# Appendix P – Alternative Stormwater Design

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Appendix P – Alternative Stormwater Management Design Re-Evaluation Memo



July 12, 2022

#### **BR Benson Mines Solar Project**

#### Stormwater Management Design Re-evaluation

The current stormwater runoff analysis for this Project is based on Natural Resources Conservation Service (NRCS) Hydrologic Soil Group (HSG) classifications. These are summarized in the following table.

#### NRCS Soil Classifications:

Symbol	Name	Slope	HSG
021	Dawson-Fluvaquents-Loxley Complex, Frequently Flooded	-	A/D
365	Naumberg-Croghan Complex	-	A/D
346C	Colton-Duxbury-Adams Complex	3-15%	А
634C	Bershire Loam, Very Bouldery	3-15%	В
741C	Potsdam-Tunbridge-Crary Complex, Very Bouldery	3-15%	С
807	Udorthents, Mine Waste	-	С
831D	Tunbridge-Lyman Complex, Very Rocky, Very Bouldery	15-35%	В

During the design process, infiltration testing was conducted at various areas across the site to determine soil infiltration rates where infiltration is proposed as a Water Quality treatment Stormwater Management Practice (SMP). The results of the testing demonstrated that the infiltration rate of soil type 807 – "Udorthents, Mine Waste" soil is significantly higher than would be expected from typical HSG C soil. The Applicant provided the infiltration testing results to the New York State Department of Environmental Conservation (NYSDEC) and requested permission to use HSG A for the mine waste soil type 807. This request was approved in an email received from NYSDEC dated June 27, 2022.

Both the pre- and post-development runoff models were re-evaluated using HSG A to determine the runoff curve number (CN) for the mine waste soil for all land cover types. The soil group for 741C – "Potsdam-Tunbridge-Crary Complex, Very Bouldery", also an HSG C soil, was not changed. Preliminary results from the revised pre- and post-development models are summarized below. As expected, the use of HSG A and corresponding CN for the mine waste soil reduces the peak rate and volume of runoff at all Study Points effected by the change, as detailed in the table below.



Study Point	Storm	Peak R	ate of Runo	off (cfs)	Runoff Volume (ac-ft)			
<b>,</b>	Event	Pre	Post	Change	Pre	Post	Change	
	WQ	0.00	0.00	0.00	0.000	0.000	0.000	
SP1	1-Year	0.00	0.00	0.00	0.000	0.000	0.000	
JF I	10-Year	0.00	0.56	0.56	0.000	0.110	0.110	
	100-Year	9.09	10.61	1.52	7.713	7.384	-0.330	
	WQ	0.00	0.00	0.00	0.000	0.000	0.000	
SP2	1-Year	0.00	0.00	0.00	0.000	0.000	0.000	
362	10-Year	0.01	0.01	0.00	0.001	0.001	0.000	
	100-Year	0.88	0.66	-0.22	0.272	0.272	0.000	
	WQ	0.00	0.00	0.00	0.000	0.000	0.000	
SP3	1-Year	0.00	0.00	0.00	0.000	0.000	0.000	
353	10-Year	0.03	0.02	-0.01	0.014	0.007	-0.007	
	100-Year	3.17	2.04	-1.13	0.500	0.442	-0.058	
	WQ	0.00	0.00	0.00	0.000	0.000	0.000	
SP4	1-Year	0.04	0.07	0.03	0.010	0.059	0.049	
364	10-Year	2.53	3.36	0.83	1.040	1.146	0.106	
	100-Year	30.77	31.02	0.25	5.405	5.546	0.141	
	WQ	0.00	0.00	0.00	0.000	0.000	0.000	
0.05	1-Year	0.00	0.00	0.00	0.000	0.000	0.000	
SP5	10-Year	0.00	0.00	0.00	0.000	0.000	0.000	
	100-Year	0.10	0.02	-0.08	0.071	0.010	-0.061	
	WQ	0.00	0.00	0.00	0.000	0.000	0.000	
0.00	1-Year	0.00	0.00	0.00	0.000	0.000	0.000	
SP6	10-Year	0.11	0.08	-0.03	0.083	0.059	-0.024	
	100-Year	3.69	3.11	-0.58	1.109	1.002	-0.107	

#### **Conclusion**

The current stormwater runoff analysis has not been revised. The HSG A curve number has not been used to model runoff from the "807 – Udorthents, Mine Waste" soil type. The design is still based on the curve number for the HSG C soil group, as provided by NRCS, which provides a more conservative design. However, the Contractor/Owner that ultimately builds the Project will have the option to revise the design based on the use of an HSG A soil group for the soil type 807 soils.

Appendix P – NYSDEC Consultation Email

#### **Kniffen, Chelsey**

From:	Darougar, Tracy L (NYSERDA) <tracy.darougar@nyserda.ny.gov></tracy.darougar@nyserda.ny.gov>
Sent:	Tuesday, July 5, 2022 10:13 AM
То:	Brown, Joshua S.
Cc:	Bergquist, Erin; Lefebvre, Laura; Wagner, Shirley
Subject:	[EXTERNAL] Fwd: NYSERDA Build-Ready Benson Mines Solar Project

# This is an **EXTERNAL** email. Do not click links or open attachments unless you validate the sender and know the content is safe.

ALWAYS hover over the link to preview the actual URL/site and confirm its legitimacy.

#### Get Outlook for iOS

From: Boyer, Brian C (DEC) <brian.boyer@dec.ny.gov>
Sent: Monday, June 27, 2022 2:16 PM
To: Darougar, Tracy L (NYSERDA) <Tracy.Darougar@nyserda.ny.gov>
Cc: Wagner, Shirley <SJWagner@trccompanies.com>; Purzycki, Alicia J (APA) <Alicia.Purzycki@apa.ny.gov>; Gasper, David J (DEC) <david.gasper@dec.ny.gov>; Duffany, Matthew W (DEC) <matthew.duffany@dec.ny.gov>
Subject: NYSERDA Build-Ready Benson Mines Solar Project

Tracy,

The following (in blue) are comments on the two requested points of clarification following my 6/14 site visit to the NYSERDA Build-Ready Benson Mines Solar Project Site.

 Whether the attached geotechnical investigation results and infiltration (percolation) test results, coupled with your field observations today, will allow us to apply a Hydrologic Soil Group (HSG) A classification to the site as opposed to the HSG C classification derived from the USDA NRCS Web Soil Survey. (Note that these attachments are included as an excerpt from the Draft SWPPP NYSERDA submitted to the APA in March of 2022 – we can send the full draft SWPPP if you'd like via Sharepoint).

The geotechnical investigation and infiltration tests provided within the January 2022 SWPPP are sufficient to allow the application of a HSG A classification to the project site.

2. Whether vegetative stabilization will be required throughout the entire mine tailings pile given the lack of top soil and lack of well-established vegetation (due to low-to-no nutrients in the soil and the soil's inability to retain moisture), the low probability of erosion, and the need to augment the soil at great cost (\$2.5m estimate) via many truck trips of top soil to then create a potential erosion issue and increase the maintenance cost of the solar array (increased vegetative management obligations).

Achieving Final Stabilization on a project site is a central tenet of the SPDES General Permit for Stormwater Discharges for Stormwater Discharges From Construction Activity, GP-0-20-001. Leaving a bare unstabilized surface presents the potential for erosion from both wind and precipitation that could impact nearby surface waters and/or wetlands. The Landscaping Plan included in the January 2022 SWPPP called for seeding the site with either of two pollinator seed mixes. If NYSERDA/TRC proposes to not vegetatively stabilize the entire project site as currently proposed in the January 2022 SWPPP then in order for the NYSDEC and other agencies (APA) to provide appropriate feedback, please provide an alternative proposal that at minimum addresses the following:

- Potential for erosion from wind and precipitation
- Potential impacts to Water Quality and wetlands from erosion on site
- Demonstrate equivalency to the permit requirements
- Elimination of the existing berms through proposed site grading

Note that any changes made to the January 2022 SWPPP may require further review and approval by other agencies (APA) and have impacts on other aspects of the proposal that will require further review, such as an updated visual analysis.

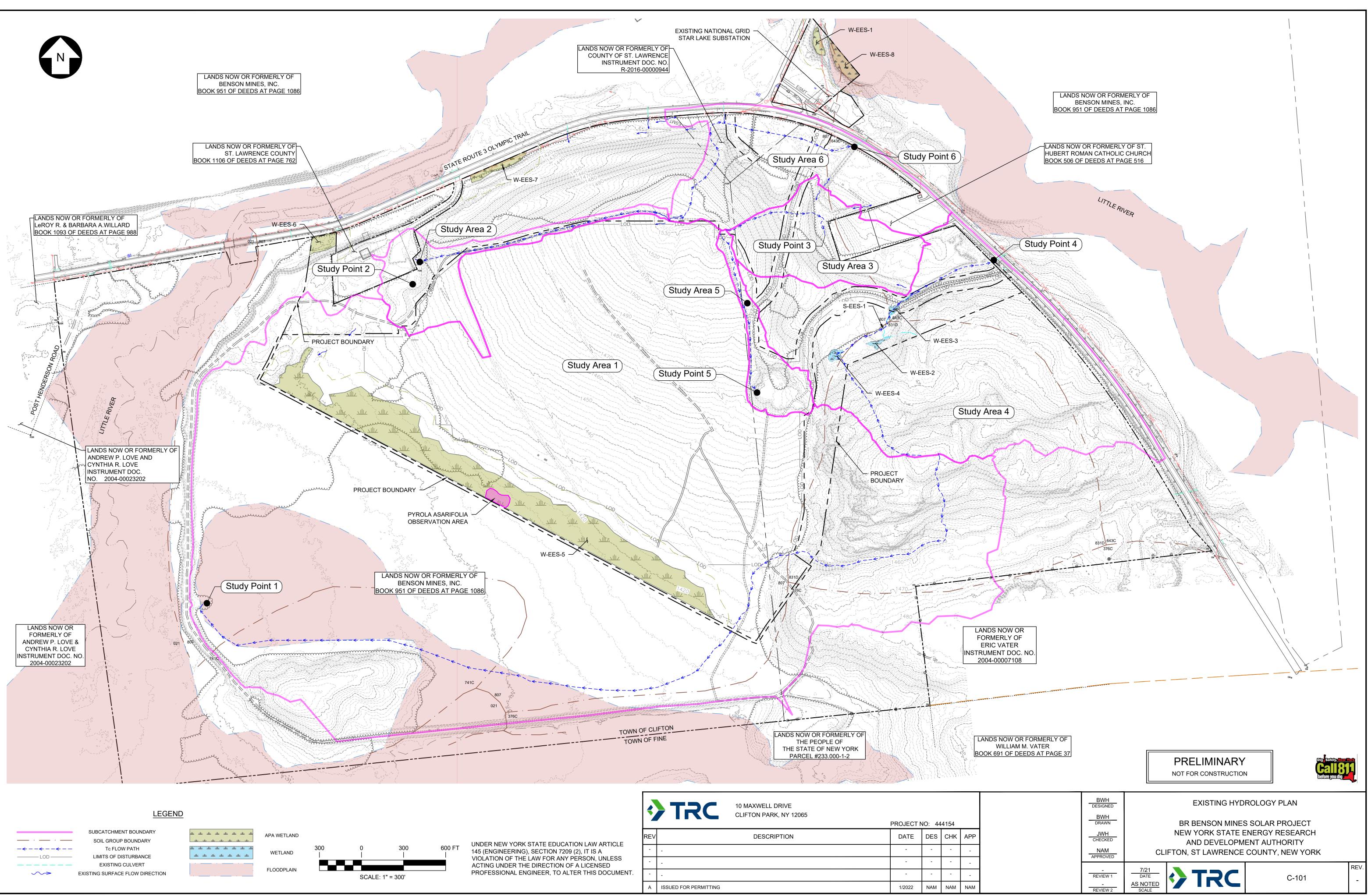
Would NYSERDA/TRC be able to develop an alternate proposal(s) to address the comments above by next week or should we postpone the planned call until a complete proposal can be developed?

#### **Brian Boyer**

Environmental Program Specialist, Division of Water

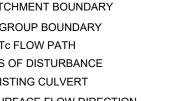
New York State Department of Environmental Conservation

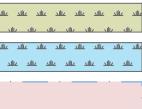
317 Washington Street, Watertown, NY 13601 P: (315) 785-2513 | F: (315) 785-2422 | <u>brian.boyer@dec.ny.gov</u> www.dec.ny.gov | **f** | **c**  Appendix P – Pre-Development Subcatchment Map

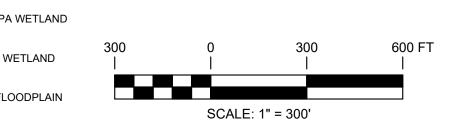






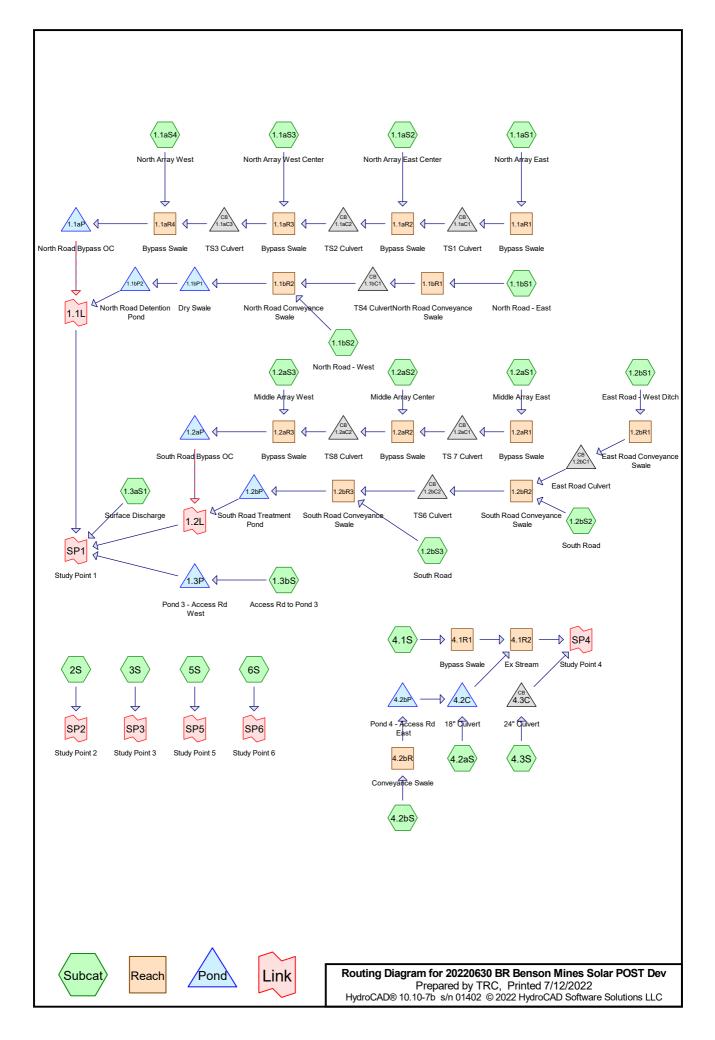






		10 MAXWELL DRIVE CLIFTON PARK, NY 12065	PROJECT	NO: 44	4154	
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	А	ISSUED FOR PERMITTING	1/2022	NAM	NAM	NAM

Appendix P – Pre-Development HydroCAD Model



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Event	#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
	1	WQv	Type II 24-hr		Default	24.00	1	1.00	2
	2	1-Yr Storm	Type II 24-hr		Default	24.00	1	1.98	2
	3	10-Yr Storm	Type II 24-hr		Default	24.00	1	3.28	2
4	4	100-Yr Storm	Type II 24-hr		Default	24.00	1	5.43	2

# **Rainfall Events Listing (selected events)**

# Area Listing (all nodes)

Area	CN	Description
(acres)		(subcatchment-numbers)
0.979	39	>75% Grass cover, Good, HSG A (2S, 3S)
4.721	61	>75% Grass cover, Good, HSG B (3S, 4.1S, 6S)
1.719	96	Gravel surface (1.2bS2, 1.3aS1, 4.1S, 4.2aS)
4.423	96	Gravel surface, HSG A (1.1bS1, 1.1bS2, 1.2bS1, 1.2bS3, 1.3bS, 2S, 4.2bS, 6S)
0.063	96	Gravel surface, HSG A, Redev (1.3bS)
232.790	30	Meadow, non-grazed, HSG A (1.1aS1, 1.1aS2, 1.1aS3, 1.1aS4, 1.1bS1, 1.1bS2,
		1.2aS1, 1.2aS2, 1.2aS3, 1.2bS1, 1.2bS2, 1.2bS3, 1.3aS1, 1.3bS, 2S, 3S, 4.1S,
		4.2aS, 4.2bS, 5S, 6S)
4.081	58	Meadow, non-grazed, HSG B (1.3aS1, 4.1S, 4.2aS, 4.3S, 6S)
25.274	71	Meadow, non-grazed, HSG C (1.3aS1)
3.158	98	Paved Roads & Rooftops (3S, 4.1S, 4.3S, 6S)
0.015	98	Roofs (1.2bS2, 1.2bS3)
0.014	98	Roofs, HSG A (1.1bS1, 1.1bS2)
81.857	30	Woods, Good, HSG A (1.3aS1, 2S, 3S, 4.1S, 4.2aS, 5S, 6S)
88.271	55	Woods, Good, HSG B (1.3aS1, 3S, 4.1S, 4.2aS, 4.3S, 6S)
13.623	70	Woods, Good, HSG C (1.3aS1)
460.988	40	TOTAL AREA

# Soil Listing (all nodes)

Area	Soil	Subcatchment
(acres)	Group	Numbers
320.126	HSG A	1.1aS1, 1.1aS2, 1.1aS3, 1.1aS4, 1.1bS1, 1.1bS2, 1.2aS1, 1.2aS2, 1.2aS3,
		1.2bS1, 1.2bS2, 1.2bS3, 1.3aS1, 1.3bS, 2S, 3S, 4.1S, 4.2aS, 4.2bS, 5S, 6S
97.073	HSG B	1.3aS1, 3S, 4.1S, 4.2aS, 4.3S, 6S
38.897	HSG C	1.3aS1
0.000	HSG D	
4.892	Other	1.2bS2, 1.2bS3, 1.3aS1, 3S, 4.1S, 4.2aS, 4.3S, 6S
460.988		TOTAL AREA

HSG-A	HSG-B	HSG-C	HSG-D	Other	Total	Ground	Subcatchment
(acres)	) (acres)	(acres)	(acres)	(acres)	(acres)	Cover	Numbers
0.979	4.721	0.000	0.000	0.000	5.700	>75% Grass cover, Good	2S, 3S,
							4.1S, 6S
4.486	0.000	0.000	0.000	1.719	6.205	Gravel surface	1.1bS1,
							1.1bS2,
							1.2bS1,
							1.2bS2,
							1.2bS3,
							1.3aS1,
							1.3bS,
							2S, 4.1S,
							4.2aS,
							4.2bS, 6S
232.790	4.081	25.274	0.000	0.000	262.145	Meadow, non-grazed	1.1aS1,
							1.1aS2,
							1.1aS3,
							1.1aS4,
							1.1bS1, 1.1bS2,
							1.1032, 1.2aS1,
							1.2aS1, 1.2aS2,
							1.2aS3,
							1.2bS1,
							1.2bS2,
							1.2bS3,
							1.3aS1,
							1.3bS,
							2S, 3S,
							4.1S,
							4.2aS,
							4.2bS,
							4.3S, 5S,
							6S
0.000	0.000	0.000	0.000	3.158	3.158	Paved Roads & Rooftops	
0.044	0.000	0.000	0.000	0.045		<b>D</b> (	4.3S, 6S
0.014	0.000	0.000	0.000	0.015	0.029	Roofs	1.1bS1,
							1.1bS2, 1.2bS2,
							1.2bS2, 1.2bS3
81.857	88.271	13.623	0.000	0.000	183.751	Woods, Good	1.2033 1.3aS1,
01.007	00.271	13.023	0.000	0.000	103.751	Woods, Good	2S, 3S,
							4.1S,
							4.13, 4.2aS,
							4.3S, 5S,
							6S
320.126	97.073	38.897	0.000	4.892	460.988	TOTAL AREA	

# Ground Covers (all nodes)

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Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	1.1aC1	1,487.56	1,486.80	47.0	0.0162	0.012	36.3	22.5	0.0
2	1.1aC2	1,470.80	1,469.57	47.0	0.0262	0.012	48.0	24.0	0.0
3	1.1aC3	1,449.55	1,447.64	47.2	0.0405	0.012	60.0	24.0	0.0
4	1.1bC1	1,449.50	1,447.27	45.9	0.0486	0.012	0.0	18.0	0.0
5	1.2aC1	1,444.22	1,443.21	47.0	0.0215	0.012	36.0	24.0	0.0
6	1.2aC2	1,431.65	1,431.11	47.5	0.0114	0.012	60.0	24.0	0.0
7	1.2bC1	1,454.39	1,453.67	41.6	0.0173	0.012	0.0	15.0	0.0
8	1.2bC2	1,443.51	1,442.84	44.3	0.0151	0.012	0.0	18.0	0.0
9	4.2C	1,431.83	1,431.18	44.0	0.0148	0.012	0.0	18.0	0.0
10	4.3C	1,431.35	1,429.87	55.8	0.0265	0.012	0.0	24.0	0.0

# Pipe Listing (all nodes)

#### Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 1.1aS1: North Array East	Runoff Area=5.874 ac 0.00% Impervious Runoff Depth=0.00"
	Flow Length=788' Tc=18.8 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1aS2: North Array East	Runoff Area=8.467 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=931' Tc=21.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1aS3: North Array West F	Runoff Area=5.792 ac 0.00% Impervious Runoff Depth=0.00" low Length=1,031' Tc=19.7 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1aS4: North Array West	Runoff Area=12.825 ac 0.00% Impervious Runoff Depth=0.00" low Length=1,562' Tc=26.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1bS1: North Road - East	Runoff Area=1.333 ac 0.53% Impervious Runoff Depth=0.01" Tc=6.0 min CN=71 Runoff=0.00 cfs 0.001 af
Subcatchment 1.1bS2: North Road - West	t Runoff Area=0.651 ac 1.08% Impervious Runoff Depth=0.00" Tc=6.0 min CN=68 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2aS1: Middle Array East	Runoff Area=7.876 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=865' Tc=19.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2aS2: Middle Array Center	<b>er</b> Runoff Area=8.911 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=825' Tc=18.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2aS3: Middle Array West	Runoff Area=5.500 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=882' Tc=18.5 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2bS1: East Road - West	Runoff Area=0.727 ac 0.00% Impervious Runoff Depth=0.00" Tc=6.0 min CN=67 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2bS2: South Road	Runoff Area=0.854 ac 0.47% Impervious Runoff Depth=0.00" Flow Length=308' Tc=13.7 min CN=58 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2bS3: South Road	Runoff Area=0.815 ac 1.35% Impervious Runoff Depth=0.01" Tc=6.0 min CN=71 Runoff=0.00 cfs 0.001 af
	e Runoff Area=279.312 ac 0.00% Impervious Runoff Depth=0.00" w Length=6,771' Tc=201.7 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment 1.3bS: Access Rd to Pond	<b>3</b> Runoff Area=0.695 ac 0.00% Impervious Runoff Depth=0.00" Tc=6.0 min CN=51 Runoff=0.00 cfs 0.000 af
Subcatchment 2S:	Runoff Area=11.056 ac 0.00% Impervious Runoff Depth=0.00" low Length=2,342' Tc=36.0 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment 3S:	Runoff Area=15.648 ac 0.56% Impervious Runoff Depth=0.00" Flow Length=886' Tc=12.7 min CN=40 Runoff=0.00 cfs 0.000 af
Subcatchment 4.1S:	Runoff Area=11.663 ac 2.80% Impervious Runoff Depth=0.00" Flow Length=845' Tc=15.8 min CN=45 Runoff=0.00 cfs 0.000 af

20220630 BR Benson Mines Solar POST DevType II 24-hrWQv Rainfall=1.00"Prepared by TRCPrinted 7/12/2022HydroCAD® 10.10-7bs/n 01402© 2022 HydroCAD Software Solutions LLCPage 8

TIYUIOCAD® 10.10-75 S/11 01402 @ 2022 TIY	CIOCAD Soliwale Solutions LLC Page 0
Subcatchment 4.2aS:	Runoff Area=27.117 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=1,640' Tc=38.9 min CN=51 Runoff=0.00 cfs 0.000 af
Subcatchment 4.2bS:	Runoff Area=0.470 ac 0.00% Impervious Runoff Depth=0.01" Tc=6.0 min CN=72 Runoff=0.00 cfs 0.000 af
Subcatchment 4.3S:	Runoff Area=25.466 ac 5.08% Impervious Runoff Depth=0.00" Flow Length=2,280' Tc=36.5 min CN=57 Runoff=0.00 cfs 0.000 af
Subcatchment 5S:	Runoff Area=4.970 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=1,180' Tc=17.5 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 6S:	Runoff Area=24.966 ac 5.81% Impervious Runoff Depth=0.00" Flow Length=1,961' Tc=60.1 min CN=43 Runoff=0.00 cfs 0.000 af
Reach 1.1aR1: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af _=580.0' S=0.0108 '/' Capacity=56.37 cfs Outflow=0.00 cfs 0.000 af
Reach 1.1aR2: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af _=557.4' S=0.0284 '/' Capacity=91.27 cfs Outflow=0.00 cfs 0.000 af
Reach 1.1aR3: Bypass Swale n=0.035 L=	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af =557.5' S=0.0352 '/' Capacity=101.68 cfs Outflow=0.00 cfs 0.000 af
Reach 1.1aR4: Bypass Swale n=0.035 L=	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af =580.5' S=0.0362 '/' Capacity=103.04 cfs Outflow=0.00 cfs 0.000 af
	Avg. Flow Depth=0.00' Max Vel=0.47 fps Inflow=0.00 cfs 0.001 af ,733.0' S=0.0240 '/' Capacity=111.65 cfs Outflow=0.00 cfs 0.001 af
	Avg. Flow Depth=0.00' Max Vel=0.60 fps Inflow=0.00 cfs 0.001 af 593.3' S=0.0380 '/' Capacity=140.36 cfs Outflow=0.00 cfs 0.001 af
Reach 1.2aR1: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af =524.2' S=0.0188 '/' Capacity=74.30 cfs Outflow=0.00 cfs 0.000 af
Reach 1.2aR2: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af .=556.0' S=0.0204 '/' Capacity=77.47 cfs Outflow=0.00 cfs 0.000 af
Reach 1.2aR3: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af _=249.0' S=0.0153 '/' Capacity=81.84 cfs Outflow=0.00 cfs 0.000 af
	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af =731.4' S=0.0456 '/' Capacity=79.22 cfs Outflow=0.00 cfs 0.000 af
	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af =604.5' S=0.0177 '/' Capacity=95.76 cfs Outflow=0.00 cfs 0.000 af
	Avg. Flow Depth=0.00' Max Vel=0.42 fps Inflow=0.00 cfs 0.001 af =755.9' S=0.0187 '/' Capacity=98.64 cfs Outflow=0.00 cfs 0.001 af
Reach 4.1R1: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af _=570.0' S=0.0303 '/' Capacity=54.88 cfs Outflow=0.00 cfs 0.000 af
Reach 4.1R2: Ex Stream n=0.035 L=	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af 740.0' S=0.0099 '/' Capacity=588.81 cfs Outflow=0.00 cfs 0.000 af

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20220630 BR Benson Mines Solar POST Dev	Type II 24-hr	WQv Rainfall=1.00"
Prepared by TRC		Printed 7/12/2022
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Reach 4.2bR: Conveyance Swale         Avg. Flow Depth=0.00'         Max Vel=0.53 fps         Inflow=0.00 cfs         0.000 af           n=0.035         L=565.0'         S=0.0432 '/'         Capacity=77.09 cfs         Outflow=0.00 cfs         0.000 af
Pond 1.1aC1: TS1 Culvert         Peak Elev=1,487.56'         Inflow=0.00 cfs         0.000 af           36.3" x 22.5", R=18.8"/51.0"         Pipe Arch Culvert         n=0.012         L=47.0'         S=0.0162 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.1aC2: TS2 Culvert         Peak Elev=1,470.80'         Inflow=0.00 cfs         0.000 af           48.0" x 24.0"         Box Culvert         n=0.012         L=47.0'         S=0.0262 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.1aC3: TS3 Culvert         Peak Elev=1,449.55'         Inflow=0.00 cfs         0.000 af           60.0" x 24.0"         Box Culvert         n=0.012         L=47.2'         S=0.0405 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.1aP: North Road Bypass OC         Peak Elev=1,426.00' Storage=0.000 af Inflow=0.00 cfs 0.000 af Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Pond 1.1bC1: TS4 Culvert         Peak Elev=1,449.51'         Inflow=0.00 cfs         0.001 af           18.0"         Round Culvert         n=0.012         L=45.9'         S=0.0486 '/'         Outflow=0.00 cfs         0.001 af
Pond 1.1bP1: Dry Swale         Peak Elev=1,425.32' Storage=17 cf         Inflow=0.00 cfs         0.001 af           Discarded=0.00 cfs         0.001 af         Primary=0.00 cfs         0.000 af         Outflow=0.00 cfs         0.001 af
Pond 1.1bP2: North Road Detention Pond Peak Elev=1,421.50' Storage=0.000 af Inflow=0.00 cfs 0.000 af Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Pond 1.2aC1: TS 7 Culvert         Peak Elev=1,444.22'         Inflow=0.00 cfs         0.000 af           36.0" x 24.0"         Box Culvert         n=0.012         L=47.0'         S=0.0215 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.2aC2: TS8 Culvert         Peak Elev=1,431.65'         Inflow=0.00 cfs         0.000 af           60.0" x 24.0"         Box Culvert         n=0.012         L=47.5'         S=0.0114 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.2aP: South Road Bypass OC       Peak Elev=1,424.00' Storage=0.000 af Inflow=0.00 cfs 0.000 af Discarded=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Pond 1.2bC1: East Road Culvert         Peak Elev=1,454.39'         Inflow=0.00 cfs         0.000 af           15.0" Round Culvert n=0.012         L=41.6'         S=0.0173 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.2bC2: TS6 Culvert         Peak Elev=1,443.51'         Inflow=0.00 cfs         0.000 af           18.0"         Round Culvert         n=0.012         L=44.3'         S=0.0151 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.2bP: South Road Treatment Pond         Peak Elev=1,424.00'         Storage=0.000 af         Inflow=0.00 cfs         0.001 af           Discarded=0.00 cfs         0.001 af         Primary=0.00 cfs         0.000 af         Outflow=0.00 cfs         0.001 af
Pond 1.3P: Pond 3 - Access Rd West         Peak Elev=1,456.00' Storage=0 cf         Inflow=0.00 cfs         0.000 af           Discarded=0.00 cfs         0.000 af         Primary=0.00 cfs         0.000 af         Outflow=0.00 cfs         0.000 af
Pond 4.2bP: Pond 4 - Access Rd East         Peak Elev=1,445.50' Storage=0 cf         Inflow=0.00 cfs         0.000 af           Discarded=0.00 cfs         0.000 af         Primary=0.00 cfs         0.000 af         Outflow=0.00 cfs         0.000 af
Pond 4.2C: 18" Culvert         Peak Elev=1,431.50' Storage=0 cf Inflow=0.00 cfs 0.000 af 18.0" Round Culvert n=0.012 L=44.0' S=0.0148 '/' Outflow=0.00 cfs 0.000 af           Peak Lev=1,431.50' Storage=0 cf Inflow=0.00 cfs 0.000 af 18.0" Round Culvert n=0.012 L=44.0' S=0.0148 '/' Outflow=0.00 cfs 0.000 af
Pond 4.3C: 24" Culvert         Peak Elev=1,431.35'         Inflow=0.00 cfs         0.000 af           Outflow=0.00 cfs         0.000 af         0.000 af         0.000 af

20220630 BR Benson Mines Solar POST Dev Prepared by TRC	Type II 24-hr WQv Rainfall=1.00" Printed 7/12/2022
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Link 1.1L:	Inflow=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af
Link 1.2L:	Inflow=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af
Link SP1: Study Point 1	Inflow=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af
Link SP2: Study Point 2	Inflow=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af
Link SP3: Study Point 3	Inflow=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af
Link SP4: Study Point 4	Inflow=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af
Link SP5: Study Point 5	Inflow=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af
Link SP6: Study Point 6	Inflow=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af
Total Runoff Area = 460.988 ac Runoff Volume = 0.0	002 af Average Runoff Depth = 0.00"

Total Runoff Area = 460.988 acRunoff Volume = 0.002 afAverage Runoff Depth = 0.00"99.31% Pervious = 457.801 ac0.69% Impervious = 3.187 ac

#### Summary for Subcatchment 1.1aS1: North Array East

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

Area	(ac) C	N Des	cription		
5	.874 3	30 Mea	dow, non-	grazed, HS	G A
5	.874	100.	00% Pervi	ous Area	
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.0499	0.14		Sheet Flow,
7.1	688	0.0526	1.61		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.8	788	Total			
			0		
			Subcat		I.1aS1: North Array East
				Hydrog	graph
Flow (cfs)					Type II 24-hr WQv Rainfall=1.00" Runoff Area=5.874 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=788' Tc=18.8 min CN=30

5 28 30 32 34 Time (hours)

#### Summary for Subcatchment 1.1aS2: North Array East Center

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR2 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

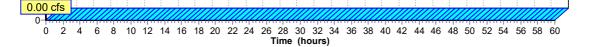
Area	(ac) C	N Des	cription							
8	8.467 30 Meadow, non-grazed, HSG A									
8	.467	100.	00% Pervi	ous Area						
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
11.9	100	0.0476	0.14		Sheet Flow,					
9.2	831	0.0463	1.51		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps					
21.1	931	Total								
	Subcatchment 1.1aS2: North Array East Center									
				Hydrog	graph					
1 - -					Type II 24-hr WQv Rainfall=1.00" Runoff Area=8.467 ac Runoff Volume=0.000 af					

Runoff Depth=0.00"

Flow Length=931'

Tc=21.1 min

**CN=30** 



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(cfs)

Flow

#### Summary for Subcatchment 1.1aS3: North Array West Center

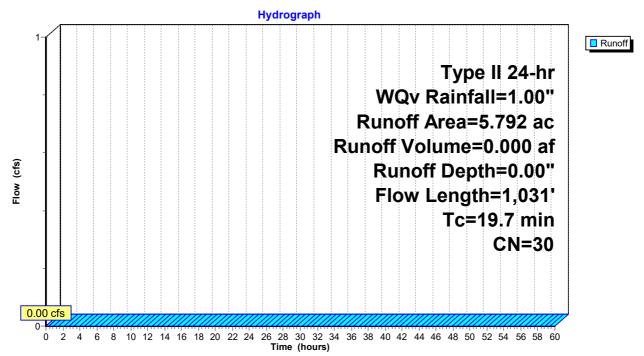
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR3 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

	Area	(ac) C	N Dese	cription							
	5.792 30 Meadow, non-grazed, HSG A										
5.792 100.00% Pervious Area											
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
-	10.7	100	0.0618	0.16		Sheet Flow,					
	9.0	931	0.0601	1.72		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps					
	40.7	4 004	Tatal			•					

19.7 1,031 Total

#### Subcatchment 1.1aS3: North Array West Center

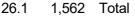


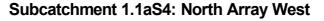
#### Summary for Subcatchment 1.1aS4: North Array West

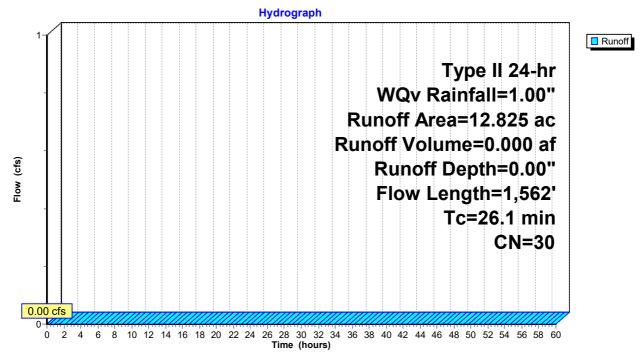
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR4 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

_	Area	(ac) C	N Dese	cription							
	12.825 30 Meadow, non-grazed, HSG A										
12.825 100.00% Pervious Area											
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
-	11.1	100	0.0560	0.15		Sheet Flow,					
	15.0	1,462	0.0540	1.63		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps					
	26.1	1 560	Tatal								







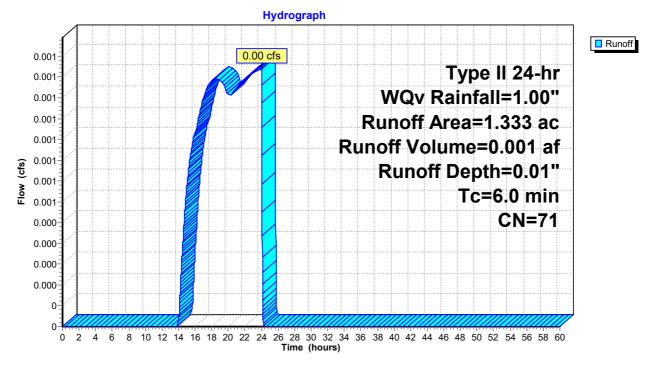
#### Summary for Subcatchment 1.1bS1: North Road - East

Runoff = 0.00 cfs @ 24.01 hrs, Volume= 0.001 af, Depth= 0.01" Routed to Reach 1.1bR1 : North Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

Area	(ac)	CN	Desc	Description						
0.	507	30	Mea	dow, non-g	grazed, HS	G A				
0.	819	96	Grav	el surface	, HSG A					
0.	007	98	Roof	s, HSG A						
1.	333	71	Weig	hted Aver	age					
1.	326		99.4	7% Pervio	us Area					
0.	007		0.539	% Impervi	ous Area					
т.	1	41-	01	V al a site c	<b>O</b> a m a site :	Decemination				
Tc	Leng		Slope	Velocity	Capacity	Description				
(min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)					
6.0						Direct Entry,				

#### Subcatchment 1.1bS1: North Road - East



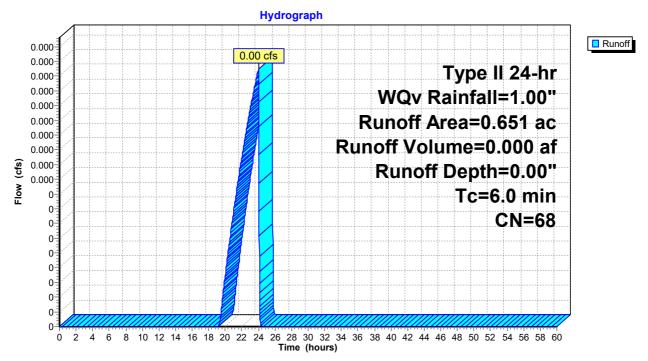
#### Summary for Subcatchment 1.1bS2: North Road - West

Runoff = 0.00 cfs @ 24.01 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1bR2 : North Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

	Area	(ac)	CN	Desc	Description						
	0.	279	30	Mea	dow, non-g	grazed, HS	SG A				
	0.	365	96	Grav	el surface	, HSG A					
_	0.	007	98	Roof	s, HSG A						
	0.	651	68	Weig	phted Aver	age					
	0.	644		98.9	2% Pervio	us Area					
	0.	007		1.08	% Impervi	ous Area					
	_										
	Тс	Leng		Slope	Velocity	Capacity	•				
_	<u>(min)</u>	(fee	et)	(ft/ft)	(ft/sec)	(cfs)					
	6.0						Direct Entry,				

# Subcatchment 1.1bS2: North Road - West



#### Summary for Subcatchment 1.2aS1: Middle Array East

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.2aR1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

Area	(ac) C	N Desc	cription						
7.876 30 Meadow, non-grazed, HSG A									
7.876 100.00% Pervious Area									
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
10.6	100	0.0628	0.16		Sheet Flow,				
8.5	765	0.0459	1.50		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
19.1	865	Total							
Flow (cfs)			Subcate	chment 1	2aS1: Middle Array East graph Type II 24-hr WQv Rainfall=1.00" Runoff Area=7.876 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=865' Tc=19.1 min	Runoff			
-					CN=30				

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

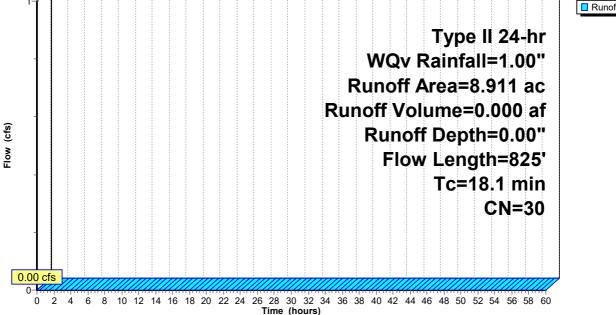
0.00

#### Summary for Subcatchment 1.2aS2: Middle Array Center

0.000 af, Depth= 0.00" Runoff = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.2aR2 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

Area (ac) CN Description									
8.	.911 3	80 Mea	dow, non-g	grazed, HS	GA				
8.	.911	100.	00% Pervi	ous Area					
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
10.8	100	0.0607	0.15		Sheet Flow,				
7.3	725	0.0559	1.66		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
18.1	825	Total							
18.1 825 Total Subcatchment 1.2aS2: Middle Array Center Hydrograph I I I I I I I I I I I I I I I I I I I									



**CN=30** 

#### Summary for Subcatchment 1.2aS3: Middle Array West

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.2aR3 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

Area	(ac) C	N Des	cription							
5	5.500 30 Meadow, non-grazed, HSG A									
5	.500	100.	00% Pervi	ous Area						
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
10.4	100	0.0660	0.16		Sheet Flow,					
8.1	782	0.0529	1.61		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps					
18.5	882	Total								
- Flow (cfs)			Subcato	chment 1. Hydrog	2aS3: Middle Array West graph Type II 24-hr WQv Rainfall=1.00" Runoff Area=5.500 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=882' Tc=18.5 min					

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

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0.00 cfs

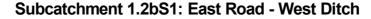
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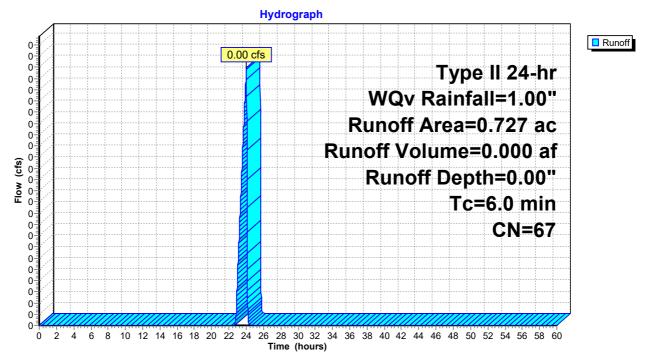
#### Summary for Subcatchment 1.2bS1: East Road - West Ditch

Runoff = 0.00 cfs @ 24.02 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.2bR1 : East Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

Area	(ac)	ic) CN Description							
0.	0.410 96 Gravel surface, HSG A								
0.	.317	317 30 Meadow, non-grazed, HSG A							
0.	0.727 67 Weighted Average								
0.727 100.00% Pervious Area									
_			<u>_</u> .		•				
Tc	Tc Length S		Slope	Velocity	Capacity	Description			
(min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)				
6.0						Direct Entry,			





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#### Summary for Subcatchment 1.2bS2: South Road

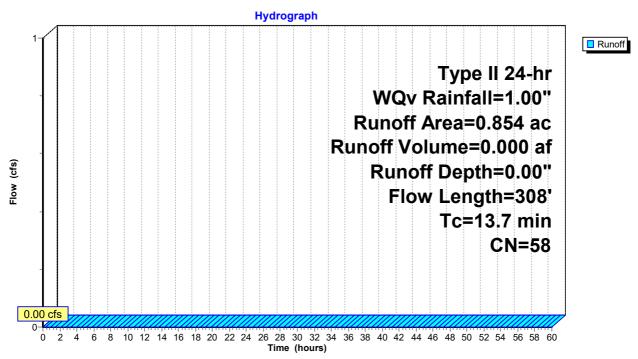
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.2bR2 : South Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

_	Area	(ac) C	N Dese	cription		
	0.	498 3	30 Mea	dow, non-g	grazed, HS	GA
*	0.	352 9	96 Grav	el surface		
*	0.	004	98 Root	fs		
_	0.	854	58 Wei	ghted Aver	ade	
	0.	850	•	3% Pervio	0	
	0.	004	0.47	% Impervi	ous Area	
	Тс	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	5.0	35	0.0516	0.12		Sheet Flow,
						Grass: Dense n= 0.240 P2= 2.31"
	0.4	25	0.0310	1.06		Sheet Flow,
						Smooth surfaces n= 0.011 P2= 2.31"
	5.9	40	0.0429	0.11		Sheet Flow,
						Grass: Dense n= 0.240 P2= 2.31"
	2.4	208	0.0442	1.47		Shallow Concentrated Flow,
_						Short Grass Pasture Kv= 7.0 fps
	40 7	000	<b>T</b> ( )			

13.7 308 Total

#### Subcatchment 1.2bS2: South Road



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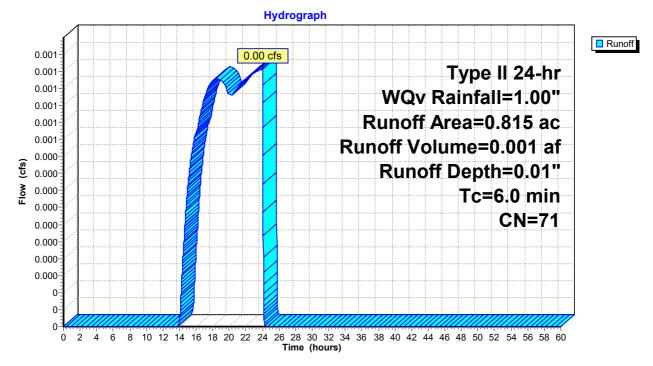
Summary for Subcatchment 1.2bS3: South Road

0.001 af, Depth= 0.01" Runoff = 0.00 cfs @ 24.01 hrs, Volume= Routed to Reach 1.2bR3 : South Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

	Area	(ac)	CN	Desc	Description						
	0.	313	30	Mea	dow, non-g	grazed, HS	GA				
	0.	0.491 96 Gravel surface, HSG A									
*	0.	011	98	Roof	s						
	0.815 71			Weig	Weighted Average						
	0.804			98.6	98.65% Pervious Area						
	0.011			1.35% Impervious Area							
	Tc Length (min) (feet)						Description				
	6.0						Direct Entry,				

#### Subcatchment 1.2bS3: South Road



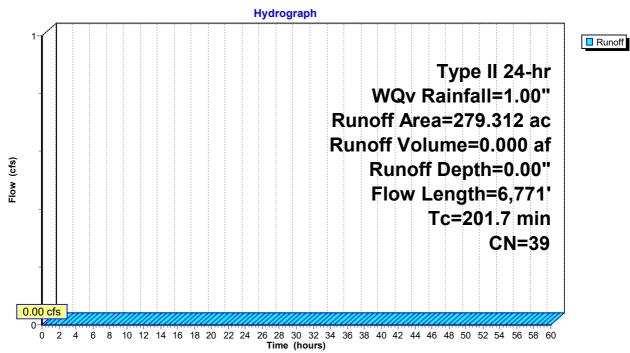
#### Summary for Subcatchment 1.3aS1: Surface Discharge

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP1 : Study Point 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

Area	(ac) C	N Desc	cription						
* 0.	754 9	96 Grav	/el surface						
144.	649 3	30 Mea	Meadow, non-grazed, HSG A						
0.	566 5	58 Mea	Meadow, non-grazed, HSG B						
			Meadow, non-grazed, HSG C						
			Woods, Good, HSG A						
			ods, Good,						
13.	<u>623 7</u>	70 Woo	ods, Good,	HSG C					
279.	312 3	39 Weig	ghted Aver	age					
279.	312	100.	00% Pervi	ous Area					
_									
Tc	Length	Slope	Velocity	Capacity	Description				
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
14.8	100	0.0764	0.11		Sheet Flow,				
					Woods: Light underbrush n= 0.400 P2= 2.31"				
4.7	581	0.1683	2.05		Shallow Concentrated Flow,				
o	4 400	0 00 4 4	o <b>-</b> 0		Woodland Kv= 5.0 fps				
25.7	1,199	0.0241	0.78		Shallow Concentrated Flow,				
0.0	400	0.0457	2.04	70.00	Woodland Kv= 5.0 fps				
0.8	189	0.0157	3.84	76.82	Channel Flow, Rerouted Stream				
					Area= 20.0 sf Perim= 32.6' r= 0.61'				
1510	4 6 4 6	0.0054	0.50		n= 0.035 Earth, dense weeds				
154.9	4,646	0.0051	0.50		Shallow Concentrated Flow,				
0.8	56	0.0566	1.19		Short Grass Pasture Kv= 7.0 fps				
0.0	56	0.0566	1.19		Shallow Concentrated Flow,				
004 -	0 77 4	<b>T</b> ( )			Woodland Kv= 5.0 fps				
2017	6 771	Total							

201.7 6,771 Total



# Subcatchment 1.3aS1: Surface Discharge

#### Summary for Subcatchment 1.3bS: Access Rd to Pond 3

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Pond 1.3P : Pond 3 - Access Rd West

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

* C * C C	(ac) 9.473 9.063 9.159 9.695 9.695 Lengtl (feet		Mea Grav Grav Weig	vel surface vel surface ghted Ave 00% Perv			 /,			
				Subcato	hment 1.3	3bS: Acces	s Rd t	o Pond	3	
	1				Hydro	graph				1
0-		6 8	10 12	14 16 18 20		Run	unofi off V Runo	v Rainf Area= olume off Dep To	be II 24-hr fall=1.00" =0.695 ac =0.000 af oth=0.00" c=6.0 min CN=51	Runoff

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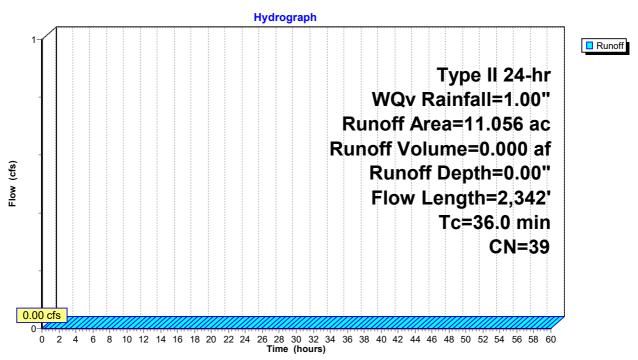
#### Summary for Subcatchment 2S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP2 : Study Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

Area	(ac) C	N Desc	ription				
1.	417 9	6 Grav	el surface	, HSG A			
0.	.573 3	9 >75%	6 Grass co	, HSG A			
6.	.530 3	0 Mea	dow, non-g	grazed, HS	GA		
2.	.536 3	0 Woo	ds, Good,	HSG A			
11.056 39 Weighted Average							
11.	.056	100.	00% Pervi	ous Area			
Tc	Length	Slope	Velocity	Capacity	Description		
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)			
10.7	100	0.0624	0.16		Sheet Flow,		
					Grass: Dense n= 0.240 P2= 2.31"		
2.7	614	0.0535	3.72		Shallow Concentrated Flow,		
					Unpaved Kv= 16.1 fps		
12.1	1,184	0.0543	1.63		Shallow Concentrated Flow,		
					Short Grass Pasture Kv= 7.0 fps		
1.9	115	0.0407	1.01		Shallow Concentrated Flow,		
			4.00		Woodland Kv= 5.0 fps		
0.6	68	0.1443	1.90		Shallow Concentrated Flow,		
0.0	004	0.0440	0.54		Woodland Kv= 5.0 fps		
8.0	261	0.0118	0.54		Shallow Concentrated Flow,		
					Woodland Kv= 5.0 fps		
36.0	2,342	Total					

#### Subcatchment 2S:



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### Summary for Subcatchment 3S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP3 : Study Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

Area	(ac) C	N Desc	cription		
* 0.				& Rooftops	
				over, Good,	
				over, Good,	
				grazed, HS	GA
			ds, Good, ds, Good,		
			ghted Aver		
	560 -	-	4% Pervio		
	088		% Impervi		
			•		
Тс	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
5.4	52	0.0937	0.16		Sheet Flow,
07	005	0 4007	0.00		Grass: Dense n= 0.240 P2= 2.31"
3.7	625	0.1637	2.83		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
3.6	209	0.0384	0.98		Shallow Concentrated Flow,
0.0	200	0.0004	0.00		Woodland Kv= 5.0 fps
12.7	886	Total			
1-				Subca Hydrog	atchment 3S: graph Type II 24-hr WQv Rainfall=1.00"
					Runoff Area=15.648 ac
					Runoff Volume=0.000 af
G I					
Flow (cfs)					Runoff Depth=0.00"
Flow					Flow Length=886'
					Tc=12.7 min
					CN=40
-					
0.00	cfs				
0-4	<del>/////////////////////////////////////</del>	8 10 12 <sup>-</sup>	14 16 18 20	22 24 26 28	30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60
0	3				(hours)

### Summary for Subcatchment 4.1S:

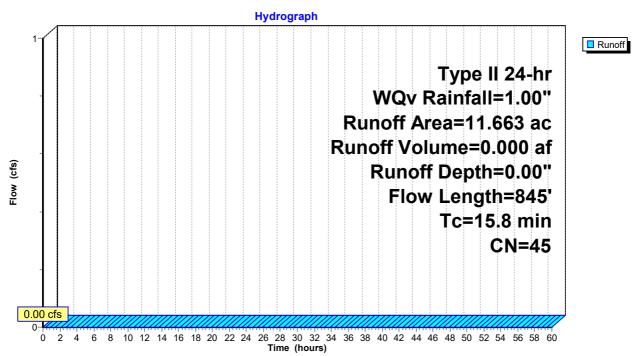
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 4.1R1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

	Area	(ac)	CN	Desc	cription				
*	0.	327	98	Pave	Paved Roads & Rooftops				
*	0.	375	96	Grav	el surface				
	0.	165	61	>75%	6 Grass co	over, Good	, HSG B		
	2.	544	30			grazed, HS			
	0.	560	58			grazed, HS	GB		
	3.	605	30		ds, Good,				
*	4.	087	55	Woo	ds, Good,	HSG B			
	11.	663	45	Weig	ghted Aver	age			
		336		97.20	0% Pervio	us Area			
	0.	327		2.80	% Impervi	ous Area			
	_		_			•			
	Tc	Length		lope	Velocity	Capacity	Description		
	(min)	(feet		(ft/ft)	(ft/sec)	(cfs)			
	8.5	100	0.0	0430	0.20		Sheet Flow,		
							Grass: Short n= 0.150 P2= 2.31"		
	2.6	360	0.1	1077	2.30		Shallow Concentrated Flow,		
							Short Grass Pasture Kv= 7.0 fps		
	4.7	385	o 0.0	0735	1.36		Shallow Concentrated Flow,		
	45.0						Woodland Kv= 5.0 fps		

15.8 845 Total

Subcatchment 4.1S:



### Summary for Subcatchment 4.2aS:

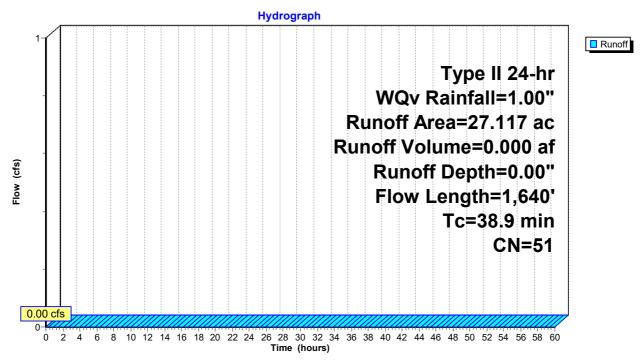
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Pond 4.2C : 18" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

<ul> <li>* 0.238 96 Gravel surface</li> <li>4.086 30 Meadow, non-grazed, HSG A</li> <li>0.384 58 Meadow, non-grazed, HSG B</li> <li>0.977 30 Woods, Good, HSG A</li> </ul>	
0.384 58 Meadow, non-grazed, HSG B	
0.977 30 Woods, Good, HSG A	
21.432 55 Woods, Good, HSG B	
27.117 51 Weighted Average	
27.117 100.00% Pervious Area	
Tc Length Slope Velocity Capacity Description	
(min) (feet) (ft/ft) (ft/sec) (cfs)	
17.8 100 0.0480 0.09 Sheet Flow,	
Woods: Light underbrush n= 0.400 P2=	2= 2.31"
8.0 878 0.1354 1.84 Shallow Concentrated Flow,	
Woodland Kv= 5.0 fps	
13.1         662         0.0144         0.84         Shallow Concentrated Flow,	
Short Grass Pasture Kv= 7.0 fps	

38.9 1,640 Total

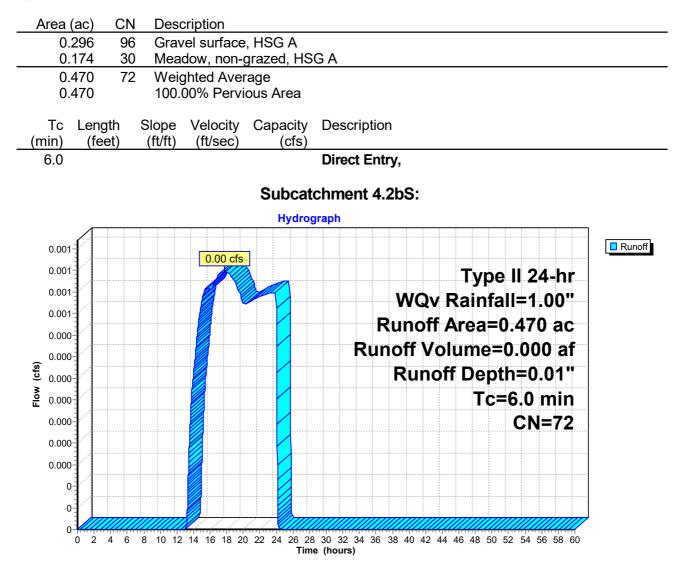
Subcatchment 4.2aS:



### Summary for Subcatchment 4.2bS:

Runoff = 0.00 cfs @ 17.70 hrs, Volume= 0.000 af, Depth= 0.01" Routed to Reach 4.2bR : Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"



### Summary for Subcatchment 4.3S:

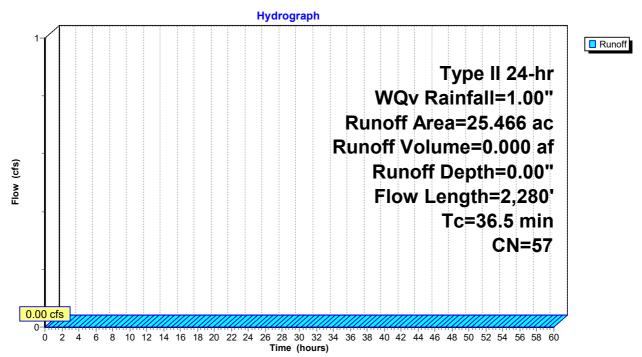
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Pond 4.3C : 24" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

	Area	(ac) C	N Desc	cription		
*	1.	293 9	8 Pave	ed Roads &	& Rooftops	
	1.	783 5			grazed, HS	GB
	22.			ds, Good,		
_	25.	466 5	57 Weid	ghted Aver	ade	
		173		2% Pervio		
		293		% Impervi		
		200	0.00	/•		
	Тс	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
_	15.9	100	0.0634	0.10		Sheet Flow,
				•••••		Woods: Light underbrush n= 0.400 P2= 2.31"
	17.8	1,368	0.0656	1.28		Shallow Concentrated Flow,
		.,				Woodland Kv= 5.0 fps
	0.1	38	0.3960	4.40		Shallow Concentrated Flow,
	5.1	00	2.2000			Short Grass Pasture Kv= 7.0 fps
	2.7	774	0.0281	4.70	109.09	Channel Flow,
	,		0.0201	1.10		Area= 23.2 sf Perim= 43.2' r= 0.54' n= 0.035

36.5 2,280 Total

#### Subcatchment 4.3S:



### Summary for Subcatchment 5S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP5 : Study Point 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

	(ac) C	IN DESC	cription	Area (ac) CN Description						
	4.139 30 Meadow, non-grazed, HSG A									
			ds, Good,							
			ghted Ave							
4.	.970	100.	00% Pervi	ous Area						
Tc	Length	Slope	Velocity	Capacity	Description					
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	Decemption					
7.1	100	0.0675	0.24		Sheet Flow,					
					Grass: Short n= 0.150 P2= 2.31"					
8.5	801	0.0508	1.58		Shallow Concentrated Flow,					
4.0	047	0 4 5 4 5	0.70		Short Grass Pasture Kv= 7.0 fps					
1.3	217	0.1515	2.72		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps					
0.6	62	0.0697	1.85		Shallow Concentrated Flow,					
0.0	02	0.0007	1.00		Short Grass Pasture Kv= 7.0 fps					
17.5	1,180	Total								
				Subca	atchment 5S:					
				Hydrog	graph					
1 <b>-1</b>										
					Type II 24-hr					
-					Type II 24-hr WQv Rainfall=1.00"					
					Type II 24-hr					
					Type II 24-hr WQv Rainfall=1.00"					
cfs)					Type II 24-hr WQv Rainfall=1.00" Runoff Area=4.970 ac Runoff Volume=0.000 af					
wv (cfs)					Type II 24-hr WQv Rainfall=1.00" Runoff Area=4.970 ac Runoff Volume=0.000 af Runoff Depth=0.00"					
Flow (cfs)					Type II 24-hr WQv Rainfall=1.00" Runoff Area=4.970 ac Runoff Volume=0.000 af					
Flow (cfs)					Type II 24-hr WQv Rainfall=1.00" Runoff Area=4.970 ac Runoff Volume=0.000 af Runoff Depth=0.00"					
Flow (cfs)					Type II 24-hr WQv Rainfall=1.00" Runoff Area=4.970 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=1,180' Tc=17.5 min					
Flow (cfs)					Type II 24-hr WQv Rainfall=1.00" Runoff Area=4.970 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=1,180'					

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

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0.00 cfs

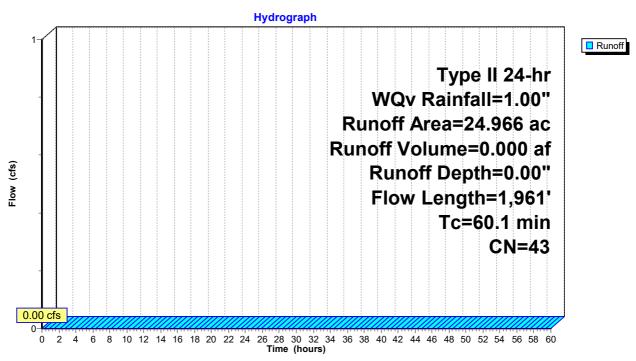
### Summary for Subcatchment 6S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP6 : Study Point 6

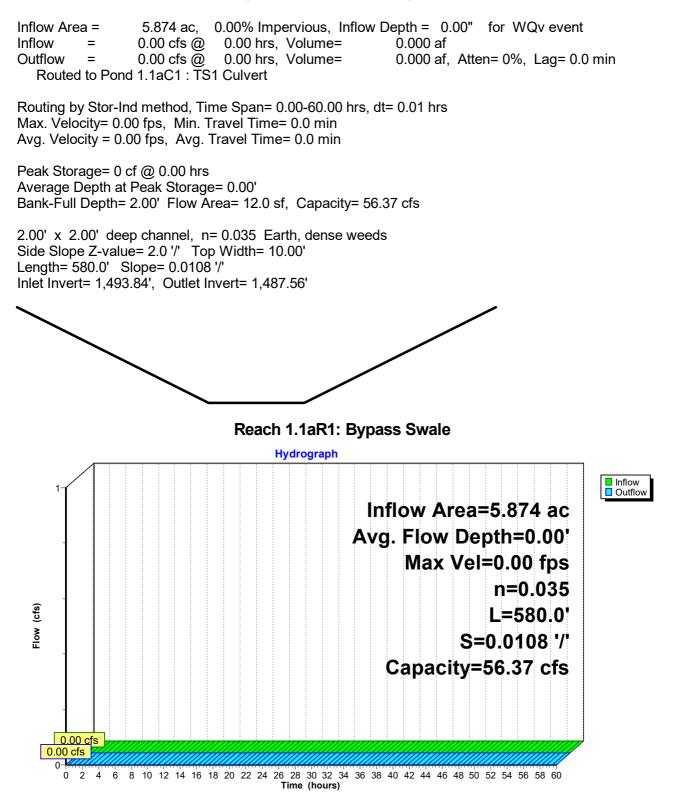
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

	Area	(ac) (	CN Desc	cription			
*	1.	450	98 Pave	ed Roads &	& Rooftops		
	0.	466	96 Grav	el surface	, HSG A		
	2.	545	61 >759	% Grass co	over, Good	, HSG B	
	7.	511	30 Mea	dow, non-g	grazed, HS	IG A	
	0.	788	58 Mea	dow, non-	grazed, HS	G B	
	7.	940	30 Woo	ds, Good,	HSG A		
_	4.	266	55 Woo	ds, Good,	HSG B		
	24.	966	43 Wei	ghted Avei	rage		
		516	94.1	9% Pervio	us Area		
	1.	450	5.81	5.81% Impervious Area			
	_		-				
	Tc	Length		Velocity	Capacity	Description	
_	(min)	(feet)		(ft/sec)	(cfs)		
	10.1	100	0.0278	0.16		Sheet Flow,	
						Grass: Short n= 0.150 P2= 2.31"	
	3.2	313	0.0528	1.61		Shallow Concentrated Flow,	
	~ ~	400	0 4740	0.00		Short Grass Pasture Kv= 7.0 fps	
	3.9	486	0.1742	2.09		Shallow Concentrated Flow,	
	40.0	1 000	0.0000	0.44		Woodland Kv= 5.0 fps	
	42.9	1,062	0.0068	0.41		Shallow Concentrated Flow,	
_	00 (	1.001	<b>.</b>			Woodland Kv= 5.0 fps	
	60.1	1,961	Total				

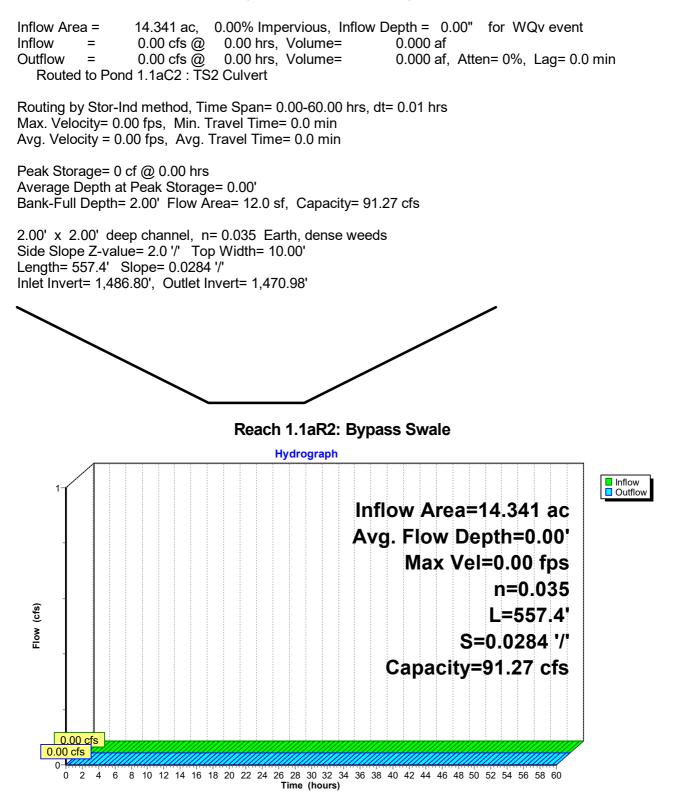
## Subcatchment 6S:



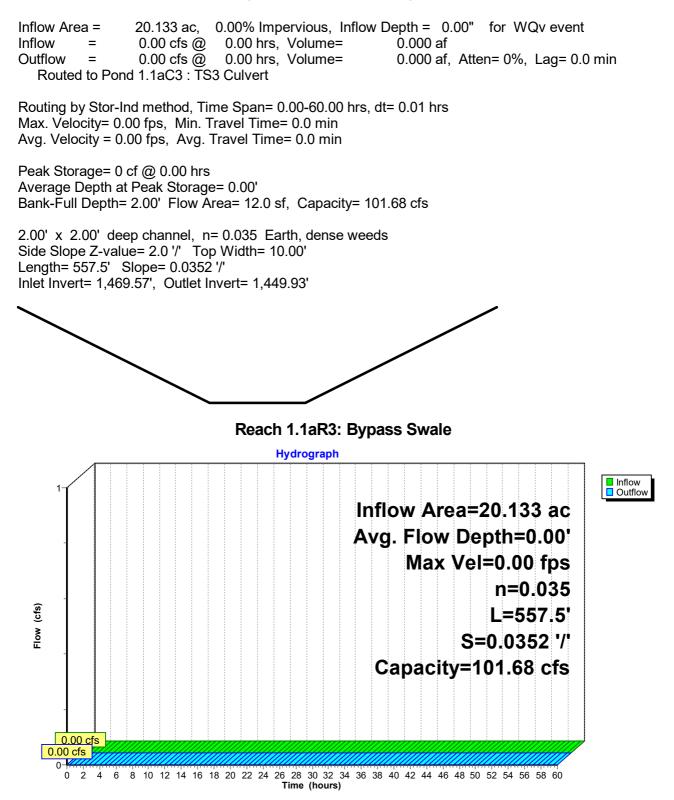
### Summary for Reach 1.1aR1: Bypass Swale



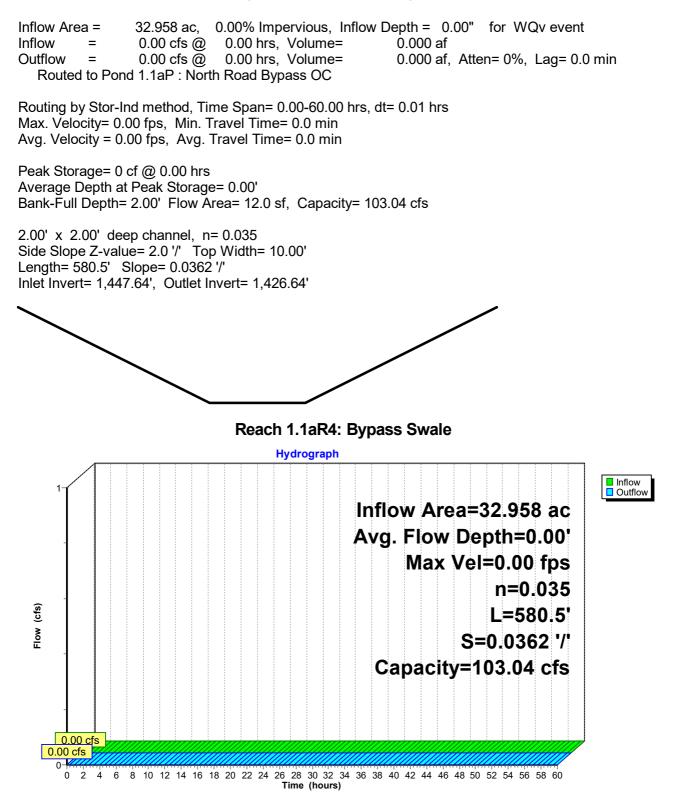
### Summary for Reach 1.1aR2: Bypass Swale



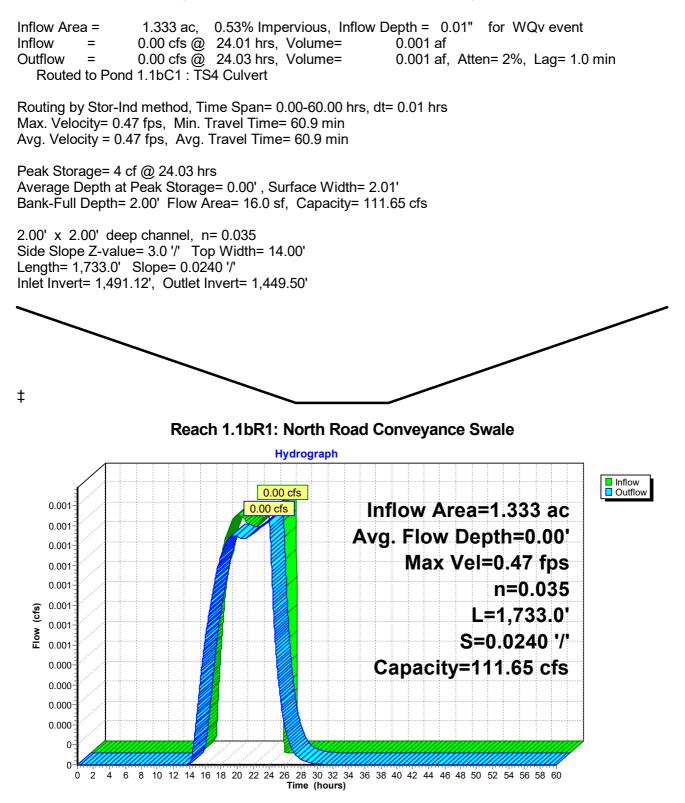
### Summary for Reach 1.1aR3: Bypass Swale



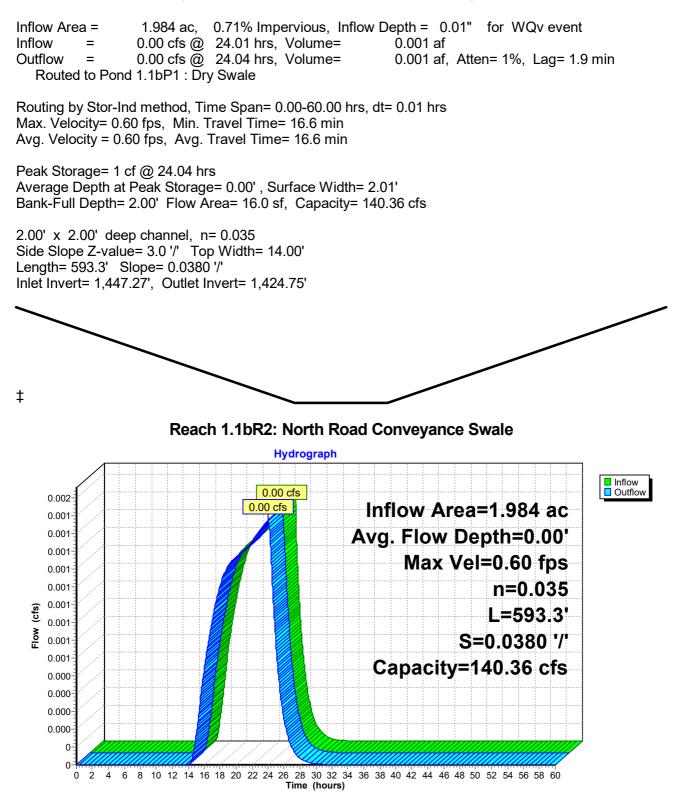
### Summary for Reach 1.1aR4: Bypass Swale



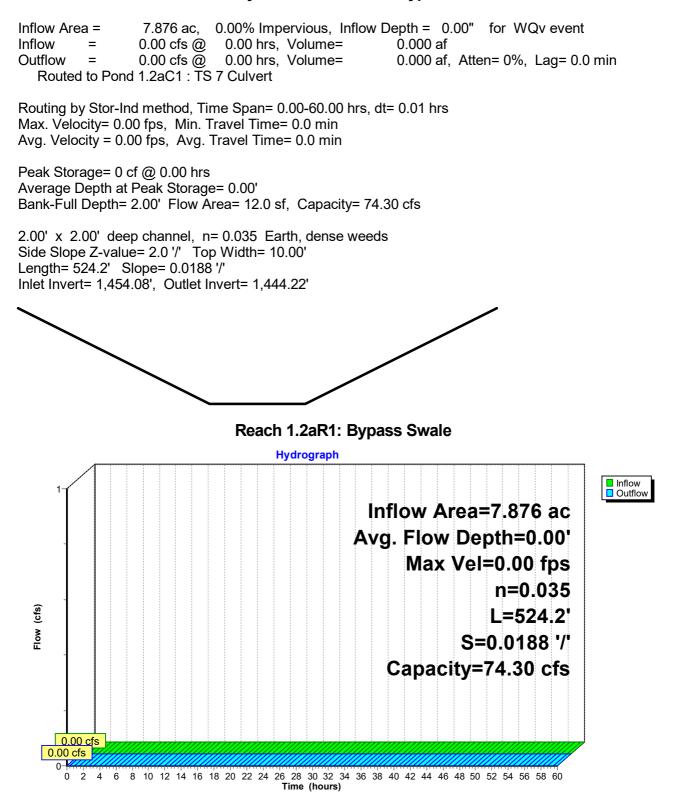
#### Summary for Reach 1.1bR1: North Road Conveyance Swale



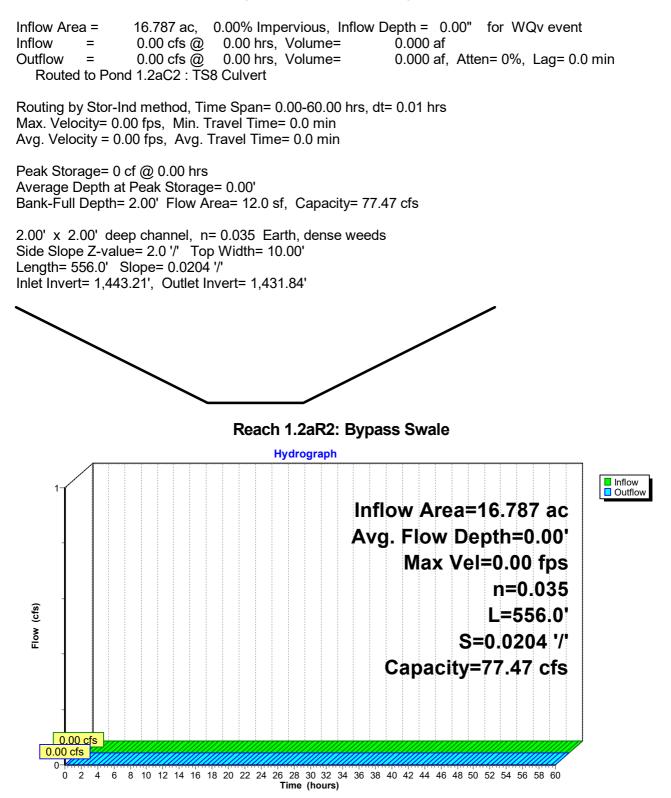
#### Summary for Reach 1.1bR2: North Road Conveyance Swale



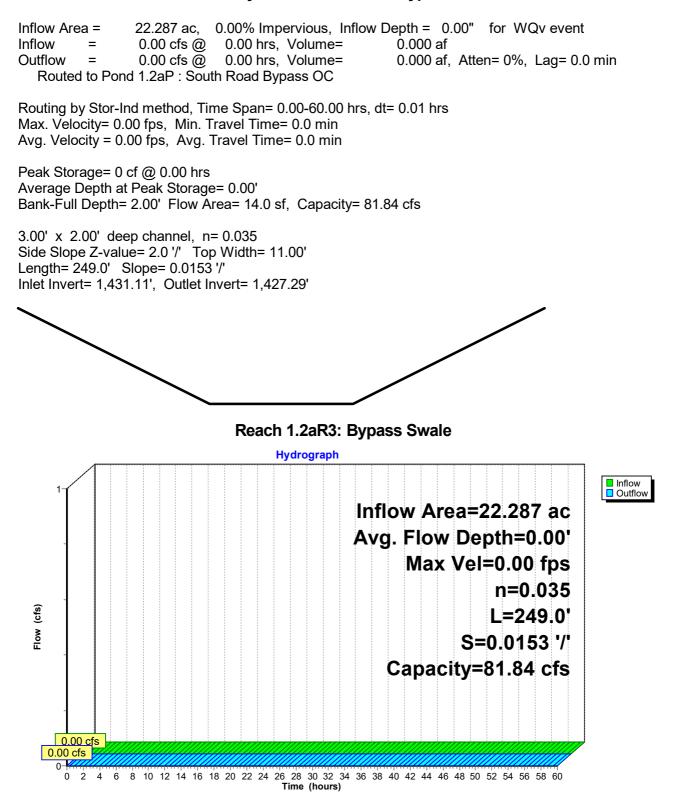
### Summary for Reach 1.2aR1: Bypass Swale

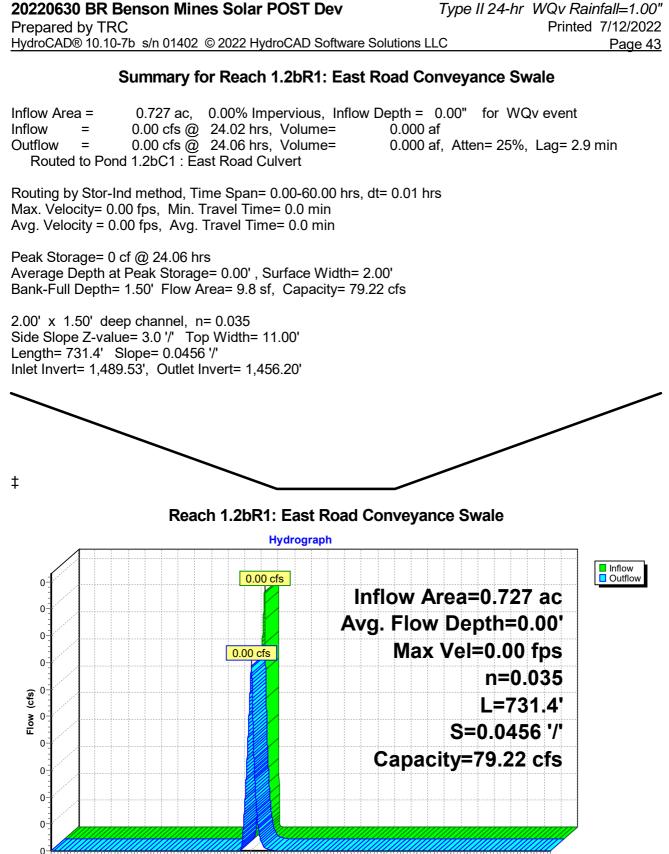


### Summary for Reach 1.2aR2: Bypass Swale



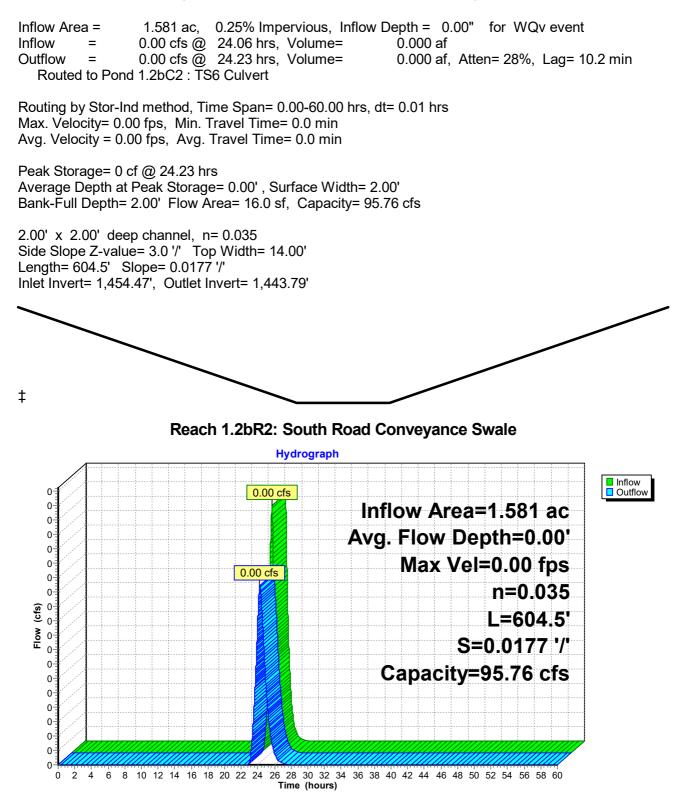
#### Summary for Reach 1.2aR3: Bypass Swale



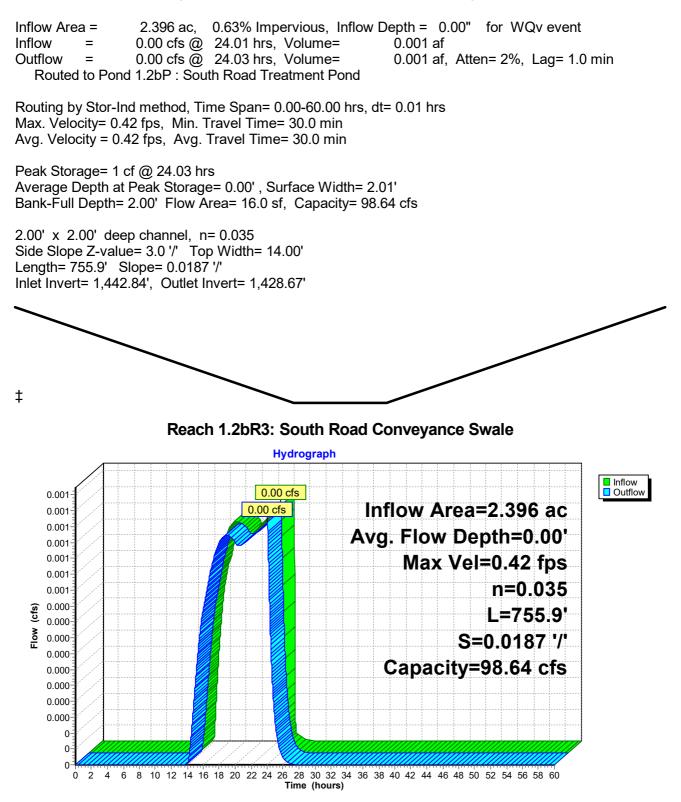


0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

#### Summary for Reach 1.2bR2: South Road Conveyance Swale



#### Summary for Reach 1.2bR3: South Road Conveyance Swale

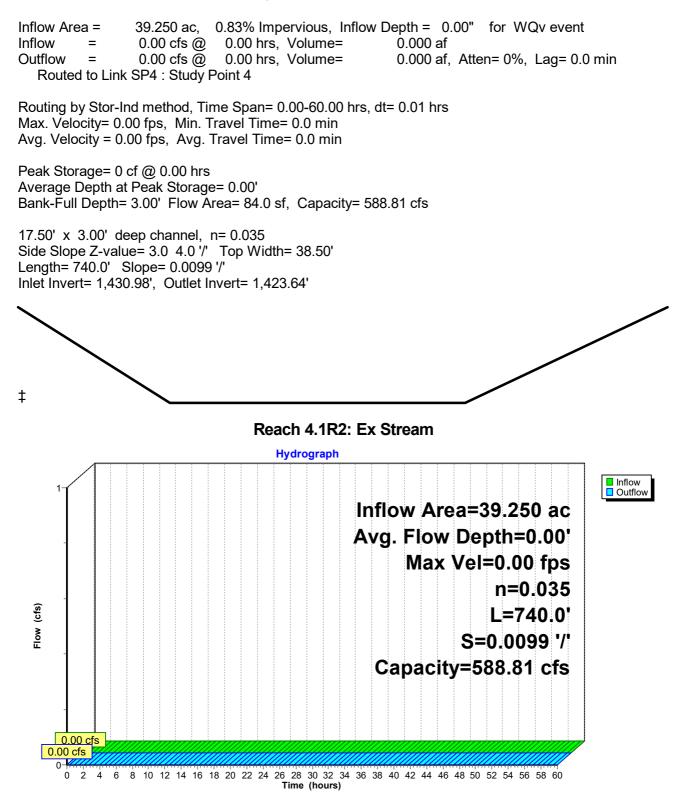


### Summary for Reach 4.1R1: Bypass Swale

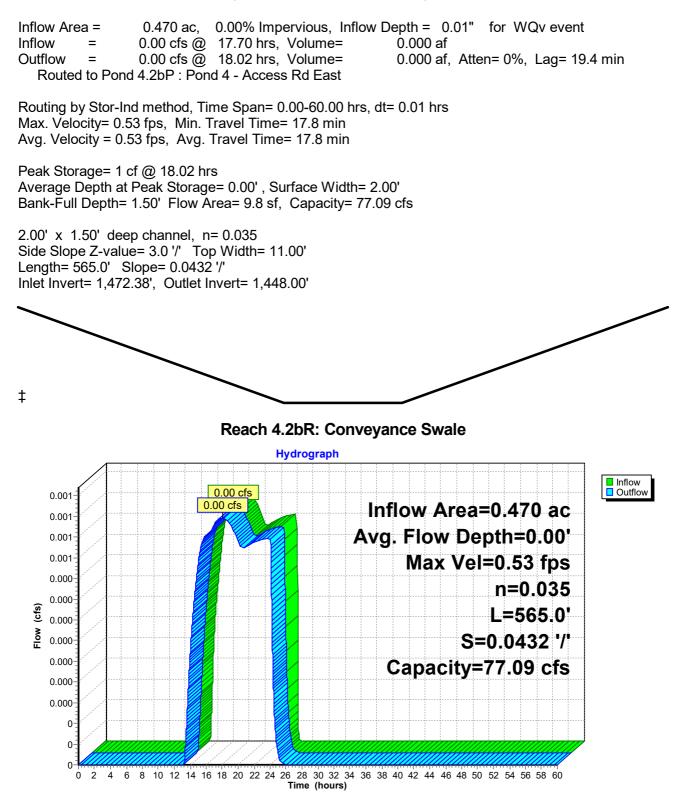
Inflow Area = 11.663 ac, 2.80% Impervious, Inflow Depth = 0.00" for WQv event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min Routed to Reach 4.1R2 : Ex Stream Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min Peak Storage= 0 cf @ 0.00 hrs Average Depth at Peak Storage= 0.00' Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 54.88 cfs 0.00' x 2.00' deep channel, n= 0.035 Side Slope Z-value= 2.0 '/' Top Width= 8.00' Length= 570.0' Slope= 0.0303 '/' Inlet Invert= 1,448.24', Outlet Invert= 1,430.97' Reach 4.1R1: Bypass Swale Hydrograph Inflow Outflow Inflow Area=11.663 ac Avg. Flow Depth=0.00' Max Vel=0.00 fps n=0.035 Flow (cfs) L=570.0' S=0.0303 '/' Capacity=54.88 cfs 0.00 cfs 0.00 cfs 0ò 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

### Summary for Reach 4.1R2: Ex Stream

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#### Summary for Reach 4.2bR: Conveyance Swale



# Summary for Pond 1.1aC1: TS1 Culvert

Inflow Area = 5.874 ac, 0.00% Impervious, Inflow Depth = 0.00" for WQv event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = Outflow 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.1aR2 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,487.56' @ 0.00 hrs Flood Elev= 1,489.60' **Outlet Devices** Device Routing Invert 36.3" W x 22.5" H, R=18.8"/51.0" Pipe Arch RCP\_Arch 37x23 #1 Primary 1.487.56 L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,487.56' / 1,486.80' S= 0.0162 '/' Cc= 0.900 n= 0.012, Flow Area= 4.43 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,487.56' (Free Discharge) -1=RCP\_Arch 37x23 (Controls 0.00 cfs) Pond 1.1aC1: TS1 Culvert Hydrograph Inflow Primary Inflow Area=5.874 ac Peak Elev=1,487.56' 36.3" x 22.5" R=18.8"/51.0" (cfs) **Pipe Arch Culvert** Flow n=0.012 L=47.0' S=0.0162 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

# Summary for Pond 1.1aC2: TS2 Culvert

Inflow Area = 14.341 ac, 0.00% Impervious, Inflow Depth = 0.00" for WQv event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.1aR3 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,470.80' @ 0.00 hrs Flood Elev= 1,473.07' Device Routing Invert **Outlet Devices** 48.0" W x 24.0" H Box Culvert #1 Primary 1.470.80' L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,470.80' / 1,469.57' S= 0.0262 '/' Cc= 0.900 n= 0.012, Flow Area= 8.00 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,470.80' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.1aC2: TS2 Culvert Hydrograph Inflow Primary Inflow Area=14.341 ac Peak Elev=1,470.80' 48.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.0' S=0.0262 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

# Summary for Pond 1.1aC3: TS3 Culvert

Inflow Area = 20.133 ac, 0.00% Impervious, Inflow Depth = 0.00" for WQv event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min 0.00 hrs, Volume= 0.000 af Primary = 0.00 cfs @ Routed to Reach 1.1aR4 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,449.55' @ 0.00 hrs Flood Elev= 1,452.10' Device Routing Invert Outlet Devices 60.0" W x 24.0" H Box Culvert #1 Primary 1.449.55' L= 47.2' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,449.55' / 1,447.64' S= 0.0405 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 10.00 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,449.55' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.1aC3: TS3 Culvert Hydrograph Inflow Primary Inflow Area=20.133 ac Peak Elev=1,449.55' 60.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.2' S=0.0405 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60

Time (hours)

# Summary for Pond 1.1aP: North Road Bypass OC

Inflow Area =	32.958 ac,	0.00% Impervious, Inflow D	epth = 0.00" for WQv event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Discarded =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Link	1.1L :		

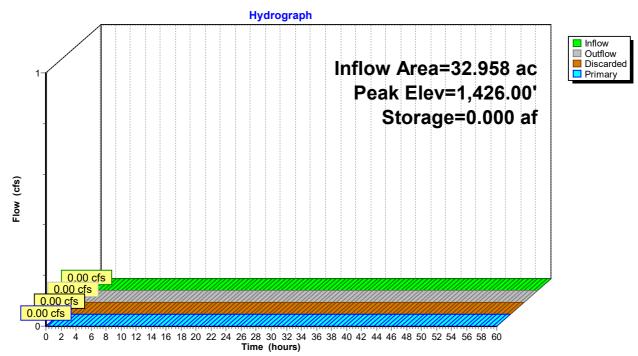
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,426.00' @ 0.00 hrs Surf.Area= 0.005 ac Storage= 0.000 af

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

Volume	Invert	Avail.Storage	e Storage Description
#1	1,426.00'	0.069 a	af 10.00'W x 20.00'L x 4.00'H Prismatoid Z=3.0
Device	Routing	Invert C	Outlet Devices
#1	Discarded	1,426.00' <b>0</b>	0.500 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Primary		<b>10.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,426.00' (Free Discharge) **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,426.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



## Pond 1.1aP: North Road Bypass OC

# Summary for Pond 1.1bC1: TS4 Culvert

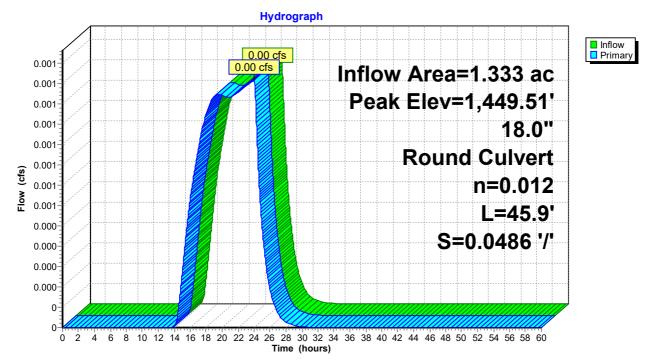
Inflow Area = 1.333 ac, 0.53% Impervious, Inflow Depth = 0.01" for WQv event Inflow 0.00 cfs @ 24.03 hrs, Volume= = 0.001 af 0.00 cfs @ 24.03 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min Outflow 0.00 cfs @ 24.03 hrs, Volume= 0.001 af Primary = Routed to Reach 1.1bR2 : North Road Conveyance Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 1,449.51' @ 24.03 hrs Flood Elev= 1,451.20'

FI000 EIEV- 1,451.20

Device	Routing	Invert	Outlet Devices
#1	Primary	1,449.50'	18.0" Round Culvert
			L= 45.9' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,449.50' / 1,447.27' S= 0.0486 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 24.03 hrs HW=1,449.51' (Free Discharge) ←1=Culvert (Inlet Controls 0.00 cfs @ 0.39 fps)



### Pond 1.1bC1: TS4 Culvert

## Summary for Pond 1.1bP1: Dry Swale

Inflow Area =	1.984 ac,	0.71% Impervious, Inflow D	Depth = 0.01" for WQv event
Inflow =	0.00 cfs @	24.04 hrs, Volume=	0.001 af
Outflow =	0.00 cfs @	24.72 hrs, Volume=	0.001 af, Atten= 37%, Lag= 40.6 min
Discarded =	0.00 cfs @	24.72 hrs, Volume=	0.001 af
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Pond	l 1.1bP2 : Ño	orth Road Detention Pond	

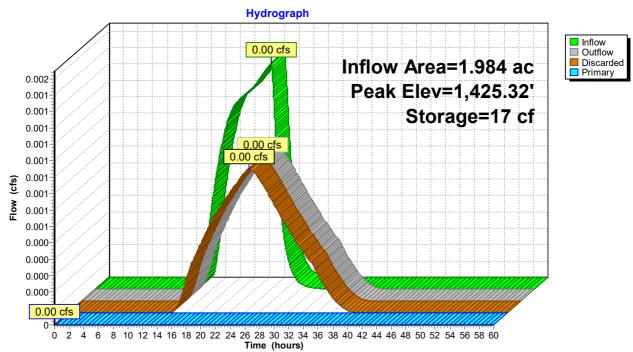
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,425.32' @ 24.72 hrs Surf.Area= 76 sf Storage= 17 cf

Plug-Flow detention time= 255.0 min calculated for 0.001 af (100% of inflow) Center-of-Mass det. time= 255.0 min (1,512.3 - 1,257.3)

Inve	ert Avail.	Storage	Storage Description	on		
1,424.7	'5'	428 cf	Custom Stage Da	<b>ta (Irregular)</b> Liste	ed below (Recalc)	
on	Surf.Area	Perim.	Inc.Store	Cum.Store	Wet.Area	
et)	(sq-ft)	(feet)	(cubic-feet)	(cubic-feet)	<u>(sq-ft)</u>	
75	0	0.0	0	0	0	
)0	25	22.9	2	2	42	
00	273	98.0	127	129	767	
70	603	161.7	299	428	2,086	
Routing	Inv	ert Outl	et Devices			
Discarde	d 1,424.	75' <b>0.50</b>	0 in/hr Exfiltration	over Surface area	Phase-In= 0.01'	
Primary	1,425.	69' <b>2.0'</b>	long x 2.0' breadtl	n Broad-Crested F	Rectangular Weir	
		Hea	d (feet) 0.20 0.40	0.60 0.80 1.00	1.20 1.40 1.60 1.80 2.00	
		2.50	3.00 3.50			
		Coe	f. (English) 2.54 2	.61 2.61 2.60 2.6	6 2.70 2.77 2.89 2.88	
	1,424.7 on et) 75 00 00 70 Routing Discarde	1,424.75'         on       Surf.Area         et)       (sq-ft)         75       0         00       25         00       273         70       603         Routing         Discarded       1,424.	1,424.75'       428 cf         on       Surf.Area       Perim.         et)       (sq-ft)       (feet)         75       0       0.0         00       25       22.9         00       273       98.0         70       603       161.7         Routing       Invert       Outl         Discarded       1,424.75' <b>0.50</b> Primary       1,425.69' <b>2.0'</b> Hea       2.50       Coe	1,424.75'       428 cf       Custom Stage Da         on       Surf.Area       Perim.       Inc.Store         et)       (sq-ft)       (feet)       (cubic-feet)         75       0       0.0       0         00       25       22.9       2         00       273       98.0       127         70       603       161.7       299         Routing       Invert       Outlet Devices         Discarded       1,424.75' <b>0.500 in/hr Exfiltration</b> Primary       1,425.69' <b>2.0' long x 2.0' breadtl</b> Head (feet)       0.20       0.40         2.50       3.00       3.50	1,424.75'       428 cf       Custom Stage Data (Irregular) Lister         on       Surf.Area       Perim.       Inc.Store       Cum.Store         et)       (sq-ft)       (feet)       (cubic-feet)       (cubic-feet)         75       0       0.0       0       0         90       25       22.9       2       2         90       273       98.0       127       129         70       603       161.7       299       428         Routing       Invert       Outlet Devices         Discarded       1,424.75'       0.500 in/hr Exfiltration over Surface area         Primary       1,425.69'       2.0' long x 2.0' breadth Broad-Crested F         Head (feet)       0.20       0.40       0.60       0.80       1.00         2.50       3.00       3.50       Coef. (English)       2.54       2.61       2.61       2.60       2.60	1,424.75'       428 cf       Custom Stage Data (Irregular) Listed below (Recalc)         on       Surf.Area       Perim.       Inc.Store       Cum.Store       Wet.Area         et)       (sq-ft)       (feet)       (cubic-feet)       (cubic-feet)       (sq-ft)         75       0       0.0       0       0       0         00       25       22.9       2       42         00       273       98.0       127       129       767         70       603       161.7       299       428       2,086         Routing       Invert       Outlet Devices         Discarded       1,424.75'       0.500 in/hr Exfiltration over Surface area       Phase-In= 0.01'         Primary       1,425.69'       2.0' long x 2.0' breadth Broad-Crested Rectangular Weir         Head (feet)       0.20       0.40       0.60       0.80       1.00       1.20       1.40       1.60       1.80       2.00         2.50       3.00       3.50       Coef. (English)       2.54       2.61       2.61       2.60       2.66       2.70       2.77       2.89       2.88

**Discarded OutFlow** Max=0.00 cfs @ 24.72 hrs HW=1,425.32' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,424.75' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



# Pond 1.1bP1: Dry Swale

### Summary for Pond 1.1bP2: North Road Detention Pond

Inflow Area =	1.984 ac,	0.71% Impervious, Inflow D	epth = 0.00" for WQv event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Discarded =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Link	1.1L :		

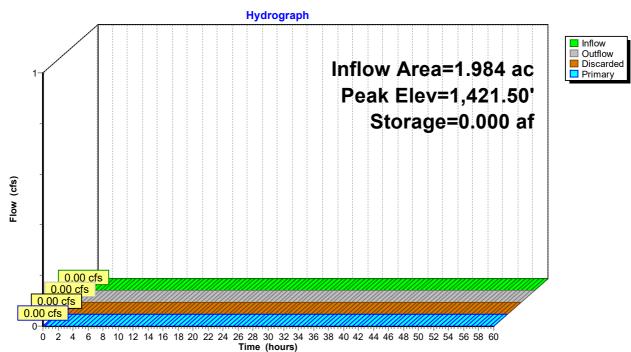
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,421.50' @ 0.00 hrs Surf.Area= 0.009 ac Storage= 0.000 af

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

Volume	Invert	Avail.Storag	e Storage Description
#1	1,421.50'	0.166 a	af 10.00'W x 40.00'L x 5.00'H Prismatoid Z=3.0
Device	Routing		Outlet Devices
#1 #2	Discarded Primary	,	0.500 in/hr Exfiltration over Surface area Phase-In= 0.01' 20.0' long x 10.0' breadth Broad-Crested Rectangular Weir
π <b>∠</b>	1 minury	, i	Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,421.50' (Free Discharge) **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,421.50' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



#### Pond 1.1bP2: North Road Detention Pond

# Summary for Pond 1.2aC1: TS 7 Culvert

Inflow Area = 7.876 ac, 0.00% Impervious, Inflow Depth = 0.00" for WQv event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = Outflow 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.2aR2 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,444.22' @ 0.00 hrs Flood Elev= 1,446.28' Device Routing Invert Outlet Devices 36.0" W x 24.0" H Box Culvert #1 Primary 1.444.22' L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,444.22' / 1,443.21' S= 0.0215 '/' Cc= 0.900 n= 0.012, Flow Area= 6.00 sf **Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,444.22' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.2aC1: TS 7 Culvert Hydrograph Inflow Primary Inflow Area=7.876 ac Peak Elev=1,444.22' 36.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.0' S=0.0215 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

## Summary for Pond 1.2aC2: TS8 Culvert

Inflow Area = 16.787 ac, 0.00% Impervious, Inflow Depth = 0.00" for WQv event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.2aR3 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,431.65' @ 0.00 hrs Flood Elev= 1,433.87' Device Routing Invert **Outlet Devices** 60.0" W x 24.0" H Box Culvert #1 Primary 1.431.65' L= 47.5' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,431.65' / 1,431.11' S= 0.0114 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 10.00 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,431.65' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.2aC2: TS8 Culvert Hydrograph Inflow Primary Inflow Area=16.787 ac Peak Elev=1,431.65' 60.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.5' S=0.0114 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60

Time (hours)

### Summary for Pond 1.2aP: South Road Bypass OC

Inflow Area = 22.287 ac,		0.00% Impervious, Inflow D	epth = 0.00" for WQv event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Discarded =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Link	1.2L :		

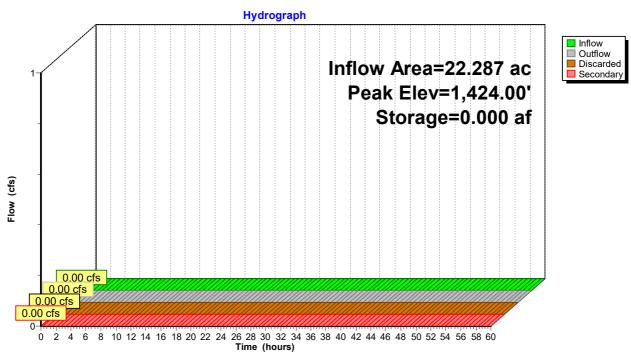
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,424.00' @ 0.00 hrs Surf.Area= 0.005 ac Storage= 0.000 af

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

Volume	Invert	Avail.Stora	ge Storage Description
#1	1,424.00'	0.069	af 10.00'W x 20.00'L x 4.00'H Prismatoid Z=3.0
Device	Routing	Invert	Outlet Devices
#1	Discarded	1,424.00'	12.000 in/hr Exfiltration over Surface area
#2	Secondary	1,426.50'	<b>10.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,424.00' (Free Discharge) **1=Exfiltration** (Passes 0.00 cfs of 0.06 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,424.00' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



#### Pond 1.2aP: South Road Bypass OC

## Summary for Pond 1.2bC1: East Road Culvert

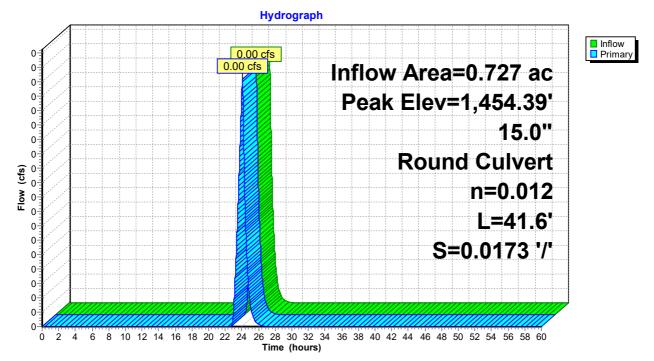
Inflow Area = 0.727 ac, 0.00% Impervious, Inflow Depth = 0.00" for WQv event Inflow = 0.00 cfs @ 24.06 hrs, Volume= 0.000 af Outflow = 0.00 cfs @ 24.06 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min Primary = 0.00 cfs @ 24.06 hrs, Volume= 0.000 af Routed to Reach 1.2bR2 : South Road Conveyance Swale

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,454.39' @ 24.06 hrs Flood Elev= 1,457.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,454.39'	15.0" Round Culvert
			L= 41.6' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,454.39' / 1,453.67' S= 0.0173 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 24.06 hrs HW=1,454.39' (Free Discharge) ←1=Culvert (Barrel Controls 0.00 cfs @ 0.04 fps)

# Pond 1.2bC1: East Road Culvert



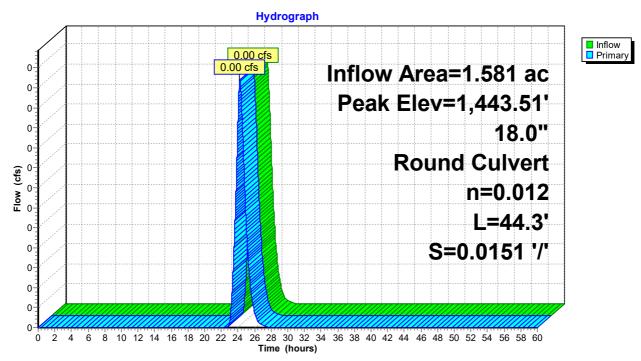
# Summary for Pond 1.2bC2: TS6 Culvert

Inflow Area =1.581 ac,0.25% Impervious, Inflow Depth =0.00" for WQv eventInflow =0.00 cfs @24.23 hrs, Volume=0.000 afOutflow =0.00 cfs @24.23 hrs, Volume=0.000 af, Atten= 0%, Lag= 0.0 minPrimary =0.00 cfs @24.23 hrs, Volume=0.000 afRouted to Reach 1.2bR3 : South Road Conveyance SwaleNote that the state of the state of

Peak Elev= 1,443.51' @ 24.23 hrs Flood Elev= 1,445.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,443.51'	18.0" Round Culvert
			L= 44.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,443.51' / 1,442.84' S= 0.0151 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 24.23 hrs HW=1,443.51' (Free Discharge) ←1=Culvert (Barrel Controls 0.00 cfs @ 0.04 fps)



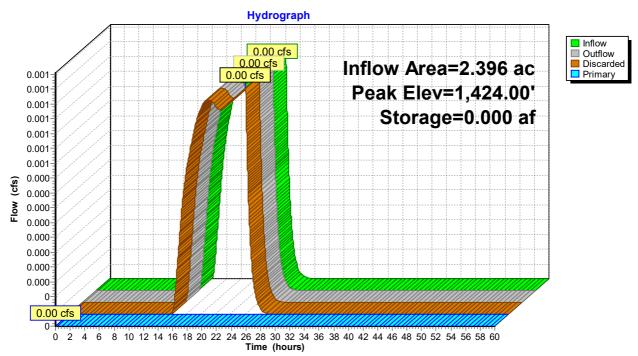
### Pond 1.2bC2: TS6 Culvert

### Summary for Pond 1.2bP: South Road Treatment Pond

Outflow Discardo Primary	= = ed =	0.00 cfs @ 2 0.00 cfs @ 2 0.00 cfs @ 2 0.00 cfs @	63% Impervious, Inflow Depth =       0.00" for WQv event         4.03 hrs, Volume=       0.001 af         4.05 hrs, Volume=       0.001 af, Atten= 0%, Lag= 1.1 min         4.05 hrs, Volume=       0.001 af         0.00 hrs, Volume=       0.000 af	
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,424.00' @ 24.05 hrs Surf.Area= 0.009 ac Storage= 0.000 af				
Plug-Flow detention time= 3.0 min calculated for 0.001 af (100% of inflow) Center-of-Mass det. time= 3.0 min(1,209.7-1,206.7)				
Volume	Volume Invert Avail.Storage Storage Description			
#1	1,424.00	)' 0.14	9 af 20.00'W x 20.00'L x 5.00'H Prismatoid Z=3.0	
Device	Routing	Invert	Outlet Devices	
#1 #2	Discarded Primary		12.000 in/hr Exfiltration over Surface area Phase-In= 0.01'	

**Discarded OutFlow** Max=0.00 cfs @ 24.05 hrs HW=1,424.00' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,424.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



# Pond 1.2bP: South Road Treatment Pond

#### Summary for Pond 1.3P: Pond 3 - Access Rd West

Inflow Area =	0.695 ac,	0.00% Impervious, Inflow E	Depth = 0.00" for WQv event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Discarded =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Link	SP1 : Study F	Point 1	

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,456.00' @ 0.00 hrs Surf.Area= 784 sf Storage= 0 cf

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

Volume	Invert	Avail.	Storage	Storage Description	on	
#1	1,456.00'		8,743 cf	Custom Stage Dat	<b>ta (Irregular)</b> Listed	d below (Recalc)
Elevatio (fee 1,456.0 1,458.0 1,459.0 1,460.0	e <u>t)</u> 00 00 00	urf.Area (sq-ft) 784 1,720 2,884 5,280	Perim. (feet) 123.0 194.0 279.0 421.0	Inc.Store (cubic-feet) 0 2,443 2,277 4,022	Cum.Store (cubic-feet) 0 2,443 4,721 8,743	Wet.Area (sq-ft) 784 2,603 5,811 13,729
Device	Routing	Inv	ert Outle	et Devices		
#1 #2	Discarded Primary	1,456.0 1,459.9	99' <b>20.0</b> '	0 in/hr Exfiltration ' long x 4.0' breadt	th Broad-Crested I	Rectangular Weir
				d (feet) 0.20 0.40 3.00 3.50 4.00 4		.20 1.40 1.60 1.80 2.00
			Coe	f. (English) 2.38 2.	54 2.69 2.68 2.6	7 2.67 2.65 2.66 2.66
			2.68	2.72 2.73 2.76 2	.79 2.88 3.07 3.3	2

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,456.00' (Free Discharge) **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,456.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



Hydrograph Inflow Outflow Discarded Primary Inflow Area=0.695 ac 1 Peak Elev=1,456.00' Storage=0 cf (cfs) Flow 0.00 cfs <u>0.00 cfs</u> 0.00 cfs 0.00 cfs 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

#### Pond 1.3P: Pond 3 - Access Rd West

#### Summary for Pond 4.2bP: Pond 4 - Access Rd East

Inflow Area =	0.470 ac,	0.00% Impervious, Inf	ow Depth = 0.01" for WQv event
Inflow =	0.00 cfs @	18.02 hrs, Volume=	0.000 af
Outflow =	0.00 cfs @	18.09 hrs, Volume=	0.000 af, Atten= 0%, Lag= 3.7 min
Discarded =	0.00 cfs @	18.09 hrs, Volume=	0.000 af
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Pond	4.2C : 18" C	ulvert	

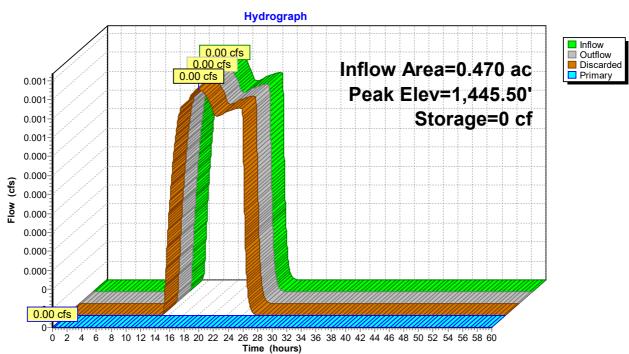
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,445.50' @ 18.09 hrs Surf.Area= 200 sf Storage= 0 cf

Plug-Flow detention time= 4.1 min calculated for 0.000 af (100% of inflow) Center-of-Mass det. time= 4.1 min (1,156.5 - 1,152.4)

Volume	Invert	Avail.Stor	age Storage Description
#1	1,445.50'	2,31	7 cf 10.00'W x 20.00'L x 3.50'H Prismatoid Z=3.0
Device	Routing	Invert	Outlet Devices
#1	Discarded	1,445.50'	6.000 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Primary	1,448.25'	10.0' long x 4.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66
			2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.00 cfs @ 18.09 hrs HW=1,445.50' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,445.50' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



#### Pond 4.2bP: Pond 4 - Access Rd East

#### Summary for Pond 4.2C: 18" Culvert

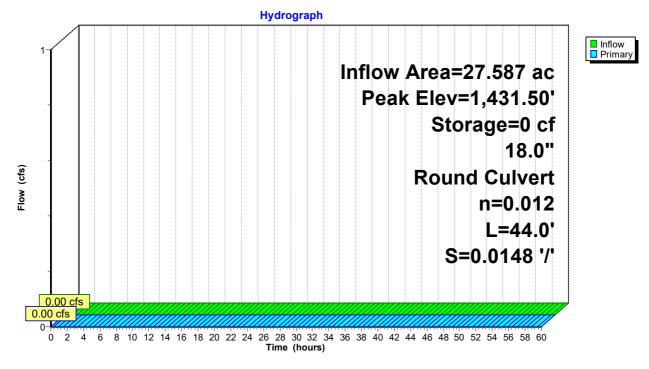
Inflow Area	a =	27.587 ac,	0.00% Impervious, Inflow D	epth = 0.00" for WQv event
Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed	to Rea	ch 4.1R2 : Ēx	Stream	

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,431.50' @ 0.00 hrs Storage= 0 cf Flood Elev= 1,434.64' Surf.Area= 27,666 sf Storage= 28,656 cf

