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Engineering Report

November 3, 2022
Revised December 12, 2022
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Prepared For
Piage Management Corp
49 Plains Road
Essex, Connecticut 06426

Prepared By
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1.0 Introduction:

This Engineering Report has been prepared on behalf of Piage Management Corp who is seeking approval for the development of an approximately 2.0 acre parcel located in the central portion of Essex. The parcel is located at 49 Plains Road (Conn. Route 153) in the Town of Essex, Connecticut. Please see Figure 1 for a location map.

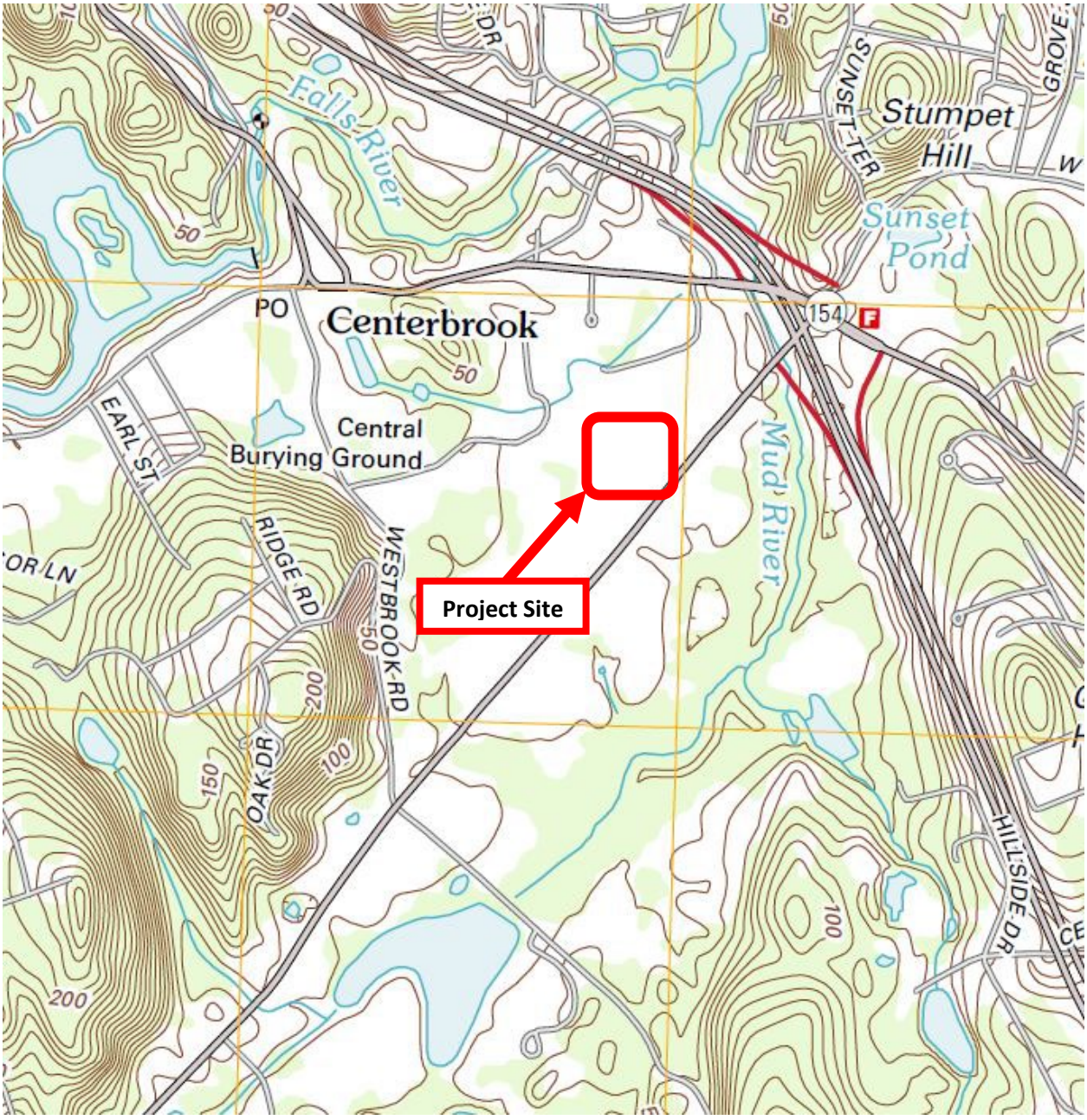

Figure 1. Project location
U.S.G.S Essex Connecticut Quadrangle

The planned development proposal consists of the construction of a new 10,125 sf. warehouse to the rear of the existing 4,750 sf warehouse. Additional site improvements include driveways, parking areas, utility services, on-site wastewater system, landscaping, and stormwater management facilities.

The project site is located primarily within the Limited Industrial (LI) zoning district. The access way to the site is in the Business District (B). The existing land used adjacent to and in the vicinity of the site is residential and commercial. The property is currently used as a warehouse that is occupied by Cross Island Provisions.

The site is served by the Connecticut Water Company public water system, public communication, and electric utilities located within the Plains Road Right of Way.

Surface runoff from the site currently drains to a small wetland located in the southeast corner of the site. This wetland discharges to a swale towards Plains Road and an 18" pipe crossing Plains Road. The runoff ultimately discharges to the Mud River.

Surface runoff from the developed site will be collected by an on-site drainage system and detained in above ground and underground storage onsite. The proposed stormwater management system will continue to direct stormwater to the on-site wetland.

The site is not located within a flood zone per FIRM Community Panel Number 090065 0331 G map effective date 08-28-2008.

The site is located with the Water Resource Protection Area.

The site is not located within Aquifer Protection Area or identified Connecticut Department of Energy and Environmental Protection Diversity Database Area.

The Natural Resources Conservation Service Soil Survey of the State of Connecticut indicates that the uplands surficial soil type on the site is classified as Ninigret-Urban Land Complex 0%-5% Slopes (221A)

The site contains 0.06 acres of inland wetlands and 0.5 acres of upland review area.

The total area of land disturbance associated with the completed project construction activities is approximately 1.7 acres. The approximate area of disturbance within the upland review area is 0.4 acres.

2.0 Hydrologic Model Development:

The site stormwater management system has been designed in accordance with standard hydrologic and hydraulic engineering practices HydroCAD Version 10.10 (Hydrologic Modeling Software 9 HydroCAD Software Solutions, LLC) was used to create the Hydrologic models and estimates of peak rates of discharge and volumes of runoff. The U.S. Department of Agriculture Soil Conservation Service (now Natural Resources Conservations Service) Technical Release 20 Computer Program for Project Formulation Hydrology Methodology was used within the HydroCAD software program. TR-20 is a single event, lumped parameter surface water hydrologic model that simulates the precipitation-runoff relationships of a drainage area. The model used the Soil Conservation Service Curve Number and Unit-Hydrograph methods to represent infiltration losses and to transform excess precipitation into runoff, and the Modified Plus (Storage-Indication) Method to preform reservoir routing.

NOAA Precipitation Frequency Atlas 14 for the Northeastern States 24-hour rainfall depths in the project site vicinity shown in Table 1 were accessed from the NOAA precipitation frequency data server and entered into the model.

Table 1

24-Hour Rainfall Depths for the Project Site Vicinity

Recurrence Interval Year	Rainfall Depth Inches
2	3.44
10	5.20
25	6.31
50	7.13
100	8.01

Partial duration series precipitation frequency data was also accessed from the NOAA precipitation frequency data server and entered into the models to create a synthetic rainfall distribution specific to the project site vicinity.

Catchment area boundaries where delineated using the existing conditions mapping for the site. The delineations were checked and adjusted based on a field inspection.

Antecedent Moisture Condition II was used to represent the soil moisture condition in the catchment areas prior to the modeled rainfall events.

3.0 Stormwater Management System:

The site stormwater management system consists of an underground stormwater detention area, 2 above ground detention areas and the associated collection system. The system has been designed to reduce the peak discharge for the site.

The storm drainage pipes have been sized to accommodate the 25-year storm. All discharges from the stormwater detention basins have been sized to accommodate the 100 year storm.

The above ground stormwater basins have been designed to meet the water quality volume and annual groundwater recharge volume requirements of the Connecticut Department of Energy and Environmental Protection Stormwater Quality Manual for the developed site and to provide a level of attenuation of the rates of peak discharge of stormwater runoff from the developed site. Additional all catch basins will have 4' sumps and hooded outlets to help with debris collection and water quality.

A Summary of the rates of peak discharge and the reservoir elevations is shown below.

Table 2

Peak Discharge and Reservoir Elevations

Storm	Existing (cfs)	Proposed (cfs)	Change (cfs)	Basin 21S Elevation	Basin 22SA Elevation	Underground 22SB Elevation
1 Year	1.76	1.24	-0.52	34.38	37.43	34.84
2 Year	2.35	1.64	-0.71	34.49	37.44	35.05
5 Year	3.37	2.42	-0.95	34.64	37.45	35.44
10 Year	4.25	3.59	-0.66	34.72	37.46	35.8
25 Year	5.49	4.93	-0.56	34.79	37.47	36.38
50 Year	6.42	5.93	-0.49	34.84	37.48	36.93
100 Year	7.41	6.92	-0.49	34.88	37.48	37.04

4.0 Sanitary System Design Information:

The sanitary system has been designed based on actual water usage data provided by the Connecticut Water Company. Water data was collected from June of 2019 though September of 2022. The calculated daily use of the existing warehouse business is 144 gallons per day. This is calculated excluding 2 outlying data points of 3/7/2022 and 3/9/2022. It is assumed that a leak caused this data to not be in line with the other water data collected.

Cross Island Provisions currently has 15 employees with 8 being officer staff and 7 being on the road making deliveries. Upon completion of the new warehouse building, it is estimated that the business will have 30 employees. Based on the average daily water usage of 144 gallons and the current number of employees 15 its estimated that 10 gpd are generated by each employee.

144 gallons / 15 employees = 10 gallons per day per employee

A safety factor of 1.5 can then be applied bringing the 10 gpd to the estimated design flow of 15 gpd per employee .

10 Gallons per day per employee X 1.5 Safety Factor= 15 gallons per day per employee

It is estimated that once construction is completed Cross Island provisions will occupy both the warehouse spaces and have 30 employees. Therefore, the total design flow can be calculated at 450 gallons per day.

15 gallons per day per employee X 30 Employees = 450 gallons per day

Below is the full sanitary system design calculation.

DESIGN FLOW = 450 GPD (BASED ON WATER USAGE DATA)
PERCOLATION RATE = 1.0-10.0 MIN/IN
APPLICATION RATE = 1.5 GAL/SF/DAY
REQUIRED EFFECTIVE LEACHING AREA = 450/1.5 = 300 SF
PROVIDED 1 - 60 LF ROWS OF GST 6212
EFFECTIVE LEACHING AREA PROVIDED =
1 X 60 LF X 10.0 LF/SF = 600 SF
MINIMUM LEACHING SYSTEM SPREAD (MLSS)
DEPTH TO RESTRICTIVE LAYER = 38 INCHES
(BASED ON GROUND WATER MONITORING TP-10)
SLOPE= 1.0 %
HF= 36
FF= 450/300 = 1.5
PF= 1
MLSS REQUIRED = 36 X 1.5 X 1 = 54 LF
MLSS PROVIDED = 1 ROW X 60 = 60 LF

Appendix A
Design Computations

Water Quality Volume

WQV, Water Quality Volume (AC-FT)
RCV, Runoff Capture Volume (AC-FT)
R, Volumetric Runoff Coefficient
I, Percent Impervious Cover
A, Site Area (AC)

I= 69.02
R= 0.05+0.009(69) = 0.671
A= 1.84

$$WQV = \frac{1" \text{ X } R \text{ X } A}{12} = \frac{1 \quad 0.67 \quad 1.84}{12} = 0.1029 \text{ AC-FT}$$

$$= 4482.9 \text{ CF}$$

WQV=4776.9 CF

Groundwater Recharge

GVR=Groundwater Recharge Volume (ac-ft)
D=Depth of Runoff to be Recharged (inches) (Table 7-4)
A=Site Area (acres)
I=Post Development Impervious (decimal)
net inches increase in site impervious for redevelopment

$$GRV = \frac{(D)\ (A)\ (I)}{12}$$

Table 7-4 Groundwater Recharge Depth		
NCRS Hydrologic Soil Groups	Average Annual Recharge	Groundwater Recharge Depth (D)
A	18 inches/year	0.4 inches
B	12 inches/year	0.25 inches
C	6 inches/year	0.1 inches
D	3 inches/year	0 inces (waived)

Existing Impervious	0.67
Proposed Impervious	1.27
Change In Impervious	0.6

$$GRV = \frac{0.25\ \ 1.84\ \ 0.6}{12}$$

GRV=	**0.023**	**ac-ft**
	1001.9	**cf**

Appendix B
Hydrologic Model Input Data and Results

Watershed Area's

Existing Watershed WS 10		
	SF	AC
Woods	9000	0.21
Grass	1200	0.03
Gravel	19300	0.44
Impervious	10000	0.23
Total	39500	0.91

Existing Watershed WS 11		
	SF	AC
Woods	30500	0.7
Grass	5600	0.13
Impervious	4500	0.1
Total	40600	0.93

Proposed Watershed WS 20		
	SF	AC
Woods	3450	0.08
Grass	1830	0.04
Total	5280	0.12

Proposed Watershed WS 21		
		AC
Grass	9475	0.22
Impervious (Bituminous)	29400	0.67
Impervious (Building)	2375	0.05
Total	41250	0.95

Proposed Water Shed WS 22		
	SF	AC
Grass	9870	0.23
Impervious (Bituminous)	11200	0.26
Impervious (Building)	12500	0.29
Total	33570	0.77

DATE	REVISION	CK.
11/29/22	REVISION	
12/12/22	TOWN COMMENTS	
01/06/23	TOWN COMMENTS	

EXISTING WATERSHED BOUNDARY

EXISTING TIME OF CONCENTRATION FLOW PATH

WS 11

WS 10

A

B

C

D

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

1 inch = 40 ft.

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WATERSHED AREAS EXISTING CONDITIONS

PREPARED FOR

PIAGE MANAGEMENT CORP

#49 PLAINS ROAD ,ESSEX , CONNECTICUT

SCALE:	DATE:	SHEET NO.:	IDENT. NO.:
1"=40'	11/03/22	1 OF 2	

FILE: \\DEFS1\Drawings\DRAWINGS\TOWNS\ESSEX\PLAINS ROAD\PIAGENTINI-808\Hydro Areas.dwg

DATE	REVISION	CK.
11/29/22	REVISION	
12/12/22	TOWN COMMENTS	
01/06/23	TOWN COMMENTS	

PROPOSED WATERSHED BOUNDARY

WS 20

WS 22

WS 21

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

1 inch = 40 ft.

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WATERSHED AREAS PROPOSED CONDITIONS

PREPARED FOR

PIAGE MANAGEMENT CORP

#49 PLAINS ROAD ,ESSEX , CONNECTICUT

SCALE:	DATE:	SHEET NO.:	IDENT. NO.:
1"=40'	11/03/22	2 OF 2	

FILE:N:\DRAWINGS\TOWNS\ESSEX\ESSEX\PLAINS ROAD\PIAGE\TRM-800\Hydro Areas.dwg

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Circle one: ***Present*** Developed
Circle one: ***T_c*** T_t

Watershed: EX WS10
Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B				
1.	Surface description (Table 3-1)		BIT				
2.	Manning's roughness coeff. for sheet flow, n (Table 3-1)		0.010				
3.	Flow Length, L (< 300ft)	ft.	65.0				
4.	Two-year 24-hr rainfall, P_2	in.	3.44				
5.	Land slope, s	ft./ft.	0.040				
6.	$T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.	0.010	=	0.010		

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D			
7.	Surface description		BIT	WOODS			
8.	Manning's roughness coeff., n		0.015	0.100			
9.	Paved or unpaved		UNPVD	UNPVD			
10.	Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.	0.40	0.40			
11.	Flow Length, L	ft.	160.0	25.0			
12.	Watercourse slope, s	ft./ft.	0.005	0.100			
13.	Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.	3.81	2.56			
14.	$T_t = \frac{L}{3600 * V}$	hr.	0.012	+ 0.003			= 0.014

Channel flow

		Segment ID					
15.	Channel Bottom width, b	ft.					
16.	Horizontal side slope component, z (z horiz:1 vert)	ft.					
17.	Depth of flow, d	ft.					
18.	Cross sectional flow area, A (assume trapazoidal)	$ft.^2$					
19.	Wetted perimeter, P_w	ft.					
20.	Hydraulic Radius, $R = \frac{A}{P_w}$	ft.					
21.	Channel slope, s	ft./ft.					
22.	Manning's roughness coeff., n						
23.	$V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.					
24.	Flow length, L	ft.					
25.	$T_t = \frac{L}{3600 * V}$	hr.					= 0.000

26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25) hr. 0.024

Time of Concentration (T_c) or Travel Time (T_t) Worksheet

Circle one: ***Present*** Developed
Circle one: ***T_c*** T_t

Watershed: EX WS11
Subwatershed:

Sheet flow (applicable to T_c only)

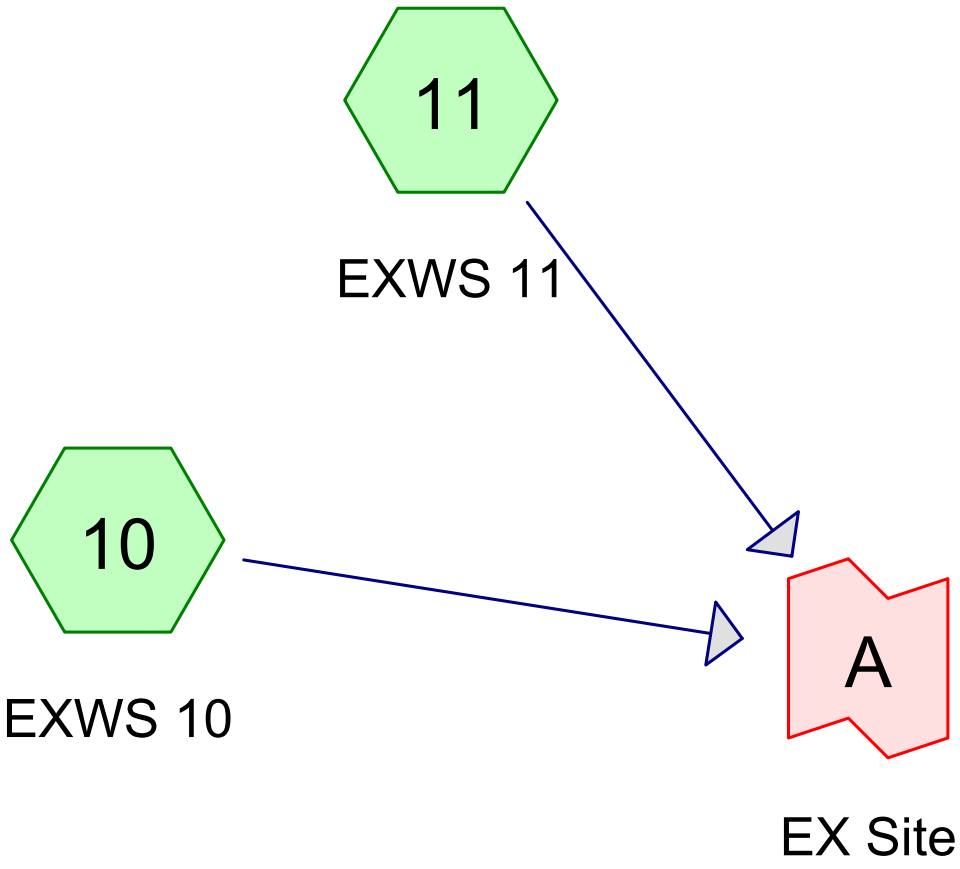
		Segment ID	A-B		
1.	Surface description (Table 3-1)		WOODS		
2.	Manning's roughness coeff. for sheet flow, n (Table 3-1)		0.400		
3.	Flow Length, L (< 300ft)	ft.	50.0		
4.	Two-year 24-hr rainfall, P_2	in.	3.44		
5.	Land slope, s	ft./ft.	0.020		
6.	$T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.	0.198	=	0.198

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D			
7.	Surface description		WOODS	WOODS			
8.	Manning's roughness coeff., n		0.400	0.400			
9.	Paved or unpaved		UNPVD	UNPVD			
10.	Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.	0.40	0.40			
11.	Flow Length, L	ft.	218.0	60.0			
12.	Watercourse slope, s	ft./ft.	0.010	0.050			
13.	Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.	0.20	0.45			
14.	$T_t = \frac{L}{3600 * V}$	hr.	0.299	+ 0.037			= 0.336

Channel flow

		Segment ID					
15.	Channel Bottom width, b	ft.					
16.	Horizontal side slope component, z (z horiz:1 vert)	ft.					
17.	Depth of flow, d	ft.					
18.	Cross sectional flow area, A (assume trapazoidal)	$ft.^2$					
19.	Wetted perimeter, P_w	ft.					
20.	Hydraulic Radius, $R = \frac{A}{P_w}$	ft.					
21.	Channel slope, s	ft./ft.					
22.	Manning's roughness coeff., n						
23.	$V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.					
24.	Flow length, L	ft.					
25.	$T_t = \frac{L}{3600 * V}$	hr.					= 0.000
26.	Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)					hr.	0.535



Subcat Reach Pond Link

Routing Diagram for 49 Plains Road Existing
Prepared by Doane Enginnering, Printed 1/6/2023

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	CT-49 Plains Road Essex 24-hr S1	1-yr	Default	24.00	1	2.85	2
2	2-yr	CT-49 Plains Road Essex 24-hr S1	2-yr	Default	24.00	1	3.44	2
3	5-yr	CT-49 Plains Road Essex 24-hr S1	5-yr	Default	24.00	1	4.40	2
4	10-yr	CT-49 Plains Road Essex 24-hr S1	10-yr	Default	24.00	1	5.20	2
5	25-yr	CT-49 Plains Road Essex 24-hr S1	25-yr	Default	24.00	1	6.31	2
6	50-yr	CT-49 Plains Road Essex 24-hr S1	50-yr	Default	24.00	1	7.13	2
7	100-yr	CT-49 Plains Road Essex 24-hr S1	100-yr	Default	24.00	1	8.01	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.156	61	>75% Grass cover, Good, HSG B (10, 11)
0.443	96	Gravel surface, HSG B (10)
0.333	98	Impervious (10, 11)
0.907	55	Woods, Good, HSG B (10, 11)
1.839	**73**	**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.156	0.000	0.000	0.000	0.156	>75% Grass cover, Good	10, 11
0.000	0.443	0.000	0.000	0.000	0.443	Gravel surface	10
0.000	0.000	0.000	0.000	0.333	0.333	Impervious	10, 11
0.000	0.907	0.000	0.000	0.000	0.907	Woods, Good	10, 11
0.000	**1.506**	**0.000**	**0.000**	**0.333**	**1.839**	**TOTAL AREA**	

Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10: EXWS 10 Runoff Area=39,500 sf 25.32% Impervious Runoff Depth>1.53"
Tc=6.0 min CN=86 Runoff=1.76 cfs 0.116 af

Subcatchment 11: EXWS 11 Runoff Area=40,600 sf 11.08% Impervious Runoff Depth>0.30"
Tc=32.1 min CN=61 Runoff=0.08 cfs 0.024 af

Link A: EX Site Inflow=1.76 cfs 0.140 af
Primary=1.76 cfs 0.140 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.140 af Average Runoff Depth = 0.91"
81.90% Pervious = 1.506 ac 18.10% Impervious = 0.333 ac

Summary for Subcatchment 10: EXWS 10

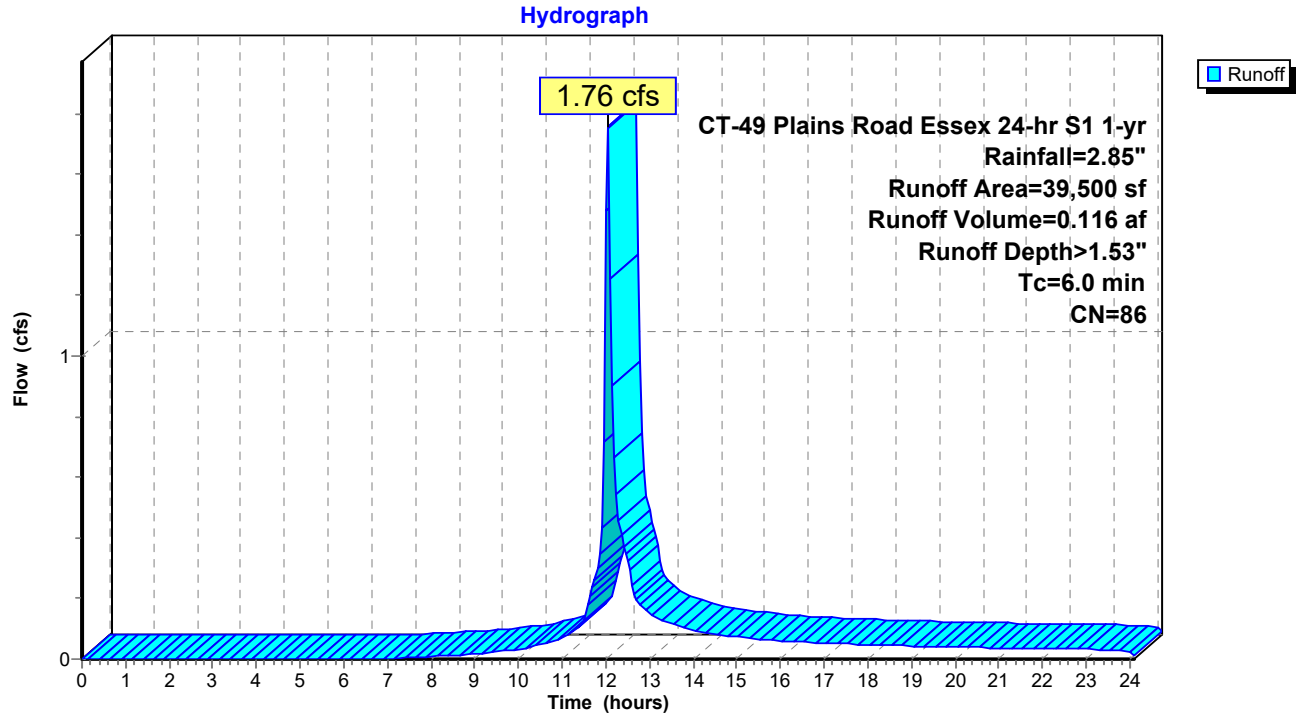
Runoff = 1.76 cfs @ 12.04 hrs, Volume= 0.116 af, Depth> 1.53"
Routed to Link A : EX Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 1-yr Rainfall=2.85"

	Area (sf)	CN	Description
	9,000	55	Woods, Good, HSG B
	1,200	61	>75% Grass cover, Good, HSG B
	19,300	96	Gravel surface, HSG B
*	10,000	98	Impervious
	39,500	86	Weighted Average
	29,500		74.68% Pervious Area
	10,000		25.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN TR-55 TC 6.0 MIN**

Subcatchment 10: EXWS 10



Summary for Subcatchment 11: EXWS 11

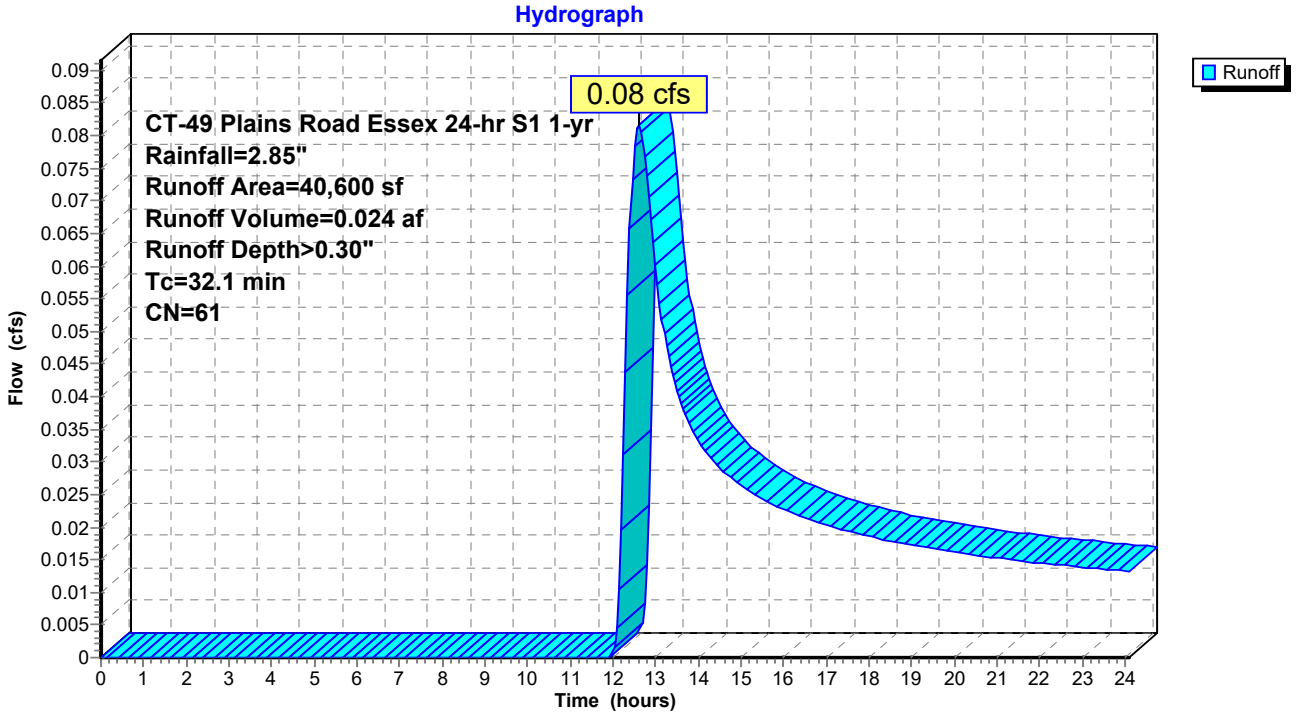
Runoff = 0.08 cfs @ 12.60 hrs, Volume= 0.024 af, Depth> 0.30"
Routed to Link A : EX Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 1-yr Rainfall=2.85"

	Area (sf)	CN	Description
	30,500	55	Woods, Good, HSG B
	5,600	61	>75% Grass cover, Good, HSG B
*	4,500	98	Impervious
	40,600	61	Weighted Average
	36,100		88.92% Pervious Area
	4,500		11.08% Impervious Area

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

Subcatchment 11: EXWS 11

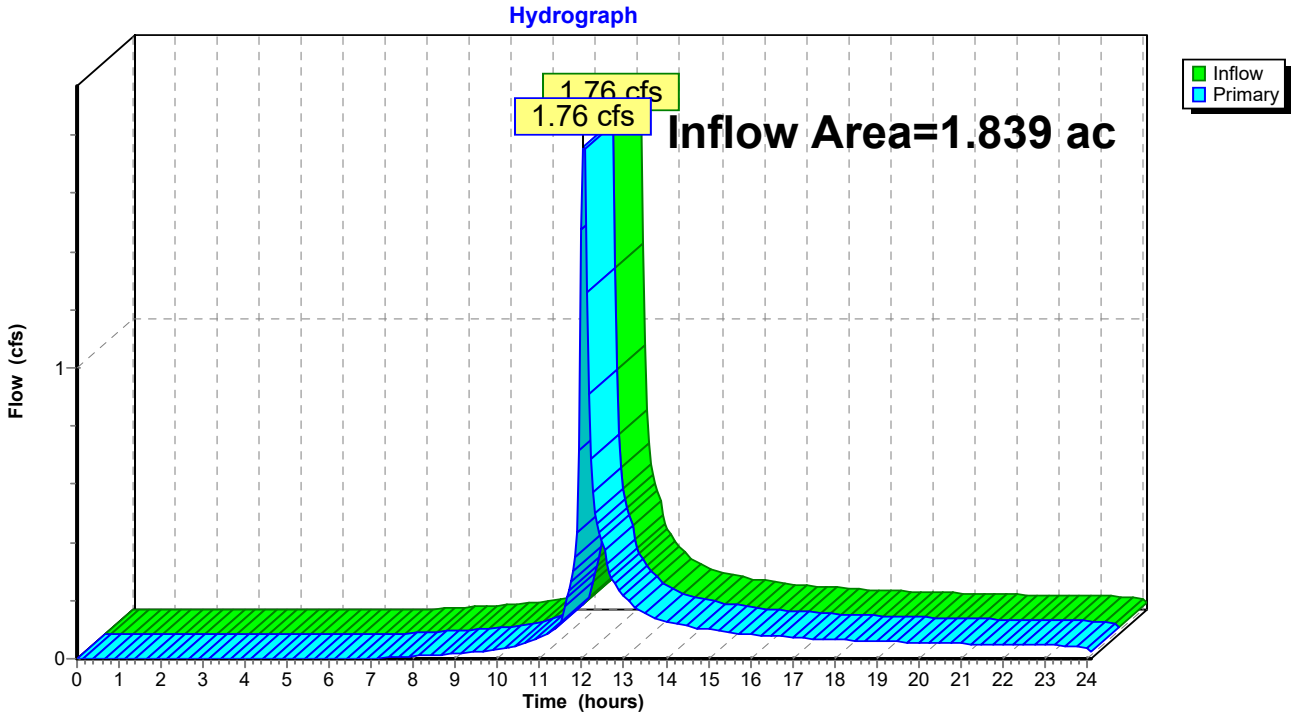


Summary for Link A: EX Site

Inflow Area = 1.839 ac, 18.10% Impervious, Inflow Depth > 0.91" for 1-yr event
Inflow = 1.76 cfs @ 12.04 hrs, Volume= 0.140 af
Primary = 1.76 cfs @ 12.04 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link A: EX Site



Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10: EXWS 10 Runoff Area=39,500 sf 25.32% Impervious Runoff Depth>2.05"
Tc=6.0 min CN=86 Runoff=2.34 cfs 0.155 af

Subcatchment 11: EXWS 11 Runoff Area=40,600 sf 11.08% Impervious Runoff Depth>0.54"
Tc=32.1 min CN=61 Runoff=0.20 cfs 0.042 af

Link A: EX Site Inflow=2.35 cfs 0.196 af
Primary=2.35 cfs 0.196 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.196 af Average Runoff Depth = 1.28"
81.90% Pervious = 1.506 ac 18.10% Impervious = 0.333 ac

Summary for Subcatchment 10: EXWS 10

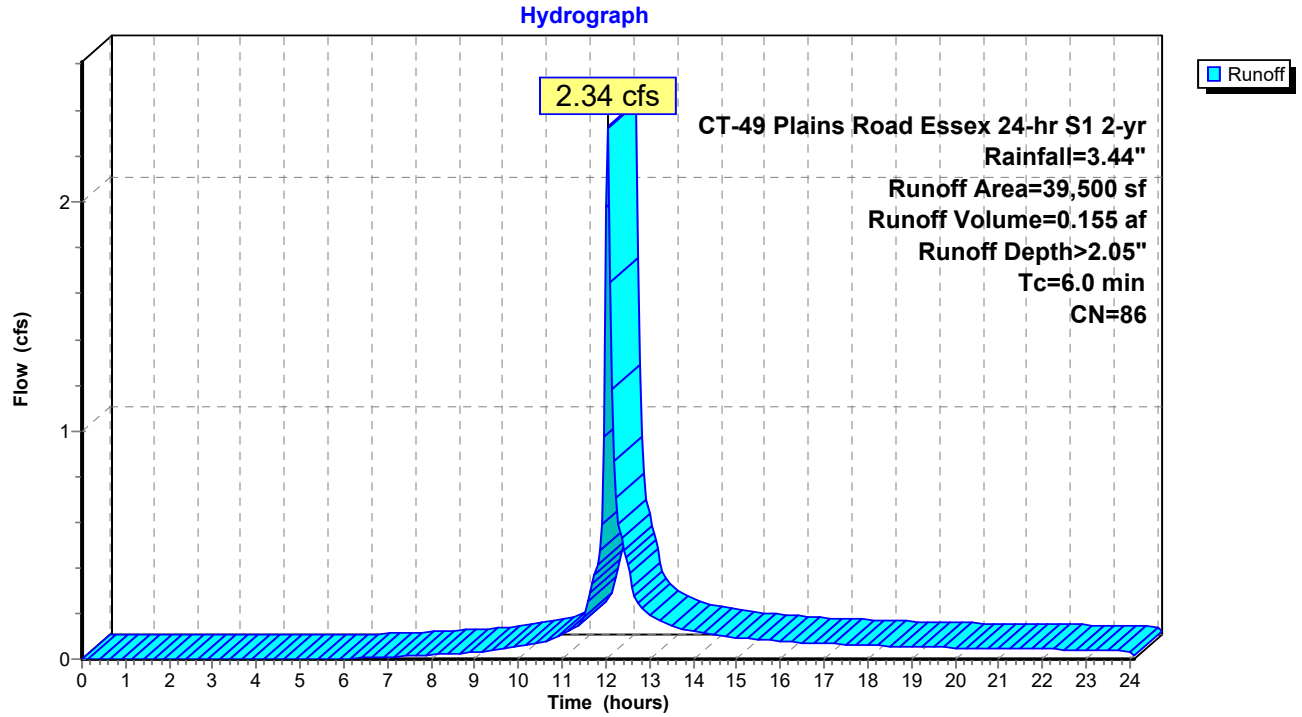
Runoff = 2.34 cfs @ 12.04 hrs, Volume= 0.155 af, Depth> 2.05"
Routed to Link A : EX Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 2-yr Rainfall=3.44"

	Area (sf)	CN	Description
	9,000	55	Woods, Good, HSG B
	1,200	61	>75% Grass cover, Good, HSG B
	19,300	96	Gravel surface, HSG B
*	10,000	98	Impervious
	39,500	86	Weighted Average
	29,500		74.68% Pervious Area
	10,000		25.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN TR-55 TC 6.0 MIN**

Subcatchment 10: EXWS 10



Summary for Subcatchment 11: EXWS 11

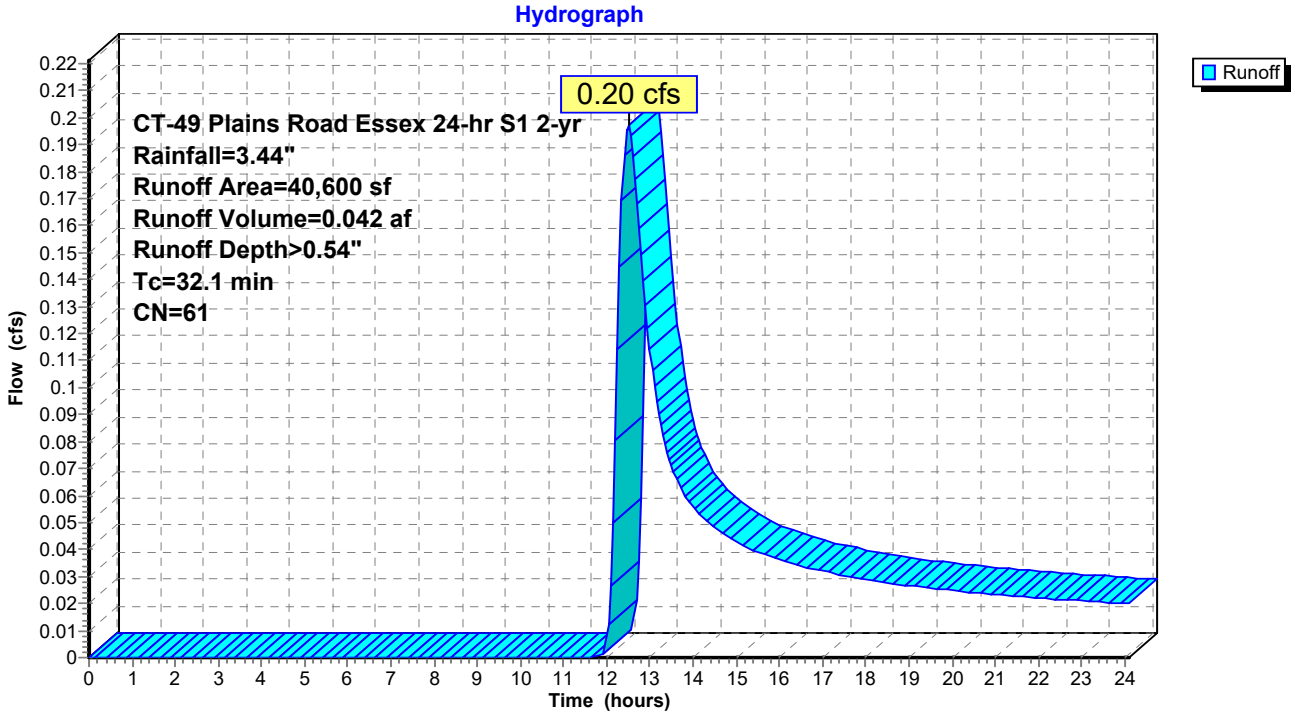
Runoff = 0.20 cfs @ 12.49 hrs, Volume= 0.042 af, Depth> 0.54"
Routed to Link A : EX Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 2-yr Rainfall=3.44"

	Area (sf)	CN	Description
	30,500	55	Woods, Good, HSG B
	5,600	61	>75% Grass cover, Good, HSG B
*	4,500	98	Impervious
	40,600	61	Weighted Average
	36,100		88.92% Pervious Area
	4,500		11.08% Impervious Area

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

Subcatchment 11: EXWS 11

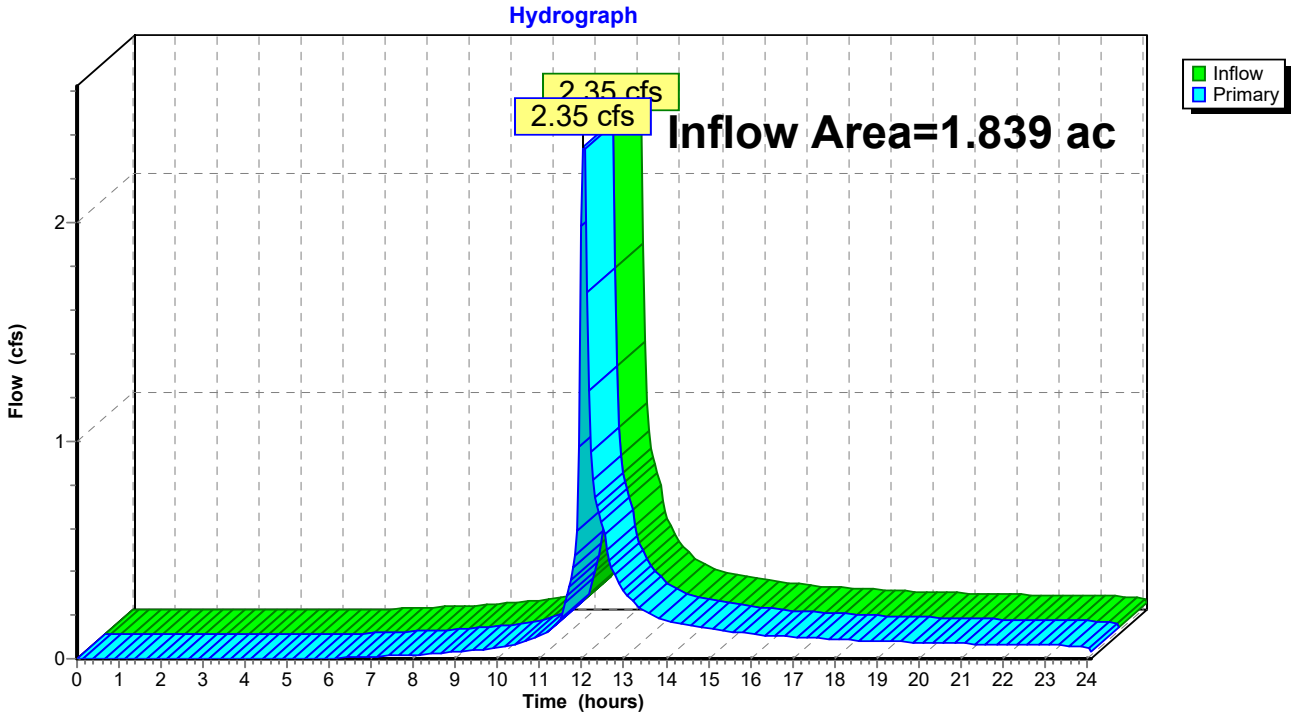


Summary for Link A: EX Site

Inflow Area = 1.839 ac, 18.10% Impervious, Inflow Depth > 1.28" for 2-yr event
Inflow = 2.35 cfs @ 12.04 hrs, Volume= 0.196 af
Primary = 2.35 cfs @ 12.04 hrs, Volume= 0.196 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link A: EX Site



Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10: EXWS 10 Runoff Area=39,500 sf 25.32% Impervious Runoff Depth>2.91"
Tc=6.0 min CN=86 Runoff=3.29 cfs 0.220 af

Subcatchment 11: EXWS 11 Runoff Area=40,600 sf 11.08% Impervious Runoff Depth>1.01"
Tc=32.1 min CN=61 Runoff=0.46 cfs 0.079 af

Link A: EX Site Inflow=3.37 cfs 0.299 af
Primary=3.37 cfs 0.299 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.299 af Average Runoff Depth = 1.95"
81.90% Pervious = 1.506 ac 18.10% Impervious = 0.333 ac

Summary for Subcatchment 10: EXWS 10

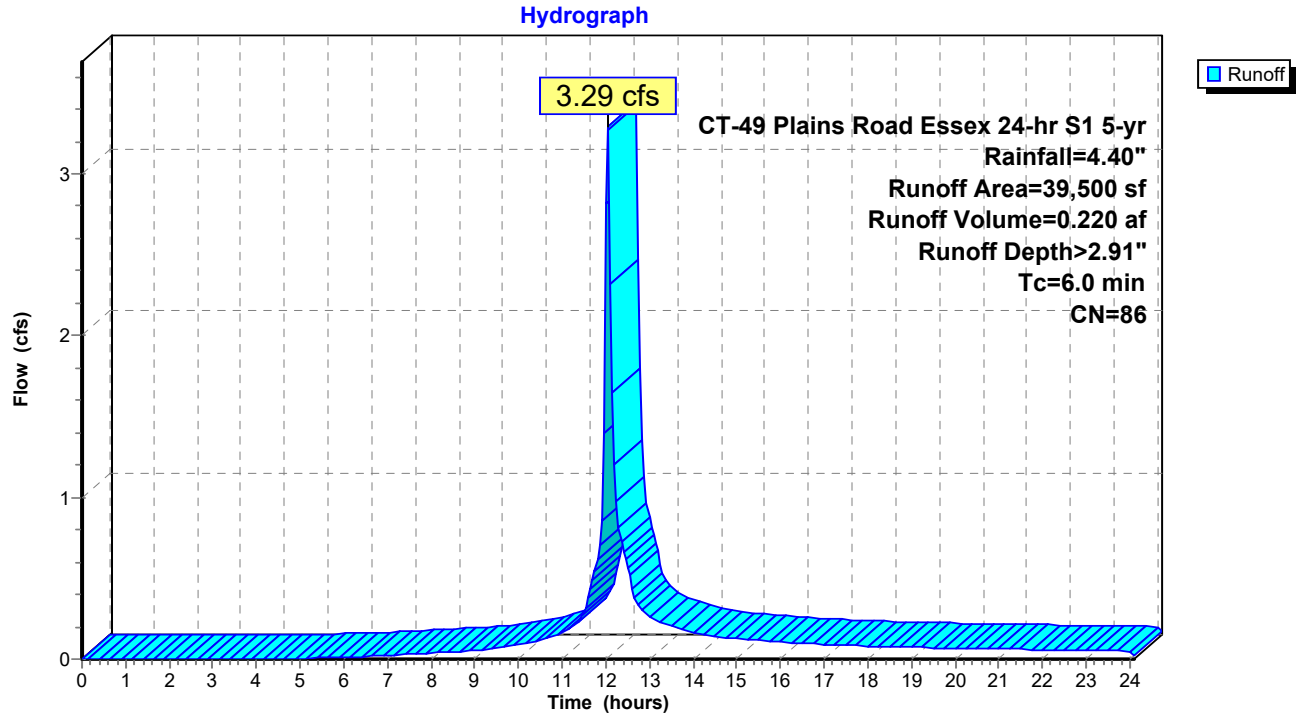
Runoff = 3.29 cfs @ 12.04 hrs, Volume= 0.220 af, Depth> 2.91"
Routed to Link A : EX Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 5-yr Rainfall=4.40"

	Area (sf)	CN	Description
	9,000	55	Woods, Good, HSG B
	1,200	61	>75% Grass cover, Good, HSG B
	19,300	96	Gravel surface, HSG B
*	10,000	98	Impervious
	39,500	86	Weighted Average
	29,500		74.68% Pervious Area
	10,000		25.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN TR-55 TC 6.0 MIN**

Subcatchment 10: EXWS 10



Summary for Subcatchment 11: EXWS 11

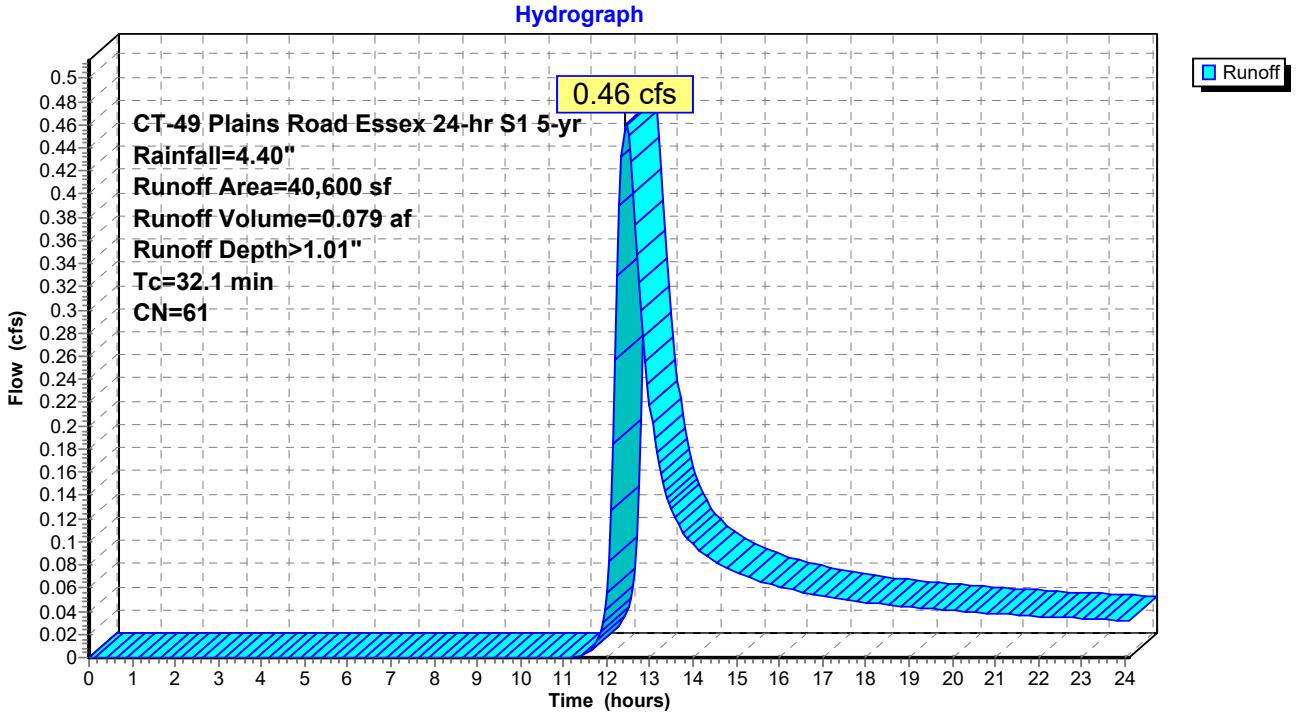
Runoff = 0.46 cfs @ 12.44 hrs, Volume= 0.079 af, Depth> 1.01"
Routed to Link A : EX Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 5-yr Rainfall=4.40"

	Area (sf)	CN	Description
	30,500	55	Woods, Good, HSG B
	5,600	61	>75% Grass cover, Good, HSG B
*	4,500	98	Impervious
	40,600	61	Weighted Average
	36,100		88.92% Pervious Area
	4,500		11.08% Impervious Area

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

Subcatchment 11: EXWS 11

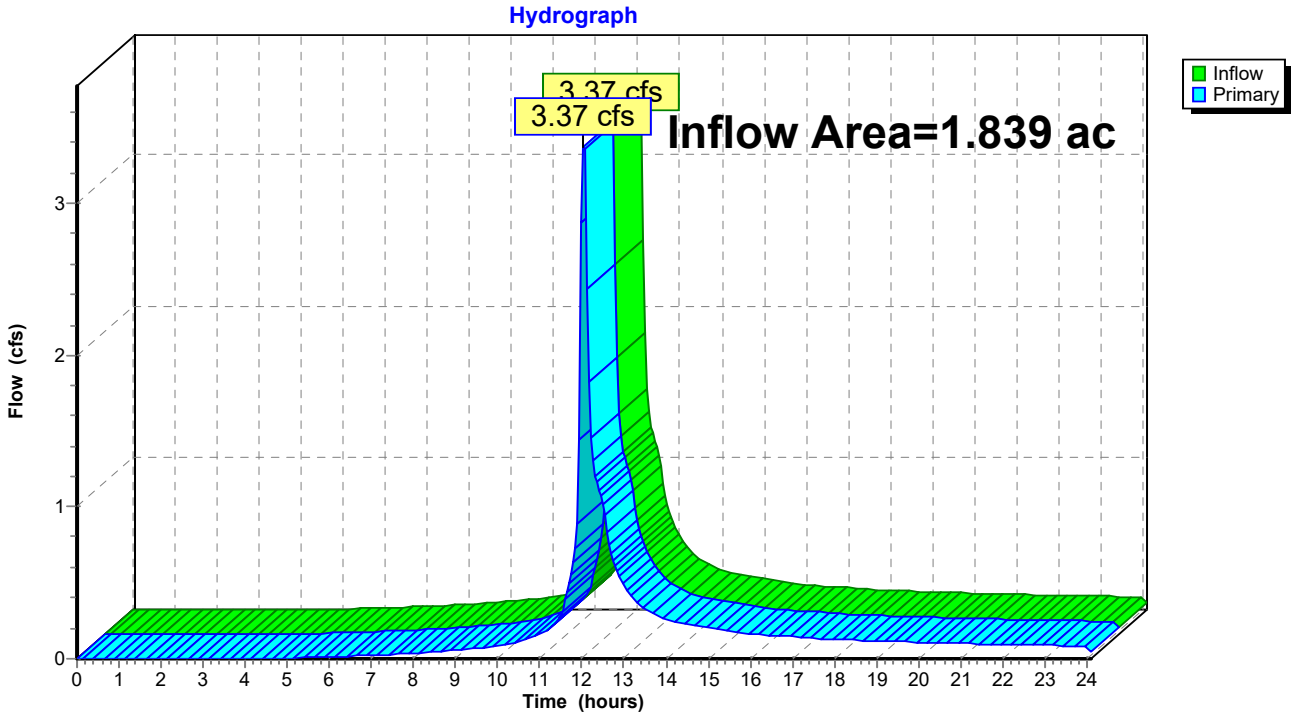


Summary for Link A: EX Site

Inflow Area = 1.839 ac, 18.10% Impervious, Inflow Depth > 1.95" for 5-yr event
Inflow = 3.37 cfs @ 12.04 hrs, Volume= 0.299 af
Primary = 3.37 cfs @ 12.04 hrs, Volume= 0.299 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link A: EX Site



Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10: EXWS 10 Runoff Area=39,500 sf 25.32% Impervious Runoff Depth>3.65"
Tc=6.0 min CN=86 Runoff=4.09 cfs 0.276 af

Subcatchment 11: EXWS 11 Runoff Area=40,600 sf 11.08% Impervious Runoff Depth>1.47"
Tc=32.1 min CN=61 Runoff=0.72 cfs 0.114 af

Link A: EX Site Inflow=4.25 cfs 0.391 af
Primary=4.25 cfs 0.391 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.391 af Average Runoff Depth = 2.55"
81.90% Pervious = 1.506 ac 18.10% Impervious = 0.333 ac

Summary for Subcatchment 10: EXWS 10

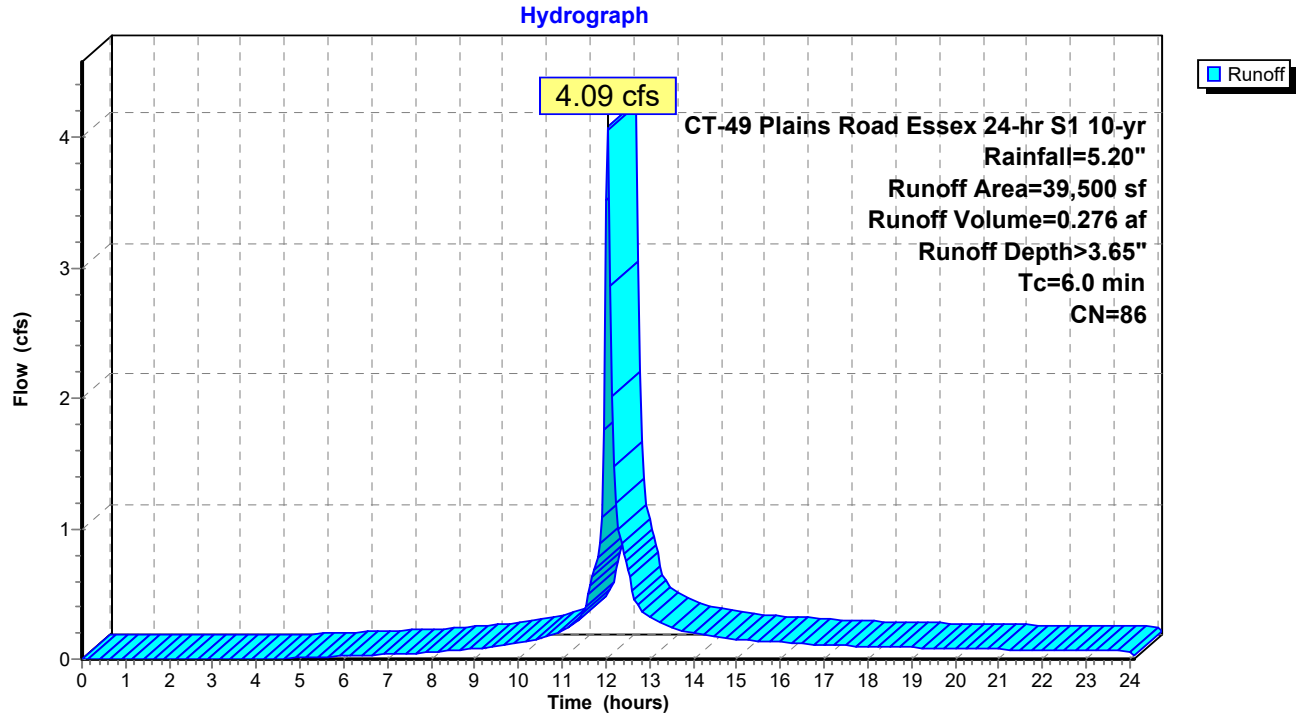
Runoff = 4.09 cfs @ 12.04 hrs, Volume= 0.276 af, Depth> 3.65"
Routed to Link A : EX Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 10-yr Rainfall=5.20"

	Area (sf)	CN	Description
	9,000	55	Woods, Good, HSG B
	1,200	61	>75% Grass cover, Good, HSG B
	19,300	96	Gravel surface, HSG B
*	10,000	98	Impervious
	39,500	86	Weighted Average
	29,500		74.68% Pervious Area
	10,000		25.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN TR-55 TC 6.0 MIN**

Subcatchment 10: EXWS 10



Summary for Subcatchment 11: EXWS 11

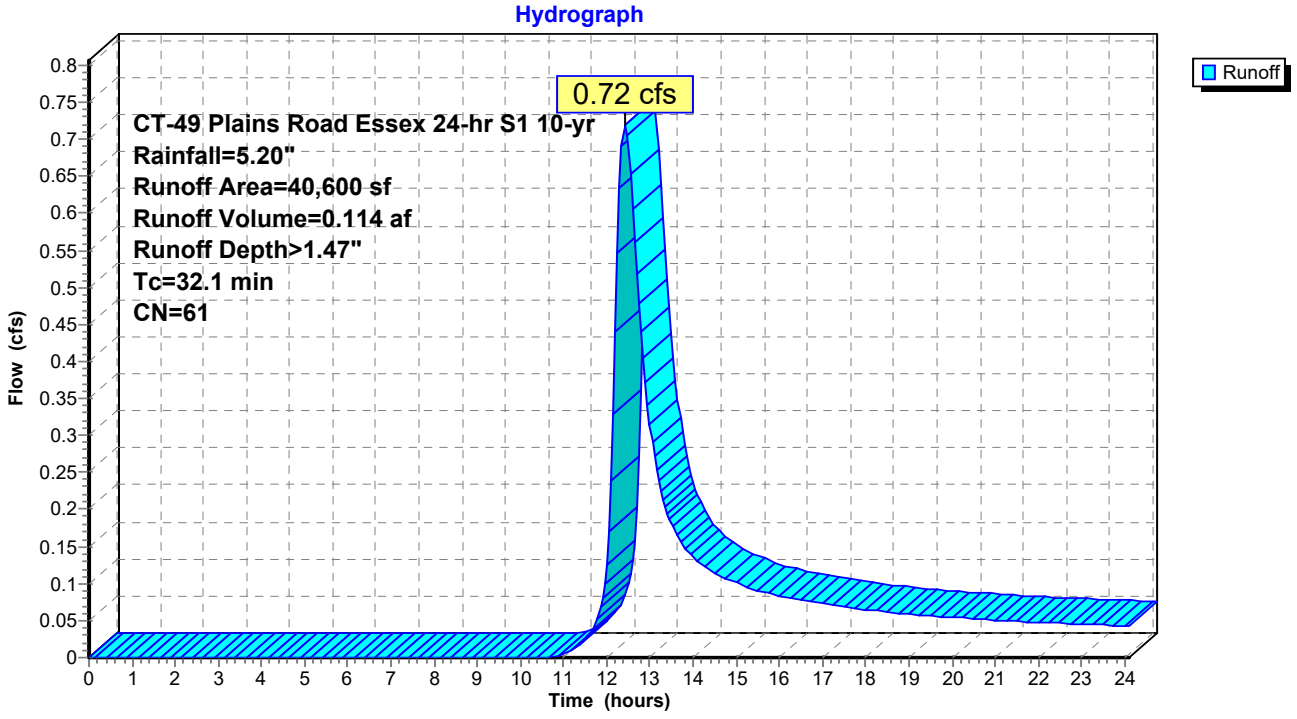
Runoff = 0.72 cfs @ 12.42 hrs, Volume= 0.114 af, Depth> 1.47"
Routed to Link A : EX Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 10-yr Rainfall=5.20"

	Area (sf)	CN	Description
	30,500	55	Woods, Good, HSG B
	5,600	61	>75% Grass cover, Good, HSG B
*	4,500	98	Impervious
	40,600	61	Weighted Average
	36,100		88.92% Pervious Area
	4,500		11.08% Impervious Area

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

Subcatchment 11: EXWS 11

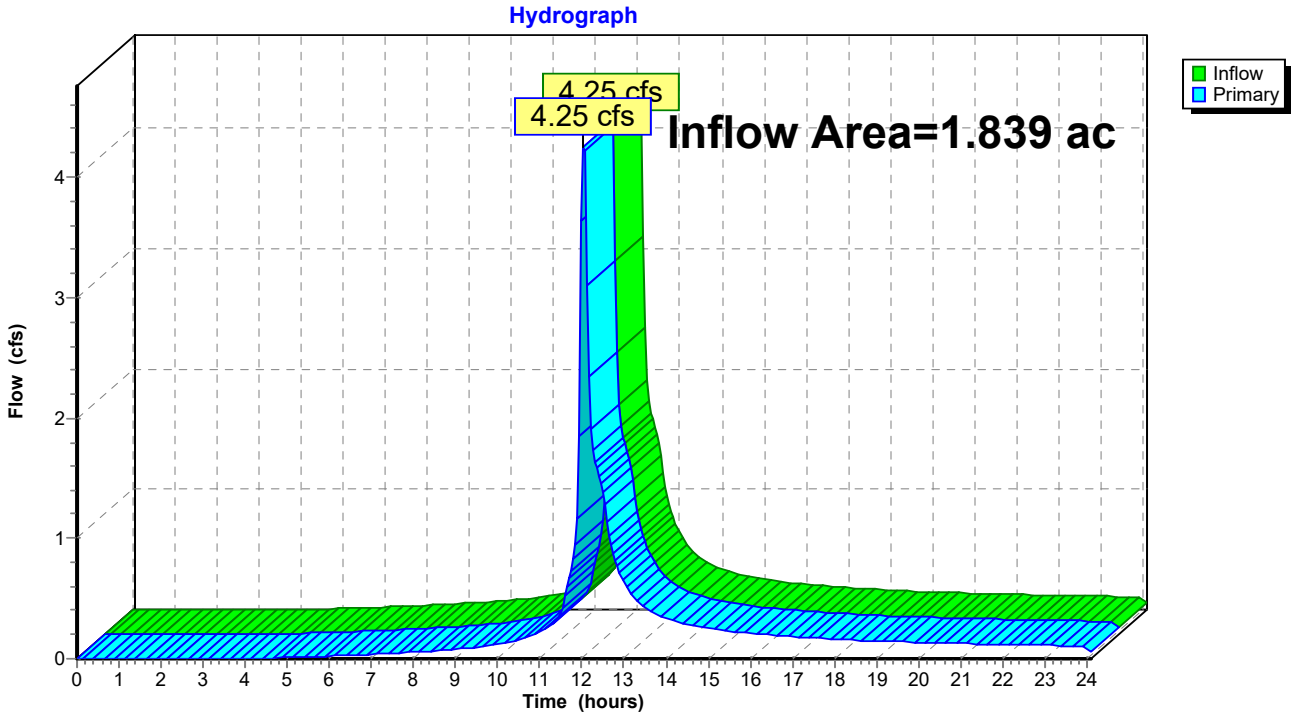


Summary for Link A: EX Site

Inflow Area = 1.839 ac, 18.10% Impervious, Inflow Depth > 2.55" for 10-yr event
Inflow = 4.25 cfs @ 12.04 hrs, Volume= 0.391 af
Primary = 4.25 cfs @ 12.04 hrs, Volume= 0.391 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link A: EX Site



Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10: EXWS 10 Runoff Area=39,500 sf 25.32% Impervious Runoff Depth>4.70"
Tc=6.0 min CN=86 Runoff=5.19 cfs 0.355 af

Subcatchment 11: EXWS 11 Runoff Area=40,600 sf 11.08% Impervious Runoff Depth>2.19"
Tc=32.1 min CN=61 Runoff=1.12 cfs 0.170 af

Link A: EX Site Inflow=5.49 cfs 0.526 af
Primary=5.49 cfs 0.526 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.526 af Average Runoff Depth = 3.43"
81.90% Pervious = 1.506 ac 18.10% Impervious = 0.333 ac

Summary for Subcatchment 10: EXWS 10

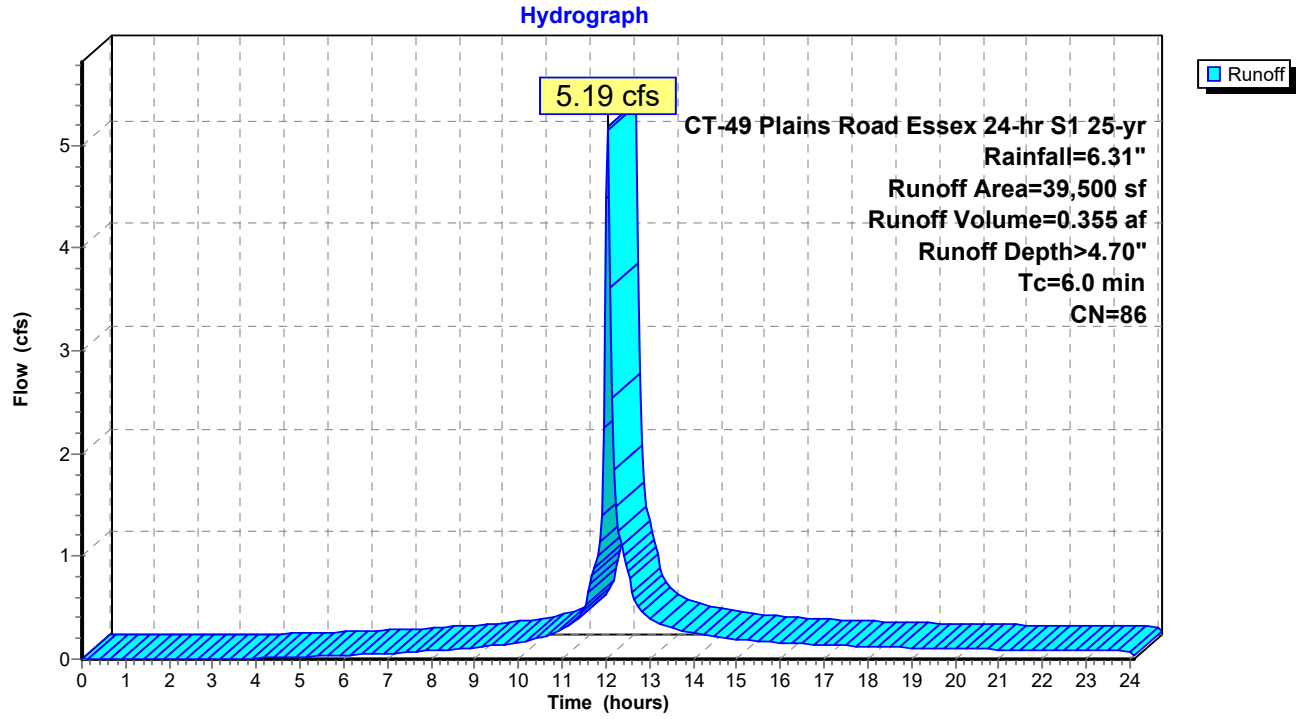
Runoff = 5.19 cfs @ 12.04 hrs, Volume= 0.355 af, Depth> 4.70"
Routed to Link A : EX Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 25-yr Rainfall=6.31"

