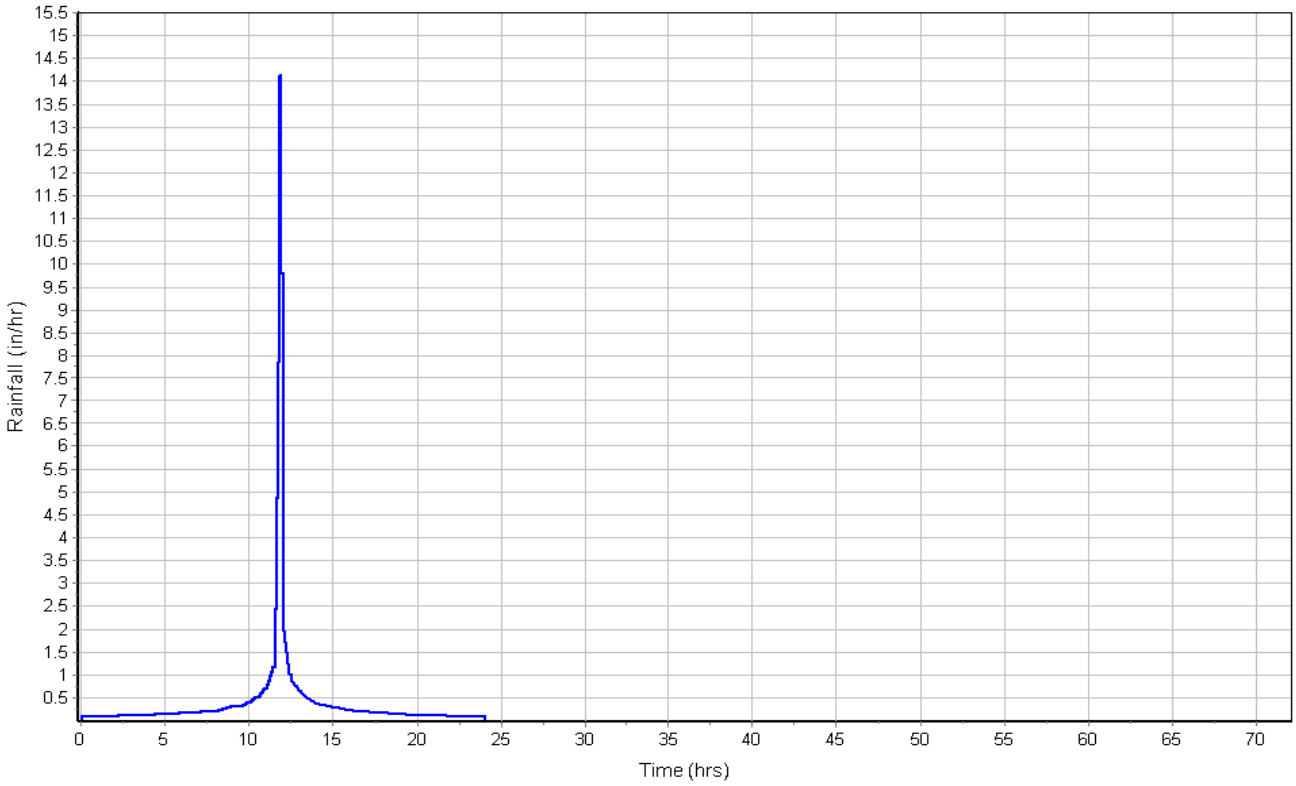
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

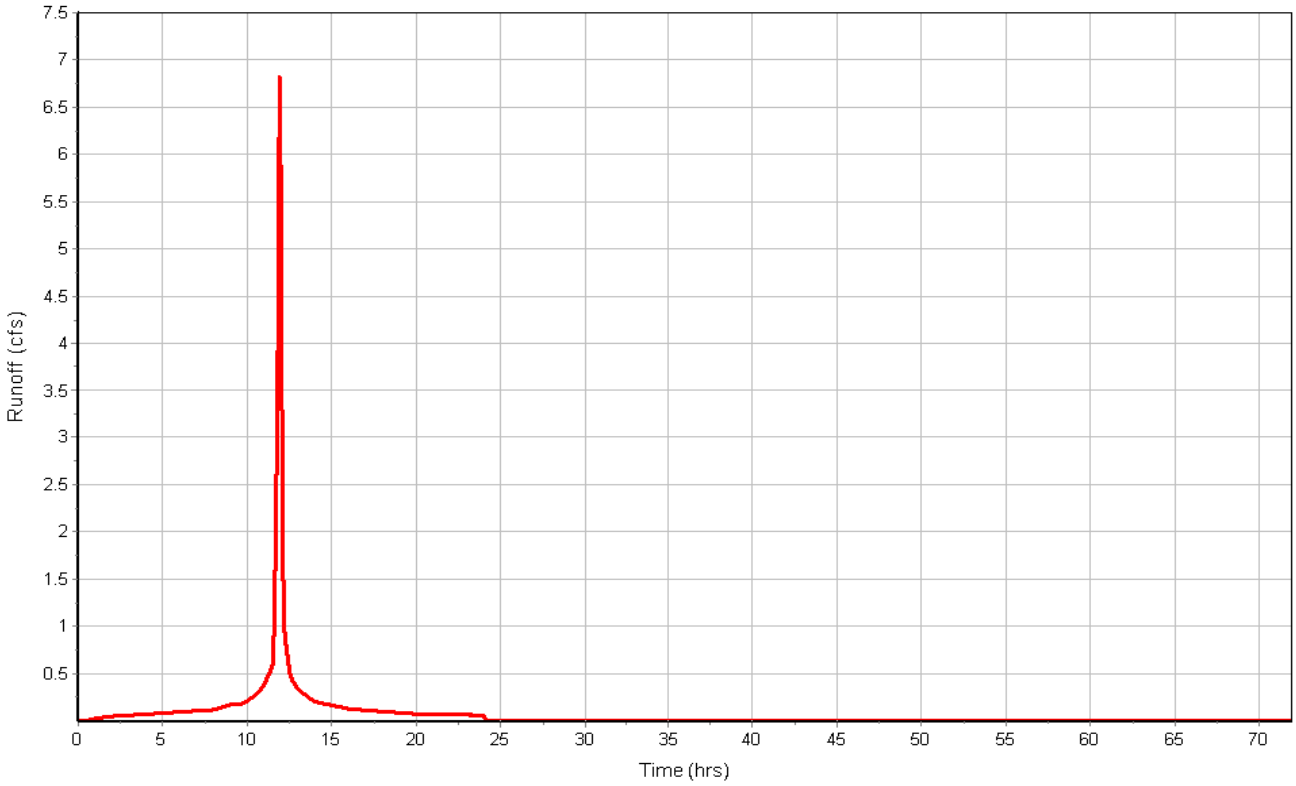
Total Rainfall (in) 10.30
Total Runoff (in) 10.06
Peak Runoff (cfs) 6.85
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-601

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-602

Input Data

Area (ac) 0.27
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.30	-	98.00
Composite Area & Weighted CN	0.30		98.00

Time of Concentration

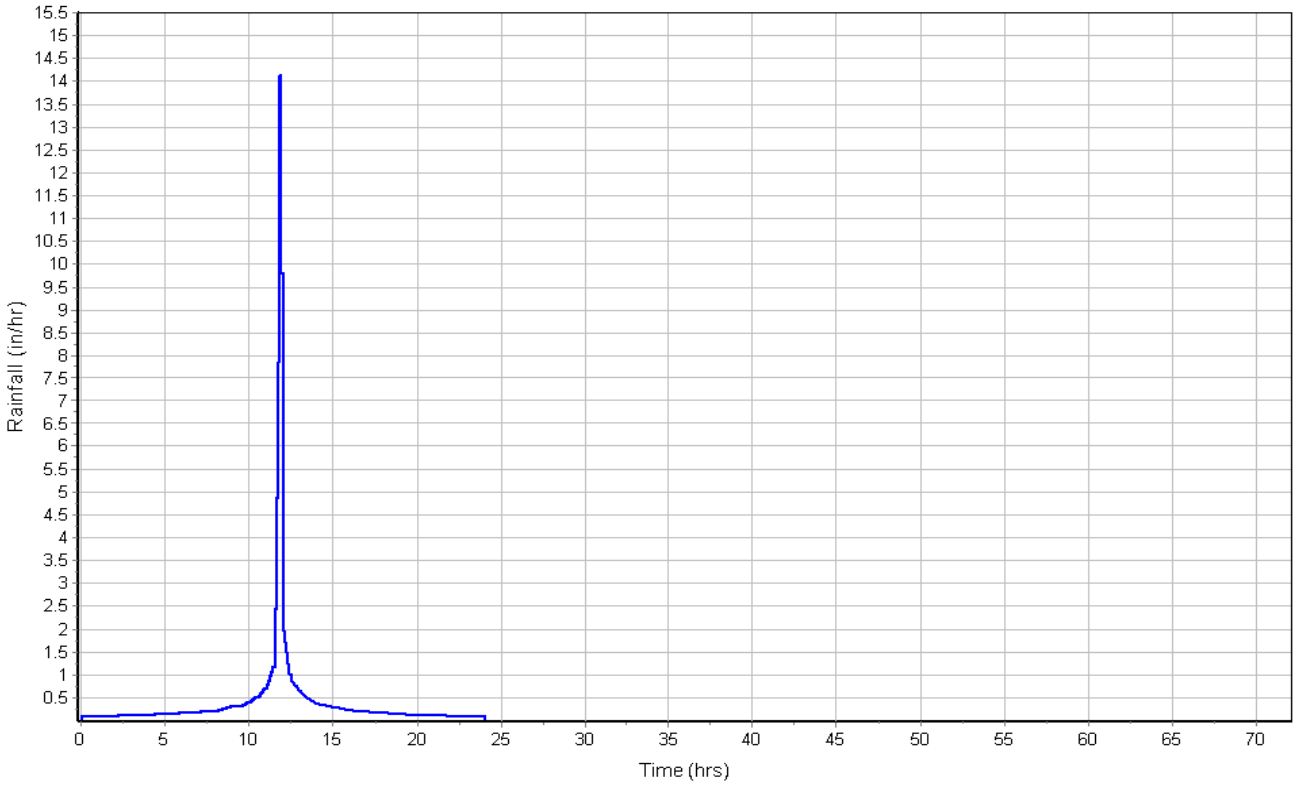
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

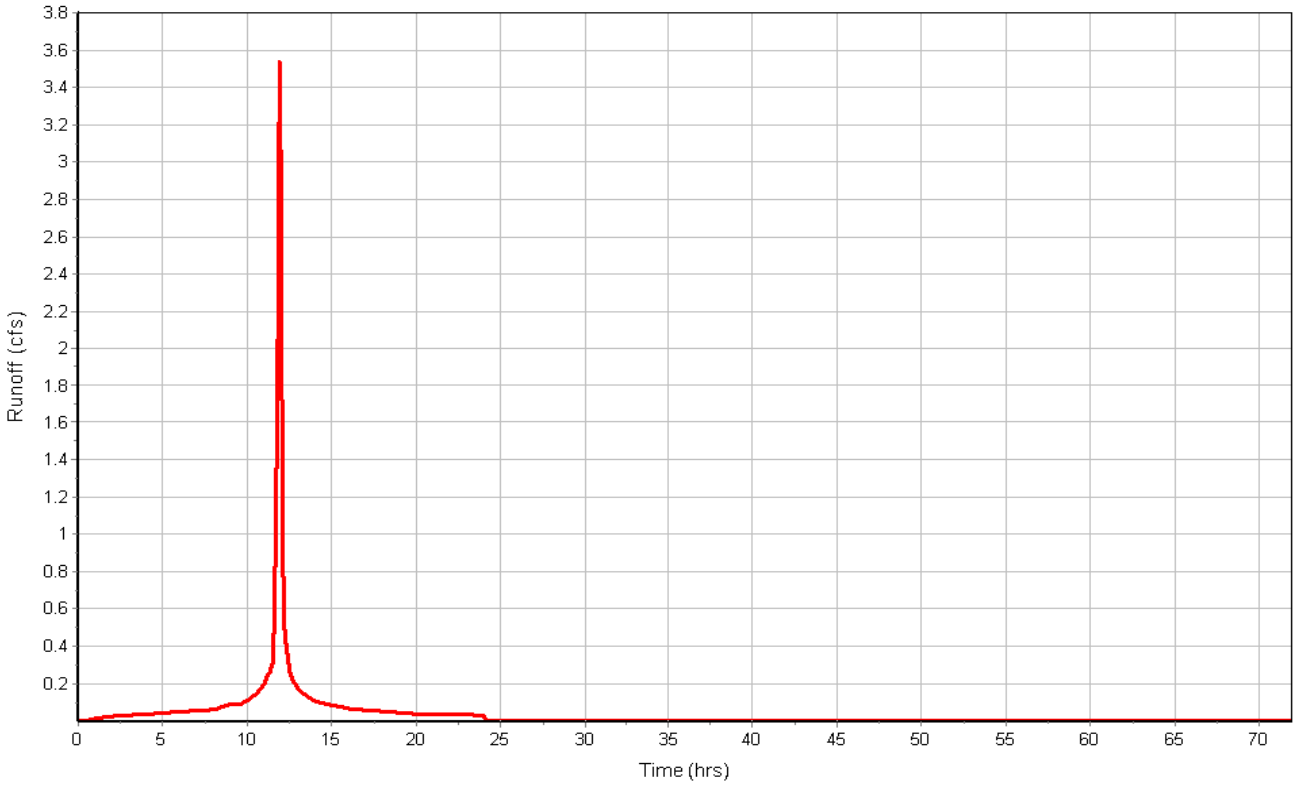
Total Rainfall (in) 10.30
Total Runoff (in) 10.06
Peak Runoff (cfs) 3.55
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-602

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-606

Input Data

Area (ac) 0.40
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.42	-	98.00
Composite Area & Weighted CN	0.42		98.00

Time of Concentration

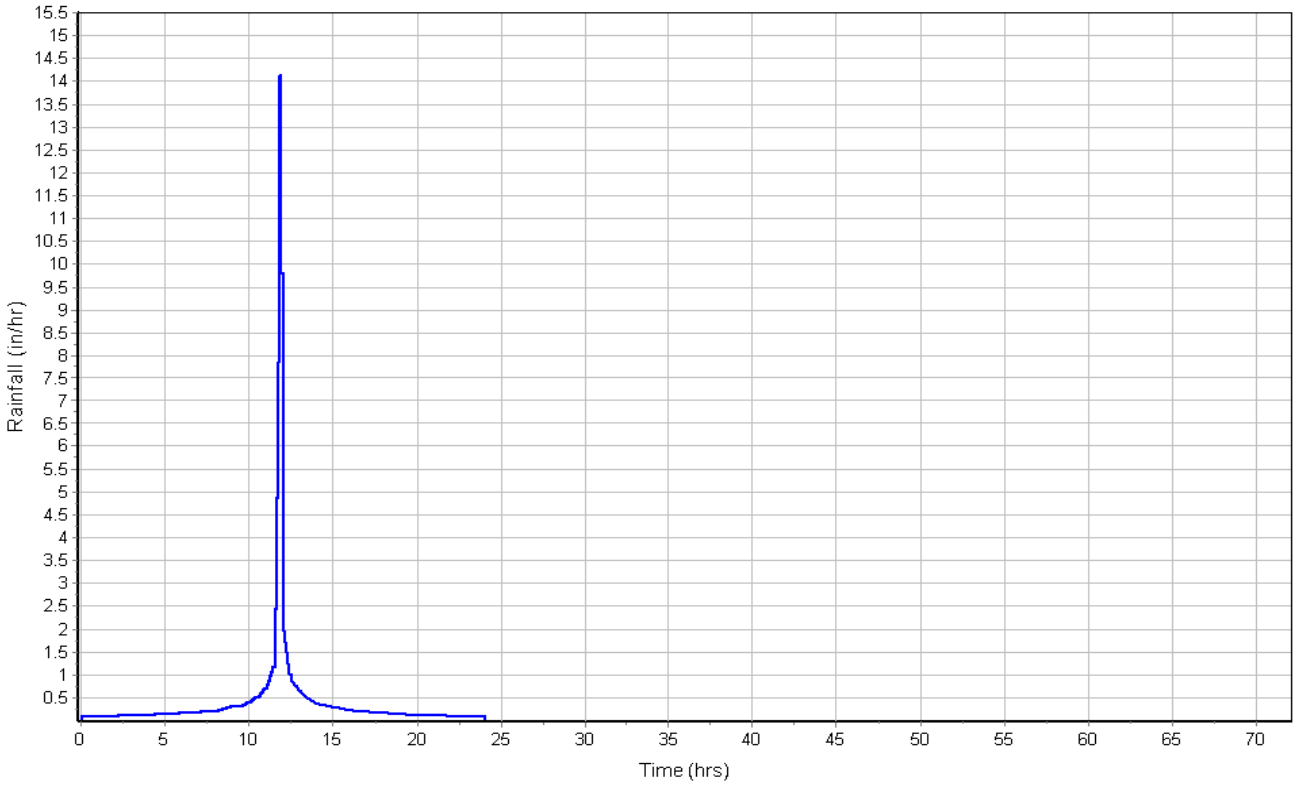
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

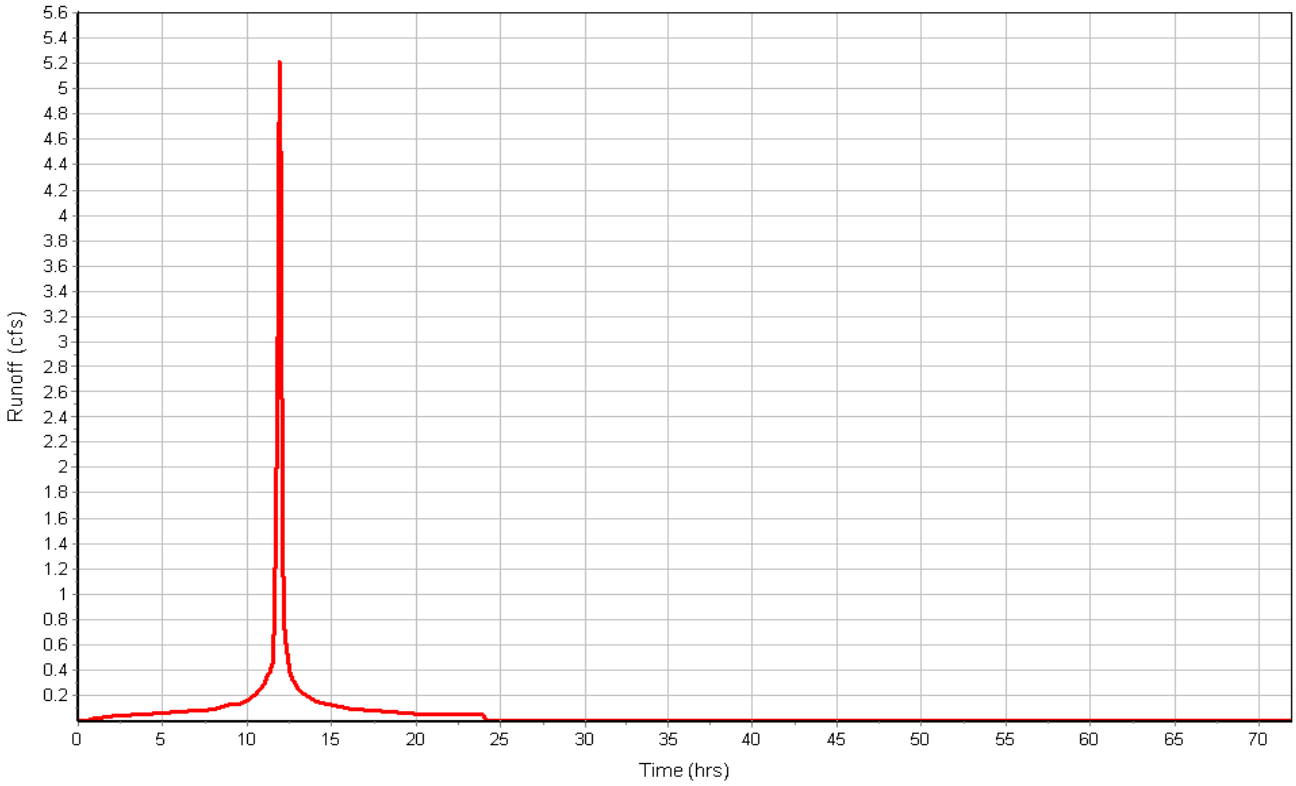
Total Rainfall (in) 10.30
Total Runoff (in) 10.06
Peak Runoff (cfs) 5.24
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-606

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-607

Input Data

Area (ac) 0.34
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.43	-	98.00
Composite Area & Weighted CN	0.43		98.00

Time of Concentration

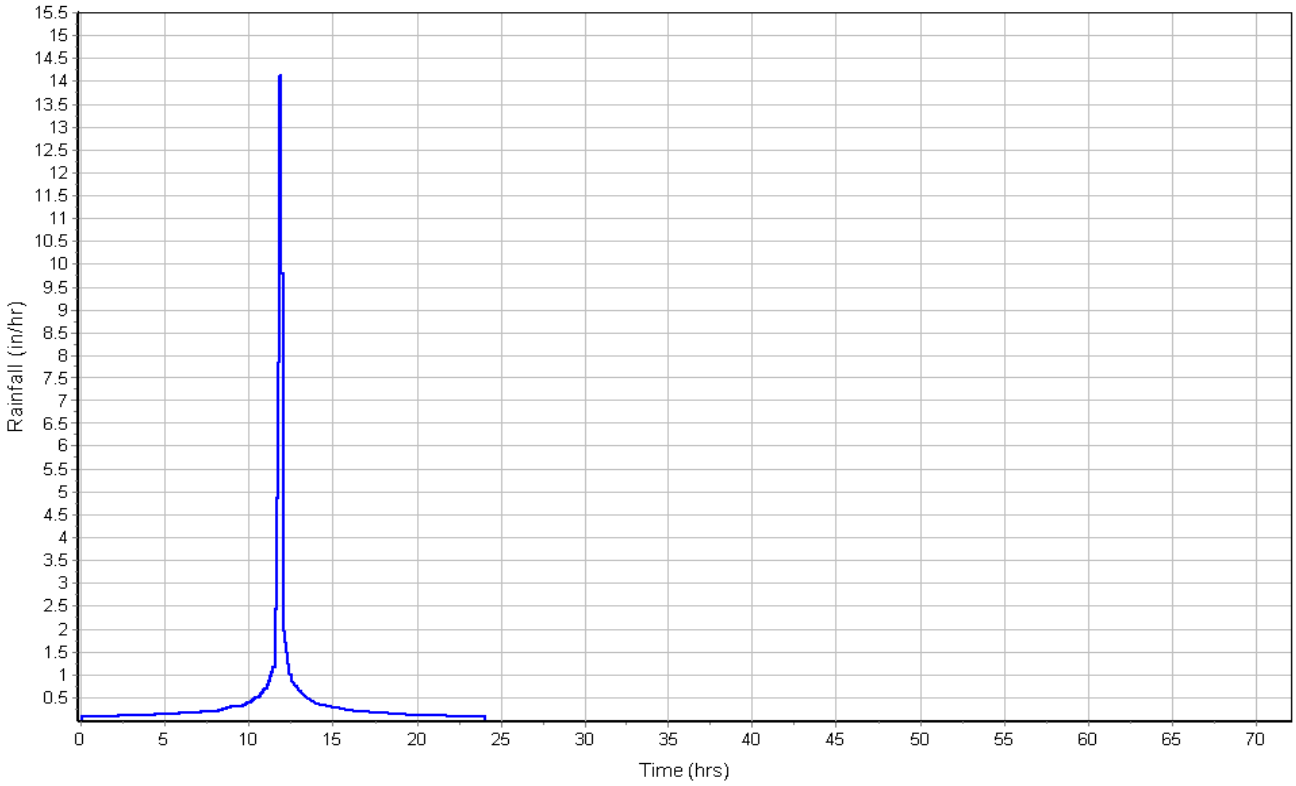
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

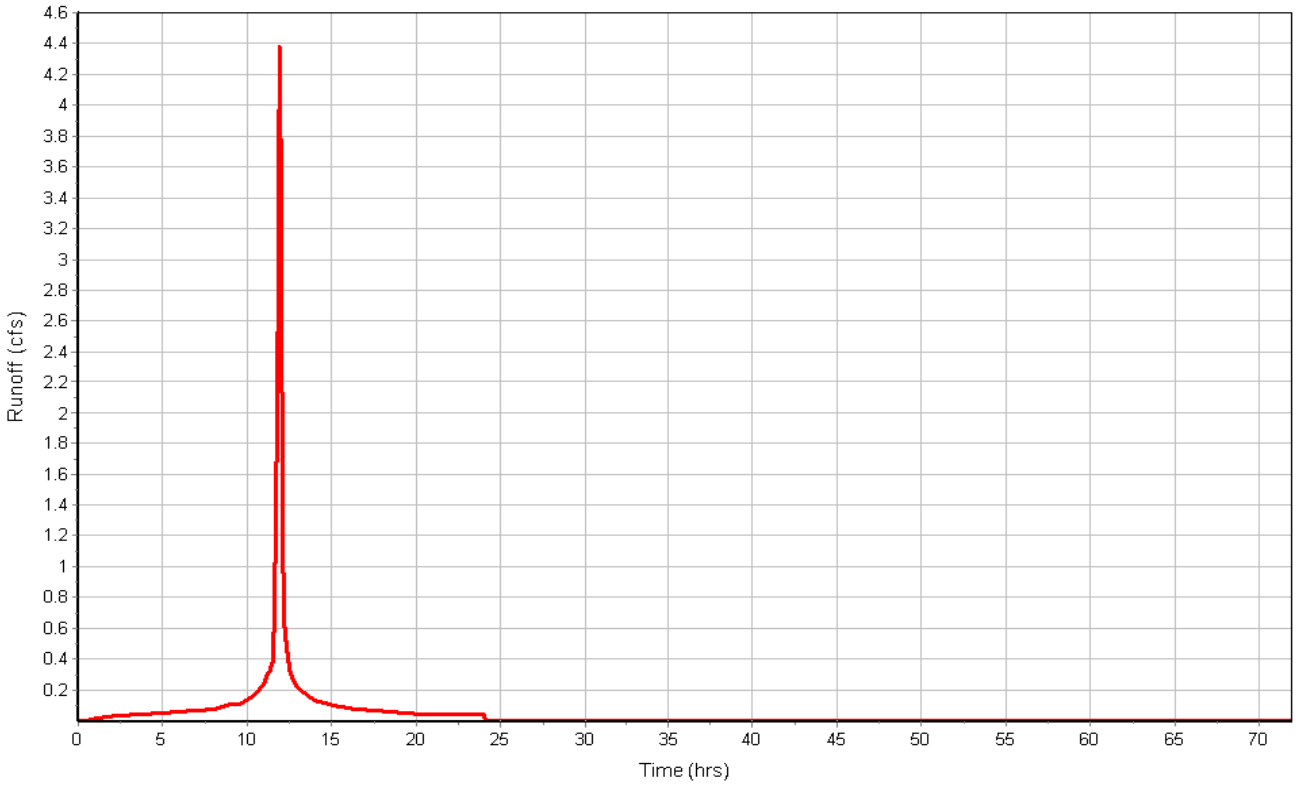
Total Rainfall (in) 10.30
Total Runoff (in) 10.06
Peak Runoff (cfs) 4.39
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-607

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-608

Input Data

Area (ac) 0.73
Weighted Curve Number 75.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.73	-	75.00
Composite Area & Weighted CN	0.73		75.00

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.30	0.00	0.00
Flow Length (ft) :	245	0.00	0.00
Slope (%) :	1.6	0.00	0.00
2 yr, 24 hr Rainfall (in) :	4.50	0.00	0.00
Velocity (ft/sec) :	0.13	0.00	0.00
Computed Flow Time (min) :	32.21	0.00	0.00