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

Volume	Inve	ert Ava	il.Storage	Storage Description	on		
#1	1,431.5	50'	39,033 cf	Custom Stage Da	<b>ta (Irregular)</b> Liste	ed below (Recalc)	
Elevatio	n	Surf.Area	Perim.	Inc.Store	Cum.Store	Wet.Area	
feet	-	(sq-ft)	(feet)	(cubic-feet)	(cubic-feet)	(sq-ft)	
	/		. ,	· · · · ·		(SQ-II)	
1,431.5	0	0	0.0	0	0	0	
1,432.0	0	1,190	146.0	198	198	1,697	
1,432.5	0	3,534	368.0	1,129	1,327	10,778	
1,433.0	0	5,795	497.0	2,309	3,637	19,660	
1,433.5	0	10,362	837.0	3,984	7,621	55,755	
1,434.0	0	16,931	975.0	6,756	14,377	75,659	
1,434.6	0	27,412	1,352.0	13,177	27,555	145,474	
1,435.0	0	30,000	1,500.0	11,479	39,033	179,068	
Davidaa		1		at Daviese			
Device	Routing	Ir	ivert Outl	et Devices			
#1	Primary	1,43′	1.83' <b>18.0</b>	" Round Culvert			
	-		L= 4	4.0' RCP, square	edge headwall. K	(e= 0.500	
				/ Outlet Invert= 1,4			
				,	'		
			n– t	0.012 Corrugated P		, FIUW AIEa- 1.//	51

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,431.50' (Free Discharge) ←1=Culvert (Controls 0.00 cfs) Pond 4.2C: 18" Culvert



#### Summary for Pond 4.3C: 24" Culvert

5.08% Impervious, Inflow Depth = 0.00" for WQv event Inflow Area = 25.466 ac, 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af Routed to Link SP4 : Study Point 4 Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,431.35' @ 0.00 hrs Flood Elev= 1,434.65' **Outlet Devices** Device Routing Invert 24.0" Round Culvert #1 1.431.35 Primary L= 55.8' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,431.35' / 1,429.87' S= 0.0265 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf #2 20.0' long x 30.0' breadth Broad-Crested Rectangular Weir Primary 1,434.81' Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,431.35' (Free Discharge) -1=Culvert (Controls 0.00 cfs) -2=Broad-Crested Rectangular Weir (Controls 0.00 cfs) Pond 4.3C: 24" Culvert Hydrograph Inflow Primar Inflow Area=25.466 ac Peak Elev=1,431.35' Flow (cfs)

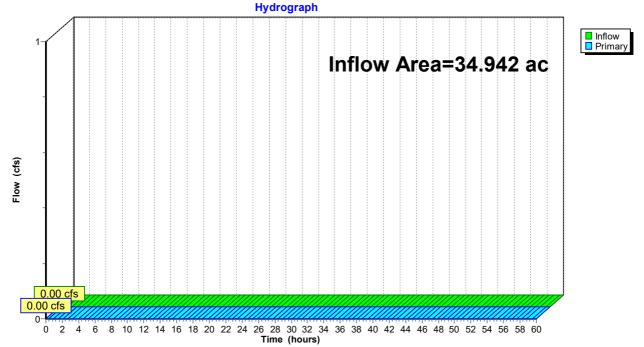
0.00 cfs 0.00 cfs 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

#### Summary for Link 1.1L:

Inflow Area = 34.942 ac, 0.04% Impervious, Inflow Depth = 0.00" for WQv event Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min Routed to Link SP1 : Study Point 1

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

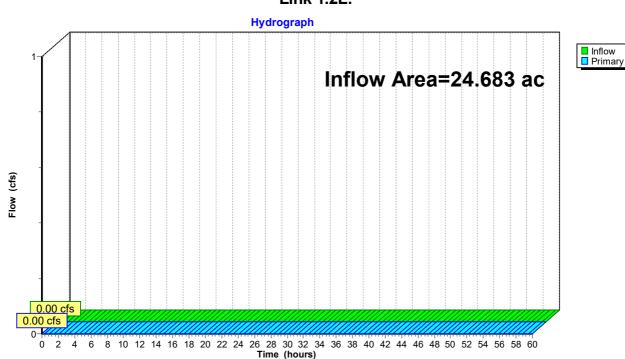
#### Link 1.1L:



#### Summary for Link 1.2L:

Inflow Area = 24.683 ac, 0.06% Impervious, Inflow Depth = 0.00" for WQv event Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min Routed to Link SP1 : Study Point 1

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

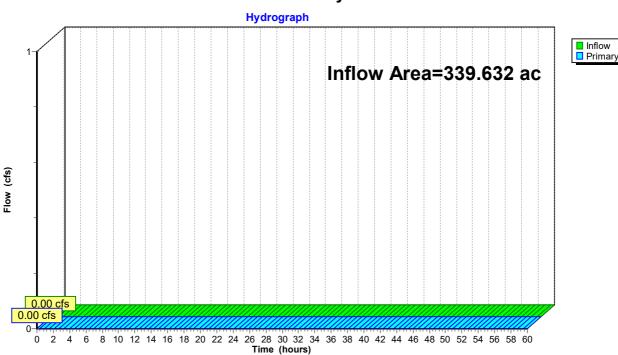


#### Link 1.2L:

#### Summary for Link SP1: Study Point 1

Inflow Area =	339.632 ac,	0.01% Impervious, Inflow	Depth = 0.00"	for WQv event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

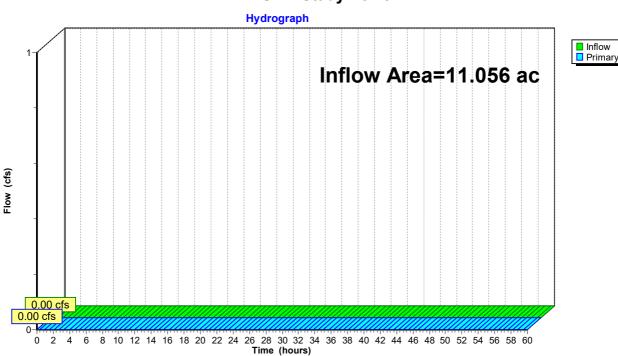


#### Link SP1: Study Point 1

#### Summary for Link SP2: Study Point 2

Inflow Area =	11.056 ac,	0.00% Impervious, Inflow	Depth = 0.00"	for WQv event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs



#### Link SP2: Study Point 2

#### Summary for Link SP3: Study Point 3

Inflow Area =	15.648 ac,	0.56% Impervious, Inflow	Depth = $0.00$ "	for WQv event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

## Hydrograph Inflow Area=15.648 ac y of the second secon

#### Link SP3: Study Point 3

#### Summary for Link SP4: Study Point 4

Inflow Area =	64.716 ac,	2.50% Impervious, Inflow	Depth = 0.00"	for WQv event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

## Hydrograph Inflow Area=64.716 ac y or y of the second second

#### Link SP4: Study Point 4

#### Summary for Link SP5: Study Point 5

Inflow Area =	4.970 ac,	0.00% Impervious, Inflow	Depth = 0.00"	for WQv event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

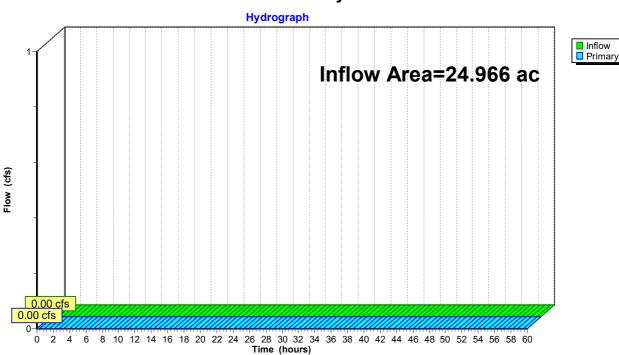
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#### Link SP5: Study Point 5

#### Summary for Link SP6: Study Point 6

Inflow Area =	24.966 ac,	5.81% Impervious, Inflow	Depth = 0.00"	for WQv event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs



#### Link SP6: Study Point 6

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 1.1aS1: North Array East F	Runoff Area=5.874 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=788' Tc=18.8 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1aS2: North Array East	Runoff Area=8.467 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=931' Tc=21.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1aS3: North Array West Flo	Runoff Area=5.792 ac 0.00% Impervious Runoff Depth=0.00" w Length=1,031' Tc=19.7 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1aS4: North Array West	Runoff Area=12.825 ac 0.00% Impervious Runoff Depth=0.00" w Length=1,562' Tc=26.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1bS1: North Road - East	Runoff Area=1.333 ac 0.53% Impervious Runoff Depth=0.26" Tc=6.0 min CN=71 Runoff=0.47 cfs 0.029 af
Subcatchment 1.1bS2: North Road - West	Runoff Area=0.651 ac 1.08% Impervious Runoff Depth=0.19" Tc=6.0 min CN=68 Runoff=0.13 cfs 0.010 af
Subcatchment 1.2aS1: Middle Array East F	Runoff Area=7.876 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=865' Tc=19.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2aS2: Middle Array Center F	r Runoff Area=8.911 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=825' Tc=18.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2aS3: Middle Array West F	Runoff Area=5.500 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=882' Tc=18.5 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2bS1: East Road - West	Runoff Area=0.727 ac 0.00% Impervious Runoff Depth=0.17" Tc=6.0 min CN=67 Runoff=0.12 cfs 0.010 af
Subcatchment 1.2bS2: South Road	Runoff Area=0.854 ac 0.47% Impervious Runoff Depth=0.04" Flow Length=308' Tc=13.7 min CN=58 Runoff=0.00 cfs 0.003 af
Subcatchment 1.2bS3: South Road	Runoff Area=0.815 ac  1.35% Impervious  Runoff Depth=0.26" Tc=6.0 min  CN=71  Runoff=0.29 cfs  0.018 af
	Runoff Area=279.312 ac 0.00% Impervious Runoff Depth=0.00" v Length=6,771' Tc=201.7 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment 1.3bS: Access Rd to Pond 3	Runoff Area=0.695 ac 0.00% Impervious Runoff Depth=0.00" Tc=6.0 min CN=51 Runoff=0.00 cfs 0.000 af
Subcatchment 2S: Flo	Runoff Area=11.056 ac 0.00% Impervious Runoff Depth=0.00" w Length=2,342' Tc=36.0 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment 3S:	Runoff Area=15.648 ac 0.56% Impervious Runoff Depth=0.00" Flow Length=886' Tc=12.7 min CN=40 Runoff=0.00 cfs 0.000 af
Subcatchment 4.1S:	Runoff Area=11.663 ac 2.80% Impervious Runoff Depth=0.00" Flow Length=845' Tc=15.8 min CN=45 Runoff=0.00 cfs 0.000 af

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Subcatchment 4.2aS:	Runoff Area=27.117 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=1,640' Tc=38.9 min CN=51 Runoff=0.01 cfs 0.001 af
Subcatchment 4.2bS:	Runoff Area=0.470 ac 0.00% Impervious Runoff Depth=0.28" Tc=6.0 min CN=72 Runoff=0.19 cfs 0.011 af
Subcatchment 4.3S:	Runoff Area=25.466 ac 5.08% Impervious Runoff Depth=0.03" Flow Length=2,280' Tc=36.5 min CN=57 Runoff=0.07 cfs 0.059 af
Subcatchment 5S:	Runoff Area=4.970 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=1,180' Tc=17.5 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 6S:	Runoff Area=24.966 ac 5.81% Impervious Runoff Depth=0.00" Flow Length=1,961' Tc=60.1 min CN=43 Runoff=0.00 cfs 0.000 af
Reach 1.1aR1: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=580.0' S=0.0108 '/' Capacity=56.37 cfs Outflow=0.00 cfs 0.000 af
Reach 1.1aR2: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=557.4' S=0.0284 '/' Capacity=91.27 cfs Outflow=0.00 cfs 0.000 af
Reach 1.1aR3: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af .=557.5' S=0.0352 '/' Capacity=101.68 cfs Outflow=0.00 cfs 0.000 af
Reach 1.1aR4: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af .=580.5' S=0.0362 '/' Capacity=103.04 cfs Outflow=0.00 cfs 0.000 af
	<b>e</b> Avg. Flow Depth=0.06' Max Vel=0.94 fps Inflow=0.47 cfs 0.029 af 1,733.0' S=0.0240 '/' Capacity=111.65 cfs Outflow=0.12 cfs 0.029 af
	<b>e</b> Avg. Flow Depth=0.06' Max Vel=1.18 fps Inflow=0.20 cfs 0.039 af _=593.3' S=0.0380 '/' Capacity=140.36 cfs Outflow=0.15 cfs 0.039 af
Reach 1.2aR1: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=524.2' S=0.0188 '/' Capacity=74.30 cfs Outflow=0.00 cfs 0.000 af
Reach 1.2aR2: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=556.0' S=0.0204 '/' Capacity=77.47 cfs Outflow=0.00 cfs 0.000 af
Reach 1.2aR3: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=249.0' S=0.0153 '/' Capacity=81.84 cfs Outflow=0.00 cfs 0.000 af
Reach 1.2bR1: East Road Conveyance n=0.035	Avg. Flow Depth=0.03' Max Vel=0.80 fps Inflow=0.12 cfs 0.010 af L=731.4' S=0.0456 '/' Capacity=79.22 cfs Outflow=0.04 cfs 0.010 af
	<b>ce</b> Avg. Flow Depth=0.03' Max Vel=0.53 fps Inflow=0.04 cfs 0.013 af L=604.5' S=0.0177 '/' Capacity=95.76 cfs Outflow=0.03 cfs 0.013 af
	<b>ce</b> Avg. Flow Depth=0.06' Max Vel=0.89 fps Inflow=0.29 cfs 0.030 af L=755.9' S=0.0187 '/' Capacity=98.64 cfs Outflow=0.13 cfs 0.030 af
Reach 4.1R1: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=570.0' S=0.0303 '/' Capacity=54.88 cfs Outflow=0.00 cfs 0.000 af
Reach 4.1R2: Ex Stream n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af =740.0' S=0.0099 '/' Capacity=588.81 cfs Outflow=0.00 cfs 0.000 af

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Reach 4.2bR: Conveyance Swale         Avg. Flow Depth=0.05'         Max Vel=1.13 fps         Inflow=0.19 cfs         0.011 af           n=0.035         L=565.0'         S=0.0432 '/'         Capacity=77.09 cfs         Outflow=0.12 cfs         0.011 af
Pond 1.1aC1: TS1 Culvert         Peak Elev=1,487.56'         Inflow=0.00 cfs         0.000 af           36.3" x 22.5", R=18.8"/51.0"         Pipe Arch Culvert         n=0.012         L=47.0'         S=0.0162 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.1aC2: TS2 Culvert         Peak Elev=1,470.80'         Inflow=0.00 cfs         0.000 af           48.0" x 24.0"         Box Culvert         n=0.012         L=47.0'         S=0.0262 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.1aC3: TS3 Culvert         Peak Elev=1,449.55'         Inflow=0.00 cfs         0.000 af           60.0" x 24.0"         Box Culvert         n=0.012         L=47.2'         S=0.0405 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.1aP: North Road Bypass OC         Peak Elev=1,426.00' Storage=0.000 af Inflow=0.00 cfs 0.000 af Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Pond 1.1bC1: TS4 Culvert         Peak Elev=1,449.65'         Inflow=0.12 cfs         0.029 af           18.0" Round Culvert n=0.012         L=45.9'         S=0.0486 '/'         Outflow=0.12 cfs         0.029 af
Pond 1.1bP1: Dry Swale         Peak Elev=1,425.78' Storage=78 cf         Inflow=0.15 cfs         0.039 af           Discarded=0.00 cfs         0.004 af         Primary=0.15 cfs         0.035 af         Outflow=0.15 cfs         0.039 af
Pond 1.1bP2: North Road Detention Pond Peak Elev=1,423.08' Storage=0.024 af Inflow=0.15 cfs 0.035 af Discarded=0.01 cfs 0.034 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.034 af
Pond 1.2aC1: TS 7 Culvert         Peak Elev=1,444.22'         Inflow=0.00 cfs         0.000 af           36.0" x 24.0"         Box Culvert         n=0.012         L=47.0'         S=0.0215 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.2aC2: TS8 Culvert         Peak Elev=1,431.65'         Inflow=0.00 cfs         0.000 af           60.0" x 24.0"         Box Culvert n=0.012         L=47.5'         S=0.0114 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.2aP: South Road Bypass OC         Peak Elev=1,424.00' Storage=0.000 af Inflow=0.00 cfs 0.000 af           Discarded=0.00 cfs         0.000 af         Secondary=0.00 cfs 0.000 af         Outflow=0.00 cfs 0.000 af
Pond 1.2bC1: East Road Culvert         Peak Elev=1,454.48'         Inflow=0.04 cfs         0.010 af           15.0" Round Culvert n=0.012         L=41.6'         S=0.0173 '/'         Outflow=0.04 cfs         0.010 af
Pond 1.2bC2: TS6 Culvert         Peak Elev=1,443.58'         Inflow=0.03 cfs         0.013 af           18.0" Round Culvert n=0.012         L=44.3'         S=0.0151 '/'         Outflow=0.03 cfs         0.013 af
Pond 1.2bP: South Road Treatment Pond Peak Elev=1,424.05' Storage=0.000 af Inflow=0.13 cfs 0.030 af Discarded=0.11 cfs 0.030 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.030 af
Pond 1.3P: Pond 3 - Access Rd West         Peak Elev=1,456.00'         Storage=0 cf         Inflow=0.00 cfs         0.000 af           Discarded=0.00 cfs         0.000 af         Primary=0.00 cfs         0.000 af         Outflow=0.00 cfs         0.000 af
Pond 4.2bP: Pond 4 - Access Rd East         Peak Elev=1,445.81' Storage=70 cf         Inflow=0.12 cfs         0.011 af           Discarded=0.04 cfs         0.011 af         Primary=0.00 cfs         0.000 af         Outflow=0.04 cfs         0.011 af
Pond 4.2C: 18" Culvert         Peak Elev=1,431.78' Storage=35 cf         Inflow=0.01 cfs         0.001 af           18.0" Round Culvert n=0.012 L=44.0' S=0.0148 '/' Outflow=0.00 cfs         0.000 af
Pond 4.3C: 24" Culvert         Peak Elev=1,431.46'         Inflow=0.07 cfs         0.059 af           Outflow=0.07 cfs         0.059 af

20220630 BR Benson Mines Solar POS	ST Dev Type II 24-hr 1-Yr S	
Prepared by TRC		Printed 7/12/2022
HydroCAD® 10.10-7b s/n 01402 © 2022 HydroC	AD Software Solutions LLC	Page 80
Link 1.1L:	Ir	flow=0.00 cfs 0.000 af
	Prir	mary=0.00 cfs 0.000 af
Link 1.2L:	Ir	flow=0.00 cfs 0.000 af
	Prir	mary=0.00 cfs_0.000 af
Link SP1: Study Point 1	Ir	flow=0.00 cfs 0.000 af
-	Prir	mary=0.00 cfs 0.000 af
Link SP2: Study Point 2	Ir	flow=0.00 cfs 0.000 af
	Prir	mary=0.00 cfs 0.000 af
Link SP3: Study Point 3	Ir	flow=0.00 cfs 0.000 af
	Prir	nary=0.00 cfs_0.000 af
Link SP4: Study Point 4		flow=0.07 cfs 0.059 af
	Prir	mary=0.07 cfs_0.059 af
Link SP5: Study Point 5		flow=0.00 cfs 0.000 af
	Prir	mary=0.00 cfs_0.000 af
Link SP6: Study Point 6		flow=0.00 cfs 0.000 af
	Prir	mary=0.00 cfs_0.000 af
Total Pupoff Area = 460 988 ac	Runoff Volume = $0.140$ af Average B	Pupoff Donth - 0.00"

# Total Runoff Area = 460.988 acRunoff Volume = 0.140 afAverage Runoff Depth = 0.00"99.31% Pervious = 457.801 ac0.69% Impervious = 3.187 ac

#### Summary for Subcatchment 1.1aS1: North Array East

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

-	1 1	30 Mea	cription dow, non- 00% Pervi	grazed, HS ous Area	G A			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
11.7	100	0.0499	0.14		Sheet Flow, Grass: Dense n= 0.240 P2= 2.31"			
7.1	688	0.0526	1.61		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps			
18.8	788	Total						
	Subcatchment 1.1aS1: North Array East							
	Hydrograph							
Elow (cts)	<del>/////////////////////////////////////</del>	8 10 12	14 16 18 20		Type II 24-hr 1-Yr Storm Rainfall=1.98" Runoff Area=5.874 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=788' Tc=18.8 min CN=30			

#### Summary for Subcatchment 1.1aS2: North Array East Center

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR2 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac) C	N Des	cription					
8	.467 3	30 Mea	dow, non-g	grazed, HS	GA			
8	.467	100.	00% Pervi					
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
11.9	100	0.0476	0.14		Sheet Flow,			
9.2	831	0.0463	1.51		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps			
21.1	931	Total						
	Subcatchment 1.1aS2: North Array East Center							
				Hydrog	graph			
1					Type II 24-hr 1-Yr Storm Rainfall=1.98" Runoff Area=8.467 ac			

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

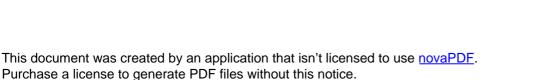
Runoff Volume=0.000 af

Runoff Depth=0.00"

Flow Length=931'

Tc=21.1 min

**CN=30** 



(cfs)

Flow

0.00 cfs

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#### Summary for Subcatchment 1.1aS3: North Array West Center

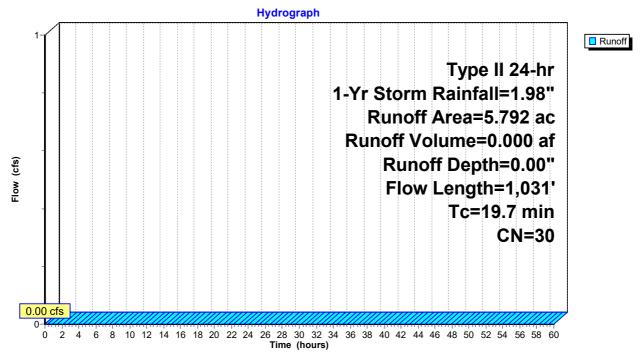
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR3 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

_	Area	Area (ac) CN Description									
-	5.792 30 Meadow, non-grazed, HSG A										
5.792 100.00% Pervious Area											
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
-	10.7	100	0.0618	0.16		Sheet Flow,					
	9.0	931	0.0601	1.72		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps					
-	40.7	4 004	T			·					

19.7 1,031 Total





#### Summary for Subcatchment 1.1aS4: North Array West

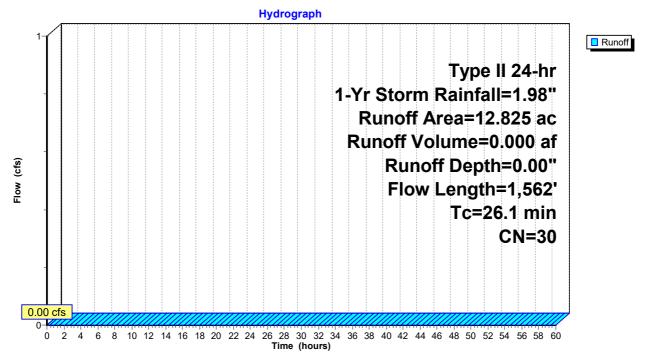
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR4 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

_	Area (ac) CN Description									
	12.825 30 Meadow, non-grazed, HSG A									
12.825 100.00% Pervious Area										
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
-	11.1	100	0.0560	0.15		Sheet Flow,				
	15.0	1,462	0.0540	1.63		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
	26.1	1 560	Total							



#### Subcatchment 1.1aS4: North Array West



#### Summary for Subcatchment 1.1bS1: North Road - East

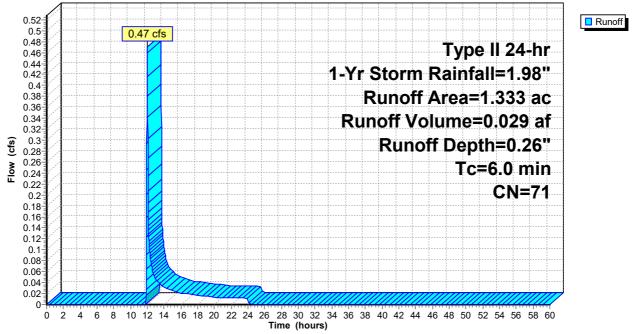
Runoff = 0.47 cfs @ 12.00 hrs, Volume= 0.029 af, Depth= 0.26" Routed to Reach 1.1bR1 : North Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac)	CN	Desc	cription		
0.	507	30	Mea	dow, non-g	grazed, HS	SG A
0.	819	96	Grav	el surface	, HSG A	
0.	.007	98	Roof	s, HSG A		
1.	.333	71	Weig	ghted Aver	age	
1.	326		99.4	7% Pervio	us Area	
0.	.007		0.539	% Impervi	ous Area	
Tc (min)	Leng (fee		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	
6.0						Direct Entry,

#### Subcatchment 1.1bS1: North Road - East

Hydrograph



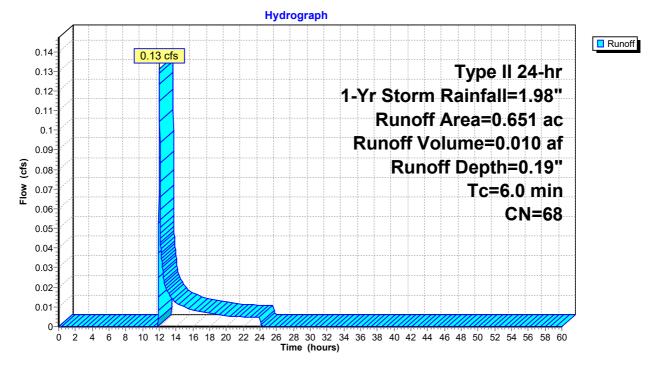
#### Summary for Subcatchment 1.1bS2: North Road - West

Runoff = 0.13 cfs @ 12.01 hrs, Volume= 0.010 af, Depth= 0.19" Routed to Reach 1.1bR2 : North Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac)	CN	Desc	Description					
0.	279	30	Mead	dow, non-g	grazed, HS	SG A			
0.	365	96	Grav	el surface	, HSG A				
0.	007	98	Roof	s, HSG A					
0.	651	68	Weig	hted Aver	age				
0.	644		98.92	2% Pervio	us Area				
0.	007		1.089	% Impervi	ous Area				
Tc (min)	Leng (fee		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)				
6.0						Direct Entry,			

#### Subcatchment 1.1bS2: North Road - West



#### Summary for Subcatchment 1.2aS1: Middle Array East

0.000 af, Depth= 0.00" Runoff = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.2aR1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac) C	N Des	cription					
7	.876 3	30 Mea	dow, non-	grazed, HS	GA			
7	.876	100.	00% Pervi	ous Area				
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
10.6	100	0.0628	0.16		Sheet Flow,			
8.5	765	0.0459	1.50		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps			
19.1	865	Total						
	Subcatchment 1.2aS1: Middle Array East							
				Hydrog	graph			
1 1 	<del>/////////////////////////////////////</del>	8 10 12			Type II 24-hr 1-Yr Storm Rainfall=1.98" Runoff Area=7.876 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=865' Tc=19.1 min CN=30			

#### Summary for Subcatchment 1.2aS2: Middle Array Center

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.2aR2 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac) C	N Des	cription							
8	8.911 30 Meadow, non-grazed, HSG A									
8	.911	100.	00% Pervi	ous Area						
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
10.8	100	0.0607	0.15		Sheet Flow,					
7.3	725	0.0559	1.66		Grass: Dense n= 0.240 P2= 2.31" Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps					
18.1	825	Total								
Flow (cfs)			Subcatc	nment 1.2 Hydrog	AS2: Middle Array Center graph Type II 24-hr 1-Yr Storm Rainfall=1.98" Runoff Area=8.911 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=825' Tc=18.1 min					

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

**CN=30** 

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0.00 cfs

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#### Summary for Subcatchment 1.2aS3: Middle Array West

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.2aR3 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac) C	N Des	cription							
5.500 30 Meadow, non-grazed, HSG A										
5.500 100.00% Pervious Area										
Tc _(min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
10.4	100	0.0660	0.16		Sheet Flow,					
8.1	782	0.0529	1.61		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps					
18.5	882	Total								
	Subcatchment 1.2aS3: Middle Array West									
- 1 - - - - - - - - - - - - - - - - - -	cfs				Type II 24-hr 1-Yr Storm Rainfall=1.98" Runoff Area=5.500 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=882' Tc=18.5 min CN=30					

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

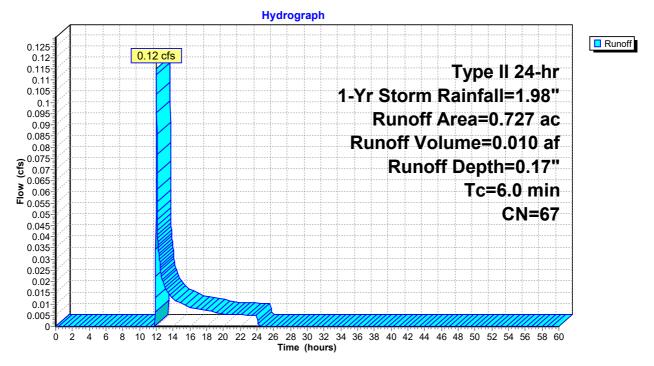
#### Summary for Subcatchment 1.2bS1: East Road - West Ditch

Runoff = 0.12 cfs @ 12.01 hrs, Volume= 0.010 af, Depth= 0.17" Routed to Reach 1.2bR1 : East Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac)	CN	Desc	cription					
0.	410	0 96 Gravel surface, HSG A							
0.	.317 30 Meadow, non-grazed, HSG A								
0.	0.727 67 Weighted Average								
0.	0.727 100.00% Pervious Area								
_									
Tc	Leng	th	Slope	Velocity	Capacity	Description			
(min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)				
6.0						Direct Entry,			

#### Subcatchment 1.2bS1: East Road - West Ditch



#### Summary for Subcatchment 1.2bS2: South Road

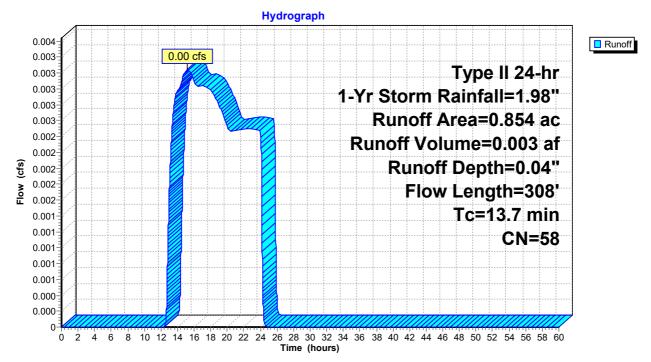
Runoff = 0.00 cfs @ 15.21 hrs, Volume= 0.003 af, Depth= 0.04" Routed to Reach 1.2bR2 : South Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

	Area	(ac) (	N Des	cription						
	0.	498	30 Mea	dow, non-	grazed, HS	GA				
*	0.	352	96 Grav	Gravel surface						
*	0.	004	98 Roo	Roofs						
0.854 58 Weighted Average										
	0.	850		3% Pervio	•					
	0.	004	0.47	% Impervi	ous Area					
				•						
	Тс	Length	Slope	Velocity	Capacity	Description				
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
	5.0	35	0.0516	0.12		Sheet Flow,				
						Grass: Dense n= 0.240 P2= 2.31"				
	0.4	25	0.0310	1.06		Sheet Flow,				
						Smooth surfaces n= 0.011 P2= 2.31"				
	5.9	40	0.0429	0.11		Sheet Flow,				
						Grass: Dense n= 0.240 P2= 2.31"				
	2.4	208	0.0442	1.47		Shallow Concentrated Flow,				
						Short Grass Pasture Kv= 7.0 fps				
	407	~~~	<b>T</b> , ,							

13.7 308 Total

#### Subcatchment 1.2bS2: South Road



#### Summary for Subcatchment 1.2bS3: South Road

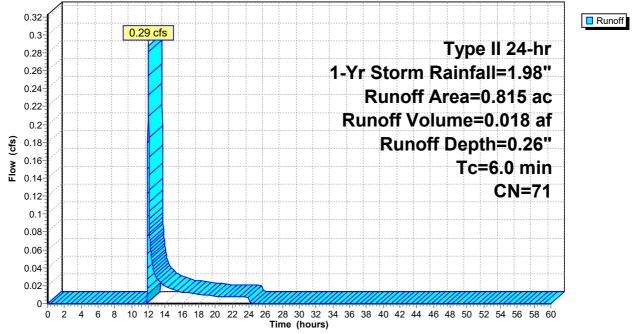
Runoff = 0.29 cfs @ 12.00 hrs, Volume= 0.018 af, Depth= 0.26" Routed to Reach 1.2bR3 : South Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

	Area	(ac)	CN	Desc	ription								
	0.	313	30	Mead	Aeadow, non-grazed, HSG A								
	0.	491	96	Grav	el surface	, HSG A							
*	0.	011	98	Roof	S								
	0.	0.815 71 Weighted Average											
	0.	804		98.65	5% Pervio	us Area							
	0.011 1.35% Impervious Area												
	Тс	Leng	th	Slope	Velocity	Capacity	Description						
	(min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)							
	6.0						Direct Entry,						
							-						

#### Subcatchment 1.2bS3: South Road





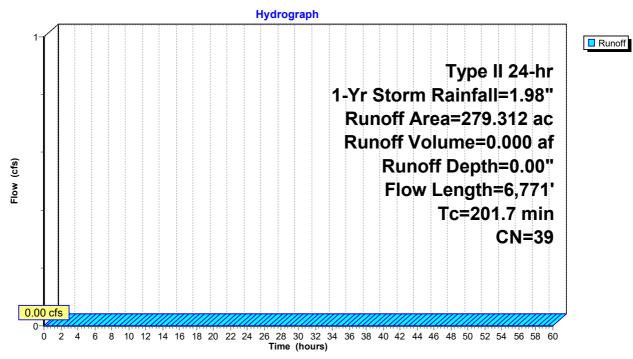
#### Summary for Subcatchment 1.3aS1: Surface Discharge

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP1 : Study Point 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

	Area	(ac) C	N Desc	cription						
*	0.754 96 Gravel surface									
	144.	649 3	30 Mea	Meadow, non-grazed, HSG A						
	0.	566 5	58 Mea	dow, non-g	grazed, HS	GB				
	25.	274 7	71 Mea	dow, non-g	grazed, HS	GC				
	61.	692 3		ds, Good,						
	32.	754 5	55 Woo	ds, Good,	HSG B					
	13.	623 7	70 Woo	ds, Good,	HSG C					
	279.	312 3	39 Weig	ghted Aver	age					
	279.	312	100.	00% Pervi	ous Area					
	Тс	Length	Slope	Velocity	Capacity	Description				
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
	14.8	100	0.0764	0.11		Sheet Flow,				
						Woods: Light underbrush n= 0.400 P2= 2.31"				
	4.7	581	0.1683	2.05		Shallow Concentrated Flow,				
						Woodland Kv= 5.0 fps				
	25.7	1,199	0.0241	0.78		Shallow Concentrated Flow,				
						Woodland Kv= 5.0 fps				
	0.8	189	0.0157	3.84	76.82	Channel Flow, Rerouted Stream				
						Area= 20.0 sf Perim= 32.6' r= 0.61'				
						n= 0.035 Earth, dense weeds				
	154.9	4,646	0.0051	0.50		Shallow Concentrated Flow,				
	0.0	50	0.0500	4.40		Short Grass Pasture Kv= 7.0 fps				
	0.8	56	0.0566	1.19		Shallow Concentrated Flow,				
						Woodland Kv= 5.0 fps				
	2017	6 771	Total							

201.7 6,771 Total



#### Subcatchment 1.3aS1: Surface Discharge

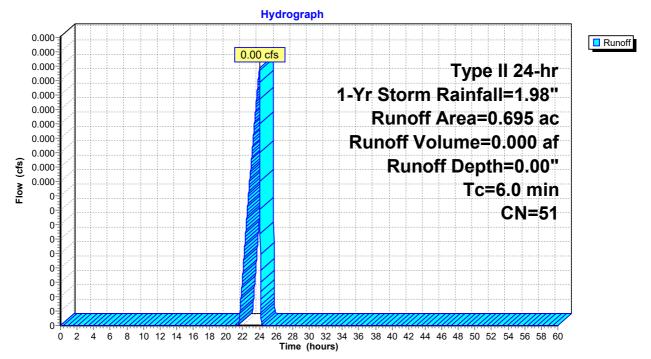
#### Summary for Subcatchment 1.3bS: Access Rd to Pond 3

Runoff = 0.00 cfs @ 24.01 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Pond 1.3P : Pond 3 - Access Rd West

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

	Area	(ac)	CN	Desc	cription							
	0.	473	30	Mea	Aeadow, non-grazed, HSG A							
*	0.	063	96	Grav	el surface	, HSG A, R	Redev					
*	0.	159	9 96 Gravel surface, HSG A									
	0.	695	695 51 Weighted Average									
	0.	0.695 100.00% Pervious Area										
	Tc (min)	Leng (fee		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
	6.0						Direct Entry,					





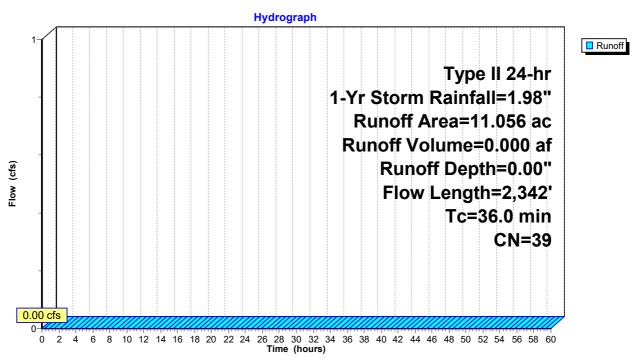
#### Summary for Subcatchment 2S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP2 : Study Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac) C	N Desc	cription							
1.	.417 9	6 Grav	el surface	, HSG A						
0.	.573 3	9 >75%	% Grass co	over, Good	, HSG A					
6.	.530 3	0 Mea	dow, non-g	grazed, HS	GA					
2.	2.536 30 Woods, Good, HSG A									
11.	11.056 39 Weighted Average									
11.	.056	100.0	00% Pervi	ous Area						
Tc	Length	Slope	Velocity	Capacity	Description					
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)						
10.7	100	0.0624	0.16		Sheet Flow,					
					Grass: Dense n= 0.240 P2= 2.31"					
2.7	614	0.0535	3.72		Shallow Concentrated Flow,					
					Unpaved Kv= 16.1 fps					
12.1	1,184	0.0543	1.63		Shallow Concentrated Flow,					
					Short Grass Pasture Kv= 7.0 fps					
1.9	115	0.0407	1.01		Shallow Concentrated Flow,					
					Woodland Kv= 5.0 fps					
0.6	68	0.1443	1.90		Shallow Concentrated Flow,					
	004	0.0440	0.54		Woodland Kv= 5.0 fps					
8.0	261	0.0118	0.54		Shallow Concentrated Flow,					
					Woodland Kv= 5.0 fps					
36.0	2,342	Total								

#### Subcatchment 2S:



#### Summary for Subcatchment 3S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP3 : Study Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac) C	N Des	cription							
				& Rooftops						
				over, Good						
				over, Good						
				grazed, HS	GA					
	4.276 30 Woods, Good, HSG A									
	3.342         55         Woods, Good, HSG B           15.648         40         Weighted Average									
	.048 4 .560	-	4% Pervio							
	.088		% Impervi							
-										
Tc	Length	Slope	Velocity	Capacity	Description					
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)						
5.4	52	0.0937	0.16		Sheet Flow,					
					Grass: Dense n= 0.240 P2= 2.31"					
3.7	625	0.1637	2.83		Shallow Concentrated Flow,					
3.6	209	0.0384	0.98		Short Grass Pasture Kv= 7.0 fps Shallow Concentrated Flow,					
5.0	203	0.0304	0.30		Woodland Kv= 5.0 fps					
12.7	886	Total								
				Subca	atchment 3S:					
				Hydrog	graph					
<sup>1</sup> -1										
					Type II 24-hr					
-					1-Yr Storm Rainfall=1.98"					
					Runoff Area=15.648 ac					
-					Runoff Volume=0.000 af					
cfs)					Runoff Depth=0.00"					
Flow (cfs)					Flow Length=886'					
Εl										
1					Tc=12.7 min					
					CN=40					
-										
0.00	cfs									
0	2 4 6	8 10 12	14 16 18 20	22 24 26 28	30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60					
0	3				(hours)					

#### Summary for Subcatchment 4.1S:

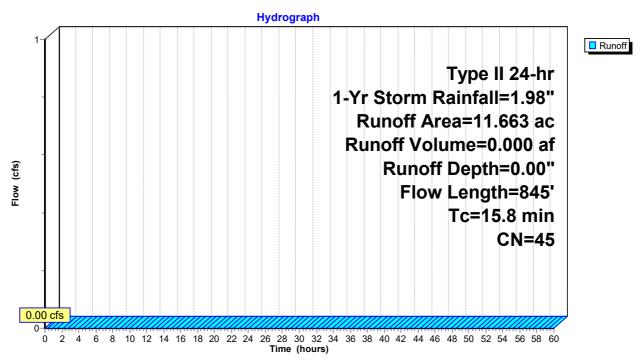
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 4.1R1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

_	Area	(40)	CN	Dest	cription								
*	0.	327	98	Pave	aved Roads & Rooftops								
*	0.	375	96	Grav	ravel surface								
	0.	165	61	>75%	6 Grass co	over, Good,	, HSG B						
	2.544 30 Meadow, non-grazed, HSG A												
	0.	560	58	Mea	dow, non-g	grazed, HS	GB						
	3.	605	30		ds, Good,								
*	4.	087	55	Woo	ds, Good,	HSG B							
	11.663 45 Weighted Average												
	11.336 97.20% Pervious Area												
	0.	327		2.80	2.80% Impervious Area								
	_												
	Tc	Lengt		Slope	Velocity	Capacity	Description						
	(min)	(fee	/	(ft/ft)	(ft/sec)	(cfs)							
	8.5	10	0 0	.0430	0.20		Sheet Flow,						
							Grass: Short n= 0.150 P2= 2.31"						
	2.6	36	0 0	.1077	2.30		Shallow Concentrated Flow,						
							Short Grass Pasture Kv= 7.0 fps						
	4.7	38	50	.0735	1.36		Shallow Concentrated Flow,						
	45.0						Woodland Kv= 5.0 fps						

15.8 845 Total

Subcatchment 4.1S:



#### Summary for Subcatchment 4.2aS:

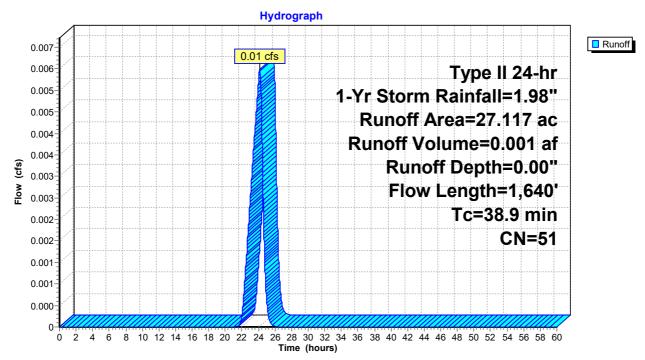
Runoff = 0.01 cfs @ 24.16 hrs, Volume= 0.001 af, Depth= 0.00" Routed to Pond 4.2C : 18" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

	Area	(ac) C	N Dese	cription				
*	0.	238	8 96 Gravel surface					
	4.	086	30 Mea	dow, non-	grazed, HS	GA		
	0.	384	58 Mea	Meadow, non-grazed, HSG B				
	0.	977	30 Woo	ds, Good,	HSG A			
_	21.	432	55 Woo	ds, Good,	HSG B			
	27.	117	51 Weig	ghted Avei	rage			
	27.	117	100.	00% Pervi	ous Area			
	Tc	Length	Slope	Velocity	Capacity	Description		
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)			
	17.8	100	0.0480	0.09		Sheet Flow,		
						Woods: Light underbrush n= 0.400 P2= 2.31"		
	8.0	878	0.1354	1.84		Shallow Concentrated Flow,		
						Woodland Kv= 5.0 fps		
	13.1	662	0.0144	0.84		Shallow Concentrated Flow,		
						Short Grass Pasture Kv= 7.0 fps		

38.9 1,640 Total

Subcatchment 4.2aS:



#### Summary for Subcatchment 4.2bS:

Runoff = 0.19 cfs @ 12.00 hrs, Volume= 0.011 af, Depth= 0.28" Routed to Reach 4.2bR : Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

72 Weighted Av	/erage		
ngth Slope Veloci	ty Capacity	Description	
		Direct Entry,	
	Subcatc	hment 4.2bS:	
	Hydrogr	aph	
0.19 cfs		Type II 24-hr	Runof
		1-Yr Storm Rainfall=1.98"	
		Runoff Volume=0.011 af	
		CN=72	
	72 Weighted Av 100.00% Pe ngth Slope Velocit eet) (ft/ft) (ft/sec	72 Weighted Average 100.00% Pervious Area ngth Slope Velocity Capacity eet) (ft/ft) (ft/sec) (cfs) <b>Subcatc</b> Hydrogr	72 Weighted Average 100.00% Pervious Area ngth Slope Velocity Capacity Description eet) (ft/ft) (ft/sec) (cfs) Direct Entry, Subcatchment 4.2bS: Hydrograph 0.19 cfs 0.19 cfs Type II 24-hr 1-Yr Storm Rainfall=1.98" Runoff Area=0.470 ac Runoff Volume=0.011 af Runoff Depth=0.28" Tc=6.0 min

#### Summary for Subcatchment 4.3S:

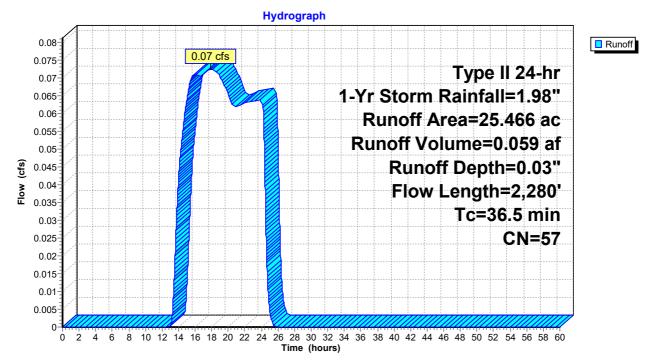
Runoff = 0.07 cfs @ 17.89 hrs, Volume= 0.059 af, Depth= 0.03" Routed to Pond 4.3C : 24" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

	Area	(ac) C	N Desc	cription		
*	1.	293 9	8 Pave	ed Roads &	& Rooftops	
	1.	783 5	68 Mea	dow, non-g	grazed, HS	GB
	22.	390 5	5 Woo	ds, Good,	HSG B	
	25.	466 5	57 Weig	ghted Aver	age	
	24.	173	94.9	2% Pervio	us Area	
	1.	293	5.08	% Impervi	ous Area	
	Тс	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	15.9	100	0.0634	0.10		Sheet Flow,
						Woods: Light underbrush n= 0.400 P2= 2.31"
	17.8	1,368	0.0656	1.28		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps
	0.1	38	0.3960	4.40		Shallow Concentrated Flow,
						Short Grass Pasture Kv= 7.0 fps
	2.7	774	0.0281	4.70	109.09	Channel Flow,
						Area= 23.2 sf Perim= 43.2' r= 0.54' n= 0.035

36.5 2,280 Total

#### Subcatchment 4.3S:

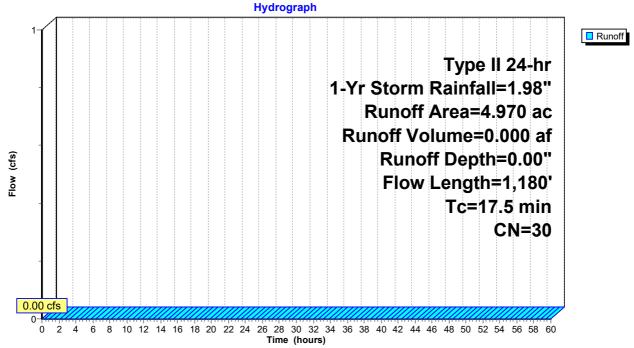


#### Summary for Subcatchment 5S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP5 : Study Point 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac) C	N Desc	cription						
4.	139 3	0 Mea	dow, non-g	grazed, HS	GA				
0.	0.831 30 Woods, Good, HSG A								
4.	970 3	0 Weig	ghted Aver	age					
4.	970	100.	00% Pervi	ous Area					
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
7.1	100	0.0675	0.24		Sheet Flow,				
8.5	801	0.0508	1.58		Grass: Short n= 0.150 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
1.3	217	0.1515	2.72		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps				
0.6	62	0.0697	1.85		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps				
17.5	1,180	Total							
	Subcatchment 5S:								



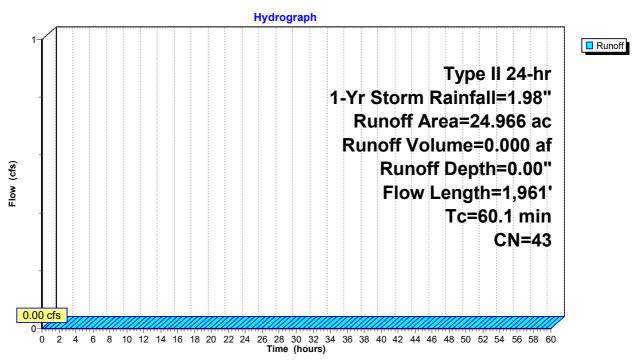
#### Summary for Subcatchment 6S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP6 : Study Point 6

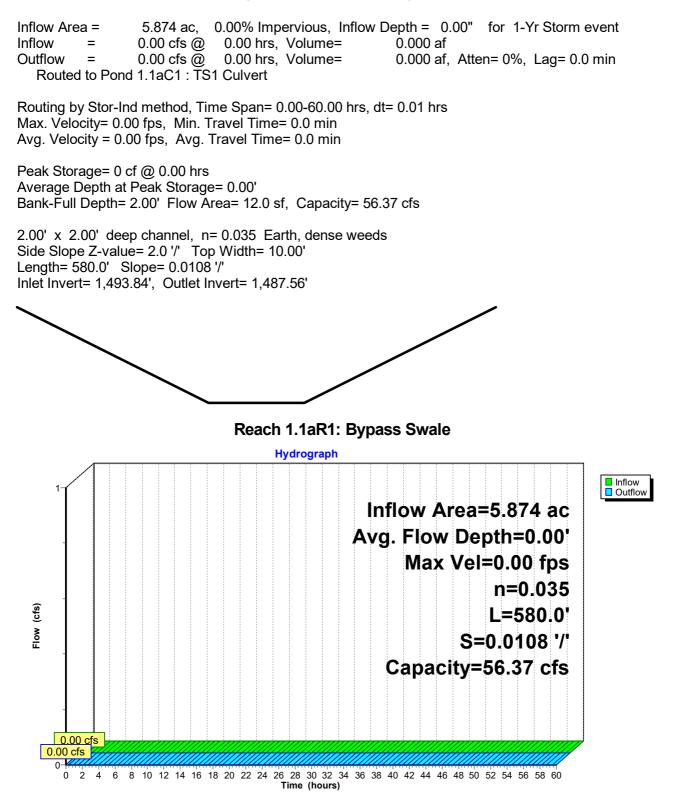
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

	Area	(ac)	CN De	scription		
*	1.	.450 98 Paved Roads & Rooftops				
	0.	466	96 Gra	vel surface	e, HSG A	
	2.	545	61 >75	5% Grass c	over, Good	, HSG B
	7.	511	30 Me	adow, non-	grazed, HS	G A
	0.	788	58 Me	adow, non-	grazed, HS	G B
	7.	940	30 Wc	ods, Good,	HSG A	
	4.	266	55 Wc	ods, Good,	HSG B	
	24.	966	43 We	ighted Ave	rage	
	23.	516		19% Pervic	•	
	1.	450	5.8	5.81% Impervious Area		
				-		
	Tc	Length	n Slope	Velocity	Capacity	Description
	(min)	(feet	) (ft/ft)	(ft/sec)	(cfs)	
	10.1	100	0.0278	0.16		Sheet Flow,
						Grass: Short n= 0.150 P2= 2.31"
	3.2	313	0.0528	1.61		Shallow Concentrated Flow,
						Short Grass Pasture Kv= 7.0 fps
	3.9	486	6 0.1742	2.09		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps
	42.9	1,062	2 0.0068	0.41		Shallow Concentrated Flow,
_						Woodland Kv= 5.0 fps
	60.1	1,961	Total			

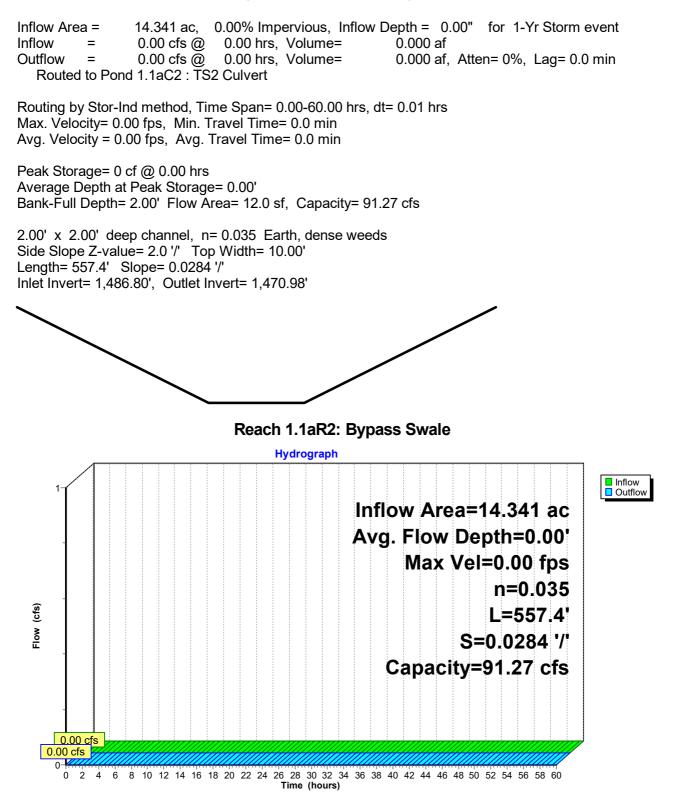
### Subcatchment 6S:



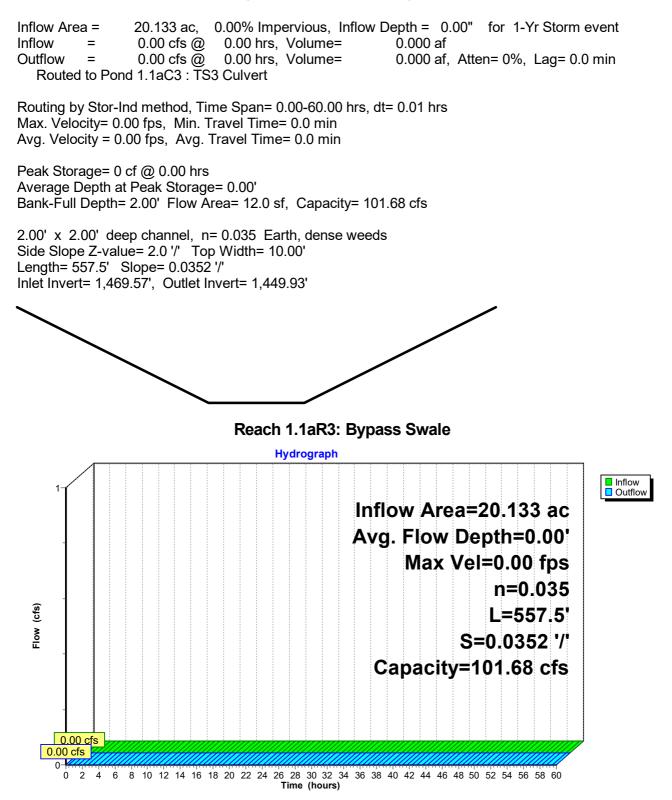
### Summary for Reach 1.1aR1: Bypass Swale



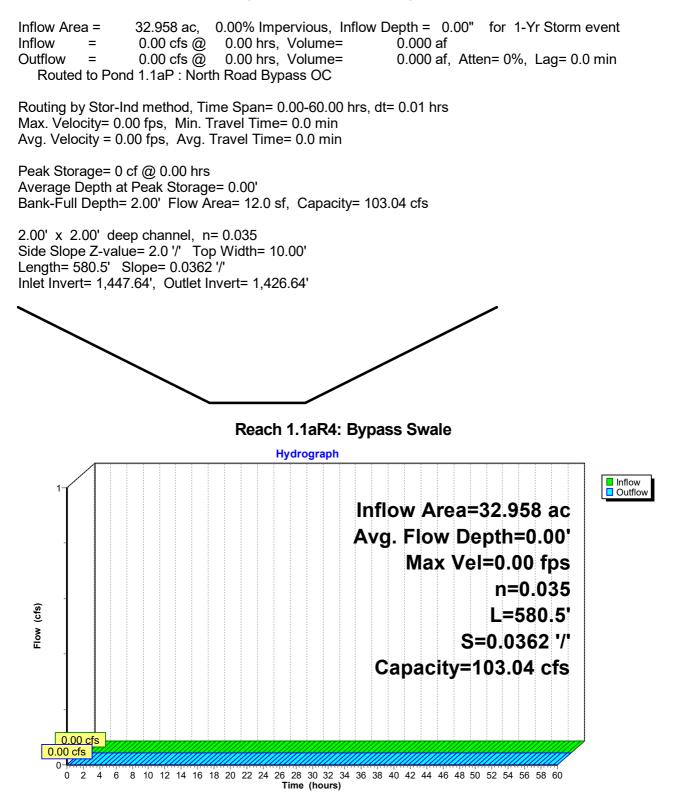
### Summary for Reach 1.1aR2: Bypass Swale



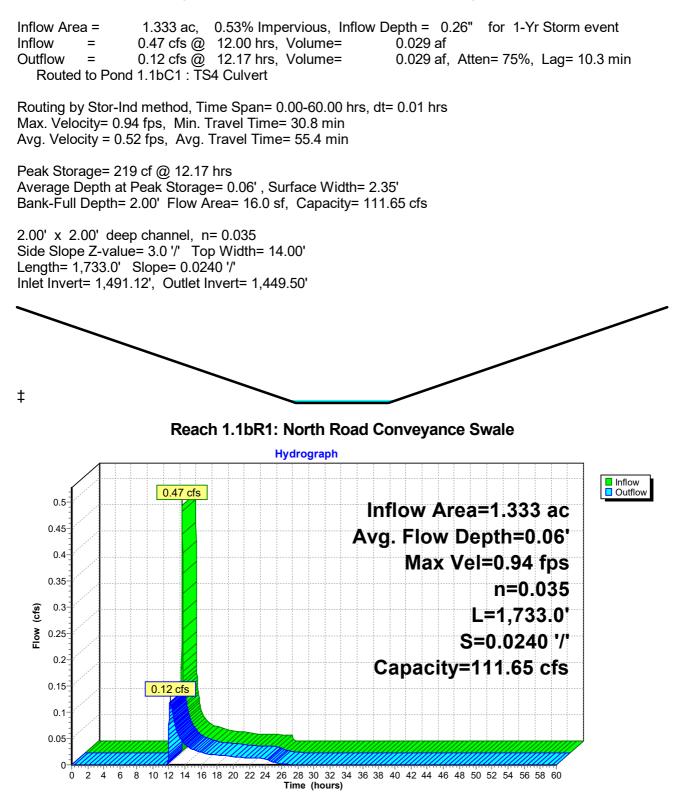
### Summary for Reach 1.1aR3: Bypass Swale



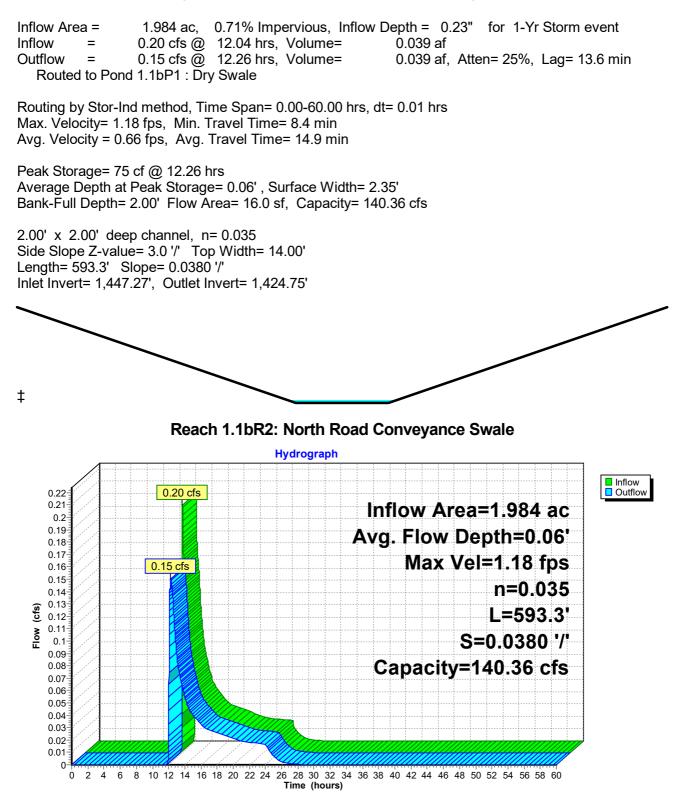
#### Summary for Reach 1.1aR4: Bypass Swale



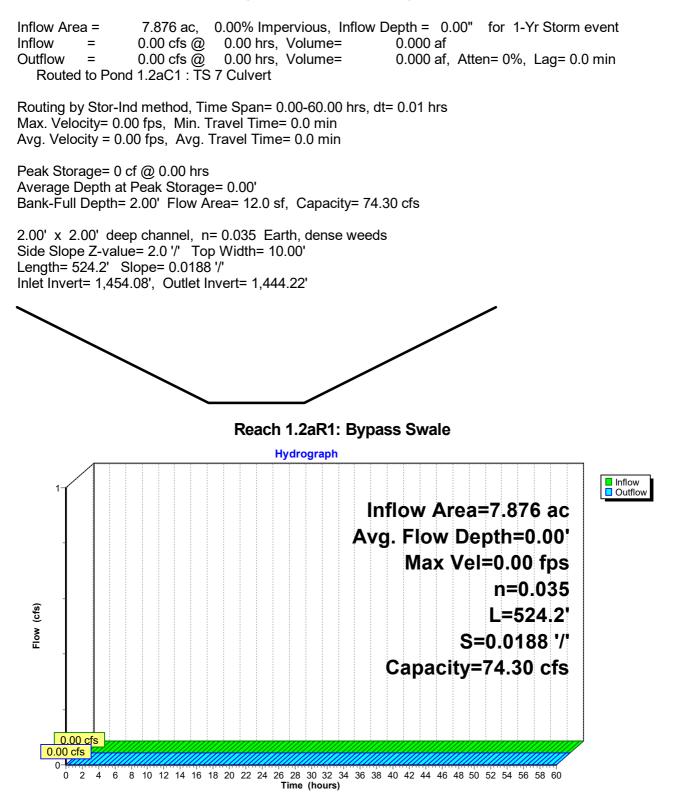
#### Summary for Reach 1.1bR1: North Road Conveyance Swale



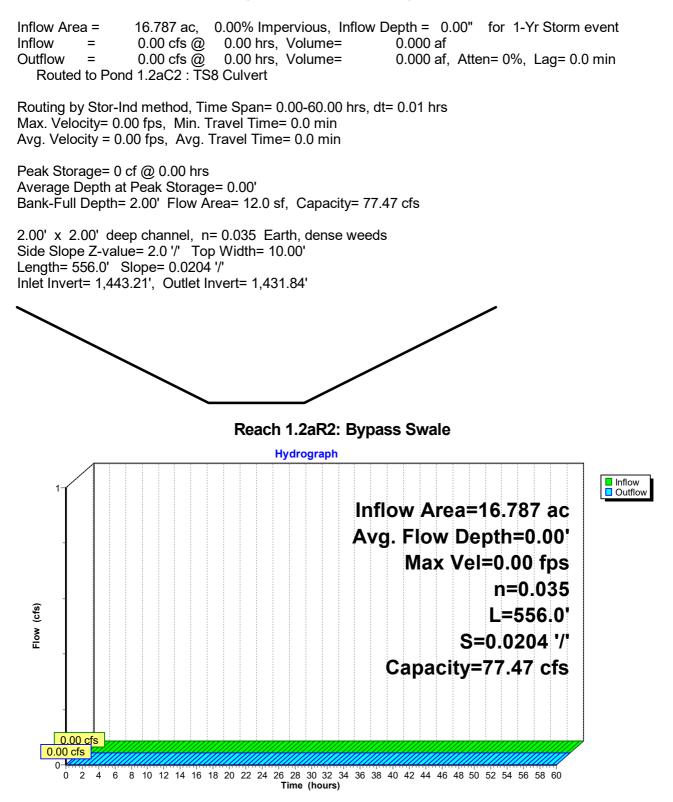
#### Summary for Reach 1.1bR2: North Road Conveyance Swale



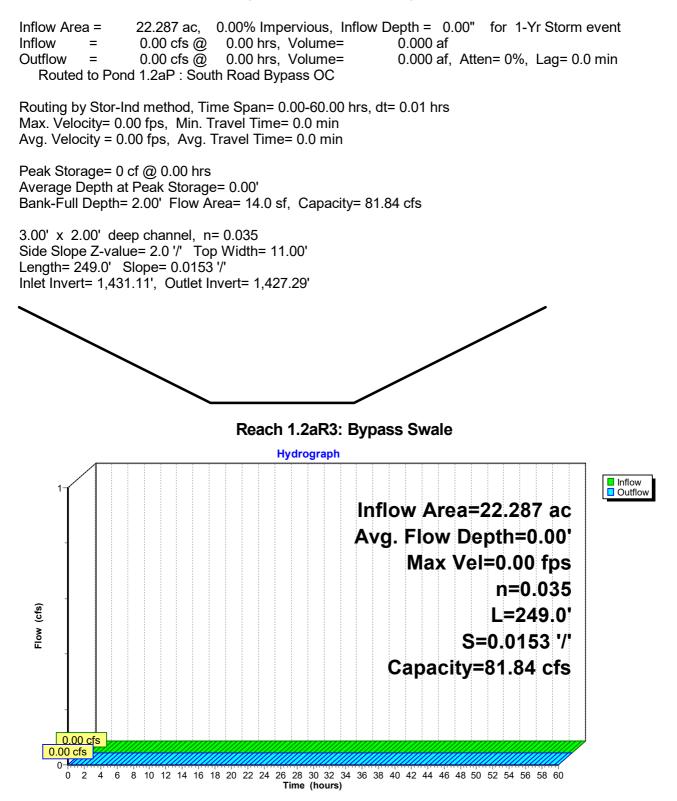
### Summary for Reach 1.2aR1: Bypass Swale

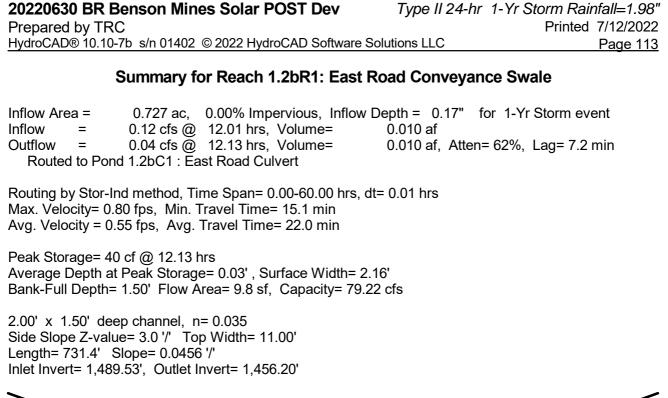


#### Summary for Reach 1.2aR2: Bypass Swale



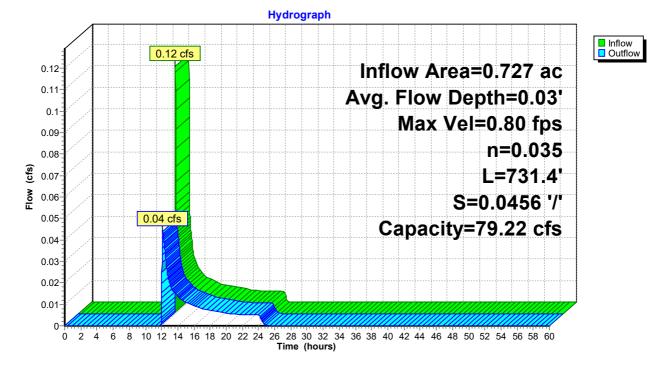
#### Summary for Reach 1.2aR3: Bypass Swale



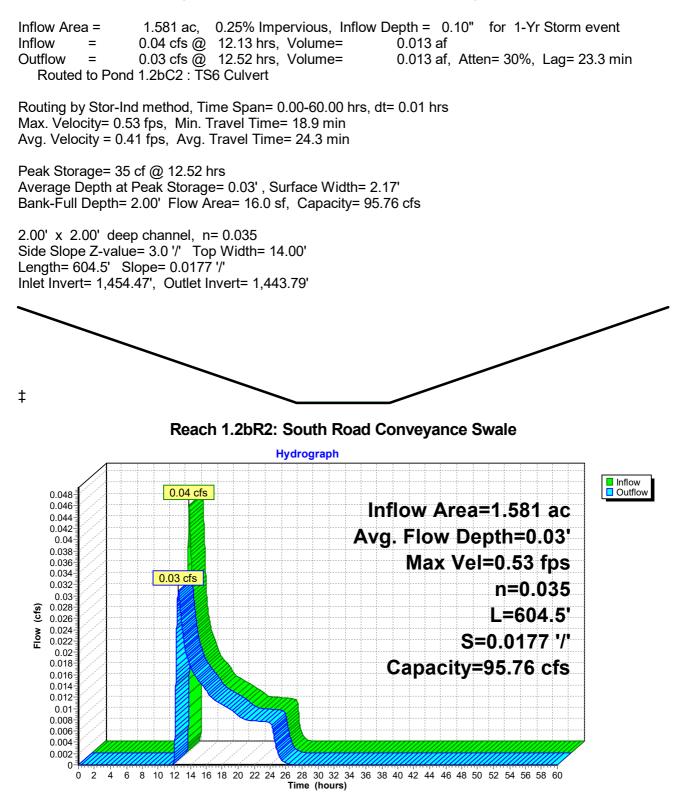




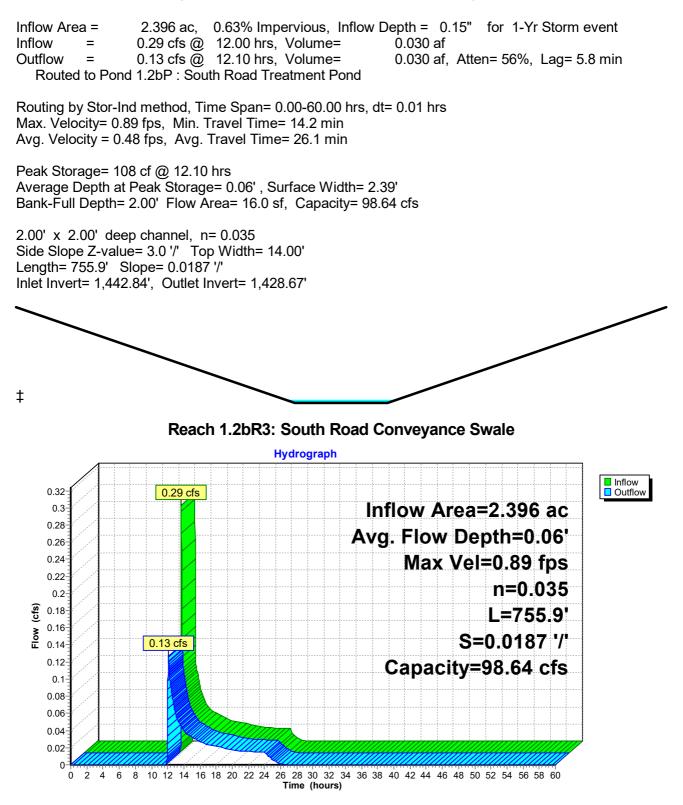
#### Reach 1.2bR1: East Road Conveyance Swale



#### Summary for Reach 1.2bR2: South Road Conveyance Swale



#### Summary for Reach 1.2bR3: South Road Conveyance Swale



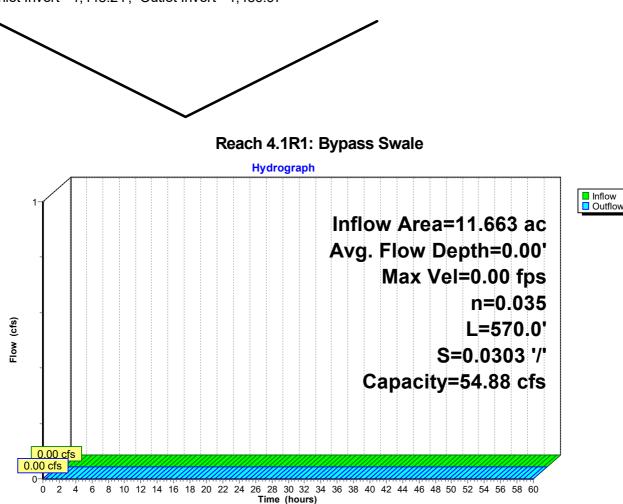
### Summary for Reach 4.1R1: Bypass Swale

Inflow Area = 11.663 ac, 2.80% Impervious, Inflow Depth = 0.00" for 1-Yr Storm event Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min Routed to Reach 4.1R2 : Ex Stream Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

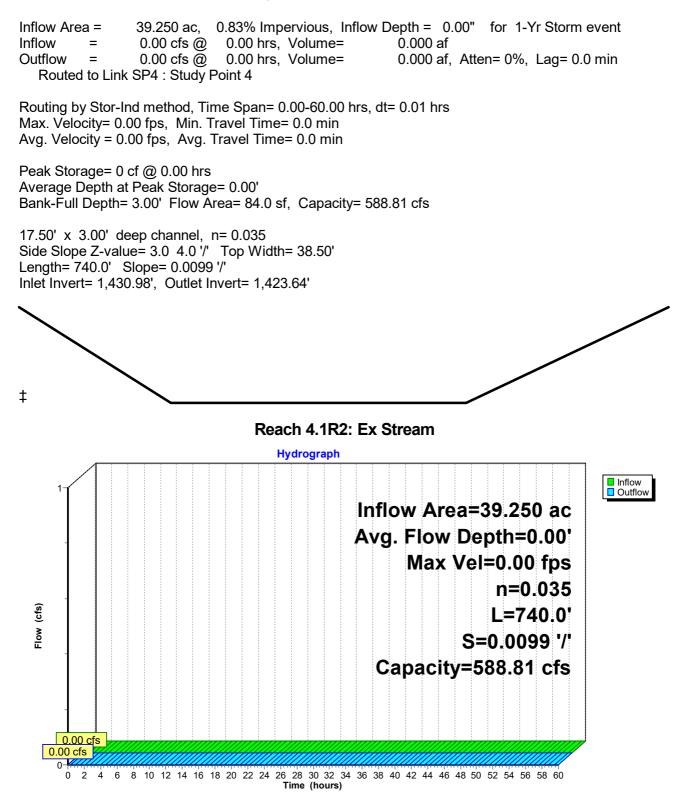
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs Average Depth at Peak Storage= 0.00' Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 54.88 cfs

0.00' x 2.00' deep channel, n= 0.035 Side Slope Z-value= 2.0 '/' Top Width= 8.00' Length= 570.0' Slope= 0.0303 '/' Inlet Invert= 1,448.24', Outlet Invert= 1,430.97'



#### Summary for Reach 4.1R2: Ex Stream



#### Summary for Reach 4.2bR: Conveyance Swale

Inflow Area = 0.470 ac, 0.00% Impervious, Inflow Depth = 0.28" for 1-Yr Storm event 0.19 cfs @ 12.00 hrs, Volume= Inflow = 0.011 af 0.12 cfs @ 12.06 hrs, Volume= 0.011 af, Atten= 39%, Lag= 4.1 min Outflow Routed to Pond 4.2bP : Pond 4 - Access Rd East Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Max. Velocity= 1.13 fps, Min. Travel Time= 8.4 min Avg. Velocity = 0.55 fps, Avg. Travel Time= 17.2 min Peak Storage= 59 cf @ 12.06 hrs Average Depth at Peak Storage= 0.05', Surface Width= 2.29' Bank-Full Depth= 1.50' Flow Area= 9.8 sf, Capacity= 77.09 cfs 2.00' x 1.50' deep channel, n= 0.035 Side Slope Z-value= 3.0 '/' Top Width= 11.00' Length= 565.0' Slope= 0.0432 '/' Inlet Invert= 1,472.38', Outlet Invert= 1,448.00' ‡ Reach 4.2bR: Conveyance Swale Hydrograph Inflow 0.19 cfs Outflow 0.21 Inflow Area=0.470 ac 0.2 0.19 Avg. Flow Depth=0.05' 0.18 0.17 Max Vel=1.13 fps 0.16 0.15 0.14 n=0.035 0.13 0.12 cfs (cfs) 0.12 L=565.0' 0.11 Flow 0.1 S=0.0432 '/' 0.09 Capacity=77.09 cfs 0.08 0.07 0.06 0.05 0.04 0.03 0.02

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

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### Summary for Pond 1.1aC1: TS1 Culvert

Inflow Area = 5.874 ac, 0.00% Impervious, Inflow Depth = 0.00" for 1-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = Outflow 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.1aR2 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,487.56' @ 0.00 hrs Flood Elev= 1,489.60' **Outlet Devices** Device Routing Invert 36.3" W x 22.5" H, R=18.8"/51.0" Pipe Arch RCP\_Arch 37x23 #1 Primary 1.487.56 L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,487.56' / 1,486.80' S= 0.0162 '/' Cc= 0.900 n= 0.012, Flow Area= 4.43 sf **Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,487.56' (Free Discharge) **1=RCP\_Arch 37x23** (Controls 0.00 cfs) Pond 1.1aC1: TS1 Culvert Hydrograph Inflow Primary Inflow Area=5.874 ac Peak Elev=1,487.56' 36.3" x 22.5" R=18.8"/51.0" (cfs) **Pipe Arch Culvert** Flow n=0.012 L=47.0' S=0.0162 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

### Summary for Pond 1.1aC2: TS2 Culvert

Inflow Area = 14.341 ac, 0.00% Impervious, Inflow Depth = 0.00" for 1-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min 0.00 hrs, Volume= 0.000 af Primary = 0.00 cfs @ Routed to Reach 1.1aR3 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,470.80' @ 0.00 hrs Flood Elev= 1,473.07' Device Routing Invert **Outlet Devices** 48.0" W x 24.0" H Box Culvert #1 Primary 1.470.80' L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,470.80' / 1,469.57' S= 0.0262 '/' Cc= 0.900 n= 0.012, Flow Area= 8.00 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,470.80' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.1aC2: TS2 Culvert Hydrograph Inflow Primary Inflow Area=14.341 ac Peak Elev=1,470.80' 48.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.0' S=0.0262 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

### Summary for Pond 1.1aC3: TS3 Culvert

Inflow Area = 20.133 ac, 0.00% Impervious, Inflow Depth = 0.00" for 1-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min 0.00 hrs, Volume= 0.000 af Primary = 0.00 cfs @ Routed to Reach 1.1aR4 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,449.55' @ 0.00 hrs Flood Elev= 1,452.10' Device Routing Invert **Outlet Devices** 60.0" W x 24.0" H Box Culvert #1 Primary 1.449.55' L= 47.2' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,449.55' / 1,447.64' S= 0.0405 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 10.00 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,449.55' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.1aC3: TS3 Culvert Hydrograph Inflow Primary Inflow Area=20.133 ac Peak Elev=1,449.55' 60.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.2' S=0.0405 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

### Summary for Pond 1.1aP: North Road Bypass OC

Inflow Area = 32.958 ac, 0.00% Impervious, Inflow Depth = 0.00" for 1-Yr Storm event Inflow 0.00 cfs @ 0.00 hrs, Volume= = 0.000 af 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Link 1.1L :

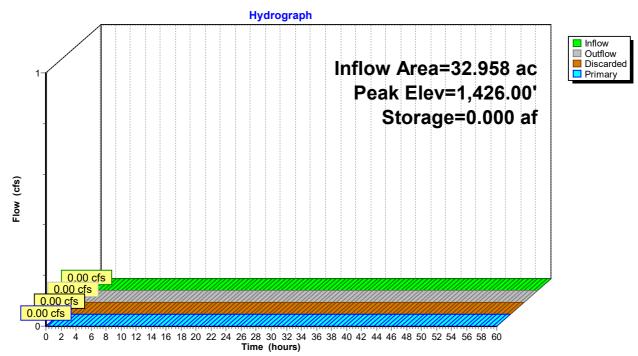
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,426.00' @ 0.00 hrs Surf.Area= 0.005 ac Storage= 0.000 af

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

Volume	Invert	Avail.Storag	ge Storage Description
#1	1,426.00'	0.069	af 10.00'W x 20.00'L x 4.00'H Prismatoid Z=3.0
Device #1 #2	Routing Discarded Primary	1,426.00' 1,428.50'	Outlet Devices           0.500 in/hr Exfiltration over Surface area         Phase-In= 0.01'           10.0' long x 10.0' breadth Broad-Crested Rectangular Weir           Head (feet)         0.20         0.40         0.60         0.80         1.00         1.20         1.40         1.60           Coef. (English)         2.49         2.56         2.70         2.69         2.68         2.69         2.67         2.64

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,426.00' (Free Discharge) **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,426.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



### Pond 1.1aP: North Road Bypass OC

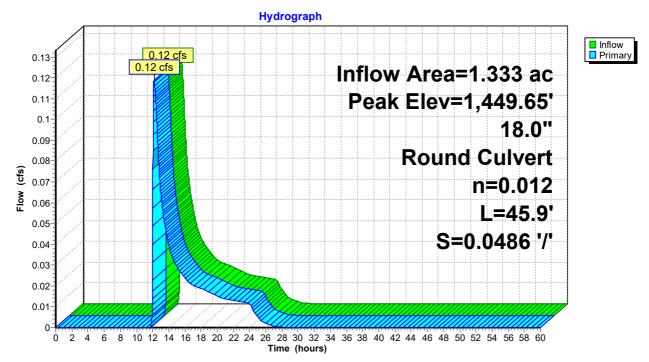
## Summary for Pond 1.1bC1: TS4 Culvert

Inflow Area = 1.333 ac, 0.53% Impervious, Inflow Depth = 0.26" for 1-Yr Storm event Inflow = 0.12 cfs @ 12.17 hrs, Volume= 0.029 af Outflow = 0.12 cfs @ 12.17 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min Primary = 0.12 cfs @ 12.17 hrs, Volume= 0.029 af Routed to Reach 1.1bR2 : North Road Conveyance Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,449.65' @ 12.17 hrs

Flood Elev= 1,451.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,449.50'	<b>18.0" Round Culvert</b> L= 45.9' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,449.50' / 1,447.27' S= 0.0486 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.12 cfs @ 12.17 hrs HW=1,449.65' (Free Discharge) ←1=Culvert (Inlet Controls 0.12 cfs @ 1.31 fps)



#### Pond 1.1bC1: TS4 Culvert

### Summary for Pond 1.1bP1: Dry Swale

Inflow Area =	1.984 ac,	0.71% Impervious, Inflow	Depth = 0.23" for 1-Yr Storm event			
Inflow =	0.15 cfs @	12.26 hrs, Volume=	0.039 af			
Outflow =	0.15 cfs @	12.31 hrs, Volume=	0.039 af, Atten= 1%, Lag= 2.8 min			
Discarded =	0.00 cfs @	12.31 hrs, Volume=	0.004 af			
Primary =	0.15 cfs @	12.31 hrs, Volume=	0.035 af			
Routed to Pond 1.1bP2 : North Road Detention Pond						

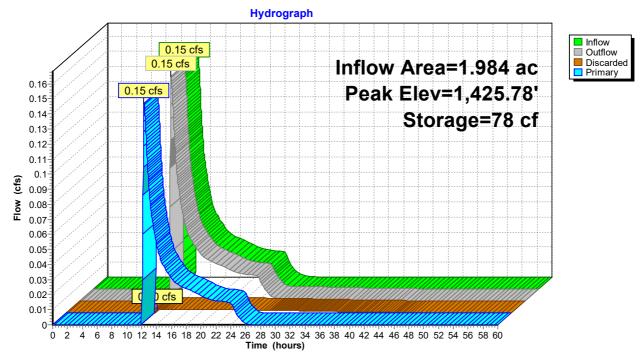
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,425.78' @ 12.31 hrs Surf.Area= 197 sf Storage= 78 cf

Plug-Flow detention time= 49.3 min calculated for 0.039 af (100% of inflow) Center-of-Mass det. time= 49.5 min (1,022.2 - 972.7)

Volume	Inve	ert Avail	.Storage	Storage Description	on		
#1	1,424.7	5'	428 cf	Custom Stage Da	<b>ta (Irregular)</b> Liste	d below (Recalc)	
Elevatio (fee 1,424.7 1,425.0 1,426.0 1,426.7	et) 75 00 00	Surf.Area (sq-ft) 0 25 273 603	Perim. (feet) 0.0 22.9 98.0 161.7	Inc.Store (cubic-feet) 0 2 127 299	Cum.Store (cubic-feet) 0 2 129 428	Wet.Area (sq-ft) 0 42 767 2,086	
Device	Routing	Inv	vert Outl	et Devices			
#1	Discarde	d 1,424.	.75' <b>0.50</b>	0 in/hr Exfiltration	over Surface area	Phase-In= 0.01'	
#2	Primary	1,425.	69' <b>2.0'</b>	long x 2.0' breadtl	n Broad-Crested F	Rectangular Weir	
			Hea	d (feet) 0.20 0.40	0.60 0.80 1.00 1	1.20 1.40 1.60 1.80 2.0	00
			2.50	3.00 3.50			
				( )	.61 2.61 2.60 2.6	6 2.70 2.77 2.89 2.88	\$
			2.85	3.07 3.20 3.32			

**Discarded OutFlow** Max=0.00 cfs @ 12.31 hrs HW=1,425.78' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.15 cfs @ 12.31 hrs HW=1,425.78' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 0.15 cfs @ 0.78 fps)



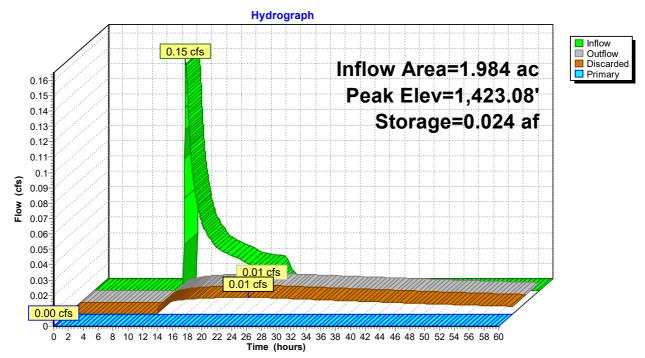
# Pond 1.1bP1: Dry Swale

### Summary for Pond 1.1bP2: North Road Detention Pond

Discarde Primary	= = ed =	0.15 cfs @ 0.01 cfs @ 0.01 cfs @ 2 0.00 cfs @	0.71% Impervious, Inflow Depth =       0.21" for 1-Yr Storm event         12.31 hrs, Volume=       0.035 af         24.37 hrs, Volume=       0.034 af, Atten= 92%, Lag= 723.7 min         24.37 hrs, Volume=       0.034 af         0.00 hrs, Volume=       0.000 af			
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,423.08' @ 24.37 hrs Surf.Area= 0.022 ac Storage= 0.024 af						
0	Plug-Flow detention time= 1,064.8 min calculated for 0.034 af (96% of inflow) Center-of-Mass det. time= 1,046.6 min ( 2,017.3 - 970.8 )					
Volume	Inver	t Avail.Stor	age Storage Description			
#1	1,421.50	0.16	6 af 10.00'W x 40.00'L x 5.00'H Prismatoid Z=3.0			
Device	Routing	Invert	Outlet Devices			
#1 #2	Discarded Primary	1,421.50 1,424.00				

**Discarded OutFlow** Max=0.01 cfs @ 24.37 hrs HW=1,423.08' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,421.50' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



## Pond 1.1bP2: North Road Detention Pond

### Summary for Pond 1.2aC1: TS 7 Culvert

Inflow Area = 7.876 ac, 0.00% Impervious, Inflow Depth = 0.00" for 1-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = Outflow 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.2aR2 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,444.22' @ 0.00 hrs Flood Elev= 1,446.28' Device Routing Invert Outlet Devices 36.0" W x 24.0" H Box Culvert #1 Primary 1.444.22' L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,444.22' / 1,443.21' S= 0.0215 '/' Cc= 0.900 n= 0.012, Flow Area= 6.00 sf **Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,444.22' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.2aC1: TS 7 Culvert Hydrograph Inflow Primary Inflow Area=7.876 ac Peak Elev=1,444.22' 36.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.0' S=0.0215 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

### Summary for Pond 1.2aC2: TS8 Culvert

Inflow Area = 16.787 ac, 0.00% Impervious, Inflow Depth = 0.00" for 1-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.2aR3 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,431.65' @ 0.00 hrs Flood Elev= 1,433.87' Device Routing Invert **Outlet Devices** 60.0" W x 24.0" H Box Culvert #1 Primary 1.431.65' L= 47.5' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,431.65' / 1,431.11' S= 0.0114 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 10.00 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,431.65' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.2aC2: TS8 Culvert Hydrograph Inflow Primary Inflow Area=16.787 ac Peak Elev=1,431.65' 60.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.5' S=0.0114 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

### Summary for Pond 1.2aP: South Road Bypass OC

Inflow Area =	22.287 ac,	0.00% Impervious, Inflow D	Depth = 0.00" for 1-Yr Storm event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Discarded =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Link	1.2L :		

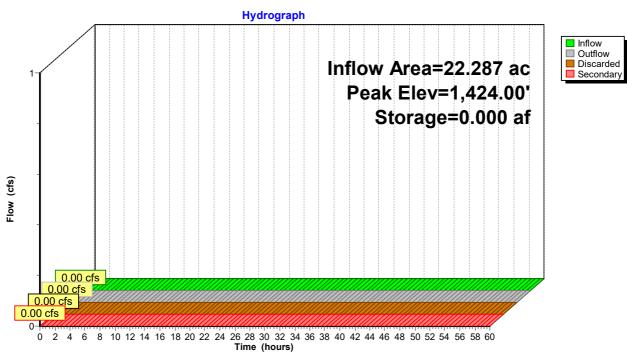
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,424.00' @ 0.00 hrs Surf.Area= 0.005 ac Storage= 0.000 af

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

Volume	Invert	Avail.Stora	ge Storage Description
#1	1,424.00'	0.069	af 10.00'W x 20.00'L x 4.00'H Prismatoid Z=3.0
Device	Routing	Invert	Outlet Devices
#1	Discarded	1,424.00'	12.000 in/hr Exfiltration over Surface area
#2	Secondary	1,426.50'	<b>10.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,424.00' (Free Discharge) **1=Exfiltration** (Passes 0.00 cfs of 0.06 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,424.00' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



### Pond 1.2aP: South Road Bypass OC

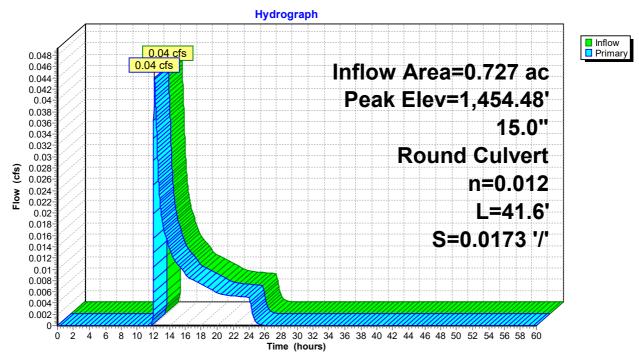
## Summary for Pond 1.2bC1: East Road Culvert

Inflow Area = 0.727 ac, 0.00% Impervious, Inflow Depth = 0.17" for 1-Yr Storm event 0.04 cfs @ 12.13 hrs, Volume= Inflow 0.010 af = 0.04 cfs @ 12.13 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min Outflow 0.04 cfs @ 12.13 hrs, Volume= 0.010 af Primary = Routed to Reach 1.2bR2 : South Road Conveyance Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 1,454.48' @ 12.13 hrs Flood Elev= 1,457.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,454.39'	15.0" Round Culvert
	2		L= 41.6' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,454.39' / 1,453.67' S= 0.0173 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.04 cfs @ 12.13 hrs HW=1,454.48' (Free Discharge) ←1=Culvert (Inlet Controls 0.04 cfs @ 1.04 fps)



## Pond 1.2bC1: East Road Culvert

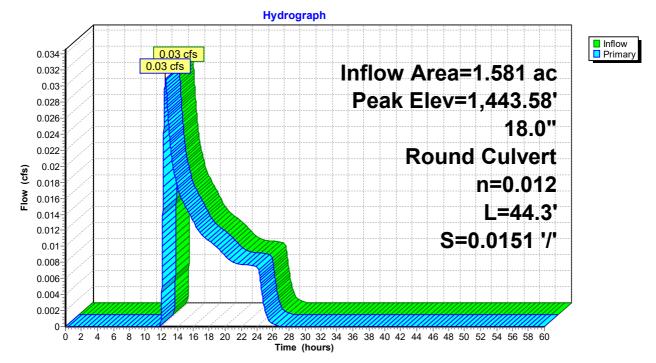
## Summary for Pond 1.2bC2: TS6 Culvert

Inflow Area = 1.581 ac, 0.25% Impervious, Inflow Depth = 0.10" for 1-Yr Storm event 0.03 cfs @ 12.52 hrs, Volume= Inflow 0.013 af = 0.03 cfs @ 12.52 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min Outflow 0.013 af Primary = 0.03 cfs @ 12.52 hrs, Volume= Routed to Reach 1.2bR3 : South Road Conveyance Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 1,443.58' @ 12.52 hrs Flood Elev= 1,445.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,443.51'	18.0" Round Culvert
			L= 44.3' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 1,443.51' / 1,442.84' S= 0.0151 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.03 cfs @ 12.52 hrs HW=1,443.58' (Free Discharge) ←1=Culvert (Inlet Controls 0.03 cfs @ 0.93 fps)



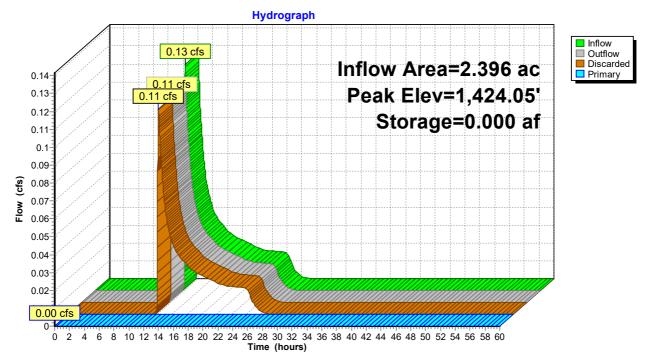
### Pond 1.2bC2: TS6 Culvert

### Summary for Pond 1.2bP: South Road Treatment Pond

Outflow = Discarded = Primary =	0.13 cfs @ 0.11 cfs @ 0.11 cfs @	0.63% Imperviou 12.10 hrs, Volu 12.17 hrs, Volu 12.17 hrs, Volu 0.00 hrs, Volu	me= 0. me= 0. me= 0.	.030 af	for 1-Yr Storm event n= 9%, Lag= 4.6 min		
	Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,424.05' @ 12.17 hrs  Surf.Area= 0.009 ac  Storage= 0.000 af						
Plug-Flow detention time= 3.0 min calculated for 0.030 af (100% of inflow) Center-of-Mass det. time= 3.0 min ( 987.7 - 984.7 )							
Volume	Invert Avail.S	storage Storage I	Description				
#1 1	,424.00' 0	.149 af <b>20.00'W</b> :	x 20.00'L x 5.00	0'H Prismatoi	id Z=3.0		
<u>Device Ro</u>	uting Inv	ert Outlet Device	S				
#1 Dis	carded 1,424.0	00' 12.000 in/hr	Exfiltration ove	er Surface ar	ea Phase-In= 0.01'		
#2 Pri	mary 1,426.0	05' 20.0' long x	10.0' breadth E	Broad-Creste	d Rectangular Weir		

**Discarded OutFlow** Max=0.11 cfs @ 12.17 hrs HW=1,424.05' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,424.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



### Pond 1.2bP: South Road Treatment Pond

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

### Summary for Pond 1.3P: Pond 3 - Access Rd West

Inflow Area = 0.695 ac,		0.00% Impervious, Inflow I	Depth = 0.00" for 1-Yr Storm event			
Inflow =	0.00 cfs @	24.01 hrs, Volume=	0.000 af			
Outflow =	0.00 cfs @	24.03 hrs, Volume=	0.000 af, Atten= 2%, Lag= 1.1 min			
Discarded =	0.00 cfs @	24.03 hrs, Volume=	0.000 af			
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af			
Routed to Link SP1 : Study Point 1						

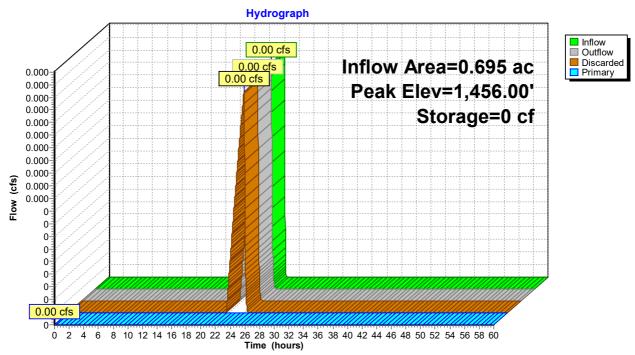
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,456.00' @ 24.03 hrs Surf.Area= 784 sf Storage= 0 cf

Plug-Flow detention time= 4.8 min calculated for 0.000 af (100% of inflow) Center-of-Mass det. time= 4.8 min (1,398.1 - 1,393.4)

Volume	Inve	rt Avai	l.Storage	Storage Description	on			
#1	1,456.00	כ'	8,743 cf	Custom Stage Dat	<b>ta (Irregular)</b> Listed	l below (Recalc)		
Elevatic (fee 1,456.0 1,458.0 1,459.0 1,460.0	et) 00 00 00	Surf.Area (sq-ft) 784 1,720 2,884 5,280	Perim. (feet) 123.0 194.0 279.0 421.0	Inc.Store (cubic-feet) 0 2,443 2,277 4,022	Cum.Store (cubic-feet) 0 2,443 4,721 8,743	Wet.Area (sq-ft) 784 2,603 5,811 13,729		
Device	Routing	In	vert Outl	Outlet Devices				
#1	Discardeo	1,456	.00' 6.00	6.000 in/hr Exfiltration over Surface area Phase-In= 0.01'				
#2	Primary	1,459		20.0' long x 4.0' breadth Broad-Crested Rectangular Weir				
				Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00				
				2.50 3.00 3.50 4.00 4.50 5.00 5.50				
				Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32				
			2.00	2.12 2.13 2.10 2	.13 2.00 0.01 0.0			

**Discarded OutFlow** Max=0.00 cfs @ 24.03 hrs HW=1,456.00' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,456.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



# Pond 1.3P: Pond 3 - Access Rd West

### Summary for Pond 4.2bP: Pond 4 - Access Rd East

 Inflow Area =
 0.470 ac, 0.00% Impervious, Inflow Depth = 0.28" for 1-Yr Storm event

 Inflow =
 0.12 cfs @
 12.06 hrs, Volume=
 0.011 af

 Outflow =
 0.04 cfs @
 12.50 hrs, Volume=
 0.011 af, Atten= 69%, Lag= 26.2 min

 Discarded =
 0.04 cfs @
 12.50 hrs, Volume=
 0.011 af, Atten= 69%, Lag= 26.2 min

 Primary =
 0.00 cfs @
 0.00 hrs, Volume=
 0.011 af

 Routed to Pond 4.2C : 18" Culvert
 0.000 af

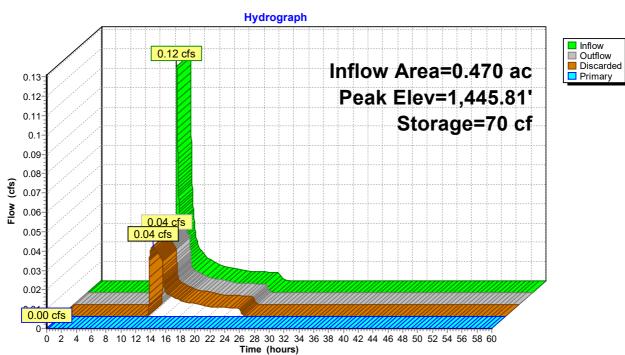
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,445.81' @ 12.50 hrs Surf.Area= 259 sf Storage= 70 cf

Plug-Flow detention time= 12.7 min calculated for 0.011 af (100% of inflow) Center-of-Mass det. time= 12.7 min ( 939.1 - 926.4 )

Volume	Invert	Avail.Stor	rage Storage Description
#1	1,445.50'	2,31	17 cf 10.00'W x 20.00'L x 3.50'H Prismatoid Z=3.0
Device	Routing	Invert	Outlet Devices
#1	Discarded	1,445.50'	6.000 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Primary	1,448.25'	10.0' long x 4.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66
			2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.04 cfs @ 12.50 hrs HW=1,445.81' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,445.50' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



#### Pond 4.2bP: Pond 4 - Access Rd East

### Summary for Pond 4.2C: 18" Culvert

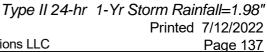
Inflow Area =	27.587 ac,	0.00% Impervious, Inflow E	Depth = 0.00" for 1-Yr Storm event	
Inflow =	0.01 cfs @	24.16 hrs, Volume=	0.001 af	
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 100%, Lag= 0.0 min	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Routed to Reach 4.1R2 : Ex Stream				

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,431.78' @ 26.20 hrs Surf.Area= 373 sf Storage= 35 cf Flood Elev= 1,434.64' Surf.Area= 27,666 sf Storage= 28,656 cf

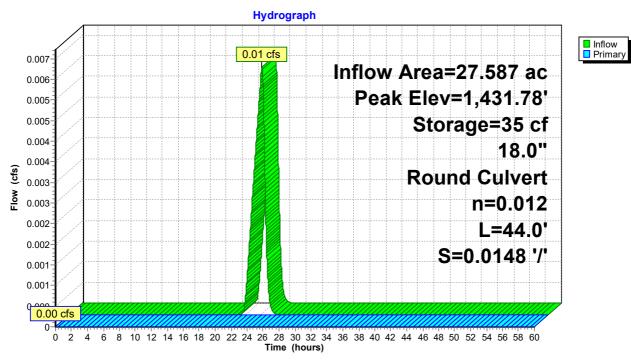
Plug-Flow detention time= (not calculated: initial storage exceeds outflow) Center-of-Mass det. time= (not calculated: no outflow)

Volume	Inve	ert Ava	il.Storage	Storage Description	on		
#1	1,431.5	50'	39,033 cf	Custom Stage Da	<b>ta (Irregular)</b> Liste	ed below (Recalc)	
Elevatio (fee		Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
1,431.5	1	<u>(34-11)</u> 0	0.0	0	0	(34-11)	
1,431.0		1,190	146.0	198	198	1,697	
1,432.5		3,534	368.0	1,129	1,327	10,778	
1,433.0		5,795	497.0	2,309	3,637	19,660	
1,433.5	60	10,362	837.0	3,984	7,621	55,755	
1,434.0	0	16,931	975.0	6,756	14,377	75,659	
1,434.6		27,412	1,352.0	13,177	27,555	145,474	
1,435.0	0	30,000	1,500.0	11,479	39,033	179,068	
Device	Routing	Ir	vert Outl	et Devices			
#1	Primary	1,43	1.83' <b>18.0</b>	" Round Culvert			
			L= 4	4.0' RCP, square	edge headwall, k	(e= 0.500	
				,	,	S= 0.0148 '/' Cc=	
			n= 0	.012 Corrugated P	P, smooth interior	r, Flow Area= 1.77	sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,431.50' (Free Discharge) ←1=Culvert (Controls 0.00 cfs)



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Pond 4.2C: 18" Culvert

## Summary for Pond 4.3C: 24" Culvert

Inflow Area = 25.466 ac, 5.08% Impervious, Inflow Depth = 0.03" for 1-Yr Storm event Inflow = 0.07 cfs @ 17.89 hrs, Volume= 0.059 af Outflow = 0.07 cfs @ 17.89 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.0 min Primary = 0.07 cfs @ 17.89 hrs, Volume= 0.059 af Routed to Link SP4 : Study Point 4 Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 1,431.46' @ 17.89 hrs Flood Elev= 1,434.65'

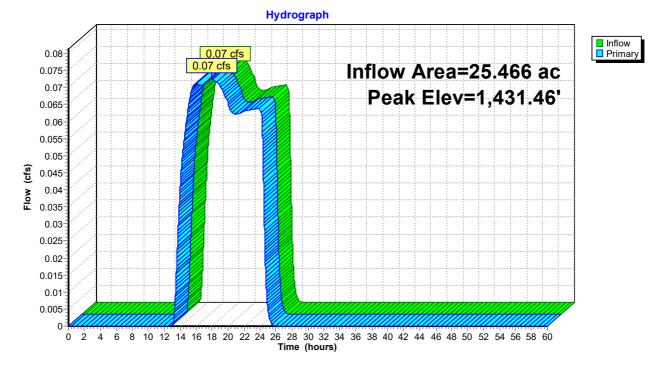
Device	Routing	Invert	Outlet Devices
#1	Primary	1,431.35'	24.0" Round Culvert
			L= 55.8' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 1,431.35' / 1,429.87' S= 0.0265 '/' Cc= 0.900
			n= 0.012, Flow Area= 3.14 sf
#2	Primary	1,434.81'	20.0' long x 30.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.07 cfs @ 17.89 hrs HW=1,431.46' (Free Discharge)

-1=Culvert (Inlet Controls 0.07 cfs @ 1.11 fps)

-2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4.3C: 24" Culvert

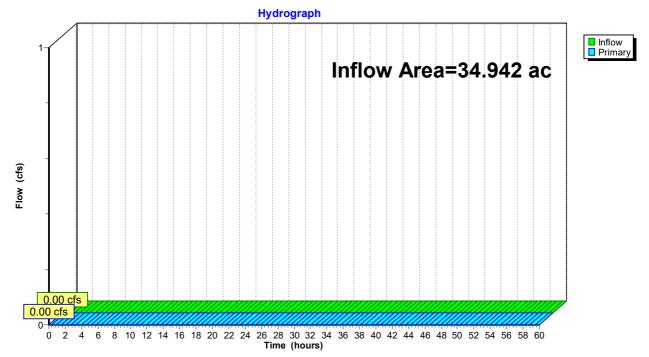


## Summary for Link 1.1L:

Inflow Area = 34.942 ac, 0.04% Impervious, Inflow Depth = 0.00" for 1-Yr Storm event Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min Routed to Link SP1 : Study Point 1

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

# Link 1.1L:

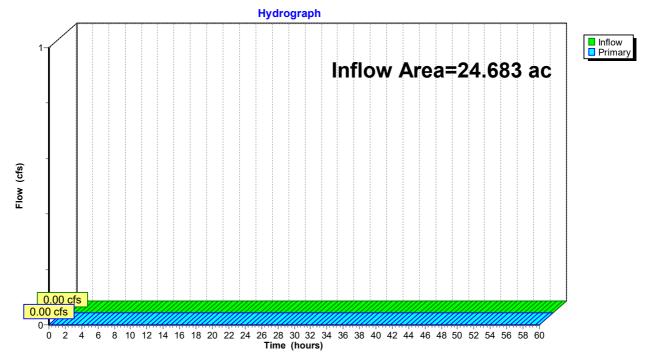


### Summary for Link 1.2L:

Inflow Area = 24.683 ac, 0.06% Impervious, Inflow Depth = 0.00" for 1-Yr Storm event Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min Routed to Link SP1 : Study Point 1

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

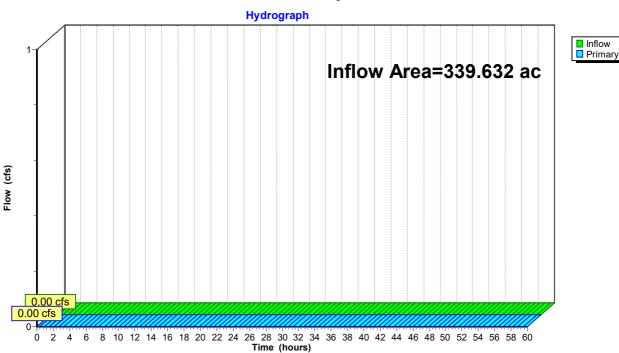
## Link 1.2L:



# Summary for Link SP1: Study Point 1

Inflow Area =	339.632 ac,	0.01% Impervious, Infl	ow Depth = 0.00"	for 1-Yr Storm event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

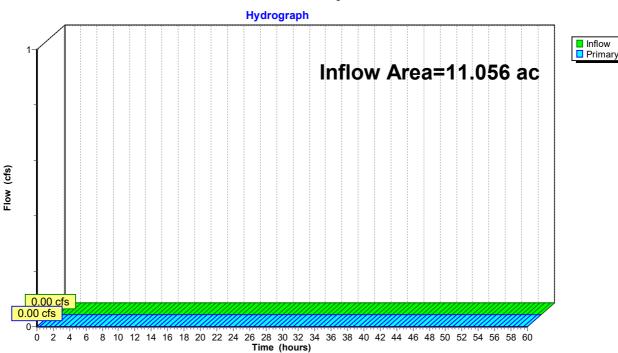


## Link SP1: Study Point 1

# Summary for Link SP2: Study Point 2

Inflow Area =	11.056 ac,	0.00% Impervious, Inflow	Depth = 0.00"	for 1-Yr Storm event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

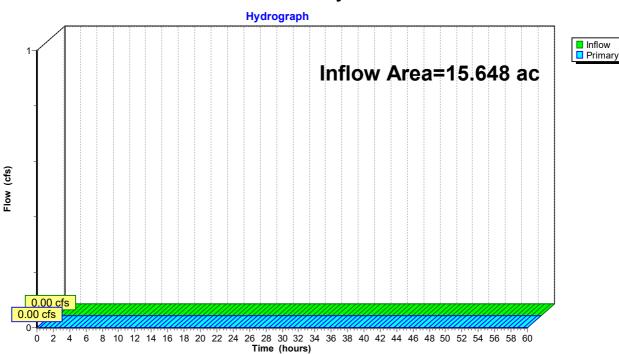


## Link SP2: Study Point 2

## Summary for Link SP3: Study Point 3

Inflow Area =	15.648 ac,	0.56% Impervious, Inflow	Depth = 0.00"	for 1-Yr Storm event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

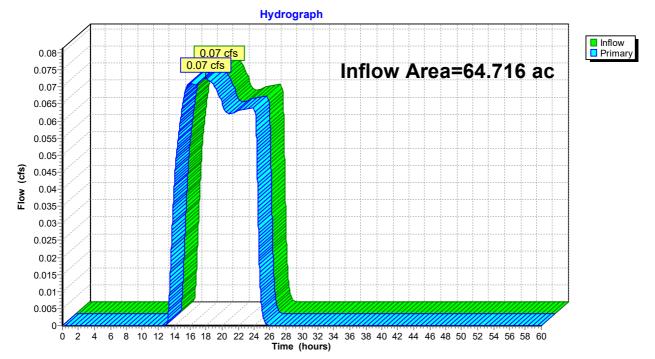


### Link SP3: Study Point 3

### Summary for Link SP4: Study Point 4

Inflow Area =	64.716 ac,	2.50% Impervious, Inflow D	epth = 0.01"	for 1-Yr Storm event
Inflow =	0.07 cfs @	17.89 hrs, Volume=	0.059 af	
Primary =	0.07 cfs @	17.89 hrs, Volume=	0.059 af, Atte	n= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

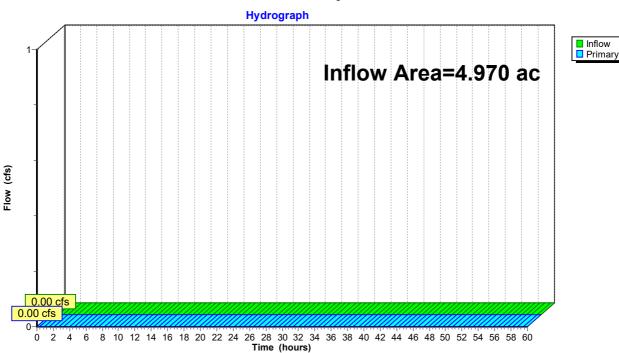


### Link SP4: Study Point 4

### Summary for Link SP5: Study Point 5

Inflow Area =	4.970 ac,	0.00% Impervious, Inflow	Depth = 0.00"	for 1-Yr Storm event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	n= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

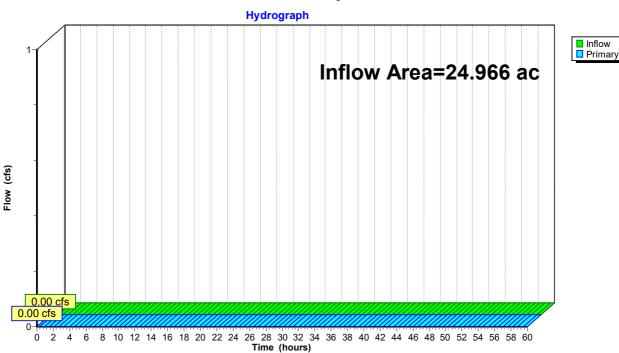


## Link SP5: Study Point 5

### Summary for Link SP6: Study Point 6

Inflow Area =	24.966 ac,	5.81% Impervious, Inflow	Depth = 0.00"	for 1-Yr Storm event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs



## Link SP6: Study Point 6

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 1.1aS1: North Array East	Runoff Area=5.874 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=788' Tc=18.8 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1aS2: North Array East	Runoff Area=8.467 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=931' Tc=21.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1aS3: North Array West	Runoff Area=5.792 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=1,031' Tc=19.7 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1aS4: North Array West	Runoff Area=12.825 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=1,562' Tc=26.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1bS1: North Road - East	t Runoff Area=1.333 ac 0.53% Impervious Runoff Depth=0.93" Tc=6.0 min CN=71 Runoff=2.16 cfs 0.103 af
Subcatchment 1.1bS2: North Road - Wes	t Runoff Area=0.651 ac 1.08% Impervious Runoff Depth=0.78" Tc=6.0 min CN=68 Runoff=0.86 cfs 0.042 af
Subcatchment 1.2aS1: Middle Array East	t Runoff Area=7.876 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=865' Tc=19.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2aS2: Middle Array Cent	<b>ter</b> Runoff Area=8.911 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=825' Tc=18.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2aS3: Middle Array Wes	t Runoff Area=5.500 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=882' Tc=18.5 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2bS1: East Road - West	Runoff Area=0.727 ac 0.00% Impervious Runoff Depth=0.73" Tc=6.0 min CN=67 Runoff=0.89 cfs 0.044 af
Subcatchment 1.2bS2: South Road	Runoff Area=0.854 ac 0.47% Impervious Runoff Depth=0.37" Flow Length=308' Tc=13.7 min CN=58 Runoff=0.26 cfs 0.026 af
Subcatchment 1.2bS3: South Road	Runoff Area=0.815 ac  1.35% Impervious  Runoff Depth=0.93" Tc=6.0 min  CN=71  Runoff=1.32 cfs  0.063 af
	<b>e</b> Runoff Area=279.312 ac 0.00% Impervious Runoff Depth=0.00" low Length=6,771' Tc=201.7 min CN=39 Runoff=0.11 cfs 0.034 af
Subcatchment 1.3bS: Access Rd to Pond	<b>1 3</b> Runoff Area=0.695 ac 0.00% Impervious Runoff Depth=0.17" Tc=6.0 min CN=51 Runoff=0.04 cfs 0.010 af
Subcatchment 2S:	Runoff Area=11.056 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=2,342' Tc=36.0 min CN=39 Runoff=0.01 cfs 0.001 af
Subcatchment 3S:	Runoff Area=15.648 ac 0.56% Impervious Runoff Depth=0.01" Flow Length=886' Tc=12.7 min CN=40 Runoff=0.02 cfs 0.007 af
Subcatchment 4.1S:	Runoff Area=11.663 ac 2.80% Impervious Runoff Depth=0.05" Flow Length=845' Tc=15.8 min CN=45 Runoff=0.06 cfs 0.052 af