	Area (sf)	CN	Description
	9,000	55	Woods, Good, HSG B
	1,200	61	>75% Grass cover, Good, HSG B
	19,300	96	Gravel surface, HSG B
*	10,000	98	Impervious
	39,500	86	Weighted Average
	29,500		74.68% Pervious Area
	10,000		25.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN TR-55 TC 6.0 MIN**

Subcatchment 10: EXWS 10



Summary for Subcatchment 11: EXWS 11

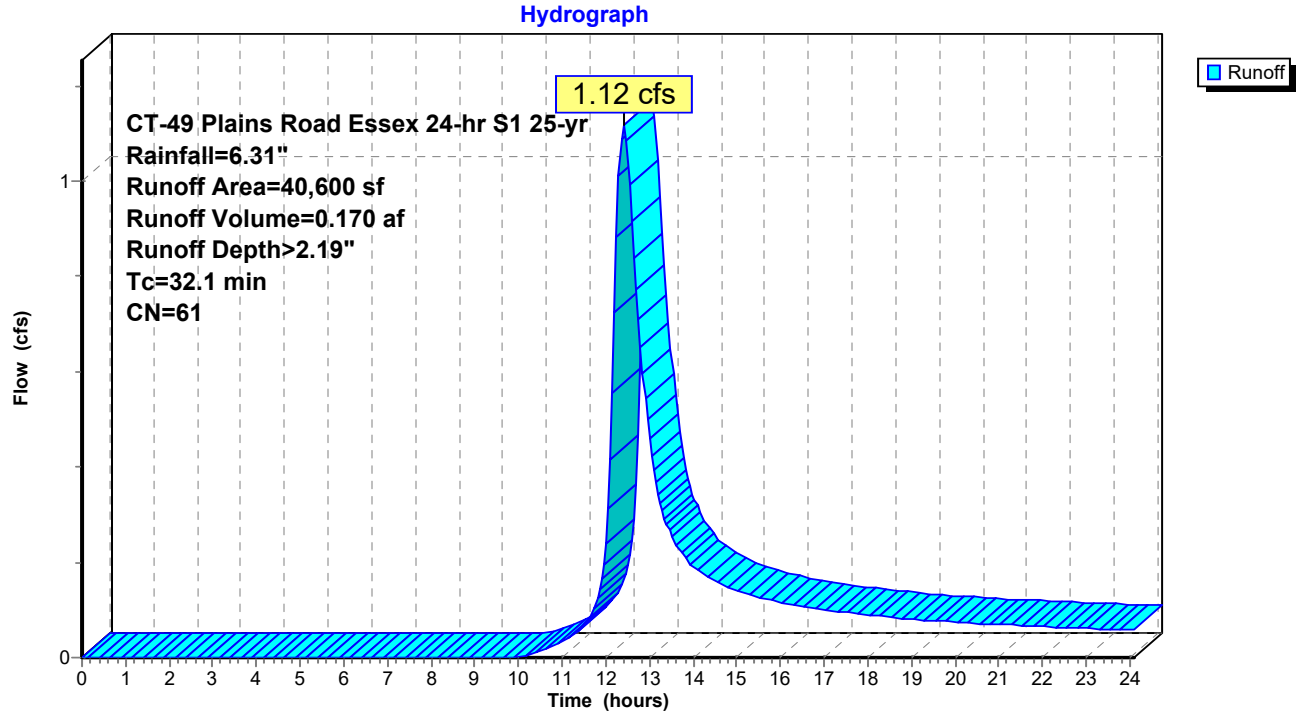
Runoff = 1.12 cfs @ 12.41 hrs, Volume= 0.170 af, Depth> 2.19"
Routed to Link A : EX Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 25-yr Rainfall=6.31"

	Area (sf)	CN	Description
	30,500	55	Woods, Good, HSG B
	5,600	61	>75% Grass cover, Good, HSG B
*	4,500	98	Impervious
	40,600	61	Weighted Average
	36,100		88.92% Pervious Area
	4,500		11.08% Impervious Area

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

Subcatchment 11: EXWS 11

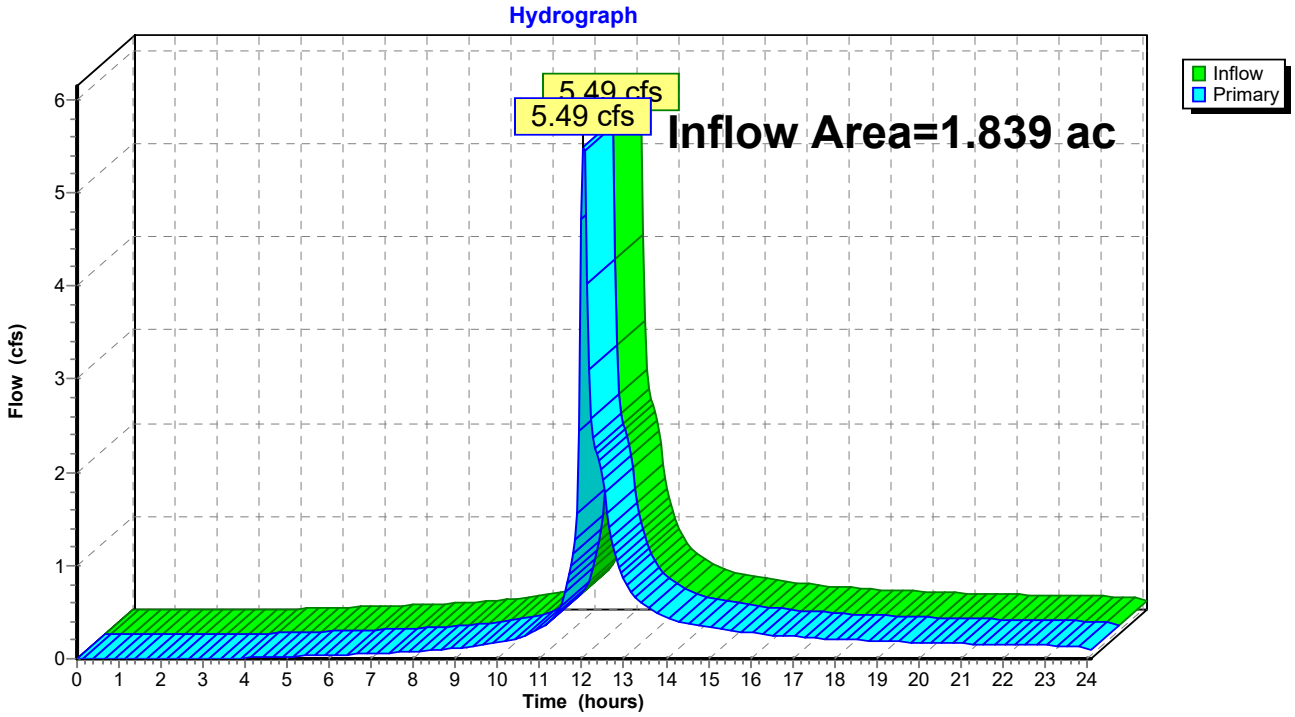


Summary for Link A: EX Site

Inflow Area = 1.839 ac, 18.10% Impervious, Inflow Depth > 3.43" for 25-yr event
Inflow = 5.49 cfs @ 12.04 hrs, Volume= 0.526 af
Primary = 5.49 cfs @ 12.04 hrs, Volume= 0.526 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link A: EX Site



Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10: EXWS 10 Runoff Area=39,500 sf 25.32% Impervious Runoff Depth>5.49"
Tc=6.0 min CN=86 Runoff=6.02 cfs 0.415 af

Subcatchment 11: EXWS 11 Runoff Area=40,600 sf 11.08% Impervious Runoff Depth>2.77"
Tc=32.1 min CN=61 Runoff=1.45 cfs 0.215 af

Link A: EX Site Inflow=6.42 cfs 0.630 af
Primary=6.42 cfs 0.630 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.630 af Average Runoff Depth = 4.11"
81.90% Pervious = 1.506 ac 18.10% Impervious = 0.333 ac

Summary for Subcatchment 10: EXWS 10

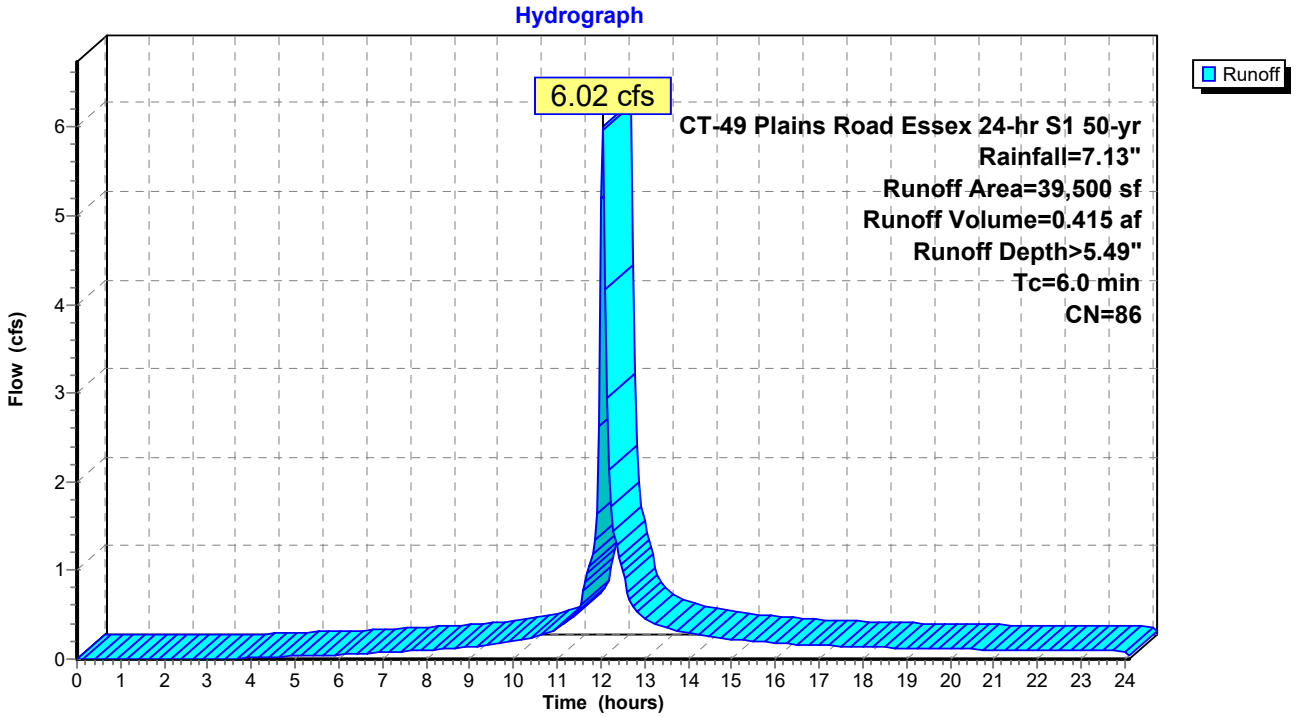
Runoff = 6.02 cfs @ 12.04 hrs, Volume= 0.415 af, Depth> 5.49"
Routed to Link A : EX Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 50-yr Rainfall=7.13"

	Area (sf)	CN	Description
	9,000	55	Woods, Good, HSG B
	1,200	61	>75% Grass cover, Good, HSG B
	19,300	96	Gravel surface, HSG B
*	10,000	98	Impervious
	39,500	86	Weighted Average
	29,500		74.68% Pervious Area
	10,000		25.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN TR-55 TC 6.0 MIN**

Subcatchment 10: EXWS 10



Summary for Subcatchment 11: EXWS 11

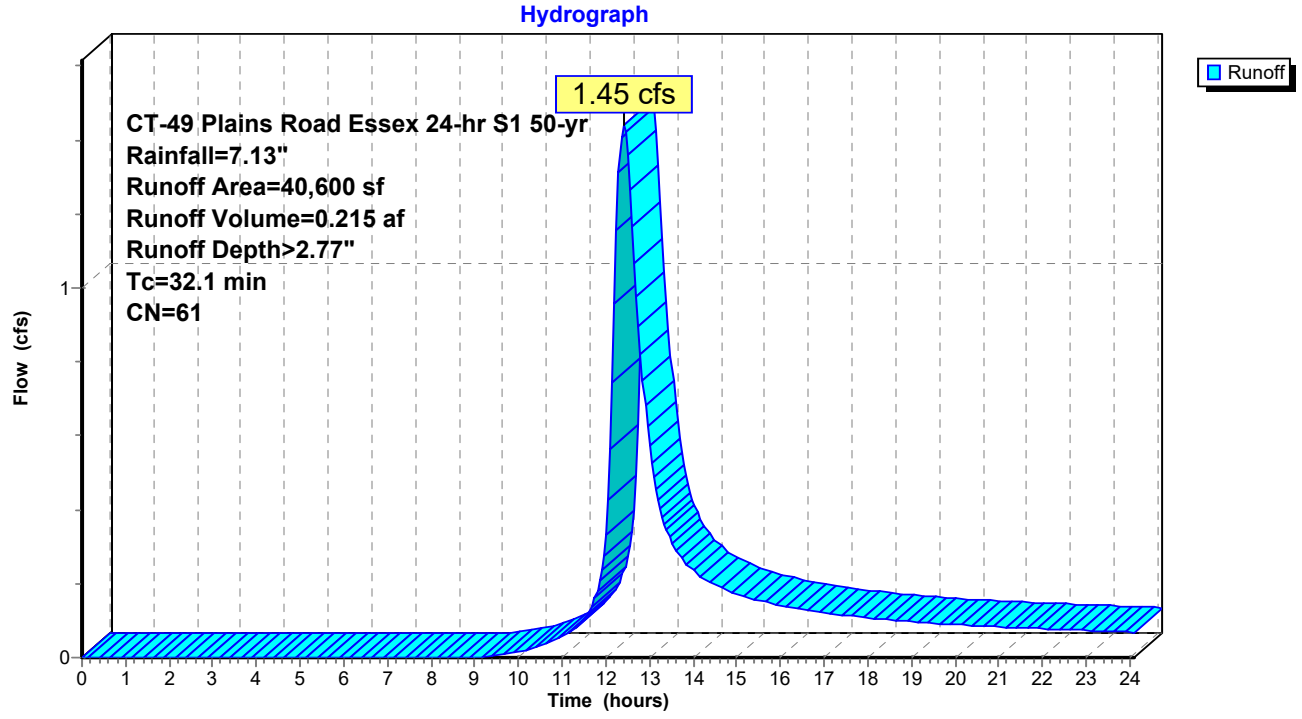
Runoff = 1.45 cfs @ 12.41 hrs, Volume= 0.215 af, Depth> 2.77"
Routed to Link A : EX Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 50-yr Rainfall=7.13"

	Area (sf)	CN	Description
	30,500	55	Woods, Good, HSG B
	5,600	61	>75% Grass cover, Good, HSG B
*	4,500	98	Impervious
	40,600	61	Weighted Average
	36,100		88.92% Pervious Area
	4,500		11.08% Impervious Area

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

Subcatchment 11: EXWS 11

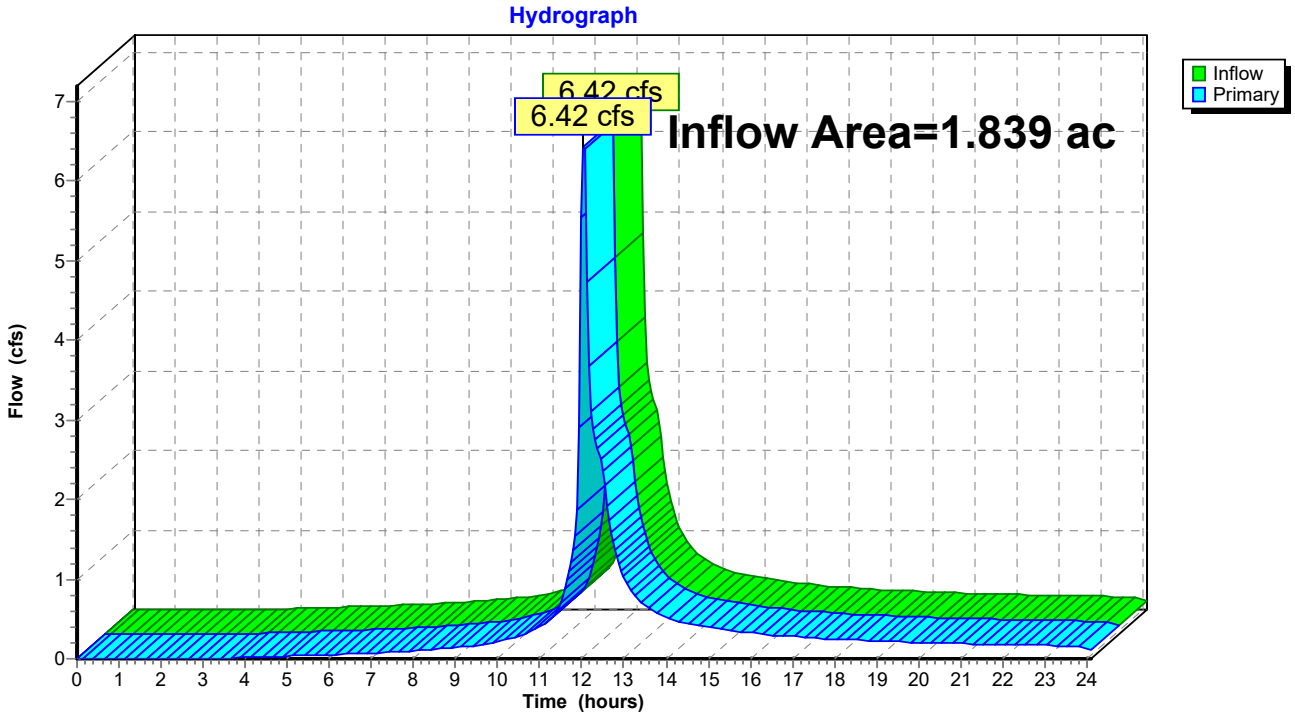


Summary for Link A: EX Site

Inflow Area = 1.839 ac, 18.10% Impervious, Inflow Depth > 4.11" for 50-yr event
Inflow = 6.42 cfs @ 12.04 hrs, Volume= 0.630 af
Primary = 6.42 cfs @ 12.04 hrs, Volume= 0.630 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link A: EX Site



Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10: EXWS 10 Runoff Area=39,500 sf 25.32% Impervious Runoff Depth>6.34"
Tc=6.0 min CN=86 Runoff=6.88 cfs 0.479 af

Subcatchment 11: EXWS 11 Runoff Area=40,600 sf 11.08% Impervious Runoff Depth>3.42"
Tc=32.1 min CN=61 Runoff=1.80 cfs 0.266 af

Link A: EX Site Inflow=7.41 cfs 0.745 af
Primary=7.41 cfs 0.745 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.745 af Average Runoff Depth = 4.86"
81.90% Pervious = 1.506 ac 18.10% Impervious = 0.333 ac

Summary for Subcatchment 10: EXWS 10

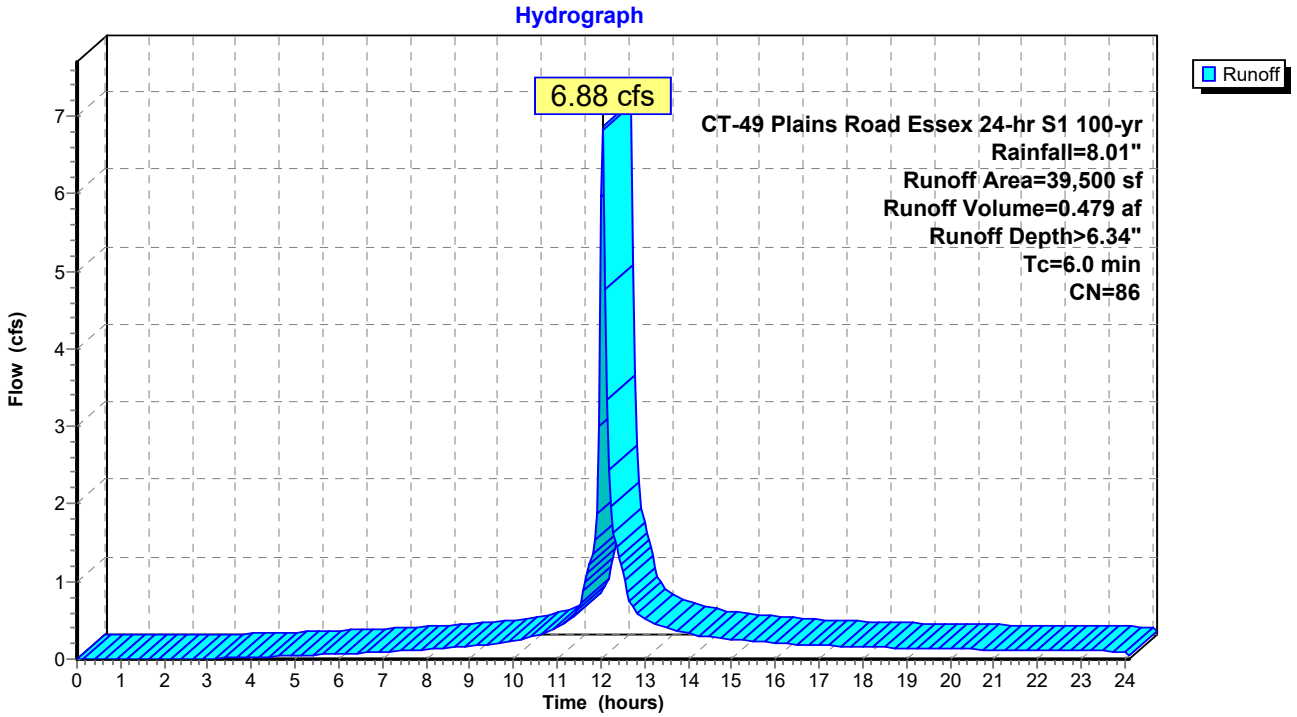
Runoff = 6.88 cfs @ 12.04 hrs, Volume= 0.479 af, Depth> 6.34"
Routed to Link A : EX Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 100-yr Rainfall=8.01"

	Area (sf)	CN	Description
	9,000	55	Woods, Good, HSG B
	1,200	61	>75% Grass cover, Good, HSG B
	19,300	96	Gravel surface, HSG B
*	10,000	98	Impervious
	39,500	86	Weighted Average
	29,500		74.68% Pervious Area
	10,000		25.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN TR-55 TC 6.0 MIN**

Subcatchment 10: EXWS 10



Summary for Subcatchment 11: EXWS 11

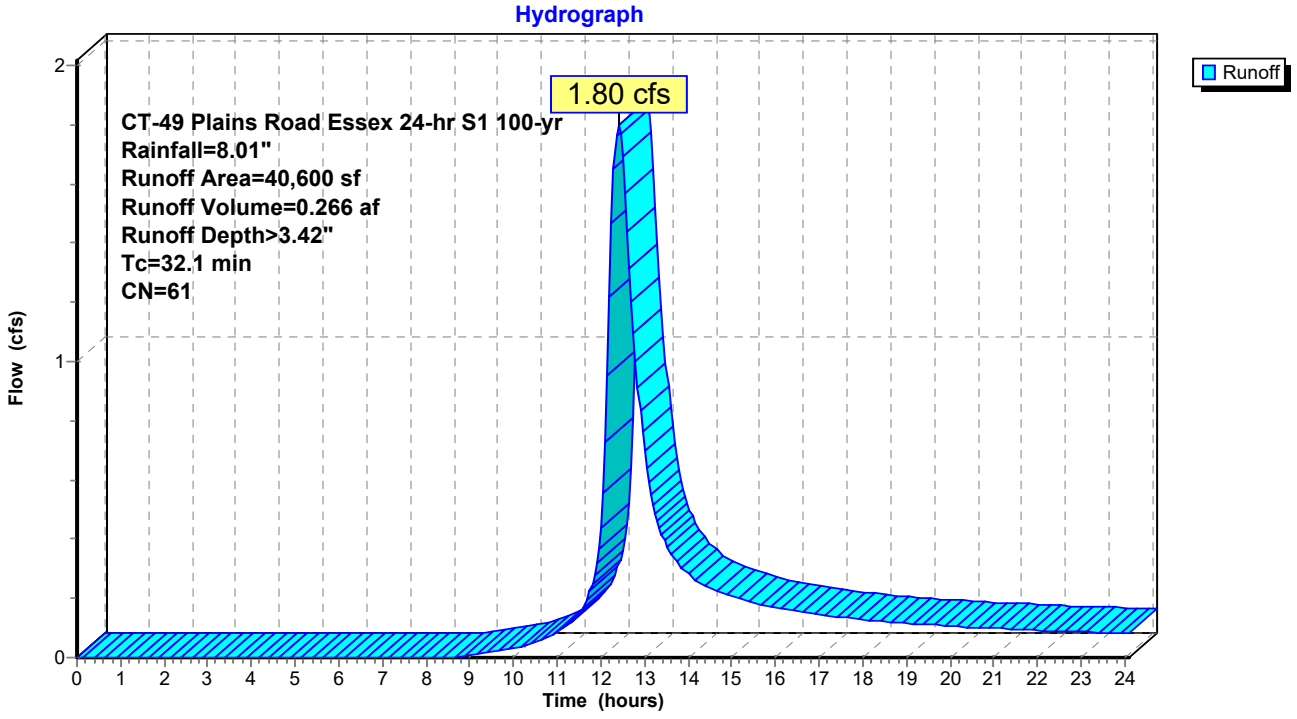
Runoff = 1.80 cfs @ 12.40 hrs, Volume= 0.266 af, Depth> 3.42"
Routed to Link A : EX Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 100-yr Rainfall=8.01"

	Area (sf)	CN	Description
	30,500	55	Woods, Good, HSG B
	5,600	61	>75% Grass cover, Good, HSG B
*	4,500	98	Impervious
	40,600	61	Weighted Average
	36,100		88.92% Pervious Area
	4,500		11.08% Impervious Area

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

Subcatchment 11: EXWS 11

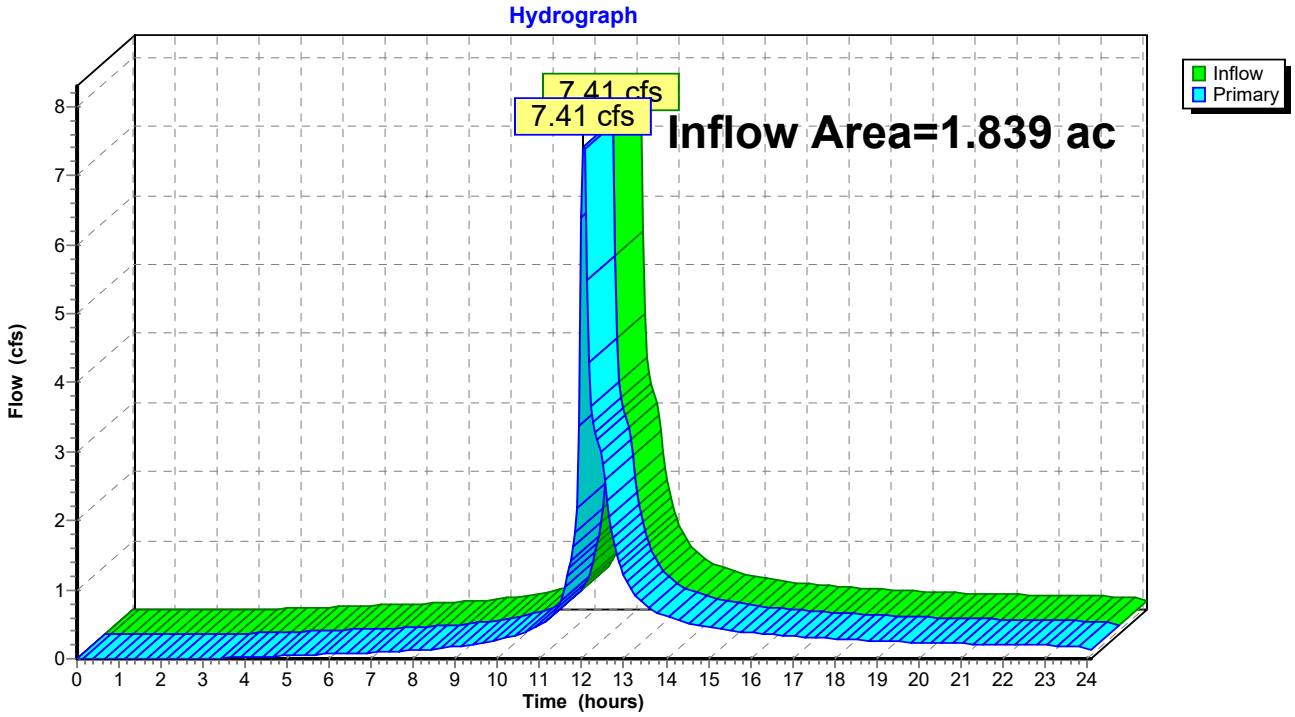


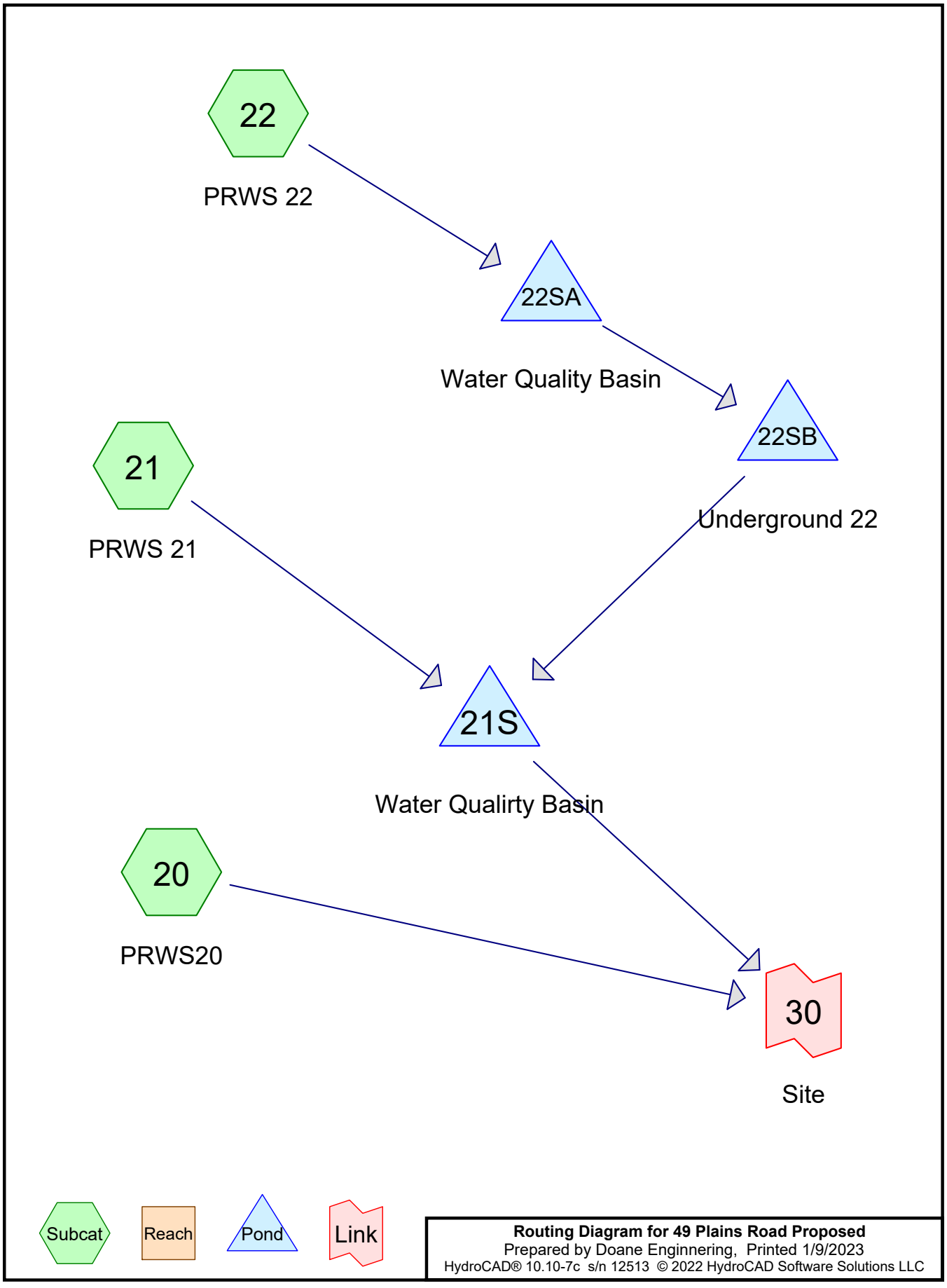
Summary for Link A: EX Site

Inflow Area = 1.839 ac, 18.10% Impervious, Inflow Depth > 4.86" for 100-yr event
Inflow = 7.41 cfs @ 12.04 hrs, Volume= 0.745 af
Primary = 7.41 cfs @ 12.04 hrs, Volume= 0.745 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link A: EX Site





Routing Diagram for 49 Plains Road Proposed
Prepared by Doane Enginnering, Printed 1/9/2023

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	CT-49 Plains Road Essex 24-hr S1	1-yr	Default	24.00	1	2.85	2
2	2-yr	CT-49 Plains Road Essex 24-hr S1	2-yr	Default	24.00	1	3.44	2
3	5-yr	CT-49 Plains Road Essex 24-hr S1	5-yr	Default	24.00	1	4.40	2
4	10-yr	CT-49 Plains Road Essex 24-hr S1	10-yr	Default	24.00	1	5.20	2
5	25-yr	CT-49 Plains Road Essex 24-hr S1	25-yr	Default	24.00	1	6.31	2
6	50-yr	CT-49 Plains Road Essex 24-hr S1	50-yr	Default	24.00	1	7.13	2
7	100-yr	CT-49 Plains Road Essex 24-hr S1	100-yr	Default	24.00	1	8.01	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.486	61	>75% Grass cover, Good, HSG B (20, 21, 22)
0.932	98	Paved parking, HSG B (21, 22)
0.341	98	Roofs, HSG B (21, 22)
0.079	55	Woods, Good, HSG B (20)
1.839	**86**	**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.486	0.000	0.000	0.000	0.486	>75% Grass cover, Good	20, 21, 22
0.000	0.932	0.000	0.000	0.000	0.932	Paved parking	21, 22
0.000	0.341	0.000	0.000	0.000	0.341	Roofs	21, 22
0.000	0.079	0.000	0.000	0.000	0.079	Woods, Good	20
0.000	**1.839**	**0.000**	**0.000**	**0.000**	**1.839**	**TOTAL AREA**	

Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 20: PRWS20 Runoff Area=5,280 sf 0.00% Impervious Runoff Depth>0.20"
Tc=6.0 min CN=57 Runoff=0.01 cfs 0.002 af

Subcatchment 21: PRWS 21 Runoff Area=41,250 sf 77.03% Impervious Runoff Depth>1.85"
Tc=6.0 min CN=90 Runoff=2.21 cfs 0.146 af

Subcatchment 22: PRWS 22 Runoff Area=33,570 sf 70.60% Impervious Runoff Depth>1.61"
Tc=6.0 min CN=87 Runoff=1.57 cfs 0.103 af

Pond 21S: Water Qualirty Basin Peak Elev=34.38' Storage=4,179 cf Inflow=2.28 cfs 0.234 af
Outflow=1.23 cfs 0.226 af

Pond 22SA: Water Quality Basin Peak Elev=37.43' Storage=1,974 cf Inflow=1.57 cfs 0.103 af
Outflow=1.61 cfs 0.103 af

Pond 22SB: Underground 22 Peak Elev=34.84' Storage=0.048 af Inflow=1.61 cfs 0.103 af
Outflow=0.09 cfs 0.088 af

Link 30: Site Inflow=1.24 cfs 0.228 af
Primary=1.24 cfs 0.228 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.251 af Average Runoff Depth = 1.64"
30.74% Pervious = 0.565 ac 69.26% Impervious = 1.274 ac

Summary for Subcatchment 20: PRWS20

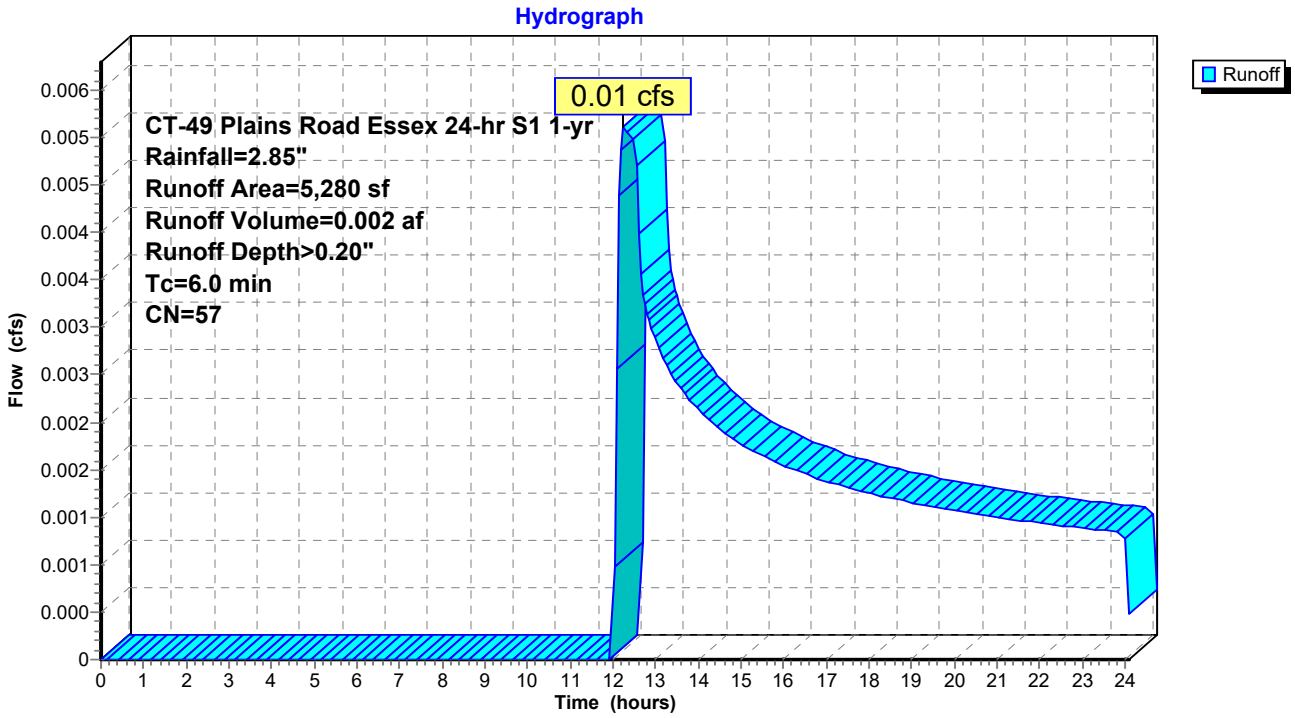
Runoff = 0.01 cfs @ 12.25 hrs, Volume= 0.002 af, Depth> 0.20"
Routed to Link 30 : Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 1-yr Rainfall=2.85"

Area (sf)	CN	Description
3,450	55	Woods, Good, HSG B
1,830	61	>75% Grass cover, Good, HSG B
5,280	57	Weighted Average
5,280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 20: PRWS20



Summary for Subcatchment 21: PRWS 21

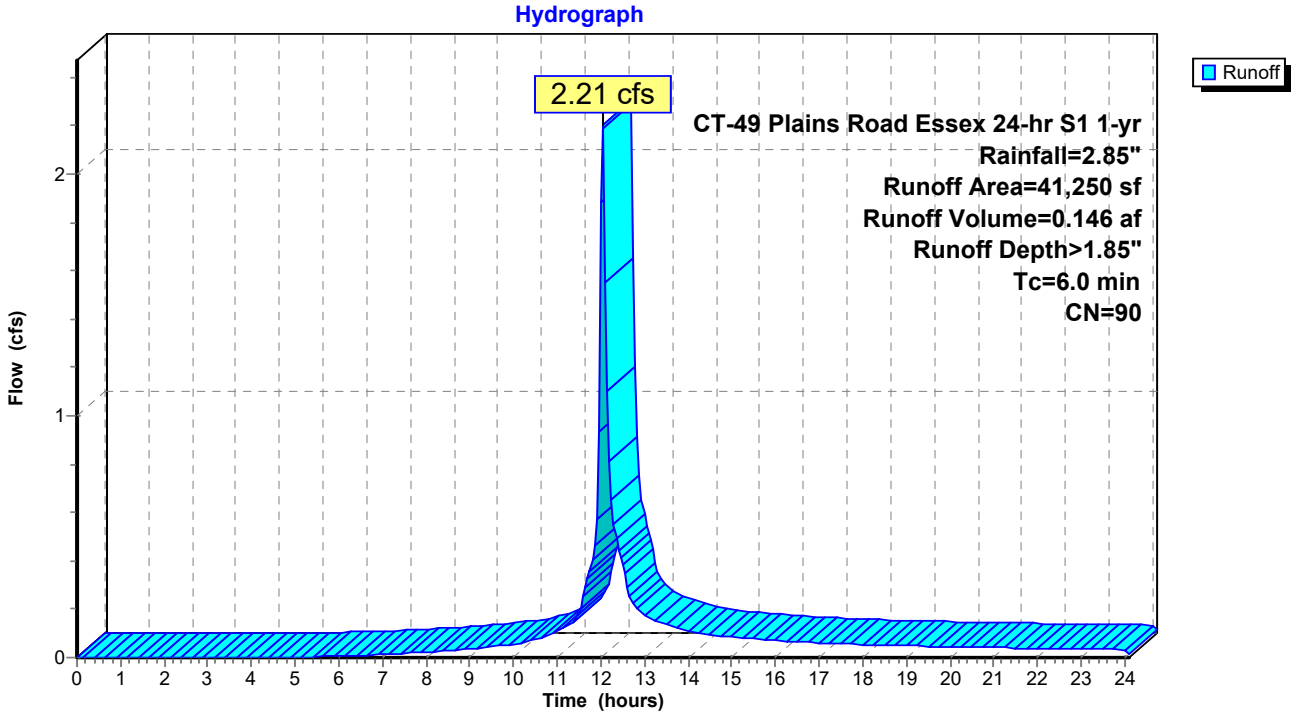
Runoff = 2.21 cfs @ 12.04 hrs, Volume= 0.146 af, Depth> 1.85"
Routed to Pond 21S : Water Qualirty Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 1-yr Rainfall=2.85"

Area (sf)	CN	Description
9,475	61	>75% Grass cover, Good, HSG B
29,400	98	Paved parking, HSG B
2,375	98	Roofs, HSG B
41,250	90	Weighted Average
9,475		22.97% Pervious Area
31,775		77.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 21: PRWS 21



Summary for Subcatchment 22: PRWS 22

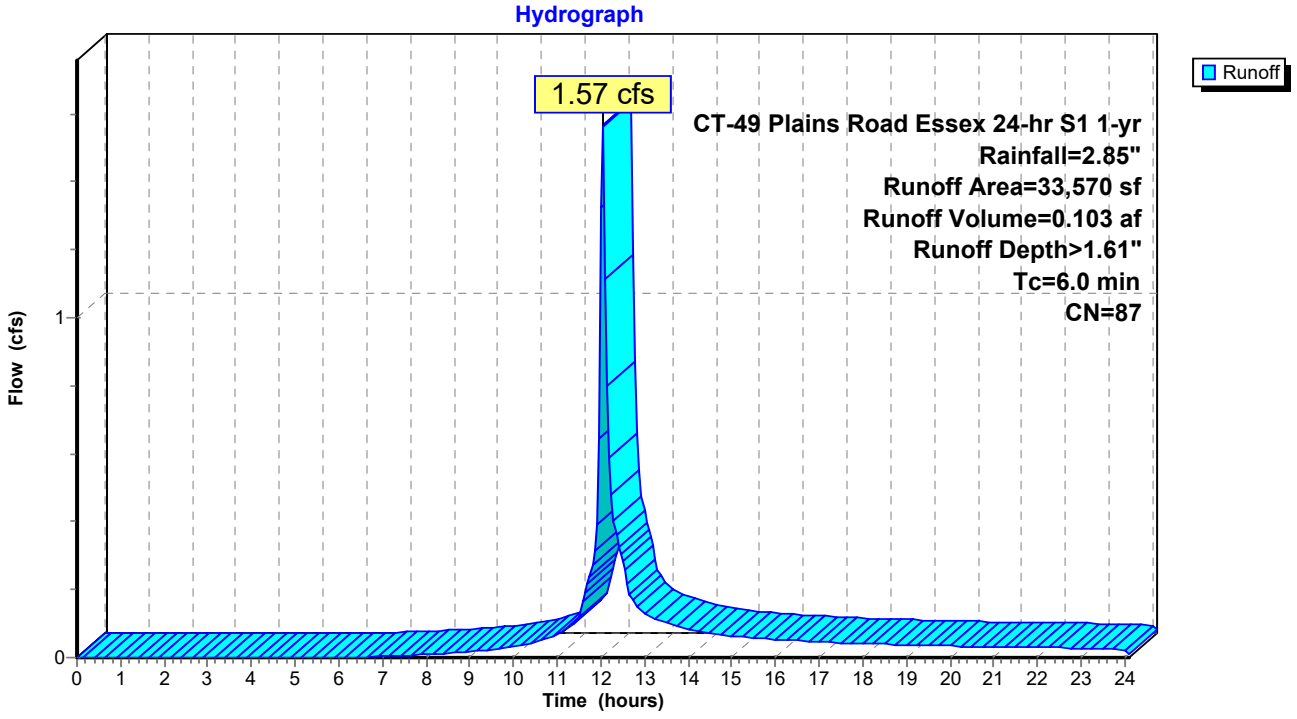
Runoff = 1.57 cfs @ 12.04 hrs, Volume= 0.103 af, Depth> 1.61"
Routed to Pond 22SA : Water Quality Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 1-yr Rainfall=2.85"

Area (sf)	CN	Description
9,870	61	>75% Grass cover, Good, HSG B
11,200	98	Paved parking, HSG B
12,500	98	Roofs, HSG B
33,570	87	Weighted Average
9,870		29.40% Pervious Area
23,700		70.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 22: PRWS 22



Summary for Pond 21S: Water Qualirty Basin

Inflow Area = 1.718 ac, 74.14% Impervious, Inflow Depth > 1.63" for 1-yr event
Inflow = 2.28 cfs @ 12.04 hrs, Volume= 0.234 af
Outflow = 1.23 cfs @ 12.15 hrs, Volume= 0.226 af, Atten= 46%, Lag= 6.6 min
Primary = 1.23 cfs @ 12.15 hrs, Volume= 0.226 af
Routed to Link 30 : Site

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 33.80' Surf.Area= 2,078 sf Storage= 2,873 cf
Peak Elev= 34.38' @ 12.15 hrs Surf.Area= 2,411 sf Storage= 4,179 cf (1,306 cf above start)

Plug-Flow detention time= 254.8 min calculated for 0.160 af (69% of inflow)
Center-of-Mass det. time= 21.7 min (928.8 - 907.1)

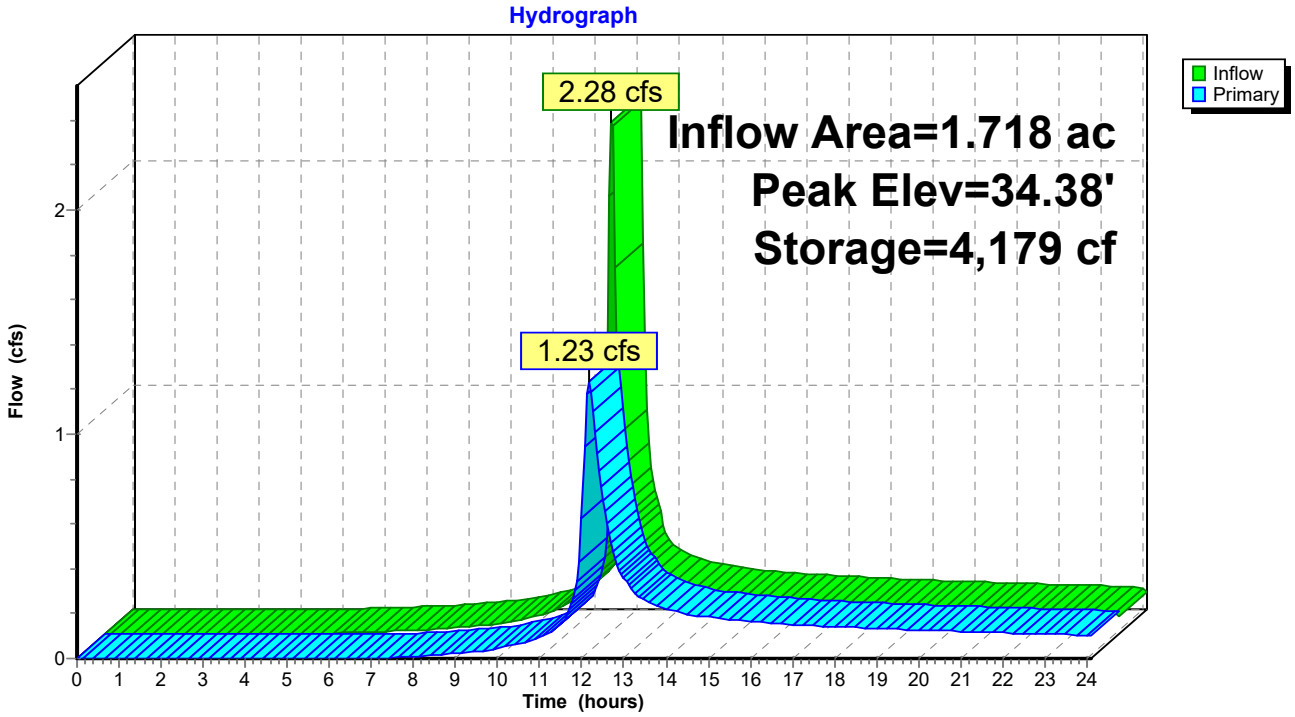
Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	5,832 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.00	1,141	239.0	0	0	1,141
33.00	1,647	259.0	1,386	1,386	1,972
34.00	2,194	263.0	1,914	3,300	2,281
34.50	2,480	289.0	1,168	4,468	3,432
35.00	2,982	391.0	1,364	5,832	8,954

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	34.60'	**10.0' long + 0.5 '/' SideZ x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=1.23 cfs @ 12.15 hrs HW=34.38' (Free Discharge)
1=Orifice/Grate (Orifice Controls 1.23 cfs @ 2.60 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 21S: Water Qualirty Basin



Summary for Pond 22SA: Water Quality Basin

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 1.61" for 1-yr event
Inflow = 1.57 cfs @ 12.04 hrs, Volume= 0.103 af
Outflow = 1.61 cfs @ 12.05 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.4 min
Primary = 1.61 cfs @ 12.05 hrs, Volume= 0.103 af
Routed to Pond 22SB : Underground 22

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 37.40' Surf.Area= 1,493 sf Storage= 1,924 cf
Peak Elev= 37.43' @ 12.05 hrs Surf.Area= 1,513 sf Storage= 1,974 cf (50 cf above start)

Plug-Flow detention time= 250.0 min calculated for 0.059 af (57% of inflow)
Center-of-Mass det. time= 0.6 min (844.4 - 843.8)

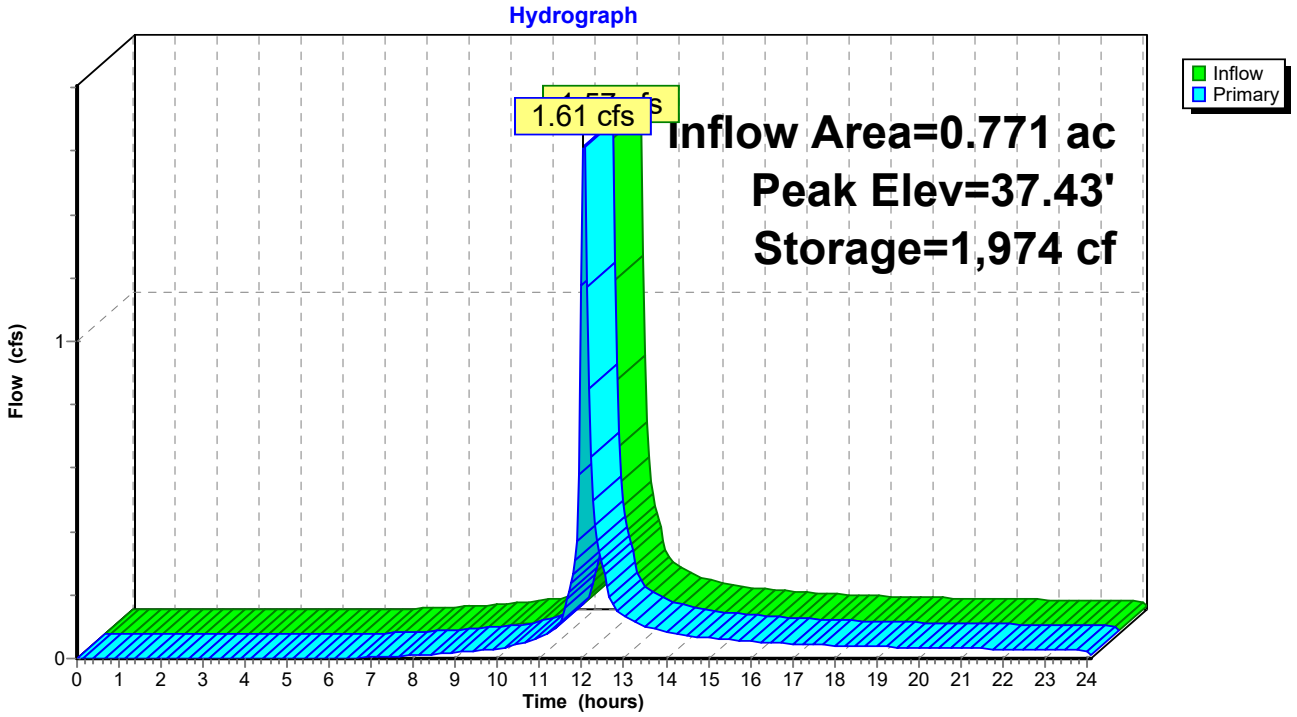
Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	2,076 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	175	238.0	0	0	175
36.00	700	264.0	408	408	1,244
37.00	1,259	291.0	966	1,374	2,468
37.50	1,554	298.0	702	2,076	2,828

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	**2.4" x 4.0" Horiz. Orifice/Grate X 8.00 columns** X 9 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.54 cfs @ 12.05 hrs HW=37.43' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 1.54 cfs @ 0.60 fps)

Pond 22SA: Water Quality Basin



Summary for Pond 22SB: Underground 22

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 1.61" for 1-yr event
Inflow = 1.61 cfs @ 12.05 hrs, Volume= 0.103 af
Outflow = 0.09 cfs @ 13.75 hrs, Volume= 0.088 af, Atten= 94%, Lag= 102.1 min
Primary = 0.09 cfs @ 13.75 hrs, Volume= 0.088 af
Routed to Pond 21S : Water Qualirty Basin

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Peak Elev= 34.84' @ 13.75 hrs Surf.Area= 0.113 ac Storage= 0.048 af

Plug-Flow detention time= 267.0 min calculated for 0.088 af (85% of inflow)
Center-of-Mass det. time= 194.3 min (1,038.6 - 844.4)

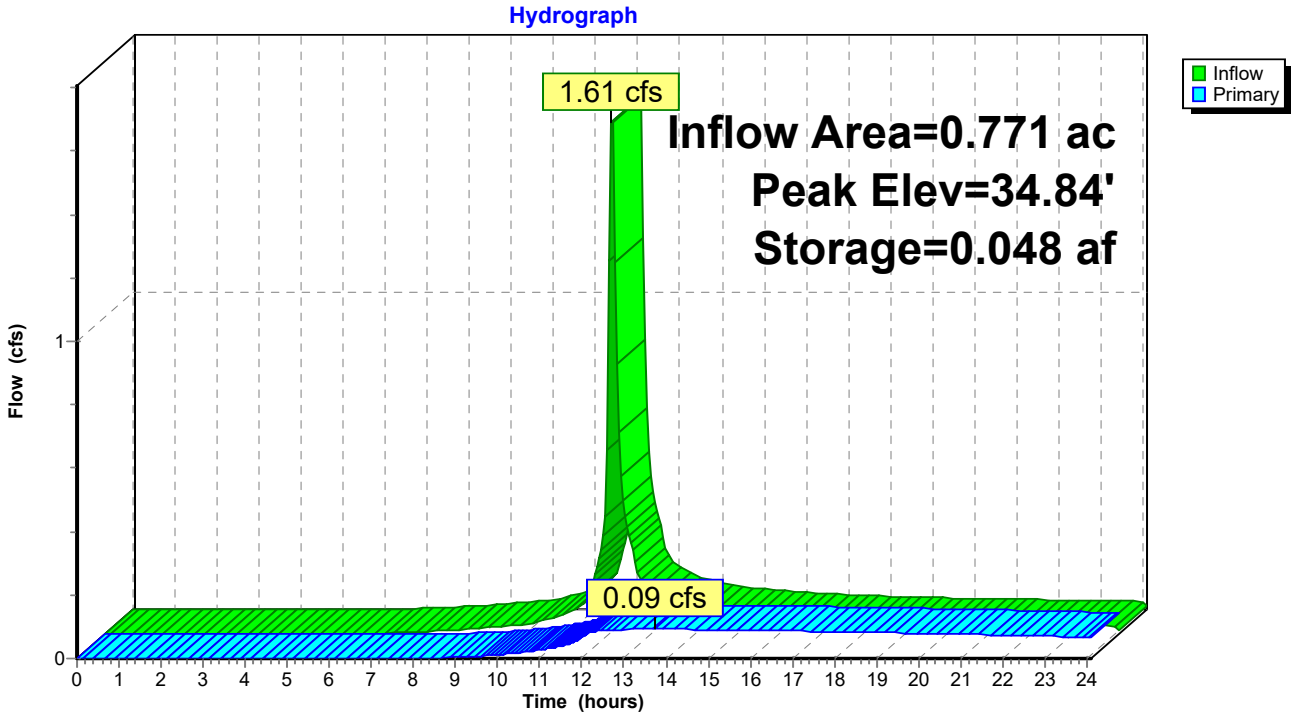
Volume	Invert	Avail.Storage	Storage Description
#1A	34.00'	0.076 af	**39.50'W x 124.66'L x 3.50'H Field A** 0.396 af Overall - 0.143 af Embedded = 0.252 af x 30.0% Voids
#2A	34.50'	0.143 af	**ADS_StormTech SC-740 +Cap** x 136 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 136 Chambers in 8 Rows
		0.219 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	36.90'	**4.0' long + 1.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.09 cfs @ 13.75 hrs HW=34.84' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.09 cfs @ 4.20 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 22SB: Underground 22

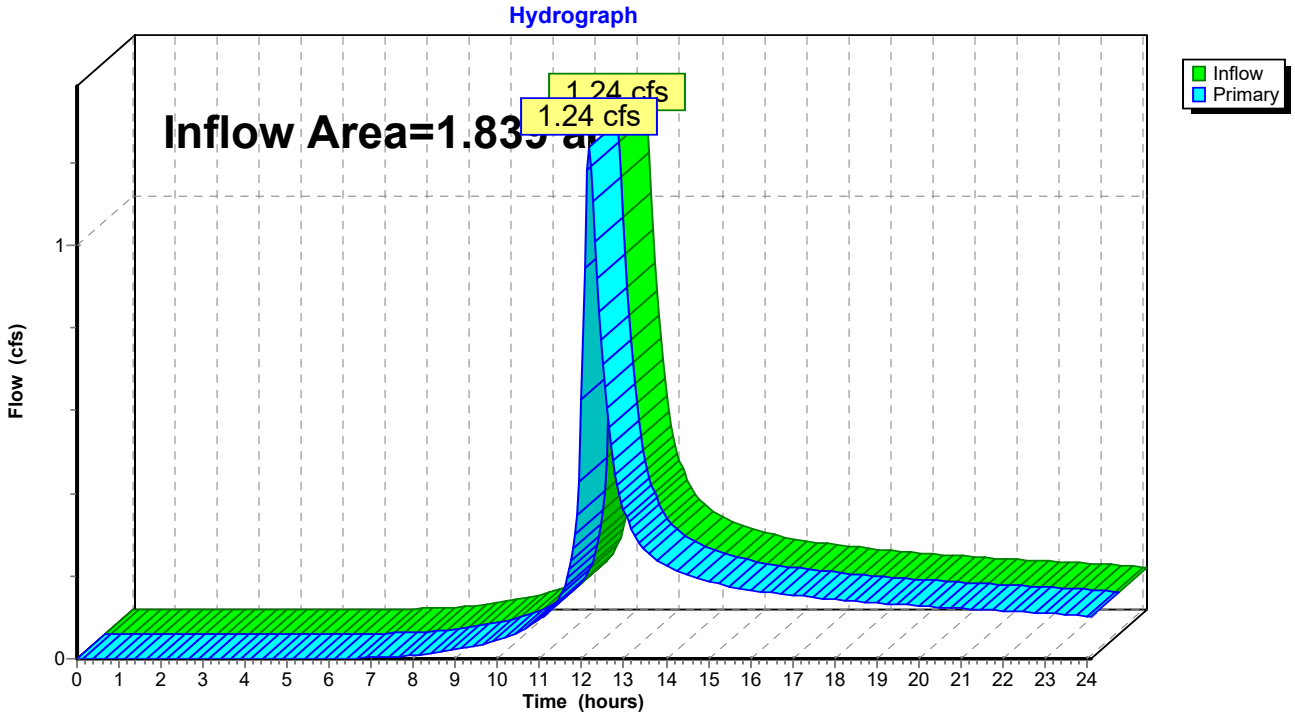


Summary for Link 30: Site

Inflow Area = 1.839 ac, 69.26% Impervious, Inflow Depth > 1.49" for 1-yr event
Inflow = 1.24 cfs @ 12.15 hrs, Volume= 0.228 af
Primary = 1.24 cfs @ 12.15 hrs, Volume= 0.228 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link 30: Site



Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 20: PRWS20 Runoff Area=5,280 sf 0.00% Impervious Runoff Depth>0.39"
Tc=6.0 min CN=57 Runoff=0.02 cfs 0.004 af

Subcatchment 21: PRWS 21 Runoff Area=41,250 sf 77.03% Impervious Runoff Depth>2.39"
Tc=6.0 min CN=90 Runoff=2.82 cfs 0.189 af

Subcatchment 22: PRWS 22 Runoff Area=33,570 sf 70.60% Impervious Runoff Depth>2.13"
Tc=6.0 min CN=87 Runoff=2.06 cfs 0.137 af

Pond 21S: Water Qualirty Basin Peak Elev=34.49' Storage=4,435 cf Inflow=2.90 cfs 0.293 af
Outflow=1.62 cfs 0.285 af

Pond 22SA: Water Quality Basin Peak Elev=37.44' Storage=1,984 cf Inflow=2.06 cfs 0.137 af
Outflow=2.09 cfs 0.137 af

Pond 22SB: Underground 22 Peak Elev=35.05' Storage=0.067 af Inflow=2.09 cfs 0.137 af
Outflow=0.10 cfs 0.104 af

Link 30: Site Inflow=1.64 cfs 0.289 af
Primary=1.64 cfs 0.289 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.329 af Average Runoff Depth = 2.15"
30.74% Pervious = 0.565 ac 69.26% Impervious = 1.274 ac

Summary for Subcatchment 20: PRWS20

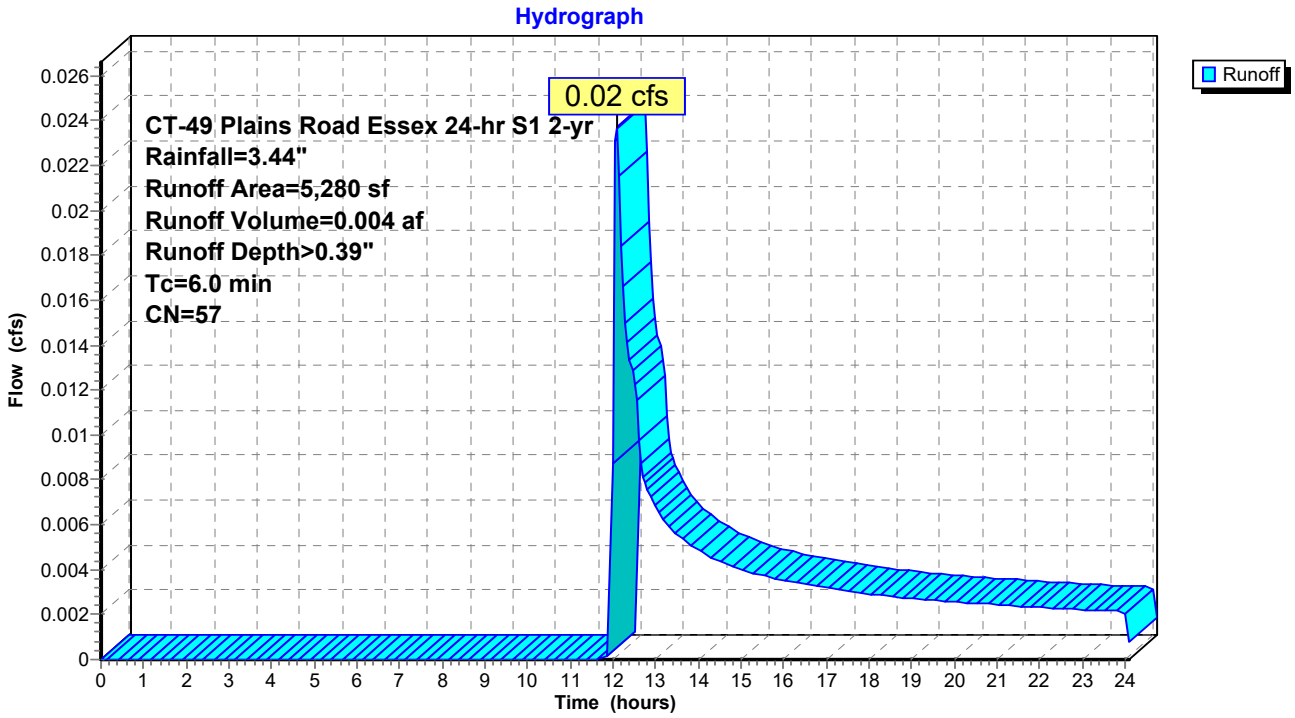
Runoff = 0.02 cfs @ 12.09 hrs, Volume= 0.004 af, Depth> 0.39"
Routed to Link 30 : Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 2-yr Rainfall=3.44"

Area (sf)	CN	Description
3,450	55	Woods, Good, HSG B
1,830	61	>75% Grass cover, Good, HSG B
5,280	57	Weighted Average
5,280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Mln. TR-55 TC**

Subcatchment 20: PRWS20



Summary for Subcatchment 21: PRWS 21

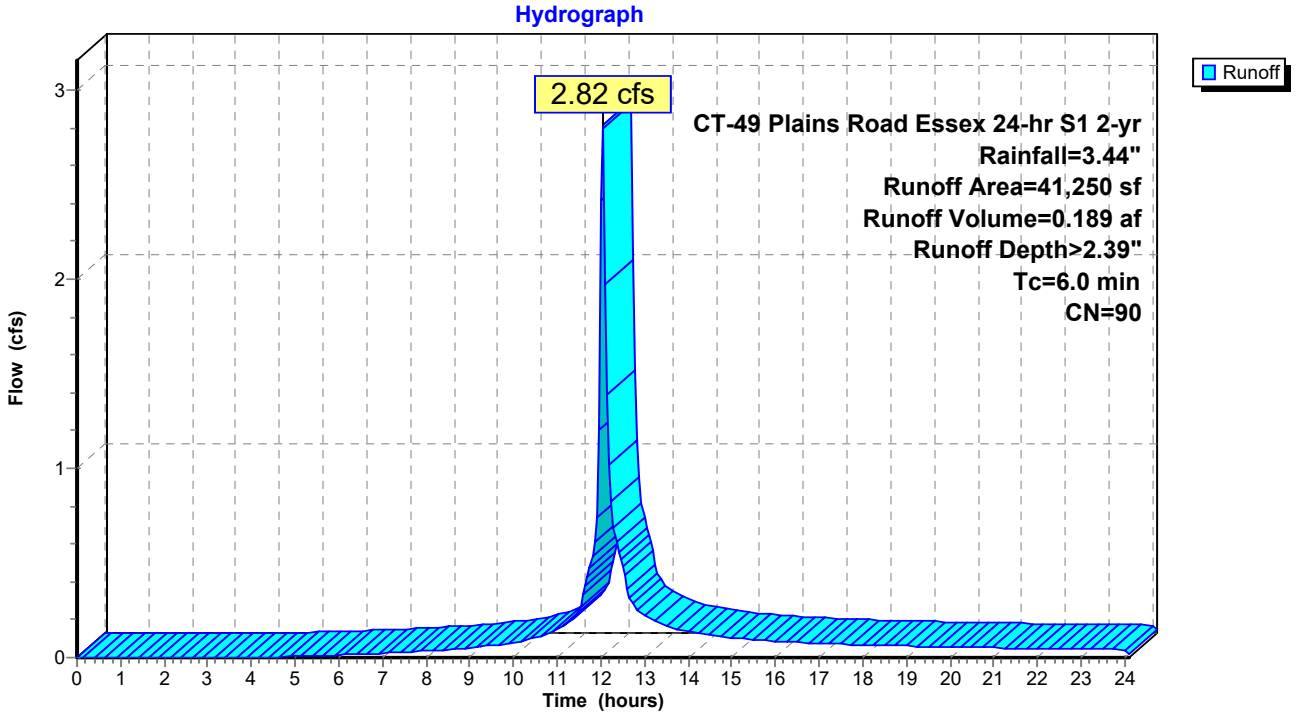
Runoff = 2.82 cfs @ 12.04 hrs, Volume= 0.189 af, Depth> 2.39"
Routed to Pond 21S : Water Qualirty Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 2-yr Rainfall=3.44"