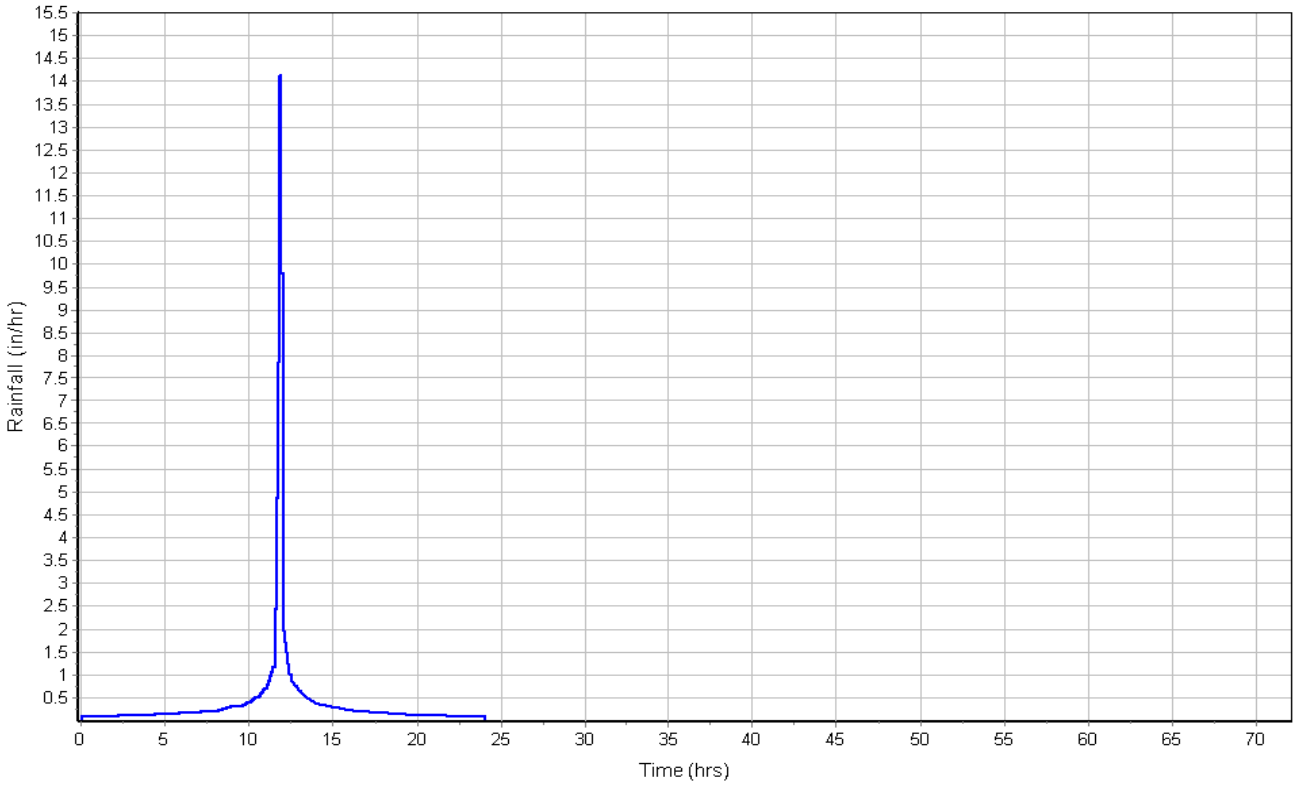
Total TOC (min) 32.21

Subbasin Runoff Results

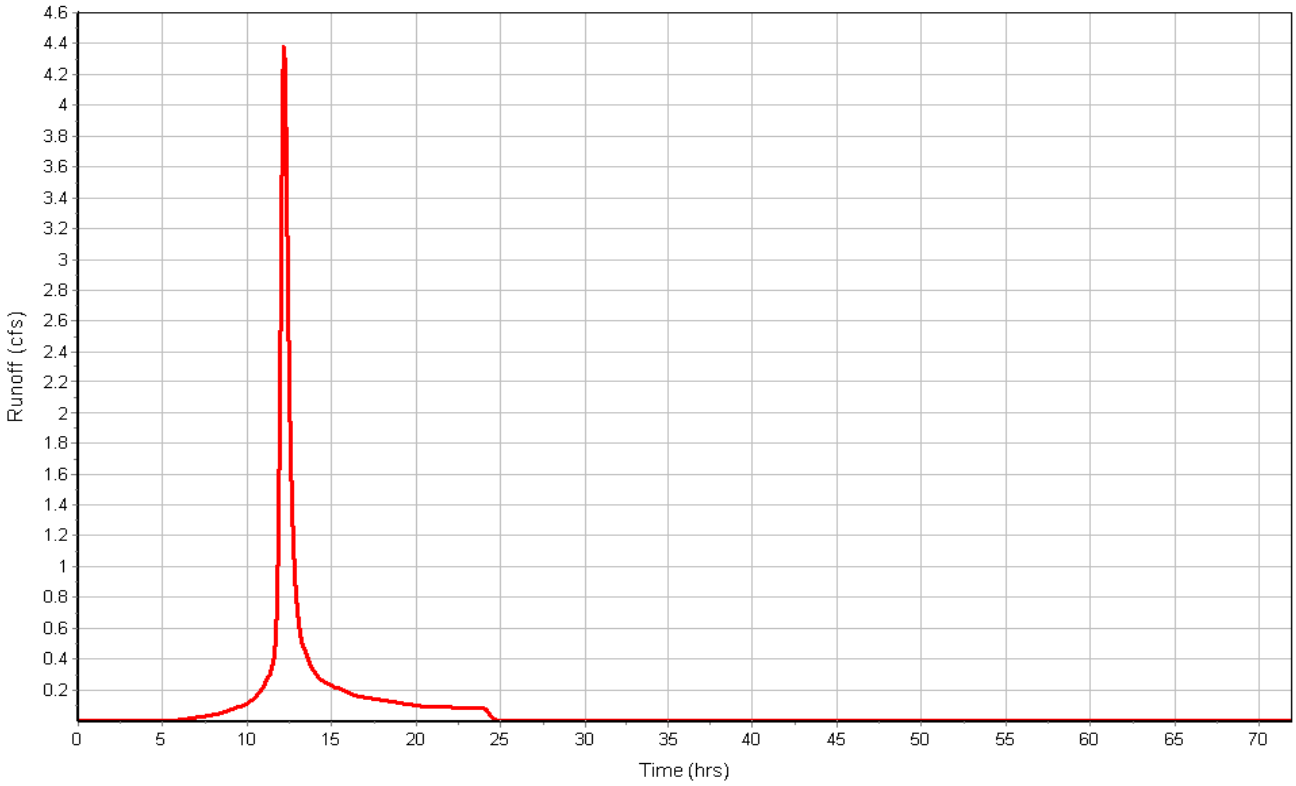
Total Rainfall (in) 10.30
Total Runoff (in) 7.16
Peak Runoff (cfs) 4.43
Weighted Curve Number 75.00
Time of Concentration (days hh:mm:ss) 0 00:32:13

Subbasin : DA-608

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-700

Input Data

Area (ac)	0.45
Weighted Curve Number	98.00
Rain Gage ID	SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.60	-	98.00
Composite Area & Weighted CN	0.60		98.00

Time of Concentration

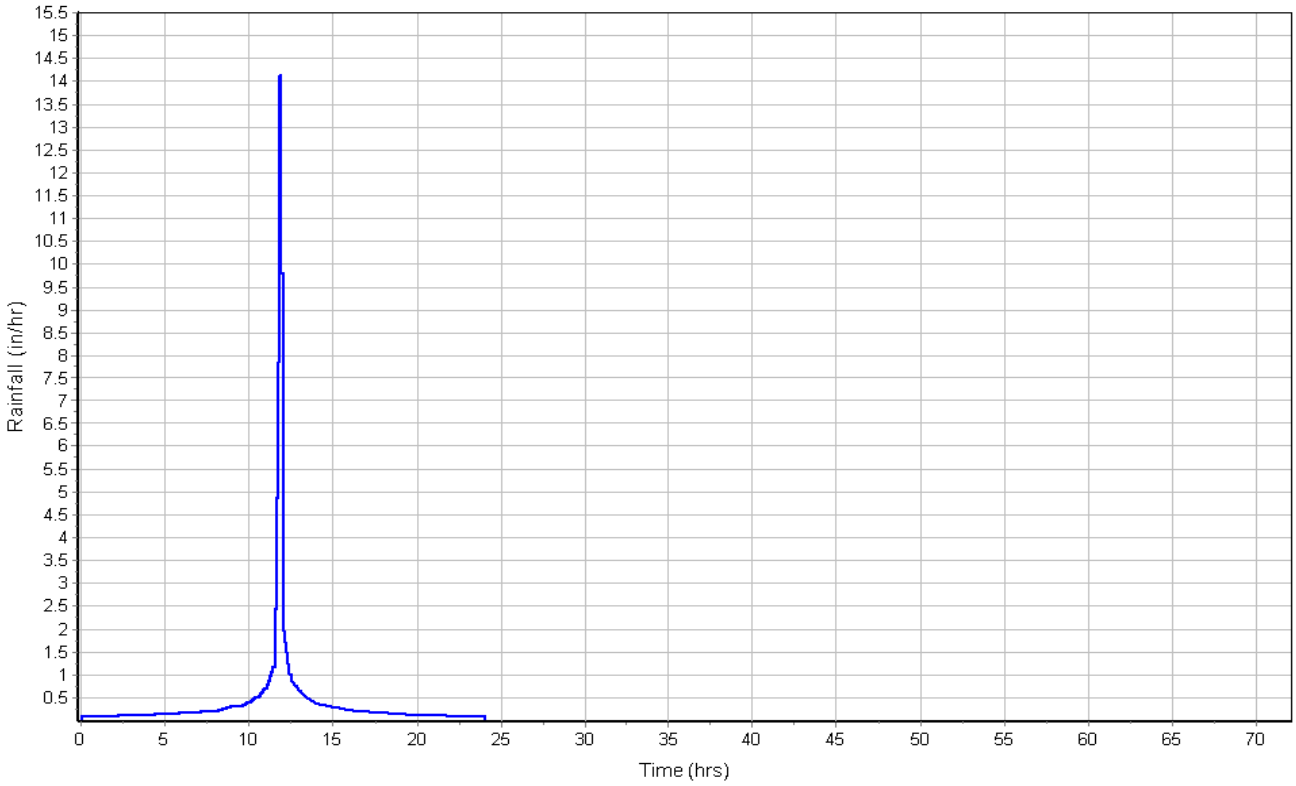
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

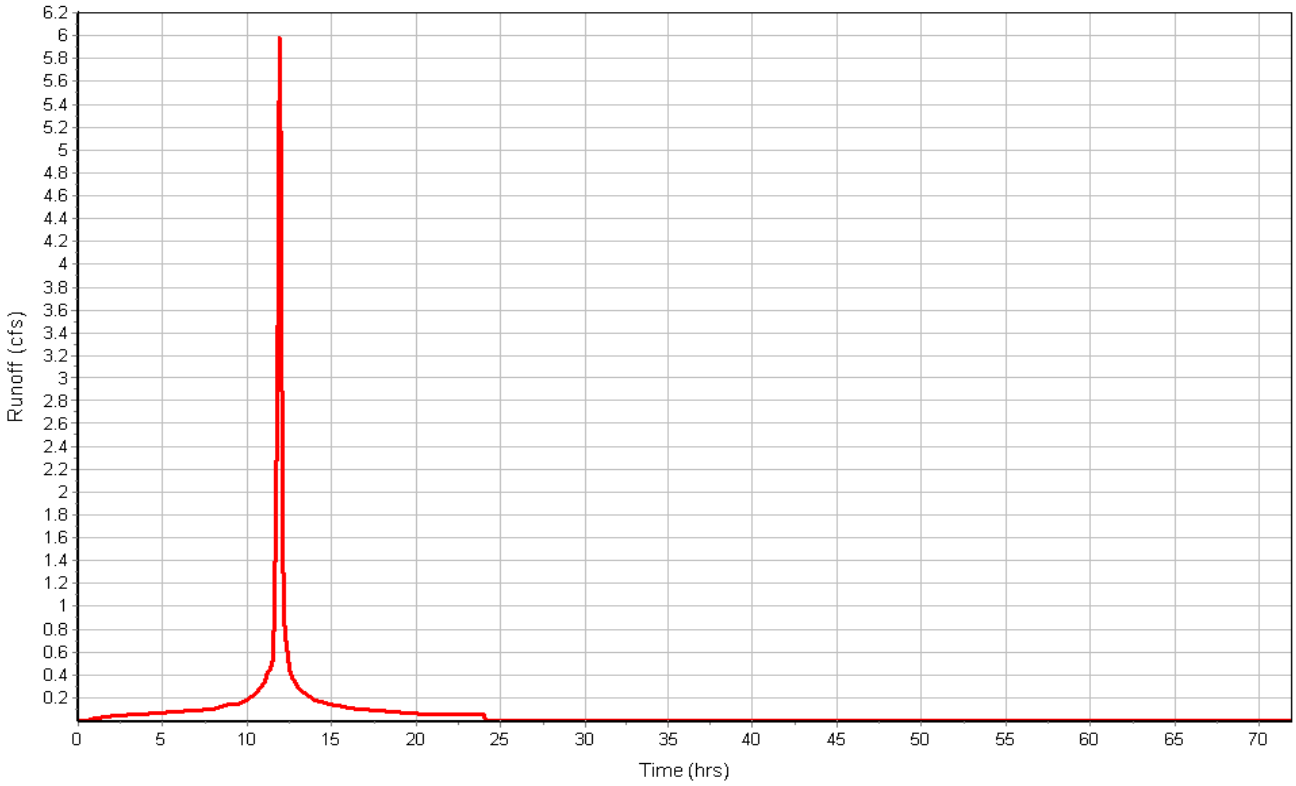
Total Rainfall (in)	10.30
Total Runoff (in)	10.06
Peak Runoff (cfs)	6.00
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : DA-700

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-800

Input Data

Area (ac) 0.33
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.49	-	98.00
Composite Area & Weighted CN	0.49		98.00

Time of Concentration

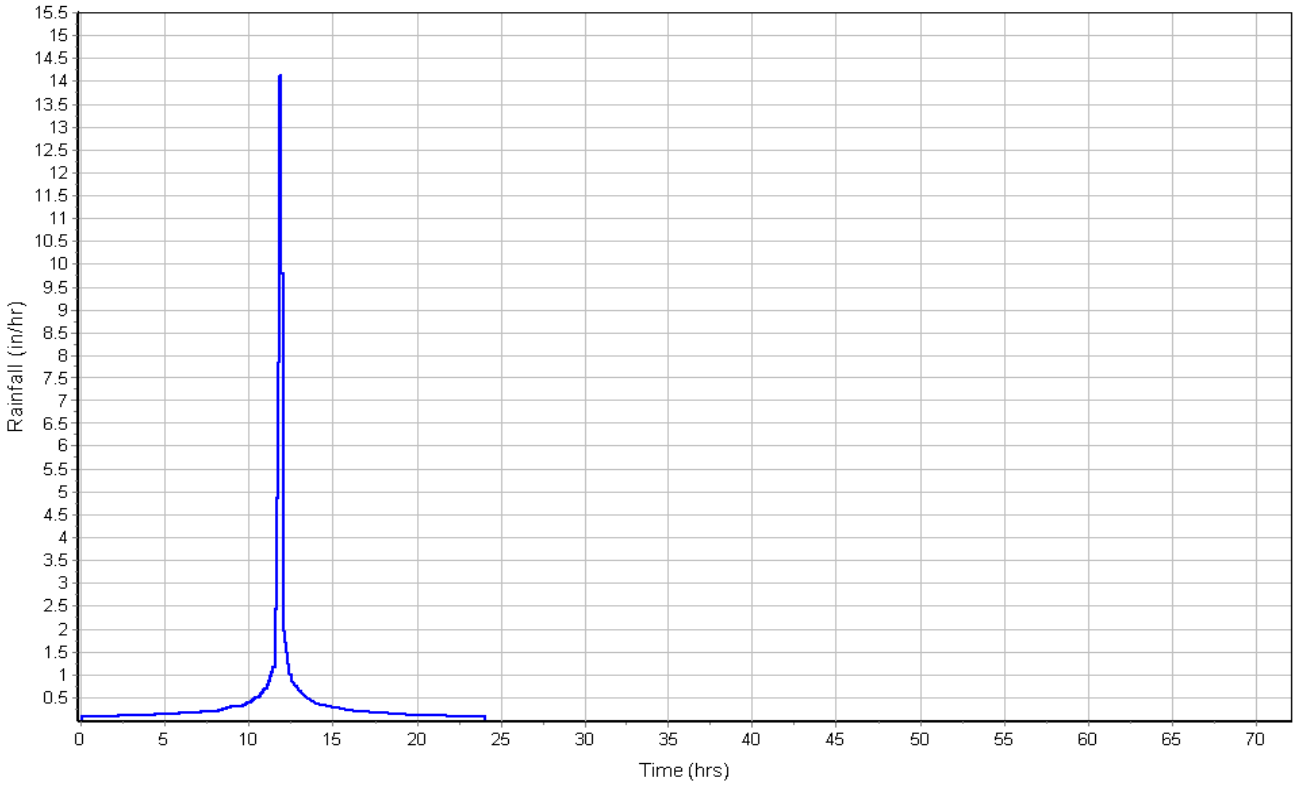
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

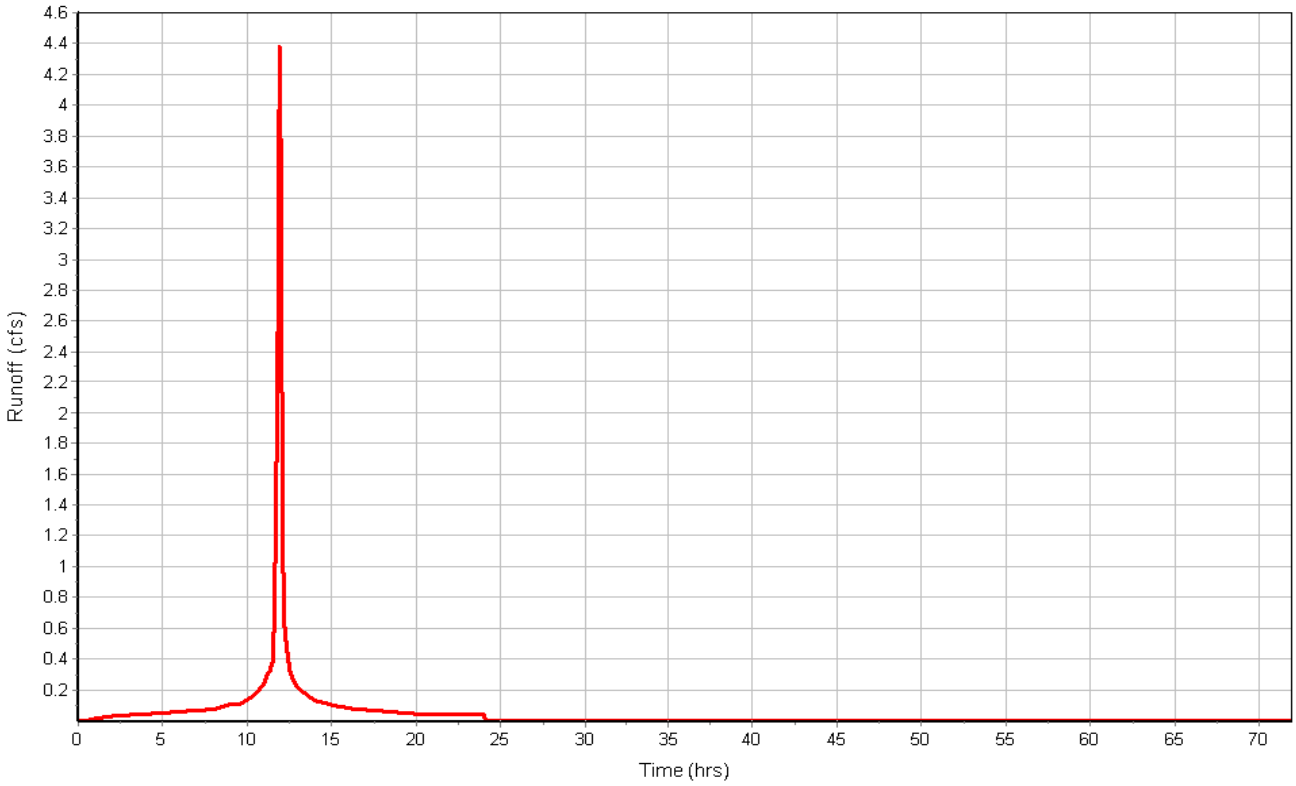
Total Rainfall (in) 10.30
Total Runoff (in) 10.06
Peak Runoff (cfs) 4.39
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-800

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-801

Input Data

Area (ac) 0.24
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.32	-	98.00
Composite Area & Weighted CN	0.32		98.00

Time of Concentration

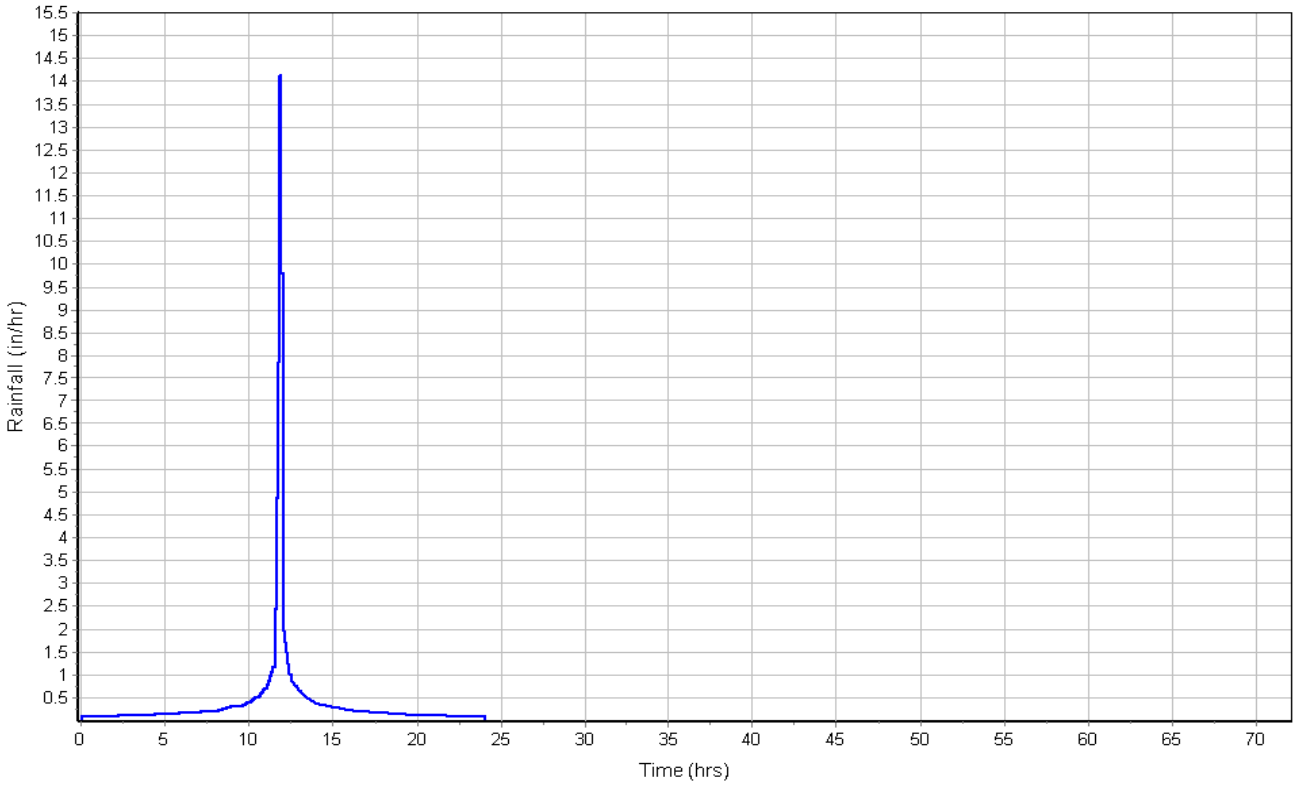
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

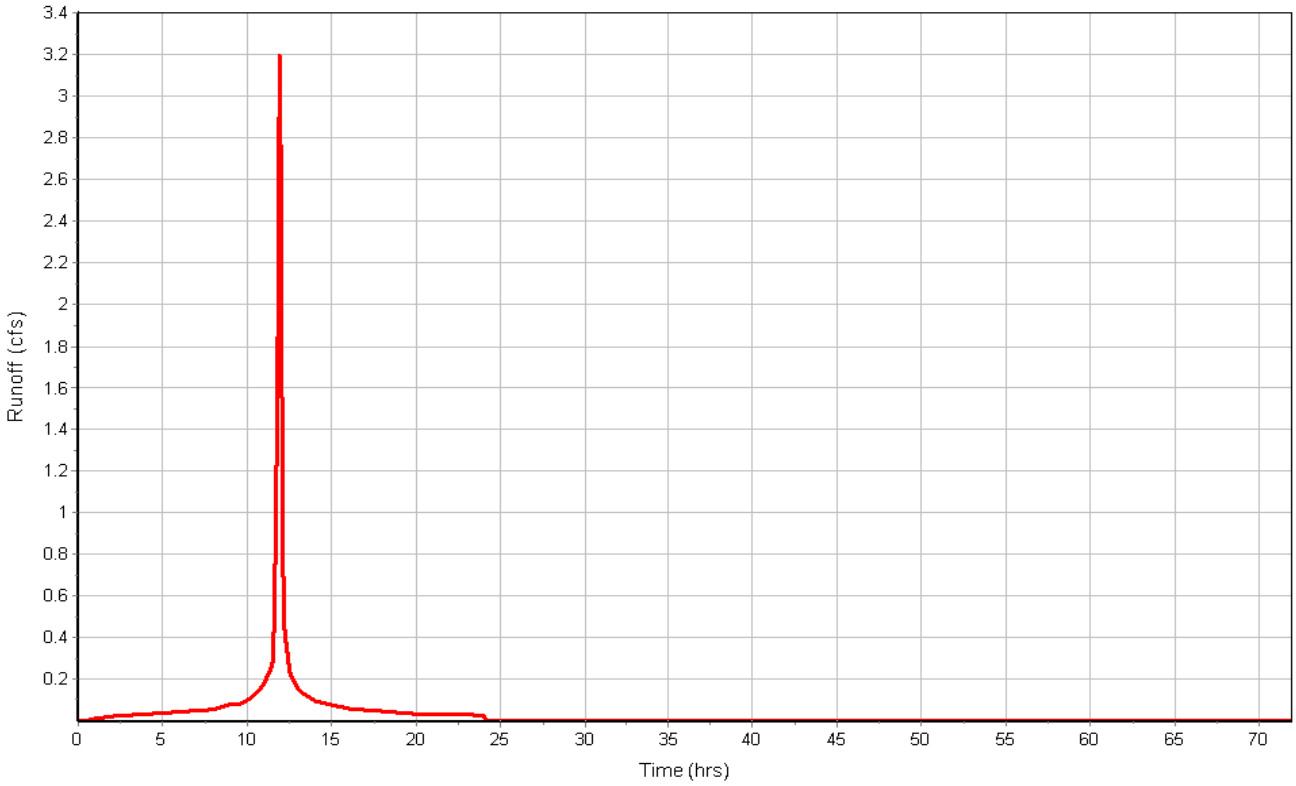
Total Rainfall (in) 10.30
Total Runoff (in) 10.06
Peak Runoff (cfs) 3.21
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-801

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-900

Input Data

Area (ac) 0.64
Weighted Curve Number 98.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.64	-	98.00
Composite Area & Weighted CN	0.64		98.00

Time of Concentration

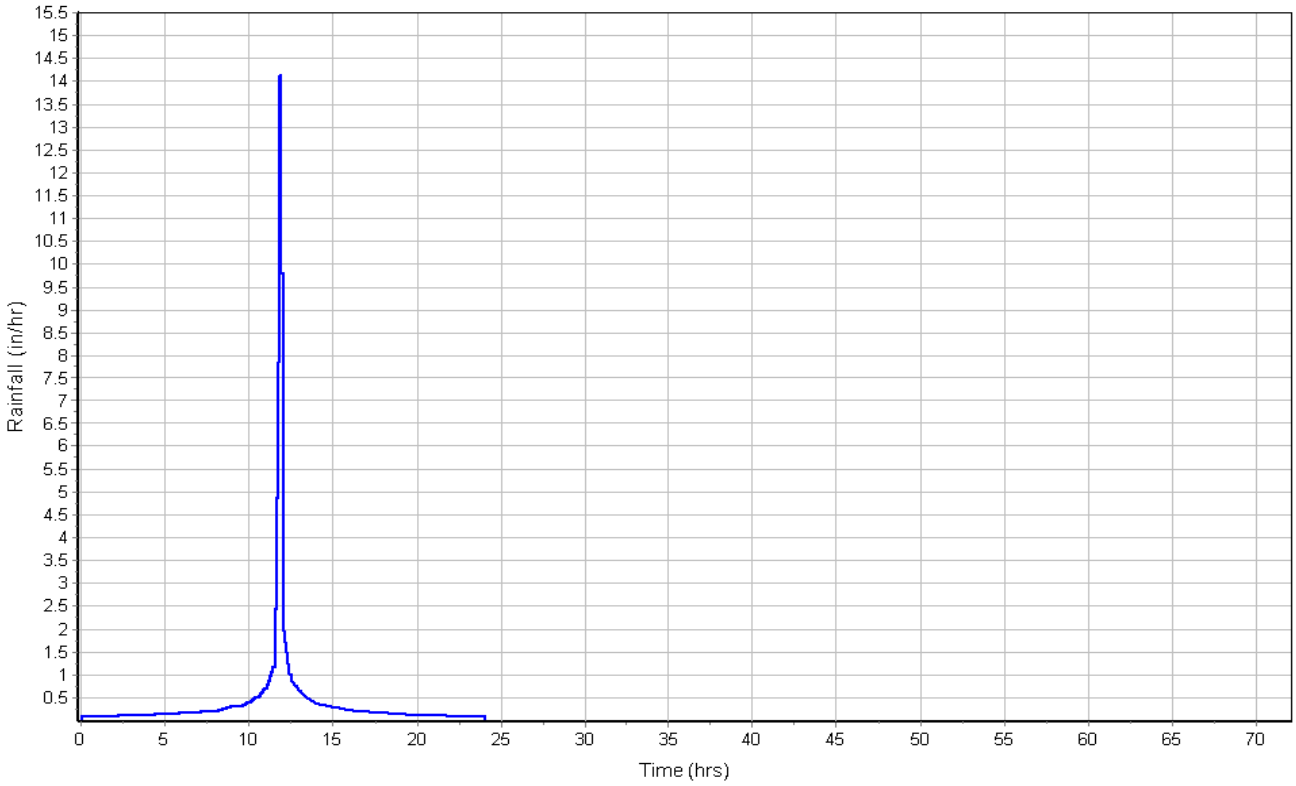
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