20220630 BR Benson Mines Solar POST DevType II 24-hr10-Yr Storm Rainfall=3.28"Prepared by TRCPrinted7/12/2022HydroCAD® 10.10-7bs/n 01402© 2022 HydroCAD Software Solutions LLCPage 148

Subcatchment 4.2aS:	Runoff Area=27.117 ac 0.00% Impervious Runoff Depth=0.17" Flow Length=1,640' Tc=38.9 min CN=51 Runoff=0.85 cfs 0.380 af
Subcatchment 4.2bS:	Runoff Area=0.470 ac 0.00% Impervious Runoff Depth=0.98" Tc=6.0 min CN=72 Runoff=0.81 cfs 0.038 af
Subcatchment 4.3S:	Runoff Area=25.466 ac 5.08% Impervious Runoff Depth=0.34" Flow Length=2,280' Tc=36.5 min CN=57 Runoff=3.30 cfs 0.715 af
Subcatchment 5S:	Runoff Area=4.970 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=1,180' Tc=17.5 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 6S:	Runoff Area=24.966 ac 5.81% Impervious Runoff Depth=0.03" Flow Length=1,961' Tc=60.1 min CN=43 Runoff=0.08 cfs 0.059 af
Reach 1.1aR1: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=580.0' S=0.0108 '/' Capacity=56.37 cfs Outflow=0.00 cfs 0.000 af
Reach 1.1aR2: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=557.4' S=0.0284 '/' Capacity=91.27 cfs Outflow=0.00 cfs 0.000 af
Reach 1.1aR3: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af .=557.5' S=0.0352 '/' Capacity=101.68 cfs Outflow=0.00 cfs 0.000 af
Reach 1.1aR4: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af .=580.5' S=0.0362 '/' Capacity=103.04 cfs Outflow=0.00 cfs 0.000 af
n=0.035 L=	<b>e</b> Avg. Flow Depth=0.21' Max Vel=2.01 fps Inflow=2.16 cfs 0.103 af 1,733.0' S=0.0240 '/' Capacity=111.65 cfs Outflow=1.13 cfs 0.103 af
	<b>e</b> Avg. Flow Depth=0.23' Max Vel=2.62 fps Inflow=1.78 cfs 0.145 af .=593.3' S=0.0380 '/' Capacity=140.36 cfs Outflow=1.61 cfs 0.145 af
Reach 1.2aR1: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=524.2' S=0.0188 '/' Capacity=74.30 cfs Outflow=0.00 cfs 0.000 af
Reach 1.2aR2: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=556.0' S=0.0204 '/' Capacity=77.47 cfs Outflow=0.00 cfs 0.000 af
Reach 1.2aR3: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=249.0' S=0.0153 '/' Capacity=81.84 cfs Outflow=0.00 cfs 0.000 af
Reach 1.2bR1: East Road Conveyance n=0.035	Avg. Flow Depth=0.13' Max Vel=2.13 fps Inflow=0.89 cfs 0.044 af L=731.4' S=0.0456 '/' Capacity=79.22 cfs Outflow=0.69 cfs 0.044 af
	<b>ce</b> Avg. Flow Depth=0.18' Max Vel=1.55 fps Inflow=0.89 cfs 0.071 af L=604.5' S=0.0177 '/' Capacity=95.76 cfs Outflow=0.70 cfs 0.071 af
	<b>ce</b> Avg. Flow Depth=0.24' Max Vel=1.89 fps Inflow=1.54 cfs 0.133 af L=755.9' S=0.0187 '/' Capacity=98.64 cfs Outflow=1.22 cfs 0.133 af
Reach 4.1R1: Bypass Swale n=0.035	Avg. Flow Depth=0.16' Max Vel=1.27 fps Inflow=0.06 cfs 0.052 af L=570.0' S=0.0303 '/' Capacity=54.88 cfs Outflow=0.06 cfs 0.052 af
Reach 4.1R2: Ex Stream n=0.035 L	Avg. Flow Depth=0.06' Max Vel=0.68 fps Inflow=0.82 cfs 0.431 af .=740.0' S=0.0099 '/' Capacity=588.81 cfs Outflow=0.77 cfs 0.431 af

20220630 BR Benson Mines Solar POST Dev	Type II 24-hr	10-Yr Storm Rainfall=3.28"
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Reach 4.2bR: Conveyance Swale         Avg. Flow Depth=0.14'         Max Vel=2.09 fps         Inflow=0.81 cfs         0.038 af           n=0.035         L=565.0'         S=0.0432 '/'         Capacity=77.09 cfs         Outflow=0.69 cfs         0.038 af
Pond 1.1aC1: TS1 Culvert         Peak Elev=1,487.56'         Inflow=0.00 cfs         0.000 af           36.3" x 22.5", R=18.8"/51.0"         Pipe Arch Culvert         n=0.012         L=47.0'         S=0.0162 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.1aC2: TS2 Culvert         Peak Elev=1,470.80'         Inflow=0.00 cfs         0.000 af           48.0" x 24.0"         Box Culvert         n=0.012         L=47.0'         S=0.0262 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.1aC3: TS3 Culvert         Peak Elev=1,449.55'         Inflow=0.00 cfs         0.000 af           60.0" x 24.0"         Box Culvert n=0.012         L=47.2'         S=0.0405 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.1aP: North Road Bypass OC         Peak Elev=1,426.00'         Storage=0.000 af         Inflow=0.00 cfs         0.000 af           Discarded=0.00 cfs         0.000 af         Primary=0.00 cfs         0.000 af         Outflow=0.00 cfs         0.000 af
Pond 1.1bC1: TS4 Culvert         Peak Elev=1,449.98'         Inflow=1.13 cfs         0.103 af           18.0" Round Culvert n=0.012         L=45.9'         S=0.0486 '/'         Outflow=1.13 cfs         0.103 af
Pond 1.1bP1: Dry SwalePeak Elev=1,426.14' Storage=171 cf Inflow=1.61 cfs 0.145 af Discarded=0.00 cfs 0.004 af Primary=1.58 cfs 0.141 af Outflow=1.59 cfs 0.145 af
Pond 1.1bP2: North Road Detention Pond Peak Elev=1,424.04' Storage=0.050 af Inflow=1.58 cfs 0.141 af Discarded=0.02 cfs 0.052 af Primary=0.45 cfs 0.074 af Outflow=0.46 cfs 0.127 af
Pond 1.2aC1: TS 7 Culvert         Peak Elev=1,444.22'         Inflow=0.00 cfs         0.000 af           36.0" x 24.0"         Box Culvert n=0.012         L=47.0'         S=0.0215 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.2aC2: TS8 Culvert         Peak Elev=1,431.65'         Inflow=0.00 cfs         0.000 af           60.0" x 24.0"         Box Culvert n=0.012         L=47.5'         S=0.0114 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.2aP: South Road Bypass OC         Peak Elev=1,424.00' Storage=0.000 af Inflow=0.00 cfs 0.000 af           Discarded=0.00 cfs         0.000 af         Secondary=0.00 cfs 0.000 af         Outflow=0.00 cfs 0.000 af
Pond 1.2bC1: East Road Culvert         Peak Elev=1,454.78'         Inflow=0.69 cfs         0.044 af           15.0" Round Culvert n=0.012         L=41.6'         S=0.0173 '/'         Outflow=0.69 cfs         0.044 af
Pond 1.2bC2: TS6 Culvert         Peak Elev=1,443.88'         Inflow=0.70 cfs         0.071 af           18.0"         Round Culvert         n=0.012         L=44.3'         S=0.0151 '/'         Outflow=0.70 cfs         0.071 af
Pond 1.2bP: South Road Treatment Pond Peak Elev=1,426.06' Storage=0.033 af Inflow=1.22 cfs 0.133 af Discarded=0.29 cfs 0.132 af Primary=0.12 cfs 0.002 af Outflow=0.41 cfs 0.133 af
Pond 1.3P: Pond 3 - Access Rd West         Peak Elev=1,456.01' Storage=8 cf         Inflow=0.04 cfs         0.010 af           Discarded=0.03 cfs         0.010 af         Primary=0.00 cfs         0.000 af         Outflow=0.03 cfs         0.010 af
Pond 4.2bP: Pond 4 - Access Rd East         Peak Elev=1,447.07'         Storage=581 cf         Inflow=0.69 cfs         0.038 af           Discarded=0.08 cfs         0.038 af         Primary=0.00 cfs         0.000 af         Outflow=0.08 cfs         0.038 af
Pond 4.2C: 18" Culvert         Peak Elev=1,432.23' Storage=572 cf         Inflow=0.85 cfs         0.380 af           18.0" Round Culvert n=0.012 L=44.0' S=0.0148 '/'         Outflow=0.81 cfs         0.379 af
Pond 4.3C: 24" Culvert         Peak Elev=1,432.12'         Inflow=3.30 cfs         0.715 af           Outflow=3.30 cfs         0.715 af

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Link 1.1L:		Inflow=0.45 cfs 0.074 af
		Primary=0.45 cfs 0.074 af
Link 1.2L:		Inflow=0.12 cfs 0.002 af
		Primary=0.12 cfs 0.002 af
Link SP1: Study Point 1		Inflow=0.56 cfs 0.110 af
		Primary=0.56 cfs 0.110 af
Link SP2: Study Point 2		Inflow=0.01 cfs 0.001 af
		Primary=0.01 cfs 0.001 af
Link SP3: Study Point 3		Inflow=0.02 cfs 0.007 af
		Primary=0.02 cfs 0.007 af
Link OD4: Otraha Daint 4		
Link SP4: Study Point 4		Inflow=3.36 cfs 1.146 af
		Primary=3.36 cfs 1.146 af
Link SD5: Study Doint 5		Inflow=0.00 cfs_0.000 af
Link SP5: Study Point 5		Primary=0.00 cfs 0.000 af
		Fillinary=0.00 cis 0.000 al
Link SP6: Study Point 6		Inflow=0.08 cfs 0.059 af
Link of 0. Sludy Foline 0		Primary=0.08 cfs 0.059 af
		1 mary=0.00 crs 0.009 ar
Total Punoff Area = 160 988 ac	Pupoff Volume = 1 575 af	Werage Runoff Depth = $0.04$ "

Total Runoff Area = 460.988 acRunoff Volume = 1.575 afAverage Runoff Depth = 0.04"99.31% Pervious = 457.801 ac0.69% Impervious = 3.187 ac

# Summary for Subcatchment 1.1aS1: North Array East

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

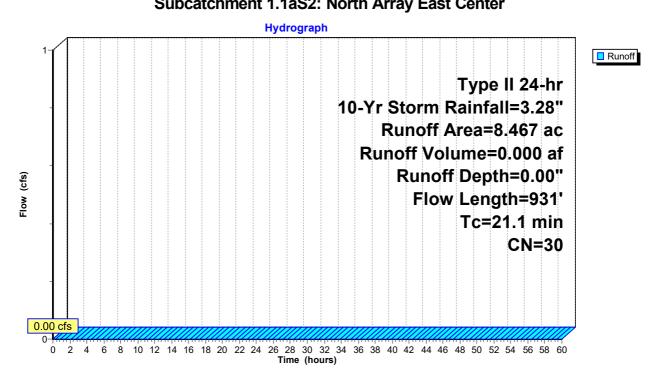
Area	<u> </u>		cription							
-	5.874 30 Meadow, non-grazed, HSG A									
5.	.874	100.								
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
11.7	100	0.0499	0.14		Sheet Flow,					
7.1	688	0.0526	1.61		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps					
18.8	788	Total								
	Subcatchment 1.1aS1: North Array East									
				Hydrog	graph					
-1 - - - - - - - - - - - - - - - - - -		8 10 12	4 16 18 20		Type II 24-hr 10-Yr Storm Rainfall=3.28" Runoff Area=5.874 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=788' Tc=18.8 min CN=30					

## Summary for Subcatchment 1.1aS2: North Array East Center

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR2 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

Area	(ac) C	N Desc	cription						
8.467 30 Meadow, non-grazed, HSG A									
8.467 100.00% Pervious Area									
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
11.9	100	0.0476	0.14		Sheet Flow,				
9.2	831	0.0463	1.51		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
21.1	931	Total							
	Subcatchment 1 1aS2: North Array Fast Center								



### Summary for Subcatchment 1.1aS3: North Array West Center

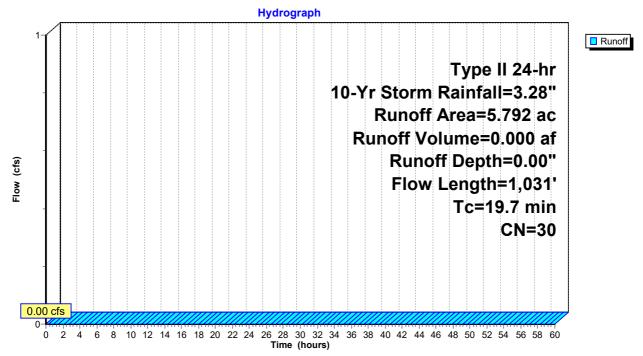
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR3 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac) C	N Desc	cription						
	5.792 30 Meadow, non-grazed, HSG A									
	5.	792	100.	00% Pervi	ous Area					
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
•	10.7	100	0.0618	0.16		Sheet Flow,				
	9.0	931	0.0601	1.72		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
	40.7	4 004	T . 4 . 1			-				

19.7 1,031 Total





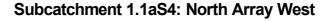
## Summary for Subcatchment 1.1aS4: North Array West

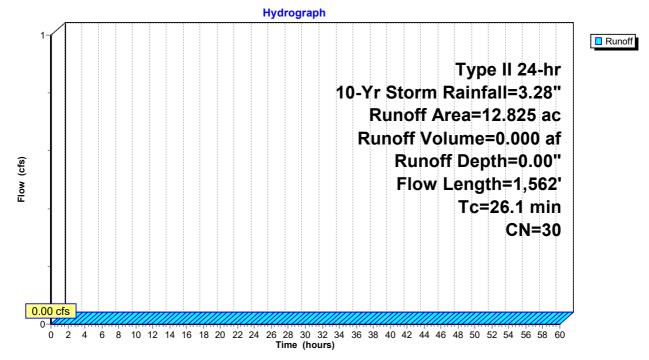
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR4 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

_	Area	(ac) C	N Desc	cription							
	12.825 30 Meadow, non-grazed, HSG A										
-	12.	825	100.	00% Pervi	ous Area						
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
-	11.1	100	0.0560	0.15		Sheet Flow,					
	15.0	1,462	0.0540	1.63		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps					
	26.1	1 560	Tatal								







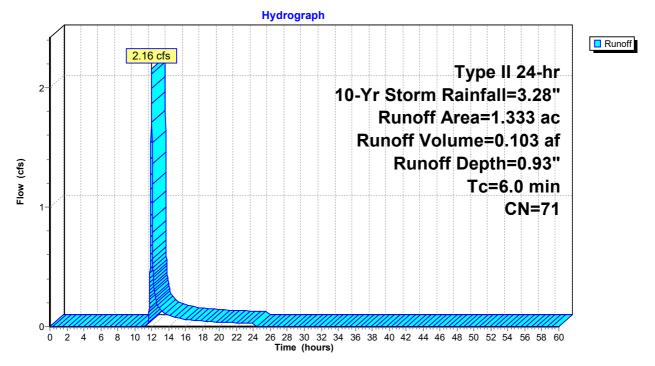
## Summary for Subcatchment 1.1bS1: North Road - East

Runoff = 2.16 cfs @ 11.98 hrs, Volume= 0.103 af, Depth= 0.93" Routed to Reach 1.1bR1 : North Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

Area	(ac)	CN	Desc	cription			
0.	.507	30	Mea	dow, non-g	grazed, HS	SGA	
0.	.819	96	Grav	el surface	, HSG A		
0.	.007	98	Roof	s, HSG A			
1.	.333	71	Weig	ghted Aver	age		
1.	1.326 99.47% Pervious Area						
0.	.007		0.53	% Impervi	ous Area		
Тс	Leng		Slope	Velocity	Capacity	•	
(min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)		
6.0						Direct Entry,	

### Subcatchment 1.1bS1: North Road - East



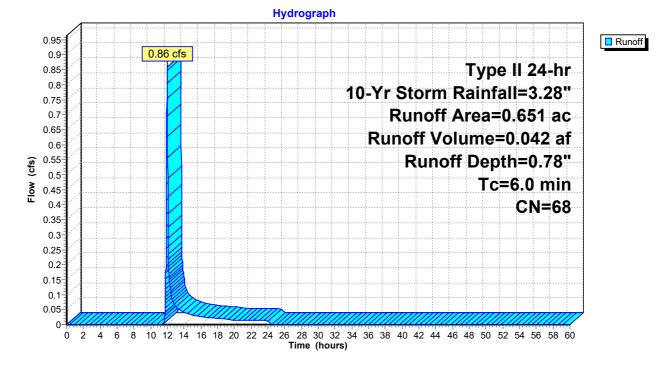
### Summary for Subcatchment 1.1bS2: North Road - West

Runoff = 0.86 cfs @ 11.98 hrs, Volume= 0.042 af, Depth= 0.78" Routed to Reach 1.1bR2 : North Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac)	CN	Desc	ription		
	0.	279	30	Mead	dow, non-g	grazed, HS	SG A
	0.	365	96	Grav	el surface	, HSG A	
_	0.	007	98	Roof	s, HSG A		
	0.	651	68	Weig	hted Aver	age	
	0.	644		98.92	2% Pervio	us Area	
	0.	007		1.089	% Impervi	ous Area	
	Тс	Leng		Slope	Velocity	Capacity	Description
	(min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)	
	6.0						Direct Entry,

#### Subcatchment 1.1bS2: North Road - West



### Summary for Subcatchment 1.2aS1: Middle Array East

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.2aR1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

Area	(ac) C	N Desc	cription						
7	7.876 30 Meadow, non-grazed, HSG A								
7	7.876 100.00% Pervious Area								
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
10.6	100	0.0628	0.16		Sheet Flow,				
8.5	765	0.0459	1.50		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
19.1	865	Total							
			Subcate	chment 1.	2aS1: Middle Array East				
				Hydrog	graph				
Elow (cfs)					Type II 24-hr 10-Yr Storm Rainfall=3.28" Runoff Area=7.876 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=865' Tc=19.1 min CN=30	Runoff			

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

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0.00 cfs

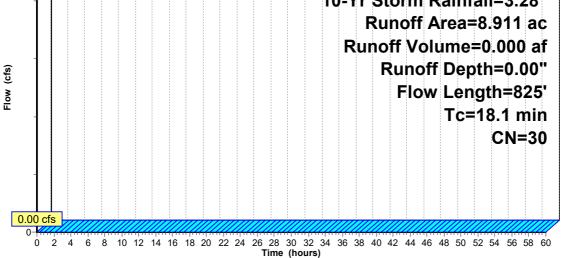
0

### Summary for Subcatchment 1.2aS2: Middle Array Center

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.2aR2 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

Area	Area (ac) CN Description									
8	8.911 30 Meadow, non-grazed, HSG A									
8	.911	100.	00% Pervi	ous Area						
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
10.8	100	0.0607	0.15		Sheet Flow,					
7.3	725	0.0559	1.66		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps					
18.1	825	Total								
	Subcatchment 1.2aS2: Middle Array Center									
				Hydrog	graph					
1-					Type II 24-hr 10-Yr Storm Rainfall=3.28" Runoff Area=8.911 ac					



## Summary for Subcatchment 1.2aS3: Middle Array West

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.2aR3 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

Area	(ac) C	N Des	cription							
5	5.500 30 Meadow, non-grazed, HSG A									
5	5.500 100.00% Pervious Area									
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
10.4	100	0.0660	0.16		Sheet Flow,					
8.1	782	0.0529	1.61		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps					
18.5	882	Total								
-1 Flow (cfs)			Subcato	chment 1. Hydrog	2aS3: Middle Array West graph Type II 24-hr 10-Yr Storm Rainfall=3.28" Runoff Area=5.500 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=882' Tc=18.5 min CN=30					

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

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0.00 cfs

ò

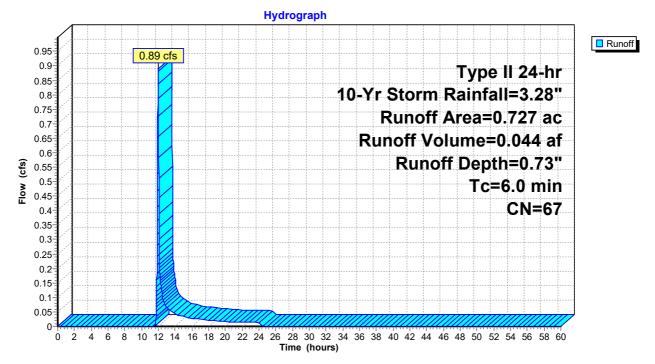
## Summary for Subcatchment 1.2bS1: East Road - West Ditch

Runoff = 0.89 cfs @ 11.99 hrs, Volume= 0.044 af, Depth= 0.73" Routed to Reach 1.2bR1 : East Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

Area	(ac)	CN	Desc	cription						
0	.410	96	Grav	el surface	, HSG A					
0	0.317 30 Meadow, non-grazed, HSG A									
0	.727	67	Weig	ghted Aver	age					
0.727 100.00% Pervious Area										
Тс	Leng	gth	Slope	Velocity	Capacity	Description				
(min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)					
6.0						Direct Entry,				

### Subcatchment 1.2bS1: East Road - West Ditch



## Summary for Subcatchment 1.2bS2: South Road

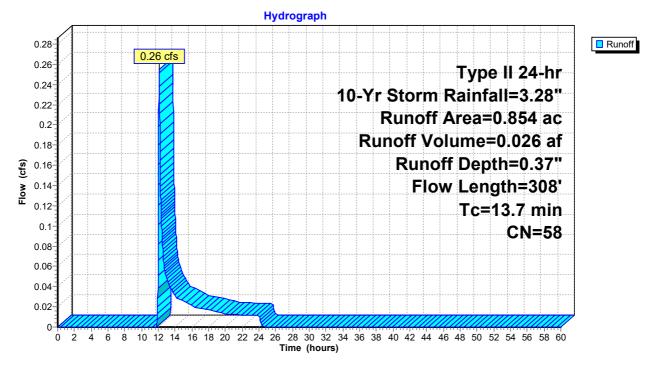
Runoff = 0.26 cfs @ 12.10 hrs, Volume= 0.026 af, Depth= 0.37" Routed to Reach 1.2bR2 : South Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac) C	N Dese	cription		
	0.	498 🕄	30 Mea	dow, non-g	grazed, HS	GA
*	0.	352 9	96 Grav	el surface	-	
*	0.	004 9	8 Root	fs		
	0.	854 5	58 Weig	ghted Aver	age	
	0.	850	•	3% Pervio	•	
	0.	004	0.47	% Impervi	ous Area	
	Тс	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	5.0	35	0.0516	0.12		Sheet Flow,
						Grass: Dense n= 0.240 P2= 2.31"
	0.4	25	0.0310	1.06		Sheet Flow,
						Smooth surfaces n= 0.011 P2= 2.31"
	5.9	40	0.0429	0.11		Sheet Flow,
						Grass: Dense n= 0.240 P2= 2.31"
	2.4	208	0.0442	1.47		Shallow Concentrated Flow,
						Short Grass Pasture Kv= 7.0 fps
	407	000	Tatal			

13.7 308 Total

### Subcatchment 1.2bS2: South Road



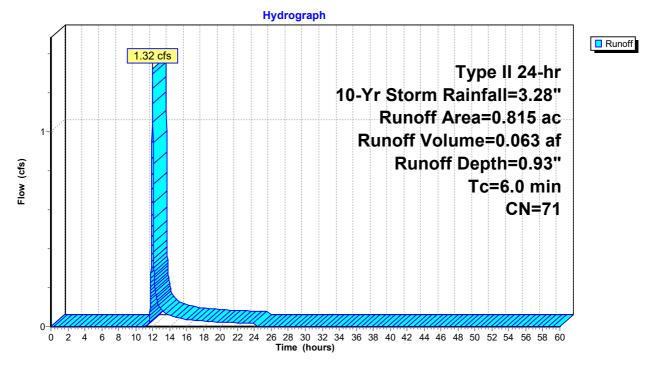
## Summary for Subcatchment 1.2bS3: South Road

Runoff = 1.32 cfs @ 11.98 hrs, Volume= 0.063 af, Depth= 0.93" Routed to Reach 1.2bR3 : South Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac)	CN	Desc	ription						
	0.	313	30	Mea	dow, non-g	grazed, HS	G A				
	0.	491	96	Grav	el surface	, HSG A					
*	0.	011	98	Roof	s						
	0.	815	71	Weig	hted Aver	age					
	0.	0.804 98.65% Pervious Area									
	0.	011		1.359	% Impervi	ous Area					
	Tc	Leng	th	Slope	Velocity	Capacity	Description				
	(min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)					
	6.0						Direct Entry,				
					Sub	eatchmon	t 1 2653: South Boad				

#### Subcatchment 1.2bS3: South Road



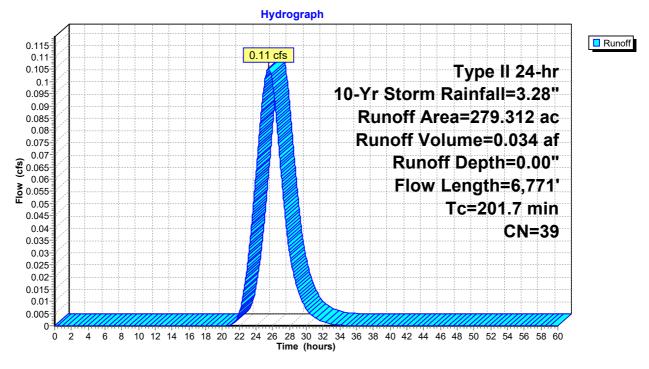
#### Summary for Subcatchment 1.3aS1: Surface Discharge

Runoff = 0.11 cfs @ 25.55 hrs, Volume= 0.034 af, Depth= 0.00" Routed to Link SP1 : Study Point 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac) C	N Desc	cription							
*	0.	754 9	96 Grav	el surface							
	144.649 30 Meadow, non-grazed, HSG A										
	0.566 58 Meadow, non-grazed, HSG B										
	25.274 71 Meadow, non-grazed, HSG C										
	61.	692 3		ds, Good,							
	32.	754 5	55 Woo	ds, Good,	HSG B						
	13.	623 7	70 Woo	ds, Good,	HSG C						
	279.	312 3	39 Weig	ghted Aver	age						
	279.	312	100.	00% Pervi	ous Area						
	Тс	Length	Slope	Velocity	Capacity	Description					
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)						
	14.8	100	0.0764	0.11		Sheet Flow,					
						Woods: Light underbrush n= 0.400 P2= 2.31"					
	4.7	581	0.1683	2.05		Shallow Concentrated Flow,					
						Woodland Kv= 5.0 fps					
	25.7	25.7 1,199 0		0.78		Shallow Concentrated Flow,					
						Woodland Kv= 5.0 fps					
	0.8	189	0.0157	3.84	76.82	Channel Flow, Rerouted Stream					
						Area= 20.0 sf Perim= 32.6' r= 0.61'					
						n= 0.035 Earth, dense weeds					
	154.9	4,646	0.0051	0.50		Shallow Concentrated Flow,					
	0.0	50	0.0500	4.40		Short Grass Pasture Kv= 7.0 fps					
	0.8	56	0.0566	1.19		Shallow Concentrated Flow,					
						Woodland Kv= 5.0 fps					
	2017	6 771	Total								

201.7 6,771 Total



# Subcatchment 1.3aS1: Surface Discharge

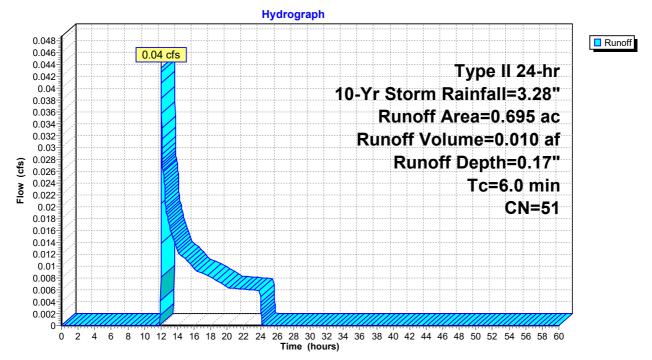
#### Summary for Subcatchment 1.3bS: Access Rd to Pond 3

Runoff = 0.04 cfs @ 12.04 hrs, Volume= 0.010 af, Depth= 0.17" Routed to Pond 1.3P : Pond 3 - Access Rd West

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac)	CN	Desc	cription		
	0.	473	30	Mea	dow, non-g	grazed, HS	SG A
*	0.	063	96	Grav	el surface	, HSG A, R	Redev
*	0.	159	96	Grav	el surface	, HSG A	
	0.	695	51	Weig	ghted Aver	age	
	0.	695		100.	00% Pervi	ous Area	
	Tc (min)	Leng (fee	,	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
_	6.0	(	/	(1214)	(1200)	(0.0)	Direct Entry,

# Subcatchment 1.3bS: Access Rd to Pond 3



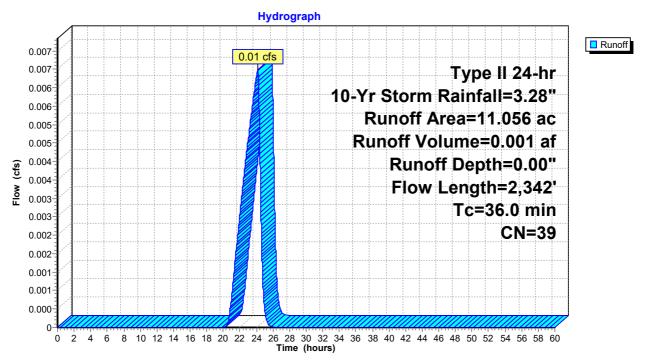
### Summary for Subcatchment 2S:

Runoff = 0.01 cfs @ 24.12 hrs, Volume= 0.001 af, Depth= 0.00" Routed to Link SP2 : Study Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

Area	(ac) C	N Desc	cription								
1.	.417 9	6 Grav	el surface	, HSG A							
0.	.573 3	9 >75%	% Grass co	over, Good	, HSG A						
6.	.530 3	0 Mea	dow, non-g	grazed, HS	GA						
2	.536 3	0 Woo	ds, Good,	HSG A							
11.056 39 Weighted Average											
11.056 100.00% Pervious Area											
Tc	Length	Slope	Velocity	Capacity	Description						
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)							
10.7	100	0.0624	0.16		Sheet Flow,						
					Grass: Dense n= 0.240 P2= 2.31"						
2.7	614	0.0535	3.72		Shallow Concentrated Flow,						
					Unpaved Kv= 16.1 fps						
12.1	1,184	0.0543	1.63		Shallow Concentrated Flow,						
					Short Grass Pasture Kv= 7.0 fps						
1.9	115	0.0407	1.01		Shallow Concentrated Flow,						
			4.00		Woodland Kv= 5.0 fps						
0.6	68	0.1443	1.90		Shallow Concentrated Flow,						
0.0	004	0.0440	0.54		Woodland Kv= 5.0 fps						
8.0	261	0.0118	0.54		Shallow Concentrated Flow,						
					Woodland Kv= 5.0 fps						
36.0	2,342	Total									





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### Summary for Subcatchment 3S:

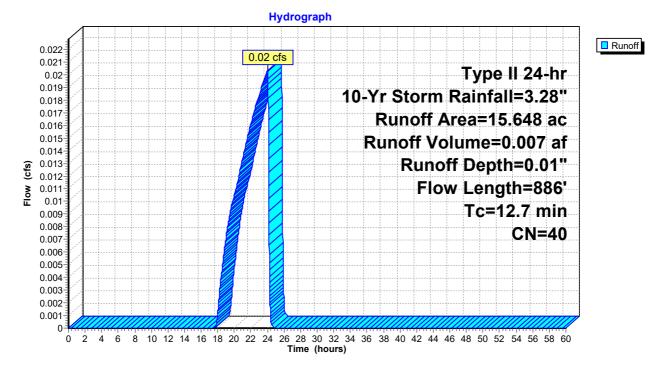
Runoff = 0.02 cfs @ 24.01 hrs, Volume= 0.007 af, Depth= 0.01" Routed to Link SP3 : Study Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac)	CN	Desc	cription							
*	0.	088	98	Pave	ed Roads &	& Rooftops						
	0.	406	39	>75%	6 Grass co	over, Good,	, HSG A					
	2.011 61 >75% Grass cover, Good, HSG B											
	5.525 30 Meadow, non-grazed, HSG A											
	4.276 30 Woods, Good, HSG A											
_	3.342 55 Woods, Good, HSG B											
	15.648 40 Weighted Average											
	15.560 99.44% Pervious Area											
	0.	088		0.56	% Impervi	ous Area						
	-		~			<b>O</b>						
	Tc	Lengt		Slope	Velocity	Capacity	Description					
_	(min)	(feet	/	(ft/ft)	(ft/sec)	(cfs)						
	5.4	52	2 0.	0937	0.16		Sheet Flow,					
							Grass: Dense n= 0.240 P2= 2.31"					
	3.7	62	5 0.	1637	2.83		Shallow Concentrated Flow,					
							Short Grass Pasture Kv= 7.0 fps					
	3.6	209	9 0.	0384	0.98		Shallow Concentrated Flow,					
							Woodland Kv= 5.0 fps					

12.7 886 Total

Subcatchment 3S:



### Summary for Subcatchment 4.1S:

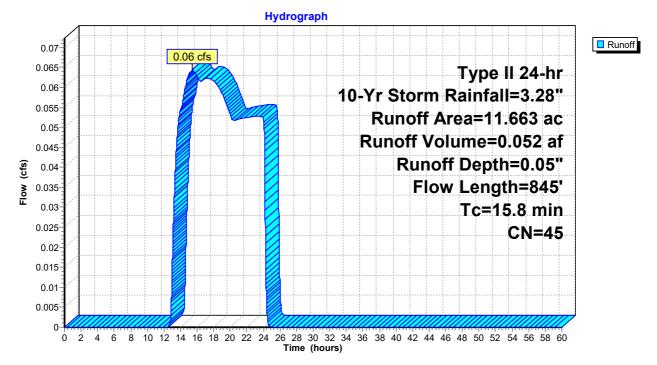
Runoff = 0.06 cfs @ 15.43 hrs, Volume= 0.052 af, Depth= 0.05" Routed to Reach 4.1R1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac) (	CN Des	scription								
*	0.	327	98 Pa\	ed Roads &	& Rooftops							
*	•											
	0.165 61 >75% Grass cover, Good, HSG B											
	2.544 30 Meadow, non-grazed, HSG A											
	0.560 58 Meadow, non-grazed, HSG B											
	3.605 30 Woods, Good, HSG A											
*												
11.663 45 Weighted Average												
	11.336 97.20% Pervious Area											
	0.	327	2.8	0% Impervi	ous Area							
				-								
	Tc	Length	Slope	Velocity	Capacity	Description						
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)							
	8.5	100	0.0430	0.20		Sheet Flow,						
						Grass: Short n= 0.150 P2= 2.31"						
	2.6	360	0.1077	2.30		Shallow Concentrated Flow,						
						Short Grass Pasture Kv= 7.0 fps						
	4.7	385	0.0735	1.36		Shallow Concentrated Flow,						
						Woodland Kv= 5.0 fps						

15.8 845 Total

## Subcatchment 4.1S:



### Summary for Subcatchment 4.2aS:

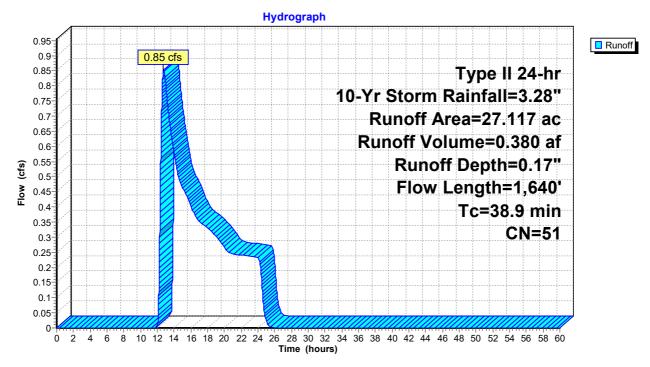
Runoff = 0.85 cfs @ 12.75 hrs, Volume= 0.380 af, Depth= 0.17" Routed to Pond 4.2C : 18" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac) (	CN Dese	cription								
*	0.	238	96 Grav	/el surface	1							
	4.	086	30 Mea	dow, non-g	grazed, HS	GA						
	0.	384	58 Mea	dow, non-g	grazed, HS	GB						
0.977 30 Woods, Good, HSG A												
_	21.432 55 Woods, Good, HSG B											
	27.117 51 Weighted Average											
	27.117 100.00% Pervious Area											
	Тс	Length		Velocity	Capacity	Description						
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)							
	17.8	100	0.0480	0.09		Sheet Flow,						
						Woods: Light underbrush n= 0.400 P2= 2.31"						
	8.0	878	0.1354	1.84		Shallow Concentrated Flow,						
						Woodland Kv= 5.0 fps						
	13.1	662	0.0144	0.84		Shallow Concentrated Flow,						
						Short Grass Pasture Kv= 7.0 fps						

38.9 1,640 Total

Subcatchment 4.2aS:



#### Summary for Subcatchment 4.2bS:

Runoff = 0.81 cfs @ 11.98 hrs, Volume= 0.038 af, Depth= 0.98" Routed to Reach 4.2bR : Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

		174 470		′2 <i>\</i>	Neig	low, no hted A	ver	age		5G A	4										
	0.4	470			100.0	0% Pe	ervio	ous /	Area												
T mir	-ิ่ว า)		ngth eet)		ope t/ft)	Veloc (ft/se		Cap	oacity (cfs)		esc	ripti	on								
6.	.0					•				D	irec	t Er	ntry,								
								Sı	ubca	tch	me	nt 4	I.2b	S:							
									Hydro	ograp	bh										
	0.9																				Runof
0	.85	<u>_</u>		C	.81 cf	s															
	0.8	(J															ӯр	e II	24	.hr	
	.75	<u>/</u>										10-	Yr	Sto	orm	Ra	inf	all:	=3.2	.8"	
	0.7	2-											C	Diir	off	٨r	02-	-∩	170	20	
	.65 0.6	7												6707				( <b>-</b>			
	.55	4	Runoff Volume=0.038 af																		
	0.5	4												R	unc	off [	Dep	oth	=0.9	8"	
2	.45	4																1 1	.0 n		
È	0.4	4																1			
0	.35	<u>_</u>																(	CN=	12	
	0.3	<u>_</u>																			
	.25	<u>_</u>																			
	0.2	/																			
	.15 0.1	1-																			
	0.1-1	1																			

#### Summary for Subcatchment 4.3S:

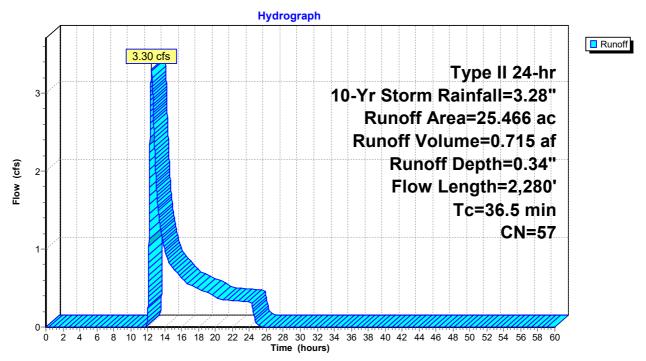
Runoff = 3.30 cfs @ 12.45 hrs, Volume= 0.715 af, Depth= 0.34" Routed to Pond 4.3C : 24" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac) C	N Dese	cription		
*	1.	293 9	98 Pave	ed Roads &	& Rooftops	
	1.	783 5	58 Mea	dow. non-o	grazed, HS	GB
	22.			ds, Good,		
	25			ghted Aver		
		173		2% Pervio	•	
		293		% Impervi		
		200	0.00		0007400	
	Тс	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
_	15.9	100	0.0634	0.10		Sheet Flow,
				•••••		Woods: Light underbrush n= 0.400 P2= 2.31"
	17.8	1,368	0.0656	1.28		Shallow Concentrated Flow,
		1,000	0.0000	1.20		Woodland Kv= 5.0 fps
	0.1	38	0.3960	4.40		Shallow Concentrated Flow,
	5.1		0.0000			Short Grass Pasture Kv= 7.0 fps
	2.7	774	0.0281	4.70	109.09	Channel Flow,
			0.0201	1.10		Area= 23.2 sf Perim= 43.2' r= 0.54' n= 0.035

36.5 2,280 Total

#### Subcatchment 4.3S:



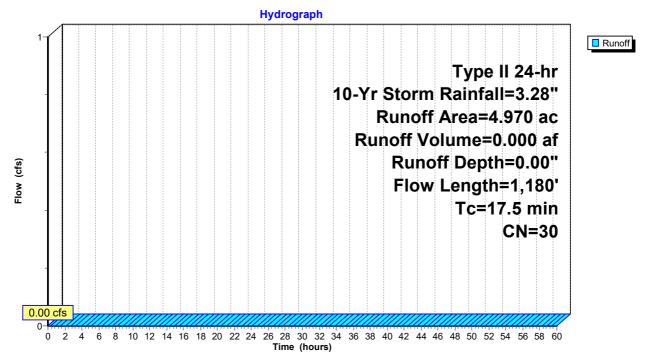
#### Summary for Subcatchment 5S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP5 : Study Point 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

Area	(ac) C	N Desc	cription		
4.	.139 3			grazed, HS	GA
0.	<u>.831 3</u>	0 Woo	ds, Good,	HSG A	
4.	.970 3	0 Weig	ghted Avei	rage	
4.	.970	100.	00% Pervi	ous Area	
Тс	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
7.1	100	0.0675	0.24		Sheet Flow,
					Grass: Short n= 0.150 P2= 2.31"
8.5	801	0.0508	1.58		Shallow Concentrated Flow,
					Short Grass Pasture Kv= 7.0 fps
1.3	217	0.1515	2.72		Shallow Concentrated Flow,
					Short Grass Pasture Kv= 7.0 fps
0.6	62	0.0697	1.85		Shallow Concentrated Flow,
					Short Grass Pasture Kv= 7.0 fps
17.5	1,180	Total			
				Subc	atchment 5S <sup>.</sup>

#### Subcatchment 5S:



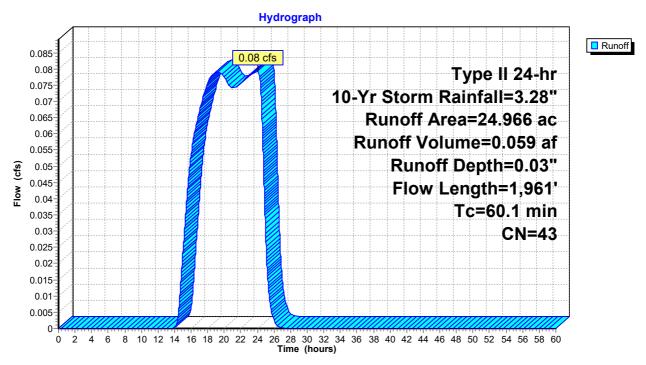
#### Summary for Subcatchment 6S:

Runoff = 0.08 cfs @ 24.10 hrs, Volume= 0.059 af, Depth= 0.03" Routed to Link SP6 : Study Point 6

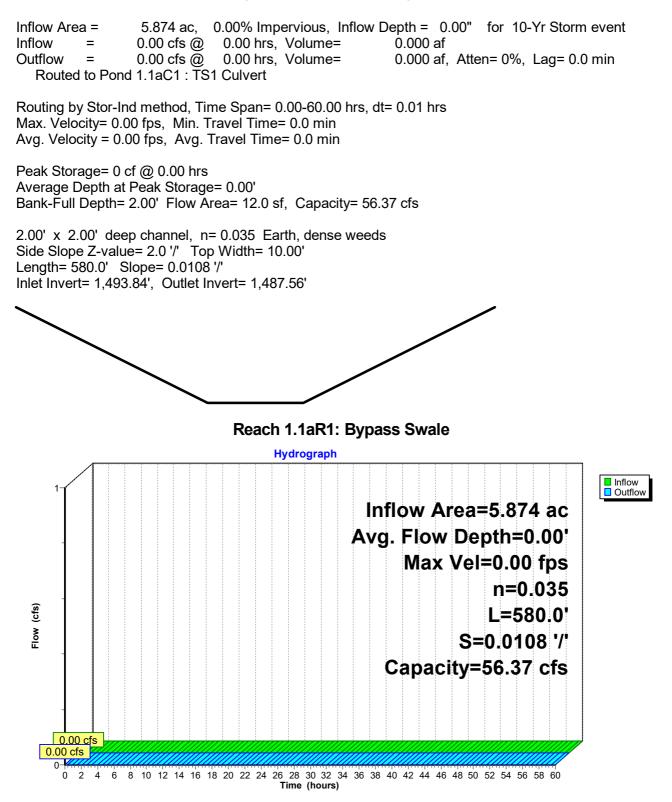
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac)	CN [	Desc	ription		
*	1.	450	98 F	Pave	ed Roads &	& Rooftops	
	0.	466	96 (	Grav	el surface	, HSG A	
	2.	545	61 >	>75%	6 Grass co	over, Good	, HSG B
	7.	511	30 N	Mead	dow, non-g	grazed, HS	ig A
	0.	788	58 N	Mead	dow, non-g	grazed, HS	ig B
	7.	940	30 \	Noo	ds, Good,	HSG A	
	4.	266	55 \	Noo	ds, Good,	HSG B	
	24.	966	43 \	Neig	hted Aver	age	
	23.	516	ç	94.1	9% Pervio	us Area	
	1.	450	5	5.819	% Impervi	ous Area	
	Тс	Length		pe	Velocity	Capacity	Description
	(min)	(feet	) (ft	t/ft)	(ft/sec)	(cfs)	
	10.1	100	0.02	278	0.16		Sheet Flow,
							Grass: Short n= 0.150 P2= 2.31"
	3.2	313	8 0.05	528	1.61		Shallow Concentrated Flow,
							Short Grass Pasture Kv= 7.0 fps
	3.9	486	6 0.17	742	2.09		Shallow Concentrated Flow,
							Woodland Kv= 5.0 fps
	42.9	1,062	2 0.00	)68	0.41		Shallow Concentrated Flow,
							Woodland Kv= 5.0 fps
	60.1	1,961	Tota	al			

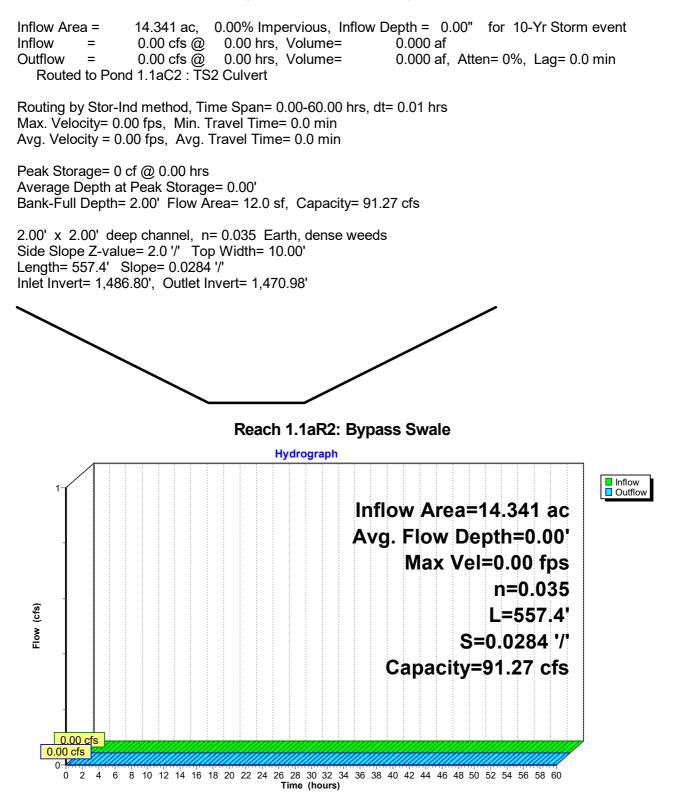
#### Subcatchment 6S:



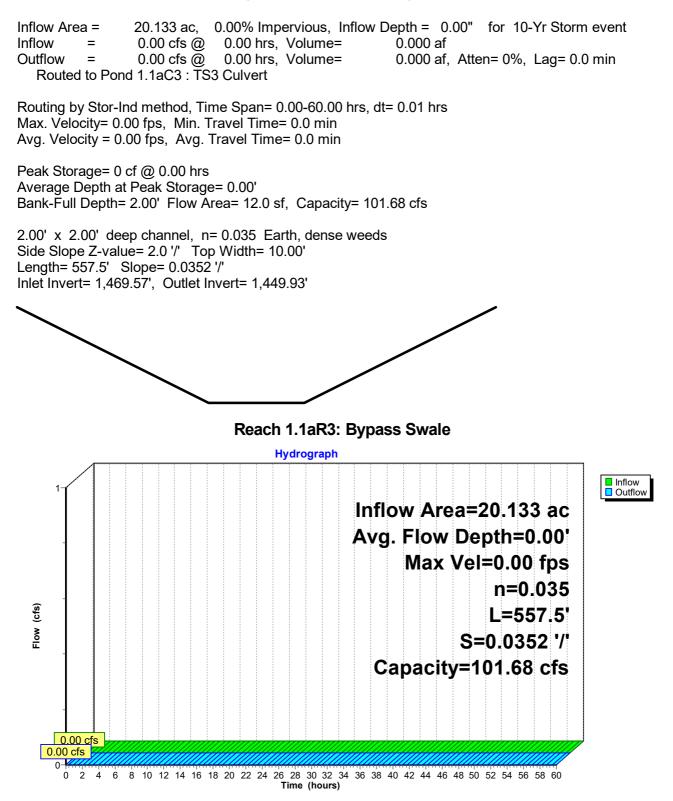
# Summary for Reach 1.1aR1: Bypass Swale



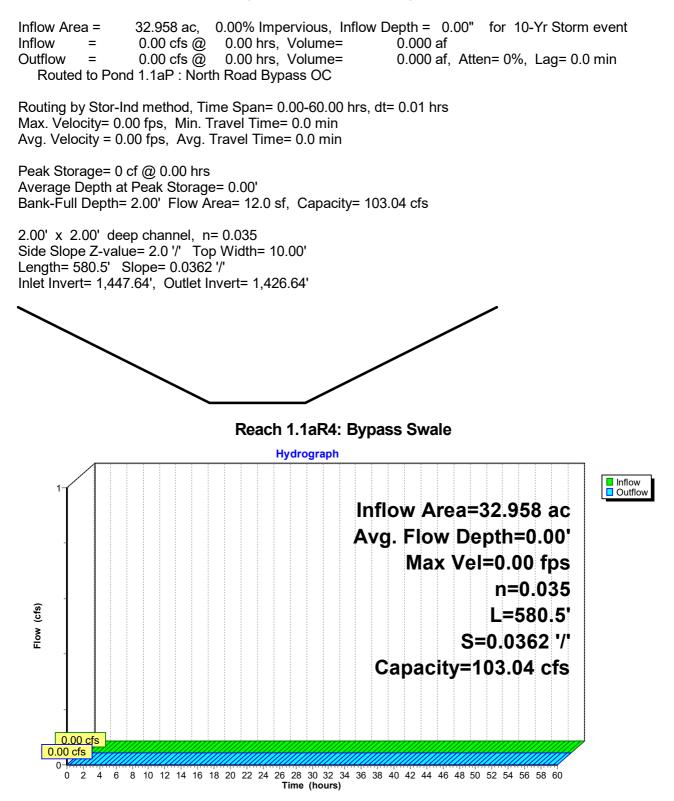
#### Summary for Reach 1.1aR2: Bypass Swale



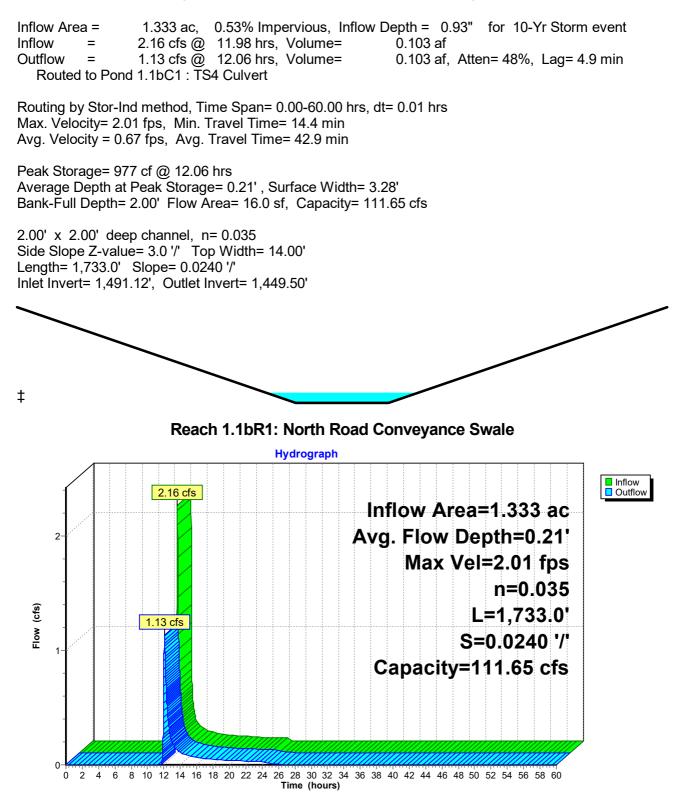
#### Summary for Reach 1.1aR3: Bypass Swale



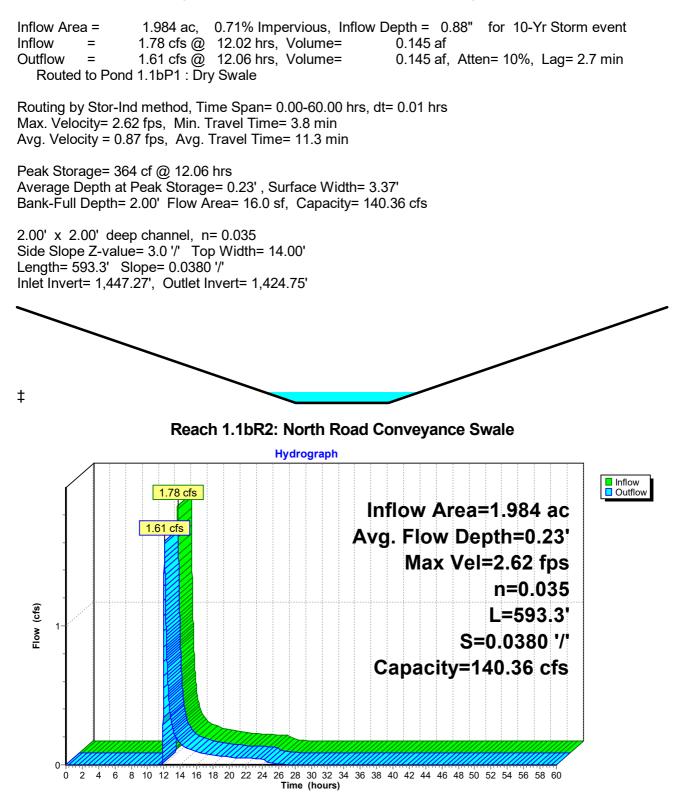
#### Summary for Reach 1.1aR4: Bypass Swale



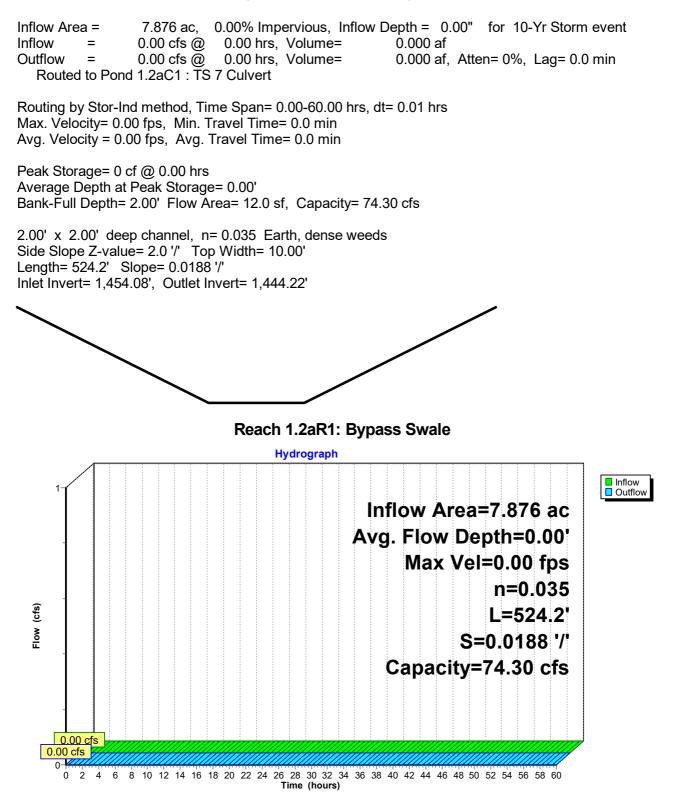
#### Summary for Reach 1.1bR1: North Road Conveyance Swale



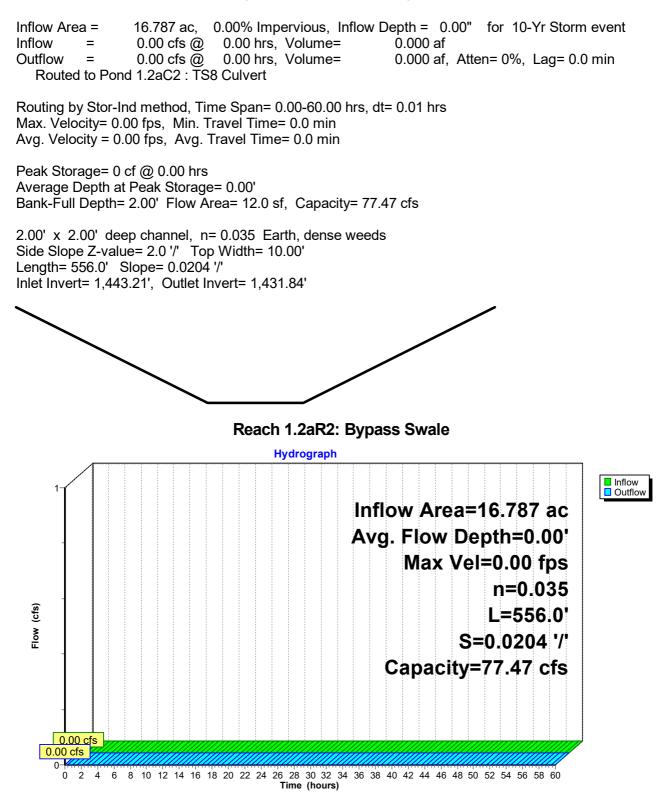
#### Summary for Reach 1.1bR2: North Road Conveyance Swale



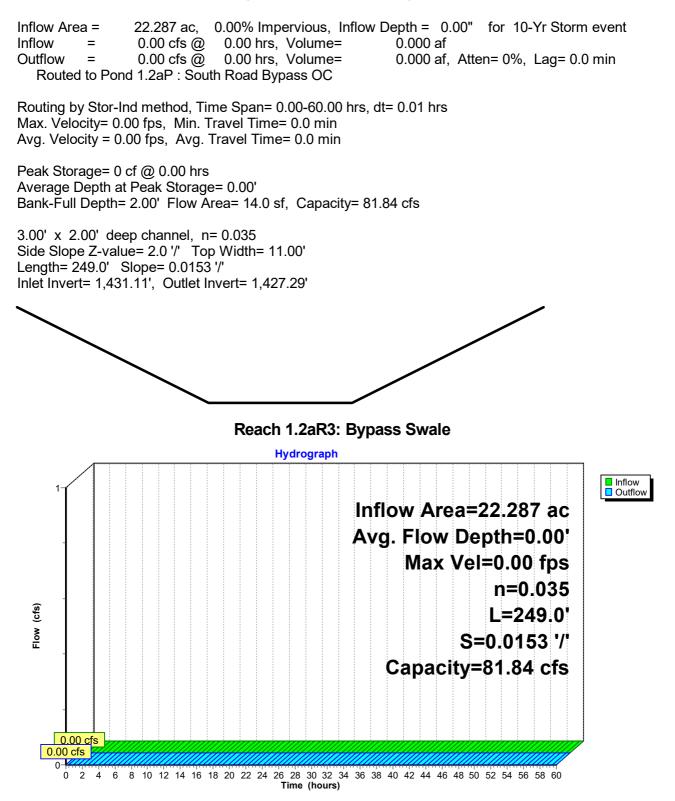
# Summary for Reach 1.2aR1: Bypass Swale



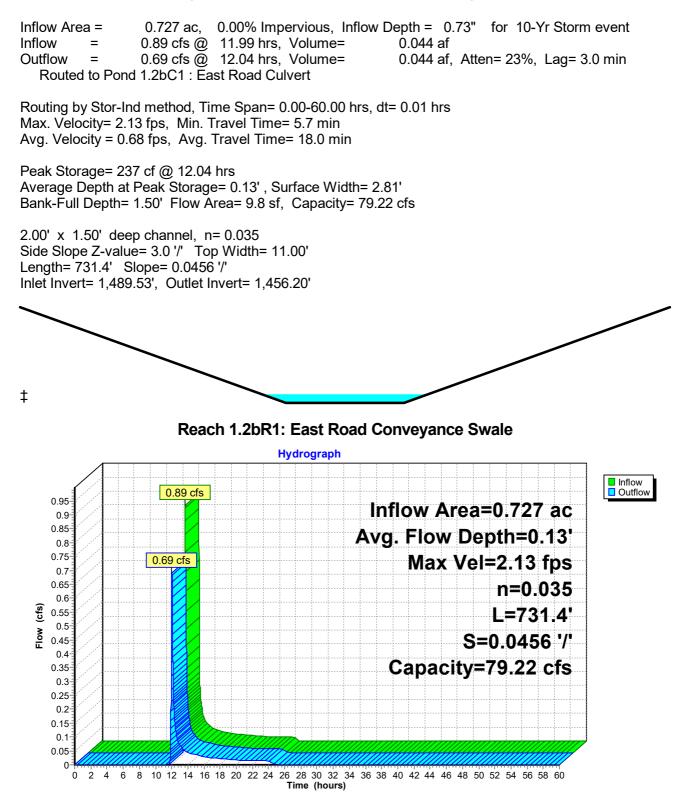
#### Summary for Reach 1.2aR2: Bypass Swale



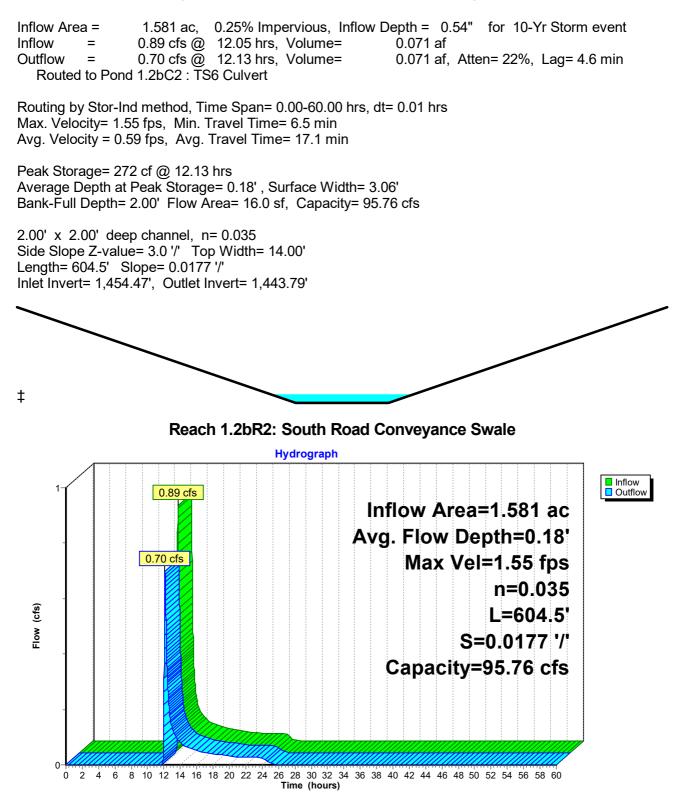
#### Summary for Reach 1.2aR3: Bypass Swale



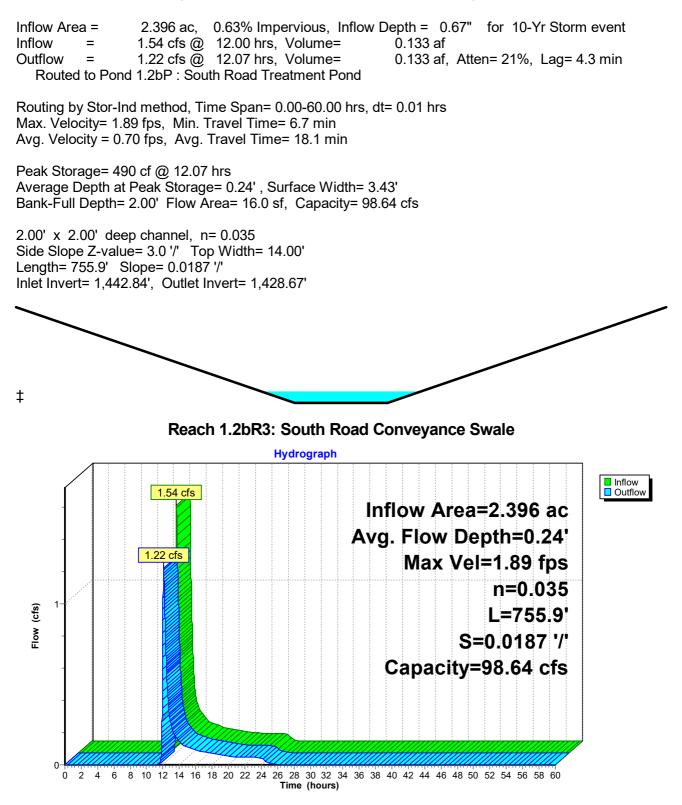
#### Summary for Reach 1.2bR1: East Road Conveyance Swale



#### Summary for Reach 1.2bR2: South Road Conveyance Swale



#### Summary for Reach 1.2bR3: South Road Conveyance Swale



#### Summary for Reach 4.1R1: Bypass Swale

 Inflow Area =
 11.663 ac,
 2.80% Impervious, Inflow Depth =
 0.05"
 for
 10-Yr Storm event

 Inflow =
 0.06 cfs @
 15.43 hrs, Volume=
 0.052 af

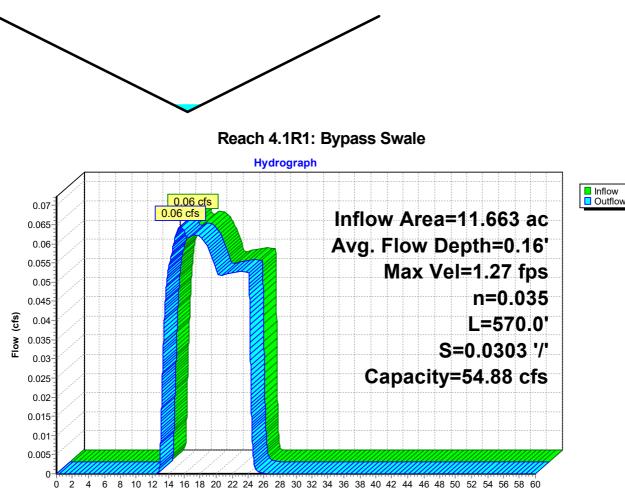
 Outflow =
 0.06 cfs @
 15.51 hrs, Volume=
 0.052 af, Atten= 0%, Lag= 4.8 min

 Routed to Reach 4.1R2 : Ex Stream
 0.052 af, Atten= 0%, Lag= 4.8 min

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Max. Velocity= 1.27 fps, Min. Travel Time= 7.5 min Avg. Velocity = 1.09 fps, Avg. Travel Time= 8.7 min

Peak Storage= 29 cf @ 15.51 hrs Average Depth at Peak Storage= 0.16', Surface Width= 0.64' Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 54.88 cfs

0.00' x 2.00' deep channel, n= 0.035 Side Slope Z-value= 2.0 '/' Top Width= 8.00' Length= 570.0' Slope= 0.0303 '/' Inlet Invert= 1,448.24', Outlet Invert= 1,430.97'



Time (hours)

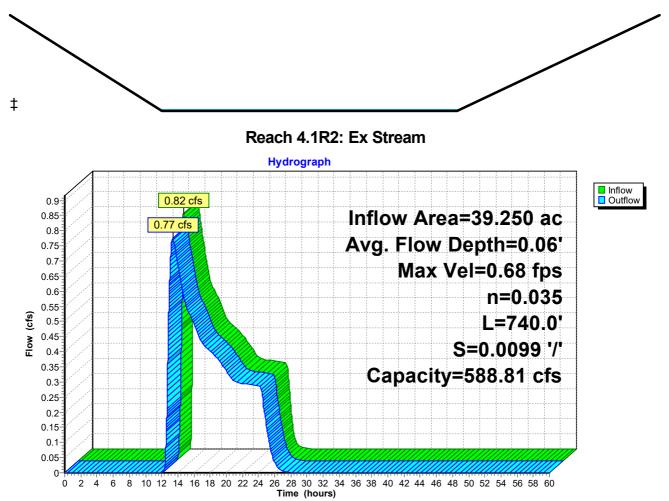
#### Summary for Reach 4.1R2: Ex Stream

Inflow Area =39.250 ac,0.83% Impervious,Inflow Depth =0.13"for10-Yr Storm eventInflow =0.82 cfs @13.01 hrs,Volume=0.431 afOutflow =0.77 cfs @13.36 hrs,Volume=0.431 af,Atten= 5%,Routed to Link SP4 : Study Point 40.431 af,Atten= 5%,Lag= 21.0 min

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Max. Velocity= 0.68 fps, Min. Travel Time= 18.1 min Avg. Velocity = 0.48 fps, Avg. Travel Time= 25.5 min

Peak Storage= 842 cf @ 13.36 hrs Average Depth at Peak Storage= 0.06', Surface Width= 17.95' Bank-Full Depth= 3.00' Flow Area= 84.0 sf, Capacity= 588.81 cfs

17.50' x 3.00' deep channel, n= 0.035 Side Slope Z-value= 3.0 4.0 '/' Top Width= 38.50' Length= 740.0' Slope= 0.0099 '/' Inlet Invert= 1,430.98', Outlet Invert= 1,423.64'



#### Summary for Reach 4.2bR: Conveyance Swale

Inflow Area = 0.470 ac, 0.00% Impervious, Inflow Depth = 0.98" for 10-Yr Storm event 0.81 cfs @ 11.98 hrs, Volume= Inflow = 0.038 af = 0.69 cfs @ 12.02 hrs, Volume= Outflow 0.038 af, Atten= 15%, Lag= 2.4 min Routed to Pond 4.2bP : Pond 4 - Access Rd East Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Max. Velocity= 2.09 fps, Min. Travel Time= 4.5 min Avg. Velocity = 0.63 fps, Avg. Travel Time= 14.8 min Peak Storage= 187 cf @ 12.02 hrs Average Depth at Peak Storage= 0.14', Surface Width= 2.82' Bank-Full Depth= 1.50' Flow Area= 9.8 sf, Capacity= 77.09 cfs 2.00' x 1.50' deep channel, n= 0.035 Side Slope Z-value= 3.0 '/' Top Width= 11.00' Length= 565.0' Slope= 0.0432 '/' Inlet Invert= 1,472.38', Outlet Invert= 1,448.00' ‡ Reach 4.2bR: Conveyance Swale Hydrograph Inflow 0.9 0.81 cfs Outflow 0.85 Inflow Area=0.470 ac 0.8 Avg. Flow Depth=0.14' 0.75 0.69 cfs 0.7 Max Vel=2.09 fps 0.65 0.6 n=0.035 0.55 Flow (cfs) 0.5 L=565.0' 0.45 S=0.0432 '/' 0.4 0.35 Capacity=77.09 cfs 0.3 0.25 0.2 0.15 0.1 0.05 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 0 Time (hours)

# Summary for Pond 1.1aC1: TS1 Culvert

Inflow Area = 5.874 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = Outflow 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.1aR2 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,487.56' @ 0.00 hrs Flood Elev= 1,489.60' **Outlet Devices** Device Routing Invert 36.3" W x 22.5" H, R=18.8"/51.0" Pipe Arch RCP\_Arch 37x23 #1 Primary 1.487.56 L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,487.56' / 1,486.80' S= 0.0162 '/' Cc= 0.900 n= 0.012, Flow Area= 4.43 sf **Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,487.56' (Free Discharge) **1=RCP\_Arch 37x23** (Controls 0.00 cfs) Pond 1.1aC1: TS1 Culvert Hydrograph Inflow Primary Inflow Area=5.874 ac Peak Elev=1,487.56' 36.3" x 22.5" R=18.8"/51.0" (cfs) **Pipe Arch Culvert** Flow n=0.012 L=47.0' S=0.0162 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

# Summary for Pond 1.1aC2: TS2 Culvert

Inflow Area = 14.341 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min 0.00 hrs, Volume= 0.000 af Primary = 0.00 cfs @ Routed to Reach 1.1aR3 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,470.80' @ 0.00 hrs Flood Elev= 1,473.07' Device Routing Invert **Outlet Devices** 48.0" W x 24.0" H Box Culvert #1 Primary 1.470.80' L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,470.80' / 1,469.57' S= 0.0262 '/' Cc= 0.900 n= 0.012, Flow Area= 8.00 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,470.80' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.1aC2: TS2 Culvert Hydrograph Inflow Primary Inflow Area=14.341 ac Peak Elev=1,470.80' 48.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.0' S=0.0262 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

# Summary for Pond 1.1aC3: TS3 Culvert

Inflow Area = 20.133 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min 0.00 hrs, Volume= 0.000 af Primary = 0.00 cfs @ Routed to Reach 1.1aR4 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,449.55' @ 0.00 hrs Flood Elev= 1,452.10' Device Routing Invert **Outlet Devices** 60.0" W x 24.0" H Box Culvert #1 Primary 1.449.55' L= 47.2' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,449.55' / 1,447.64' S= 0.0405 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 10.00 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,449.55' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.1aC3: TS3 Culvert Hydrograph Inflow Primary Inflow Area=20.133 ac Peak Elev=1,449.55' 60.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.2' S=0.0405 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

# Summary for Pond 1.1aP: North Road Bypass OC

Inflow Area = 32.958 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr Storm event Inflow 0.00 cfs @ 0.00 hrs, Volume= = 0.000 af 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Link 1.1L :

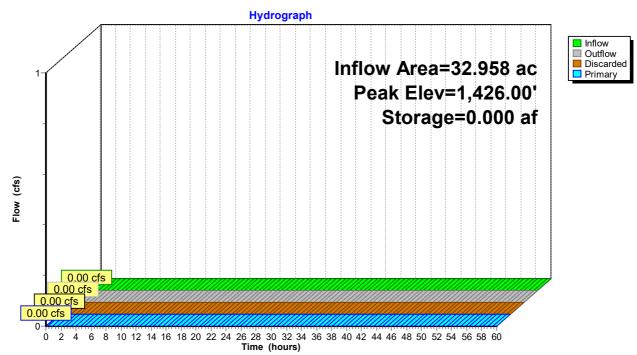
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,426.00' @ 0.00 hrs Surf.Area= 0.005 ac Storage= 0.000 af

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

Volume	Invert	Avail.Storage	e Storage Description
#1	1,426.00'	0.069 at	f 10.00'W x 20.00'L x 4.00'H Prismatoid Z=3.0
Device #1	Routing Discarded	1,426.00' <b>0</b>	Outlet Devices         0.500 in/hr Exfiltration over Surface area         Phase-In= 0.01'
#2	Primary	H	<b>0.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> lead (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,426.00' (Free Discharge) **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,426.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



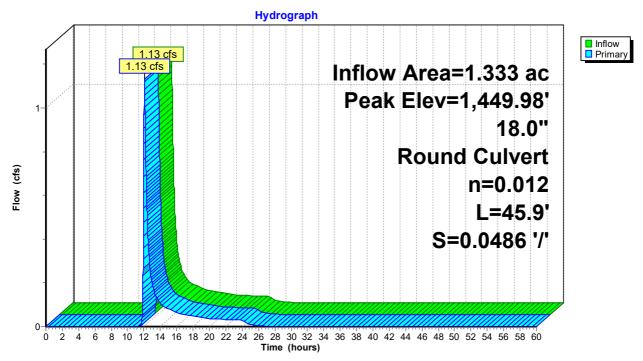
# Pond 1.1aP: North Road Bypass OC

# Summary for Pond 1.1bC1: TS4 Culvert

Inflow Area = 1.333 ac, 0.53% Impervious, Inflow Depth = 0.93" for 10-Yr Storm event 1.13 cfs @ 12.06 hrs, Volume= Inflow = 0.103 af 1.13 cfs @ 12.06 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min Outflow 1.13 cfs @ 12.06 hrs, Volume= 0.103 af Primary = Routed to Reach 1.1bR2 : North Road Conveyance Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,449.98' @ 12.06 hrs Flood Elev= 1,451.20'

Device Routing Invert Outlet Devices	
#1 Primary 1,449.50' <b>18.0'' Round Culvert</b> L= 45.9' CPP, end-section conforming to fill, Ke Inlet / Outlet Invert= 1,449.50' / 1,447.27' S= 0.0 n= 0.012, Flow Area= 1.77 sf	

Primary OutFlow Max=1.13 cfs @ 12.06 hrs HW=1,449.98' (Free Discharge) ←1=Culvert (Inlet Controls 1.13 cfs @ 2.35 fps)



Pond 1.1bC1: TS4 Culvert

#### Summary for Pond 1.1bP1: Dry Swale

 Inflow Area =
 1.984 ac,
 0.71% Impervious, Inflow Depth =
 0.88" for 10-Yr Storm event

 Inflow =
 1.61 cfs @
 12.06 hrs, Volume=
 0.145 af

 Outflow =
 1.59 cfs @
 12.08 hrs, Volume=
 0.145 af, Atten= 1%, Lag= 1.1 min

 Discarded =
 0.00 cfs @
 12.08 hrs, Volume=
 0.004 af

 Primary =
 1.58 cfs @
 12.08 hrs, Volume=
 0.141 af

 Routed to Pond 1.1bP2 : North Road Detention Pond
 Primary
 0.145 af

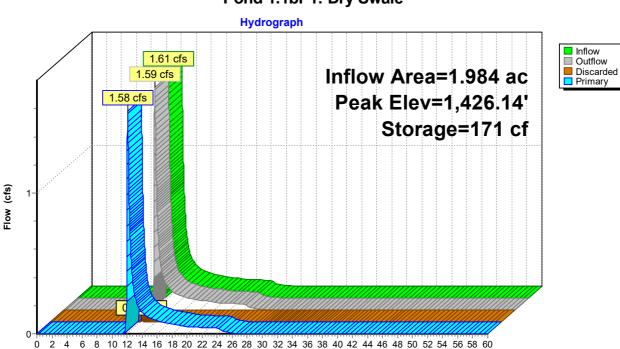
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,426.14' @ 12.08 hrs Surf.Area= 329 sf Storage= 171 cf

Plug-Flow detention time= 14.8 min calculated for 0.145 af (100% of inflow) Center-of-Mass det. time= 14.9 min ( 914.0 - 899.1 )

Volume	Inve	ert Avai	I.Storage	Storage Description	on		
#1	1,424.7	5'	428 cf	Custom Stage Da	<b>ta (Irregular)</b> Liste	ed below (Recalc)	
Elevatio (fee 1,424.7 1,425.0 1,426.0 1,426.7	et) 75 00 00	Surf.Area (sq-ft) 0 25 273 603	Perim. (feet) 0.0 22.9 98.0 161.7	Inc.Store (cubic-feet) 0 2 127 299	Cum.Store (cubic-feet) 0 2 129 428	Wet.Area (sq-ft) 0 42 767 2,086	
Device	Routing	In	vert Outl	et Devices			
#1 #2	Discarde Primary	d 1,424 1,425	.69' <b>2.0'</b> Hea 2.50 Coe				

**Discarded OutFlow** Max=0.00 cfs @ 12.08 hrs HW=1,426.14' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.58 cfs @ 12.08 hrs HW=1,426.14' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 1.58 cfs @ 1.75 fps)



Time (hours)

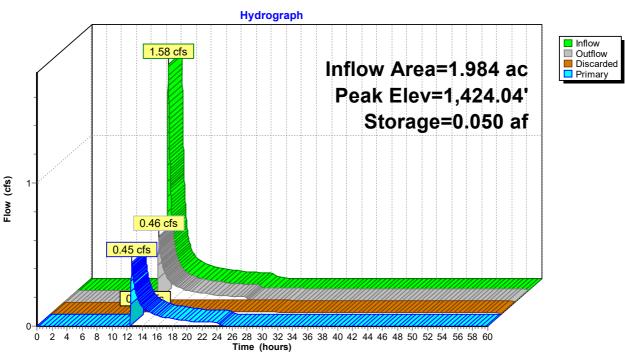
Pond 1.1bP1: Dry Swale

# Summary for Pond 1.1bP2: North Road Detention Pond

Outflow Discarde Primary	= = ed =	1.58 cfs @ 0.46 cfs @ 0.02 cfs @ 0.45 cfs @	.71% Impervious, Inflow Depth = 0.85" for 10-Yr Storm event         2.08 hrs, Volume=       0.141 af         2.62 hrs, Volume=       0.127 af, Atten= 71%, Lag= 32.3 min         2.62 hrs, Volume=       0.052 af         2.62 hrs, Volume=       0.074 af		
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,424.04' @ 12.62 hrs Surf.Area= 0.032 ac Storage= 0.050 af					
Plug-Flow detention time= 547.6 min calculated for 0.127 af (90% of inflow) Center-of-Mass det. time= 495.3 min(1,392.5 - 897.2)					
Volume	Inver	t Avail.Stor	age Storage Description		
#1	1,421.50	0.16	6 af 10.00'W x 40.00'L x 5.00'H Prismatoid Z=3.0		
Device	Routing	Invert	Outlet Devices		
#1 #2	Discarded Primary	1,421.50' 1,424.00'			

**Discarded OutFlow** Max=0.02 cfs @ 12.62 hrs HW=1,424.04' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.40 cfs @ 12.62 hrs HW=1,424.04' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 0.40 cfs @ 0.50 fps)



# Pond 1.1bP2: North Road Detention Pond

# Summary for Pond 1.2aC1: TS 7 Culvert

Inflow Area = 7.876 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = Outflow 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.2aR2 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,444.22' @ 0.00 hrs Flood Elev= 1,446.28' Device Routing Invert Outlet Devices 36.0" W x 24.0" H Box Culvert #1 Primary 1.444.22' L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,444.22' / 1,443.21' S= 0.0215 '/' Cc= 0.900 n= 0.012, Flow Area= 6.00 sf **Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,444.22' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.2aC1: TS 7 Culvert Hydrograph Inflow Primary Inflow Area=7.876 ac Peak Elev=1,444.22' 36.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.0' S=0.0215 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

# Summary for Pond 1.2aC2: TS8 Culvert

Inflow Area = 16.787 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.2aR3 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,431.65' @ 0.00 hrs Flood Elev= 1,433.87' Device Routing Invert **Outlet Devices** 60.0" W x 24.0" H Box Culvert #1 Primary 1.431.65' L= 47.5' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,431.65' / 1,431.11' S= 0.0114 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 10.00 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,431.65' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.2aC2: TS8 Culvert Hydrograph Inflow Primary Inflow Area=16.787 ac Peak Elev=1,431.65' 60.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.5' S=0.0114 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

# Summary for Pond 1.2aP: South Road Bypass OC

Inflow Area =	22.287 ac,	0.00% Impervious, Inflow	Depth = 0.00" for 10-Yr Storm event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Discarded =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Link	1.2L :		

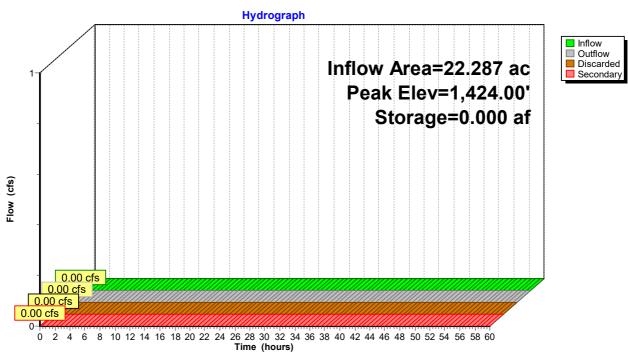
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,424.00' @ 0.00 hrs Surf.Area= 0.005 ac Storage= 0.000 af

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

Volume	Invert	Avail.Stora	ge Storage Description
#1	1,424.00'	0.069	af 10.00'W x 20.00'L x 4.00'H Prismatoid Z=3.0
Device	Routing	Invert	Outlet Devices
#1	Discarded	1,424.00'	12.000 in/hr Exfiltration over Surface area
#2	Secondary	1,426.50'	<b>10.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,424.00' (Free Discharge) **1=Exfiltration** (Passes 0.00 cfs of 0.06 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,424.00' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



# Pond 1.2aP: South Road Bypass OC

# Summary for Pond 1.2bC1: East Road Culvert

Inflow Area =0.727 ac,0.00% Impervious,Inflow Depth =0.73"for10-Yr Storm eventInflow =0.69 cfs @12.04 hrs,Volume=0.044 afOutflow =0.69 cfs @12.04 hrs,Volume=0.044 af,Primary =0.69 cfs @12.04 hrs,Volume=0.044 afRouted to Reach 1.2bR2 : South Road Conveyance SwaleRouting by Stor-Ind method, Time Span=0.00-60.00 hrs, dt=0.01 hrs

Peak Elev= 1,454.78' @ 12.04 hrs Flood Elev= 1,457.45'

#1 Primary 1,454.39' <b>15.0" Round Culvert</b> L = 41.6' CPP end-section conforming to fill Ke= 0.500	Device	Routing	Invert	Outlet Devices
Inlet / Outlet Invert= 1,454.39' / 1,453.67' S= 0.0173 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf	-	U		<b>15.0" Round Culvert</b> L= 41.6' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,454.39' / 1,453.67' S= 0.0173 '/' Cc= 0.900

Primary OutFlow Max=0.69 cfs @ 12.04 hrs HW=1,454.78' (Free Discharge) ←1=Culvert (Inlet Controls 0.69 cfs @ 2.12 fps)

#### Hydrograph Inflow <u>0.69 cf</u>s Primary 0.75 0.69 cfs Inflow Area=0.727 ac 0.7 0.65 Peak Elev=1,454.78' 0.6 15.0" 0.55 0.5 **Round Culvert** 0.45 (cfs) n=0.012 0.4 **8** 0.35 L=41.6' 0.3 S=0.0173 '/' 0.25 02 0 15 0.1 0.05 0 Ò 24 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

# Pond 1.2bC1: East Road Culvert

# Summary for Pond 1.2bC2: TS6 Culvert

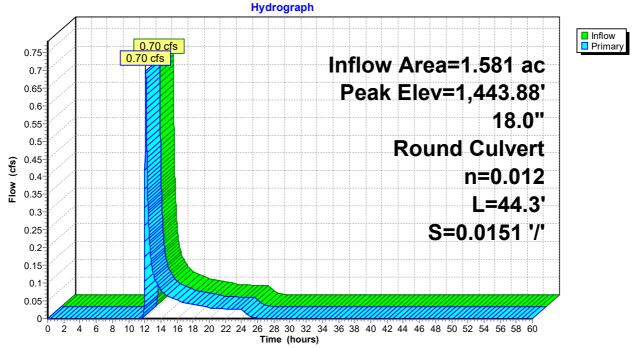
Inflow Area = 1.581 ac, 0.25% Impervious, Inflow Depth = 0.54" for 10-Yr Storm event Inflow = 0.70 cfs @ 12.13 hrs, Volume= 0.071 af Outflow = 0.70 cfs @ 12.13 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min Primary = 0.70 cfs @ 12.13 hrs, Volume= 0.071 af Routed to Reach 1.2bR3 : South Road Conveyance Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 1,443.88' @ 12.13 hrs Flood Elev= 1,445.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,443.51'	18.0" Round Culvert
			L= 44.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,443.51' / 1,442.84' S= 0.0151 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.70 cfs @ 12.13 hrs HW=1,443.88' (Free Discharge) ←1=Culvert (Inlet Controls 0.70 cfs @ 2.07 fps)

# Pond 1.2bC2: TS6 Culvert

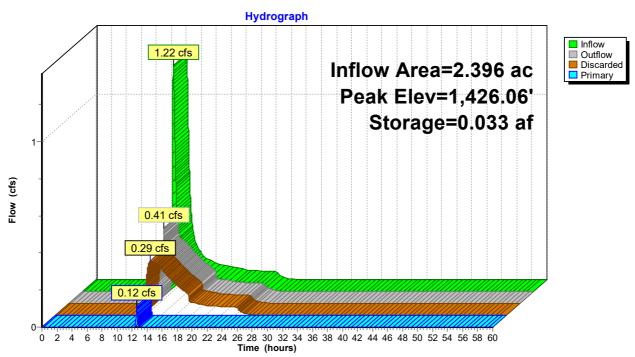


# Summary for Pond 1.2bP: South Road Treatment Pond

Outflow Discarde Primary	= = ed =	0.41 cfs @ 0.29 cfs @ 0.12 cfs @	12.07 12.61 12.61	6 Impervious, Inflow Depth = 0.67" for 10-Yr Storm event7 hrs, Volume=0.133 afhrs, Volume=0.133 af, Atten= 67%, Lag= 32.1 minhrs, Volume=0.132 afhrs, Volume=0.002 af		
	Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,426.06' @ 12.61 hrs Surf.Area= 0.024 ac Storage= 0.033 af					
Plug-Flow detention time= 44.3 min calculated for 0.133 af (100% of inflow) Center-of-Mass det. time= 44.3 min ( 954.4 - 910.1 )						
Volume Invert Ava		rt Avail.St	orage	Storage Description		
#1	1,424.0	0' 0.1	149 af	20.00'W x 20.00'L x 5.00'H Prismatoid Z=3.0		
Device	Routing	Inve	rt Ou	utlet Devices		
#1 #2	Discarde Primary	d 1,424.0 1,426.0	5' <b>20</b> .	<b>2.000 in/hr Exfiltration over Surface area</b> Phase-In= 0.01' <b>.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> ead (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60		

**Discarded OutFlow** Max=0.29 cfs @ 12.61 hrs HW=1,426.06' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.29 cfs)

Primary OutFlow Max=0.05 cfs @ 12.61 hrs HW=1,426.06' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 0.05 cfs @ 0.25 fps)



# Pond 1.2bP: South Road Treatment Pond

Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

#### Summary for Pond 1.3P: Pond 3 - Access Rd West

Inflow Area =	0.695 ac,	0.00% Impervious, Infl	ow Depth = 0.17" for 10-Yr Storm event		
Inflow =	0.04 cfs @	12.04 hrs, Volume=	0.010 af		
Outflow =	0.03 cfs @	12.12 hrs, Volume=	0.010 af, Atten= 33%, Lag= 4.7 min		
Discarded =	0.03 cfs @	12.12 hrs, Volume=	0.010 af		
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af		
Routed to Link SP1 : Study Point 1					

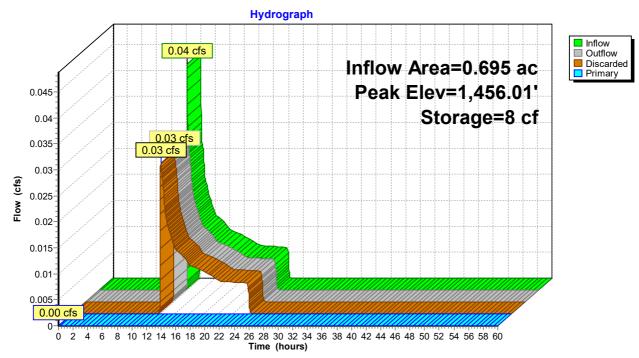
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,456.01' @ 12.12 hrs Surf.Area= 788 sf Storage= 8 cf

Plug-Flow detention time= 4.8 min calculated for 0.010 af (100% of inflow) Center-of-Mass det. time= 4.8 min (997.7 - 992.9)

Volume	Inver	t Avai	l.Storage	Storage Descriptio	n			
#1	1,456.00	)'	8,743 cf	Custom Stage Dat	ta (Irregular) Listed	l below (Recalc)		
Elevatio	on S	Surf.Area	Perim.	Inc.Store	Cum.Store	Wet.Area		
(fee	et)	(sq-ft)	(feet)	(cubic-feet)	(cubic-feet)	<u>(sq-ft)</u>		
1,456.0	0	784	123.0	0	0	784		
1,458.0	00	1,720	194.0	2,443	2,443	2,603		
1,459.0	00	2,884	279.0	2,277	4,721	5,811		
1,460.0	00	5,280	421.0	4,022	8,743	13,729		
Device	Routing	In	vert Outl	et Devices				
#1	Discardeo	1,456	.00' 6.00	6.000 in/hr Exfiltration over Surface area Phase-In= 0.01'				
#2	Primary	1,459	.99' 20.0	long x 4.0' breadt	h Broad-Crested F	Rectangular Weir		
	-		Hea	Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00				
			2.50	3.00 3.50 4.00 4	.50 5.00 5.50			
			Coe	f. (English) 2.38 2.	54 2.69 2.68 2.67	7 2.67 2.65 2.66 2.66		
				2.72 2.73 2.76 2				

**Discarded OutFlow** Max=0.11 cfs @ 12.12 hrs HW=1,456.01' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,456.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



# Pond 1.3P: Pond 3 - Access Rd West

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# Summary for Pond 4.2bP: Pond 4 - Access Rd East

Inflow Area = 0.470 ac, 0.00% Impervious, Inflow Depth = 0.98" for 10-Yr Storm event 0.69 cfs @ 12.02 hrs, Volume= Inflow = 0.038 af 0.08 cfs @ 12.64 hrs, Volume= Outflow 0.038 af, Atten= 89%, Lag= 37.2 min 0.08 cfs @ 12.64 hrs, Volume= Discarded = 0.038 af 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Pond 4.2C : 18" Culvert

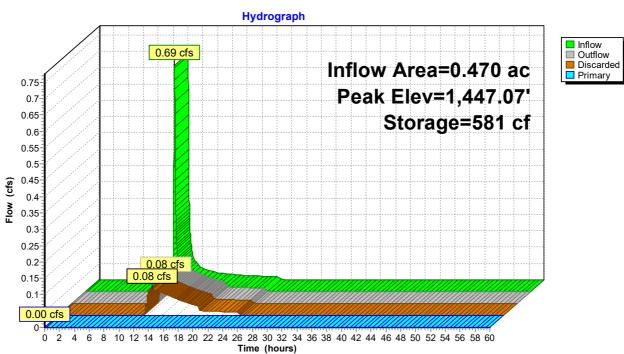
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,447.07' @ 12.64 hrs Surf.Area= 571 sf Storage= 581 cf

Plug-Flow detention time= 73.6 min calculated for 0.038 af (100% of inflow) Center-of-Mass det. time= 73.5 min (948.1 - 874.6)

Volume	Invert	Avail.Stor	age Storage Description
#1	1,445.50'	2,31	7 cf 10.00'W x 20.00'L x 3.50'H Prismatoid Z=3.0
Device	Routing	Invert	Outlet Devices
#1	Discarded	1,445.50'	6.000 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Primary	1,448.25'	10.0' long x 4.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66
			2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.08 cfs @ 12.64 hrs HW=1,447.07' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,445.50' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



# Pond 4.2bP: Pond 4 - Access Rd East

#### Summary for Pond 4.2C: 18" Culvert

 Inflow Area =
 27.587 ac, 0.00% Impervious, Inflow Depth = 0.17" for 10-Yr Storm event

 Inflow =
 0.85 cfs @
 12.75 hrs, Volume=
 0.380 af

 Outflow =
 0.81 cfs @
 12.97 hrs, Volume=
 0.379 af, Atten= 5%, Lag= 13.4 min

 Primary =
 0.81 cfs @
 12.97 hrs, Volume=
 0.379 af

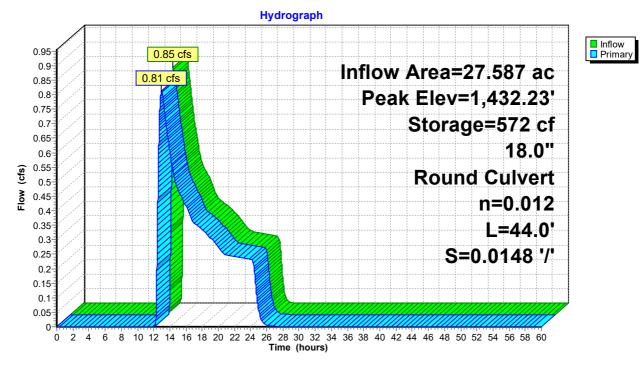
 Routed to Reach 4.1R2 : Ex Stream
 0.379 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,432.23' @ 12.97 hrs Surf.Area= 2,110 sf Storage= 572 cf Flood Elev= 1,434.64' Surf.Area= 27,666 sf Storage= 28,656 cf

Plug-Flow detention time= 14.9 min calculated for 0.379 af (100% of inflow) Center-of-Mass det. time= 13.3 min (1,036.8 - 1,023.5)

Volume	Inv	ert Ava	il.Storage	Storage Description	on		
#1	1,431.5	50'	39,033 cf	Custom Stage Dat	<b>ta (Irregular)</b> Liste	ed below (Recalc)	
		~ ~ ~	Б.				
Elevatio		Surf.Area	Perim.	Inc.Store	Cum.Store	Wet.Area	
(fee	et)	(sq-ft)	(feet)	(cubic-feet)	(cubic-feet)	<u>(sq-ft)</u>	
1,431.5	50	0	0.0	0	0	0	
1,432.0	0	1,190	146.0	198	198	1,697	
1,432.5	50	3,534	368.0	1,129	1,327	10,778	
1,433.0	0	5,795	497.0	2,309	3,637	19,660	
1,433.5	50	10,362	837.0	3,984	7,621	55,755	
1,434.0	0	16,931	975.0	6,756	14,377	75,659	
1,434.6	60	27,412	1,352.0	13,177	27,555	145,474	
1,435.0	00	30,000	1,500.0	11,479	39,033	179,068	
Device	Routing	Ir	ivert Outl	et Devices			
#1	Primary	1,43 <sup>-</sup>	1.83' <b>18.0</b>	" Round Culvert			
	L= 44.0' RCP, square edge headwall, Ke= 0.500						
	Inlet / Outlet Invert= 1,431.83' / 1,431.18' S= 0.0148 '/' Cc= 0.900					= 0.900	
			n= 0	0.012 Corrugated P	P, smooth interior	, Flow Area= 1.77	sf
				0			

Primary OutFlow Max=0.81 cfs @ 12.97 hrs HW=1,432.23' (Free Discharge) ←1=Culvert (Inlet Controls 0.81 cfs @ 2.15 fps)



Pond 4.2C: 18" Culvert

## Summary for Pond 4.3C: 24" Culvert

Inflow Area = 25.466 ac, 5.08% Impervious, Inflow Depth = 0.34" for 10-Yr Storm event Inflow = 3.30 cfs @ 12.45 hrs, Volume= 0.715 af Outflow = 3.30 cfs @ 12.45 hrs, Volume= 0.715 af, Atten= 0%, Lag= 0.0 min Primary = 3.30 cfs @ 12.45 hrs, Volume= 0.715 af Routed to Link SP4 : Study Point 4 Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,432.12' @ 12.45 hrs Flood Elev= 1,434.65'

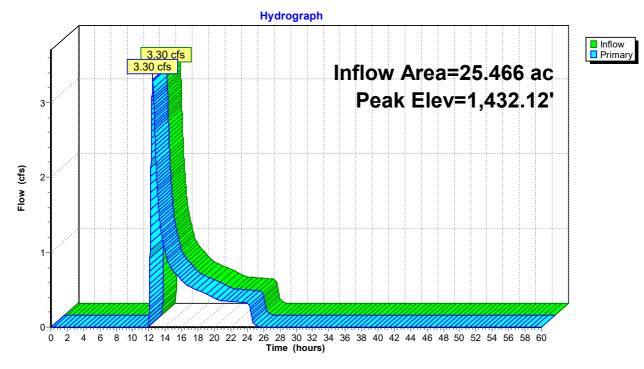
Device	Routing	Invert	Outlet Devices
#1	Primary	1,431.35'	24.0" Round Culvert
	-		L= 55.8' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 1,431.35' / 1,429.87' S= 0.0265 '/' Cc= 0.900
			n= 0.012, Flow Area= 3.14 sf
#2	Primary	1,434.81'	20.0' long x 30.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.30 cfs @ 12.45 hrs HW=1,432.12' (Free Discharge)

-1=Culvert (Inlet Controls 3.30 cfs @ 2.98 fps)

-2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

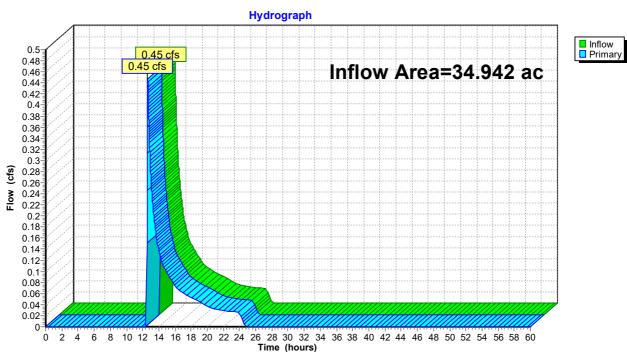
Pond 4.3C: 24" Culvert



## Summary for Link 1.1L:

Inflow Area = 34.942 ac, 0.04% Impervious, Inflow Depth = 0.03" for 10-Yr Storm event Inflow = 0.45 cfs @ 12.62 hrs, Volume= 0.074 af Primary = 0.45 cfs @ 12.62 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min Routed to Link SP1 : Study Point 1

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

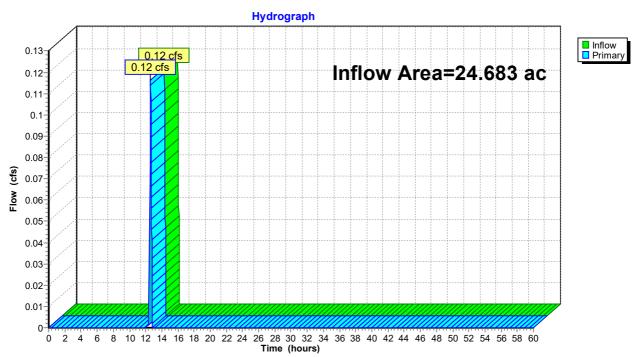


# Link 1.1L:

### Summary for Link 1.2L:

Inflow Area = 24.683 ac, 0.06% Impervious, Inflow Depth = 0.00" for 10-Yr Storm event Inflow = 0.12 cfs @ 12.61 hrs, Volume= 0.002 af Primary = 0.12 cfs @ 12.61 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min Routed to Link SP1 : Study Point 1

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

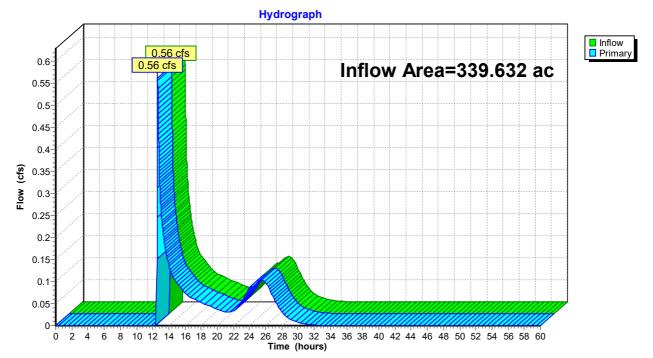


### Link 1.2L:

## Summary for Link SP1: Study Point 1

Inflow Area =	339.632 ac,	0.01% Impervious, Inflow	v Depth = 0.00"	for 10-Yr Storm event
Inflow =	0.56 cfs @	12.61 hrs, Volume=	0.110 af	
Primary =	0.56 cfs @	12.61 hrs, Volume=	0.110 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

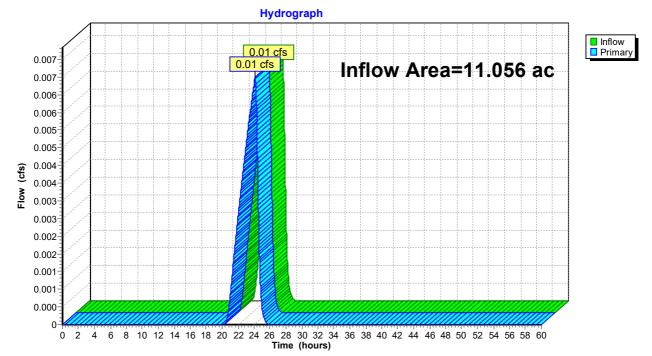


## Link SP1: Study Point 1

## Summary for Link SP2: Study Point 2

Inflow Area =	11.056 ac,	0.00% Impervious, Inflow E	Depth = 0.00"	for 10-Yr Storm event
Inflow =	0.01 cfs @	24.12 hrs, Volume=	0.001 af	
Primary =	0.01 cfs @	24.12 hrs, Volume=	0.001 af, Atten	= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

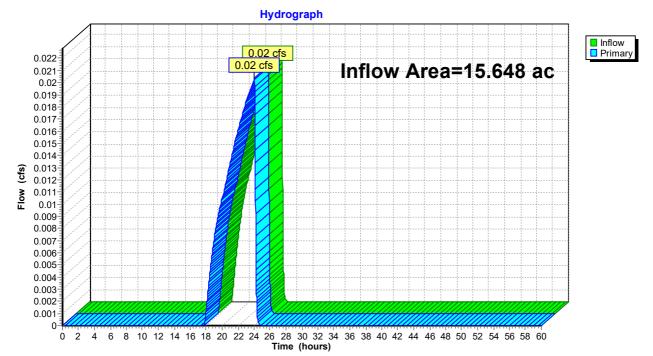


# Link SP2: Study Point 2

## Summary for Link SP3: Study Point 3

Inflow Area =	15.648 ac,	0.56% Impervious, Inflow I	Depth = 0.01"	for 10-Yr Storm event
Inflow =	0.02 cfs @	24.01 hrs, Volume=	0.007 af	
Primary =	0.02 cfs @	24.01 hrs, Volume=	0.007 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

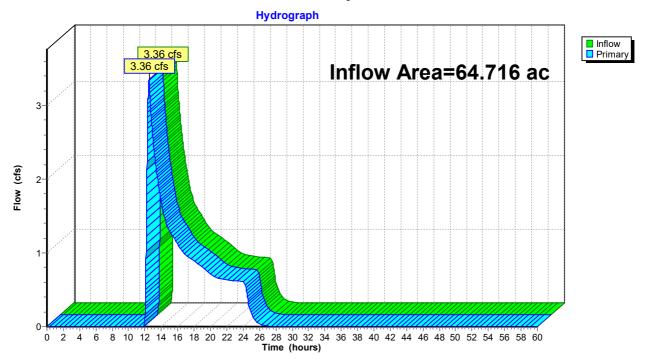


## Link SP3: Study Point 3

## Summary for Link SP4: Study Point 4

Inflow Area =	64.716 ac,	2.50% Impervious, Inflow D	Depth = 0.21" for 10-Yr Storm event
Inflow =	3.36 cfs @	12.49 hrs, Volume=	1.146 af
Primary =	3.36 cfs @	12.49 hrs, Volume=	1.146 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

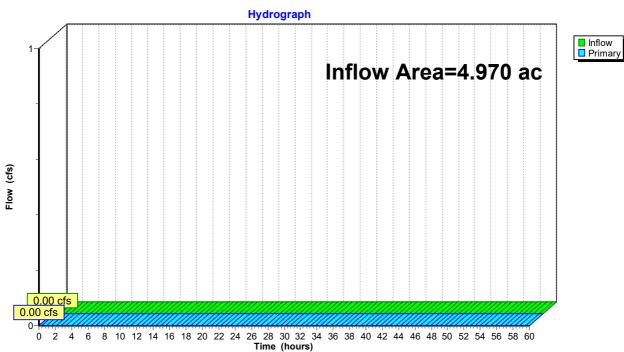


### Link SP4: Study Point 4

## Summary for Link SP5: Study Point 5

Inflow Area =	4.970 ac,	0.00% Impervious, Inflow	Depth = 0.00"	for 10-Yr Storm event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	n= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

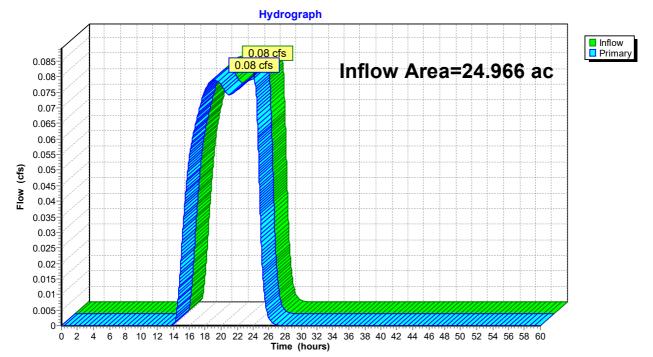


### Link SP5: Study Point 5

## Summary for Link SP6: Study Point 6

Inflow Area =	24.966 ac,	5.81% Impervious, Inflow E	Depth = 0.03"	for 10-Yr Storm event
Inflow =	0.08 cfs @	24.10 hrs, Volume=	0.059 af	
Primary =	0.08 cfs @	24.10 hrs, Volume=	0.059 af, Atte	n= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs



## Link SP6: Study Point 6

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 1.1aS1: North Array East	Runoff Area=5.874 ac 0.00% Impervious Runoff Depth=0.02" Flow Length=788' Tc=18.8 min CN=30 Runoff=0.02 cfs 0.012 af
Subcatchment 1.1aS2: North Array East	Runoff Area=8.467 ac 0.00% Impervious Runoff Depth=0.02" Flow Length=931' Tc=21.1 min CN=30 Runoff=0.03 cfs 0.017 af
Subcatchment 1.1aS3: North Array West F	Runoff Area=5.792 ac 0.00% Impervious Runoff Depth=0.02" Flow Length=1,031' Tc=19.7 min CN=30 Runoff=0.02 cfs 0.012 af
Subcatchment 1.1aS4: North Array West F	Runoff Area=12.825 ac 0.00% Impervious Runoff Depth=0.02" Flow Length=1,562' Tc=26.1 min CN=30 Runoff=0.05 cfs 0.026 af
Subcatchment 1.1bS1: North Road - East	Runoff Area=1.333 ac 0.53% Impervious Runoff Depth=2.45" Tc=6.0 min CN=71 Runoff=5.85 cfs 0.272 af
Subcatchment 1.1bS2: North Road - Wes	t Runoff Area=0.651 ac 1.08% Impervious Runoff Depth=2.19" Tc=6.0 min CN=68 Runoff=2.56 cfs 0.119 af
Subcatchment 1.2aS1: Middle Array East	Runoff Area=7.876 ac 0.00% Impervious Runoff Depth=0.02" Flow Length=865' Tc=19.1 min CN=30 Runoff=0.03 cfs 0.016 af
Subcatchment 1.2aS2: Middle Array Cent	er Runoff Area=8.911 ac 0.00% Impervious Runoff Depth=0.02" Flow Length=825' Tc=18.1 min CN=30 Runoff=0.03 cfs 0.018 af
Subcatchment 1.2aS3: Middle Array West	t Runoff Area=5.500 ac 0.00% Impervious Runoff Depth=0.02" Flow Length=882' Tc=18.5 min CN=30 Runoff=0.02 cfs 0.011 af
Subcatchment 1.2bS1: East Road - West	Runoff Area=0.727 ac 0.00% Impervious Runoff Depth=2.11" Tc=6.0 min CN=67 Runoff=2.75 cfs 0.128 af
Subcatchment 1.2bS2: South Road	Runoff Area=0.854 ac 0.47% Impervious Runoff Depth=1.41" Flow Length=308' Tc=13.7 min CN=58 Runoff=1.51 cfs 0.101 af
Subcatchment 1.2bS3: South Road	Runoff Area=0.815 ac 1.35% Impervious Runoff Depth=2.45" Tc=6.0 min CN=71 Runoff=3.57 cfs 0.166 af
	e Runoff Area=279.312 ac 0.00% Impervious Runoff Depth=0.30" ow Length=6,771' Tc=201.7 min CN=39 Runoff=9.14 cfs 6.873 af
Subcatchment 1.3bS: Access Rd to Pond	<b>I 3</b> Runoff Area=0.695 ac 0.00% Impervious Runoff Depth=0.94" Tc=6.0 min CN=51 Runoff=1.02 cfs 0.054 af
Subcatchment 2S:	Runoff Area=11.056 ac 0.00% Impervious Runoff Depth=0.30" Flow Length=2,342' Tc=36.0 min CN=39 Runoff=0.66 cfs 0.272 af
Subcatchment 3S:	Runoff Area=15.648 ac 0.56% Impervious Runoff Depth=0.34" Flow Length=886' Tc=12.7 min CN=40 Runoff=2.04 cfs 0.442 af
Subcatchment 4.1S:	Runoff Area=11.663 ac 2.80% Impervious Runoff Depth=0.59" Flow Length=845' Tc=15.8 min CN=45 Runoff=4.82 cfs 0.570 af

20220630 BR Benson Mines Solar POST DevType II 24-hr100-Yr Storm Rainfall=5.43"Prepared by TRCPrinted7/12/2022HydroCAD® 10.10-7bs/n 01402© 2022 HydroCAD Software Solutions LLCPage 218