Area (sf)	CN	Description
9,475	61	>75% Grass cover, Good, HSG B
29,400	98	Paved parking, HSG B
2,375	98	Roofs, HSG B
41,250	90	Weighted Average
9,475		22.97% Pervious Area
31,775		77.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 21: PRWS 21



Summary for Subcatchment 22: PRWS 22

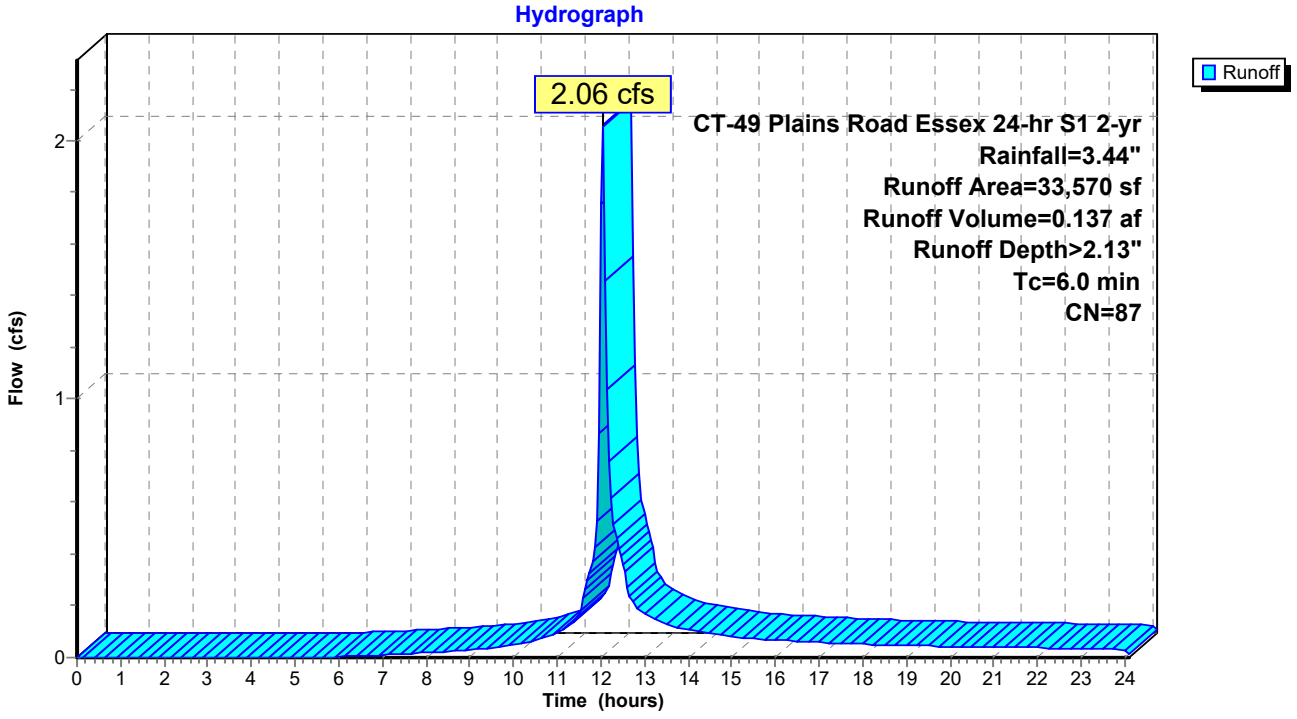
Runoff = 2.06 cfs @ 12.04 hrs, Volume= 0.137 af, Depth> 2.13"
Routed to Pond 22SA : Water Quality Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 2-yr Rainfall=3.44"

Area (sf)	CN	Description
9,870	61	>75% Grass cover, Good, HSG B
11,200	98	Paved parking, HSG B
12,500	98	Roofs, HSG B
33,570	87	Weighted Average
9,870		29.40% Pervious Area
23,700		70.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 22: PRWS 22



Summary for Pond 21S: Water Qualirty Basin

Inflow Area = 1.718 ac, 74.14% Impervious, Inflow Depth > 2.05" for 2-yr event
Inflow = 2.90 cfs @ 12.04 hrs, Volume= 0.293 af
Outflow = 1.62 cfs @ 12.14 hrs, Volume= 0.285 af, Atten= 44%, Lag= 6.2 min
Primary = 1.62 cfs @ 12.14 hrs, Volume= 0.285 af
Routed to Link 30 : Site

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 33.80' Surf.Area= 2,078 sf Storage= 2,873 cf
Peak Elev= 34.49' @ 12.14 hrs Surf.Area= 2,472 sf Storage= 4,435 cf (1,562 cf above start)

Plug-Flow detention time= 211.8 min calculated for 0.218 af (75% of inflow)
Center-of-Mass det. time= 20.1 min (914.7 - 894.6)

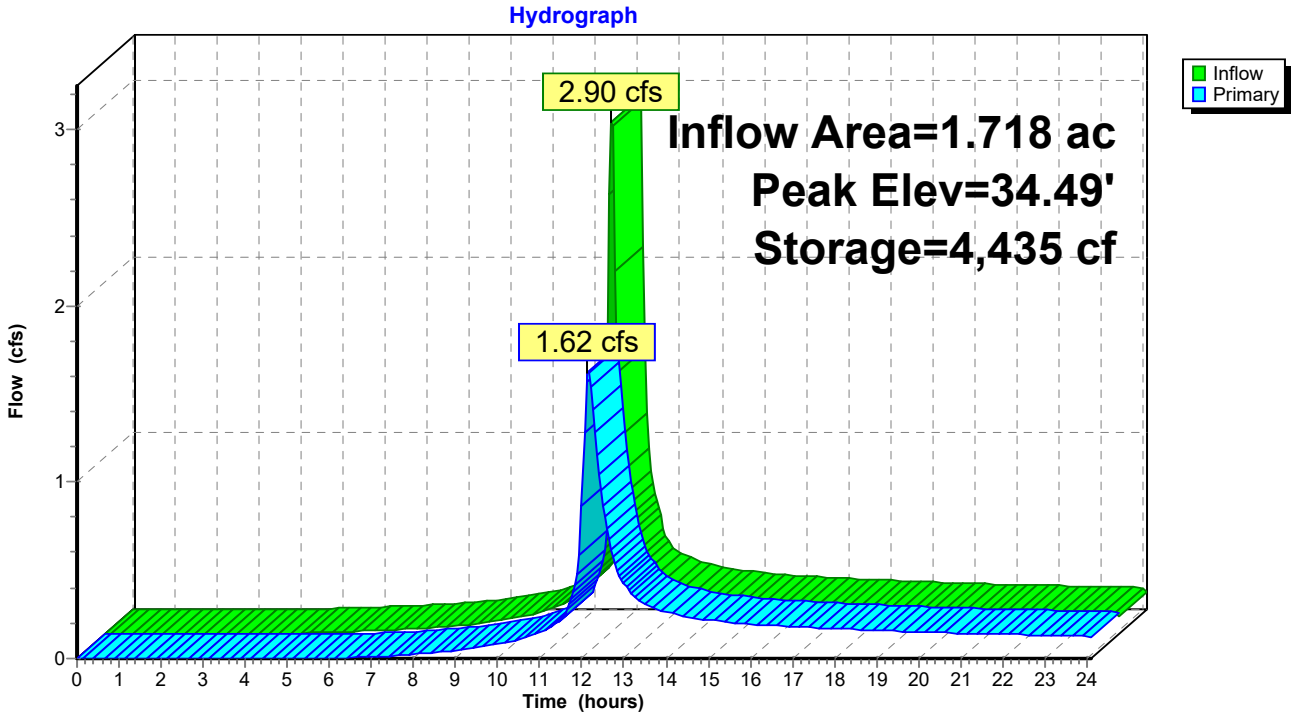
Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	5,832 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.00	1,141	239.0	0	0	1,141
33.00	1,647	259.0	1,386	1,386	1,972
34.00	2,194	263.0	1,914	3,300	2,281
34.50	2,480	289.0	1,168	4,468	3,432
35.00	2,982	391.0	1,364	5,832	8,954

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	34.60'	**10.0' long + 0.5 '/' SideZ x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=1.62 cfs @ 12.14 hrs HW=34.48' (Free Discharge)
1=Orifice/Grate (Orifice Controls 1.62 cfs @ 2.82 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 21S: Water Qualirty Basin



Summary for Pond 22SA: Water Quality Basin

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 2.13" for 2-yr event
Inflow = 2.06 cfs @ 12.04 hrs, Volume= 0.137 af
Outflow = 2.09 cfs @ 12.05 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.4 min
Primary = 2.09 cfs @ 12.05 hrs, Volume= 0.137 af
Routed to Pond 22SB : Underground 22

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 37.40' Surf.Area= 1,493 sf Storage= 1,924 cf
Peak Elev= 37.44' @ 12.05 hrs Surf.Area= 1,517 sf Storage= 1,984 cf (60 cf above start)

Plug-Flow detention time= 199.4 min calculated for 0.092 af (68% of inflow)
Center-of-Mass det. time= 0.6 min (834.4 - 833.9)

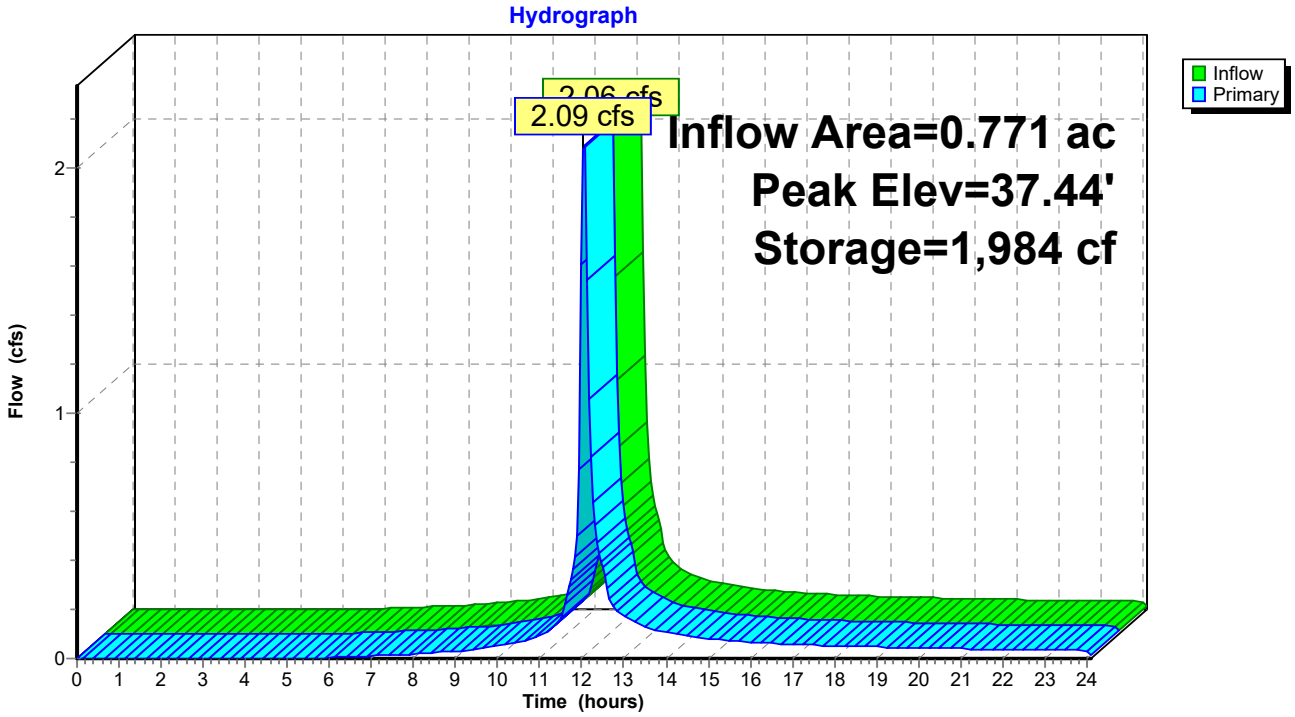
Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	2,076 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	175	238.0	0	0	175
36.00	700	264.0	408	408	1,244
37.00	1,259	291.0	966	1,374	2,468
37.50	1,554	298.0	702	2,076	2,828

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	**2.4" x 4.0" Horiz. Orifice/Grate X 8.00 columns** X 9 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.00 cfs @ 12.05 hrs HW=37.44' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 2.00 cfs @ 0.65 fps)

Pond 22SA: Water Quality Basin



Summary for Pond 22SB: Underground 22

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 2.13" for 2-yr event
Inflow = 2.09 cfs @ 12.05 hrs, Volume= 0.137 af
Outflow = 0.10 cfs @ 14.10 hrs, Volume= 0.104 af, Atten= 95%, Lag= 122.9 min
Primary = 0.10 cfs @ 14.10 hrs, Volume= 0.104 af
Routed to Pond 21S : Water Qualirty Basin

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Peak Elev= 35.05' @ 14.10 hrs Surf.Area= 0.113 ac Storage= 0.067 af

Plug-Flow detention time= 297.9 min calculated for 0.104 af (76% of inflow)
Center-of-Mass det. time= 197.5 min (1,031.9 - 834.4)

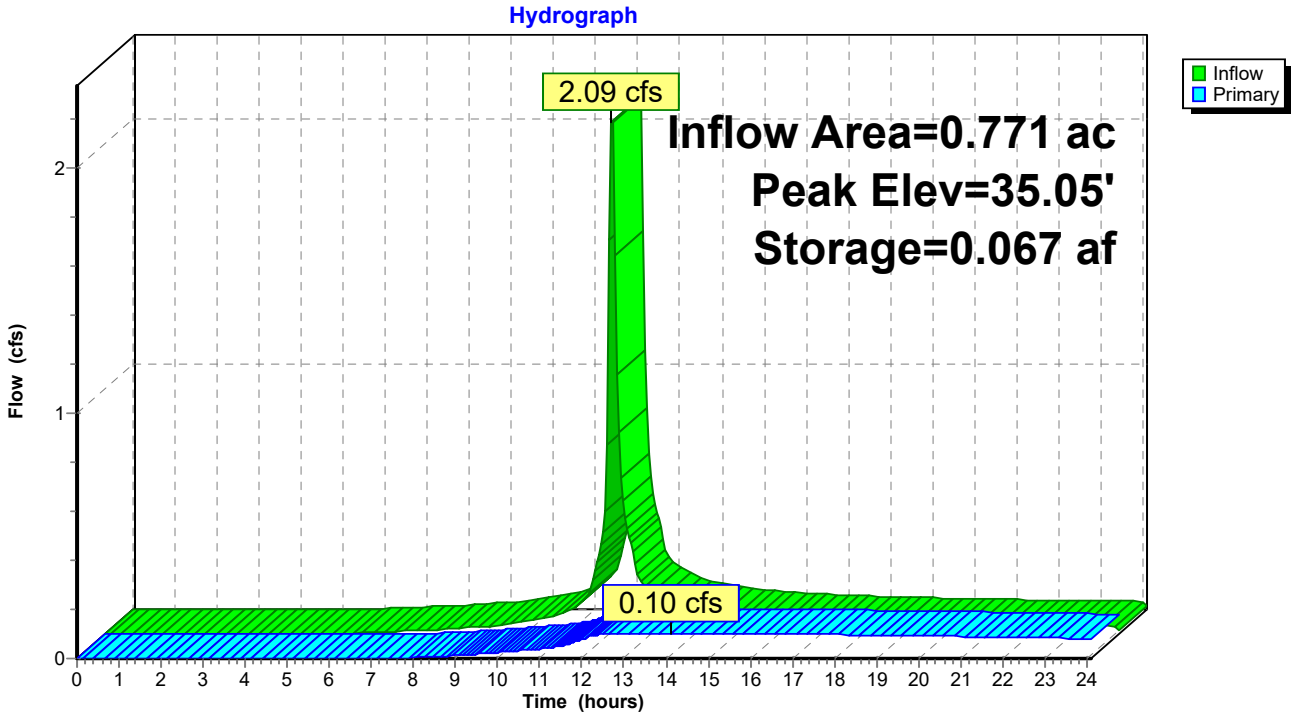
Volume	Invert	Avail.Storage	Storage Description
#1A	34.00'	0.076 af	**39.50'W x 124.66'L x 3.50'H Field A** 0.396 af Overall - 0.143 af Embedded = 0.252 af x 30.0% Voids
#2A	34.50'	0.143 af	**ADS_StormTech SC-740 +Cap** x 136 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 136 Chambers in 8 Rows
		0.219 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	36.90'	**4.0' long + 1.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.10 cfs @ 14.10 hrs HW=35.05' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.10 cfs @ 4.74 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 22SB: Underground 22

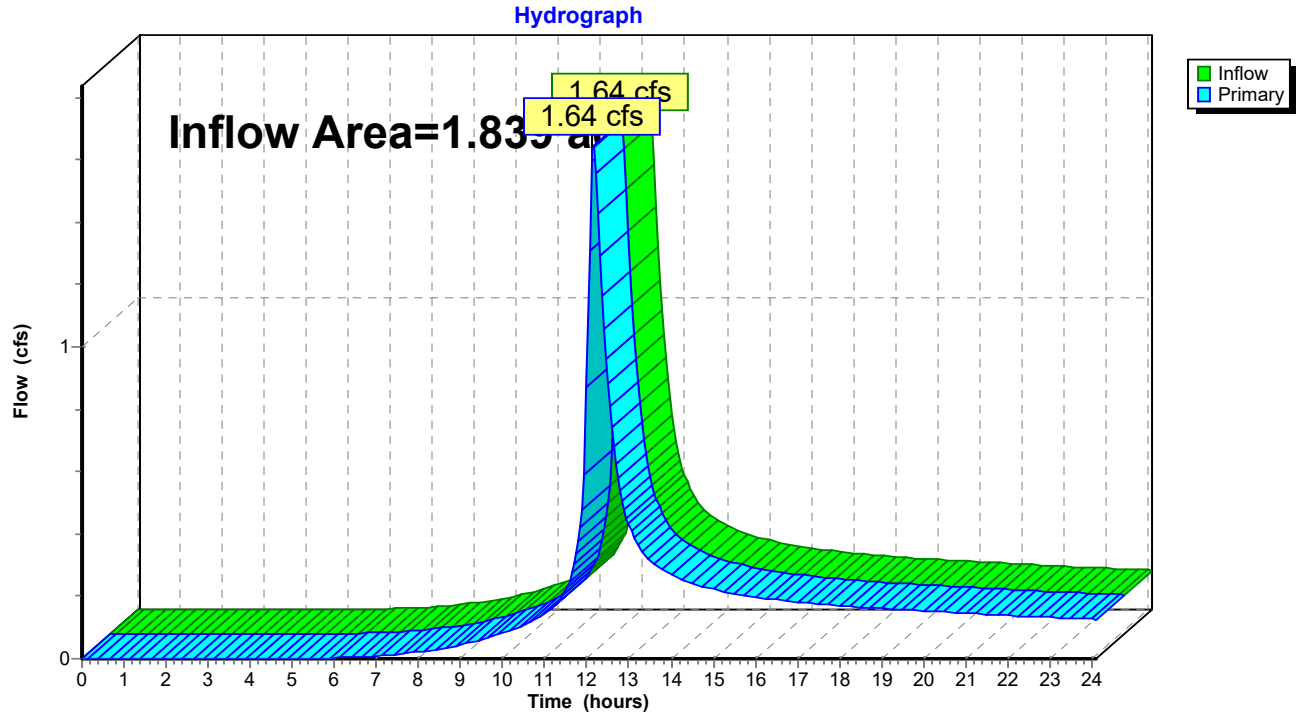


Summary for Link 30: Site

Inflow Area = 1.839 ac, 69.26% Impervious, Inflow Depth > 1.88" for 2-yr event
Inflow = 1.64 cfs @ 12.14 hrs, Volume= 0.289 af
Primary = 1.64 cfs @ 12.14 hrs, Volume= 0.289 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link 30: Site



Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 20: PRWS20 Runoff Area=5,280 sf 0.00% Impervious Runoff Depth>0.80"
Tc=6.0 min CN=57 Runoff=0.09 cfs 0.008 af

Subcatchment 21: PRWS 21 Runoff Area=41,250 sf 77.03% Impervious Runoff Depth>3.30"
Tc=6.0 min CN=90 Runoff=3.83 cfs 0.260 af

Subcatchment 22: PRWS 22 Runoff Area=33,570 sf 70.60% Impervious Runoff Depth>3.01"
Tc=6.0 min CN=87 Runoff=2.88 cfs 0.193 af

Pond 21S: Water Qualirty Basin Peak Elev=34.64' Storage=4,815 cf Inflow=3.92 cfs 0.390 af
Outflow=2.35 cfs 0.381 af

Pond 22SA: Water Quality Basin Peak Elev=37.45' Storage=2,001 cf Inflow=2.88 cfs 0.193 af
Outflow=2.89 cfs 0.193 af

Pond 22SB: Underground 22 Peak Elev=35.44' Storage=0.100 af Inflow=2.89 cfs 0.193 af
Outflow=0.12 cfs 0.130 af

Link 30: Site Inflow=2.42 cfs 0.389 af
Primary=2.42 cfs 0.389 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.461 af Average Runoff Depth = 3.01"
30.74% Pervious = 0.565 ac 69.26% Impervious = 1.274 ac

Summary for Subcatchment 20: PRWS20

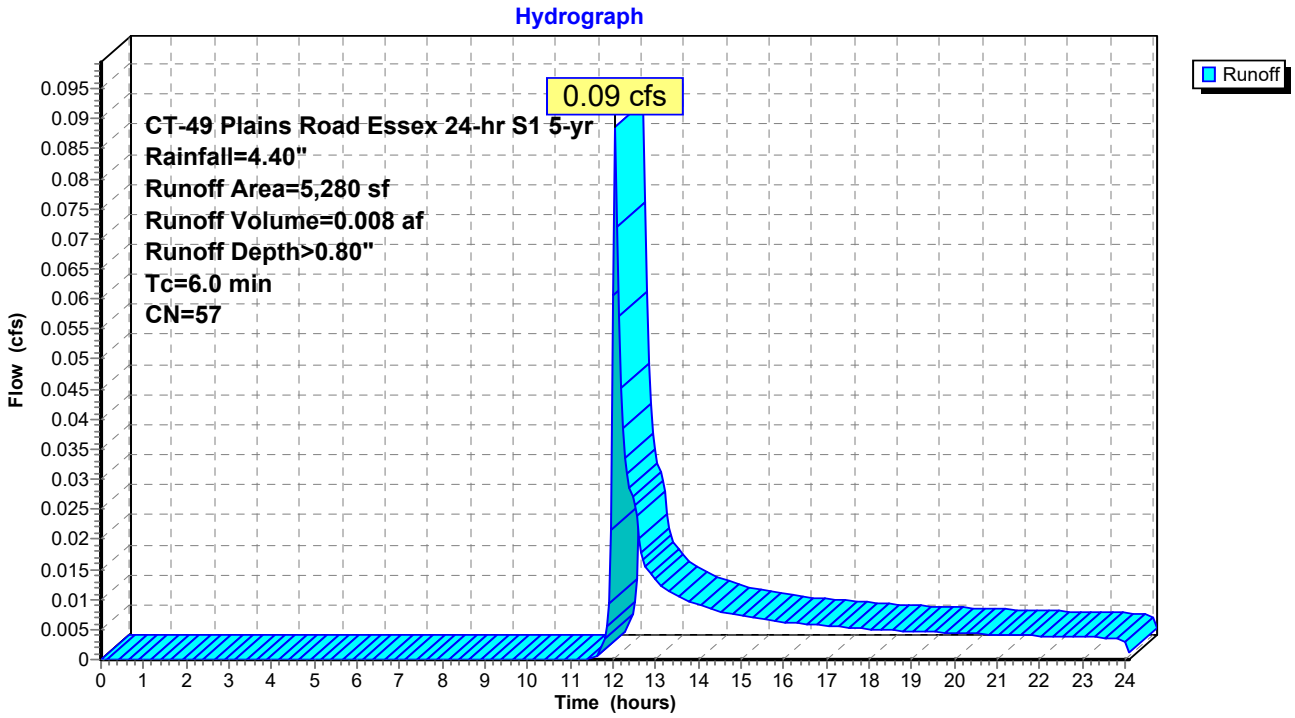
Runoff = 0.09 cfs @ 12.06 hrs, Volume= 0.008 af, Depth> 0.80"
Routed to Link 30 : Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 5-yr Rainfall=4.40"

Area (sf)	CN	Description
3,450	55	Woods, Good, HSG B
1,830	61	>75% Grass cover, Good, HSG B
5,280	57	Weighted Average
5,280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Mln. TR-55 TC**

Subcatchment 20: PRWS20



Summary for Subcatchment 21: PRWS 21

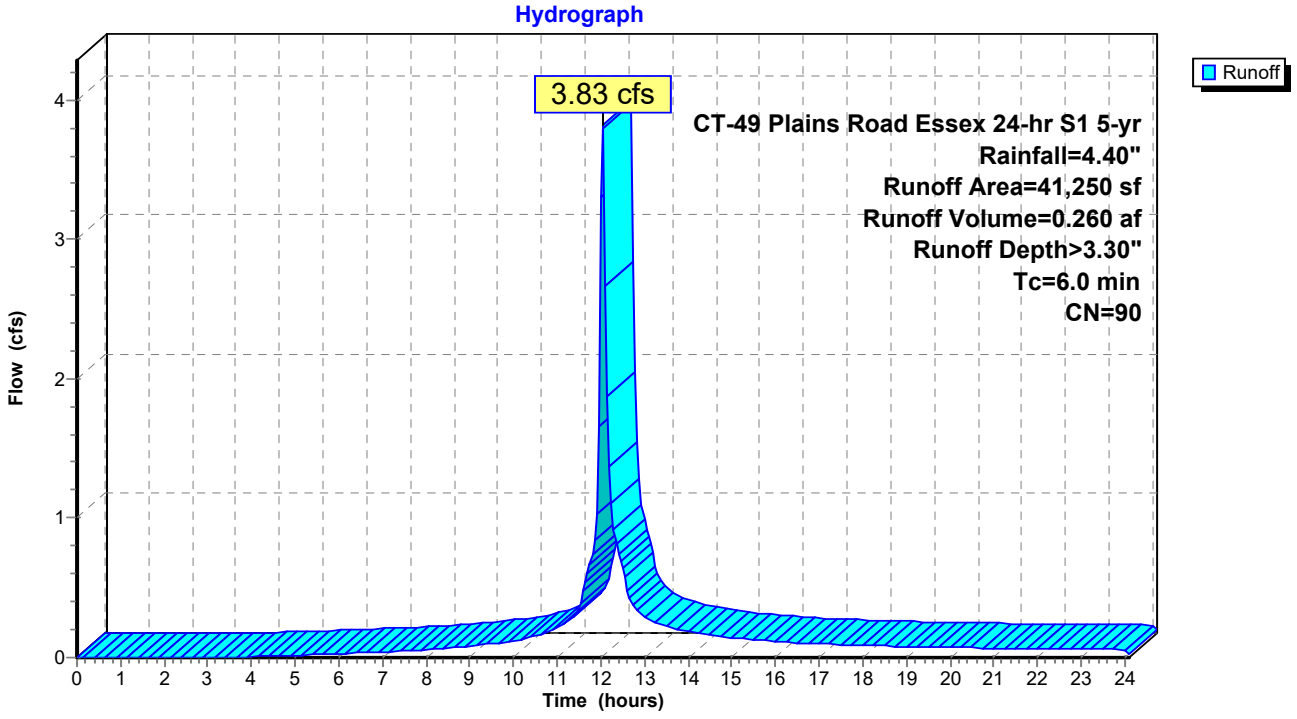
Runoff = 3.83 cfs @ 12.04 hrs, Volume= 0.260 af, Depth> 3.30"
Routed to Pond 21S : Water Qualirty Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 5-yr Rainfall=4.40"

Area (sf)	CN	Description
9,475	61	>75% Grass cover, Good, HSG B
29,400	98	Paved parking, HSG B
2,375	98	Roofs, HSG B
41,250	90	Weighted Average
9,475		22.97% Pervious Area
31,775		77.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 21: PRWS 21



Summary for Subcatchment 22: PRWS 22

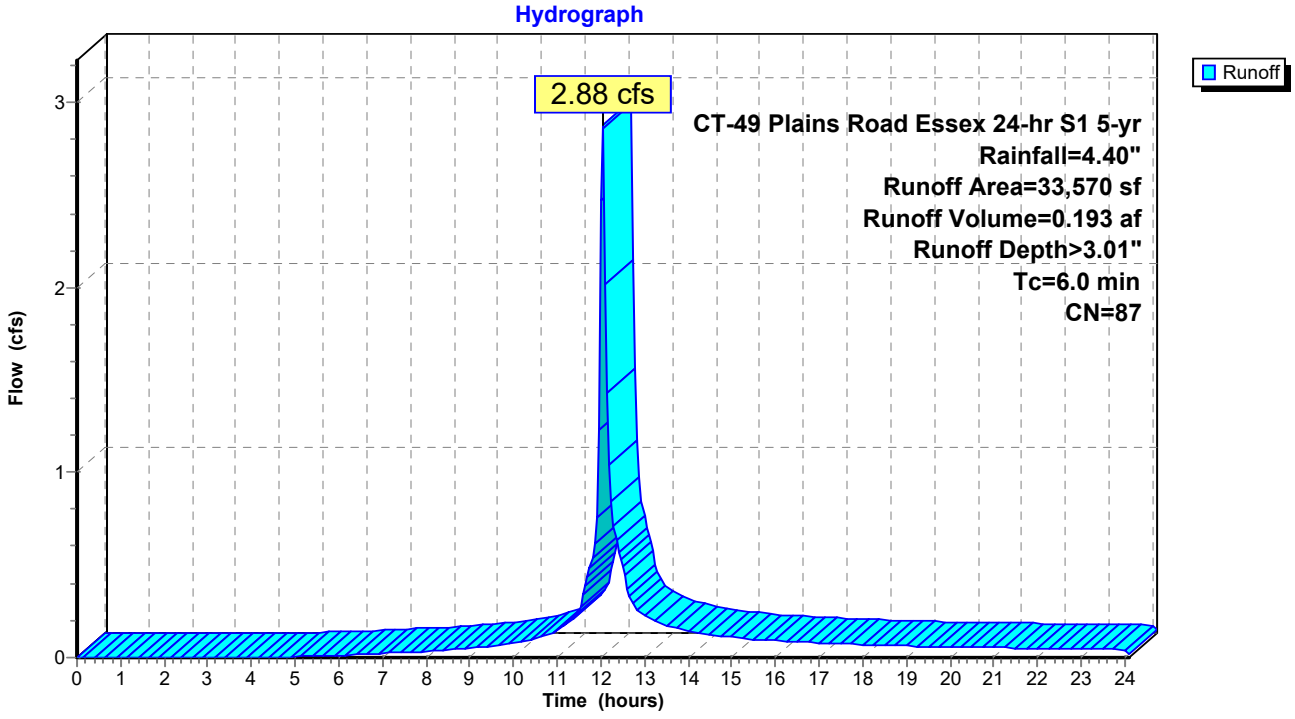
Runoff = 2.88 cfs @ 12.04 hrs, Volume= 0.193 af, Depth> 3.01"
Routed to Pond 22SA : Water Quality Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 5-yr Rainfall=4.40"

Area (sf)	CN	Description
9,870	61	>75% Grass cover, Good, HSG B
11,200	98	Paved parking, HSG B
12,500	98	Roofs, HSG B
33,570	87	Weighted Average
9,870		29.40% Pervious Area
23,700		70.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 22: PRWS 22



Summary for Pond 21S: Water Qualirty Basin

Inflow Area = 1.718 ac, 74.14% Impervious, Inflow Depth > 2.73" for 5-yr event
Inflow = 3.92 cfs @ 12.04 hrs, Volume= 0.390 af
Outflow = 2.35 cfs @ 12.13 hrs, Volume= 0.381 af, Atten= 40%, Lag= 5.4 min
Primary = 2.35 cfs @ 12.13 hrs, Volume= 0.381 af
Routed to Link 30 : Site

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 33.80' Surf.Area= 2,078 sf Storage= 2,873 cf
Peak Elev= 34.64' @ 12.13 hrs Surf.Area= 2,612 sf Storage= 4,815 cf (1,942 cf above start)

Plug-Flow detention time= 172.6 min calculated for 0.315 af (81% of inflow)
Center-of-Mass det. time= 18.4 min (896.7 - 878.3)

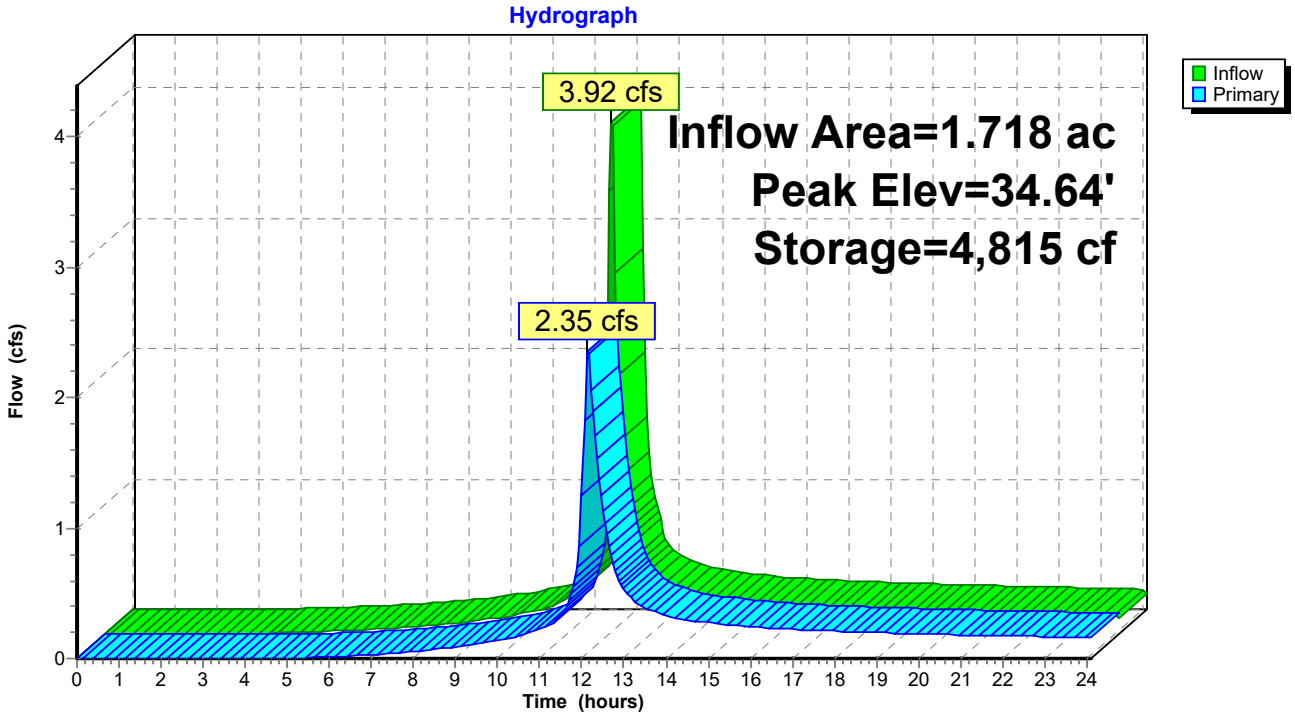
Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	5,832 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.00	1,141	239.0	0	0	1,141
33.00	1,647	259.0	1,386	1,386	1,972
34.00	2,194	263.0	1,914	3,300	2,281
34.50	2,480	289.0	1,168	4,468	3,432
35.00	2,982	391.0	1,364	5,832	8,954

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	34.60'	**10.0' long + 0.5 '/' SideZ x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=2.31 cfs @ 12.13 hrs HW=34.63' (Free Discharge)
1=Orifice/Grate (Orifice Controls 2.17 cfs @ 3.11 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 0.14 cfs @ 0.44 fps)

Pond 21S: Water Qualirty Basin



Summary for Pond 22SA: Water Quality Basin

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 3.01" for 5-yr event
Inflow = 2.88 cfs @ 12.04 hrs, Volume= 0.193 af
Outflow = 2.89 cfs @ 12.05 hrs, Volume= 0.193 af, Atten= 0%, Lag= 0.4 min
Primary = 2.89 cfs @ 12.05 hrs, Volume= 0.193 af
Routed to Pond 22SB : Underground 22

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 37.40' Surf.Area= 1,493 sf Storage= 1,924 cf
Peak Elev= 37.45' @ 12.05 hrs Surf.Area= 1,524 sf Storage= 2,001 cf (77 cf above start)

Plug-Flow detention time= 157.6 min calculated for 0.149 af (77% of inflow)
Center-of-Mass det. time= 0.6 min (821.9 - 821.4)

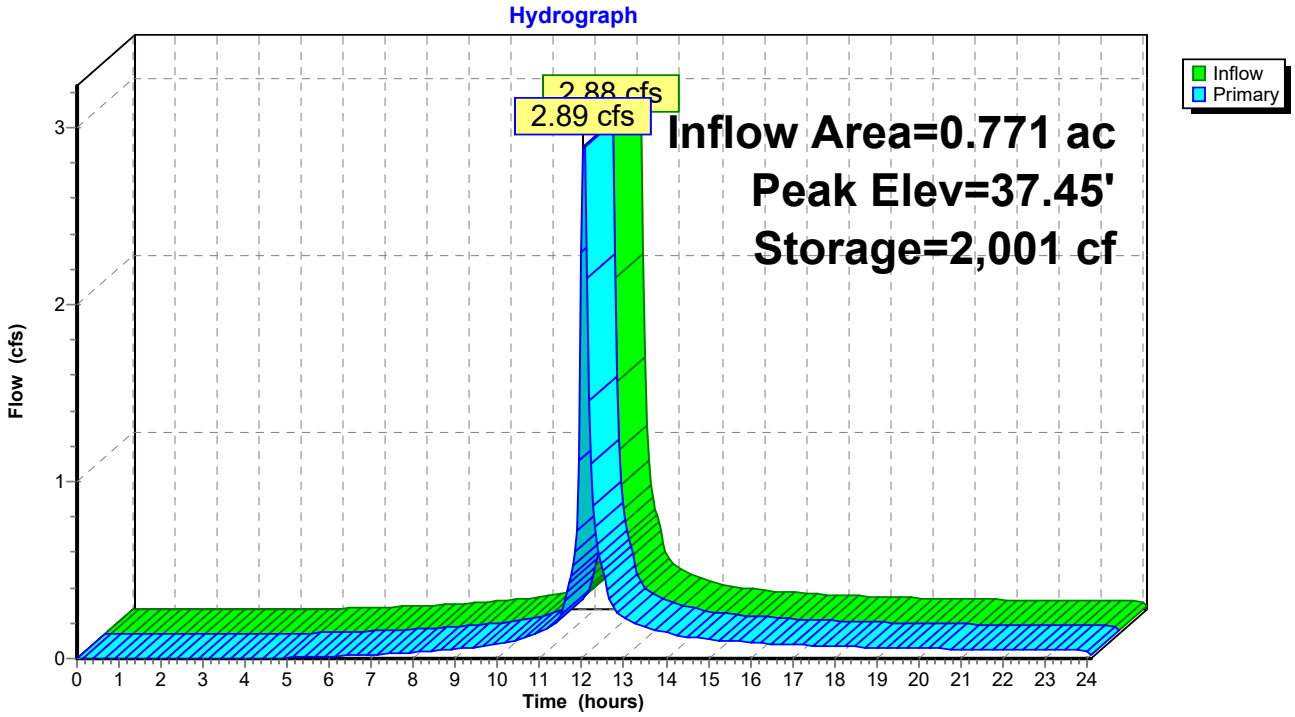
Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	2,076 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	175	238.0	0	0	175
36.00	700	264.0	408	408	1,244
37.00	1,259	291.0	966	1,374	2,468
37.50	1,554	298.0	702	2,076	2,828

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	**2.4" x 4.0" Horiz. Orifice/Grate X 8.00 columns** X 9 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.85 cfs @ 12.05 hrs HW=37.45' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 2.85 cfs @ 0.73 fps)

Pond 22SA: Water Quality Basin



Summary for Pond 22SB: Underground 22

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 3.01" for 5-yr event
Inflow = 2.89 cfs @ 12.05 hrs, Volume= 0.193 af
Outflow = 0.12 cfs @ 14.55 hrs, Volume= 0.130 af, Atten= 96%, Lag= 150.1 min
Primary = 0.12 cfs @ 14.55 hrs, Volume= 0.130 af
Routed to Pond 21S : Water Qualirty Basin

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Peak Elev= 35.44' @ 14.55 hrs Surf.Area= 0.113 ac Storage= 0.100 af

Plug-Flow detention time= 318.3 min calculated for 0.130 af (67% of inflow)
Center-of-Mass det. time= 198.8 min (1,020.7 - 821.9)

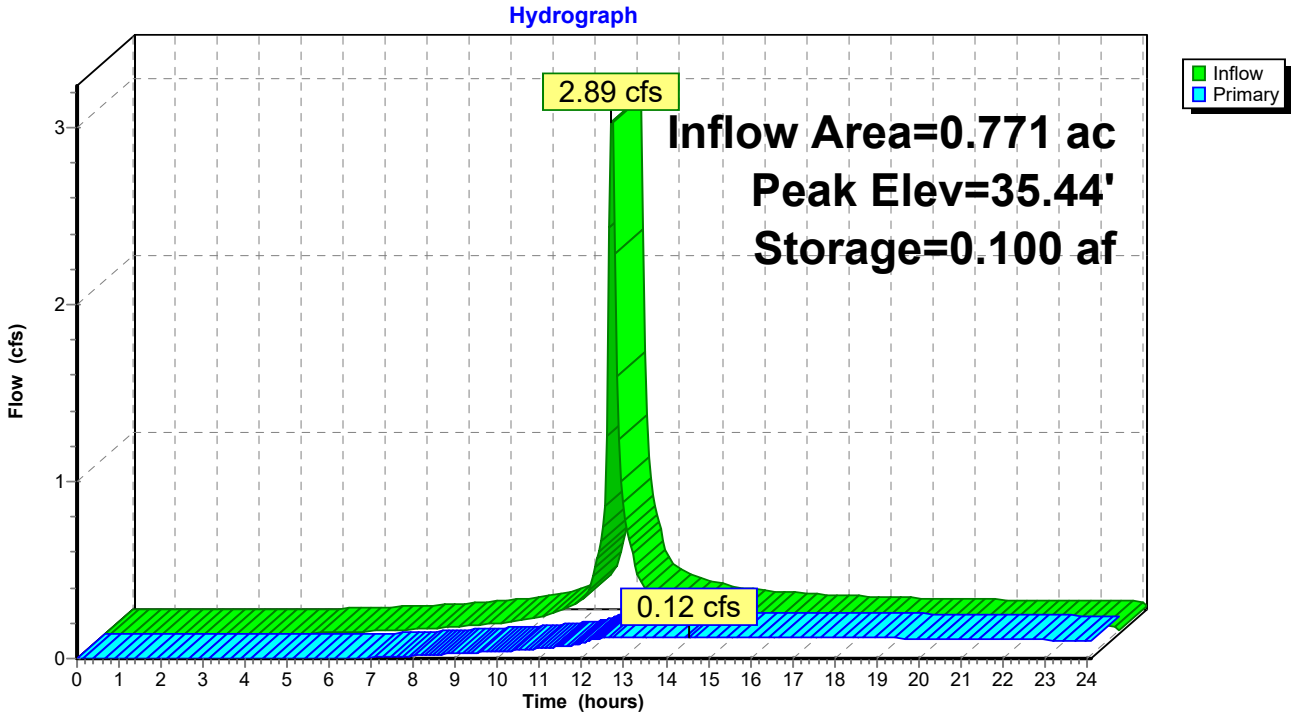
Volume	Invert	Avail.Storage	Storage Description
#1A	34.00'	0.076 af	**39.50'W x 124.66'L x 3.50'H Field A** 0.396 af Overall - 0.143 af Embedded = 0.252 af x 30.0% Voids
#2A	34.50'	0.143 af	**ADS_StormTech SC-740 +Cap** x 136 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 136 Chambers in 8 Rows
		0.219 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	36.90'	**4.0' long + 1.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.12 cfs @ 14.55 hrs HW=35.44' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.12 cfs @ 5.60 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 22SB: Underground 22

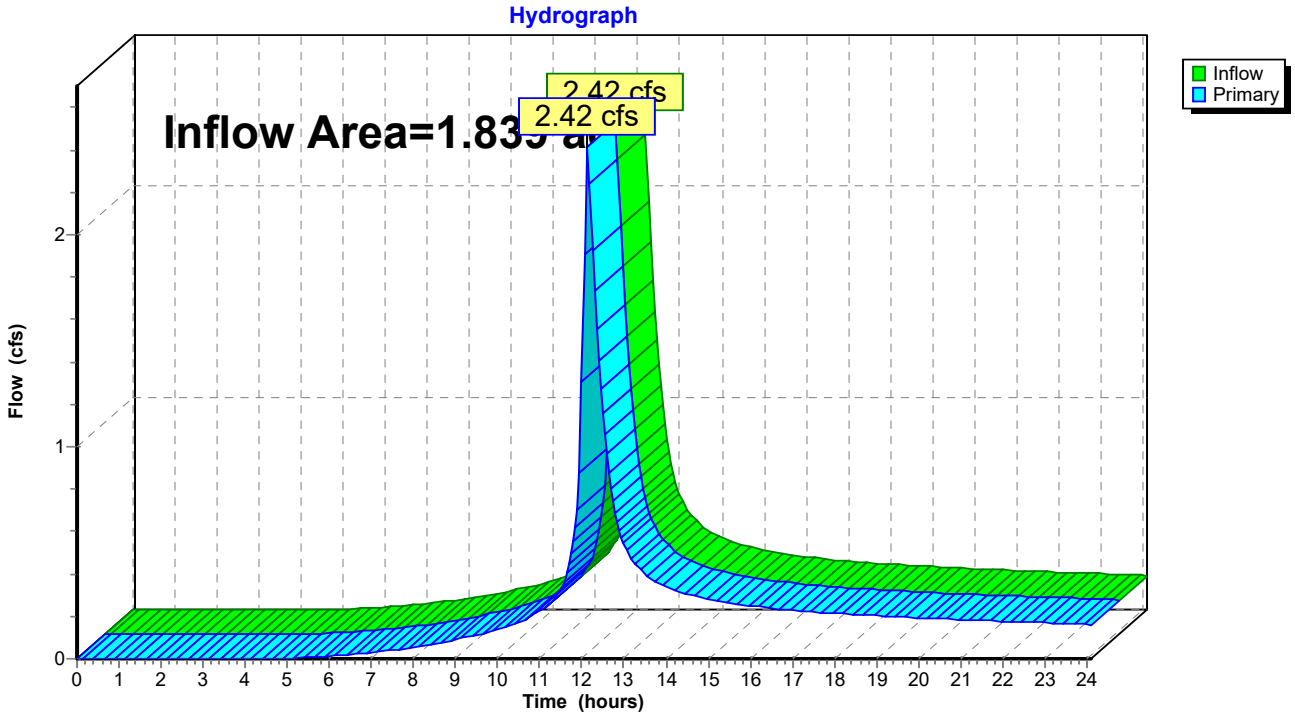


Summary for Link 30: Site

Inflow Area = 1.839 ac, 69.26% Impervious, Inflow Depth > 2.54" for 5-yr event
Inflow = 2.42 cfs @ 12.13 hrs, Volume= 0.389 af
Primary = 2.42 cfs @ 12.13 hrs, Volume= 0.389 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link 30: Site



Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 20: PRWS20 Runoff Area=5,280 sf 0.00% Impervious Runoff Depth>1.21"
Tc=6.0 min CN=57 Runoff=0.15 cfs 0.012 af

Subcatchment 21: PRWS 21 Runoff Area=41,250 sf 77.03% Impervious Runoff Depth>4.07"
Tc=6.0 min CN=90 Runoff=4.66 cfs 0.321 af

Subcatchment 22: PRWS 22 Runoff Area=33,570 sf 70.60% Impervious Runoff Depth>3.76"
Tc=6.0 min CN=87 Runoff=3.56 cfs 0.241 af

Pond 21S: Water Qualirty Basin Peak Elev=34.72' Storage=5,037 cf Inflow=4.76 cfs 0.471 af
Outflow=3.48 cfs 0.461 af

Pond 22SA: Water Quality Basin Peak Elev=37.46' Storage=2,013 cf Inflow=3.56 cfs 0.241 af
Outflow=3.62 cfs 0.241 af

Pond 22SB: Underground 22 Peak Elev=35.80' Storage=0.129 af Inflow=3.62 cfs 0.241 af
Outflow=0.14 cfs 0.150 af

Link 30: Site Inflow=3.59 cfs 0.474 af
Primary=3.59 cfs 0.474 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.575 af Average Runoff Depth = 3.75"
30.74% Pervious = 0.565 ac 69.26% Impervious = 1.274 ac

Summary for Subcatchment 20: PRWS20

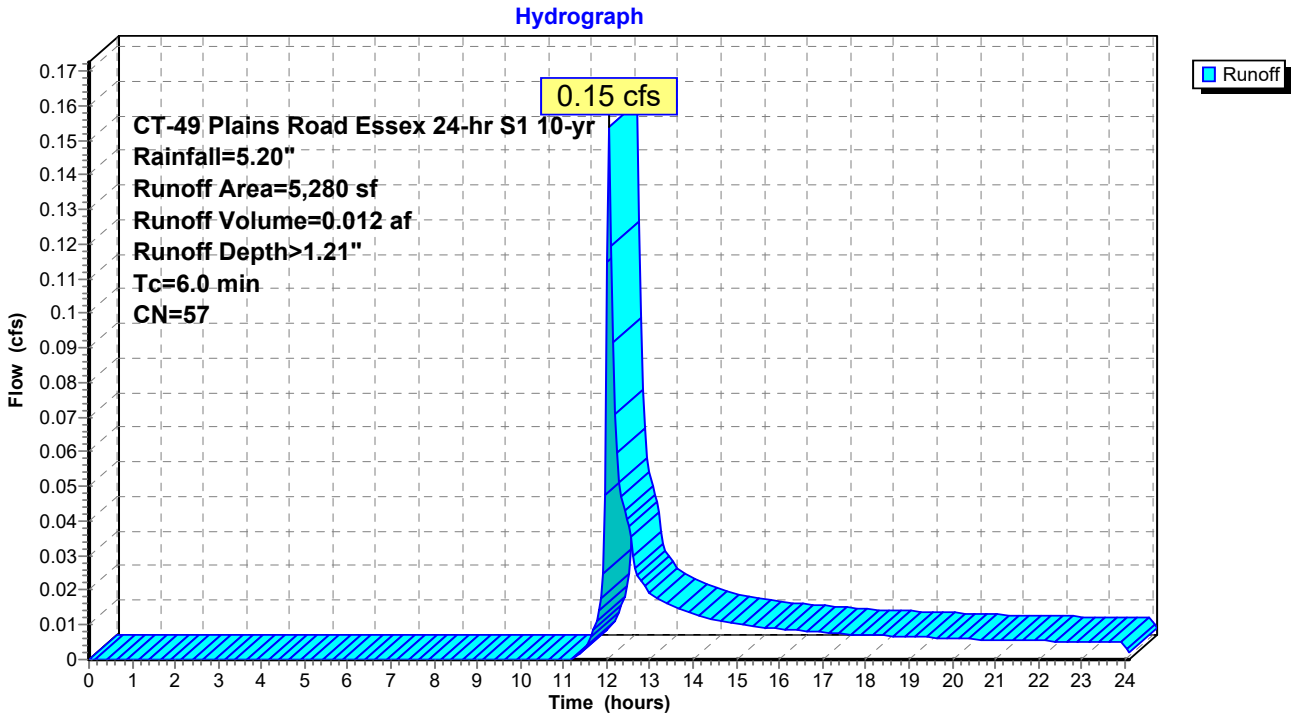
Runoff = 0.15 cfs @ 12.05 hrs, Volume= 0.012 af, Depth> 1.21"
Routed to Link 30 : Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 10-yr Rainfall=5.20"

Area (sf)	CN	Description
3,450	55	Woods, Good, HSG B
1,830	61	>75% Grass cover, Good, HSG B
5,280	57	Weighted Average
5,280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Mln. TR-55 TC**

Subcatchment 20: PRWS20



Summary for Subcatchment 21: PRWS 21

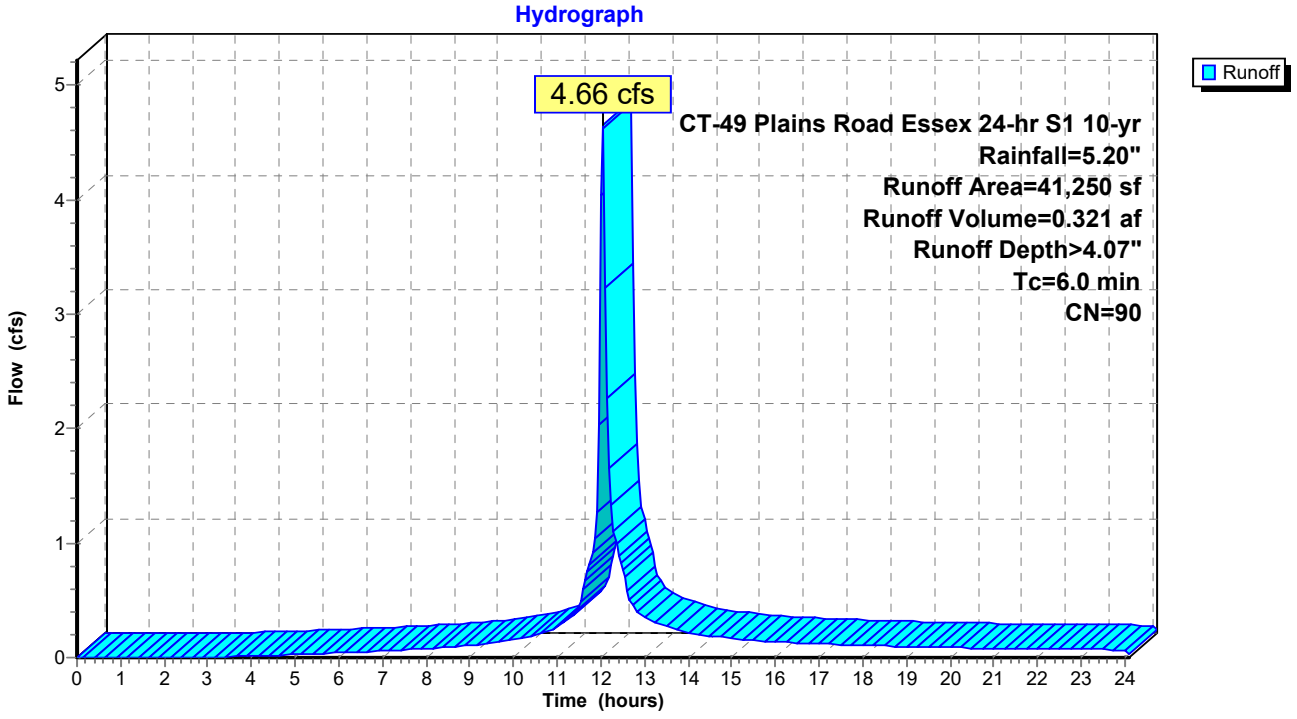
Runoff = 4.66 cfs @ 12.04 hrs, Volume= 0.321 af, Depth> 4.07"
Routed to Pond 21S : Water Qualirty Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 10-yr Rainfall=5.20"

Area (sf)	CN	Description
9,475	61	>75% Grass cover, Good, HSG B
29,400	98	Paved parking, HSG B
2,375	98	Roofs, HSG B
41,250	90	Weighted Average
9,475		22.97% Pervious Area
31,775		77.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 21: PRWS 21



Summary for Subcatchment 22: PRWS 22

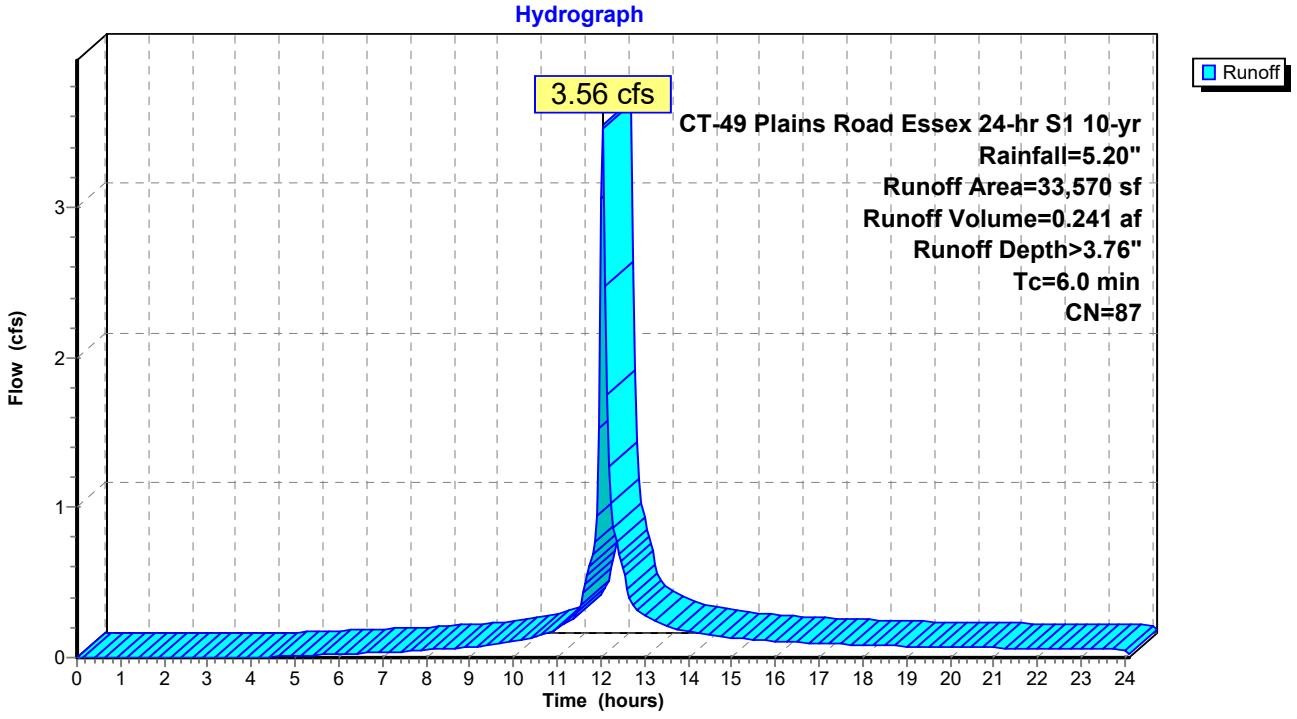
Runoff = 3.56 cfs @ 12.04 hrs, Volume= 0.241 af, Depth> 3.76"
Routed to Pond 22SA : Water Quality Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 10-yr Rainfall=5.20"

Area (sf)	CN	Description
9,870	61	>75% Grass cover, Good, HSG B
11,200	98	Paved parking, HSG B
12,500	98	Roofs, HSG B
33,570	87	Weighted Average
9,870		29.40% Pervious Area
23,700		70.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 22: PRWS 22



Summary for Pond 21S: Water Qualirty Basin

Inflow Area = 1.718 ac, 74.14% Impervious, Inflow Depth > 3.29" for 10-yr event
Inflow = 4.76 cfs @ 12.04 hrs, Volume= 0.471 af
Outflow = 3.48 cfs @ 12.11 hrs, Volume= 0.461 af, Atten= 27%, Lag= 4.3 min
Primary = 3.48 cfs @ 12.11 hrs, Volume= 0.461 af
Routed to Link 30 : Site

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 33.80' Surf.Area= 2,078 sf Storage= 2,873 cf
Peak Elev= 34.72' @ 12.11 hrs Surf.Area= 2,695 sf Storage= 5,037 cf (2,164 cf above start)

Plug-Flow detention time= 152.4 min calculated for 0.395 af (84% of inflow)
Center-of-Mass det. time= 17.2 min (885.1 - 867.8)

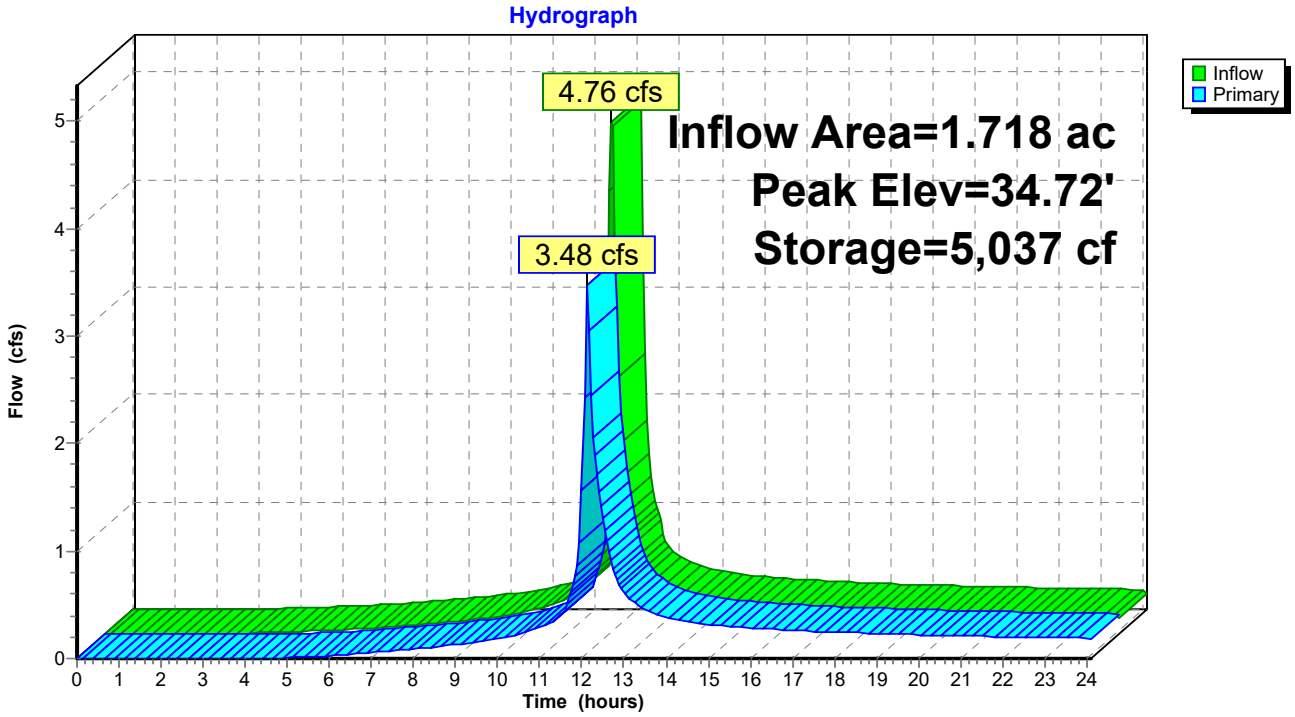
Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	5,832 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.00	1,141	239.0	0	0	1,141
33.00	1,647	259.0	1,386	1,386	1,972
34.00	2,194	263.0	1,914	3,300	2,281
34.50	2,480	289.0	1,168	4,468	3,432
35.00	2,982	391.0	1,364	5,832	8,954

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	34.60'	**10.0' long + 0.5 '/' SideZ x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=3.35 cfs @ 12.11 hrs HW=34.71' (Free Discharge)
1=Orifice/Grate (Orifice Controls 2.44 cfs @ 3.25 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 0.91 cfs @ 0.81 fps)

Pond 21S: Water Qualirty Basin



Summary for Pond 22SA: Water Quality Basin

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 3.76" for 10-yr event
Inflow = 3.56 cfs @ 12.04 hrs, Volume= 0.241 af
Outflow = 3.62 cfs @ 12.05 hrs, Volume= 0.241 af, Atten= 0%, Lag= 0.4 min
Primary = 3.62 cfs @ 12.05 hrs, Volume= 0.241 af
Routed to Pond 22SB : Underground 22

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 37.40' Surf.Area= 1,493 sf Storage= 1,924 cf
Peak Elev= 37.46' @ 12.05 hrs Surf.Area= 1,528 sf Storage= 2,013 cf (89 cf above start)

Plug-Flow detention time= 138.2 min calculated for 0.197 af (82% of inflow)
Center-of-Mass det. time= 0.6 min (814.0 - 813.5)

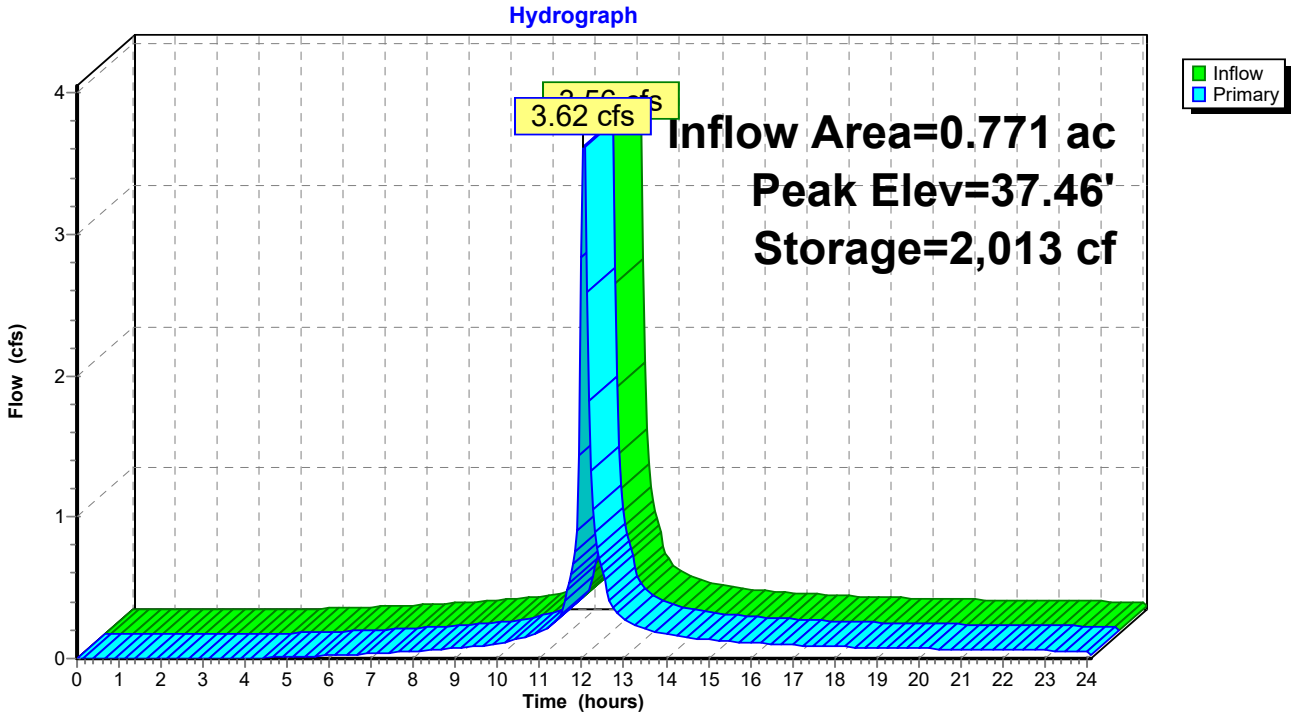
Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	2,076 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	175	238.0	0	0	175
36.00	700	264.0	408	408	1,244
37.00	1,259	291.0	966	1,374	2,468
37.50	1,554	298.0	702	2,076	2,828

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	**2.4" x 4.0" Horiz. Orifice/Grate X 8.00 columns** X 9 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.51 cfs @ 12.05 hrs HW=37.46' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 3.51 cfs @ 0.79 fps)

Pond 22SA: Water Quality Basin



Summary for Pond 22SB: Underground 22

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 3.76" for 10-yr event
Inflow = 3.62 cfs @ 12.05 hrs, Volume= 0.241 af
Outflow = 0.14 cfs @ 14.86 hrs, Volume= 0.150 af, Atten= 96%, Lag= 168.6 min
Primary = 0.14 cfs @ 14.86 hrs, Volume= 0.150 af
Routed to Pond 21S : Water Qualirty Basin