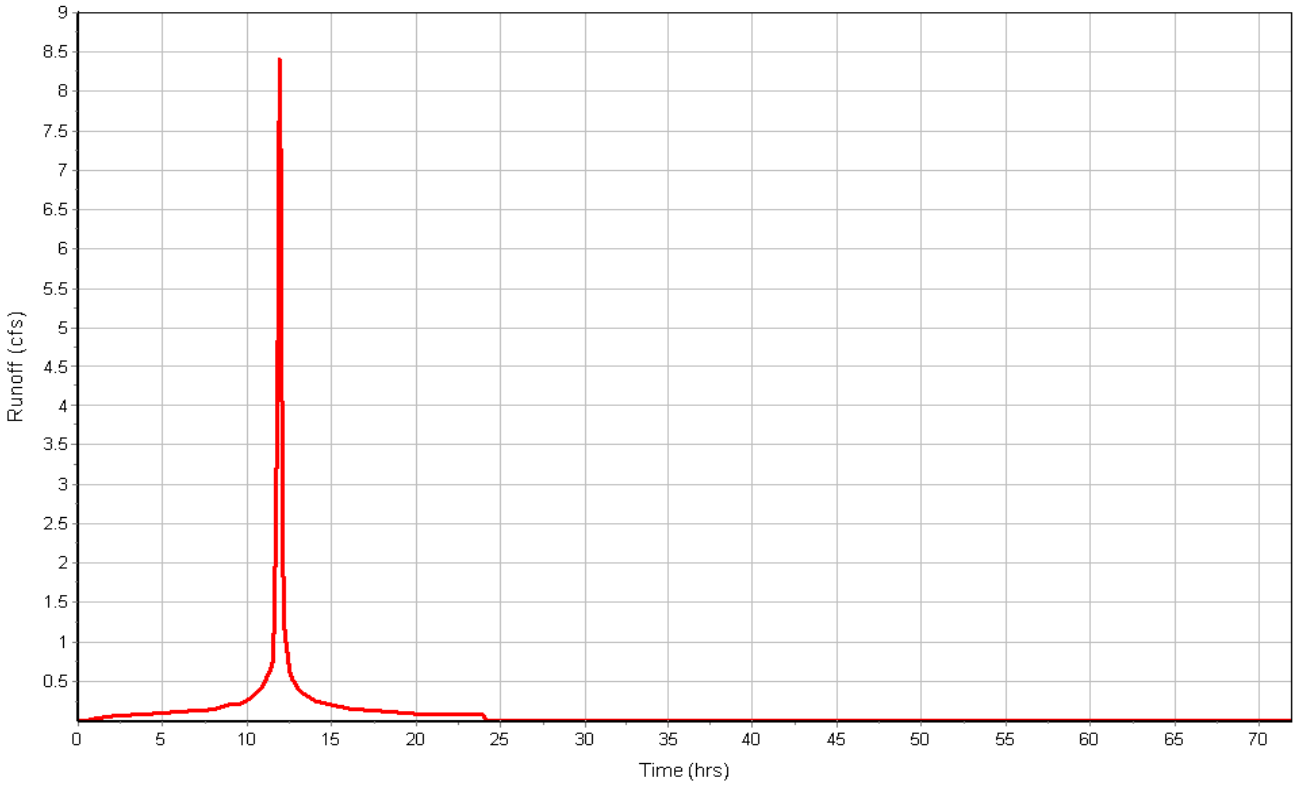
Total Rainfall (in) 10.30
Total Runoff (in) 10.06
Peak Runoff (cfs) 8.45
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-900

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-D1

Input Data

Area (ac) 0.35
Weighted Curve Number 70.60
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.35	-	70.60
Composite Area & Weighted CN	0.35		70.60

Time of Concentration

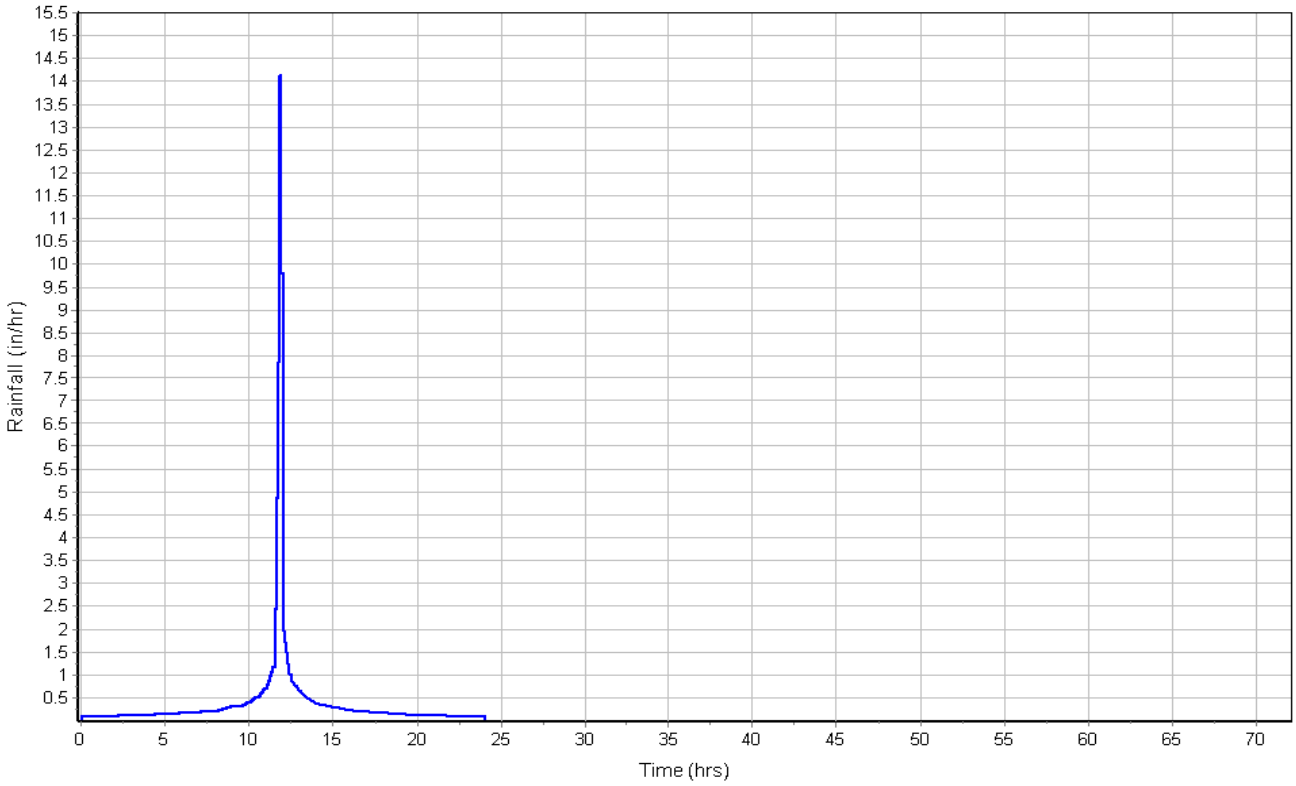
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

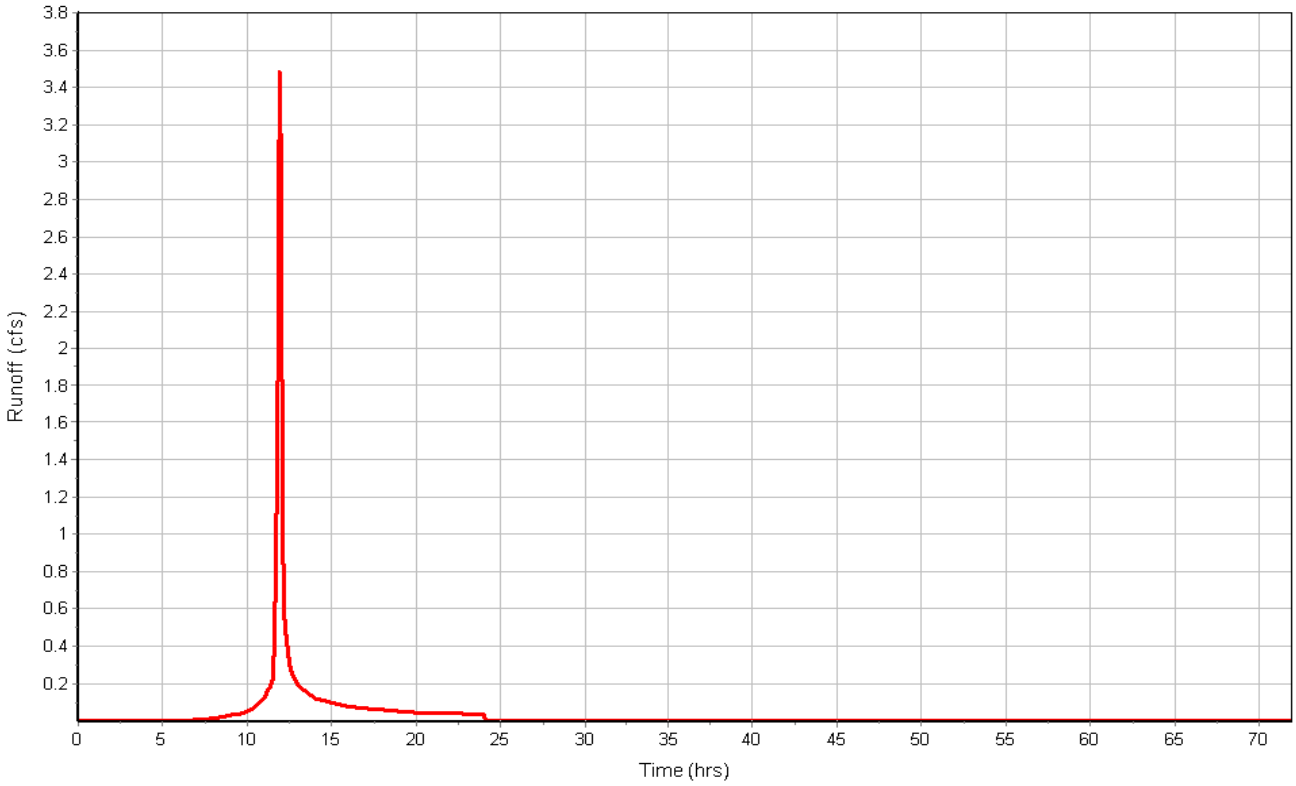
Total Rainfall (in) 10.30
Total Runoff (in) 6.58
Peak Runoff (cfs) 3.54
Weighted Curve Number 70.60
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-D1

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-D2

Input Data

Area (ac) 0.05
Weighted Curve Number 70.60
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.05	-	70.60
Composite Area & Weighted CN	0.05		70.60

Time of Concentration

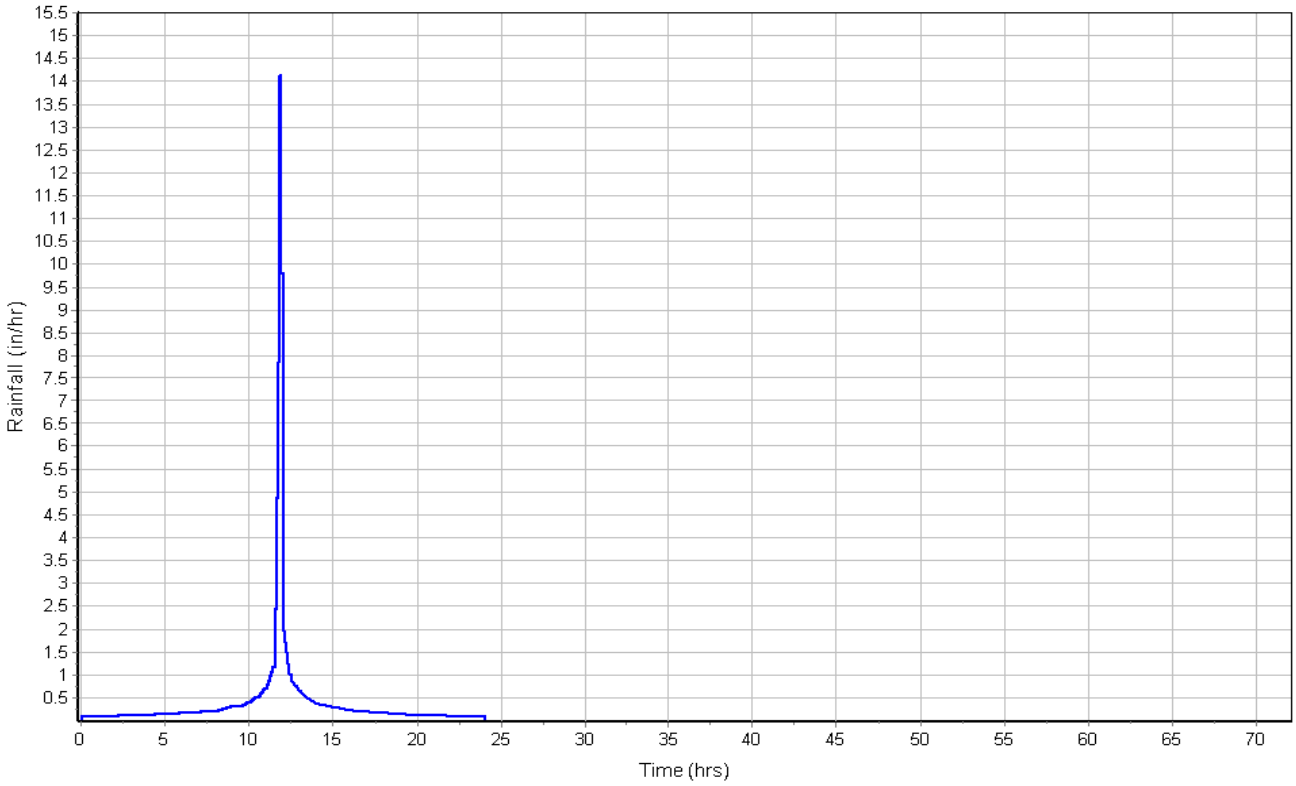
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

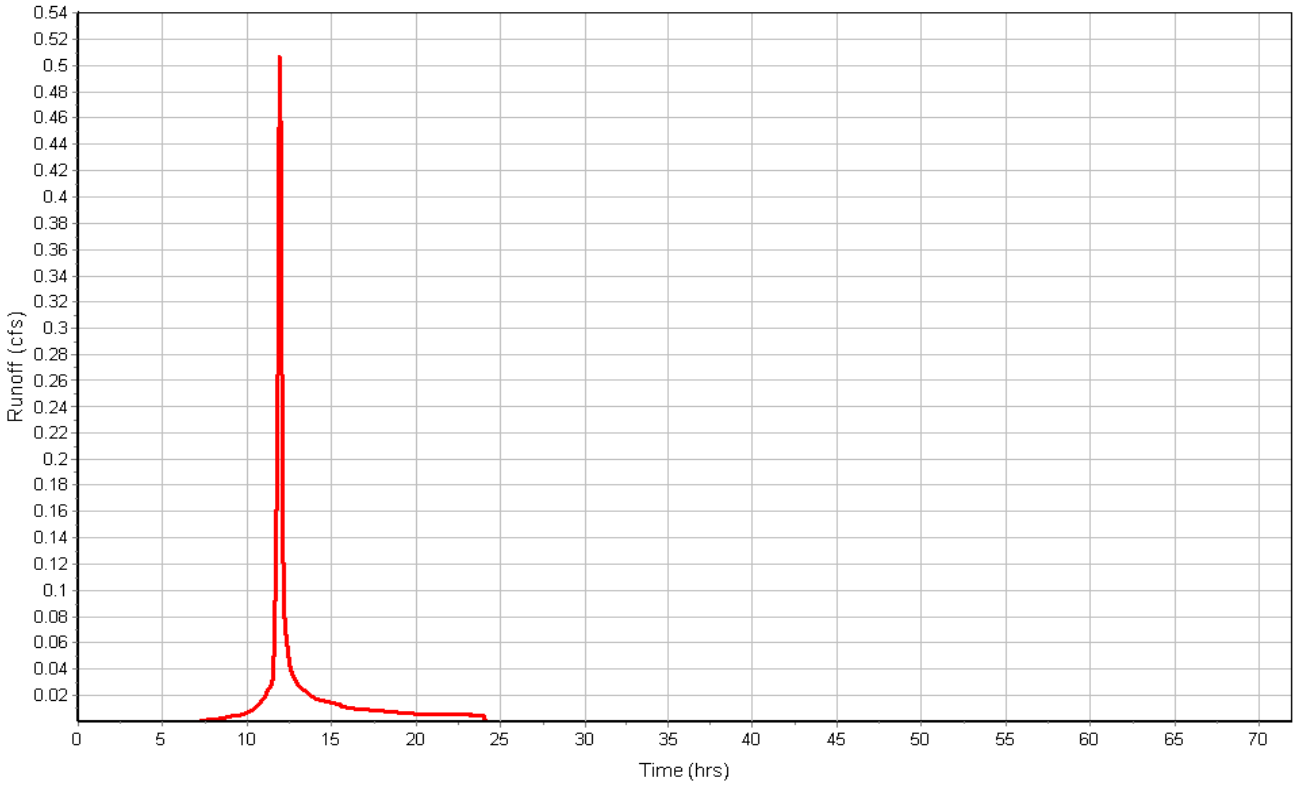
Total Rainfall (in) 10.30
Total Runoff (in) 6.56
Peak Runoff (cfs) 0.51
Weighted Curve Number 70.60
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-D2

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-D3

Input Data

Area (ac) 0.49
Weighted Curve Number 70.60
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	1.06	-	70.60
Composite Area & Weighted CN	1.06		70.60

Time of Concentration

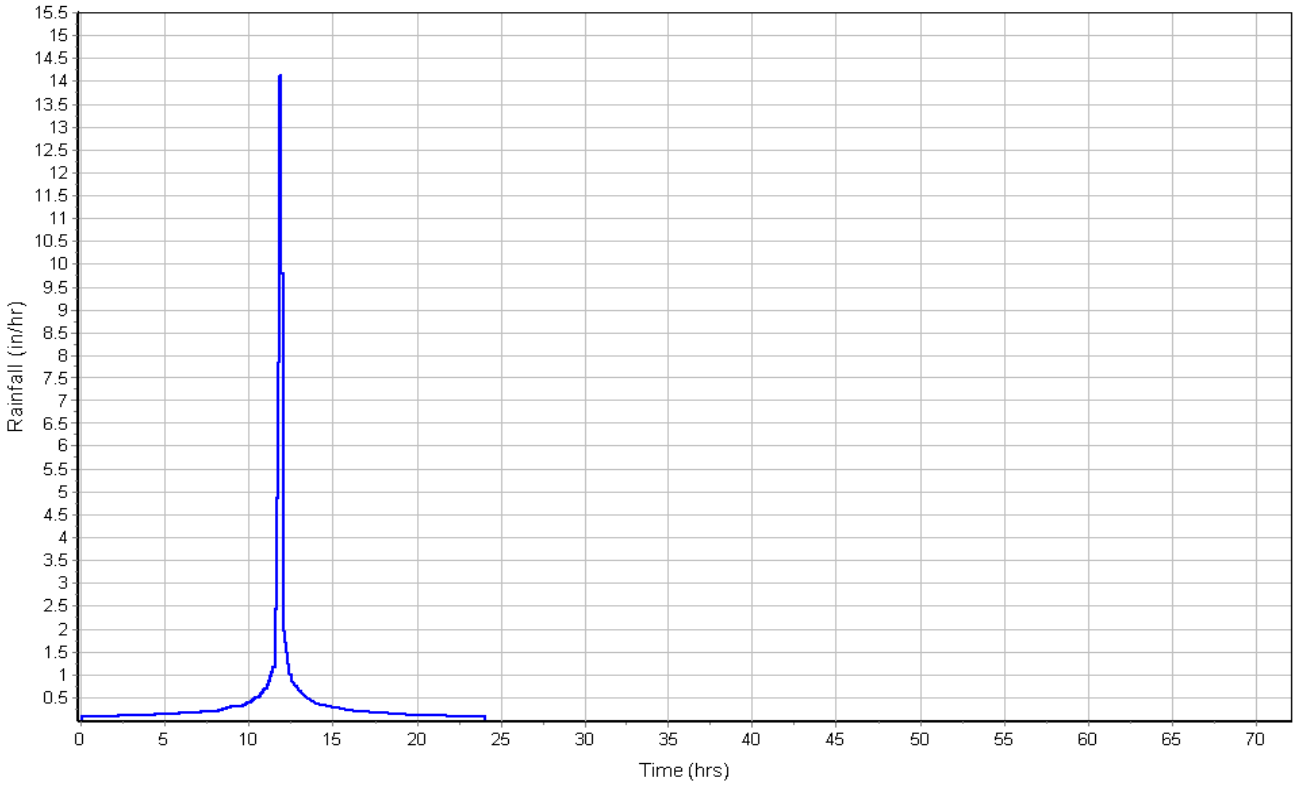
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

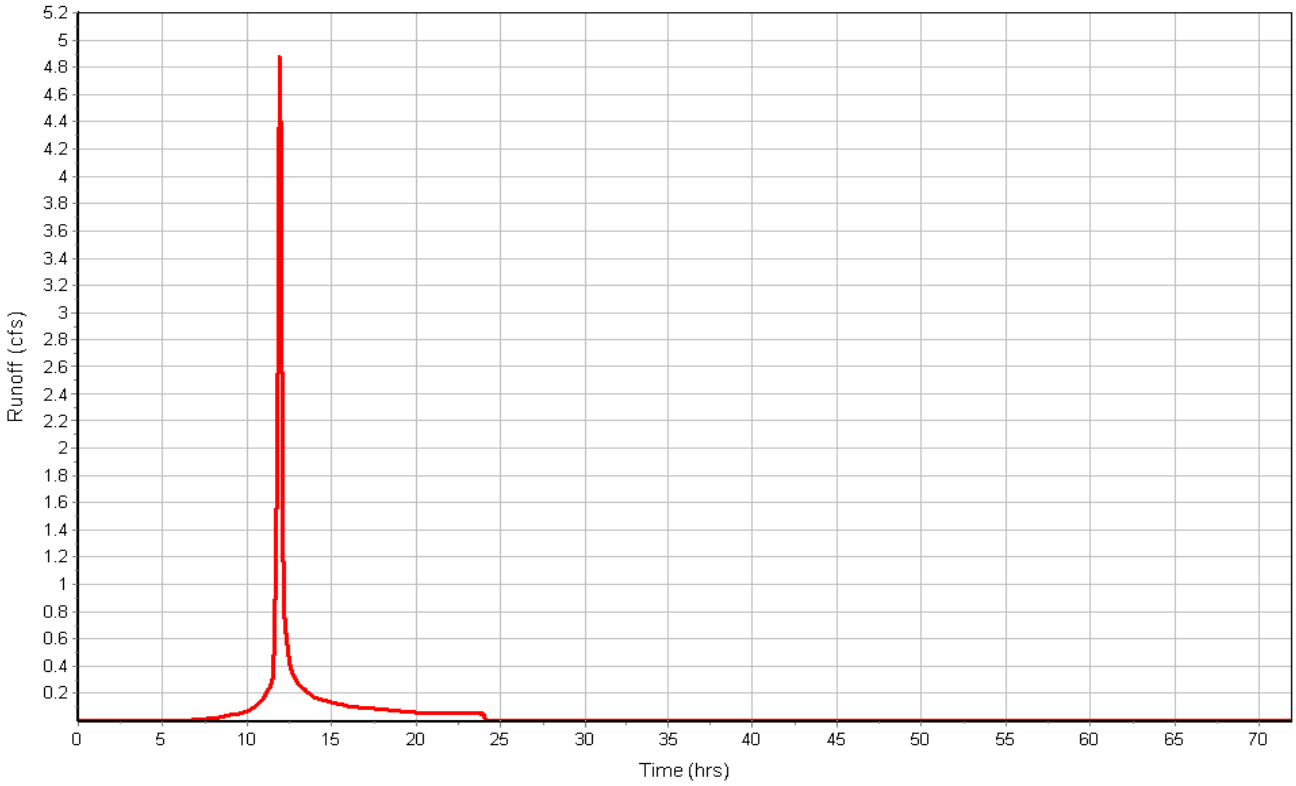
Total Rainfall (in) 10.30
Total Runoff (in) 6.58
Peak Runoff (cfs) 4.95
Weighted Curve Number 70.60
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-D3

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-D4

Input Data

Area (ac) 0.31
Weighted Curve Number 70.60
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.31	-	70.60
Composite Area & Weighted CN	0.31		70.60

Time of Concentration

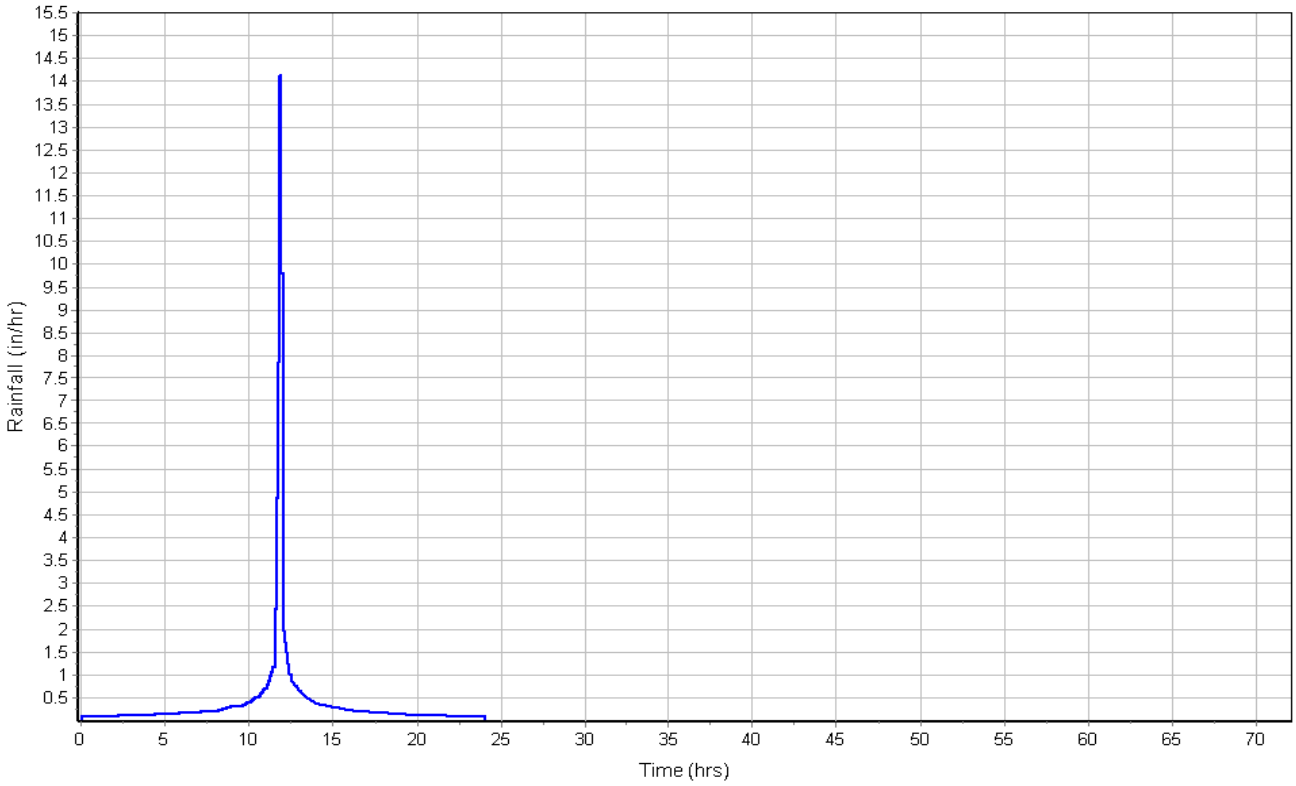
User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