Subcatchment 4.2aS:	Runoff Area=27.117 ac 0.00% Impervious Runoff Depth=0.94" Flow Length=1,640' Tc=38.9 min CN=51 Runoff=13.31 cfs 2.121 af
Subcatchment 4.2bS:	Runoff Area=0.470 ac 0.00% Impervious Runoff Depth=2.53" Tc=6.0 min CN=72 Runoff=2.13 cfs 0.099 af
Subcatchment 4.3S:	Runoff Area=25.466 ac 5.08% Impervious Runoff Depth=1.34" Flow Length=2,280' Tc=36.5 min CN=57 Runoff=22.16 cfs 2.846 af
Subcatchment 5S:	Runoff Area=4.970 ac 0.00% Impervious Runoff Depth=0.02" Flow Length=1,180' Tc=17.5 min CN=30 Runoff=0.02 cfs 0.010 af
Subcatchment 6S:	Runoff Area=24.966 ac 5.81% Impervious Runoff Depth=0.48" Flow Length=1,961' Tc=60.1 min CN=43 Runoff=3.11 cfs 1.002 af
Reach 1.1aR1: Bypass Swale n=0.035	Avg. Flow Depth=0.03' Max Vel=0.41 fps Inflow=0.02 cfs 0.012 af L=580.0' S=0.0108 '/' Capacity=56.37 cfs Outflow=0.02 cfs 0.012 af
Reach 1.1aR2: Bypass Swale n=0.035	Avg. Flow Depth=0.03' Max Vel=0.76 fps Inflow=0.05 cfs 0.029 af L=557.4' S=0.0284 '/' Capacity=91.27 cfs Outflow=0.05 cfs 0.029 af
Reach 1.1aR3: Bypass Swale n=0.035	Avg. Flow Depth=0.04' Max Vel=0.90 fps Inflow=0.07 cfs 0.041 af L=557.5' S=0.0352 '/' Capacity=101.68 cfs Outflow=0.07 cfs 0.041 af
Reach 1.1aR4: Bypass Swale n=0.035	Avg. Flow Depth=0.05' Max Vel=1.10 fps Inflow=0.12 cfs 0.066 af L=580.5' S=0.0362 '/' Capacity=103.04 cfs Outflow=0.12 cfs 0.066 af
	<b>ce</b> Avg. Flow Depth=0.42' Max Vel=2.90 fps Inflow=5.85 cfs 0.272 af =1,733.0' S=0.0240 '/' Capacity=111.65 cfs Outflow=3.95 cfs 0.272 af
Reach 1.1bR2: North Road Conveyan n=0.035	<b>ce</b> Avg. Flow Depth=0.45' Max Vel=3.81 fps Inflow=6.08 cfs 0.391 af L=593.3' S=0.0380 '/' Capacity=140.36 cfs Outflow=5.77 cfs 0.391 af
Reach 1.2aR1: Bypass Swale n=0.035	Avg. Flow Depth=0.03' Max Vel=0.54 fps Inflow=0.03 cfs 0.016 af L=524.2' S=0.0188 '/' Capacity=74.30 cfs Outflow=0.03 cfs 0.016 af
Reach 1.2aR2: Bypass Swale n=0.035	Avg. Flow Depth=0.04' Max Vel=0.71 fps Inflow=0.06 cfs 0.034 af L=556.0' S=0.0204 '/' Capacity=77.47 cfs Outflow=0.06 cfs 0.034 af
Reach 1.2aR3: Bypass Swale n=0.035	Avg. Flow Depth=0.04' Max Vel=0.63 fps Inflow=0.08 cfs 0.045 af L=249.0' S=0.0153 '/' Capacity=81.84 cfs Outflow=0.08 cfs 0.045 af
	e Avg. Flow Depth=0.27' Max Vel=3.17 fps Inflow=2.75 cfs 0.128 af L=731.4' S=0.0456 '/' Capacity=79.22 cfs Outflow=2.43 cfs 0.128 af
	L=604.5' S=0.0177 '/' Capacity=95.76 cfs Outflow=3.39 cfs 0.228 af
	<b>Ice</b> Avg. Flow Depth=0.52' Max Vel=2.88 fps Inflow=5.95 cfs 0.394 af L=755.9' S=0.0187 '/' Capacity=98.64 cfs Outflow=5.31 cfs 0.394 af
Reach 4.1R1: Bypass Swale n=0.035	Avg. Flow Depth=0.79' Max Vel=3.69 fps Inflow=4.82 cfs 0.570 af L=570.0' S=0.0303 '/' Capacity=54.88 cfs Outflow=4.59 cfs 0.570 af
Reach 4.1R2: Ex Stream n=0.035 L	Avg. Flow Depth=0.31' Max Vel=1.85 fps Inflow=10.59 cfs 2.700 af _=740.0' S=0.0099 '/' Capacity=588.81 cfs Outflow=10.53 cfs 2.700 af

20220630 BR Benson Mines Solar POST Dev	Type II 24-hr 100-Yr Storm Rainfall=5.43"	
Prepared by TRC	Printed 7/12/2022	
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Reach 4.2bR: Conveyance Swale         Avg. Flow Depth=0.25'         Max Vel=2.91 fps         Inflow=2.13 cfs         0.099 af           n=0.035         L=565.0'         S=0.0432 '/'         Capacity=77.09 cfs         Outflow=1.95 cfs         0.099 af
Pond 1.1aC1: TS1 Culvert         Peak Elev=1,487.60'         Inflow=0.02 cfs         0.012 af           36.3" x 22.5", R=18.8"/51.0"         Pipe Arch Culvert         n=0.012         L=47.0'         S=0.0162 '/'         Outflow=0.02 cfs         0.012 af
Pond 1.1aC2: TS2 Culvert         Peak Elev=1,470.83'         Inflow=0.05 cfs         0.029 af           48.0" x 24.0"         Box Culvert         n=0.012         L=47.0'         S=0.0262 '/'         Outflow=0.05 cfs         0.029 af
Pond 1.1aC3: TS3 Culvert         Peak Elev=1,449.58'         Inflow=0.07 cfs         0.041 af           60.0" x 24.0"         Box Culvert         n=0.012         L=47.2'         S=0.0405 '/'         Outflow=0.07 cfs         0.041 af
Pond 1.1aP: North Road Bypass OCPeak Elev=1,428.53' Storage=0.029 af Inflow=0.12 cfs 0.066 afDiscarded=0.01 cfs 0.028 af Primary=0.11 cfs 0.031 af Outflow=0.12 cfs 0.059 af
Pond 1.1bC1: TS4 Culvert         Peak Elev=1,450.46'         Inflow=3.95 cfs         0.272 af           18.0"         Round Culvert         n=0.012         L=45.9'         S=0.0486 '/'         Outflow=3.95 cfs         0.272 af
Pond 1.1bP1: Dry Swale         Peak Elev=1,426.74' Storage=428 cf Inflow=5.77 cfs 0.391 af           Discarded=0.01 cfs 0.005 af         Primary=5.77 cfs 0.386 af         Outflow=5.77 cfs 0.391 af
Pond 1.1bP2: North Road Detention Pond Peak Elev=1,424.23' Storage=0.056 af Inflow=5.77 cfs 0.386 af Discarded=0.02 cfs 0.053 af Primary=5.63 cfs 0.318 af Outflow=5.65 cfs 0.372 af
Pond 1.2aC1: TS 7 Culvert         Peak Elev=1,444.24'         Inflow=0.03 cfs         0.016 af           36.0" x 24.0"         Box Culvert         n=0.012         L=47.0'         S=0.0215 '/'         Outflow=0.03 cfs         0.016 af
Pond 1.2aC2: TS8 Culvert         Peak Elev=1,431.67'         Inflow=0.06 cfs         0.034 af           60.0" x 24.0"         Box Culvert         n=0.012         L=47.5'         S=0.0114 '/'         Outflow=0.06 cfs         0.034 af
Pond 1.2aP: South Road Bypass OCPeak Elev=1,424.42' Storage=0.002 af Inflow=0.08 cfs 0.045 afDiscarded=0.08 cfs 0.045 af Secondary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.045 af
Pond 1.2bC1: East Road Culvert         Peak Elev=1,455.17'         Inflow=2.43 cfs         0.128 af           15.0" Round Culvert n=0.012         L=41.6'         S=0.0173 '/'         Outflow=2.43 cfs         0.128 af
Pond 1.2bC2: TS6 Culvert         Peak Elev=1,444.38'         Inflow=3.39 cfs         0.228 af           18.0"         Round Culvert         n=0.012         L=44.3'         S=0.0151 '/'         Outflow=3.39 cfs         0.228 af
Pond 1.2bP: South Road Treatment Pond Peak Elev=1,426.26' Storage=0.038 af Inflow=5.31 cfs 0.394 af Discarded=0.31 cfs 0.232 af Primary=4.98 cfs 0.162 af Outflow=5.30 cfs 0.394 af
Pond 1.3P: Pond 3 - Access Rd West         Peak Elev=1,456.62'         Storage=566 cf         Inflow=1.02 cfs         0.054 af           Discarded=0.14 cfs         0.054 af         Primary=0.00 cfs         0.000 af         Outflow=0.14 cfs         0.054 af
Pond 4.2bP: Pond 4 - Access Rd East         Peak Elev=1,448.33' Storage=1,559 cf         Inflow=1.95 cfs         0.099 af           Discarded=0.14 cfs         0.089 af         Primary=0.55 cfs         0.011 af         Outflow=0.69 cfs         0.099 af
Pond 4.2C: 18" Culvert         Peak Elev=1,433.72' Storage=10,213 cf         Inflow=13.46 cfs         2.131 af           18.0" Round Culvert n=0.012 L=44.0' S=0.0148 '/         Outflow=9.09 cfs         2.130 af
Pond 4.3C: 24" Culvert         Peak Elev=1,434.50'         Inflow=22.16 cfs         2.846 af           Outflow=22.16 cfs         2.846 af

20220630 BR Benson Mines Solar POST Dev Prepared by TRC	Type II 24-hr 100-Yr Storm Rainfall=5.43" Printed 7/12/2022
HydroCAD® 10.10-7b s/n 01402 © 2022 HydroCAD Software Sc	
· · · ·	
Link 1.1L:	Inflow=5.63 cfs 0.349 af
	Primary=5.63 cfs 0.349 af
Link 1.2L:	Inflow=4.98 cfs_0.162 af
	Primary=4.98 cfs 0.162 af
	-
Link SP1: Study Point 1	Inflow=10.61 cfs 7.384 af
	Primary=10.61 cfs 7.384 af
Link SP2: Study Point 2	Inflow=0.66 cfs_0.272 af
	Primary=0.66 cfs 0.272 af
Link SP3: Study Point 3	Inflow=2.04 cfs 0.442 af
	Primary=2.04 cfs 0.442 af
Link CD4: Study Daint 4	Inflow=31.02 cfs 5.546 af
Link SP4: Study Point 4	Primary=31.02 cfs 5.546 af
	1 hinary=31.02 cis 3.040 ai
Link SP5: Study Point 5	Inflow=0.02 cfs 0.010 af
•	Primary=0.02 cfs 0.010 af
Link SP6: Study Point 6	Inflow=3.11 cfs 1.002 af
	Primary=3.11 cfs 1.002 af
Total Runoff Area = 460.988 ac Runoff Volum	e = 15.185 af Average Runoff Depth = 0.40"

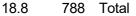
99.31% Pervious = 457.801 ac 0.69% Impervious = 3.187 ac

## Summary for Subcatchment 1.1aS1: North Array East

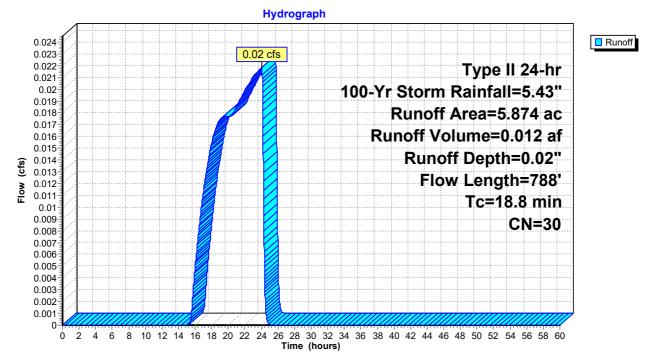
Runoff = 0.02 cfs @ 24.00 hrs, Volume= 0.012 af, Depth= 0.02" Routed to Reach 1.1aR1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac) C	N Dese	cription						
	5.874 30 Meadow, non-grazed, HSG A									
	5.	874	100.	00% Pervi	ous Area					
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
-	11.7	100	0.0499	0.14		Sheet Flow,				
	7.1	688	0.0526	1.61		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
-	40.0	700	Tatal			•				



## Subcatchment 1.1aS1: North Array East

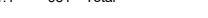


## Summary for Subcatchment 1.1aS2: North Array East Center

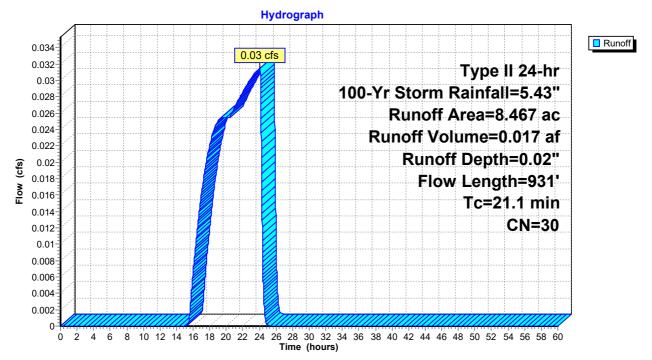
Runoff = 0.03 cfs @ 24.03 hrs, Volume= 0.017 af, Depth= 0.02" Routed to Reach 1.1aR2 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

Area	(ac) C	N Desc	cription							
8	8.467 30 Meadow, non-grazed, HSG A									
8	8.467 100.00% Perviou					_				
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
11.9	100	0.0476	0.14		Sheet Flow,	_				
9.2	831	0.0463	1.51		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps					
21.1	931	Total				_				



### Subcatchment 1.1aS2: North Array East Center



### Summary for Subcatchment 1.1aS3: North Array West Center

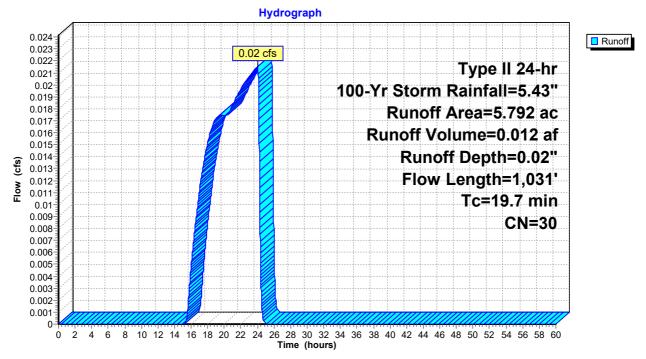
Runoff = 0.02 cfs @ 24.01 hrs, Volume= 0.012 af, Depth= 0.02" Routed to Reach 1.1aR3 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac) C	N Dese	cription							
	5.792 30 Meadow, non-grazed, HSG A										
	5.	792	100.	00% Pervi	ous Area						
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
-	10.7	100	0.0618	0.16	(013)	Sheet Flow,					
	9.0	931	0.0601	1.72		Grass: Dense n= 0.240 P2= 2.31" Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps					
	40.7	4 004	<b>T</b> ( )			·					

19.7 1,031 Total





## Summary for Subcatchment 1.1aS4: North Array West

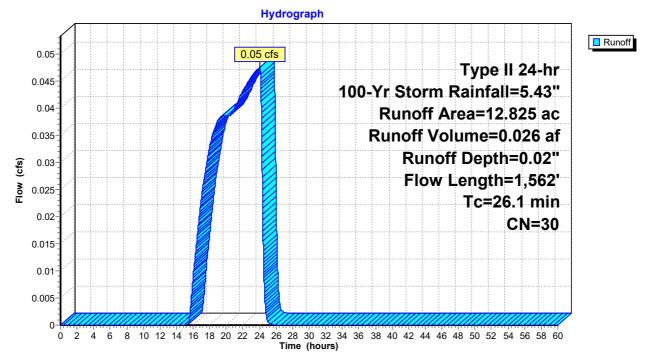
Runoff = 0.05 cfs @ 24.04 hrs, Volume= 0.026 af, Depth= 0.02" Routed to Reach 1.1aR4 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

Area	(ac) C	N Desc	cription						
12.825 30 Meadow, non-grazed, HSG A									
12.825		100.00% Pervious /							
Tc (min)	Length	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
<u>(min)</u> 11.1	(feet) 100	0.0560	0.15	(05)	Sheet Flow,				
15.0	1,462	0.0540	1.63		Grass: Dense n= 0.240 P2= 2.31" Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps				
00.4	4 500	<b>T</b> ( )							

26.1 1,562 Total





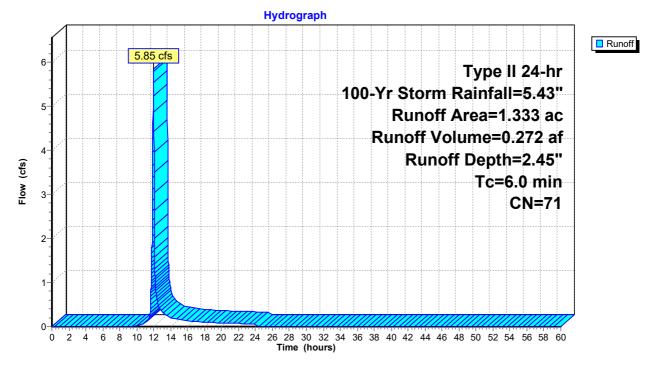
## Summary for Subcatchment 1.1bS1: North Road - East

Runoff = 5.85 cfs @ 11.98 hrs, Volume= 0.272 af, Depth= 2.45" Routed to Reach 1.1bR1 : North Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

 Area	(ac)	CN	Desc	cription				
0.	507	30	Mea	dow, non-g	grazed, HS	6G A		
0.	819	96	Grav	el surface	, HSG A			
 0.	007	7 98 Roofs, HSG A						
1.	333	71	Weig	ghted Aver	age			
1.	326		99.4	7% Pervio	us Area			
0.	007		0.53	% Impervi	ous Area			
<b>–</b>		а.	0		0			
Tc	Leng		Slope	Velocity	Capacity	Description		
 (min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)			
6.0						Direct Entry,		

## Subcatchment 1.1bS1: North Road - East



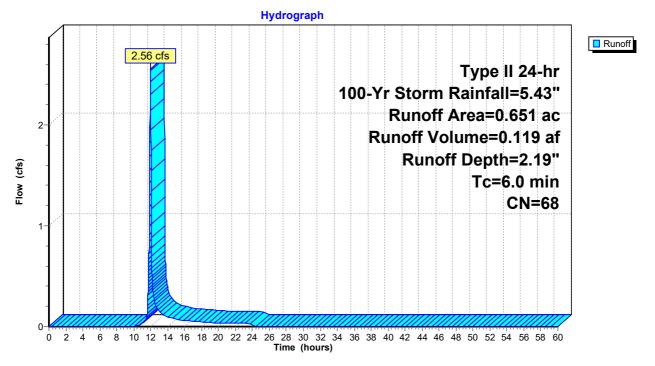
## Summary for Subcatchment 1.1bS2: North Road - West

Runoff = 2.56 cfs @ 11.98 hrs, Volume= 0.119 af, Depth= 2.19" Routed to Reach 1.1bR2 : North Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

Area	(ac)	CN	Desc	Description							
0	SG A										
0	.365	96	Grav	el surface	, HSG A						
0	.007	98	Roof	s, HSG A							
0	0.651 68 Weighted Average										
0	.644		98.9	2% Pervio	us Area						
0	.007		1.089	% Impervi	ous Area						
Tc (min)	Leng (fee		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)						
6.0						Direct Entry,					

### Subcatchment 1.1bS2: North Road - West

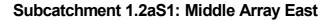


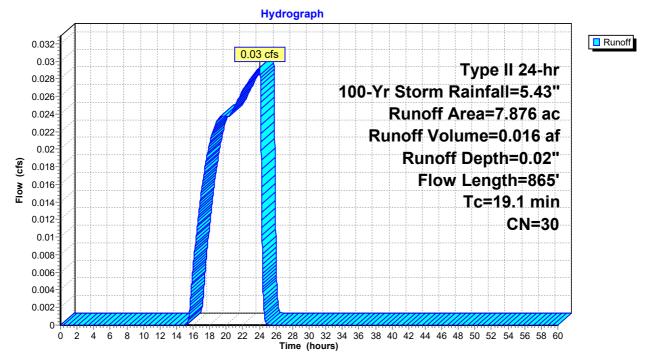
## Summary for Subcatchment 1.2aS1: Middle Array East

Runoff = 0.03 cfs @ 24.00 hrs, Volume= 0.016 af, Depth= 0.02" Routed to Reach 1.2aR1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

_	Area	(ac) C	N Desc	cription						
	7.876 30 Meadow, non-grazed, HSG A									
	7.	876	100.	00% Pervi	ous Area					
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
-	10.6	100	0.0628	0.16		Sheet Flow,				
	8.5	765	0.0459	1.50		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
-	19.1	865	Total			· · · · · · · · · · · · · · · · · · ·				





## Summary for Subcatchment 1.2aS2: Middle Array Center

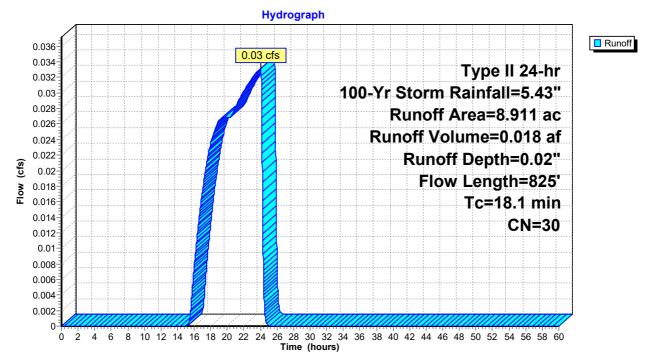
Runoff = 0.03 cfs @ 24.03 hrs, Volume= 0.018 af, Depth= 0.02" Routed to Reach 1.2aR2 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

_	Area	(ac) C	N Dese	cription						
	8.911 30 Meadow, non-grazed, HSG A									
	8.	911	100.	00% Pervi	ous Area					
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
-	10.8	100	0.0607	0.15		Sheet Flow,				
	7.3	725	0.0559	1.66		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
	40.4	005	Tatal							

18.1 825 Total

## Subcatchment 1.2aS2: Middle Array Center



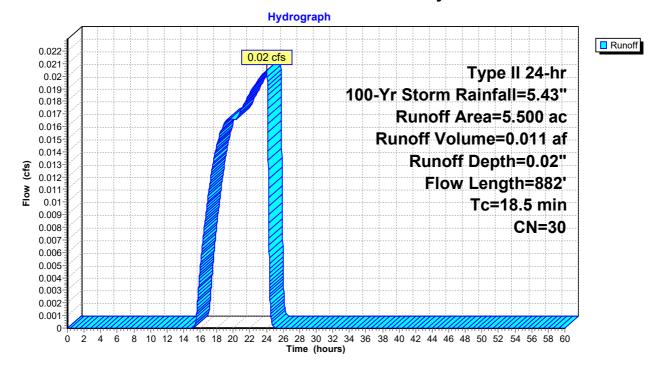
## Summary for Subcatchment 1.2aS3: Middle Array West

Runoff = 0.02 cfs @ 24.03 hrs, Volume= 0.011 af, Depth= 0.02" Routed to Reach 1.2aR3 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

_	Area	(ac) C	N Desc	cription						
	5.500 30 Meadow, non-grazed, HSG A									
_	5.	500	100.	00% Pervi	ous Area					
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
-	10.4	100	0.0660	0.16		Sheet Flow,				
	8.1	782	0.0529	1.61		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
-	18.5	882	Total							





## Summary for Subcatchment 1.2bS1: East Road - West Ditch

Runoff = 2.75 cfs @ 11.98 hrs, Volume= 0.128 af, Depth= 2.11" Routed to Reach 1.2bR1 : East Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

0.	(ac) CN 410 96 317 30	6 Grav 0 Mea	cription vel surface dow, non- ghted Ave	grazed, HS	G A				
	.727		00% Perv						
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Descriptio	on			
6.0					Direct En	try,			
		S	ubcatch	ment 1.2b	S1: East	Road - Wes	st Ditch		
				Hydro	graph				
3		2.75 cfs	5		100	-Yr Storm Runoff	Rainfa	II 24-hr I=5.43" .727 ac	Runoff
-2 - Low (cfs) 						Runoff Vo Runo	ff Deptl	).128 af n=2.11" 6.0 min CN=67	
1									
0-4	246	8 10 12 1	4 16 18 20		30 32 34 36 (hours)	38 40 42 44 46	48 50 52	54 56 58 60	

## Summary for Subcatchment 1.2bS2: South Road

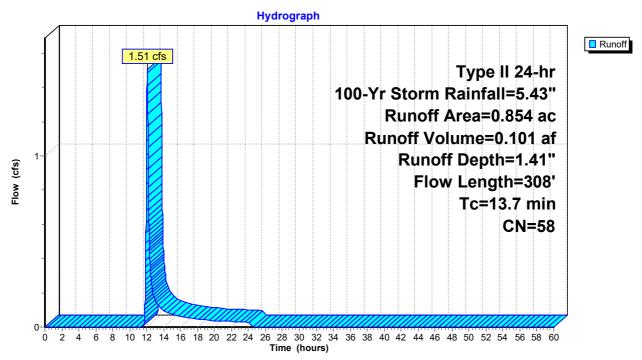
Runoff = 1.51 cfs @ 12.07 hrs, Volume= 0.101 af, Depth= 1.41" Routed to Reach 1.2bR2 : South Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac) C	N Dese	cription		
	0.	498 3	30 Mea	dow, non-	grazed, HS	GA
*	0.	352 9		/el surface		
*						
	0.	854	58 Wei	ghted Aver	ade	
		850	•	3% Pervio	•	
	-	004	0.47	% Impervi	ous Area	
				•		
	Тс	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	5.0	35	0.0516	0.12		Sheet Flow,
						Grass: Dense n= 0.240 P2= 2.31"
	0.4	25	0.0310	1.06		Sheet Flow,
						Smooth surfaces n= 0.011 P2= 2.31"
	5.9	40	0.0429	0.11		Sheet Flow,
						Grass: Dense n= 0.240 P2= 2.31"
	2.4	208	0.0442	1.47		Shallow Concentrated Flow,
						Short Grass Pasture Kv= 7.0 fps
_	40.7	200	Tatal			

13.7 308 Total

### Subcatchment 1.2bS2: South Road

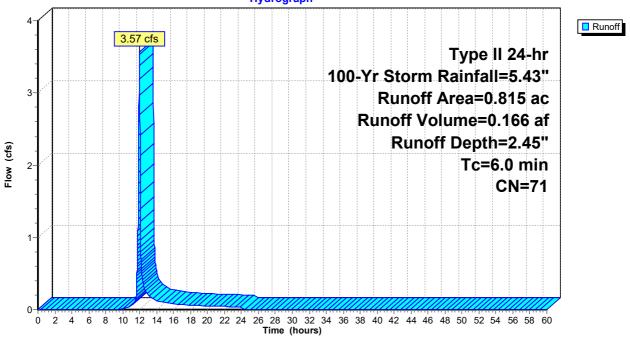


## Summary for Subcatchment 1.2bS3: South Road

Runoff = 3.57 cfs @ 11.98 hrs, Volume= 0.166 af, Depth= 2.45" Routed to Reach 1.2bR3 : South Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

_	Area	(ac)	CN	Desc	cription							
	0.	313	30	Mea	adow, non-grazed, HSG A							
	0.	491	96	Grav	el surface	, HSG A						
*	0.	011	98	Roof	s							
	0.	815	15 71 Weighted Average									
	0.	804	0 0									
	0.	011	011 1.35% Impervious Area									
	Тс	Leng	th	Slope	Velocitv	Capacity	Description					
	(min)	(fee		(ft/ft)	(ft/sec)	(cfs)						
	6.0	Direct Entry,										
	Subcatchment 1.2bS3: South Road											
	Hydrograph											



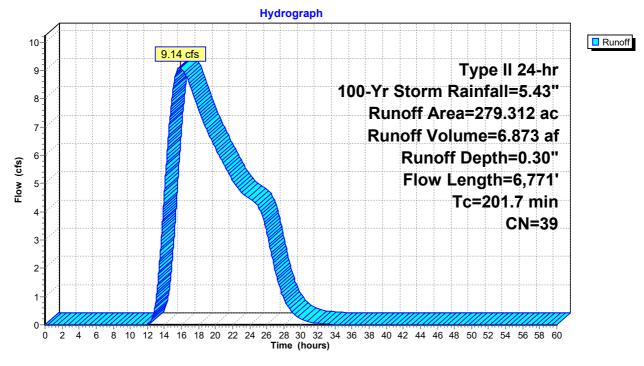
### Summary for Subcatchment 1.3aS1: Surface Discharge

Runoff = 9.14 cfs @ 15.91 hrs, Volume= 6.873 af, Depth= 0.30" Routed to Link SP1 : Study Point 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac) C	N Desc	cription					
*	0.754 96 Graver surface								
	144.	649 3	30 Mea	dow, non-g	grazed, HS	GA			
	0.	566 5	58 Mea	Meadow, non-grazed, HSG B					
	25.	274 7	71 Mea	dow, non-g	grazed, HS	GC			
	61.	692 3		ds, Good,					
	32.	754 5	55 Woo	ds, Good,	HSG B				
	13.	623 7	70 Woo	ds, Good,	HSG C				
	279.	312 3	39 Weig	ghted Aver	age				
	279.	312	100.	00% Pervi	ous Area				
	Тс	Length	Slope	Velocity	Capacity	Description			
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
	14.8	100	0.0764	0.11		Sheet Flow,			
						Woods: Light underbrush n= 0.400 P2= 2.31"			
	4.7	581	0.1683	2.05		Shallow Concentrated Flow,			
						Woodland Kv= 5.0 fps			
	25.7	1,199	0.0241	0.78		Shallow Concentrated Flow,			
						Woodland Kv= 5.0 fps			
	0.8	189	0.0157	3.84	76.82	Channel Flow, Rerouted Stream			
						Area= 20.0 sf Perim= 32.6' r= 0.61'			
						n= 0.035 Earth, dense weeds			
	154.9	4,646	0.0051	0.50		Shallow Concentrated Flow,			
	0.0	50	0.0500	4.40		Short Grass Pasture Kv= 7.0 fps			
	0.8	56	0.0566	1.19		Shallow Concentrated Flow,			
						Woodland Kv= 5.0 fps			
	2017	6 771	Total						

201.7 6,771 Total



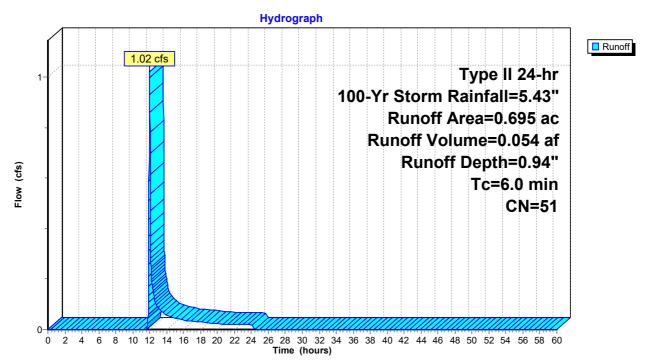
# Subcatchment 1.3aS1: Surface Discharge

### Summary for Subcatchment 1.3bS: Access Rd to Pond 3

Runoff = 1.02 cfs @ 11.99 hrs, Volume= 0.054 af, Depth= 0.94" Routed to Pond 1.3P : Pond 3 - Access Rd West

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac)	CN	Desc	cription							
	0.	473	30	Mea	Aeadow, non-grazed, HSG A							
*	0.	063	96	Grav	el surface	, HSG A, R	Redev					
*	0.	159	96	Grav	el surface	, HSG A						
_	0.	695	51	Weig	ghted Aver	age						
	0.	695	0 0									
	Тс	c Length Slope Velocity Capacity Description										
	(min)											
	6.0						Direct Entry,					
	Subcatchment 1.3bS: Access Rd to Pond 3											



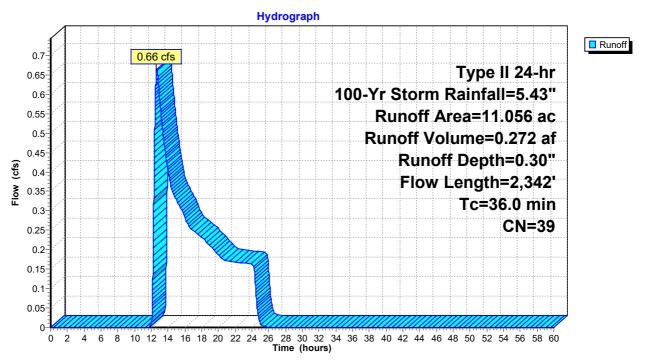
### Summary for Subcatchment 2S:

Runoff = 0.66 cfs @ 12.61 hrs, Volume= 0.272 af, Depth= 0.30" Routed to Link SP2 : Study Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

Area	(ac) C	N Desc	cription						
1.	1.417 96 Gravel surface, HSG A								
0.	0.573 39 >75% Grass cover, Good, HSG A								
6.	6.530 30 Meadow, non-grazed, HSG A								
2.	.536 3	0 Woo	ds, Good,	HSG A					
11.	.056 3	9 Weig	ghted Aver	age					
11.	.056	100.0	00% Pervi	ous Area					
Tc	Length	Slope	Velocity	Capacity	Description				
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
10.7	100	0.0624	0.16		Sheet Flow,				
					Grass: Dense n= 0.240 P2= 2.31"				
2.7	614	0.0535	3.72		Shallow Concentrated Flow,				
					Unpaved Kv= 16.1 fps				
12.1	1,184	0.0543	1.63		Shallow Concentrated Flow,				
					Short Grass Pasture Kv= 7.0 fps				
1.9	115	0.0407	1.01		Shallow Concentrated Flow,				
					Woodland Kv= 5.0 fps				
0.6	68	0.1443	1.90		Shallow Concentrated Flow,				
					Woodland Kv= 5.0 fps				
8.0	261	0.0118	0.54		Shallow Concentrated Flow,				
					Woodland Kv= 5.0 fps				
36.0	2,342	Total							



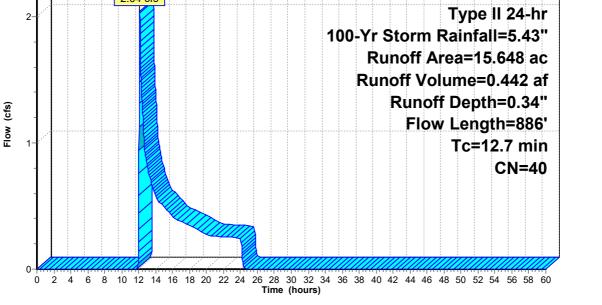


### Summary for Subcatchment 3S:

Runoff = 2.04 cfs @ 12.13 hrs, Volume= 0.442 af, Depth= 0.34" Routed to Link SP3 : Study Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac) C	N Desc	cription			
*	0.000 90 Paved Roads & Roonops						
	0.	406 3	<mark>89 &gt;75</mark> 9	6 Grass co	, HSG A		
					over, Good		
	-				grazed, HS	GA	
				ds, Good,			
_				ds, Good,			
	-			phted Aver	•		
		560		4% Pervio			
	0.	088	0.56	% Impervi	ous Area		
	Тс	Length	Slope	Velocity	Capacity	Description	
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	1	
_	5.4	52	0.0937	0.16		Sheet Flow,	
						Grass: Dense n= 0.240 P2= 2.31"	
	3.7	625	0.1637	2.83		Shallow Concentrated Flow,	
						Short Grass Pasture Kv= 7.0 fps	
	3.6	209	0.0384	0.98		Shallow Concentrated Flow,	
						Woodland Kv= 5.0 fps	
	12.7	886	Total				
					Subca	atchment 3S:	
					Hydrog	praph	
					,		
	-		2.04 cf	s		Runoff	
	2-	4				Type II 24-hr	
	-					100-Yr Storm Rainfall=5.43"	



### Summary for Subcatchment 4.1S:

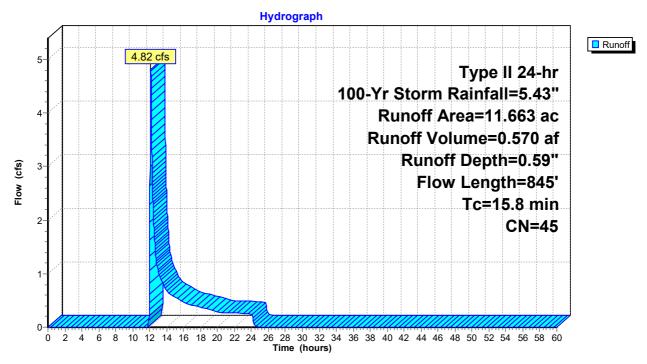
Runoff = 4.82 cfs @ 12.13 hrs, Volume= 0.570 af, Depth= 0.59" Routed to Reach 4.1R1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac)	CN	Desc	cription					
*	0.	327	98	Pave	Paved Roads & Rooftops					
*	0.	375	96	Grav	el surface	-				
	0.	165	61	>75%	6 Grass co	over, Good	, HSG B			
	2.	544	30			grazed, HS				
		560	58			grazed, HS	GB			
	3.	605	30		ds, Good,					
*	4.	087	55	Woo	ds, Good,	HSG B				
	11.	663	45	Weig	ghted Aver	age				
	11.	336		97.20	0% Pervio	us Area				
	0.	327		2.80	% Impervi	ous Area				
	Tc	Lengt		Slope	Velocity	Capacity	Description			
	(min)	(fee	t)	(ft/ft)	(ft/sec)	(cfs)				
	8.5	10	0 0	.0430	0.20		Sheet Flow,			
							Grass: Short n= 0.150 P2= 2.31"			
	2.6	36	0 0	.1077	2.30		Shallow Concentrated Flow,			
							Short Grass Pasture Kv= 7.0 fps			
	4.7	38	50	.0735	1.36		Shallow Concentrated Flow,			
_							Woodland Kv= 5.0 fps			

15.8 845 Total

## Subcatchment 4.1S:



### Summary for Subcatchment 4.2aS:

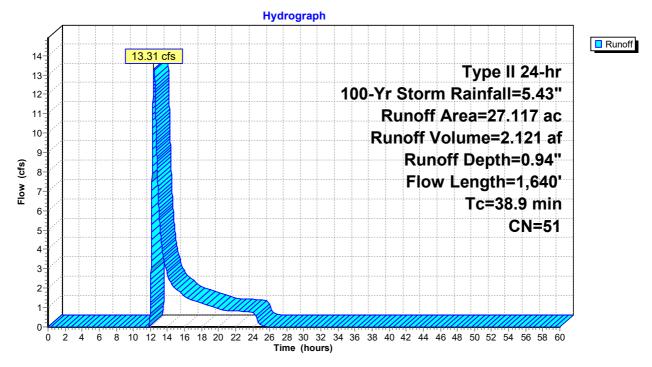
Runoff = 13.31 cfs @ 12.41 hrs, Volume= 2.121 af, Depth= 0.94" Routed to Pond 4.2C : 18" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac) C	N Dese	cription		
*	0.	238	96 Grav	el surface/	1	
	4.	086	30 Mea	dow, non-g	grazed, HS	IG A
	0.	384	58 Mea	dow, non-g	grazed, HS	G B
	0.	977	30 Woo	ds, Good,	HSG A	
_	21.	432	55 Woo	ds, Good,	HSG B	
	27.	117		ghted Aver		
	27.	117	100.	00% Pervi	ous Area	
	Tc	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	17.8	100	0.0480	0.09		Sheet Flow,
						Woods: Light underbrush n= 0.400 P2= 2.31"
	8.0	878	0.1354	1.84		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps
	13.1	662	0.0144	0.84		Shallow Concentrated Flow,
						Short Grass Pasture Kv= 7.0 fps
	~ ~ ~					

38.9 1,640 Total

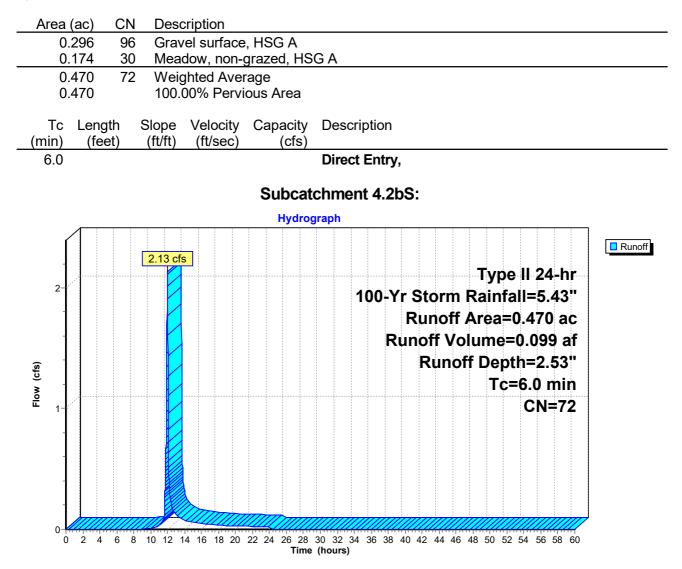
Subcatchment 4.2aS:



### Summary for Subcatchment 4.2bS:

Runoff = 2.13 cfs @ 11.98 hrs, Volume= 0.099 af, Depth= 2.53" Routed to Reach 4.2bR : Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"



#### Summary for Subcatchment 4.3S:

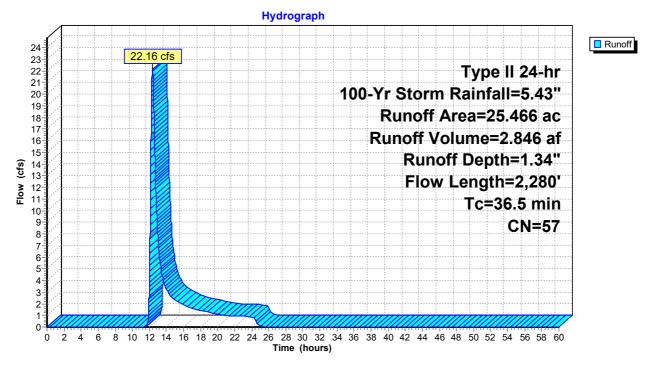
Runoff = 22.16 cfs @ 12.37 hrs, Volume= 2.846 af, Depth= 1.34" Routed to Pond 4.3C : 24" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac) C	N Desc	cription				
*	1.	293 9	8 Pave	ed Roads &	& Rooftops			
				Meadow, non-grazed, HSG B				
22.390 55 Woods, Good, HSG B								
	25.	466 5	7 Weig	ghted Aver	age			
	24.	173	94.9	2% Pervio	us Area			
	1.	293	5.08	% Impervi	ous Area			
	Tc	Length	Slope	Velocity	Capacity	Description		
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)			
	15.9	100	0.0634	0.10		Sheet Flow,		
						Woods: Light underbrush n= 0.400 P2= 2.31"		
	17.8	1,368	0.0656	1.28		Shallow Concentrated Flow,		
						Woodland Kv= 5.0 fps		
	0.1	38	0.3960	4.40		Shallow Concentrated Flow,		
						Short Grass Pasture Kv= 7.0 fps		
	2.7	774	0.0281	4.70	109.09	Channel Flow,		
						Area= 23.2 sf Perim= 43.2' r= 0.54' n= 0.035		

36.5 2,280 Total

#### Subcatchment 4.3S:



### Summary for Subcatchment 5S:

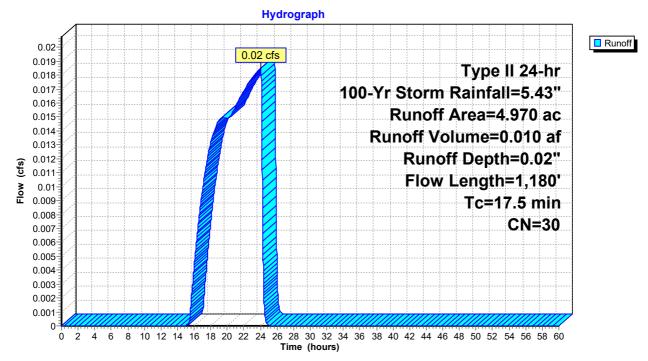
Runoff = 0.02 cfs @ 24.02 hrs, Volume= 0.010 af, Depth= 0.02" Routed to Link SP5 : Study Point 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

i (ac)	CN Dese	cription					
4.139 30 Meadow, non-grazed, HSG A							
).831	<u>30 Woc</u>	ods, Good,	HSG A				
1.970	30 Weig	ghted Avei	rage				
1.970	100.	00% Pervi	ous Area				
Length	Slope	Velocity	Capacity	Description			
(feet	) (ft/ft)	(ft/sec)	(cfs)				
100	0.0675	0.24		Sheet Flow,			
				Grass: Short n= 0.150 P2= 2.31"			
801	0.0508	1.58		Shallow Concentrated Flow,			
				Short Grass Pasture Kv= 7.0 fps			
217	0.1515	2.72		Shallow Concentrated Flow,			
				Short Grass Pasture Kv= 7.0 fps			
62	0.0697	1.85		Shallow Concentrated Flow,			
				Short Grass Pasture Kv= 7.0 fps			
	4.139 <u>0.831</u> 4.970 4.970 <b>Length</b> (feet) 100 801 217	4.139         30         Mea           0.831         30         Woo           4.970         30         Weig           4.970         30         Weig           4.970         100.           Length         Slope           (feet)         (ft/ft)           100         0.0675           801         0.0508           217         0.1515	4.139         30         Meadow, non-(0.831)         30         Woods, Good,         4.970         30         Weighted Averation (0.00%)         Averation (0.00%)         Pervious (0.00%)         Per	4.139       30       Meadow, non-grazed, HS         0.831       30       Woods, Good, HSG A         4.970       30       Weighted Average         4.970       100.00% Pervious Area         4.970       100.0075         0.0675       0.24         801       0.0508       1.58         217       0.1515       2.72			

17.5 1,180 Total

#### Subcatchment 5S:



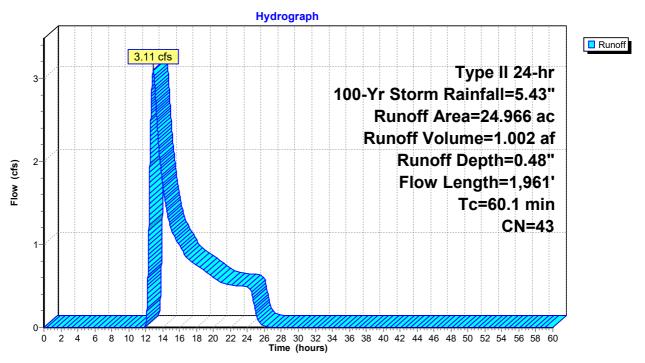
### Summary for Subcatchment 6S:

Runoff = 3.11 cfs @ 12.89 hrs, Volume= 1.002 af, Depth= 0.48" Routed to Link SP6 : Study Point 6

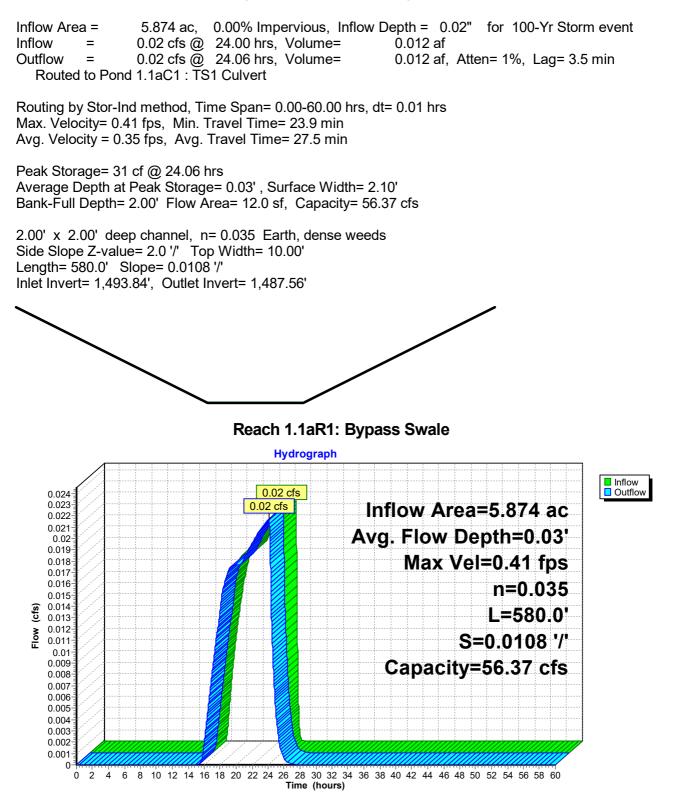
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac)	CN E	Desc	ription			
*	1.450 98 Paved Roads & Roofto					& Rooftops		
	0.466 96			Gravel surface, HSG A				
	2.	545	61 >	•75%	6 Grass co	over, Good	, HSG B	
	7.	511				grazed, HS		
	0.	788	58 N	/lea	dow, non-g	grazed, HS	G B	
	7.	940	30 V	Voo	ds, Good,	HSG A		
	4.	266	<u>55 V</u>	Voo	ds, Good,	HSG B		
	24.	966	43 V	Veig	phted Aver	age		
		516	9	94.19	9% Pervio	us Area		
	1.450			5.81	% Impervi	ous Area		
	_					_		
	Tc	Length			Velocity	Capacity	Description	
	(min)	(feet		/ft)	(ft/sec)	(cfs)		
	10.1	100	0.02	78	0.16		Sheet Flow,	
				_			Grass: Short n= 0.150 P2= 2.31"	
	3.2	313	0.05	28	1.61		Shallow Concentrated Flow,	
			–				Short Grass Pasture Kv= 7.0 fps	
	3.9	486	6 0.17	42	2.09		Shallow Concentrated Flow,	
	40.0	4 0.00		~~	0.44		Woodland Kv= 5.0 fps	
	42.9	1,062	2 0.00	68	0.41		Shallow Concentrated Flow,	
							Woodland Kv= 5.0 fps	
	60.1	1,961	Tota	l				

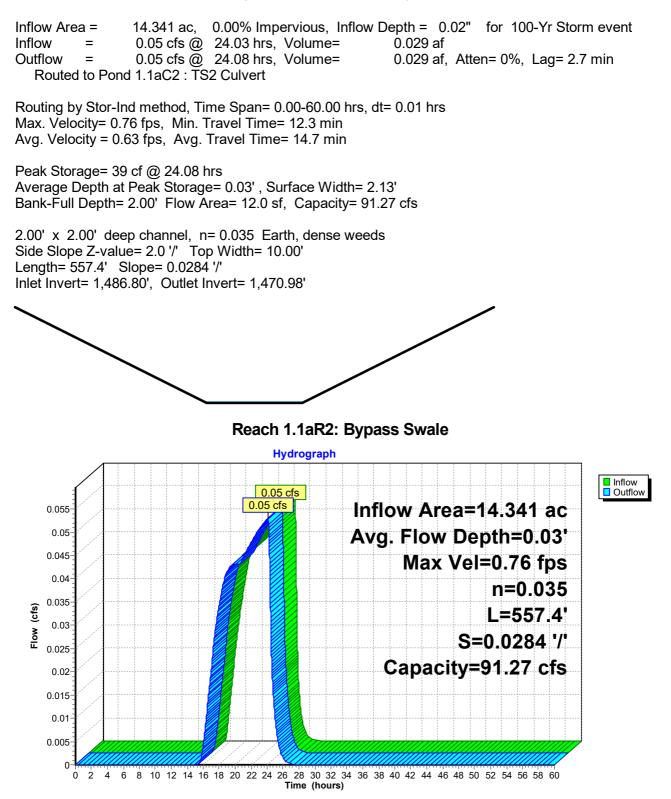
# Subcatchment 6S:



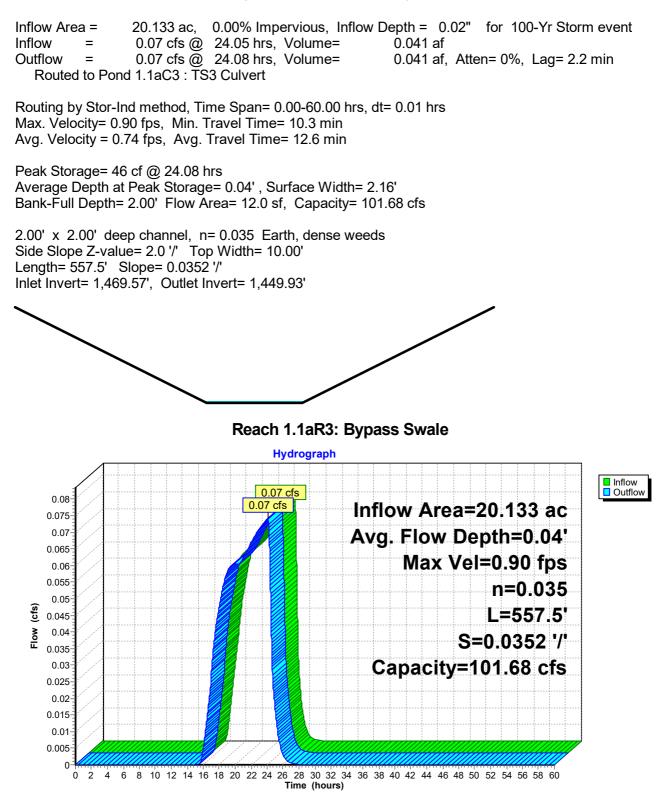
# Summary for Reach 1.1aR1: Bypass Swale



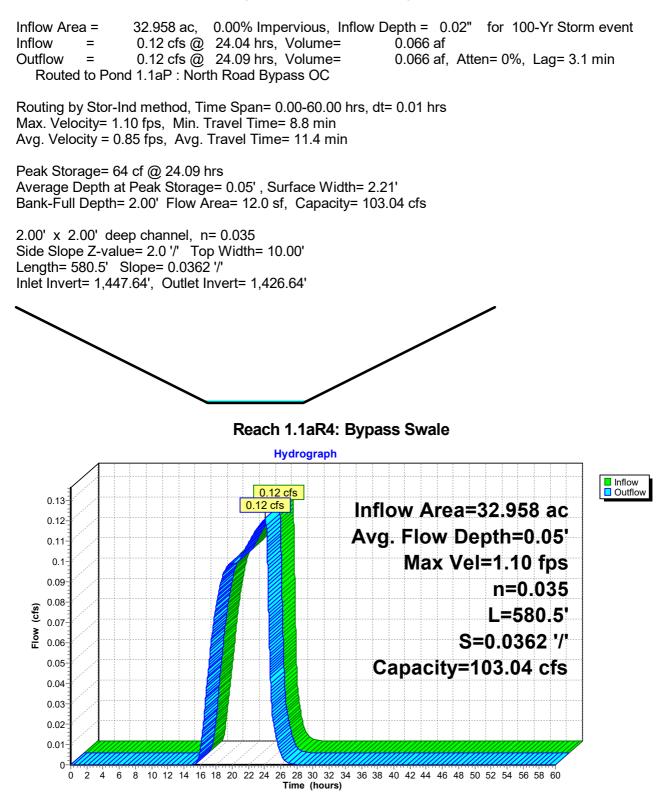
# Summary for Reach 1.1aR2: Bypass Swale



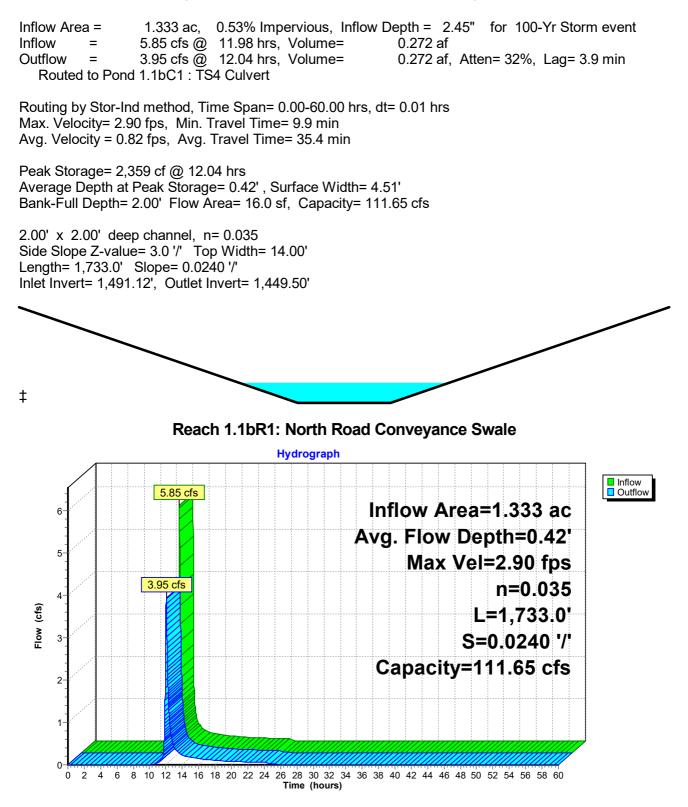
# Summary for Reach 1.1aR3: Bypass Swale



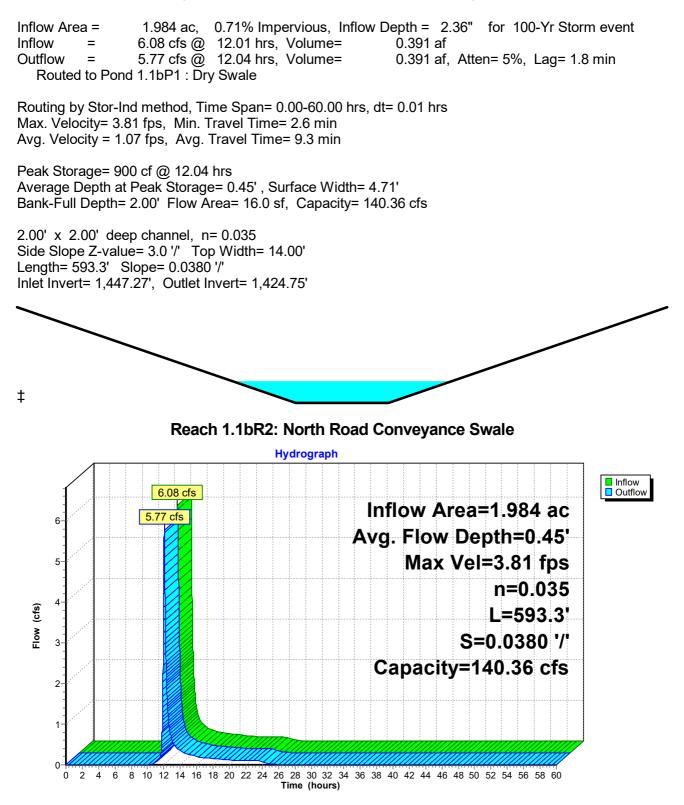
# Summary for Reach 1.1aR4: Bypass Swale



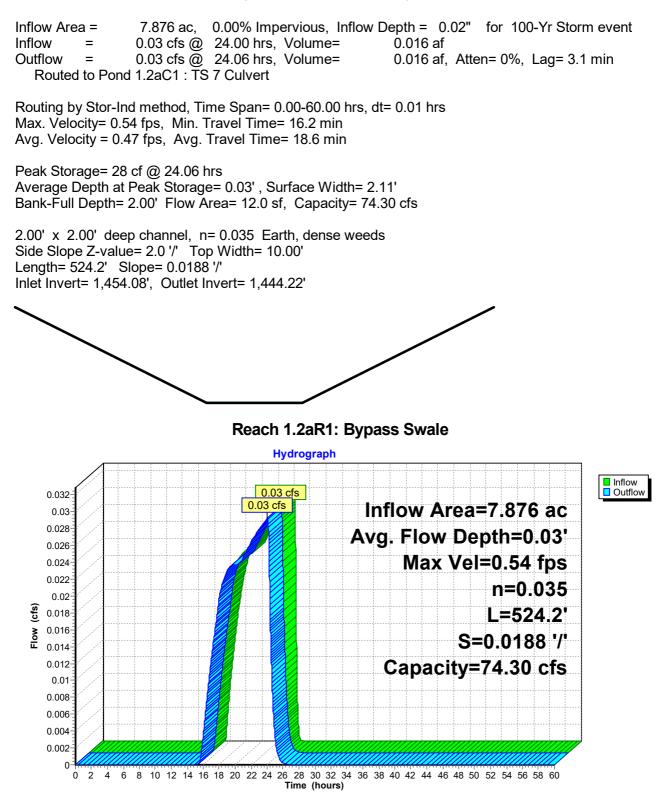
### Summary for Reach 1.1bR1: North Road Conveyance Swale



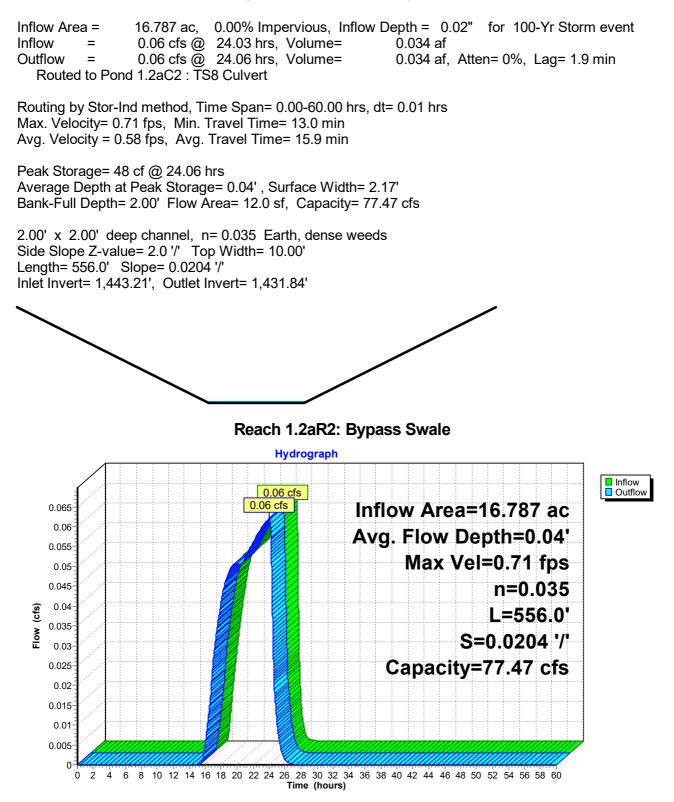
### Summary for Reach 1.1bR2: North Road Conveyance Swale



# Summary for Reach 1.2aR1: Bypass Swale

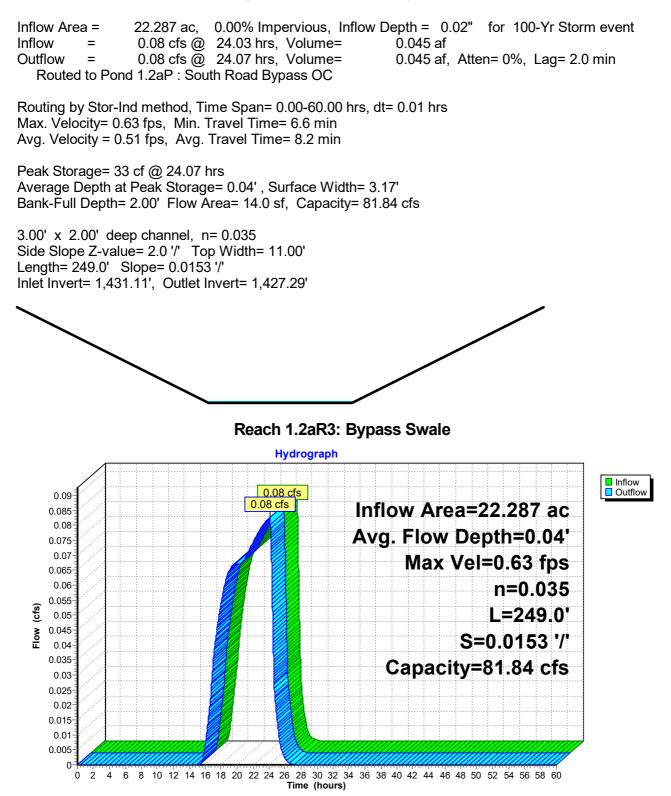


# Summary for Reach 1.2aR2: Bypass Swale

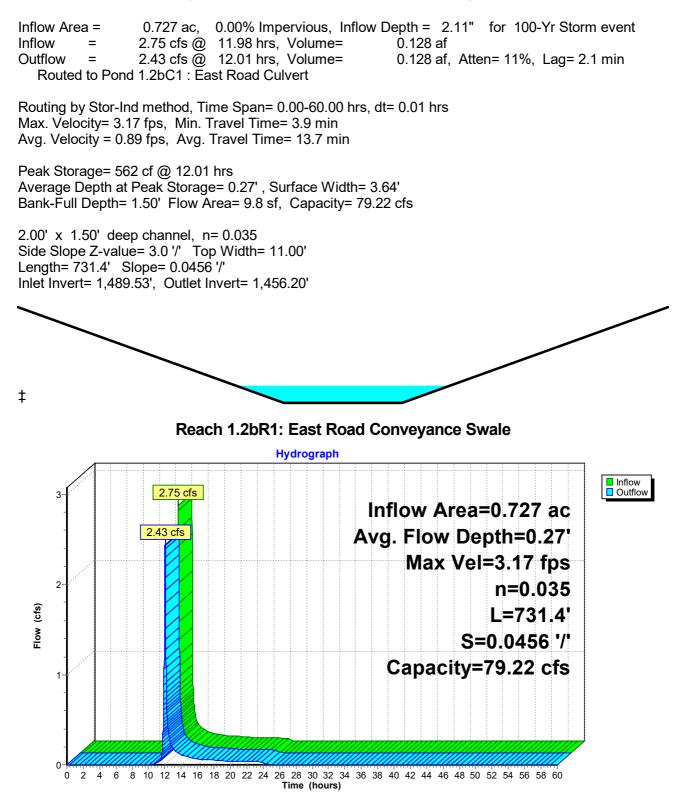


20220630 BR Benson Mines Solar POST DevType II 24-hr100-Yr Storm Rainfall=5.43"Prepared by TRCPrinted7/12/2022HydroCAD® 10.10-7bs/n 01402© 2022 HydroCAD Software Solutions LLCPage 252

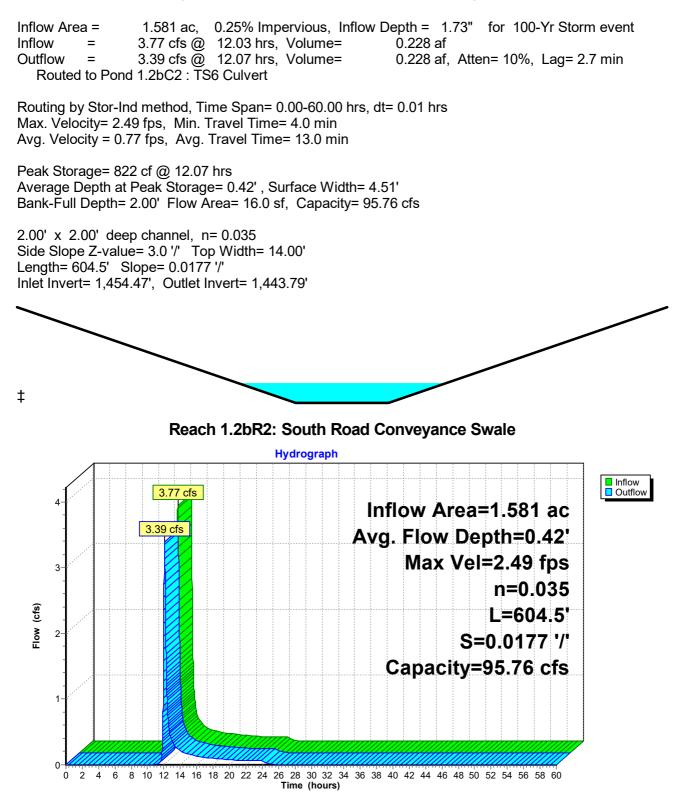
### Summary for Reach 1.2aR3: Bypass Swale



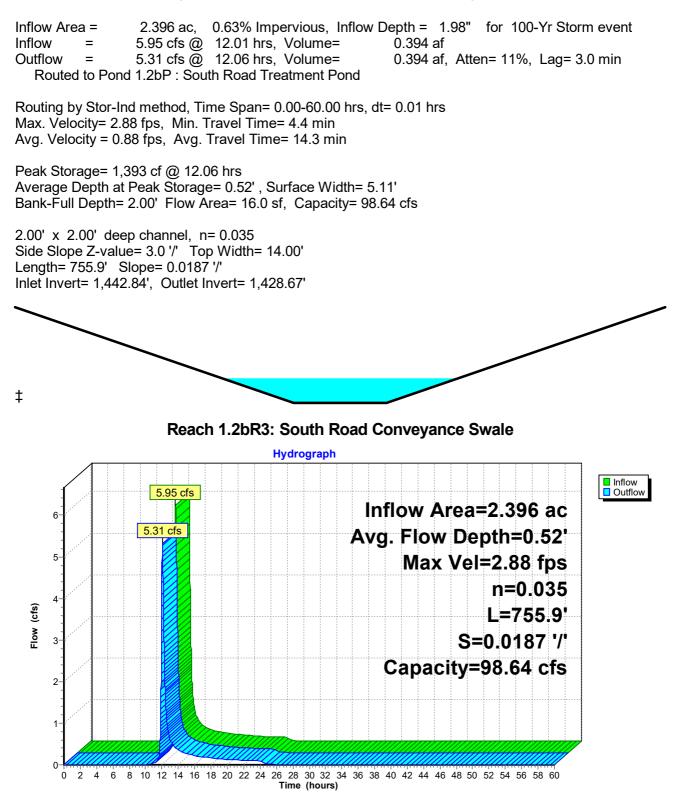
#### Summary for Reach 1.2bR1: East Road Conveyance Swale



### Summary for Reach 1.2bR2: South Road Conveyance Swale



### Summary for Reach 1.2bR3: South Road Conveyance Swale



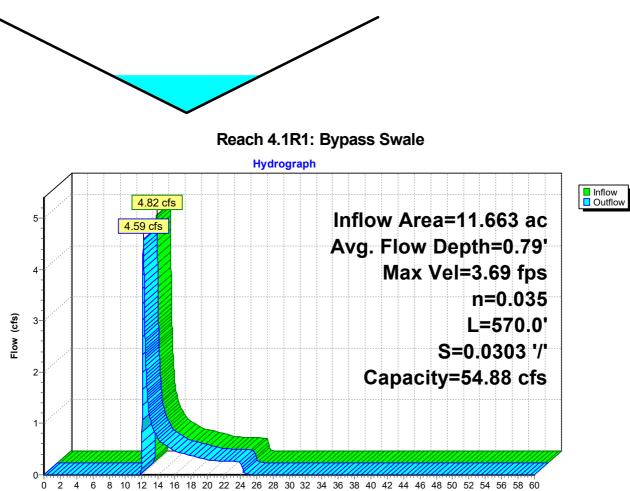
# Summary for Reach 4.1R1: Bypass Swale

Inflow Area =11.663 ac,2.80% Impervious, Inflow Depth =0.59"for100-Yr Storm eventInflow =4.82 cfs @12.13 hrs, Volume=0.570 afOutflow =4.59 cfs @12.17 hrs, Volume=0.570 af, Atten= 5%, Lag= 2.3 minRouted to Reach 4.1R2 : Ex Stream

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Max. Velocity= 3.69 fps, Min. Travel Time= 2.6 min Avg. Velocity = 1.82 fps, Avg. Travel Time= 5.2 min

Peak Storage= 709 cf @ 12.17 hrs Average Depth at Peak Storage= 0.79', Surface Width= 3.16' Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 54.88 cfs

0.00' x 2.00' deep channel, n= 0.035 Side Slope Z-value= 2.0 '/' Top Width= 8.00' Length= 570.0' Slope= 0.0303 '/' Inlet Invert= 1,448.24', Outlet Invert= 1,430.97'



Time (hours)

20220630 BR Benson Mines Solar POST DevType II 24-hr100-Yr Storm Rainfall=5.43"Prepared by TRCPrinted7/12/2022HydroCAD® 10.10-7bs/n 01402© 2022 HydroCAD Software Solutions LLCPage 257

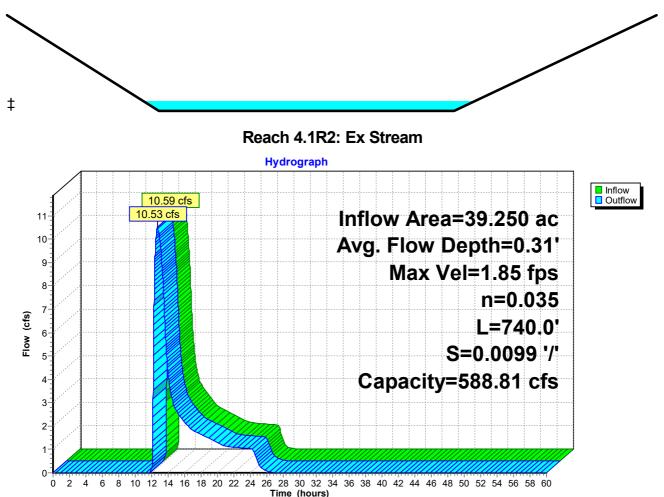
#### Summary for Reach 4.1R2: Ex Stream

Inflow Area =39.250 ac,0.83% Impervious,Inflow Depth =0.83"for100-Yr Storm eventInflow =10.59 cfs @12.62 hrs,Volume=2.700 afOutflow =10.53 cfs @12.70 hrs,Volume=2.700 af,Routed to Link SP4 : Study Point 42.700 af,Atten= 1%,

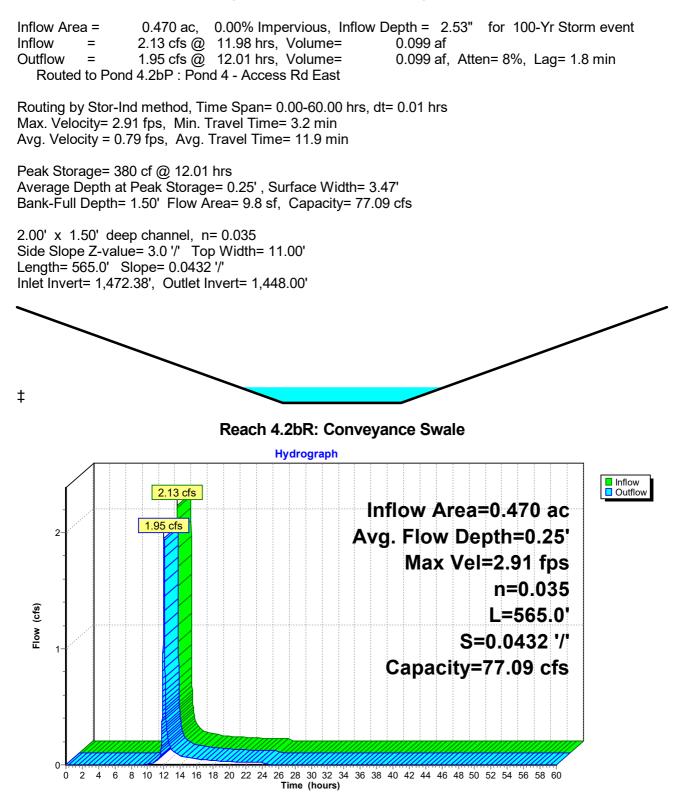
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Max. Velocity= 1.85 fps, Min. Travel Time= 6.7 min Avg. Velocity = 0.76 fps, Avg. Travel Time= 16.2 min

Peak Storage= 4,215 cf @ 12.70 hrs Average Depth at Peak Storage= 0.31', Surface Width= 19.65' Bank-Full Depth= 3.00' Flow Area= 84.0 sf, Capacity= 588.81 cfs

17.50' x 3.00' deep channel, n= 0.035 Side Slope Z-value= 3.0 4.0 '/' Top Width= 38.50' Length= 740.0' Slope= 0.0099 '/' Inlet Invert= 1,430.98', Outlet Invert= 1,423.64'



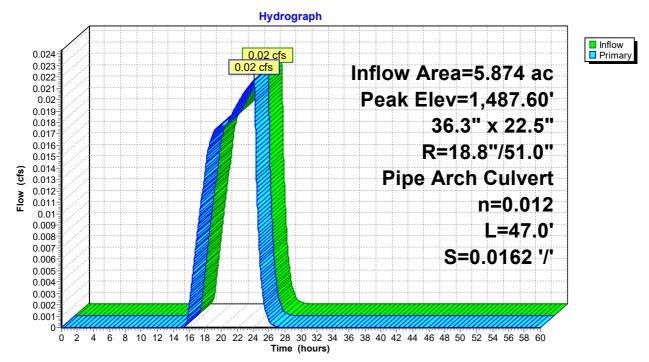
### Summary for Reach 4.2bR: Conveyance Swale



# Summary for Pond 1.1aC1: TS1 Culvert

Inflow Area = 5.874 ac, 0.00% Impervious, Inflow Depth = 0.02" for 100-Yr Storm event 0.02 cfs @ 24.06 hrs, Volume= Inflow 0.012 af = 0.02 cfs @ 24.06 hrs, Volume= Outflow 0.012 af, Atten= 0%, Lag= 0.0 min Primary = 0.02 cfs @ 24.06 hrs, Volume= 0.012 af Routed to Reach 1.1aR2 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,487.60' @ 24.06 hrs Flood Elev= 1,489.60' **Outlet Devices** Device Routing Invert 36.3" W x 22.5" H, R=18.8"/51.0" Pipe Arch RCP\_Arch 37x23 #1 Primary 1.487.56 L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,487.56' / 1,486.80' S= 0.0162 '/' Cc= 0.900 n= 0.012, Flow Area= 4.43 sf

Primary OutFlow Max=0.02 cfs @ 24.06 hrs HW=1,487.60' (Free Discharge) ←1=RCP\_Arch 37x23 (Inlet Controls 0.02 cfs @ 0.61 fps)

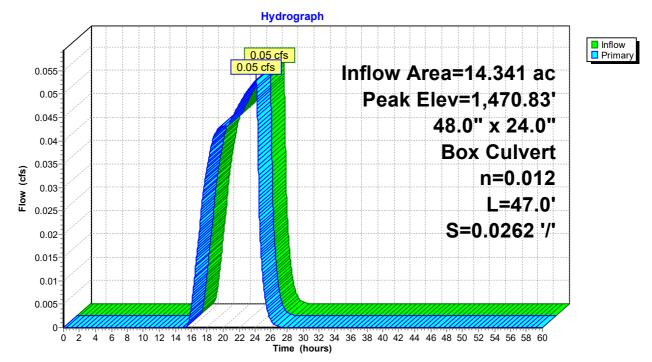


Pond 1.1aC1: TS1 Culvert

# Summary for Pond 1.1aC2: TS2 Culvert

Inflow Area = 14.341 ac, 0.00% Impervious, Inflow Depth = 0.02" for 100-Yr Storm event 0.05 cfs @ 24.08 hrs, Volume= Inflow 0.029 af = 0.05 cfs @ 24.08 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min Outflow 0.05 cfs @ 24.08 hrs, Volume= 0.029 af Primary = Routed to Reach 1.1aR3 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,470.83' @ 24.08 hrs Flood Elev= 1,473.07' Device Routing Invert Outlet Devices 48.0" W x 24.0" H Box Culvert #1 Primary 1.470.80' L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,470.80' / 1,469.57' S= 0.0262 '/' Cc= 0.900 n= 0.012, Flow Area= 8.00 sf

Primary OutFlow Max=0.05 cfs @ 24.08 hrs HW=1,470.83' (Free Discharge) ←1=Culvert (Inlet Controls 0.05 cfs @ 0.51 fps)

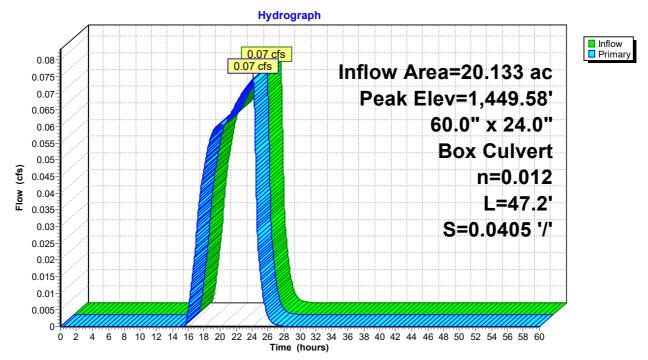


Pond 1.1aC2: TS2 Culvert

# Summary for Pond 1.1aC3: TS3 Culvert

Inflow Area = 20.133 ac, 0.00% Impervious, Inflow Depth = 0.02" for 100-Yr Storm event 0.07 cfs @ 24.08 hrs, Volume= Inflow 0.041 af = 0.07 cfs @ 24.08 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min Outflow 0.07 cfs @ 24.08 hrs, Volume= 0.041 af Primary = Routed to Reach 1.1aR4 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,449.58' @ 24.08 hrs Flood Elev= 1,452.10' Device Routing Invert Outlet Devices 60.0" W x 24.0" H Box Culvert #1 Primary 1.449.55' L= 47.2' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,449.55' / 1,447.64' S= 0.0405 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 10.00 sf

Primary OutFlow Max=0.07 cfs @ 24.08 hrs HW=1,449.58' (Free Discharge) ←1=Culvert (Inlet Controls 0.07 cfs @ 0.53 fps)



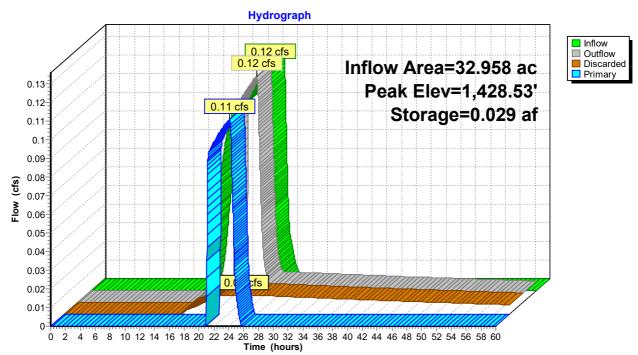
# Pond 1.1aC3: TS3 Culvert

# Summary for Pond 1.1aP: North Road Bypass OC

Inflow Area = 32.958 ac, 0.00% Impervious, Inflow Depth = 0.02" for 100-Yr Storm event 0.12 cfs @ 24.09 hrs, Volume= Inflow = 0.066 af 0.12 cfs @ 24.12 hrs, Volume= Outflow 0.059 af, Atten= 0%, Lag= 1.3 min 0.01 cfs @ 24.12 hrs, Volume= Discarded = 0.028 af 0.031 af Primary = 0.11 cfs @ 24.12 hrs, Volume= Routed to Link 1.1L : Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,428.53' @ 24.12 hrs Surf.Area= 0.020 ac Storage= 0.029 af Plug-Flow detention time= 520.4 min calculated for 0.059 af (88% of inflow) Center-of-Mass det. time= 493.0 min (1,761.0 - 1,268.0) Avail.Storage Storage Description Volume Invert 0.069 af 10.00'W x 20.00'L x 4.00'H Prismatoid Z=3.0 1,426.00' #1 Device Routing Invert **Outlet Devices** #1 Discarded 1.426.00' 0.500 in/hr Exfiltration over Surface area Phase-In= 0.01' #2 10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Primary 1.428.50' Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.01 cfs @ 24.12 hrs HW=1,428.53' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.10 cfs @ 24.12 hrs HW=1,428.53' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 0.10 cfs @ 0.40 fps)



# Pond 1.1aP: North Road Bypass OC

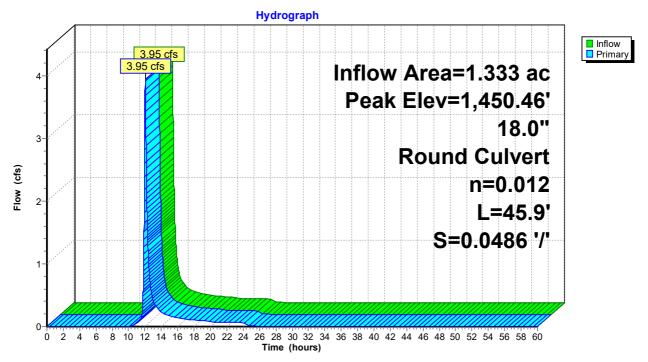
# Summary for Pond 1.1bC1: TS4 Culvert

Inflow Area = 1.333 ac, 0.53% Impervious, Inflow Depth = 2.45" for 100-Yr Storm event 3.95 cfs @ 12.04 hrs, Volume= Inflow = 0.272 af 3.95 cfs @ 12.04 hrs, Volume= 3.95 cfs @ 12.04 hrs, Volume= = 0.272 af, Atten= 0%, Lag= 0.0 min Outflow 0.272 af Primary = Routed to Reach 1.1bR2 : North Road Conveyance Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,450.46' @ 12.04 hrs Flood Elev= 1,451.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,449.50'	18.0" Round Culvert
			L= 45.9' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,449.50' / 1,447.27' S= 0.0486 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=3.95 cfs @ 12.04 hrs HW=1,450.46' (Free Discharge) ←1=Culvert (Inlet Controls 3.95 cfs @ 3.33 fps)

# Pond 1.1bC1: TS4 Culvert



### Summary for Pond 1.1bP1: Dry Swale

Inflow Area =	1.984 ac,	0.71% Impervious, Inflow I	Depth = 2.36" for 100-Yr Storm event		
Inflow =	5.77 cfs @	12.04 hrs, Volume=	0.391 af		
Outflow =	5.77 cfs @	12.04 hrs, Volume=	0.391 af, Atten= 0%, Lag= 0.0 min		
Discarded =	0.01 cfs @	12.03 hrs, Volume=	0.005 af		
Primary =	5.77 cfs @	12.04 hrs, Volume=	0.386 af		
Routed to Pond 1.1bP2 : North Road Detention Pond					

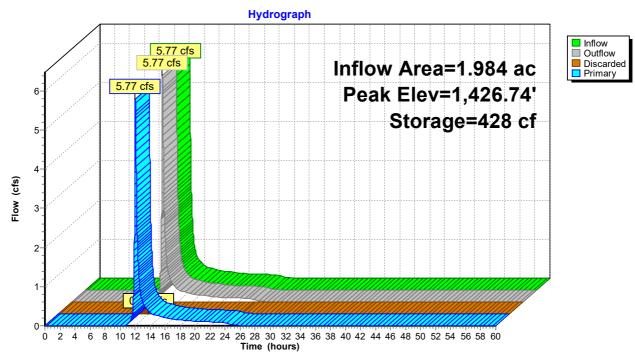
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,426.74' @ 12.04 hrs Surf.Area= 603 sf Storage= 428 cf

Plug-Flow detention time= 6.5 min calculated for 0.391 af (100% of inflow) Center-of-Mass det. time= 6.7 min (866.5 - 859.8)

Volume	Inve	ert Avai	I.Storage	Storage Description	on		
#1 1,424.7		'5'	428 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
_		~ ~ .	<b>_</b> .		<b>a a</b>		
Elevatio	on	Surf.Area	Perim.	Inc.Store	Cum.Store	Wet.Area	
(fee	et)	(sq-ft)	(feet)	(cubic-feet)	(cubic-feet)	(sq-ft)	
1,424.7	75	0	0.0	0	0	0	
1,425.0	)0	25	22.9	2	2	42	
1,426.0	)0	273	98.0	127	129	767	
1,426.7	70	603	161.7	299	428	2,086	
Device	Routing	In	vert Outl	et Devices			
#1	Discarde	d 1,424	.75' <b>0.50</b>	0 in/hr Exfiltration	over Surface area	a Phase-In= 0.01'	
#2	Primary	1,425	.69' <b>2.0'</b>	long x 2.0' breadt	h Broad-Crested I	Rectangular Weir	
		,				1.20 1.40 1.60 1.80	) 2.00
				3.00 3.50			
			Coe	f. (English) 2.54 2	.61 2.61 2.60 2.	66 2.70 2.77 2.89	2.88
				3.07 3.20 3.32			

**Discarded OutFlow** Max=0.01 cfs @ 12.03 hrs HW=1,426.74' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=5.76 cfs @ 12.04 hrs HW=1,426.74' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 5.76 cfs @ 2.74 fps)



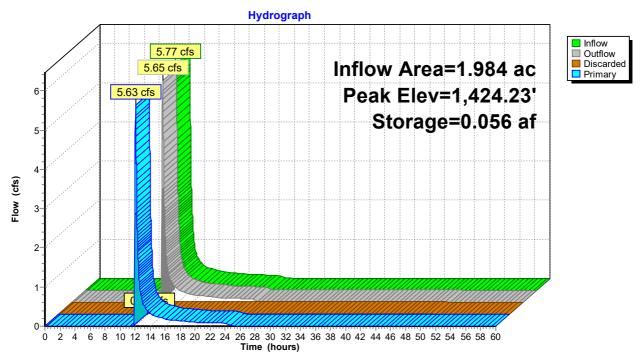
Pond 1.1bP1: Dry Swale

# Summary for Pond 1.1bP2: North Road Detention Pond

Inflow Outflow Discarde Primary	Inflow Area =       1.984 ac,       0.71% Impervious, Inflow Depth =       2.33" for 100-Yr Storm event         Inflow =       5.77 cfs @       12.04 hrs, Volume=       0.386 af         Outflow =       5.65 cfs @       12.06 hrs, Volume=       0.372 af, Atten= 2%, Lag= 1.3 min         Discarded =       0.02 cfs @       12.06 hrs, Volume=       0.053 af         Primary =       5.63 cfs @       12.06 hrs, Volume=       0.318 af         Routed to Link 1.1L :       1.1L       1.1L					
			ne Span= 0.00-60.00 hrs, dt= 0.01 hrs nrs Surf.Area= 0.034 ac Storage= 0.056 af			
•	Plug-Flow detention time= 193.0 min calculated for 0.371 af (96% of inflow) Center-of-Mass det. time= 171.5 min(1,031.2 - 859.7)					
Volume	Inve	rt Avail.Sto	brage Storage Description			
#1	1,421.5	0' 0.1	66 af 10.00'W x 40.00'L x 5.00'H Prismatoid Z=3.0			
Device	Device Routing Invert Outlet Devices					
#1 #2	Discarde Primary	d 1,421.50 1,424.00				

**Discarded OutFlow** Max=0.02 cfs @ 12.06 hrs HW=1,424.23' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=5.60 cfs @ 12.06 hrs HW=1,424.23' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 5.60 cfs @ 1.21 fps)

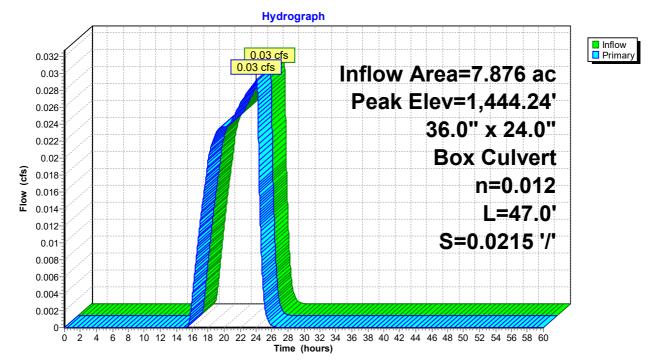


# Pond 1.1bP2: North Road Detention Pond

# Summary for Pond 1.2aC1: TS 7 Culvert

Inflow Area = 7.876 ac, 0.00% Impervious, Inflow Depth = 0.02" for 100-Yr Storm event 0.03 cfs @ 24.06 hrs, Volume= Inflow 0.016 af = 0.03 cfs @ 24.06 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min Outflow 0.016 af 0.03 cfs @ 24.06 hrs, Volume= Primary = Routed to Reach 1.2aR2 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,444.24' @ 24.06 hrs Flood Elev= 1,446.28' Device Routing Invert Outlet Devices 36.0" W x 24.0" H Box Culvert #1 Primary 1.444.22' L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,444.22' / 1,443.21' S= 0.0215 '/' Cc= 0.900 n= 0.012, Flow Area= 6.00 sf

Primary OutFlow Max=0.03 cfs @ 24.06 hrs HW=1,444.24' (Free Discharge) ←1=Culvert (Inlet Controls 0.03 cfs @ 0.46 fps)

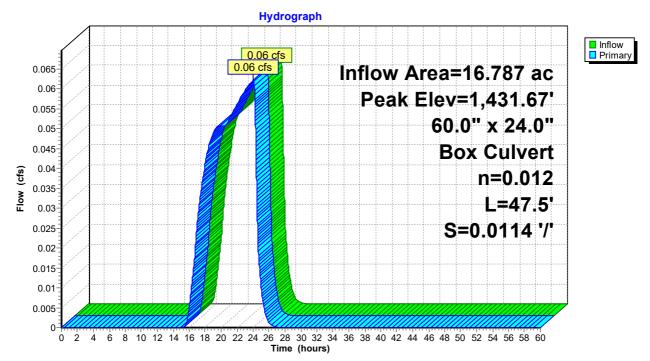


Pond 1.2aC1: TS 7 Culvert

# Summary for Pond 1.2aC2: TS8 Culvert

Inflow Area = 16.787 ac, 0.00% Impervious, Inflow Depth = 0.02" for 100-Yr Storm event 0.06 cfs @ 24.06 hrs, Volume= Inflow 0.034 af = 0.06 cfs @ 24.06 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min Outflow 0.06 cfs @ 24.06 hrs, Volume= 0.034 af Primary = Routed to Reach 1.2aR3 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,431.67' @ 24.06 hrs Flood Elev= 1,433.87' Device Routing Invert Outlet Devices 60.0" W x 24.0" H Box Culvert #1 Primary 1.431.65' L= 47.5' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,431.65' / 1,431.11' S= 0.0114 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 10.00 sf

**Primary OutFlow** Max=0.06 cfs @ 24.06 hrs HW=1,431.67' (Free Discharge) **1=Culvert** (Inlet Controls 0.06 cfs @ 0.50 fps)



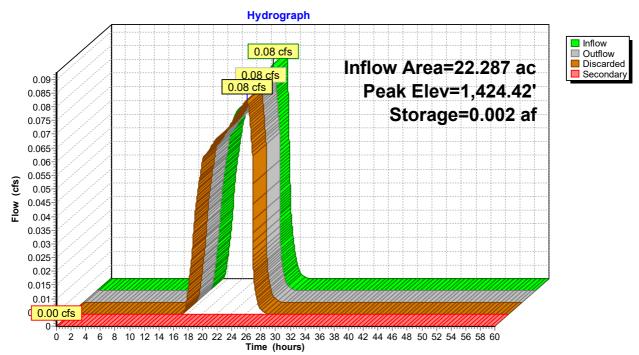
### Pond 1.2aC2: TS8 Culvert

# Summary for Pond 1.2aP: South Road Bypass OC

Inflow Outflow Discarde Seconda	Inflow Area =       22.287 ac,       0.00% Impervious, Inflow Depth =       0.02" for 100-Yr Storm event         Inflow =       0.08 cfs @       24.07 hrs, Volume=       0.045 af         Outflow =       0.08 cfs @       24.20 hrs, Volume=       0.045 af, Atten= 5%, Lag= 8.4 min         Discarded =       0.08 cfs @       24.20 hrs, Volume=       0.045 af         Secondary =       0.00 cfs @       0.00 hrs, Volume=       0.000 af         Routed to Link 1.2L :       0.00 cfs @       0.00 hrs, Volume=       0.000 af					
Routing	by Stor-In	d method, Ti	me Span= 0.00-60.00 hrs, dt= 0.01 hrs			
			hrs Surf.Area= 0.006 ac Storage= 0.002 af			
			min calculated for 0.045 af (100% of inflow) min(1,272.7 - 1,261.5)			
Volume	Inve	ert Avail.St	orage Storage Description			
#1	1,424.0	0' 0.0	069 af 10.00'W x 20.00'L x 4.00'H Prismatoid Z=3.0			
Device	Device Routing Invert Outlet Devices					
#1	Discarde	d 1,424.0	0' 12.000 in/hr Exfiltration over Surface area			
#2	Seconda	ry 1,426.5				
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60			
			Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64			

**Discarded OutFlow** Max=0.08 cfs @ 24.20 hrs HW=1,424.42' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,424.00' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



# Pond 1.2aP: South Road Bypass OC

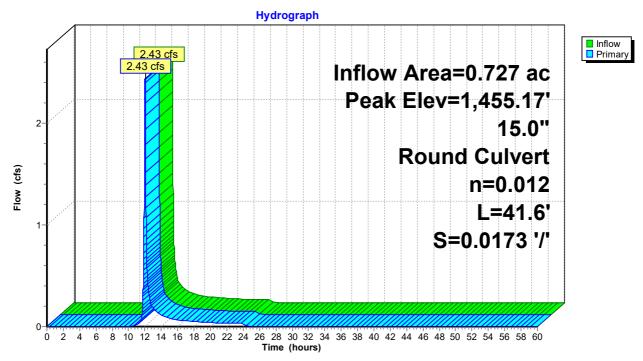
# Summary for Pond 1.2bC1: East Road Culvert

Inflow Area = 0.727 ac, 0.00% Impervious, Inflow Depth = 2.11" for 100-Yr Storm event 2.43 cfs @ 12.01 hrs, Volume= Inflow = 0.128 af 2.43 cfs @ 12.01 hrs, Volume= 0.128 af, Atten= 0%, Lag= 0.0 min Outflow 2.43 cfs @ 12.01 hrs, Volume= 0.128 af Primary = Routed to Reach 1.2bR2 : South Road Conveyance Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,455.17' @ 12.01 hrs

Flood Elev= 1,457.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,454.39'	<b>15.0" Round Culvert</b> L= 41.6' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,454.39' / 1,453.67' S= 0.0173 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.43 cfs @ 12.01 hrs HW=1,455.17' (Free Discharge) ←1=Culvert (Inlet Controls 2.43 cfs @ 3.01 fps)



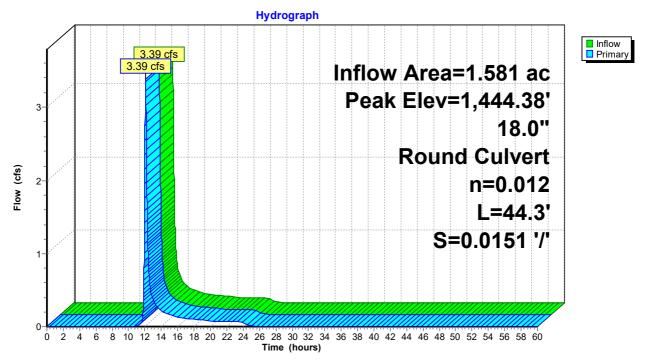
# Pond 1.2bC1: East Road Culvert

# Summary for Pond 1.2bC2: TS6 Culvert

Inflow Area = 1.581 ac, 0.25% Impervious, Inflow Depth = 1.73" for 100-Yr Storm event 3.39 cfs @ 12.07 hrs, Volume= Inflow = 0.228 af 3.39 cfs @ 12.07 hrs, Volume= = 0.228 af, Atten= 0%, Lag= 0.0 min Outflow 3.39 cfs @ 12.07 hrs, Volume= 0.228 af Primary = Routed to Reach 1.2bR3 : South Road Conveyance Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,444.38' @ 12.07 hrs Flood Elev= 1,445.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,443.51'	18.0" Round Culvert
			L= 44.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,443.51' / 1,442.84' S= 0.0151 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=3.38 cfs @ 12.07 hrs HW=1,444.38' (Free Discharge) ←1=Culvert (Inlet Controls 3.38 cfs @ 3.18 fps)



# Pond 1.2bC2: TS6 Culvert

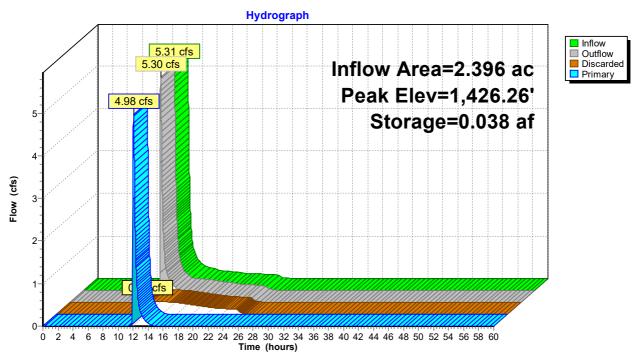
# Summary for Pond 1.2bP: South Road Treatment Pond

Inflow Area = 2.396 ac, 0.63% Impervious, Inflow Depth = 1.98" for 100-Yr Storm event 5.31 cfs @ 12.06 hrs, Volume= Inflow 0.394 af = 5.30 cfs @ 12.06 hrs, Volume= 0.31 cfs @ 12.06 hrs, Volume= Outflow 0.394 af, Atten= 0%, Lag= 0.6 min Discarded = 0.232 af 4.98 cfs @ 12.06 hrs, Volume= 0.162 af Primary = Routed to Link 1.2L : Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,426.26' @ 12.06 hrs Surf.Area= 0.026 ac Storage= 0.038 af Plug-Flow detention time= 34.9 min calculated for 0.394 af (100% of inflow) Center-of-Mass det. time= 34.9 min (902.9 - 868.1) Invert Avail.Storage Storage Description Volume 0.149 af 20.00'W x 20.00'L x 5.00'H Prismatoid Z=3.0 #1 1,424.00' Device Routing Invert **Outlet Devices** #1 Discarded 1.424.00' 12.000 in/hr Exfiltration over Surface area Phase-In= 0.01' #2 20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Primary 1.426.05

Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 **Discarded OutFlow** Max=0.31 cfs @ 12.06 hrs HW=1,426.26' (Free Discharge)

**<sup>T</sup>—1=Exfiltration** (Exfiltration Controls 0.31 cfs)

Primary OutFlow Max=4.95 cfs @ 12.06 hrs HW=1,426.26' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 4.95 cfs @ 1.16 fps)



# Pond 1.2bP: South Road Treatment Pond

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60

### Summary for Pond 1.3P: Pond 3 - Access Rd West

Inflow Area =	0.695 ac,	0.00% Impervious, Inflow D	Depth = 0.94" for 100-Yr Storm event
Inflow =	1.02 cfs @	11.99 hrs, Volume=	0.054 af
Outflow =	0.14 cfs @	12.44 hrs, Volume=	0.054 af, Atten= 86%, Lag= 27.2 min
Discarded =	0.14 cfs @	12.44 hrs, Volume=	0.054 af
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Link	SP1 : Study	Point 1	

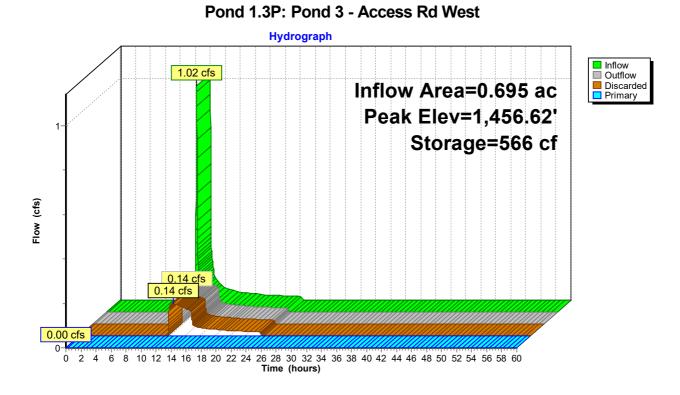
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,456.62' @ 12.44 hrs Surf.Area= 1,037 sf Storage= 566 cf

Plug-Flow detention time= 28.7 min calculated for 0.054 af (100% of inflow) Center-of-Mass det. time= 28.7 min ( 927.0 - 898.4 )

Volume	Invei	rt Avail	.Storage	Storage Description	on	
#1	1,456.00	)'	8,743 cf	Custom Stage Dat	<b>ta (Irregular)</b> Listed	below (Recalc)
Elevatio (fee 1,456.0 1,458.0 1,459.0 1,460.0	et) 00 00 00	Gurf.Area (sq-ft) 784 1,720 2,884 5,280	Perim. (feet) 123.0 194.0 279.0 421.0	Inc.Store (cubic-feet) 0 2,443 2,277 4,022	Cum.Store (cubic-feet) 0 2,443 4,721 8,743	Wet.Area (sq-ft) 784 2,603 5,811 13,729
Device	Routing	In	vert Outl	et Devices		
#1	Discardeo	1,456	.00' 6.00	0 in/hr Exfiltration	over Surface area	Phase-In= 0.01'
#2	Primary	1,459		long x 4.0' breadt		
				d (feet) 0.20 0.40 0 3.00 3.50 4.00 4		20 1.40 1.60 1.80 2.00
						7 2.67 2.65 2.66 2.66
				2.72 2.73 2.76 2		

**Discarded OutFlow** Max=0.14 cfs @ 12.44 hrs HW=1,456.62' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,456.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



# Summary for Pond 4.2bP: Pond 4 - Access Rd East

 Inflow Area =
 0.470 ac, 0.00% Impervious, Inflow Depth = 2.53" for 100-Yr Storm event

 Inflow =
 1.95 cfs @
 12.01 hrs, Volume=
 0.099 af

 Outflow =
 0.69 cfs @
 12.15 hrs, Volume=
 0.099 af, Atten= 65%, Lag= 8.9 min

 Discarded =
 0.14 cfs @
 12.15 hrs, Volume=
 0.089 af

 Primary =
 0.55 cfs @
 12.15 hrs, Volume=
 0.011 af

 Routed to Pond 4.2C : 18" Culvert
 0.011 af
 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,448.33' @ 12.15 hrs Surf.Area= 998 sf Storage= 1,559 cf

Plug-Flow detention time= 117.3 min calculated for 0.099 af (100% of inflow) Center-of-Mass det. time= 117.3 min (960.2 - 842.9)

Volume	Invert	Avail.Stor	rage Storage Description
#1	1,445.50'	2,31	17 cf 10.00'W x 20.00'L x 3.50'H Prismatoid Z=3.0
Device	Routing	Invert	Outlet Devices
#1	Discarded	1,445.50'	6.000 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Primary	1,448.25'	10.0' long x 4.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
	2.50 3.00 3.50 4.00 4.50 5.00 5.50		2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66
			2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.14 cfs @ 12.15 hrs HW=1,448.33' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.54 cfs @ 12.15 hrs HW=1,448.33' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 0.54 cfs @ 0.67 fps)

# Hydrograph Inflow 1.95 cfs Outflow Discarded Inflow Area=0.470 ac Primary Peak Elev=1,448.33' 2 Storage=1,559 cf (cfs) Flow 0.69 cfs 1 0.55 cfs 0 cfs 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

Pond 4.2bP: Pond 4 - Access Rd East

### Summary for Pond 4.2C: 18" Culvert

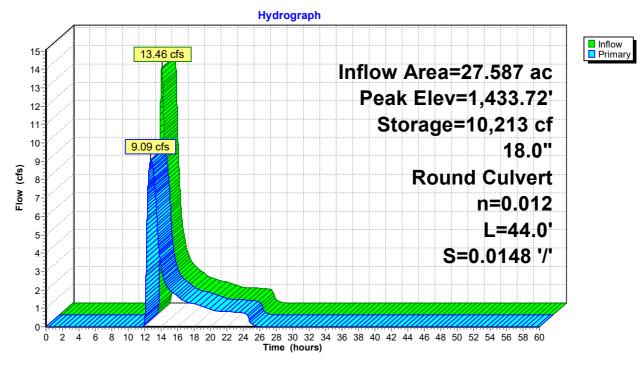
Inflow Area =		27.587 ac,	0.00% Impervious, Inflow	Depth = 0.93" for 100-Yr Storm event
Inflow	=	13.46 cfs @	12.41 hrs, Volume=	2.131 af
Outflow	=	9.09 cfs @	12.74 hrs, Volume=	2.130 af, Atten= 32%, Lag= 19.7 min
Primary	=	9.09 cfs @	12.74 hrs, Volume=	2.130 af
Routed	to Rea	ach 4.1R2 : Ĕx	Stream	

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,433.72' @ 12.74 hrs Surf.Area= 13,077 sf Storage= 10,213 cf Flood Elev= 1,434.64' Surf.Area= 27,666 sf Storage= 28,656 cf

Plug-Flow detention time= 13.0 min calculated for 2.130 af (100% of inflow) Center-of-Mass det. time= 12.5 min (940.4 - 927.9)

Volume	Inve	ert Ava	il.Storage	Storage Description	on		
#1	1,431.5	0'	39,033 cf	Custom Stage Da	<b>ta (Irregular)</b> Liste	ed below (Recalc)	
Elevatio	n :	Surf.Area	Perim.	Inc.Store	Cum.Store	Wet.Area	
(fee	t)	(sq-ft)	(feet)	(cubic-feet)	(cubic-feet)	(sq-ft)	
1,431.5	0	0	0.0	0	0	0	
1,432.0	0	1,190	146.0	198	198	1,697	
1,432.5	0	3,534	368.0	1,129	1,327	10,778	
1,433.0	0	5,795	497.0	2,309	3,637	19,660	
1,433.5		10,362	837.0	3,984	7,621	55,755	
1,434.0		16,931	975.0	6,756	14,377	75,659	
1,434.60		27,412	1,352.0	13,177	27,555	145,474	
1,435.00		30,000	1,500.0	11,479	39,033	179,068	
Device	Routing	Ir	vert Outl	et Devices			
#1	Primary			" Round Culvert			
	L= 44.0' RCP, square edge headwall, Ke= 0.500						
	Inlet / Outlet Invert= 1,431.83' / 1,431.18' S= 0.0148 '/' Cc= 0.						= 0.900
			n= 0	n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf			
				-			

**Primary OutFlow** Max=9.09 cfs @ 12.74 hrs HW=1,433.72' (Free Discharge) **1=Culvert** (Inlet Controls 9.09 cfs @ 5.14 fps)



Pond 4.2C: 18" Culvert

# Summary for Pond 4.3C: 24" Culvert

Inflow Area = 25.466 ac, 5.08% Impervious, Inflow Depth = 1.34" for 100-Yr Storm event Inflow = 22.16 cfs @ 12.37 hrs, Volume= 2.846 af Outflow = 22.16 cfs @ 12.37 hrs, Volume= 2.846 af, Atten= 0%, Lag= 0.0 min Primary = 22.16 cfs @ 12.37 hrs, Volume= 2.846 af Routed to Link SP4 : Study Point 4 Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

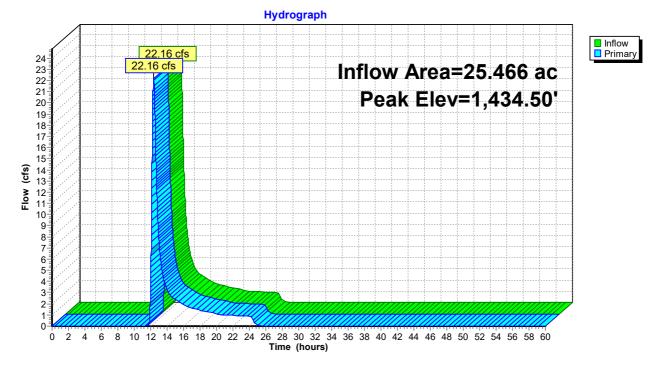
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,434.50' @ 12.37 hrs Flood Elev= 1,434.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,431.35'	24.0" Round Culvert
	·		L= 55.8' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 1,431.35' / 1,429.87' S= 0.0265 '/' Cc= 0.900
			n= 0.012, Flow Area= 3.14 sf
#2	Primary	1,434.81'	20.0' long x 30.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=22.15 cfs @ 12.37 hrs HW=1,434.49' (Free Discharge) -1=Culvert (Inlet Controls 22.15 cfs @ 7.05 fps)

-2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

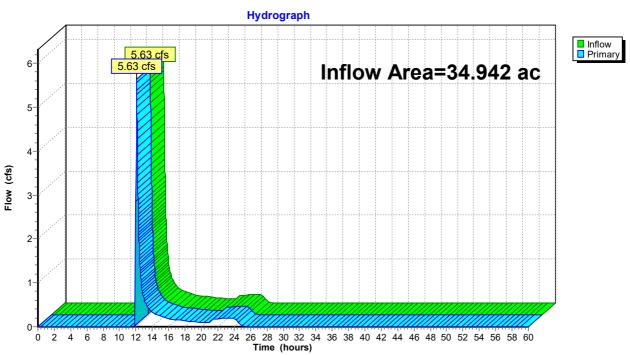
Pond 4.3C: 24" Culvert



## Summary for Link 1.1L:

Inflow Area = 34.942 ac, 0.04% Impervious, Inflow Depth = 0.12" for 100-Yr Storm event Inflow = 5.63 cfs @ 12.06 hrs, Volume= 0.349 af Primary = 5.63 cfs @ 12.06 hrs, Volume= 0.349 af, Atten= 0%, Lag= 0.0 min Routed to Link SP1 : Study Point 1

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

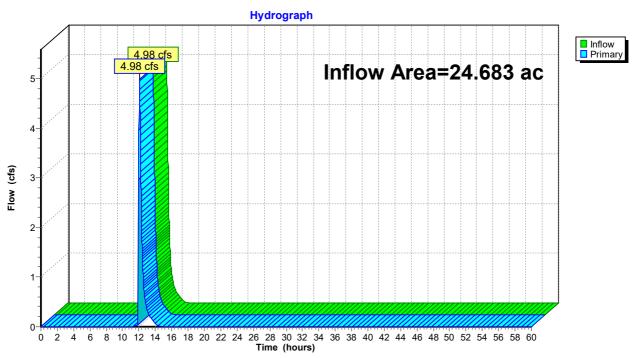


#### Link 1.1L:

## Summary for Link 1.2L:

Inflow Area =24.683 ac,0.06% Impervious,Inflow Depth =0.08"for100-Yr Storm eventInflow =4.98 cfs @12.06 hrs,Volume=0.162 afPrimary =4.98 cfs @12.06 hrs,Volume=0.162 af,Routed to Link SP1 : Study Point 10.162 af,Atten= 0%,Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

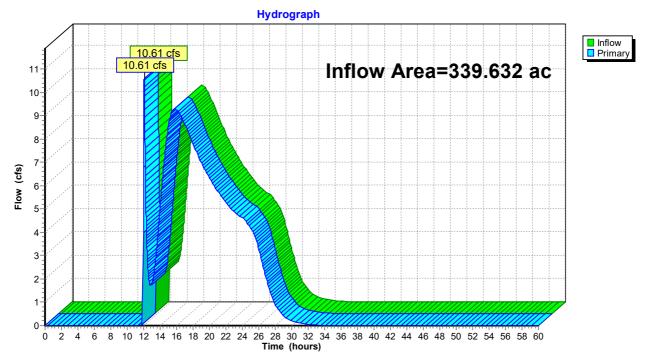


#### Link 1.2L:

## Summary for Link SP1: Study Point 1

Inflow Area =	=	339.632 ac,	0.01% Impervious, Inflow	Depth = 0.26"	for 100-Yr Storm event
Inflow =		10.61 cfs @	12.06 hrs, Volume=	7.384 af	
Primary =		10.61 cfs @	12.06 hrs, Volume=	7.384 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

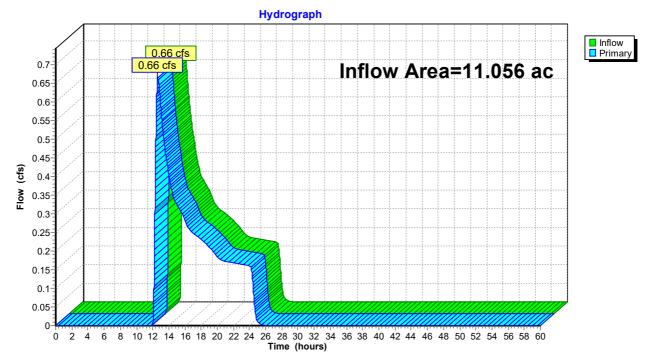


## Link SP1: Study Point 1

## Summary for Link SP2: Study Point 2

Inflow Area =	11.056 ac,	0.00% Impervious, Inflow E	Depth = 0.30" for 100-Yr Storm event
Inflow =	0.66 cfs @	12.61 hrs, Volume=	0.272 af
Primary =	0.66 cfs @	12.61 hrs, Volume=	0.272 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

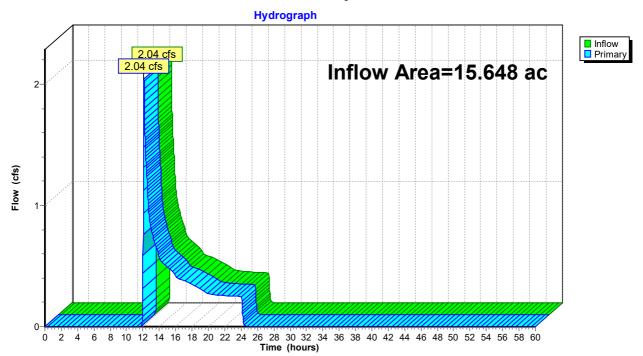


## Link SP2: Study Point 2

## Summary for Link SP3: Study Point 3

Inflow Area =	15.648 ac,	0.56% Impervious, Inflow D	epth = 0.34"	for 100-Yr Storm event
Inflow =	2.04 cfs @	12.13 hrs, Volume=	0.442 af	
Primary =	2.04 cfs @	12.13 hrs, Volume=	0.442 af, Atte	n= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

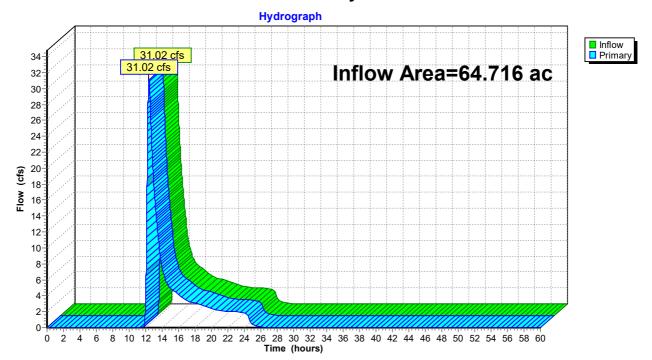


## Link SP3: Study Point 3

## Summary for Link SP4: Study Point 4

Inflow Area =	64.716 ac,	2.50% Impervious, I	Inflow Depth = 1.03"	for 100-Yr Storm event
Inflow =	31.02 cfs @	12.41 hrs, Volume=	5.546 af	
Primary =	31.02 cfs @	12.41 hrs, Volume=	5.546 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