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Peak Elev= 35.80' @ 14.86 hrs Surf.Area= 0.113 ac Storage= 0.129 af

Plug-Flow detention time= 326.3 min calculated for 0.150 af (62% of inflow)
Center-of-Mass det. time= 198.5 min (1,012.5 - 814.0)

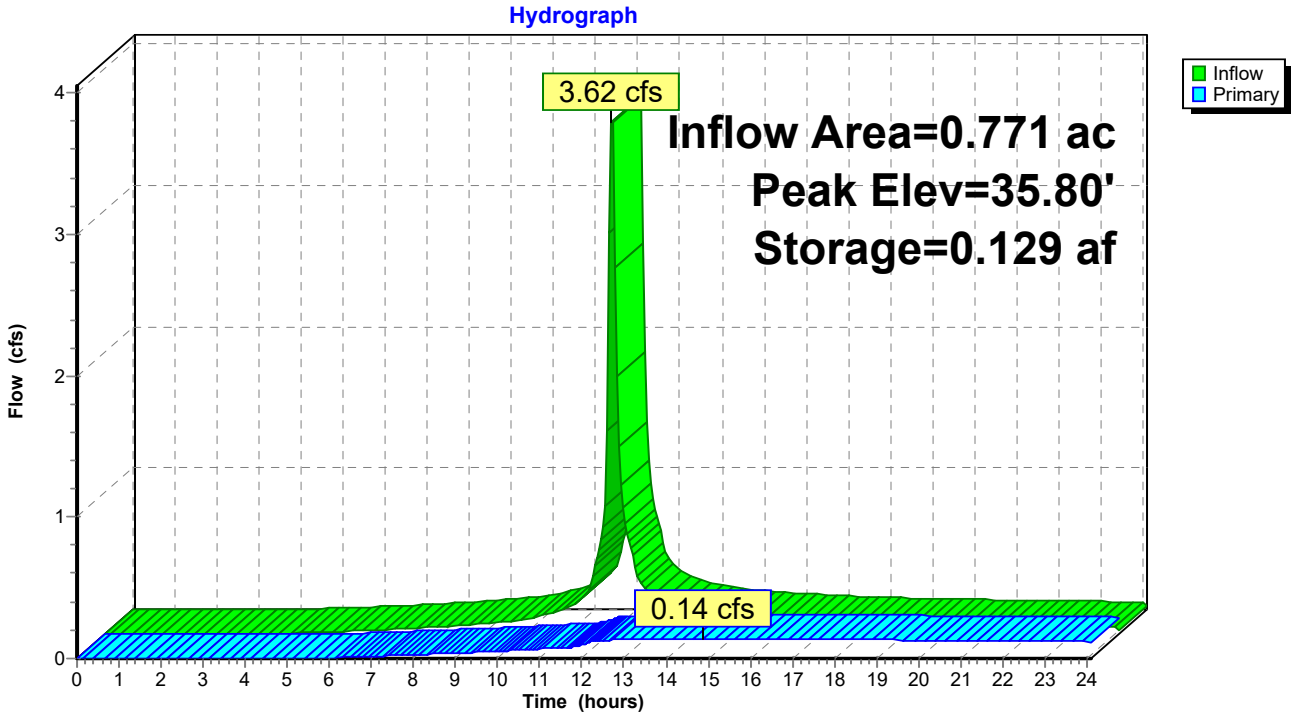
Volume	Invert	Avail.Storage	Storage Description
#1A	34.00'	0.076 af	**39.50'W x 124.66'L x 3.50'H Field A** 0.396 af Overall - 0.143 af Embedded = 0.252 af x 30.0% Voids
#2A	34.50'	0.143 af	**ADS_StormTech SC-740 +Cap** x 136 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 136 Chambers in 8 Rows
		0.219 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	36.90'	**4.0' long + 1.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.14 cfs @ 14.86 hrs HW=35.80' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.14 cfs @ 6.31 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 22SB: Underground 22

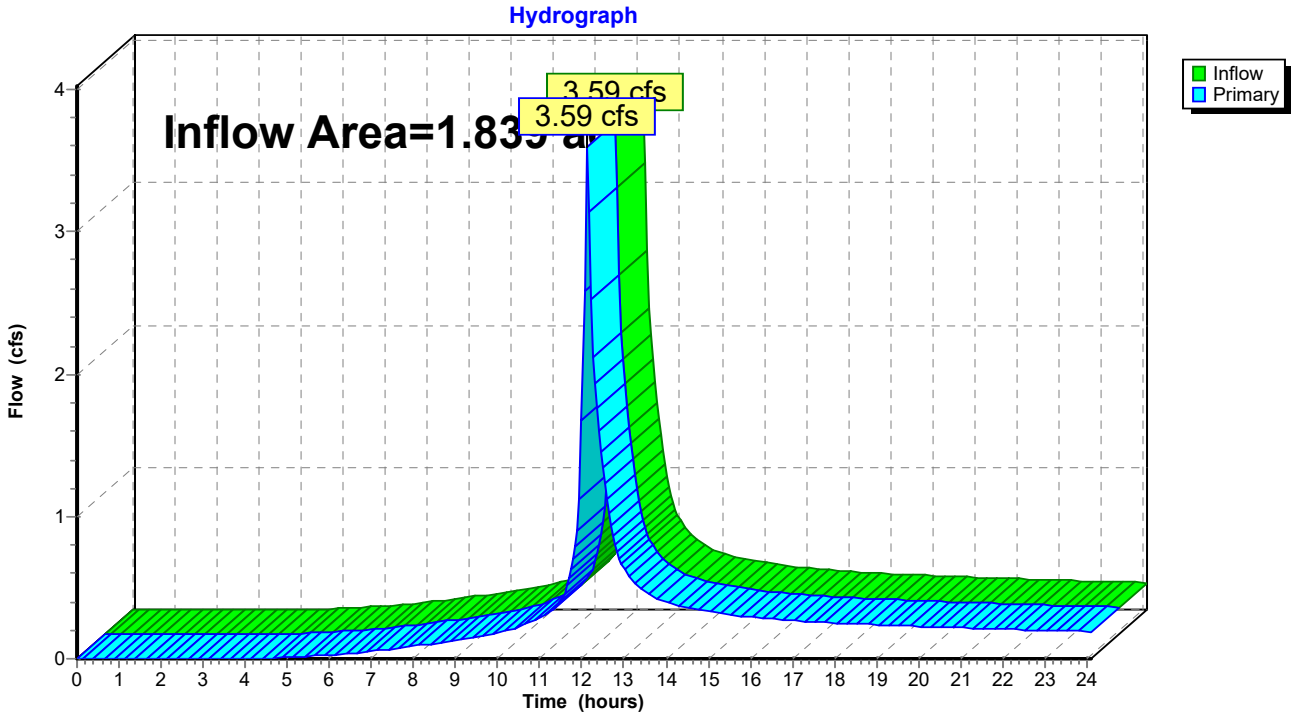


Summary for Link 30: Site

Inflow Area = 1.839 ac, 69.26% Impervious, Inflow Depth > 3.09" for 10-yr event
Inflow = 3.59 cfs @ 12.11 hrs, Volume= 0.474 af
Primary = 3.59 cfs @ 12.11 hrs, Volume= 0.474 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link 30: Site



Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 20: PRWS20 Runoff Area=5,280 sf 0.00% Impervious Runoff Depth>1.87"
Tc=6.0 min CN=57 Runoff=0.26 cfs 0.019 af

Subcatchment 21: PRWS 21 Runoff Area=41,250 sf 77.03% Impervious Runoff Depth>5.15"
Tc=6.0 min CN=90 Runoff=5.80 cfs 0.406 af

Subcatchment 22: PRWS 22 Runoff Area=33,570 sf 70.60% Impervious Runoff Depth>4.81"
Tc=6.0 min CN=87 Runoff=4.49 cfs 0.309 af

Pond 21S: Water Qualirty Basin Peak Elev=34.79' Storage=5,234 cf Inflow=5.91 cfs 0.585 af
Outflow=4.73 cfs 0.573 af

Pond 22SA: Water Quality Basin Peak Elev=37.47' Storage=2,028 cf Inflow=4.49 cfs 0.309 af
Outflow=4.55 cfs 0.309 af

Pond 22SB: Underground 22 Peak Elev=36.38' Storage=0.172 af Inflow=4.55 cfs 0.309 af
Outflow=0.16 cfs 0.178 af

Link 30: Site Inflow=4.93 cfs 0.592 af
Primary=4.93 cfs 0.592 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.734 af Average Runoff Depth = 4.79"
30.74% Pervious = 0.565 ac 69.26% Impervious = 1.274 ac

Summary for Subcatchment 20: PRWS20

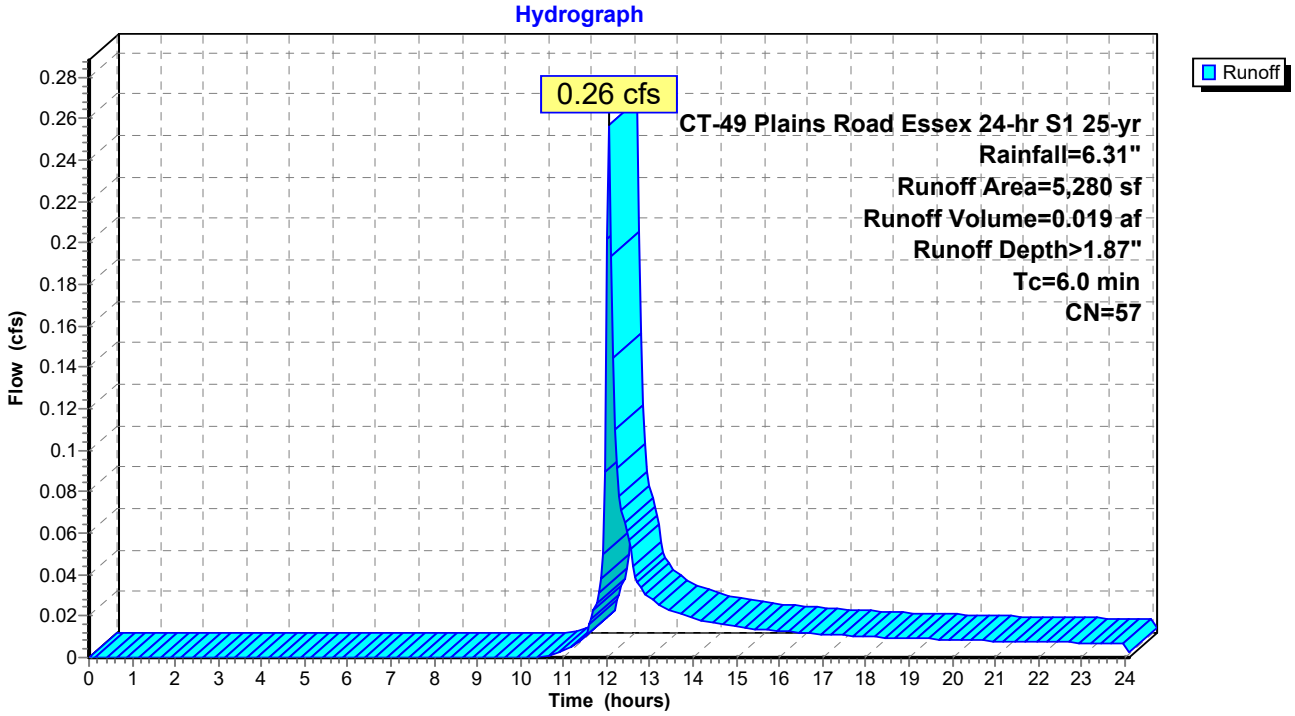
Runoff = 0.26 cfs @ 12.05 hrs, Volume= 0.019 af, Depth> 1.87"
Routed to Link 30 : Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 25-yr Rainfall=6.31"

Area (sf)	CN	Description
3,450	55	Woods, Good, HSG B
1,830	61	>75% Grass cover, Good, HSG B
5,280	57	Weighted Average
5,280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 20: PRWS20



Summary for Subcatchment 21: PRWS 21

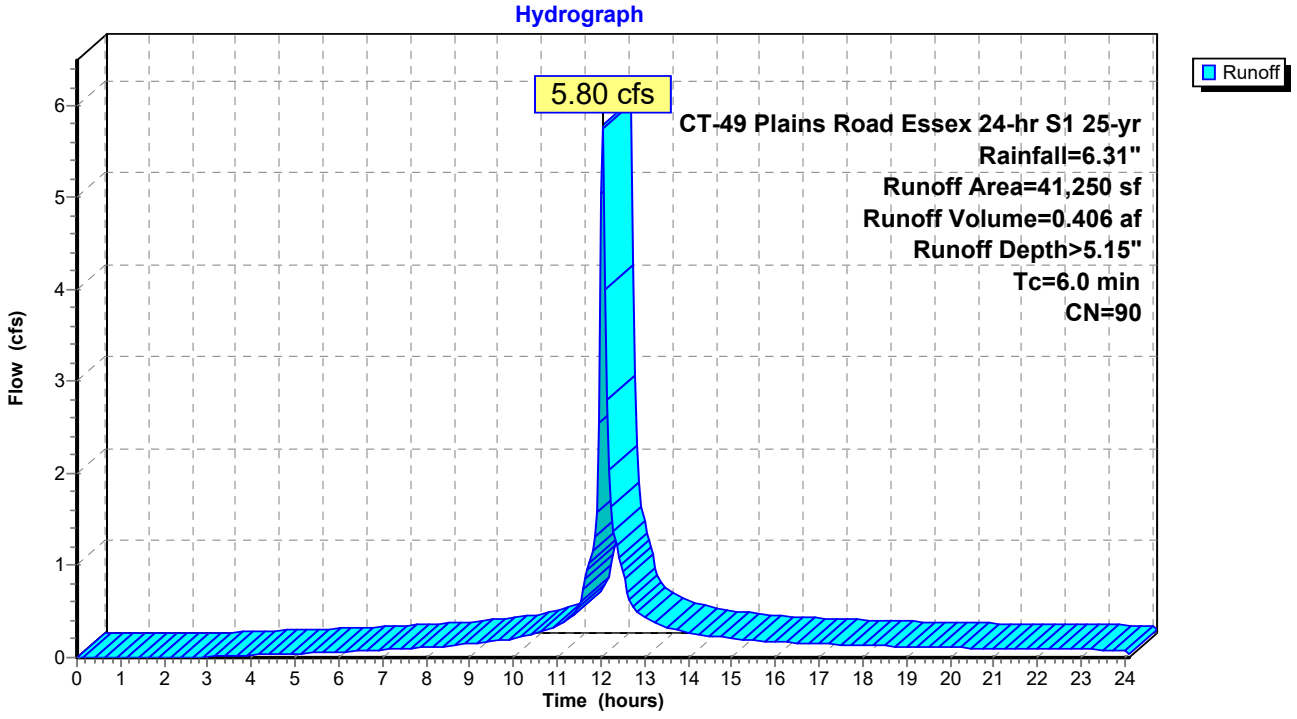
Runoff = 5.80 cfs @ 12.04 hrs, Volume= 0.406 af, Depth> 5.15"
Routed to Pond 21S : Water Qualirty Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 25-yr Rainfall=6.31"

Area (sf)	CN	Description
9,475	61	>75% Grass cover, Good, HSG B
29,400	98	Paved parking, HSG B
2,375	98	Roofs, HSG B
41,250	90	Weighted Average
9,475		22.97% Pervious Area
31,775		77.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 21: PRWS 21



Summary for Subcatchment 22: PRWS 22

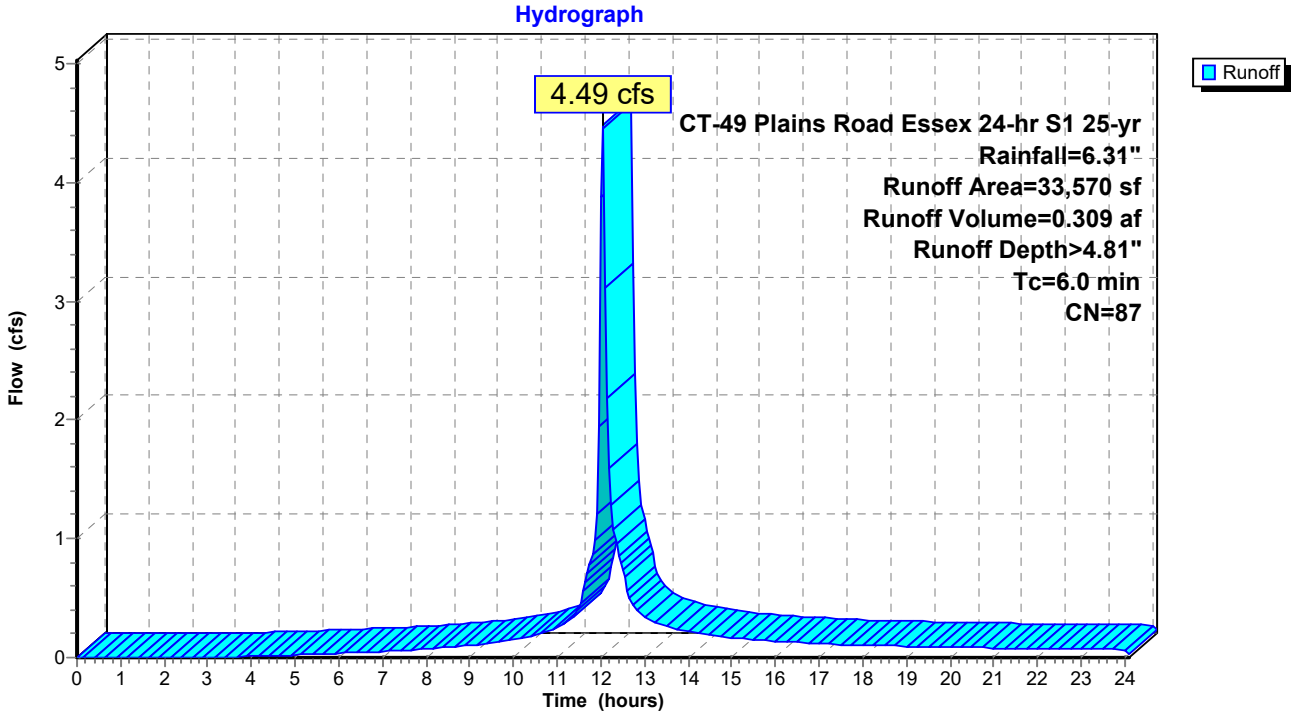
Runoff = 4.49 cfs @ 12.04 hrs, Volume= 0.309 af, Depth> 4.81"
Routed to Pond 22SA : Water Quality Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 25-yr Rainfall=6.31"

Area (sf)	CN	Description
9,870	61	>75% Grass cover, Good, HSG B
11,200	98	Paved parking, HSG B
12,500	98	Roofs, HSG B
33,570	87	Weighted Average
9,870		29.40% Pervious Area
23,700		70.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 22: PRWS 22



Summary for Pond 21S: Water Qualirty Basin

Inflow Area = 1.718 ac, 74.14% Impervious, Inflow Depth > 4.08" for 25-yr event
Inflow = 5.91 cfs @ 12.04 hrs, Volume= 0.585 af
Outflow = 4.73 cfs @ 12.10 hrs, Volume= 0.573 af, Atten= 20%, Lag= 3.5 min
Primary = 4.73 cfs @ 12.10 hrs, Volume= 0.573 af
Routed to Link 30 : Site

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 33.80' Surf.Area= 2,078 sf Storage= 2,873 cf
Peak Elev= 34.79' @ 12.10 hrs Surf.Area= 2,767 sf Storage= 5,234 cf (2,360 cf above start)

Plug-Flow detention time= 133.1 min calculated for 0.507 af (87% of inflow)
Center-of-Mass det. time= 16.0 min (872.6 - 856.6)

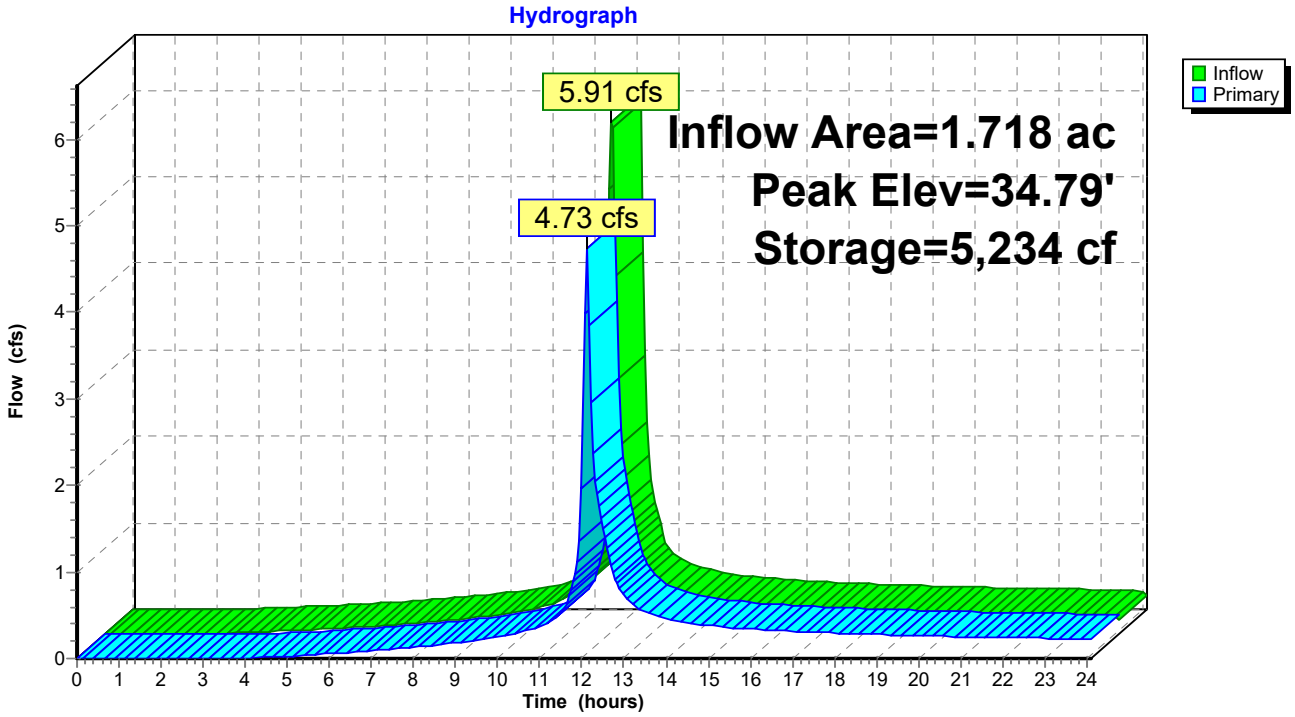
Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	5,832 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.00	1,141	239.0	0	0	1,141
33.00	1,647	259.0	1,386	1,386	1,972
34.00	2,194	263.0	1,914	3,300	2,281
34.50	2,480	289.0	1,168	4,468	3,432
35.00	2,982	391.0	1,364	5,832	8,954

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	34.60'	**10.0' long + 0.5 '/' SideZ x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=4.69 cfs @ 12.10 hrs HW=34.79' (Free Discharge)
1=Orifice/Grate (Orifice Controls 2.66 cfs @ 3.39 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 2.04 cfs @ 1.06 fps)

Pond 21S: Water Qualirty Basin



Summary for Pond 22SA: Water Quality Basin

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 4.81" for 25-yr event
Inflow = 4.49 cfs @ 12.04 hrs, Volume= 0.309 af
Outflow = 4.55 cfs @ 12.05 hrs, Volume= 0.309 af, Atten= 0%, Lag= 0.4 min
Primary = 4.55 cfs @ 12.05 hrs, Volume= 0.309 af
Routed to Pond 22SB : Underground 22

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 37.40' Surf.Area= 1,493 sf Storage= 1,924 cf
Peak Elev= 37.47' @ 12.05 hrs Surf.Area= 1,535 sf Storage= 2,028 cf (104 cf above start)

Plug-Flow detention time= 118.5 min calculated for 0.264 af (86% of inflow)
Center-of-Mass det. time= 0.6 min (805.4 - 804.8)

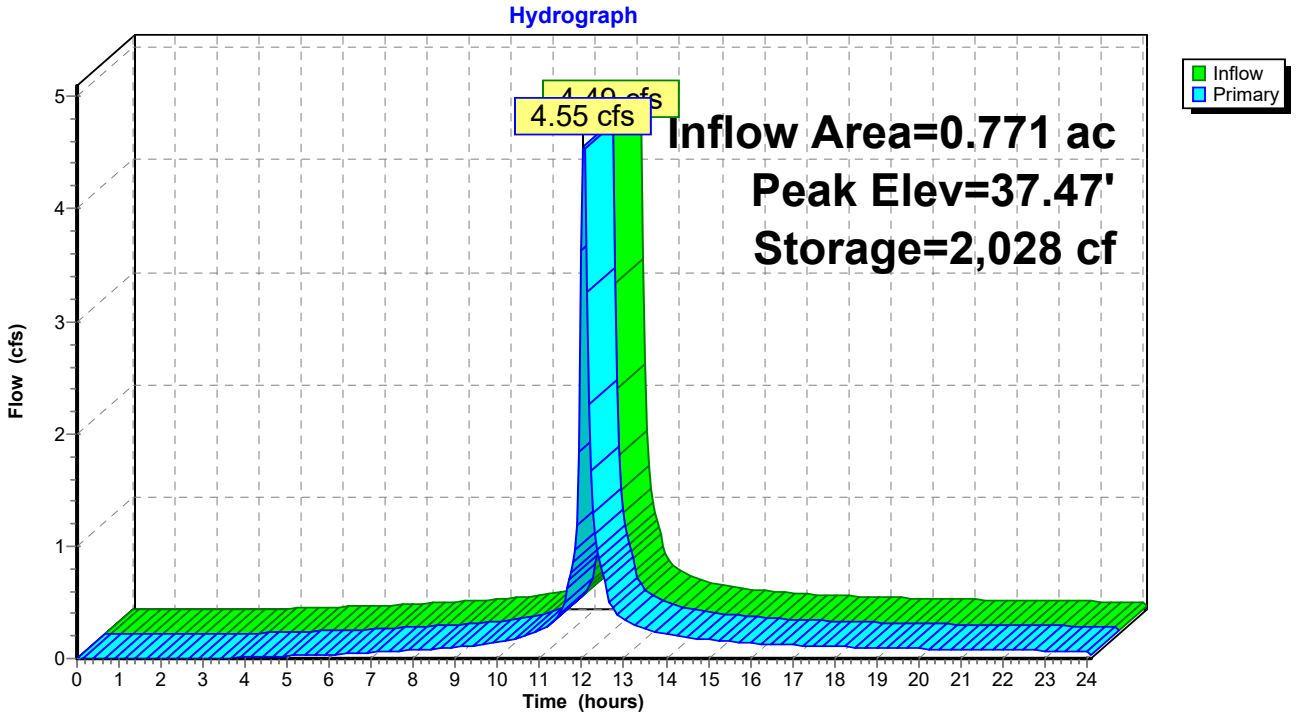
Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	2,076 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	175	238.0	0	0	175
36.00	700	264.0	408	408	1,244
37.00	1,259	291.0	966	1,374	2,468
37.50	1,554	298.0	702	2,076	2,828

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	**2.4" x 4.0" Horiz. Orifice/Grate X 8.00 columns** X 9 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.42 cfs @ 12.05 hrs HW=37.47' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 4.42 cfs @ 0.85 fps)

Pond 22SA: Water Quality Basin



Summary for Pond 22SB: Underground 22

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 4.81" for 25-yr event
Inflow = 4.55 cfs @ 12.05 hrs, Volume= 0.309 af
Outflow = 0.16 cfs @ 15.18 hrs, Volume= 0.178 af, Atten= 96%, Lag= 187.9 min
Primary = 0.16 cfs @ 15.18 hrs, Volume= 0.178 af
Routed to Pond 21S : Water Qualirty Basin

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Peak Elev= 36.38' @ 15.18 hrs Surf.Area= 0.113 ac Storage= 0.172 af

Plug-Flow detention time= 332.0 min calculated for 0.178 af (58% of inflow)
Center-of-Mass det. time= 197.8 min (1,003.1 - 805.4)

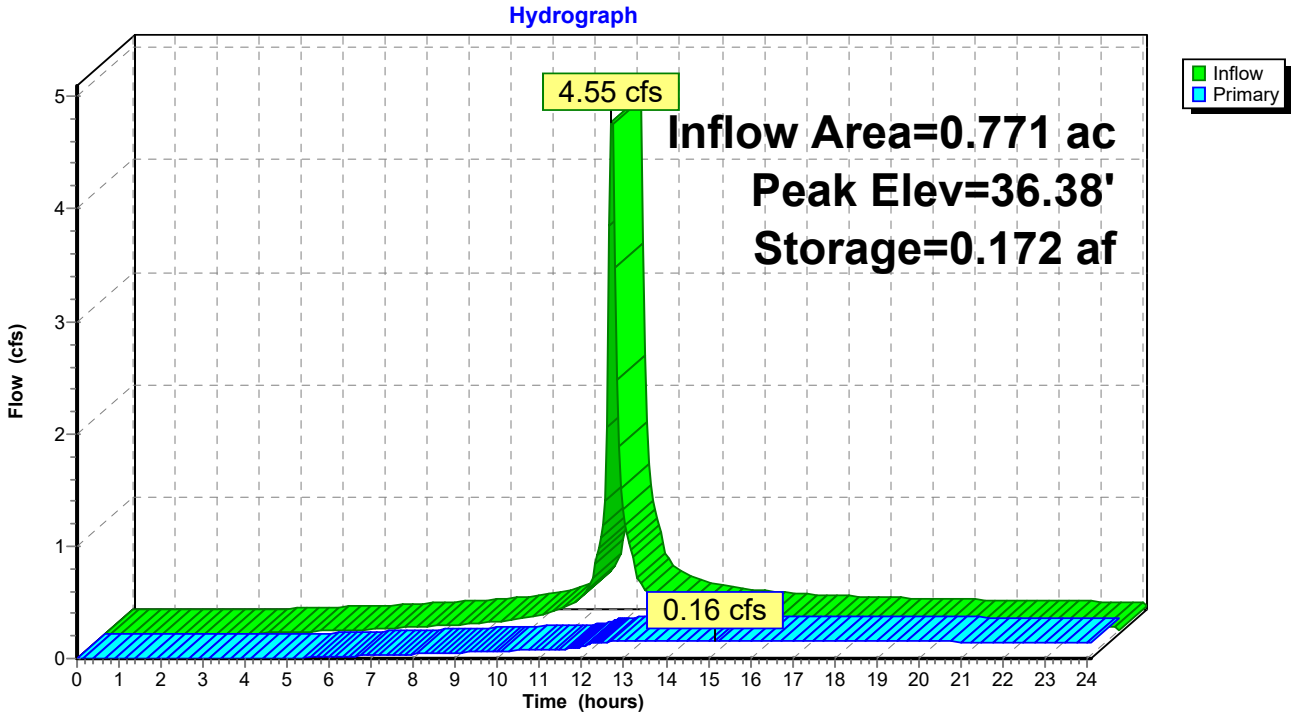
Volume	Invert	Avail.Storage	Storage Description
#1A	34.00'	0.076 af	**39.50'W x 124.66'L x 3.50'H Field A** 0.396 af Overall - 0.143 af Embedded = 0.252 af x 30.0% Voids
#2A	34.50'	0.143 af	**ADS_StormTech SC-740 +Cap** x 136 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 136 Chambers in 8 Rows
		0.219 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	36.90'	**4.0' long + 1.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.16 cfs @ 15.18 hrs HW=36.38' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.16 cfs @ 7.30 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 22SB: Underground 22

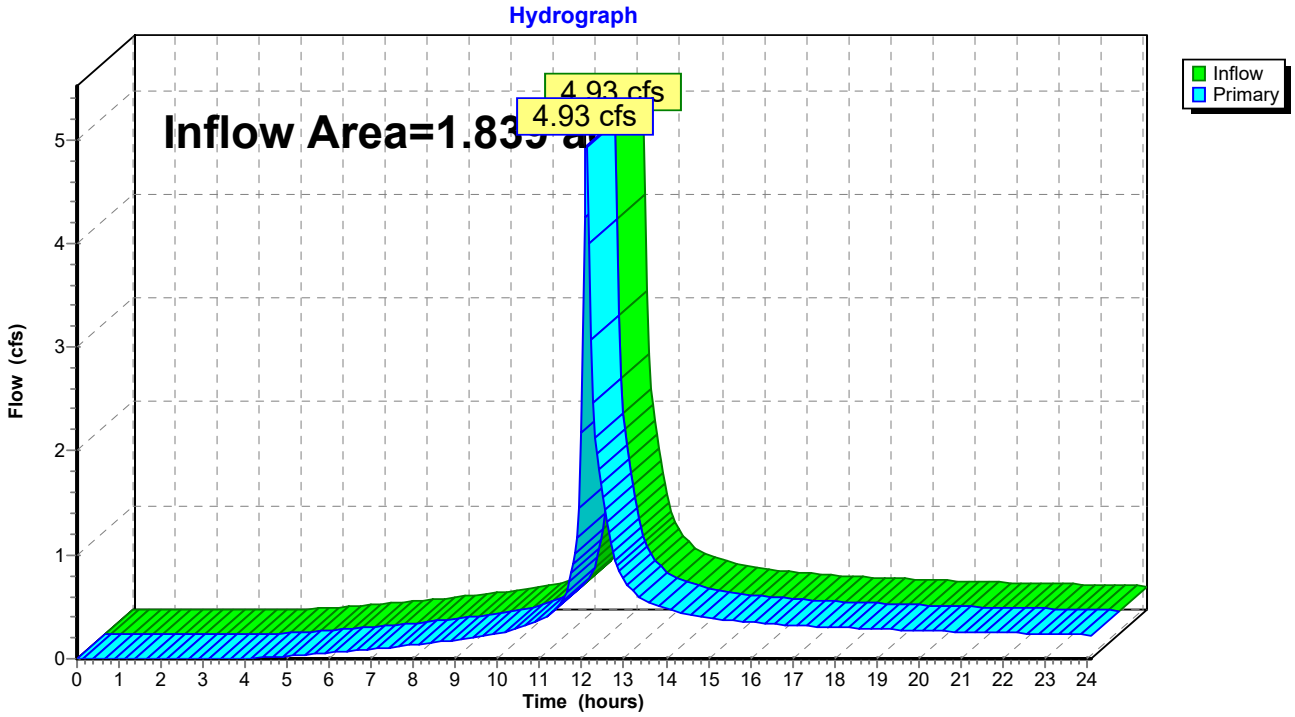


Summary for Link 30: Site

Inflow Area = 1.839 ac, 69.26% Impervious, Inflow Depth > 3.87" for 25-yr event
Inflow = 4.93 cfs @ 12.10 hrs, Volume= 0.592 af
Primary = 4.93 cfs @ 12.10 hrs, Volume= 0.592 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link 30: Site



Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 20: PRWS20 Runoff Area=5,280 sf 0.00% Impervious Runoff Depth>2.40"
Tc=6.0 min CN=57 Runoff=0.34 cfs 0.024 af

Subcatchment 21: PRWS 21 Runoff Area=41,250 sf 77.03% Impervious Runoff Depth>5.95"
Tc=6.0 min CN=90 Runoff=6.65 cfs 0.470 af

Subcatchment 22: PRWS 22 Runoff Area=33,570 sf 70.60% Impervious Runoff Depth>5.60"
Tc=6.0 min CN=87 Runoff=5.19 cfs 0.360 af

Pond 21S: Water Qualirty Basin Peak Elev=34.84' Storage=5,361 cf Inflow=6.77 cfs 0.673 af
Outflow=5.65 cfs 0.661 af

Pond 22SA: Water Quality Basin Peak Elev=37.48' Storage=2,039 cf Inflow=5.19 cfs 0.360 af
Outflow=5.25 cfs 0.360 af

Pond 22SB: Underground 22 Peak Elev=36.93' Storage=0.200 af Inflow=5.25 cfs 0.360 af
Outflow=0.24 cfs 0.203 af

Link 30: Site Inflow=5.93 cfs 0.685 af
Primary=5.93 cfs 0.685 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.854 af Average Runoff Depth = 5.57"
30.74% Pervious = 0.565 ac 69.26% Impervious = 1.274 ac

Summary for Subcatchment 20: PRWS20

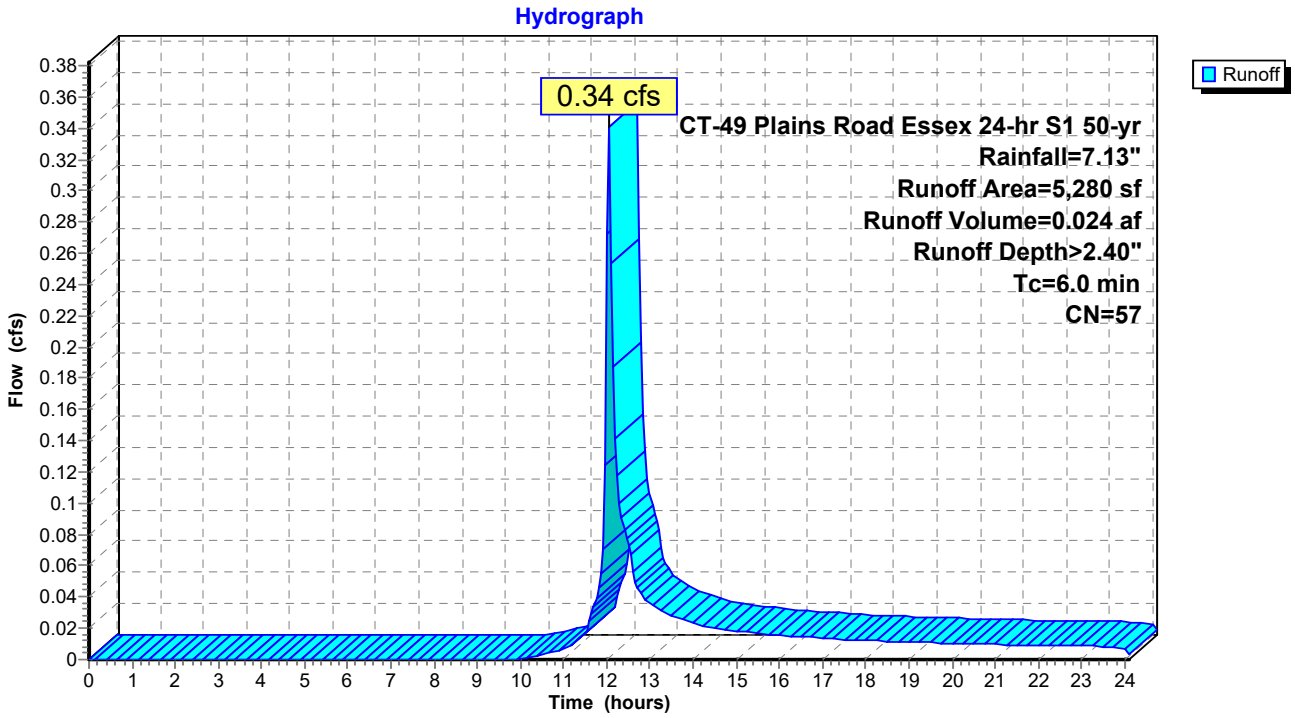
Runoff = 0.34 cfs @ 12.05 hrs, Volume= 0.024 af, Depth> 2.40"
Routed to Link 30 : Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 50-yr Rainfall=7.13"

Area (sf)	CN	Description
3,450	55	Woods, Good, HSG B
1,830	61	>75% Grass cover, Good, HSG B
5,280	57	Weighted Average
5,280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Mln. TR-55 TC**

Subcatchment 20: PRWS20



Summary for Subcatchment 21: PRWS 21

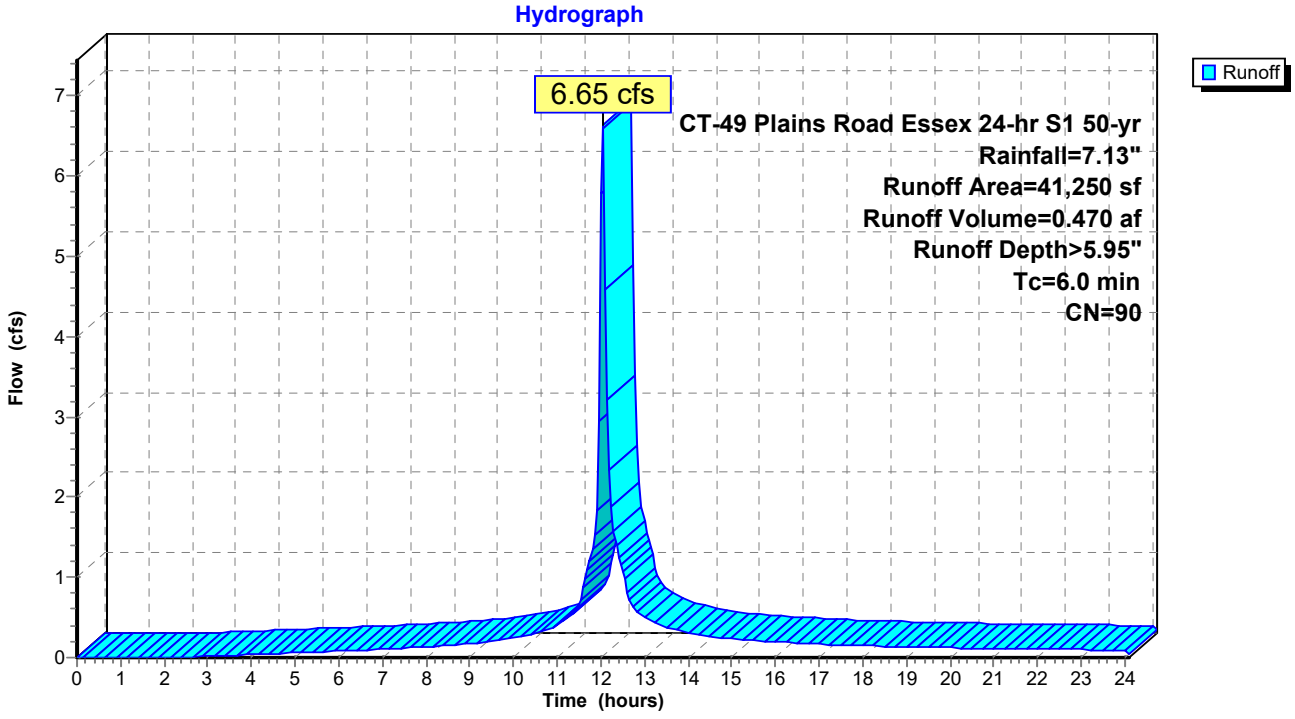
Runoff = 6.65 cfs @ 12.04 hrs, Volume= 0.470 af, Depth> 5.95"
Routed to Pond 21S : Water Qualirty Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 50-yr Rainfall=7.13"

Area (sf)	CN	Description
9,475	61	>75% Grass cover, Good, HSG B
29,400	98	Paved parking, HSG B
2,375	98	Roofs, HSG B
41,250	90	Weighted Average
9,475		22.97% Pervious Area
31,775		77.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 21: PRWS 21



Summary for Subcatchment 22: PRWS 22

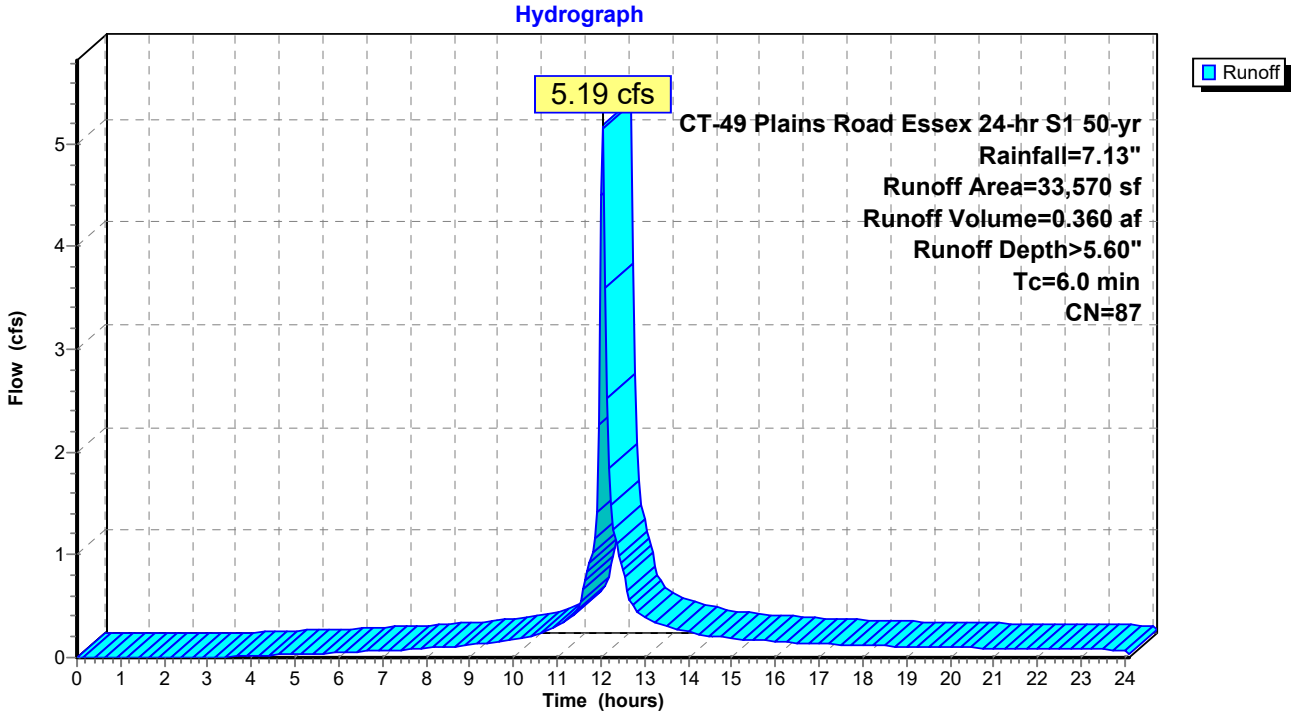
Runoff = 5.19 cfs @ 12.04 hrs, Volume= 0.360 af, Depth> 5.60"
Routed to Pond 22SA : Water Quality Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 50-yr Rainfall=7.13"

Area (sf)	CN	Description
9,870	61	>75% Grass cover, Good, HSG B
11,200	98	Paved parking, HSG B
12,500	98	Roofs, HSG B
33,570	87	Weighted Average
9,870		29.40% Pervious Area
23,700		70.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 22: PRWS 22



Summary for Pond 21S: Water Qualirty Basin

Inflow Area = 1.718 ac, 74.14% Impervious, Inflow Depth > 4.70" for 50-yr event
Inflow = 6.77 cfs @ 12.04 hrs, Volume= 0.673 af
Outflow = 5.65 cfs @ 12.09 hrs, Volume= 0.661 af, Atten= 17%, Lag= 2.9 min
Primary = 5.65 cfs @ 12.09 hrs, Volume= 0.661 af
Routed to Link 30 : Site

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 33.80' Surf.Area= 2,078 sf Storage= 2,873 cf
Peak Elev= 34.84' @ 12.09 hrs Surf.Area= 2,814 sf Storage= 5,361 cf (2,488 cf above start)

Plug-Flow detention time= 121.0 min calculated for 0.595 af (88% of inflow)
Center-of-Mass det. time= 15.3 min (864.9 - 849.6)

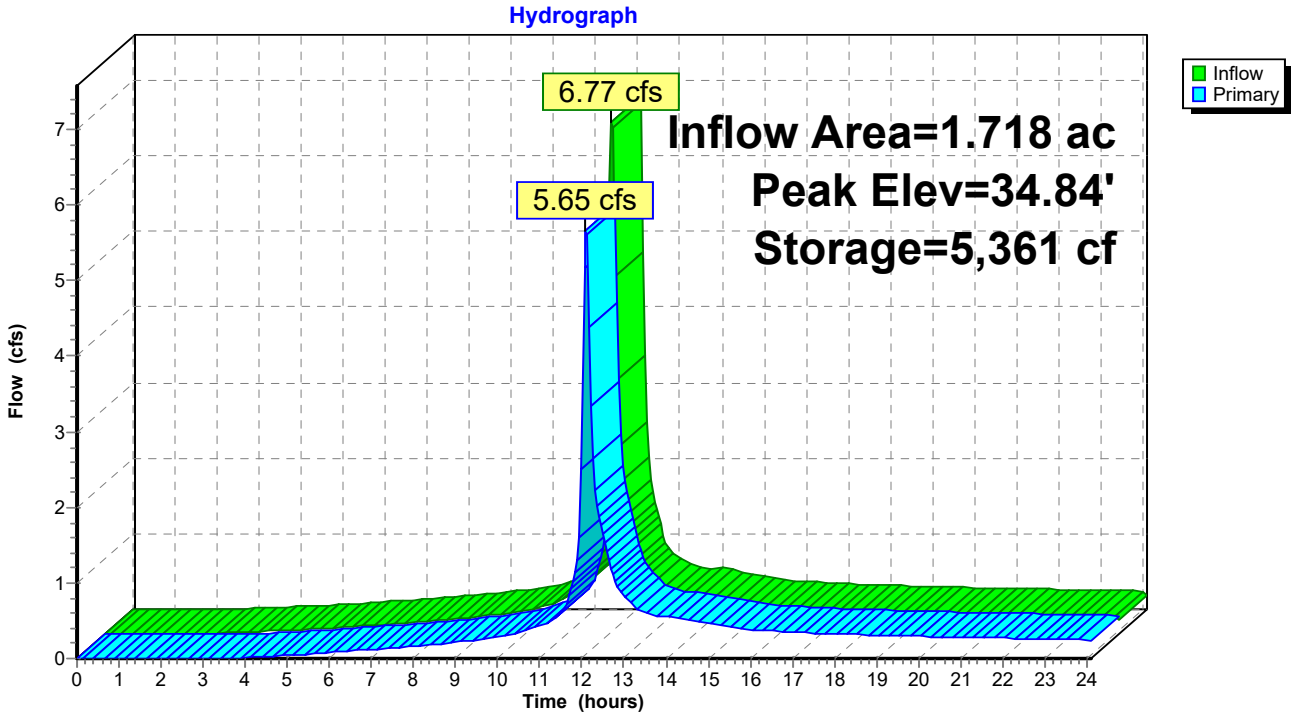
Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	5,832 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.00	1,141	239.0	0	0	1,141
33.00	1,647	259.0	1,386	1,386	1,972
34.00	2,194	263.0	1,914	3,300	2,281
34.50	2,480	289.0	1,168	4,468	3,432
35.00	2,982	391.0	1,364	5,832	8,954

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	34.60'	**10.0' long + 0.5 '/' SideZ x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=5.50 cfs @ 12.09 hrs HW=34.83' (Free Discharge)
1=Orifice/Grate (Orifice Controls 2.75 cfs @ 3.51 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 2.74 cfs @ 1.18 fps)

Pond 21S: Water Qualirty Basin



Summary for Pond 22SA: Water Quality Basin

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 5.60" for 50-yr event
Inflow = 5.19 cfs @ 12.04 hrs, Volume= 0.360 af
Outflow = 5.25 cfs @ 12.05 hrs, Volume= 0.360 af, Atten= 0%, Lag= 0.3 min
Primary = 5.25 cfs @ 12.05 hrs, Volume= 0.360 af
Routed to Pond 22SB : Underground 22

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 37.40' Surf.Area= 1,493 sf Storage= 1,924 cf
Peak Elev= 37.48' @ 12.05 hrs Surf.Area= 1,539 sf Storage= 2,039 cf (115 cf above start)

Plug-Flow detention time= 107.5 min calculated for 0.315 af (88% of inflow)
Center-of-Mass det. time= 0.6 min (799.9 - 799.4)

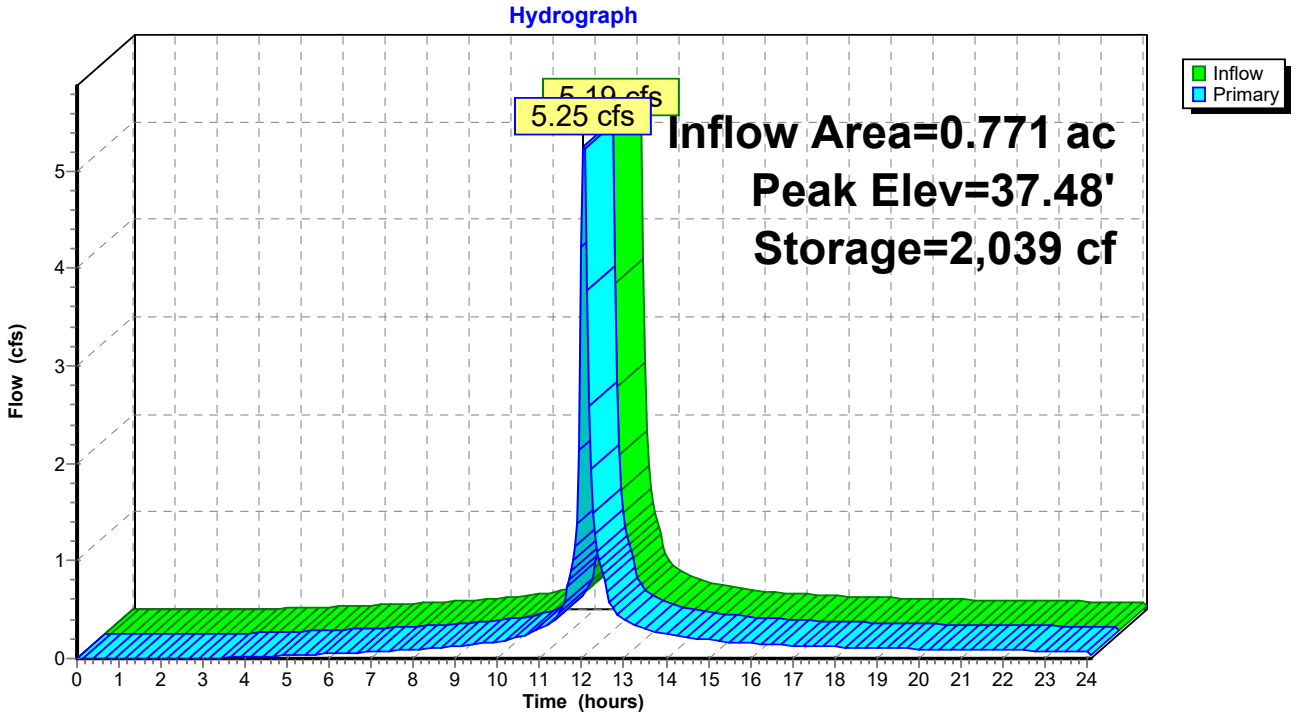
Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	2,076 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	175	238.0	0	0	175
36.00	700	264.0	408	408	1,244
37.00	1,259	291.0	966	1,374	2,468
37.50	1,554	298.0	702	2,076	2,828

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	**2.4" x 4.0" Horiz. Orifice/Grate X 8.00 columns** X 9 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.15 cfs @ 12.05 hrs HW=37.47' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 5.15 cfs @ 0.90 fps)

Pond 22SA: Water Quality Basin



Summary for Pond 22SB: Underground 22

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 5.60" for 50-yr event
Inflow = 5.25 cfs @ 12.05 hrs, Volume= 0.360 af
Outflow = 0.24 cfs @ 14.09 hrs, Volume= 0.203 af, Atten= 95%, Lag= 122.7 min
Primary = 0.24 cfs @ 14.09 hrs, Volume= 0.203 af
Routed to Pond 21S : Water Qualirty Basin

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Peak Elev= 36.93' @ 14.09 hrs Surf.Area= 0.113 ac Storage= 0.200 af

Plug-Flow detention time= 330.1 min calculated for 0.203 af (56% of inflow)
Center-of-Mass det. time= 193.5 min (993.4 - 799.9)

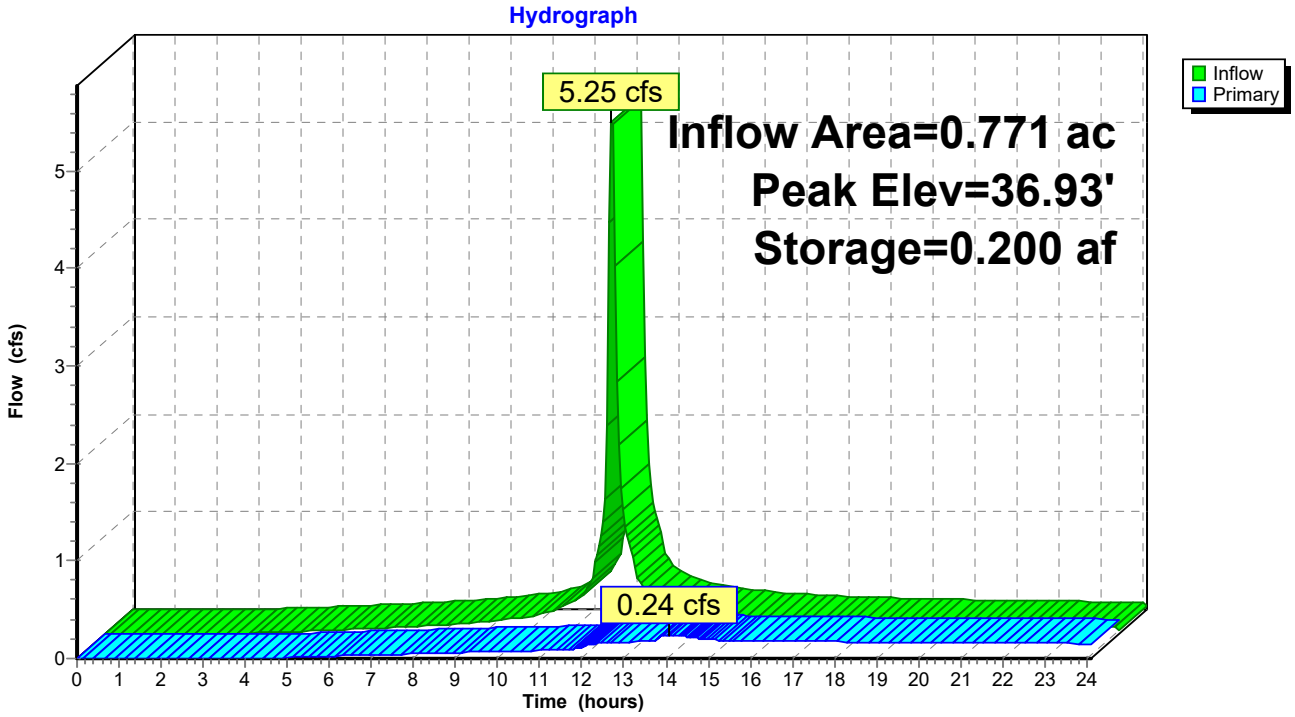
Volume	Invert	Avail.Storage	Storage Description
#1A	34.00'	0.076 af	**39.50'W x 124.66'L x 3.50'H Field A** 0.396 af Overall - 0.143 af Embedded = 0.252 af x 30.0% Voids
#2A	34.50'	0.143 af	**ADS_StormTech SC-740 +Cap** x 136 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 136 Chambers in 8 Rows
		0.219 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	36.90'	**4.0' long + 1.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.24 cfs @ 14.09 hrs HW=36.93' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.18 cfs @ 8.13 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 0.06 cfs @ 0.48 fps)

Pond 22SB: Underground 22

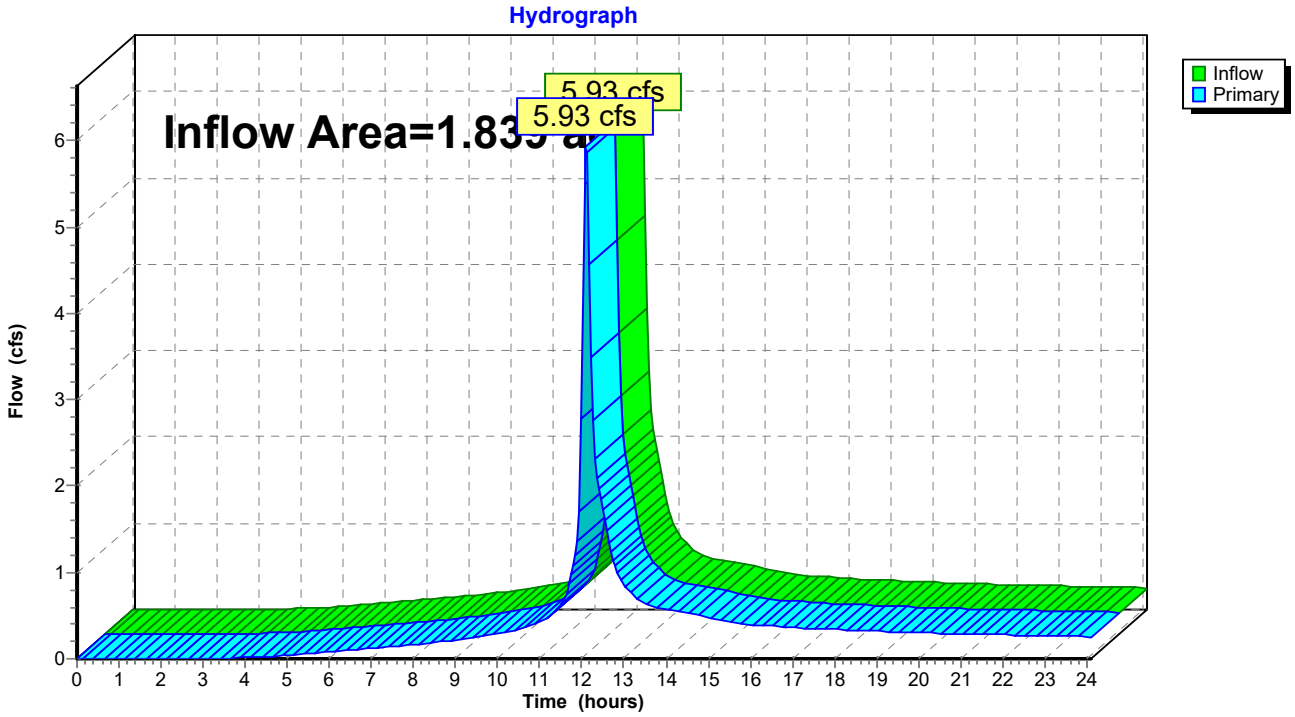


Summary for Link 30: Site

Inflow Area = 1.839 ac, 69.26% Impervious, Inflow Depth > 4.47" for 50-yr event
Inflow = 5.93 cfs @ 12.09 hrs, Volume= 0.685 af
Primary = 5.93 cfs @ 12.09 hrs, Volume= 0.685 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link 30: Site



Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 20: PRWS20 Runoff Area=5,280 sf 0.00% Impervious Runoff Depth>3.01"
Tc=6.0 min CN=57 Runoff=0.44 cfs 0.030 af

Subcatchment 21: PRWS 21 Runoff Area=41,250 sf 77.03% Impervious Runoff Depth>6.81"
Tc=6.0 min CN=90 Runoff=7.53 cfs 0.538 af

Subcatchment 22: PRWS 22 Runoff Area=33,570 sf 70.60% Impervious Runoff Depth>6.46"
Tc=6.0 min CN=87 Runoff=5.92 cfs 0.415 af

Pond 21S: Water Qualirty Basin Peak Elev=34.88' Storage=5,475 cf Inflow=7.67 cfs 0.788 af
Outflow=6.56 cfs 0.776 af

Pond 22SA: Water Quality Basin Peak Elev=37.48' Storage=2,052 cf Inflow=5.92 cfs 0.415 af
Outflow=5.96 cfs 0.415 af

Pond 22SB: Underground 22 Peak Elev=37.04' Storage=0.204 af Inflow=5.96 cfs 0.415 af
Outflow=0.79 cfs 0.250 af

Link 30: Site Inflow=6.92 cfs 0.806 af
Primary=6.92 cfs 0.806 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.983 af Average Runoff Depth = 6.41"
30.74% Pervious = 0.565 ac 69.26% Impervious = 1.274 ac

Summary for Subcatchment 20: PRWS20

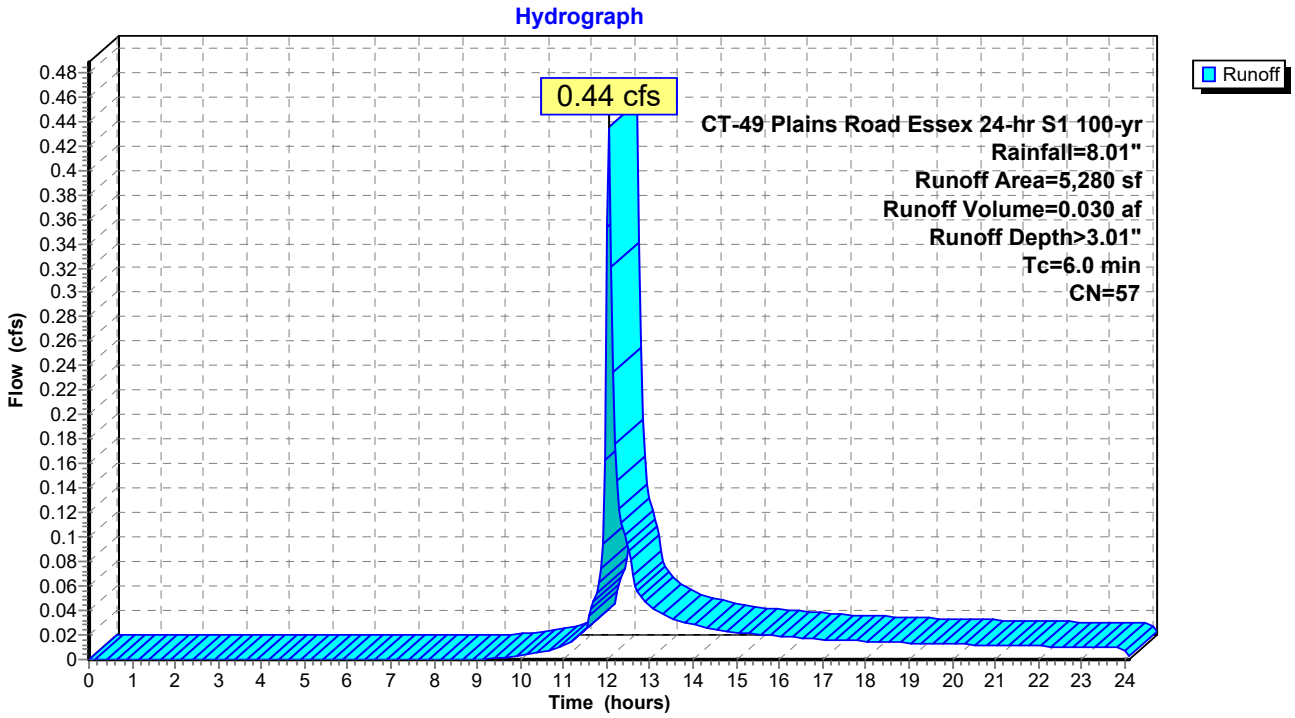
Runoff = 0.44 cfs @ 12.05 hrs, Volume= 0.030 af, Depth> 3.01"
Routed to Link 30 : Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 100-yr Rainfall=8.01"

Area (sf)	CN	Description
3,450	55	Woods, Good, HSG B
1,830	61	>75% Grass cover, Good, HSG B
5,280	57	Weighted Average
5,280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 20: PRWS20



Summary for Subcatchment 21: PRWS 21

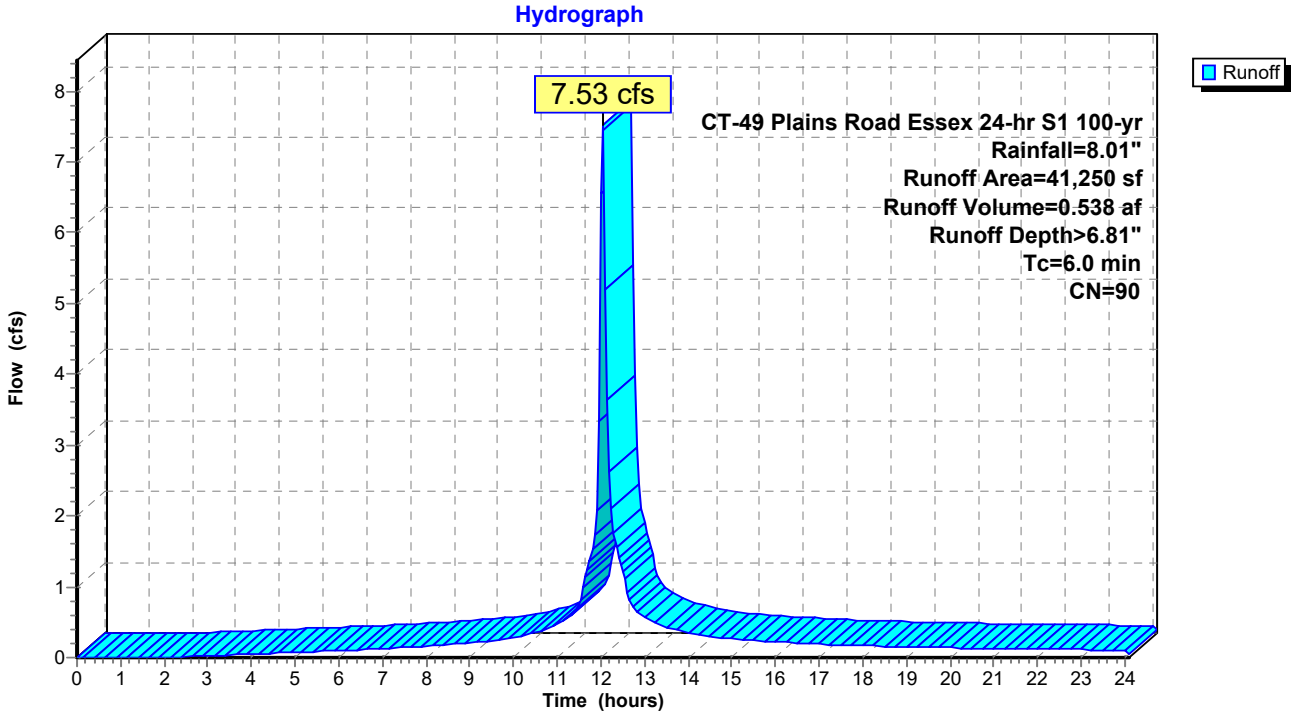
Runoff = 7.53 cfs @ 12.04 hrs, Volume= 0.538 af, Depth> 6.81"
Routed to Pond 21S : Water Qualirty Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 100-yr Rainfall=8.01"