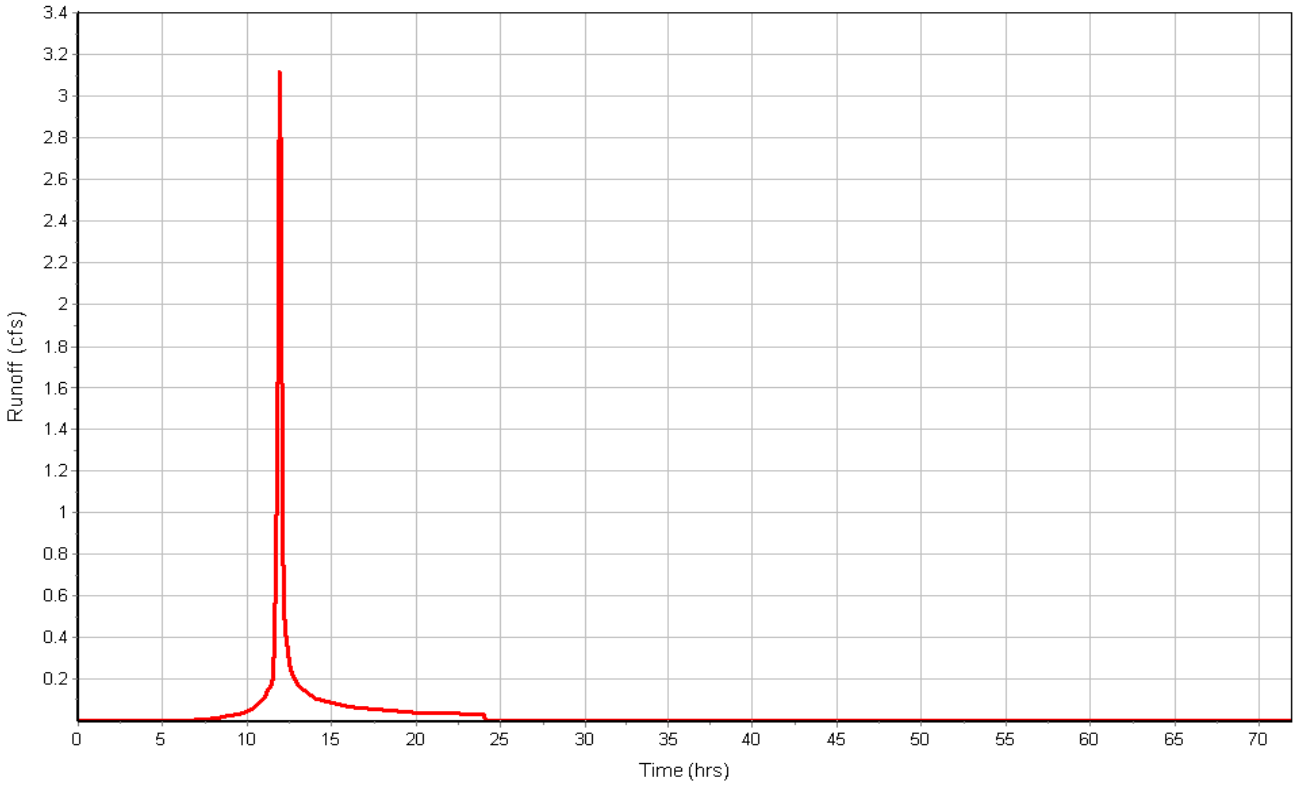
Total Rainfall (in) 10.30
Total Runoff (in) 6.58
Peak Runoff (cfs) 3.15
Weighted Curve Number 70.60
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : DA-D4

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DA-P1

Input Data

Area (ac)	11.00
Weighted Curve Number	70.60
Rain Gage ID	SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	11.00	-	70.60
Composite Area & Weighted CN	11.00		70.60

Time of Concentration

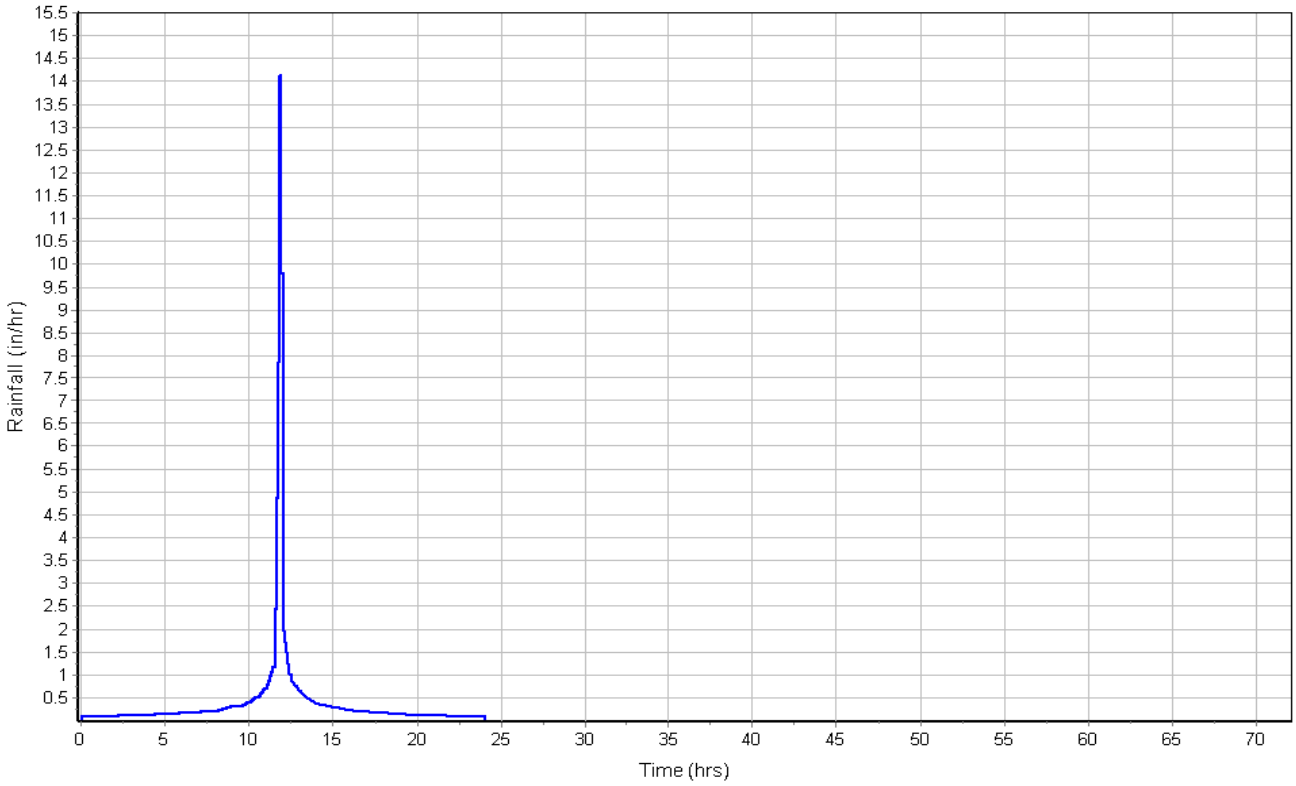
User-Defined TOC override (minutes): 6

Subbasin Runoff Results

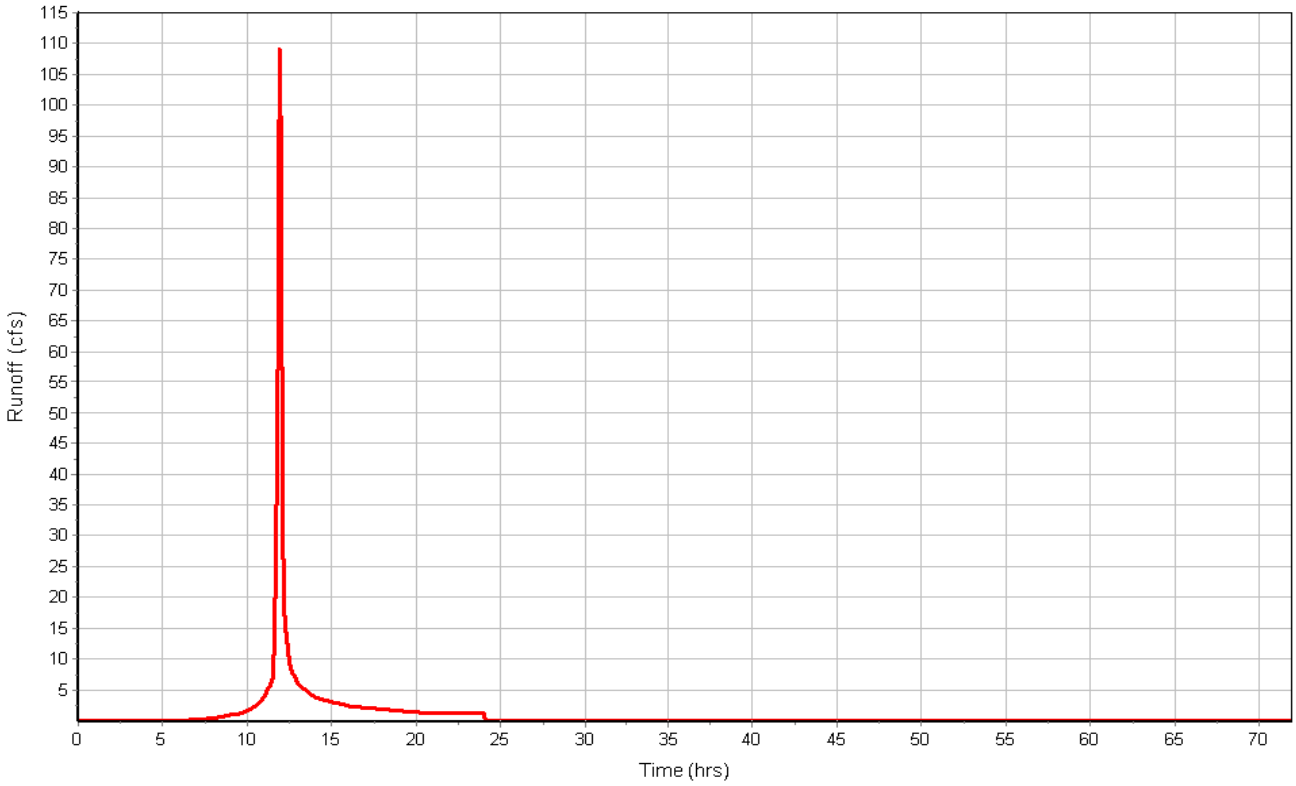
Total Rainfall (in)	10.30
Total Runoff (in)	6.58
Peak Runoff (cfs)	110.55
Weighted Curve Number	70.60
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : DA-P1

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST-OSB1

Input Data

Area (ac) 5.63
Weighted Curve Number 95.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	5.63	-	95.00
Composite Area & Weighted CN	5.63		95.00

Time of Concentration

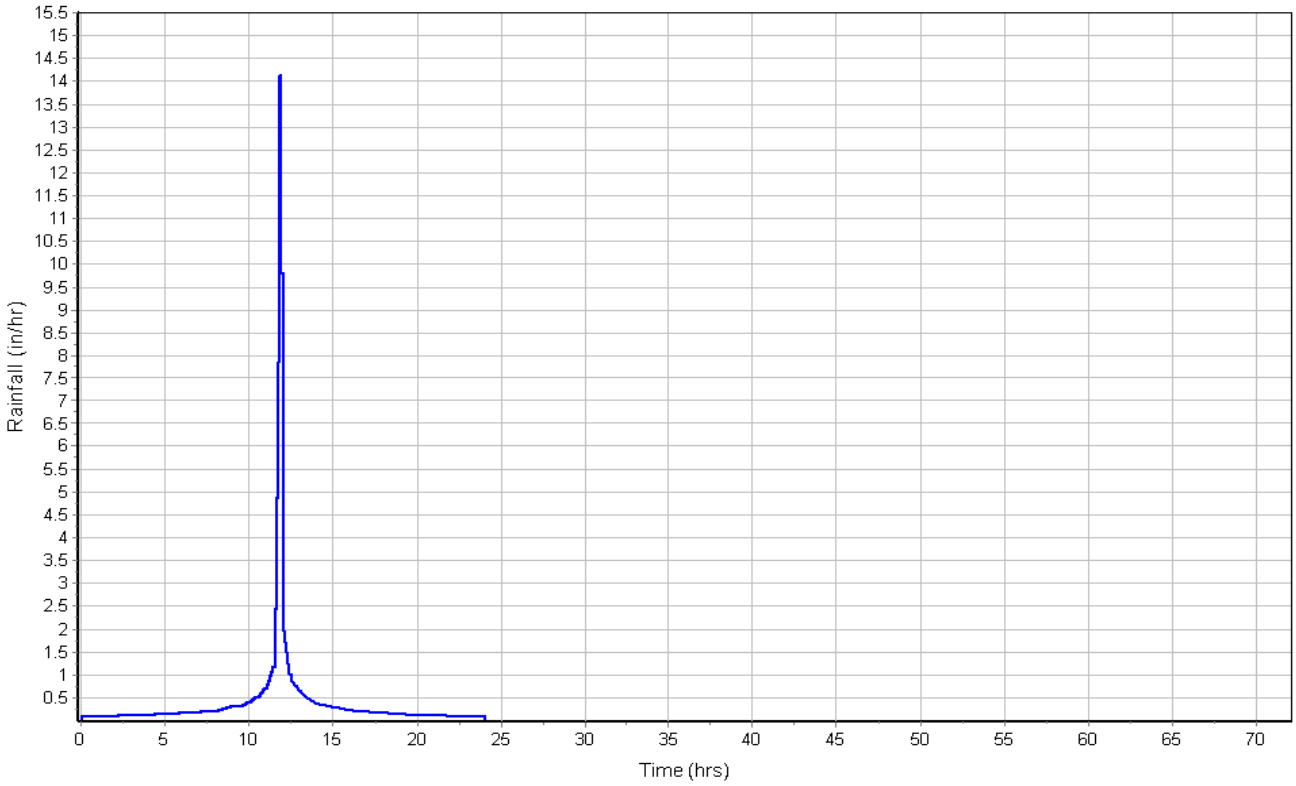
User-Defined TOC override (minutes): 6.4

Subbasin Runoff Results

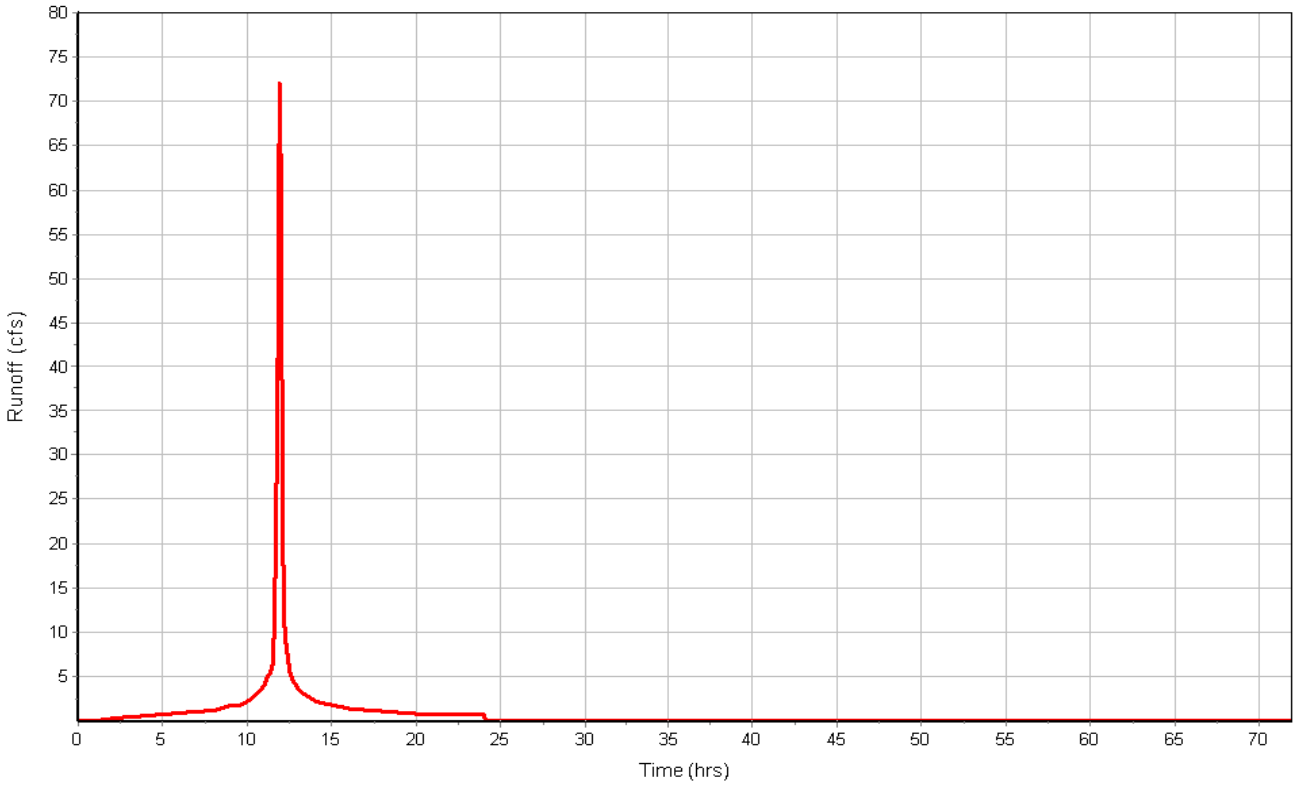
Total Rainfall (in) 10.30
Total Runoff (in) 9.69
Peak Runoff (cfs) 73.01
Weighted Curve Number 95.00
Time of Concentration (days hh:mm:ss) 0 00:06:24

Subbasin : POST-OSB1

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST-SB1

Input Data

Area (ac) 18.31
Weighted Curve Number 47.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	16.91	-	47.00
-	1.40	-	47.00
Composite Area & Weighted CN	18.31		47.00

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.01	0.00	0.00
Flow Length (ft) :	300	0.00	0.00
Slope (%) :	.033	0.00	0.00
2 yr, 24 hr Rainfall (in) :	4.35	0.00	0.00
Velocity (ft/sec) :	0.42	0.00	0.00
Computed Flow Time (min) :	11.98	0.00	0.00

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	500	0.00	0.00
Slope (%) :	0.4	0.00	0.00
Surface Type :	Paved	Unpaved	Unpaved
Velocity (ft/sec) :	1.40	0.00	0.00
Computed Flow Time (min) :	5.95	0.00	0.00

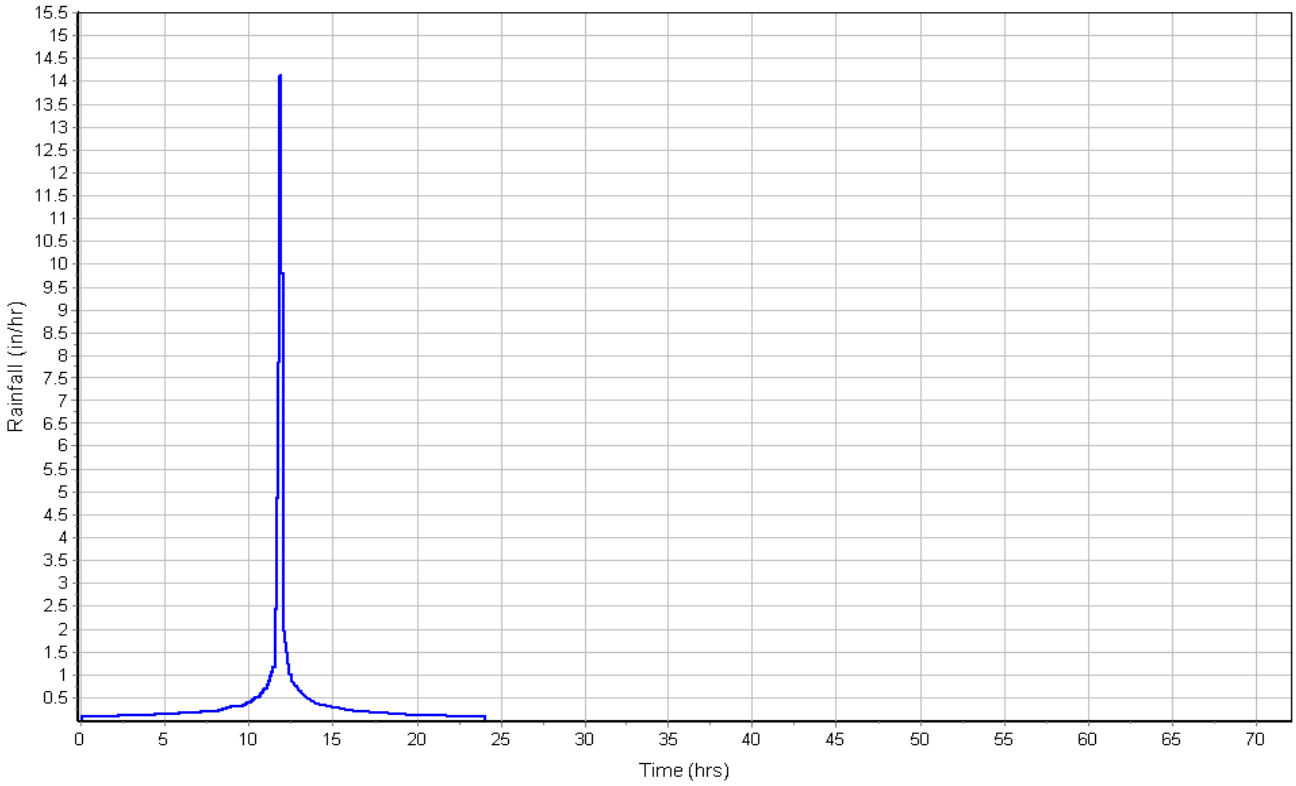
Total TOC (min) 17.93

Subbasin Runoff Results

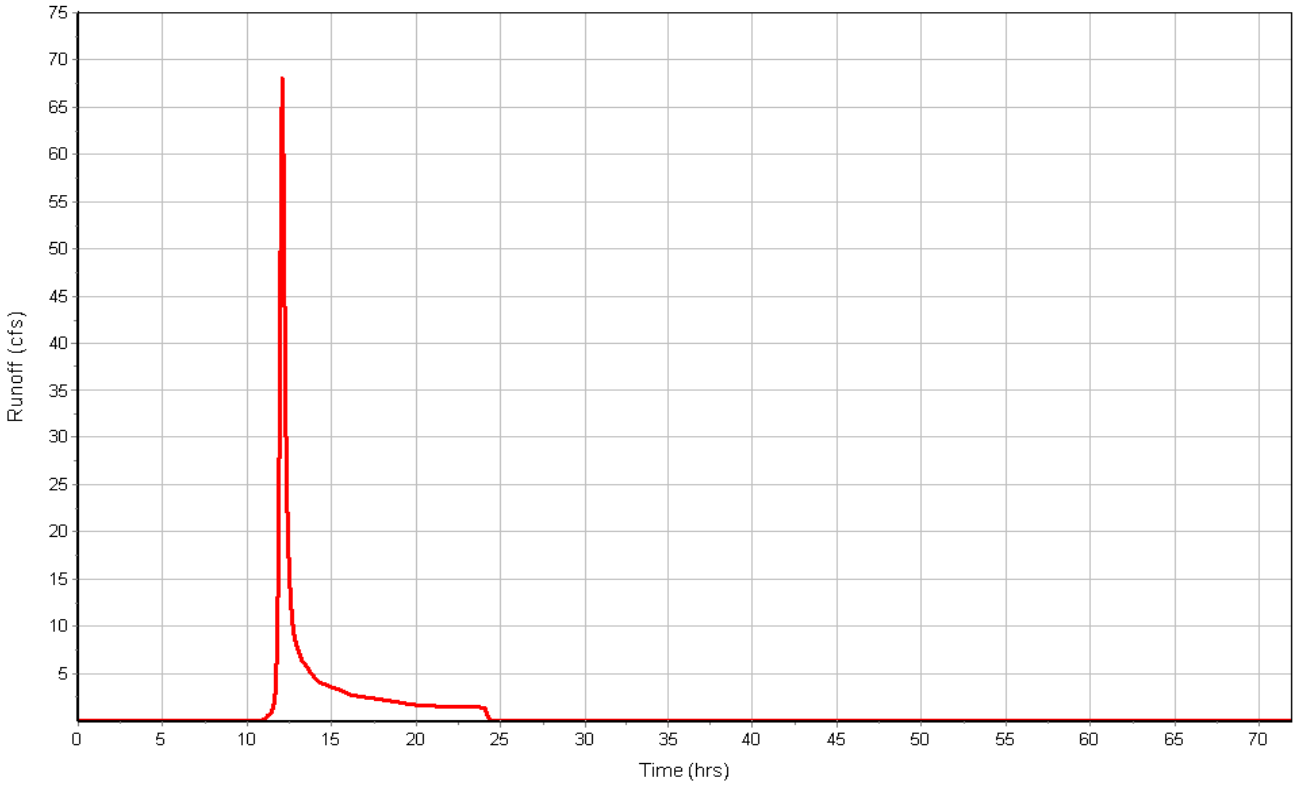
Total Rainfall (in) 10.30
Total Runoff (in) 3.35
Peak Runoff (cfs) 68.15
Weighted Curve Number 47.00
Time of Concentration (days hh:mm:ss) 0 00:17:56

Subbasin : POST-SB1

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST-SB2

Input Data

Area (ac) 6.53
Weighted Curve Number 94.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	6.53	-	94.00
Composite Area & Weighted CN	6.53		94.00

Time of Concentration

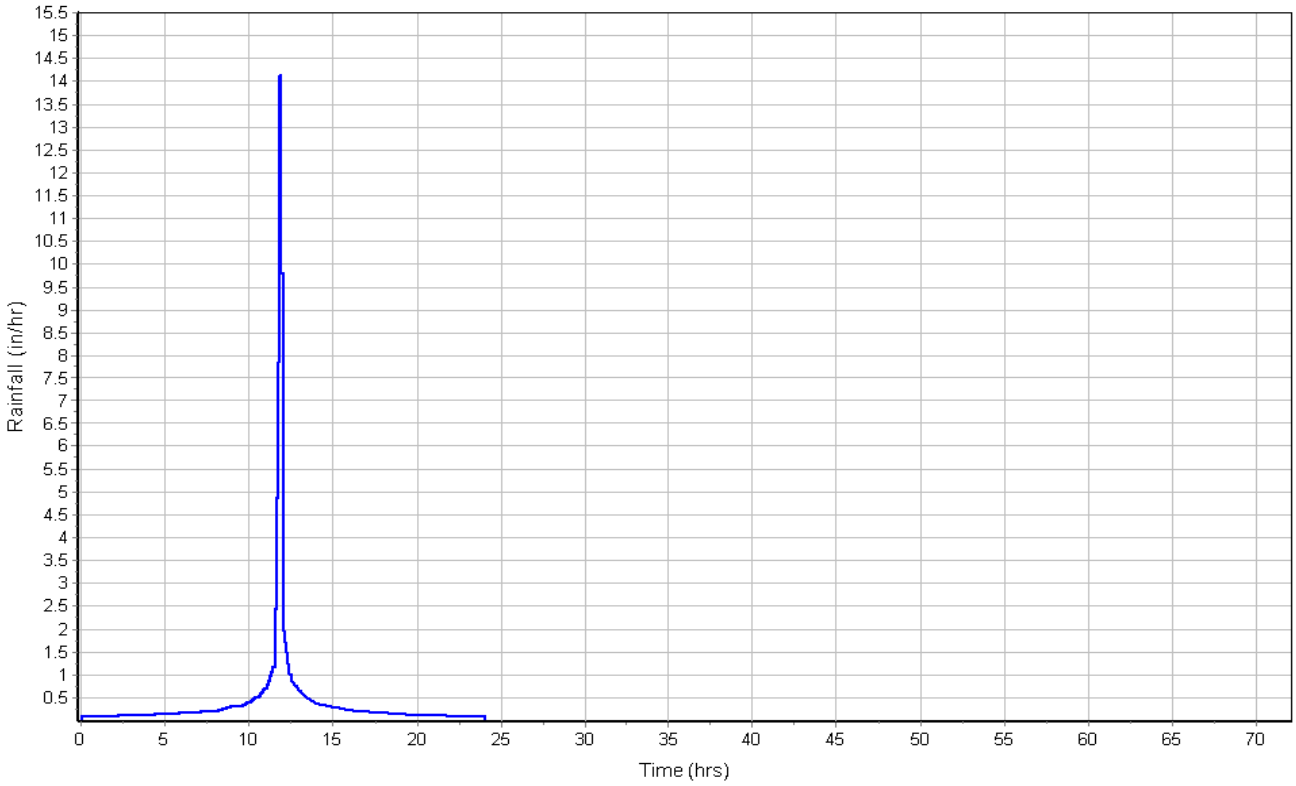
User-Defined TOC override (minutes): 6.6

Subbasin Runoff Results

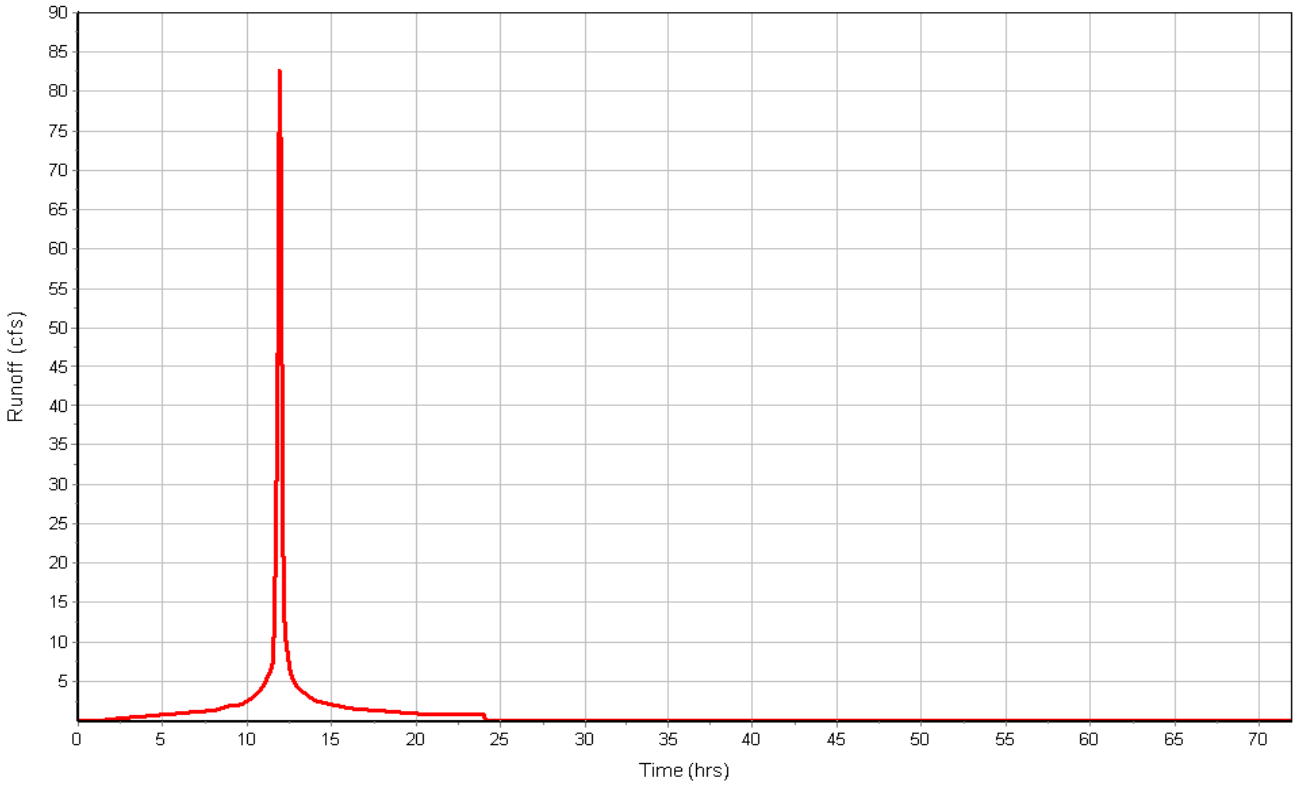
Total Rainfall (in) 10.30
Total Runoff (in) 9.57
Peak Runoff (cfs) 83.88
Weighted Curve Number 94.00
Time of Concentration (days hh:mm:ss) 0 00:06:36