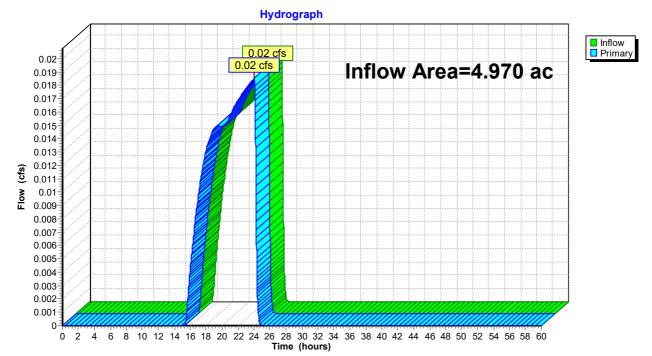


## Link SP4: Study Point 4

## Summary for Link SP5: Study Point 5

Inflow Area =	4.970 ac,	0.00% Impervious, Inflow E	Depth = 0.02" for 100-Yr Storm event
Inflow =	0.02 cfs @	24.02 hrs, Volume=	0.010 af
Primary =	0.02 cfs @	24.02 hrs, Volume=	0.010 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

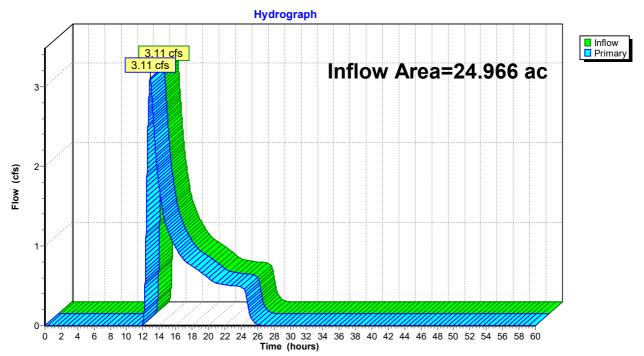


## Link SP5: Study Point 5

## Summary for Link SP6: Study Point 6

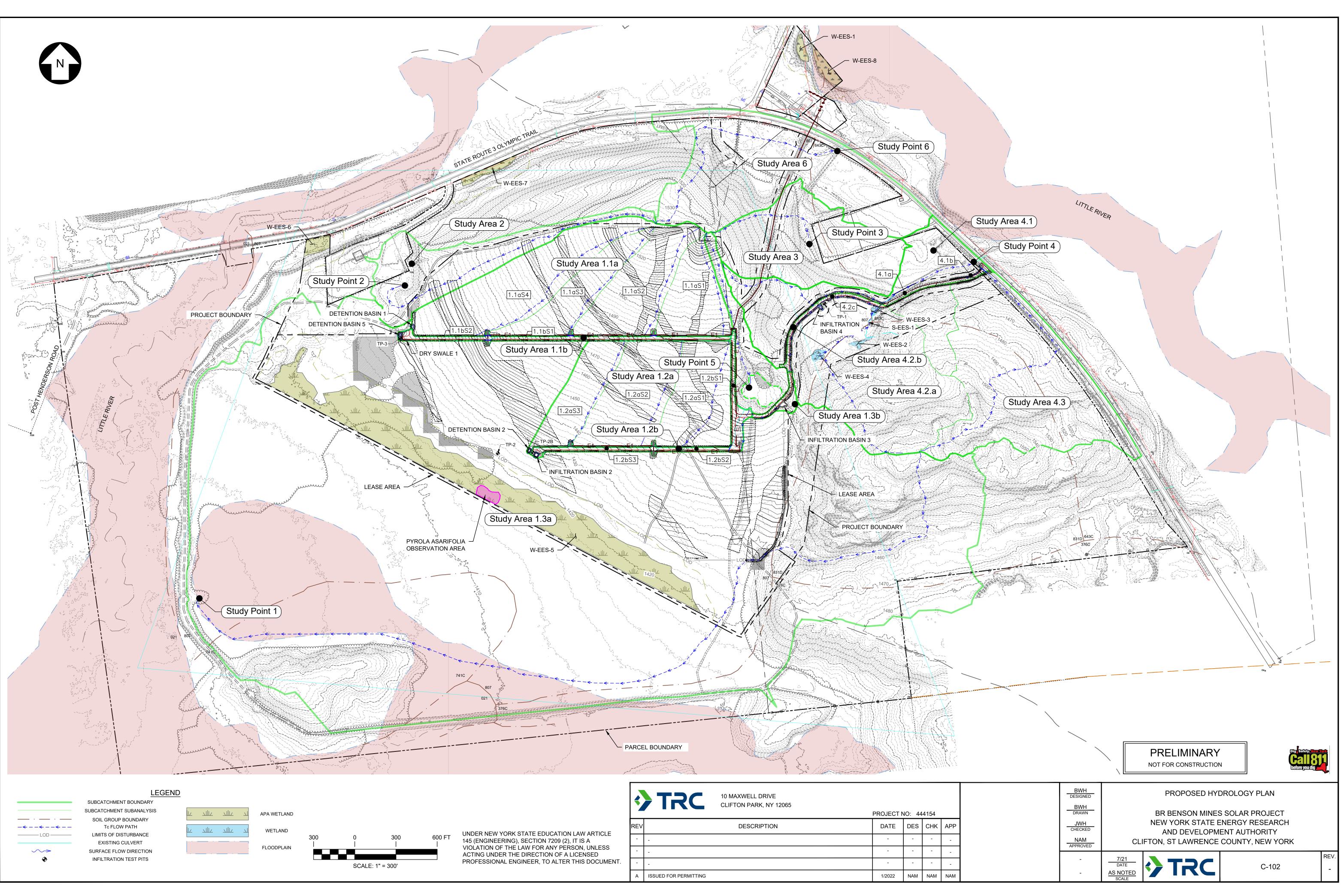
Inflow Area =	24.966 ac,	5.81% Impervious, Inflow E	Depth = 0.48"	for 100-Yr Storm event
Inflow =	3.11 cfs @	12.89 hrs, Volume=	1.002 af	
Primary =	3.11 cfs @	12.89 hrs, Volume=	1.002 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

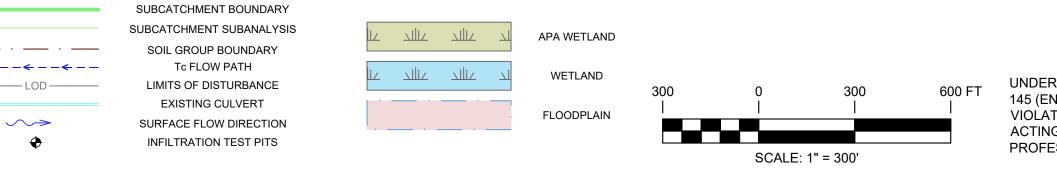


## Link SP6: Study Point 6

Appendix P – Post-Development Subcatchment Map

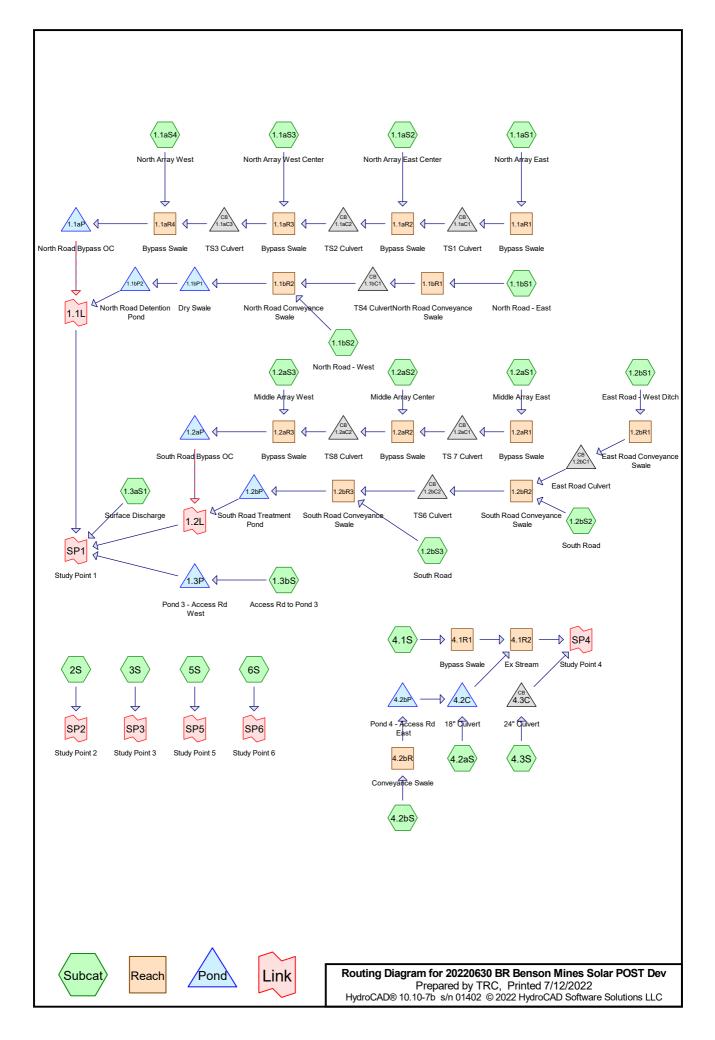






	CLIFTON PARK, NY 12005				
		PROJECT N	10: 44	4154	
v	DESCRIPTION	DATE	DES	СНК	APP
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	ISSUED FOR PERMITTING	1/2022	NAM	NAM	NAM

Appendix P – Post-Development HydroCAD Model



Event	#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
	1	WQv	Type II 24-hr		Default	24.00	1	1.00	2
	2	1-Yr Storm	Type II 24-hr		Default	24.00	1	1.98	2
	3	10-Yr Storm	Type II 24-hr		Default	24.00	1	3.28	2
4	4	100-Yr Storm	Type II 24-hr		Default	24.00	1	5.43	2

# **Rainfall Events Listing (selected events)**

# Area Listing (all nodes)

Area	CN	Description
(acres)		(subcatchment-numbers)
0.979	39	>75% Grass cover, Good, HSG A (2S, 3S)
4.721	61	>75% Grass cover, Good, HSG B (3S, 4.1S, 6S)
1.719	96	Gravel surface (1.2bS2, 1.3aS1, 4.1S, 4.2aS)
4.423	96	Gravel surface, HSG A (1.1bS1, 1.1bS2, 1.2bS1, 1.2bS3, 1.3bS, 2S, 4.2bS, 6S)
0.063	96	Gravel surface, HSG A, Redev (1.3bS)
232.790	30	Meadow, non-grazed, HSG A (1.1aS1, 1.1aS2, 1.1aS3, 1.1aS4, 1.1bS1, 1.1bS2,
		1.2aS1, 1.2aS2, 1.2aS3, 1.2bS1, 1.2bS2, 1.2bS3, 1.3aS1, 1.3bS, 2S, 3S, 4.1S,
		4.2aS, 4.2bS, 5S, 6S)
4.081	58	Meadow, non-grazed, HSG B (1.3aS1, 4.1S, 4.2aS, 4.3S, 6S)
25.274	71	Meadow, non-grazed, HSG C (1.3aS1)
3.158	98	Paved Roads & Rooftops (3S, 4.1S, 4.3S, 6S)
0.015	98	Roofs (1.2bS2, 1.2bS3)
0.014	98	Roofs, HSG A (1.1bS1, 1.1bS2)
81.857	30	Woods, Good, HSG A (1.3aS1, 2S, 3S, 4.1S, 4.2aS, 5S, 6S)
88.271	55	Woods, Good, HSG B (1.3aS1, 3S, 4.1S, 4.2aS, 4.3S, 6S)
13.623	70	Woods, Good, HSG C (1.3aS1)
460.988	40	TOTAL AREA

## Soil Listing (all nodes)

Area	Soil	Subcatchment
(acres)	Group	Numbers
320.126	HSG A	1.1aS1, 1.1aS2, 1.1aS3, 1.1aS4, 1.1bS1, 1.1bS2, 1.2aS1, 1.2aS2, 1.2aS3,
		1.2bS1, 1.2bS2, 1.2bS3, 1.3aS1, 1.3bS, 2S, 3S, 4.1S, 4.2aS, 4.2bS, 5S, 6S
97.073	HSG B	1.3aS1, 3S, 4.1S, 4.2aS, 4.3S, 6S
38.897	HSG C	1.3aS1
0.000	HSG D	
4.892	Other	1.2bS2, 1.2bS3, 1.3aS1, 3S, 4.1S, 4.2aS, 4.3S, 6S
460.988		TOTAL AREA

HSG-A	HSG-B	HSG-C	HSG-D	Other	Total	Ground	Subcatchment
(acres)	) (acres)	(acres)	(acres)	(acres)	(acres)	Cover	Numbers
0.979	4.721	0.000	0.000	0.000	5.700	>75% Grass cover, Good	2S, 3S,
							4.1S, 6S
4.486	0.000	0.000	0.000	1.719	6.205	Gravel surface	1.1bS1,
							1.1bS2,
							1.2bS1,
							1.2bS2,
							1.2bS3,
							1.3aS1,
							1.3bS,
							2S, 4.1S,
							4.2aS,
							4.2bS, 6S
232.790	4.081	25.274	0.000	0.000	262.145	Meadow, non-grazed	1.1aS1,
							1.1aS2,
							1.1aS3,
							1.1aS4,
							1.1bS1, 1.1bS2,
							1.1032, 1.2aS1,
							1.2aS1, 1.2aS2,
							1.2aS3,
							1.2bS1,
							1.2bS2,
							1.2bS3,
							1.3aS1,
							1.3bS,
							2S, 3S,
							4.1S,
							4.2aS,
							4.2bS,
							4.3S, 5S,
							6S
0.000	0.000	0.000	0.000	3.158	3.158	Paved Roads & Rooftops	
0.044	0.000	0.000	0.000	0.045		<b>D</b> (	4.3S, 6S
0.014	0.000	0.000	0.000	0.015	0.029	Roofs	1.1bS1,
							1.1bS2, 1.2bS2,
							1.2bS2, 1.2bS3
81.857	88.271	13.623	0.000	0.000	183.751	Woods, Good	1.2033 1.3aS1,
01.007	00.271	13.023	0.000	0.000	103.751	Woods, Good	2S, 3S,
							4.1S,
							4.13, 4.2aS,
							4.3S, 5S,
							6S
320.126	97.073	38.897	0.000	4.892	460.988	TOTAL AREA	

# Ground Covers (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	1.1aC1	1,487.56	1,486.80	47.0	0.0162	0.012	36.3	22.5	0.0
2	1.1aC2	1,470.80	1,469.57	47.0	0.0262	0.012	48.0	24.0	0.0
3	1.1aC3	1,449.55	1,447.64	47.2	0.0405	0.012	60.0	24.0	0.0
4	1.1bC1	1,449.50	1,447.27	45.9	0.0486	0.012	0.0	18.0	0.0
5	1.2aC1	1,444.22	1,443.21	47.0	0.0215	0.012	36.0	24.0	0.0
6	1.2aC2	1,431.65	1,431.11	47.5	0.0114	0.012	60.0	24.0	0.0
7	1.2bC1	1,454.39	1,453.67	41.6	0.0173	0.012	0.0	15.0	0.0
8	1.2bC2	1,443.51	1,442.84	44.3	0.0151	0.012	0.0	18.0	0.0
9	4.2C	1,431.83	1,431.18	44.0	0.0148	0.012	0.0	18.0	0.0
10	4.3C	1,431.35	1,429.87	55.8	0.0265	0.012	0.0	24.0	0.0

# Pipe Listing (all nodes)

#### Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 1.1aS1: North Array East	Runoff Area=5.874 ac 0.00% Impervious Runoff Depth=0.00"
	Flow Length=788' Tc=18.8 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1aS2: North Array East	Runoff Area=8.467 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=931' Tc=21.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1aS3: North Array West F	Runoff Area=5.792 ac 0.00% Impervious Runoff Depth=0.00" low Length=1,031' Tc=19.7 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1aS4: North Array West F	Runoff Area=12.825 ac 0.00% Impervious Runoff Depth=0.00" low Length=1,562' Tc=26.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1bS1: North Road - East	Runoff Area=1.333 ac 0.53% Impervious Runoff Depth=0.01" Tc=6.0 min CN=71 Runoff=0.00 cfs 0.001 af
Subcatchment 1.1bS2: North Road - West	t Runoff Area=0.651 ac 1.08% Impervious Runoff Depth=0.00" Tc=6.0 min CN=68 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2aS1: Middle Array East	Runoff Area=7.876 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=865' Tc=19.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2aS2: Middle Array Center	<b>er</b> Runoff Area=8.911 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=825' Tc=18.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2aS3: Middle Array West	Runoff Area=5.500 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=882' Tc=18.5 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2bS1: East Road - West	Runoff Area=0.727 ac 0.00% Impervious Runoff Depth=0.00" Tc=6.0 min CN=67 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2bS2: South Road	Runoff Area=0.854 ac 0.47% Impervious Runoff Depth=0.00" Flow Length=308' Tc=13.7 min CN=58 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2bS3: South Road	Runoff Area=0.815 ac 1.35% Impervious Runoff Depth=0.01" Tc=6.0 min CN=71 Runoff=0.00 cfs 0.001 af
	e Runoff Area=279.312 ac 0.00% Impervious Runoff Depth=0.00" w Length=6,771' Tc=201.7 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment 1.3bS: Access Rd to Pond	<b>3</b> Runoff Area=0.695 ac 0.00% Impervious Runoff Depth=0.00" Tc=6.0 min CN=51 Runoff=0.00 cfs 0.000 af
Subcatchment 2S:	Runoff Area=11.056 ac 0.00% Impervious Runoff Depth=0.00" low Length=2,342' Tc=36.0 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment 3S:	Runoff Area=15.648 ac 0.56% Impervious Runoff Depth=0.00" Flow Length=886' Tc=12.7 min CN=40 Runoff=0.00 cfs 0.000 af
Subcatchment 4.1S:	Runoff Area=11.663 ac 2.80% Impervious Runoff Depth=0.00" Flow Length=845' Tc=15.8 min CN=45 Runoff=0.00 cfs 0.000 af

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TIYUIOCAD® 10.10-75 S/11 01402 @ 2022 TIY	CIOCAD Soliwale Solutions LLC Page 0
Subcatchment 4.2aS:	Runoff Area=27.117 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=1,640' Tc=38.9 min CN=51 Runoff=0.00 cfs 0.000 af
Subcatchment 4.2bS:	Runoff Area=0.470 ac 0.00% Impervious Runoff Depth=0.01" Tc=6.0 min CN=72 Runoff=0.00 cfs 0.000 af
Subcatchment 4.3S:	Runoff Area=25.466 ac 5.08% Impervious Runoff Depth=0.00" Flow Length=2,280' Tc=36.5 min CN=57 Runoff=0.00 cfs 0.000 af
Subcatchment 5S:	Runoff Area=4.970 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=1,180' Tc=17.5 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 6S:	Runoff Area=24.966 ac 5.81% Impervious Runoff Depth=0.00" Flow Length=1,961' Tc=60.1 min CN=43 Runoff=0.00 cfs 0.000 af
Reach 1.1aR1: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af _=580.0' S=0.0108 '/' Capacity=56.37 cfs Outflow=0.00 cfs 0.000 af
Reach 1.1aR2: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af _=557.4' S=0.0284 '/' Capacity=91.27 cfs Outflow=0.00 cfs 0.000 af
Reach 1.1aR3: Bypass Swale n=0.035 L=	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af =557.5' S=0.0352 '/' Capacity=101.68 cfs Outflow=0.00 cfs 0.000 af
Reach 1.1aR4: Bypass Swale n=0.035 L=	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af =580.5' S=0.0362 '/' Capacity=103.04 cfs Outflow=0.00 cfs 0.000 af
	Avg. Flow Depth=0.00' Max Vel=0.47 fps Inflow=0.00 cfs 0.001 af ,733.0' S=0.0240 '/' Capacity=111.65 cfs Outflow=0.00 cfs 0.001 af
	Avg. Flow Depth=0.00' Max Vel=0.60 fps Inflow=0.00 cfs 0.001 af 593.3' S=0.0380 '/' Capacity=140.36 cfs Outflow=0.00 cfs 0.001 af
Reach 1.2aR1: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af =524.2' S=0.0188 '/' Capacity=74.30 cfs Outflow=0.00 cfs 0.000 af
Reach 1.2aR2: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af .=556.0' S=0.0204 '/' Capacity=77.47 cfs Outflow=0.00 cfs 0.000 af
Reach 1.2aR3: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af _=249.0' S=0.0153 '/' Capacity=81.84 cfs Outflow=0.00 cfs 0.000 af
	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af =731.4' S=0.0456 '/' Capacity=79.22 cfs Outflow=0.00 cfs 0.000 af
	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af =604.5' S=0.0177 '/' Capacity=95.76 cfs Outflow=0.00 cfs 0.000 af
	Avg. Flow Depth=0.00' Max Vel=0.42 fps Inflow=0.00 cfs 0.001 af =755.9' S=0.0187 '/' Capacity=98.64 cfs Outflow=0.00 cfs 0.001 af
Reach 4.1R1: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af _=570.0' S=0.0303 '/' Capacity=54.88 cfs Outflow=0.00 cfs 0.000 af
Reach 4.1R2: Ex Stream n=0.035 L=	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af 740.0' S=0.0099 '/' Capacity=588.81 cfs Outflow=0.00 cfs 0.000 af

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Reach 4.2bR: Conveyance Swale         Avg. Flow Depth=0.00'         Max Vel=0.53 fps         Inflow=0.00 cfs         0.000 af           n=0.035         L=565.0'         S=0.0432 '/'         Capacity=77.09 cfs         Outflow=0.00 cfs         0.000 af
Pond 1.1aC1: TS1 Culvert         Peak Elev=1,487.56'         Inflow=0.00 cfs         0.000 af           36.3" x 22.5", R=18.8"/51.0"         Pipe Arch Culvert         n=0.012         L=47.0'         S=0.0162 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.1aC2: TS2 Culvert         Peak Elev=1,470.80'         Inflow=0.00 cfs         0.000 af           48.0" x 24.0"         Box Culvert         n=0.012         L=47.0'         S=0.0262 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.1aC3: TS3 Culvert         Peak Elev=1,449.55'         Inflow=0.00 cfs         0.000 af           60.0" x 24.0"         Box Culvert         n=0.012         L=47.2'         S=0.0405 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.1aP: North Road Bypass OC         Peak Elev=1,426.00' Storage=0.000 af Inflow=0.00 cfs 0.000 af Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Pond 1.1bC1: TS4 Culvert         Peak Elev=1,449.51'         Inflow=0.00 cfs         0.001 af           18.0"         Round Culvert         n=0.012         L=45.9'         S=0.0486 '/'         Outflow=0.00 cfs         0.001 af
Pond 1.1bP1: Dry Swale         Peak Elev=1,425.32' Storage=17 cf         Inflow=0.00 cfs         0.001 af           Discarded=0.00 cfs         0.001 af         Primary=0.00 cfs         0.000 af         Outflow=0.00 cfs         0.001 af
Pond 1.1bP2: North Road Detention Pond Peak Elev=1,421.50' Storage=0.000 af Inflow=0.00 cfs 0.000 af Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Pond 1.2aC1: TS 7 Culvert         Peak Elev=1,444.22'         Inflow=0.00 cfs         0.000 af           36.0" x 24.0"         Box Culvert         n=0.012         L=47.0'         S=0.0215 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.2aC2: TS8 Culvert         Peak Elev=1,431.65'         Inflow=0.00 cfs         0.000 af           60.0" x 24.0"         Box Culvert         n=0.012         L=47.5'         S=0.0114 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.2aP: South Road Bypass OC       Peak Elev=1,424.00' Storage=0.000 af Inflow=0.00 cfs 0.000 af Discarded=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Pond 1.2bC1: East Road Culvert         Peak Elev=1,454.39'         Inflow=0.00 cfs         0.000 af           15.0" Round Culvert n=0.012         L=41.6'         S=0.0173 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.2bC2: TS6 Culvert         Peak Elev=1,443.51'         Inflow=0.00 cfs         0.000 af           18.0"         Round Culvert         n=0.012         L=44.3'         S=0.0151 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.2bP: South Road Treatment Pond         Peak Elev=1,424.00'         Storage=0.000 af         Inflow=0.00 cfs         0.001 af           Discarded=0.00 cfs         0.001 af         Primary=0.00 cfs         0.000 af         Outflow=0.00 cfs         0.001 af
Pond 1.3P: Pond 3 - Access Rd West         Peak Elev=1,456.00' Storage=0 cf         Inflow=0.00 cfs         0.000 af           Discarded=0.00 cfs         0.000 af         Primary=0.00 cfs         0.000 af         Outflow=0.00 cfs         0.000 af
Pond 4.2bP: Pond 4 - Access Rd East         Peak Elev=1,445.50' Storage=0 cf         Inflow=0.00 cfs         0.000 af           Discarded=0.00 cfs         0.000 af         Primary=0.00 cfs         0.000 af         Outflow=0.00 cfs         0.000 af
Pond 4.2C: 18" Culvert         Peak Elev=1,431.50' Storage=0 cf Inflow=0.00 cfs 0.000 af 18.0" Round Culvert n=0.012 L=44.0' S=0.0148 '/' Outflow=0.00 cfs 0.000 af           Peak Lev=1,431.50' Storage=0 cf Inflow=0.00 cfs 0.000 af 18.0" Round Culvert n=0.012 L=44.0' S=0.0148 '/' Outflow=0.00 cfs 0.000 af
Pond 4.3C: 24" Culvert         Peak Elev=1,431.35'         Inflow=0.00 cfs         0.000 af           Outflow=0.00 cfs         0.000 af         0.000 af         0.000 af

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Link 1.1L:	Inflow=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af
Link 1.2L:	Inflow=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af
Link SP1: Study Point 1	Inflow=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af
Link SP2: Study Point 2	Inflow=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af
Link SP3: Study Point 3	Inflow=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af
Link SP4: Study Point 4	Inflow=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af
Link SP5: Study Point 5	Inflow=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af
Link SP6: Study Point 6	Inflow=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af
Total Runoff Area = 460.988 ac Runoff Volume = 0.0	002 af Average Runoff Depth = 0.00"

Total Runoff Area = 460.988 acRunoff Volume = 0.002 afAverage Runoff Depth = 0.00"99.31% Pervious = 457.801 ac0.69% Impervious = 3.187 ac

## Summary for Subcatchment 1.1aS1: North Array East

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

Area	(ac) C	N Des	cription					
5	.874 3	30 Mea	dow, non-	grazed, HS	G A			
5	.874	100.	00% Pervi	ous Area				
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
11.7	100	0.0499	0.14		Sheet Flow,			
7.1	7.1       688       0.0526       1.61       Grass: Dense n= 0.240 P2= 2.31"         Shallow Concentrated Flow, Short Grass Pasture       Kv= 7.0 fps							
18.8	788	Total						
			0					
			Subcat		I.1aS1: North Array East			
				Hydrog	graph			
Flow (cfs)					Type II 24-hr WQv Rainfall=1.00" Runoff Area=5.874 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=788' Tc=18.8 min CN=30			

5 28 30 32 34 Time (hours)

## Summary for Subcatchment 1.1aS2: North Array East Center

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR2 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

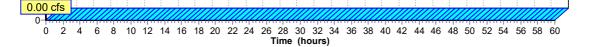
Area	(ac) C	N Des	cription								
8	8.467 30 Meadow, non-grazed, HSG A										
8	8.467 100.00% Pervious Area										
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description						
11.9	100	0.0476	0.14		Sheet Flow,						
9.2	831	0.0463	1.51		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps						
21.1	931	Total									
	Subcatchment 1.1aS2: North Array East Center										
				Hydrog	graph						
1 - -					Type II 24-hr WQv Rainfall=1.00" Runoff Area=8.467 ac Runoff Volume=0.000 af						

Runoff Depth=0.00"

Flow Length=931'

Tc=21.1 min

**CN=30** 



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(cfs)

Flow

## Summary for Subcatchment 1.1aS3: North Array West Center

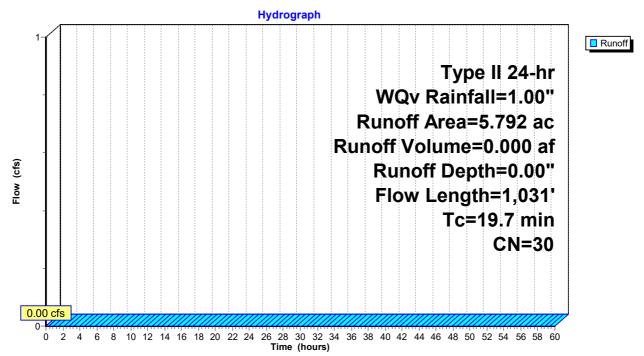
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR3 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

	Area	(ac) C	N Dese	cription					
	5.	792 3	80 Mea	dow, non-g	grazed, HS	GA			
5.792 100.00% Pervious Area									
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
-	10.7	100	0.0618	0.16		Sheet Flow,			
	9.0	931	0.0601	1.72		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps			
	40.7	4 004	Tatal			•			

19.7 1,031 Total

## Subcatchment 1.1aS3: North Array West Center

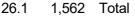


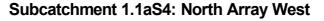
## Summary for Subcatchment 1.1aS4: North Array West

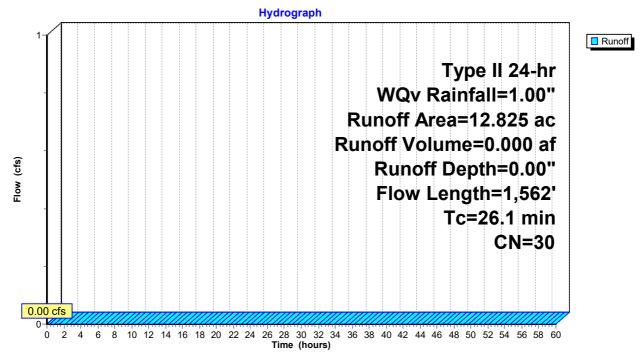
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR4 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

_	Area	(ac) C	N Dese	cription					
	12.	825 3	30 Mea	dow, non-g	grazed, HS	GA			
12.825 100.00% Pervious Area									
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
-	11.1	100	0.0560	0.15		Sheet Flow,			
	15.0	1,462	0.0540	1.63		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps			
	06.1	1 560	Tatal						







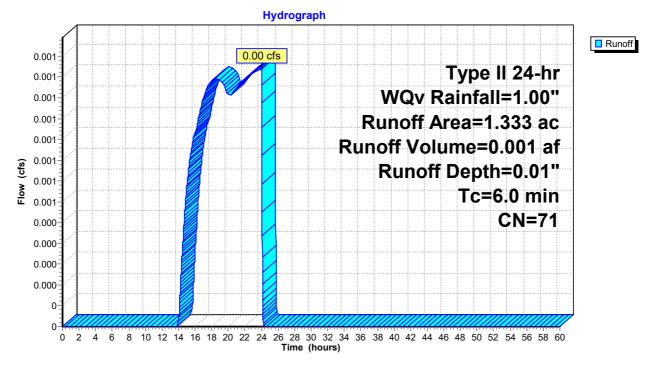
## Summary for Subcatchment 1.1bS1: North Road - East

Runoff = 0.00 cfs @ 24.01 hrs, Volume= 0.001 af, Depth= 0.01" Routed to Reach 1.1bR1 : North Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

Area	(ac)	CN	Desc	ription				
0.	507	30	Mea	dow, non-g	grazed, HS	G A		
0.	819	96	Grav	el surface	, HSG A			
0.	0.007 98 Roofs, HSG A							
1.	333	71	Weig	phted Aver	age			
1.	326		99.4	7% Pervio	us Area			
0.	0.007 0.53% Impervious Area							
т.	1	41-	01	Mala alter	<b>O</b> a m a site :	Decemination		
Tc	Leng		Slope	Velocity	Capacity	Description		
(min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)			
6.0						Direct Entry,		

## Subcatchment 1.1bS1: North Road - East



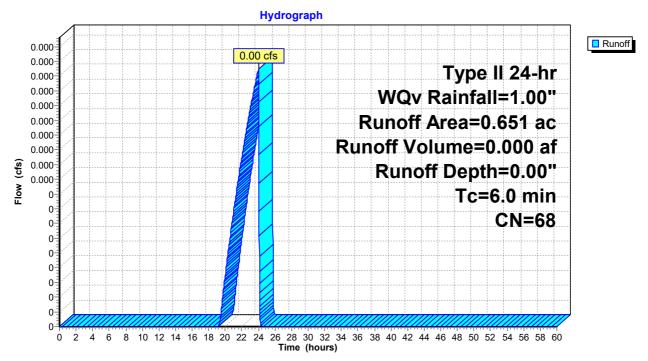
## Summary for Subcatchment 1.1bS2: North Road - West

Runoff = 0.00 cfs @ 24.01 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1bR2 : North Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

	Area	(ac)	CN	Desc	ription				
	0.	279	30	Mea	dow, non-g	grazed, HS	SG A		
	0.	365	96	Grav	el surface	, HSG A			
_	0.	0.007 98 Roofs, HSG A							
	0.	651	68	Weig	phted Aver	age			
	0.	644		98.9	2% Pervio	us Area			
0.007 1.08% Impervious Area									
	_								
	Тс	Leng		Slope	Velocity	Capacity	•		
_	<u>(min)</u>	(fee	et)	(ft/ft)	(ft/sec)	(cfs)			
	6.0						Direct Entry,		

## Subcatchment 1.1bS2: North Road - West



## Summary for Subcatchment 1.2aS1: Middle Array East

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.2aR1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

Area	(ac) C	N Desc	cription			
7	.876 3	80 Mea	dow, non-	grazed, HS	G A	
7	.876	100.	00% Pervi	ous Area		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	
10.6	100	0.0628	0.16		Sheet Flow,	
8.5	765	0.0459	1.50		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps	
19.1	865	Total				
Flow (cfs)			Subcate	chment 1	2aS1: Middle Array East graph Type II 24-hr WQv Rainfall=1.00" Runoff Area=7.876 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=865' Tc=19.1 min	Runoff
-					CN=30	

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

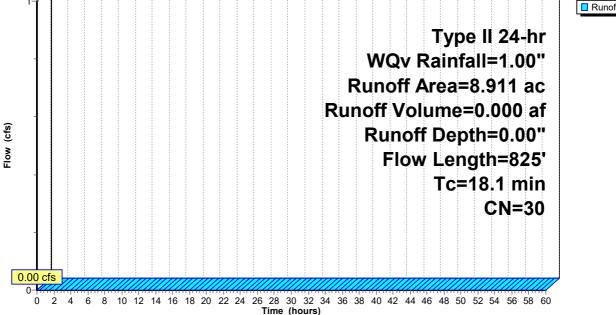
0.00

#### Summary for Subcatchment 1.2aS2: Middle Array Center

0.000 af, Depth= 0.00" Runoff = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.2aR2 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

Area	(ac) C	N Dese	cription						
8.	.911 3	80 Mea	dow, non-g	grazed, HS	GA				
8.	.911	100.	00% Pervi	ous Area					
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
10.8	100	0.0607	0.15		Sheet Flow,				
7.3	725	0.0559	1.66		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
18.1	825	Total							
Subcatchment 1.2aS2: Middle Array Center Hydrograph									



**CN=30** 

## Summary for Subcatchment 1.2aS3: Middle Array West

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.2aR3 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

Area	(ac) C	N Des	cription								
5	5.500 30 Meadow, non-grazed, HSG A										
5	.500	100.	00% Pervi	ous Area							
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description						
10.4	100	0.0660	0.16		Sheet Flow,						
8.1	782	0.0529	1.61		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps						
18.5 882 Total											
- Flow (cfs)			Subcate	chment 1. Hydrog	2aS3: Middle Array West graph Type II 24-hr WQv Rainfall=1.00" Runoff Area=5.500 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=882' Tc=18.5 min						

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

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0.00 cfs

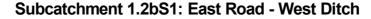
ò

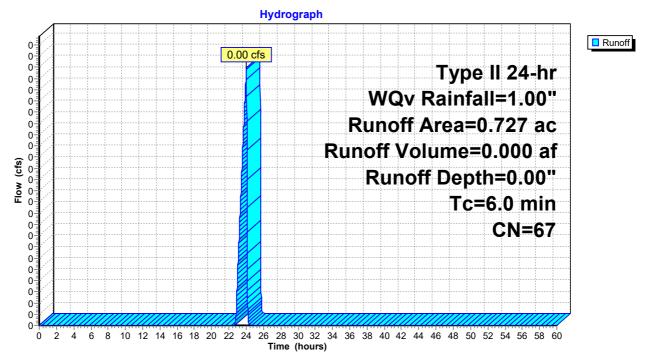
## Summary for Subcatchment 1.2bS1: East Road - West Ditch

Runoff = 0.00 cfs @ 24.02 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.2bR1 : East Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

Area	(ac)	ac) CN Description									
0.	410	96									
0.	0.317 30 Meadow, non-grazed, HSG A										
0.	0.727 67 Weighted Average										
0.	0.727 100.00% Pervious Area										
_			<u>_</u> .		•						
Tc	Leng	th	Slope	Velocity	Capacity	Description					
(min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)						
6.0						Direct Entry,					





## Summary for Subcatchment 1.2bS2: South Road

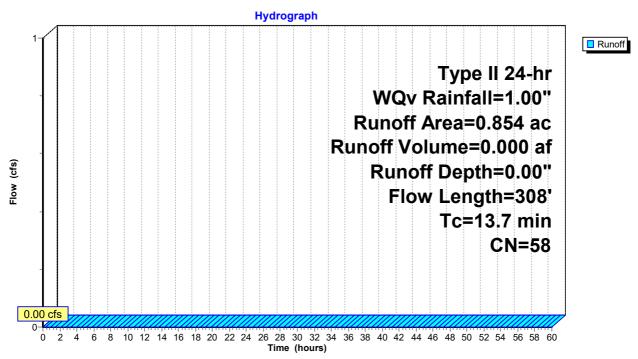
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.2bR2 : South Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

_	Area	(ac) C	N Dese	cription		
	0.	498 3	30 Mea	dow, non-g	grazed, HS	GA
*	0.	352 9	96 Grav	el surface		
*	0.	004	98 Root	fs		
_	0.	854	58 Wei	ghted Aver	ade	
	0.	850	•	3% Pervio	0	
	0.	004	0.47	% Impervi	ous Area	
	Тс	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	5.0 35 0		0.0516	0.12		Sheet Flow,
						Grass: Dense n= 0.240 P2= 2.31"
	0.4	25	0.0310	1.06		Sheet Flow,
						Smooth surfaces n= 0.011 P2= 2.31"
	5.9	40	0.0429	0.11		Sheet Flow,
						Grass: Dense n= 0.240 P2= 2.31"
	2.4	208	0.0442	1.47		Shallow Concentrated Flow,
_						Short Grass Pasture Kv= 7.0 fps
	40 7	000	<b>T</b> ( )			

13.7 308 Total

## Subcatchment 1.2bS2: South Road



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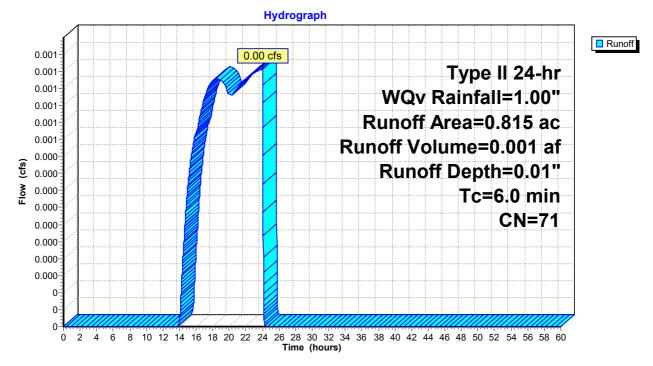
Summary for Subcatchment 1.2bS3: South Road

0.001 af, Depth= 0.01" Runoff = 0.00 cfs @ 24.01 hrs, Volume= Routed to Reach 1.2bR3 : South Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

	Area	(ac)	CN	Desc	ription						
	0.	313 30 Meadow, non-grazed, HSG A									
	0.	.491 96 Gravel surface, HSG A									
*	0.	011 98 Roofs									
	0.	815	71	Weig	hted Aver	age					
	0.	804		98.6	5% Pervio	us Area					
	0.	011		1.359	% Impervi	ous Area					
	Tc Length Slope Velocity Capacity (min) (feet) (ft/ft) (ft/sec) (cfs)						Description				
	6.0						Direct Entry,				

## Subcatchment 1.2bS3: South Road



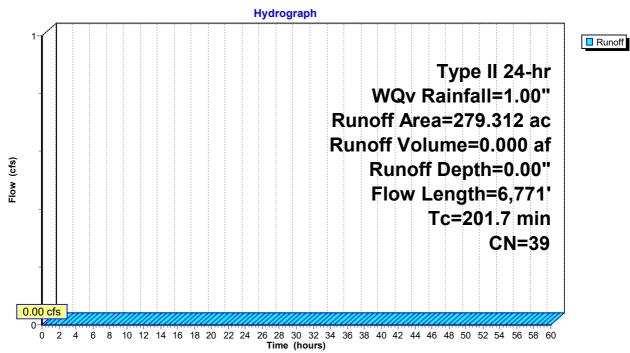
#### Summary for Subcatchment 1.3aS1: Surface Discharge

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP1 : Study Point 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

	Area	(ac) C	N Desc	cription						
	* 0.	754 9	96 Grav	/el surface						
	144.	649 3	30 Mea	Meadow, non-grazed, HSG A						
	0.	566 5	58 Mea	Meadow, non-grazed, HSG B						
				Meadow, non-grazed, HSG C						
				Woods, Good, HSG A						
				ods, Good,						
	13.	<u>623 7</u>	70 Woo	ods, Good,	HSG C					
	279.	312 3	39 Weig	ghted Aver	age					
	279.	312	100.	00% Pervi	ous Area					
	_									
	Tc	Length	Slope	Velocity	Capacity	Description				
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
	14.8	100	0.0764	0.11		Sheet Flow,				
						Woods: Light underbrush n= 0.400 P2= 2.31"				
	4.7	581	0.1683	2.05		Shallow Concentrated Flow,				
			0 00 4 4	0.0044 0.70		Woodland Kv= 5.0 fps				
	25.7 1,199 0		0.0241 0.78			Shallow Concentrated Flow,				
	0.8 189 (		400 00457 0.04	2.04	70.00	Woodland Kv= 5.0 fps				
			189 0.0157 3.84		76.82	Channel Flow, Rerouted Stream				
						Area= 20.0 sf Perim= 32.6' r= 0.61'				
	1510	4 6 4 6	0.0054	0.50		n= 0.035 Earth, dense weeds				
	154.9	4,646	0.0051	0.50		Shallow Concentrated Flow,				
	0.8	56	0.0566	1.19		Short Grass Pasture Kv= 7.0 fps				
	0.0	56	0.0566	1.19		Shallow Concentrated Flow,				
	004 -	0 77 1	<b>T</b> ( )			Woodland Kv= 5.0 fps				
	2017	6 771	Total							

201.7 6,771 Total



## Subcatchment 1.3aS1: Surface Discharge

#### Summary for Subcatchment 1.3bS: Access Rd to Pond 3

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Pond 1.3P : Pond 3 - Access Rd West

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

* C * C C	(ac) 9.473 9.063 9.159 9.695 9.695 Lengtl (feet		Mea Grav Grav Weig	vel surface vel surface ghted Ave 00% Perv			 /,			
				Subcato	hment 1.3	3bS: Acces	s Rd t	o Pond	3	
	1				Hydro	graph				1
0-		6 8	10 12	14 16 18 20		Run	unofi off V Runo	v Rainf Area= olume off Dep To	be II 24-hr fall=1.00" =0.695 ac =0.000 af oth=0.00" c=6.0 min CN=51	Runoff

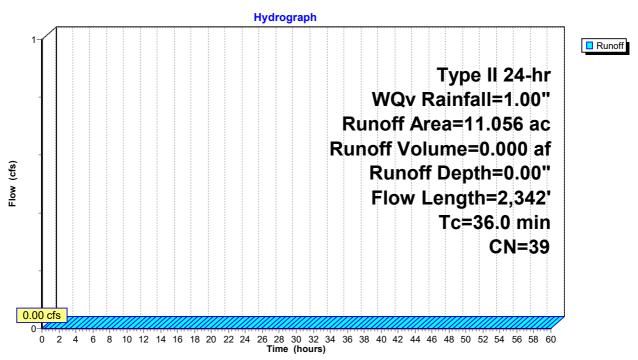
# Summary for Subcatchment 2S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP2 : Study Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

Area	(ac) C	N Desc	ription					
1.	417 9	6 Grav	el surface	, HSG A				
0.	.573 3	9 >75%	6 Grass co	over, Good	, HSG A			
6.	6.530 30 Meadow, non-grazed, HSG A							
2.	.536 3	0 Woo	ds, Good,	HSG A				
11.056 39 Weighted Average								
11.	.056	100.0	00% Pervi	ous Area				
Tc	Length	Slope	Velocity	Capacity	Description			
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
10.7	100	0.0624	0.16		Sheet Flow,			
					Grass: Dense n= 0.240 P2= 2.31"			
2.7	614	0.0535	3.72		Shallow Concentrated Flow,			
					Unpaved Kv= 16.1 fps			
12.1	1,184	0.0543	1.63		Shallow Concentrated Flow,			
					Short Grass Pasture Kv= 7.0 fps			
1.9	115	0.0407	1.01		Shallow Concentrated Flow,			
			4.00		Woodland Kv= 5.0 fps			
0.6	68	0.1443	1.90		Shallow Concentrated Flow,			
0.0	004	0.0440	0.54		Woodland Kv= 5.0 fps			
8.0	261	0.0118	0.54		Shallow Concentrated Flow,			
					Woodland Kv= 5.0 fps			
36.0	2,342	Total						

# Subcatchment 2S:



## Summary for Subcatchment 3S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP3 : Study Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

Area	(ac) C	N Desc	cription				
* 0.				& Rooftops			
				over, Good,			
				over, Good,			
				grazed, HS	GA		
			ds, Good, ds, Good,				
			ghted Aver				
	560 -	-	4% Pervio				
0.088 0.56% Impervious Area							
			•				
Тс	Length	Slope	Velocity	Capacity	Description		
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)			
5.4	52	0.0937	0.16		Sheet Flow,		
07	005	0 4007	0.00		Grass: Dense n= 0.240 P2= 2.31"		
3.7	625	0.1637	2.83		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps		
3.6	209	0.0384	0.98		Shallow Concentrated Flow,		
0.0	200	0.0004	0.00		Woodland Kv= 5.0 fps		
12.7	886	Total					
1-				Subca Hydrog	atchment 3S: graph Type II 24-hr WQv Rainfall=1.00"		
					Runoff Area=15.648 ac		
					Runoff Volume=0.000 af		
G I							
Flow (cfs)					Runoff Depth=0.00"		
Flow					Flow Length=886'		
					Tc=12.7 min		
					CN=40		
-							
0.00	cfs						
0-4	<del>/////////////////////////////////////</del>	8 10 12 <sup>-</sup>	14 16 18 20	22 24 26 28	30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60		
0	3				(hours)		

# Summary for Subcatchment 4.1S:

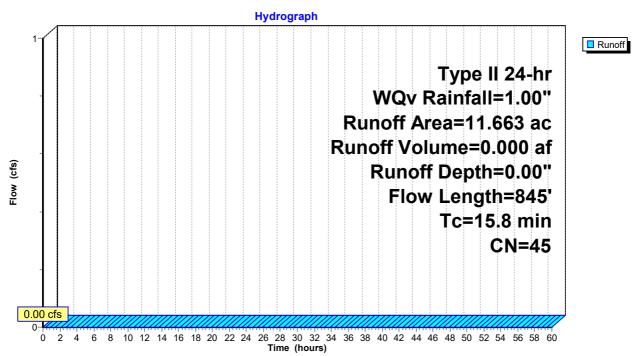
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 4.1R1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

	Area	(ac)	CN	Desc	cription							
*	0.	327	98	Pave	aved Roads & Rooftops							
*	0.	375	96	Grav	ravel surface							
	0.	165	61	>75%	6 Grass co	over, Good	, HSG B					
	2.	544	30			grazed, HS						
	0.	560	58			grazed, HS	GB					
	3.605 30 Woods, Good, HSG A											
*	4.	087	55	Woo	ds, Good,	HSG B						
	11.	663	45	Weig	ghted Aver	age						
		336		97.20	0% Pervio	us Area						
	0.327 2.80% Impervious Area											
	_		_			•						
	Tc	Length		lope	Velocity	Capacity	Description					
	(min)	(feet		(ft/ft)	(ft/sec)	(cfs)						
	8.5	100	0.0	0430	0.20		Sheet Flow,					
							Grass: Short n= 0.150 P2= 2.31"					
	2.6	360	0.1	1077	2.30		Shallow Concentrated Flow,					
							Short Grass Pasture Kv= 7.0 fps					
	4.7	385	o 0.0	0735	1.36		Shallow Concentrated Flow,					
	45.0						Woodland Kv= 5.0 fps					

15.8 845 Total

Subcatchment 4.1S:



## Summary for Subcatchment 4.2aS:

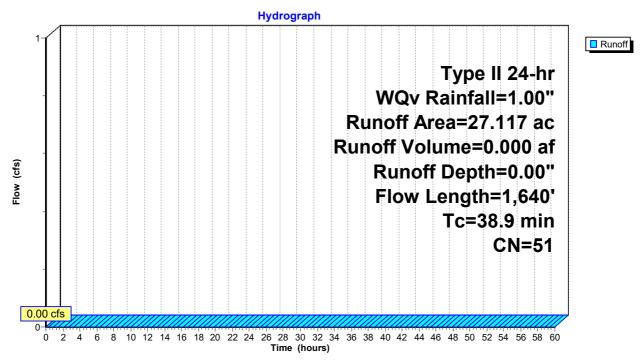
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Pond 4.2C : 18" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

<ul> <li>* 0.238 96 Gravel surface</li> <li>4.086 30 Meadow, non-grazed, HSG A</li> <li>0.384 58 Meadow, non-grazed, HSG B</li> <li>0.977 30 Woods, Good, HSG A</li> </ul>						
0.384 58 Meadow, non-grazed, HSG B						
0.977 30 Woods, Good, HSG A	Meadow, non-grazed, HSG B					
21.432 55 Woods, Good, HSG B						
27.117 51 Weighted Average						
27.117 100.00% Pervious Area						
Tc Length Slope Velocity Capacity Description						
(min) (feet) (ft/ft) (ft/sec) (cfs)						
17.8 100 0.0480 0.09 Sheet Flow,						
Woods: Light underbrush n= 0.400 P2=	2= 2.31"					
8.0 878 0.1354 1.84 Shallow Concentrated Flow,						
Woodland Kv= 5.0 fps						
13.1         662         0.0144         0.84         Shallow Concentrated Flow,						
Short Grass Pasture Kv= 7.0 fps						

38.9 1,640 Total

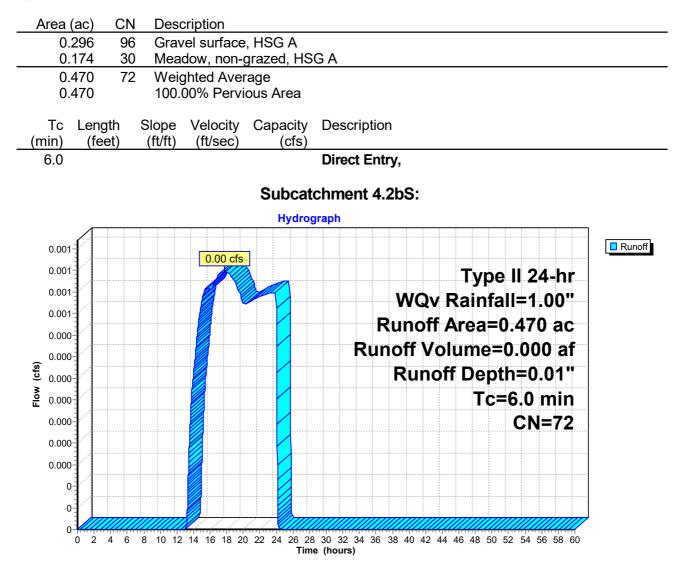
Subcatchment 4.2aS:



## Summary for Subcatchment 4.2bS:

Runoff = 0.00 cfs @ 17.70 hrs, Volume= 0.000 af, Depth= 0.01" Routed to Reach 4.2bR : Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"



# Summary for Subcatchment 4.3S:

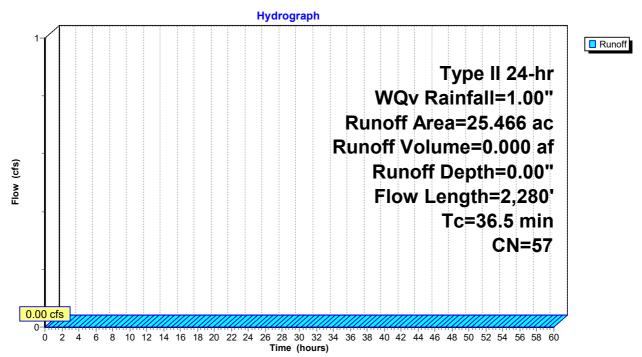
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Pond 4.3C : 24" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

	Area	(ac) C	N Desc	cription		
*	1.	293 9	8 Pave	ed Roads &	& Rooftops	
	1.	783 5			grazed, HS	GB
	22.			ds, Good,		
_	25.	466 5	57 Weid	ghted Aver	ade	
		173		2% Pervio		
		293		% Impervi		
		200	0.00	/•		
	Тс	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
_	15.9	100	0.0634	0.10		Sheet Flow,
				•••••		Woods: Light underbrush n= 0.400 P2= 2.31"
	17.8	1,368	0.0656	1.28		Shallow Concentrated Flow,
		.,				Woodland Kv= 5.0 fps
	0.1	38	0.3960	4.40		Shallow Concentrated Flow,
	5.1		2.2000			Short Grass Pasture Kv= 7.0 fps
	2.7	774	0.0281	4.70	109.09	Channel Flow,
	,		0.0201	1.10		Area= 23.2 sf Perim= 43.2' r= 0.54' n= 0.035

36.5 2,280 Total

#### Subcatchment 4.3S:



## Summary for Subcatchment 5S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP5 : Study Point 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

	(ac) C	IN DESC	cription					
				grazed, HS	GA			
			ds, Good,					
			ghted Ave					
4.	.970	100.	00% Pervi	ous Area				
Tc	Length	Slope	Velocity	Capacity	Description			
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	Decemption			
7.1	100	0.0675	0.24		Sheet Flow,			
					Grass: Short n= 0.150 P2= 2.31"			
8.5	801	0.0508	1.58		Shallow Concentrated Flow,			
4.0	047	0 4 5 4 5	0.70		Short Grass Pasture Kv= 7.0 fps			
1.3	217	0.1515	2.72		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps			
0.6	62	0.0697	1.85		Shallow Concentrated Flow,			
0.0	02	0.0007	1.00		Short Grass Pasture Kv= 7.0 fps			
17.5	1,180	Total						
				Subca	atchment 5S:			
				Hydrog	graph			
1 <b>-1</b>								
					Type II 24-hr			
-					Type II 24-hr WQv Rainfall=1.00"			
					Type II 24-hr			
					Type II 24-hr WQv Rainfall=1.00"			
cfs)					Type II 24-hr WQv Rainfall=1.00" Runoff Area=4.970 ac Runoff Volume=0.000 af			
wv (cfs)					Type II 24-hr WQv Rainfall=1.00" Runoff Area=4.970 ac Runoff Volume=0.000 af Runoff Depth=0.00"			
Flow (cfs)					Type II 24-hr WQv Rainfall=1.00" Runoff Area=4.970 ac Runoff Volume=0.000 af			
Flow (cfs)					Type II 24-hr WQv Rainfall=1.00" Runoff Area=4.970 ac Runoff Volume=0.000 af Runoff Depth=0.00"			
Flow (cfs)					Type II 24-hr WQv Rainfall=1.00" Runoff Area=4.970 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=1,180' Tc=17.5 min			
Flow (cfs)					Type II 24-hr WQv Rainfall=1.00" Runoff Area=4.970 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=1,180'			

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

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0.00 cfs

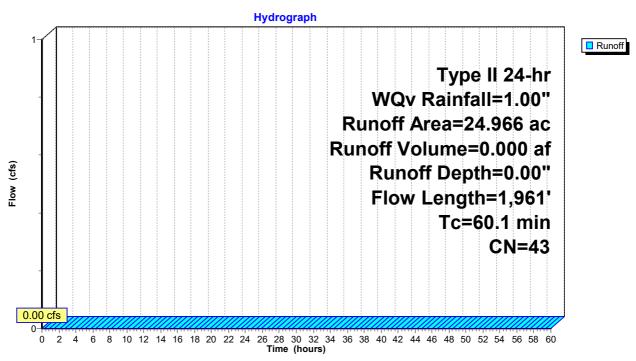
# Summary for Subcatchment 6S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP6 : Study Point 6

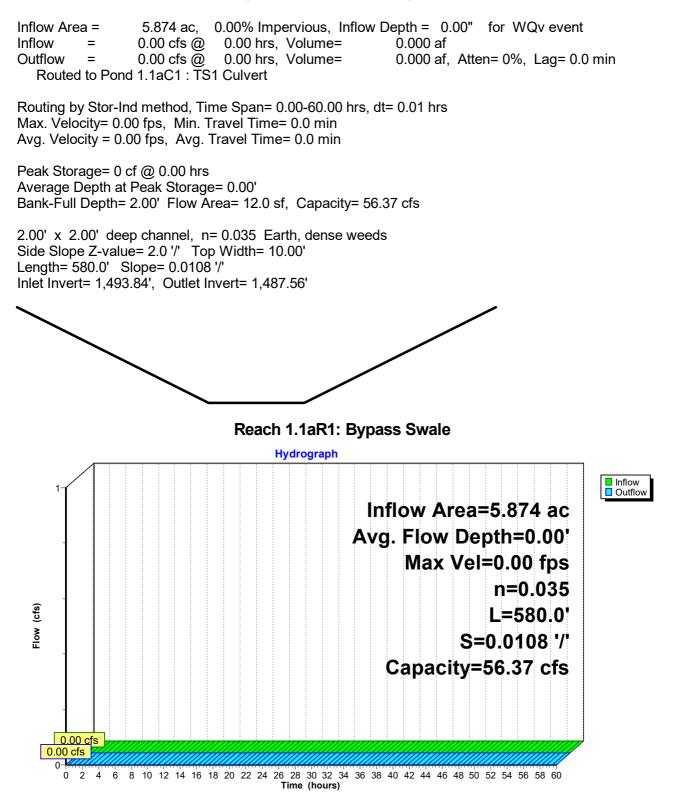
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr WQv Rainfall=1.00"

	Area	(ac) (	CN Desc	cription		
*	1.	450	98 Pave	ed Roads &	& Rooftops	
	0.	466	96 Grav	el surface	, HSG A	
	2.	545	61 >759	% Grass co	over, Good	, HSG B
	7.	511	30 Mea	dow, non-g	grazed, HS	IG A
	0.	788	58 Mea	dow, non-	grazed, HS	G B
	7.	940	30 Woo	ds, Good,	HSG A	
_	4.	266	55 Woo	ds, Good,	HSG B	
	24.	966	43 Wei	ghted Avei	rage	
		516	94.1	9% Pervio	us Area	
	1.450			% Impervi	ous Area	
	_					
	Tc	Length		Velocity	Capacity	Description
_	(min)	(feet)		(ft/sec)	(cfs)	
	10.1	100	0.0278	0.16		Sheet Flow,
						Grass: Short n= 0.150 P2= 2.31"
	3.2	313	0.0528	1.61		Shallow Concentrated Flow,
	~ ~	400	0 4740	0.00		Short Grass Pasture Kv= 7.0 fps
	3.9	486	0.1742	2.09		Shallow Concentrated Flow,
	40.0	1 000	0.0000	0.44		Woodland Kv= 5.0 fps
	42.9	1,062	0.0068	0.41		Shallow Concentrated Flow,
_	00 (	1.001	<b>.</b>			Woodland Kv= 5.0 fps
	60.1	1,961	Total			

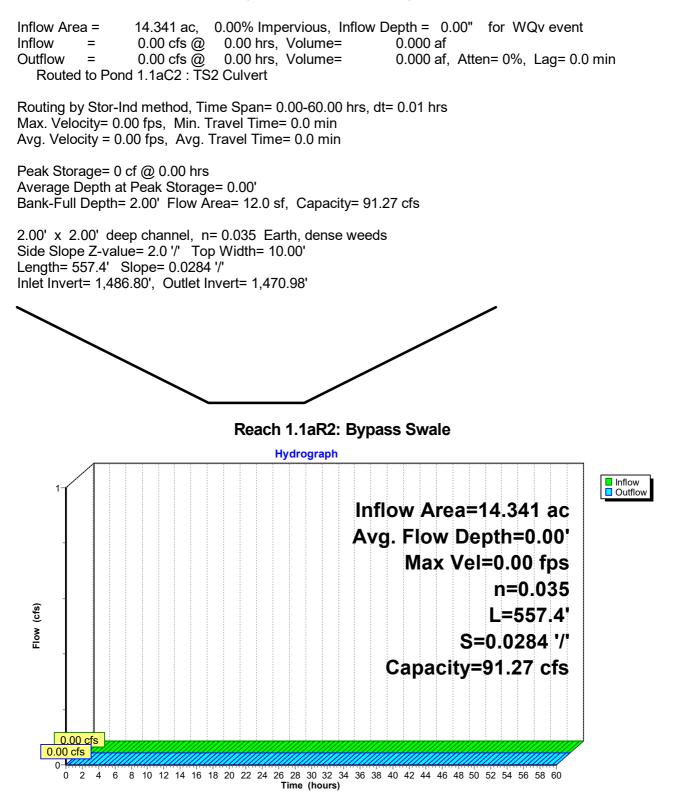
# Subcatchment 6S:



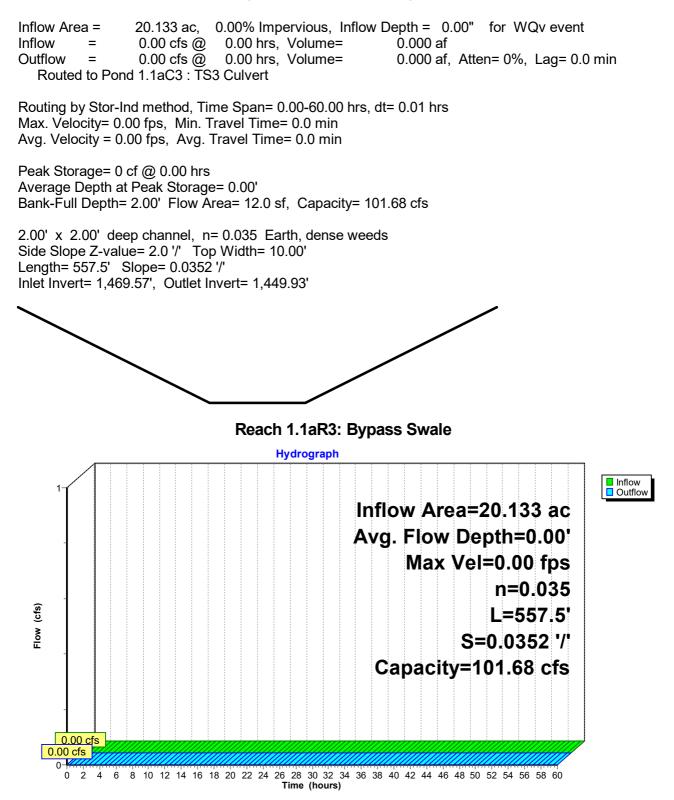
# Summary for Reach 1.1aR1: Bypass Swale



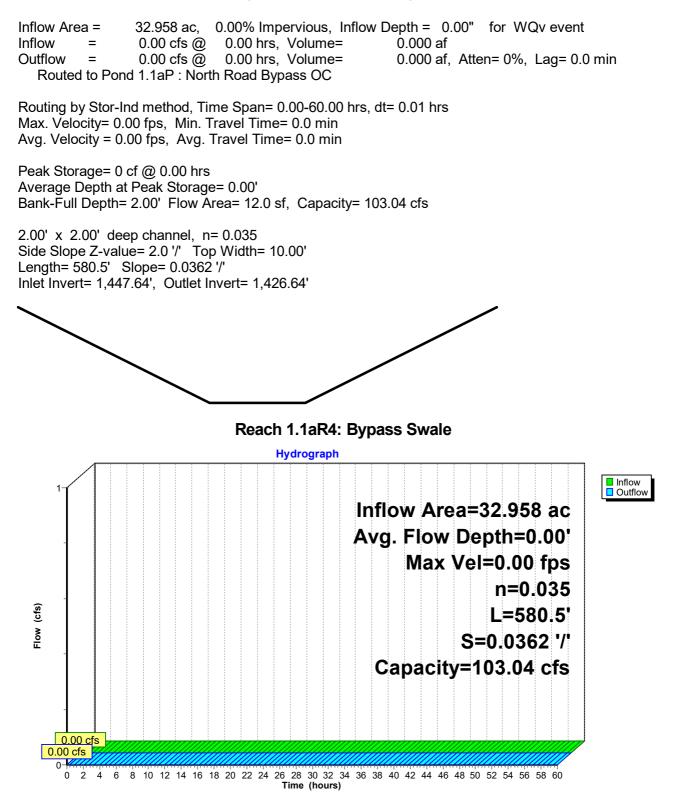
# Summary for Reach 1.1aR2: Bypass Swale



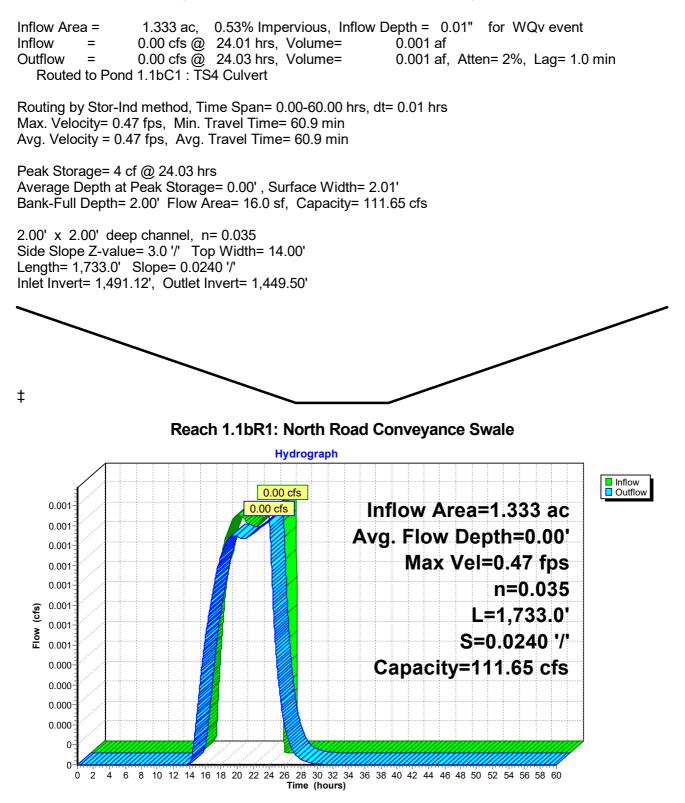
## Summary for Reach 1.1aR3: Bypass Swale



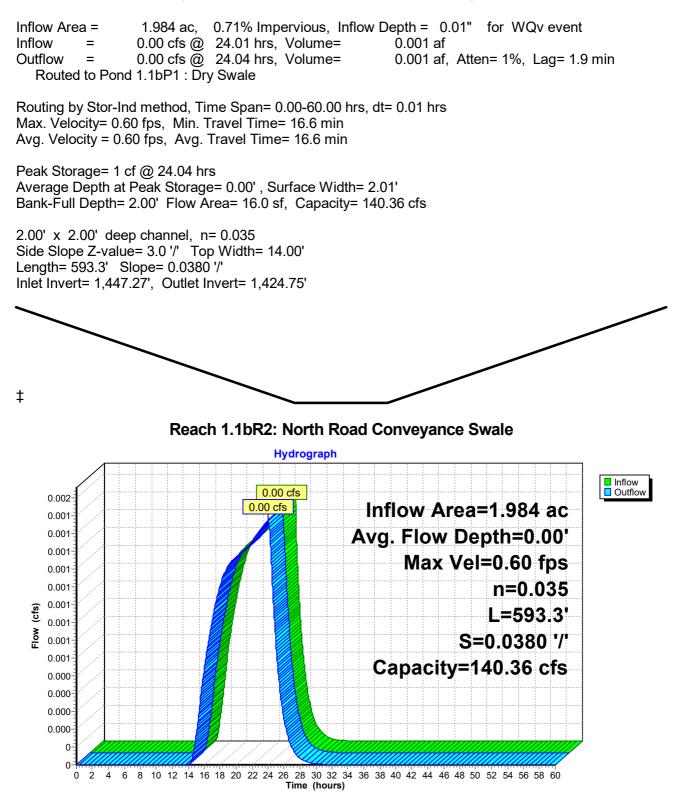
## Summary for Reach 1.1aR4: Bypass Swale



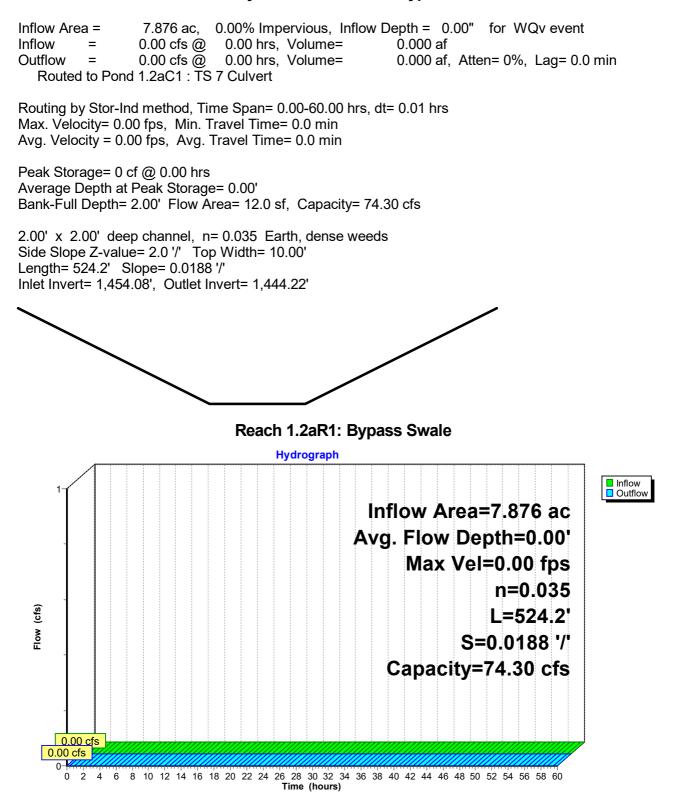
#### Summary for Reach 1.1bR1: North Road Conveyance Swale



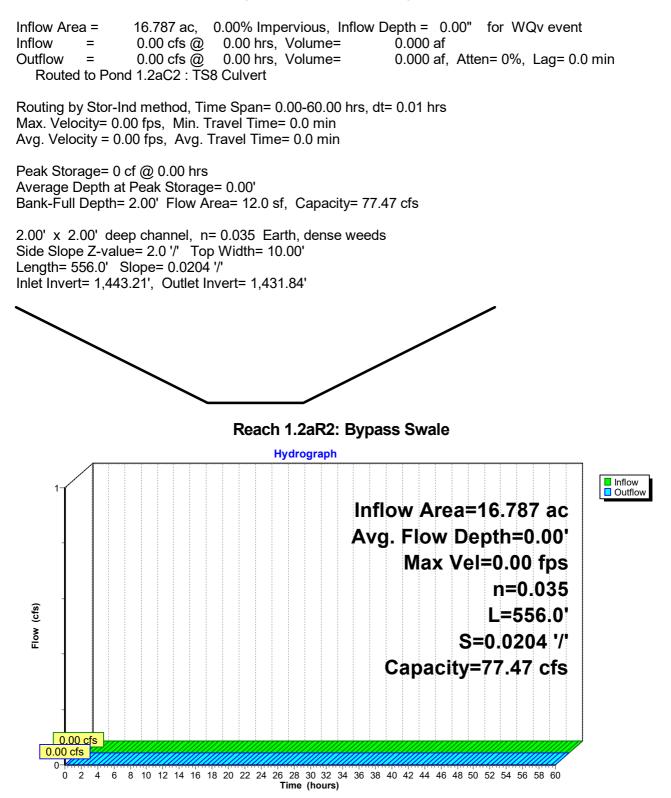
#### Summary for Reach 1.1bR2: North Road Conveyance Swale



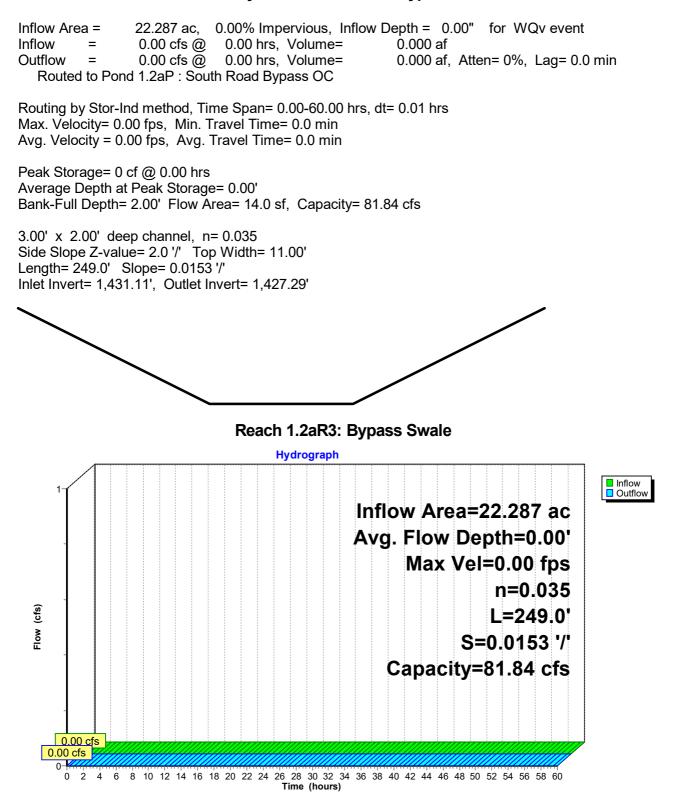
# Summary for Reach 1.2aR1: Bypass Swale

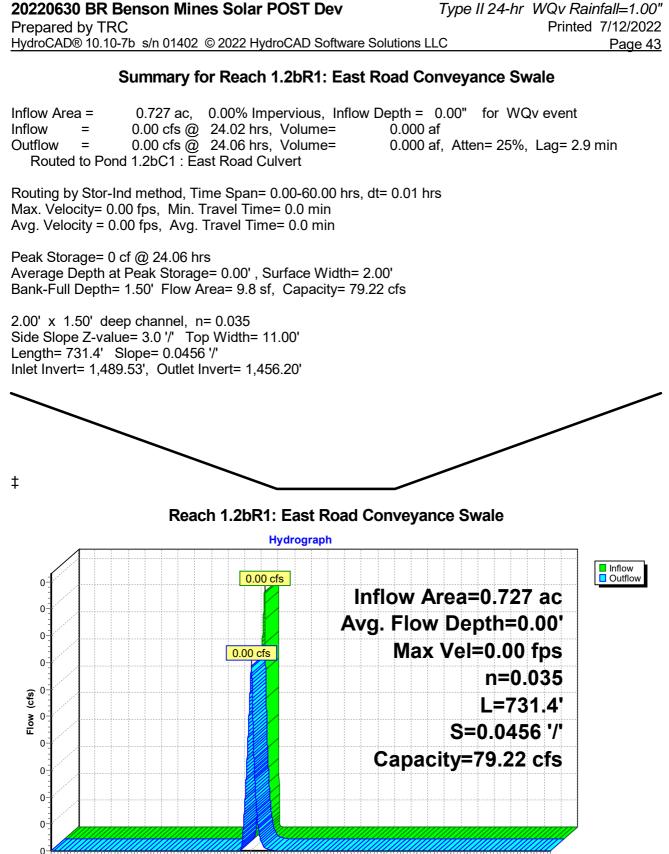


# Summary for Reach 1.2aR2: Bypass Swale



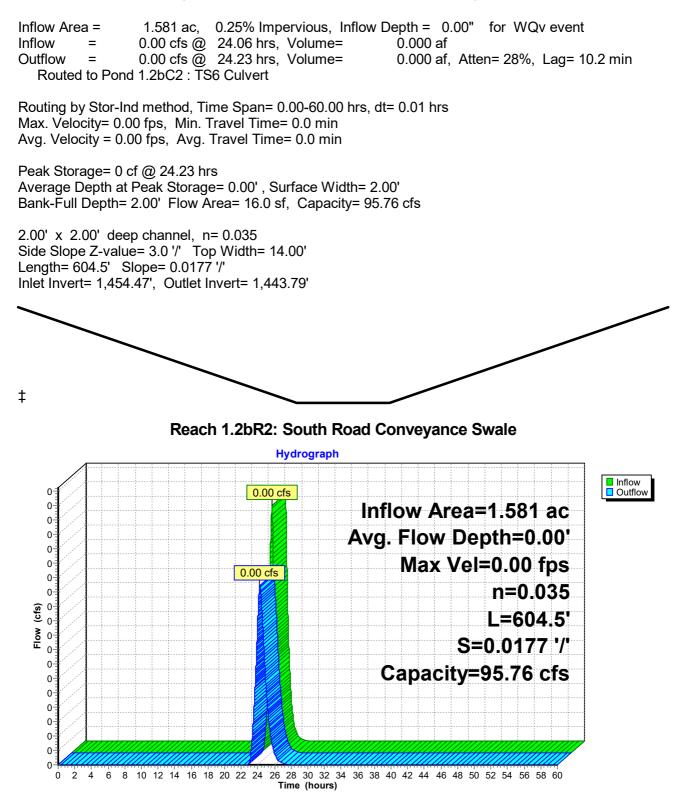
#### Summary for Reach 1.2aR3: Bypass Swale



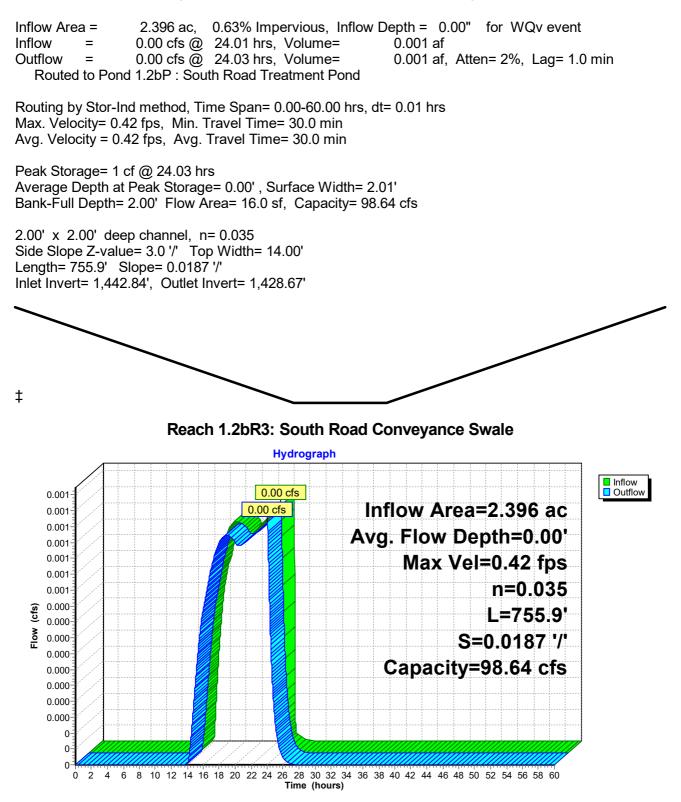


0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

#### Summary for Reach 1.2bR2: South Road Conveyance Swale



#### Summary for Reach 1.2bR3: South Road Conveyance Swale

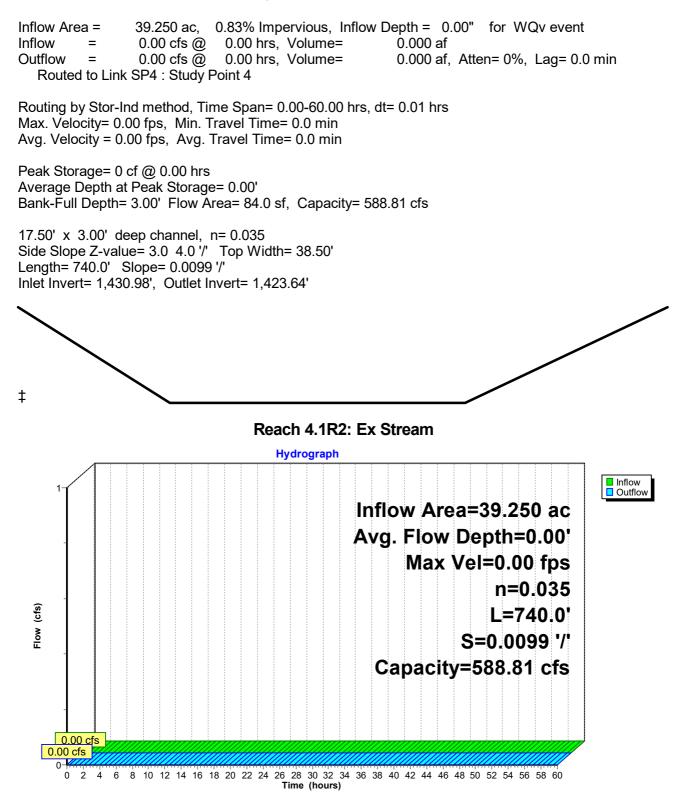


# Summary for Reach 4.1R1: Bypass Swale

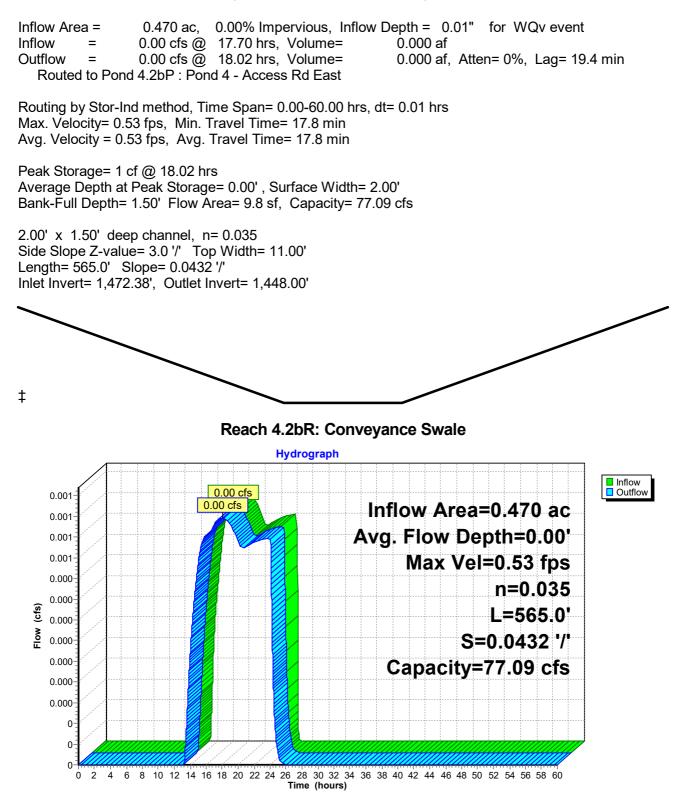
Inflow Area = 11.663 ac, 2.80% Impervious, Inflow Depth = 0.00" for WQv event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min Routed to Reach 4.1R2 : Ex Stream Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min Peak Storage= 0 cf @ 0.00 hrs Average Depth at Peak Storage= 0.00' Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 54.88 cfs 0.00' x 2.00' deep channel, n= 0.035 Side Slope Z-value= 2.0 '/' Top Width= 8.00' Length= 570.0' Slope= 0.0303 '/' Inlet Invert= 1,448.24', Outlet Invert= 1,430.97' Reach 4.1R1: Bypass Swale Hydrograph Inflow Outflow Inflow Area=11.663 ac Avg. Flow Depth=0.00' Max Vel=0.00 fps n=0.035 Flow (cfs) L=570.0' S=0.0303 '/' Capacity=54.88 cfs 0.00 cfs 0.00 cfs 0ò 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

## Summary for Reach 4.1R2: Ex Stream

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#### Summary for Reach 4.2bR: Conveyance Swale



# Summary for Pond 1.1aC1: TS1 Culvert

Inflow Area = 5.874 ac, 0.00% Impervious, Inflow Depth = 0.00" for WQv event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = Outflow 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.1aR2 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,487.56' @ 0.00 hrs Flood Elev= 1,489.60' **Outlet Devices** Device Routing Invert 36.3" W x 22.5" H, R=18.8"/51.0" Pipe Arch RCP\_Arch 37x23 #1 Primary 1.487.56 L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,487.56' / 1,486.80' S= 0.0162 '/' Cc= 0.900 n= 0.012, Flow Area= 4.43 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,487.56' (Free Discharge) -1=RCP\_Arch 37x23 (Controls 0.00 cfs) Pond 1.1aC1: TS1 Culvert Hydrograph Inflow Primary Inflow Area=5.874 ac Peak Elev=1,487.56' 36.3" x 22.5" R=18.8"/51.0" (cfs) **Pipe Arch Culvert** Flow n=0.012 L=47.0' S=0.0162 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

# Summary for Pond 1.1aC2: TS2 Culvert

Inflow Area = 14.341 ac, 0.00% Impervious, Inflow Depth = 0.00" for WQv event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.1aR3 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,470.80' @ 0.00 hrs Flood Elev= 1,473.07' Device Routing Invert **Outlet Devices** 48.0" W x 24.0" H Box Culvert #1 Primary 1.470.80' L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,470.80' / 1,469.57' S= 0.0262 '/' Cc= 0.900 n= 0.012, Flow Area= 8.00 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,470.80' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.1aC2: TS2 Culvert Hydrograph Inflow Primary Inflow Area=14.341 ac Peak Elev=1,470.80' 48.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.0' S=0.0262 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

# Summary for Pond 1.1aC3: TS3 Culvert

Inflow Area = 20.133 ac, 0.00% Impervious, Inflow Depth = 0.00" for WQv event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min 0.00 hrs, Volume= 0.000 af Primary = 0.00 cfs @ Routed to Reach 1.1aR4 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,449.55' @ 0.00 hrs Flood Elev= 1,452.10' Device Routing Invert Outlet Devices 60.0" W x 24.0" H Box Culvert #1 Primary 1.449.55' L= 47.2' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,449.55' / 1,447.64' S= 0.0405 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 10.00 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,449.55' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.1aC3: TS3 Culvert Hydrograph Inflow Primary Inflow Area=20.133 ac Peak Elev=1,449.55' 60.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.2' S=0.0405 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60

Time (hours)

# Summary for Pond 1.1aP: North Road Bypass OC

Inflow Area =	32.958 ac,	0.00% Impervious, Inflow D	epth = 0.00" for WQv event		
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af		
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min		
Discarded =	0.00 cfs @	0.00 hrs, Volume=	0.000 af		
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af		
Routed to Link 1.1L :					

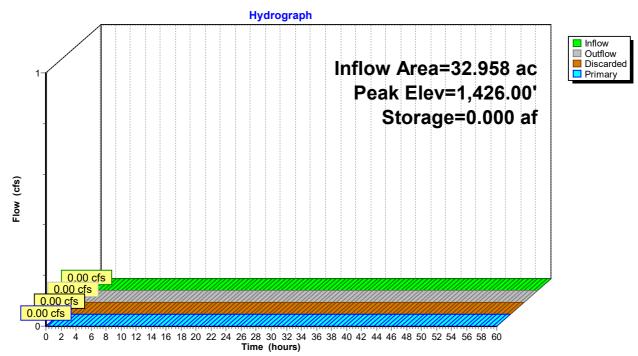
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,426.00' @ 0.00 hrs Surf.Area= 0.005 ac Storage= 0.000 af

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

Volume	Invert	Avail.Storage	e Storage Description
#1	1,426.00'	0.069 a	af 10.00'W x 20.00'L x 4.00'H Prismatoid Z=3.0
Device	Routing	Invert C	Outlet Devices
#1	Discarded	1,426.00' <b>0</b>	0.500 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Primary		<b>10.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,426.00' (Free Discharge) **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,426.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



# Pond 1.1aP: North Road Bypass OC

# Summary for Pond 1.1bC1: TS4 Culvert

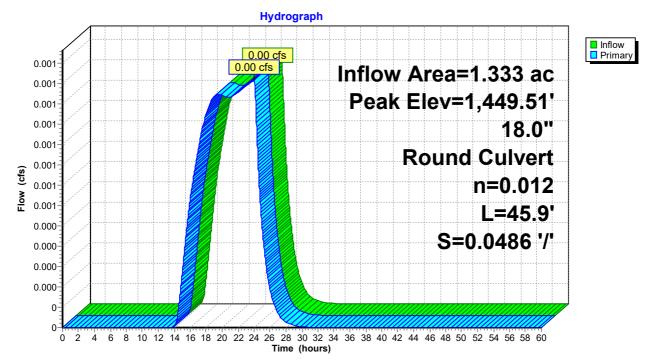
Inflow Area = 1.333 ac, 0.53% Impervious, Inflow Depth = 0.01" for WQv event Inflow 0.00 cfs @ 24.03 hrs, Volume= = 0.001 af 0.00 cfs @ 24.03 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min Outflow 0.00 cfs @ 24.03 hrs, Volume= 0.001 af Primary = Routed to Reach 1.1bR2 : North Road Conveyance Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 1,449.51' @ 24.03 hrs Flood Elev= 1,451.20'

FI000 EIEV- 1,451.20

Device	Routing	Invert	Outlet Devices
#1	Primary	1,449.50'	18.0" Round Culvert
			L= 45.9' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,449.50' / 1,447.27' S= 0.0486 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 24.03 hrs HW=1,449.51' (Free Discharge) ←1=Culvert (Inlet Controls 0.00 cfs @ 0.39 fps)



# Pond 1.1bC1: TS4 Culvert

# Summary for Pond 1.1bP1: Dry Swale

Inflow Area =	1.984 ac,	0.71% Impervious, Inflow D	Depth = 0.01" for WQv event				
Inflow =	0.00 cfs @	24.04 hrs, Volume=	0.001 af				
Outflow =	0.00 cfs @	24.72 hrs, Volume=	0.001 af, Atten= 37%, Lag= 40.6 min				
Discarded =	0.00 cfs @	24.72 hrs, Volume=	0.001 af				
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af				
Routed to Pond 1.1bP2 : North Road Detention Pond							

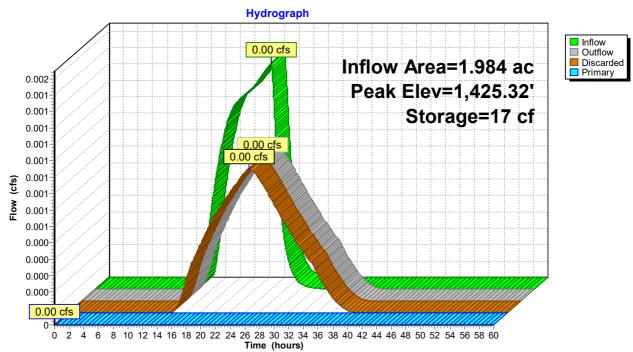
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,425.32' @ 24.72 hrs Surf.Area= 76 sf Storage= 17 cf

Plug-Flow detention time= 255.0 min calculated for 0.001 af (100% of inflow) Center-of-Mass det. time= 255.0 min (1,512.3 - 1,257.3)

Inve	ert Avail.	Storage	Storage Description	on		
1,424.7	'5'	428 cf	Custom Stage Da	<b>ta (Irregular)</b> Liste	ed below (Recalc)	
on	Surf.Area	Perim.	Inc.Store	Cum.Store	Wet.Area	
et)	(sq-ft)	(feet)	(cubic-feet)	(cubic-feet)	<u>(sq-ft)</u>	
75	0	0.0	0	0	0	
)0	25	22.9	2	2	42	
00	273	98.0	127	129	767	
70	603	161.7	299	428	2,086	
Routing	Inv	ert Outl	et Devices			
Discarde	d 1,424.	75' <b>0.50</b>	0 in/hr Exfiltration	over Surface area	Phase-In= 0.01'	
Primary	1,425.	69' <b>2.0'</b>	long x 2.0' breadtl	n Broad-Crested F	Rectangular Weir	
		Hea	d (feet) 0.20 0.40	0.60 0.80 1.00	1.20 1.40 1.60 1.80 2.00	
		2.50	3.00 3.50			
		Coe	f. (English) 2.54 2	.61 2.61 2.60 2.6	6 2.70 2.77 2.89 2.88	
	1,424.7 on et) 75 00 00 70 Routing Discarde	1,424.75'         on       Surf.Area         et)       (sq-ft)         75       0         00       25         00       273         70       603         Routing         Discarded       1,424.	1,424.75'       428 cf         on       Surf.Area       Perim.         et)       (sq-ft)       (feet)         75       0       0.0         00       25       22.9         00       273       98.0         70       603       161.7         Routing       Invert       Outl         Discarded       1,424.75' <b>0.50</b> Primary       1,425.69' <b>2.0'</b> Hea       2.50       Coe	1,424.75'       428 cf       Custom Stage Da         on       Surf.Area       Perim.       Inc.Store         et)       (sq-ft)       (feet)       (cubic-feet)         75       0       0.0       0         00       25       22.9       2         00       273       98.0       127         70       603       161.7       299         Routing       Invert       Outlet Devices         Discarded       1,424.75' <b>0.500 in/hr Exfiltration</b> Primary       1,425.69' <b>2.0' long x 2.0' breadtl</b> Head (feet)       0.20       0.40         2.50       3.00       3.50	1,424.75'       428 cf       Custom Stage Data (Irregular) Lister         on       Surf.Area       Perim.       Inc.Store       Cum.Store         et)       (sq-ft)       (feet)       (cubic-feet)       (cubic-feet)         75       0       0.0       0       0         90       25       22.9       2       2         90       273       98.0       127       129         70       603       161.7       299       428         Routing       Invert       Outlet Devices         Discarded       1,424.75'       0.500 in/hr Exfiltration over Surface area         Primary       1,425.69'       2.0' long x 2.0' breadth Broad-Crested F         Head (feet)       0.20       0.40       0.60       0.80       1.00         2.50       3.00       3.50       Coef. (English)       2.54       2.61       2.61       2.60       2.60	1,424.75'       428 cf       Custom Stage Data (Irregular) Listed below (Recalc)         on       Surf.Area       Perim.       Inc.Store       Cum.Store       Wet.Area         et)       (sq-ft)       (feet)       (cubic-feet)       (cubic-feet)       (sq-ft)         75       0       0.0       0       0       0         00       25       22.9       2       42         00       273       98.0       127       129       767         70       603       161.7       299       428       2,086         Routing       Invert       Outlet Devices         Discarded       1,424.75'       0.500 in/hr Exfiltration over Surface area       Phase-In= 0.01'         Primary       1,425.69'       2.0' long x 2.0' breadth Broad-Crested Rectangular Weir         Head (feet)       0.20       0.40       0.60       0.80       1.00       1.20       1.40       1.60       1.80       2.00         2.50       3.00       3.50       Coef. (English)       2.54       2.61       2.61       2.60       2.66       2.70       2.77       2.89       2.88

**Discarded OutFlow** Max=0.00 cfs @ 24.72 hrs HW=1,425.32' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,424.75' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



# Pond 1.1bP1: Dry Swale

# Summary for Pond 1.1bP2: North Road Detention Pond

Inflow Area =	1.984 ac,	0.71% Impervious, Inflow D	epth = 0.00" for WQv event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Discarded =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Link 1.1L :			

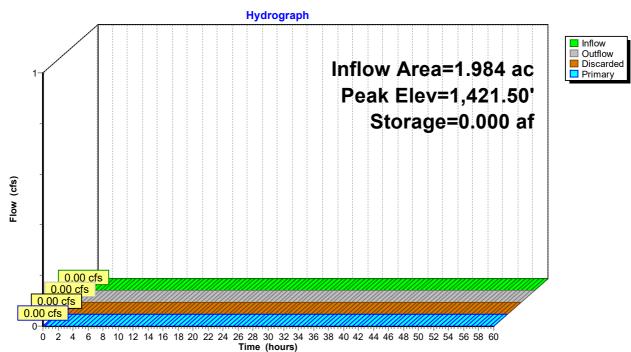
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,421.50' @ 0.00 hrs Surf.Area= 0.009 ac Storage= 0.000 af

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

Volume	Invert	Avail.Storag	e Storage Description
#1	1,421.50'	0.166 a	af 10.00'W x 40.00'L x 5.00'H Prismatoid Z=3.0
Device	Routing		Outlet Devices
#1 #2	Discarded Primary	,	0.500 in/hr Exfiltration over Surface area Phase-In= 0.01' 20.0' long x 10.0' breadth Broad-Crested Rectangular Weir
π <b>∠</b>	1 minury	, i	Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,421.50' (Free Discharge) **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,421.50' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



#### Pond 1.1bP2: North Road Detention Pond

# Summary for Pond 1.2aC1: TS 7 Culvert

Inflow Area = 7.876 ac, 0.00% Impervious, Inflow Depth = 0.00" for WQv event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = Outflow 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.2aR2 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,444.22' @ 0.00 hrs Flood Elev= 1,446.28' Device Routing Invert Outlet Devices 36.0" W x 24.0" H Box Culvert #1 Primary 1.444.22' L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,444.22' / 1,443.21' S= 0.0215 '/' Cc= 0.900 n= 0.012, Flow Area= 6.00 sf **Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,444.22' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.2aC1: TS 7 Culvert Hydrograph Inflow Primary Inflow Area=7.876 ac Peak Elev=1,444.22' 36.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.0' S=0.0215 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

# Summary for Pond 1.2aC2: TS8 Culvert

Inflow Area = 16.787 ac, 0.00% Impervious, Inflow Depth = 0.00" for WQv event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.2aR3 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,431.65' @ 0.00 hrs Flood Elev= 1,433.87' Device Routing Invert **Outlet Devices** 60.0" W x 24.0" H Box Culvert #1 Primary 1.431.65' L= 47.5' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,431.65' / 1,431.11' S= 0.0114 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 10.00 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,431.65' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.2aC2: TS8 Culvert Hydrograph Inflow Primary Inflow Area=16.787 ac Peak Elev=1,431.65' 60.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.5' S=0.0114 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60

Time (hours)

# Summary for Pond 1.2aP: South Road Bypass OC

Inflow Area =	22.287 ac,	0.00% Impervious, Inflow D	epth = 0.00" for WQv event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Discarded =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Link 1.2L :			

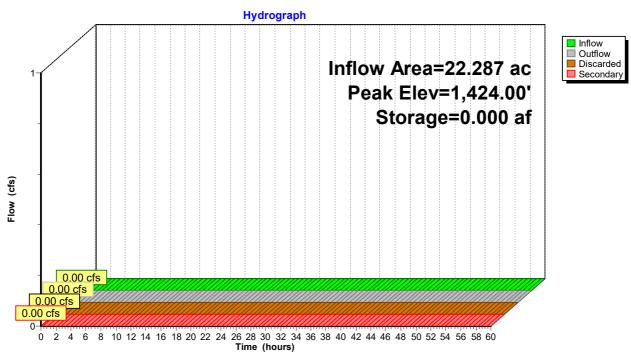
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,424.00' @ 0.00 hrs Surf.Area= 0.005 ac Storage= 0.000 af

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

Volume	Invert	Avail.Stora	ge Storage Description
#1	1,424.00'	0.069	af 10.00'W x 20.00'L x 4.00'H Prismatoid Z=3.0
Device	Routing	Invert	Outlet Devices
#1	Discarded	1,424.00'	12.000 in/hr Exfiltration over Surface area
#2	Secondary	1,426.50'	<b>10.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,424.00' (Free Discharge) **1=Exfiltration** (Passes 0.00 cfs of 0.06 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,424.00' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



#### Pond 1.2aP: South Road Bypass OC

# Summary for Pond 1.2bC1: East Road Culvert

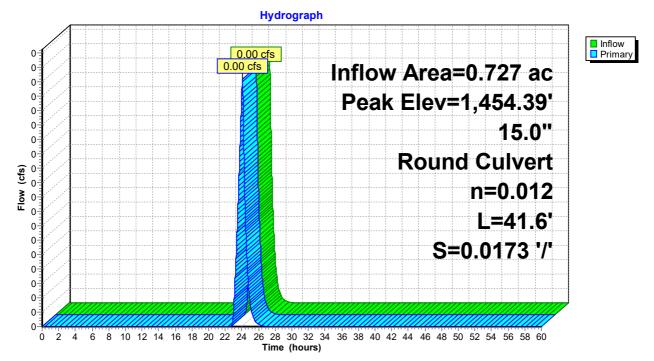
Inflow Area = 0.727 ac, 0.00% Impervious, Inflow Depth = 0.00" for WQv event Inflow = 0.00 cfs @ 24.06 hrs, Volume= 0.000 af Outflow = 0.00 cfs @ 24.06 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min Primary = 0.00 cfs @ 24.06 hrs, Volume= 0.000 af Routed to Reach 1.2bR2 : South Road Conveyance Swale

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,454.39' @ 24.06 hrs Flood Elev= 1,457.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,454.39'	15.0" Round Culvert
			L= 41.6' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,454.39' / 1,453.67' S= 0.0173 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 24.06 hrs HW=1,454.39' (Free Discharge) ←1=Culvert (Barrel Controls 0.00 cfs @ 0.04 fps)

# Pond 1.2bC1: East Road Culvert



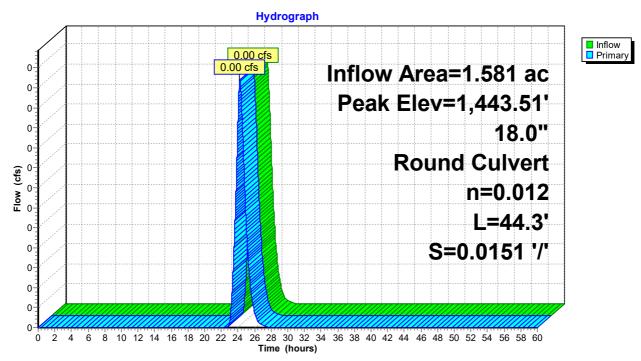
# Summary for Pond 1.2bC2: TS6 Culvert

Inflow Area =1.581 ac,0.25% Impervious, Inflow Depth =0.00" for WQv eventInflow =0.00 cfs @24.23 hrs, Volume=0.000 afOutflow =0.00 cfs @24.23 hrs, Volume=0.000 af, Atten= 0%, Lag= 0.0 minPrimary =0.00 cfs @24.23 hrs, Volume=0.000 afRouted to Reach 1.2bR3 : South Road Conveyance SwaleNote that the state of the state of

Peak Elev= 1,443.51' @ 24.23 hrs Flood Elev= 1,445.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,443.51'	18.0" Round Culvert
			L= 44.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,443.51' / 1,442.84' S= 0.0151 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 24.23 hrs HW=1,443.51' (Free Discharge) ←1=Culvert (Barrel Controls 0.00 cfs @ 0.04 fps)



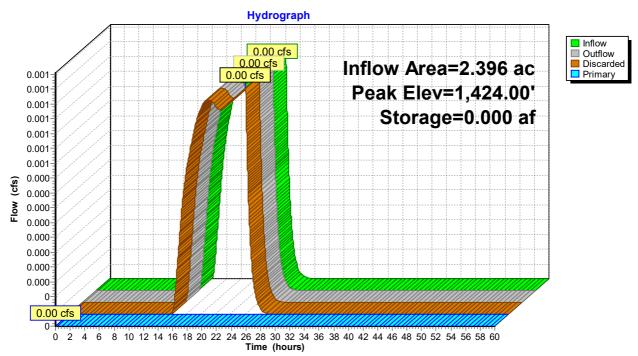
## Pond 1.2bC2: TS6 Culvert

#### Summary for Pond 1.2bP: South Road Treatment Pond

Outflow Discardo Primary	= = ed =	0.00 cfs @ 2 0.00 cfs @ 2 0.00 cfs @ 2 0.00 cfs @	63% Impervious, Inflow Depth =       0.00" for WQv event         4.03 hrs, Volume=       0.001 af         4.05 hrs, Volume=       0.001 af, Atten= 0%, Lag= 1.1 min         4.05 hrs, Volume=       0.001 af         0.00 hrs, Volume=       0.000 af			
	Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,424.00' @ 24.05 hrs Surf.Area= 0.009 ac Storage= 0.000 af					
•			n calculated for 0.001 af (100% of inflow) n(1,209.7 - 1,206.7)			
Volume	Inve	t Avail.Stor	age Storage Description			
#1	1,424.00	)' 0.14	9 af 20.00'W x 20.00'L x 5.00'H Prismatoid Z=3.0			
Device	Routing	Invert	Outlet Devices			
#1 #2	Discarded Primary		12.000 in/hr Exfiltration over Surface area Phase-In= 0.01'			

**Discarded OutFlow** Max=0.00 cfs @ 24.05 hrs HW=1,424.00' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,424.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



#### Pond 1.2bP: South Road Treatment Pond

#### Summary for Pond 1.3P: Pond 3 - Access Rd West

Inflow Area =	0.695 ac,	0.00% Impervious, Inflow E	Depth = 0.00" for WQv event		
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af		
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min		
Discarded =	0.00 cfs @	0.00 hrs, Volume=	0.000 af		
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af		
Routed to Link SP1 : Study Point 1					

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,456.00' @ 0.00 hrs Surf.Area= 784 sf Storage= 0 cf

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

Volume	Invert	Avail.	Storage	Storage Description	on	
#1	1,456.00'		8,743 cf	Custom Stage Dat	<b>ta (Irregular)</b> Listed	d below (Recalc)
Elevatio (fee 1,456.0 1,458.0 1,459.0 1,460.0	e <u>t)</u> 00 00 00	urf.Area (sq-ft) 784 1,720 2,884 5,280	Perim. (feet) 123.0 194.0 279.0 421.0	Inc.Store (cubic-feet) 0 2,443 2,277 4,022	Cum.Store (cubic-feet) 0 2,443 4,721 8,743	Wet.Area (sq-ft) 784 2,603 5,811 13,729
Device	Routing	Inv	ert Outle	et Devices		
#1 #2	Discarded Primary	1,456.0 1,459.9	99' <b>20.0</b> '	0 in/hr Exfiltration ' long x 4.0' breadt	th Broad-Crested I	Rectangular Weir
				d (feet) 0.20 0.40 3.00 3.50 4.00 4		.20 1.40 1.60 1.80 2.00
			Coe	f. (English) 2.38 2.	54 2.69 2.68 2.6	7 2.67 2.65 2.66 2.66
			2.68	2.72 2.73 2.76 2	.79 2.88 3.07 3.3	2

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,456.00' (Free Discharge) **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,456.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



Hydrograph Inflow Outflow Discarded Primary Inflow Area=0.695 ac 1 Peak Elev=1,456.00' Storage=0 cf (cfs) Flow 0.00 cfs <u>0.00 cfs</u> 0.00 cfs 0.00 cfs 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

#### Pond 1.3P: Pond 3 - Access Rd West

#### Summary for Pond 4.2bP: Pond 4 - Access Rd East

Inflow Area =	0.470 ac,	0.00% Impervious, Inf	ow Depth = 0.01" for WQv event
Inflow =	0.00 cfs @	18.02 hrs, Volume=	0.000 af
Outflow =	0.00 cfs @	18.09 hrs, Volume=	0.000 af, Atten= 0%, Lag= 3.7 min
Discarded =	0.00 cfs @	18.09 hrs, Volume=	0.000 af
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Pond	4.2C : 18" C	ulvert	

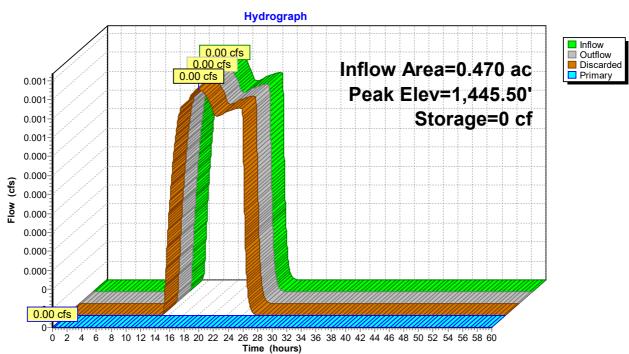
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,445.50' @ 18.09 hrs Surf.Area= 200 sf Storage= 0 cf

Plug-Flow detention time= 4.1 min calculated for 0.000 af (100% of inflow) Center-of-Mass det. time= 4.1 min (1,156.5 - 1,152.4)

Volume	Invert	Avail.Stor	age Storage Description
#1	1,445.50'	2,31	7 cf 10.00'W x 20.00'L x 3.50'H Prismatoid Z=3.0
Device	Routing	Invert	Outlet Devices
#1	Discarded	1,445.50'	6.000 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Primary	1,448.25'	10.0' long x 4.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66
			2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.00 cfs @ 18.09 hrs HW=1,445.50' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,445.50' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



#### Pond 4.2bP: Pond 4 - Access Rd East

#### Summary for Pond 4.2C: 18" Culvert

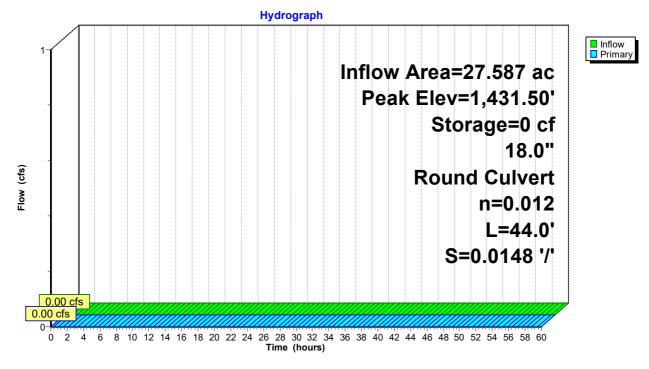
Inflow Area	a =	27.587 ac,	0.00% Impervious, Inflow D	epth = 0.00" for WQv event	
Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min	
Primary	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Routed to Reach 4.1R2 : Ex Stream					

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,431.50' @ 0.00 hrs Storage= 0 cf Flood Elev= 1,434.64' Surf.Area= 27,666 sf Storage= 28,656 cf

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

Volume	Inve	ert Ava	il.Storage	Storage Description	on		
#1	1,431.5	50'	39,033 cf	Custom Stage Da	<b>ta (Irregular)</b> Liste	ed below (Recalc)	
Elevatio	n	Surf.Area	Perim.	Inc.Store	Cum.Store	Wet.Area	
feet	-	(sq-ft)	(feet)	(cubic-feet)	(cubic-feet)	(sq-ft)	
	/		. ,	· · · · ·		(SQ-II)	
1,431.5	0	0	0.0	0	0	0	
1,432.0	0	1,190	146.0	198	198	1,697	
1,432.5	0	3,534	368.0	1,129	1,327	10,778	
1,433.0	0	5,795	497.0	2,309	3,637	19,660	
1,433.5	0	10,362	837.0	3,984	7,621	55,755	
1,434.0	0	16,931	975.0	6,756	14,377	75,659	
1,434.6	0	27,412	1,352.0	13,177	27,555	145,474	
1,435.0	0	30,000	1,500.0	11,479	39,033	179,068	
Davidaa		1		at Daviese			
Device	Routing	Ir	ivert Outl	et Devices			
#1	Primary	1,43′	1.83' <b>18.0</b>	" Round Culvert			
	-		L= 4	4.0' RCP, square	edge headwall. K	(e= 0.500	
				/ Outlet Invert= 1,4			
				,	'		
			n– t	0.012 Corrugated P		, FIUW AIEa- 1.//	51

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,431.50' (Free Discharge) ←1=Culvert (Controls 0.00 cfs) Pond 4.2C: 18" Culvert



#### Summary for Pond 4.3C: 24" Culvert

5.08% Impervious, Inflow Depth = 0.00" for WQv event Inflow Area = 25.466 ac, 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af Routed to Link SP4 : Study Point 4 Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,431.35' @ 0.00 hrs Flood Elev= 1,434.65' **Outlet Devices** Device Routing Invert 24.0" Round Culvert #1 1.431.35 Primary L= 55.8' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,431.35' / 1,429.87' S= 0.0265 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf #2 20.0' long x 30.0' breadth Broad-Crested Rectangular Weir Primary 1,434.81' Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,431.35' (Free Discharge) -1=Culvert (Controls 0.00 cfs) -2=Broad-Crested Rectangular Weir (Controls 0.00 cfs) Pond 4.3C: 24" Culvert Hydrograph Inflow Primar Inflow Area=25.466 ac Peak Elev=1,431.35' Flow (cfs)

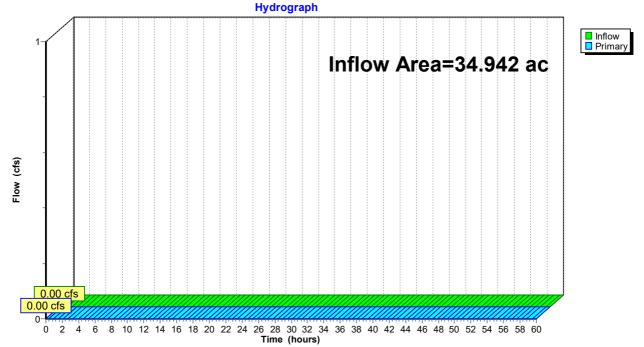
0.00 cfs 0.00 cfs 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

#### Summary for Link 1.1L:

Inflow Area = 34.942 ac, 0.04% Impervious, Inflow Depth = 0.00" for WQv event Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min Routed to Link SP1 : Study Point 1

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

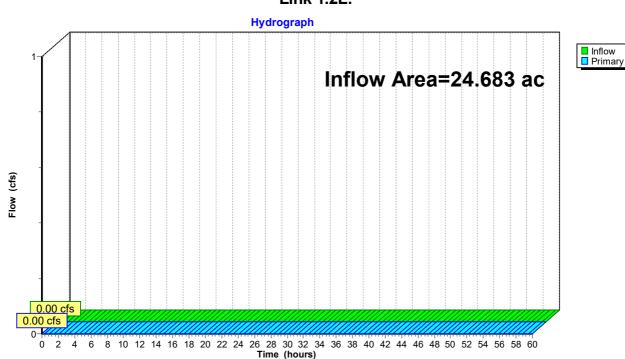
#### Link 1.1L:



#### Summary for Link 1.2L:

Inflow Area = 24.683 ac, 0.06% Impervious, Inflow Depth = 0.00" for WQv event Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min Routed to Link SP1 : Study Point 1

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

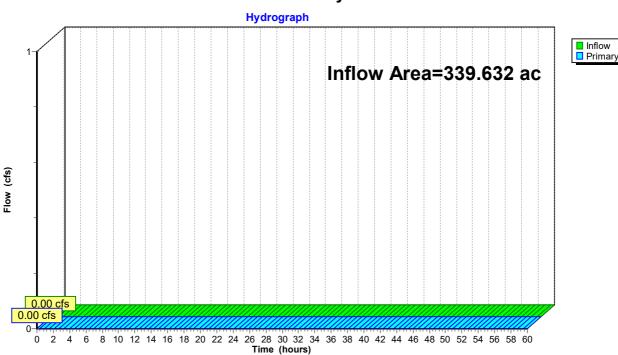


#### Link 1.2L:

#### Summary for Link SP1: Study Point 1

Inflow Area =	339.632 ac,	0.01% Impervious, Inflow	Depth = 0.00"	for WQv event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