Area (sf)	CN	Description
9,475	61	>75% Grass cover, Good, HSG B
29,400	98	Paved parking, HSG B
2,375	98	Roofs, HSG B
41,250	90	Weighted Average
9,475		22.97% Pervious Area
31,775		77.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 21: PRWS 21



Summary for Subcatchment 22: PRWS 22

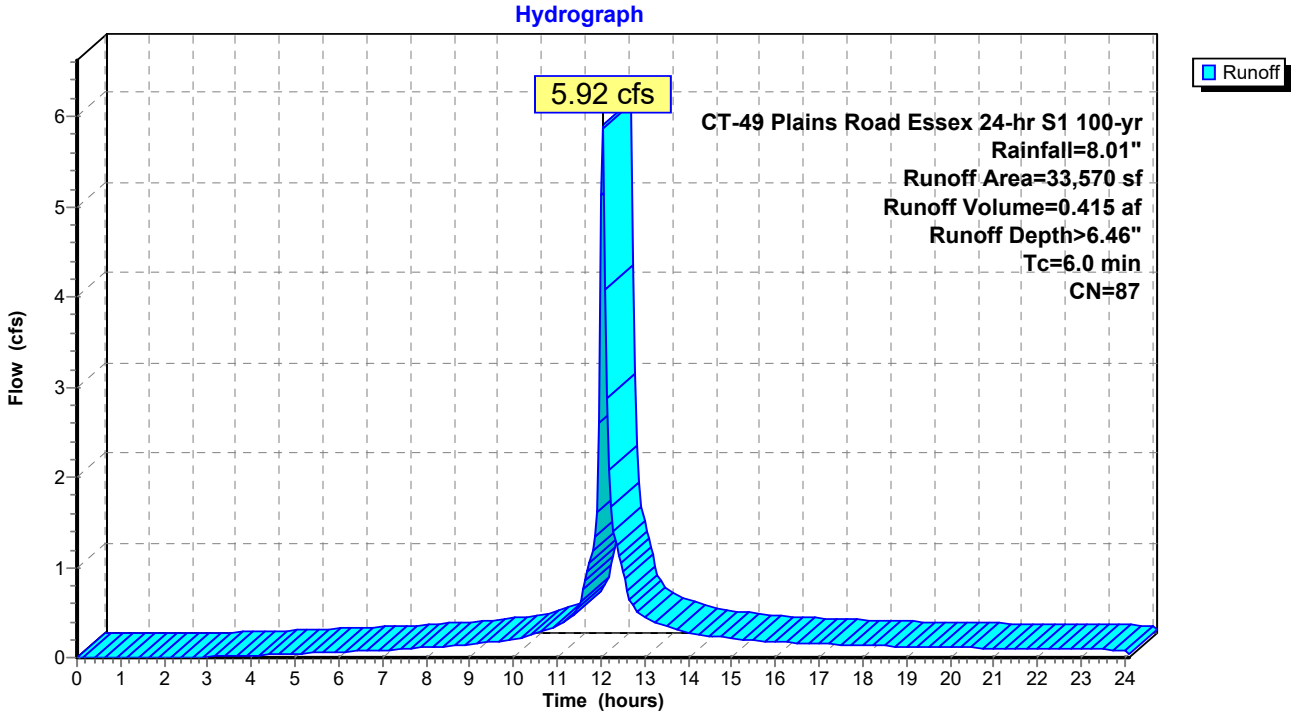
Runoff = 5.92 cfs @ 12.04 hrs, Volume= 0.415 af, Depth> 6.46"
Routed to Pond 22SA : Water Quality Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 100-yr Rainfall=8.01"

Area (sf)	CN	Description
9,870	61	>75% Grass cover, Good, HSG B
11,200	98	Paved parking, HSG B
12,500	98	Roofs, HSG B
33,570	87	Weighted Average
9,870		29.40% Pervious Area
23,700		70.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 22: PRWS 22



Summary for Pond 21S: Water Qualirty Basin

Inflow Area = 1.718 ac, 74.14% Impervious, Inflow Depth > 5.50" for 100-yr event
Inflow = 7.67 cfs @ 12.04 hrs, Volume= 0.788 af
Outflow = 6.56 cfs @ 12.08 hrs, Volume= 0.776 af, Atten= 14%, Lag= 2.5 min
Primary = 6.56 cfs @ 12.08 hrs, Volume= 0.776 af
Routed to Link 30 : Site

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 33.80' Surf.Area= 2,078 sf Storage= 2,873 cf
Peak Elev= 34.88' @ 12.08 hrs Surf.Area= 2,855 sf Storage= 5,475 cf (2,602 cf above start)

Plug-Flow detention time= 107.6 min calculated for 0.710 af (90% of inflow)
Center-of-Mass det. time= 14.6 min (851.7 - 837.1)

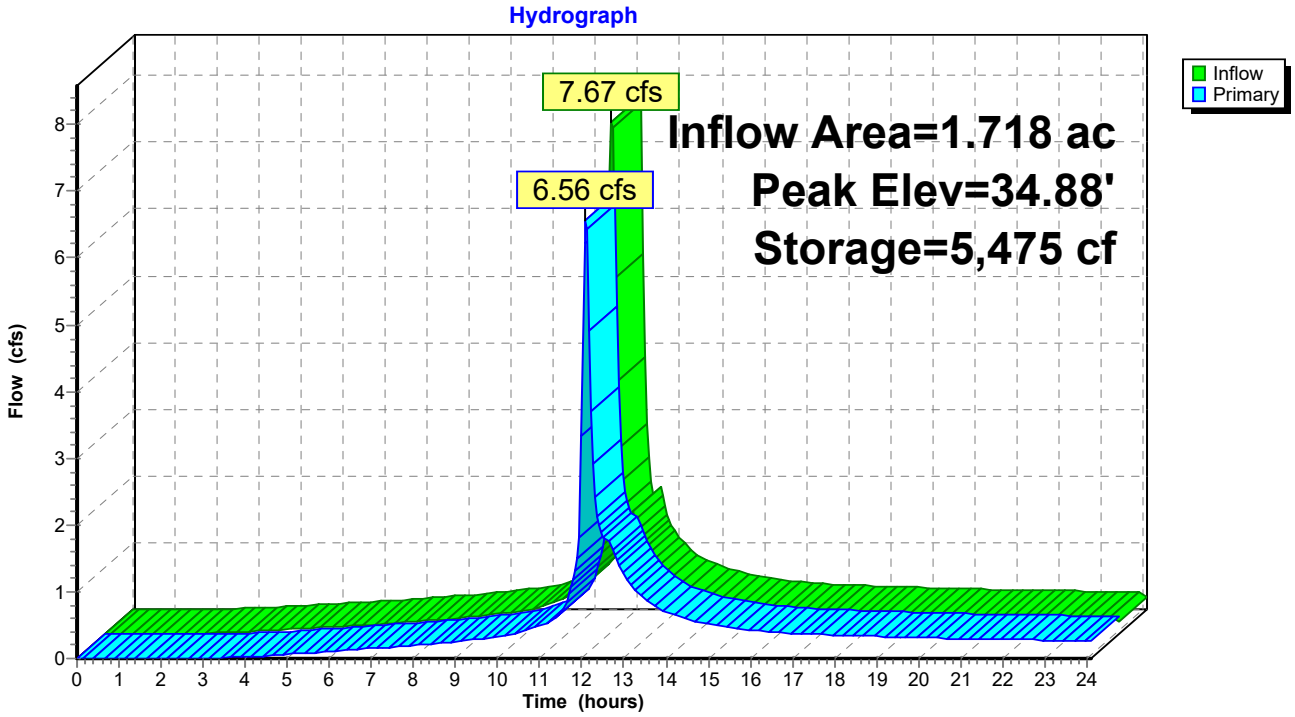
Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	5,832 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.00	1,141	239.0	0	0	1,141
33.00	1,647	259.0	1,386	1,386	1,972
34.00	2,194	263.0	1,914	3,300	2,281
34.50	2,480	289.0	1,168	4,468	3,432
35.00	2,982	391.0	1,364	5,832	8,954

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	34.60'	**10.0' long + 0.5 '/' SideZ x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=6.35 cfs @ 12.08 hrs HW=34.87' (Free Discharge)
1=Orifice/Grate (Orifice Controls 2.85 cfs @ 3.63 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 3.50 cfs @ 1.29 fps)

Pond 21S: Water Qualirty Basin



Summary for Pond 22SA: Water Quality Basin

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 6.46" for 100-yr event
Inflow = 5.92 cfs @ 12.04 hrs, Volume= 0.415 af
Outflow = 5.96 cfs @ 12.05 hrs, Volume= 0.415 af, Atten= 0%, Lag= 0.3 min
Primary = 5.96 cfs @ 12.05 hrs, Volume= 0.415 af
Routed to Pond 22SB : Underground 22

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 37.40' Surf.Area= 1,493 sf Storage= 1,924 cf
Peak Elev= 37.48' @ 12.05 hrs Surf.Area= 1,544 sf Storage= 2,052 cf (128 cf above start)

Plug-Flow detention time= 98.7 min calculated for 0.371 af (89% of inflow)
Center-of-Mass det. time= 0.5 min (795.2 - 794.6)

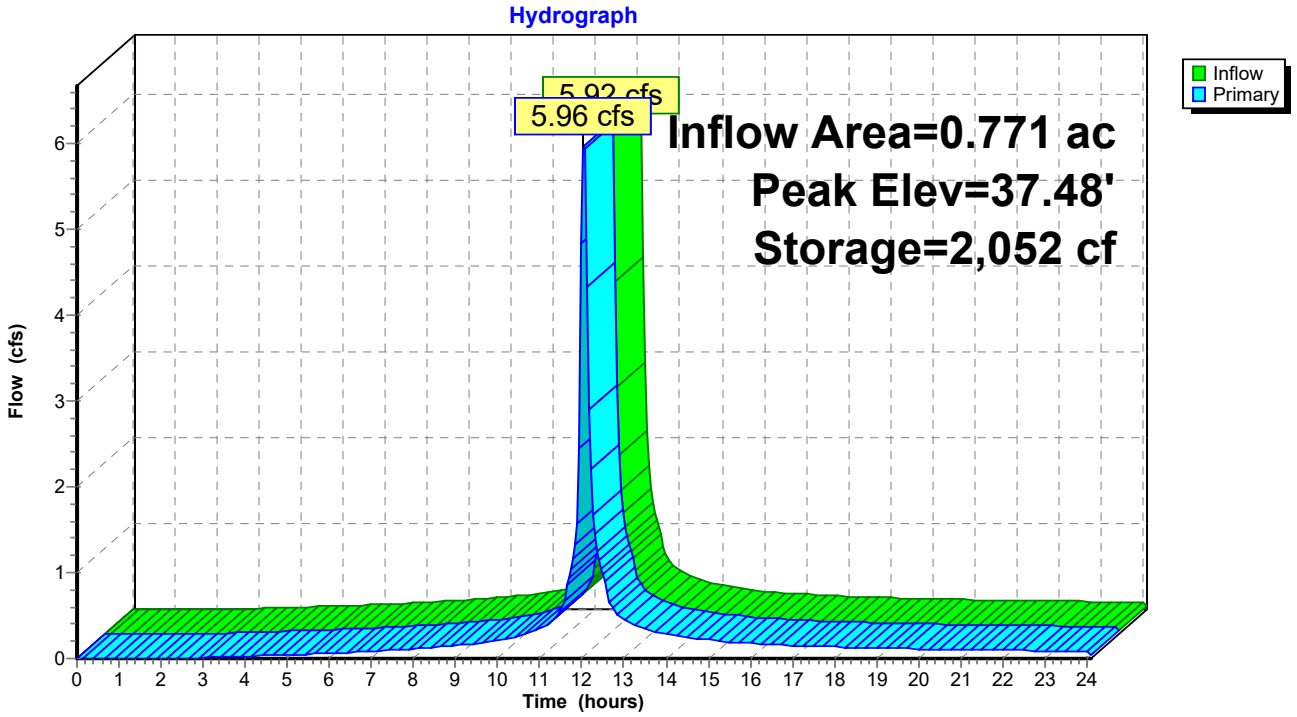
Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	2,076 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	175	238.0	0	0	175
36.00	700	264.0	408	408	1,244
37.00	1,259	291.0	966	1,374	2,468
37.50	1,554	298.0	702	2,076	2,828

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	**2.4" x 4.0" Horiz. Orifice/Grate X 8.00 columns** X 9 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.00 cfs @ 12.05 hrs HW=37.48' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 6.00 cfs @ 0.94 fps)

Pond 22SA: Water Quality Basin



Summary for Pond 22SB: Underground 22

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 6.46" for 100-yr event
Inflow = 5.96 cfs @ 12.05 hrs, Volume= 0.415 af
Outflow = 0.79 cfs @ 12.60 hrs, Volume= 0.250 af, Atten= 87%, Lag= 33.5 min
Primary = 0.79 cfs @ 12.60 hrs, Volume= 0.250 af
Routed to Pond 21S : Water Qualirty Basin

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Peak Elev= 37.04' @ 12.60 hrs Surf.Area= 0.113 ac Storage= 0.204 af

Plug-Flow detention time= 289.1 min calculated for 0.250 af (60% of inflow)
Center-of-Mass det. time= 158.0 min (953.2 - 795.2)

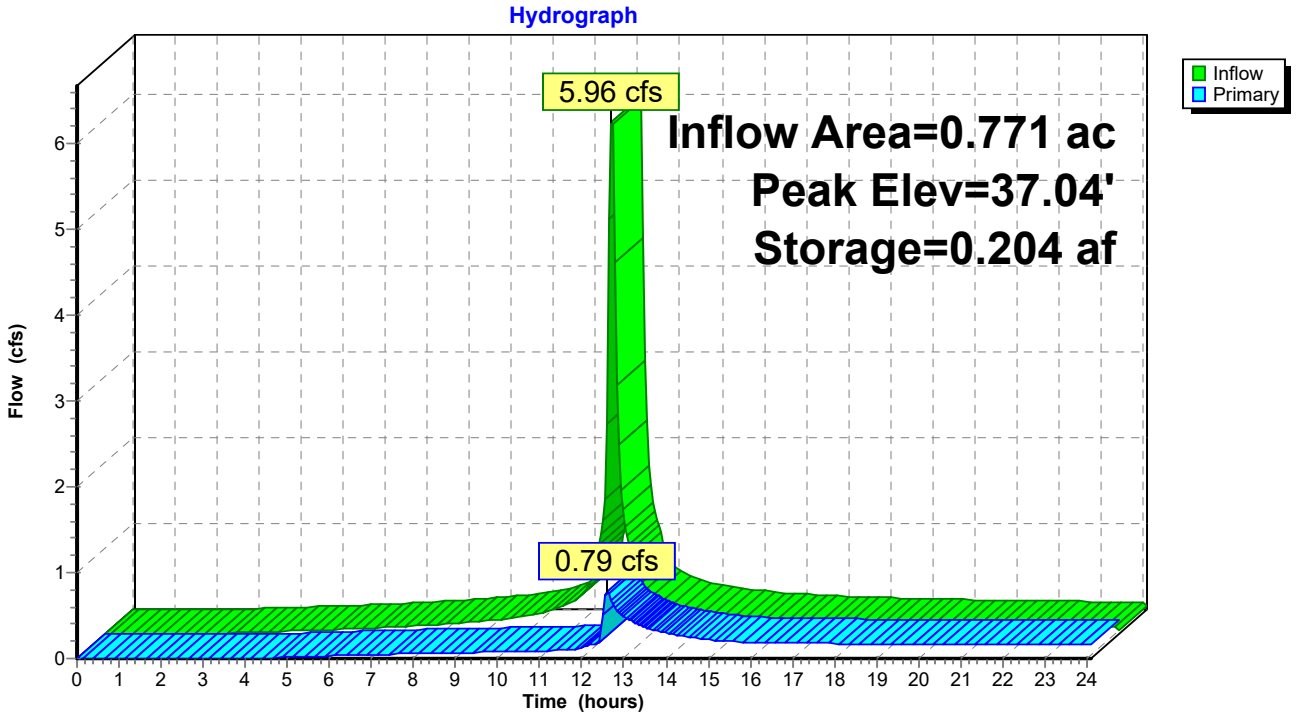
Volume	Invert	Avail.Storage	Storage Description
#1A	34.00'	0.076 af	**39.50'W x 124.66'L x 3.50'H Field A** 0.396 af Overall - 0.143 af Embedded = 0.252 af x 30.0% Voids
#2A	34.50'	0.143 af	**ADS_StormTech SC-740 +Cap** x 136 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 136 Chambers in 8 Rows
		0.219 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	36.90'	**4.0' long + 1.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.78 cfs @ 12.60 hrs HW=37.04' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.18 cfs @ 8.28 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 0.60 cfs @ 1.01 fps)

Pond 22SB: Underground 22

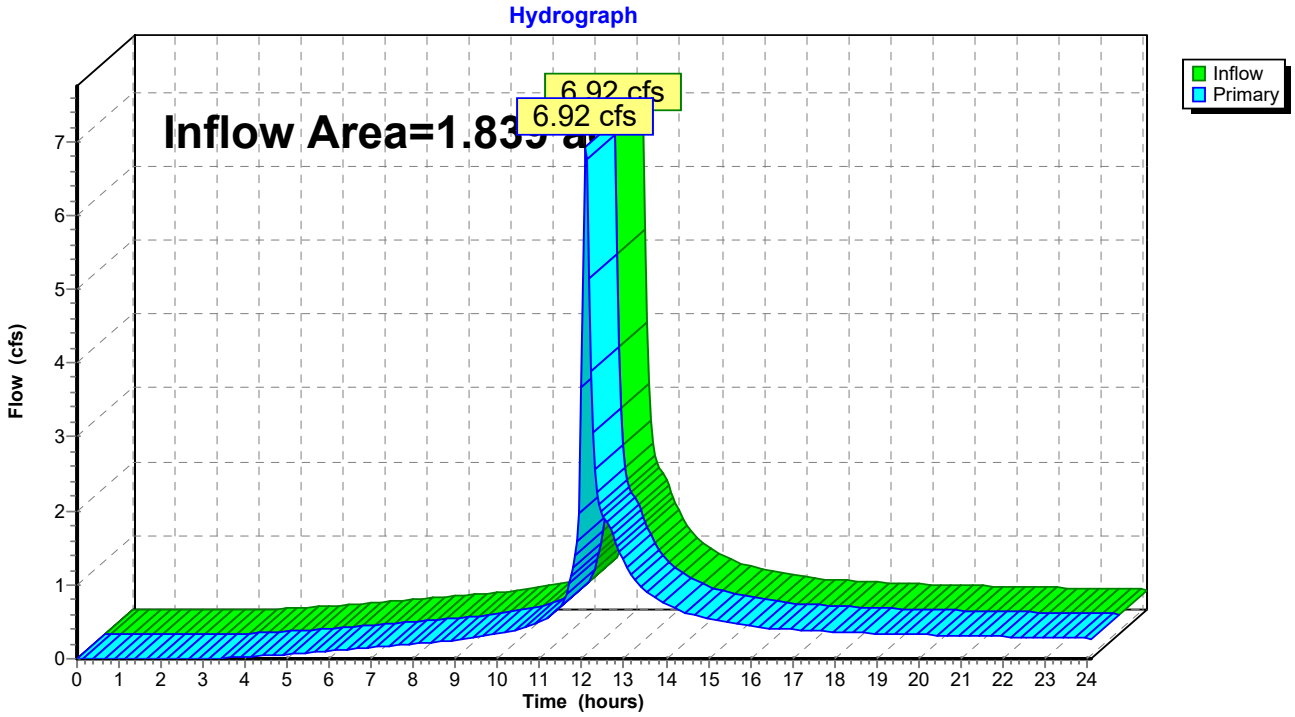


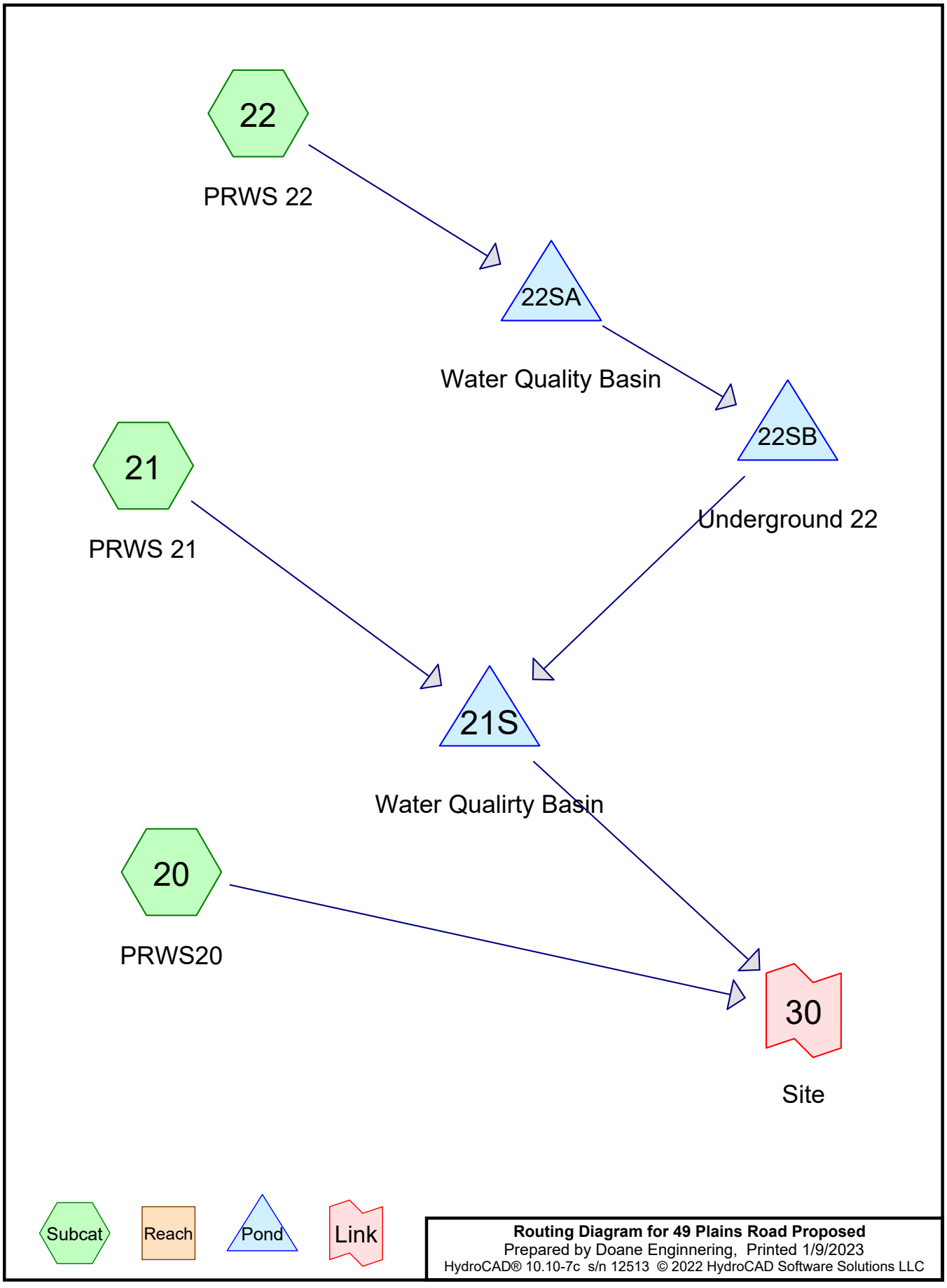
Summary for Link 30: Site

Inflow Area = 1.839 ac, 69.26% Impervious, Inflow Depth > 5.26" for 100-yr event
Inflow = 6.92 cfs @ 12.08 hrs, Volume= 0.806 af
Primary = 6.92 cfs @ 12.08 hrs, Volume= 0.806 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link 30: Site





Routing Diagram for 49 Plains Road Proposed
Prepared by Doane Enginnering, Printed 1/9/2023

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	CT-49 Plains Road Essex 24-hr S1	1-yr	Default	24.00	1	2.85	2
2	2-yr	CT-49 Plains Road Essex 24-hr S1	2-yr	Default	24.00	1	3.44	2
3	5-yr	CT-49 Plains Road Essex 24-hr S1	5-yr	Default	24.00	1	4.40	2
4	10-yr	CT-49 Plains Road Essex 24-hr S1	10-yr	Default	24.00	1	5.20	2
5	25-yr	CT-49 Plains Road Essex 24-hr S1	25-yr	Default	24.00	1	6.31	2
6	50-yr	CT-49 Plains Road Essex 24-hr S1	50-yr	Default	24.00	1	7.13	2
7	100-yr	CT-49 Plains Road Essex 24-hr S1	100-yr	Default	24.00	1	8.01	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.486	61	>75% Grass cover, Good, HSG B (20, 21, 22)
0.932	98	Paved parking, HSG B (21, 22)
0.341	98	Roofs, HSG B (21, 22)
0.079	55	Woods, Good, HSG B (20)
1.839	**86**	**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.486	0.000	0.000	0.000	0.486	>75% Grass cover, Good	20, 21, 22
0.000	0.932	0.000	0.000	0.000	0.932	Paved parking	21, 22
0.000	0.341	0.000	0.000	0.000	0.341	Roofs	21, 22
0.000	0.079	0.000	0.000	0.000	0.079	Woods, Good	20
0.000	**1.839**	**0.000**	**0.000**	**0.000**	**1.839**	**TOTAL AREA**	

Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 20: PRWS20 Runoff Area=5,280 sf 0.00% Impervious Runoff Depth>0.20"
Tc=6.0 min CN=57 Runoff=0.01 cfs 0.002 af

Subcatchment 21: PRWS 21 Runoff Area=41,250 sf 77.03% Impervious Runoff Depth>1.85"
Tc=6.0 min CN=90 Runoff=2.21 cfs 0.146 af

Subcatchment 22: PRWS 22 Runoff Area=33,570 sf 70.60% Impervious Runoff Depth>1.61"
Tc=6.0 min CN=87 Runoff=1.57 cfs 0.103 af

Pond 21S: Water Qualirty Basin Peak Elev=34.38' Storage=4,179 cf Inflow=2.28 cfs 0.234 af
Outflow=1.23 cfs 0.226 af

Pond 22SA: Water Quality Basin Peak Elev=37.43' Storage=1,974 cf Inflow=1.57 cfs 0.103 af
Outflow=1.61 cfs 0.103 af

Pond 22SB: Underground 22 Peak Elev=34.84' Storage=0.048 af Inflow=1.61 cfs 0.103 af
Outflow=0.09 cfs 0.088 af

Link 30: Site Inflow=1.24 cfs 0.228 af
Primary=1.24 cfs 0.228 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.251 af Average Runoff Depth = 1.64"
30.74% Pervious = 0.565 ac 69.26% Impervious = 1.274 ac

Summary for Subcatchment 20: PRWS20

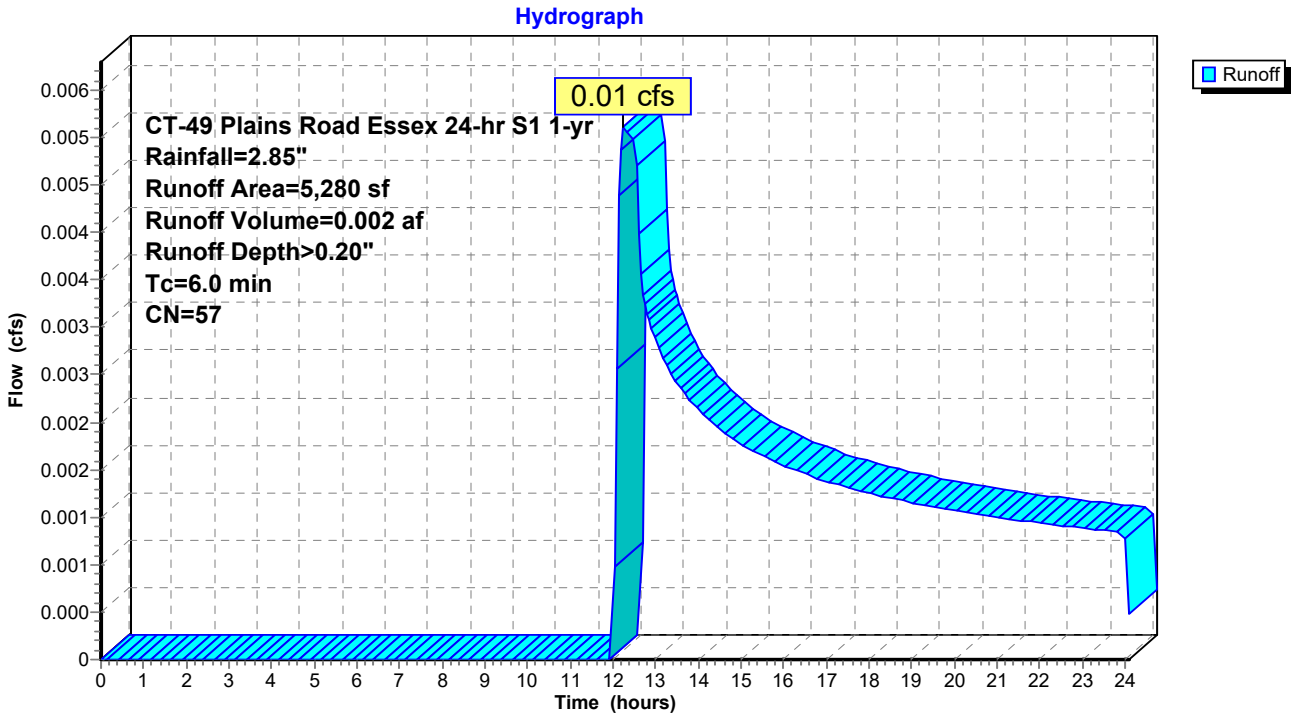
Runoff = 0.01 cfs @ 12.25 hrs, Volume= 0.002 af, Depth> 0.20"
Routed to Link 30 : Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 1-yr Rainfall=2.85"

Area (sf)	CN	Description
3,450	55	Woods, Good, HSG B
1,830	61	>75% Grass cover, Good, HSG B
5,280	57	Weighted Average
5,280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 20: PRWS20



Summary for Subcatchment 21: PRWS 21

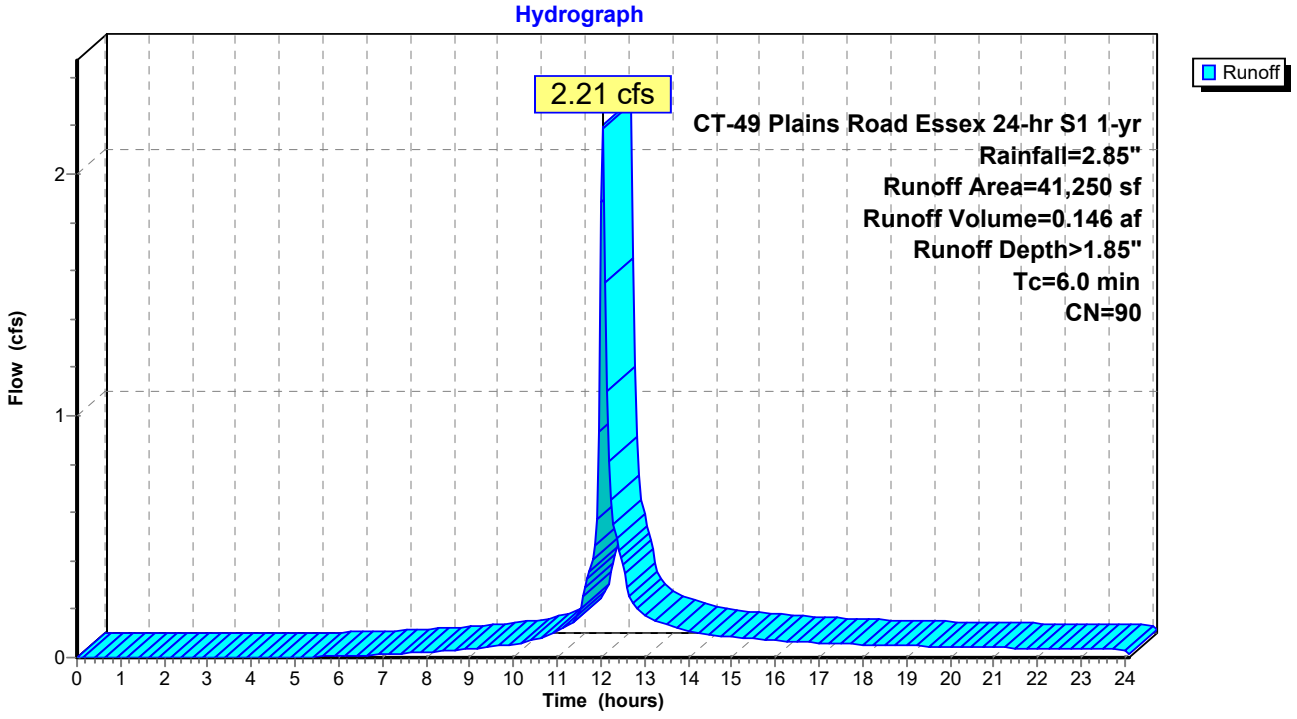
Runoff = 2.21 cfs @ 12.04 hrs, Volume= 0.146 af, Depth> 1.85"
Routed to Pond 21S : Water Qualirty Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 1-yr Rainfall=2.85"

Area (sf)	CN	Description
9,475	61	>75% Grass cover, Good, HSG B
29,400	98	Paved parking, HSG B
2,375	98	Roofs, HSG B
41,250	90	Weighted Average
9,475		22.97% Pervious Area
31,775		77.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 21: PRWS 21



Summary for Subcatchment 22: PRWS 22

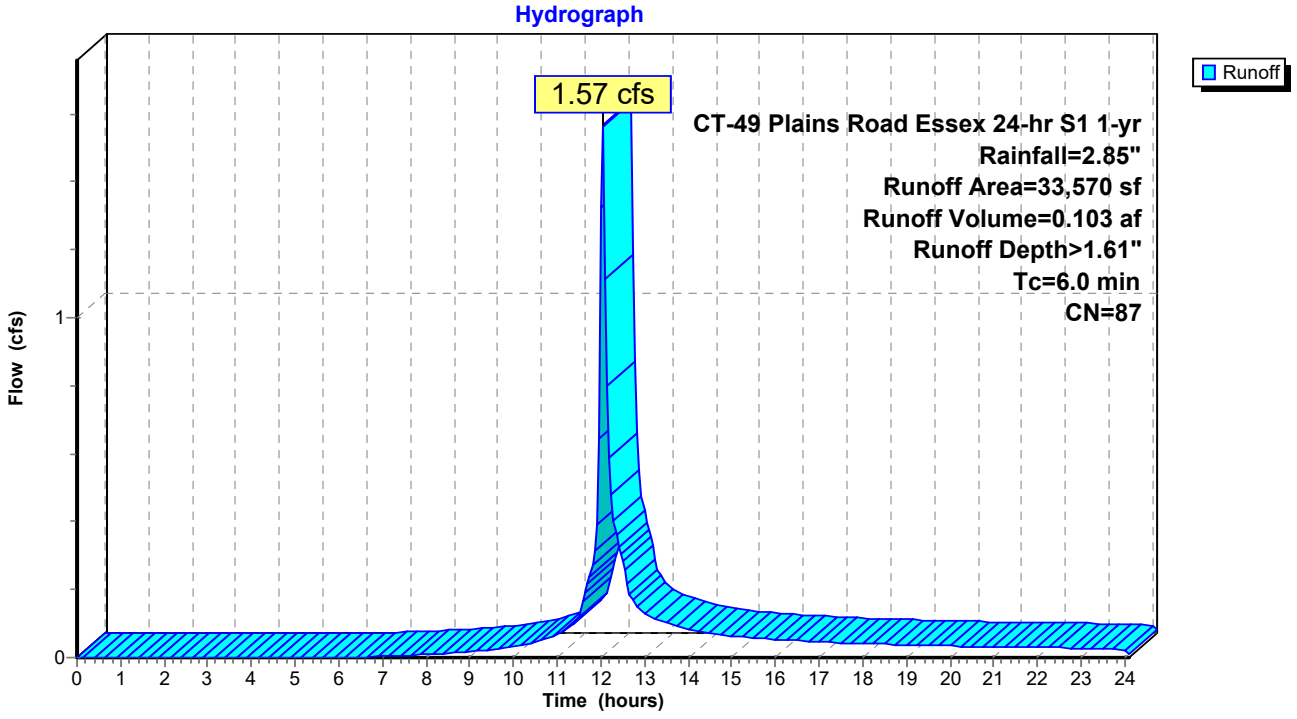
Runoff = 1.57 cfs @ 12.04 hrs, Volume= 0.103 af, Depth> 1.61"
Routed to Pond 22SA : Water Quality Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 1-yr Rainfall=2.85"

Area (sf)	CN	Description
9,870	61	>75% Grass cover, Good, HSG B
11,200	98	Paved parking, HSG B
12,500	98	Roofs, HSG B
33,570	87	Weighted Average
9,870		29.40% Pervious Area
23,700		70.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 22: PRWS 22



Summary for Pond 21S: Water Qualirty Basin

Inflow Area = 1.718 ac, 74.14% Impervious, Inflow Depth > 1.63" for 1-yr event
Inflow = 2.28 cfs @ 12.04 hrs, Volume= 0.234 af
Outflow = 1.23 cfs @ 12.15 hrs, Volume= 0.226 af, Atten= 46%, Lag= 6.6 min
Primary = 1.23 cfs @ 12.15 hrs, Volume= 0.226 af
Routed to Link 30 : Site

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 33.80' Surf.Area= 2,078 sf Storage= 2,873 cf
Peak Elev= 34.38' @ 12.15 hrs Surf.Area= 2,411 sf Storage= 4,179 cf (1,306 cf above start)

Plug-Flow detention time= 254.8 min calculated for 0.160 af (69% of inflow)
Center-of-Mass det. time= 21.7 min (928.8 - 907.1)

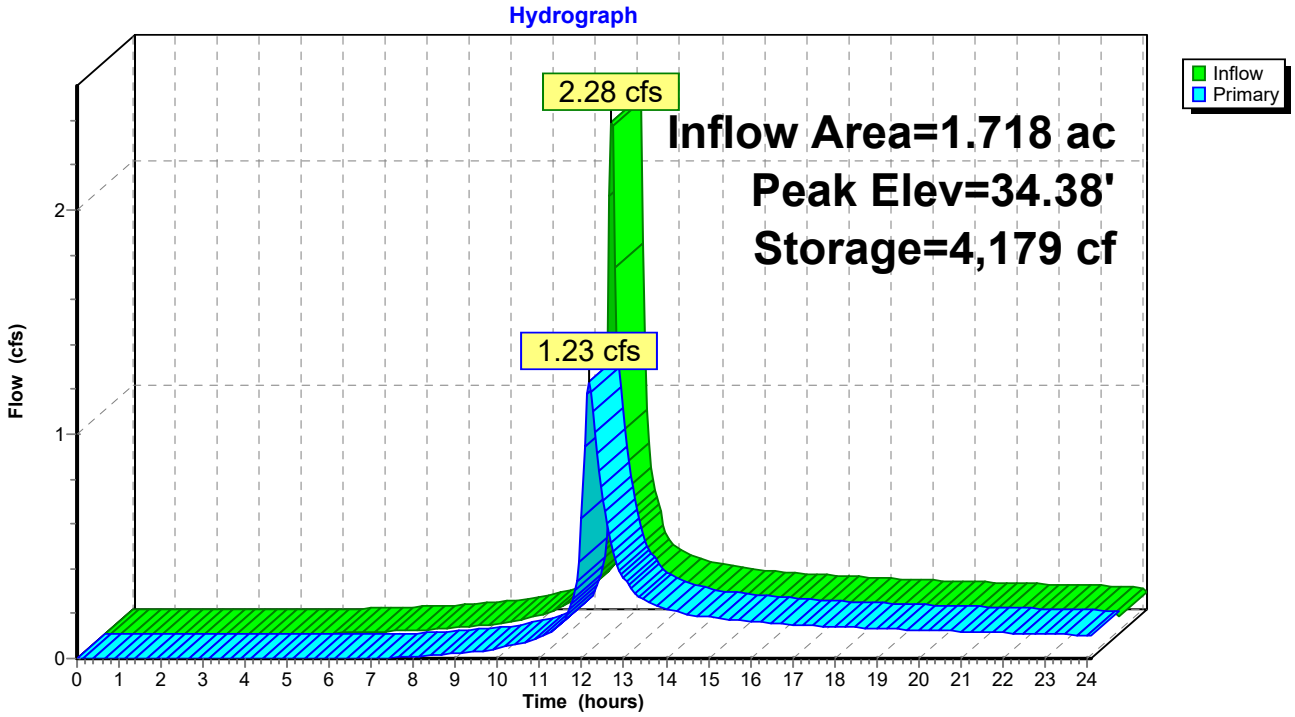
Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	5,832 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.00	1,141	239.0	0	0	1,141
33.00	1,647	259.0	1,386	1,386	1,972
34.00	2,194	263.0	1,914	3,300	2,281
34.50	2,480	289.0	1,168	4,468	3,432
35.00	2,982	391.0	1,364	5,832	8,954

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	34.60'	**10.0' long + 0.5 '/' SideZ x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=1.23 cfs @ 12.15 hrs HW=34.38' (Free Discharge)
1=Orifice/Grate (Orifice Controls 1.23 cfs @ 2.60 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 21S: Water Qualirty Basin



Summary for Pond 22SA: Water Quality Basin

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 1.61" for 1-yr event
Inflow = 1.57 cfs @ 12.04 hrs, Volume= 0.103 af
Outflow = 1.61 cfs @ 12.05 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.4 min
Primary = 1.61 cfs @ 12.05 hrs, Volume= 0.103 af
Routed to Pond 22SB : Underground 22

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 37.40' Surf.Area= 1,493 sf Storage= 1,924 cf
Peak Elev= 37.43' @ 12.05 hrs Surf.Area= 1,513 sf Storage= 1,974 cf (50 cf above start)

Plug-Flow detention time= 250.0 min calculated for 0.059 af (57% of inflow)
Center-of-Mass det. time= 0.6 min (844.4 - 843.8)

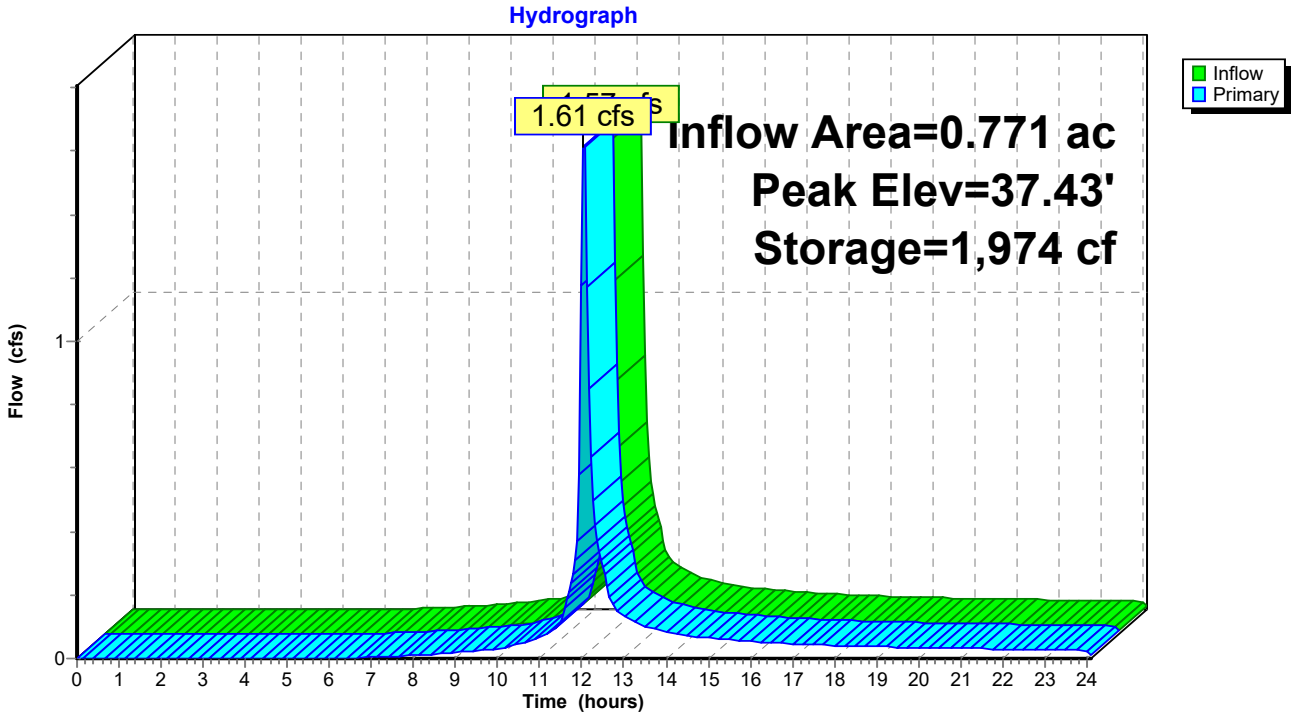
Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	2,076 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	175	238.0	0	0	175
36.00	700	264.0	408	408	1,244
37.00	1,259	291.0	966	1,374	2,468
37.50	1,554	298.0	702	2,076	2,828

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	**2.4" x 4.0" Horiz. Orifice/Grate X 8.00 columns** X 9 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.54 cfs @ 12.05 hrs HW=37.43' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 1.54 cfs @ 0.60 fps)

Pond 22SA: Water Quality Basin



Summary for Pond 22SB: Underground 22

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 1.61" for 1-yr event
Inflow = 1.61 cfs @ 12.05 hrs, Volume= 0.103 af
Outflow = 0.09 cfs @ 13.75 hrs, Volume= 0.088 af, Atten= 94%, Lag= 102.1 min
Primary = 0.09 cfs @ 13.75 hrs, Volume= 0.088 af
Routed to Pond 21S : Water Qualirty Basin

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Peak Elev= 34.84' @ 13.75 hrs Surf.Area= 0.113 ac Storage= 0.048 af

Plug-Flow detention time= 267.0 min calculated for 0.088 af (85% of inflow)
Center-of-Mass det. time= 194.3 min (1,038.6 - 844.4)

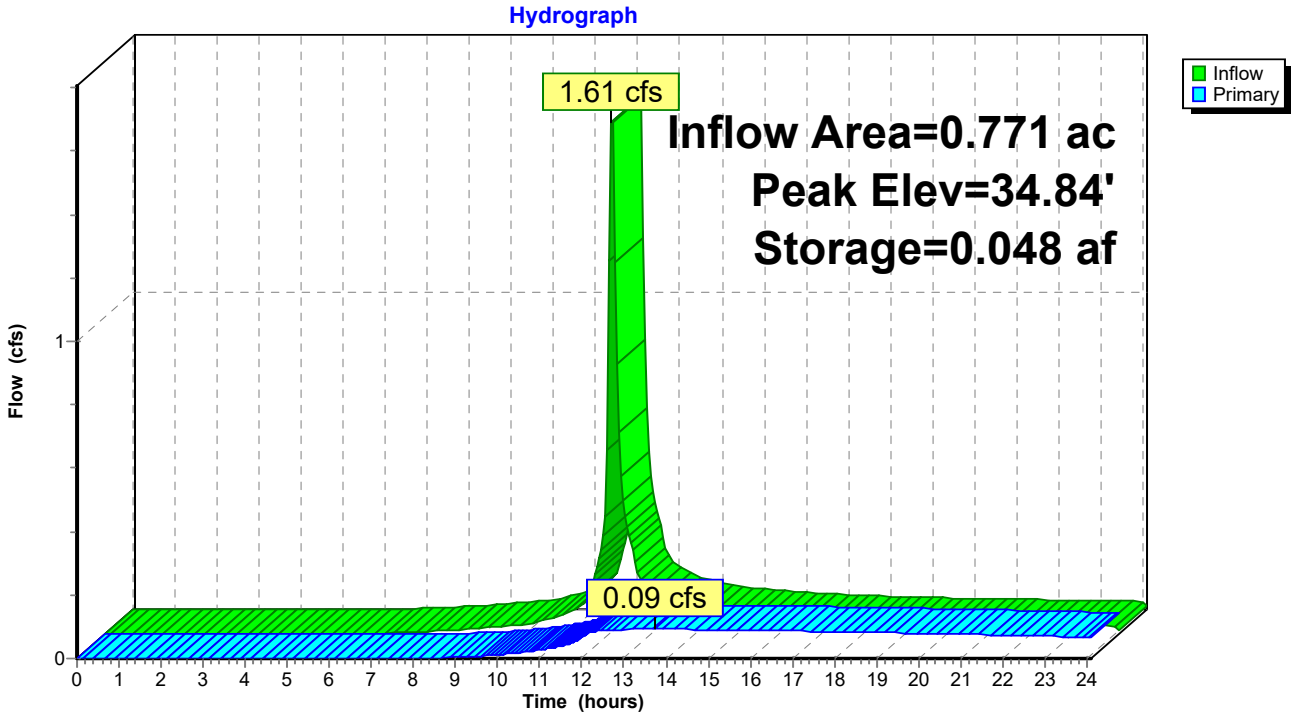
Volume	Invert	Avail.Storage	Storage Description
#1A	34.00'	0.076 af	**39.50'W x 124.66'L x 3.50'H Field A** 0.396 af Overall - 0.143 af Embedded = 0.252 af x 30.0% Voids
#2A	34.50'	0.143 af	**ADS_StormTech SC-740 +Cap** x 136 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 136 Chambers in 8 Rows
		0.219 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	36.90'	**4.0' long + 1.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.09 cfs @ 13.75 hrs HW=34.84' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.09 cfs @ 4.20 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 22SB: Underground 22

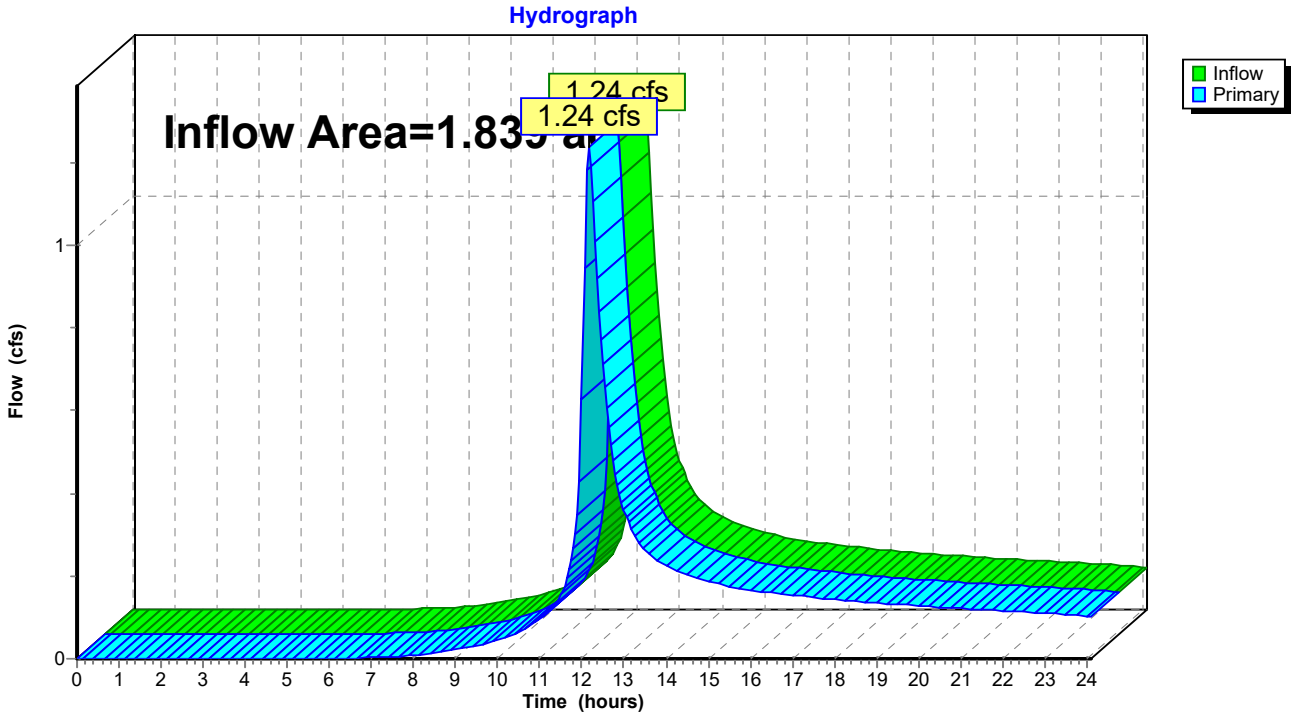


Summary for Link 30: Site

Inflow Area = 1.839 ac, 69.26% Impervious, Inflow Depth > 1.49" for 1-yr event
Inflow = 1.24 cfs @ 12.15 hrs, Volume= 0.228 af
Primary = 1.24 cfs @ 12.15 hrs, Volume= 0.228 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link 30: Site



Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 20: PRWS20 Runoff Area=5,280 sf 0.00% Impervious Runoff Depth>0.39"
Tc=6.0 min CN=57 Runoff=0.02 cfs 0.004 af

Subcatchment 21: PRWS 21 Runoff Area=41,250 sf 77.03% Impervious Runoff Depth>2.39"
Tc=6.0 min CN=90 Runoff=2.82 cfs 0.189 af

Subcatchment 22: PRWS 22 Runoff Area=33,570 sf 70.60% Impervious Runoff Depth>2.13"
Tc=6.0 min CN=87 Runoff=2.06 cfs 0.137 af

Pond 21S: Water Qualirty Basin Peak Elev=34.49' Storage=4,435 cf Inflow=2.90 cfs 0.293 af
Outflow=1.62 cfs 0.285 af

Pond 22SA: Water Quality Basin Peak Elev=37.44' Storage=1,984 cf Inflow=2.06 cfs 0.137 af
Outflow=2.09 cfs 0.137 af

Pond 22SB: Underground 22 Peak Elev=35.05' Storage=0.067 af Inflow=2.09 cfs 0.137 af
Outflow=0.10 cfs 0.104 af

Link 30: Site Inflow=1.64 cfs 0.289 af
Primary=1.64 cfs 0.289 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.329 af Average Runoff Depth = 2.15"
30.74% Pervious = 0.565 ac 69.26% Impervious = 1.274 ac

Summary for Subcatchment 20: PRWS20

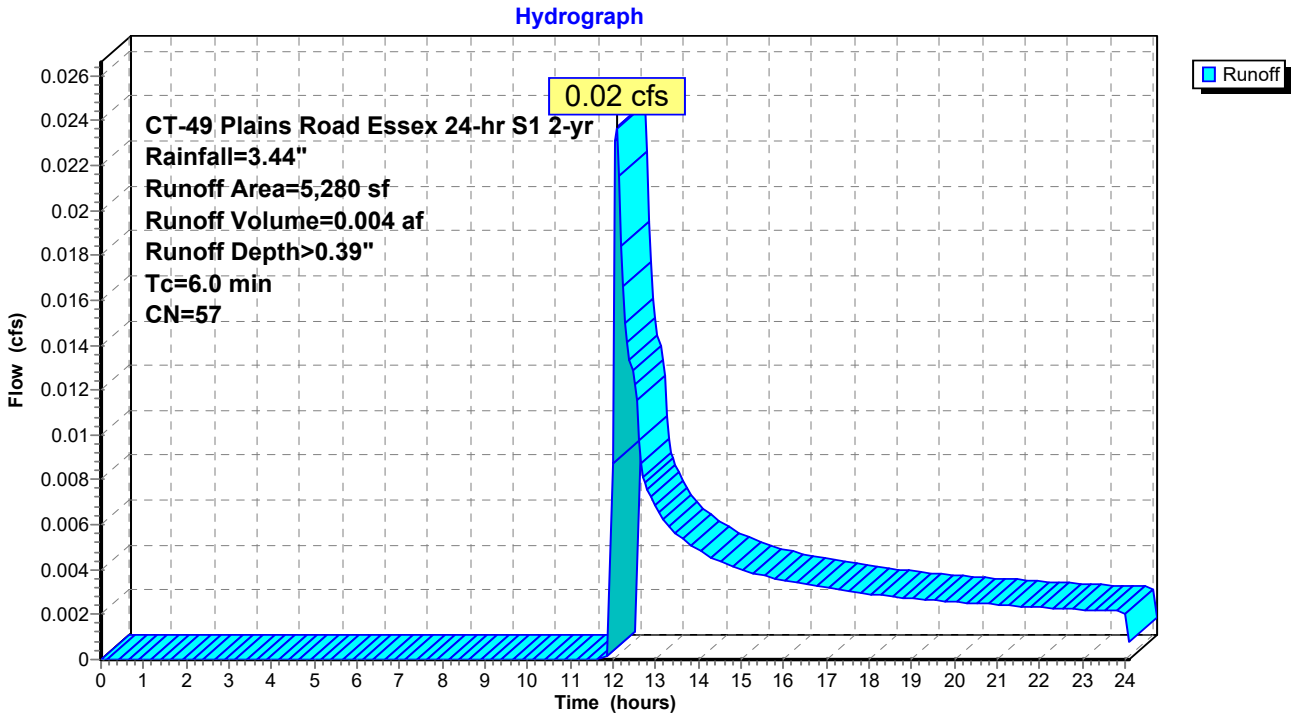
Runoff = 0.02 cfs @ 12.09 hrs, Volume= 0.004 af, Depth> 0.39"
Routed to Link 30 : Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 2-yr Rainfall=3.44"

Area (sf)	CN	Description
3,450	55	Woods, Good, HSG B
1,830	61	>75% Grass cover, Good, HSG B
5,280	57	Weighted Average
5,280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Mln. TR-55 TC**

Subcatchment 20: PRWS20



Summary for Subcatchment 21: PRWS 21

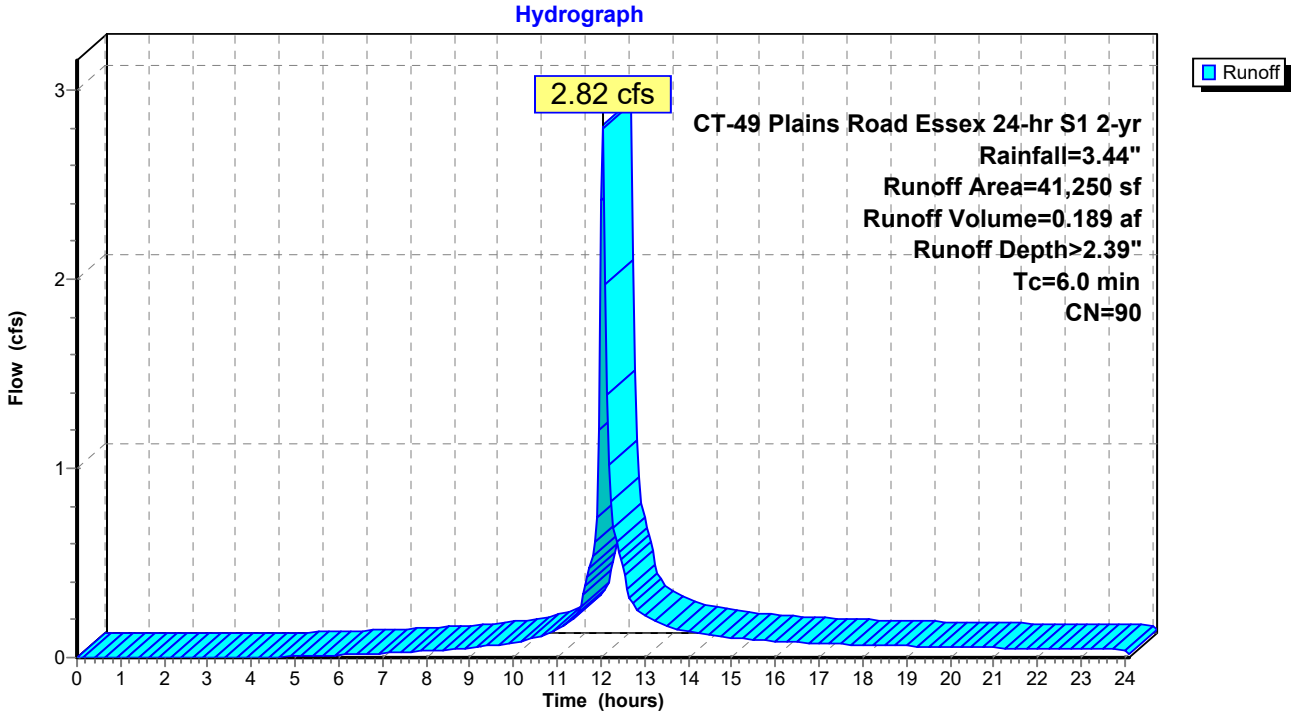
Runoff = 2.82 cfs @ 12.04 hrs, Volume= 0.189 af, Depth> 2.39"
Routed to Pond 21S : Water Qualirty Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 2-yr Rainfall=3.44"

Area (sf)	CN	Description
9,475	61	>75% Grass cover, Good, HSG B
29,400	98	Paved parking, HSG B
2,375	98	Roofs, HSG B
41,250	90	Weighted Average
9,475		22.97% Pervious Area
31,775		77.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 21: PRWS 21



Summary for Subcatchment 22: PRWS 22

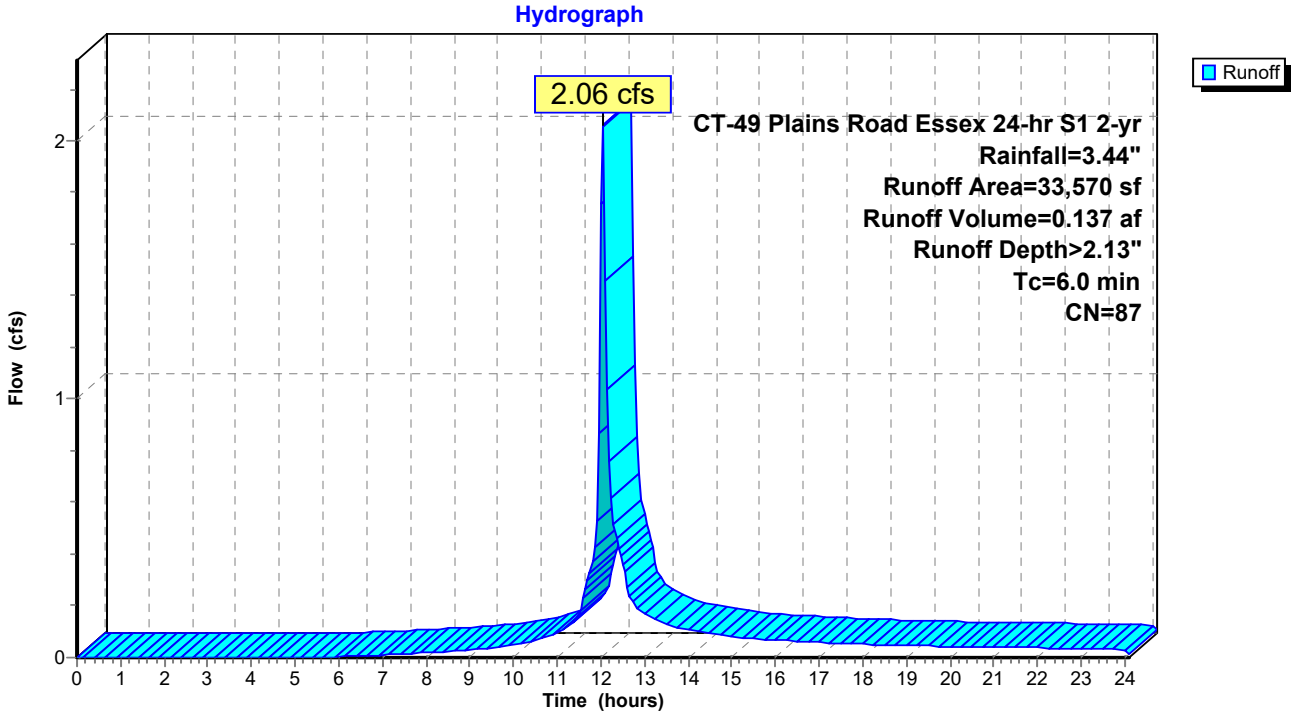
Runoff = 2.06 cfs @ 12.04 hrs, Volume= 0.137 af, Depth> 2.13"
Routed to Pond 22SA : Water Quality Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 2-yr Rainfall=3.44"

Area (sf)	CN	Description
9,870	61	>75% Grass cover, Good, HSG B
11,200	98	Paved parking, HSG B
12,500	98	Roofs, HSG B
33,570	87	Weighted Average
9,870		29.40% Pervious Area
23,700		70.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 22: PRWS 22



Summary for Pond 21S: Water Qualirty Basin

Inflow Area = 1.718 ac, 74.14% Impervious, Inflow Depth > 2.05" for 2-yr event
Inflow = 2.90 cfs @ 12.04 hrs, Volume= 0.293 af
Outflow = 1.62 cfs @ 12.14 hrs, Volume= 0.285 af, Atten= 44%, Lag= 6.2 min
Primary = 1.62 cfs @ 12.14 hrs, Volume= 0.285 af
Routed to Link 30 : Site

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 33.80' Surf.Area= 2,078 sf Storage= 2,873 cf
Peak Elev= 34.49' @ 12.14 hrs Surf.Area= 2,472 sf Storage= 4,435 cf (1,562 cf above start)

Plug-Flow detention time= 211.8 min calculated for 0.218 af (75% of inflow)
Center-of-Mass det. time= 20.1 min (914.7 - 894.6)

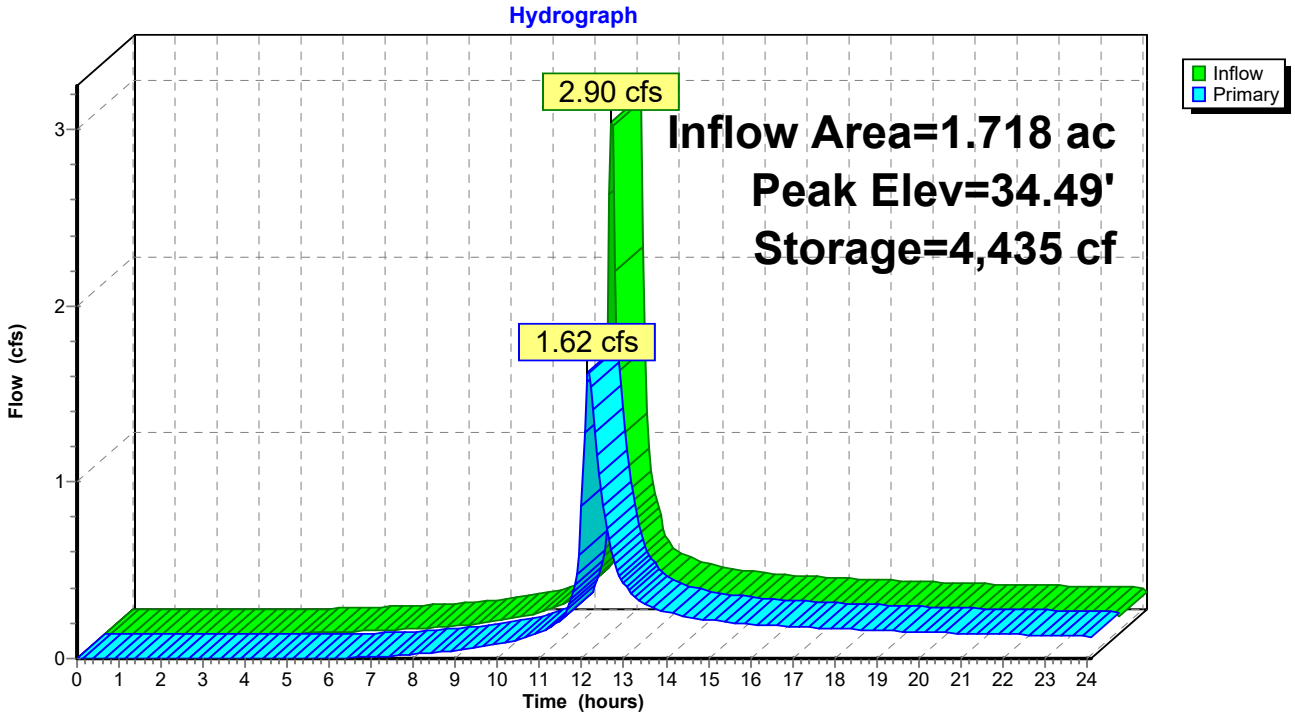
Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	5,832 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.00	1,141	239.0	0	0	1,141
33.00	1,647	259.0	1,386	1,386	1,972
34.00	2,194	263.0	1,914	3,300	2,281
34.50	2,480	289.0	1,168	4,468	3,432
35.00	2,982	391.0	1,364	5,832	8,954