Subbasin : POST-SB2

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-OSB1

Input Data

Area (ac) 5.63
Weighted Curve Number 95.00
Rain Gage ID ..... SEMINOLE

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	5.63	-	95.00
Composite Area & Weighted CN	5.63		95.00

Time of Concentration

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft^2)	Minimum Pipe Cover (in)
1	100	68.24	73.50	5.27	0.00	-68.24	74.00	0.50	0.00	0.00
2	101	69.04	73.50	4.47	0.00	-69.04	74.00	0.50	0.00	0.00
3	102	69.72	73.50	3.79	0.00	-69.72	74.00	0.50	0.00	0.00
4	103	70.00	73.50	3.51	0.00	-70.00	74.00	0.50	0.00	0.00
5	104	70.37	73.50	3.14	0.00	-70.37	74.00	0.50	0.00	0.00
6	201	66.60	71.83	5.23	0.00	-66.60	71.83	0.00	0.00	0.00
7	202	68.15	73.50	5.35	0.00	-68.15	74.00	0.50	0.00	0.00
8	203	68.80	73.50	4.70	0.00	-68.80	74.00	0.50	0.00	0.00
9	204	69.45	73.50	4.05	0.00	-69.45	74.00	0.50	0.00	0.00
10	205	69.67	73.50	3.83	0.00	-69.67	74.00	0.50	0.00	0.00
11	206	70.80	73.50	2.70	0.00	-70.80	74.00	0.50	0.00	0.00
12	207	71.00	73.50	2.50	0.00	-71.00	74.00	0.50	0.00	0.00
13	300	69.96	73.50	3.54	0.00	-69.96	74.00	0.50	0.00	0.00
14	301	70.47	73.50	3.03	0.00	-70.47	74.00	0.50	0.00	0.00
15	400	70.72	73.50	2.78	0.00	-70.72	74.00	0.50	0.00	0.00
16	500	70.80	73.50	2.70	0.00	-70.80	74.00	0.50	0.00	0.00
17	601	67.40	73.50	6.11	0.00	-67.40	74.00	0.50	0.00	0.00
18	602	68.06	73.50	5.44	0.00	-68.06	74.00	0.50	0.00	0.00
19	603	68.65	73.50	4.85	0.00	-68.65	74.00	0.50	0.00	0.00
20	604	69.40	73.50	4.10	0.00	-69.40	74.00	0.50	0.00	0.00
21	605	69.60	73.50	3.90	0.00	-69.60	74.00	0.50	0.00	0.00
22	606	69.93	73.50	3.57	0.00	-69.93	74.00	0.50	0.00	0.00
23	607	70.34	73.50	3.16	0.00	-70.34	74.00	0.50	0.00	0.00
24	608	70.48	73.50	3.02	0.00	-70.48	74.00	0.50	0.00	0.00
25	700	70.95	73.50	2.55	0.00	-70.95	74.00	0.50	0.00	0.00
26	800	70.18	73.50	3.32	0.00	-70.18	74.00	0.50	0.00	0.00
27	801	70.56	73.50	2.94	0.00	-70.56	74.00	0.50	0.00	0.00
28	900	70.25	73.50	3.25	0.00	-70.25	74.00	0.50	0.00	0.00
29	1400	69.89	73.50	3.62	0.00	-69.89	74.00	0.50	0.00	0.00
30	D1	66.05	71.00	4.95	0.00	-66.05	0.00	-71.00	0.00	0.00
31	D2	66.15	71.00	4.85	0.00	-66.15	0.00	-71.00	0.00	0.00
32	D3	67.54	71.00	3.46	0.00	-67.54	0.00	-71.00	0.00	0.00
33	D4	67.65	71.00	3.35	0.00	-67.65	0.00	-71.00	0.00	0.00

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	100	23.03	1.53	70.10	1.87	0.00	3.40	68.52	0.29	0 12:00	0 00:00	0.00	0.00
2	101	19.91	4.24	71.15	2.12	0.00	2.35	69.35	0.32	0 12:00	0 00:00	0.00	0.00
3	102	15.64	3.66	72.10	2.38	0.00	1.40	70.05	0.33	0 11:59	0 00:00	0.00	0.00
4	103	11.97	4.99	72.74	2.74	0.00	0.76	70.34	0.34	0 11:59	0 00:00	0.00	0.00
5	104	6.98	6.98	73.41	3.05	0.00	0.09	70.68	0.32	0 11:59	0 00:00	0.00	0.00
6	201	47.22	2.41	68.56	1.96	0.00	3.27	67.01	0.41	0 12:00	0 00:00	0.00	0.00
7	202	44.96	5.71	70.44	2.29	0.00	3.06	68.49	0.34	0 12:00	0 00:00	0.00	0.00
8	203	31.41	6.32	71.54	2.74	0.00	1.96	69.22	0.42	0 12:00	0 00:00	0.00	0.00
9	204	25.04	4.88	72.17	2.72	0.00	1.33	69.85	0.40	0 11:59	0 00:00	0.00	0.00
10	205	20.12	1.85	72.53	2.86	0.00	0.97	70.05	0.38	0 12:00	0 00:00	0.00	0.00
11	206	7.66	1.85	73.11	2.31	0.00	0.39	71.08	0.28	0 11:59	0 00:00	0.00	0.00
12	207	5.81	5.81	73.51	2.51	0.01	0.00	71.27	0.27	0 12:00	0 00:00	0.00	0.00
13	300	10.61	6.15	72.93	2.97	0.00	0.57	70.31	0.35	0 12:00	0 00:00	0.00	0.00
14	301	4.46	4.46	73.30	2.83	0.00	0.20	70.74	0.27	0 12:00	0 00:00	0.00	0.00
15	400	3.95	3.95	73.63	2.91	0.13	0.00	70.98	0.26	0 11:59	0 00:00	0.00	0.00
16	500	4.96	4.96	72.61	1.81	0.00	0.89	71.04	0.24	0 12:01	0 00:00	0.00	0.00
17	601	109.92	6.81	71.29	3.90	0.00	2.21	68.15	0.76	0 12:05	0 00:00	0.00	0.00
18	602	37.17	3.53	71.54	3.48	0.00	1.96	68.64	0.58	0 12:02	0 00:00	0.00	0.00
19	603	26.34	0.00	71.83	3.18	0.00	1.67	69.15	0.50	0 12:01	0 00:00	0.00	0.00
20	604	21.33	0.00	72.42	3.02	0.00	1.08	69.85	0.45	0 12:01	0 00:00	0.00	0.00
21	605	15.34	0.00	72.65	3.05	0.00	0.85	70.03	0.43	0 11:59	0 00:00	0.00	0.00
22	606	15.34	5.22	73.30	3.37	0.00	0.20	70.38	0.45	0 11:59	0 00:00	0.00	0.00
23	607	6.36	4.37	74.00	3.66	0.50	0.00	70.77	0.43	0 11:59	0 11:59	0.00	0.00
24	608	4.38	4.38	74.00	3.52	0.50	0.00	70.85	0.37	0 11:59	0 11:59	0.00	0.00
25	700	5.98	5.98	73.51	2.56	0.01	0.00	71.20	0.25	0 11:59	0 00:00	0.00	0.00
26	800	7.57	4.37	72.30	2.12	0.00	1.20	70.43	0.25	0 12:00	0 00:00	0.00	0.00
27	801	3.19	3.19	72.49	1.93	0.00	1.01	70.75	0.19	0 12:00	0 00:00	0.00	0.00
28	900	8.40	8.40	73.64	3.39	0.14	0.00	70.56	0.31	0 12:00	0 00:00	0.00	0.00
29	1400	1.88	1.88	70.59	0.70	0.00	2.91	69.99	0.10	0 12:00	0 00:00	0.00	0.00
30	D1	32.81	3.48	67.56	1.51	0.00	3.44	66.51	0.46	0 13:18	0 00:00	0.00	0.00
31	D2	30.27	0.51	67.63	1.48	0.00	3.37	66.61	0.46	0 12:04	0 00:00	0.00	0.00
32	D3	30.44	4.88	69.22	1.68	0.00	1.79	67.80	0.26	0 12:02	0 00:00	0.00	0.00
33	D4	26.13	3.12	69.31	1.66	0.00	1.69	67.89	0.24	0 12:02	0 00:00	0.00	0.00

Channel Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Shape	Height (ft)	Width (ft)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow (cfs)	Flap Gate
1	D0-D1	189.00	66.05	0.00	65.50	0.50	0.55	0.2900	Trapezoidal	4.960	29.840	0.0320	0.5000	0.5000	0.0000	0.00	No
2	D1-D2	35.00	66.15	0.00	66.05	0.00	0.10	0.2900	Trapezoidal	4.850	24.380	0.0320	0.5000	0.5000	0.0000	0.00	No
3	D2-D3	508.00	67.54	0.00	66.15	0.00	1.39	0.2700	Trapezoidal	3.460	19.920	0.0320	0.5000	0.5000	0.0000	0.00	No
4	D3-D4	35.77	67.65	0.00	67.54	0.00	0.10	0.2900	Trapezoidal	3.350	22.760	0.0320	0.5000	0.5000	0.0000	0.00	No

Channel Results

SN	Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/ Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged (min)	Froude Number	Reported Condition
1	D0-D1	32.97	0 12:05	521.88	0.06	2.46	1.28	1.79	0.36	0.00		
2	D1-D2	29.76	0 12:04	333.82	0.09	3.09	0.19	1.47	0.30	0.00		
3	D2-D3	29.80	0 12:03	156.43	0.19	2.51	3.37	1.56	0.45	0.00		
4	D3-D4	25.69	0 12:01	170.37	0.15	1.87	0.32	1.63	0.50	0.00		

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow (cfs)	Flap Gate	No. of Barrels
1	100	194.39	68.24	0.00	67.65	0.00	0.59	0.3000	CIRCULAR	36.000	36.000	0.0120	0.2000	0.5000	0.0000	0.00	No	1
2	100-101	120.00	69.04	0.00	68.74	0.50	0.30	0.2500	CIRCULAR	30.000	30.000	0.0120	0.5000	0.6000	0.0000	0.00	No	1
3	100-1400	60.00	69.89	0.00	69.74	1.50	0.15	0.2500	CIRCULAR	15.000	15.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
4	101-102	120.00	69.72	0.00	69.54	0.50	0.18	0.1500	CIRCULAR	24.000	24.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
5	102-103	180.00	70.00	0.00	69.82	0.10	0.18	0.1000	CIRCULAR	24.000	24.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
6	103-104	120.00	70.37	0.00	70.25	0.25	0.12	0.1000	CIRCULAR	18.000	18.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
7	1100-1101	94.00	74.00	1.00	73.00	3.00	1.00	1.0600	CIRCULAR	24.000	24.000	0.0150	0.2000	0.5000	0.0000	0.00	No	3
8	1200-1201	76.33	74.00	0.00	73.00	3.00	1.00	1.3100	CIRCULAR	18.000	18.000	0.0150	0.2000	0.5000	0.0000	0.00	No	1
9	200-201	160.00	66.60	0.00	65.00	0.00	1.60	1.0000	CIRCULAR	42.000	42.000	0.0120	0.2000	0.5000	0.0000	0.00	No	1
10	201-202	140.00	68.15	0.00	67.10	0.50	1.05	0.7500	CIRCULAR	36.000	36.000	0.0120	0.2000	0.5000	0.0000	0.00	No	1
11	202-203	220.00	68.80	0.00	68.25	0.10	0.55	0.2500	CIRCULAR	36.000	36.000	0.0150	0.2000	0.6000	0.0000	0.00	No	1
12	202-900	140.00	70.25	0.00	69.90	1.75	0.35	0.2500	CIRCULAR	15.000	15.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
13	203-204	100.00	69.45	0.00	69.30	0.50	0.15	0.1500	CIRCULAR	30.000	30.000	0.0120	0.2000	0.5000	0.0000	0.00	No	1
14	204-205	80.00	69.67	0.00	69.55	0.10	0.12	0.1500	CIRCULAR	30.000	30.000	0.0120	0.2000	0.5000	0.0000	0.00	No	1
15	205-206	80.00	70.80	0.00	70.72	1.05	0.08	0.1000	CIRCULAR	18.000	18.000	0.0120	0.2000	0.5000	0.0000	0.00	No	1
16	205-300	80.00	69.96	0.00	69.84	0.17	0.12	0.1500	CIRCULAR	24.000	24.000	0.0150	0.2000	0.7000	0.0000	0.00	No	1
17	206-207	100.00	71.00	0.00	70.90	0.10	0.10	0.1000	CIRCULAR	18.000	18.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
18	300-301	180.00	70.47	0.00	70.29	0.33	0.18	0.1000	CIRCULAR	18.000	18.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
19	600-601	300.00	67.40	0.00	65.00	0.00	2.40	0.8000	CIRCULAR	48.000	48.000	0.0150	0.2000	0.5000	0.0000	0.00	No	1
20	601-1000	70.39	70.00	0.00	68.40	1.00	1.61	2.2800	CIRCULAR	36.000	36.000	0.0120	0.2000	0.5000	0.0000	0.00	No	2
21	601-602	113.00	68.06	0.00	67.90	0.50	0.17	0.1500	CIRCULAR	42.000	42.000	0.0120	0.2000	0.8000	0.0000	0.00	No	1
22	602-603	71.88	68.65	0.00	68.56	0.50	0.09	0.1300	CIRCULAR	36.000	36.000	0.0120	0.2000	0.9000	0.0000	0.00	No	1
23	602-800	145.00	70.18	0.00	69.81	1.75	0.36	0.2500	CIRCULAR	18.000	18.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
24	603-500	14.96	70.80	0.00	70.75	2.10	0.05	0.3300	CIRCULAR	12.000	12.000	0.0120	0.2000	0.8000	0.0000	0.00	No	1
25	603-604	152.44	69.40	0.00	69.15	0.50	0.25	0.1600	CIRCULAR	30.000	30.000	0.0120	0.2000	0.8000	0.0000	0.00	No	1
26	604-605	100.00	69.60	0.00	69.50	0.10	0.10	0.1000	CIRCULAR	30.000	30.000	0.0120	0.2000	0.5000	0.0000	0.00	No	1
27	604-700	120.00	70.65	1.25	70.95	0.00	-0.30	-0.2500	CIRCULAR	15.000	15.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
28	605-606	80.00	69.93	0.00	69.85	0.25	0.08	0.1000	CIRCULAR	24.000	24.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1
29	606-400	40.00	70.72	0.00	70.68	0.75	0.04	0.1000	CIRCULAR	15.000	15.000	0.0120	0.2000	0.9000	0.0000	0.00	No	1
30	606-607	160.00	70.34	0.00	70.18	0.25	0.16	0.1000	CIRCULAR	18.000	18.000	0.0120	0.2000	0.9000	0.0000	0.00	No	1
31	607-608	40.00	70.48	0.00	70.44	0.10	0.04	0.1000	CIRCULAR	18.000	18.000	0.0120	0.2000	0.8000	0.0000	0.00	No	1
32	800-801	54.00	70.56	0.00	70.43	0.25	0.13	0.2500	CIRCULAR	15.000	15.000	0.0120	0.2000	0.6000	0.0000	0.00	No	1

Pipe Results

SN	Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/ Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged (min)	Froude Number	Reported Condition
1	100	23.09	0 12:00	39.72	0.58	5.42	0.60	1.69	0.58	0.00		Calculated
2	100-101	19.65	0 12:00	22.22	0.88	5.17	0.39	1.78	0.72	0.00		Calculated
3	100-1400	1.87	0 12:00	3.50	0.53	3.06	0.33	0.62	0.50	0.00		Calculated
4	101-102	15.68	0 12:00	9.49	1.65	5.27	0.38	1.79	0.90	0.00		> CAPACITY
5	102-103	11.97	0 12:00	7.75	1.55	3.81	0.79	2.00	1.00	5.00		SURCHARGED
6	103-104	6.98	0 12:00	3.60	1.94	3.95	0.51	1.50	1.00	11.00		SURCHARGED
7	1100-1101	47.81	0 12:17	60.67	0.79	6.57	0.24	1.42	0.72	0.00		Calculated
8	1200-1201	12.99	0 12:13	10.42	1.25	7.50	0.17	1.42	0.95	0.00		> CAPACITY
9	200-201	47.37	0 12:00	108.99	0.43	10.93	0.24	1.77	0.50	0.00		Calculated
10	201-202	44.86	0 12:00	62.58	0.72	8.57	0.27	2.03	0.69	0.00		Calculated
11	202-203	30.99	0 12:00	28.90	1.07	5.00	0.73	2.42	0.82	0.00		> CAPACITY
12	202-900	8.40	0 12:00	3.50	2.40	6.97	0.33	1.19	0.95	0.00		> CAPACITY
13	203-204	25.11	0 12:00	17.21	1.46	5.23	0.32	2.35	0.95	0.00		> CAPACITY
14	204-205	20.17	0 12:00	17.21	1.17	4.11	0.32	2.50	1.00	2.00		SURCHARGED
15	205-206	7.66	0 12:00	3.60	2.13	4.34	0.31	1.50	1.00	4.00		SURCHARGED
16	205-300	10.61	0 12:00	7.59	1.40	3.38	0.39	2.00	1.00	9.00		SURCHARGED
17	206-207	5.81	0 12:00	3.60	1.62	3.29	0.51	1.50	1.00	7.00		SURCHARGED
18	300-301	4.46	0 12:00	3.60	1.24	2.52	1.19	1.50	1.00	11.00		SURCHARGED
19	600-601	110.31	0 12:06	111.23	0.99	12.46	0.40	2.72	0.68	0.00		Calculated
20	601-1000	80.43	0 12:14	218.22	0.37	9.93	0.12	2.28	0.76	0.00		Calculated
21	601-602	36.51	0 12:00	42.21	0.86	4.01	0.47	3.43	0.98	0.00		Calculated
22	602-603	26.14	0 12:00	25.57	1.02	3.76	0.32	2.99	1.00	0.00		> CAPACITY
23	602-800	7.57	0 12:00	5.69	1.33	4.31	0.56	1.50	1.00	7.00		SURCHARGED
24	603-500	4.97	0 12:00	2.23	2.23	6.42	0.04	1.00	1.00	5.00		SURCHARGED
25	603-604	21.40	0 11:59	17.91	1.19	4.36	0.58	2.50	1.00	6.00		SURCHARGED
26	604-605	15.37	0 11:59	14.05	1.09	3.13	0.53	2.50	1.00	7.00		SURCHARGED
27	604-700	5.98	0 12:00	3.50	1.71	4.87	0.41	1.25	1.00	8.00		SURCHARGED
28	605-606	15.34	0 11:59	7.75	1.98	4.88	0.27	2.00	1.00	10.00		SURCHARGED
29	606-400	3.95	0 12:00	2.21	1.79	3.22	0.21	1.25	1.00	12.00		SURCHARGED
30	606-607	6.37	0 12:05	3.60	1.77	3.60	0.74	1.50	1.00	15.00		SURCHARGED
31	607-608	4.39	0 12:15	3.60	1.22	2.50	0.27	1.50	1.00	18.00		SURCHARGED
32	800-801	3.20	0 12:00	3.50	0.91	2.60	0.35	1.25	1.00	8.00		SURCHARGED

Storage Nodes

Storage Node : P1

Input Data

Invert Elevation (ft)	65.00
Max (Rim) Elevation (ft)	71.00
Max (Rim) Offset (ft)	6.00
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-65.00
Ponded Area (ft²)	0.00
Evaporation Loss	0.00

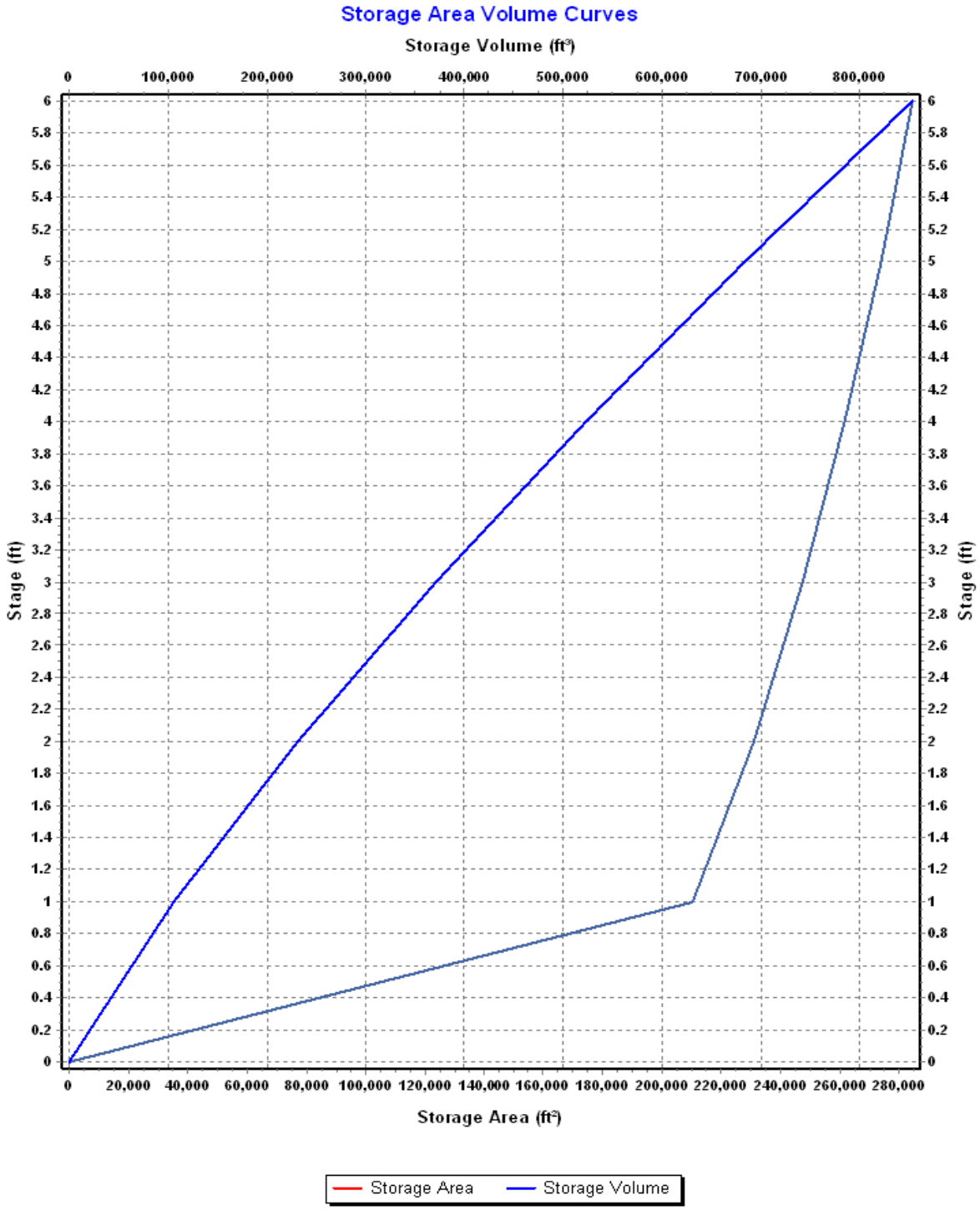
Infiltration/Exfiltration

Exfiltration Rate (in/hr)	5.5100

Storage Area Volume Curves

Storage Curve : NEW TIC/KIEWIT POND

Stage (ft)	Storage Area (ft²)	Storage Volume (ft³)
0	0	0
1	210268.00	105134
2	230622.00	230622
3	247171.33	370757
4	261392.50	522785
5	273778.00	684445
6	284363.33	853090


Storage Area Volume Curves
Storage Volume (ft³)
0
100,000
200,000
300,000
400,000
500,000
600,000
700,000
800,000
Stage (ft)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
3.2
3.4
3.6
3.8
4
4.2
4.4
4.6
4.8
5
5.2
5.4
5.6
5.8
6
0
20,000
40,000
60,000
80,000
100,000
120,000
140,000
160,000
180,000
200,000
220,000
240,000
260,000
280,000
Storage Area (ft²)
Storage Area
Storage Volume

Storage Node : P1 (continued)

Outflow Weirs

SN	Element ID	Weir Type	Flap Gate	Crest Elevation (ft)	Crest Offset (ft)	Length (ft)	Weir Total Height (ft)	Discharge Coefficient
1	EMERGENCY-DISCHARGE-RISER	Side Flow	No	69.00	4.00	9.45	2.00	0.61
2	EMERGENCY-OVERFLOW-SPILLWAY	Trapezoidal	No	70.00	5.00	10.00	1.00	3.33

Output Summary Results

Peak Inflow (cfs)	283.88
Peak Lateral Inflow (cfs)	109.07
Peak Outflow (cfs)	1.05
Peak Exfiltration Flow Rate (cfm)	1836.40
Max HGL Elevation Attained (ft)	67.56
Max HGL Depth Attained (ft)	2.56
Average HGL Elevation Attained (ft)	65.81
Average HGL Depth Attained (ft)	0.81
Time of Max HGL Occurrence (days hh:mm)	0 13:18
Total Exfiltration Volume (1000-ft³)	1028.629
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00

Storage Node : SB1-DITCH

Input Data

Invert Elevation (ft)	73.00
Max (Rim) Elevation (ft)	77.50
Max (Rim) Offset (ft)	4.50
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-73.00
Ponded Area (ft²)	0.00
Evaporation Loss	0.00

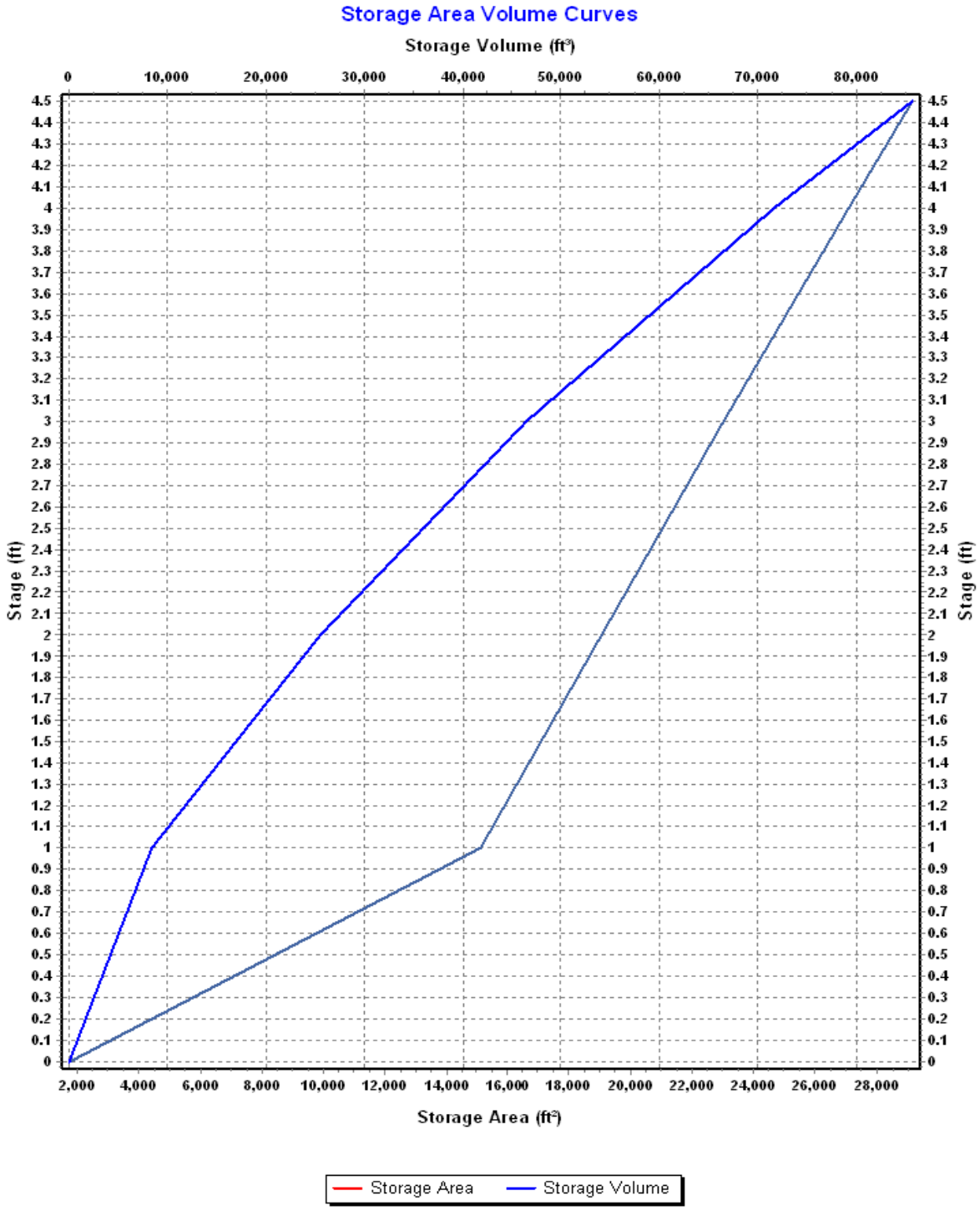
Infiltration/Exfiltration

Exfiltration Rate (in/hr)	5.5100

Storage Area Volume Curves

Storage Curve : SB-1_DITCH_PERM

Stage (ft)	Storage Area (ft²)	Storage Volume (ft³)
0	1729.969	0.000
1	15098.368	8414.17
2	19036.497	25481.60
3	23039.023	46519.36
4	27105.946	71591.84
4.5	29163.557	85659.22