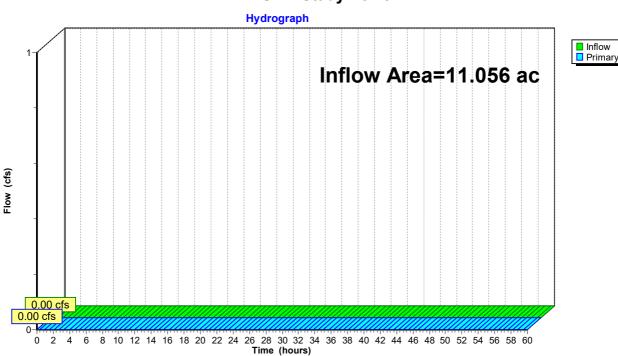


#### Link SP1: Study Point 1

#### Summary for Link SP2: Study Point 2

Inflow Area =	11.056 ac,	0.00% Impervious, Inflow	Depth = 0.00"	for WQv event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs



#### Link SP2: Study Point 2

#### Summary for Link SP3: Study Point 3

Inflow Area =	15.648 ac,	0.56% Impervious, Inflow	Depth = $0.00$ "	for WQv event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

## Hydrograph Inflow Area=15.648 ac y of the second secon

#### Link SP3: Study Point 3

#### Summary for Link SP4: Study Point 4

Inflow Area =	64.716 ac,	2.50% Impervious, Inflow	Depth = 0.00"	for WQv event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

## Hydrograph Inflow Area=64.716 ac y or y of the second second

#### Link SP4: Study Point 4

#### Summary for Link SP5: Study Point 5

Inflow Area =	4.970 ac,	0.00% Impervious, Inflow	Depth = 0.00"	for WQv event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

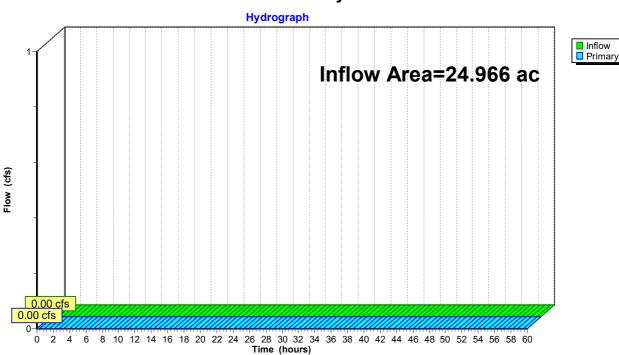
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#### Link SP5: Study Point 5

#### Summary for Link SP6: Study Point 6

Inflow Area =	24.966 ac,	5.81% Impervious, Inflow	Depth = 0.00"	for WQv event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs



#### Link SP6: Study Point 6

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 1.1aS1: North Array East F	Runoff Area=5.874 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=788' Tc=18.8 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1aS2: North Array East	Runoff Area=8.467 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=931' Tc=21.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1aS3: North Array West Flo	Runoff Area=5.792 ac 0.00% Impervious Runoff Depth=0.00" w Length=1,031' Tc=19.7 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1aS4: North Array West	Runoff Area=12.825 ac 0.00% Impervious Runoff Depth=0.00" w Length=1,562' Tc=26.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1bS1: North Road - East	Runoff Area=1.333 ac 0.53% Impervious Runoff Depth=0.26" Tc=6.0 min CN=71 Runoff=0.47 cfs 0.029 af
Subcatchment 1.1bS2: North Road - West	Runoff Area=0.651 ac 1.08% Impervious Runoff Depth=0.19" Tc=6.0 min CN=68 Runoff=0.13 cfs 0.010 af
Subcatchment 1.2aS1: Middle Array East F	Runoff Area=7.876 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=865' Tc=19.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2aS2: Middle Array Center F	r Runoff Area=8.911 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=825' Tc=18.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2aS3: Middle Array West F	Runoff Area=5.500 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=882' Tc=18.5 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2bS1: East Road - West	Runoff Area=0.727 ac 0.00% Impervious Runoff Depth=0.17" Tc=6.0 min CN=67 Runoff=0.12 cfs 0.010 af
Subcatchment 1.2bS2: South Road	Runoff Area=0.854 ac 0.47% Impervious Runoff Depth=0.04" Flow Length=308' Tc=13.7 min CN=58 Runoff=0.00 cfs 0.003 af
Subcatchment 1.2bS3: South Road	Runoff Area=0.815 ac  1.35% Impervious  Runoff Depth=0.26" Tc=6.0 min  CN=71  Runoff=0.29 cfs  0.018 af
	Runoff Area=279.312 ac 0.00% Impervious Runoff Depth=0.00" v Length=6,771' Tc=201.7 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment 1.3bS: Access Rd to Pond 3	Runoff Area=0.695 ac 0.00% Impervious Runoff Depth=0.00" Tc=6.0 min CN=51 Runoff=0.00 cfs 0.000 af
Subcatchment 2S: Flo	Runoff Area=11.056 ac 0.00% Impervious Runoff Depth=0.00" w Length=2,342' Tc=36.0 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment 3S:	Runoff Area=15.648 ac 0.56% Impervious Runoff Depth=0.00" Flow Length=886' Tc=12.7 min CN=40 Runoff=0.00 cfs 0.000 af
Subcatchment 4.1S:	Runoff Area=11.663 ac 2.80% Impervious Runoff Depth=0.00" Flow Length=845' Tc=15.8 min CN=45 Runoff=0.00 cfs 0.000 af

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Subcatchment 4.2aS:	Runoff Area=27.117 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=1,640' Tc=38.9 min CN=51 Runoff=0.01 cfs 0.001 af
Subcatchment 4.2bS:	Runoff Area=0.470 ac 0.00% Impervious Runoff Depth=0.28" Tc=6.0 min CN=72 Runoff=0.19 cfs 0.011 af
Subcatchment 4.3S:	Runoff Area=25.466 ac 5.08% Impervious Runoff Depth=0.03" Flow Length=2,280' Tc=36.5 min CN=57 Runoff=0.07 cfs 0.059 af
Subcatchment 5S:	Runoff Area=4.970 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=1,180' Tc=17.5 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 6S:	Runoff Area=24.966 ac 5.81% Impervious Runoff Depth=0.00" Flow Length=1,961' Tc=60.1 min CN=43 Runoff=0.00 cfs 0.000 af
Reach 1.1aR1: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=580.0' S=0.0108 '/' Capacity=56.37 cfs Outflow=0.00 cfs 0.000 af
Reach 1.1aR2: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=557.4' S=0.0284 '/' Capacity=91.27 cfs Outflow=0.00 cfs 0.000 af
Reach 1.1aR3: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af .=557.5' S=0.0352 '/' Capacity=101.68 cfs Outflow=0.00 cfs 0.000 af
Reach 1.1aR4: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af .=580.5' S=0.0362 '/' Capacity=103.04 cfs Outflow=0.00 cfs 0.000 af
	<b>e</b> Avg. Flow Depth=0.06' Max Vel=0.94 fps Inflow=0.47 cfs 0.029 af 1,733.0' S=0.0240 '/' Capacity=111.65 cfs Outflow=0.12 cfs 0.029 af
	<b>e</b> Avg. Flow Depth=0.06' Max Vel=1.18 fps Inflow=0.20 cfs 0.039 af _=593.3' S=0.0380 '/' Capacity=140.36 cfs Outflow=0.15 cfs 0.039 af
Reach 1.2aR1: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=524.2' S=0.0188 '/' Capacity=74.30 cfs Outflow=0.00 cfs 0.000 af
Reach 1.2aR2: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=556.0' S=0.0204 '/' Capacity=77.47 cfs Outflow=0.00 cfs 0.000 af
Reach 1.2aR3: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=249.0' S=0.0153 '/' Capacity=81.84 cfs Outflow=0.00 cfs 0.000 af
Reach 1.2bR1: East Road Conveyance n=0.035	Avg. Flow Depth=0.03' Max Vel=0.80 fps Inflow=0.12 cfs 0.010 af L=731.4' S=0.0456 '/' Capacity=79.22 cfs Outflow=0.04 cfs 0.010 af
	<b>ce</b> Avg. Flow Depth=0.03' Max Vel=0.53 fps Inflow=0.04 cfs 0.013 af L=604.5' S=0.0177 '/' Capacity=95.76 cfs Outflow=0.03 cfs 0.013 af
	<b>ce</b> Avg. Flow Depth=0.06' Max Vel=0.89 fps Inflow=0.29 cfs 0.030 af L=755.9' S=0.0187 '/' Capacity=98.64 cfs Outflow=0.13 cfs 0.030 af
Reach 4.1R1: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=570.0' S=0.0303 '/' Capacity=54.88 cfs Outflow=0.00 cfs 0.000 af
Reach 4.1R2: Ex Stream n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af .=740.0' S=0.0099 '/' Capacity=588.81 cfs Outflow=0.00 cfs 0.000 af

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Reach 4.2bR: Conveyance Swale         Avg. Flow Depth=0.05'         Max Vel=1.13 fps         Inflow=0.19 cfs         0.011 af           n=0.035         L=565.0'         S=0.0432 '/'         Capacity=77.09 cfs         Outflow=0.12 cfs         0.011 af
Pond 1.1aC1: TS1 Culvert         Peak Elev=1,487.56'         Inflow=0.00 cfs         0.000 af           36.3" x 22.5", R=18.8"/51.0"         Pipe Arch Culvert         n=0.012         L=47.0'         S=0.0162 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.1aC2: TS2 Culvert         Peak Elev=1,470.80'         Inflow=0.00 cfs         0.000 af           48.0" x 24.0"         Box Culvert         n=0.012         L=47.0'         S=0.0262 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.1aC3: TS3 Culvert         Peak Elev=1,449.55'         Inflow=0.00 cfs         0.000 af           60.0" x 24.0"         Box Culvert         n=0.012         L=47.2'         S=0.0405 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.1aP: North Road Bypass OC         Peak Elev=1,426.00' Storage=0.000 af Inflow=0.00 cfs 0.000 af Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Pond 1.1bC1: TS4 Culvert         Peak Elev=1,449.65'         Inflow=0.12 cfs         0.029 af           18.0" Round Culvert n=0.012         L=45.9'         S=0.0486 '/'         Outflow=0.12 cfs         0.029 af
Pond 1.1bP1: Dry Swale         Peak Elev=1,425.78' Storage=78 cf         Inflow=0.15 cfs         0.039 af           Discarded=0.00 cfs         0.004 af         Primary=0.15 cfs         0.035 af         Outflow=0.15 cfs         0.039 af
Pond 1.1bP2: North Road Detention Pond Peak Elev=1,423.08' Storage=0.024 af Inflow=0.15 cfs 0.035 af Discarded=0.01 cfs 0.034 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.034 af
Pond 1.2aC1: TS 7 Culvert         Peak Elev=1,444.22'         Inflow=0.00 cfs         0.000 af           36.0" x 24.0"         Box Culvert         n=0.012         L=47.0'         S=0.0215 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.2aC2: TS8 Culvert         Peak Elev=1,431.65'         Inflow=0.00 cfs         0.000 af           60.0" x 24.0"         Box Culvert n=0.012         L=47.5'         S=0.0114 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.2aP: South Road Bypass OC         Peak Elev=1,424.00' Storage=0.000 af Inflow=0.00 cfs 0.000 af           Discarded=0.00 cfs         0.000 af         Secondary=0.00 cfs 0.000 af         Outflow=0.00 cfs 0.000 af
Pond 1.2bC1: East Road Culvert         Peak Elev=1,454.48'         Inflow=0.04 cfs         0.010 af           15.0" Round Culvert n=0.012         L=41.6'         S=0.0173 '/'         Outflow=0.04 cfs         0.010 af
Pond 1.2bC2: TS6 Culvert         Peak Elev=1,443.58'         Inflow=0.03 cfs         0.013 af           18.0" Round Culvert n=0.012         L=44.3'         S=0.0151 '/'         Outflow=0.03 cfs         0.013 af
Pond 1.2bP: South Road Treatment Pond Peak Elev=1,424.05' Storage=0.000 af Inflow=0.13 cfs 0.030 af Discarded=0.11 cfs 0.030 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.030 af
Pond 1.3P: Pond 3 - Access Rd West         Peak Elev=1,456.00'         Storage=0 cf         Inflow=0.00 cfs         0.000 af           Discarded=0.00 cfs         0.000 af         Primary=0.00 cfs         0.000 af         Outflow=0.00 cfs         0.000 af
Pond 4.2bP: Pond 4 - Access Rd East         Peak Elev=1,445.81' Storage=70 cf         Inflow=0.12 cfs         0.011 af           Discarded=0.04 cfs         0.011 af         Primary=0.00 cfs         0.000 af         Outflow=0.04 cfs         0.011 af
Pond 4.2C: 18" Culvert         Peak Elev=1,431.78' Storage=35 cf         Inflow=0.01 cfs         0.001 af           18.0" Round Culvert n=0.012 L=44.0' S=0.0148 '/' Outflow=0.00 cfs         0.000 af
Pond 4.3C: 24" Culvert         Peak Elev=1,431.46'         Inflow=0.07 cfs         0.059 af           Outflow=0.07 cfs         0.059 af

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Link 1.1L:	Ir	flow=0.00 cfs 0.000 af
	Prir	mary=0.00 cfs 0.000 af
Link 1.2L:	Ir	flow=0.00 cfs 0.000 af
	Prir	mary=0.00 cfs_0.000 af
Link SP1: Study Point 1	Ir	flow=0.00 cfs 0.000 af
-	Prir	mary=0.00 cfs 0.000 af
Link SP2: Study Point 2	Ir	flow=0.00 cfs 0.000 af
	Prir	mary=0.00 cfs 0.000 af
Link SP3: Study Point 3	Ir	flow=0.00 cfs 0.000 af
	Prir	mary=0.00 cfs_0.000 af
Link SP4: Study Point 4		flow=0.07 cfs 0.059 af
	Prir	mary=0.07 cfs 0.059 af
Link SP5: Study Point 5		flow=0.00 cfs 0.000 af
	Prir	mary=0.00 cfs_0.000 af
Link SP6: Study Point 6		flow=0.00 cfs 0.000 af
	Prir	mary=0.00 cfs_0.000 af
Total Pupoff Area = 460 988 ac	Runoff Volume = $0.140$ af Average B	Pupoff Donth - 0.00"

# Total Runoff Area = 460.988 acRunoff Volume = 0.140 afAverage Runoff Depth = 0.00"99.31% Pervious = 457.801 ac0.69% Impervious = 3.187 ac

#### Summary for Subcatchment 1.1aS1: North Array East

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

-	1 1	30 Mea	cription dow, non- 00% Pervi	grazed, HS ous Area	G A			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
11.7	100	0.0499	0.14		Sheet Flow, Grass: Dense n= 0.240 P2= 2.31"			
7.1	688	0.0526	1.61		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps			
18.8	788	Total						
Subcatchment 1.1aS1: North Array East								
	Hydrograph							
Elow (cts)	<del>/////////////////////////////////////</del>	8 10 12	14 16 18 20		Type II 24-hr 1-Yr Storm Rainfall=1.98" Runoff Area=5.874 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=788' Tc=18.8 min CN=30			

#### Summary for Subcatchment 1.1aS2: North Array East Center

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR2 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	Area (ac) CN Description							
8	.467 3	30 Mea	dow, non-g	grazed, HS	GA			
8	.467	100.	00% Pervi	ous Area				
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
11.9	100	0.0476	0.14		Sheet Flow,			
9.2 831 0.0463 1.51 Shallow Concentrated Flow,				Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
21.1	931	Total						
	Subcatchment 1.1aS2: North Array East Center							
				Hydrog	graph			
1					Type II 24-hr 1-Yr Storm Rainfall=1.98" Runoff Area=8.467 ac			

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

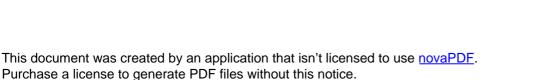
Runoff Volume=0.000 af

Runoff Depth=0.00"

Flow Length=931'

Tc=21.1 min

**CN=30** 



(cfs)

Flow

0.00 cfs

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#### Summary for Subcatchment 1.1aS3: North Array West Center

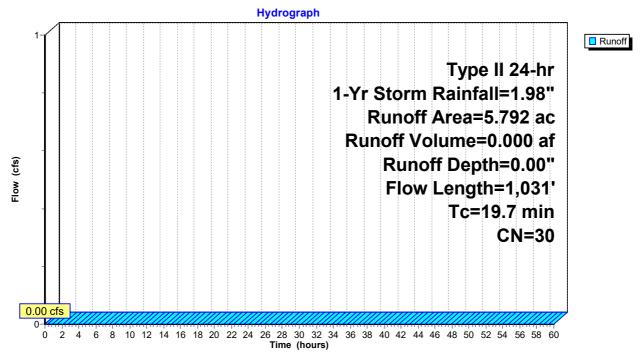
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR3 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

_	Area	Area (ac) CN Description								
-	5.792 30 Meadow, non-grazed, HSG A									
5.792 100.00% Pervious Area										
Tc Length Slope Velocity Capacity (min) (feet) (ft/ft) (ft/sec) (cfs)						Description				
-	10.7	100	0.0618	0.16		Sheet Flow,				
	9.0	931	0.0601	1.72		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
-	40.7	4 004	T . ( . )			·				

19.7 1,031 Total





#### Summary for Subcatchment 1.1aS4: North Array West

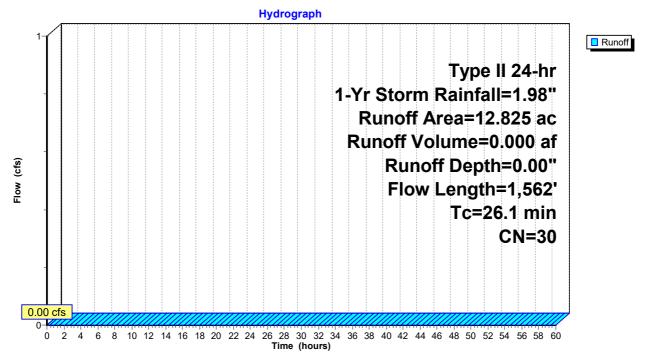
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR4 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

_	Area	Area (ac) CN Description								
	12.825 30 Meadow, non-grazed, HSG A									
-	12.	825	100.							
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
-	11.1	100	0.0560	0.15		Sheet Flow,				
	15.0	1,462	0.0540	1.63		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
	26.1	1 560	Total							



#### Subcatchment 1.1aS4: North Array West



#### Summary for Subcatchment 1.1bS1: North Road - East

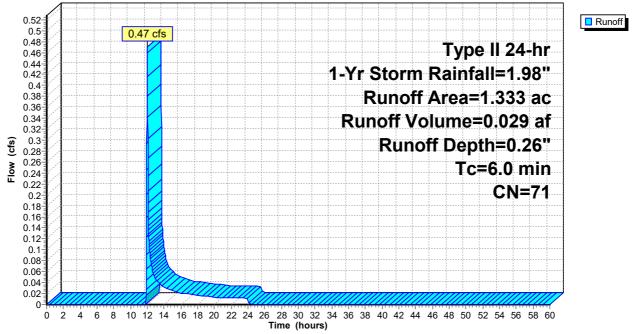
Runoff = 0.47 cfs @ 12.00 hrs, Volume= 0.029 af, Depth= 0.26" Routed to Reach 1.1bR1 : North Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac)	CN	Desc	Description					
0.	507	30	Mea	dow, non-g	grazed, HS	SG A			
0.	819	96	Grav	el surface	, HSG A				
0.	.007	98	Roof	s, HSG A					
1.	.333	71	Weig	ghted Aver	age				
1.	326		99.4	7% Pervio	us Area				
0.	.007		0.539	% Impervi	ous Area				
Tc (min)	Leng (fee		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)				
6.0						Direct Entry,			

#### Subcatchment 1.1bS1: North Road - East

Hydrograph



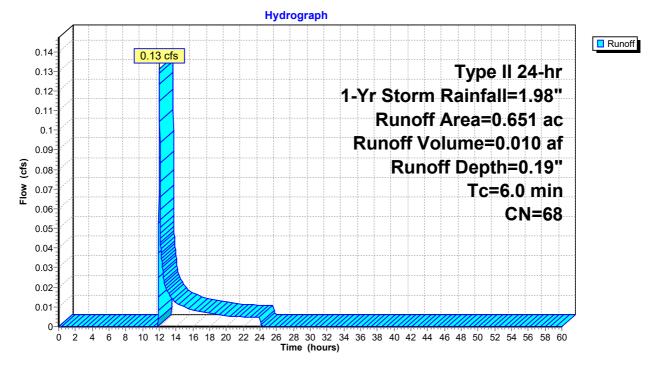
#### Summary for Subcatchment 1.1bS2: North Road - West

Runoff = 0.13 cfs @ 12.01 hrs, Volume= 0.010 af, Depth= 0.19" Routed to Reach 1.1bR2 : North Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac)	CN	Desc	Description					
0.	279	30	Mead	dow, non-g	grazed, HS	SG A			
0.	365	96	Grav	el surface	, HSG A				
0.	007	98	Roof	s, HSG A					
0.	651	68	Weig	hted Aver	age				
0.	644		98.92	2% Pervio	us Area				
0.	007		1.089	% Impervi	ous Area				
Tc (min)	Leng (fee		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)				
6.0						Direct Entry,			

#### Subcatchment 1.1bS2: North Road - West



#### Summary for Subcatchment 1.2aS1: Middle Array East

0.000 af, Depth= 0.00" Runoff = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.2aR1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac) C	N Desc	cription		
7	.876 3	80 Mea	dow, non-	grazed, HS	GA
7	.876	100.	00% Pervi	ous Area	
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0628	0.16		Sheet Flow,
8.5	765	0.0459	1.50		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
19.1	865	Total			
			Subcate	chment 1	.2aS1: Middle Array East
	4			Hydrog	graph
-1 	<del>/////////////////////////////////////</del>	8 10 12			Type II 24-hr 1-Yr Storm Rainfall=1.98" Runoff Area=7.876 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=865' Tc=19.1 min CN=30

#### Summary for Subcatchment 1.2aS2: Middle Array Center

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.2aR2 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac) C	N Des	cription							
8	8.91130Meadow, non-grazed, HSG A8.911100.00% Pervious Area									
8	.911									
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
10.8	100	0.0607	0.15		Sheet Flow,					
7.3	725	0.0559	1.66		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps					
18.1	825	Total								
Flow (cfs)			Subcatc	nment 1.2 Hydrog	AS2: Middle Array Center graph Type II 24-hr 1-Yr Storm Rainfall=1.98" Runoff Area=8.911 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=825' Tc=18.1 min					

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

**CN=30** 

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0.00 cfs

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#### Summary for Subcatchment 1.2aS3: Middle Array West

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.2aR3 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac) C	N Des	cription						
5.500 30 Meadow, non-grazed, HSG A									
5	.500	100.	00% Pervi	ous Area					
Tc _(min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
10.4	100	0.0660	0.16		Sheet Flow,				
8.1	782	0.0529	1.61		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
18.5	882	Total							
			Subcato	chment 1. Hydrog	2aS3: Middle Array West				
- 1 - - - - - - - - - - - - - - - - - -	cfs				Type II 24-hr 1-Yr Storm Rainfall=1.98" Runoff Area=5.500 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=882' Tc=18.5 min CN=30				

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

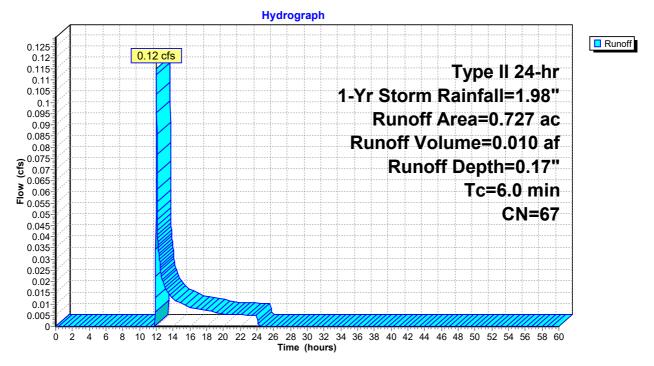
#### Summary for Subcatchment 1.2bS1: East Road - West Ditch

Runoff = 0.12 cfs @ 12.01 hrs, Volume= 0.010 af, Depth= 0.17" Routed to Reach 1.2bR1 : East Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac)	CN	Desc	cription						
0.	410	96	96 Gravel surface, HSG A							
0.	0.317 30 Meadow, non-grazed, HSG A									
0.	727	67	Weig	ghted Aver	age					
0.	727		100.0	00% Pervi	ous Area					
_										
Tc	Leng	th	Slope	Velocity	Capacity	Description				
(min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)					
6.0						Direct Entry,				

#### Subcatchment 1.2bS1: East Road - West Ditch



#### Summary for Subcatchment 1.2bS2: South Road

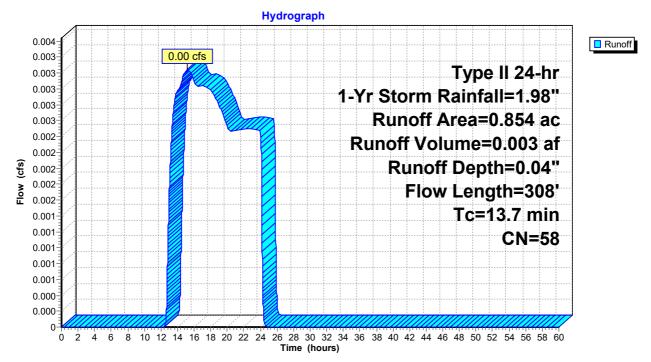
Runoff = 0.00 cfs @ 15.21 hrs, Volume= 0.003 af, Depth= 0.04" Routed to Reach 1.2bR2 : South Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

	Area	(ac) (	N Des	cription						
	0.	498	30 Mea	Meadow, non-grazed, HSG A						
*	0.	352	96 Grav	/el surface						
*	0.	004	98 Roo	Roofs						
_	0.	854	58 Wei	Weighted Average						
	0.	850		3% Pervio	•					
	0.	004	0.47	% Impervi	ous Area					
				•						
	Тс	Length	Slope	Velocity	Capacity	Description				
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
	5.0	35	0.0516	0.12		Sheet Flow,				
						Grass: Dense n= 0.240 P2= 2.31"				
	0.4	25	0.0310	1.06		Sheet Flow,				
						Smooth surfaces n= 0.011 P2= 2.31"				
	5.9	40	0.0429	0.11		Sheet Flow,				
						Grass: Dense n= 0.240 P2= 2.31"				
	2.4	208	0.0442	1.47		Shallow Concentrated Flow,				
						Short Grass Pasture Kv= 7.0 fps				
	407	~~~	<b>T</b> , ,							

13.7 308 Total

#### Subcatchment 1.2bS2: South Road



#### Summary for Subcatchment 1.2bS3: South Road

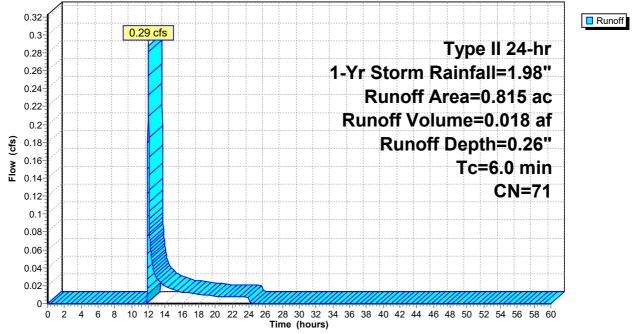
Runoff = 0.29 cfs @ 12.00 hrs, Volume= 0.018 af, Depth= 0.26" Routed to Reach 1.2bR3 : South Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

	Area	(ac)	CN	Desc	ription						
	0.	313	30 Meadow, non-grazed, HSG A								
	0.	491	96	Grav	el surface	, HSG A					
*	0.	011	98	Roof	S						
	0.	815	71	Weig	hted Aver	age					
	0.	804		98.65	5% Pervio	us Area					
	0.	011		1.359	1.35% Impervious Area						
	Тс	Leng	th	Slope	Velocity	Capacity	Description				
	(min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)					
	6.0						Direct Entry,				
							-				

#### Subcatchment 1.2bS3: South Road





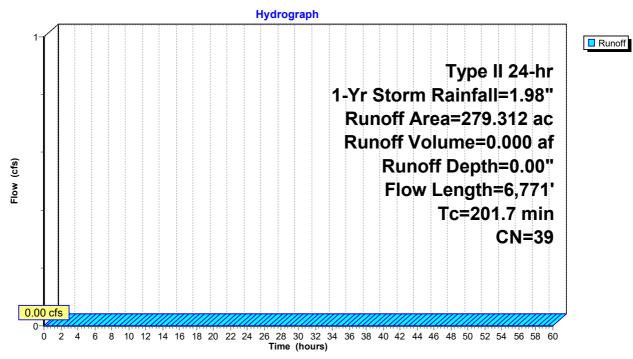
#### Summary for Subcatchment 1.3aS1: Surface Discharge

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP1 : Study Point 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

	Area	(ac) C	N Desc	cription						
*	0.	754 9	96 Grav	el surface						
	144.	649 3	30 Mea	Meadow, non-grazed, HSG A						
	0.	566 5	58 Mea	dow, non-g	grazed, HS	GB				
	25.	274 7	71 Mea	dow, non-g	grazed, HS	GC				
	61.	692 3		ds, Good,						
	32.	754 5	55 Woo	ds, Good,	HSG B					
	13.	623 7	70 Woo	ds, Good,	HSG C					
	279.	312 3	39 Weig	ghted Aver	age					
	279.	312	100.	00% Pervi	ous Area					
	Тс	Length	Slope	Velocity	Capacity	Description				
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
	14.8	100	0.0764	0.11		Sheet Flow,				
						Woods: Light underbrush n= 0.400 P2= 2.31"				
	4.7	581	0.1683	2.05		Shallow Concentrated Flow,				
						Woodland Kv= 5.0 fps				
	25.7	1,199	0.0241	0.78		Shallow Concentrated Flow,				
						Woodland Kv= 5.0 fps				
	0.8	189	0.0157	3.84	76.82	Channel Flow, Rerouted Stream				
						Area= 20.0 sf Perim= 32.6' r= 0.61'				
						n= 0.035 Earth, dense weeds				
	154.9	4,646	0.0051	0.50		Shallow Concentrated Flow,				
	0.0	50	0.0500	4.40		Short Grass Pasture Kv= 7.0 fps				
	0.8	56	0.0566	1.19		Shallow Concentrated Flow,				
						Woodland Kv= 5.0 fps				
	2017	6 771	Total							

201.7 6,771 Total



#### Subcatchment 1.3aS1: Surface Discharge

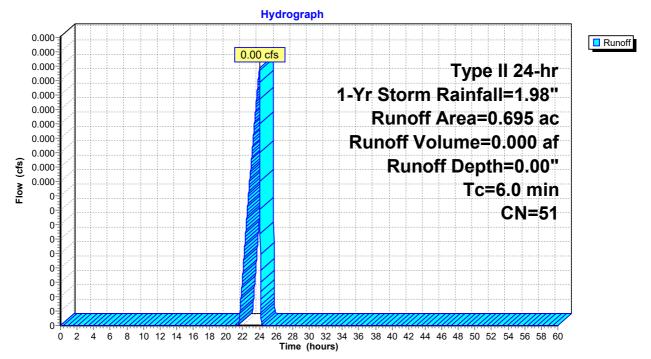
#### Summary for Subcatchment 1.3bS: Access Rd to Pond 3

Runoff = 0.00 cfs @ 24.01 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Pond 1.3P : Pond 3 - Access Rd West

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

	Area	(ac)	CN	Desc	cription						
	0.	473	30	0 Meadow, non-grazed, HSG A							
*	0.	063	96	Grav	el surface	, HSG A, R	Redev				
*	0.	159	96	Grav	el surface	, HSG A					
	0.	695	51	Weig	ghted Aver	age					
	0.	0.695 100.00% Pervious Area				ous Area					
	Tc (min)	Leng (fee		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
	6.0						Direct Entry,				





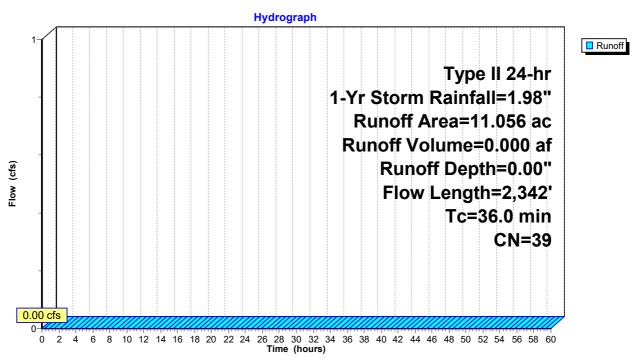
#### Summary for Subcatchment 2S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP2 : Study Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac) C	N Desc	cription							
1.	1.417 96 Gravel surface, HSG A									
0.573 39 >75% Grass cover, Good, HSG A										
6.	.530 3	0 Mea	dow, non-g	grazed, HS	GA					
2.	.536 3	0 Woo	ds, Good,	HSG A						
11.	.056 3	9 Weig	ghted Aver	age						
11.	.056	100.0	00% Pervi	ous Area						
Tc	Length	Slope	Velocity	Capacity	Description					
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)						
10.7	100	0.0624	0.16		Sheet Flow,					
					Grass: Dense n= 0.240 P2= 2.31"					
2.7	614	0.0535	3.72		Shallow Concentrated Flow,					
					Unpaved Kv= 16.1 fps					
12.1	1,184	0.0543	1.63		Shallow Concentrated Flow,					
					Short Grass Pasture Kv= 7.0 fps					
1.9	115	0.0407	1.01		Shallow Concentrated Flow,					
					Woodland Kv= 5.0 fps					
0.6	68	0.1443	1.90		Shallow Concentrated Flow,					
	004	0.0440	0.54		Woodland Kv= 5.0 fps					
8.0	261	0.0118	0.54		Shallow Concentrated Flow,					
					Woodland Kv= 5.0 fps					
36.0	2,342	Total								

#### Subcatchment 2S:



#### Summary for Subcatchment 3S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP3 : Study Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac) C	N Des	cription		
				& Rooftops	
				over, Good	
				over, Good	
				grazed, HS	GA
			ods, Good, ods, Good,		
			ghted Aver		
	.048 4 .560	-	4% Pervio		
	.088		% Impervi		
-					
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
5.4	52	0.0937	0.16		Sheet Flow,
					Grass: Dense n= 0.240 P2= 2.31"
3.7	625	0.1637	2.83		Shallow Concentrated Flow,
3.6	209	0.0384	0.98		Short Grass Pasture Kv= 7.0 fps Shallow Concentrated Flow,
5.0	203	0.0304	0.30		Woodland Kv= 5.0 fps
12.7	886	Total			
				Subca	atchment 3S:
				Hydrog	graph
<sup>1</sup> -1					
					Type II 24-hr
-					1-Yr Storm Rainfall=1.98"
					Runoff Area=15.648 ac
-					Runoff Volume=0.000 af
cfs)					Runoff Depth=0.00"
Flow (cfs)					Flow Length=886'
Εl					
1					Tc=12.7 min
					CN=40
-					
0.00	cfs				
0	2 4 6	8 10 12	14 16 18 20	22 24 26 28	30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60
0	3				(hours)

#### Summary for Subcatchment 4.1S:

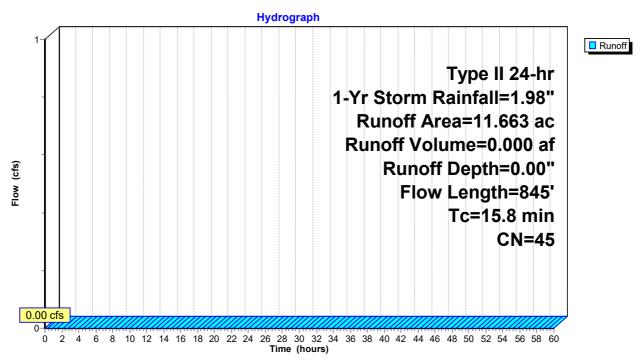
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 4.1R1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac)	CN	Desc	cription						
0.	327	98	Pave	aved Roads & Rooftops						
0.	375	96	Grav	el surface						
0.	165	61	>75%	6 Grass co	over, Good	, HSG B				
2.	544	30								
0.	560	58	Mea	dow, non-g	grazed, HS	GB				
3.	605	30		, , ,						
4.	087	55	Woo	ds, Good,	HSG B					
11.	663	45	Weig	ghted Aver	age					
11.336			97.2	97.20% Pervious Area						
0.	327		2.80	% Impervi	ous Area					
_					- ··					
	•		•			Description				
	· · ·	/			(cfs)					
8.5	10	0 0	.0430	0.20		Sheet Flow,				
	_	_				Grass: Short n= 0.150 P2= 2.31"				
2.6	36	0 0	.1077	2.30		Shallow Concentrated Flow,				
						Short Grass Pasture Kv= 7.0 fps				
4.7	38	5 0	.0735	1.36		Shallow Concentrated Flow,				
45.0						Woodland Kv= 5.0 fps				
	0. 0. 0. 2. 0. 3. 4. 11. 11. 0. Tc (min) 8.5 2.6 4.7	0.327 Tc Lengt ( <u>min) (feet</u> 8.5 10 2.6 36 4.7 38	0.327 98 0.375 96 0.165 61 2.544 30 0.560 58 3.605 30 4.087 55 11.663 45 11.336 0.327 Tc Length 5 (min) (feet) 8.5 100 0 2.6 360 0 4.7 385 0	0.327         98         Pave           0.375         96         Grav           0.165         61         >759           2.544         30         Mead           0.560         58         Mead           3.605         30         Woo           4.087         55         Woo           11.663         45         Weig           11.336         97.20           0.327         2.800           Tc         Length         Slope           (min)         (feet)         (ft/ft)           8.5         100         0.0430           2.6         360         0.1077           4.7         385         0.0735	0.327         98         Paved Roads &           0.375         96         Gravel surface           0.165         61         >75% Grass co           2.544         30         Meadow, non-g           0.560         58         Meadow, non-g           0.560         58         Meadow, non-g           3.605         30         Woods, Good,           4.087         55         Woods, Good,           11.663         45         Weighted Aver           11.336         97.20% Pervio           0.327         2.80% Impervio           Tc         Length         Slope         Velocity           (min)         (feet)         (ft/ft)         (ft/sec)           8.5         100         0.0430         0.20           2.6         360         0.1077         2.30           4.7         385         0.0735         1.36	0.327         98         Paved Roads & Rooftops           0.375         96         Gravel surface           0.165         61         >75% Grass cover, Good           2.544         30         Meadow, non-grazed, HS           0.560         58         Meadow, non-grazed, HS           3.605         30         Woods, Good, HSG A           4.087         55         Woods, Good, HSG B           11.663         45         Weighted Average           11.336         97.20% Pervious Area           0.327         2.80% Impervious Area           0.327         2.30           4.7         385         0.0735				

15.8 845 Total

Subcatchment 4.1S:



#### Summary for Subcatchment 4.2aS:

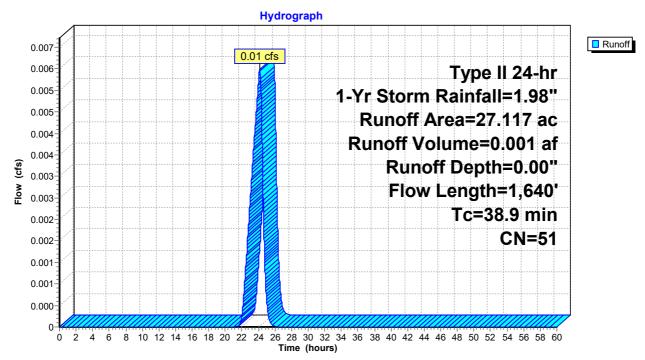
Runoff = 0.01 cfs @ 24.16 hrs, Volume= 0.001 af, Depth= 0.00" Routed to Pond 4.2C : 18" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

	Area	(ac) C	N Dese	cription				
*	0.	238	96 Grav	el surface/	•			
	4.	086	30 Mea	dow, non-	grazed, HS	GA		
	0.	384	58 Mea	Meadow, non-grazed, HSG B				
	0.	977	30 Woo	ds, Good,	HSG A			
_	21.	432	55 Woo	ds, Good,	HSG B			
	27.	117	51 Weig	ghted Avei	rage			
	27.	117	100.	00% Pervi	ous Area			
	Tc	Length	Slope	Velocity	Capacity	Description		
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)			
	17.8	100	0.0480	0.09		Sheet Flow,		
						Woods: Light underbrush n= 0.400 P2= 2.31"		
	8.0	878	0.1354	1.84		Shallow Concentrated Flow,		
						Woodland Kv= 5.0 fps		
	13.1	662	0.0144	0.84		Shallow Concentrated Flow,		
						Short Grass Pasture Kv= 7.0 fps		

38.9 1,640 Total

Subcatchment 4.2aS:



#### Summary for Subcatchment 4.2bS:

Runoff = 0.19 cfs @ 12.00 hrs, Volume= 0.011 af, Depth= 0.28" Routed to Reach 4.2bR : Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

72 Weighted Av	/erage		
ngth Slope Veloci	ty Capacity	Description	
		Direct Entry,	
	Subcatc	hment 4.2bS:	
	Hydrogr	aph	
0.19 cfs		Type II 24-hr	Runof
		1-Yr Storm Rainfall=1.98"	
		Runoff Volume=0.011 af	
		CN=72	
	72 Weighted Av 100.00% Pe ngth Slope Velocit eet) (ft/ft) (ft/sec	72 Weighted Average 100.00% Pervious Area ngth Slope Velocity Capacity eet) (ft/ft) (ft/sec) (cfs) <b>Subcatc</b> Hydrogr	72 Weighted Average 100.00% Pervious Area ngth Slope Velocity Capacity Description eet) (ft/ft) (ft/sec) (cfs) Direct Entry, Subcatchment 4.2bS: Hydrograph 0.19 cfs 0.19 cfs Type II 24-hr 1-Yr Storm Rainfall=1.98" Runoff Area=0.470 ac Runoff Volume=0.011 af Runoff Depth=0.28" Tc=6.0 min

#### Summary for Subcatchment 4.3S:

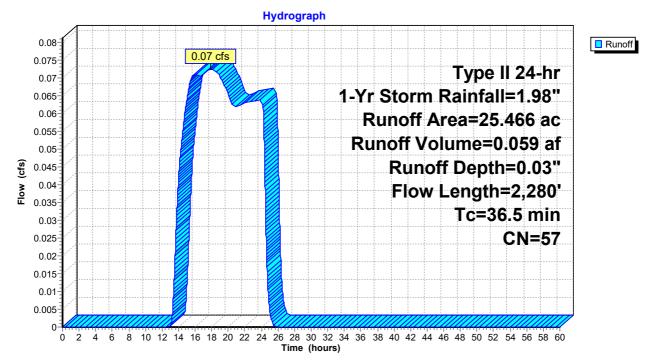
Runoff = 0.07 cfs @ 17.89 hrs, Volume= 0.059 af, Depth= 0.03" Routed to Pond 4.3C : 24" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

	Area	(ac) C	N Desc	cription		
*	1.	293 9	8 Pave	ed Roads &	& Rooftops	
	1.	783 5	68 Mea	dow, non-g	grazed, HS	GB
	22.	390 5	5 Woo	ds, Good,	HSG B	
	25.	466 5	57 Weig	ghted Aver	age	
	24.	173	94.9	2% Pervio	us Area	
	1.	293	5.08	% Impervi	ous Area	
	Тс	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	15.9	100	0.0634	0.10		Sheet Flow,
						Woods: Light underbrush n= 0.400 P2= 2.31"
	17.8	1,368	0.0656	1.28		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps
	0.1	38	0.3960	4.40		Shallow Concentrated Flow,
						Short Grass Pasture Kv= 7.0 fps
	2.7	774	0.0281	4.70	109.09	Channel Flow,
						Area= 23.2 sf Perim= 43.2' r= 0.54' n= 0.035

36.5 2,280 Total

#### Subcatchment 4.3S:

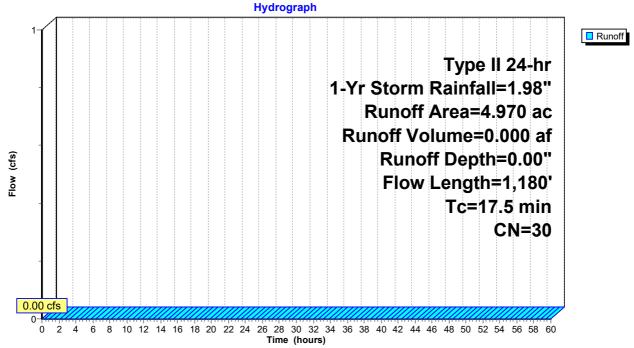


#### Summary for Subcatchment 5S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP5 : Study Point 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

Area	(ac) C	N Desc	cription							
4.	4.139 30 Meadow, non-grazed, HSG A									
0.	0.831 30 Woods, Good, HSG A									
4.	4.970 30 Weighted Average									
4.	970	100.	00% Pervi	ous Area						
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
7.1	100	0.0675	0.24		Sheet Flow,					
8.5	801	0.0508	1.58		Grass: Short n= 0.150 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps					
1.3	217	0.1515	2.72		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps					
0.6	62	0.0697	1.85		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps					
17.5	1,180	Total								
	Subcatchment 5S:									



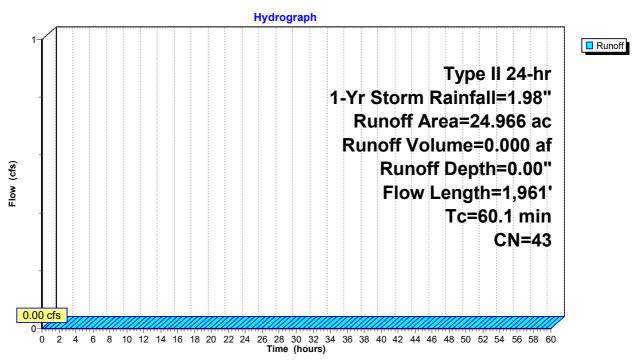
#### Summary for Subcatchment 6S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP6 : Study Point 6

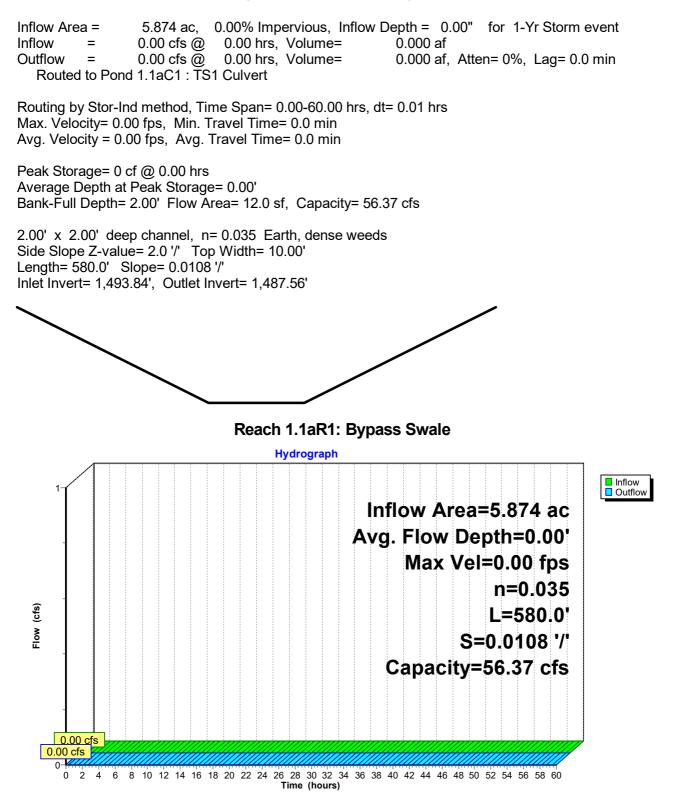
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Yr Storm Rainfall=1.98"

	Area	(ac)	CN De	scription		
*	1.	450	98 Pav	ed Roads	& Rooftops	
	0.	466	96 Gra	vel surface	e, HSG A	
	2.	545	61 >75	5% Grass c	over, Good	, HSG B
	7.	511	30 Me	adow, non-	grazed, HS	G A
	0.	788	58 Me	adow, non-	grazed, HS	G B
	7.	940	30 Wc	ods, Good,	HSG A	
	4.	266	55 Wc	ods, Good,	HSG B	
	24.	966	43 We	ighted Ave	rage	
	23.	516		19% Pervic	•	
	1.	450	5.8	1% Impervi	ous Area	
				-		
	Tc	Length	n Slope	Velocity	Capacity	Description
	(min)	(feet	) (ft/ft)	(ft/sec)	(cfs)	
	10.1	100	0.0278	0.16		Sheet Flow,
						Grass: Short n= 0.150 P2= 2.31"
	3.2	313	0.0528	1.61		Shallow Concentrated Flow,
						Short Grass Pasture Kv= 7.0 fps
	3.9	486	6 0.1742	2.09		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps
	42.9	1,062	2 0.0068	0.41		Shallow Concentrated Flow,
_						Woodland Kv= 5.0 fps
	60.1	1,961	Total			

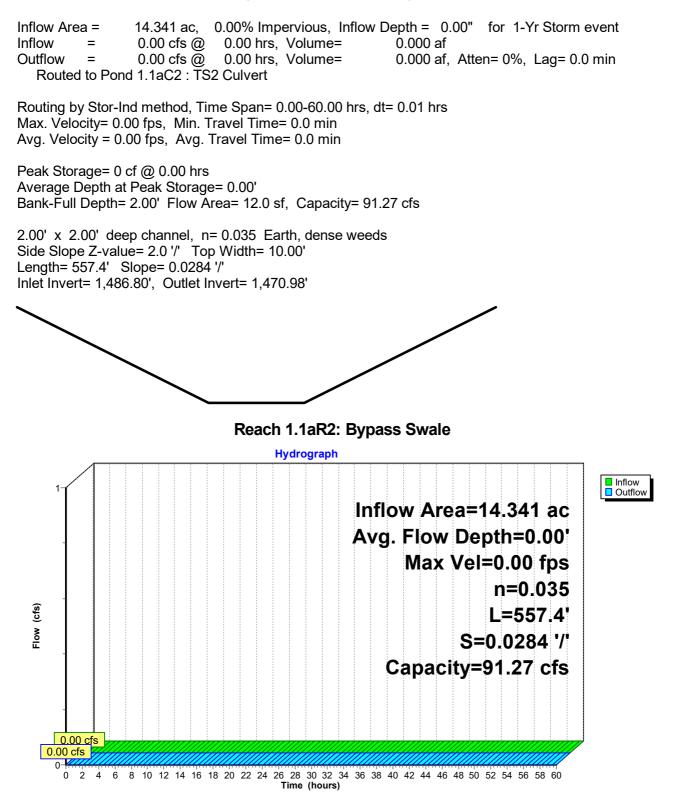
### Subcatchment 6S:



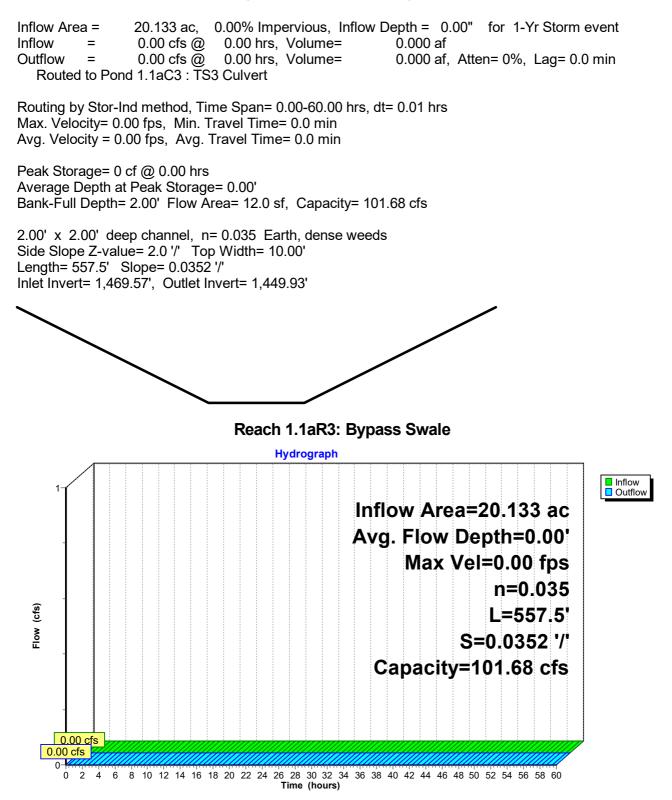
### Summary for Reach 1.1aR1: Bypass Swale



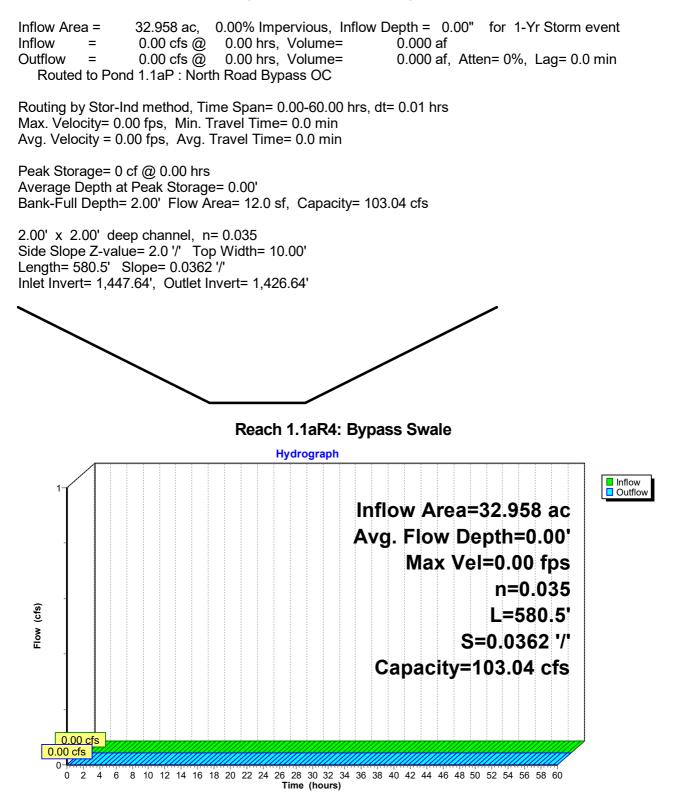
### Summary for Reach 1.1aR2: Bypass Swale



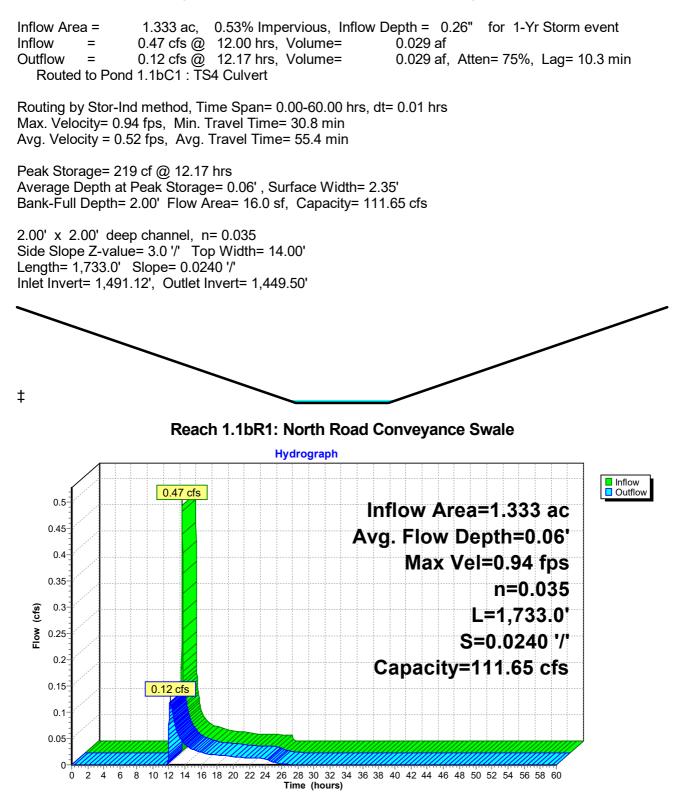
### Summary for Reach 1.1aR3: Bypass Swale



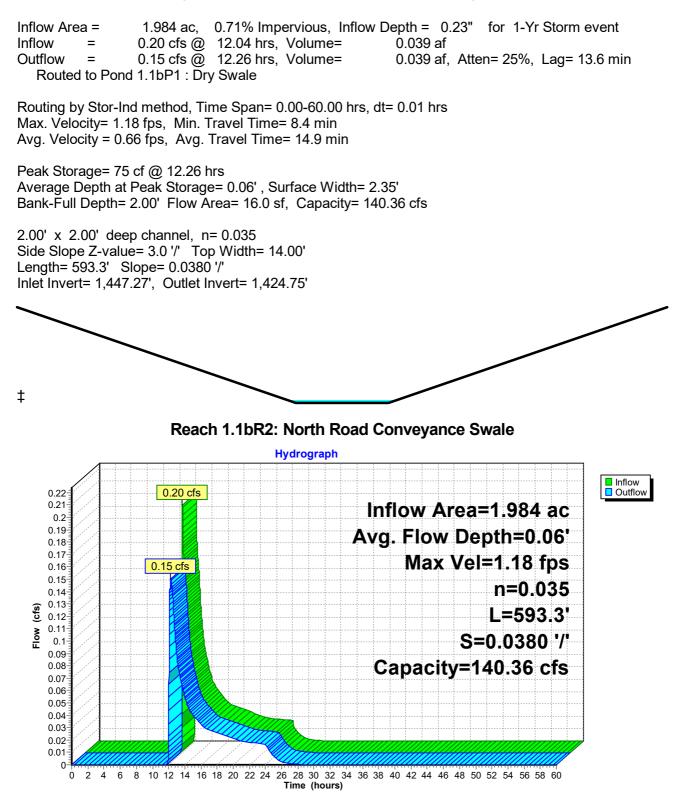
#### Summary for Reach 1.1aR4: Bypass Swale



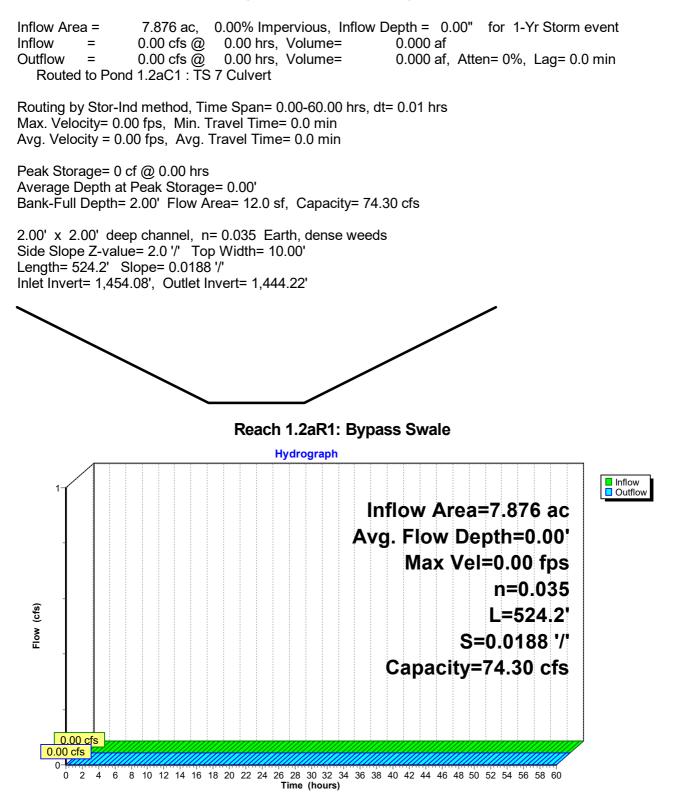
#### Summary for Reach 1.1bR1: North Road Conveyance Swale



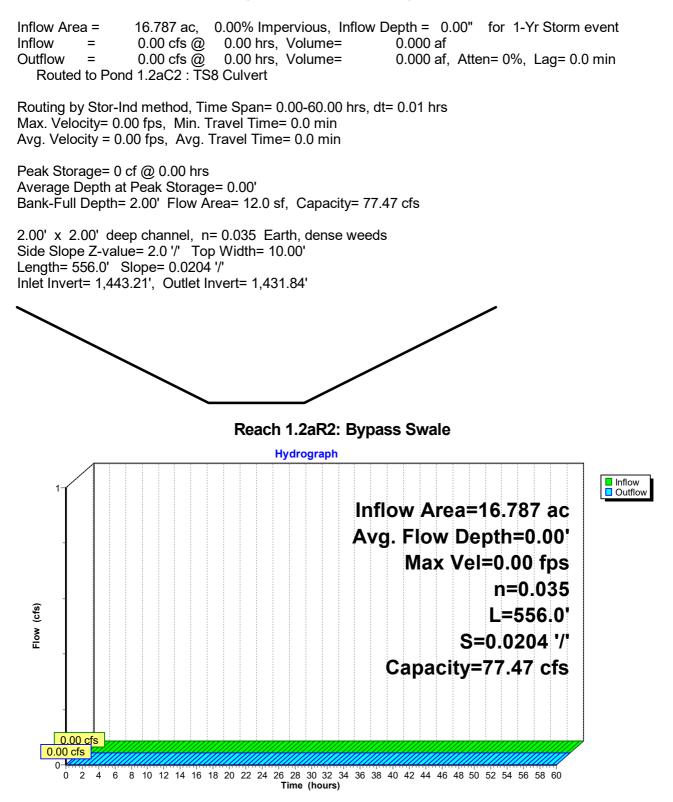
#### Summary for Reach 1.1bR2: North Road Conveyance Swale



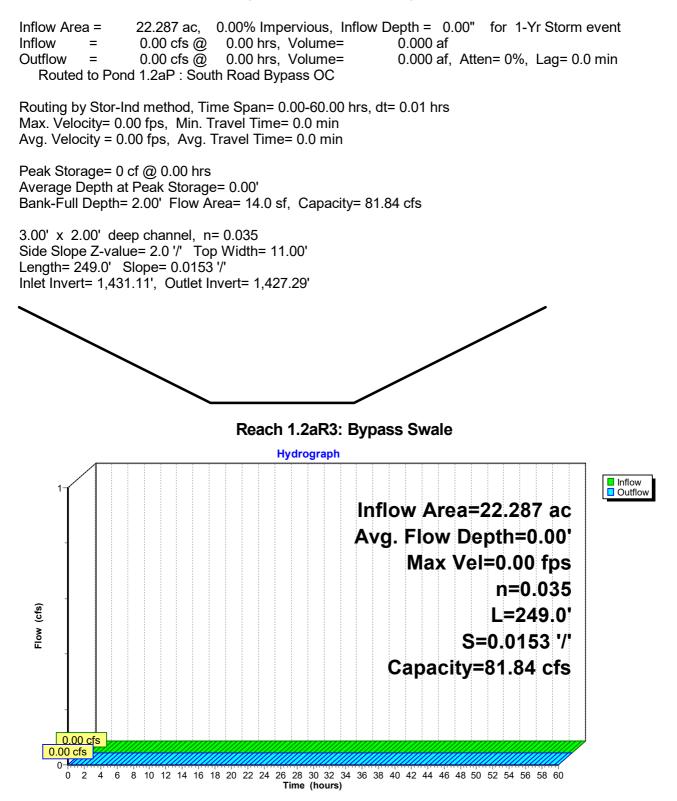
### Summary for Reach 1.2aR1: Bypass Swale

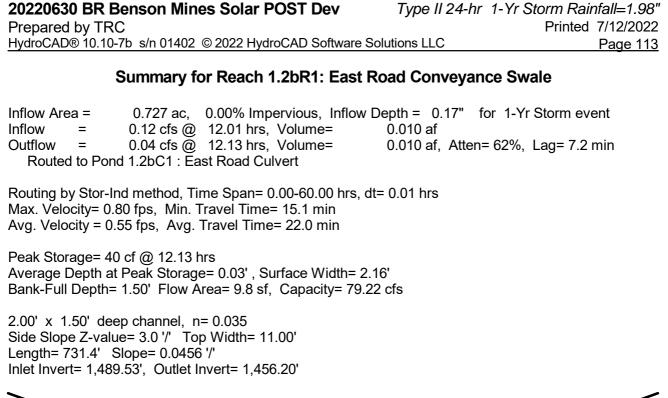


### Summary for Reach 1.2aR2: Bypass Swale



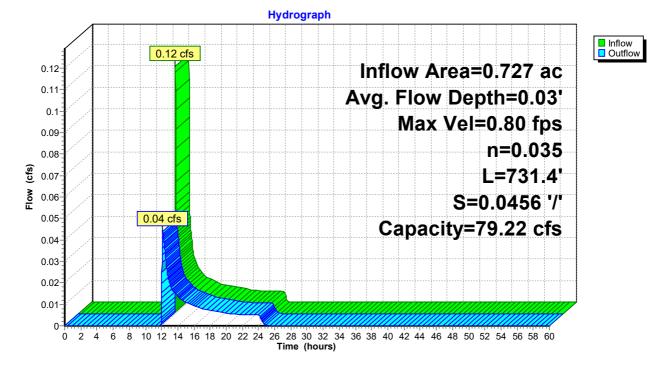
#### Summary for Reach 1.2aR3: Bypass Swale



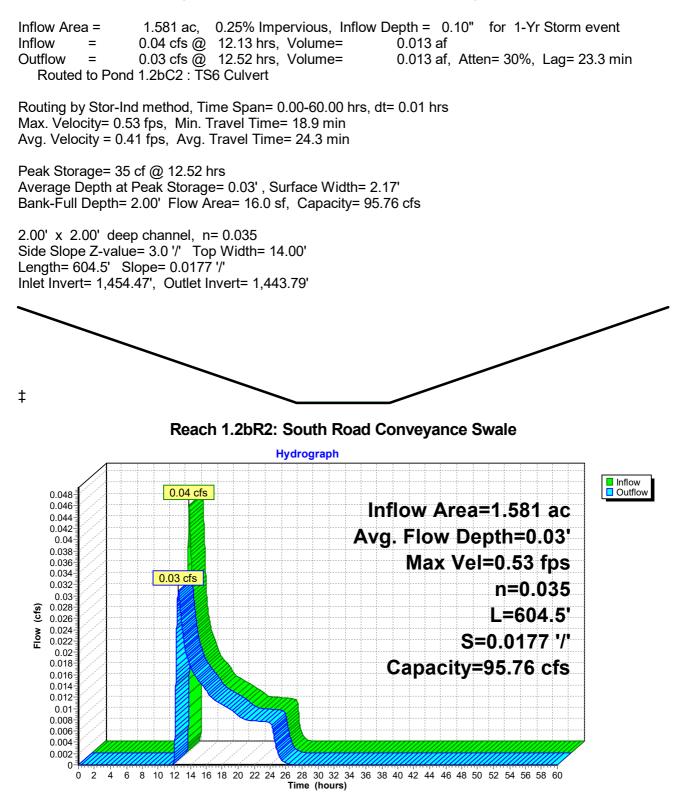




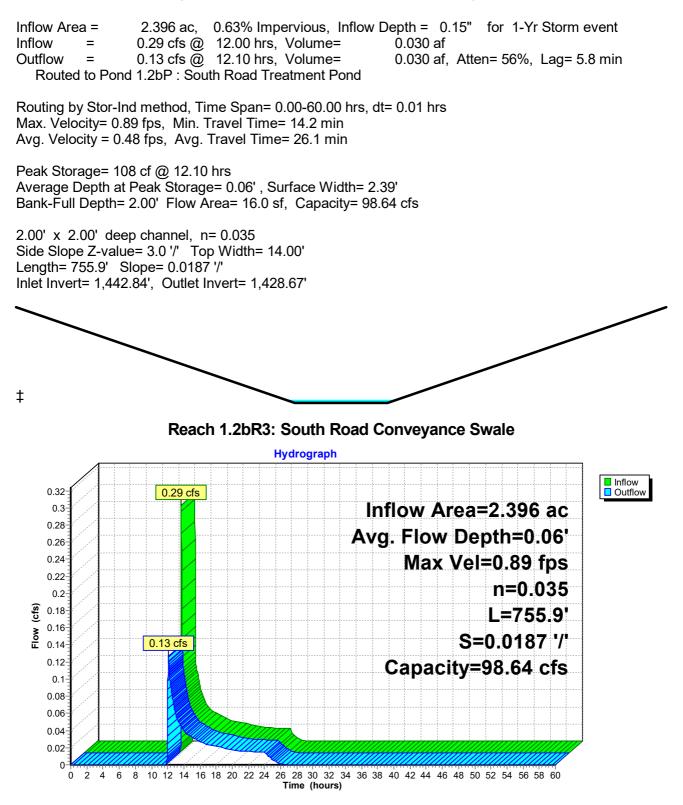
#### Reach 1.2bR1: East Road Conveyance Swale



#### Summary for Reach 1.2bR2: South Road Conveyance Swale



#### Summary for Reach 1.2bR3: South Road Conveyance Swale



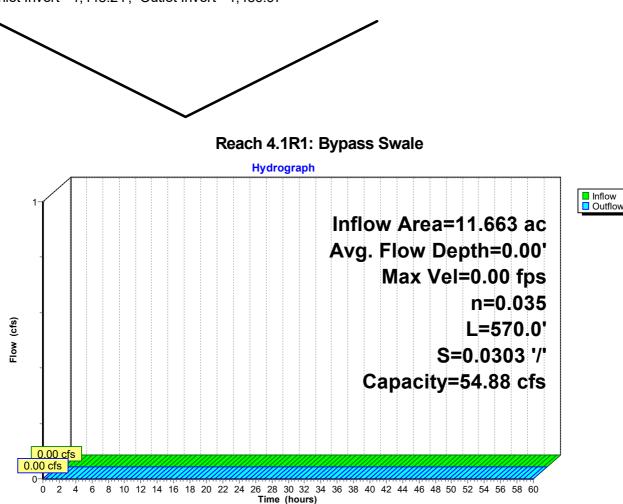
### Summary for Reach 4.1R1: Bypass Swale

Inflow Area = 11.663 ac, 2.80% Impervious, Inflow Depth = 0.00" for 1-Yr Storm event Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min Routed to Reach 4.1R2 : Ex Stream Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

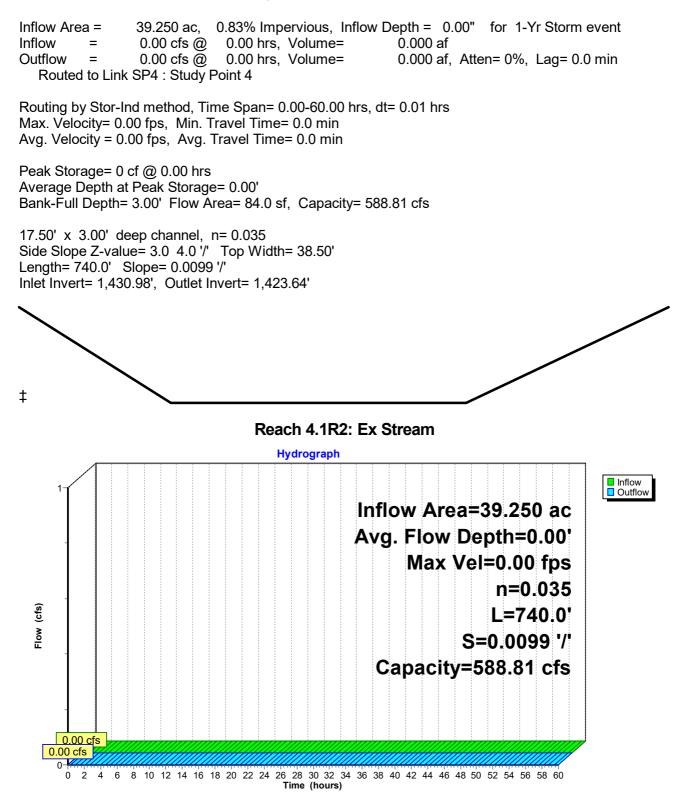
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs Average Depth at Peak Storage= 0.00' Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 54.88 cfs

0.00' x 2.00' deep channel, n= 0.035 Side Slope Z-value= 2.0 '/' Top Width= 8.00' Length= 570.0' Slope= 0.0303 '/' Inlet Invert= 1,448.24', Outlet Invert= 1,430.97'



#### Summary for Reach 4.1R2: Ex Stream



#### Summary for Reach 4.2bR: Conveyance Swale

Inflow Area = 0.470 ac, 0.00% Impervious, Inflow Depth = 0.28" for 1-Yr Storm event 0.19 cfs @ 12.00 hrs, Volume= Inflow = 0.011 af 0.12 cfs @ 12.06 hrs, Volume= 0.011 af, Atten= 39%, Lag= 4.1 min Outflow Routed to Pond 4.2bP : Pond 4 - Access Rd East Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Max. Velocity= 1.13 fps, Min. Travel Time= 8.4 min Avg. Velocity = 0.55 fps, Avg. Travel Time= 17.2 min Peak Storage= 59 cf @ 12.06 hrs Average Depth at Peak Storage= 0.05', Surface Width= 2.29' Bank-Full Depth= 1.50' Flow Area= 9.8 sf, Capacity= 77.09 cfs 2.00' x 1.50' deep channel, n= 0.035 Side Slope Z-value= 3.0 '/' Top Width= 11.00' Length= 565.0' Slope= 0.0432 '/' Inlet Invert= 1,472.38', Outlet Invert= 1,448.00' ‡ Reach 4.2bR: Conveyance Swale Hydrograph Inflow 0.19 cfs Outflow 0.21 Inflow Area=0.470 ac 0.2 0.19 Avg. Flow Depth=0.05' 0.18 0.17 Max Vel=1.13 fps 0.16 0.15 0.14 n=0.035 0.13 0.12 cfs (cfs) 0.12 L=565.0' 0.11 Flow 0.1 S=0.0432 '/' 0.09 Capacity=77.09 cfs 0.08 0.07 0.06 0.05 0.04 0.03 0.02

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

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### Summary for Pond 1.1aC1: TS1 Culvert

Inflow Area = 5.874 ac, 0.00% Impervious, Inflow Depth = 0.00" for 1-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = Outflow 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.1aR2 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,487.56' @ 0.00 hrs Flood Elev= 1,489.60' **Outlet Devices** Device Routing Invert 36.3" W x 22.5" H, R=18.8"/51.0" Pipe Arch RCP\_Arch 37x23 #1 Primary 1.487.56 L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,487.56' / 1,486.80' S= 0.0162 '/' Cc= 0.900 n= 0.012, Flow Area= 4.43 sf **Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,487.56' (Free Discharge) **1=RCP\_Arch 37x23** (Controls 0.00 cfs) Pond 1.1aC1: TS1 Culvert Hydrograph Inflow Primary Inflow Area=5.874 ac Peak Elev=1,487.56' 36.3" x 22.5" R=18.8"/51.0" (cfs) **Pipe Arch Culvert** Flow n=0.012 L=47.0' S=0.0162 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

### Summary for Pond 1.1aC2: TS2 Culvert

Inflow Area = 14.341 ac, 0.00% Impervious, Inflow Depth = 0.00" for 1-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min 0.00 hrs, Volume= 0.000 af Primary = 0.00 cfs @ Routed to Reach 1.1aR3 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,470.80' @ 0.00 hrs Flood Elev= 1,473.07' Device Routing Invert **Outlet Devices** 48.0" W x 24.0" H Box Culvert #1 Primary 1.470.80' L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,470.80' / 1,469.57' S= 0.0262 '/' Cc= 0.900 n= 0.012, Flow Area= 8.00 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,470.80' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.1aC2: TS2 Culvert Hydrograph Inflow Primary Inflow Area=14.341 ac Peak Elev=1,470.80' 48.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.0' S=0.0262 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

### Summary for Pond 1.1aC3: TS3 Culvert

Inflow Area = 20.133 ac, 0.00% Impervious, Inflow Depth = 0.00" for 1-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min 0.00 hrs, Volume= 0.000 af Primary = 0.00 cfs @ Routed to Reach 1.1aR4 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,449.55' @ 0.00 hrs Flood Elev= 1,452.10' Device Routing Invert **Outlet Devices** 60.0" W x 24.0" H Box Culvert #1 Primary 1.449.55' L= 47.2' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,449.55' / 1,447.64' S= 0.0405 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 10.00 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,449.55' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.1aC3: TS3 Culvert Hydrograph Inflow Primary Inflow Area=20.133 ac Peak Elev=1,449.55' 60.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.2' S=0.0405 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

### Summary for Pond 1.1aP: North Road Bypass OC

Inflow Area = 32.958 ac, 0.00% Impervious, Inflow Depth = 0.00" for 1-Yr Storm event Inflow 0.00 cfs @ 0.00 hrs, Volume= = 0.000 af 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Link 1.1L :

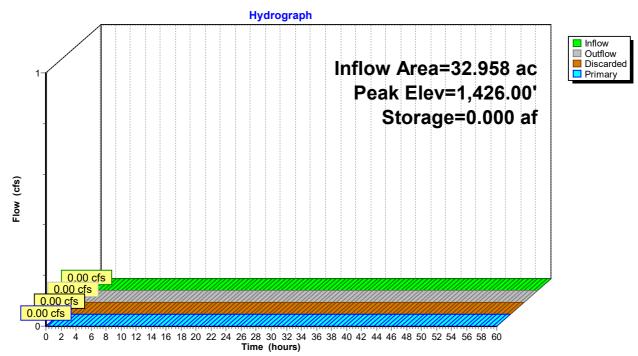
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,426.00' @ 0.00 hrs Surf.Area= 0.005 ac Storage= 0.000 af

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

Volume	lume Invert Avail.Storage		ge Storage Description
#1	1,426.00'	0.069	af 10.00'W x 20.00'L x 4.00'H Prismatoid Z=3.0
Device #1 #2	Routing Discarded Primary	1,426.00' 1,428.50'	Outlet Devices           0.500 in/hr Exfiltration over Surface area         Phase-In= 0.01'           10.0' long x 10.0' breadth Broad-Crested Rectangular Weir           Head (feet)         0.20         0.40         0.60         0.80         1.00         1.20         1.40         1.60           Coef. (English)         2.49         2.56         2.70         2.69         2.68         2.69         2.67         2.64

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,426.00' (Free Discharge) **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,426.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



### Pond 1.1aP: North Road Bypass OC

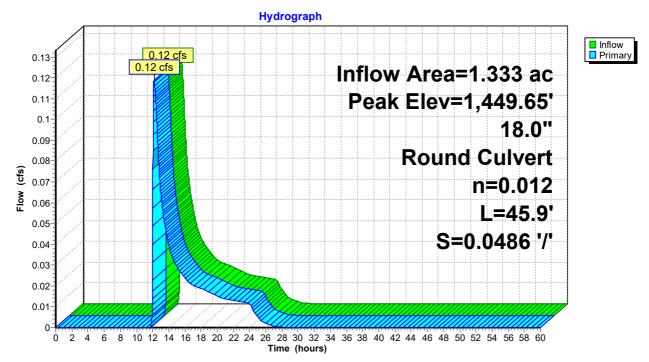
## Summary for Pond 1.1bC1: TS4 Culvert

Inflow Area = 1.333 ac, 0.53% Impervious, Inflow Depth = 0.26" for 1-Yr Storm event Inflow = 0.12 cfs @ 12.17 hrs, Volume= 0.029 af Outflow = 0.12 cfs @ 12.17 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min Primary = 0.12 cfs @ 12.17 hrs, Volume= 0.029 af Routed to Reach 1.1bR2 : North Road Conveyance Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,449.65' @ 12.17 hrs

Flood Elev= 1,451.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,449.50'	<b>18.0" Round Culvert</b> L= 45.9' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,449.50' / 1,447.27' S= 0.0486 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.12 cfs @ 12.17 hrs HW=1,449.65' (Free Discharge) ←1=Culvert (Inlet Controls 0.12 cfs @ 1.31 fps)



#### Pond 1.1bC1: TS4 Culvert

### Summary for Pond 1.1bP1: Dry Swale

Inflow Area =	1.984 ac,	0.71% Impervious, Inflow	Depth = 0.23" for 1-Yr Storm event				
Inflow =	0.15 cfs @	12.26 hrs, Volume=	0.039 af				
Outflow =	0.15 cfs @	12.31 hrs, Volume=	0.039 af, Atten= 1%, Lag= 2.8 min				
Discarded =	0.00 cfs @	12.31 hrs, Volume=	0.004 af				
Primary =	0.15 cfs @	12.31 hrs, Volume=	0.035 af				
Routed to Pond 1.1bP2 : North Road Detention Pond							

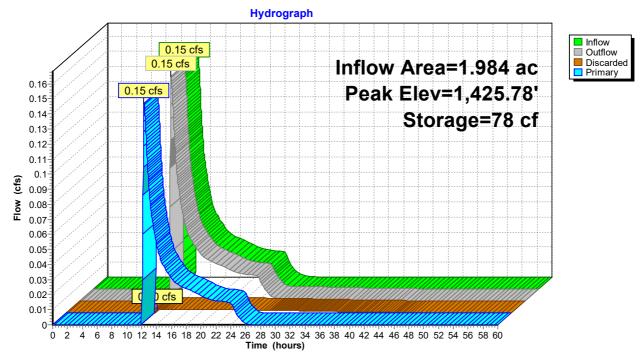
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,425.78' @ 12.31 hrs Surf.Area= 197 sf Storage= 78 cf

Plug-Flow detention time= 49.3 min calculated for 0.039 af (100% of inflow) Center-of-Mass det. time= 49.5 min (1,022.2 - 972.7)

Volume	Inve	ert Avail	.Storage	Storage Description	on		
#1	1,424.7	5'	428 cf	Custom Stage Da	<b>ta (Irregular)</b> Liste	d below (Recalc)	
Elevatio (fee 1,424.7 1,425.0 1,426.0 1,426.7	et) 75 00 00	Surf.Area (sq-ft) 0 25 273 603	Perim. (feet) 0.0 22.9 98.0 161.7	Inc.Store (cubic-feet) 0 2 127 299	Cum.Store (cubic-feet) 0 2 129 428	Wet.Area (sq-ft) 0 42 767 2,086	
Device	Routing	Inv	vert Outl	et Devices			
#1	Discarde	d 1,424.	.75' <b>0.50</b>	0 in/hr Exfiltration	over Surface area	Phase-In= 0.01'	
#2	Primary	1,425.	69' <b>2.0'</b>	long x 2.0' breadtl	n Broad-Crested F	Rectangular Weir	
			Hea	d (feet) 0.20 0.40	0.60 0.80 1.00 1	1.20 1.40 1.60 1.80 2.0	00
			2.50	3.00 3.50			
				( )	.61 2.61 2.60 2.6	6 2.70 2.77 2.89 2.88	\$
			2.85	3.07 3.20 3.32			

**Discarded OutFlow** Max=0.00 cfs @ 12.31 hrs HW=1,425.78' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.15 cfs @ 12.31 hrs HW=1,425.78' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 0.15 cfs @ 0.78 fps)



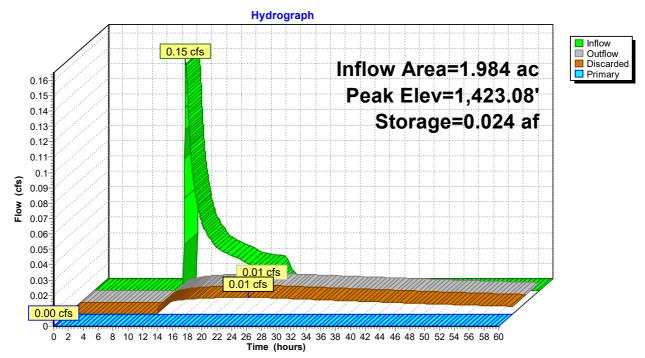
# Pond 1.1bP1: Dry Swale

### Summary for Pond 1.1bP2: North Road Detention Pond

Discarde Primary	= = ed =	0.15 cfs @ 0.01 cfs @ 0.01 cfs @ 2 0.00 cfs @	0.71% Impervious, Inflow Depth =       0.21" for 1-Yr Storm event         12.31 hrs, Volume=       0.035 af         24.37 hrs, Volume=       0.034 af, Atten= 92%, Lag= 723.7 min         24.37 hrs, Volume=       0.034 af         0.00 hrs, Volume=       0.000 af				
•	Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,423.08' @ 24.37 hrs Surf.Area= 0.022 ac Storage= 0.024 af						
0			.8 min calculated for 0.034 af (96% of inflow) .6 min(2,017.3 - 970.8)				
Volume	Inver	t Avail.Stor	age Storage Description				
#1	1,421.50	0.16	6 af 10.00'W x 40.00'L x 5.00'H Prismatoid Z=3.0				
Device	Routing	Invert	Outlet Devices				
#1 #2	Discarded Primary	1,421.50 1,424.00					

**Discarded OutFlow** Max=0.01 cfs @ 24.37 hrs HW=1,423.08' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,421.50' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



# Pond 1.1bP2: North Road Detention Pond

### Summary for Pond 1.2aC1: TS 7 Culvert

Inflow Area = 7.876 ac, 0.00% Impervious, Inflow Depth = 0.00" for 1-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = Outflow 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.2aR2 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,444.22' @ 0.00 hrs Flood Elev= 1,446.28' Device Routing Invert Outlet Devices 36.0" W x 24.0" H Box Culvert #1 Primary 1.444.22' L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,444.22' / 1,443.21' S= 0.0215 '/' Cc= 0.900 n= 0.012, Flow Area= 6.00 sf **Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,444.22' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.2aC1: TS 7 Culvert Hydrograph Inflow Primary Inflow Area=7.876 ac Peak Elev=1,444.22' 36.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.0' S=0.0215 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

### Summary for Pond 1.2aC2: TS8 Culvert

Inflow Area = 16.787 ac, 0.00% Impervious, Inflow Depth = 0.00" for 1-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.2aR3 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,431.65' @ 0.00 hrs Flood Elev= 1,433.87' Device Routing Invert **Outlet Devices** 60.0" W x 24.0" H Box Culvert #1 Primary 1.431.65' L= 47.5' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,431.65' / 1,431.11' S= 0.0114 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 10.00 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,431.65' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.2aC2: TS8 Culvert Hydrograph Inflow Primary Inflow Area=16.787 ac Peak Elev=1,431.65' 60.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.5' S=0.0114 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

### Summary for Pond 1.2aP: South Road Bypass OC

Inflow Area =	22.287 ac,	0.00% Impervious, Inflow D	Depth = 0.00" for 1-Yr Storm event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Discarded =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Link	1.2L :		

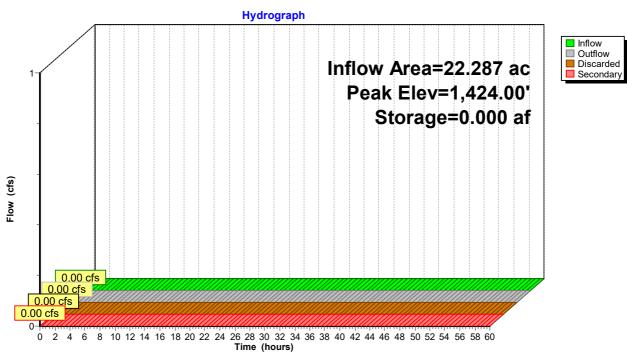
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,424.00' @ 0.00 hrs Surf.Area= 0.005 ac Storage= 0.000 af

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

Volume	Invert	Avail.Stora	ge Storage Description
#1	1,424.00'	0.069	af 10.00'W x 20.00'L x 4.00'H Prismatoid Z=3.0
Device	Routing	Invert	Outlet Devices
#1	Discarded	1,424.00'	12.000 in/hr Exfiltration over Surface area
#2	Secondary	1,426.50'	<b>10.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,424.00' (Free Discharge) **1=Exfiltration** (Passes 0.00 cfs of 0.06 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,424.00' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



### Pond 1.2aP: South Road Bypass OC

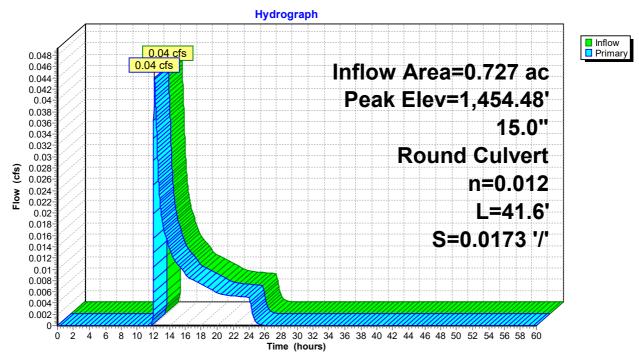
## Summary for Pond 1.2bC1: East Road Culvert

Inflow Area = 0.727 ac, 0.00% Impervious, Inflow Depth = 0.17" for 1-Yr Storm event 0.04 cfs @ 12.13 hrs, Volume= Inflow 0.010 af = 0.04 cfs @ 12.13 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min Outflow 0.04 cfs @ 12.13 hrs, Volume= 0.010 af Primary = Routed to Reach 1.2bR2 : South Road Conveyance Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 1,454.48' @ 12.13 hrs Flood Elev= 1,457.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,454.39'	15.0" Round Culvert
			L= 41.6' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,454.39' / 1,453.67' S= 0.0173 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.04 cfs @ 12.13 hrs HW=1,454.48' (Free Discharge) ←1=Culvert (Inlet Controls 0.04 cfs @ 1.04 fps)



# Pond 1.2bC1: East Road Culvert

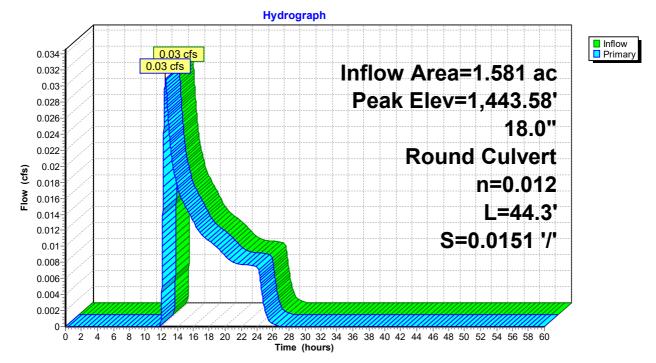
## Summary for Pond 1.2bC2: TS6 Culvert

Inflow Area = 1.581 ac, 0.25% Impervious, Inflow Depth = 0.10" for 1-Yr Storm event 0.03 cfs @ 12.52 hrs, Volume= Inflow 0.013 af = 0.03 cfs @ 12.52 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min Outflow 0.013 af Primary = 0.03 cfs @ 12.52 hrs, Volume= Routed to Reach 1.2bR3 : South Road Conveyance Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 1,443.58' @ 12.52 hrs Flood Elev= 1,445.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,443.51'	18.0" Round Culvert
			L= 44.3' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 1,443.51' / 1,442.84' S= 0.0151 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.03 cfs @ 12.52 hrs HW=1,443.58' (Free Discharge) ←1=Culvert (Inlet Controls 0.03 cfs @ 0.93 fps)



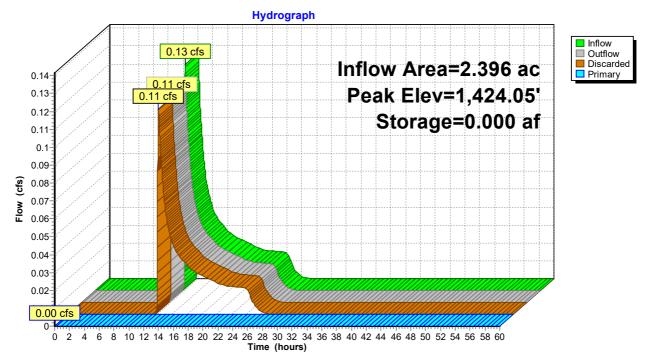
### Pond 1.2bC2: TS6 Culvert

### Summary for Pond 1.2bP: South Road Treatment Pond

Inflow Ar Inflow Outflow Discarde Primary Route	=	0.11 cfs @ 0.11 cfs @ 0.00 cfs @	12.10 12.17 12.17	hrs, Volume hrs, Volume hrs, Volume hrs, Volume hrs, Volume	9= 9= 9=	0.030 af	, Atten=		Yr Storm event Lag= 4.6 min
	Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,424.05' @ 12.17 hrs Surf.Area= 0.009 ac Storage= 0.000 af								
Plug-Flow detention time= 3.0 min calculated for 0.030 af (100% of inflow) Center-of-Mass det. time= 3.0 min ( 987.7 - 984.7 )									
Volume	Inve	rt Avail.St	torage	Storage De	escription				
#1	1,424.0	0' 0.	149 af	20.00'W x 2	20.00'L x 5	5.00'H Pris	smatoic	d Z=3	3.0
Device	Routing	Inve	ert Ou	Itlet Devices					
#1	Discarde	d 1,424.0	00' <b>12</b>	.000 in/hr Ex	filtration	over Surf	ace are	a P	hase-In= 0.01'
#2	Primary	1,426.0	)5' <b>20</b>	.0' long x 10	.0' breadt	h Broad-	Crested	l Rect	angular Weir

**Discarded OutFlow** Max=0.11 cfs @ 12.17 hrs HW=1,424.05' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,424.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



### Pond 1.2bP: South Road Treatment Pond

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

### Summary for Pond 1.3P: Pond 3 - Access Rd West

Inflow Area =	0.695 ac,	0.00% Impervious, Inflow I	Depth = 0.00" for 1-Yr Storm event				
Inflow =	0.00 cfs @	24.01 hrs, Volume=	0.000 af				
Outflow =	0.00 cfs @	24.03 hrs, Volume=	0.000 af, Atten= 2%, Lag= 1.1 min				
Discarded =	0.00 cfs @	24.03 hrs, Volume=	0.000 af				
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af				
Routed to Link SP1 : Study Point 1							

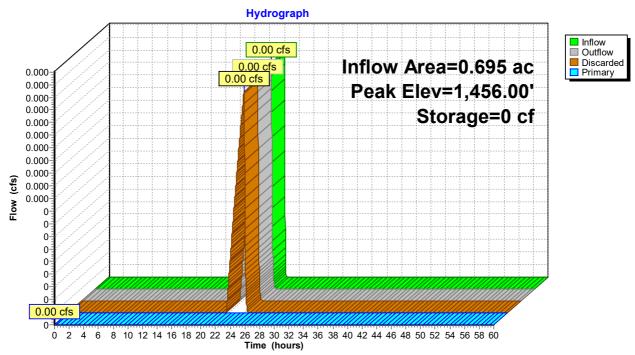
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,456.00' @ 24.03 hrs Surf.Area= 784 sf Storage= 0 cf

Plug-Flow detention time= 4.8 min calculated for 0.000 af (100% of inflow) Center-of-Mass det. time= 4.8 min (1,398.1 - 1,393.4)

Volume	Inve	rt Avai	l.Storage	Storage Description	on				
#1	1,456.00	כ'	8,743 cf	f Custom Stage Data (Irregular) Listed below (Recalc)					
Elevatic (fee 1,456.0 1,458.0 1,459.0 1,460.0	et) 00 00 00	Surf.Area (sq-ft) 784 1,720 2,884 5,280	Perim. (feet) 123.0 194.0 279.0 421.0	Inc.Store (cubic-feet) 0 2,443 2,277 4,022	Cum.Store (cubic-feet) 0 2,443 4,721 8,743	Wet.Area (sq-ft) 784 2,603 5,811 13,729			
Device	Routing	In	vert Outl	Outlet Devices					
#1	Discardeo	1,456	.00' 6.00	6.000 in/hr Exfiltration over Surface area Phase-In= 0.01'					
#2	Primary	1,459		20.0' long x 4.0' breadth Broad-Crested Rectangular Weir					
				Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00					
				2.50 3.00 3.50 4.00 4.50 5.00 5.50					
				Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32					
			2.00	2.12 2.13 2.10 2	.13 2.00 0.01 0.0				

**Discarded OutFlow** Max=0.00 cfs @ 24.03 hrs HW=1,456.00' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,456.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



# Pond 1.3P: Pond 3 - Access Rd West

#### Summary for Pond 4.2bP: Pond 4 - Access Rd East

 Inflow Area =
 0.470 ac, 0.00% Impervious, Inflow Depth = 0.28" for 1-Yr Storm event

 Inflow =
 0.12 cfs @
 12.06 hrs, Volume=
 0.011 af

 Outflow =
 0.04 cfs @
 12.50 hrs, Volume=
 0.011 af, Atten= 69%, Lag= 26.2 min

 Discarded =
 0.04 cfs @
 12.50 hrs, Volume=
 0.011 af, Atten= 69%, Lag= 26.2 min

 Primary =
 0.00 cfs @
 0.00 hrs, Volume=
 0.011 af

 Routed to Pond 4.2C : 18" Culvert
 0.000 af

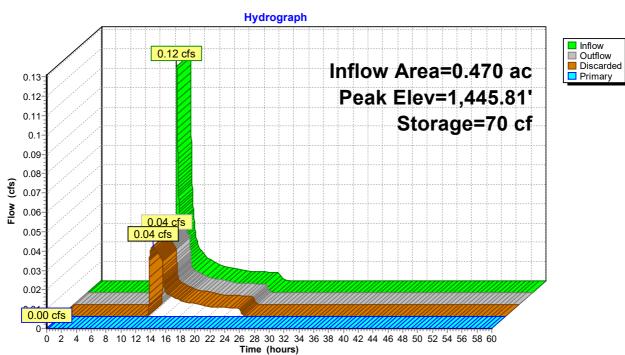
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,445.81' @ 12.50 hrs Surf.Area= 259 sf Storage= 70 cf

Plug-Flow detention time= 12.7 min calculated for 0.011 af (100% of inflow) Center-of-Mass det. time= 12.7 min ( 939.1 - 926.4 )

Volume	Invert	Avail.Stor	rage Storage Description
#1	1,445.50'	2,31	17 cf 10.00'W x 20.00'L x 3.50'H Prismatoid Z=3.0
Device	Routing	Invert	Outlet Devices
#1	Discarded	1,445.50'	6.000 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Primary	1,448.25'	10.0' long x 4.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66
			2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.04 cfs @ 12.50 hrs HW=1,445.81' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,445.50' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



#### Pond 4.2bP: Pond 4 - Access Rd East

#### Summary for Pond 4.2C: 18" Culvert

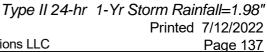
Inflow Area =	27.587 ac,	0.00% Impervious, Inflow E	Depth = 0.00" for 1-Yr Storm event	
Inflow =	0.01 cfs @	24.16 hrs, Volume=	0.001 af	
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 100%, Lag= 0.0 min	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Routed to Reach 4.1R2 : Ex Stream				

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,431.78' @ 26.20 hrs Surf.Area= 373 sf Storage= 35 cf Flood Elev= 1,434.64' Surf.Area= 27,666 sf Storage= 28,656 cf

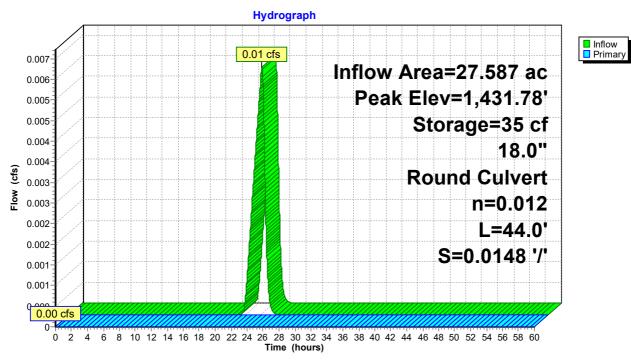
Plug-Flow detention time= (not calculated: initial storage exceeds outflow) Center-of-Mass det. time= (not calculated: no outflow)

Volume	Inve	ert Ava	il.Storage	Storage Description	on		
#1	1,431.5	50'	39,033 cf	Custom Stage Da	<b>ta (Irregular)</b> Liste	ed below (Recalc)	
Elevatio (fee		Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
1,431.5	1	<u>(34-11)</u> 0	0.0	0	0	(34-11)	
1,431.0		1,190	146.0	198	198	1,697	
1,432.5		3,534	368.0	1,129	1,327	10,778	
1,433.0		5,795	497.0	2,309	3,637	19,660	
1,433.5	60	10,362	837.0	3,984	7,621	55,755	
1,434.0	0	16,931	975.0	6,756	14,377	75,659	
1,434.6		27,412	1,352.0	13,177	27,555	145,474	
1,435.0	0	30,000	1,500.0	11,479	39,033	179,068	
Device	Routing	Ir	vert Outl	et Devices			
#1	Primary	1,43	1.83' <b>18.0</b>	" Round Culvert			
			L= 4	4.0' RCP, square	edge headwall, k	(e= 0.500	
				,	,	S= 0.0148 '/' Cc=	
			n= 0	.012 Corrugated P	P, smooth interior	r, Flow Area= 1.77	sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,431.50' (Free Discharge) ←1=Culvert (Controls 0.00 cfs)



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Pond 4.2C: 18" Culvert

### Summary for Pond 4.3C: 24" Culvert

Inflow Area = 25.466 ac, 5.08% Impervious, Inflow Depth = 0.03" for 1-Yr Storm event Inflow = 0.07 cfs @ 17.89 hrs, Volume= 0.059 af Outflow = 0.07 cfs @ 17.89 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.0 min Primary = 0.07 cfs @ 17.89 hrs, Volume= 0.059 af Routed to Link SP4 : Study Point 4 Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 1,431.46' @ 17.89 hrs Flood Elev= 1,434.65'

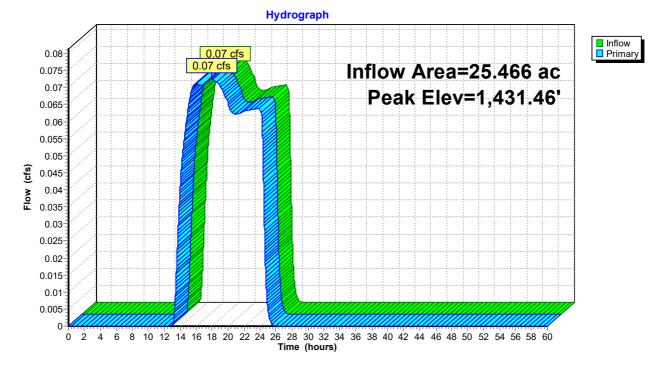
Device	Routing	Invert	Outlet Devices
#1	Primary	1,431.35'	24.0" Round Culvert
			L= 55.8' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 1,431.35' / 1,429.87' S= 0.0265 '/' Cc= 0.900
			n= 0.012, Flow Area= 3.14 sf
#2	Primary	1,434.81'	20.0' long x 30.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.07 cfs @ 17.89 hrs HW=1,431.46' (Free Discharge)

-1=Culvert (Inlet Controls 0.07 cfs @ 1.11 fps)

-2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4.3C: 24" Culvert

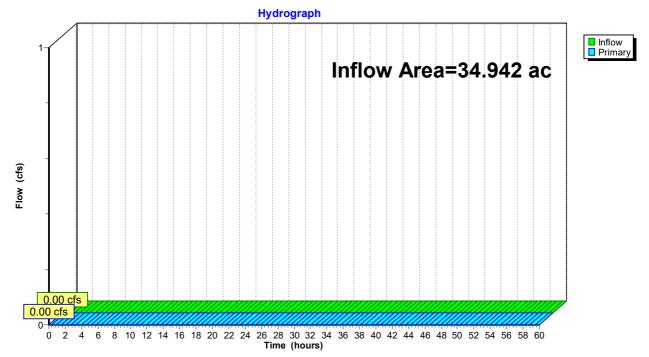


## Summary for Link 1.1L:

Inflow Area = 34.942 ac, 0.04% Impervious, Inflow Depth = 0.00" for 1-Yr Storm event Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min Routed to Link SP1 : Study Point 1

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

# Link 1.1L:

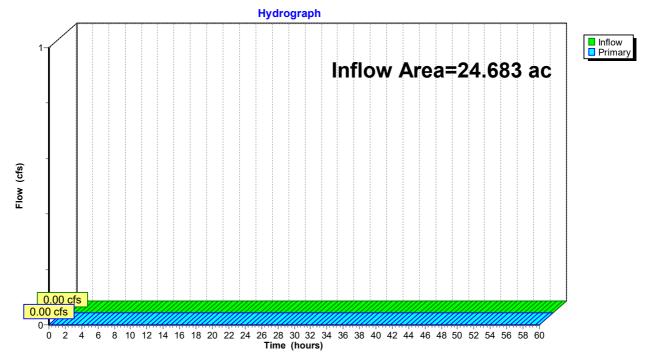


#### Summary for Link 1.2L:

Inflow Area = 24.683 ac, 0.06% Impervious, Inflow Depth = 0.00" for 1-Yr Storm event Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min Routed to Link SP1 : Study Point 1

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

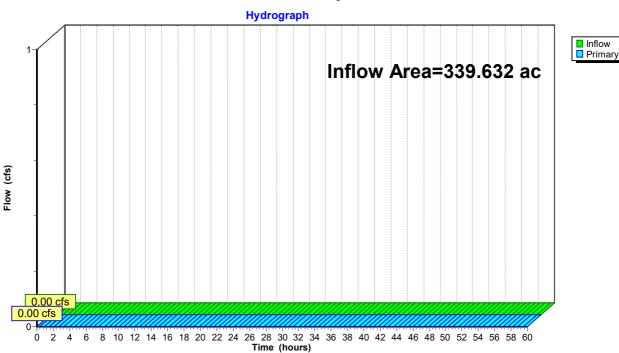
### Link 1.2L:



# Summary for Link SP1: Study Point 1

Inflow Area =	339.632 ac,	0.01% Impervious, Infl	ow Depth = $0.00"$	for 1-Yr Storm event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

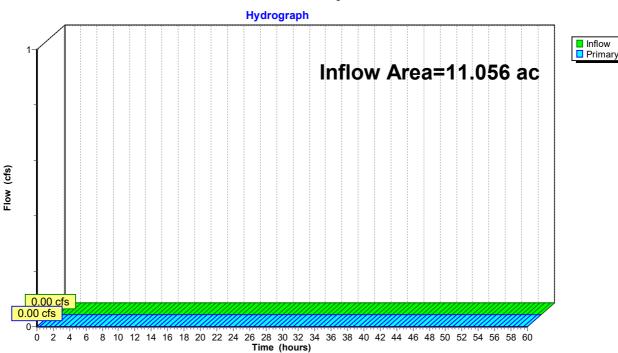


## Link SP1: Study Point 1

# Summary for Link SP2: Study Point 2

Inflow Area =	11.056 ac,	0.00% Impervious, Inflow	Depth = 0.00"	for 1-Yr Storm event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

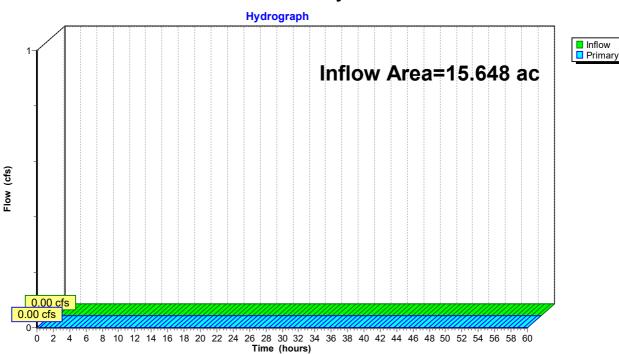


## Link SP2: Study Point 2

## Summary for Link SP3: Study Point 3

Inflow Area =	15.648 ac,	0.56% Impervious, Inflow	Depth = 0.00"	for 1-Yr Storm event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

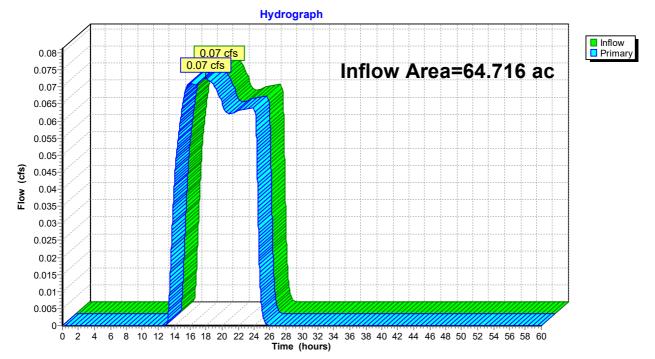


#### Link SP3: Study Point 3

#### Summary for Link SP4: Study Point 4

Inflow Area =	64.716 ac,	2.50% Impervious, Inflow D	epth = 0.01"	for 1-Yr Storm event
Inflow =	0.07 cfs @	17.89 hrs, Volume=	0.059 af	
Primary =	0.07 cfs @	17.89 hrs, Volume=	0.059 af, Atte	n= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

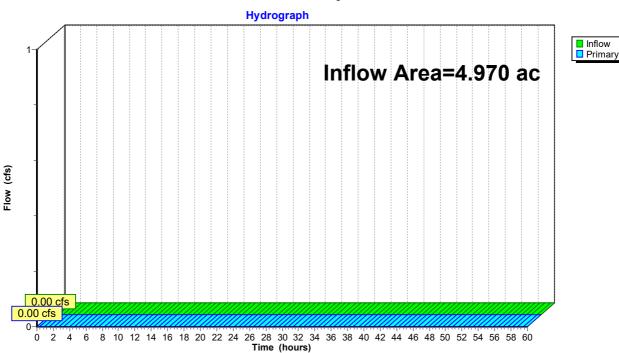


### Link SP4: Study Point 4

#### Summary for Link SP5: Study Point 5

Inflow Area =	4.970 ac,	0.00% Impervious, Inflow	Depth = 0.00"	for 1-Yr Storm event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	n= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

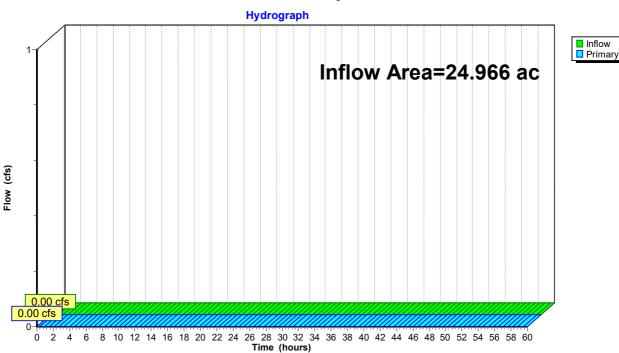


## Link SP5: Study Point 5

#### Summary for Link SP6: Study Point 6

Inflow Area =	24.966 ac,	5.81% Impervious, Inflow	Depth = 0.00"	for 1-Yr Storm event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs



## Link SP6: Study Point 6

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 1.1aS1: North Array East	Runoff Area=5.874 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=788' Tc=18.8 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1aS2: North Array East	Runoff Area=8.467 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=931' Tc=21.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1aS3: North Array West	Runoff Area=5.792 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=1,031' Tc=19.7 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1aS4: North Array West	Runoff Area=12.825 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=1,562' Tc=26.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.1bS1: North Road - East	t Runoff Area=1.333 ac 0.53% Impervious Runoff Depth=0.93" Tc=6.0 min CN=71 Runoff=2.16 cfs 0.103 af
Subcatchment 1.1bS2: North Road - Wes	t Runoff Area=0.651 ac 1.08% Impervious Runoff Depth=0.78" Tc=6.0 min CN=68 Runoff=0.86 cfs 0.042 af
Subcatchment 1.2aS1: Middle Array East	t Runoff Area=7.876 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=865' Tc=19.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2aS2: Middle Array Cent	<b>ter</b> Runoff Area=8.911 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=825' Tc=18.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2aS3: Middle Array Wes	t Runoff Area=5.500 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=882' Tc=18.5 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 1.2bS1: East Road - West	Runoff Area=0.727 ac 0.00% Impervious Runoff Depth=0.73" Tc=6.0 min CN=67 Runoff=0.89 cfs 0.044 af
Subcatchment 1.2bS2: South Road	Runoff Area=0.854 ac 0.47% Impervious Runoff Depth=0.37" Flow Length=308' Tc=13.7 min CN=58 Runoff=0.26 cfs 0.026 af
Subcatchment 1.2bS3: South Road	Runoff Area=0.815 ac  1.35% Impervious  Runoff Depth=0.93" Tc=6.0 min  CN=71  Runoff=1.32 cfs  0.063 af
	<b>e</b> Runoff Area=279.312 ac 0.00% Impervious Runoff Depth=0.00" low Length=6,771' Tc=201.7 min CN=39 Runoff=0.11 cfs 0.034 af
Subcatchment 1.3bS: Access Rd to Pond	<b>1 3</b> Runoff Area=0.695 ac 0.00% Impervious Runoff Depth=0.17" Tc=6.0 min CN=51 Runoff=0.04 cfs 0.010 af
Subcatchment 2S:	Runoff Area=11.056 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=2,342' Tc=36.0 min CN=39 Runoff=0.01 cfs 0.001 af
Subcatchment 3S:	Runoff Area=15.648 ac 0.56% Impervious Runoff Depth=0.01" Flow Length=886' Tc=12.7 min CN=40 Runoff=0.02 cfs 0.007 af
Subcatchment 4.1S:	Runoff Area=11.663 ac 2.80% Impervious Runoff Depth=0.05" Flow Length=845' Tc=15.8 min CN=45 Runoff=0.06 cfs 0.052 af

20220630 BR Benson Mines Solar POST DevType II 24-hr10-Yr Storm Rainfall=3.28"Prepared by TRCPrinted7/12/2022HydroCAD® 10.10-7bs/n 01402© 2022 HydroCAD Software Solutions LLCPage 148

Subcatchment 4.2aS:	Runoff Area=27.117 ac 0.00% Impervious Runoff Depth=0.17" Flow Length=1,640' Tc=38.9 min CN=51 Runoff=0.85 cfs 0.380 af
Subcatchment 4.2bS:	Runoff Area=0.470 ac 0.00% Impervious Runoff Depth=0.98" Tc=6.0 min CN=72 Runoff=0.81 cfs 0.038 af
Subcatchment 4.3S:	Runoff Area=25.466 ac 5.08% Impervious Runoff Depth=0.34" Flow Length=2,280' Tc=36.5 min CN=57 Runoff=3.30 cfs 0.715 af
Subcatchment 5S:	Runoff Area=4.970 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=1,180' Tc=17.5 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 6S:	Runoff Area=24.966 ac 5.81% Impervious Runoff Depth=0.03" Flow Length=1,961' Tc=60.1 min CN=43 Runoff=0.08 cfs 0.059 af
Reach 1.1aR1: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=580.0' S=0.0108 '/' Capacity=56.37 cfs Outflow=0.00 cfs 0.000 af
Reach 1.1aR2: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=557.4' S=0.0284 '/' Capacity=91.27 cfs Outflow=0.00 cfs 0.000 af
Reach 1.1aR3: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af .=557.5' S=0.0352 '/' Capacity=101.68 cfs Outflow=0.00 cfs 0.000 af
Reach 1.1aR4: Bypass Swale n=0.035 L	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af .=580.5' S=0.0362 '/' Capacity=103.04 cfs Outflow=0.00 cfs 0.000 af
n=0.035 L=	<b>e</b> Avg. Flow Depth=0.21' Max Vel=2.01 fps Inflow=2.16 cfs 0.103 af 1,733.0' S=0.0240 '/' Capacity=111.65 cfs Outflow=1.13 cfs 0.103 af
	<b>e</b> Avg. Flow Depth=0.23' Max Vel=2.62 fps Inflow=1.78 cfs 0.145 af .=593.3' S=0.0380 '/' Capacity=140.36 cfs Outflow=1.61 cfs 0.145 af
Reach 1.2aR1: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=524.2' S=0.0188 '/' Capacity=74.30 cfs Outflow=0.00 cfs 0.000 af
Reach 1.2aR2: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=556.0' S=0.0204 '/' Capacity=77.47 cfs Outflow=0.00 cfs 0.000 af
Reach 1.2aR3: Bypass Swale n=0.035	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af L=249.0' S=0.0153 '/' Capacity=81.84 cfs Outflow=0.00 cfs 0.000 af
Reach 1.2bR1: East Road Conveyance n=0.035	Avg. Flow Depth=0.13' Max Vel=2.13 fps Inflow=0.89 cfs 0.044 af L=731.4' S=0.0456 '/' Capacity=79.22 cfs Outflow=0.69 cfs 0.044 af
	<b>ce</b> Avg. Flow Depth=0.18' Max Vel=1.55 fps Inflow=0.89 cfs 0.071 af L=604.5' S=0.0177 '/' Capacity=95.76 cfs Outflow=0.70 cfs 0.071 af
	<b>ce</b> Avg. Flow Depth=0.24' Max Vel=1.89 fps Inflow=1.54 cfs 0.133 af L=755.9' S=0.0187 '/' Capacity=98.64 cfs Outflow=1.22 cfs 0.133 af
Reach 4.1R1: Bypass Swale n=0.035	Avg. Flow Depth=0.16' Max Vel=1.27 fps Inflow=0.06 cfs 0.052 af L=570.0' S=0.0303 '/' Capacity=54.88 cfs Outflow=0.06 cfs 0.052 af
Reach 4.1R2: Ex Stream n=0.035 L	Avg. Flow Depth=0.06' Max Vel=0.68 fps Inflow=0.82 cfs 0.431 af .=740.0' S=0.0099 '/' Capacity=588.81 cfs Outflow=0.77 cfs 0.431 af