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	34.60'	**10.0' long + 0.5 '/' SideZ x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=1.62 cfs @ 12.14 hrs HW=34.48' (Free Discharge)
1=Orifice/Grate (Orifice Controls 1.62 cfs @ 2.82 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 21S: Water Qualirty Basin



Summary for Pond 22SA: Water Quality Basin

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 2.13" for 2-yr event
Inflow = 2.06 cfs @ 12.04 hrs, Volume= 0.137 af
Outflow = 2.09 cfs @ 12.05 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.4 min
Primary = 2.09 cfs @ 12.05 hrs, Volume= 0.137 af
Routed to Pond 22SB : Underground 22

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 37.40' Surf.Area= 1,493 sf Storage= 1,924 cf
Peak Elev= 37.44' @ 12.05 hrs Surf.Area= 1,517 sf Storage= 1,984 cf (60 cf above start)

Plug-Flow detention time= 199.4 min calculated for 0.092 af (68% of inflow)
Center-of-Mass det. time= 0.6 min (834.4 - 833.9)

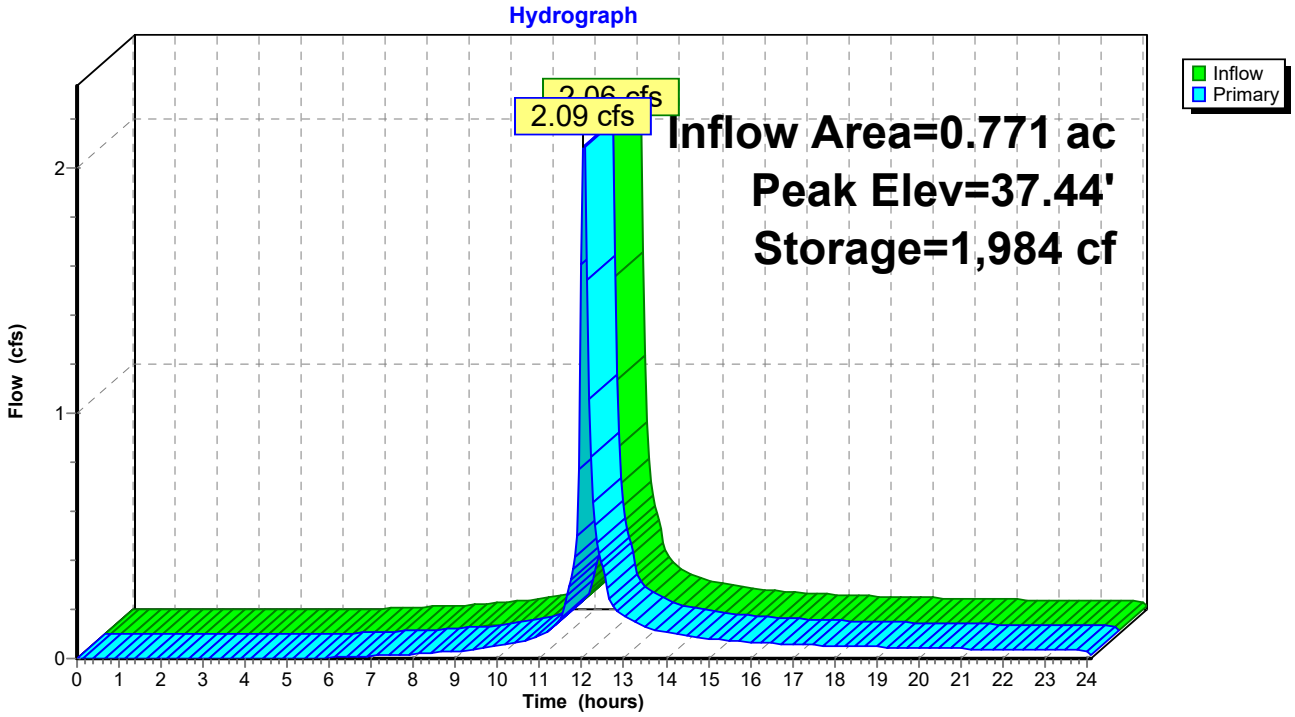
Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	2,076 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	175	238.0	0	0	175
36.00	700	264.0	408	408	1,244
37.00	1,259	291.0	966	1,374	2,468
37.50	1,554	298.0	702	2,076	2,828

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	**2.4" x 4.0" Horiz. Orifice/Grate X 8.00 columns** X 9 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.00 cfs @ 12.05 hrs HW=37.44' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 2.00 cfs @ 0.65 fps)

Pond 22SA: Water Quality Basin



Summary for Pond 22SB: Underground 22

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 2.13" for 2-yr event
Inflow = 2.09 cfs @ 12.05 hrs, Volume= 0.137 af
Outflow = 0.10 cfs @ 14.10 hrs, Volume= 0.104 af, Atten= 95%, Lag= 122.9 min
Primary = 0.10 cfs @ 14.10 hrs, Volume= 0.104 af
Routed to Pond 21S : Water Qualirty Basin

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Peak Elev= 35.05' @ 14.10 hrs Surf.Area= 0.113 ac Storage= 0.067 af

Plug-Flow detention time= 297.9 min calculated for 0.104 af (76% of inflow)
Center-of-Mass det. time= 197.5 min (1,031.9 - 834.4)

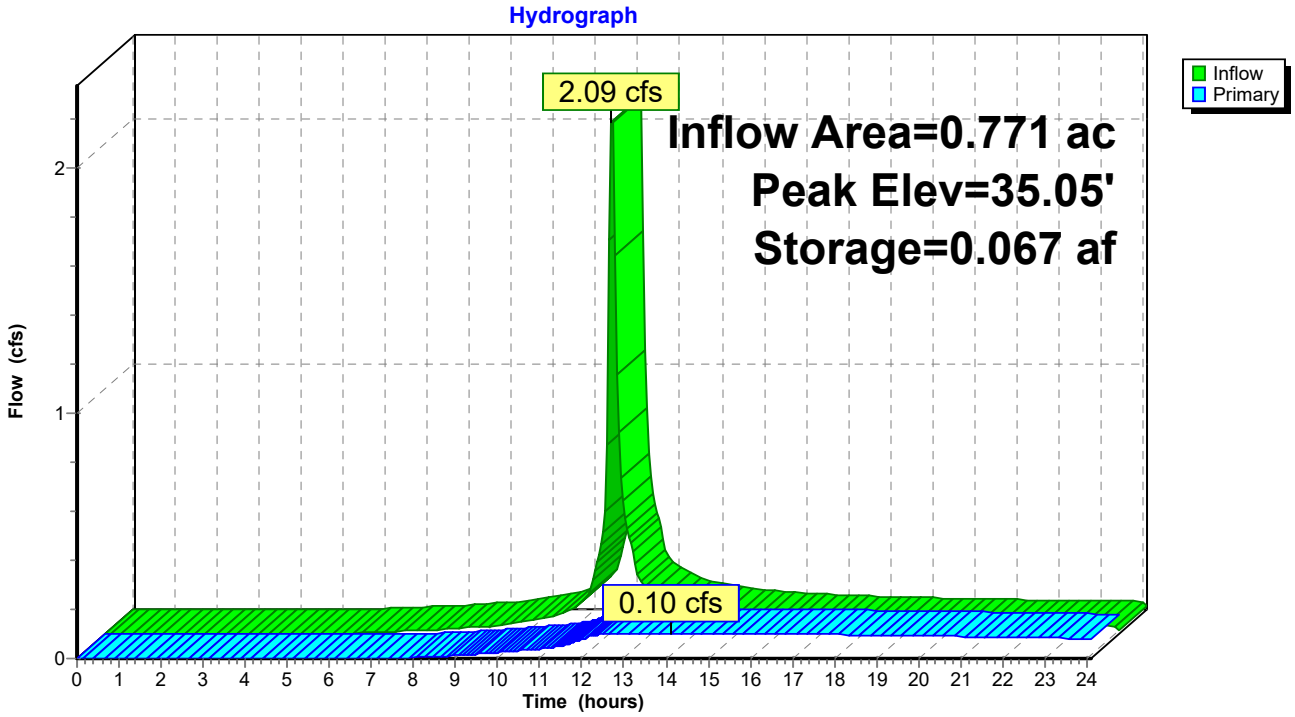
Volume	Invert	Avail.Storage	Storage Description
#1A	34.00'	0.076 af	**39.50'W x 124.66'L x 3.50'H Field A** 0.396 af Overall - 0.143 af Embedded = 0.252 af x 30.0% Voids
#2A	34.50'	0.143 af	**ADS_StormTech SC-740 +Cap** x 136 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 136 Chambers in 8 Rows
		0.219 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	36.90'	**4.0' long + 1.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.10 cfs @ 14.10 hrs HW=35.05' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.10 cfs @ 4.74 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 22SB: Underground 22

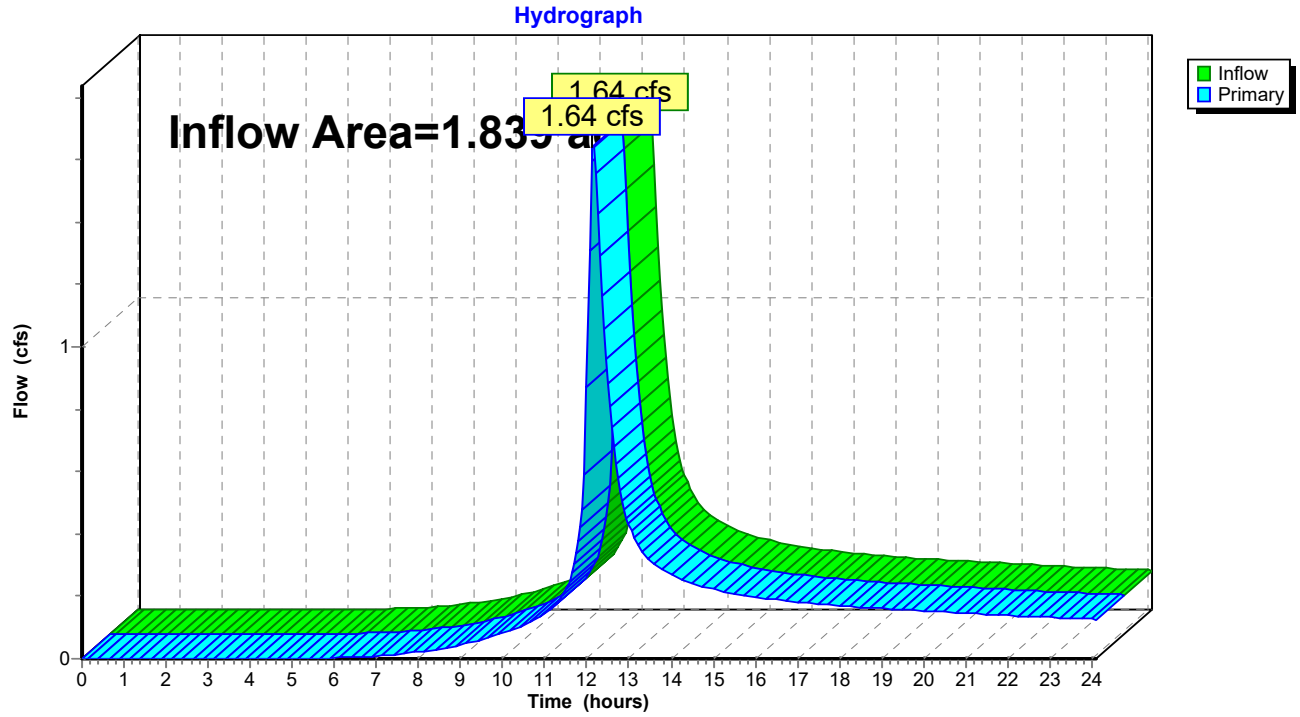


Summary for Link 30: Site

Inflow Area = 1.839 ac, 69.26% Impervious, Inflow Depth > 1.88" for 2-yr event
Inflow = 1.64 cfs @ 12.14 hrs, Volume= 0.289 af
Primary = 1.64 cfs @ 12.14 hrs, Volume= 0.289 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link 30: Site



Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 20: PRWS20 Runoff Area=5,280 sf 0.00% Impervious Runoff Depth>0.80"
Tc=6.0 min CN=57 Runoff=0.09 cfs 0.008 af

Subcatchment 21: PRWS 21 Runoff Area=41,250 sf 77.03% Impervious Runoff Depth>3.30"
Tc=6.0 min CN=90 Runoff=3.83 cfs 0.260 af

Subcatchment 22: PRWS 22 Runoff Area=33,570 sf 70.60% Impervious Runoff Depth>3.01"
Tc=6.0 min CN=87 Runoff=2.88 cfs 0.193 af

Pond 21S: Water Qualirty Basin Peak Elev=34.64' Storage=4,815 cf Inflow=3.92 cfs 0.390 af
Outflow=2.35 cfs 0.381 af

Pond 22SA: Water Quality Basin Peak Elev=37.45' Storage=2,001 cf Inflow=2.88 cfs 0.193 af
Outflow=2.89 cfs 0.193 af

Pond 22SB: Underground 22 Peak Elev=35.44' Storage=0.100 af Inflow=2.89 cfs 0.193 af
Outflow=0.12 cfs 0.130 af

Link 30: Site Inflow=2.42 cfs 0.389 af
Primary=2.42 cfs 0.389 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.461 af Average Runoff Depth = 3.01"
30.74% Pervious = 0.565 ac 69.26% Impervious = 1.274 ac

Summary for Subcatchment 20: PRWS20

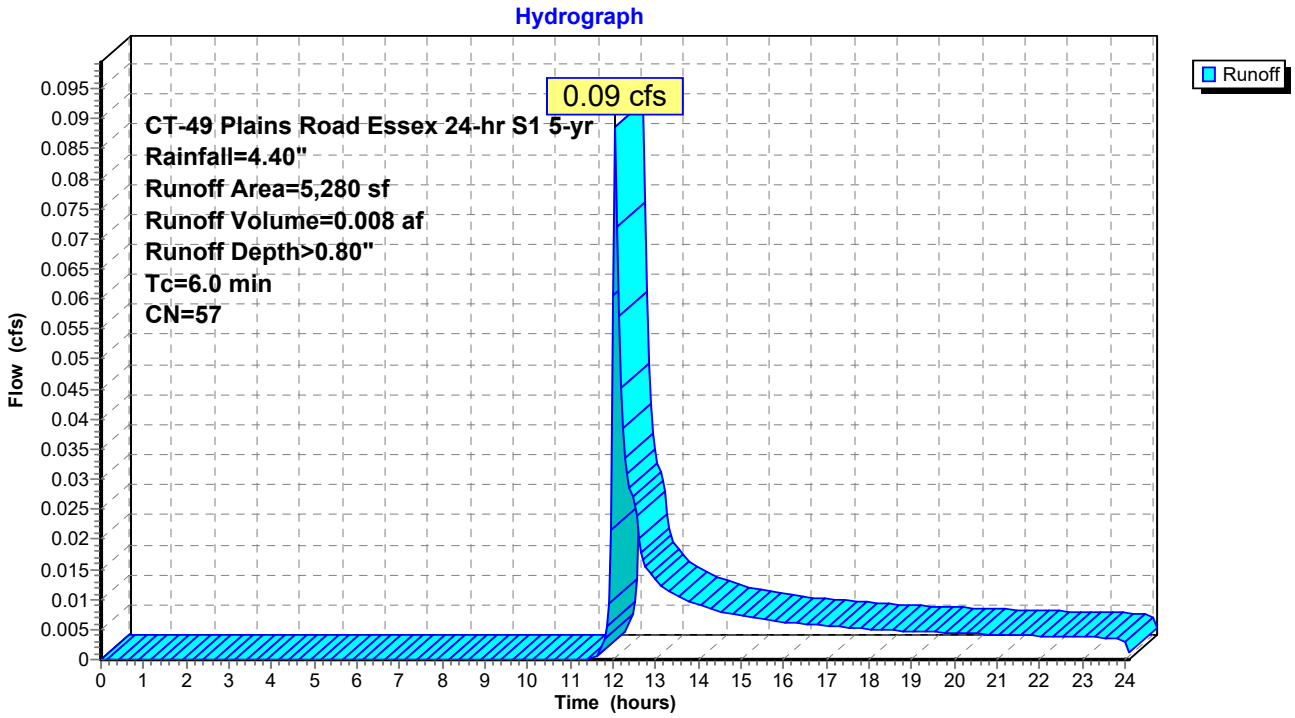
Runoff = 0.09 cfs @ 12.06 hrs, Volume= 0.008 af, Depth> 0.80"
Routed to Link 30 : Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 5-yr Rainfall=4.40"

Area (sf)	CN	Description
3,450	55	Woods, Good, HSG B
1,830	61	>75% Grass cover, Good, HSG B
5,280	57	Weighted Average
5,280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Mln. TR-55 TC**

Subcatchment 20: PRWS20



Summary for Subcatchment 21: PRWS 21

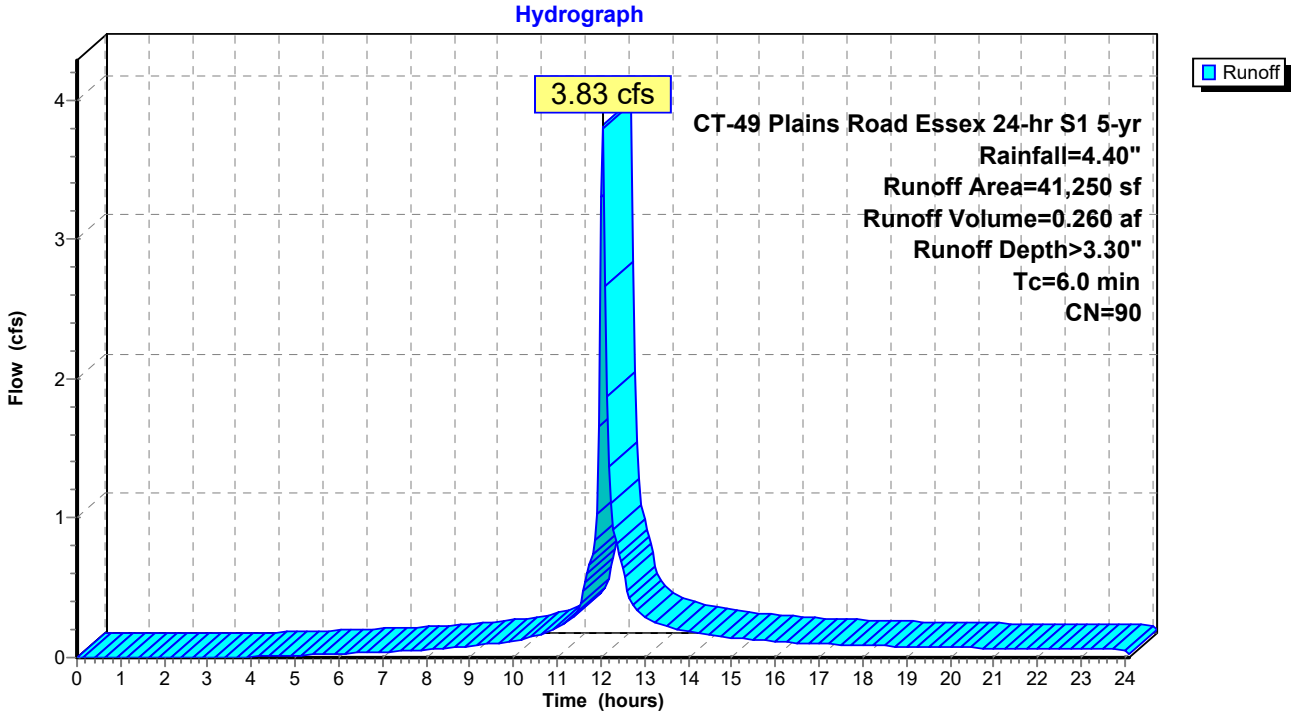
Runoff = 3.83 cfs @ 12.04 hrs, Volume= 0.260 af, Depth> 3.30"
Routed to Pond 21S : Water Qualirty Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 5-yr Rainfall=4.40"

Area (sf)	CN	Description
9,475	61	>75% Grass cover, Good, HSG B
29,400	98	Paved parking, HSG B
2,375	98	Roofs, HSG B
41,250	90	Weighted Average
9,475		22.97% Pervious Area
31,775		77.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 21: PRWS 21



Summary for Subcatchment 22: PRWS 22

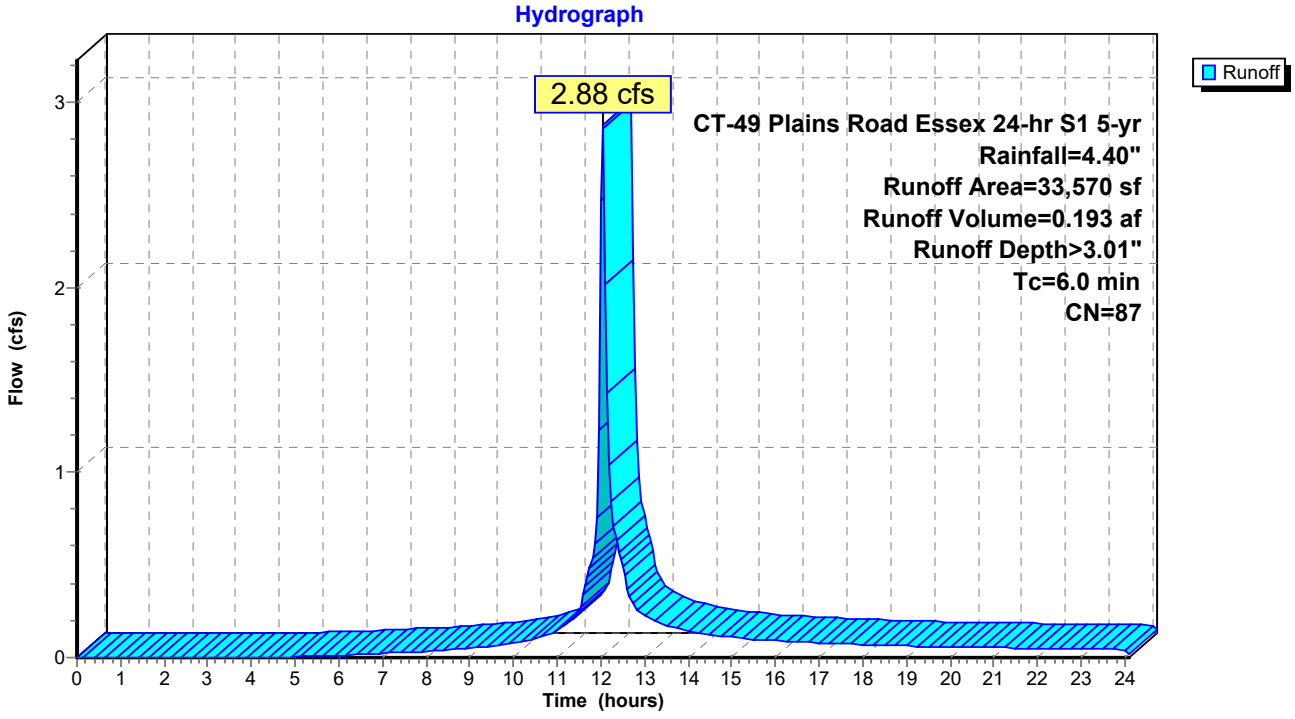
Runoff = 2.88 cfs @ 12.04 hrs, Volume= 0.193 af, Depth> 3.01"
Routed to Pond 22SA : Water Quality Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 5-yr Rainfall=4.40"

Area (sf)	CN	Description
9,870	61	>75% Grass cover, Good, HSG B
11,200	98	Paved parking, HSG B
12,500	98	Roofs, HSG B
33,570	87	Weighted Average
9,870		29.40% Pervious Area
23,700		70.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 22: PRWS 22



Summary for Pond 21S: Water Qualirty Basin

Inflow Area = 1.718 ac, 74.14% Impervious, Inflow Depth > 2.73" for 5-yr event
Inflow = 3.92 cfs @ 12.04 hrs, Volume= 0.390 af
Outflow = 2.35 cfs @ 12.13 hrs, Volume= 0.381 af, Atten= 40%, Lag= 5.4 min
Primary = 2.35 cfs @ 12.13 hrs, Volume= 0.381 af
Routed to Link 30 : Site

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 33.80' Surf.Area= 2,078 sf Storage= 2,873 cf
Peak Elev= 34.64' @ 12.13 hrs Surf.Area= 2,612 sf Storage= 4,815 cf (1,942 cf above start)

Plug-Flow detention time= 172.6 min calculated for 0.315 af (81% of inflow)
Center-of-Mass det. time= 18.4 min (896.7 - 878.3)

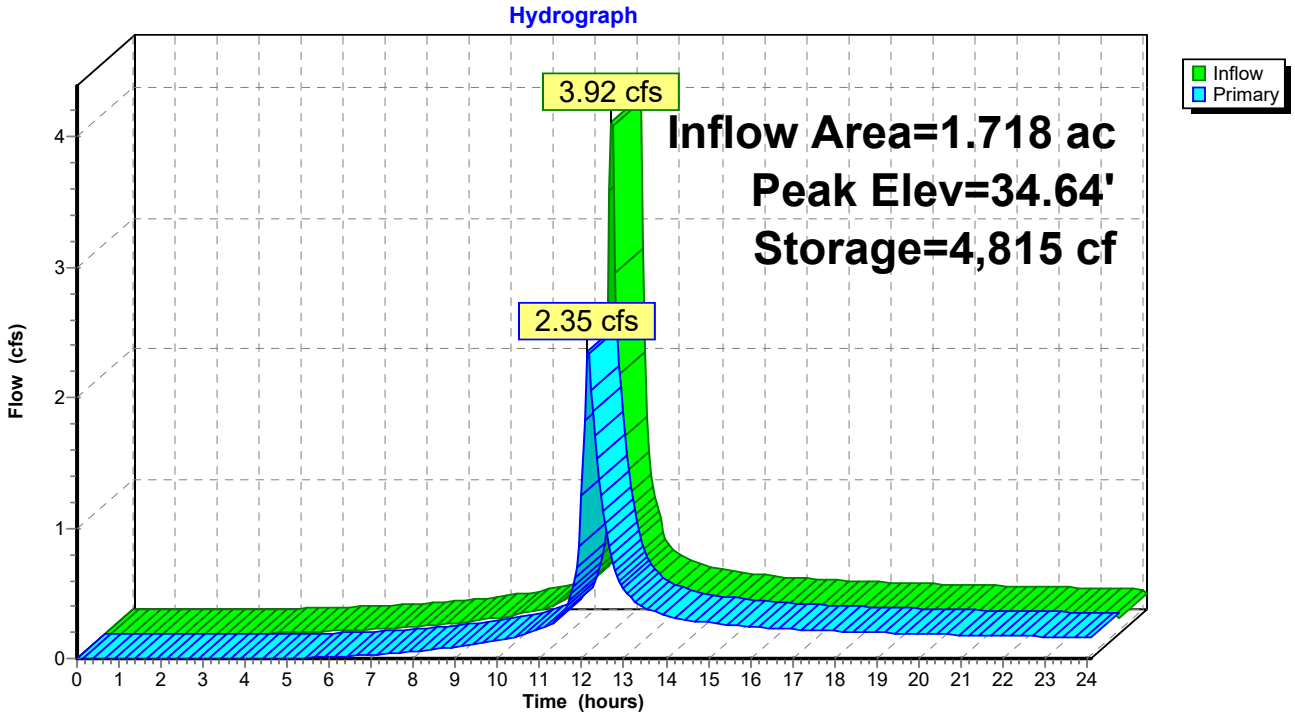
Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	5,832 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.00	1,141	239.0	0	0	1,141
33.00	1,647	259.0	1,386	1,386	1,972
34.00	2,194	263.0	1,914	3,300	2,281
34.50	2,480	289.0	1,168	4,468	3,432
35.00	2,982	391.0	1,364	5,832	8,954

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	34.60'	**10.0' long + 0.5 '/' SideZ x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=2.31 cfs @ 12.13 hrs HW=34.63' (Free Discharge)
1=Orifice/Grate (Orifice Controls 2.17 cfs @ 3.11 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 0.14 cfs @ 0.44 fps)

Pond 21S: Water Qualirty Basin



Summary for Pond 22SA: Water Quality Basin

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 3.01" for 5-yr event
Inflow = 2.88 cfs @ 12.04 hrs, Volume= 0.193 af
Outflow = 2.89 cfs @ 12.05 hrs, Volume= 0.193 af, Atten= 0%, Lag= 0.4 min
Primary = 2.89 cfs @ 12.05 hrs, Volume= 0.193 af
Routed to Pond 22SB : Underground 22

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 37.40' Surf.Area= 1,493 sf Storage= 1,924 cf
Peak Elev= 37.45' @ 12.05 hrs Surf.Area= 1,524 sf Storage= 2,001 cf (77 cf above start)

Plug-Flow detention time= 157.6 min calculated for 0.149 af (77% of inflow)
Center-of-Mass det. time= 0.6 min (821.9 - 821.4)

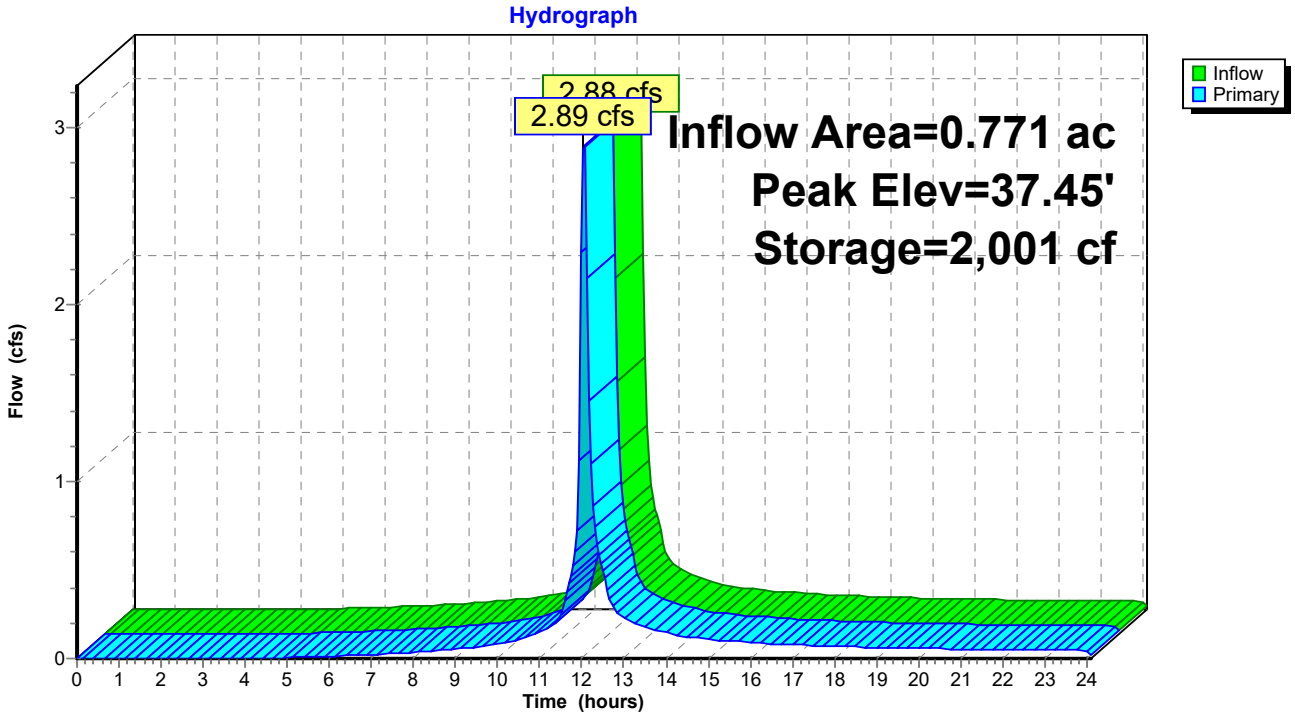
Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	2,076 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	175	238.0	0	0	175
36.00	700	264.0	408	408	1,244
37.00	1,259	291.0	966	1,374	2,468
37.50	1,554	298.0	702	2,076	2,828

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	**2.4" x 4.0" Horiz. Orifice/Grate X 8.00 columns** X 9 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.85 cfs @ 12.05 hrs HW=37.45' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 2.85 cfs @ 0.73 fps)

Pond 22SA: Water Quality Basin



Summary for Pond 22SB: Underground 22

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 3.01" for 5-yr event
Inflow = 2.89 cfs @ 12.05 hrs, Volume= 0.193 af
Outflow = 0.12 cfs @ 14.55 hrs, Volume= 0.130 af, Atten= 96%, Lag= 150.1 min
Primary = 0.12 cfs @ 14.55 hrs, Volume= 0.130 af
Routed to Pond 21S : Water Qualirty Basin

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Peak Elev= 35.44' @ 14.55 hrs Surf.Area= 0.113 ac Storage= 0.100 af

Plug-Flow detention time= 318.3 min calculated for 0.130 af (67% of inflow)
Center-of-Mass det. time= 198.8 min (1,020.7 - 821.9)

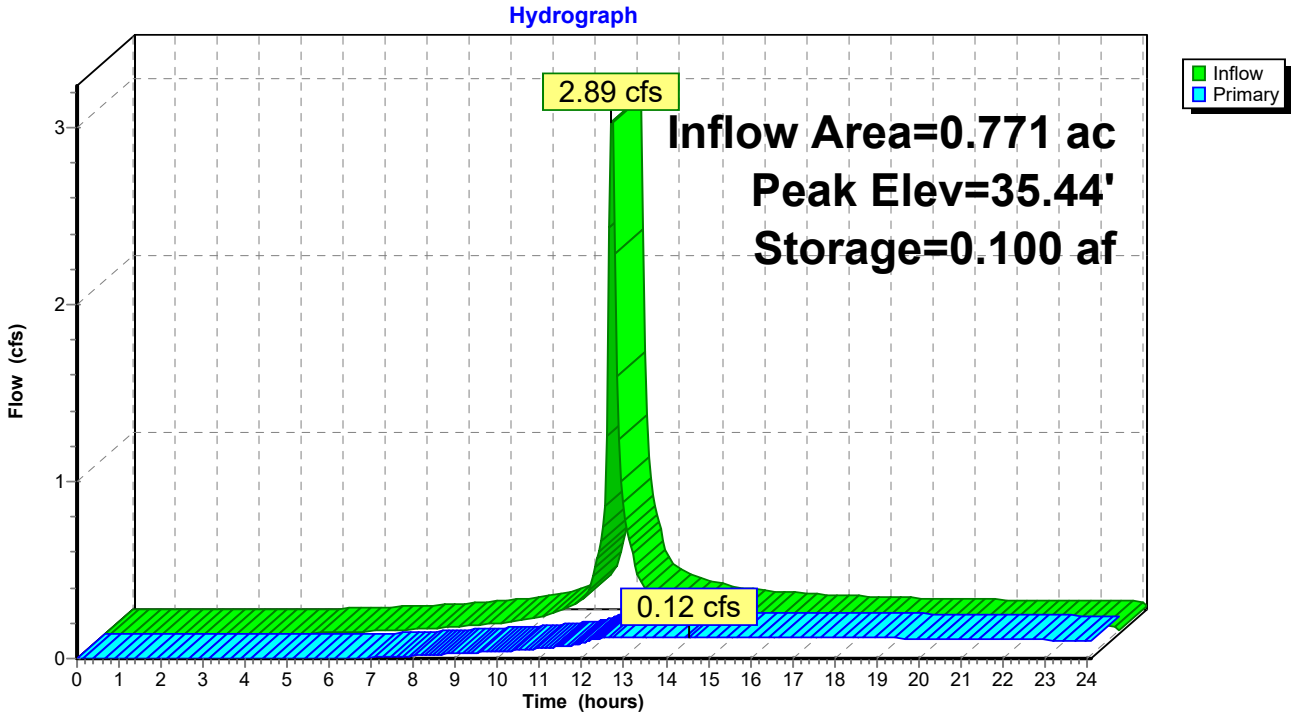
Volume	Invert	Avail.Storage	Storage Description
#1A	34.00'	0.076 af	**39.50'W x 124.66'L x 3.50'H Field A** 0.396 af Overall - 0.143 af Embedded = 0.252 af x 30.0% Voids
#2A	34.50'	0.143 af	**ADS_StormTech SC-740 +Cap** x 136 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 136 Chambers in 8 Rows
		0.219 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	36.90'	**4.0' long + 1.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.12 cfs @ 14.55 hrs HW=35.44' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.12 cfs @ 5.60 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 22SB: Underground 22

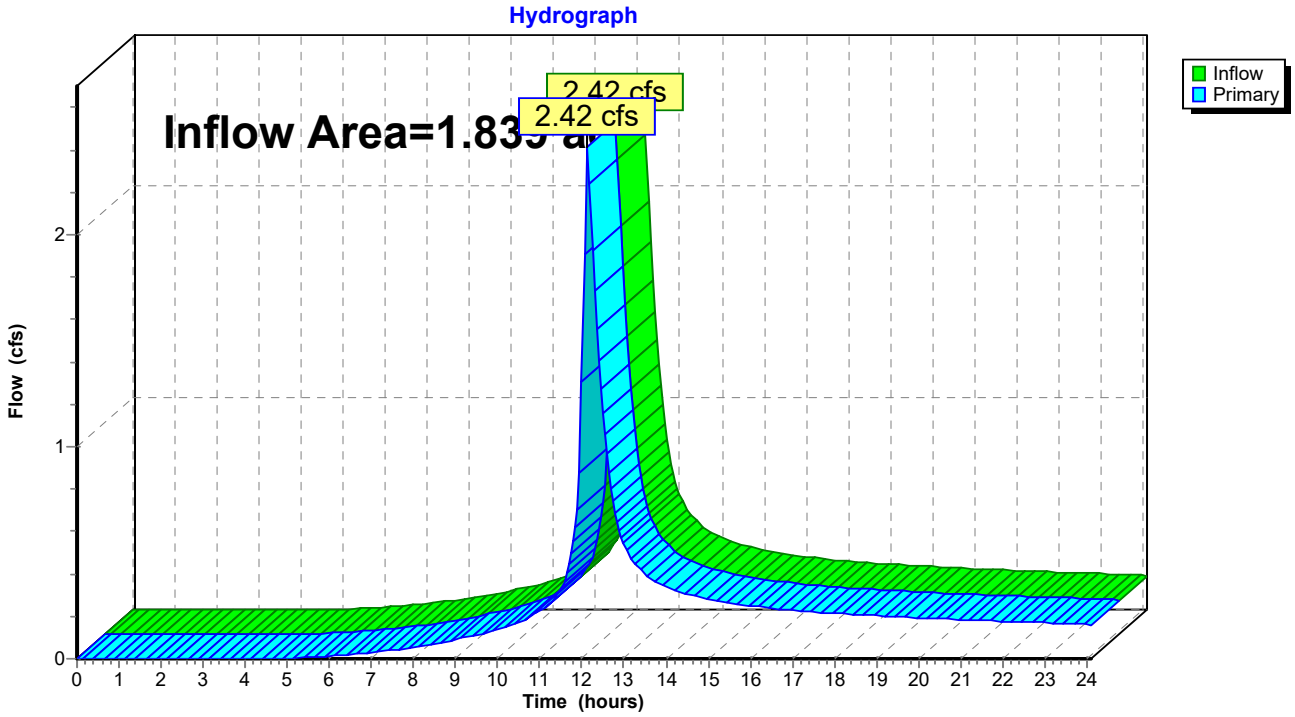


Summary for Link 30: Site

Inflow Area = 1.839 ac, 69.26% Impervious, Inflow Depth > 2.54" for 5-yr event
Inflow = 2.42 cfs @ 12.13 hrs, Volume= 0.389 af
Primary = 2.42 cfs @ 12.13 hrs, Volume= 0.389 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link 30: Site



Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 20: PRWS20 Runoff Area=5,280 sf 0.00% Impervious Runoff Depth>1.21"
Tc=6.0 min CN=57 Runoff=0.15 cfs 0.012 af

Subcatchment 21: PRWS 21 Runoff Area=41,250 sf 77.03% Impervious Runoff Depth>4.07"
Tc=6.0 min CN=90 Runoff=4.66 cfs 0.321 af

Subcatchment 22: PRWS 22 Runoff Area=33,570 sf 70.60% Impervious Runoff Depth>3.76"
Tc=6.0 min CN=87 Runoff=3.56 cfs 0.241 af

Pond 21S: Water Qualirty Basin Peak Elev=34.72' Storage=5,037 cf Inflow=4.76 cfs 0.471 af
Outflow=3.48 cfs 0.461 af

Pond 22SA: Water Quality Basin Peak Elev=37.46' Storage=2,013 cf Inflow=3.56 cfs 0.241 af
Outflow=3.62 cfs 0.241 af

Pond 22SB: Underground 22 Peak Elev=35.80' Storage=0.129 af Inflow=3.62 cfs 0.241 af
Outflow=0.14 cfs 0.150 af

Link 30: Site Inflow=3.59 cfs 0.474 af
Primary=3.59 cfs 0.474 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.575 af Average Runoff Depth = 3.75"
30.74% Pervious = 0.565 ac 69.26% Impervious = 1.274 ac

Summary for Subcatchment 20: PRWS20

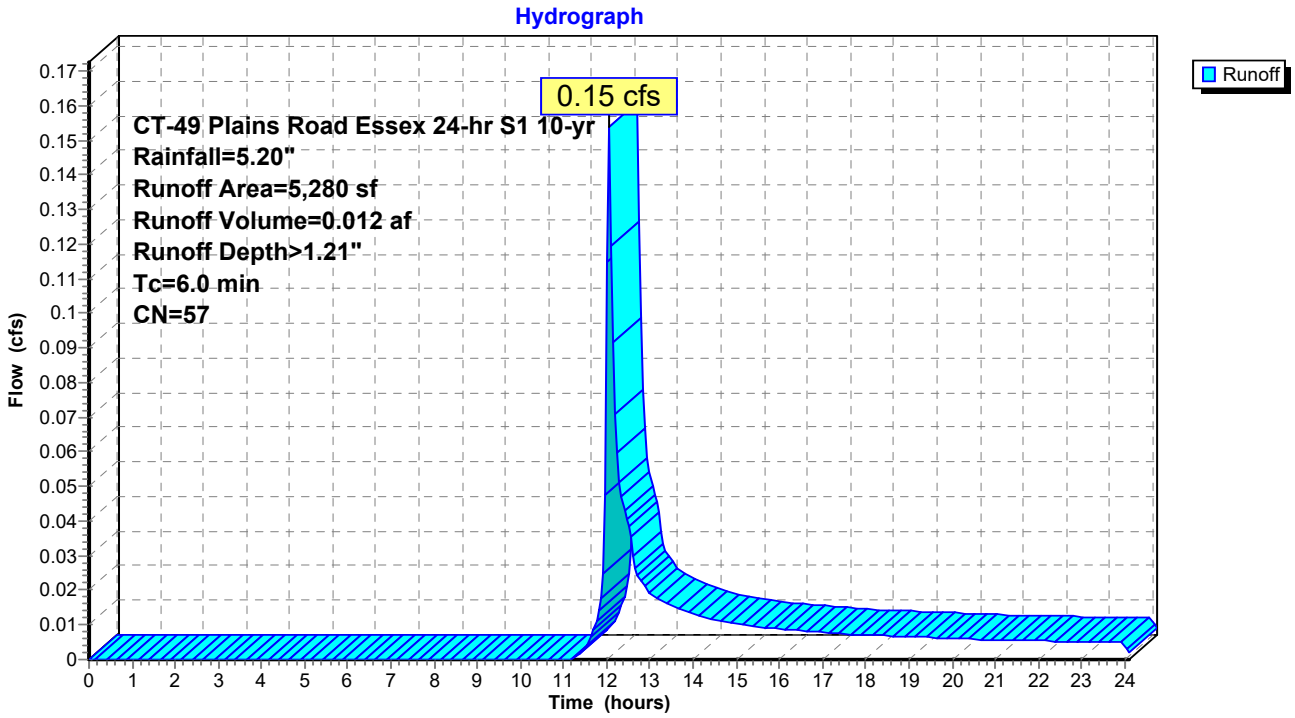
Runoff = 0.15 cfs @ 12.05 hrs, Volume= 0.012 af, Depth> 1.21"
Routed to Link 30 : Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 10-yr Rainfall=5.20"

Area (sf)	CN	Description
3,450	55	Woods, Good, HSG B
1,830	61	>75% Grass cover, Good, HSG B
5,280	57	Weighted Average
5,280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Mln. TR-55 TC**

Subcatchment 20: PRWS20



Summary for Subcatchment 21: PRWS 21

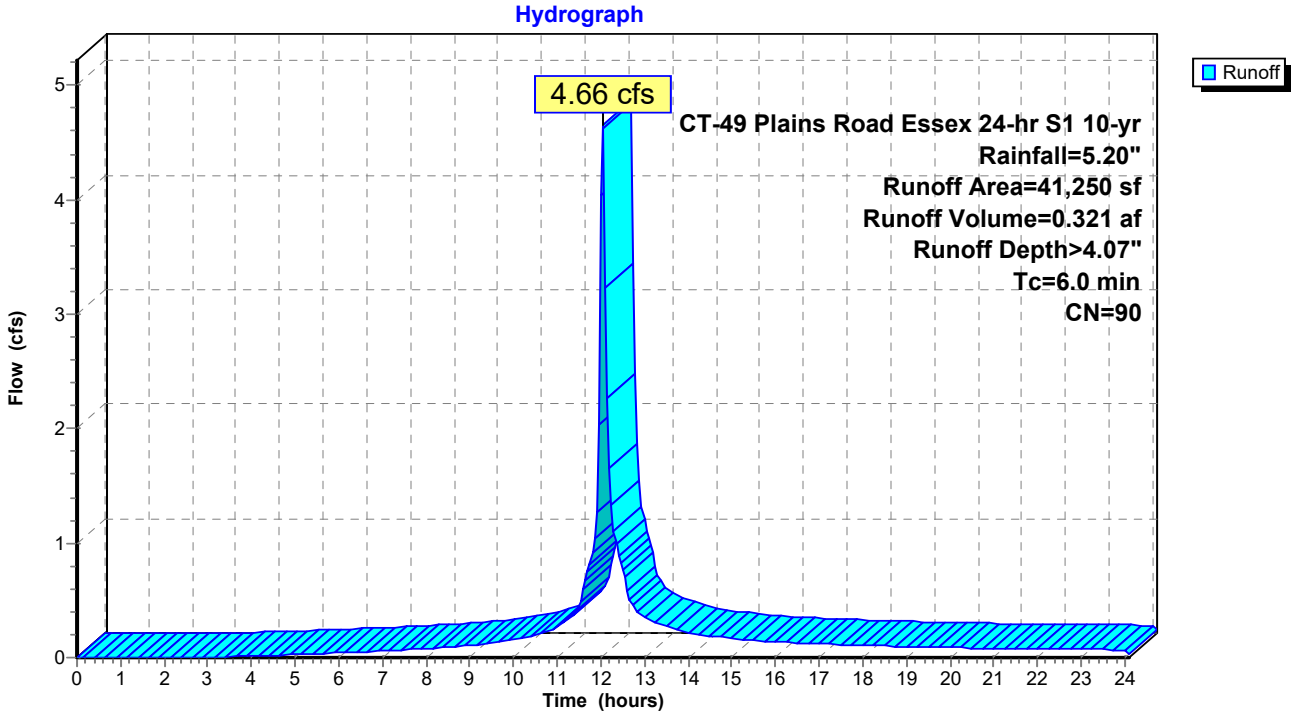
Runoff = 4.66 cfs @ 12.04 hrs, Volume= 0.321 af, Depth> 4.07"
Routed to Pond 21S : Water Qualirty Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 10-yr Rainfall=5.20"

Area (sf)	CN	Description
9,475	61	>75% Grass cover, Good, HSG B
29,400	98	Paved parking, HSG B
2,375	98	Roofs, HSG B
41,250	90	Weighted Average
9,475		22.97% Pervious Area
31,775		77.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 21: PRWS 21



Summary for Subcatchment 22: PRWS 22

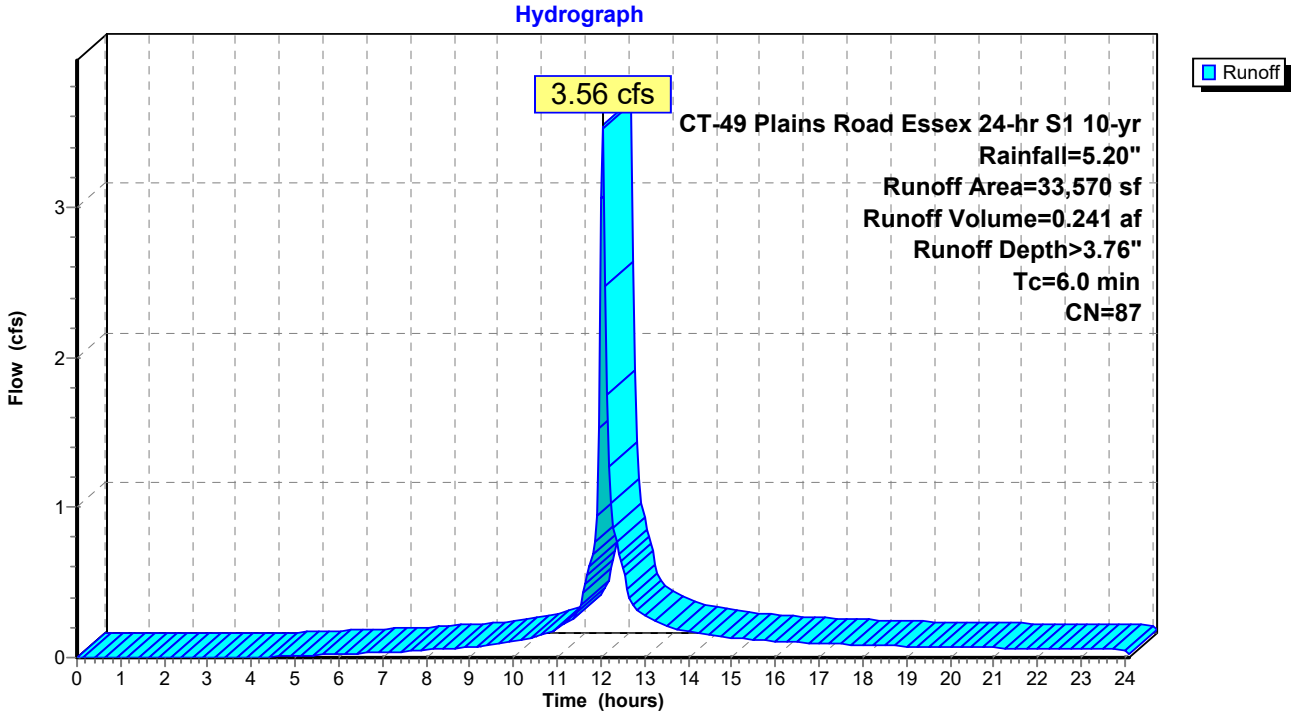
Runoff = 3.56 cfs @ 12.04 hrs, Volume= 0.241 af, Depth> 3.76"
Routed to Pond 22SA : Water Quality Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 10-yr Rainfall=5.20"

Area (sf)	CN	Description
9,870	61	>75% Grass cover, Good, HSG B
11,200	98	Paved parking, HSG B
12,500	98	Roofs, HSG B
33,570	87	Weighted Average
9,870		29.40% Pervious Area
23,700		70.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 22: PRWS 22



Summary for Pond 21S: Water Qualirty Basin

Inflow Area = 1.718 ac, 74.14% Impervious, Inflow Depth > 3.29" for 10-yr event
Inflow = 4.76 cfs @ 12.04 hrs, Volume= 0.471 af
Outflow = 3.48 cfs @ 12.11 hrs, Volume= 0.461 af, Atten= 27%, Lag= 4.3 min
Primary = 3.48 cfs @ 12.11 hrs, Volume= 0.461 af
Routed to Link 30 : Site

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 33.80' Surf.Area= 2,078 sf Storage= 2,873 cf
Peak Elev= 34.72' @ 12.11 hrs Surf.Area= 2,695 sf Storage= 5,037 cf (2,164 cf above start)

Plug-Flow detention time= 152.4 min calculated for 0.395 af (84% of inflow)
Center-of-Mass det. time= 17.2 min (885.1 - 867.8)

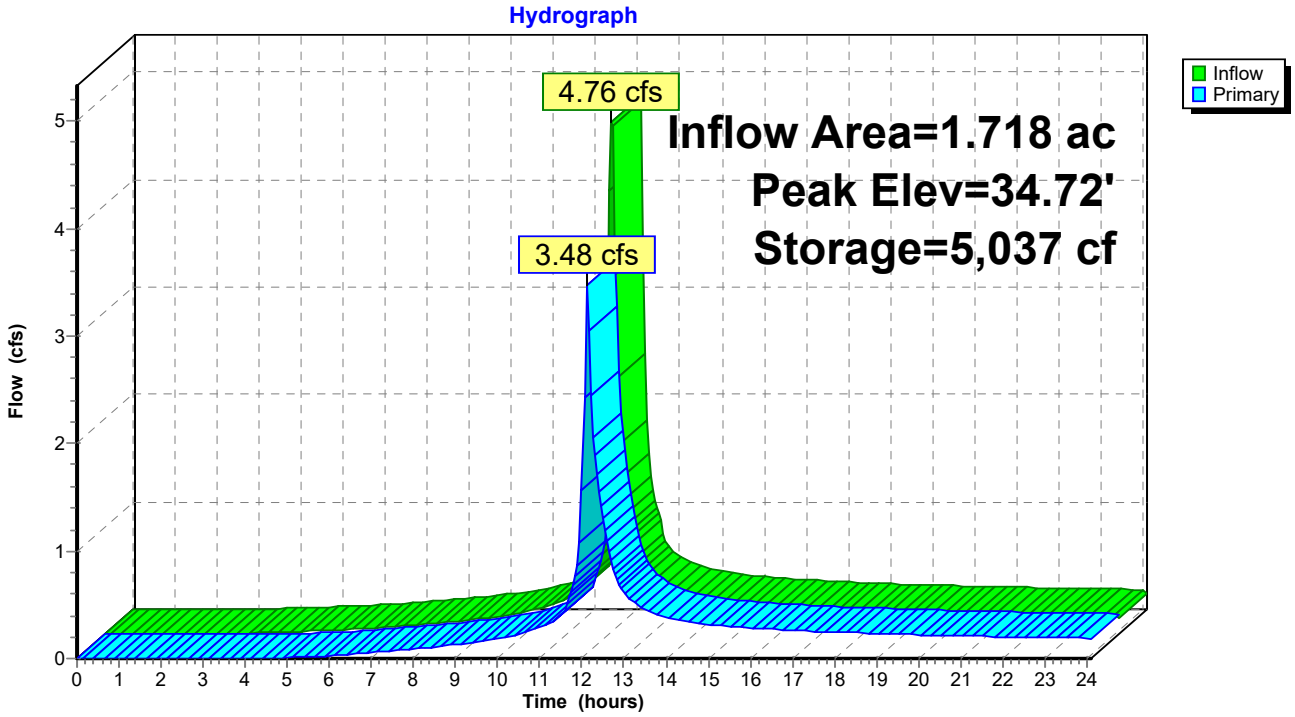
Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	5,832 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.00	1,141	239.0	0	0	1,141
33.00	1,647	259.0	1,386	1,386	1,972
34.00	2,194	263.0	1,914	3,300	2,281
34.50	2,480	289.0	1,168	4,468	3,432
35.00	2,982	391.0	1,364	5,832	8,954

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	34.60'	**10.0' long + 0.5 '/' SideZ x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=3.35 cfs @ 12.11 hrs HW=34.71' (Free Discharge)
1=Orifice/Grate (Orifice Controls 2.44 cfs @ 3.25 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 0.91 cfs @ 0.81 fps)

Pond 21S: Water Qualirty Basin



Summary for Pond 22SA: Water Quality Basin

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 3.76" for 10-yr event
Inflow = 3.56 cfs @ 12.04 hrs, Volume= 0.241 af
Outflow = 3.62 cfs @ 12.05 hrs, Volume= 0.241 af, Atten= 0%, Lag= 0.4 min
Primary = 3.62 cfs @ 12.05 hrs, Volume= 0.241 af
Routed to Pond 22SB : Underground 22

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 37.40' Surf.Area= 1,493 sf Storage= 1,924 cf
Peak Elev= 37.46' @ 12.05 hrs Surf.Area= 1,528 sf Storage= 2,013 cf (89 cf above start)

Plug-Flow detention time= 138.2 min calculated for 0.197 af (82% of inflow)
Center-of-Mass det. time= 0.6 min (814.0 - 813.5)

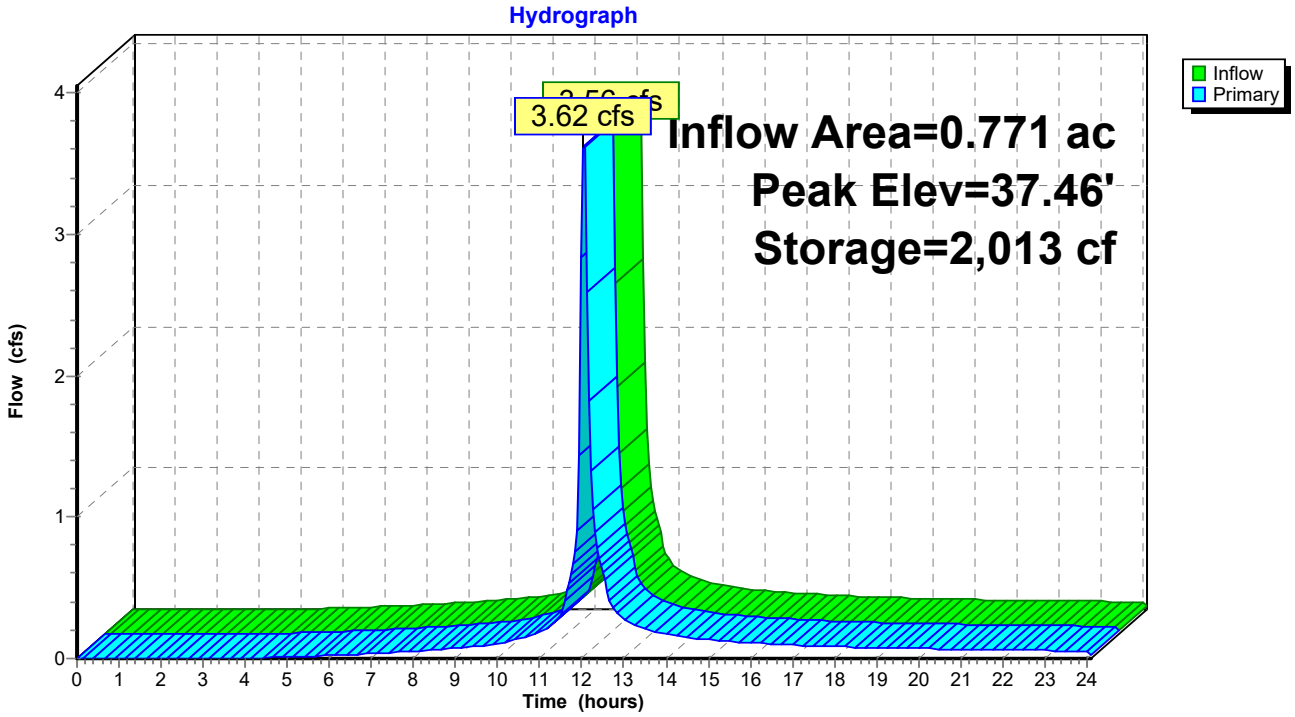
Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	2,076 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	175	238.0	0	0	175
36.00	700	264.0	408	408	1,244
37.00	1,259	291.0	966	1,374	2,468
37.50	1,554	298.0	702	2,076	2,828

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	**2.4" x 4.0" Horiz. Orifice/Grate X 8.00 columns** X 9 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.51 cfs @ 12.05 hrs HW=37.46' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 3.51 cfs @ 0.79 fps)

Pond 22SA: Water Quality Basin



Summary for Pond 22SB: Underground 22

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 3.76" for 10-yr event
Inflow = 3.62 cfs @ 12.05 hrs, Volume= 0.241 af
Outflow = 0.14 cfs @ 14.86 hrs, Volume= 0.150 af, Atten= 96%, Lag= 168.6 min
Primary = 0.14 cfs @ 14.86 hrs, Volume= 0.150 af
Routed to Pond 21S : Water Qualirty Basin

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Peak Elev= 35.80' @ 14.86 hrs Surf.Area= 0.113 ac Storage= 0.129 af

Plug-Flow detention time= 326.3 min calculated for 0.150 af (62% of inflow)
Center-of-Mass det. time= 198.5 min (1,012.5 - 814.0)

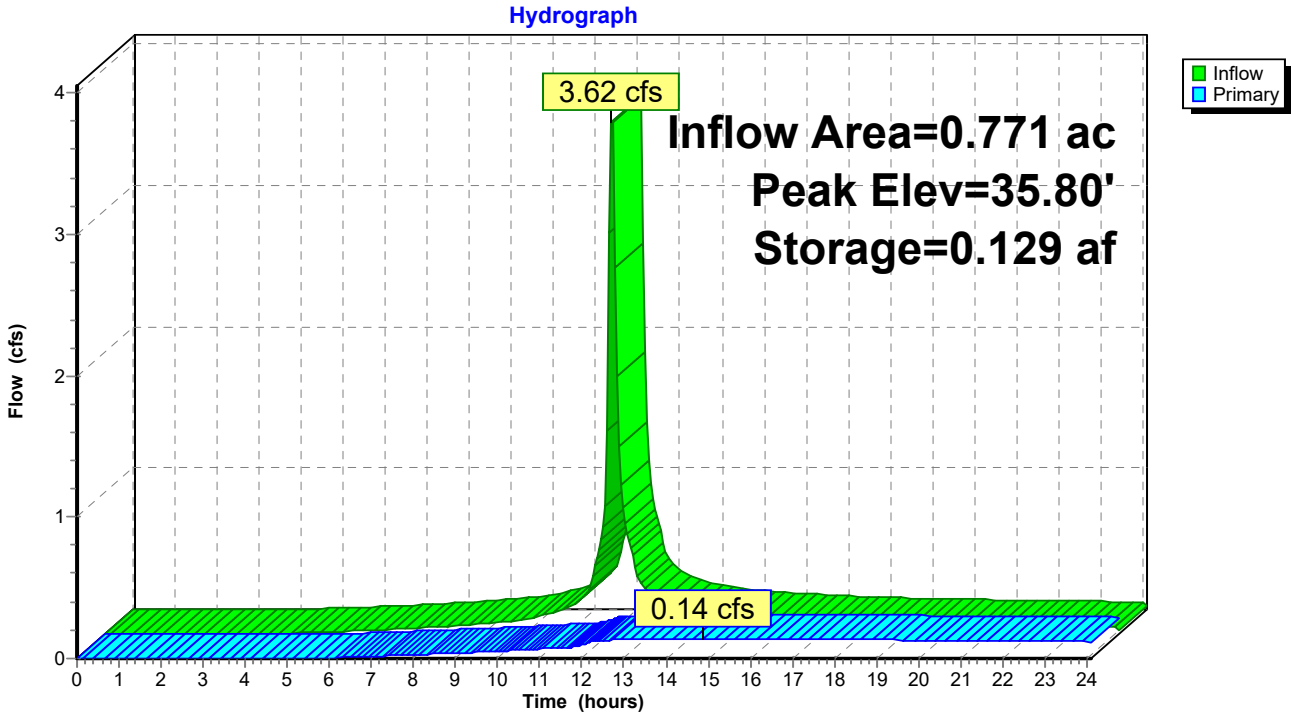
Volume	Invert	Avail.Storage	Storage Description
#1A	34.00'	0.076 af	**39.50'W x 124.66'L x 3.50'H Field A** 0.396 af Overall - 0.143 af Embedded = 0.252 af x 30.0% Voids
#2A	34.50'	0.143 af	**ADS_StormTech SC-740 +Cap** x 136 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 136 Chambers in 8 Rows
		0.219 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	36.90'	**4.0' long + 1.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.14 cfs @ 14.86 hrs HW=35.80' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.14 cfs @ 6.31 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 22SB: Underground 22

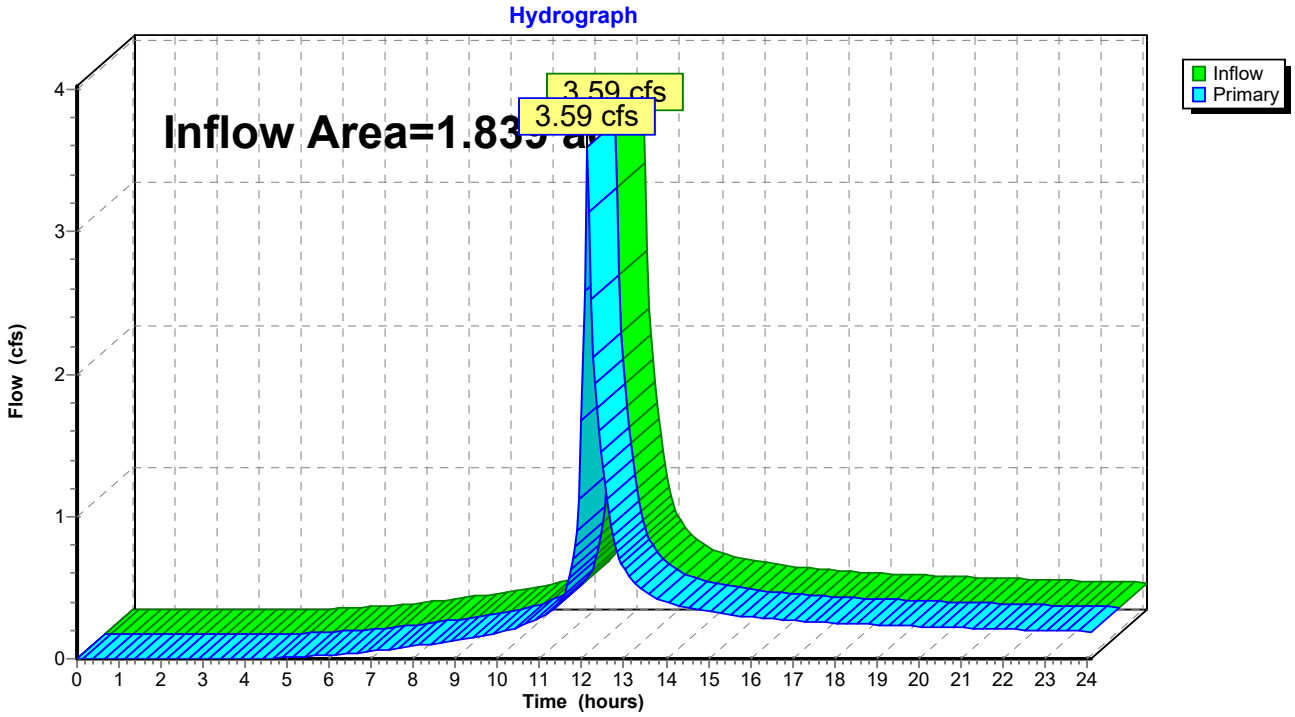


Summary for Link 30: Site

Inflow Area = 1.839 ac, 69.26% Impervious, Inflow Depth > 3.09" for 10-yr event
Inflow = 3.59 cfs @ 12.11 hrs, Volume= 0.474 af
Primary = 3.59 cfs @ 12.11 hrs, Volume= 0.474 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link 30: Site



Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 20: PRWS20 Runoff Area=5,280 sf 0.00% Impervious Runoff Depth>1.87"
Tc=6.0 min CN=57 Runoff=0.26 cfs 0.019 af

Subcatchment 21: PRWS 21 Runoff Area=41,250 sf 77.03% Impervious Runoff Depth>5.15"
Tc=6.0 min CN=90 Runoff=5.80 cfs 0.406 af

Subcatchment 22: PRWS 22 Runoff Area=33,570 sf 70.60% Impervious Runoff Depth>4.81"
Tc=6.0 min CN=87 Runoff=4.49 cfs 0.309 af

Pond 21S: Water Qualirty Basin Peak Elev=34.79' Storage=5,234 cf Inflow=5.91 cfs 0.585 af
Outflow=4.73 cfs 0.573 af

Pond 22SA: Water Quality Basin Peak Elev=37.47' Storage=2,028 cf Inflow=4.49 cfs 0.309 af
Outflow=4.55 cfs 0.309 af

Pond 22SB: Underground 22 Peak Elev=36.38' Storage=0.172 af Inflow=4.55 cfs 0.309 af
Outflow=0.16 cfs 0.178 af

Link 30: Site Inflow=4.93 cfs 0.592 af
Primary=4.93 cfs 0.592 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.734 af Average Runoff Depth = 4.79"
30.74% Pervious = 0.565 ac 69.26% Impervious = 1.274 ac