Storage Area Volume Curves
Storage Volume (ft³)
0
10,000
20,000
30,000
40,000
50,000
60,000
70,000
80,000
Stage (ft)
Stage (ft)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
1.9
2
2.1
2.2
2.3
2.4
2.5
2.6
2.7
2.8
2.9
3
3.1
3.2
3.3
3.4
3.5
3.6
3.7
3.8
3.9
4
4.1
4.2
4.3
4.4
4.5
2,000
4,000
6,000
8,000
10,000
12,000
14,000
16,000
18,000
20,000
22,000
24,000
26,000
28,000
Storage Area (ft²)
Storage Area
Storage Volume

Storage Node : SB1-DITCH (continued)

Output Summary Results

Peak Inflow (cfs)	68.12
Peak Lateral Inflow (cfs)	68.12
Peak Outflow (cfs)	47.81
Peak Exfiltration Flow Rate (cfm)	162.58
Max HGL Elevation Attained (ft)	75.55
Max HGL Depth Attained (ft)	2.55
Average HGL Elevation Attained (ft)	73.56
Average HGL Depth Attained (ft)	0.56
Time of Max HGL Occurrence (days hh:mm)	0 12:16
Total Exfiltration Volume (1000-ft³)	93.901
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00

Storage Node : SB2-DITCH

Input Data

Invert Elevation (ft)	70.00
Max (Rim) Elevation (ft)	73.00
Max (Rim) Offset (ft)	3.00
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-70.00
Ponded Area (ft²)	0.00
Evaporation Loss	0.00

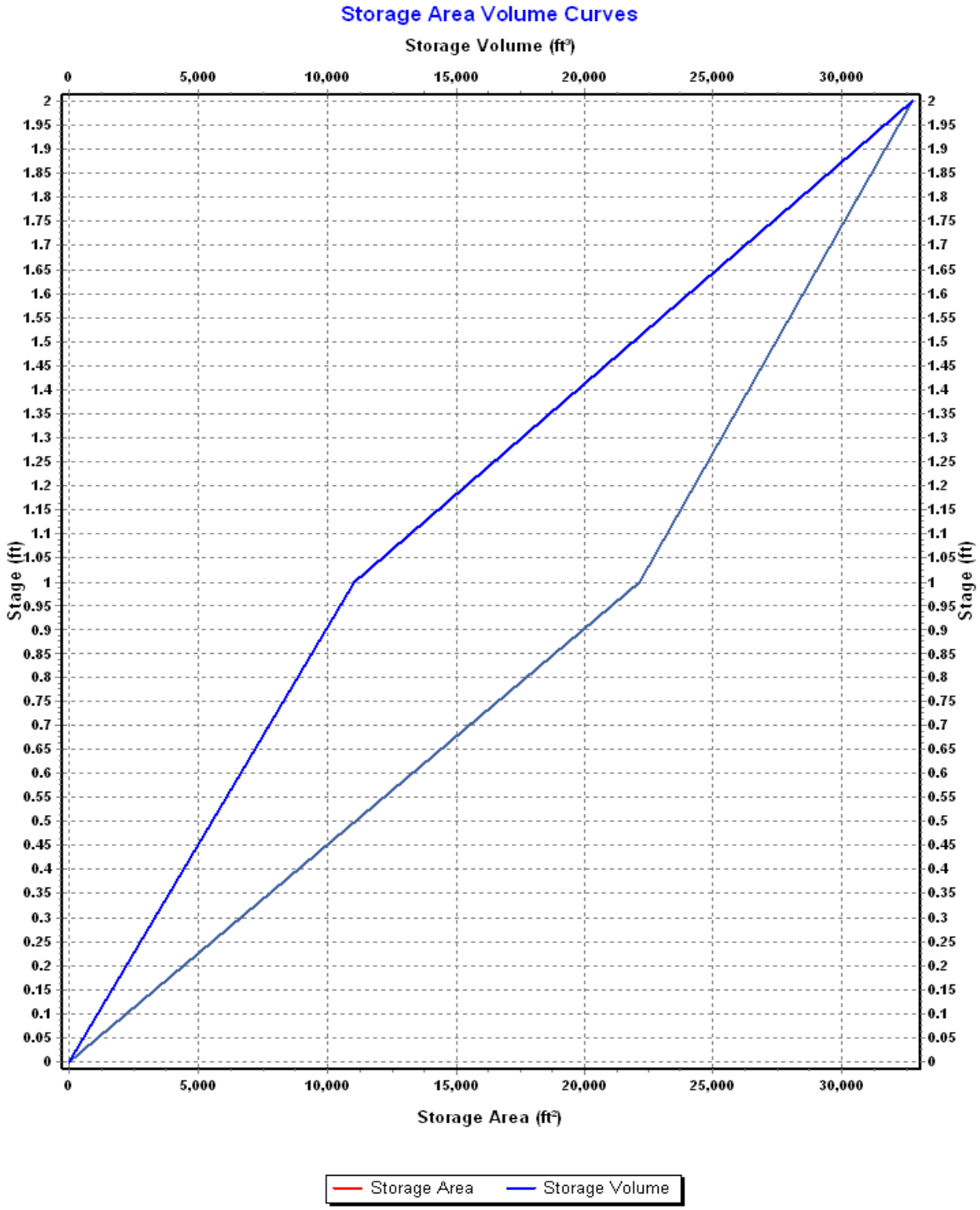
Infiltration/Exfiltration

Exfiltration Rate (in/hr)	5.5100

Storage Area Volume Curves

Storage Curve : SB-2-DITCH_BV

Stage (ft)	Storage Area (ft²)	Storage Volume (ft³)
0	0	0
1	22128.00	11064
2	32726.00	32726


Storage Area Volume Curves
Storage Volume (ft³)
0
5,000
10,000
15,000
20,000
25,000
30,000
Stage (ft)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
0.7
0.75
0.8
0.85
0.9
0.95
1
1.05
1.1
1.15
1.2
1.25
1.3
1.35
1.4
1.45
1.5
1.55
1.6
1.65
1.7
1.75
1.8
1.85
1.9
1.95
2
Storage Area (ft²)
Storage Area
Storage Volume

Storage Node : SB2-DITCH (continued)

Output Summary Results

Peak Inflow (cfs)	100.29
Peak Lateral Inflow (cfs)	82.54
Peak Outflow (cfs)	80.43
Peak Exfiltration Flow Rate (cfm)	234.84
Max HGL Elevation Attained (ft)	71.81
Max HGL Depth Attained (ft)	1.81
Average HGL Elevation Attained (ft)	70.36
Average HGL Depth Attained (ft)	0.36
Time of Max HGL Occurrence (days hh:mm)	0 12:12
Total Exfiltration Volume (1000-ft³)	56.646
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00

Storage Node : SWYD

Input Data

Invert Elevation (ft)	74.00
Max (Rim) Elevation (ft)	78.00
Max (Rim) Offset (ft)	4.00
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-74.00
Ponded Area (ft²)	0.00
Evaporation Loss	0.00

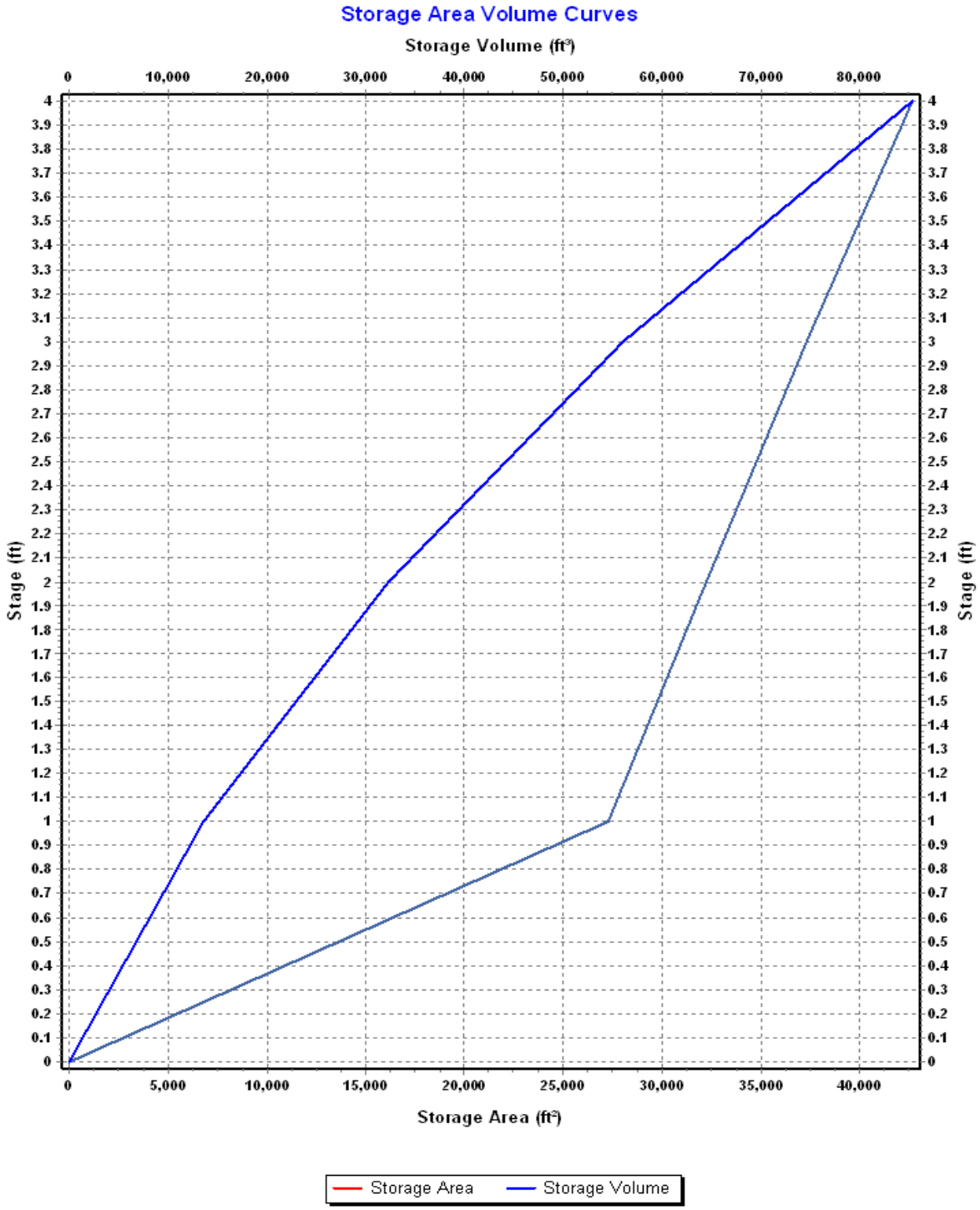
Infiltration/Exfiltration

Exfiltration Rate (in/hr)	5.5100

Storage Area Volume Curves

Storage Curve : SWYD-BV

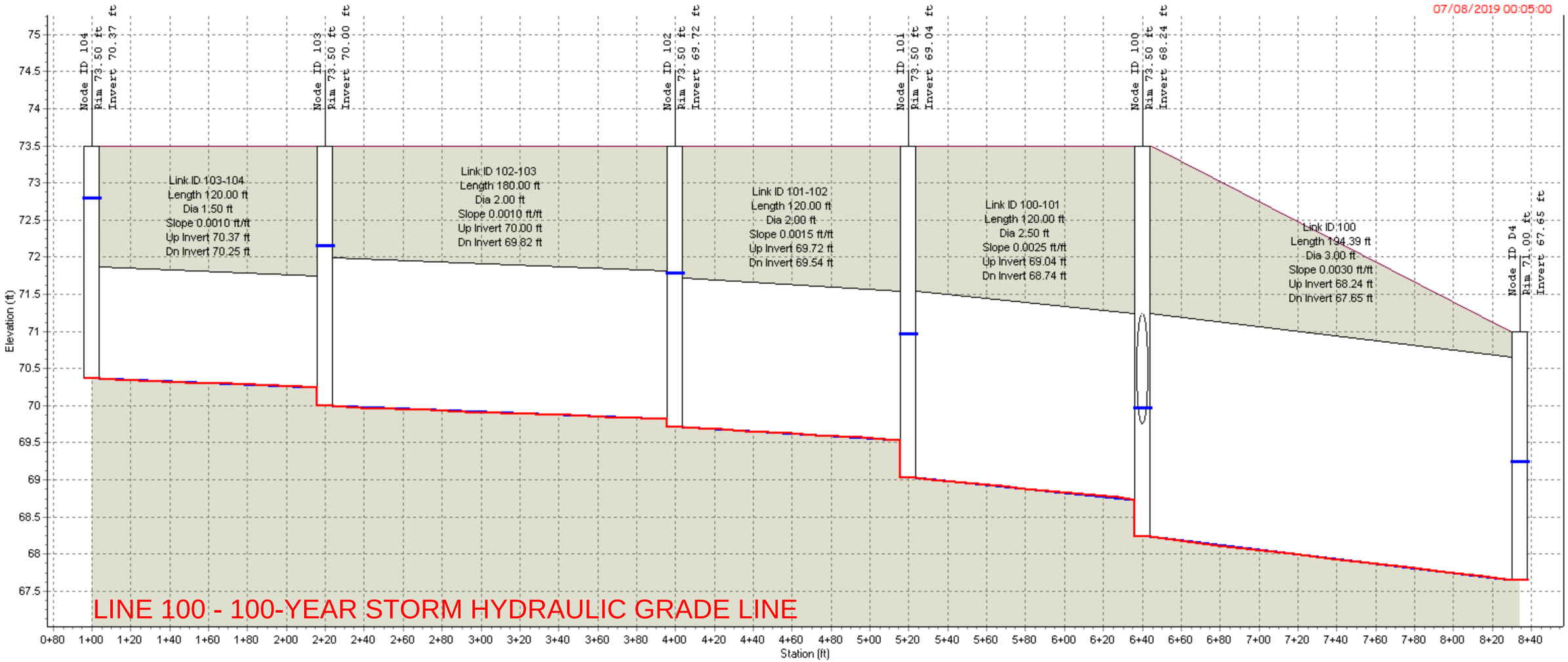
Stage (ft)	Storage Area (ft²)	Storage Volume (ft³)
0	0	0
1	27244.00	13622
2	32220.00	32220
3	37327.33	55991
4	42652.50	85305


Storage Area Volume Curves
Storage Volume (ft³)
0
10,000
20,000
30,000
40,000
50,000
60,000
70,000
80,000
Stage (ft)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
1.9
2
2.1
2.2
2.3
2.4
2.5
2.6
2.7
2.8
2.9
3
3.1
3.2
3.3
3.4
3.5
3.6
3.7
3.8
3.9
4
Storage Area (ft²)
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
Storage Area
Storage Volume

Storage Node : SWYD (continued)

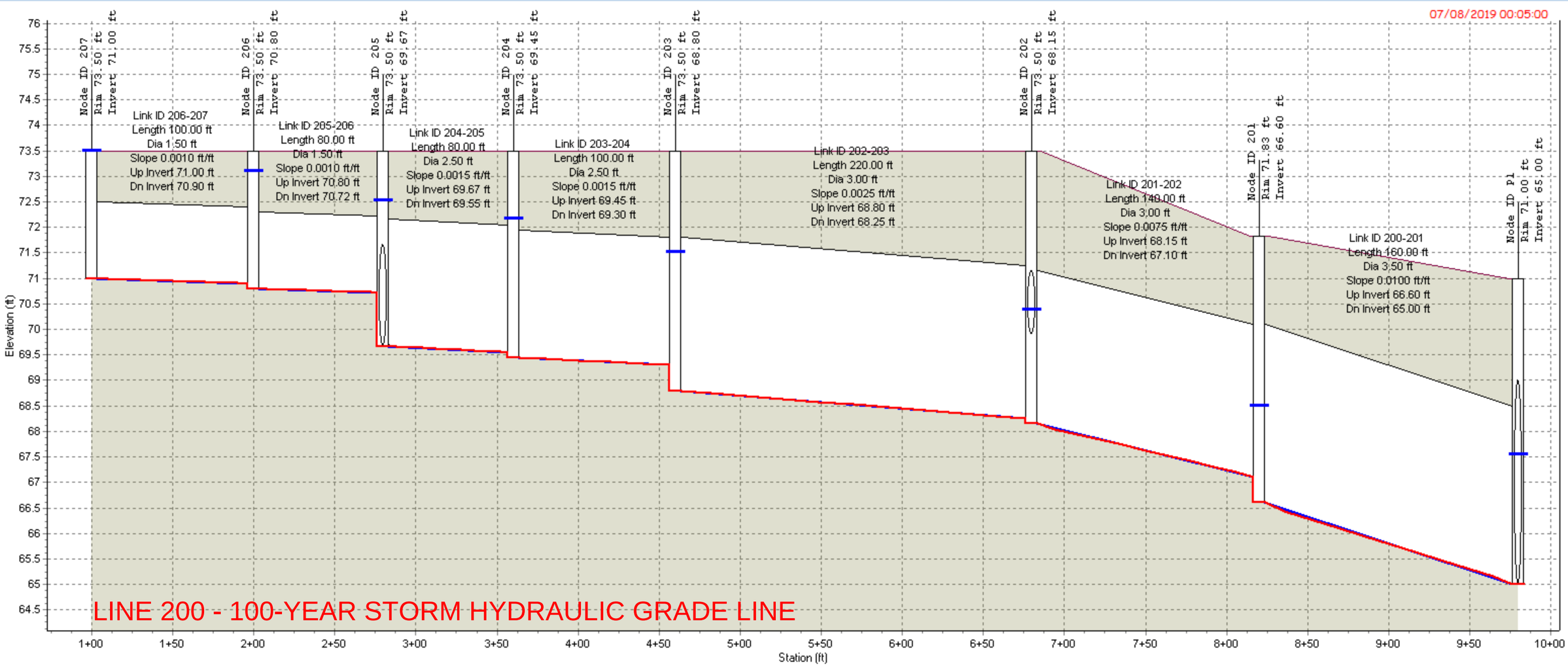
Output Summary Results

Peak Inflow (cfs)	72.01
Peak Lateral Inflow (cfs)	72.01
Peak Outflow (cfs)	12.99
Peak Exfiltration Flow Rate (cfm)	265.61
Max HGL Elevation Attained (ft)	76.48
Max HGL Depth Attained (ft)	2.48
Average HGL Elevation Attained (ft)	74.51
Average HGL Depth Attained (ft)	0.51
Time of Max HGL Occurrence (days hh:mm)	0 12:13
Total Exfiltration Volume (1000-ft³)	83.463
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00



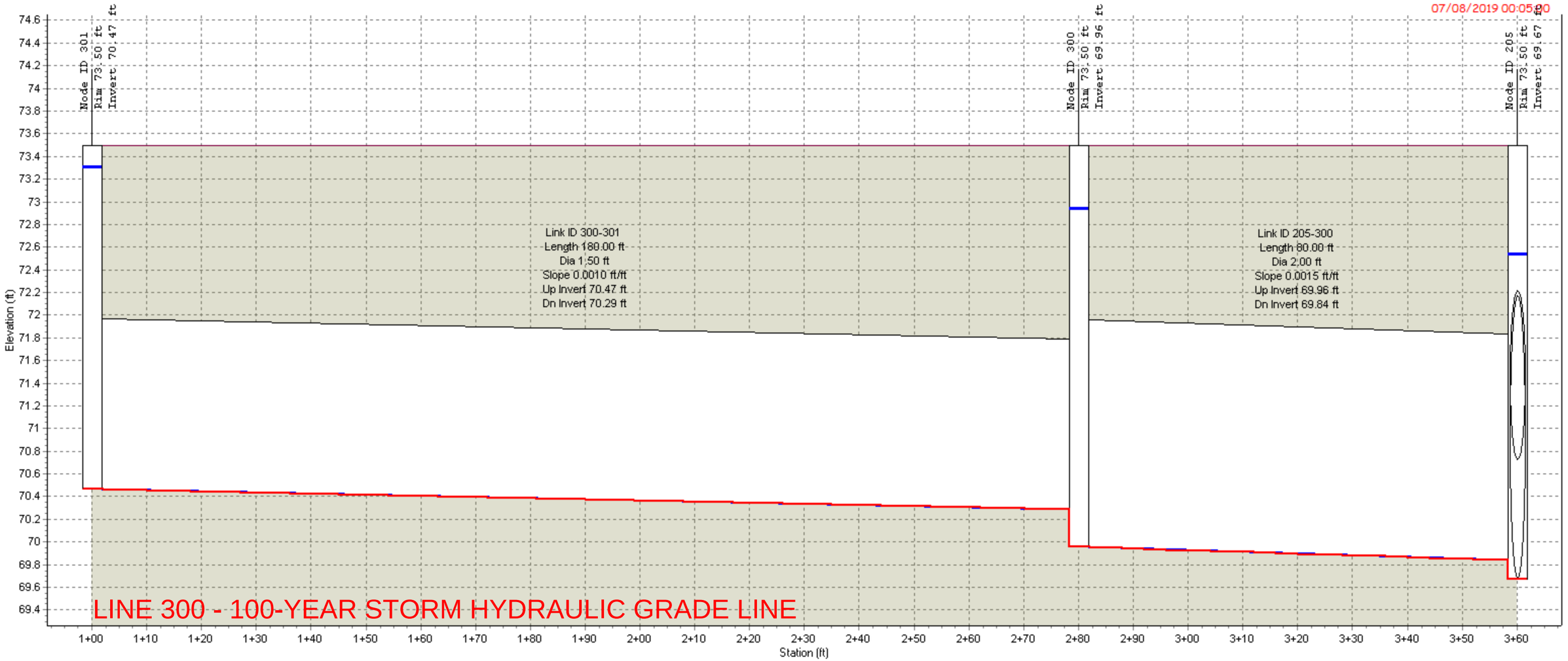
Node ID:	104	103	102	101	100	D4
Rim (ft):	73.50	73.50	73.50	73.50	73.50	71.00
Invert (ft):	70.37	70.00	69.72	69.04	68.24	67.65
Min Pipe Cover (ft):	1.63	1.51	1.69	1.97	2.26	0.00
Max HGL (ft):	73.09	72.42	71.80	71.01	70.01	69.26

Link ID:	103-104	102-103	101-102	100-101	100
Length (ft):	120.00	180.00	120.00	120.00	194.39
Dia (ft):	1.50	2.00	2.00	2.50	3.00
Slope (ft/ft):	0.0010	0.0010	0.0015	0.0025	0.0030
Up Invert (ft):	70.37	70.00	69.72	69.04	68.24
Dn Invert (ft):	70.25	69.82	69.54	68.74	67.65
Max Q (cfs):	6.98	10.23	13.80	17.87	21.32
Max Vel (ft/s):	3.95	3.26	4.79	5.02	5.24
Max Depth (ft):	1.50	1.99	1.71	1.66	1.67



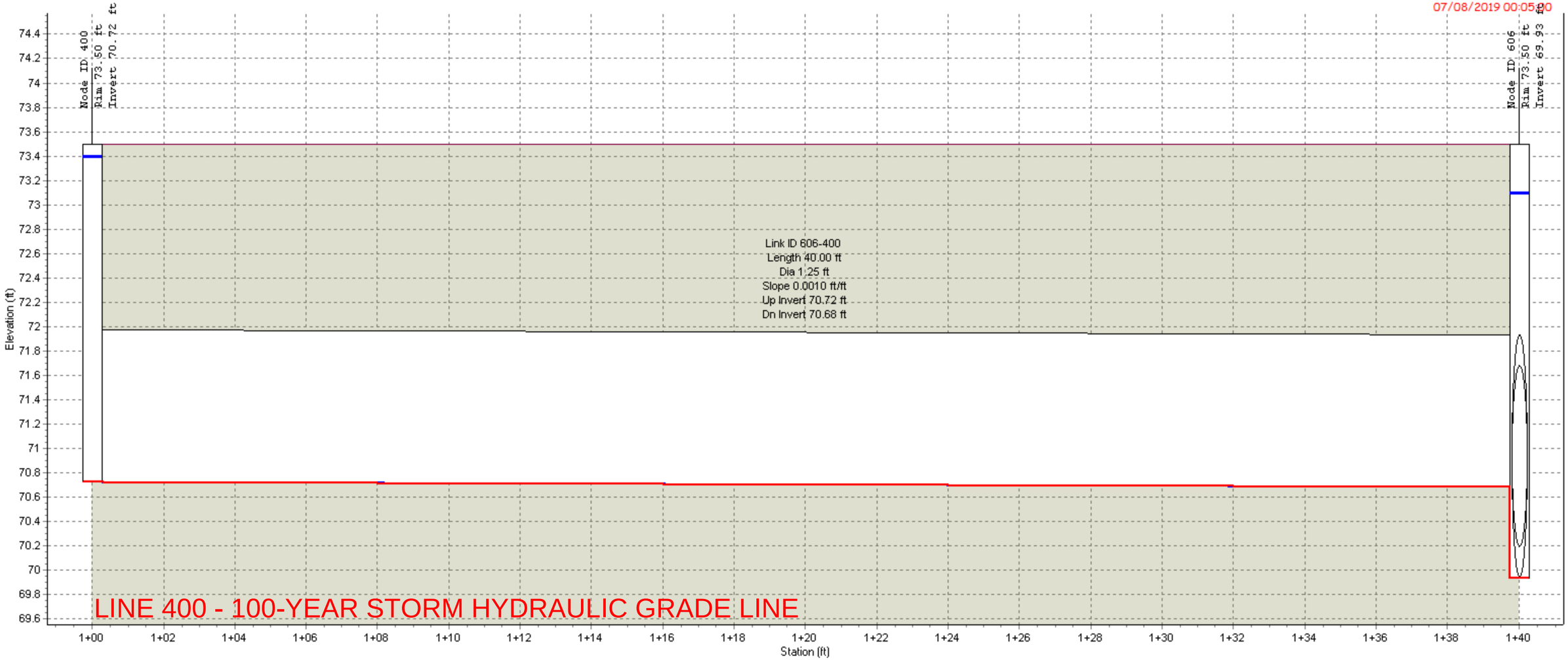
Node ID:	207	206	205	204	203	202	201	P1
Rim (ft):	73.50	73.50	73.50	73.50	73.50	73.50	71.83	71.00
Invert (ft):	71.00	70.80	69.67	69.45	68.80	68.15	66.60	65.00
Min Pipe Cover (ft):	1.00	1.10	1.28	1.45	1.70	2.25	1.73	
Max HGL (ft):	73.53	73.12	72.54	72.18	71.54	70.44	68.56	67.56

Link ID:	206-207	205-206	204-205	203-204	202-203	201-202	200-201
Length (ft):	100.00	80.00	80.00	100.00	220.00	140.00	160.00
Dia (ft):	1.50	1.50	2.50	2.50	3.00	3.00	3.50
Slope (ft/ft):	0.0010	0.0010	0.0015	0.0015	0.0025	0.0075	0.0100
Up Invert (ft):	71.00	70.80	69.67	69.45	68.80	68.15	66.60
Dn Invert (ft):	70.90	70.72	69.55	69.30	68.25	67.10	65.00
Max Q (cfs):	5.81	7.66	20.20	25.11	30.97	44.85	47.36
Max Vel (ft/s):	3.29	4.33	4.12	5.23	5.00	8.57	10.94
Max Depth (ft):	1.50	1.50	2.50	2.35	2.42	2.03	1.77