20220630 BR Benson Mines Solar POST Dev	Type II 24-hr	10-Yr Storm Rainfall=3.28"
Prepared by TRC		Printed 7/12/2022
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Reach 4.2bR: Conveyance Swale         Avg. Flow Depth=0.14'         Max Vel=2.09 fps         Inflow=0.81 cfs         0.038 af           n=0.035         L=565.0'         S=0.0432 '/'         Capacity=77.09 cfs         Outflow=0.69 cfs         0.038 af
Pond 1.1aC1: TS1 Culvert         Peak Elev=1,487.56'         Inflow=0.00 cfs         0.000 af           36.3" x 22.5", R=18.8"/51.0"         Pipe Arch Culvert         n=0.012         L=47.0'         S=0.0162 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.1aC2: TS2 Culvert         Peak Elev=1,470.80'         Inflow=0.00 cfs         0.000 af           48.0" x 24.0"         Box Culvert         n=0.012         L=47.0'         S=0.0262 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.1aC3: TS3 Culvert         Peak Elev=1,449.55'         Inflow=0.00 cfs         0.000 af           60.0" x 24.0"         Box Culvert n=0.012         L=47.2'         S=0.0405 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.1aP: North Road Bypass OC         Peak Elev=1,426.00'         Storage=0.000 af         Inflow=0.00 cfs         0.000 af           Discarded=0.00 cfs         0.000 af         Primary=0.00 cfs         0.000 af         Outflow=0.00 cfs         0.000 af
Pond 1.1bC1: TS4 Culvert         Peak Elev=1,449.98'         Inflow=1.13 cfs         0.103 af           18.0" Round Culvert n=0.012         L=45.9'         S=0.0486 '/'         Outflow=1.13 cfs         0.103 af
Pond 1.1bP1: Dry SwalePeak Elev=1,426.14' Storage=171 cf Inflow=1.61 cfs 0.145 af Discarded=0.00 cfs 0.004 af Primary=1.58 cfs 0.141 af Outflow=1.59 cfs 0.145 af
Pond 1.1bP2: North Road Detention Pond Peak Elev=1,424.04' Storage=0.050 af Inflow=1.58 cfs 0.141 af Discarded=0.02 cfs 0.052 af Primary=0.45 cfs 0.074 af Outflow=0.46 cfs 0.127 af
Pond 1.2aC1: TS 7 Culvert         Peak Elev=1,444.22'         Inflow=0.00 cfs         0.000 af           36.0" x 24.0"         Box Culvert n=0.012         L=47.0'         S=0.0215 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.2aC2: TS8 Culvert         Peak Elev=1,431.65'         Inflow=0.00 cfs         0.000 af           60.0" x 24.0"         Box Culvert n=0.012         L=47.5'         S=0.0114 '/'         Outflow=0.00 cfs         0.000 af
Pond 1.2aP: South Road Bypass OC         Peak Elev=1,424.00' Storage=0.000 af Inflow=0.00 cfs 0.000 af           Discarded=0.00 cfs         0.000 af         Secondary=0.00 cfs 0.000 af         Outflow=0.00 cfs 0.000 af
Pond 1.2bC1: East Road Culvert         Peak Elev=1,454.78'         Inflow=0.69 cfs         0.044 af           15.0" Round Culvert n=0.012         L=41.6'         S=0.0173 '/'         Outflow=0.69 cfs         0.044 af
Pond 1.2bC2: TS6 Culvert         Peak Elev=1,443.88'         Inflow=0.70 cfs         0.071 af           18.0"         Round Culvert         n=0.012         L=44.3'         S=0.0151 '/'         Outflow=0.70 cfs         0.071 af
Pond 1.2bP: South Road Treatment Pond Peak Elev=1,426.06' Storage=0.033 af Inflow=1.22 cfs 0.133 af Discarded=0.29 cfs 0.132 af Primary=0.12 cfs 0.002 af Outflow=0.41 cfs 0.133 af
Pond 1.3P: Pond 3 - Access Rd West         Peak Elev=1,456.01' Storage=8 cf         Inflow=0.04 cfs         0.010 af           Discarded=0.03 cfs         0.010 af         Primary=0.00 cfs         0.000 af         Outflow=0.03 cfs         0.010 af
Pond 4.2bP: Pond 4 - Access Rd East         Peak Elev=1,447.07'         Storage=581 cf         Inflow=0.69 cfs         0.038 af           Discarded=0.08 cfs         0.038 af         Primary=0.00 cfs         0.000 af         Outflow=0.08 cfs         0.038 af
Pond 4.2C: 18" Culvert         Peak Elev=1,432.23' Storage=572 cf         Inflow=0.85 cfs         0.380 af           18.0" Round Culvert n=0.012 L=44.0' S=0.0148 '/'         Outflow=0.81 cfs         0.379 af
Pond 4.3C: 24" Culvert         Peak Elev=1,432.12'         Inflow=3.30 cfs         0.715 af           Outflow=3.30 cfs         0.715 af

20220630 BR Benson Mines Solar PO	ST Dev Type II 24-hr	10-Yr Storm Rainfall=3.28"
Prepared by TRC		Printed 7/12/2022
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Link 1.1L:		Inflow=0.45 cfs 0.074 af
		Primary=0.45 cfs 0.074 af
Link 1.2L:		Inflow=0.12 cfs 0.002 af
		Primary=0.12 cfs 0.002 af
Link SP1: Study Point 1		Inflow=0.56 cfs 0.110 af
		Primary=0.56 cfs 0.110 af
Link SP2: Study Point 2		Inflow=0.01 cfs 0.001 af
		Primary=0.01 cfs 0.001 af
Link SP3: Study Point 3		Inflow=0.02 cfs 0.007 af
		Primary=0.02 cfs 0.007 af
Link OD4: Otraha Daint 4		
Link SP4: Study Point 4		Inflow=3.36 cfs 1.146 af
		Primary=3.36 cfs 1.146 af
Link SD5: Study Doint 5		Inflow=0.00 cfs_0.000 af
Link SP5: Study Point 5		Primary=0.00 cfs 0.000 af
		Fillinary=0.00 cis 0.000 al
Link SP6: Study Point 6		Inflow=0.08 cfs 0.059 af
Link of 0. Sludy Foline 0		Primary=0.08 cfs 0.059 af
		1 mary=0.00 crs 0.009 ar
Total Punoff Area = 160 988 ac	Pupoff Volume = 1 575 af	Werage Runoff Depth = $0.04$ "

Total Runoff Area = 460.988 acRunoff Volume = 1.575 afAverage Runoff Depth = 0.04"99.31% Pervious = 457.801 ac0.69% Impervious = 3.187 ac

# Summary for Subcatchment 1.1aS1: North Array East

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

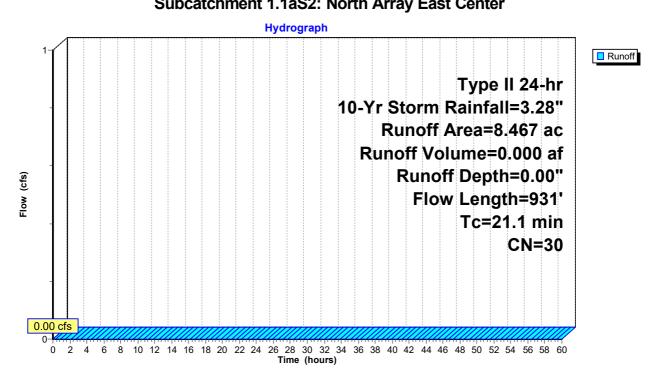
Area	<u> </u>		cription							
-	5.874 30 Meadow, non-grazed, HSG A									
5.	.874	100.								
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
11.7	100	0.0499	0.14		Sheet Flow,					
7.1	688	0.0526	1.61		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps					
18.8	788	Total								
	Subcatchment 1.1aS1: North Array East									
				Hydrog	graph					
-1 - - - - - - - - - - - - - - - - - -		8 10 12	4 16 18 20		Type II 24-hr 10-Yr Storm Rainfall=3.28" Runoff Area=5.874 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=788' Tc=18.8 min CN=30					

### Summary for Subcatchment 1.1aS2: North Array East Center

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR2 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

Area	(ac) C	N Desc	cription						
8.467 30 Meadow, non-grazed, HSG A									
8.467 100.00% Pervious Area									
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
11.9	100	0.0476	0.14		Sheet Flow,				
9.2	831	0.0463	1.51		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
21.1	931	Total							
	Subcatchment 1 1aS2: North Array Fast Center								



#### Summary for Subcatchment 1.1aS3: North Array West Center

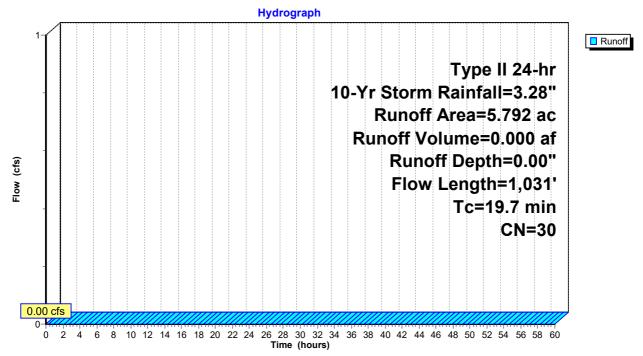
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR3 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac) C	N Desc	cription						
	5.792 30 Meadow, non-grazed, HSG A									
	5.	792	100.	00% Pervi	ous Area					
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
•	10.7	100	0.0618	0.16		Sheet Flow,				
	9.0	931	0.0601	1.72		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
	40.7	4 004	T . 4 . 1			-				

19.7 1,031 Total





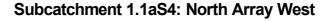
## Summary for Subcatchment 1.1aS4: North Array West

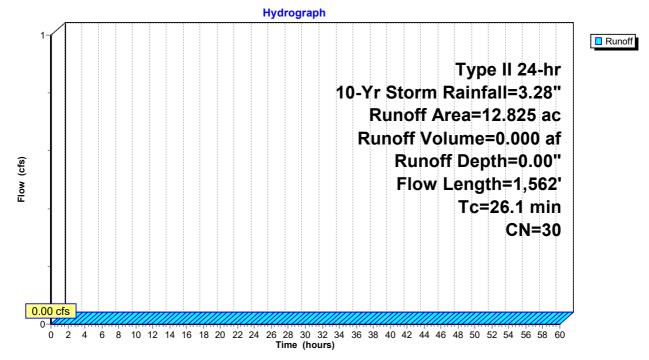
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.1aR4 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

_	Area	(ac) C	N Desc	cription							
	12.825 30 Meadow, non-grazed, HSG A										
-	12.	825	100.	00% Pervi	ous Area						
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
-	11.1	100	0.0560	0.15		Sheet Flow,					
	15.0	1,462	0.0540	1.63		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps					
	26.1	1 560	Tatal								







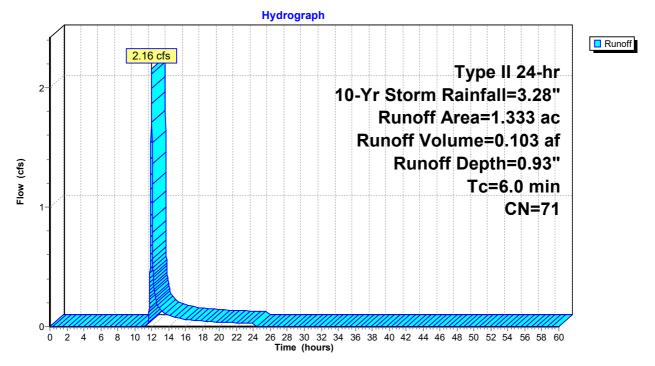
## Summary for Subcatchment 1.1bS1: North Road - East

Runoff = 2.16 cfs @ 11.98 hrs, Volume= 0.103 af, Depth= 0.93" Routed to Reach 1.1bR1 : North Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

Area	(ac)	CN	Desc	cription			
0.	.507	30	Mea	dow, non-g	grazed, HS	SGA	
0.	.819	96	Grav	el surface	, HSG A		
0.	.007	98	Roof	s, HSG A			
1.	.333	71	Weig	ghted Aver	age		
1.	1.326 99.47% Pervious Area						
0.	.007		0.53	% Impervi	ous Area		
Тс	Leng		Slope	Velocity	Capacity	•	
(min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)		
6.0						Direct Entry,	

#### Subcatchment 1.1bS1: North Road - East



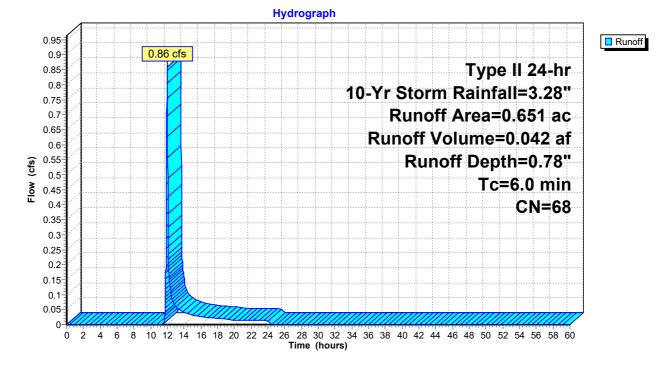
#### Summary for Subcatchment 1.1bS2: North Road - West

Runoff = 0.86 cfs @ 11.98 hrs, Volume= 0.042 af, Depth= 0.78" Routed to Reach 1.1bR2 : North Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac)	CN	Desc	ription		
	0.	279	30	Mead	dow, non-g	grazed, HS	SG A
	0.	365	96	Grav	el surface	, HSG A	
_	0.	007	98	Roof	s, HSG A		
	0.	651	68	Weig	hted Aver	age	
	0.	644		98.92	2% Pervio	us Area	
	0.	007		1.089	% Impervi	ous Area	
	Тс	Leng		Slope	Velocity	Capacity	Description
	(min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)	
	6.0						Direct Entry,

#### Subcatchment 1.1bS2: North Road - West



#### Summary for Subcatchment 1.2aS1: Middle Array East

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.2aR1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

Area	(ac) C	N Des	cription						
7	7.876 30 Meadow, non-grazed, HSG A								
7	7.876 100.00% Pervious Area								
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
10.6	100	0.0628	0.16		Sheet Flow,				
8.5	765	0.0459	1.50		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
19.1	865	Total							
			Subcate	chment 1.	2aS1: Middle Array East				
				Hydrog	graph				
Elow (cfs)					Type II 24-hr 10-Yr Storm Rainfall=3.28" Runoff Area=7.876 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=865' Tc=19.1 min CN=30	Runoff			

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

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0.00 cfs

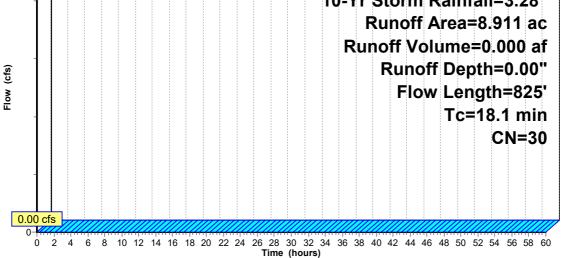
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#### Summary for Subcatchment 1.2aS2: Middle Array Center

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.2aR2 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

Area	Area (ac) CN Description									
8	8.911 30 Meadow, non-grazed, HSG A									
8	.911	100.	00% Pervi	ous Area						
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
10.8	100	0.0607	0.15		Sheet Flow,					
7.3	725	0.0559	1.66		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps					
18.1	825	Total								
	Subcatchment 1.2aS2: Middle Array Center									
				Hydrog	graph					
1-					Type II 24-hr 10-Yr Storm Rainfall=3.28" Runoff Area=8.911 ac					



## Summary for Subcatchment 1.2aS3: Middle Array West

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Reach 1.2aR3 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

Area	(ac) C	N Des	cription							
5	5.500 30 Meadow, non-grazed, HSG A									
5	5.500 100.00% Pervious Area									
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
10.4	100	0.0660	0.16		Sheet Flow,					
8.1	782	0.0529	1.61		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps					
18.5	882	Total								
-1 Flow (cfs)			Subcato	chment 1. Hydrog	2aS3: Middle Array West graph Type II 24-hr 10-Yr Storm Rainfall=3.28" Runoff Area=5.500 ac Runoff Volume=0.000 af Runoff Depth=0.00" Flow Length=882' Tc=18.5 min CN=30					

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

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0.00 cfs

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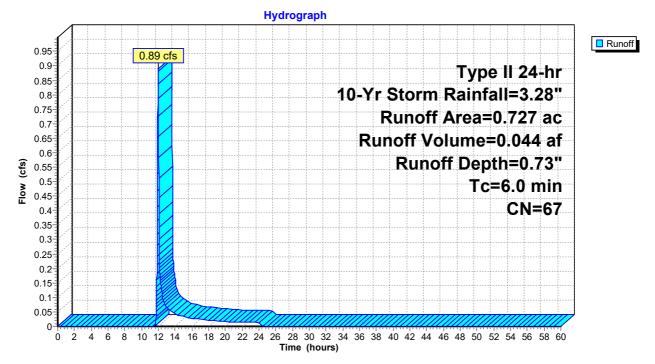
## Summary for Subcatchment 1.2bS1: East Road - West Ditch

Runoff = 0.89 cfs @ 11.99 hrs, Volume= 0.044 af, Depth= 0.73" Routed to Reach 1.2bR1 : East Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

Area	(ac)	CN	Desc	Description					
0.410 96 Gravel surface, HSG A									
0	0.317 30 Meadow, non-grazed, HSG A								
0	0.727 67 Weighted Average								
0	.727		100.0	00% Pervi	ous Area				
Тс	Leng	gth	Slope	Velocity	Capacity	Description			
(min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)				
6.0						Direct Entry,			

#### Subcatchment 1.2bS1: East Road - West Ditch



## Summary for Subcatchment 1.2bS2: South Road

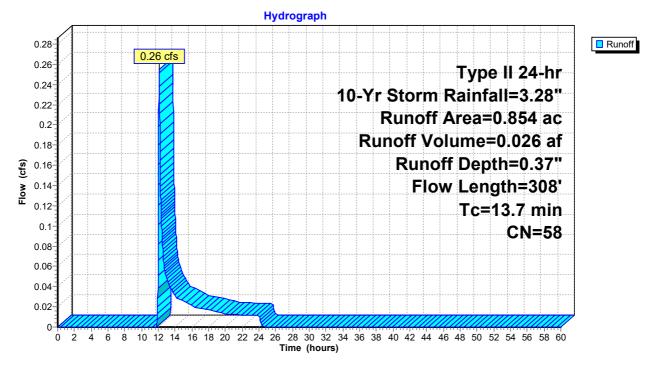
Runoff = 0.26 cfs @ 12.10 hrs, Volume= 0.026 af, Depth= 0.37" Routed to Reach 1.2bR2 : South Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac) C	N Dese	cription						
	0.	498 🕄	30 Mea	Meadow, non-grazed, HSG A						
*	0.	352 9	96 Grav	Gravel surface						
*	0.	004 9	8 Root	Roofs						
	0.	854 5	58 Weig	ghted Aver	age					
	0.	850	•	3% Pervio	•					
	0.	004	0.47	% Impervi	ous Area					
	Тс	Length	Slope	Velocity	Capacity	Description				
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
	5.0	35	0.0516	0.12		Sheet Flow,				
						Grass: Dense n= 0.240 P2= 2.31"				
	0.4	25	0.0310	1.06		Sheet Flow,				
						Smooth surfaces n= 0.011 P2= 2.31"				
	5.9	40	0.0429	0.11		Sheet Flow,				
						Grass: Dense n= 0.240 P2= 2.31"				
	2.4	208	0.0442	1.47		Shallow Concentrated Flow,				
						Short Grass Pasture Kv= 7.0 fps				
	407	000	Tatal							

13.7 308 Total

#### Subcatchment 1.2bS2: South Road



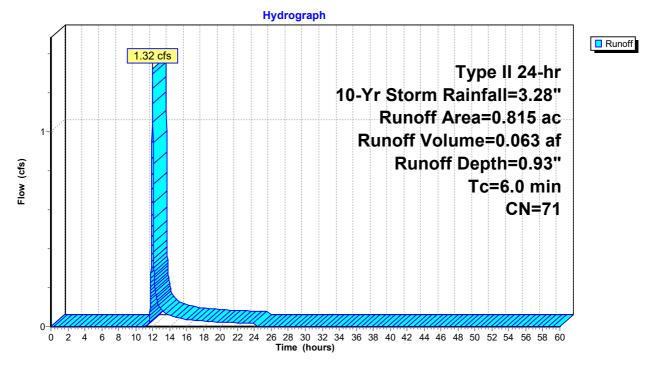
### Summary for Subcatchment 1.2bS3: South Road

Runoff = 1.32 cfs @ 11.98 hrs, Volume= 0.063 af, Depth= 0.93" Routed to Reach 1.2bR3 : South Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac)	CN	Desc	ription						
	0.	313	3 30 Meadow, non-grazed, HSG A								
	0.	491	96	Grav	el surface	, HSG A					
*	0.	011	98	Roof	s						
	0.	815	71	Weig	hted Aver	age					
	0.	804		98.6	5% Pervio	us Area					
	0.	011		1.359	1.35% Impervious Area						
	Tc	Leng	th	Slope	Velocity	Capacity	Description				
	(min)	nin) (feet)		(ft/ft)	(ft/sec)	(cfs)					
	6.0						Direct Entry,				
	Subcatchmont 1 2bS3: South Poad										

#### Subcatchment 1.2bS3: South Road



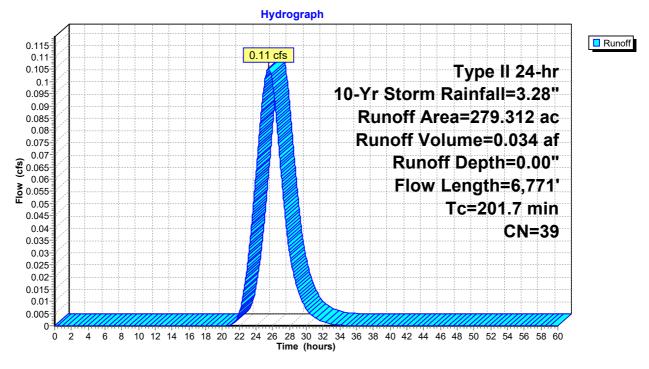
#### Summary for Subcatchment 1.3aS1: Surface Discharge

Runoff = 0.11 cfs @ 25.55 hrs, Volume= 0.034 af, Depth= 0.00" Routed to Link SP1 : Study Point 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac) C	N Desc	cription							
*	0.	754 9	96 Grav								
	144.	649 3	30 Mea	Meadow, non-grazed, HSG A							
	0.	566 5	58 Mea	Meadow, non-grazed, HSG B							
	25.	274 7	71 Mea	Meadow, non-grazed, HSG C							
	61.	692 3		Woods, Good, HSG A							
	32.	754 5	55 Woo	ds, Good,	HSG B						
	13.	623 7	70 Woo	ds, Good,	HSG C						
	279.	312 3	39 Weig	ghted Aver	age						
	279.	312	100.	00% Pervi	ous Area						
	Тс	Length	Slope	Velocity	Capacity	Description					
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)						
	14.8	100	0.0764	0.11		Sheet Flow,					
						Woods: Light underbrush n= 0.400 P2= 2.31"					
	4.7	581	0.1683	2.05		Shallow Concentrated Flow,					
						Woodland Kv= 5.0 fps					
	25.7	1,199	0.0241	0.78		Shallow Concentrated Flow,					
						Woodland Kv= 5.0 fps					
	0.8	189	0.0157	3.84	76.82	Channel Flow, Rerouted Stream					
						Area= 20.0 sf Perim= 32.6' r= 0.61'					
						n= 0.035 Earth, dense weeds					
	154.9	4,646	0.0051	0.50		Shallow Concentrated Flow,					
	0.0	50	0.0500	4.40		Short Grass Pasture Kv= 7.0 fps					
	0.8	56	0.0566	1.19		Shallow Concentrated Flow,					
						Woodland Kv= 5.0 fps					
	2017	6 771	Total								

201.7 6,771 Total



# Subcatchment 1.3aS1: Surface Discharge

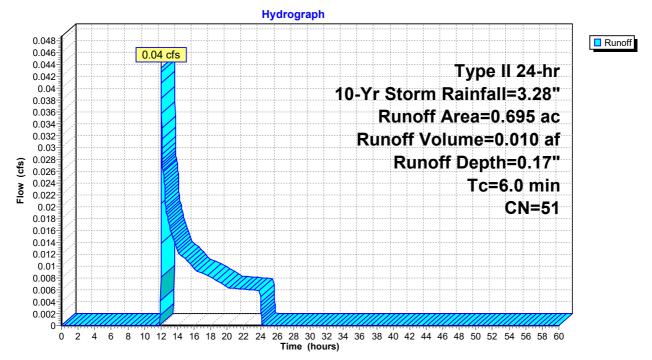
#### Summary for Subcatchment 1.3bS: Access Rd to Pond 3

Runoff = 0.04 cfs @ 12.04 hrs, Volume= 0.010 af, Depth= 0.17" Routed to Pond 1.3P : Pond 3 - Access Rd West

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac)	CN	Desc	cription				
	0.	0.473 30 Meadow, non-grazed, HSG A							
*	0.	063	96	Grav	el surface	, HSG A, R	Redev		
*	0.	159	96	Grav	el surface	, HSG A			
	0.	0.695 51 Weighted Average							
	0.695			100.00% Pervious Area					
	Tc (min)	Leng (fee	,	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description		
_	6.0	(	/	(1214)	(1220)	(0.0)	Direct Entry,		

# Subcatchment 1.3bS: Access Rd to Pond 3



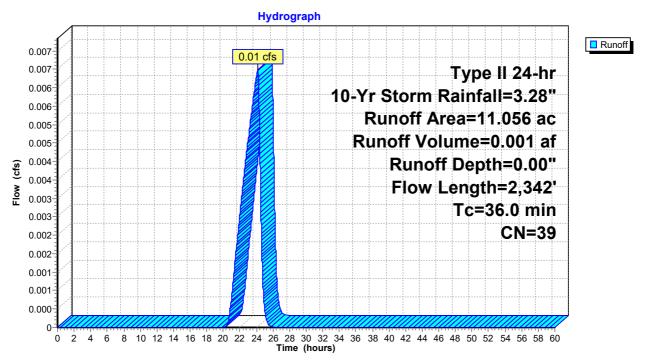
#### Summary for Subcatchment 2S:

Runoff = 0.01 cfs @ 24.12 hrs, Volume= 0.001 af, Depth= 0.00" Routed to Link SP2 : Study Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

Area	(ac) C	N Desc	cription							
1.	1.417 96 Gravel surface, HSG A									
0.	0.573 39 >75% Grass cover, Good, HSG A									
6.	6.530 30 Meadow, non-grazed, HSG A									
2	2.536 30 Woods, Good, HSG A									
11.	.056 3	9 Weig	ghted Aver	age						
11.	.056	100.	00% Pervi	ous Area						
Tc	Length	Slope	Velocity	Capacity	Description					
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)						
10.7	100	0.0624	0.16		Sheet Flow,					
					Grass: Dense n= 0.240 P2= 2.31"					
2.7	614	0.0535	3.72		Shallow Concentrated Flow,					
					Unpaved Kv= 16.1 fps					
12.1	1,184	0.0543	1.63		Shallow Concentrated Flow,					
					Short Grass Pasture Kv= 7.0 fps					
1.9	115	0.0407	1.01		Shallow Concentrated Flow,					
			4.00		Woodland Kv= 5.0 fps					
0.6	68	0.1443	1.90		Shallow Concentrated Flow,					
0.0	004	0.0440	0.54		Woodland Kv= 5.0 fps					
8.0	261	0.0118	0.54		Shallow Concentrated Flow,					
					Woodland Kv= 5.0 fps					
36.0	2,342	Total								





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#### Summary for Subcatchment 3S:

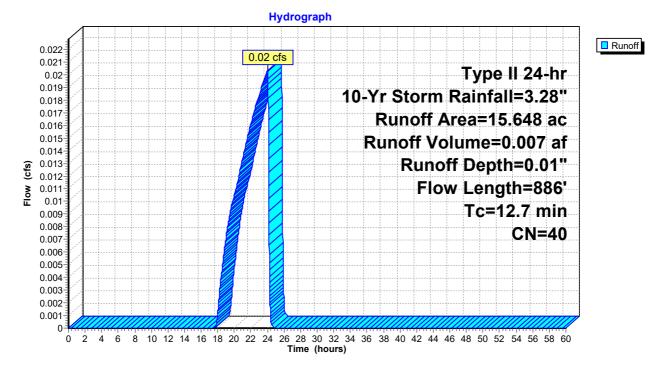
Runoff = 0.02 cfs @ 24.01 hrs, Volume= 0.007 af, Depth= 0.01" Routed to Link SP3 : Study Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac)	CN	Desc	cription				
*	0.000 90 Faveu Roads & Roonops								
	0.406 39 >75% Grass cover, Good, HSG A								
	2.	011	61	>75%	6 Grass co	over, Good,	, HSG B		
		525	30			grazed, HS	GA		
	4.	276	30	Woo	ds, Good,	HSG A			
_	3.	342	55	Woo	ds, Good,	HSG B			
	15.	648	40	Weig	ghted Aver	age			
	15.	560		99.44	4% Pervio	us Area			
	0.	088		0.56	.56% Impervious Area				
	-		~			<b>O</b>			
	Tc	Lengt		Slope	Velocity	Capacity	Description		
_	(min)	(feet	/	(ft/ft)	(ft/sec)	(cfs)			
	5.4	52	2 0.	0937	0.16		Sheet Flow,		
							Grass: Dense n= 0.240 P2= 2.31"		
	3.7	62	5 0.	1637	2.83		Shallow Concentrated Flow,		
							Short Grass Pasture Kv= 7.0 fps		
	3.6	209	9 0.	0384	0.98		Shallow Concentrated Flow,		
							Woodland Kv= 5.0 fps		

12.7 886 Total

Subcatchment 3S:



#### Summary for Subcatchment 4.1S:

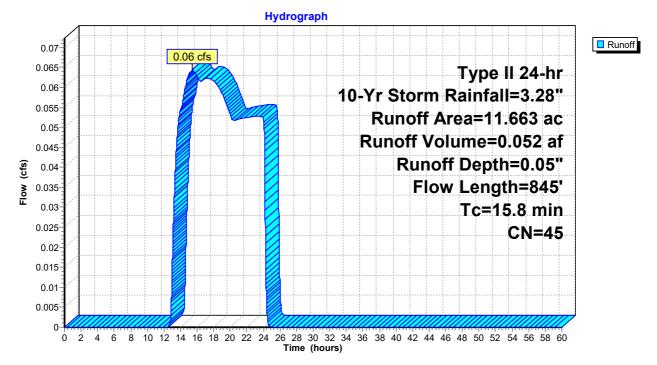
Runoff = 0.06 cfs @ 15.43 hrs, Volume= 0.052 af, Depth= 0.05" Routed to Reach 4.1R1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac) (	CN Des	scription		
*	0.	327	98 Pa\	ed Roads &	& Rooftops	
*	0.	375	96 Gra	vel surface		
	0.	165	61 >75	% Grass c	over, Good	, HSG B
	2.	544	30 Me	adow, non-	grazed, HS	GA
	0.	560	58 Me	adow, non-	grazed, HS	GB
	3.	605	30 Wo	ods, Good,	HSG A	
*	4.	087	55 Wo	ods, Good,	HSG B	
	11.	663	45 We	ighted Ave	rage	
	11.	336	97.	20% Pervio	us Area	
	0.	327	2.8	0% Impervi	ous Area	
				-		
	Tc	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	8.5	100	0.0430	0.20		Sheet Flow,
						Grass: Short n= 0.150 P2= 2.31"
	2.6	360	0.1077	2.30		Shallow Concentrated Flow,
						Short Grass Pasture Kv= 7.0 fps
	4.7	385	0.0735	1.36		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps

15.8 845 Total

## Subcatchment 4.1S:



#### Summary for Subcatchment 4.2aS:

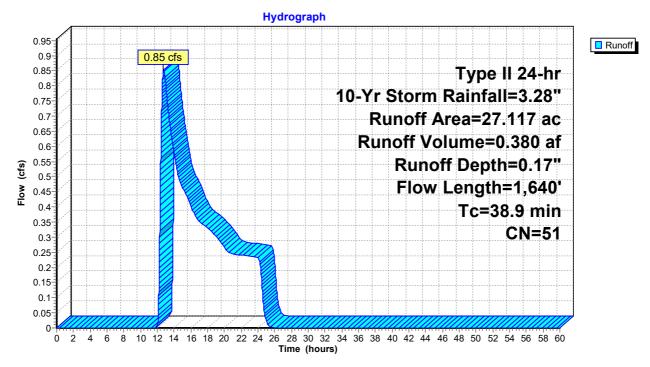
Runoff = 0.85 cfs @ 12.75 hrs, Volume= 0.380 af, Depth= 0.17" Routed to Pond 4.2C : 18" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac) (	CN Dese	cription						
*	0.	238	96 Grav	Gravel surface						
	4.	086	30 Mea	Meadow, non-grazed, HSG A						
	0.	384	58 Mea	dow, non-g	grazed, HS	GB				
	0.	977		ds, Good,						
_	21.	432	55 Woo	ds, Good,	HSG B					
	27.	117		ghted Aver						
	27.	117	100.	100.00% Pervious Area						
	Тс	Length		Velocity	Capacity	Description				
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
	17.8	100	0.0480	0.09		Sheet Flow,				
						Woods: Light underbrush n= 0.400 P2= 2.31"				
	8.0	878	0.1354	1.84		Shallow Concentrated Flow,				
						Woodland Kv= 5.0 fps				
	13.1	662	0.0144	0.84		Shallow Concentrated Flow,				
						Short Grass Pasture Kv= 7.0 fps				

38.9 1,640 Total

Subcatchment 4.2aS:



#### Summary for Subcatchment 4.2bS:

Runoff = 0.81 cfs @ 11.98 hrs, Volume= 0.038 af, Depth= 0.98" Routed to Reach 4.2bR : Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

		174 170		′2	Neig	<u>low, no</u> hted A	vera	age		36	<u>A</u>										
	0.4	470			100.0	0% Pe	ervio	ous /	Area												
٦ miı	Γc n)		ngth eet)		ope t/ft)	Veloc (ft/se		Ca	pacity (cfs	,	Desc	cript	ion								
6	.0			•		•				ב	Dire	ct E	ntry	/,							
								S	ubca	atch	nme	ent	4.2	bS	:						
									Hydr	ogra	ph										_
	0.9-																				Runof
0	.85	(J			).81 cf	s															
	0.8	<u>_</u>															Ty	oe l	1 24	-hr	
	.75	/										10	-Yr	St	or	m F	Rain	fall	=3.2	28"	
	0.7	/												Pu	no	ff A	roa	=0	470	20	
	.65 0.6	/																			
	.55	4											Ru	ino	TT -		ume	)=U	.038	s at	
	0.5	4												F	Rur	noff	De	pth	=0.9	98"	
0 (cis)	.45	4																- :	5.0 r	1 1	
Ē	0.4	<u></u>																			
0	.35	(J.,																	CN=	-12	
	0.3	<u>_</u>															·				
	.25	/																			
	0.2	<u>_</u>																			
	.15 0.1	<u> </u>																			
	.05	1																			1

#### Summary for Subcatchment 4.3S:

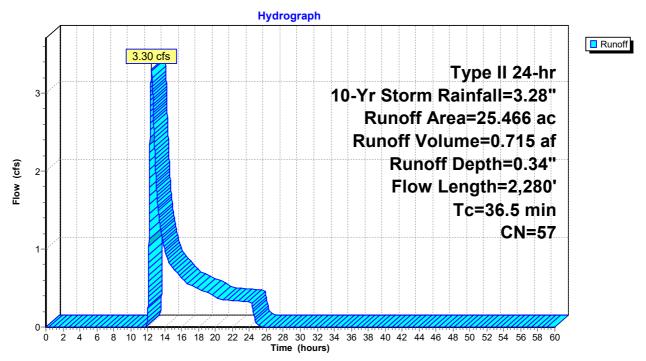
Runoff = 3.30 cfs @ 12.45 hrs, Volume= 0.715 af, Depth= 0.34" Routed to Pond 4.3C : 24" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac) C	N Dese	cription		
*	1.	293 9	98 Pave	ed Roads &	& Rooftops	
	1.	783 5	58 Mea	dow. non-o	grazed, HS	GB
	22.			ds, Good,		
	25			ghted Aver		
		173		2% Pervio	•	
		293		% Impervi		
		200	0.00		0007400	
	Тс	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
_	15.9	100	0.0634	0.10		Sheet Flow,
				•••••		Woods: Light underbrush n= 0.400 P2= 2.31"
	17.8	1,368	0.0656	1.28		Shallow Concentrated Flow,
		1,000	0.0000	1.20		Woodland Kv= 5.0 fps
	0.1	38	0.3960	4.40		Shallow Concentrated Flow,
	5.1		0.0000			Short Grass Pasture Kv= 7.0 fps
	2.7	774	0.0281	4.70	109.09	Channel Flow,
			0.0201	1.10		Area= 23.2 sf Perim= 43.2' r= 0.54' n= 0.035

36.5 2,280 Total

### Subcatchment 4.3S:



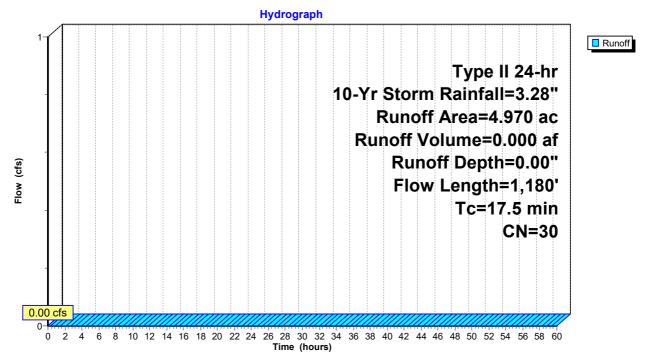
#### Summary for Subcatchment 5S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00" Routed to Link SP5 : Study Point 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

Area	(ac) C	N Desc	cription		
4.	.139 3			grazed, HS	GA
0.	<u>.831 3</u>	0 Woo	ds, Good,	HSG A	
4.	.970 3	0 Weig	ghted Avei	rage	
4.	.970	100.	00% Pervi	ous Area	
Тс	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
7.1	100	0.0675	0.24		Sheet Flow,
					Grass: Short n= 0.150 P2= 2.31"
8.5	801	0.0508	1.58		Shallow Concentrated Flow,
					Short Grass Pasture Kv= 7.0 fps
1.3	217	0.1515	2.72		Shallow Concentrated Flow,
					Short Grass Pasture Kv= 7.0 fps
0.6	62	0.0697	1.85		Shallow Concentrated Flow,
					Short Grass Pasture Kv= 7.0 fps
17.5	1,180	Total			
				Subc	atchment 5S <sup>.</sup>

#### Subcatchment 5S:



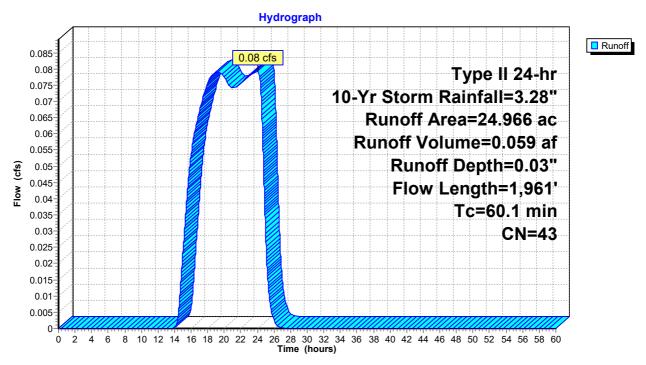
#### Summary for Subcatchment 6S:

Runoff = 0.08 cfs @ 24.10 hrs, Volume= 0.059 af, Depth= 0.03" Routed to Link SP6 : Study Point 6

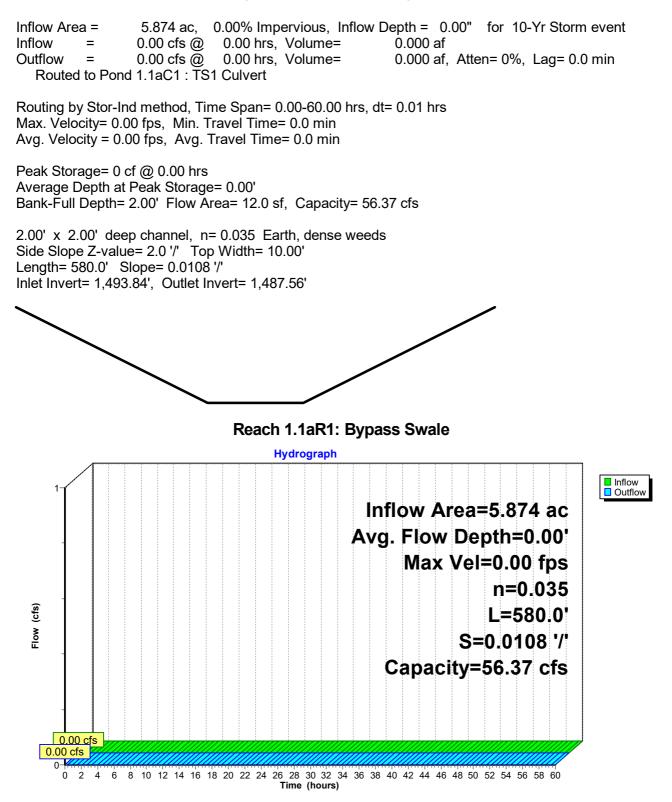
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Yr Storm Rainfall=3.28"

	Area	(ac)	CN [	Desc	ription		
*	1.	450	98 F	Pave	ed Roads &	& Rooftops	
	0.	466	96 (	Grav	el surface	, HSG A	
	2.	545	61 >	>75%	6 Grass co	over, Good	, HSG B
	7.	511	30 N	Mead	dow, non-g	grazed, HS	ig A
	0.	788	58 N	Mead	dow, non-g	grazed, HS	ig B
	7.	940	30 \	Noo	ds, Good,	HSG A	
	4.	266	55 \	Noo	ds, Good,	HSG B	
	24.	966	43 \	Neig	hted Aver	age	
	23.	516	ç	94.1	9% Pervio	us Area	
	1.	450	5	5.819	% Impervi	ous Area	
	Тс	Length		pe	Velocity	Capacity	Description
	(min)	(feet	) (ft	t/ft)	(ft/sec)	(cfs)	
	10.1	100	0.02	278	0.16		Sheet Flow,
							Grass: Short n= 0.150 P2= 2.31"
	3.2	313	8 0.05	528	1.61		Shallow Concentrated Flow,
							Short Grass Pasture Kv= 7.0 fps
	3.9	486	6 0.17	742	2.09		Shallow Concentrated Flow,
							Woodland Kv= 5.0 fps
	42.9	1,062	2 0.00	)68	0.41		Shallow Concentrated Flow,
							Woodland Kv= 5.0 fps
	60.1	1,961	Tota	al			

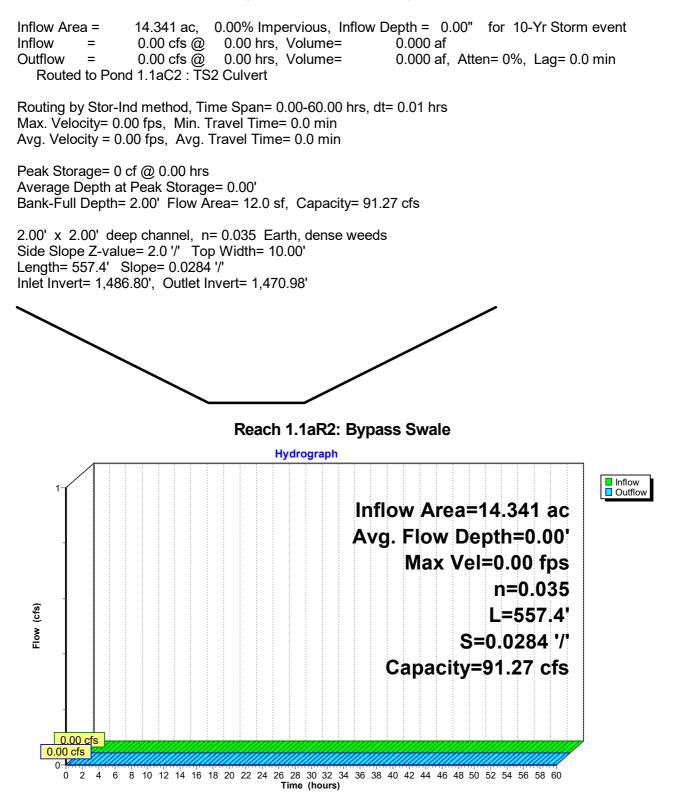
#### Subcatchment 6S:



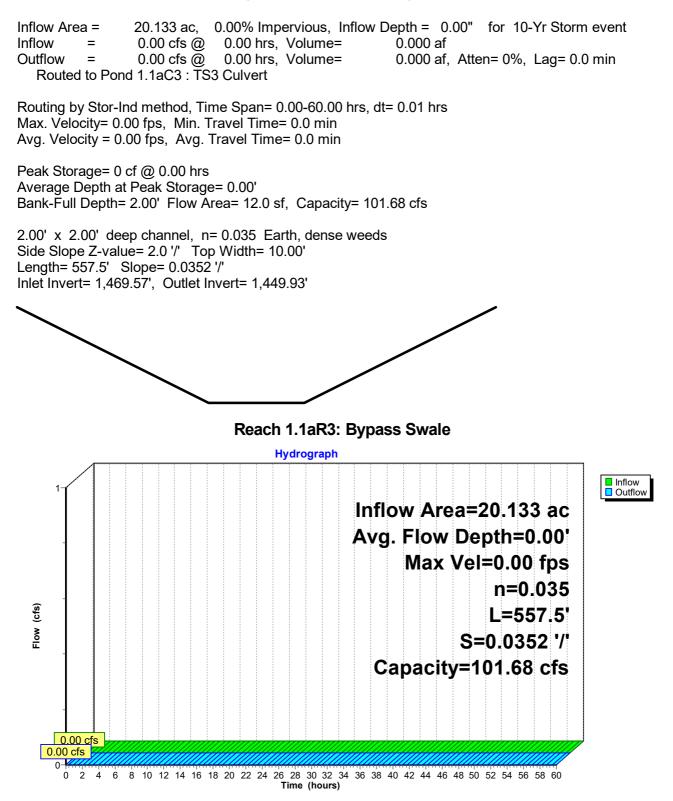
# Summary for Reach 1.1aR1: Bypass Swale



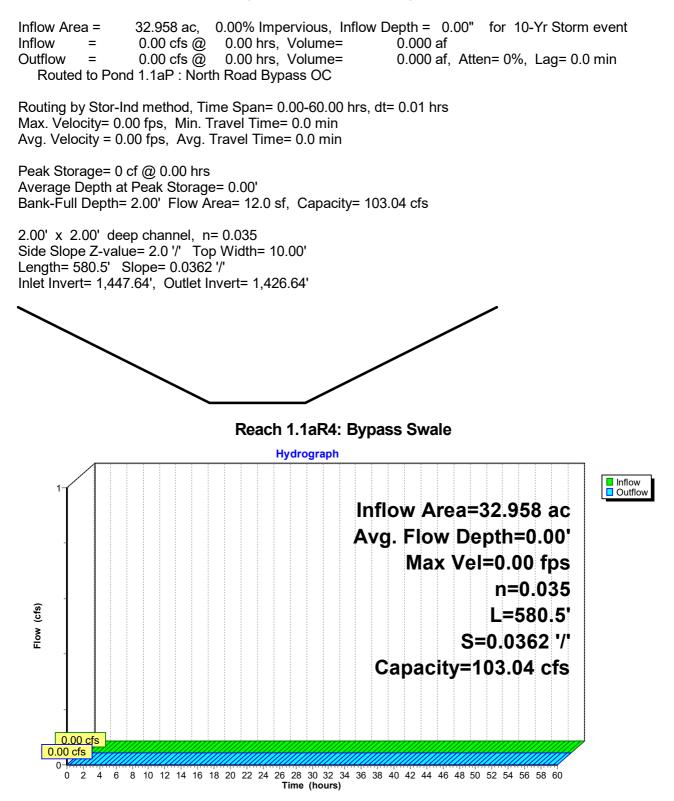
### Summary for Reach 1.1aR2: Bypass Swale



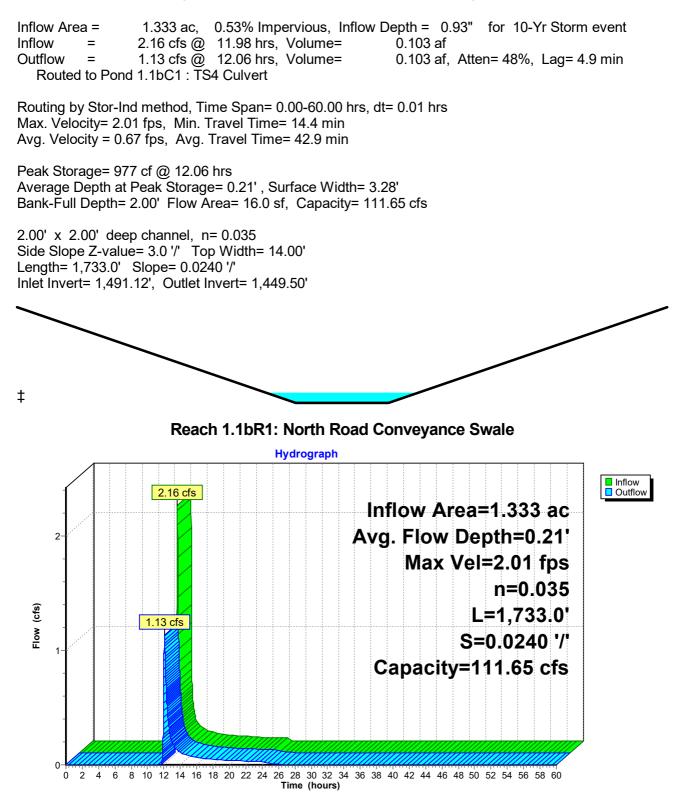
### Summary for Reach 1.1aR3: Bypass Swale



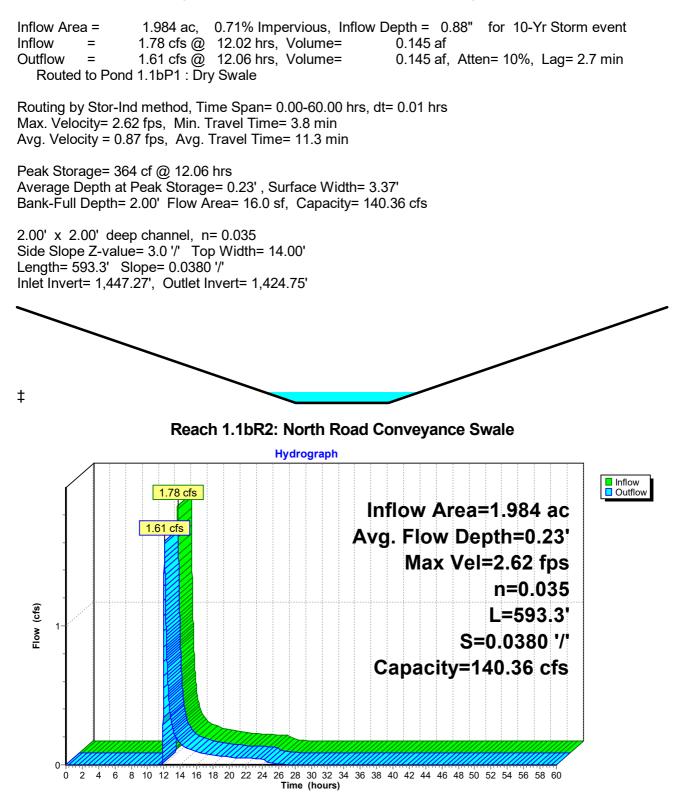
#### Summary for Reach 1.1aR4: Bypass Swale



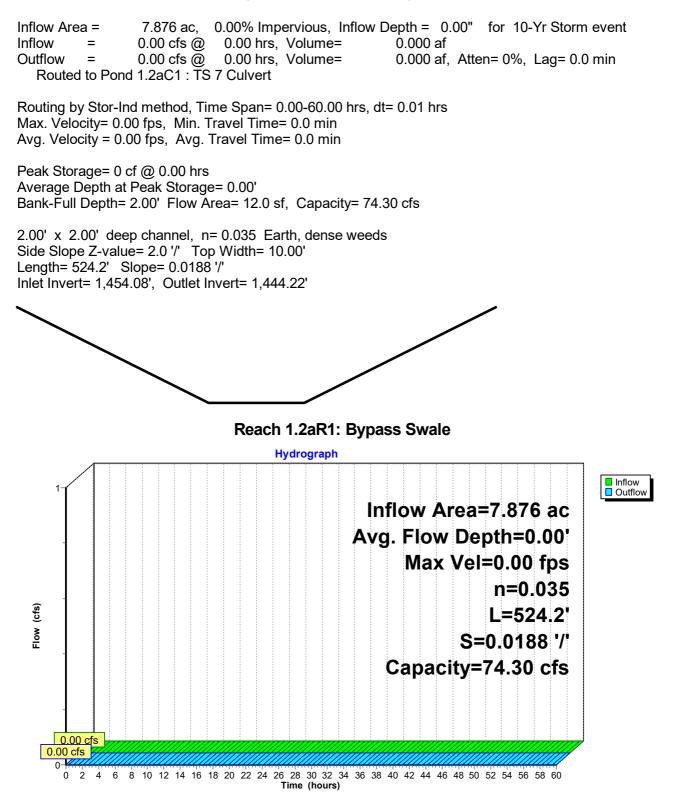
#### Summary for Reach 1.1bR1: North Road Conveyance Swale



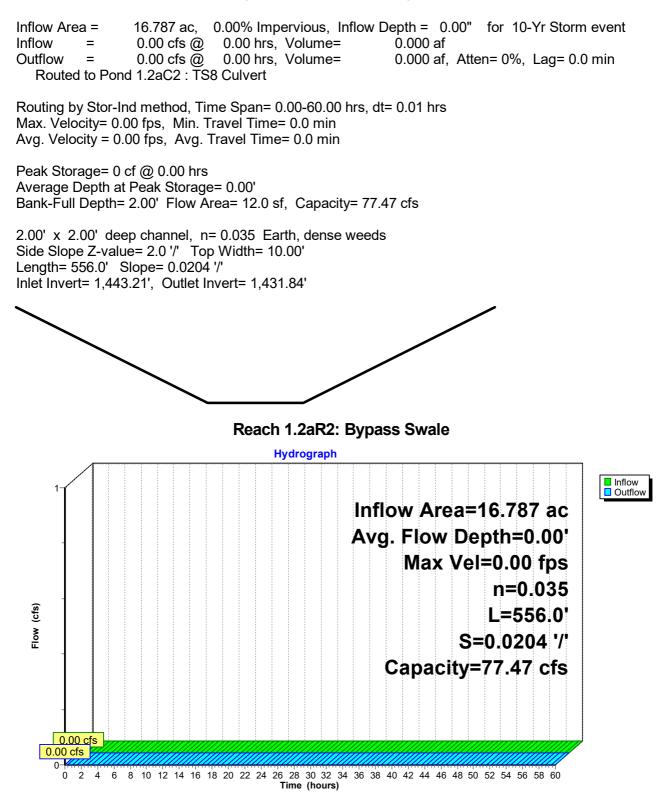
#### Summary for Reach 1.1bR2: North Road Conveyance Swale



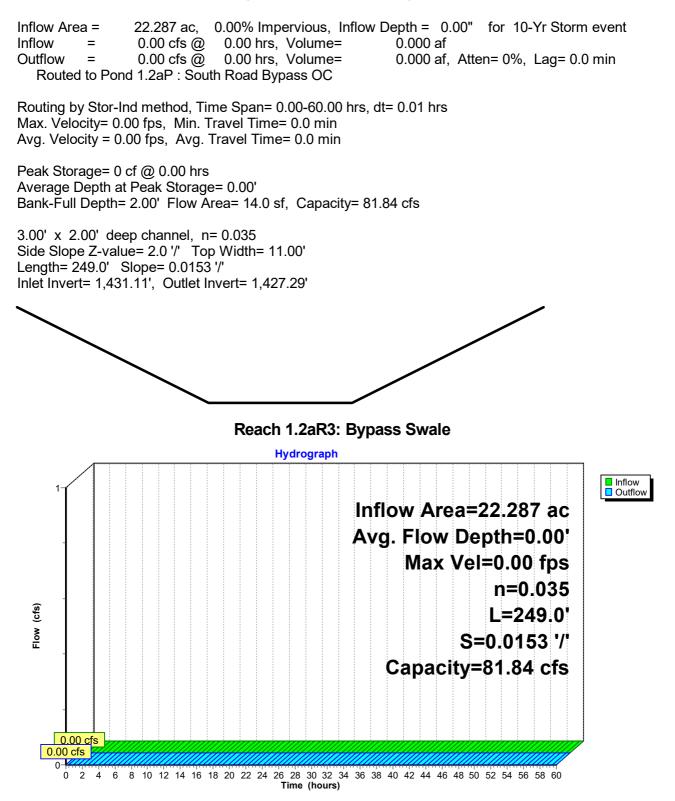
# Summary for Reach 1.2aR1: Bypass Swale



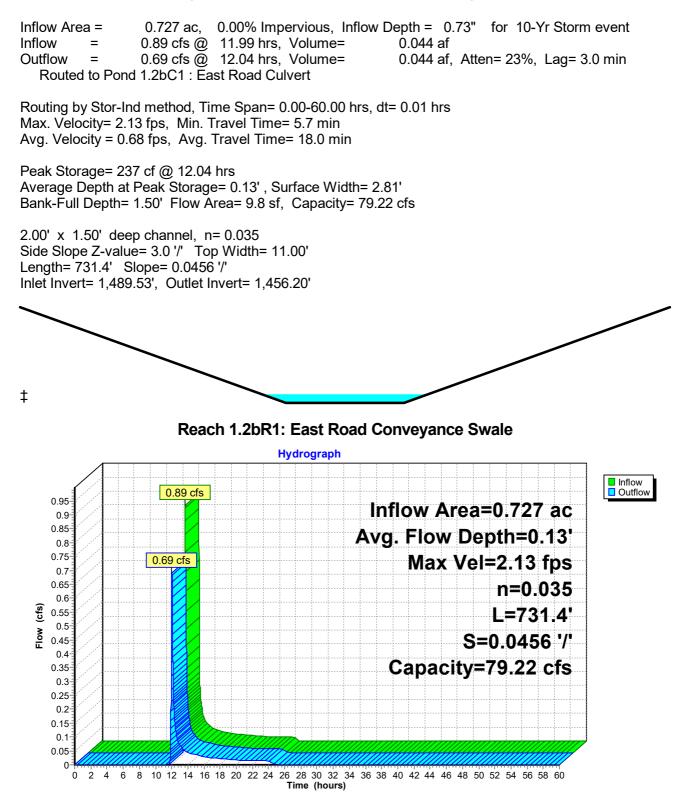
### Summary for Reach 1.2aR2: Bypass Swale



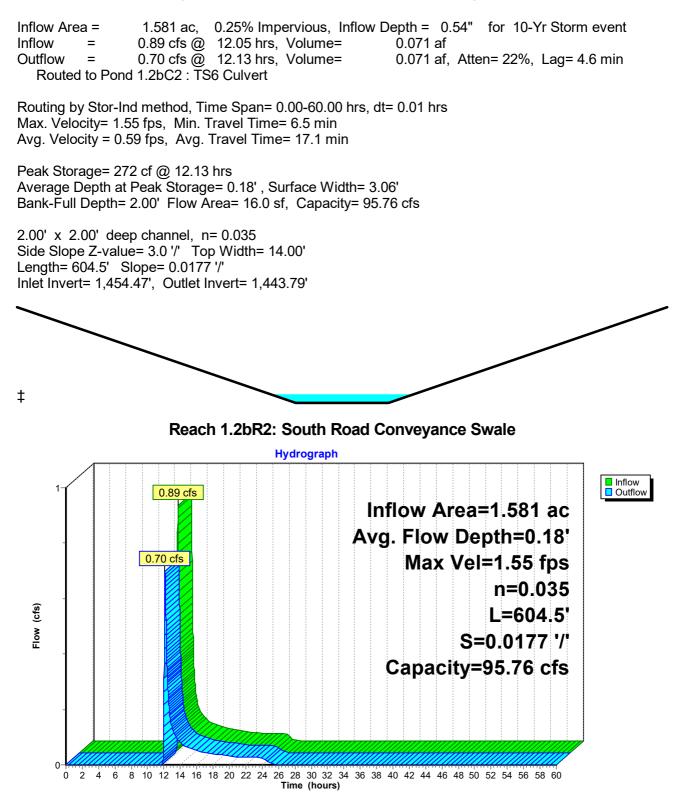
#### Summary for Reach 1.2aR3: Bypass Swale



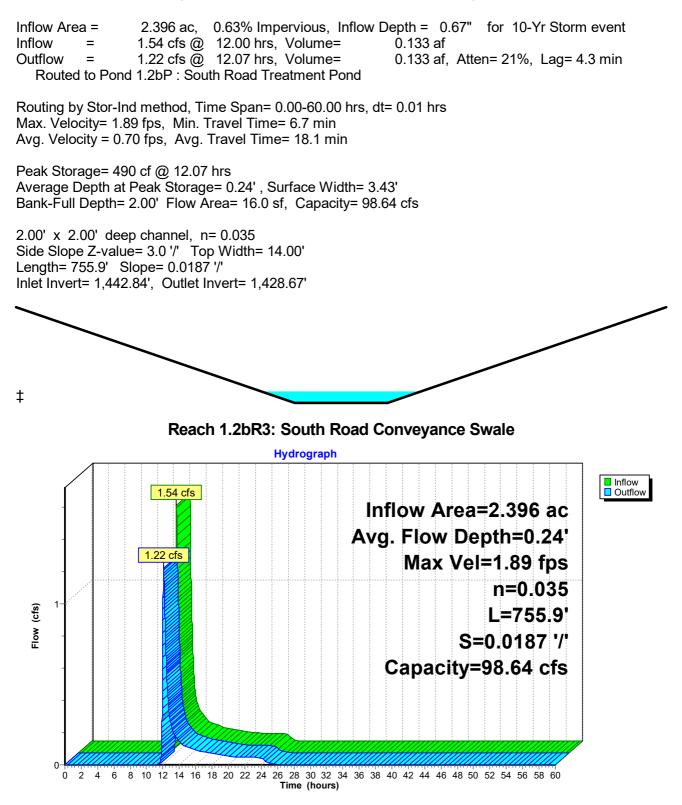
#### Summary for Reach 1.2bR1: East Road Conveyance Swale



#### Summary for Reach 1.2bR2: South Road Conveyance Swale



#### Summary for Reach 1.2bR3: South Road Conveyance Swale



## Summary for Reach 4.1R1: Bypass Swale

 Inflow Area =
 11.663 ac,
 2.80% Impervious, Inflow Depth =
 0.05"
 for
 10-Yr Storm event

 Inflow =
 0.06 cfs @
 15.43 hrs, Volume=
 0.052 af

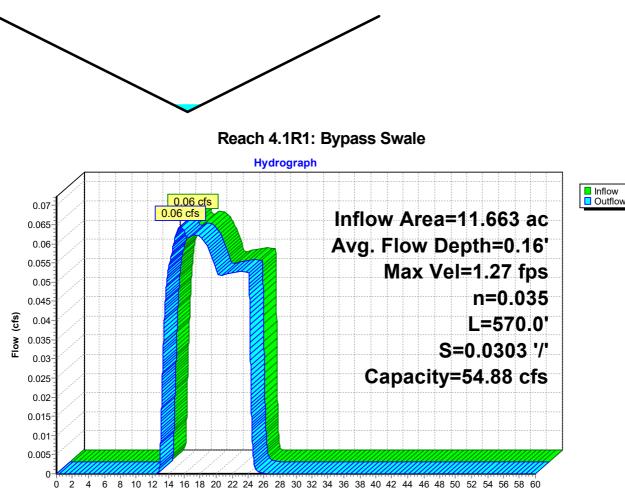
 Outflow =
 0.06 cfs @
 15.51 hrs, Volume=
 0.052 af, Atten= 0%, Lag= 4.8 min

 Routed to Reach 4.1R2 : Ex Stream
 0.052 af, Atten= 0%, Lag= 4.8 min

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Max. Velocity= 1.27 fps, Min. Travel Time= 7.5 min Avg. Velocity = 1.09 fps, Avg. Travel Time= 8.7 min

Peak Storage= 29 cf @ 15.51 hrs Average Depth at Peak Storage= 0.16', Surface Width= 0.64' Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 54.88 cfs

0.00' x 2.00' deep channel, n= 0.035 Side Slope Z-value= 2.0 '/' Top Width= 8.00' Length= 570.0' Slope= 0.0303 '/' Inlet Invert= 1,448.24', Outlet Invert= 1,430.97'



Time (hours)

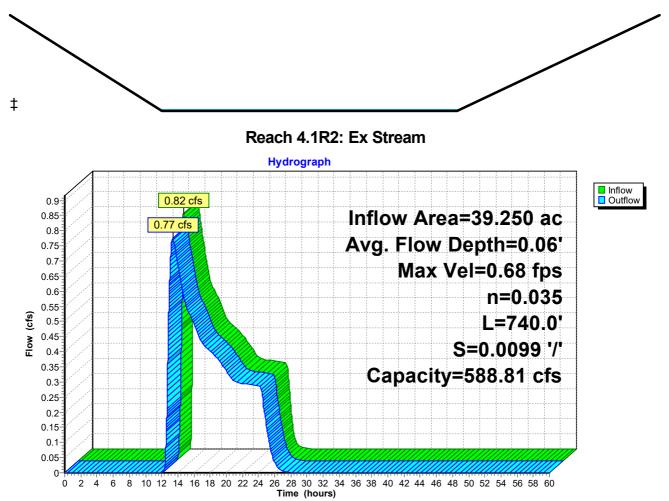
### Summary for Reach 4.1R2: Ex Stream

Inflow Area =39.250 ac,0.83% Impervious,Inflow Depth =0.13"for10-Yr Storm eventInflow =0.82 cfs @13.01 hrs,Volume=0.431 afOutflow =0.77 cfs @13.36 hrs,Volume=0.431 af,Atten= 5%,Routed to Link SP4 : Study Point 40.431 af,Atten= 5%,Lag= 21.0 min

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Max. Velocity= 0.68 fps, Min. Travel Time= 18.1 min Avg. Velocity = 0.48 fps, Avg. Travel Time= 25.5 min

Peak Storage= 842 cf @ 13.36 hrs Average Depth at Peak Storage= 0.06', Surface Width= 17.95' Bank-Full Depth= 3.00' Flow Area= 84.0 sf, Capacity= 588.81 cfs

17.50' x 3.00' deep channel, n= 0.035 Side Slope Z-value= 3.0 4.0 '/' Top Width= 38.50' Length= 740.0' Slope= 0.0099 '/' Inlet Invert= 1,430.98', Outlet Invert= 1,423.64'



#### Summary for Reach 4.2bR: Conveyance Swale

Inflow Area = 0.470 ac, 0.00% Impervious, Inflow Depth = 0.98" for 10-Yr Storm event 0.81 cfs @ 11.98 hrs, Volume= Inflow = 0.038 af = 0.69 cfs @ 12.02 hrs, Volume= Outflow 0.038 af, Atten= 15%, Lag= 2.4 min Routed to Pond 4.2bP : Pond 4 - Access Rd East Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Max. Velocity= 2.09 fps, Min. Travel Time= 4.5 min Avg. Velocity = 0.63 fps, Avg. Travel Time= 14.8 min Peak Storage= 187 cf @ 12.02 hrs Average Depth at Peak Storage= 0.14', Surface Width= 2.82' Bank-Full Depth= 1.50' Flow Area= 9.8 sf, Capacity= 77.09 cfs 2.00' x 1.50' deep channel, n= 0.035 Side Slope Z-value= 3.0 '/' Top Width= 11.00' Length= 565.0' Slope= 0.0432 '/' Inlet Invert= 1,472.38', Outlet Invert= 1,448.00' ‡ Reach 4.2bR: Conveyance Swale Hydrograph Inflow 0.9 0.81 cfs Outflow 0.85 Inflow Area=0.470 ac 0.8 Avg. Flow Depth=0.14' 0.75 0.69 cfs 0.7 Max Vel=2.09 fps 0.65 0.6 n=0.035 0.55 Flow (cfs) 0.5 L=565.0' 0.45 S=0.0432 '/' 0.4 0.35 Capacity=77.09 cfs 0.3 0.25 0.2 0.15 0.1 0.05 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 0 Time (hours)

# Summary for Pond 1.1aC1: TS1 Culvert

Inflow Area = 5.874 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = Outflow 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.1aR2 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,487.56' @ 0.00 hrs Flood Elev= 1,489.60' **Outlet Devices** Device Routing Invert 36.3" W x 22.5" H, R=18.8"/51.0" Pipe Arch RCP\_Arch 37x23 #1 Primary 1.487.56 L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,487.56' / 1,486.80' S= 0.0162 '/' Cc= 0.900 n= 0.012, Flow Area= 4.43 sf **Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,487.56' (Free Discharge) **1=RCP\_Arch 37x23** (Controls 0.00 cfs) Pond 1.1aC1: TS1 Culvert Hydrograph Inflow Primary Inflow Area=5.874 ac Peak Elev=1,487.56' 36.3" x 22.5" R=18.8"/51.0" (cfs) **Pipe Arch Culvert** Flow n=0.012 L=47.0' S=0.0162 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

# Summary for Pond 1.1aC2: TS2 Culvert

Inflow Area = 14.341 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min 0.00 hrs, Volume= 0.000 af Primary = 0.00 cfs @ Routed to Reach 1.1aR3 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,470.80' @ 0.00 hrs Flood Elev= 1,473.07' Device Routing Invert **Outlet Devices** 48.0" W x 24.0" H Box Culvert #1 Primary 1.470.80' L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,470.80' / 1,469.57' S= 0.0262 '/' Cc= 0.900 n= 0.012, Flow Area= 8.00 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,470.80' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.1aC2: TS2 Culvert Hydrograph Inflow Primary Inflow Area=14.341 ac Peak Elev=1,470.80' 48.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.0' S=0.0262 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

# Summary for Pond 1.1aC3: TS3 Culvert

Inflow Area = 20.133 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min 0.00 hrs, Volume= 0.000 af Primary = 0.00 cfs @ Routed to Reach 1.1aR4 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,449.55' @ 0.00 hrs Flood Elev= 1,452.10' Device Routing Invert **Outlet Devices** 60.0" W x 24.0" H Box Culvert #1 Primary 1.449.55' L= 47.2' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,449.55' / 1,447.64' S= 0.0405 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 10.00 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,449.55' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.1aC3: TS3 Culvert Hydrograph Inflow Primary Inflow Area=20.133 ac Peak Elev=1,449.55' 60.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.2' S=0.0405 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

# Summary for Pond 1.1aP: North Road Bypass OC

Inflow Area = 32.958 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr Storm event Inflow 0.00 cfs @ 0.00 hrs, Volume= = 0.000 af 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Link 1.1L :

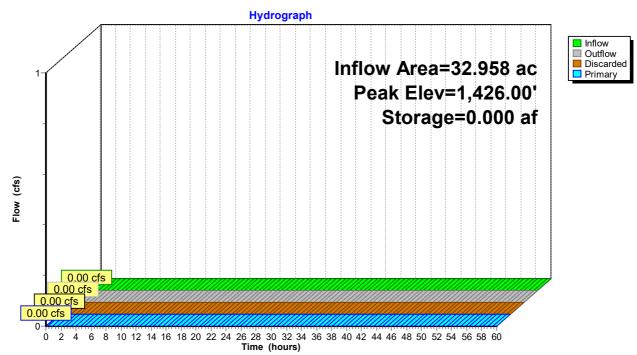
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,426.00' @ 0.00 hrs Surf.Area= 0.005 ac Storage= 0.000 af

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

Volume	Invert	Avail.Storage	e Storage Description
#1	1,426.00'	0.069 at	f 10.00'W x 20.00'L x 4.00'H Prismatoid Z=3.0
Device #1	Routing Discarded	1,426.00' <b>0</b>	Outlet Devices         0.500 in/hr Exfiltration over Surface area         Phase-In= 0.01'
#2	Primary	H	<b>0.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> lead (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,426.00' (Free Discharge) **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,426.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



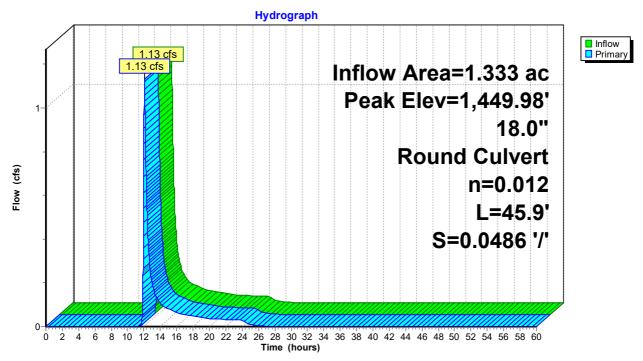
# Pond 1.1aP: North Road Bypass OC

# Summary for Pond 1.1bC1: TS4 Culvert

Inflow Area = 1.333 ac, 0.53% Impervious, Inflow Depth = 0.93" for 10-Yr Storm event 1.13 cfs @ 12.06 hrs, Volume= Inflow = 0.103 af 1.13 cfs @ 12.06 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min Outflow 1.13 cfs @ 12.06 hrs, Volume= 0.103 af Primary = Routed to Reach 1.1bR2 : North Road Conveyance Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,449.98' @ 12.06 hrs Flood Elev= 1,451.20'

Device Routing Invert Outlet Devices	
#1 Primary 1,449.50' <b>18.0'' Round Culvert</b> L= 45.9' CPP, end-section conforming to fill, Ke Inlet / Outlet Invert= 1,449.50' / 1,447.27' S= 0.0 n= 0.012, Flow Area= 1.77 sf	

Primary OutFlow Max=1.13 cfs @ 12.06 hrs HW=1,449.98' (Free Discharge) ←1=Culvert (Inlet Controls 1.13 cfs @ 2.35 fps)



Pond 1.1bC1: TS4 Culvert

### Summary for Pond 1.1bP1: Dry Swale

 Inflow Area =
 1.984 ac,
 0.71% Impervious, Inflow Depth =
 0.88" for 10-Yr Storm event

 Inflow =
 1.61 cfs @
 12.06 hrs, Volume=
 0.145 af

 Outflow =
 1.59 cfs @
 12.08 hrs, Volume=
 0.145 af, Atten= 1%, Lag= 1.1 min

 Discarded =
 0.00 cfs @
 12.08 hrs, Volume=
 0.004 af

 Primary =
 1.58 cfs @
 12.08 hrs, Volume=
 0.141 af

 Routed to Pond 1.1bP2 : North Road Detention Pond
 Primary
 0.145 af

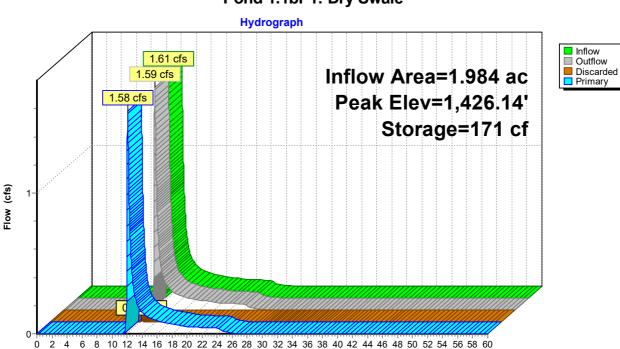
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,426.14' @ 12.08 hrs Surf.Area= 329 sf Storage= 171 cf

Plug-Flow detention time= 14.8 min calculated for 0.145 af (100% of inflow) Center-of-Mass det. time= 14.9 min ( 914.0 - 899.1 )

Volume	Inve	ert Avai	I.Storage	Storage Description	on		
#1	1,424.7	5'	428 cf	Custom Stage Da	<b>ta (Irregular)</b> Liste	ed below (Recalc)	
Elevatio (fee 1,424.7 1,425.0 1,426.0 1,426.7	et) 75 00 00	Surf.Area (sq-ft) 0 25 273 603	Perim. (feet) 0.0 22.9 98.0 161.7	Inc.Store (cubic-feet) 0 2 127 299	Cum.Store (cubic-feet) 0 2 129 428	Wet.Area (sq-ft) 0 42 767 2,086	
Device	Routing	In	vert Outl	et Devices			
#1 #2	Discarde Primary	d 1,424 1,425	.69' <b>2.0'</b> Hea 2.50 Coe	3.00 3.50	<b>Broad-Crested F</b> 0.60 0.80 1.00		

**Discarded OutFlow** Max=0.00 cfs @ 12.08 hrs HW=1,426.14' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.58 cfs @ 12.08 hrs HW=1,426.14' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 1.58 cfs @ 1.75 fps)



Time (hours)

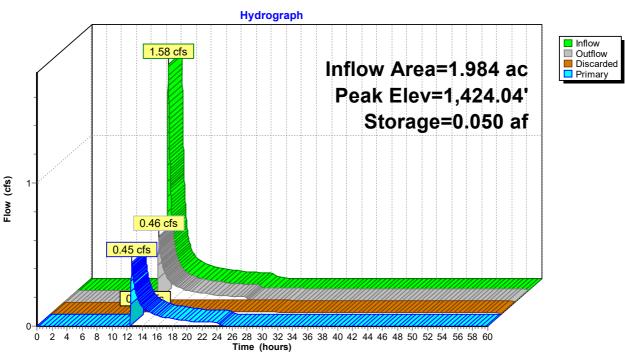
Pond 1.1bP1: Dry Swale

# Summary for Pond 1.1bP2: North Road Detention Pond

Outflow Discarde Primary	= = ed =	1.58 cfs @ 0.46 cfs @ 0.02 cfs @ 0.45 cfs @	.71% Impervious, Inflow Depth = 0.85" for 10-Yr Storm event         2.08 hrs, Volume=       0.141 af         2.62 hrs, Volume=       0.127 af, Atten= 71%, Lag= 32.3 min         2.62 hrs, Volume=       0.052 af         2.62 hrs, Volume=       0.074 af				
	Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,424.04' @ 12.62 hrs Surf.Area= 0.032 ac Storage= 0.050 af						
	Plug-Flow detention time= 547.6 min calculated for 0.127 af (90% of inflow) Center-of-Mass det. time= 495.3 min(1,392.5 - 897.2)						
Volume	Inver	t Avail.Stor	age Storage Description				
#1	1,421.50	0.16	6 af 10.00'W x 40.00'L x 5.00'H Prismatoid Z=3.0				
Device	Routing	Invert	Outlet Devices				
#1 #2	Discarded Primary	1,421.50' 1,424.00'					

**Discarded OutFlow** Max=0.02 cfs @ 12.62 hrs HW=1,424.04' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.40 cfs @ 12.62 hrs HW=1,424.04' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 0.40 cfs @ 0.50 fps)



# Pond 1.1bP2: North Road Detention Pond

# Summary for Pond 1.2aC1: TS 7 Culvert

Inflow Area = 7.876 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = Outflow 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.2aR2 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,444.22' @ 0.00 hrs Flood Elev= 1,446.28' Device Routing Invert Outlet Devices 36.0" W x 24.0" H Box Culvert #1 Primary 1.444.22' L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,444.22' / 1,443.21' S= 0.0215 '/' Cc= 0.900 n= 0.012, Flow Area= 6.00 sf **Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,444.22' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.2aC1: TS 7 Culvert Hydrograph Inflow Primary Inflow Area=7.876 ac Peak Elev=1,444.22' 36.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.0' S=0.0215 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

# Summary for Pond 1.2aC2: TS8 Culvert

Inflow Area = 16.787 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr Storm event 0.00 hrs, Volume= Inflow 0.00 cfs @ 0.000 af = 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Reach 1.2aR3 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,431.65' @ 0.00 hrs Flood Elev= 1,433.87' Device Routing Invert **Outlet Devices** 60.0" W x 24.0" H Box Culvert #1 Primary 1.431.65' L= 47.5' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,431.65' / 1,431.11' S= 0.0114 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 10.00 sf Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,431.65' (Free Discharge) **1=Culvert** (Controls 0.00 cfs) Pond 1.2aC2: TS8 Culvert Hydrograph Inflow Primary Inflow Area=16.787 ac Peak Elev=1,431.65' 60.0" x 24.0" **Box Culvert** (cfs) n=0.012 Flow L=47.5' S=0.0114 '/' 0.00 cfs 0.00 cfs 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

# Summary for Pond 1.2aP: South Road Bypass OC

Inflow Area =	22.287 ac,	0.00% Impervious, Inflow	Depth = 0.00" for 10-Yr Storm event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Discarded =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Link	1.2L :		

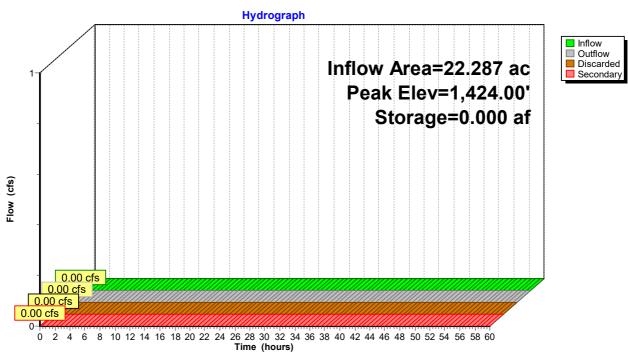
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,424.00' @ 0.00 hrs Surf.Area= 0.005 ac Storage= 0.000 af

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

Volume	Invert	Avail.Stora	ge Storage Description
#1	1,424.00'	0.069	af 10.00'W x 20.00'L x 4.00'H Prismatoid Z=3.0
Device	Routing	Invert	Outlet Devices
#1	Discarded	1,424.00'	12.000 in/hr Exfiltration over Surface area
#2	Secondary	1,426.50'	<b>10.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,424.00' (Free Discharge) **1=Exfiltration** (Passes 0.00 cfs of 0.06 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,424.00' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



# Pond 1.2aP: South Road Bypass OC

# Summary for Pond 1.2bC1: East Road Culvert

Inflow Area =0.727 ac,0.00% Impervious,Inflow Depth =0.73"for10-Yr Storm eventInflow =0.69 cfs @12.04 hrs,Volume=0.044 afOutflow =0.69 cfs @12.04 hrs,Volume=0.044 af,Primary =0.69 cfs @12.04 hrs,Volume=0.044 afRouted to Reach 1.2bR2 : South Road Conveyance SwaleRouting by Stor-Ind method, Time Span=0.00-60.00 hrs, dt=0.01 hrs

Peak Elev= 1,454.78' @ 12.04 hrs Flood Elev= 1,457.45'

#1 Primary 1,454.39' <b>15.0" Round Culvert</b> L = 41.6' CPP end-section conforming to fill Ke= 0.500	Device	Routing	Invert	Outlet Devices
Inlet / Outlet Invert= 1,454.39' / 1,453.67' S= 0.0173 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf	-	U		<b>15.0" Round Culvert</b> L= 41.6' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,454.39' / 1,453.67' S= 0.0173 '/' Cc= 0.900

Primary OutFlow Max=0.69 cfs @ 12.04 hrs HW=1,454.78' (Free Discharge) ←1=Culvert (Inlet Controls 0.69 cfs @ 2.12 fps)

#### Hydrograph Inflow <u>0.69 cf</u>s Primary 0.75 0.69 cfs Inflow Area=0.727 ac 0.7 0.65 Peak Elev=1,454.78' 0.6 15.0" 0.55 0.5 **Round Culvert** 0.45 (cfs) n=0.012 0.4 **8** 0.35 L=41.6' 0.3 S=0.0173 '/' 0.25 02 0 15 0.1 0.05 0 Ò 24 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

# Pond 1.2bC1: East Road Culvert

# Summary for Pond 1.2bC2: TS6 Culvert

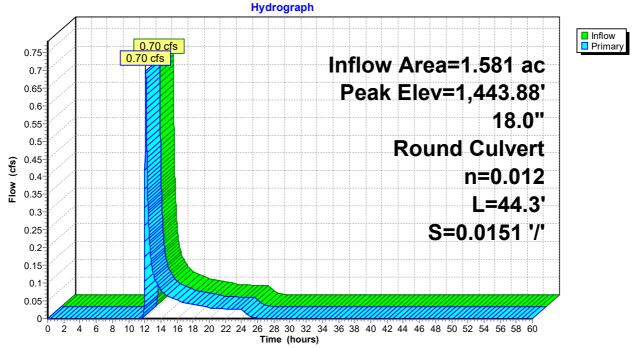
Inflow Area = 1.581 ac, 0.25% Impervious, Inflow Depth = 0.54" for 10-Yr Storm event Inflow = 0.70 cfs @ 12.13 hrs, Volume= 0.071 af Outflow = 0.70 cfs @ 12.13 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min Primary = 0.70 cfs @ 12.13 hrs, Volume= 0.071 af Routed to Reach 1.2bR3 : South Road Conveyance Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 1,443.88' @ 12.13 hrs Flood Elev= 1,445.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,443.51'	18.0" Round Culvert
			L= 44.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,443.51' / 1,442.84' S= 0.0151 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.70 cfs @ 12.13 hrs HW=1,443.88' (Free Discharge) ←1=Culvert (Inlet Controls 0.70 cfs @ 2.07 fps)

# Pond 1.2bC2: TS6 Culvert

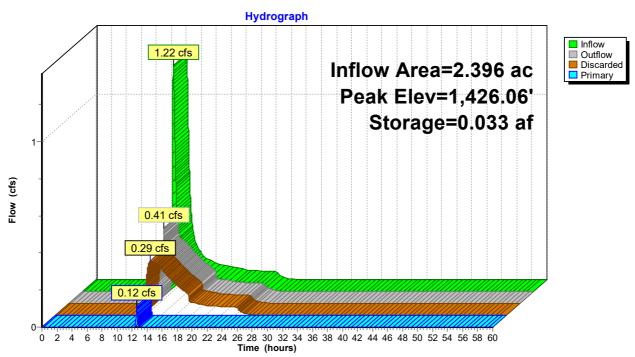


# Summary for Pond 1.2bP: South Road Treatment Pond

Outflow Discarde Primary	= = ed =	0.41 cfs @ 0.29 cfs @ 0.12 cfs @	12.07 12.61 12.61	6 Impervious, Inflow Depth = 0.67" for 10-Yr Storm event7 hrs, Volume=0.133 afhrs, Volume=0.133 af, Atten= 67%, Lag= 32.1 minhrs, Volume=0.132 afhrs, Volume=0.002 af	
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,426.06' @ 12.61 hrs Surf.Area= 0.024 ac Storage= 0.033 af					
Plug-Flow detention time= 44.3 min calculated for 0.133 af (100% of inflow) Center-of-Mass det. time= 44.3 min ( 954.4 - 910.1 )					
Volume	Inve	rt Avail.St	orage	Storage Description	
#1	1,424.0	0' 0.1	149 af	20.00'W x 20.00'L x 5.00'H Prismatoid Z=3.0	
Device	Routing	Inve	rt Ou	utlet Devices	
#1 #2	Discarde Primary	d 1,424.0 1,426.0	5' <b>20</b> .	<b>2.000 in/hr Exfiltration over Surface area</b> Phase-In= 0.01' <b>.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> ead (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60	

**Discarded OutFlow** Max=0.29 cfs @ 12.61 hrs HW=1,426.06' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.29 cfs)

Primary OutFlow Max=0.05 cfs @ 12.61 hrs HW=1,426.06' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 0.05 cfs @ 0.25 fps)



# Pond 1.2bP: South Road Treatment Pond

Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

#### Summary for Pond 1.3P: Pond 3 - Access Rd West

Inflow Area = 0.695 ac,		0.00% Impervious, Infl	ow Depth = 0.17" for 10-Yr Storm event		
Inflow =	0.04 cfs @	12.04 hrs, Volume=	0.010 af		
Outflow =	0.03 cfs @	12.12 hrs, Volume=	0.010 af, Atten= 33%, Lag= 4.7 min		
Discarded =	0.03 cfs @	12.12 hrs, Volume=	0.010 af		
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af		
Routed to Link SP1 : Study Point 1					

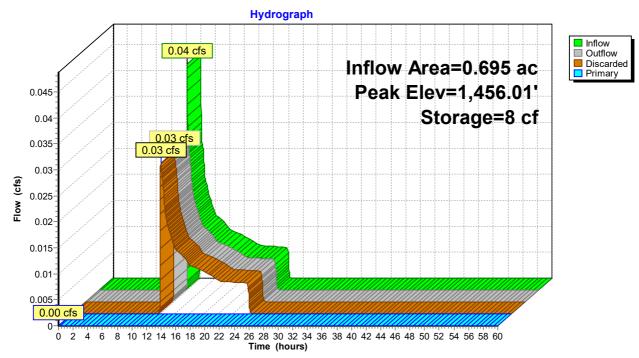
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,456.01' @ 12.12 hrs Surf.Area= 788 sf Storage= 8 cf

Plug-Flow detention time= 4.8 min calculated for 0.010 af (100% of inflow) Center-of-Mass det. time= 4.8 min (997.7 - 992.9)

Volume	Inver	t Avai	l.Storage	Storage Descriptio	n	
#1	1,456.00	)'	8,743 cf	Custom Stage Dat	ta (Irregular) Listed	l below (Recalc)
Elevatio	on S	Surf.Area	Perim.	Inc.Store	Cum.Store	Wet.Area
(fee	et)	(sq-ft)	(feet)	(cubic-feet)	(cubic-feet)	<u>(sq-ft)</u>
1,456.0	0	784	123.0	0	0	784
1,458.0	00	1,720	194.0	2,443	2,443	2,603
1,459.0	00	2,884	279.0	2,277	4,721	5,811
1,460.0	00	5,280	421.0	4,022	8,743	13,729
Device	Routing	In	vert Outl	et Devices		
#1	Discardeo	1,456	.00' 6.00	0 in/hr Exfiltration	over Surface area	Phase-In= 0.01'
#2	Primary	1,459	.99' 20.0	long x 4.0' breadt	h Broad-Crested F	Rectangular Weir
	-		Hea	d (feet) 0.20 0.40	0.60 0.80 1.00 1.	20 1.40 1.60 1.80 2.00
			2.50	3.00 3.50 4.00 4	.50 5.00 5.50	
			Coe	f. (English) 2.38 2.	54 2.69 2.68 2.67	7 2.67 2.65 2.66 2.66
				2.72 2.73 2.76 2		

**Discarded OutFlow** Max=0.11 cfs @ 12.12 hrs HW=1,456.01' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,456.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



# Pond 1.3P: Pond 3 - Access Rd West

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# Summary for Pond 4.2bP: Pond 4 - Access Rd East

Inflow Area = 0.470 ac, 0.00% Impervious, Inflow Depth = 0.98" for 10-Yr Storm event 0.69 cfs @ 12.02 hrs, Volume= Inflow = 0.038 af 0.08 cfs @ 12.64 hrs, Volume= Outflow 0.038 af, Atten= 89%, Lag= 37.2 min 0.08 cfs @ 12.64 hrs, Volume= Discarded = 0.038 af 0.000 af Primary = 0.00 cfs @ 0.00 hrs, Volume= Routed to Pond 4.2C : 18" Culvert

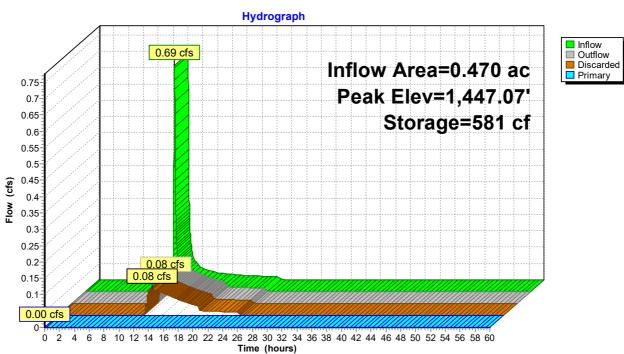
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,447.07' @ 12.64 hrs Surf.Area= 571 sf Storage= 581 cf

Plug-Flow detention time= 73.6 min calculated for 0.038 af (100% of inflow) Center-of-Mass det. time= 73.5 min (948.1 - 874.6)

Volume	Invert	Avail.Stor	age Storage Description
#1	1,445.50'	2,31	7 cf 10.00'W x 20.00'L x 3.50'H Prismatoid Z=3.0
Device	Routing	Invert	Outlet Devices
#1	Discarded	1,445.50'	6.000 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Primary	1,448.25'	10.0' long x 4.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66
			2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.08 cfs @ 12.64 hrs HW=1,447.07' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,445.50' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



# Pond 4.2bP: Pond 4 - Access Rd East

### Summary for Pond 4.2C: 18" Culvert

 Inflow Area =
 27.587 ac, 0.00% Impervious, Inflow Depth = 0.17" for 10-Yr Storm event

 Inflow =
 0.85 cfs @
 12.75 hrs, Volume=
 0.380 af

 Outflow =
 0.81 cfs @
 12.97 hrs, Volume=
 0.379 af, Atten= 5%, Lag= 13.4 min

 Primary =
 0.81 cfs @
 12.97 hrs, Volume=
 0.379 af

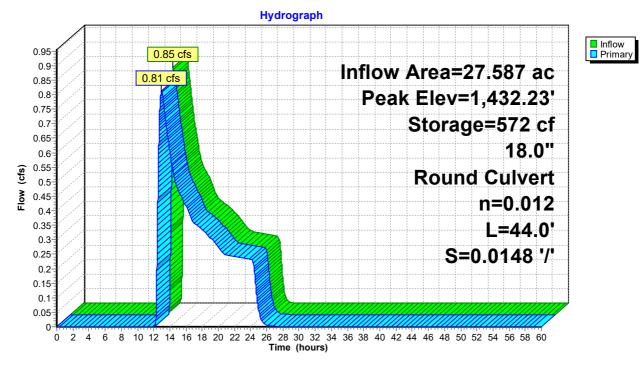
 Routed to Reach 4.1R2 : Ex Stream
 0.379 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,432.23' @ 12.97 hrs Surf.Area= 2,110 sf Storage= 572 cf Flood Elev= 1,434.64' Surf.Area= 27,666 sf Storage= 28,656 cf

Plug-Flow detention time= 14.9 min calculated for 0.379 af (100% of inflow) Center-of-Mass det. time= 13.3 min (1,036.8 - 1,023.5)

Volume	Inve	ert Ava	il.Storage	Storage Description	on		
#1	1,431.5	50'	39,033 cf	Custom Stage Da	<b>ta (Irregular)</b> Liste	ed below (Recalc)	
<b>F</b> lauratia			Devive		Ourse Otherse		
Elevatio		Surf.Area	Perim.	Inc.Store	Cum.Store	Wet.Area	
(fee	t)	(sq-ft)	(feet)	(cubic-feet)	(cubic-feet)	(sq-ft)	
1,431.5	0	0	0.0	0	0	0	
1,432.0	0	1,190	146.0	198	198	1,697	
1,432.5	0	3,534	368.0	1,129	1,327	10,778	
1,433.0	0	5,795	497.0	2,309	3,637	19,660	
1,433.5	0	10,362	837.0	3,984	7,621	55,755	
1,434.0	0	16,931	975.0	6,756	14,377	75,659	
1,434.6	0	27,412	1,352.0	13,177	27,555	145,474	
1,435.0	0	30,000	1,500.0	11,479	39,033	179,068	
Device	Routing	lr	vert Outl	et Devices			
#1	Primary	1,431	1.83' <b>18.0</b>	" Round Culvert			
			L= 4	4.0' RCP, square	edge headwall, K	(e= 0.500	
			Inlet	/ Outlet Invert= 1,4	31.83' / 1,431.18'	S= 0.0148 '/' Cc	= 0.900
				.012 Corrugated P	,		
					- ,	,	

Primary OutFlow Max=0.81 cfs @ 12.97 hrs HW=1,432.23' (Free Discharge) ←1=Culvert (Inlet Controls 0.81 cfs @ 2.15 fps)



Pond 4.2C: 18" Culvert

## Summary for Pond 4.3C: 24" Culvert

Inflow Area = 25.466 ac, 5.08% Impervious, Inflow Depth = 0.34" for 10-Yr Storm event Inflow = 3.30 cfs @ 12.45 hrs, Volume= 0.715 af Outflow = 3.30 cfs @ 12.45 hrs, Volume= 0.715 af, Atten= 0%, Lag= 0.0 min Primary = 3.30 cfs @ 12.45 hrs, Volume= 0.715 af Routed to Link SP4 : Study Point 4 Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,432.12' @ 12.45 hrs Flood Elev= 1,434.65'

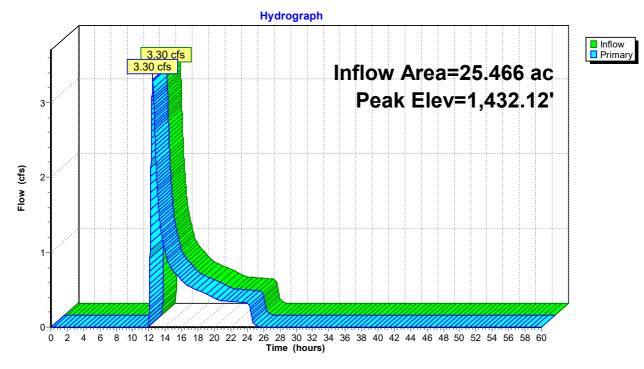
Device	Routing	Invert	Outlet Devices
#1	Primary	1,431.35'	24.0" Round Culvert
	-		L= 55.8' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 1,431.35' / 1,429.87' S= 0.0265 '/' Cc= 0.900
			n= 0.012, Flow Area= 3.14 sf
#2	Primary	1,434.81'	20.0' long x 30.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.30 cfs @ 12.45 hrs HW=1,432.12' (Free Discharge)

-1=Culvert (Inlet Controls 3.30 cfs @ 2.98 fps)

-2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

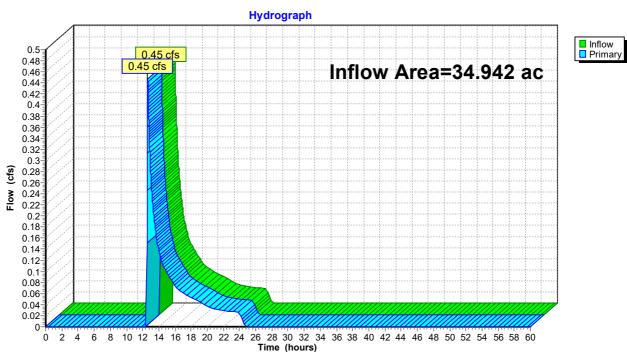
Pond 4.3C: 24" Culvert



## Summary for Link 1.1L:

Inflow Area = 34.942 ac, 0.04% Impervious, Inflow Depth = 0.03" for 10-Yr Storm event Inflow = 0.45 cfs @ 12.62 hrs, Volume= 0.074 af Primary = 0.45 cfs @ 12.62 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min Routed to Link SP1 : Study Point 1

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

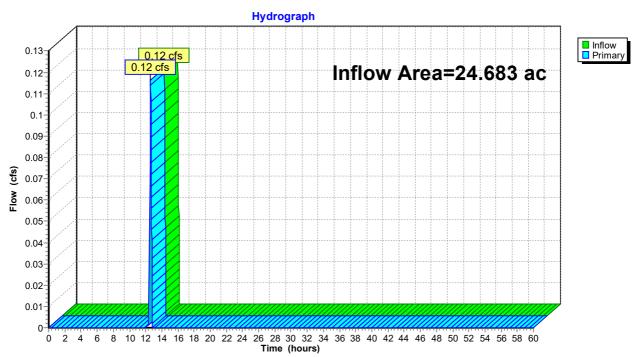


# Link 1.1L:

### Summary for Link 1.2L:

Inflow Area = 24.683 ac, 0.06% Impervious, Inflow Depth = 0.00" for 10-Yr Storm event Inflow = 0.12 cfs @ 12.61 hrs, Volume= 0.002 af Primary = 0.12 cfs @ 12.61 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min Routed to Link SP1 : Study Point 1

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

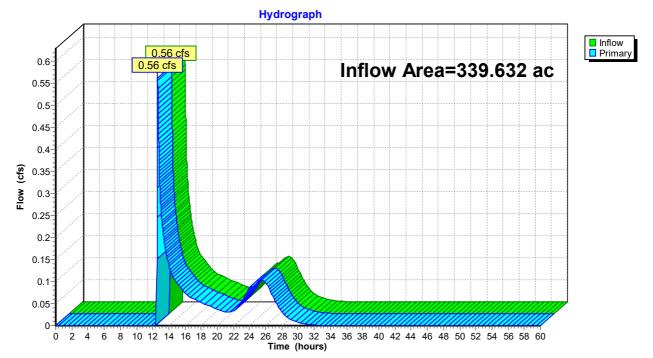


### Link 1.2L:

# Summary for Link SP1: Study Point 1

Inflow Area =	339.632 ac,	0.01% Impervious, Inflow	v Depth = 0.00"	for 10-Yr Storm event
Inflow =	0.56 cfs @	12.61 hrs, Volume=	0.110 af	
Primary =	0.56 cfs @	12.61 hrs, Volume=	0.110 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

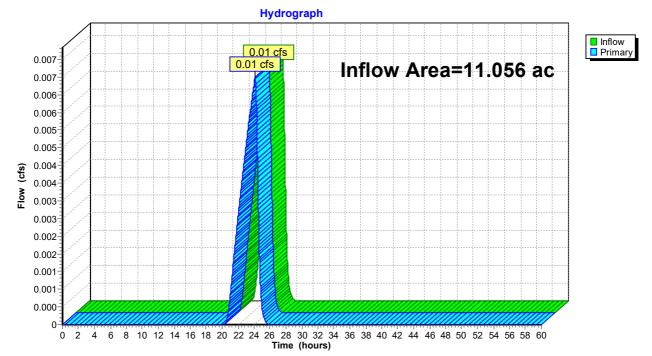


## Link SP1: Study Point 1

# Summary for Link SP2: Study Point 2

Inflow Area =	11.056 ac,	0.00% Impervious, Inflow E	Depth = 0.00"	for 10-Yr Storm event
Inflow =	0.01 cfs @	24.12 hrs, Volume=	0.001 af	
Primary =	0.01 cfs @	24.12 hrs, Volume=	0.001 af, Atten	= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

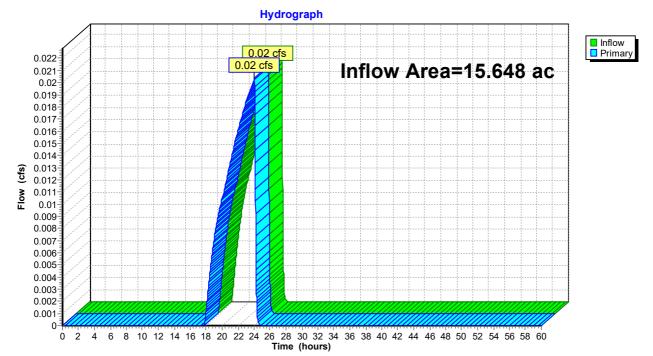


# Link SP2: Study Point 2

# Summary for Link SP3: Study Point 3

Inflow Area =	15.648 ac,	0.56% Impervious, Inflow I	Depth = 0.01"	for 10-Yr Storm event
Inflow =	0.02 cfs @	24.01 hrs, Volume=	0.007 af	
Primary =	0.02 cfs @	24.01 hrs, Volume=	0.007 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

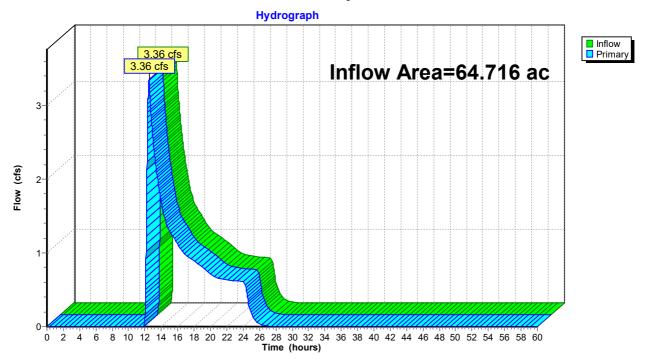


## Link SP3: Study Point 3

### Summary for Link SP4: Study Point 4

Inflow Area =	64.716 ac,	2.50% Impervious, Inflow D	Depth = 0.21" for 10-Yr Storm event
Inflow =	3.36 cfs @	12.49 hrs, Volume=	1.146 af
Primary =	3.36 cfs @	12.49 hrs, Volume=	1.146 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

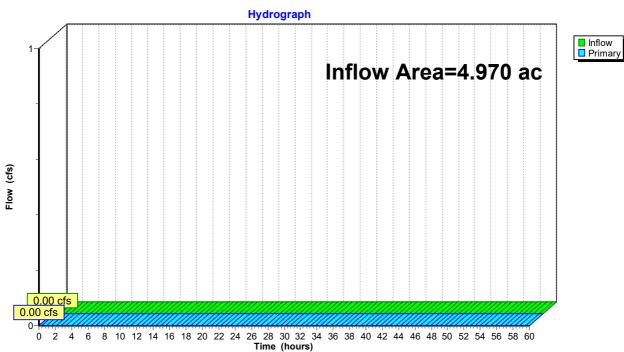


### Link SP4: Study Point 4

## Summary for Link SP5: Study Point 5

Inflow Area =	4.970 ac,	0.00% Impervious, Inflow	Depth = 0.00"	for 10-Yr Storm event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	n= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

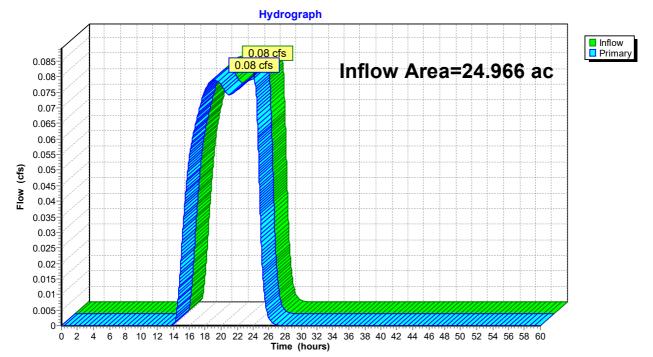


### Link SP5: Study Point 5

## Summary for Link SP6: Study Point 6

Inflow Area =	24.966 ac,	5.81% Impervious, Inflow E	Depth = 0.03"	for 10-Yr Storm event
Inflow =	0.08 cfs @	24.10 hrs, Volume=	0.059 af	
Primary =	0.08 cfs @	24.10 hrs, Volume=	0.059 af, Atte	n= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs



## Link SP6: Study Point 6

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 1.1aS1: North Array East	Runoff Area=5.874 ac 0.00% Impervious Runoff Depth=0.02" Flow Length=788' Tc=18.8 min CN=30 Runoff=0.02 cfs 0.012 af
Subcatchment 1.1aS2: North Array East	Runoff Area=8.467 ac 0.00% Impervious Runoff Depth=0.02" Flow Length=931' Tc=21.1 min CN=30 Runoff=0.03 cfs 0.017 af
Subcatchment 1.1aS3: North Array West	Runoff Area=5.792 ac 0.00% Impervious Runoff Depth=0.02" Flow Length=1,031' Tc=19.7 min CN=30 Runoff=0.02 cfs 0.012 af
Subcatchment 1.1aS4: North Array West F	Runoff Area=12.825 ac 0.00% Impervious Runoff Depth=0.02" Flow Length=1,562' Tc=26.1 min CN=30 Runoff=0.05 cfs 0.026 af
Subcatchment 1.1bS1: North Road - East	Runoff Area=1.333 ac 0.53% Impervious Runoff Depth=2.45" Tc=6.0 min CN=71 Runoff=5.85 cfs 0.272 af
Subcatchment 1.1bS2: North Road - Wes	t Runoff Area=0.651 ac 1.08% Impervious Runoff Depth=2.19" Tc=6.0 min CN=68 Runoff=2.56 cfs 0.119 af
Subcatchment 1.2aS1: Middle Array East	Runoff Area=7.876 ac 0.00% Impervious Runoff Depth=0.02" Flow Length=865' Tc=19.1 min CN=30 Runoff=0.03 cfs 0.016 af
Subcatchment 1.2aS2: Middle Array Cent	er Runoff Area=8.911 ac 0.00% Impervious Runoff Depth=0.02" Flow Length=825' Tc=18.1 min CN=30 Runoff=0.03 cfs 0.018 af
Subcatchment 1.2aS3: Middle Array West	t Runoff Area=5.500 ac 0.00% Impervious Runoff Depth=0.02" Flow Length=882' Tc=18.5 min CN=30 Runoff=0.02 cfs 0.011 af
Subcatchment 1.2bS1: East Road - West	Runoff Area=0.727 ac 0.00% Impervious Runoff Depth=2.11" Tc=6.0 min CN=67 Runoff=2.75 cfs 0.128 af
Subcatchment 1.2bS2: South Road	Runoff Area=0.854 ac 0.47% Impervious Runoff Depth=1.41" Flow Length=308' Tc=13.7 min CN=58 Runoff=1.51 cfs 0.101 af
Subcatchment 1.2bS3: South Road	Runoff Area=0.815 ac 1.35% Impervious Runoff Depth=2.45" Tc=6.0 min CN=71 Runoff=3.57 cfs 0.166 af
	e Runoff Area=279.312 ac 0.00% Impervious Runoff Depth=0.30" ow Length=6,771' Tc=201.7 min CN=39 Runoff=9.14 cfs 6.873 af
Subcatchment 1.3bS: Access Rd to Pond	<b>I 3</b> Runoff Area=0.695 ac 0.00% Impervious Runoff Depth=0.94" Tc=6.0 min CN=51 Runoff=1.02 cfs 0.054 af
Subcatchment 2S:	Runoff Area=11.056 ac 0.00% Impervious Runoff Depth=0.30" Flow Length=2,342' Tc=36.0 min CN=39 Runoff=0.66 cfs 0.272 af
Subcatchment 3S:	Runoff Area=15.648 ac 0.56% Impervious Runoff Depth=0.34" Flow Length=886' Tc=12.7 min CN=40 Runoff=2.04 cfs 0.442 af
Subcatchment 4.1S:	Runoff Area=11.663 ac 2.80% Impervious Runoff Depth=0.59" Flow Length=845' Tc=15.8 min CN=45 Runoff=4.82 cfs 0.570 af

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Subcatchment 4.2aS:	Runoff Area=27.117 ac 0.00% Impervious Runoff Depth=0.94" Flow Length=1,640' Tc=38.9 min CN=51 Runoff=13.31 cfs 2.121 af
Subcatchment 4.2bS:	Runoff Area=0.470 ac 0.00% Impervious Runoff Depth=2.53" Tc=6.0 min CN=72 Runoff=2.13 cfs 0.099 af
Subcatchment 4.3S:	Runoff Area=25.466 ac 5.08% Impervious Runoff Depth=1.34" Flow Length=2,280' Tc=36.5 min CN=57 Runoff=22.16 cfs 2.846 af
Subcatchment 5S:	Runoff Area=4.970 ac 0.00% Impervious Runoff Depth=0.02" Flow Length=1,180' Tc=17.5 min CN=30 Runoff=0.02 cfs 0.010 af
Subcatchment 6S:	Runoff Area=24.966 ac 5.81% Impervious Runoff Depth=0.48" Flow Length=1,961' Tc=60.1 min CN=43 Runoff=3.11 cfs 1.002 af
Reach 1.1aR1: Bypass Swale n=0.035	Avg. Flow Depth=0.03' Max Vel=0.41 fps Inflow=0.02 cfs 0.012 af L=580.0' S=0.0108 '/' Capacity=56.37 cfs Outflow=0.02 cfs 0.012 af
Reach 1.1aR2: Bypass Swale n=0.035	Avg. Flow Depth=0.03' Max Vel=0.76 fps Inflow=0.05 cfs 0.029 af L=557.4' S=0.0284 '/' Capacity=91.27 cfs Outflow=0.05 cfs 0.029 af
Reach 1.1aR3: Bypass Swale n=0.035	Avg. Flow Depth=0.04' Max Vel=0.90 fps Inflow=0.07 cfs 0.041 af L=557.5' S=0.0352 '/' Capacity=101.68 cfs Outflow=0.07 cfs 0.041 af
Reach 1.1aR4: Bypass Swale n=0.035	Avg. Flow Depth=0.05' Max Vel=1.10 fps Inflow=0.12 cfs 0.066 af L=580.5' S=0.0362 '/' Capacity=103.04 cfs Outflow=0.12 cfs 0.066 af
	<b>ce</b> Avg. Flow Depth=0.42' Max Vel=2.90 fps Inflow=5.85 cfs 0.272 af =1,733.0' S=0.0240 '/' Capacity=111.65 cfs Outflow=3.95 cfs 0.272 af
Reach 1.1bR2: North Road Conveyan n=0.035	<b>ce</b> Avg. Flow Depth=0.45' Max Vel=3.81 fps Inflow=6.08 cfs 0.391 af L=593.3' S=0.0380 '/' Capacity=140.36 cfs Outflow=5.77 cfs 0.391 af
Reach 1.2aR1: Bypass Swale n=0.035	Avg. Flow Depth=0.03' Max Vel=0.54 fps Inflow=0.03 cfs 0.016 af L=524.2' S=0.0188 '/' Capacity=74.30 cfs Outflow=0.03 cfs 0.016 af
Reach 1.2aR2: Bypass Swale n=0.035	Avg. Flow Depth=0.04' Max Vel=0.71 fps Inflow=0.06 cfs 0.034 af L=556.0' S=0.0204 '/' Capacity=77.47 cfs Outflow=0.06 cfs 0.034 af
Reach 1.2aR3: Bypass Swale n=0.035	Avg. Flow Depth=0.04' Max Vel=0.63 fps Inflow=0.08 cfs 0.045 af L=249.0' S=0.0153 '/' Capacity=81.84 cfs Outflow=0.08 cfs 0.045 af
	e Avg. Flow Depth=0.27' Max Vel=3.17 fps Inflow=2.75 cfs 0.128 af L=731.4' S=0.0456 '/' Capacity=79.22 cfs Outflow=2.43 cfs 0.128 af
	L=604.5' S=0.0177 '/' Capacity=95.76 cfs Outflow=3.39 cfs 0.228 af
	<b>Ice</b> Avg. Flow Depth=0.52' Max Vel=2.88 fps Inflow=5.95 cfs 0.394 af L=755.9' S=0.0187 '/' Capacity=98.64 cfs Outflow=5.31 cfs 0.394 af
Reach 4.1R1: Bypass Swale n=0.035	Avg. Flow Depth=0.79' Max Vel=3.69 fps Inflow=4.82 cfs 0.570 af L=570.0' S=0.0303 '/' Capacity=54.88 cfs Outflow=4.59 cfs 0.570 af
Reach 4.1R2: Ex Stream n=0.035 L	Avg. Flow Depth=0.31' Max Vel=1.85 fps Inflow=10.59 cfs 2.700 af _=740.0' S=0.0099 '/' Capacity=588.81 cfs Outflow=10.53 cfs 2.700 af