Summary for Subcatchment 20: PRWS20

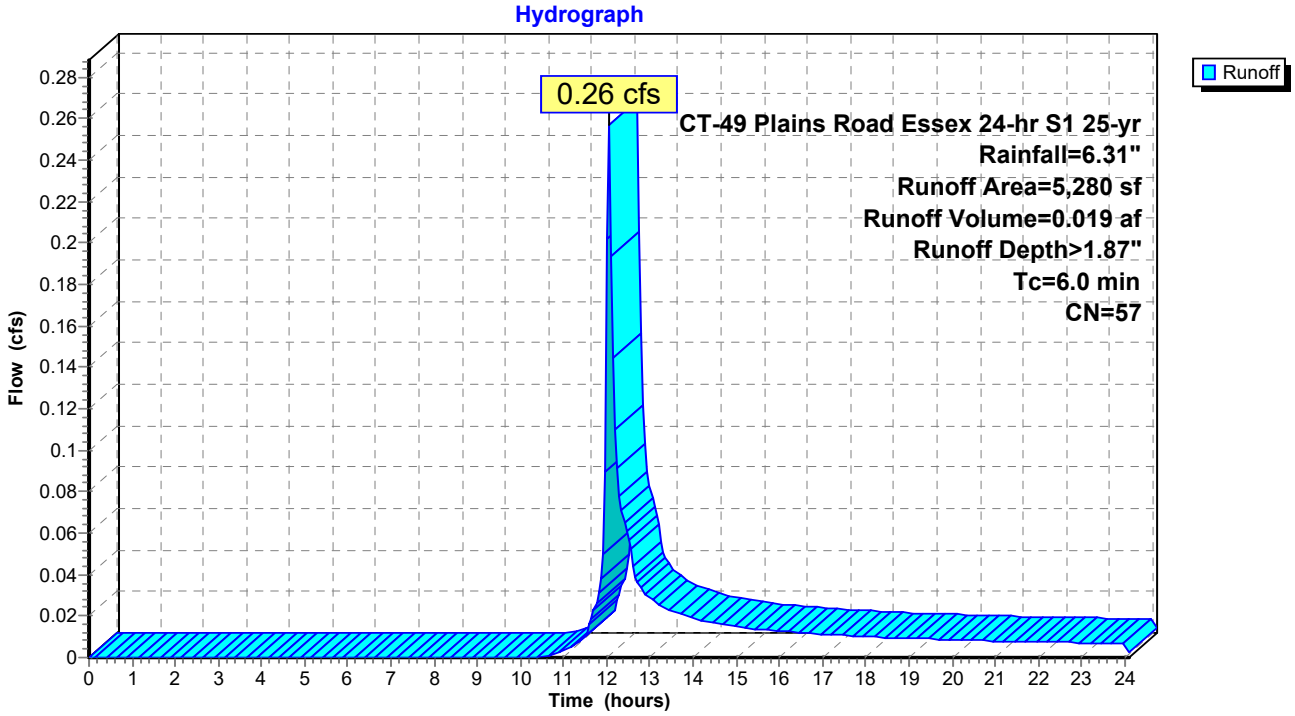
Runoff = 0.26 cfs @ 12.05 hrs, Volume= 0.019 af, Depth> 1.87"
Routed to Link 30 : Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 25-yr Rainfall=6.31"

Area (sf)	CN	Description
3,450	55	Woods, Good, HSG B
1,830	61	>75% Grass cover, Good, HSG B
5,280	57	Weighted Average
5,280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 20: PRWS20



Summary for Subcatchment 21: PRWS 21

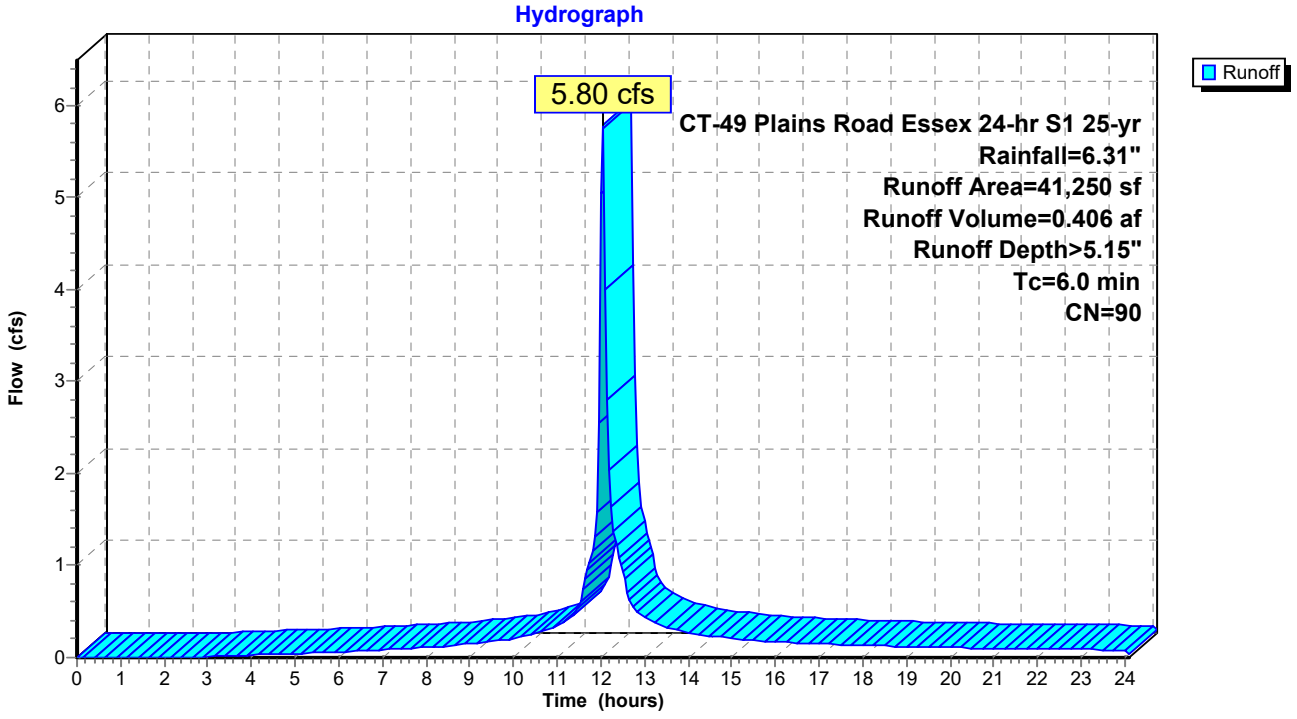
Runoff = 5.80 cfs @ 12.04 hrs, Volume= 0.406 af, Depth> 5.15"
Routed to Pond 21S : Water Qualirty Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 25-yr Rainfall=6.31"

Area (sf)	CN	Description
9,475	61	>75% Grass cover, Good, HSG B
29,400	98	Paved parking, HSG B
2,375	98	Roofs, HSG B
41,250	90	Weighted Average
9,475		22.97% Pervious Area
31,775		77.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 21: PRWS 21



Summary for Subcatchment 22: PRWS 22

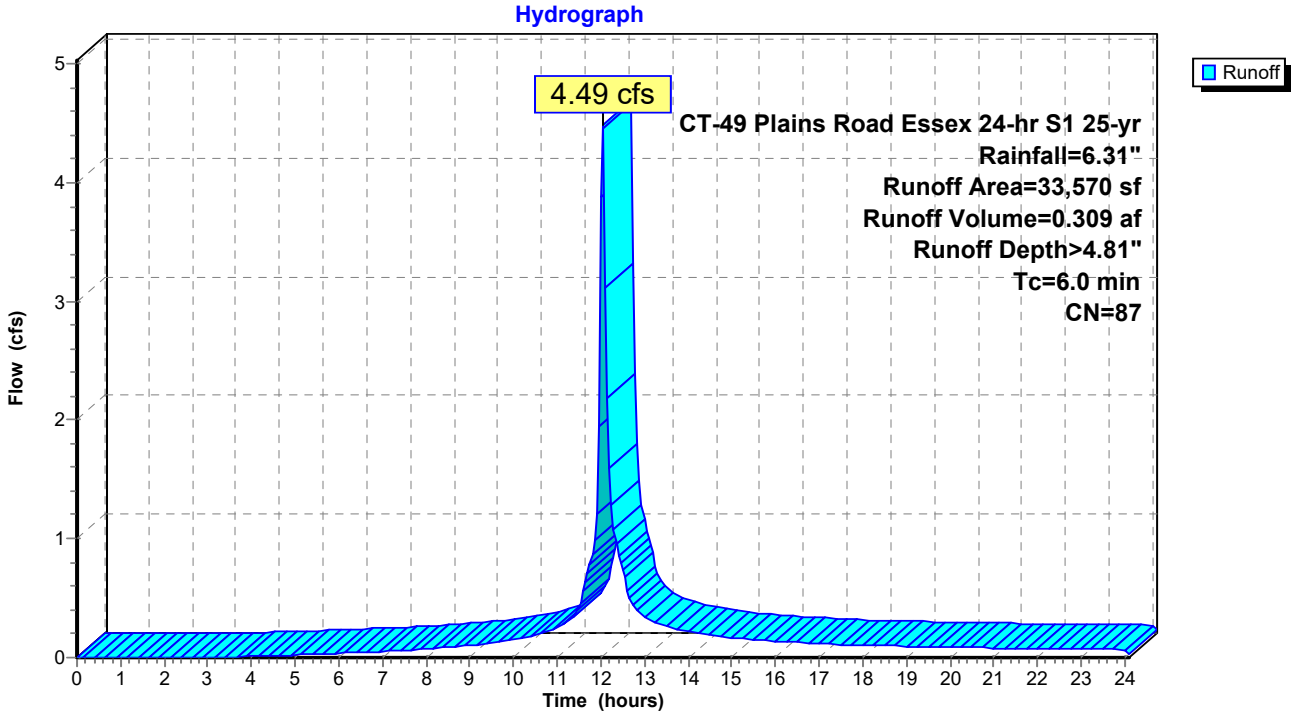
Runoff = 4.49 cfs @ 12.04 hrs, Volume= 0.309 af, Depth> 4.81"
Routed to Pond 22SA : Water Quality Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 25-yr Rainfall=6.31"

Area (sf)	CN	Description
9,870	61	>75% Grass cover, Good, HSG B
11,200	98	Paved parking, HSG B
12,500	98	Roofs, HSG B
33,570	87	Weighted Average
9,870		29.40% Pervious Area
23,700		70.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 22: PRWS 22



Summary for Pond 21S: Water Qualirty Basin

Inflow Area = 1.718 ac, 74.14% Impervious, Inflow Depth > 4.08" for 25-yr event
Inflow = 5.91 cfs @ 12.04 hrs, Volume= 0.585 af
Outflow = 4.73 cfs @ 12.10 hrs, Volume= 0.573 af, Atten= 20%, Lag= 3.5 min
Primary = 4.73 cfs @ 12.10 hrs, Volume= 0.573 af
Routed to Link 30 : Site

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 33.80' Surf.Area= 2,078 sf Storage= 2,873 cf
Peak Elev= 34.79' @ 12.10 hrs Surf.Area= 2,767 sf Storage= 5,234 cf (2,360 cf above start)

Plug-Flow detention time= 133.1 min calculated for 0.507 af (87% of inflow)
Center-of-Mass det. time= 16.0 min (872.6 - 856.6)

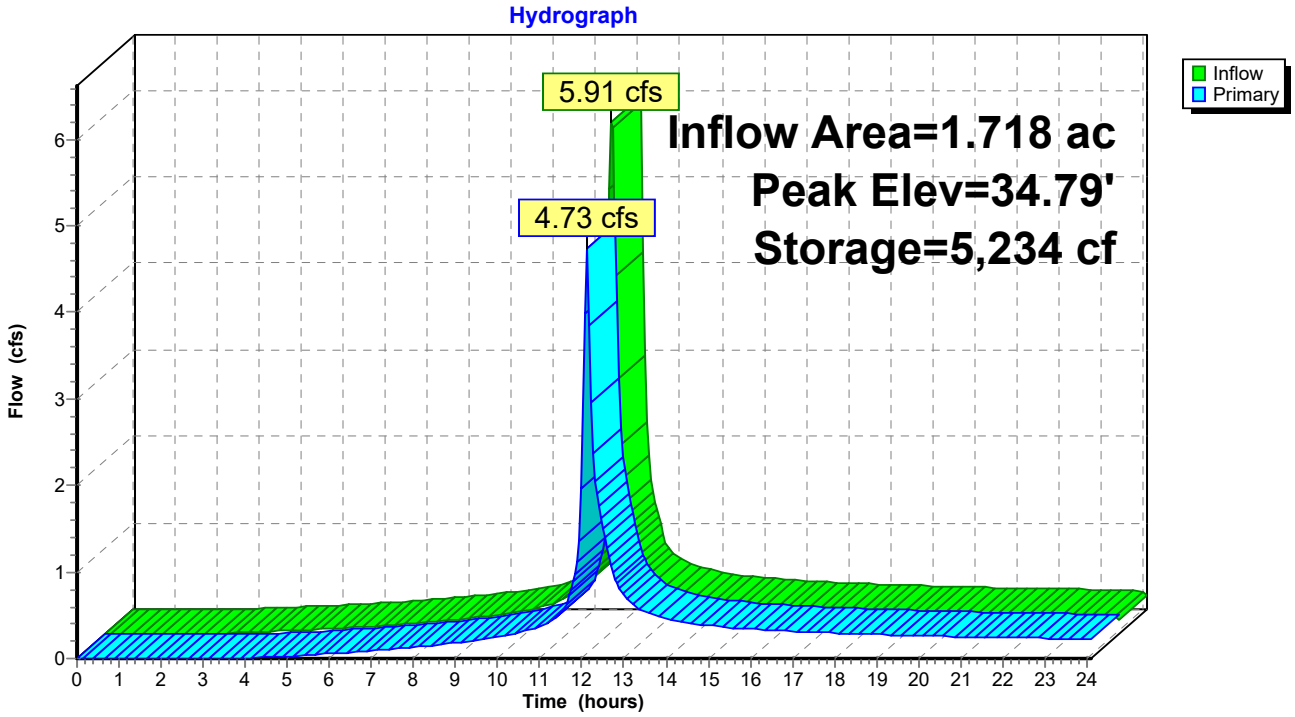
Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	5,832 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.00	1,141	239.0	0	0	1,141
33.00	1,647	259.0	1,386	1,386	1,972
34.00	2,194	263.0	1,914	3,300	2,281
34.50	2,480	289.0	1,168	4,468	3,432
35.00	2,982	391.0	1,364	5,832	8,954

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	34.60'	**10.0' long + 0.5 '/' SideZ x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=4.69 cfs @ 12.10 hrs HW=34.79' (Free Discharge)
1=Orifice/Grate (Orifice Controls 2.66 cfs @ 3.39 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 2.04 cfs @ 1.06 fps)

Pond 21S: Water Qualirty Basin



Summary for Pond 22SA: Water Quality Basin

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 4.81" for 25-yr event
Inflow = 4.49 cfs @ 12.04 hrs, Volume= 0.309 af
Outflow = 4.55 cfs @ 12.05 hrs, Volume= 0.309 af, Atten= 0%, Lag= 0.4 min
Primary = 4.55 cfs @ 12.05 hrs, Volume= 0.309 af
Routed to Pond 22SB : Underground 22

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 37.40' Surf.Area= 1,493 sf Storage= 1,924 cf
Peak Elev= 37.47' @ 12.05 hrs Surf.Area= 1,535 sf Storage= 2,028 cf (104 cf above start)

Plug-Flow detention time= 118.5 min calculated for 0.264 af (86% of inflow)
Center-of-Mass det. time= 0.6 min (805.4 - 804.8)

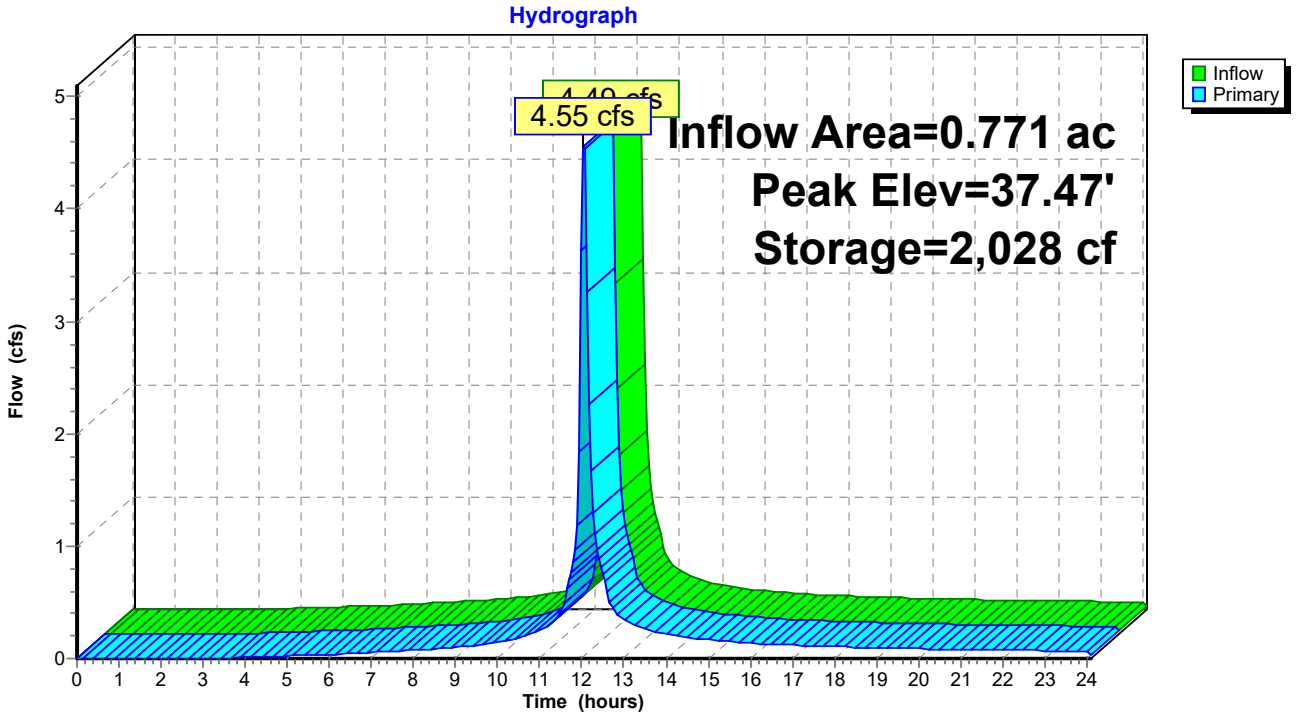
Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	2,076 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	175	238.0	0	0	175
36.00	700	264.0	408	408	1,244
37.00	1,259	291.0	966	1,374	2,468
37.50	1,554	298.0	702	2,076	2,828

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	**2.4" x 4.0" Horiz. Orifice/Grate X 8.00 columns** X 9 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.42 cfs @ 12.05 hrs HW=37.47' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 4.42 cfs @ 0.85 fps)

Pond 22SA: Water Quality Basin



Summary for Pond 22SB: Underground 22

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 4.81" for 25-yr event
Inflow = 4.55 cfs @ 12.05 hrs, Volume= 0.309 af
Outflow = 0.16 cfs @ 15.18 hrs, Volume= 0.178 af, Atten= 96%, Lag= 187.9 min
Primary = 0.16 cfs @ 15.18 hrs, Volume= 0.178 af
Routed to Pond 21S : Water Qualirty Basin

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Peak Elev= 36.38' @ 15.18 hrs Surf.Area= 0.113 ac Storage= 0.172 af

Plug-Flow detention time= 332.0 min calculated for 0.178 af (58% of inflow)
Center-of-Mass det. time= 197.8 min (1,003.1 - 805.4)

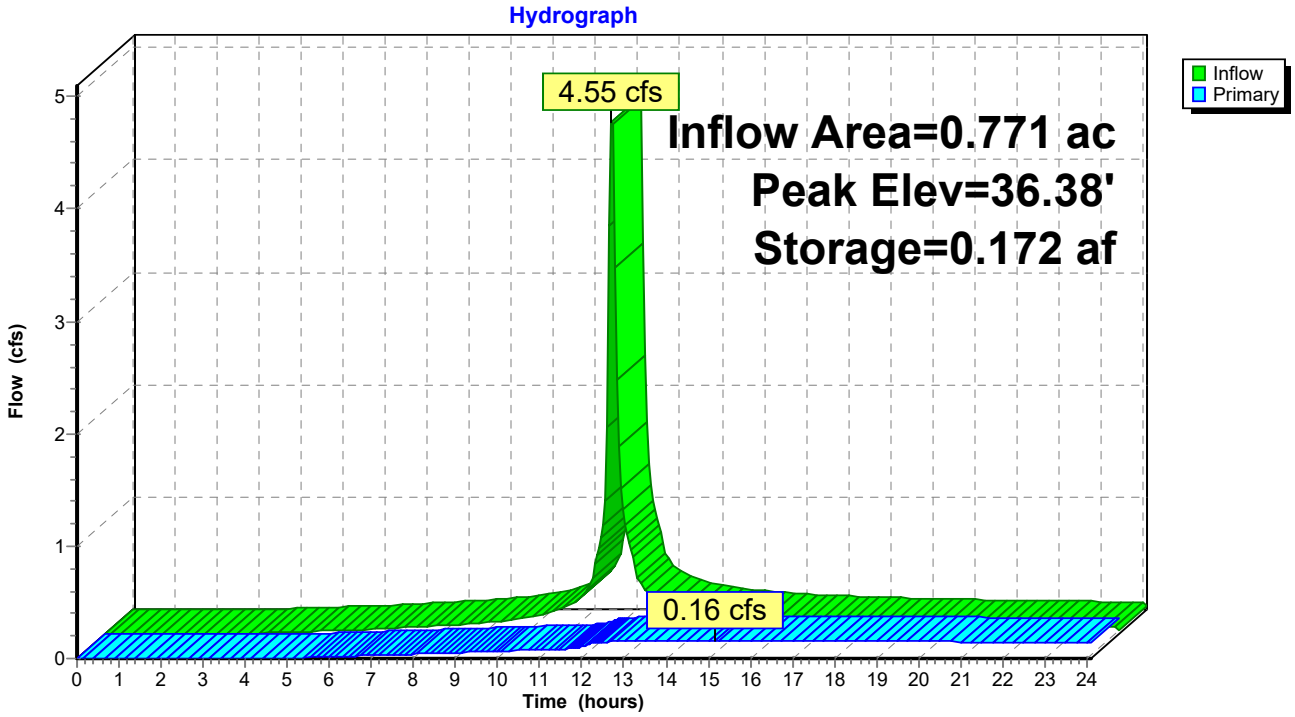
Volume	Invert	Avail.Storage	Storage Description
#1A	34.00'	0.076 af	**39.50'W x 124.66'L x 3.50'H Field A** 0.396 af Overall - 0.143 af Embedded = 0.252 af x 30.0% Voids
#2A	34.50'	0.143 af	**ADS_StormTech SC-740 +Cap** x 136 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 136 Chambers in 8 Rows
		0.219 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	36.90'	**4.0' long + 1.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.16 cfs @ 15.18 hrs HW=36.38' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.16 cfs @ 7.30 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 22SB: Underground 22

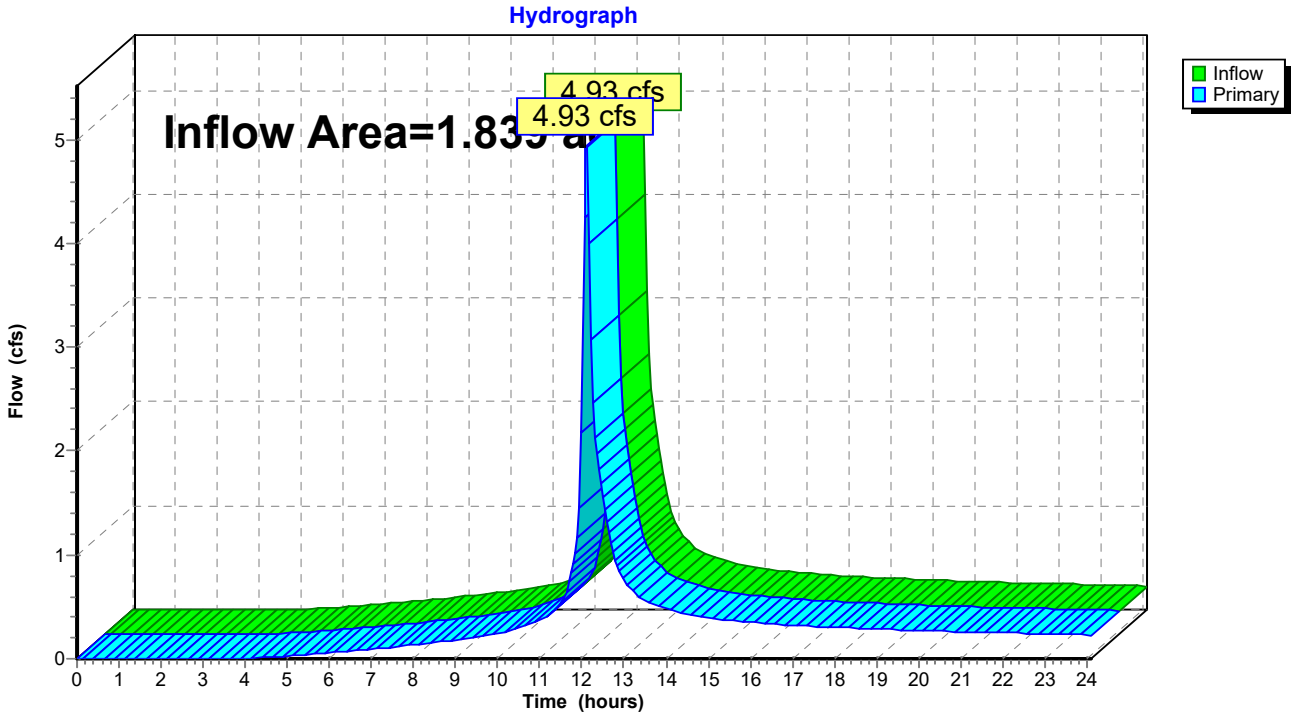


Summary for Link 30: Site

Inflow Area = 1.839 ac, 69.26% Impervious, Inflow Depth > 3.87" for 25-yr event
Inflow = 4.93 cfs @ 12.10 hrs, Volume= 0.592 af
Primary = 4.93 cfs @ 12.10 hrs, Volume= 0.592 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link 30: Site



Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 20: PRWS20 Runoff Area=5,280 sf 0.00% Impervious Runoff Depth>2.40"
Tc=6.0 min CN=57 Runoff=0.34 cfs 0.024 af

Subcatchment 21: PRWS 21 Runoff Area=41,250 sf 77.03% Impervious Runoff Depth>5.95"
Tc=6.0 min CN=90 Runoff=6.65 cfs 0.470 af

Subcatchment 22: PRWS 22 Runoff Area=33,570 sf 70.60% Impervious Runoff Depth>5.60"
Tc=6.0 min CN=87 Runoff=5.19 cfs 0.360 af

Pond 21S: Water Qualirty Basin Peak Elev=34.84' Storage=5,361 cf Inflow=6.77 cfs 0.673 af
Outflow=5.65 cfs 0.661 af

Pond 22SA: Water Quality Basin Peak Elev=37.48' Storage=2,039 cf Inflow=5.19 cfs 0.360 af
Outflow=5.25 cfs 0.360 af

Pond 22SB: Underground 22 Peak Elev=36.93' Storage=0.200 af Inflow=5.25 cfs 0.360 af
Outflow=0.24 cfs 0.203 af

Link 30: Site Inflow=5.93 cfs 0.685 af
Primary=5.93 cfs 0.685 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.854 af Average Runoff Depth = 5.57"
30.74% Pervious = 0.565 ac 69.26% Impervious = 1.274 ac

Summary for Subcatchment 20: PRWS20

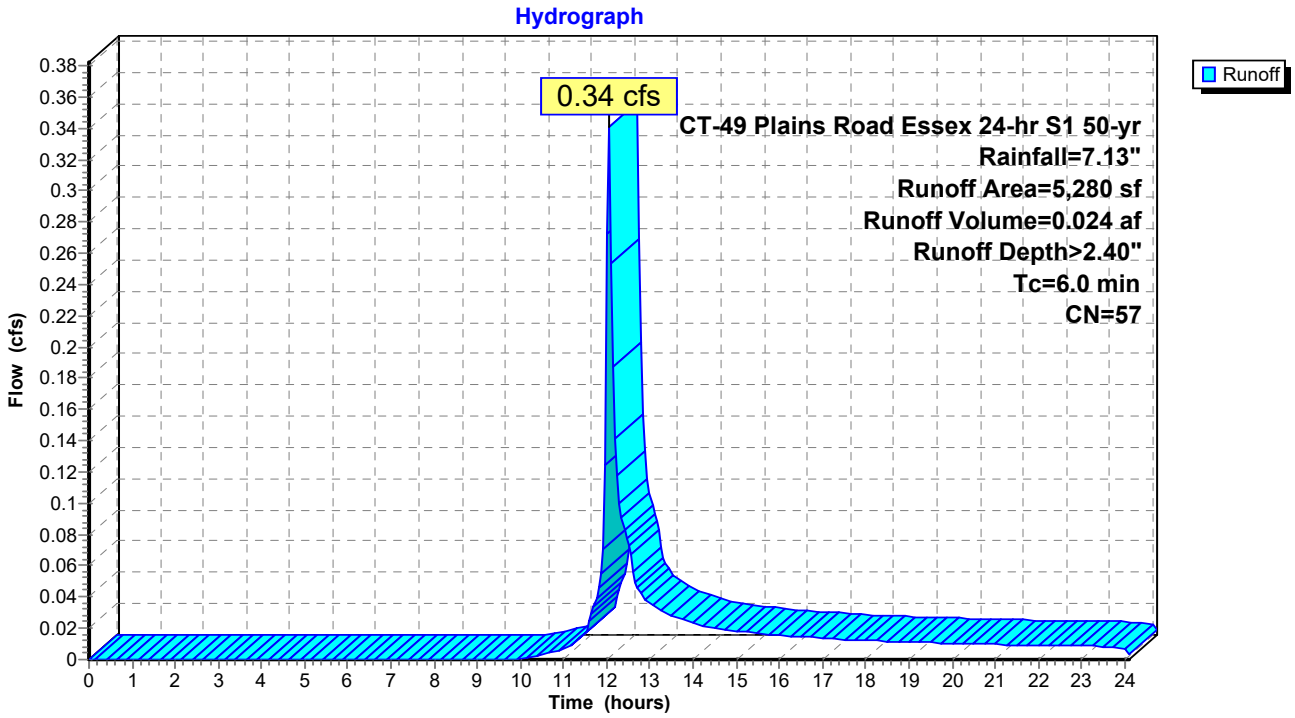
Runoff = 0.34 cfs @ 12.05 hrs, Volume= 0.024 af, Depth> 2.40"
Routed to Link 30 : Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 50-yr Rainfall=7.13"

Area (sf)	CN	Description
3,450	55	Woods, Good, HSG B
1,830	61	>75% Grass cover, Good, HSG B
5,280	57	Weighted Average
5,280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Mln. TR-55 TC**

Subcatchment 20: PRWS20



Summary for Subcatchment 21: PRWS 21

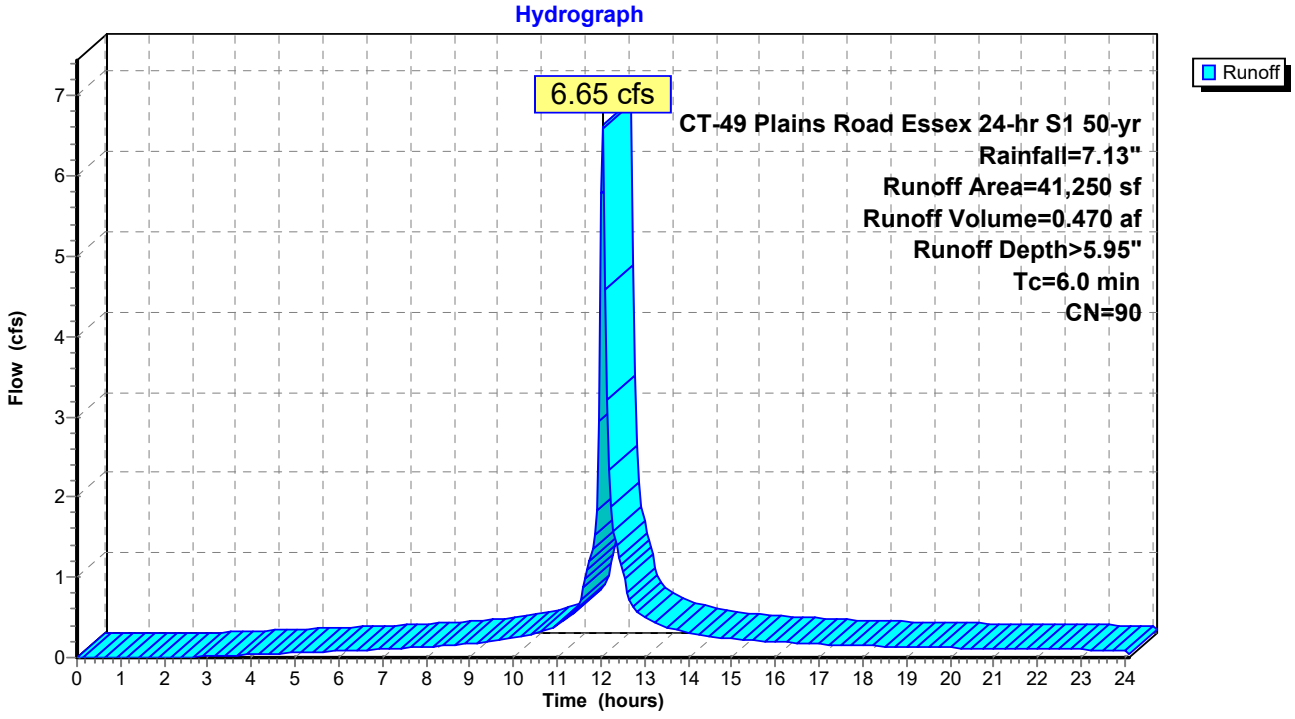
Runoff = 6.65 cfs @ 12.04 hrs, Volume= 0.470 af, Depth> 5.95"
Routed to Pond 21S : Water Qualirty Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 50-yr Rainfall=7.13"

Area (sf)	CN	Description
9,475	61	>75% Grass cover, Good, HSG B
29,400	98	Paved parking, HSG B
2,375	98	Roofs, HSG B
41,250	90	Weighted Average
9,475		22.97% Pervious Area
31,775		77.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 21: PRWS 21



Summary for Subcatchment 22: PRWS 22

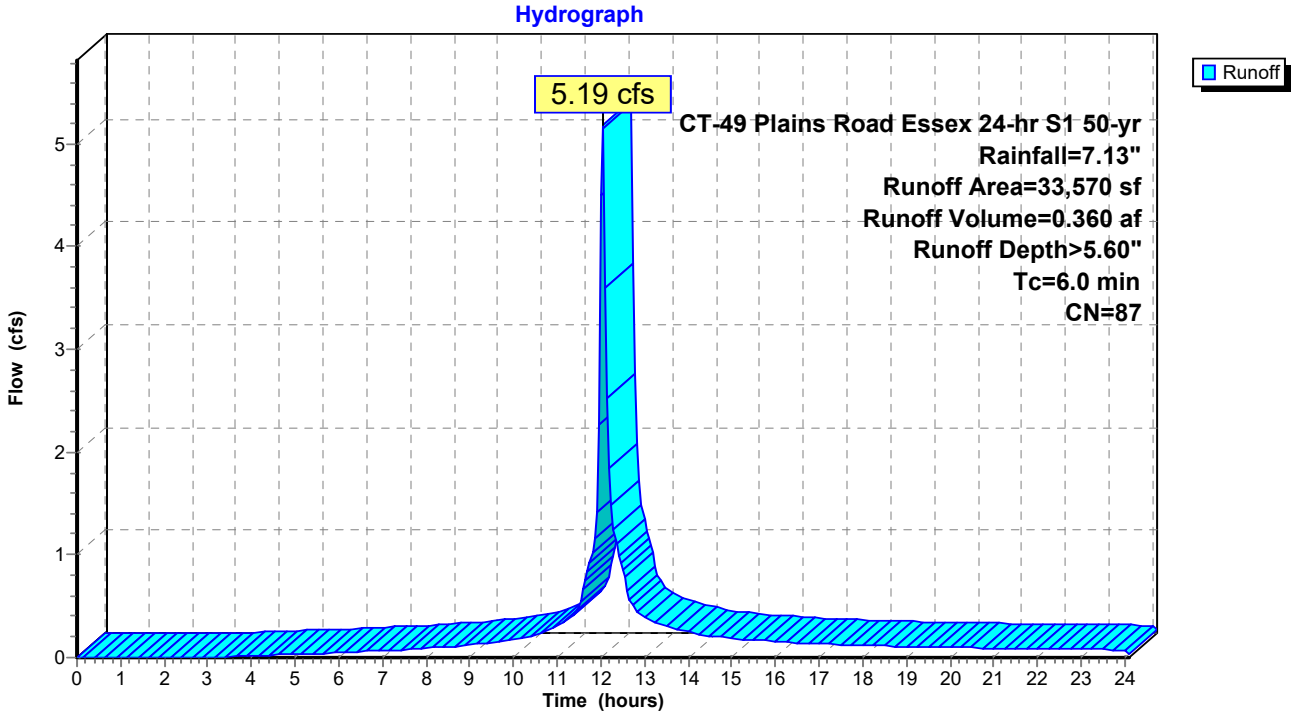
Runoff = 5.19 cfs @ 12.04 hrs, Volume= 0.360 af, Depth> 5.60"
Routed to Pond 22SA : Water Quality Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 50-yr Rainfall=7.13"

Area (sf)	CN	Description
9,870	61	>75% Grass cover, Good, HSG B
11,200	98	Paved parking, HSG B
12,500	98	Roofs, HSG B
33,570	87	Weighted Average
9,870		29.40% Pervious Area
23,700		70.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 22: PRWS 22



Summary for Pond 21S: Water Qualirty Basin

Inflow Area = 1.718 ac, 74.14% Impervious, Inflow Depth > 4.70" for 50-yr event
Inflow = 6.77 cfs @ 12.04 hrs, Volume= 0.673 af
Outflow = 5.65 cfs @ 12.09 hrs, Volume= 0.661 af, Atten= 17%, Lag= 2.9 min
Primary = 5.65 cfs @ 12.09 hrs, Volume= 0.661 af
Routed to Link 30 : Site

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 33.80' Surf.Area= 2,078 sf Storage= 2,873 cf
Peak Elev= 34.84' @ 12.09 hrs Surf.Area= 2,814 sf Storage= 5,361 cf (2,488 cf above start)

Plug-Flow detention time= 121.0 min calculated for 0.595 af (88% of inflow)
Center-of-Mass det. time= 15.3 min (864.9 - 849.6)

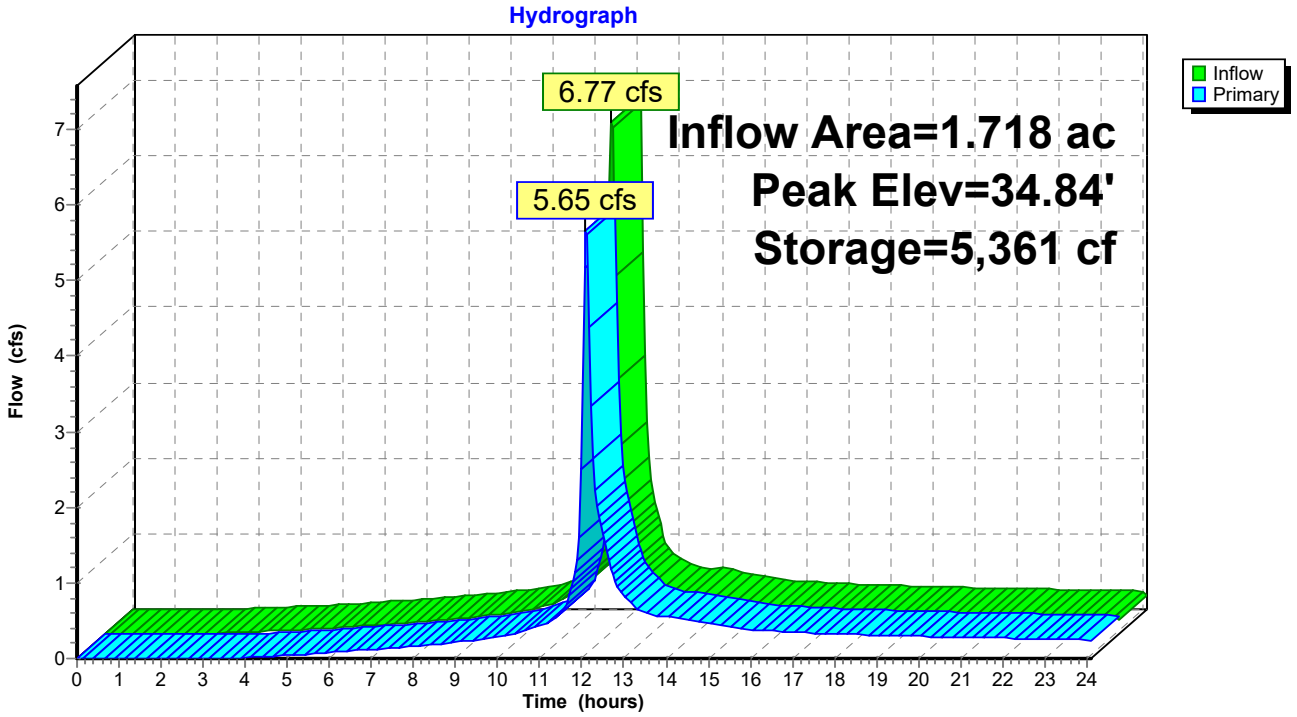
Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	5,832 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.00	1,141	239.0	0	0	1,141
33.00	1,647	259.0	1,386	1,386	1,972
34.00	2,194	263.0	1,914	3,300	2,281
34.50	2,480	289.0	1,168	4,468	3,432
35.00	2,982	391.0	1,364	5,832	8,954

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	34.60'	**10.0' long + 0.5 '/' SideZ x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=5.50 cfs @ 12.09 hrs HW=34.83' (Free Discharge)
1=Orifice/Grate (Orifice Controls 2.75 cfs @ 3.51 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 2.74 cfs @ 1.18 fps)

Pond 21S: Water Qualirty Basin



Summary for Pond 22SA: Water Quality Basin

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 5.60" for 50-yr event
Inflow = 5.19 cfs @ 12.04 hrs, Volume= 0.360 af
Outflow = 5.25 cfs @ 12.05 hrs, Volume= 0.360 af, Atten= 0%, Lag= 0.3 min
Primary = 5.25 cfs @ 12.05 hrs, Volume= 0.360 af
Routed to Pond 22SB : Underground 22

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 37.40' Surf.Area= 1,493 sf Storage= 1,924 cf
Peak Elev= 37.48' @ 12.05 hrs Surf.Area= 1,539 sf Storage= 2,039 cf (115 cf above start)

Plug-Flow detention time= 107.5 min calculated for 0.315 af (88% of inflow)
Center-of-Mass det. time= 0.6 min (799.9 - 799.4)

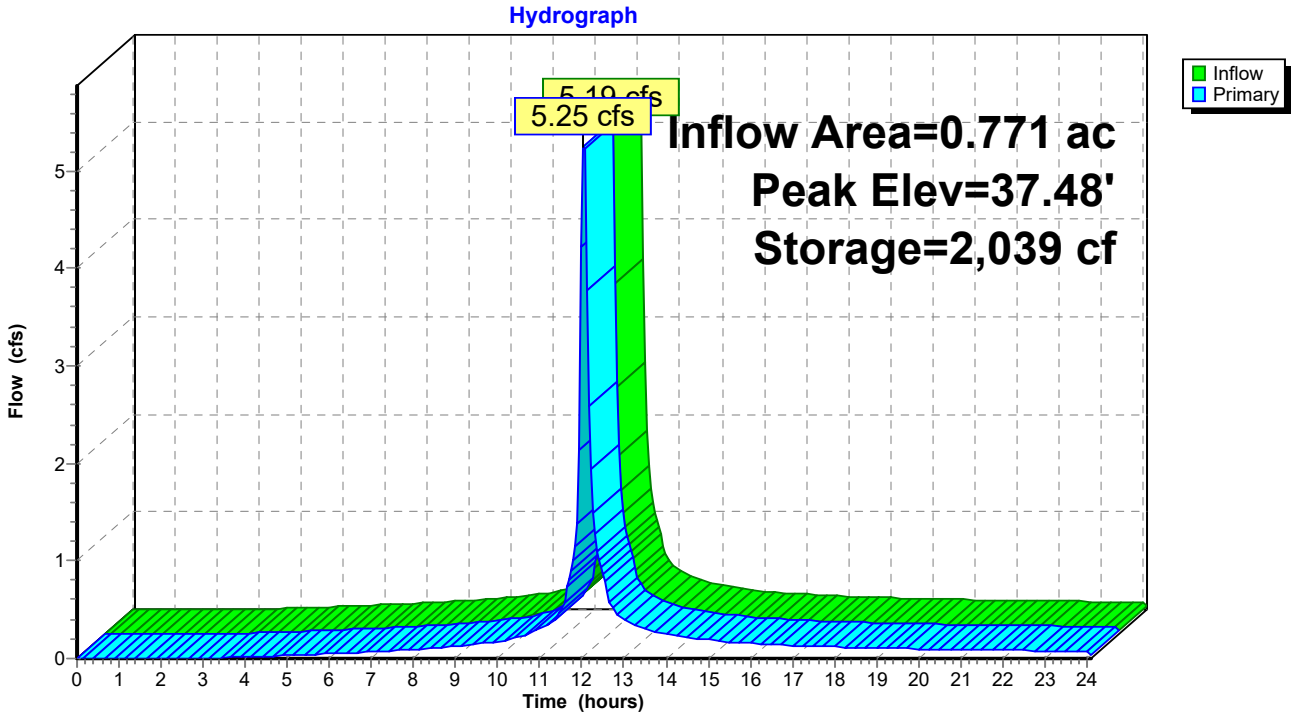
Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	2,076 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	175	238.0	0	0	175
36.00	700	264.0	408	408	1,244
37.00	1,259	291.0	966	1,374	2,468
37.50	1,554	298.0	702	2,076	2,828

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	**2.4" x 4.0" Horiz. Orifice/Grate X 8.00 columns** X 9 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.15 cfs @ 12.05 hrs HW=37.47' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 5.15 cfs @ 0.90 fps)

Pond 22SA: Water Quality Basin



Summary for Pond 22SB: Underground 22

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 5.60" for 50-yr event
Inflow = 5.25 cfs @ 12.05 hrs, Volume= 0.360 af
Outflow = 0.24 cfs @ 14.09 hrs, Volume= 0.203 af, Atten= 95%, Lag= 122.7 min
Primary = 0.24 cfs @ 14.09 hrs, Volume= 0.203 af
Routed to Pond 21S : Water Qualirty Basin

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Peak Elev= 36.93' @ 14.09 hrs Surf.Area= 0.113 ac Storage= 0.200 af

Plug-Flow detention time= 330.1 min calculated for 0.203 af (56% of inflow)
Center-of-Mass det. time= 193.5 min (993.4 - 799.9)

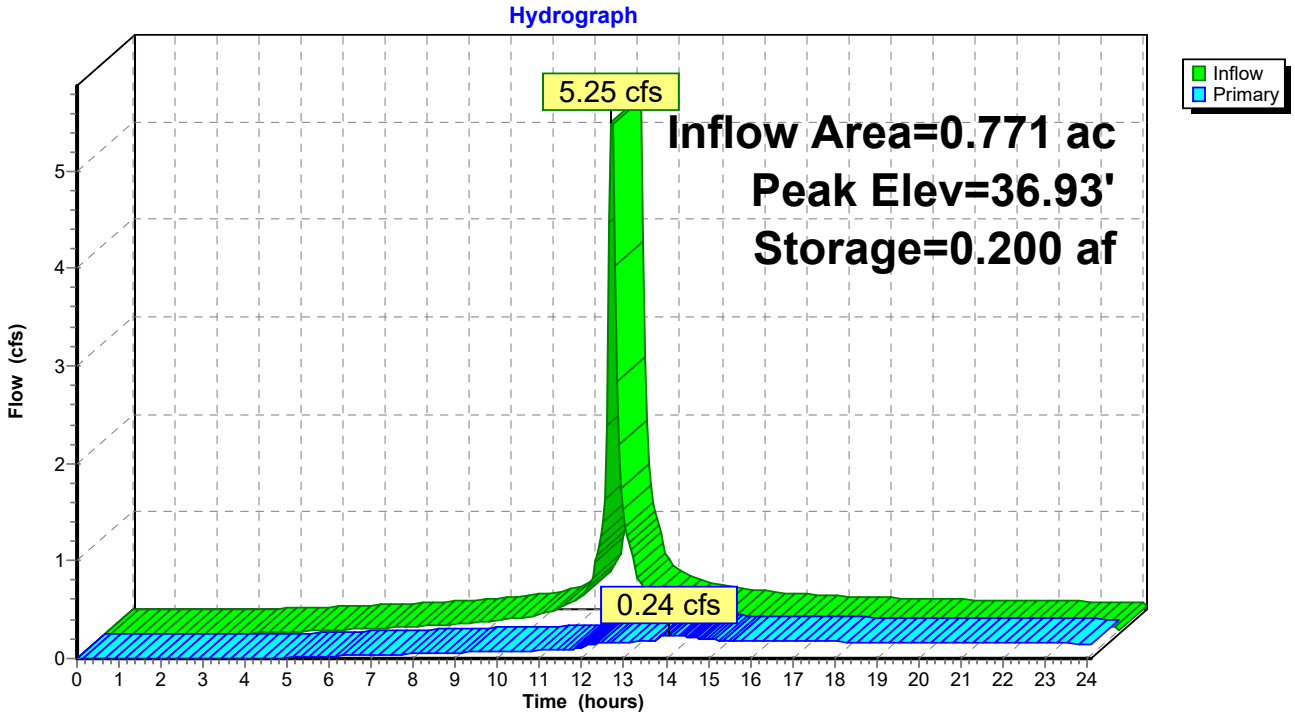
Volume	Invert	Avail.Storage	Storage Description
#1A	34.00'	0.076 af	**39.50'W x 124.66'L x 3.50'H Field A** 0.396 af Overall - 0.143 af Embedded = 0.252 af x 30.0% Voids
#2A	34.50'	0.143 af	**ADS_StormTech SC-740 +Cap** x 136 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 136 Chambers in 8 Rows
		0.219 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	36.90'	**4.0' long + 1.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.24 cfs @ 14.09 hrs HW=36.93' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.18 cfs @ 8.13 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 0.06 cfs @ 0.48 fps)

Pond 22SB: Underground 22

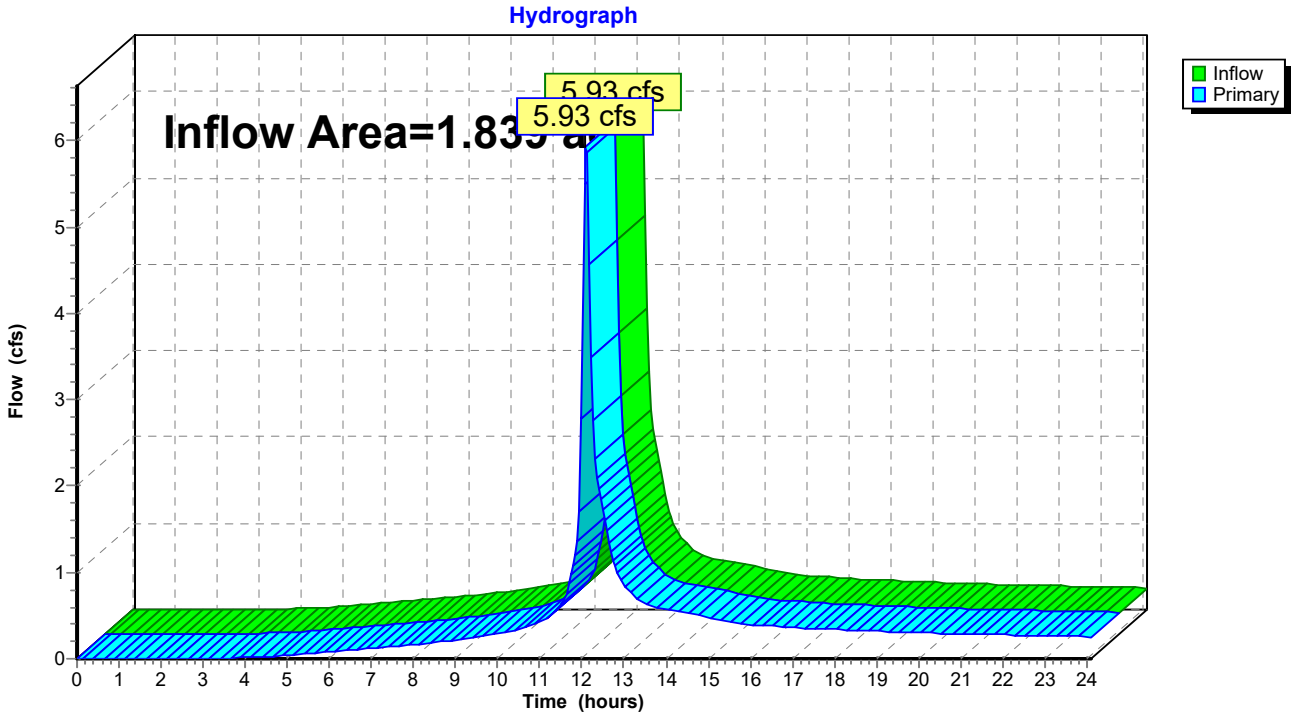


Summary for Link 30: Site

Inflow Area = 1.839 ac, 69.26% Impervious, Inflow Depth > 4.47" for 50-yr event
Inflow = 5.93 cfs @ 12.09 hrs, Volume= 0.685 af
Primary = 5.93 cfs @ 12.09 hrs, Volume= 0.685 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link 30: Site



Time span=0.00-24.10 hrs, dt=0.05 hrs, 483 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 20: PRWS20 Runoff Area=5,280 sf 0.00% Impervious Runoff Depth>3.01"
Tc=6.0 min CN=57 Runoff=0.44 cfs 0.030 af

Subcatchment 21: PRWS 21 Runoff Area=41,250 sf 77.03% Impervious Runoff Depth>6.81"
Tc=6.0 min CN=90 Runoff=7.53 cfs 0.538 af

Subcatchment 22: PRWS 22 Runoff Area=33,570 sf 70.60% Impervious Runoff Depth>6.46"
Tc=6.0 min CN=87 Runoff=5.92 cfs 0.415 af

Pond 21S: Water Qualirty Basin Peak Elev=34.88' Storage=5,475 cf Inflow=7.67 cfs 0.788 af
Outflow=6.56 cfs 0.776 af

Pond 22SA: Water Quality Basin Peak Elev=37.48' Storage=2,052 cf Inflow=5.92 cfs 0.415 af
Outflow=5.96 cfs 0.415 af

Pond 22SB: Underground 22 Peak Elev=37.04' Storage=0.204 af Inflow=5.96 cfs 0.415 af
Outflow=0.79 cfs 0.250 af

Link 30: Site Inflow=6.92 cfs 0.806 af
Primary=6.92 cfs 0.806 af

Total Runoff Area = 1.839 ac Runoff Volume = 0.983 af Average Runoff Depth = 6.41"
30.74% Pervious = 0.565 ac 69.26% Impervious = 1.274 ac

Summary for Subcatchment 20: PRWS20

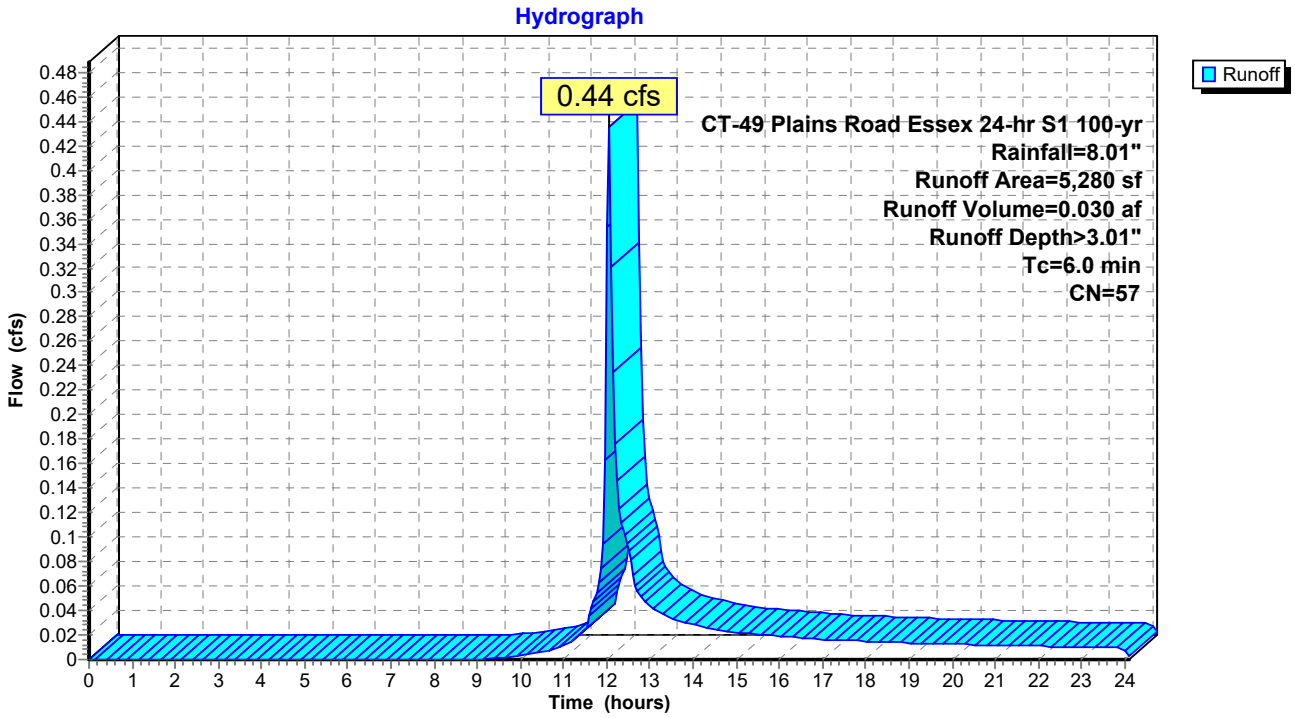
Runoff = 0.44 cfs @ 12.05 hrs, Volume= 0.030 af, Depth> 3.01"
Routed to Link 30 : Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 100-yr Rainfall=8.01"

Area (sf)	CN	Description
3,450	55	Woods, Good, HSG B
1,830	61	>75% Grass cover, Good, HSG B
5,280	57	Weighted Average
5,280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 20: PRWS20



Summary for Subcatchment 21: PRWS 21

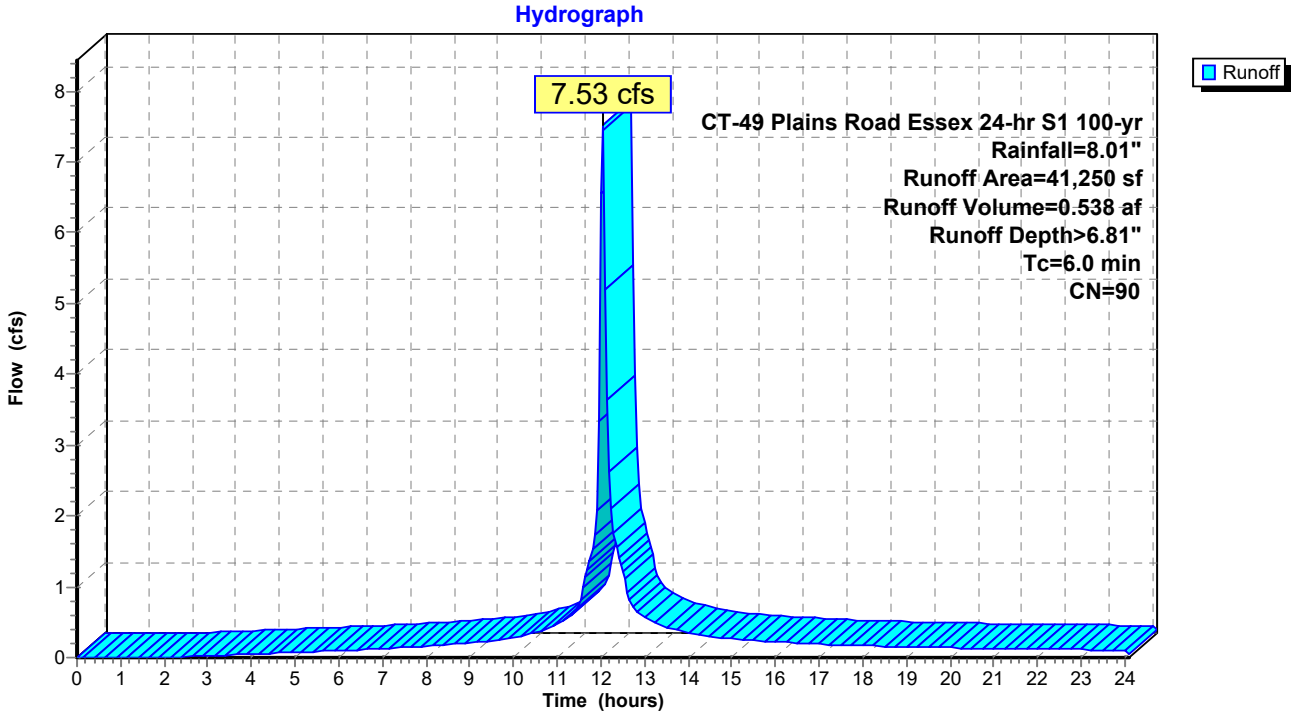
Runoff = 7.53 cfs @ 12.04 hrs, Volume= 0.538 af, Depth> 6.81"
Routed to Pond 21S : Water Qualirty Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 100-yr Rainfall=8.01"

Area (sf)	CN	Description
9,475	61	>75% Grass cover, Good, HSG B
29,400	98	Paved parking, HSG B
2,375	98	Roofs, HSG B
41,250	90	Weighted Average
9,475		22.97% Pervious Area
31,775		77.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 21: PRWS 21



Summary for Subcatchment 22: PRWS 22

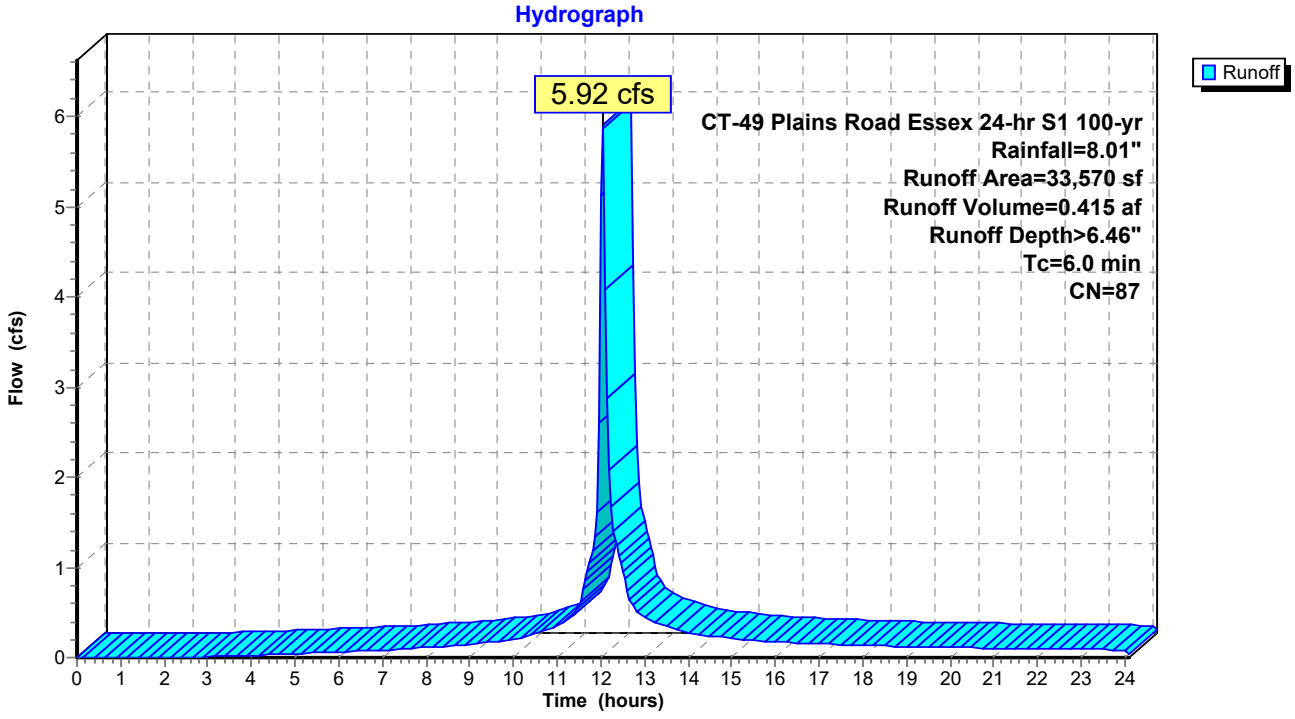
Runoff = 5.92 cfs @ 12.04 hrs, Volume= 0.415 af, Depth> 6.46"
Routed to Pond 22SA : Water Quality Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
CT-49 Plains Road Essex 24-hr S1 100-yr Rainfall=8.01"

Area (sf)	CN	Description
9,870	61	>75% Grass cover, Good, HSG B
11,200	98	Paved parking, HSG B
12,500	98	Roofs, HSG B
33,570	87	Weighted Average
9,870		29.40% Pervious Area
23,700		70.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. TR-55 TC**

Subcatchment 22: PRWS 22



Summary for Pond 21S: Water Qualirty Basin

Inflow Area = 1.718 ac, 74.14% Impervious, Inflow Depth > 5.50" for 100-yr event
Inflow = 7.67 cfs @ 12.04 hrs, Volume= 0.788 af
Outflow = 6.56 cfs @ 12.08 hrs, Volume= 0.776 af, Atten= 14%, Lag= 2.5 min
Primary = 6.56 cfs @ 12.08 hrs, Volume= 0.776 af
Routed to Link 30 : Site

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 33.80' Surf.Area= 2,078 sf Storage= 2,873 cf
Peak Elev= 34.88' @ 12.08 hrs Surf.Area= 2,855 sf Storage= 5,475 cf (2,602 cf above start)

Plug-Flow detention time= 107.6 min calculated for 0.710 af (90% of inflow)
Center-of-Mass det. time= 14.6 min (851.7 - 837.1)

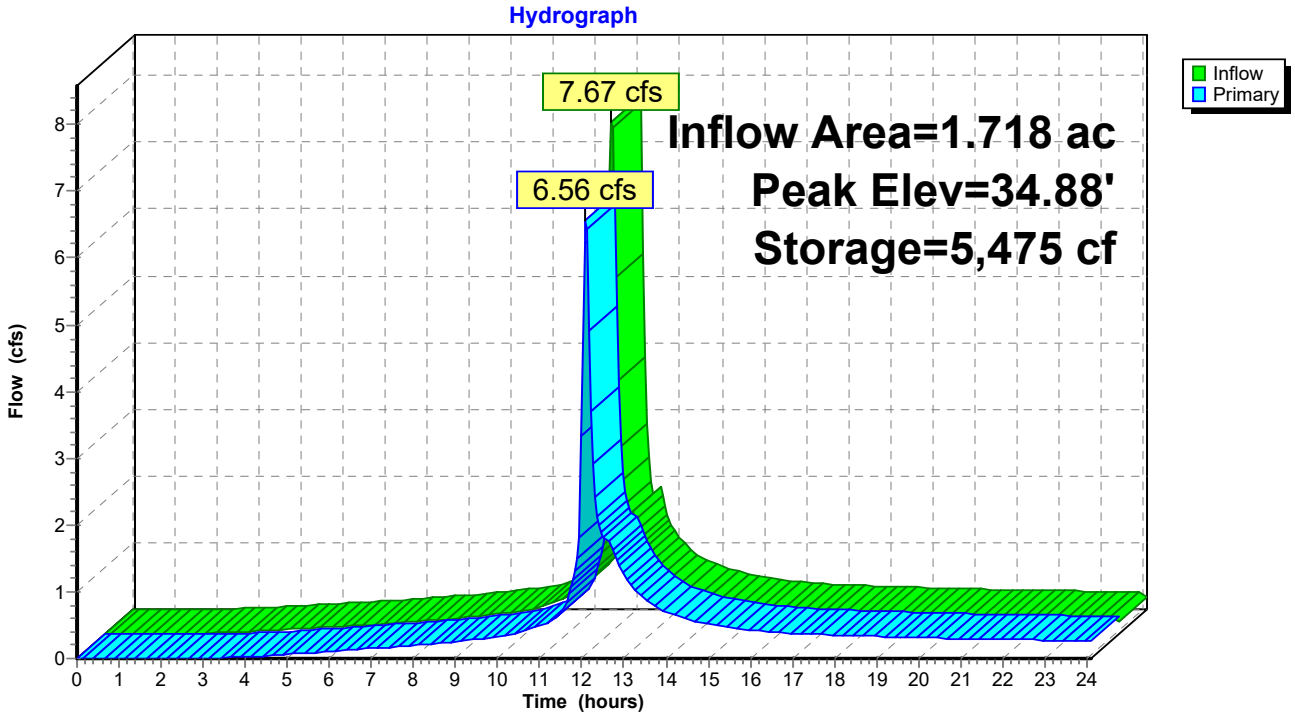
Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	5,832 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.00	1,141	239.0	0	0	1,141
33.00	1,647	259.0	1,386	1,386	1,972
34.00	2,194	263.0	1,914	3,300	2,281
34.50	2,480	289.0	1,168	4,468	3,432
35.00	2,982	391.0	1,364	5,832	8,954