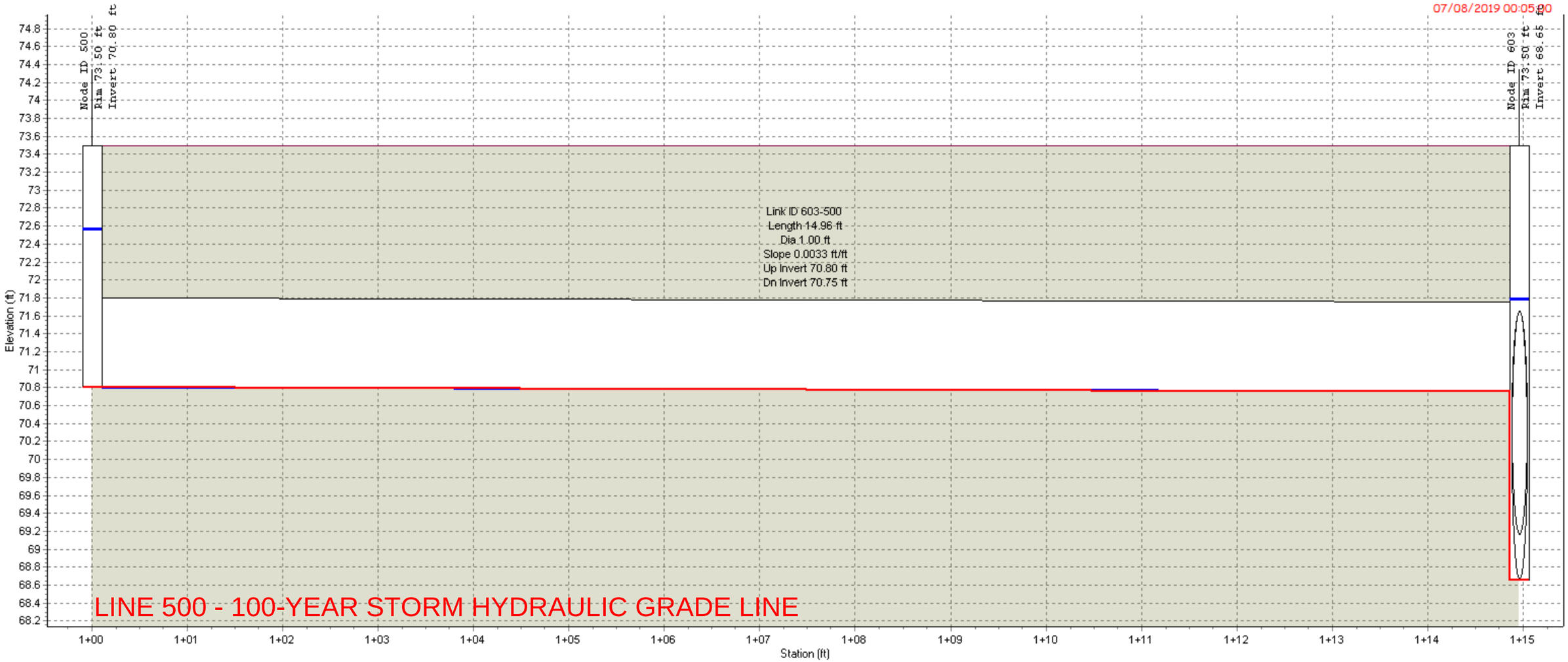
Node ID:	301	300	205
Rim (ft):	73.50	73.50	73.50
Invert (ft):	70.47	69.96	69.67
Min Pipe Cover (ft):	1.53	1.54	1.28
Max HGL (ft):	73.32	72.95	72.55

Link ID:	300-301	205-300
Length (ft):	180.00	80.00
Dia (ft):	1.50	2.00
Slope (ft/ft):	0.0010	0.0015
Up Invert (ft):	70.47	69.96
Dn Invert (ft):	70.29	69.84
Max Q (cfs):	4.46	10.61
Max Vel (ft/s):	2.52	3.38
Max Depth (ft):	1.50	2.00



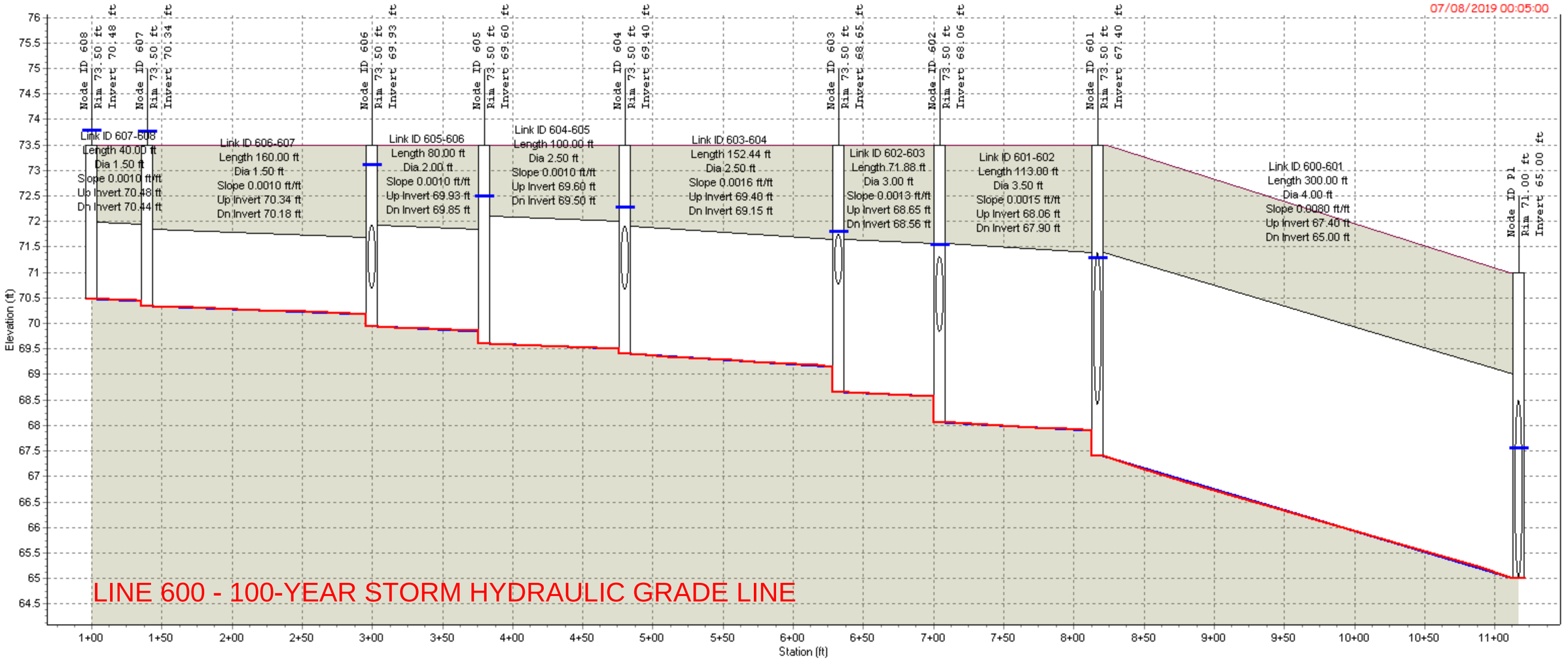
Node ID:	400		606
Rim (ft):	73.50		73.50
Invert (ft):	70.72		69.93
Min Pipe Cover (ft):	1.53		1.57
Max HGL (ft):	73.64		73.31

Link ID:	606-400
Length (ft):	40.00
Dia (ft):	1.25
Slope (ft/ft):	0.0010
Up Invert (ft):	70.72
Dn Invert (ft):	70.68
Max Q (cfs):	3.96
Max Vel (ft/s):	3.22
Max Depth (ft):	1.25



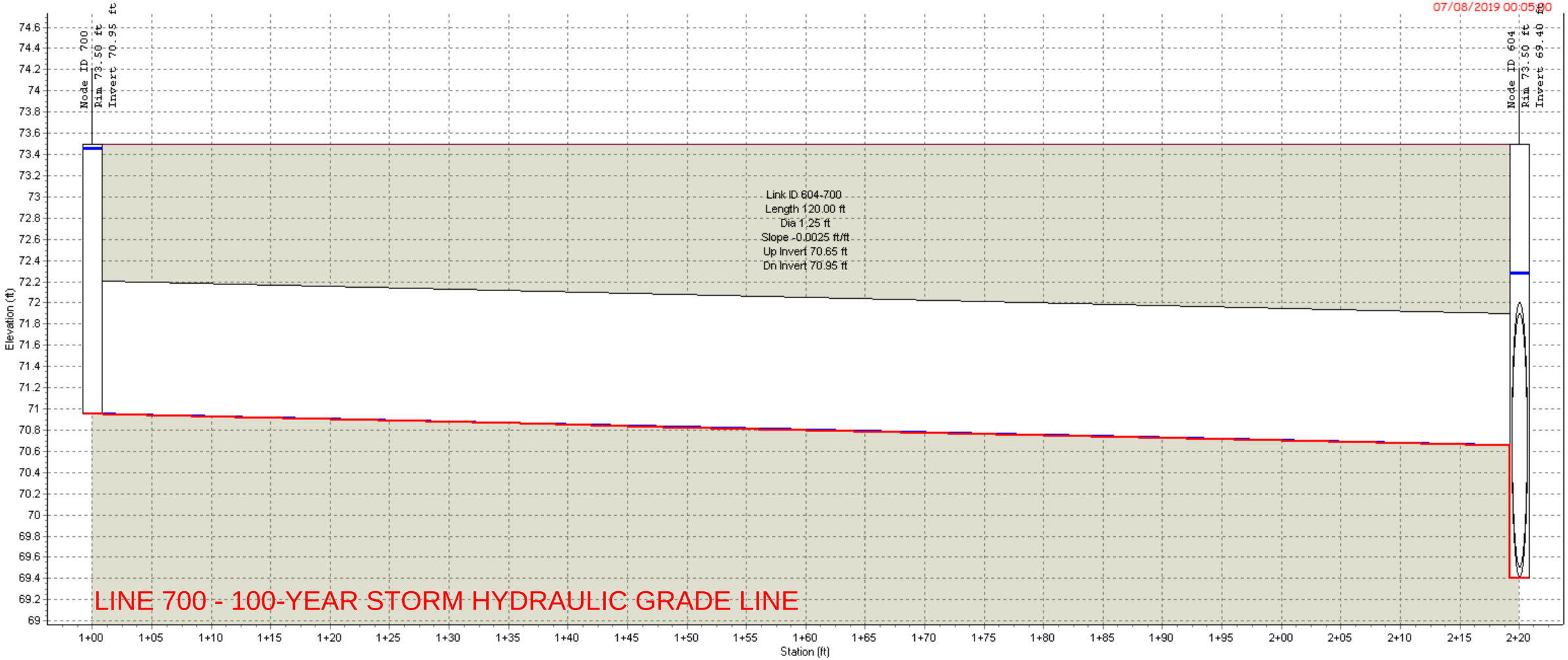
Node ID:	500		603
Rim (ft):	73.50		73.50
Invert (ft):	70.80		68.65
Min Pipe Cover (ft):	1.70		1.75
Max HGL (ft):	72.62		71.84

Link ID:	603-500
Length (ft):	14.96
Dia (ft):	1.00
Slope (ft/ft):	0.0033
Up Invert (ft):	70.80
Dn Invert (ft):	70.75
Max Q (cfs):	4.97
Max Vel (ft/s):	6.42
Max Depth (ft):	1.00



Node ID:	608	607	606	605	604	603	602	601	P1
Rim (ft):	73.50	73.50	73.50	73.50	73.50	73.50	73.50	73.50	71.00
Invert (ft):	70.48	70.34	69.93	69.60	69.40	68.65	68.06	67.40	65.00
Min Pipe Cover (ft):	1.52	1.56	1.57	1.40	1.50	1.75	1.94	2.11	
Max HGL (ft):	74.00	74.00	73.31	72.66	72.42	71.84	71.54	71.29	67.56

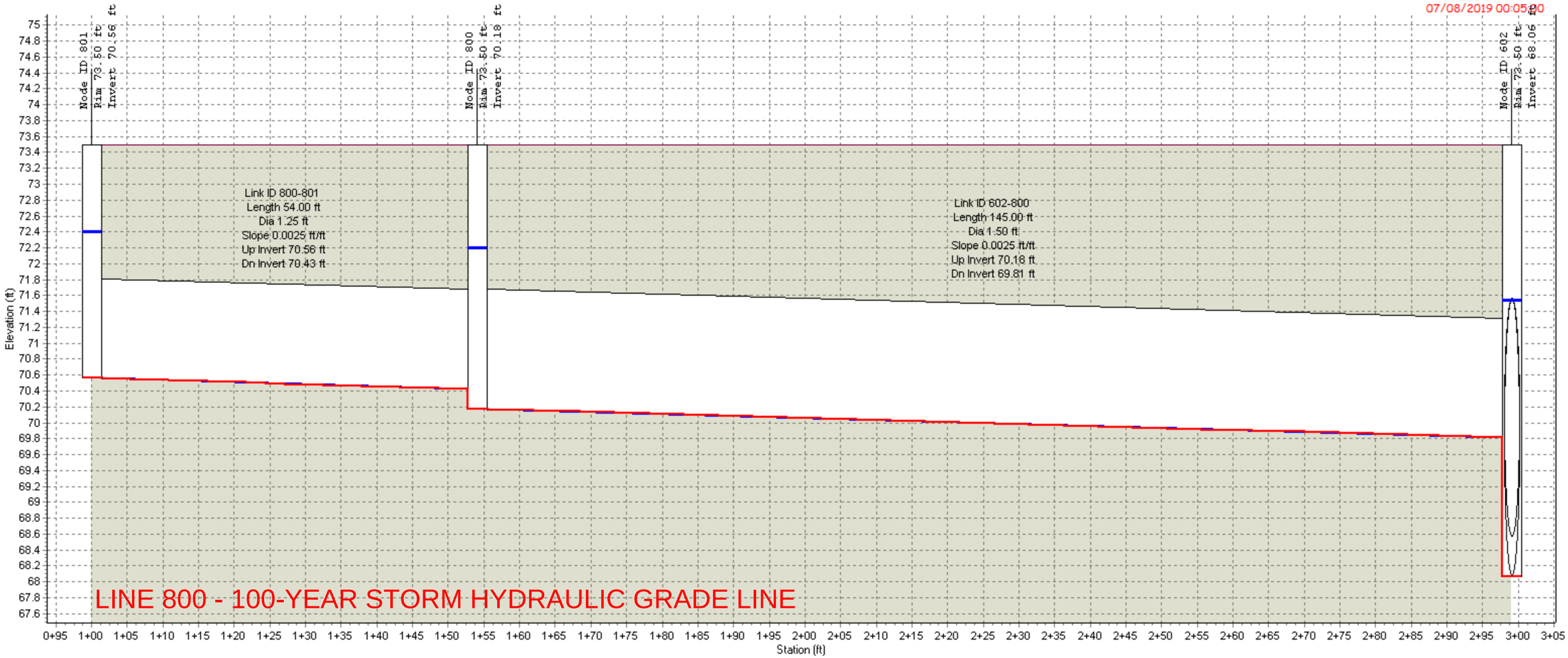
Link ID:	607-608	606-607	605-606	604-605	603-604	602-603	601-602	600-601
Length (ft):	40.00	160.00	80.00	100.00	152.44	71.88	113.00	300.00
Dia (ft):	1.50	1.50	2.00	2.50	2.50	3.00	3.50	4.00
Slope (ft/ft):	0.0010	0.0010	0.0010	0.0010	0.0016	0.0013	0.0015	0.0080
Up Invert (ft):	70.48	70.34	69.93	69.60	69.40	68.65	68.06	67.40
Dn Invert (ft):	70.44	70.18	69.85	69.50	69.15	68.56	67.90	65.00
Max Q (cfs):	4.39	6.37	15.34	15.36	21.37	26.15	36.50	110.29
Max Vel (ft/s):	2.50	3.60	4.88	3.13	4.36	3.76	4.01	12.46
Max Depth (ft):	1.50	1.50	2.00	2.50	2.50	2.99	3.43	2.72



LINE 700 - 100-YEAR STORM HYDRAULIC GRADE LINE

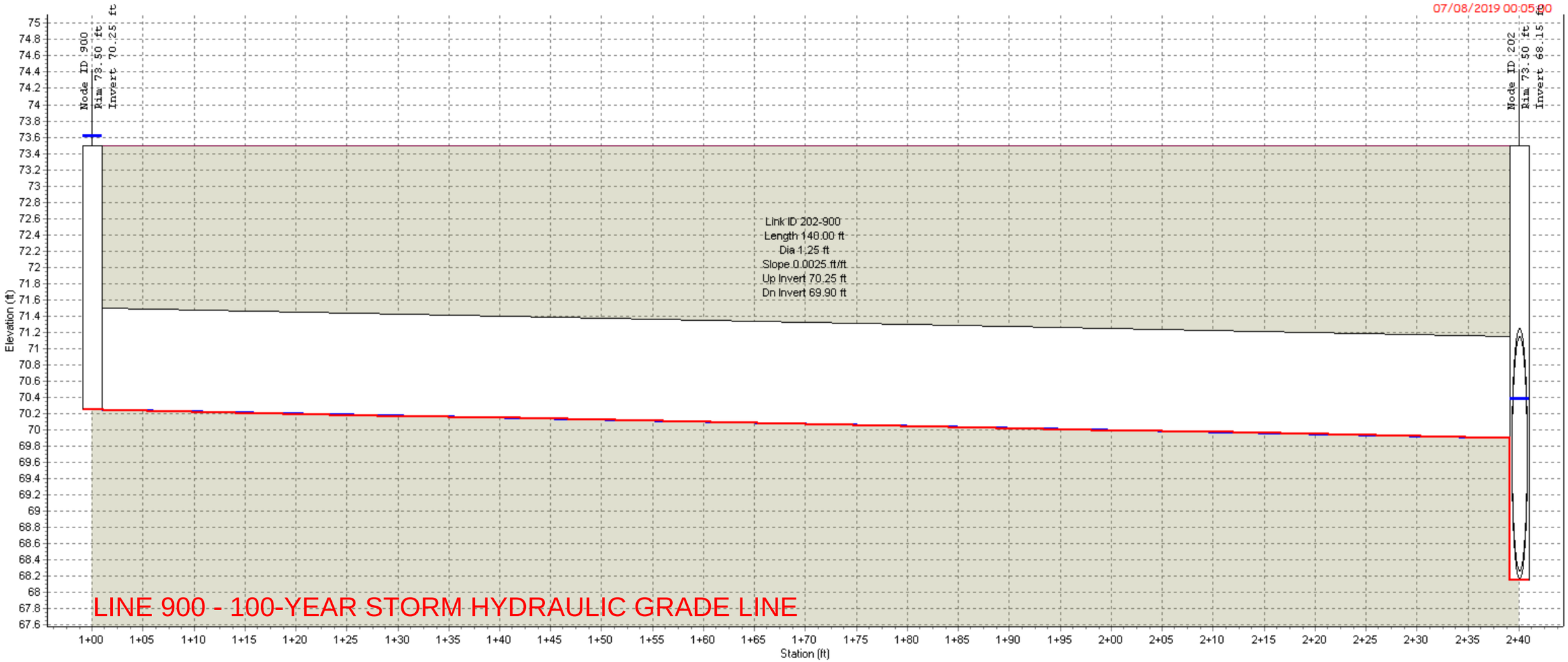
Node ID:	700		604
Rim (ft):	73.50		73.50
Invert (ft):	70.95		69.40
Min Pipe Cover (ft):	1.30		1.50
Max HGL (ft):	73.52		72.42

Link ID:	604-700
Length (ft):	120.00
Dia (ft):	1.25
Slope (ft/ft):	-0.0025
Up Invert (ft):	70.65
Dn Invert (ft):	70.95
Max Q (cfs):	5.98
Max Vel (ft/s):	4.87
Max Depth (ft):	1.25

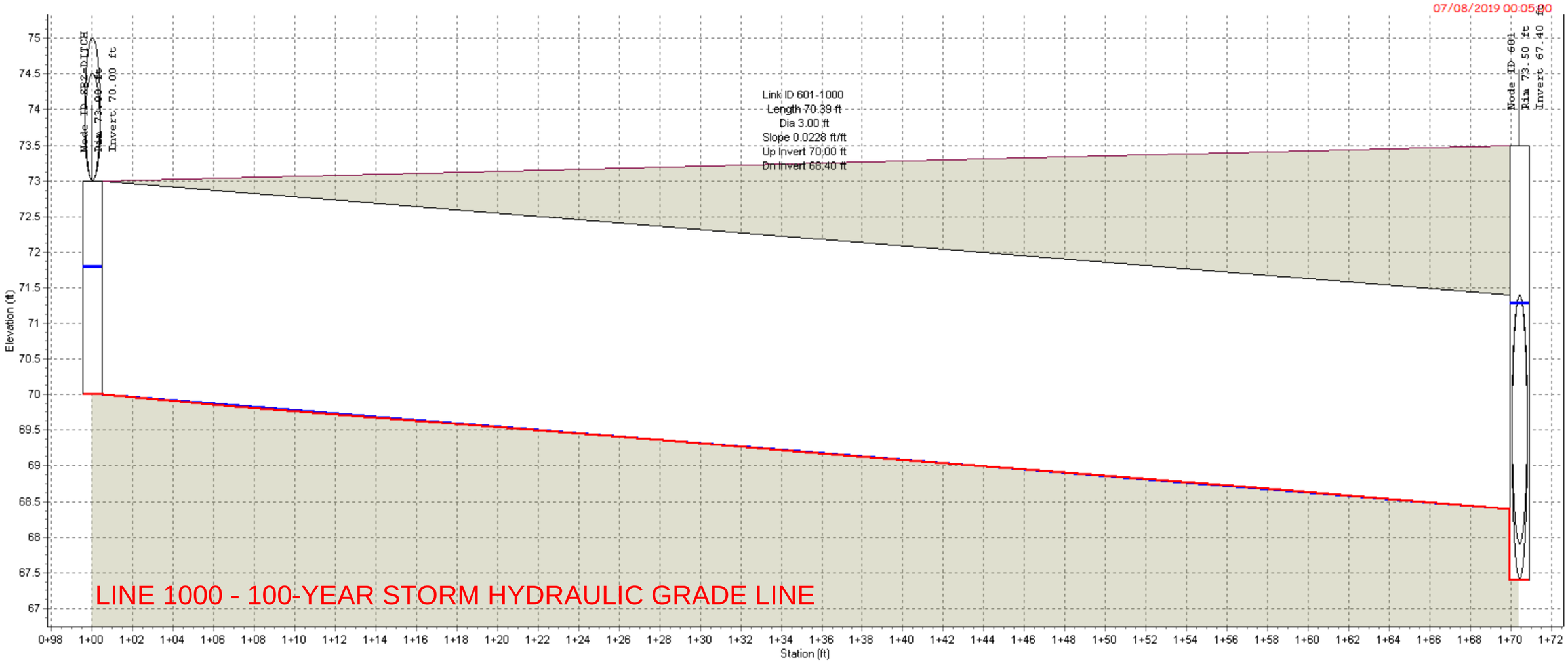


Node ID:	801	800	602
Rim (ft):	73.50	73.50	73.50
Invert (ft):	70.56	70.18	68.06
Min Pipe Cover (ft):	1.69	1.82	1.94
Max HGL (ft):	72.49	72.31	71.54

Link ID:	800-801	602-800
Length (ft):	54.00	145.00
Dia (ft):	1.25	1.50
Slope (ft/ft):	0.0025	0.0025
Up Invert (ft):	70.56	70.18
Dn Invert (ft):	70.43	69.81
Max Q (cfs):	3.20	7.57
Max Vel (ft/s):	2.60	4.30
Max Depth (ft):	1.25	1.50

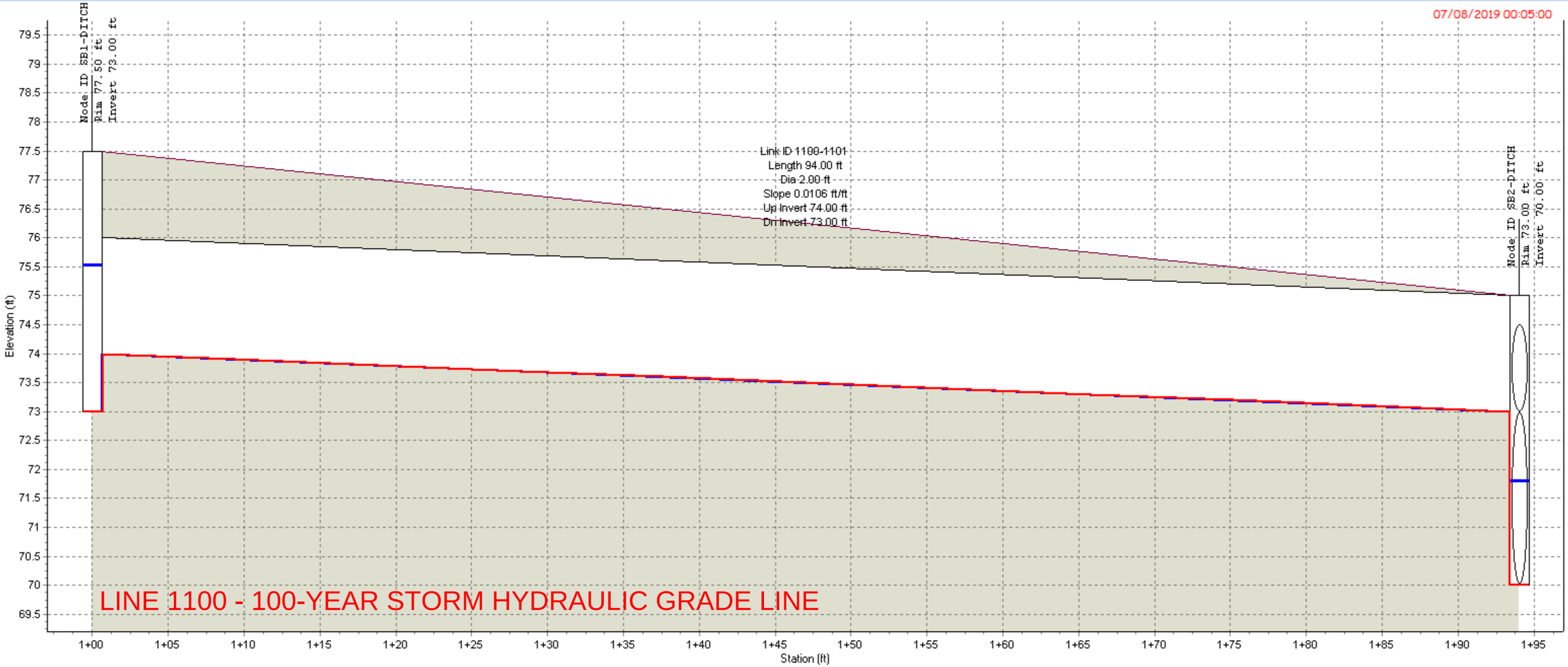


Node ID:	900		202
Rim (ft):	73.50		73.50
Invert (ft):	70.25		68.15
Min Pipe Cover (ft):	2.00		2.25
Max HGL (ft):	73.64		70.44
Link ID:		202-900	
Length (ft):		140.00	
Dia (ft):		1.25	
Slope (ft/ft):		0.0025	
Up Invert (ft):		70.25	
Dn Invert (ft):		69.90	
Max Q (cfs):		8.40	
Max Vel (ft/s):		6.97	
Max Depth (ft):		1.19	



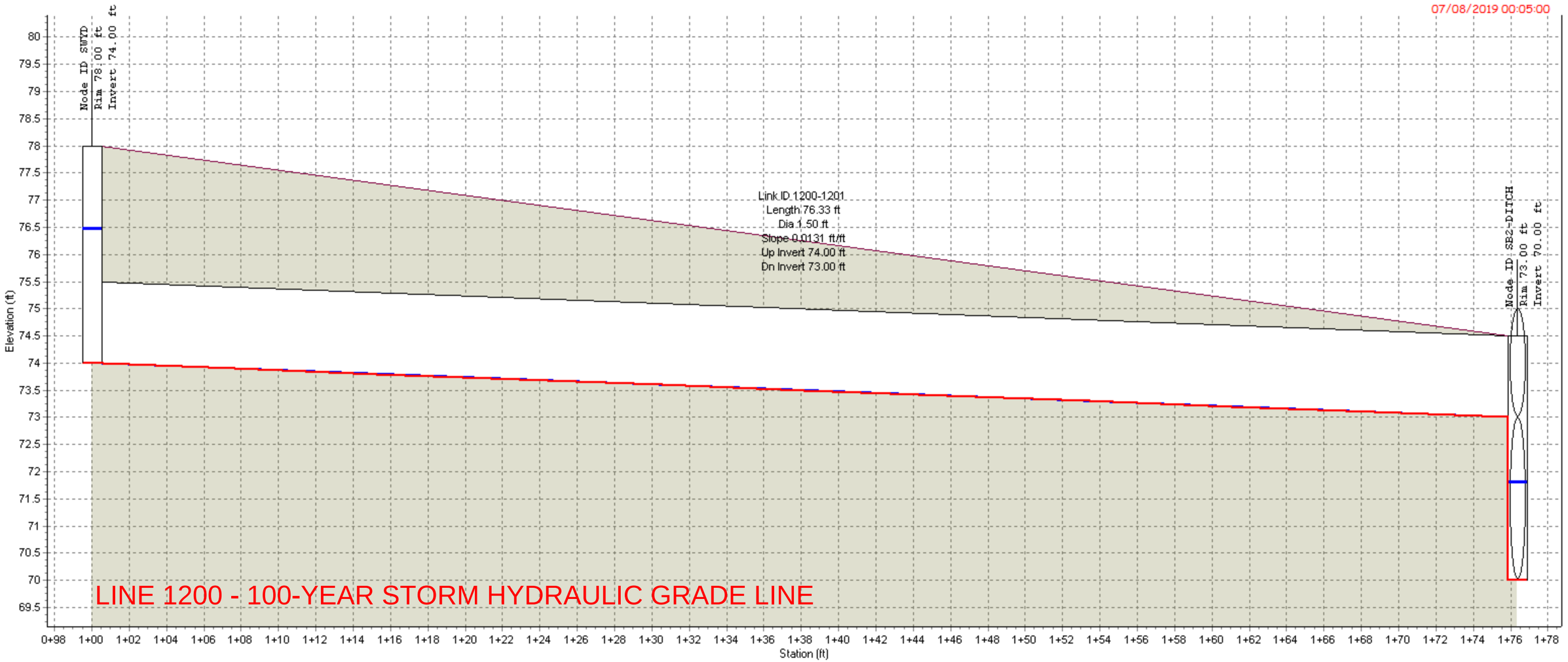
Node ID:	SB2-DITCH		601
Rim (ft):	73.00		73.50
Invert (ft):	70.00		67.40
Min Pipe Cover (ft):			2.11
Max HGL (ft):	71.81		71.29