20220630 BR Benson Mines Solar POST Dev	Type II 24-hr 100-Yr Storm Rainfall=5.43"	
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Reach 4.2bR: Conveyance Swale         Avg. Flow Depth=0.25'         Max Vel=2.91 fps         Inflow=2.13 cfs         0.099 af           n=0.035         L=565.0'         S=0.0432 '/'         Capacity=77.09 cfs         Outflow=1.95 cfs         0.099 af
Pond 1.1aC1: TS1 Culvert         Peak Elev=1,487.60'         Inflow=0.02 cfs         0.012 af           36.3" x 22.5", R=18.8"/51.0"         Pipe Arch Culvert         n=0.012         L=47.0'         S=0.0162 '/'         Outflow=0.02 cfs         0.012 af
Pond 1.1aC2: TS2 Culvert         Peak Elev=1,470.83'         Inflow=0.05 cfs         0.029 af           48.0" x 24.0"         Box Culvert         n=0.012         L=47.0'         S=0.0262 '/'         Outflow=0.05 cfs         0.029 af
Pond 1.1aC3: TS3 Culvert         Peak Elev=1,449.58'         Inflow=0.07 cfs         0.041 af           60.0" x 24.0"         Box Culvert         n=0.012         L=47.2'         S=0.0405 '/'         Outflow=0.07 cfs         0.041 af
Pond 1.1aP: North Road Bypass OCPeak Elev=1,428.53' Storage=0.029 af Inflow=0.12 cfs 0.066 afDiscarded=0.01 cfs 0.028 af Primary=0.11 cfs 0.031 af Outflow=0.12 cfs 0.059 af
Pond 1.1bC1: TS4 Culvert         Peak Elev=1,450.46'         Inflow=3.95 cfs         0.272 af           18.0"         Round Culvert         n=0.012         L=45.9'         S=0.0486 '/'         Outflow=3.95 cfs         0.272 af
Pond 1.1bP1: Dry Swale         Peak Elev=1,426.74' Storage=428 cf Inflow=5.77 cfs 0.391 af           Discarded=0.01 cfs 0.005 af         Primary=5.77 cfs 0.386 af         Outflow=5.77 cfs 0.391 af
Pond 1.1bP2: North Road Detention Pond Peak Elev=1,424.23' Storage=0.056 af Inflow=5.77 cfs 0.386 af Discarded=0.02 cfs 0.053 af Primary=5.63 cfs 0.318 af Outflow=5.65 cfs 0.372 af
Pond 1.2aC1: TS 7 Culvert         Peak Elev=1,444.24'         Inflow=0.03 cfs         0.016 af           36.0" x 24.0"         Box Culvert         n=0.012         L=47.0'         S=0.0215 '/'         Outflow=0.03 cfs         0.016 af
Pond 1.2aC2: TS8 Culvert         Peak Elev=1,431.67'         Inflow=0.06 cfs         0.034 af           60.0" x 24.0"         Box Culvert         n=0.012         L=47.5'         S=0.0114 '/'         Outflow=0.06 cfs         0.034 af
Pond 1.2aP: South Road Bypass OCPeak Elev=1,424.42' Storage=0.002 af Inflow=0.08 cfs 0.045 afDiscarded=0.08 cfs 0.045 af Secondary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.045 af
Pond 1.2bC1: East Road Culvert         Peak Elev=1,455.17'         Inflow=2.43 cfs         0.128 af           15.0" Round Culvert n=0.012         L=41.6'         S=0.0173 '/'         Outflow=2.43 cfs         0.128 af
Pond 1.2bC2: TS6 Culvert         Peak Elev=1,444.38'         Inflow=3.39 cfs         0.228 af           18.0"         Round Culvert         n=0.012         L=44.3'         S=0.0151 '/'         Outflow=3.39 cfs         0.228 af
Pond 1.2bP: South Road Treatment Pond Peak Elev=1,426.26' Storage=0.038 af Inflow=5.31 cfs 0.394 af Discarded=0.31 cfs 0.232 af Primary=4.98 cfs 0.162 af Outflow=5.30 cfs 0.394 af
Pond 1.3P: Pond 3 - Access Rd West         Peak Elev=1,456.62'         Storage=566 cf         Inflow=1.02 cfs         0.054 af           Discarded=0.14 cfs         0.054 af         Primary=0.00 cfs         0.000 af         Outflow=0.14 cfs         0.054 af
Pond 4.2bP: Pond 4 - Access Rd East         Peak Elev=1,448.33' Storage=1,559 cf         Inflow=1.95 cfs         0.099 af           Discarded=0.14 cfs         0.089 af         Primary=0.55 cfs         0.011 af         Outflow=0.69 cfs         0.099 af
Pond 4.2C: 18" Culvert         Peak Elev=1,433.72' Storage=10,213 cf         Inflow=13.46 cfs         2.131 af           18.0" Round Culvert n=0.012 L=44.0' S=0.0148 '/         Outflow=9.09 cfs         2.130 af
Pond 4.3C: 24" Culvert         Peak Elev=1,434.50'         Inflow=22.16 cfs         2.846 af           Outflow=22.16 cfs         2.846 af

20220630 BR Benson Mines Solar POST Dev Prepared by TRC	Type II 24-hr 100-Yr Storm Rainfall=5.43" Printed 7/12/2022
HydroCAD® 10.10-7b s/n 01402 © 2022 HydroCAD Software Sc	
· · · ·	
Link 1.1L:	Inflow=5.63 cfs 0.349 af
	Primary=5.63 cfs 0.349 af
Link 1.2L:	Inflow=4.98 cfs_0.162 af
	Primary=4.98 cfs 0.162 af
	-
Link SP1: Study Point 1	Inflow=10.61 cfs 7.384 af
	Primary=10.61 cfs 7.384 af
Link SP2: Study Point 2	Inflow=0.66 cfs_0.272 af
	Primary=0.66 cfs 0.272 af
Link SP3: Study Point 3	Inflow=2.04 cfs 0.442 af
	Primary=2.04 cfs 0.442 af
Link CD4: Study Daint 4	Inflow=31.02 cfs 5.546 af
Link SP4: Study Point 4	Primary=31.02 cfs 5.546 af
	1 hinary=31.02 cis 3.040 ai
Link SP5: Study Point 5	Inflow=0.02 cfs 0.010 af
•	Primary=0.02 cfs 0.010 af
Link SP6: Study Point 6	Inflow=3.11 cfs 1.002 af
	Primary=3.11 cfs 1.002 af
Total Runoff Area = 460.988 ac Runoff Volum	e = 15.185 af Average Runoff Depth = 0.40"

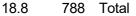
99.31% Pervious = 457.801 ac 0.69% Impervious = 3.187 ac

# Summary for Subcatchment 1.1aS1: North Array East

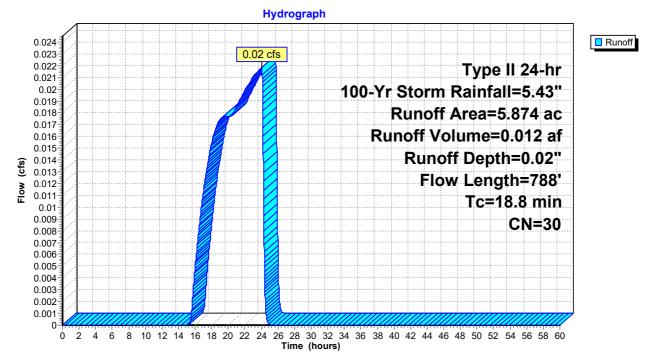
Runoff = 0.02 cfs @ 24.00 hrs, Volume= 0.012 af, Depth= 0.02" Routed to Reach 1.1aR1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac) C	N Dese	cription					
5.874 30 Meadow, non-grazed, HSG A									
	5.	874	100.	00% Pervi	ous Area				
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
-	11.7	100	0.0499	0.14		Sheet Flow,			
	7.1	688	0.0526	1.61		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps			
-	40.0	700	Tatal			•			



# Subcatchment 1.1aS1: North Array East

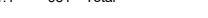


## Summary for Subcatchment 1.1aS2: North Array East Center

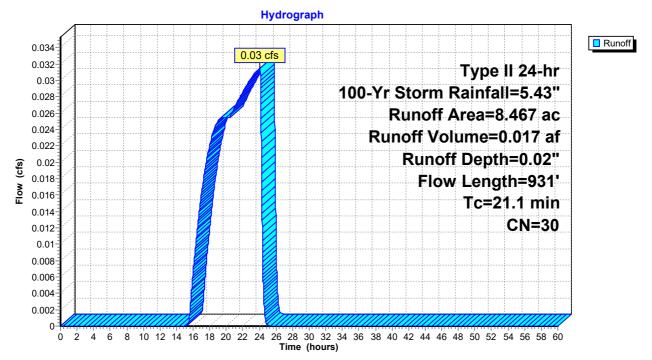
Runoff = 0.03 cfs @ 24.03 hrs, Volume= 0.017 af, Depth= 0.02" Routed to Reach 1.1aR2 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

Area	(ac) C	N Desc	cription						
8.467 30 Meadow, non-grazed, HSG A									
8	.467	100.	00% Pervi	ous Area		_			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
11.9	100	0.0476	0.14		Sheet Flow,	_			
9.2	831	0.0463	1.51		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
21.1	931	Total				_			



### Subcatchment 1.1aS2: North Array East Center



### Summary for Subcatchment 1.1aS3: North Array West Center

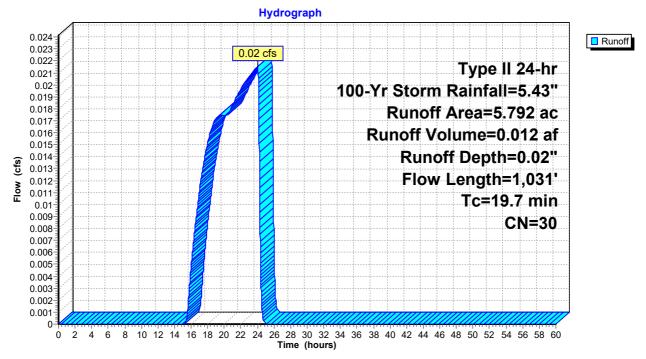
Runoff = 0.02 cfs @ 24.01 hrs, Volume= 0.012 af, Depth= 0.02" Routed to Reach 1.1aR3 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area (ac) CN Description										
	5.792 30 Meadow, non-grazed, HSG A										
	5.	792	100.	00% Pervi	ous Area						
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
-	10.7	100	0.0618	0.16	(013)	Sheet Flow,					
	9.0	931	0.0601	1.72		Grass: Dense n= 0.240 P2= 2.31" Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps					
	40.7	4 004	<b>T</b> ( )			·					

19.7 1,031 Total





# Summary for Subcatchment 1.1aS4: North Array West

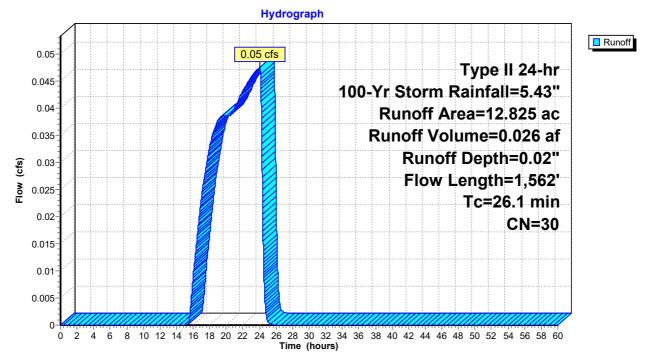
Runoff = 0.05 cfs @ 24.04 hrs, Volume= 0.026 af, Depth= 0.02" Routed to Reach 1.1aR4 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area								
12.825 30 Meadow, non-grazed, HSG A									
	12.	825	100.	00% Pervi	ous Area				
	Tc (min)	Length	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
	<u>(min)</u> 11.1	(feet) 100	0.0560	0.15	(05)	Sheet Flow,			
	15.0	1,462	0.0540	1.63		Grass: Dense n= 0.240 P2= 2.31" Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps			
	00.4	4 500	<b>T</b> ( )						

26.1 1,562 Total





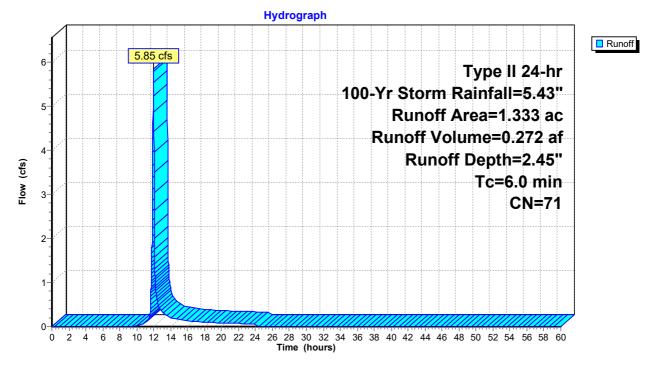
## Summary for Subcatchment 1.1bS1: North Road - East

Runoff = 5.85 cfs @ 11.98 hrs, Volume= 0.272 af, Depth= 2.45" Routed to Reach 1.1bR1 : North Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

 Area	(ac)	CN	Desc	Description							
0.	507	30	Mea	dow, non-g	grazed, HS	6G A					
0.	819	96	Grav	el surface	, HSG A						
 0.	007	98	Roof	s, HSG A							
1.	333	71	Weig	ghted Aver	age						
1.	326		99.4	7% Pervio	us Area						
0.	007		0.53	% Impervi	ous Area						
<b>–</b>		а.	0		0						
Tc	Leng		Slope	Velocity	Capacity	Description					
 (min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)						
6.0						Direct Entry,					

### Subcatchment 1.1bS1: North Road - East



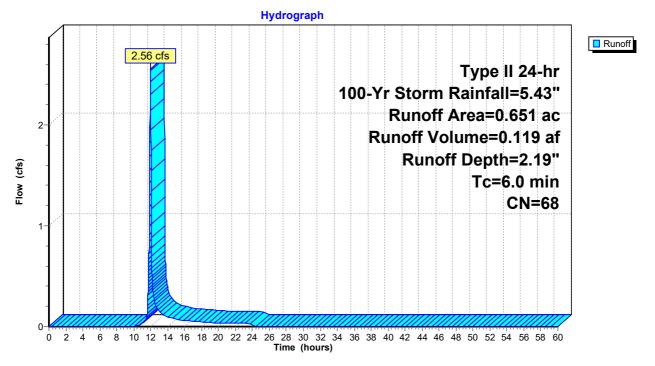
## Summary for Subcatchment 1.1bS2: North Road - West

Runoff = 2.56 cfs @ 11.98 hrs, Volume= 0.119 af, Depth= 2.19" Routed to Reach 1.1bR2 : North Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

Area	(ac)	CN	Desc	Description							
0	.279	30	Mea	dow, non-g	grazed, HS	SG A					
0	.365	96	Grav	el surface	, HSG A						
0	.007	98	Roof	s, HSG A							
0	.651	68	Weig	hted Aver	age						
0	.644		98.9	2% Pervio	us Area						
0	.007		1.089	% Impervi	ous Area						
Tc (min)	Leng (fee		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)						
6.0						Direct Entry,					

### Subcatchment 1.1bS2: North Road - West

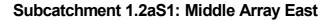


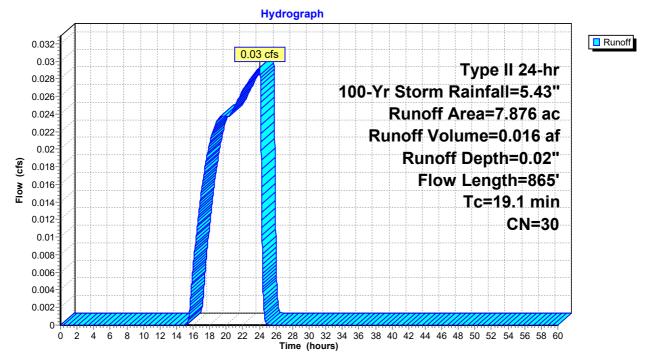
# Summary for Subcatchment 1.2aS1: Middle Array East

Runoff = 0.03 cfs @ 24.00 hrs, Volume= 0.016 af, Depth= 0.02" Routed to Reach 1.2aR1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

_	Area	(ac) C	N Desc	cription						
	7.876 30 Meadow, non-grazed, HSG A									
	7.	876	100.	00% Pervi	ous Area					
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
-	10.6	100	0.0628	0.16		Sheet Flow,				
	8.5	765	0.0459	1.50		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
-	19.1	865	Total			· · · · · · · · · · · · · · · · · · ·				





## Summary for Subcatchment 1.2aS2: Middle Array Center

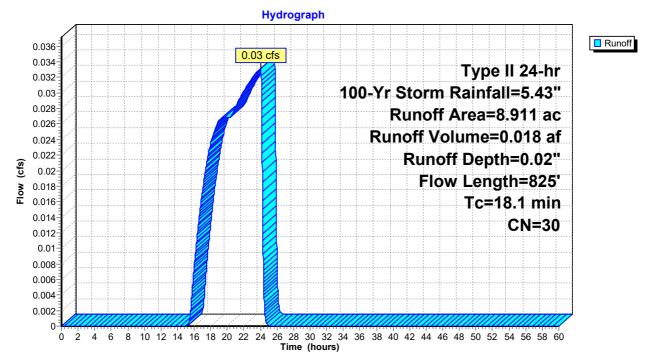
Runoff = 0.03 cfs @ 24.03 hrs, Volume= 0.018 af, Depth= 0.02" Routed to Reach 1.2aR2 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

_	Area	(ac) C	N Dese	cription						
	8.911 30 Meadow, non-grazed, HSG A									
	8.	911	100.	00% Pervi	ous Area					
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
-	10.8	100	0.0607	0.15		Sheet Flow,				
	7.3	725	0.0559	1.66		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
-	40.4	005	Tatal							

18.1 825 Total

## Subcatchment 1.2aS2: Middle Array Center



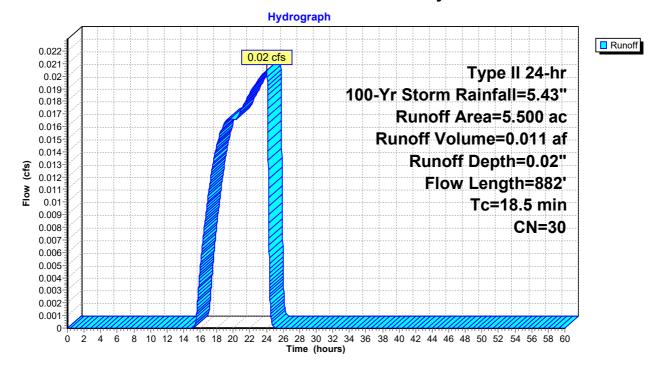
# Summary for Subcatchment 1.2aS3: Middle Array West

Runoff = 0.02 cfs @ 24.03 hrs, Volume= 0.011 af, Depth= 0.02" Routed to Reach 1.2aR3 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

_	Area	(ac) C	N Desc	cription						
	5.500 30 Meadow, non-grazed, HSG A									
_	5.	500	100.	00% Pervi	ous Area					
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
-	10.4	100	0.0660	0.16		Sheet Flow,				
	8.1	782	0.0529	1.61		Grass: Dense n= 0.240 P2= 2.31" <b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps				
-	18.5	882	Total							





# Summary for Subcatchment 1.2bS1: East Road - West Ditch

Runoff = 2.75 cfs @ 11.98 hrs, Volume= 0.128 af, Depth= 2.11" Routed to Reach 1.2bR1 : East Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

0.	(ac) CN 410 96 317 30	6 Grav 0 Mea	cription vel surface dow, non- ghted Ave	grazed, HS	G A				
	.727		00% Perv						
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Descriptio	on			
6.0					Direct En	try,			
		S	ubcatch	ment 1.2b	S1: East	Road - Wes	st Ditch		
				Hydro	graph				
3		2.75 cfs	5		100	-Yr Storm Runoff	Rainfa	II 24-hr I=5.43" .727 ac	Runoff
-2 - Low (cfs) 						Runoff Vo Runo	ff Deptl	).128 af n=2.11" 6.0 min CN=67	
1									
0-4	246	8 10 12 1	4 16 18 20		30 32 34 36 (hours)	38 40 42 44 46	48 50 52	54 56 58 60	

## Summary for Subcatchment 1.2bS2: South Road

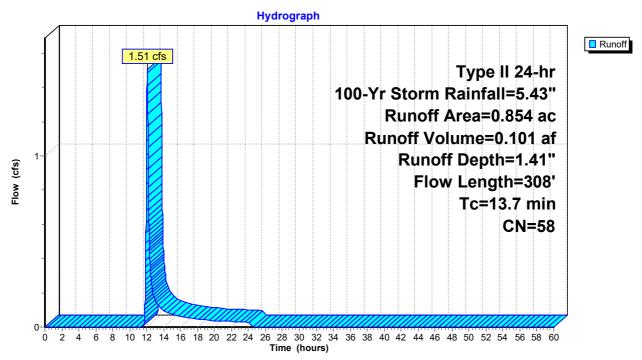
Runoff = 1.51 cfs @ 12.07 hrs, Volume= 0.101 af, Depth= 1.41" Routed to Reach 1.2bR2 : South Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac) C	N Dese	cription						
	0.	498 3	30 Mea	dow, non-	grazed, HS	GA				
*	0.	352 9		Gravel surface						
*	0.	004	98 Root	fs						
	0.	854	58 Wei	ghted Aver	ade					
		850	•	3% Pervio	•					
	-	004	0.47	% Impervi	ous Area					
				•						
	Тс	Length	Slope	Velocity	Capacity	Description				
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
	5.0	35	0.0516	0.12		Sheet Flow,				
						Grass: Dense n= 0.240 P2= 2.31"				
	0.4	25	0.0310	1.06		Sheet Flow,				
						Smooth surfaces n= 0.011 P2= 2.31"				
	5.9	40	0.0429	0.11		Sheet Flow,				
						Grass: Dense n= 0.240 P2= 2.31"				
	2.4	208	0.0442	1.47		Shallow Concentrated Flow,				
						Short Grass Pasture Kv= 7.0 fps				
_	40.7	200	Tatal							

13.7 308 Total

### Subcatchment 1.2bS2: South Road

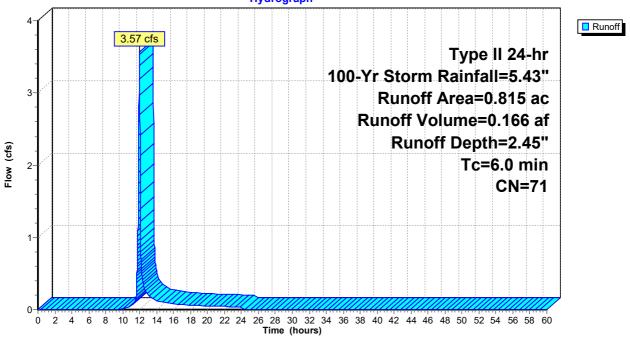


## Summary for Subcatchment 1.2bS3: South Road

Runoff = 3.57 cfs @ 11.98 hrs, Volume= 0.166 af, Depth= 2.45" Routed to Reach 1.2bR3 : South Road Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

_	Area	(ac)	CN	Desc	cription							
	0.	313	30	Mea	eadow, non-grazed, HSG A							
	0.	491	96	Grav	ravel surface, HSG A							
*	0.	011	98	Roof	s							
	0.	815	315 71 Weighted Average									
	0.	804		98.6	5% Pervio	us Area						
	0.	011		1.359	% Impervi	ous Area						
	Тс	Leng	th	Slope	Velocitv	Capacity	Description					
	(min)	(fee		(ft/ft)	(ft/sec)	(cfs)						
	6.0	Direct Entry,										
	Subcatchment 1.2bS3: South Road											
	Hydrograph											



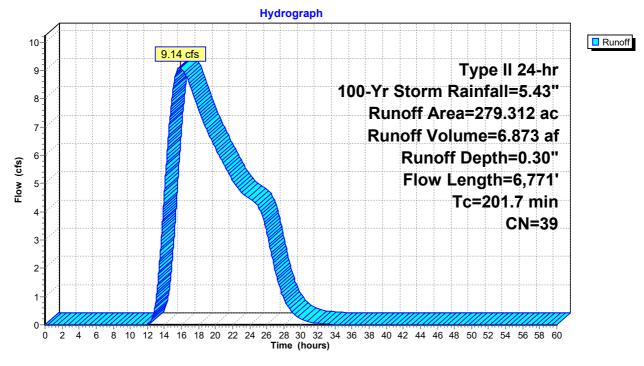
### Summary for Subcatchment 1.3aS1: Surface Discharge

Runoff = 9.14 cfs @ 15.91 hrs, Volume= 6.873 af, Depth= 0.30" Routed to Link SP1 : Study Point 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac) C	N Desc	cription						
*	0.	754 9	96 Grav	el surface						
	144.	649 3	30 Mea	Meadow, non-grazed, HSG A						
	0.	566 5	58 Mea	dow, non-g	grazed, HS	GB				
	25.	274 7	71 Mea	dow, non-g	grazed, HS	GC				
	61.	692 3		ds, Good,						
	32.	754 5	55 Woo	ds, Good,	HSG B					
	13.	623 7	70 Woo	ds, Good,	HSG C					
	279.	312 3	39 Weig	ghted Aver	age					
	279.	312	100.	00% Pervi	ous Area					
	Тс	Length	Slope	Velocity	Capacity	Description				
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
	14.8	100	0.0764	0.11		Sheet Flow,				
						Woods: Light underbrush n= 0.400 P2= 2.31"				
	4.7	581	0.1683	2.05		Shallow Concentrated Flow,				
						Woodland Kv= 5.0 fps				
	25.7	1,199	0.0241	0.78		Shallow Concentrated Flow,				
						Woodland Kv= 5.0 fps				
	0.8	189	0.0157	3.84	76.82	Channel Flow, Rerouted Stream				
						Area= 20.0 sf Perim= 32.6' r= 0.61'				
						n= 0.035 Earth, dense weeds				
	154.9	4,646	0.0051	0.50		Shallow Concentrated Flow,				
	0.0	50	0.0500	4.40		Short Grass Pasture Kv= 7.0 fps				
	0.8	56	0.0566	1.19		Shallow Concentrated Flow,				
						Woodland Kv= 5.0 fps				
	2017	6 771	Total							

201.7 6,771 Total



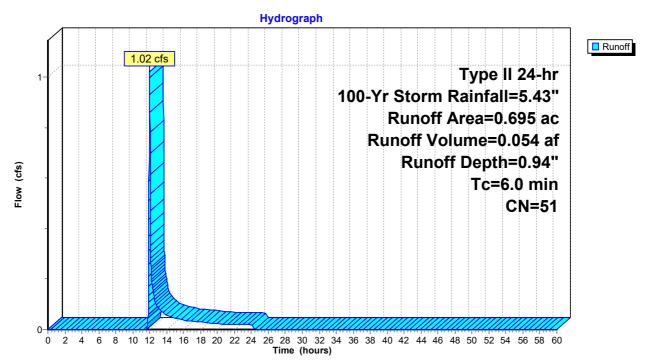
# Subcatchment 1.3aS1: Surface Discharge

### Summary for Subcatchment 1.3bS: Access Rd to Pond 3

Runoff = 1.02 cfs @ 11.99 hrs, Volume= 0.054 af, Depth= 0.94" Routed to Pond 1.3P : Pond 3 - Access Rd West

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac)	CN	Desc	cription							
	0.	473	30 Meadow, non-grazed, HSG A									
*	0.	063	96	Grav	Gravel surface, HSG A, Redev							
*	0.	159	96	Grav	el surface	, HSG A						
_	0.	695	51	Weig	ghted Aver	age						
	0.	0.695 100.00% Pervious Area										
	Тс	Leng	th	Slope	Velocity	Capacity	Description					
	(min)											
	6.0						Direct Entry,					
	Subcatchment 1.3bS: Access Rd to Pond 3											



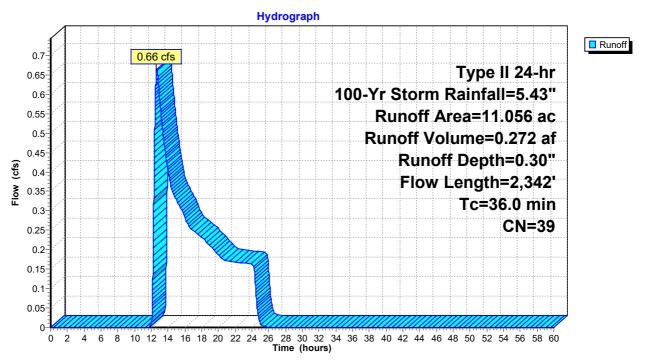
### Summary for Subcatchment 2S:

Runoff = 0.66 cfs @ 12.61 hrs, Volume= 0.272 af, Depth= 0.30" Routed to Link SP2 : Study Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

Area	(ac) C	N Desc	cription							
1.	1.417 96 Gravel surface, HSG A									
0.	0.573 39 >75% Grass cover, Good, HSG A									
6.	6.530 30 Meadow, non-grazed, HSG A									
2.	2.536 30 Woods, Good, HSG Á									
11.	.056 3	9 Weig	ghted Aver	age						
11.	.056	100.0	00% Pervi	ous Area						
Tc	Length	Slope	Velocity	Capacity	Description					
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)						
10.7	100	0.0624	0.16		Sheet Flow,					
					Grass: Dense n= 0.240 P2= 2.31"					
2.7	614	0.0535	3.72		Shallow Concentrated Flow,					
					Unpaved Kv= 16.1 fps					
12.1	1,184	0.0543	1.63		Shallow Concentrated Flow,					
					Short Grass Pasture Kv= 7.0 fps					
1.9	115	0.0407	1.01		Shallow Concentrated Flow,					
					Woodland Kv= 5.0 fps					
0.6	68	0.1443	1.90		Shallow Concentrated Flow,					
					Woodland Kv= 5.0 fps					
8.0	261	0.0118	0.54		Shallow Concentrated Flow,					
					Woodland Kv= 5.0 fps					
36.0	2,342	Total								



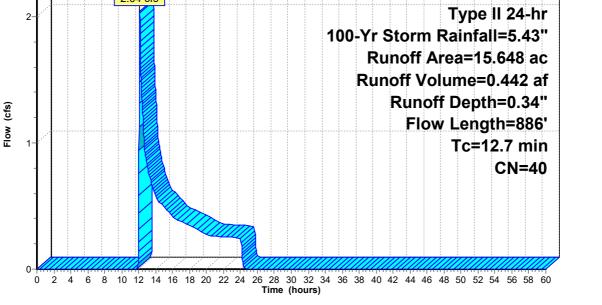


### Summary for Subcatchment 3S:

Runoff = 2.04 cfs @ 12.13 hrs, Volume= 0.442 af, Depth= 0.34" Routed to Link SP3 : Study Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac) C	N Desc	cription						
*	0.	088 9	8 Pave	Paved Roads & Rooftops						
	0.	406 3	<mark>89 &gt;75</mark> 9	>75% Grass cover, Good, HSG A						
					over, Good					
	-				grazed, HS	GA				
				ds, Good,						
_				ds, Good,						
	-			phted Aver	•					
		560		4% Pervio						
	0.	088	0.56	% Impervi	ous Area					
	Тс	Length	Slope	Velocity	Capacity	Description				
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	1				
_	5.4	52	0.0937	0.16		Sheet Flow,				
						Grass: Dense n= 0.240 P2= 2.31"				
	3.7	625	0.1637	2.83		Shallow Concentrated Flow,				
						Short Grass Pasture Kv= 7.0 fps				
	3.6	209	0.0384	0.98		Shallow Concentrated Flow,				
						Woodland Kv= 5.0 fps				
	12.7	886	Total							
					Subca	atchment 3S:				
					Hydrog	praph				
					,					
	-		2.04 cf	s		Runoff				
	2-	4				Type II 24-hr				
	-					100-Yr Storm Rainfall=5.43"				



### Summary for Subcatchment 4.1S:

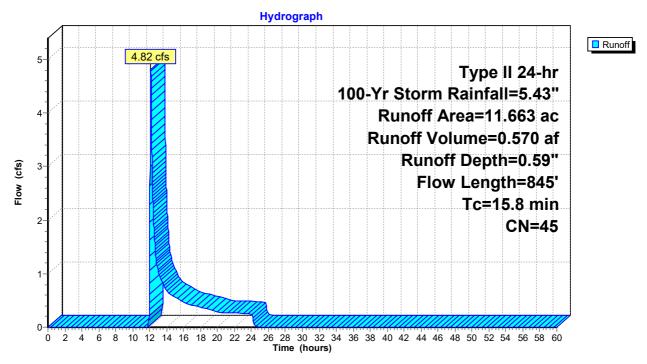
Runoff = 4.82 cfs @ 12.13 hrs, Volume= 0.570 af, Depth= 0.59" Routed to Reach 4.1R1 : Bypass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac)	CN	Desc	cription						
*	0.	327	98	Pave	Paved Roads & Rooftops						
*	0.	375	96	Grav	Gravel surface						
	0.	165	61	>75%	6 Grass co	over, Good	, HSG B				
	2.	544	30			grazed, HS					
		560	58			grazed, HS	GB				
	3.	605	30		ds, Good,						
*	4.	087	55	Woo	ds, Good,	HSG B					
	11.	663	45	Weig	ghted Aver	age					
	11.	336		97.20	0% Pervio	us Area					
	0.	327		2.80	% Impervi	ous Area					
	Tc	Lengt		Slope	Velocity	Capacity	Description				
	(min)	(fee	t)	(ft/ft)	(ft/sec)	(cfs)					
	8.5	10	0 0	.0430	0.20		Sheet Flow,				
							Grass: Short n= 0.150 P2= 2.31"				
	2.6	36	0 0	.1077	2.30		Shallow Concentrated Flow,				
							Short Grass Pasture Kv= 7.0 fps				
	4.7	38	50	.0735	1.36		Shallow Concentrated Flow,				
_							Woodland Kv= 5.0 fps				

15.8 845 Total

## Subcatchment 4.1S:



### Summary for Subcatchment 4.2aS:

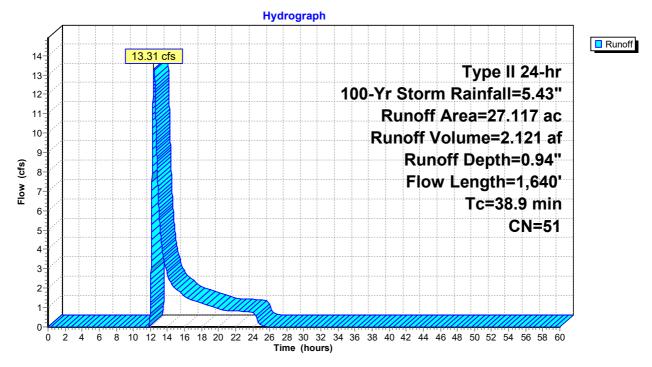
Runoff = 13.31 cfs @ 12.41 hrs, Volume= 2.121 af, Depth= 0.94" Routed to Pond 4.2C : 18" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac) C	N Dese	cription					
*	0.	238	96 Grav	el surface/	1				
	4.	086	30 Mea	dow, non-g	grazed, HS	IG A			
	0.	384	58 Mea	Meadow, non-grazed, HSG B					
	0.	977	30 Woo	ds, Good,	HSG A				
_	21.	432	55 Woo	ds, Good,	HSG B				
	27.	117		ghted Aver					
	27.	117	100.	00% Pervi	ous Area				
	Tc	Length	Slope	Velocity	Capacity	Description			
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
	17.8	100	0.0480	0.09		Sheet Flow,			
						Woods: Light underbrush n= 0.400 P2= 2.31"			
	8.0	878	0.1354	1.84		Shallow Concentrated Flow,			
						Woodland Kv= 5.0 fps			
	13.1	662	0.0144	0.84		Shallow Concentrated Flow,			
						Short Grass Pasture Kv= 7.0 fps			
	~ ~ ~								

38.9 1,640 Total

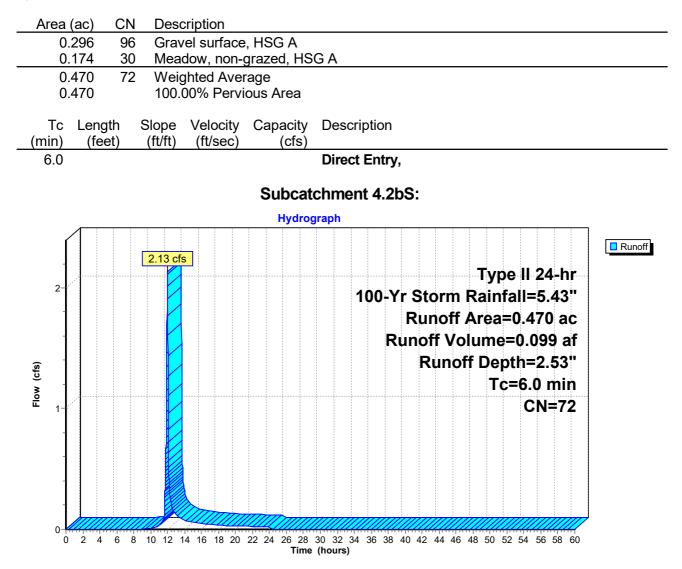
Subcatchment 4.2aS:



### Summary for Subcatchment 4.2bS:

Runoff = 2.13 cfs @ 11.98 hrs, Volume= 0.099 af, Depth= 2.53" Routed to Reach 4.2bR : Conveyance Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"



### Summary for Subcatchment 4.3S:

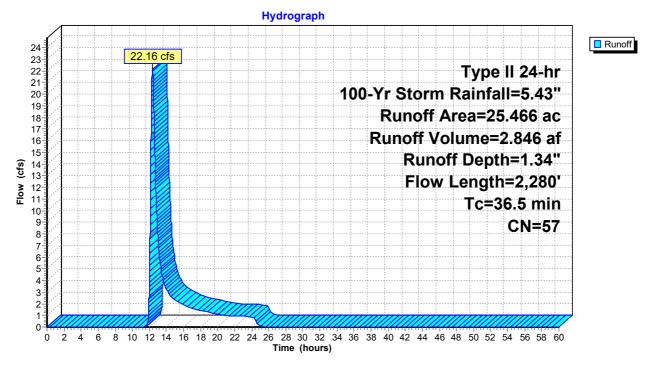
Runoff = 22.16 cfs @ 12.37 hrs, Volume= 2.846 af, Depth= 1.34" Routed to Pond 4.3C : 24" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac) C	N Desc	cription					
*	1.	293 9	8 Pave	ed Roads &	& Rooftops				
	1.	783 5	8 Mea	dow, non-g	grazed, HS	GB			
	22.	390 5	5 Woo	Woods, Good, HSG B					
	25.	466 5	7 Weig	ghted Aver	age				
	24.	173	94.9	2% Pervio	us Area				
	1.	293	5.08	% Impervi	ous Area				
	Tc	Length	Slope	Velocity	Capacity	Description			
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
	15.9	100	0.0634	0.10		Sheet Flow,			
						Woods: Light underbrush n= 0.400 P2= 2.31"			
	17.8	1,368	0.0656	1.28		Shallow Concentrated Flow,			
						Woodland Kv= 5.0 fps			
	0.1	38	0.3960	4.40		Shallow Concentrated Flow,			
						Short Grass Pasture Kv= 7.0 fps			
	2.7	774	0.0281	4.70	109.09	Channel Flow,			
						Area= 23.2 sf Perim= 43.2' r= 0.54' n= 0.035			

36.5 2,280 Total

#### Subcatchment 4.3S:



### Summary for Subcatchment 5S:

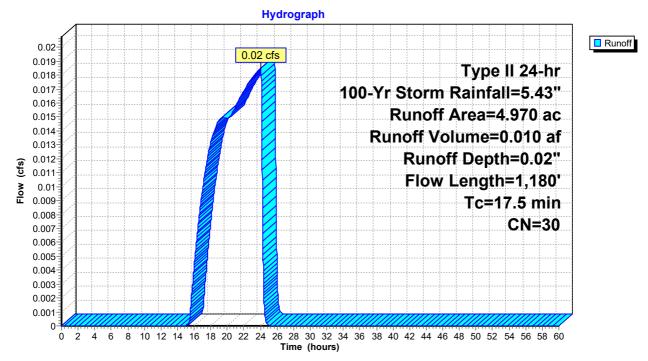
Runoff = 0.02 cfs @ 24.02 hrs, Volume= 0.010 af, Depth= 0.02" Routed to Link SP5 : Study Point 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

i (ac)	CN Dese	cription				
		, ,	<b>.</b>	G A		
).831	<u>30 Woc</u>	ods, Good,	HSG A			
4.970 30 Weighted Average						
4.970 100.00% Pervious Area						
Length	Slope	Velocity	Capacity	Description		
(feet	) (ft/ft)	(ft/sec)	(cfs)			
100	0.0675	0.24		Sheet Flow,		
				Grass: Short n= 0.150 P2= 2.31"		
801	0.0508	1.58		Shallow Concentrated Flow,		
				Short Grass Pasture Kv= 7.0 fps		
217	0.1515	2.72		Shallow Concentrated Flow,		
				Short Grass Pasture Kv= 7.0 fps		
62	0.0697	1.85		Shallow Concentrated Flow,		
				Short Grass Pasture Kv= 7.0 fps		
	4.139 <u>0.831</u> 4.970 4.970 <b>Length</b> (feet) 100 801 217	4.139         30         Mea           0.831         30         Woo           4.970         30         Weig           4.970         30         Weig           4.970         100.           Length         Slope           (feet)         (ft/ft)           100         0.0675           801         0.0508           217         0.1515	4.139         30         Meadow, non-(0.831)         30         Woods, Good,         4.970         30         Weighted Averation (0.00%)         Averation (0.00%)         Pervious (0.00%)         Per	4.139       30       Meadow, non-grazed, HS         0.831       30       Woods, Good, HSG A         4.970       30       Weighted Average         4.970       100.00% Pervious Area         4.970       100.0075         0.0675       0.24         801       0.0508       1.58         217       0.1515       2.72		

17.5 1,180 Total

#### Subcatchment 5S:



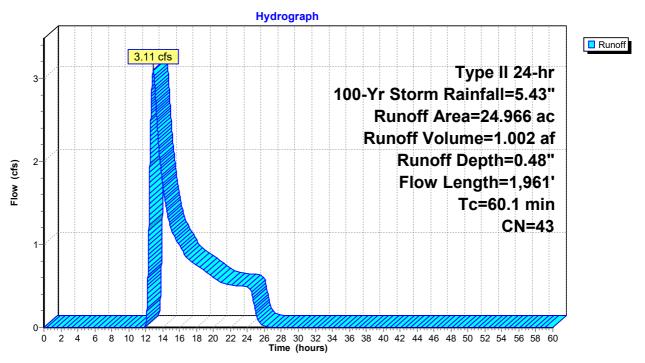
### Summary for Subcatchment 6S:

Runoff = 3.11 cfs @ 12.89 hrs, Volume= 1.002 af, Depth= 0.48" Routed to Link SP6 : Study Point 6

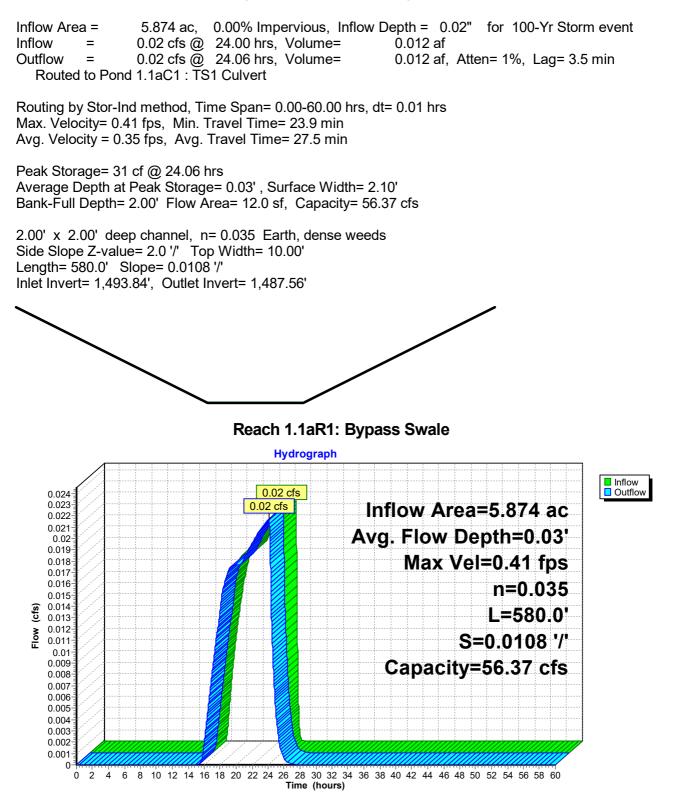
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Yr Storm Rainfall=5.43"

	Area	(ac)	CN E	Desc	ription		
*	1.	450	98 F	Pave	ed Roads &	& Rooftops	
	0.	466	96 0	Grav	el surface	, HSG A	
	2.	545	61 >	•75%	6 Grass co	over, Good	, HSG B
	7.	511				grazed, HS	
	0.	788	58 N	/lea	dow, non-g	grazed, HS	G B
	7.	940	30 V	Voo	ds, Good,	HSG A	
	4.	266	<u>55 V</u>	Voo	ds, Good,	HSG B	
	24.	966	43 V	Veig	phted Aver	age	
		516	9	94.19	9% Pervio	us Area	
	1.	450	5	5.81	% Impervi	ous Area	
	_					_	
	Tc	Length			Velocity	Capacity	Description
	(min)	(feet		/ft)	(ft/sec)	(cfs)	
	10.1	100	0.02	78	0.16		Sheet Flow,
				_			Grass: Short n= 0.150 P2= 2.31"
	3.2	313	0.05	28	1.61		Shallow Concentrated Flow,
			–				Short Grass Pasture Kv= 7.0 fps
	3.9	486	6 0.17	42	2.09		Shallow Concentrated Flow,
	40.0	4 0.00		~~	0.44		Woodland Kv= 5.0 fps
	42.9	1,062	2 0.00	68	0.41		Shallow Concentrated Flow,
							Woodland Kv= 5.0 fps
	60.1	1,961	Tota	l			

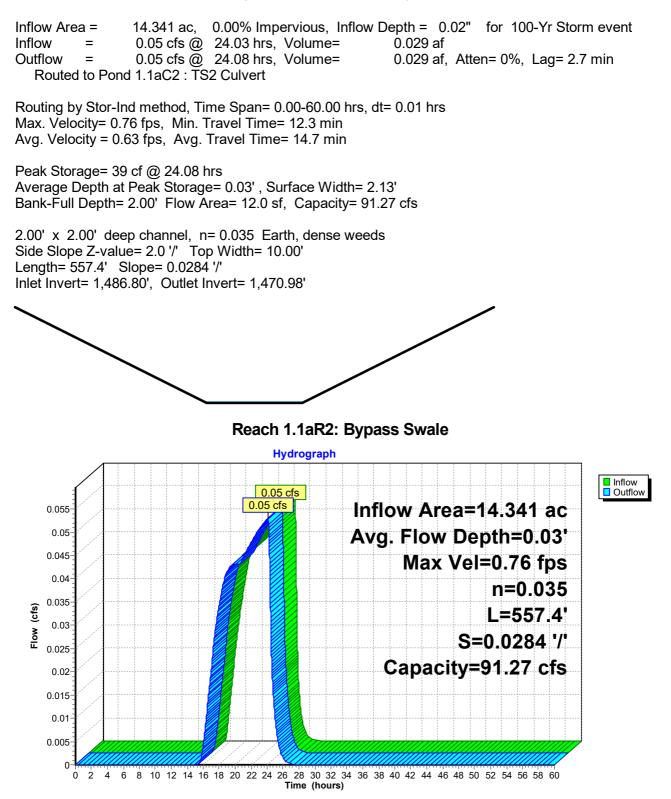
## Subcatchment 6S:



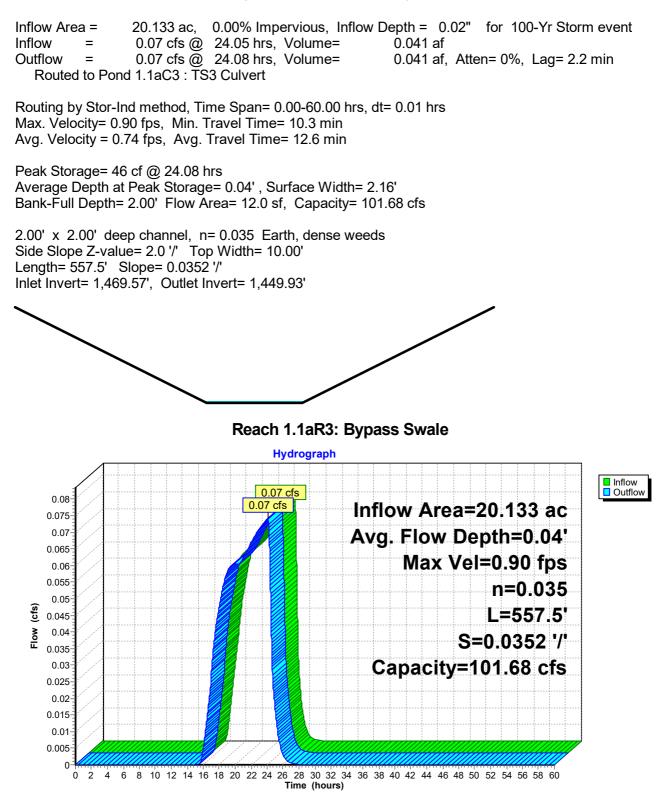
## Summary for Reach 1.1aR1: Bypass Swale



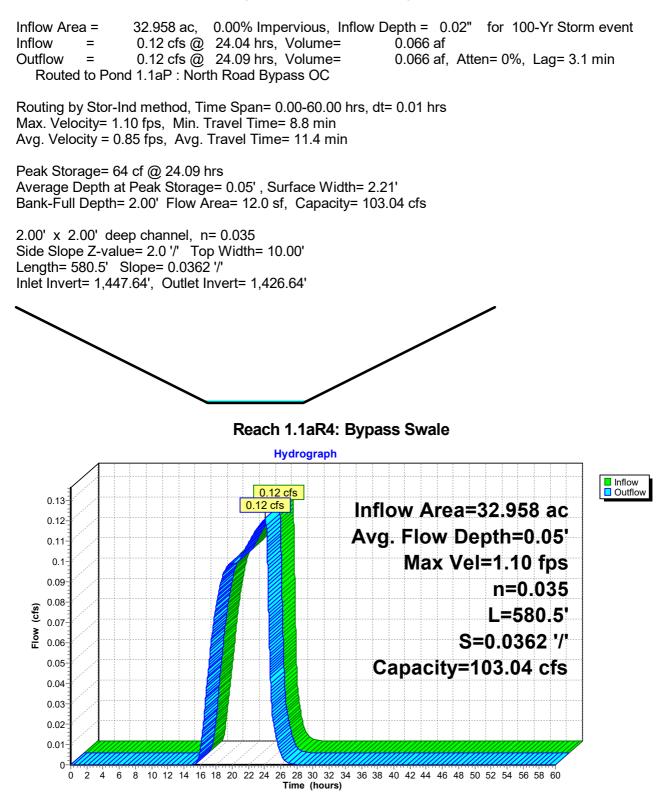
## Summary for Reach 1.1aR2: Bypass Swale



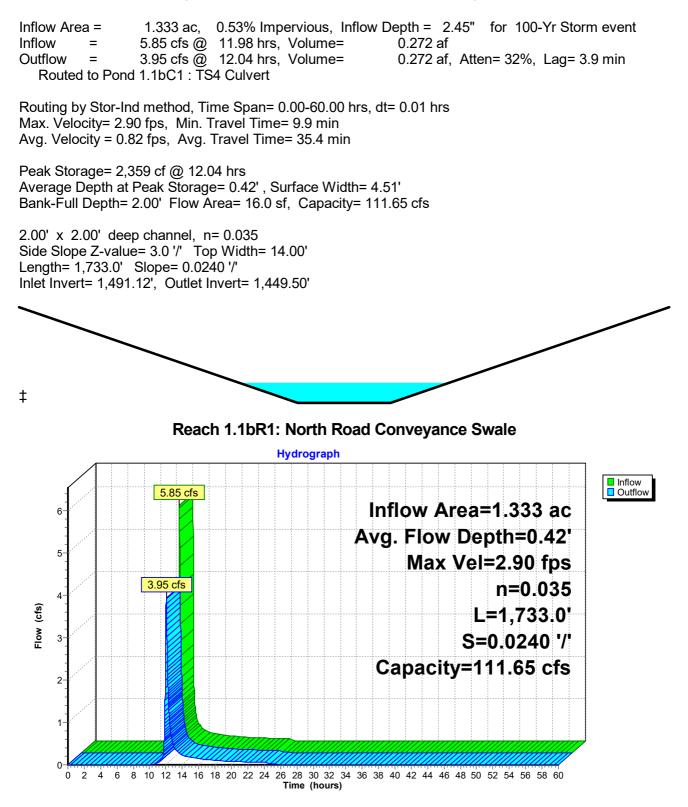
## Summary for Reach 1.1aR3: Bypass Swale



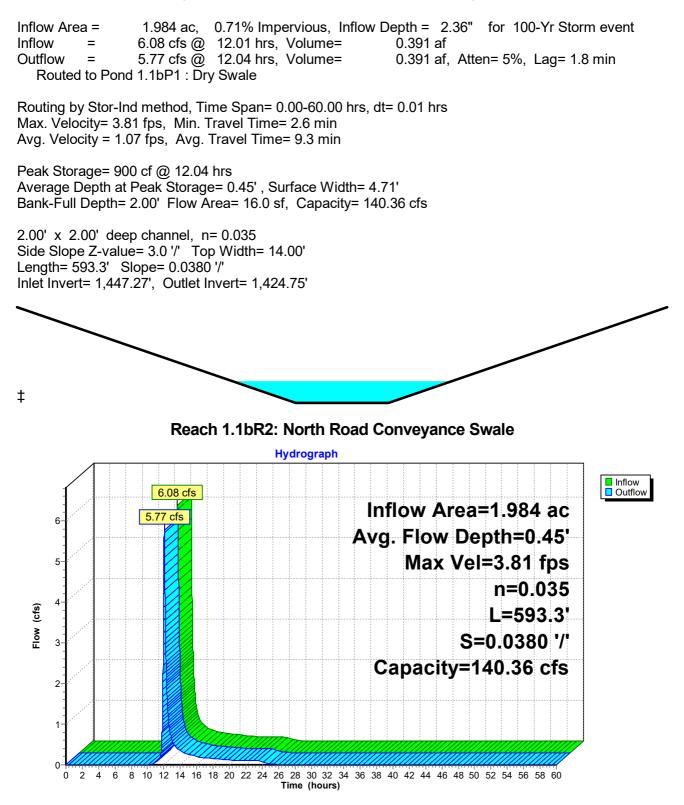
## Summary for Reach 1.1aR4: Bypass Swale



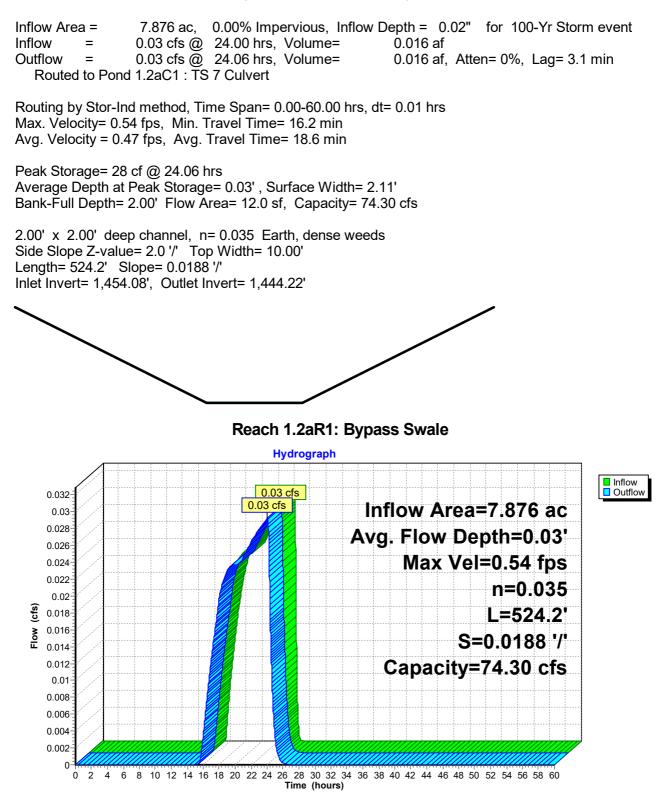
### Summary for Reach 1.1bR1: North Road Conveyance Swale



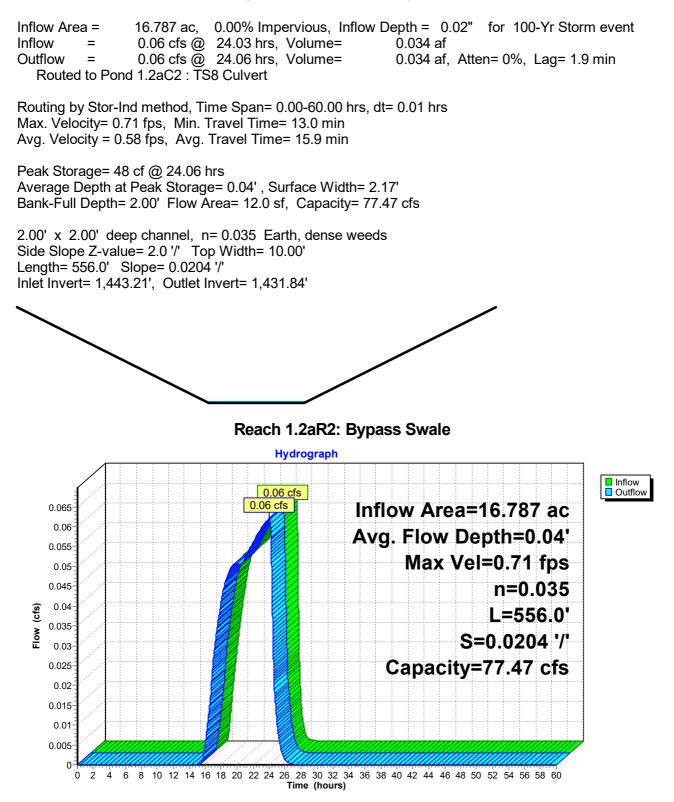
### Summary for Reach 1.1bR2: North Road Conveyance Swale



## Summary for Reach 1.2aR1: Bypass Swale

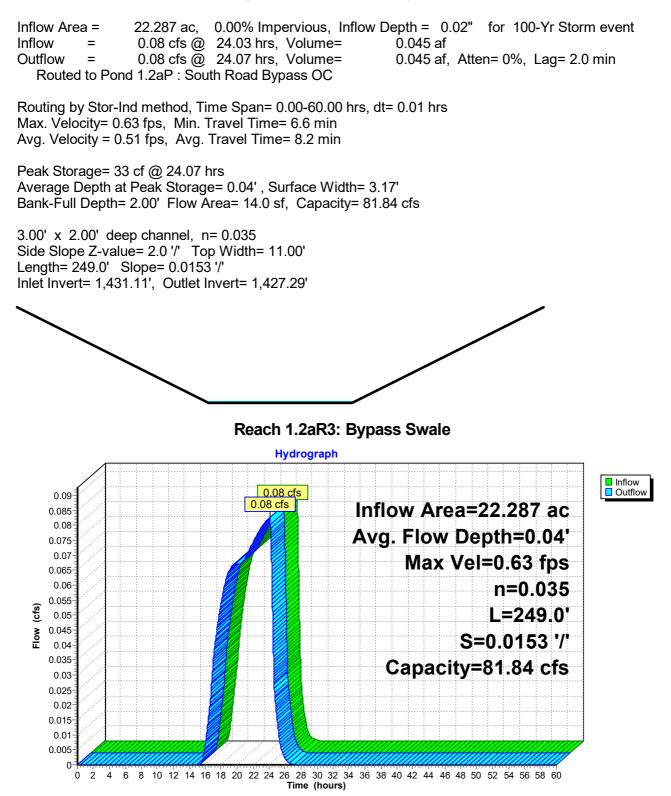


## Summary for Reach 1.2aR2: Bypass Swale

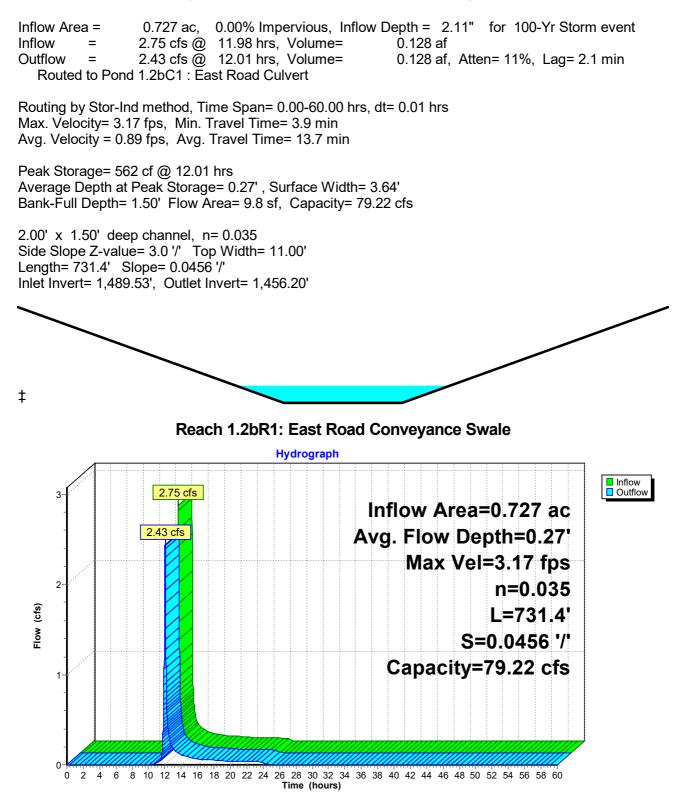


20220630 BR Benson Mines Solar POST DevType II 24-hr100-Yr Storm Rainfall=5.43"Prepared by TRCPrinted7/12/2022HydroCAD® 10.10-7bs/n 01402© 2022 HydroCAD Software Solutions LLCPage 252

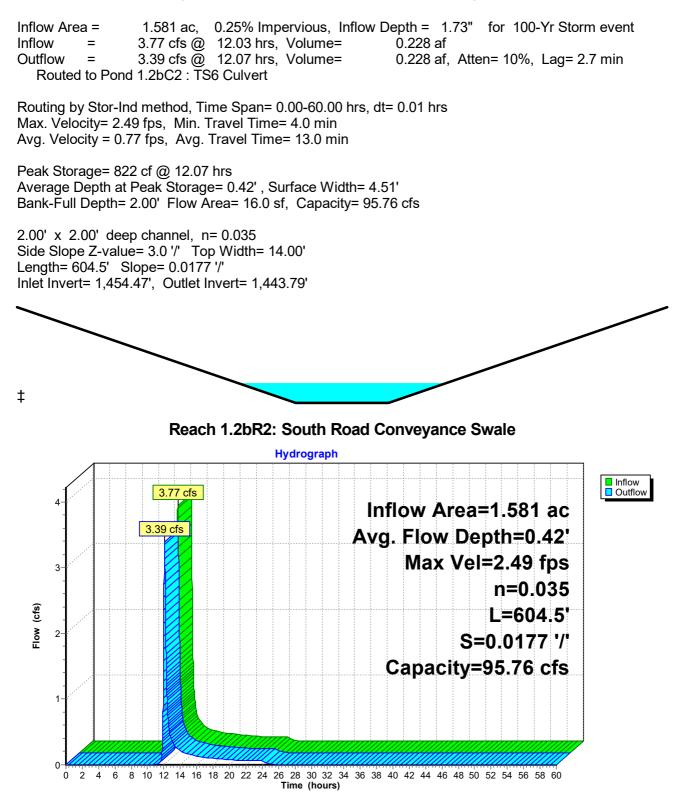
### Summary for Reach 1.2aR3: Bypass Swale



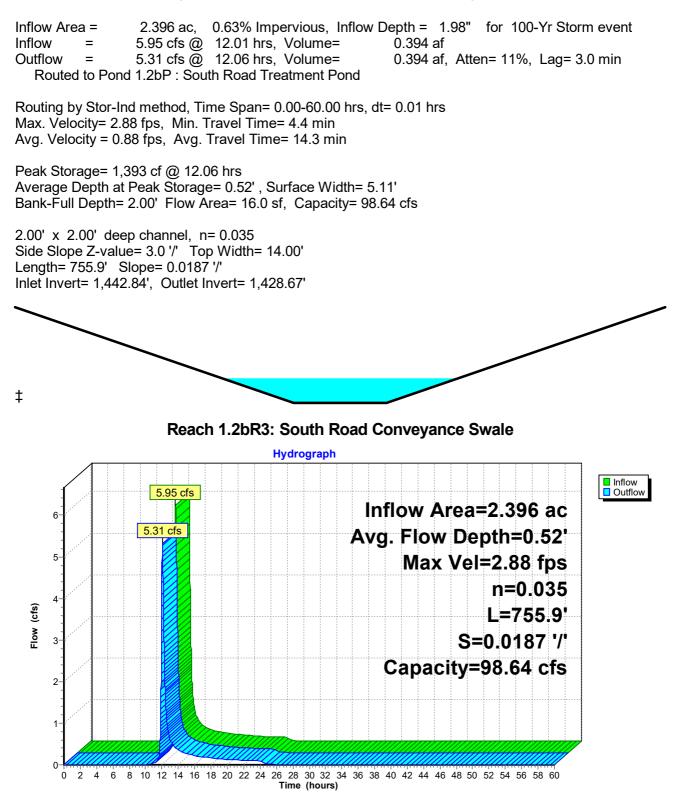
#### Summary for Reach 1.2bR1: East Road Conveyance Swale



### Summary for Reach 1.2bR2: South Road Conveyance Swale



### Summary for Reach 1.2bR3: South Road Conveyance Swale



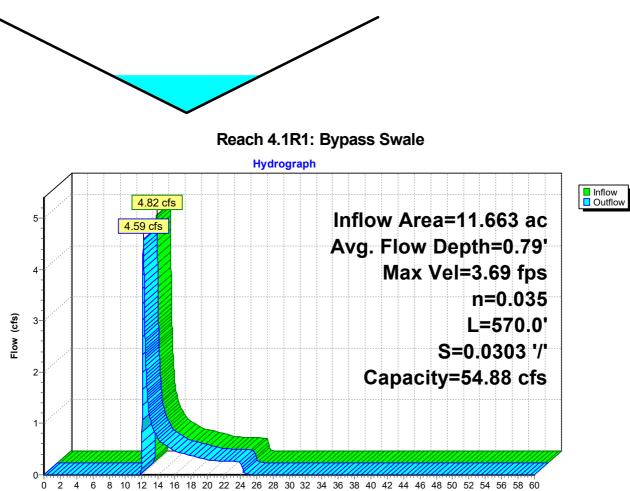
## Summary for Reach 4.1R1: Bypass Swale

Inflow Area =11.663 ac,2.80% Impervious, Inflow Depth =0.59"for100-Yr Storm eventInflow =4.82 cfs @12.13 hrs, Volume=0.570 afOutflow =4.59 cfs @12.17 hrs, Volume=0.570 af, Atten= 5%, Lag= 2.3 minRouted to Reach 4.1R2 : Ex Stream

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Max. Velocity= 3.69 fps, Min. Travel Time= 2.6 min Avg. Velocity = 1.82 fps, Avg. Travel Time= 5.2 min

Peak Storage= 709 cf @ 12.17 hrs Average Depth at Peak Storage= 0.79', Surface Width= 3.16' Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 54.88 cfs

0.00' x 2.00' deep channel, n= 0.035 Side Slope Z-value= 2.0 '/' Top Width= 8.00' Length= 570.0' Slope= 0.0303 '/' Inlet Invert= 1,448.24', Outlet Invert= 1,430.97'



Time (hours)

20220630 BR Benson Mines Solar POST DevType II 24-hr100-Yr Storm Rainfall=5.43"Prepared by TRCPrinted7/12/2022HydroCAD® 10.10-7bs/n 01402© 2022 HydroCAD Software Solutions LLCPage 257

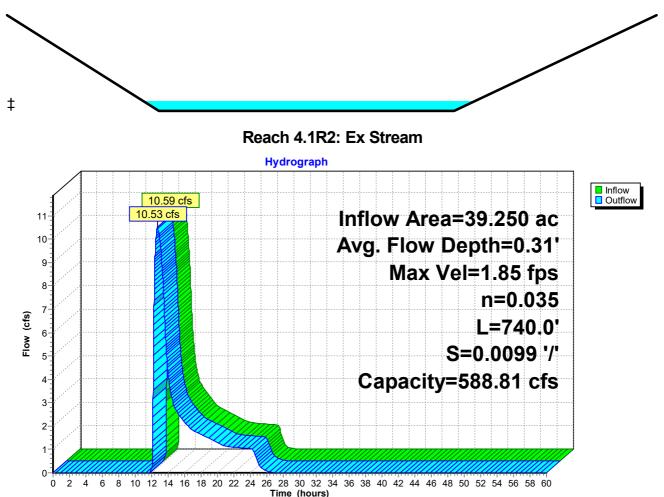
#### Summary for Reach 4.1R2: Ex Stream

Inflow Area =39.250 ac,0.83% Impervious,Inflow Depth =0.83"for100-Yr Storm eventInflow =10.59 cfs @12.62 hrs,Volume=2.700 afOutflow =10.53 cfs @12.70 hrs,Volume=2.700 af,Routed to Link SP4 : Study Point 42.700 af,Atten= 1%,

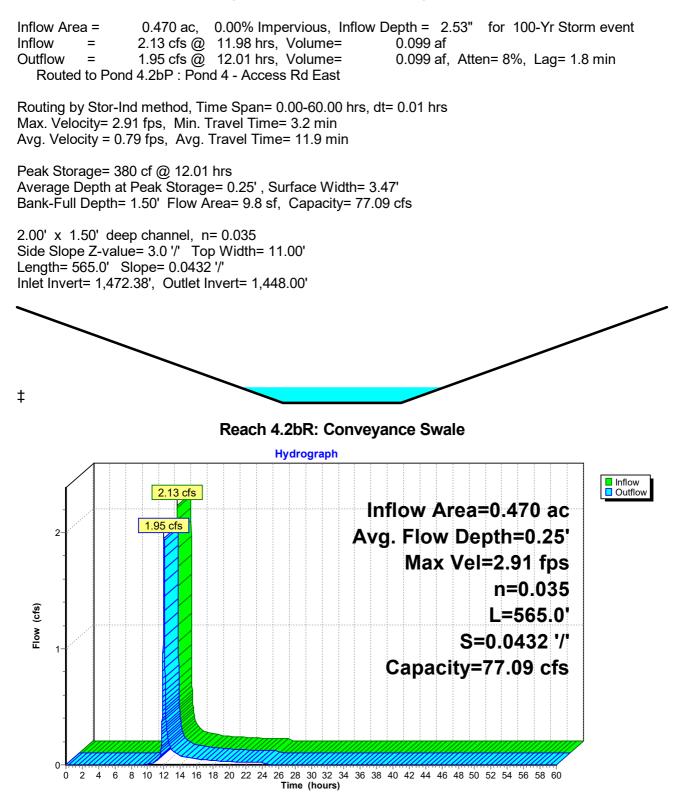
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Max. Velocity= 1.85 fps, Min. Travel Time= 6.7 min Avg. Velocity = 0.76 fps, Avg. Travel Time= 16.2 min

Peak Storage= 4,215 cf @ 12.70 hrs Average Depth at Peak Storage= 0.31', Surface Width= 19.65' Bank-Full Depth= 3.00' Flow Area= 84.0 sf, Capacity= 588.81 cfs

17.50' x 3.00' deep channel, n= 0.035 Side Slope Z-value= 3.0 4.0 '/' Top Width= 38.50' Length= 740.0' Slope= 0.0099 '/' Inlet Invert= 1,430.98', Outlet Invert= 1,423.64'



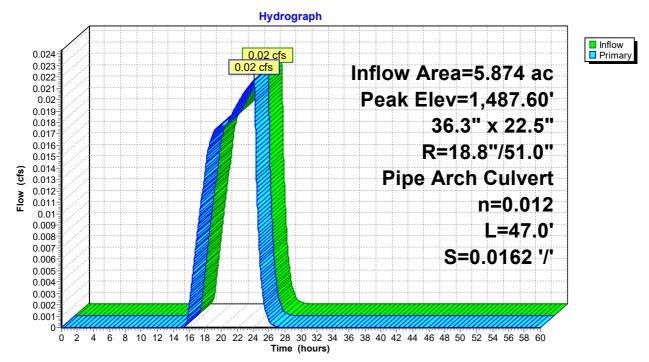
### Summary for Reach 4.2bR: Conveyance Swale



# Summary for Pond 1.1aC1: TS1 Culvert

Inflow Area = 5.874 ac, 0.00% Impervious, Inflow Depth = 0.02" for 100-Yr Storm event 0.02 cfs @ 24.06 hrs, Volume= Inflow 0.012 af = 0.02 cfs @ 24.06 hrs, Volume= Outflow 0.012 af, Atten= 0%, Lag= 0.0 min Primary = 0.02 cfs @ 24.06 hrs, Volume= 0.012 af Routed to Reach 1.1aR2 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,487.60' @ 24.06 hrs Flood Elev= 1,489.60' **Outlet Devices** Device Routing Invert 36.3" W x 22.5" H, R=18.8"/51.0" Pipe Arch RCP\_Arch 37x23 #1 Primary 1.487.56 L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,487.56' / 1,486.80' S= 0.0162 '/' Cc= 0.900 n= 0.012, Flow Area= 4.43 sf

Primary OutFlow Max=0.02 cfs @ 24.06 hrs HW=1,487.60' (Free Discharge) ←1=RCP\_Arch 37x23 (Inlet Controls 0.02 cfs @ 0.61 fps)

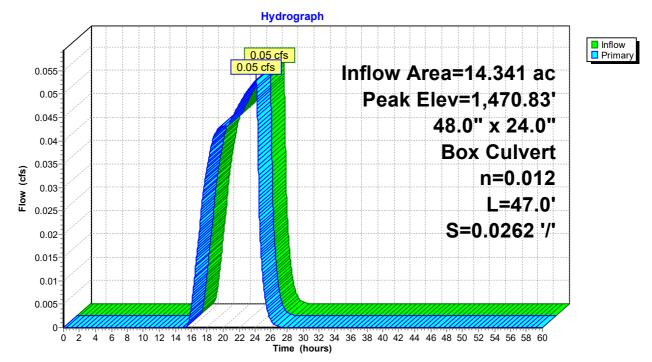


Pond 1.1aC1: TS1 Culvert

# Summary for Pond 1.1aC2: TS2 Culvert

Inflow Area = 14.341 ac, 0.00% Impervious, Inflow Depth = 0.02" for 100-Yr Storm event 0.05 cfs @ 24.08 hrs, Volume= Inflow 0.029 af = 0.05 cfs @ 24.08 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min Outflow 0.05 cfs @ 24.08 hrs, Volume= 0.029 af Primary = Routed to Reach 1.1aR3 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,470.83' @ 24.08 hrs Flood Elev= 1,473.07' Device Routing Invert Outlet Devices 48.0" W x 24.0" H Box Culvert #1 Primary 1.470.80' L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,470.80' / 1,469.57' S= 0.0262 '/' Cc= 0.900 n= 0.012, Flow Area= 8.00 sf

Primary OutFlow Max=0.05 cfs @ 24.08 hrs HW=1,470.83' (Free Discharge) ←1=Culvert (Inlet Controls 0.05 cfs @ 0.51 fps)

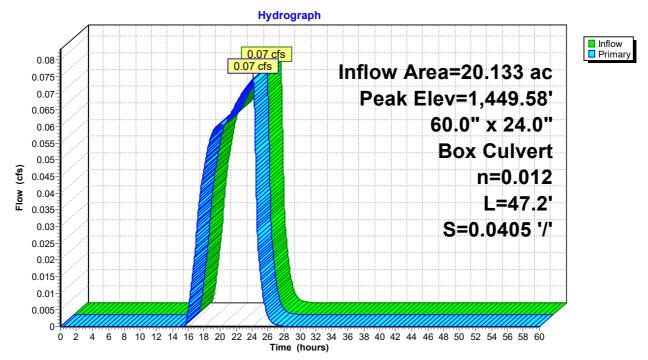


Pond 1.1aC2: TS2 Culvert

# Summary for Pond 1.1aC3: TS3 Culvert

Inflow Area = 20.133 ac, 0.00% Impervious, Inflow Depth = 0.02" for 100-Yr Storm event 0.07 cfs @ 24.08 hrs, Volume= Inflow 0.041 af = 0.07 cfs @ 24.08 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min Outflow 0.07 cfs @ 24.08 hrs, Volume= 0.041 af Primary = Routed to Reach 1.1aR4 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,449.58' @ 24.08 hrs Flood Elev= 1,452.10' Device Routing Invert Outlet Devices 60.0" W x 24.0" H Box Culvert #1 Primary 1.449.55' L= 47.2' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,449.55' / 1,447.64' S= 0.0405 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 10.00 sf

Primary OutFlow Max=0.07 cfs @ 24.08 hrs HW=1,449.58' (Free Discharge) ←1=Culvert (Inlet Controls 0.07 cfs @ 0.53 fps)



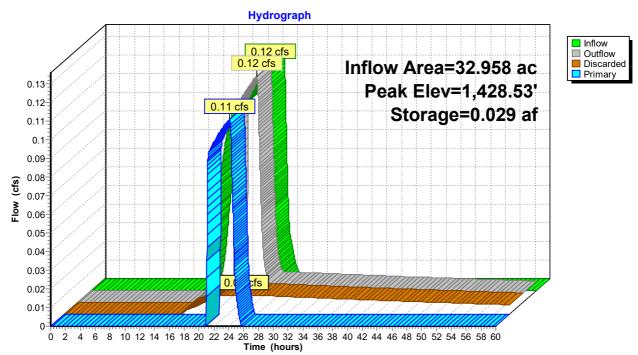
## Pond 1.1aC3: TS3 Culvert

# Summary for Pond 1.1aP: North Road Bypass OC

Inflow Area = 32.958 ac, 0.00% Impervious, Inflow Depth = 0.02" for 100-Yr Storm event 0.12 cfs @ 24.09 hrs, Volume= Inflow = 0.066 af 0.12 cfs @ 24.12 hrs, Volume= Outflow 0.059 af, Atten= 0%, Lag= 1.3 min 0.01 cfs @ 24.12 hrs, Volume= Discarded = 0.028 af 0.031 af Primary = 0.11 cfs @ 24.12 hrs, Volume= Routed to Link 1.1L : Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,428.53' @ 24.12 hrs Surf.Area= 0.020 ac Storage= 0.029 af Plug-Flow detention time= 520.4 min calculated for 0.059 af (88% of inflow) Center-of-Mass det. time= 493.0 min (1,761.0 - 1,268.0) Avail.Storage Storage Description Volume Invert 0.069 af 10.00'W x 20.00'L x 4.00'H Prismatoid Z=3.0 1,426.00' #1 Device Routing Invert **Outlet Devices** #1 Discarded 1.426.00' 0.500 in/hr Exfiltration over Surface area Phase-In= 0.01' #2 10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Primary 1.428.50' Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.01 cfs @ 24.12 hrs HW=1,428.53' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.10 cfs @ 24.12 hrs HW=1,428.53' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 0.10 cfs @ 0.40 fps)



# Pond 1.1aP: North Road Bypass OC

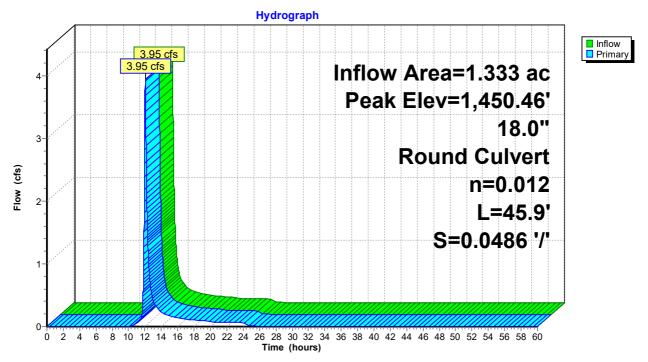
# Summary for Pond 1.1bC1: TS4 Culvert

Inflow Area = 1.333 ac, 0.53% Impervious, Inflow Depth = 2.45" for 100-Yr Storm event 3.95 cfs @ 12.04 hrs, Volume= Inflow = 0.272 af 3.95 cfs @ 12.04 hrs, Volume= 3.95 cfs @ 12.04 hrs, Volume= = 0.272 af, Atten= 0%, Lag= 0.0 min Outflow 0.272 af Primary = Routed to Reach 1.1bR2 : North Road Conveyance Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,450.46' @ 12.04 hrs Flood Elev= 1,451.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,449.50'	18.0" Round Culvert
			L= 45.9' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,449.50' / 1,447.27' S= 0.0486 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=3.95 cfs @ 12.04 hrs HW=1,450.46' (Free Discharge) ←1=Culvert (Inlet Controls 3.95 cfs @ 3.33 fps)

## Pond 1.1bC1: TS4 Culvert



### Summary for Pond 1.1bP1: Dry Swale

Inflow Area =	1.984 ac,	0.71% Impervious, Inflow I	Depth = 2.36" for 100-Yr Storm event
Inflow =	5.77 cfs @	12.04 hrs, Volume=	0.391 af
Outflow =	5.77 cfs @	12.04 hrs, Volume=	0.391 af, Atten= 0%, Lag= 0.0 min
Discarded =	0.01 cfs @	12.03 hrs, Volume=	0.005 af
Primary =	5.77 cfs @	12.04 hrs, Volume=	0.386 af
Routed to Pond	1.1bP2 : No	orth Road Detention Pond	

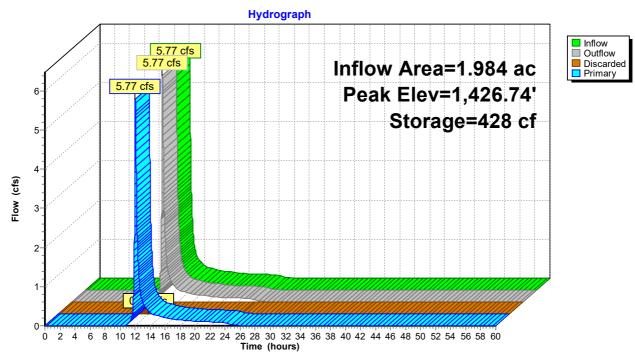
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,426.74' @ 12.04 hrs Surf.Area= 603 sf Storage= 428 cf

Plug-Flow detention time= 6.5 min calculated for 0.391 af (100% of inflow) Center-of-Mass det. time= 6.7 min (866.5 - 859.8)

Volume	Inve	ert Avai	I.Storage	Storage Description	on		
#1	1,424.7	'5'	428 cf	Custom Stage Da	<b>ita (Irregular)</b> Liste	ed below (Recalc)	
_		~ ~ .	<b>_</b> .		<b>a a</b>		
Elevatio	on	Surf.Area	Perim.	Inc.Store	Cum.Store	Wet.Area	
(fee	et)	(sq-ft)	(feet)	(cubic-feet)	(cubic-feet)	(sq-ft)	
1,424.7	75	0	0.0	0	0	0	
1,425.0	)0	25	22.9	2	2	42	
1,426.0	)0	273	98.0	127	129	767	
1,426.7	70	603	161.7	299	428	2,086	
Device	Routing	In	vert Outl	et Devices			
#1	Discarde	d 1,424	.75' <b>0.50</b>	0 in/hr Exfiltration	over Surface area	a Phase-In= 0.01'	
#2	Primary	1,425	.69' <b>2.0'</b>	long x 2.0' breadt	h Broad-Crested I	Rectangular Weir	
		,				1.20 1.40 1.60 1.80	) 2.00
				3.00 3.50			
			Coe	f. (English) 2.54 2	.61 2.61 2.60 2.	66 2.70 2.77 2.89	2.88
				3.07 3.20 3.32			

**Discarded OutFlow** Max=0.01 cfs @ 12.03 hrs HW=1,426.74' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=5.76 cfs @ 12.04 hrs HW=1,426.74' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 5.76 cfs @ 2.74 fps)



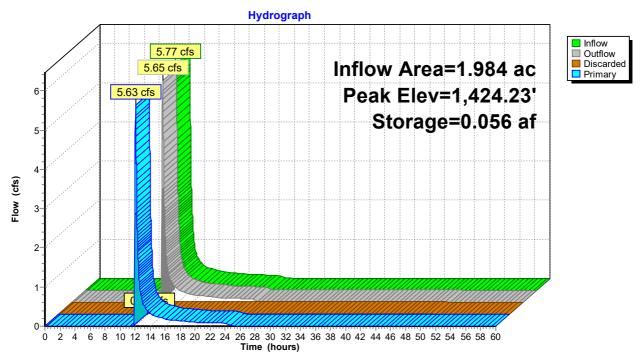
Pond 1.1bP1: Dry Swale

# Summary for Pond 1.1bP2: North Road Detention Pond

Inflow Outflow Discarde Primary	Inflow Area =       1.984 ac,       0.71% Impervious, Inflow Depth =       2.33" for 100-Yr Storm event         Inflow =       5.77 cfs @       12.04 hrs, Volume=       0.386 af         Outflow =       5.65 cfs @       12.06 hrs, Volume=       0.372 af, Atten= 2%, Lag= 1.3 min         Discarded =       0.02 cfs @       12.06 hrs, Volume=       0.053 af         Primary =       5.63 cfs @       12.06 hrs, Volume=       0.318 af         Routed to Link 1.1L :        0.318 af					
	Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,424.23' @ 12.06 hrs Surf.Area= 0.034 ac Storage= 0.056 af					
•	Plug-Flow detention time= 193.0 min calculated for 0.371 af (96% of inflow) Center-of-Mass det. time= 171.5 min(1,031.2 - 859.7)					
Volume	Inve	rt Avail.Sto	brage Storage Description			
#1	1,421.5	0' 0.1	66 af 10.00'W x 40.00'L x 5.00'H Prismatoid Z=3.0			
Device	Routing	Inve	t Outlet Devices			
#1 #2	Discarde Primary	d 1,421.50 1,424.00				

**Discarded OutFlow** Max=0.02 cfs @ 12.06 hrs HW=1,424.23' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=5.60 cfs @ 12.06 hrs HW=1,424.23' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 5.60 cfs @ 1.21 fps)

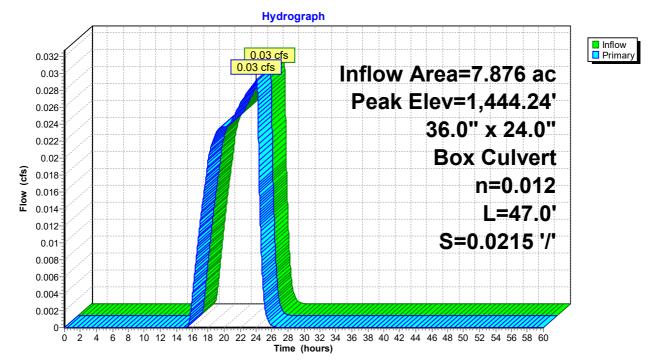


## Pond 1.1bP2: North Road Detention Pond

# Summary for Pond 1.2aC1: TS 7 Culvert

Inflow Area = 7.876 ac, 0.00% Impervious, Inflow Depth = 0.02" for 100-Yr Storm event 0.03 cfs @ 24.06 hrs, Volume= Inflow 0.016 af = 0.03 cfs @ 24.06 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min Outflow 0.016 af 0.03 cfs @ 24.06 hrs, Volume= Primary = Routed to Reach 1.2aR2 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,444.24' @ 24.06 hrs Flood Elev= 1,446.28' Device Routing Invert Outlet Devices 36.0" W x 24.0" H Box Culvert #1 Primary 1.444.22' L= 47.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,444.22' / 1,443.21' S= 0.0215 '/' Cc= 0.900 n= 0.012, Flow Area= 6.00 sf

Primary OutFlow Max=0.03 cfs @ 24.06 hrs HW=1,444.24' (Free Discharge) ←1=Culvert (Inlet Controls 0.03 cfs @ 0.46 fps)

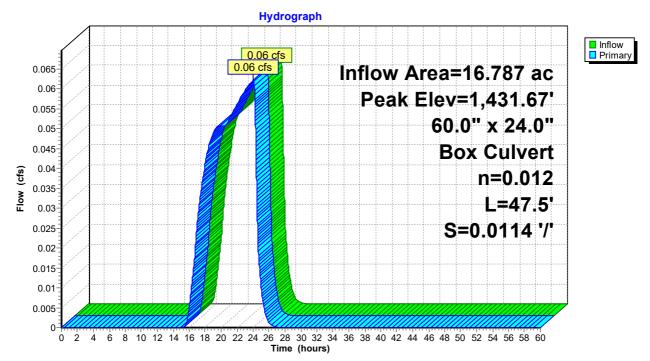


Pond 1.2aC1: TS 7 Culvert

# Summary for Pond 1.2aC2: TS8 Culvert

Inflow Area = 16.787 ac, 0.00% Impervious, Inflow Depth = 0.02" for 100-Yr Storm event 0.06 cfs @ 24.06 hrs, Volume= Inflow 0.034 af = 0.06 cfs @ 24.06 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min Outflow 0.06 cfs @ 24.06 hrs, Volume= 0.034 af Primary = Routed to Reach 1.2aR3 : Bypass Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,431.67' @ 24.06 hrs Flood Elev= 1,433.87' Device Routing Invert Outlet Devices 60.0" W x 24.0" H Box Culvert #1 Primary 1.431.65' L= 47.5' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,431.65' / 1,431.11' S= 0.0114 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 10.00 sf

**Primary OutFlow** Max=0.06 cfs @ 24.06 hrs HW=1,431.67' (Free Discharge) **1=Culvert** (Inlet Controls 0.06 cfs @ 0.50 fps)



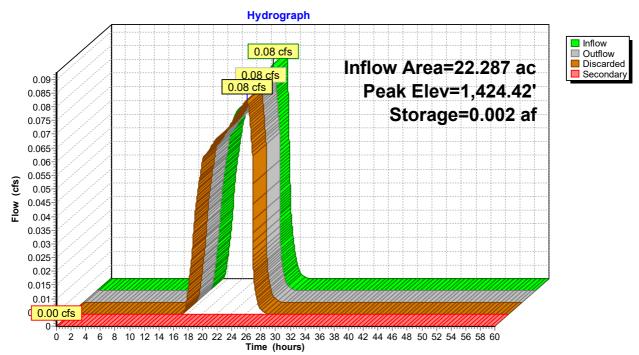
### Pond 1.2aC2: TS8 Culvert

## Summary for Pond 1.2aP: South Road Bypass OC

Outflow Discarde Seconda	= = ed =	0.08 cfs @ 0.08 cfs @ 0.08 cfs @ 0.00 cfs @	0.00% Impervious, Inflow Depth =       0.02" for 100-Yr Storm event         24.07 hrs, Volume=       0.045 af         24.20 hrs, Volume=       0.045 af, Atten= 5%, Lag= 8.4 min         24.20 hrs, Volume=       0.045 af         0.00 hrs, Volume=       0.000 af
Routing	by Stor-In	d method, Ti	me Span= 0.00-60.00 hrs, dt= 0.01 hrs
			hrs Surf.Area= 0.006 ac Storage= 0.002 af
			min calculated for 0.045 af (100% of inflow) min(1,272.7 - 1,261.5)
Volume	Inve	ert Avail.St	orage Storage Description
#1	1,424.0	0' 0.0	069 af 10.00'W x 20.00'L x 4.00'H Prismatoid Z=3.0
Device	Routing	Inve	ert Outlet Devices
#1	Discarde	d 1,424.0	0' 12.000 in/hr Exfiltration over Surface area
#2	Seconda	ry 1,426.5	
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.08 cfs @ 24.20 hrs HW=1,424.42' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,424.00' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



# Pond 1.2aP: South Road Bypass OC

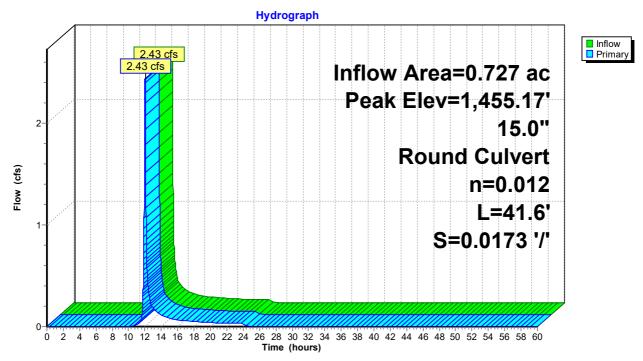
# Summary for Pond 1.2bC1: East Road Culvert

Inflow Area = 0.727 ac, 0.00% Impervious, Inflow Depth = 2.11" for 100-Yr Storm event 2.43 cfs @ 12.01 hrs, Volume= Inflow = 0.128 af 2.43 cfs @ 12.01 hrs, Volume= 0.128 af, Atten= 0%, Lag= 0.0 min Outflow 2.43 cfs @ 12.01 hrs, Volume= 0.128 af Primary = Routed to Reach 1.2bR2 : South Road Conveyance Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,455.17' @ 12.01 hrs

Flood Elev= 1,457.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,454.39'	<b>15.0" Round Culvert</b> L= 41.6' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,454.39' / 1,453.67' S= 0.0173 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.43 cfs @ 12.01 hrs HW=1,455.17' (Free Discharge) ←1=Culvert (Inlet Controls 2.43 cfs @ 3.01 fps)



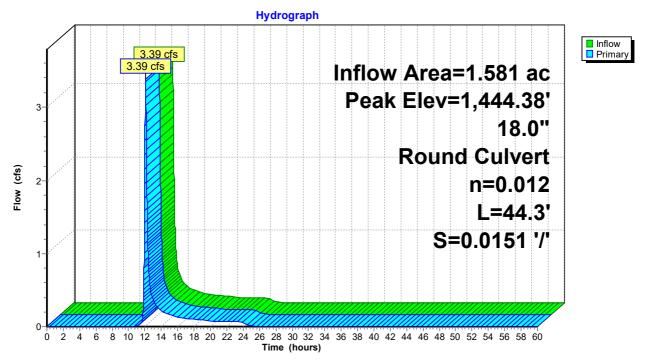
# Pond 1.2bC1: East Road Culvert

# Summary for Pond 1.2bC2: TS6 Culvert

Inflow Area = 1.581 ac, 0.25% Impervious, Inflow Depth = 1.73" for 100-Yr Storm event 3.39 cfs @ 12.07 hrs, Volume= Inflow = 0.228 af 3.39 cfs @ 12.07 hrs, Volume= = 0.228 af, Atten= 0%, Lag= 0.0 min Outflow 3.39 cfs @ 12.07 hrs, Volume= 0.228 af Primary = Routed to Reach 1.2bR3 : South Road Conveyance Swale Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,444.38' @ 12.07 hrs Flood Elev= 1,445.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,443.51'	18.0" Round Culvert
			L= 44.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,443.51' / 1,442.84' S= 0.0151 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=3.38 cfs @ 12.07 hrs HW=1,444.38' (Free Discharge) ←1=Culvert (Inlet Controls 3.38 cfs @ 3.18 fps)



## Pond 1.2bC2: TS6 Culvert

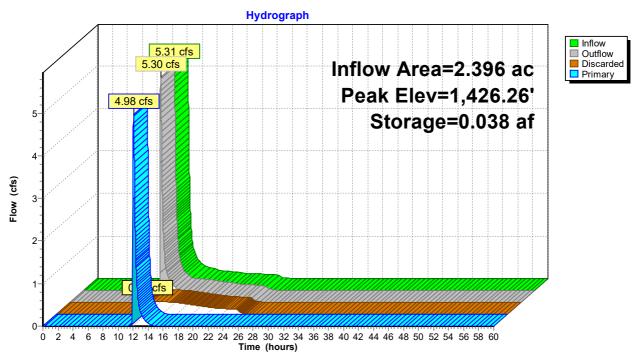
# Summary for Pond 1.2bP: South Road Treatment Pond

Inflow Area = 2.396 ac, 0.63% Impervious, Inflow Depth = 1.98" for 100-Yr Storm event 5.31 cfs @ 12.06 hrs, Volume= Inflow 0.394 af = 5.30 cfs @ 12.06 hrs, Volume= 0.31 cfs @ 12.06 hrs, Volume= Outflow 0.394 af, Atten= 0%, Lag= 0.6 min Discarded = 0.232 af 4.98 cfs @ 12.06 hrs, Volume= 0.162 af Primary = Routed to Link 1.2L : Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,426.26' @ 12.06 hrs Surf.Area= 0.026 ac Storage= 0.038 af Plug-Flow detention time= 34.9 min calculated for 0.394 af (100% of inflow) Center-of-Mass det. time= 34.9 min (902.9 - 868.1) Invert Avail.Storage Storage Description Volume 0.149 af 20.00'W x 20.00'L x 5.00'H Prismatoid Z=3.0 #1 1,424.00' Device Routing Invert **Outlet Devices** #1 Discarded 1.424.00' 12.000 in/hr Exfiltration over Surface area Phase-In= 0.01' #2 20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Primary 1.426.05

Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 **Discarded OutFlow** Max=0.31 cfs @ 12.06 hrs HW=1,426.26' (Free Discharge)

**<sup>T</sup>—1=Exfiltration** (Exfiltration Controls 0.31 cfs)

Primary OutFlow Max=4.95 cfs @ 12.06 hrs HW=1,426.26' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 4.95 cfs @ 1.16 fps)



## Pond 1.2bP: South Road Treatment Pond

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60

### Summary for Pond 1.3P: Pond 3 - Access Rd West

Inflow Area =	0.695 ac,	0.00% Impervious, Inflow D	Depth = 0.94" for 100-Yr Storm event
Inflow =	1.02 cfs @	11.99 hrs, Volume=	0.054 af
Outflow =	0.14 cfs @	12.44 hrs, Volume=	0.054 af, Atten= 86%, Lag= 27.2 min
Discarded =	0.14 cfs @	12.44 hrs, Volume=	0.054 af
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Link	SP1 : Study	Point 1	

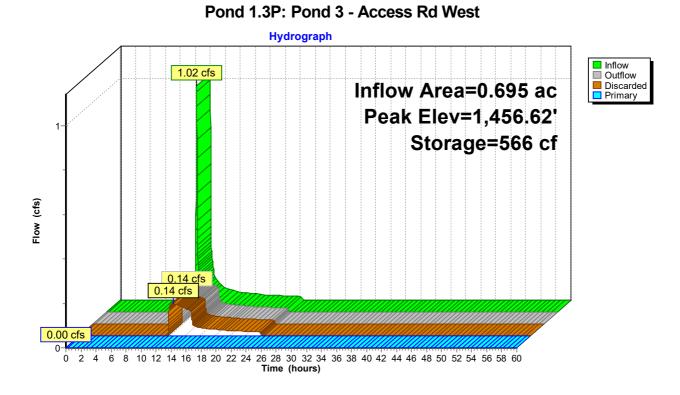
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,456.62' @ 12.44 hrs Surf.Area= 1,037 sf Storage= 566 cf

Plug-Flow detention time= 28.7 min calculated for 0.054 af (100% of inflow) Center-of-Mass det. time= 28.7 min ( 927.0 - 898.4 )

Volume	Invei	rt Avail	.Storage	Storage Description	on	
#1	1,456.00	)'	8,743 cf	Custom Stage Dat	<b>ta (Irregular)</b> Listed	below (Recalc)
Elevatio (fee 1,456.0 1,458.0 1,459.0 1,460.0	et) 00 00 00	Gurf.Area (sq-ft) 784 1,720 2,884 5,280	Perim. (feet) 123.0 194.0 279.0 421.0	Inc.Store (cubic-feet) 0 2,443 2,277 4,022	Cum.Store (cubic-feet) 0 2,443 4,721 8,743	Wet.Area (sq-ft) 784 2,603 5,811 13,729
Device	Routing	In	vert Outl	et Devices		
#1	Discardeo	1,456	.00' 6.00	0 in/hr Exfiltration	over Surface area	Phase-In= 0.01'
#2	Primary	1,459		long x 4.0' breadt		
				d (feet) 0.20 0.40 0 3.00 3.50 4.00 4		20 1.40 1.60 1.80 2.00
						7 2.67 2.65 2.66 2.66
				2.72 2.73 2.76 2		

**Discarded OutFlow** Max=0.14 cfs @ 12.44 hrs HW=1,456.62' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,456.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



# Summary for Pond 4.2bP: Pond 4 - Access Rd East

 Inflow Area =
 0.470 ac, 0.00% Impervious, Inflow Depth = 2.53" for 100-Yr Storm event

 Inflow =
 1.95 cfs @
 12.01 hrs, Volume=
 0.099 af

 Outflow =
 0.69 cfs @
 12.15 hrs, Volume=
 0.099 af, Atten= 65%, Lag= 8.9 min

 Discarded =
 0.14 cfs @
 12.15 hrs, Volume=
 0.089 af

 Primary =
 0.55 cfs @
 12.15 hrs, Volume=
 0.011 af

 Routed to Pond 4.2C : 18" Culvert
 0.011 af
 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,448.33' @ 12.15 hrs Surf.Area= 998 sf Storage= 1,559 cf

Plug-Flow detention time= 117.3 min calculated for 0.099 af (100% of inflow) Center-of-Mass det. time= 117.3 min (960.2 - 842.9)

Volume	Invert	Avail.Stor	rage Storage Description
#1	1,445.50'	2,31	17 cf 10.00'W x 20.00'L x 3.50'H Prismatoid Z=3.0
Device	Routing	Invert	Outlet Devices
#1	Discarded	1,445.50'	6.000 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Primary	1,448.25'	10.0' long x 4.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66
			2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.14 cfs @ 12.15 hrs HW=1,448.33' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.54 cfs @ 12.15 hrs HW=1,448.33' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 0.54 cfs @ 0.67 fps)

## Hydrograph Inflow 1.95 cfs Outflow Discarded Inflow Area=0.470 ac Primary Peak Elev=1,448.33' 2 Storage=1,559 cf (cfs) Flow 0.69 cfs 1 0.55 cfs 0 cfs 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 Time (hours)

Pond 4.2bP: Pond 4 - Access Rd East

### Summary for Pond 4.2C: 18" Culvert

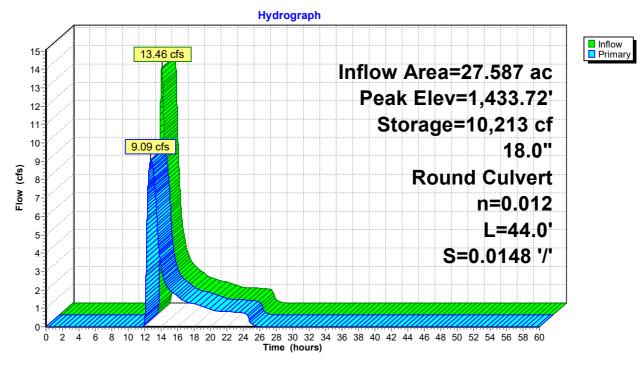
Inflow Area =		27.587 ac,	0.00% Impervious, Inflow	Depth = 0.93" for 100-Yr Storm event	
Inflow	=	13.46 cfs @	12.41 hrs, Volume=	2.131 af	
Outflow	=	9.09 cfs @	12.74 hrs, Volume=	2.130 af, Atten= 32%, Lag= 19.7 min	
Primary	=	9.09 cfs @	12.74 hrs, Volume=	2.130 af	
Routed to Reach 4.1R2 : Ex Stream					

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,433.72' @ 12.74 hrs Surf.Area= 13,077 sf Storage= 10,213 cf Flood Elev= 1,434.64' Surf.Area= 27,666 sf Storage= 28,656 cf

Plug-Flow detention time= 13.0 min calculated for 2.130 af (100% of inflow) Center-of-Mass det. time= 12.5 min (940.4 - 927.9)

Volume	Inve	ert Ava	il.Storage	Storage Description	on		
#1	1,431.5	0'	39,033 cf	Custom Stage Da	<b>ta (Irregular)</b> Liste	ed below (Recalc)	
Elevatio	n s	Surf.Area	Perim.	Inc.Store	Cum.Store	Wet.Area	
(fee	t)	(sq-ft)	(feet)	(cubic-feet)	(cubic-feet)	(sq-ft)	
1,431.5	0	0	0.0	0	0	0	
1,432.0	0	1,190	146.0	198	198	1,697	
1,432.5	0	3,534	368.0	1,129	1,327	10,778	
1,433.0	0	5,795	497.0	2,309	3,637	19,660	
1,433.5	0	10,362	837.0	3,984	7,621	55,755	
1,434.0	0	16,931	975.0	6,756	14,377	75,659	
1,434.6	0	27,412	1,352.0	13,177	27,555	145,474	
1,435.0	0	30,000	1,500.0	11,479	39,033	179,068	
Device	Routing	Ir	vert Outl	et Devices			
#1	Primary	1,43	1.83' <b>18.0</b>	" Round Culvert			
	,	,	L= 4	4.0' RCP, square	edge headwall, k	Ke= 0.500	
			Inlet	/ Outlet Invert= 1,4	31.83' / 1,431.18'	S= 0.0148 '/' Co	;= 0.900
			n= 0	0.012 Corrugated P	P, smooth interior	r, Flow Area= 1.77	7 sf
				· ·			

**Primary OutFlow** Max=9.09 cfs @ 12.74 hrs HW=1,433.72' (Free Discharge) **1=Culvert** (Inlet Controls 9.09 cfs @ 5.14 fps)



Pond 4.2C: 18" Culvert

## Summary for Pond 4.3C: 24" Culvert

Inflow Area = 25.466 ac, 5.08% Impervious, Inflow Depth = 1.34" for 100-Yr Storm event Inflow = 22.16 cfs @ 12.37 hrs, Volume= 2.846 af Outflow = 22.16 cfs @ 12.37 hrs, Volume= 2.846 af, Atten= 0%, Lag= 0.0 min Primary = 22.16 cfs @ 12.37 hrs, Volume= 2.846 af Routed to Link SP4 : Study Point 4 Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

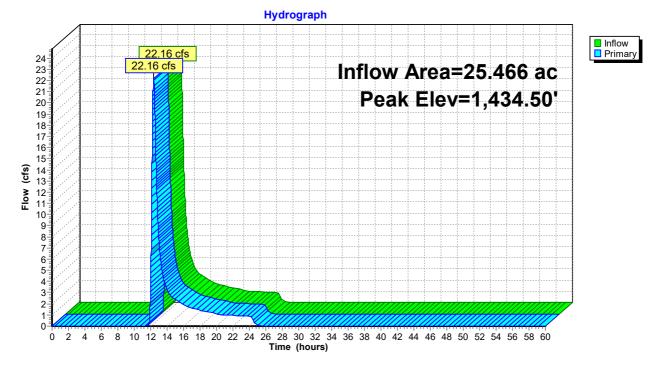
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 1,434.50' @ 12.37 hrs Flood Elev= 1,434.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,431.35'	24.0" Round Culvert
	·		L= 55.8' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 1,431.35' / 1,429.87' S= 0.0265 '/' Cc= 0.900
			n= 0.012, Flow Area= 3.14 sf
#2	Primary	1,434.81'	20.0' long x 30.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=22.15 cfs @ 12.37 hrs HW=1,434.49' (Free Discharge) -1=Culvert (Inlet Controls 22.15 cfs @ 7.05 fps)

-2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

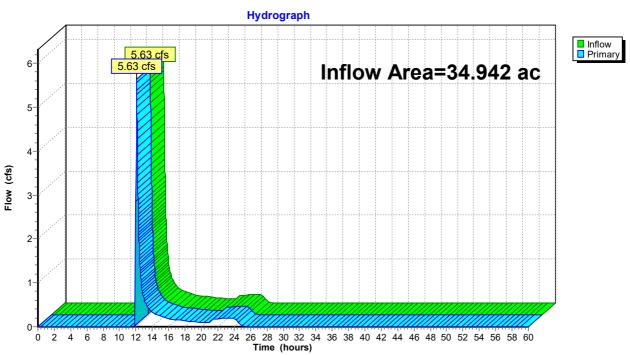
Pond 4.3C: 24" Culvert



## Summary for Link 1.1L:

Inflow Area = 34.942 ac, 0.04% Impervious, Inflow Depth = 0.12" for 100-Yr Storm event Inflow = 5.63 cfs @ 12.06 hrs, Volume= 0.349 af Primary = 5.63 cfs @ 12.06 hrs, Volume= 0.349 af, Atten= 0%, Lag= 0.0 min Routed to Link SP1 : Study Point 1

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

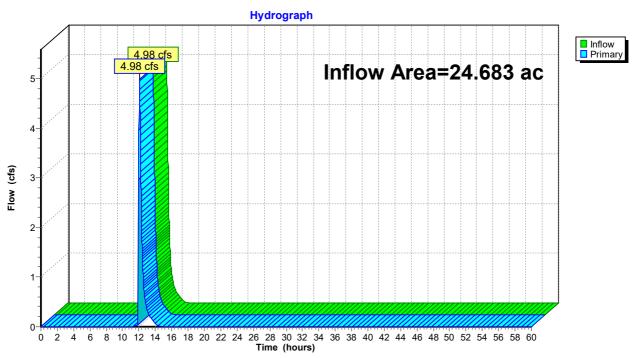


### Link 1.1L:

### Summary for Link 1.2L:

Inflow Area =24.683 ac,0.06% Impervious,Inflow Depth =0.08"for100-Yr Storm eventInflow =4.98 cfs @12.06 hrs,Volume=0.162 afPrimary =4.98 cfs @12.06 hrs,Volume=0.162 af,Routed to Link SP1 : Study Point 10.162 af,Atten= 0%,Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

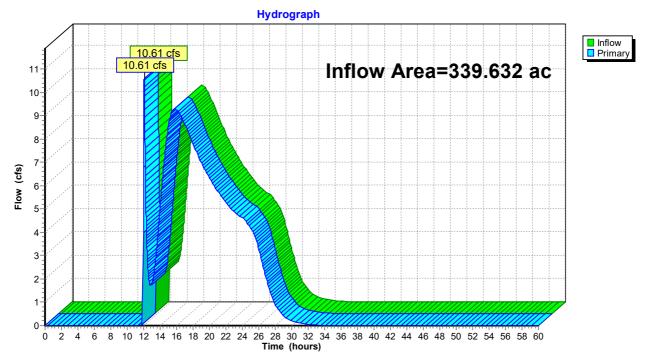


### Link 1.2L:

# Summary for Link SP1: Study Point 1

Inflow Area =	=	339.632 ac,	0.01% Impervious, Inflow	Depth = 0.26"	for 100-Yr Storm event
Inflow =		10.61 cfs @	12.06 hrs, Volume=	7.384 af	
Primary =		10.61 cfs @	12.06 hrs, Volume=	7.384 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

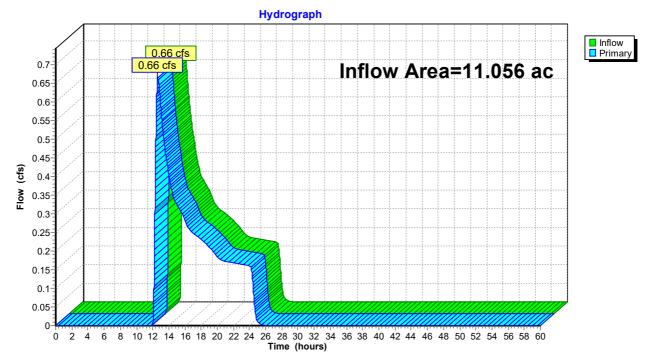


## Link SP1: Study Point 1

# Summary for Link SP2: Study Point 2

Inflow Area =	11.056 ac,	0.00% Impervious, Inflow E	epth = 0.30" fo	r 100-Yr Storm event
Inflow =	0.66 cfs @	12.61 hrs, Volume=	0.272 af	
Primary =	0.66 cfs @	12.61 hrs, Volume=	0.272 af, Atten=	0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

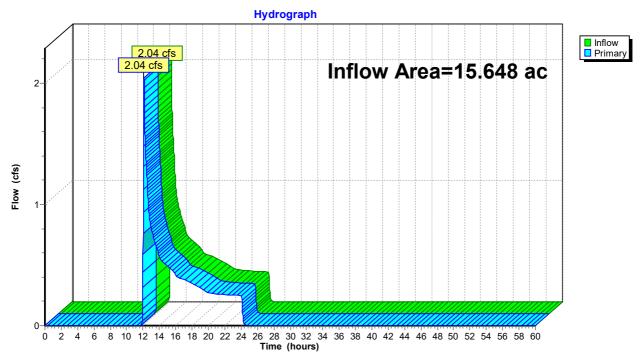


# Link SP2: Study Point 2

## Summary for Link SP3: Study Point 3

Inflow Area =	15.648 ac,	0.56% Impervious, Inflow D	epth = 0.34"	for 100-Yr Storm event
Inflow =	2.04 cfs @	12.13 hrs, Volume=	0.442 af	
Primary =	2.04 cfs @	12.13 hrs, Volume=	0.442 af, Atte	n= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

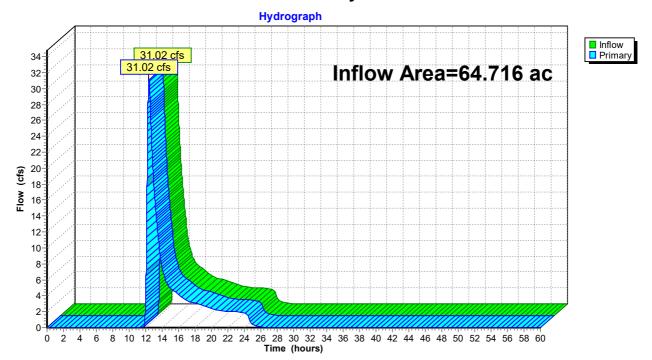


# Link SP3: Study Point 3

## Summary for Link SP4: Study Point 4

Inflow Area =	=	64.716 ac,	2.50% Impervious, Inf	low Depth = 1.03"	for 100-Yr Storm event
Inflow =		31.02 cfs @	12.41 hrs, Volume=	5.546 af	
Primary =		31.02 cfs @	12.41 hrs, Volume=	5.546 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

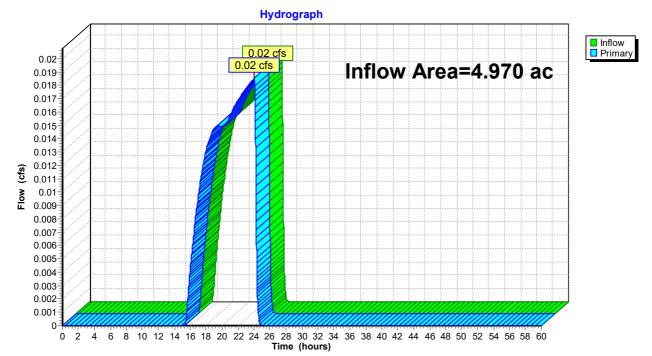


## Link SP4: Study Point 4

# Summary for Link SP5: Study Point 5

Inflow Area =	4.970 ac,	0.00% Impervious, Inflow E	Depth = 0.02" for 100-Yr Storm event
Inflow =	0.02 cfs @	24.02 hrs, Volume=	0.010 af
Primary =	0.02 cfs @	24.02 hrs, Volume=	0.010 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

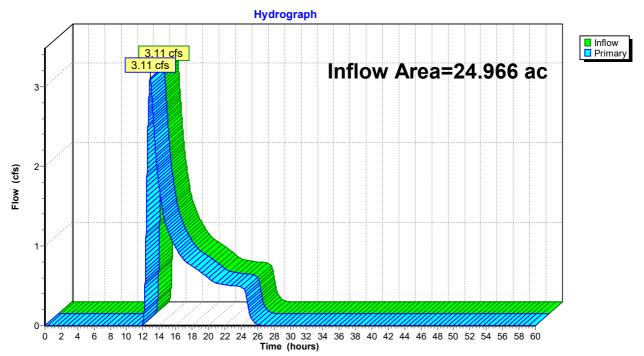


## Link SP5: Study Point 5

## Summary for Link SP6: Study Point 6

Inflow Area =	24.966 ac,	5.81% Impervious, Inflow E	Depth = 0.48"	for 100-Yr Storm event
Inflow =	3.11 cfs @	12.89 hrs, Volume=	1.002 af	
Primary =	3.11 cfs @	12.89 hrs, Volume=	1.002 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs



## Link SP6: Study Point 6