Link ID:	601-1000
Length (ft):	70.39
Dia (ft):	3.00
Slope (ft/ft):	0.0228
Up Invert (ft):	70.00
Dn Invert (ft):	68.40
Max Q (cfs):	80.43
Max Vel (ft/s):	9.92
Max Depth (ft):	2.28



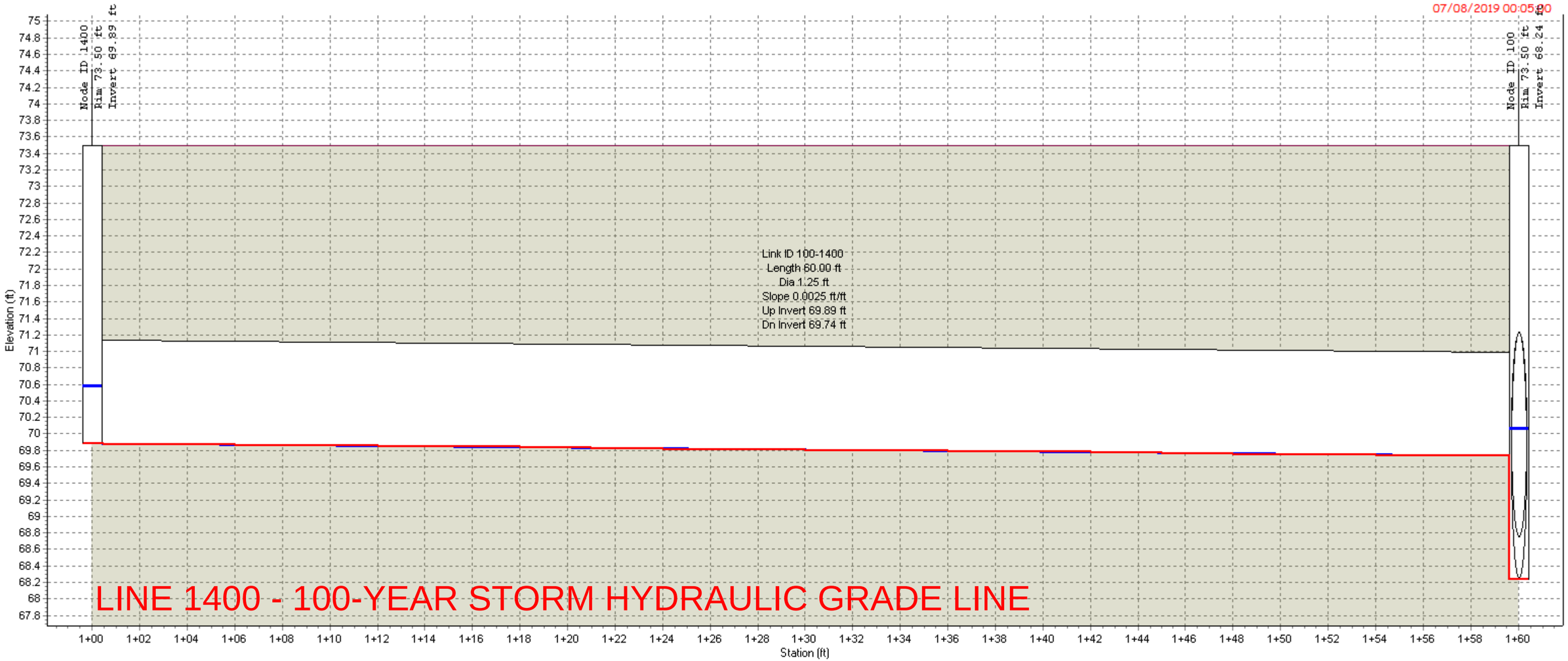
Node ID:	SB1-DITCH	SB2-DITCH
Rim (ft):	77.50	73.00
Invert (ft):	73.00	70.00
Min Pipe Cover (ft):		
Max HGL (ft):	75.55	71.81

Link ID:	1100-1101
Length (ft):	94.00
Dia (ft):	2.00
Slope (ft/ft):	0.0106
Up Invert (ft):	74.00
Dn Invert (ft):	73.00
Max Q (cfs):	47.81
Max Vel (ft/s):	6.57
Max Depth (ft):	1.42



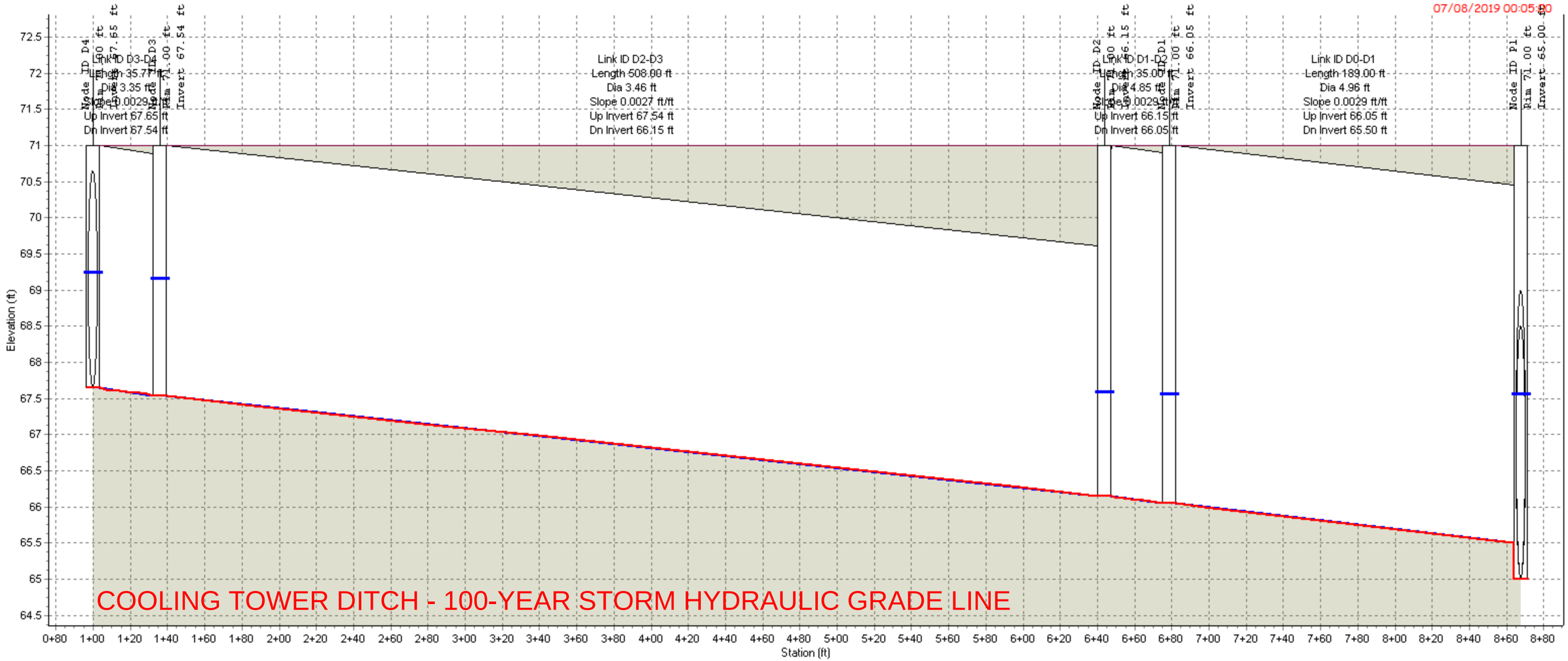
Node ID:	SWYD		SB2-DITCH
Rim (ft):	78.00		73.00
Invert (ft):	74.00		70.00
Min Pipe Cover (ft):			
Max HGL (ft):	76.48		71.81

Link ID:	1200-1201
Length (ft):	76.33
Dia (ft):	1.50
Slope (ft/ft):	0.0131
Up Invert (ft):	74.00
Dn Invert (ft):	73.00
Max Q (cfs):	12.99
Max Vel (ft/s):	7.50
Max Depth (ft):	1.42



Node ID:	1400		100
Rim (ft):	73.50		73.50
Invert (ft):	69.89		68.24
Min Pipe Cover (ft):	2.37		2.26
Max HGL (ft):	70.59		70.10

Link ID:	100-1400
Length (ft):	60.00
Dia (ft):	1.25
Slope (ft/ft):	0.0025
Up Invert (ft):	69.89
Dn Invert (ft):	69.74
Max Q (cfs):	1.87
Max Vel (ft/s):	3.06
Max Depth (ft):	0.62



Node ID:	D4	D3	D2	D1	P1
Rim (ft):	71.00	71.00	71.00	71.00	71.00
Invert (ft):	67.65	67.54	66.15	66.05	65.00
Min Pipe Cover (ft):	0.00	0.00	0.00	0.00	
Max HGL (ft):	69.26	69.17	67.60	67.56	67.56

Link ID:	D3-D4	D2-D3	D1-D2	D0-D1
Length (ft):	35.77	508.00	35.00	189.00
Dia (ft):	3.35	3.46	4.85	4.96
Slope (ft/ft):	0.0029	0.0027	0.0029	0.0029
Up Invert (ft):	67.65	67.54	66.15	66.05
Dn Invert (ft):	67.54	66.15	66.05	65.50
Max Q (cfs):	23.95	28.33	28.45	31.46
Max Vel (ft/s):	1.81	2.47	3.07	2.38
Max Depth (ft):	1.61	1.53	1.47	1.79

STORMWATER

POND #2 DESIGN REVIEW

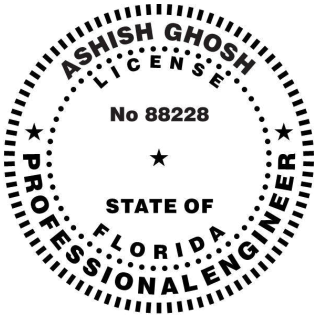
88.15.81

SEMINOLE COMBINED-CYCLE FACILITY
PALATKA, FLORIDA

KIEWIT PROJECT NO. 20015690

ISSUED: APRIL 1, 2020

REVISION A – ISSUED FOR PERMIT AMMENDMENT



This item has been digitally signed and sealed by Ashish Ghosh, PE on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

KIEWIT
9401 Renner Blvd., Lenexa, KS 66219
913-928-7000 913-689-4000 fax

Pond #2 Design Review

Seminole Combined-Cycle Facility (SCCF) construction team plans to utilize existing parking lot as construction laydown (LD1), 4.32 acres, and the area south of the railway spurs as rail unloading/laydown area (RUA), 3.47 acres, (see Figure -1 below). Runoff from both these areas flows into an existing ditch and finally goes into existing Pond #2, located northeast from these areas.

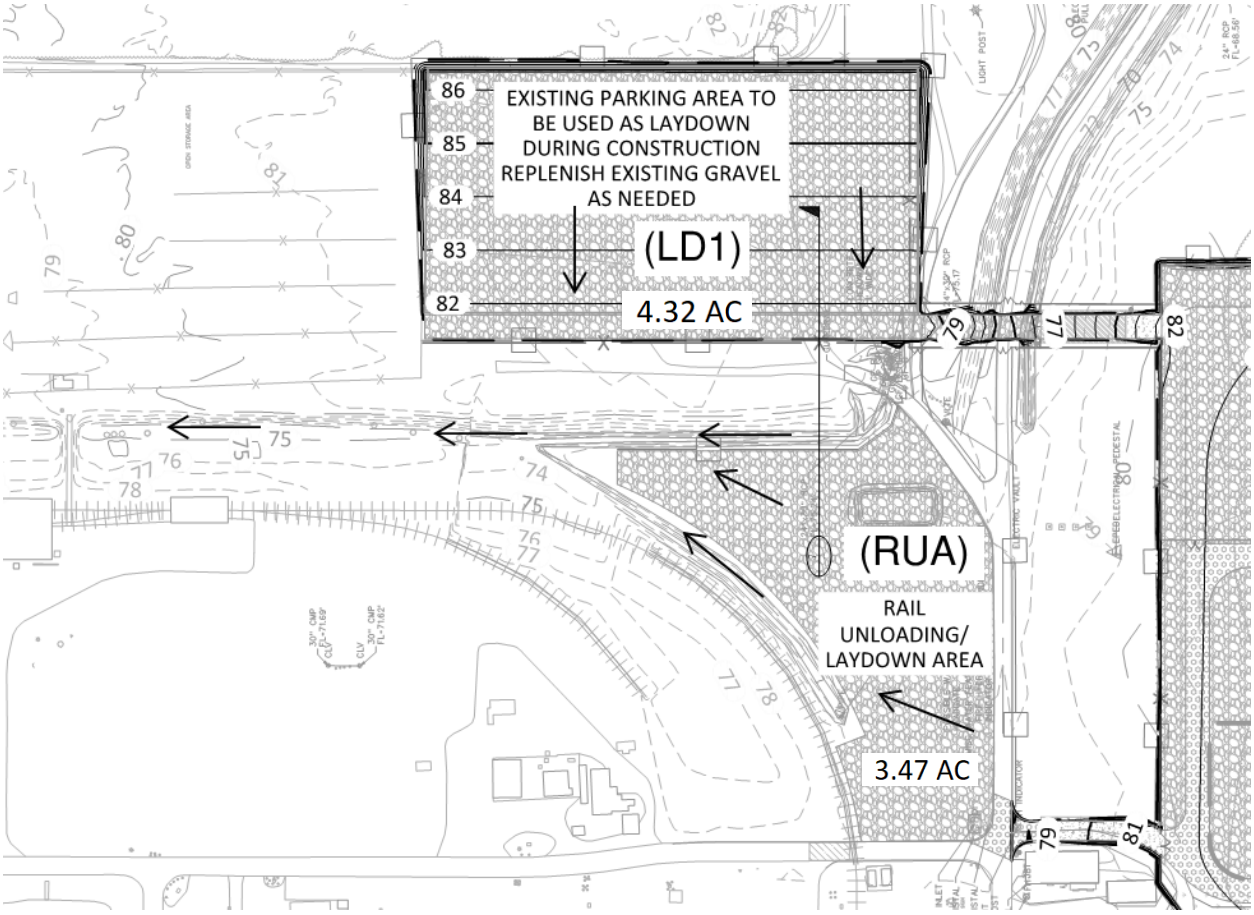


Figure - 1

Existing Pond #2 was designed in 2006 as part of SGS Pollution Control Upgrade Project, and the design information is attached for reference. This design included construction of Unit – 3 for future improvement. But Unit – 3 was never built, and as a result the area designated for this unit and surrounding areas were never converted into impervious surfaces. Note, part of the proposed RUA (as shown in Figure 1) is located in the area for Unit - 3.

In addition, 12.38-acre area (south of Pond #2) was never converted into lime rock surface, as included in Pond #2 design; instead left as natural wooded land. Also, 5.48-acre area (LD1 in

Figure 1) was never converted into grass surface; and the plant continued using this area for additional parking space as needed basis. Additionally, approximately 35-acre of wooded land (south and south-west of Pond #2) included in Pond #2 design as grass surface (in post-construction conditions) was never disturbed, and left as natural wooded land. Some information from 2006 design report are marked up and shown below in Figure - 2 (Pond #2 Post Construction Surfacing) and Figure – 3 (Pond #2 Design Notes) for clarification.

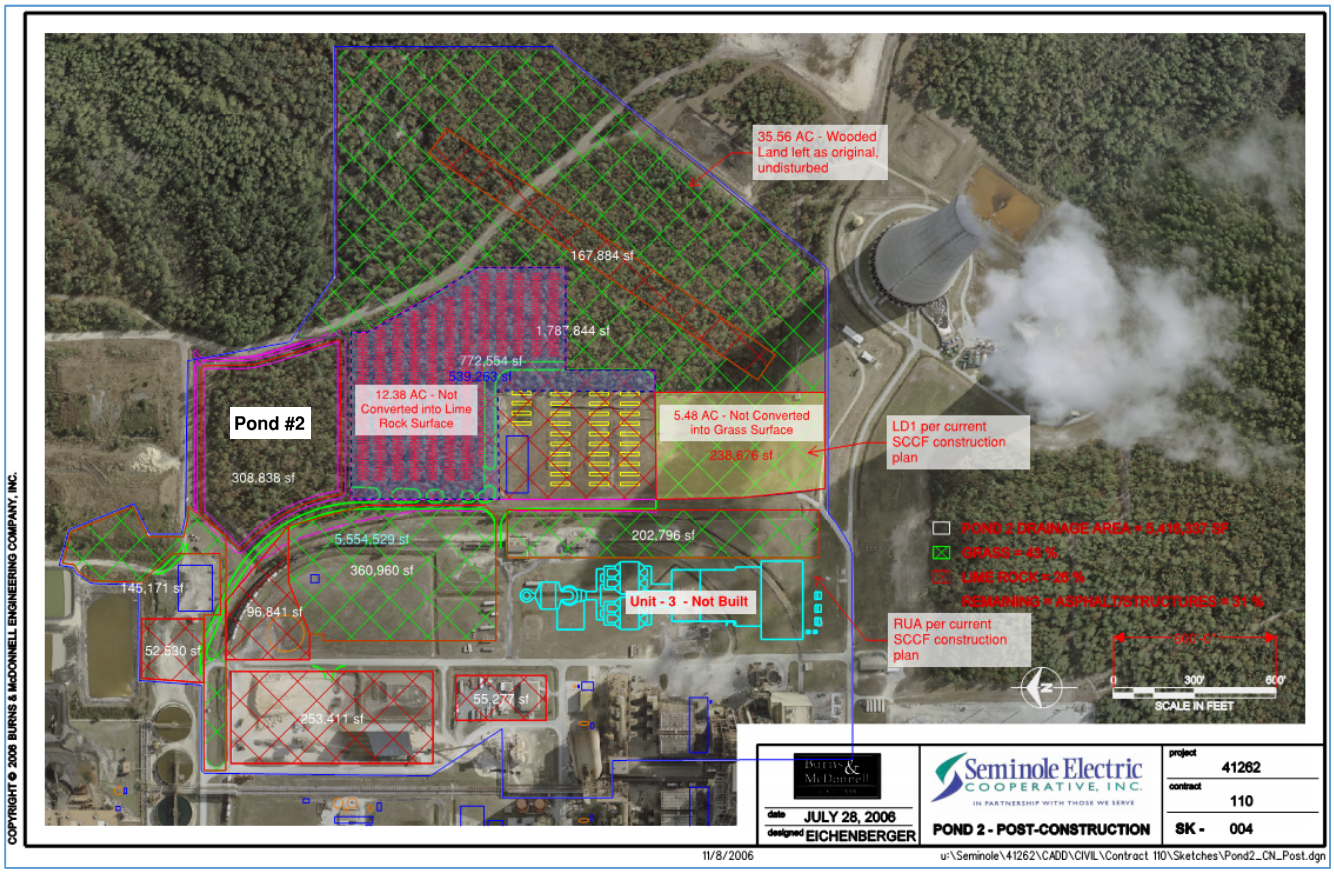


Figure – 2

Burns & McDonnell SINCE 1898

SEMINOLE
C110 - UNIT 1 & 2 SITE PREPARATION
POND #2 DESIGN NOTES

BURNS & McDONNELL
PROJECT NO.: 41262
11/8/2006

DESIGN SUMMARY

Pre-Construction Conditions		Post-Construction Conditions		
Impervious Surface	25 %	Impervious Surface	52 %	= 64.66 AC
Drainage Area	4,038,490 SF	Drainage Area	5,416,337 SF	= 124.34 AC
Curve Number	50	Curve Number	62	
Time of Concentration	3.6 hrs	Time of Concentration	4.3 hrs	

SJRWMD Requirements

Treatment Volume Required	586,770 CF	
Design Treatment Volume	645,447 CF	(Includes 10% Margin)
Permanent Pool Volume Required	951,415 CF	
Design Permanent Pool Volume	1,046,556 CF	(Includes 10% Margin)
Time to drain half of the treatment volume	25 hrs	

Figure – 3

In summary, existing drainage basin for Pond #2 discharges a lot less runoff into this pond compared to what it is designed for.

The above inference can further be confirmed using the land use map and calculations prepared by ECT Inc. in 2013, as shown below. Figure – 4 shows the calculation table based on the land use map shown in Figure – 5. The table shows the total drainage area contributing to the existing Pond #2 is 70.757 acres, and out of that 29.409 acres are impervious surfaces; whereas the pond was originally designed for a total area of 124.34 acres including 64.66 acres of impervious area.

Basins 2A and 2B

Land Cover	Area (Acres)	CN	Impervious Surface (Acres)
Asphalt	4.874	98	4.874
Building	6.347	98	6.347
Concrete	2.011	98	2.011
Dirt	1.863	72	
Grass	37.507	39	
Gravel	7.685	90	7.685
Polymer	1.891	98	1.891
Sand	1.978	68	
Water	6.601	100	6.601
Total	70.757	64.5	29.409

Note: Basins 9A and 9B are isolated from Basin 2A, do not contribute to runoff, and are not included in Basin 2A.

Source: ECT, Inc. (2013)

Figure - 4

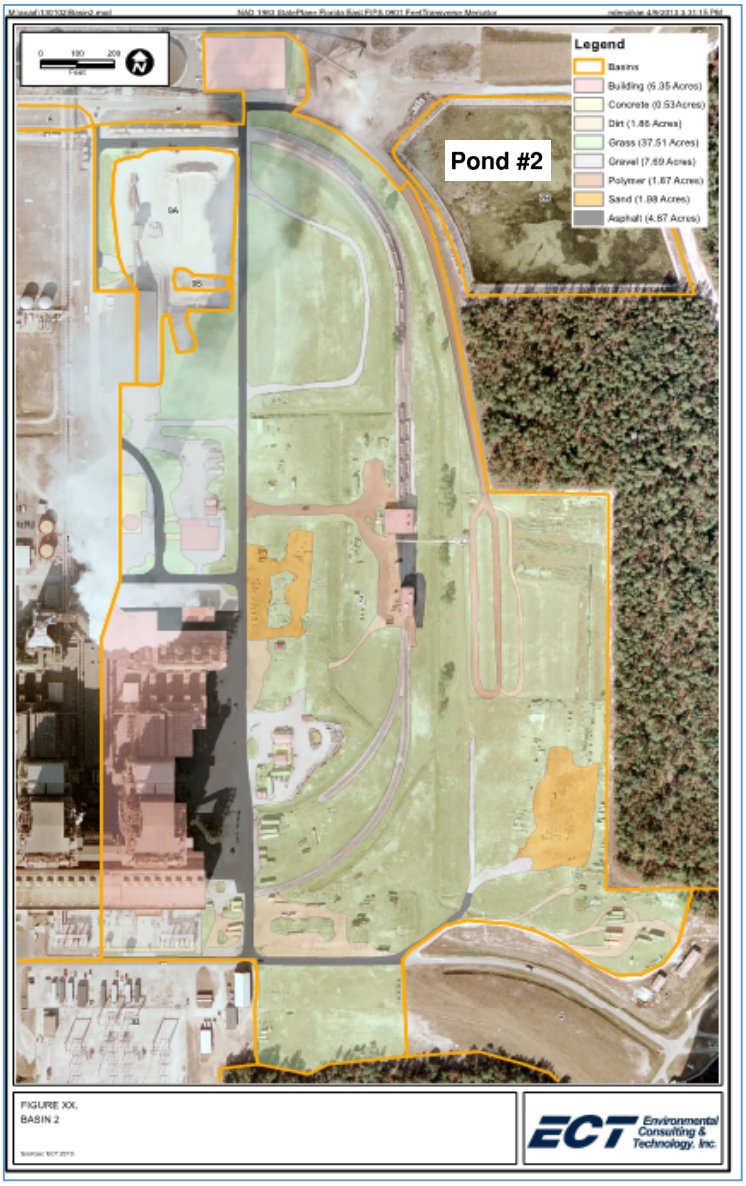


Figure - 5

SCCF construction team plans to install aggregate base (lime rock) on LD1 and RUA (see Figure -1 above) areas to use during construction. As shown below by Google Earth images from 2013 (Figure – 6) and 2017 (Figure – 7), there is no significant change in surface type since 2013. The plant continues to use the LD1 area for parking, and the gravel surface still exists (in most part), though it requires maintenance for proposed laydown use. The RUA area is hardly used, and vegetation started to grow and cover this area. This area will require more work (e.g. removal of vegetation) to prepare for rail unloading and laydown use. Seminole intends to keep these two areas as gravel surfacing for future use, after current construction of SCCF is complete. Therefore, the gravel surfacing of these two areas, a total of 7.79 acres, will contribute to additional discharge into existing Pond #2. At a minimum, this 7.79-acre gravel surface can be directly compared with 12.38-acre area (south of Pond #2) that is never converted into lime rock surface. Therefore, addition of these two impervious surfaces have no adverse impact on the existing storm drainage system, more precisely on existing Pond #2.

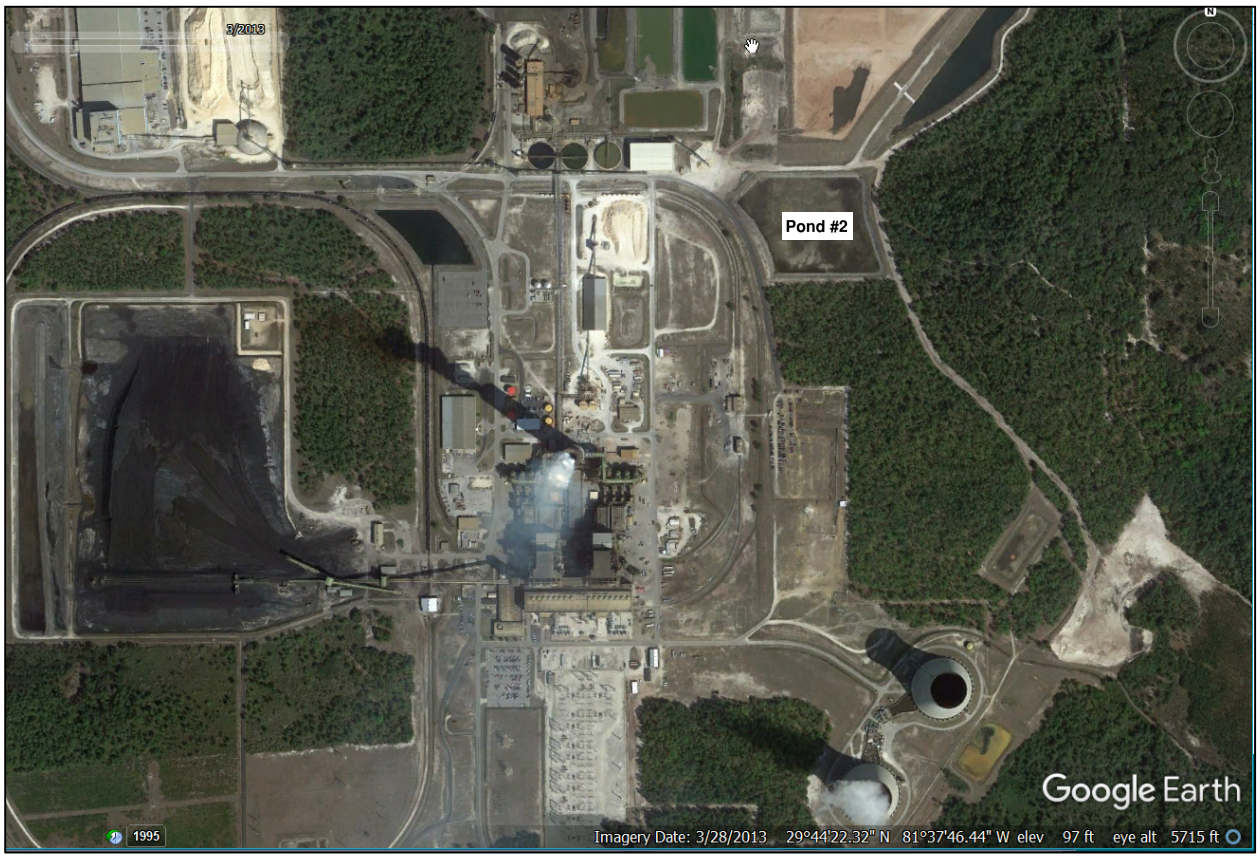


Figure - 6



Figure - 7

Conclusion:

Above analysis of existing Pond #2 design information and comparison with proposed improvement proves that the proposed gravel surfacing of the laydown area (LD1) and rail unloading/laydown area (RUA) will not adversely impact the existing storm drainage system. Existing Pond #2 has unutilized capacity to handle any additional storm discharge from these two gravel surface areas.