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	34.60'	**10.0' long + 0.5 '/' SideZ x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=6.35 cfs @ 12.08 hrs HW=34.87' (Free Discharge)
1=Orifice/Grate (Orifice Controls 2.85 cfs @ 3.63 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 3.50 cfs @ 1.29 fps)

Pond 21S: Water Qualirty Basin



Summary for Pond 22SA: Water Quality Basin

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 6.46" for 100-yr event
Inflow = 5.92 cfs @ 12.04 hrs, Volume= 0.415 af
Outflow = 5.96 cfs @ 12.05 hrs, Volume= 0.415 af, Atten= 0%, Lag= 0.3 min
Primary = 5.96 cfs @ 12.05 hrs, Volume= 0.415 af
Routed to Pond 22SB : Underground 22

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Starting Elev= 37.40' Surf.Area= 1,493 sf Storage= 1,924 cf
Peak Elev= 37.48' @ 12.05 hrs Surf.Area= 1,544 sf Storage= 2,052 cf (128 cf above start)

Plug-Flow detention time= 98.7 min calculated for 0.371 af (89% of inflow)
Center-of-Mass det. time= 0.5 min (795.2 - 794.6)

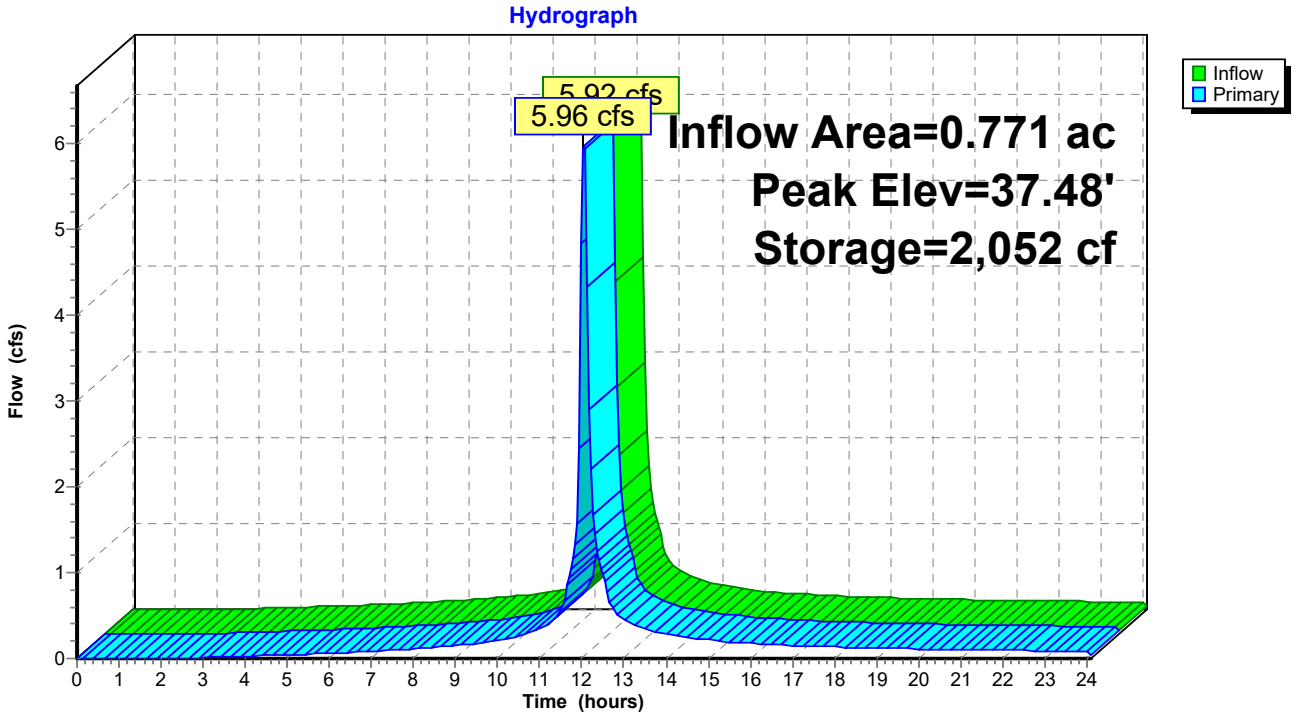
Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	2,076 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	175	238.0	0	0	175
36.00	700	264.0	408	408	1,244
37.00	1,259	291.0	966	1,374	2,468
37.50	1,554	298.0	702	2,076	2,828

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	**2.4" x 4.0" Horiz. Orifice/Grate X 8.00 columns** X 9 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.00 cfs @ 12.05 hrs HW=37.48' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 6.00 cfs @ 0.94 fps)

Pond 22SA: Water Quality Basin



Summary for Pond 22SB: Underground 22

Inflow Area = 0.771 ac, 70.60% Impervious, Inflow Depth > 6.46" for 100-yr event
Inflow = 5.96 cfs @ 12.05 hrs, Volume= 0.415 af
Outflow = 0.79 cfs @ 12.60 hrs, Volume= 0.250 af, Atten= 87%, Lag= 33.5 min
Primary = 0.79 cfs @ 12.60 hrs, Volume= 0.250 af
Routed to Pond 21S : Water Qualirty Basin

Routing by Stor-Ind method, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs
Peak Elev= 37.04' @ 12.60 hrs Surf.Area= 0.113 ac Storage= 0.204 af

Plug-Flow detention time= 289.1 min calculated for 0.250 af (60% of inflow)
Center-of-Mass det. time= 158.0 min (953.2 - 795.2)

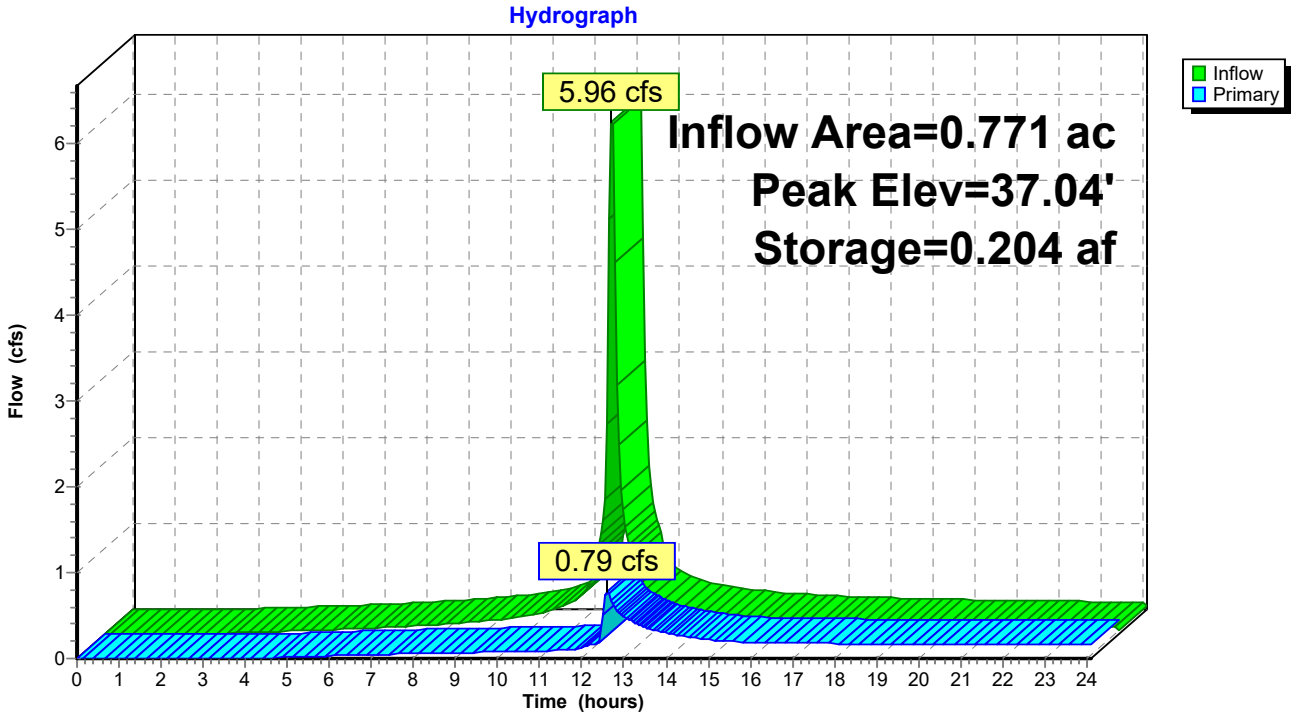
Volume	Invert	Avail.Storage	Storage Description
#1A	34.00'	0.076 af	**39.50'W x 124.66'L x 3.50'H Field A** 0.396 af Overall - 0.143 af Embedded = 0.252 af x 30.0% Voids
#2A	34.50'	0.143 af	**ADS_StormTech SC-740 +Cap** x 136 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 136 Chambers in 8 Rows
		0.219 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	36.90'	**4.0' long + 1.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.78 cfs @ 12.60 hrs HW=37.04' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.18 cfs @ 8.28 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 0.60 cfs @ 1.01 fps)

Pond 22SB: Underground 22

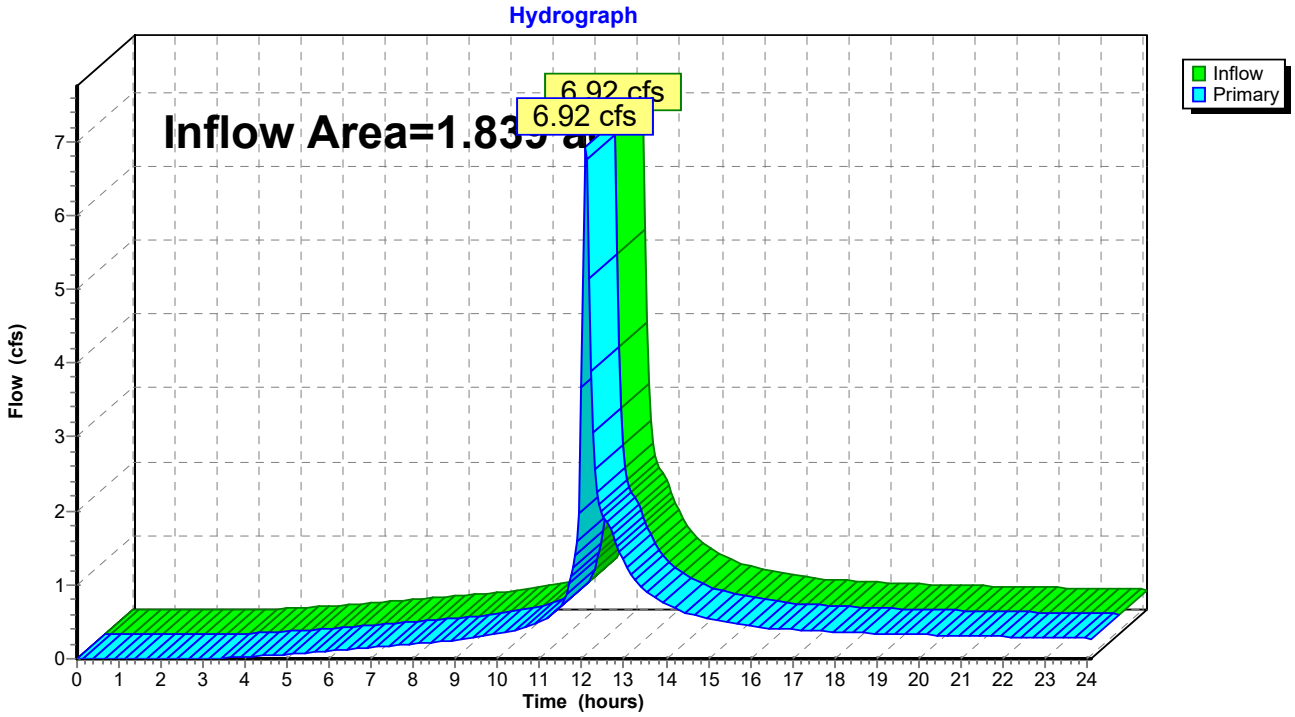


Summary for Link 30: Site

Inflow Area = 1.839 ac, 69.26% Impervious, Inflow Depth > 5.26" for 100-yr event
Inflow = 6.92 cfs @ 12.08 hrs, Volume= 0.806 af
Primary = 6.92 cfs @ 12.08 hrs, Volume= 0.806 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.10 hrs, dt= 0.05 hrs

Link 30: Site



Appendix C
Pipe Capacity Calculations

DATE	REVISION	CK.
12/12/22	TOWN COMMENTS	
01/06/23	TOWN COMMENTS	

PROPOSED WATERSHED BOUNDARY

WS 20

WS 22

WS 21

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

1 inch = 40 ft.

DOANE ENGINEERING

CIVIL ENGINEERING AND LAND SURVEYING

P.O. BOX 113 CENTERBROOK, CONNECTICUT 06409

TEL: (860)767-0138, FAX: (860)767-9104

CATCH BASIN CATCHMENT AREAS

PREPARED FOR

PIAGE MANAGEMENT CORP

#49 PLAINS ROAD ,ESSEX , CONNECTICUT

SCALE:	DATE:	SHEET NO.:	IDENT. NO.:
1"=40'	11/29/22	1 OF 1	

FILE: \\JEFS\Drawings\DRAWINGS\TOWNS\ESSEX\ESSEX\PLAINS ROAD\PIAGENTINI-808\Hydro CB Areas.dwg

Rational Method Individual Basin Calculations

Catch Basin and Area Drain Runoff Coefficients

Basin Name	Impervious Area C=0.9 (sf)	Grass Area C=0.3 (sf)	Wooded Area C=0.2 (sf)	Total Area (sf)	Total Area (ac)	Weighted C	Tc to Inlet (min)
CCB 3	9,950	0	0	9,950	0.23	0.90	5.0
CCB 4	2,560	300	0	2,860	0.07	0.84	5.0
CLCB 5	18,910	1800	0	20,710	0.48	0.85	5.0
CCB 13	2,900	3600	0	6,500	0.15	0.57	5.0
CCB 15	1,857	350	0	2,207	0.05	0.80	5.0
CCB 16	7,088	0	0	7,088	0.16	0.90	5.0
CCB 17	1,473	370	0	1,843	0.04	0.78	5.0
YD 17A	0	1275	0	1,275	0.03	0.30	5.0

Roof Drainage Pipe Calculations

Q = C x I x A, Where:
C = Runoff Coefficient
I = Rainfall Intensity (in/hr)
A = Area (acres)
Q = Flow (cfs)

	MH 9	MH 10	MH 11	MH 12
C	0.90	0.90	0.90	0.90
I	8.83	8.83	8.83	8.83
A	0.06	0.06	0.06	0.06
Q	0.48	0.48	0.48	0.48

System 20 100 YR

Project File: System 20.stm	Number of lines: 1	Date: 1/6/2023

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	207.000	179.538	MH	0.79	0.00	0.00	0.0	32.50	0.72	34.00	15	Cir	0.013	1.00	38.80	OCS19-FES 20

System 20 100 YR | Number of lines: 1 | Date: 1/6/2023

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	207.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.79	5.50	0.73	15	0.72	32.50	34.00	34.88	34.91	33.80	38.80	OCS19-FES 20

System 20 100 YR | Number of lines: 1 | Run Date: 1/6/2023

NOTES:Intensity = 50.44 / (Inlet time + 3.60) ^ 0.70; Return period =Yrs. 100 ; c = cir e = ellip b = box

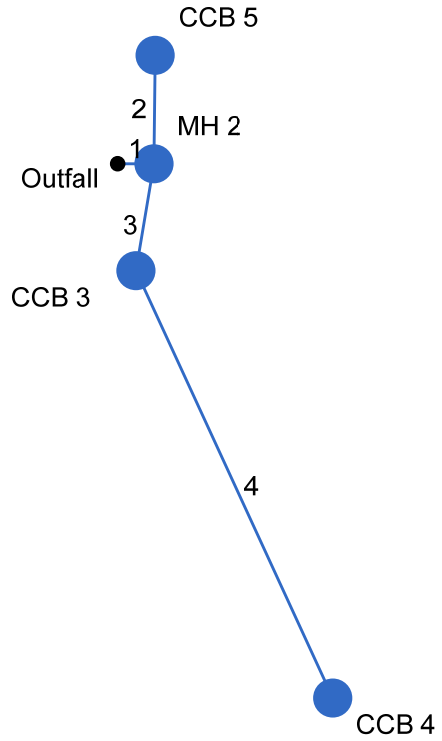
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	15	0.79	32.50	34.88	1.25	1.23	0.64	0.01	34.89	0.015	207.000	34.00	34.91	0.91	0.96	0.82	0.01	34.92	0.019	0.017	0.035	1.00	0.01

System 20 100 YR | Number of lines: 1 | Run Date: 1/6/2023

; c = cir e = ellip b = box

System 21 25 YR



Project File: System 21.stm	Number of lines: 4	Date: 1/10/2023

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	4.000	0.000	MH	0.00	0.00	0.00	0.0	32.40	2.50	32.50	15	Cir	0.013	1.00	35.80	MH 2- FES 1
2	1	12.000	-89.376	Comb	0.00	0.48	0.85	5.0	32.50	1.67	32.70	15	Cir	0.013	1.00	35.40	CCB 5- MH 2
3	1	12.000	99.517	Comb	0.00	0.23	0.90	5.0	32.50	1.67	32.70	15	Cir	0.013	0.92	35.40	CCB 3- MH 2
4	3	52.000	-34.164	Comb	0.00	0.07	0.90	5.0	32.70	2.12	33.80	15	Cir	0.013	1.00	36.10	CCB 4- CCB 3

System 21 25 YR | Number of lines: 4 | Date: 1/10/2023

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	4.000	0.00	0.78	0.00	0.00	0.68	0.0	7.0	7.6	5.15	10.21	4.20	15	2.50	32.40	32.50	34.85	34.88	33.00	35.80	MH 2- FES 1
2	1	12.000	0.48	0.48	0.85	0.41	0.41	5.0	5.0	8.8	3.59	8.34	2.93	15	1.67	32.50	32.70	35.15	35.19	35.80	35.40	CCB 5- MH 2
3	1	12.000	0.23	0.30	0.90	0.21	0.27	5.0	6.9	7.7	2.07	8.34	1.68	15	1.67	32.50	32.70	35.15	35.16	35.80	35.40	CCB 3- MH 2
4	3	52.000	0.07	0.07	0.90	0.06	0.06	5.0	5.0	8.8	0.55	9.39	0.45	15	2.12	32.70	33.80	35.20	35.21	35.40	36.10	CCB 4- CCB 3

System 21 25 YR | Number of lines: 4 | Run Date: 1/10/2023

NOTES:Intensity = 40.94 / (Inlet time + 3.80) ^ 0.71; Return period =Yrs. 25 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH 2	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	CCB 5	3.59	0.00	3.59	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.010	0.010	0.000	0.38	37.66	0.38	37.66	0.0	Off
3	CCB 3	1.82	0.29	2.11	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.010	0.010	0.000	0.27	26.76	0.27	26.76	0.0	Off
4	CCB 4	0.55	0.00	0.27	0.29	Comb	4.0	2.73	0.00	2.31	1.35	0.010	2.53	0.010	0.010	0.013	0.08	8.25	0.06	6.44	0.0	3

System 21 25 YR | Number of lines: 4 | Run Date: 1/10/2023

NOTES: Inlet N-Values = 0.016; Intensity = 40.94 / (Inlet time + 3.80) ^ 0.71; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

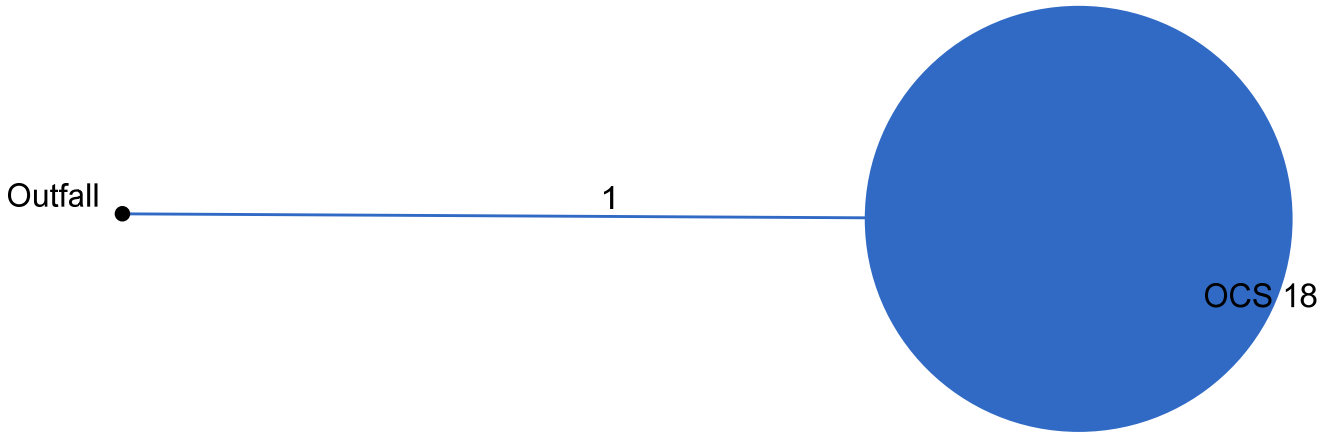
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	15	5.15	32.40	34.85	1.25	1.23	4.20	0.27	35.12	0.637	4.000	32.50	34.88	1.25	1.23	4.20	0.27	35.15	0.636	0.636	0.025	1.00	0.27
2	15	3.59	32.50	35.15	1.25	1.23	2.93	0.13	35.28	0.309	12.000	32.70	35.19	1.25	1.23	2.93	0.13	35.32	0.309	0.309	0.037	1.00	0.13
3	15	2.07	32.50	35.15	1.25	1.23	1.68	0.04	35.19	0.103	12.000	32.70	35.16	1.25	1.23	1.68	0.04	35.21	0.103	0.103	0.012	0.92	0.04
4	15	0.55	32.70	35.20	1.25	1.23	0.45	0.00	35.21	0.007	52.000	33.80	35.21	1.25	1.23	0.45	0.00	35.21	0.007	0.007	0.004	1.00	0.00

System 21 25 YR | Number of lines: 4 | Run Date: 1/10/2023

; c = cir e = ellip b = box

System OCS 18 100 YR



Project File: System 22 Water Quality.stm	Number of lines: 1	Date: 1/6/2023

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	9.000	0.324	MH	5.96	0.00	0.00	0.0	35.00	2.22	35.20	15	Cir	0.013	1.00	37.40	OCS 18-UG22

System OCS 18 100 YR | Number of lines: 1 | Date: 1/6/2023

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	9.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	5.96	9.63	4.86	15	2.22	35.00	35.20	37.04	37.12	0.00	37.40	OCS 18-UG22

System OCS 18 100 YR | Number of lines: 1 | Run Date: 1/6/2023

NOTES:Intensity = 50.44 / (Inlet time + 3.60) ^ 0.70; Return period =Yrs. 100 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	OCS 18	5.96*	0.00	0.00	5.96	MH	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.050	0.020	0.013	0.00	0.00	0.00	0.00	0.0	Off

System OCS 18 100 YR | Number of lines: 1 | Run Date: 1/6/2023

NOTES: Inlet N-Values = 0.016; Intensity = 50.44 / (Inlet time + 3.60) ^ 0.70; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

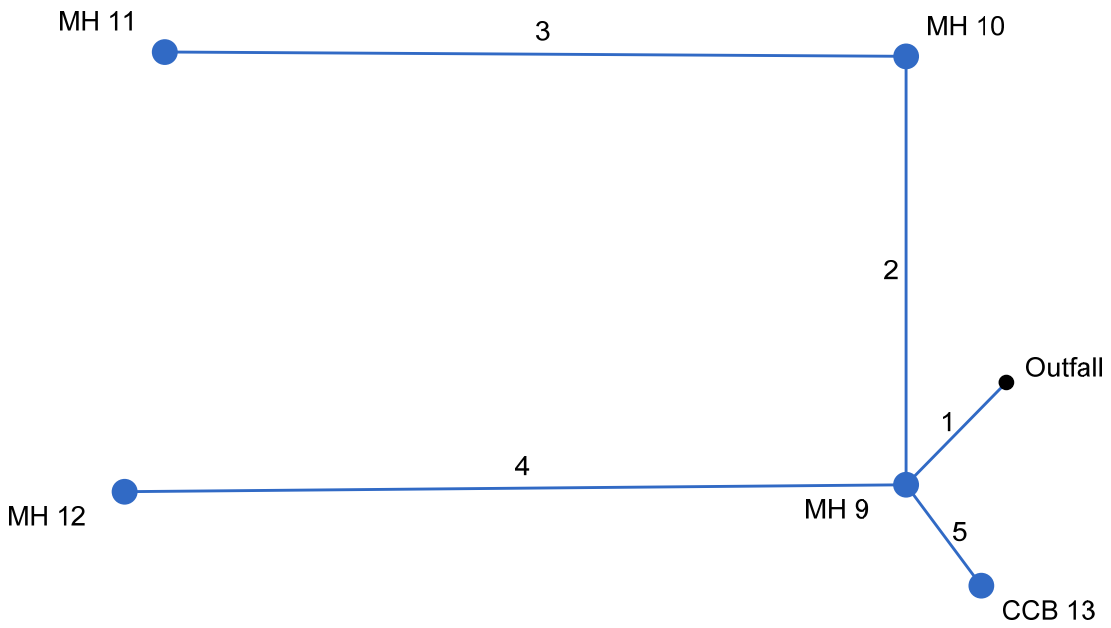
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	15	5.96	35.00	37.04	1.25	1.23	4.86	0.37	37.41	0.852	9.000	35.20	37.12	1.25	1.23	4.86	0.37	37.48	0.852	0.852	0.077	1.00	0.37

System OCS 18 100 YR | Number of lines: 1 | Run Date: 1/6/2023

; c = cir e = ellip b = box

System 22A 25 YR



Project File: System 22A.stm	Number of lines: 5	Date: 1/6/2023

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	25.000	134.266	MH	0.48	0.00	0.00	0.0	35.20	0.80	35.40	12	Cir	0.013	1.00	38.00	MH 9- FES 8
2	1	75.000	135.735	MH	0.48	0.00	0.00	0.0	35.40	0.80	36.00	8	Cir	0.011	1.00	40.00	CO 10-MH 9
3	2	129.000	-89.660	MH	0.48	0.00	0.00	0.0	36.00	0.78	37.00	8	Cir	0.011	1.00	40.00	CO 11- CO 10
4	1	136.000	45.217	MH	0.48	0.00	0.00	0.0	35.40	1.18	37.00	8	Cir	0.011	1.00	40.00	CO 12-MH 9
5	1	22.000	-80.781	Comb	0.00	0.15	0.57	5.0	35.40	0.91	35.60	12	Cir	0.013	1.00	37.80	CCB 13-MH 9

System 22A 25 YR | Number of lines: 5 | Date: 1/6/2023

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	25.000	0.00	0.15	0.00	0.00	0.09	0.0	5.4	8.5	2.65	3.19	3.37	12	0.80	35.20	35.40	37.47	37.61	36.20	38.00	MH 9- FES 8
2	1	75.000	0.00	0.00	0.00	0.00	0.00	0.0	1.6	0.0	0.96	1.28	2.75	8	0.80	35.40	36.00	37.79	38.13	38.00	40.00	CO 10-MH 9
3	2	129.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.48	1.26	1.38	8	0.78	36.00	37.00	38.24	38.39	40.00	40.00	CO 11- CO 10
4	1	136.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.48	1.55	1.38	8	1.18	35.40	37.00	37.79	37.94	38.00	40.00	CO 12-MH 9
5	1	22.000	0.15	0.15	0.57	0.09	0.09	5.0	5.0	8.8	0.75	3.40	0.96	12	0.91	35.40	35.60	37.79	37.80	38.00	37.80	CCB 13-MH 9

System 22A 25 YR | Number of lines: 5 | Run Date: 1/6/2023

NOTES:Intensity = 40.94 / (Inlet time + 3.80) ^ 0.71; Return period =Yrs. 25 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH 9	0.48*	0.00	0.00	0.48	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.0	Off
2	MH 10	0.48*	0.00	0.00	0.48	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.0	Off
3	MH 11	0.48*	0.00	0.00	0.48	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.0	Off
4	MH 12	0.48*	0.00	0.00	0.48	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.0	Off
5	CCB 13	0.75	0.00	0.75	0.00	Comb	4.0	3.12	0.00	231.00	1.35	0.010	2.53	0.010	0.010	0.013	0.09	9.25	0.00	0.30	0.0	1

System 22A 25 YR | Number of lines: 5 | Run Date: 1/6/2023

NOTES: Inlet N-Values = 0.016; Intensity = 40.94 / (Inlet time + 3.80) ^ 0.71; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

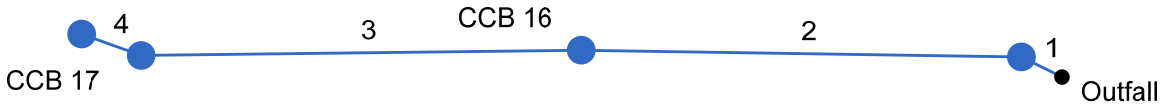
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	12	2.65	35.20	37.47	1.00	0.79	3.38	0.18	37.65	0.554	25.000	35.40	37.61	1.00	0.79	3.37	0.18	37.79	0.554	0.554	0.138	1.00	0.18
2	8	0.96	35.40	37.79	0.67	0.35	2.75	0.12	37.90	0.453	75.000	36.00	38.13	0.67	0.35	2.75	0.12	38.24	0.452	0.452	0.339	1.00	0.12
3	8	0.48	36.00	38.24	0.67	0.35	1.38	0.03	38.27	0.113	129.000	37.00	38.39	0.67	0.35	1.38	0.03	38.42	0.113	0.113	0.146	1.00	0.03
4	8	0.48	35.40	37.79	0.67	0.35	1.38	0.03	37.81	0.113	136.000	37.00	37.94	0.67	0.35	1.38	0.03	37.97	0.113	0.113	0.154	1.00	0.03
5	12	0.75	35.40	37.79	1.00	0.79	0.96	0.01	37.80	0.045	22.000	35.60	37.80	1.00	0.79	0.96	0.01	37.81	0.045	0.045	0.010	1.00	0.01

System 22A 25 YR | Number of lines: 5 | Run Date: 1/6/2023

; c = cir e = ellip b = box

System 22B 25 YR



Project File: System 22B.stm	Number of lines: 4	Date: 1/6/2023

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	7.000	-153.538	MH	0.00	0.05	0.80	5.0	35.10	1.43	35.20	12	Cir	0.013	0.49	38.40	CCB 15-FES 14
2	1	68.000	-25.581	Comb	0.00	0.16	0.90	5.0	35.20	0.59	35.60	12	Cir	0.013	0.50	38.40	CCB 16-CCB 15
3	2	68.000	-1.565	Comb	0.00	0.04	0.78	5.0	35.60	0.59	36.00	12	Cir	0.013	0.61	38.40	CCB 17-CCB 16
4	3	9.768	20.530	DrGrt	0.00	0.03	0.30	5.0	36.00	1.02	36.10	6	Cir	0.011	1.00	36.80	YD 17A-CCB 17

System 22B 25 YR | Number of lines: 4 | Date: 1/6/2023

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	7.000	0.05	0.28	0.80	0.04	0.22	5.0	8.7	6.9	1.54	4.26	1.96	12	1.43	35.10	35.20	37.47	37.48	36.10	38.40	CCB 15-FES 14
2	1	68.000	0.16	0.23	0.90	0.14	0.18	5.0	8.0	7.2	1.32	2.73	1.68	12	0.59	35.20	35.60	37.51	37.61	38.40	38.40	CCB 16-CCB 15
3	2	68.000	0.04	0.07	0.78	0.03	0.04	5.0	5.4	8.5	0.34	2.73	0.44	12	0.59	35.60	36.00	37.63	37.63	38.40	38.40	CCB 17-CCB 16
4	3	9.768	0.03	0.03	0.30	0.01	0.01	5.0	5.0	8.8	0.08	0.67	0.40	6	1.02	36.00	36.10	37.64	37.64	38.40	36.80	YD 17A-CCB 17

System 22B 25 YR | Number of lines: 4 | Run Date: 1/6/2023

NOTES:Intensity = 40.94 / (Inlet time + 3.80) ^ 0.71; Return period =Yrs. 25 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1		0.35	0.00	0.00	0.35	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	CCB 16	1.27	0.00	1.27	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.00	0.028	0.028	0.000	0.21	7.43	0.21	7.43	0.0	Off
3	CCB 17	0.27	0.00	0.27	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.00	0.028	0.028	0.000	0.09	3.26	0.09	3.26	0.0	Off
4		0.08	0.00	0.08	0.00	DrGrt	4.0	4.00	2.00	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.02	4.21	0.02	4.21	0.0	3

System 22B 25 YR | Number of lines: 4 | Run Date: 1/6/2023

NOTES: Inlet N-Values = 0.016; Intensity = 40.94 / (Inlet time + 3.80) ^ 0.71; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	12	1.54	35.10	37.47	1.00	0.79	1.96	0.06	37.53	0.188	7.000	35.20	37.48	1.00	0.79	1.96	0.06	37.54	0.188	0.188	0.013	0.49	0.03
2	12	1.32	35.20	37.51	1.00	0.79	1.68	0.04	37.56	0.137	68.000	35.60	37.61	1.00	0.79	1.68	0.04	37.65	0.137	0.137	0.093	0.50	0.02
3	12	0.34	35.60	37.63	1.00	0.79	0.44	0.00	37.63	0.009	68.000	36.00	37.63	1.00	0.79	0.44	0.00	37.64	0.009	0.009	0.006	0.61	0.00
4	6	0.08	36.00	37.64	0.50	0.20	0.40	0.00	37.64	0.014	9.768	36.10	37.64	0.50	0.20	0.40	0.00	37.64	0.014	0.014	0.001	1.00	0.00

System 22B 25 YR | Number of lines: 4 | Run Date: 1/6/2023

; c = cir e = ellip b = box

Outlet Protection Calculations

Outlet I.D. **FES 1**

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

FES 1

Design Criteria (25-yr Storm Event):

Q (cfs) =	5.15	R_p (ft)=	1.25
D (in) =	15	S_p (ft) =	1.25
V (fps) =	4.2	Tw (ft)=	2.79

Q= Flow rate at discharge point in cubic feet per second (cfs)

D= Outlet pipe diameter (in)

V= Flow velocity at discharge point (ft/s)

R_p= Maximum inside pipe rise (ft)

S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections (ft)

T_w= Tailwater depth (ft)

Based on **Table 11-13.1** use Type 'B' ---> TW≥ 0.5 Rp

Rip Rap Stone Size:

Velocity	Rip Rap Specification	D_{50} Stone Size
0-8 fps	Modified	5 inches

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a

Rip Rap Splash Pad Dimensions:

L_a	=	10	ft
W1 = 3.0(S_p) min.	=	4	ft
W2 = 3.0(Sp)+0.4(La) min.	=	8	ft
d (Depth of Stone)	=	12	inches

Outlet Protection Calculations

Outlet I.D. **FES 8**

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

FES 8

Design Criteria (25-yr Storm Event):

Q (cfs) =	2.65	R_p (ft)=	1
D (in) =	12	S_p (ft) =	1
V (fps) =	3.37	Tw (ft)=	2.27

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections (ft)
T_w= Tailwater depth (ft)

Based on **Table 11-13.1** use Type 'B' ---> TW≥ 0.5 Rp

Rip Rap Stone Size:

Velocity	Rip Rap Specification	D_{50} Stone Size
0-8 fps	Modified	5 inches

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a

Rip Rap Splash Pad Dimensions:

L_a	=	10	ft
W1 = 3.0(S_p) min.	=	3	ft
W2 = 3.0(Sp)+0.4(La) min.	=	7	ft
d (Depth of Stone)	=	12	inches

Outlet Protection Calculations

Outlet I.D. **FES 14**

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

FES 14

Design Criteria (25-yr Storm Event):

Q (cfs) =	1.54	R_p (ft)=	1
D (in) =	12	S_p (ft) =	1
V (fps) =	1.98	Tw (ft)=	2.37

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections (ft)
T_w= Tailwater depth (ft)

Based on **Table 11-13.1** use Type 'B' ---> TW≥ 0.5 Rp

Rip Rap Stone Size:

Velocity	Rip Rap Specification	D_{50} Stone Size
0-8 fps	Modified	5 inches

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a

Rip Rap Splash Pad Dimensions:

L_a	=	10	ft
W1 = 3.0(S_p) min.	=	3	ft
W2 = 3.0(Sp)+0.4(La) min.	=	7	ft
d (Depth of Stone)	=	12	inches

Outlet Protection Calculations

Outlet I.D. **FES 20**

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

FES 20

Design Criteria (100-yr Storm Event):

Q (cfs) =	0.79	R_p (ft)=	1.25
D (in) =	15	S_p (ft) =	1.25
V (fps) =	0.73	Tw (ft)=	2.38

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections (ft)
T_w= Tailwater depth (ft)

Based on **Table 11-13.1** use Type 'B' ---> TW≥ 0.5 Rp

Rip Rap Stone Size:

Velocity	Rip Rap Specification	D_{50} Stone Size
0-8 fps	Modified	5 inches

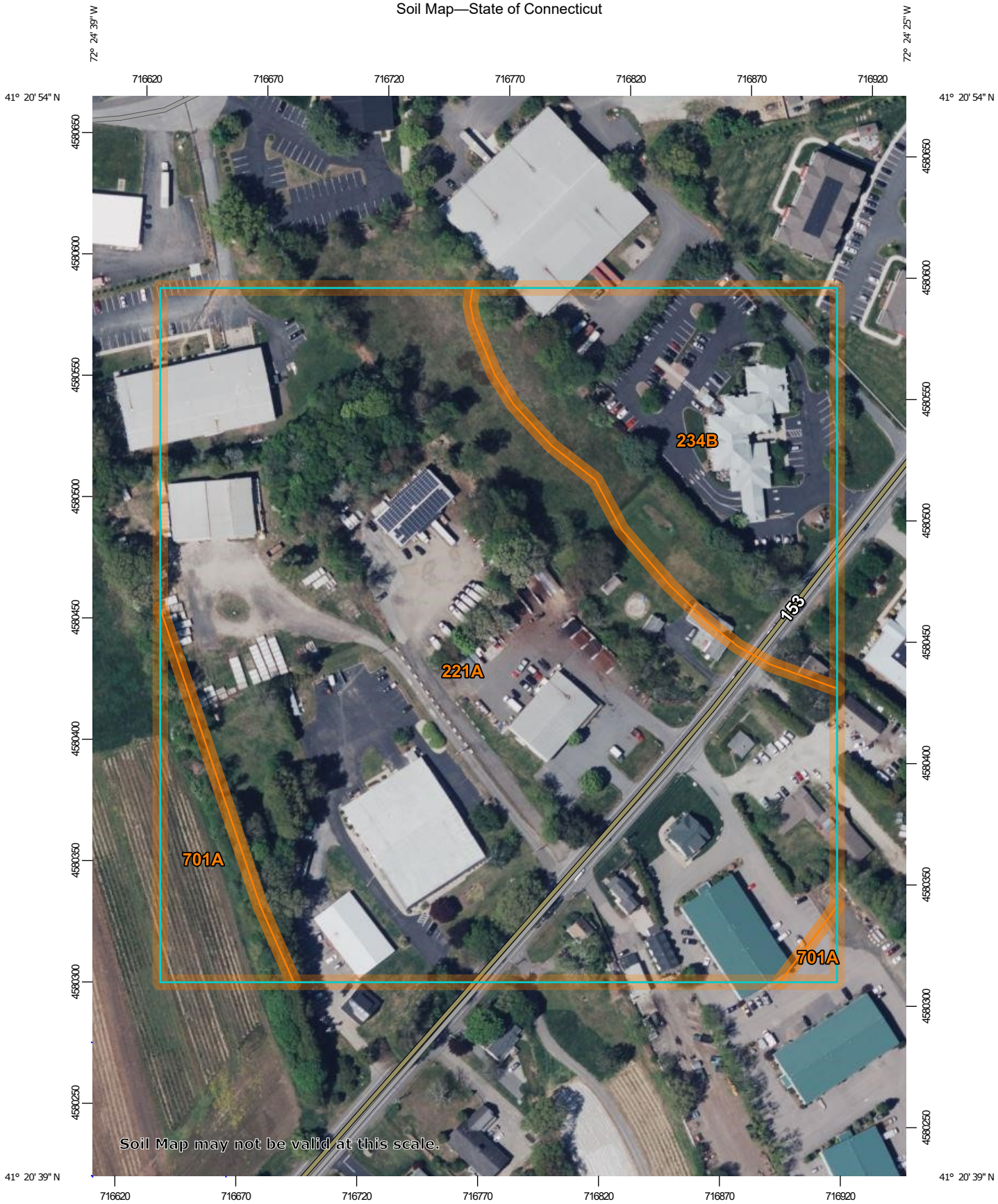
Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a

Rip Rap Splash Pad Dimensions:

L_a	=	10	ft
W1 = 3.0(S_p) min.	=	4	ft
W2 = 3.0(Sp)+0.4(La) min.	=	8	ft
d (Depth of Stone)	=	12	inches

Appendix D
NCRS Soils Information



Map Scale: 1:2,170 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

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

Special Point Features

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

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 22, Sep 12, 2022

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

Date(s) aerial images were photographed: Data not available.

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
221A	Ninigret-Urban land complex, 0 to 5 percent slopes	14.7	74.3%
234B	Merrimac-Urban land complex, 0 to 8 percent slopes	4.0	20.2%
701A	Ninigret fine sandy loam, 0 to 3 percent slopes	1.1	5.5%
Totals for Area of Interest		**19.9**	**100.0%**

Appendix E
NOAA Atlas 14 Precipitation Information

NOAA Atlas 14, Volume 10, Version 3
Location name: Essex, Connecticut, USA*
Latitude: 41.3468°, Longitude: -72.4094°
Elevation: 35.92 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.338** (0.259-0.433)	**0.406** (0.310-0.520)	**0.517** (0.394-0.665)	**0.609** (0.462-0.787)	**0.736** (0.542-0.984)	**0.831** (0.602-1.13)	**0.931** (0.656-1.31)	**1.04** (0.700-1.48)	**1.21** (0.779-1.76)	**1.34** (0.846-1.98)
10-min	**0.478** (0.366-0.613)	**0.575** (0.440-0.737)	**0.733** (0.558-0.943)	**0.863** (0.655-1.12)	**1.04** (0.768-1.39)	**1.18** (0.851-1.60)	**1.32** (0.930-1.85)	**1.48** (0.991-2.10)	**1.71** (1.11-2.49)	**1.90** (1.20-2.81)
15-min	**0.563** (0.431-0.722)	**0.676** (0.517-0.867)	**0.861** (0.657-1.11)	**1.01** (0.770-1.31)	**1.23** (0.904-1.64)	**1.39** (1.00-1.88)	**1.55** (1.09-2.17)	**1.74** (1.17-2.47)	**2.01** (1.30-2.93)	**2.23** (1.41-3.31)
30-min	**0.781** (0.599-1.00)	**0.938** (0.718-1.20)	**1.20** (0.911-1.54)	**1.41** (1.07-1.82)	**1.70** (1.25-2.27)	**1.92** (1.39-2.61)	**2.15** (1.52-3.01)	**2.41** (1.62-3.43)	**2.78** (1.80-4.06)	**3.09** (1.95-4.58)
60-min	**1.00** (0.766-1.28)	**1.20** (0.919-1.54)	**1.53** (1.17-1.97)	**1.80** (1.37-2.32)	**2.17** (1.60-2.91)	**2.46** (1.78-3.34)	**2.75** (1.94-3.85)	**3.08** (2.07-4.38)	**3.56** (2.30-5.19)	**3.94** (2.50-5.85)
2-hr	**1.31** (1.01-1.67)	**1.57** (1.21-2.00)	**2.00** (1.53-2.56)	**2.35** (1.80-3.02)	**2.84** (2.11-3.78)	**3.20** (2.34-4.34)	**3.59** (2.55-5.01)	**4.04** (2.72-5.70)	**4.70** (3.05-6.81)	**5.26** (3.34-7.73)
3-hr	**1.52** (1.18-1.93)	**1.83** (1.41-2.32)	**2.32** (1.79-2.95)	**2.73** (2.09-3.49)	**3.29** (2.46-4.37)	**3.71** (2.72-5.01)	**4.16** (2.98-5.80)	**4.69** (3.17-6.59)	**5.48** (3.56-7.90)	**6.14** (3.91-9.00)
6-hr	**1.95** (1.52-2.45)	**2.33** (1.81-2.94)	**2.96** (2.29-3.74)	**3.48** (2.68-4.41)	**4.19** (3.15-5.52)	**4.73** (3.48-6.34)	**5.30** (3.81-7.33)	**5.98** (4.05-8.32)	**6.99** (4.56-9.99)	**7.84** (5.00-11.4)
12-hr	**2.42** (1.90-3.03)	**2.90** (2.28-3.64)	**3.69** (2.88-4.63)	**4.34** (3.37-5.47)	**5.24** (3.95-6.84)	**5.90** (4.37-7.85)	**6.62** (4.77-9.07)	**7.45** (5.07-10.3)	**8.70** (5.70-12.3)	**9.75** (6.24-14.0)
24-hr	**2.85** (2.25-3.54)	**3.44** (2.71-4.28)	**4.40** (3.46-5.49)	**5.20** (4.07-6.51)	**6.31** (4.79-8.19)	**7.13** (5.31-9.42)	**8.01** (5.82-10.9)	**9.06** (6.18-12.4)	**10.6** (7.00-15.0)	**12.0** (7.71-17.1)
2-day	**3.18** (2.53-3.92)	**3.88** (3.09-4.80)	**5.04** (3.99-6.24)	**6.00** (4.72-7.46)	**7.32** (5.60-9.47)	**8.30** (6.24-10.9)	**9.36** (6.87-12.8)	**10.7** (7.32-14.5)	**12.7** (8.39-17.8)	**14.5** (9.34-20.5)
3-day	**3.44** (2.75-4.23)	**4.21** (3.36-5.18)	**5.46** (4.34-6.74)	**6.50** (5.14-8.05)	**7.94** (6.10-10.2)	**8.99** (6.78-11.8)	**10.1** (7.47-13.8)	**11.6** (7.95-15.7)	**13.8** (9.12-19.2)	**15.8** (10.2-22.2)
4-day	**3.70** (2.96-4.53)	**4.50** (3.60-5.52)	**5.82** (4.64-7.15)	**6.91** (5.47-8.53)	**8.41** (6.47-10.8)	**9.52** (7.19-12.4)	**10.7** (7.91-14.5)	**12.2** (8.41-16.5)	**14.5** (9.62-20.1)	**16.6** (10.7-23.2)
7-day	**4.41** (3.55-5.38)	**5.29** (4.25-6.45)	**6.71** (5.38-8.21)	**7.90** (6.29-9.69)	**9.53** (7.36-12.1)	**10.7** (8.13-13.9)	**12.0** (8.89-16.1)	**13.6** (9.41-18.2)	**16.0** (10.6-22.0)	**18.1** (11.7-25.2)
10-day	**5.12** (4.14-6.21)	**6.03** (4.87-7.33)	**7.52** (6.05-9.16)	**8.76** (7.01-10.7)	**10.5** (8.11-13.2)	**11.7** (8.90-15.1)	**13.1** (9.66-17.4)	**14.7** (10.2-19.6)	**17.1** (11.4-23.4)	**19.1** (12.4-26.5)
20-day	**7.27** (5.92-8.76)	**8.26** (6.71-9.96)	**9.87** (8.00-11.9)	**11.2** (9.03-13.6)	**13.1** (10.2-16.3)	**14.5** (11.0-18.3)	**15.9** (11.7-20.7)	**17.5** (12.2-23.1)	**19.7** (13.2-26.7)	**21.5** (14.0-29.5)
30-day	**9.08** (7.42-10.9)	**10.1** (8.26-12.1)	**11.8** (9.60-14.2)	**13.2** (10.7-16.0)	**15.1** (11.8-18.7)	**16.6** (12.6-20.9)	**18.1** (13.3-23.2)	**19.6** (13.7-25.8)	**21.7** (14.6-29.2)	**23.3** (15.2-31.8)
45-day	**11.3** (9.31-13.5)	**12.4** (10.2-14.9)	**14.2** (11.6-17.0)	**15.7** (12.7-18.8)	**17.7** (13.8-21.8)	**19.3** (14.7-24.0)	**20.8** (15.2-26.4)	**22.3** (15.6-29.1)	**24.1** (16.2-32.3)	**25.4** (16.6-34.6)
60-day	**13.2** (10.9-15.8)	**14.4** (11.8-17.1)	**16.2** (13.3-19.3)	**17.7** (14.4-21.2)	**19.8** (15.5-24.3)	**21.5** (16.4-26.6)	**23.0** (16.9-29.0)	**24.5** (17.2-31.8)	**26.2** (17.7-34.9)	**27.3** (17.9-37.0)

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

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

Please refer to NOAA Atlas 14 document for more information.

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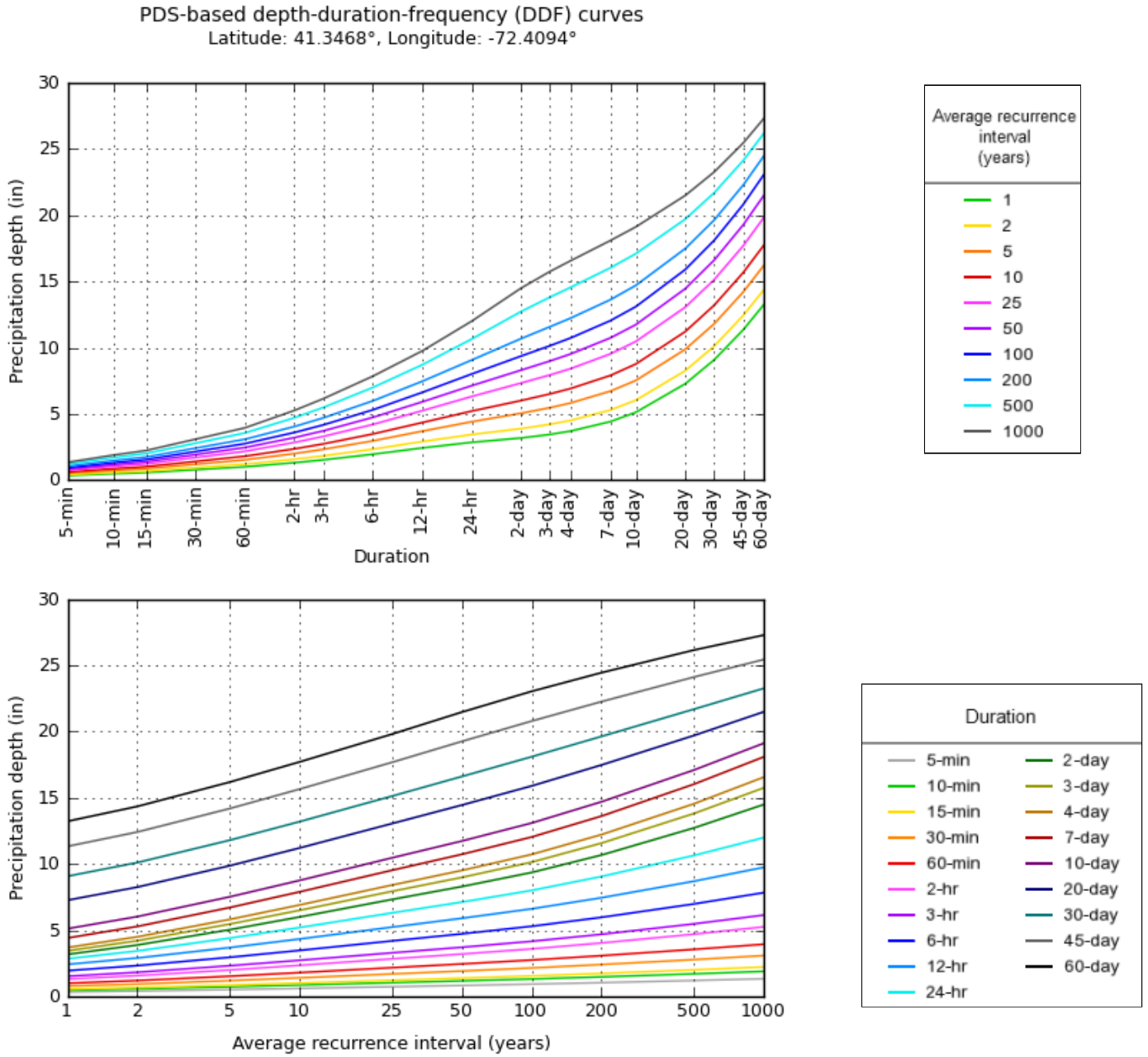
PF graphical



NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Fri Apr 15 18:54:18 2022

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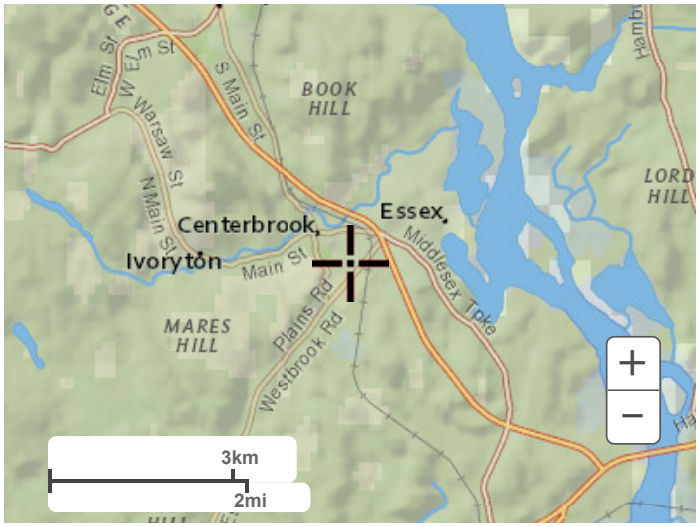
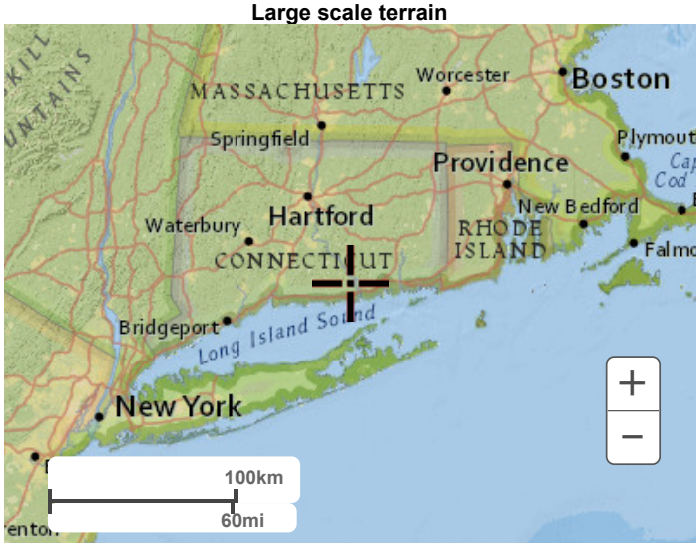
Maps & aerials

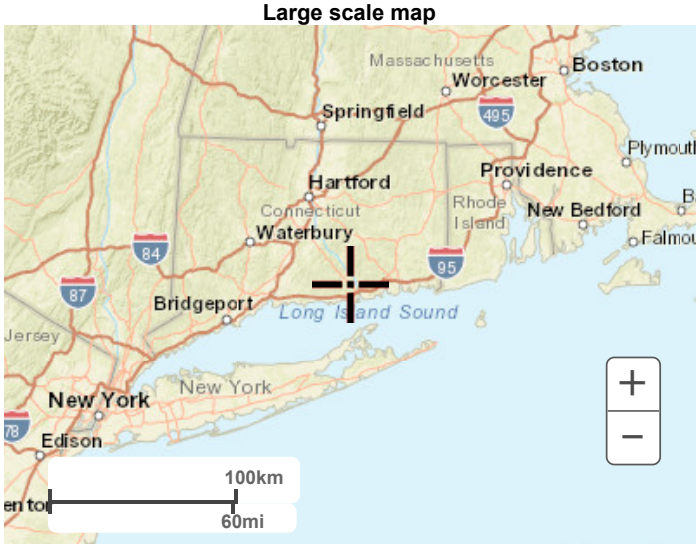
Small scale terrain



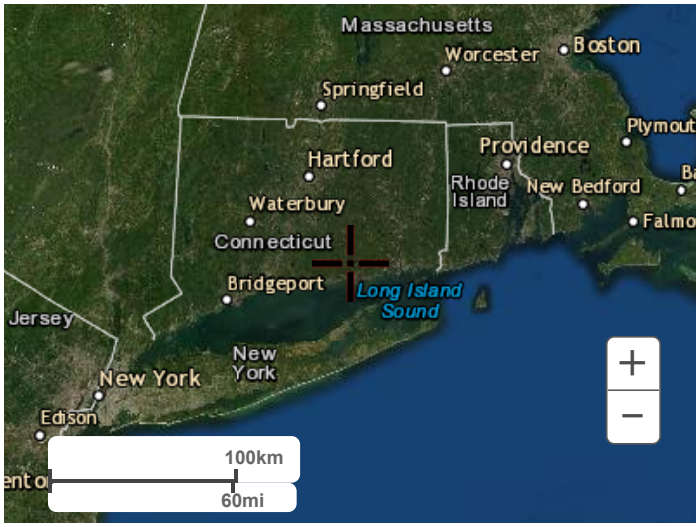
Large scale terrain



Large scale map



Large scale aerial



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

Disclaimer

NOAA Atlas 14, Volume 10, Version 3
Location name: Essex, Connecticut, USA*
Latitude: 41.3468°, Longitude: -72.4094°
Elevation: 35.92 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**4.06** (3.11-5.20)	**4.87** (3.72-6.24)	**6.20** (4.73-7.98)	**7.31** (5.54-9.44)	**8.83** (6.50-11.8)	**9.97** (7.22-13.6)	**11.2** (7.87-15.7)	**12.5** (8.40-17.8)	**14.5** (9.35-21.1)	**16.0** (10.2-23.8)
10-min	**2.87** (2.20-3.68)	**3.45** (2.64-4.42)	**4.40** (3.35-5.66)	**5.18** (3.93-6.69)	**6.25** (4.61-8.36)	**7.06** (5.11-9.61)	**7.91** (5.58-11.1)	**8.87** (5.95-12.6)	**10.2** (6.63-15.0)	**11.4** (7.19-16.9)
15-min	**2.25** (1.72-2.89)	**2.70** (2.07-3.47)	**3.44** (2.63-4.43)	**4.06** (3.08-5.24)	**4.90** (3.62-6.56)	**5.54** (4.01-7.54)	**6.21** (4.38-8.70)	**6.96** (4.66-9.89)	**8.04** (5.20-11.7)	**8.92** (5.64-13.2)
30-min	**1.56** (1.20-2.00)	**1.88** (1.44-2.41)	**2.39** (1.82-3.08)	**2.81** (2.14-3.64)	**3.40** (2.51-4.55)	**3.84** (2.78-5.22)	**4.30** (3.03-6.03)	**4.82** (3.23-6.85)	**5.56** (3.60-8.13)	**6.17** (3.91-9.16)
60-min	**1.00** (0.766-1.28)	**1.20** (0.919-1.54)	**1.53** (1.17-1.97)	**1.80** (1.37-2.32)	**2.17** (1.60-2.91)	**2.46** (1.78-3.34)	**2.75** (1.94-3.85)	**3.08** (2.07-4.38)	**3.56** (2.30-5.19)	**3.94** (2.50-5.85)
2-hr	**0.656** (0.506-0.835)	**0.786** (0.606-1.00)	**0.999** (0.767-1.28)	**1.18** (0.898-1.51)	**1.42** (1.05-1.89)	**1.60** (1.17-2.17)	**1.80** (1.28-2.51)	**2.02** (1.36-2.85)	**2.35** (1.53-3.41)	**2.63** (1.67-3.87)
3-hr	**0.507** (0.393-0.644)	**0.608** (0.470-0.772)	**0.773** (0.595-0.983)	**0.909** (0.697-1.16)	**1.10** (0.818-1.46)	**1.24** (0.905-1.67)	**1.39** (0.991-1.93)	**1.56** (1.05-2.19)	**1.83** (1.19-2.63)	**2.05** (1.30-3.00)
6-hr	**0.325** (0.253-0.410)	**0.389** (0.303-0.491)	**0.494** (0.383-0.624)	**0.581** (0.448-0.737)	**0.700** (0.525-0.922)	**0.789** (0.581-1.06)	**0.885** (0.636-1.22)	**0.998** (0.676-1.39)	**1.17** (0.761-1.67)	**1.31** (0.835-1.90)
12-hr	**0.201** (0.158-0.252)	**0.241** (0.189-0.302)	**0.306** (0.239-0.384)	**0.360** (0.280-0.454)	**0.435** (0.328-0.568)	**0.490** (0.363-0.651)	**0.549** (0.396-0.753)	**0.619** (0.421-0.855)	**0.722** (0.473-1.02)	**0.809** (0.518-1.17)
24-hr	**0.119** (0.094-0.147)	**0.143** (0.113-0.178)	**0.183** (0.144-0.229)	**0.217** (0.170-0.271)	**0.263** (0.200-0.341)	**0.297** (0.221-0.392)	**0.334** (0.242-0.455)	**0.377** (0.258-0.518)	**0.444** (0.291-0.624)	**0.500** (0.321-0.713)
2-day	**0.066** (0.053-0.082)	**0.081** (0.064-0.100)	**0.105** (0.083-0.130)	**0.125** (0.098-0.155)	**0.153** (0.117-0.197)	**0.173** (0.130-0.228)	**0.195** (0.143-0.266)	**0.222** (0.152-0.303)	**0.265** (0.175-0.370)	**0.302** (0.195-0.427)
3-day	**0.048** (0.038-0.059)	**0.058** (0.047-0.072)	**0.076** (0.060-0.094)	**0.090** (0.071-0.112)	**0.110** (0.085-0.142)	**0.125** (0.094-0.164)	**0.141** (0.104-0.191)	**0.161** (0.110-0.218)	**0.192** (0.127-0.266)	**0.219** (0.141-0.308)
4-day	**0.039** (0.031-0.047)	**0.047** (0.038-0.058)	**0.061** (0.048-0.074)	**0.072** (0.057-0.089)	**0.088** (0.067-0.112)	**0.099** (0.075-0.130)	**0.112** (0.082-0.151)	**0.127** (0.088-0.172)	**0.152** (0.100-0.210)	**0.172** (0.112-0.242)
7-day	**0.026** (0.021-0.032)	**0.031** (0.025-0.038)	**0.040** (0.032-0.049)	**0.047** (0.037-0.058)	**0.057** (0.044-0.072)	**0.064** (0.048-0.083)	**0.072** (0.053-0.096)	**0.081** (0.056-0.109)	**0.095** (0.063-0.131)	**0.108** (0.070-0.150)
10-day	**0.021** (0.017-0.026)	**0.025** (0.020-0.031)	**0.031** (0.025-0.038)	**0.037** (0.029-0.045)	**0.044** (0.034-0.055)	**0.049** (0.037-0.063)	**0.055** (0.040-0.072)	**0.061** (0.042-0.082)	**0.071** (0.047-0.097)	**0.080** (0.052-0.110)
20-day	**0.015** (0.012-0.018)	**0.017** (0.014-0.021)	**0.021** (0.017-0.025)	**0.023** (0.019-0.028)	**0.027** (0.021-0.034)	**0.030** (0.023-0.038)	**0.033** (0.024-0.043)	**0.036** (0.025-0.048)	**0.041** (0.027-0.056)	**0.045** (0.029-0.062)
30-day	**0.013** (0.010-0.015)	**0.014** (0.011-0.017)	**0.016** (0.013-0.020)	**0.018** (0.015-0.022)	**0.021** (0.016-0.026)	**0.023** (0.018-0.029)	**0.025** (0.018-0.032)	**0.027** (0.019-0.036)	**0.030** (0.020-0.041)	**0.032** (0.021-0.044)
45-day	**0.010** (0.009-0.013)	**0.011** (0.009-0.014)	**0.013** (0.011-0.016)	**0.014** (0.012-0.017)	**0.016** (0.013-0.020)	**0.018** (0.014-0.022)	**0.019** (0.014-0.024)	**0.021** (0.014-0.027)	**0.022** (0.015-0.030)	**0.024** (0.015-0.032)
60-day	**0.009** (0.008-0.011)	**0.010** (0.008-0.012)	**0.011** (0.009-0.013)	**0.012** (0.010-0.015)	**0.014** (0.011-0.017)	**0.015** (0.011-0.018)	**0.016** (0.012-0.020)	**0.017** (0.012-0.022)	**0.018** (0.012-0.024)	**0.019** (0.012-0.026)

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

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

Please refer to NOAA Atlas 14 document for more information.

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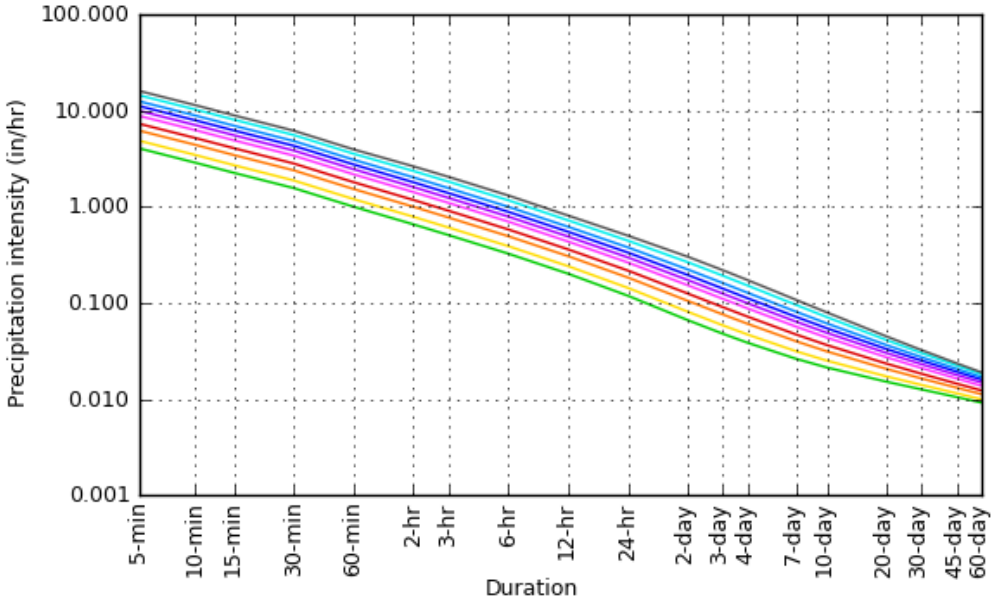
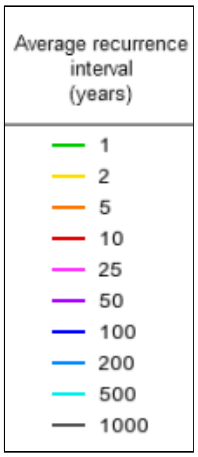
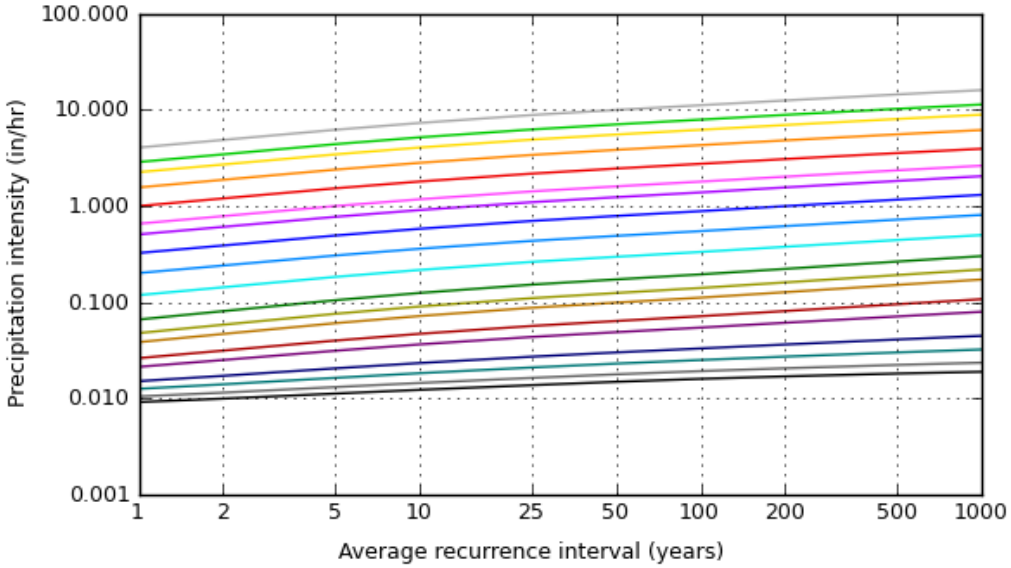
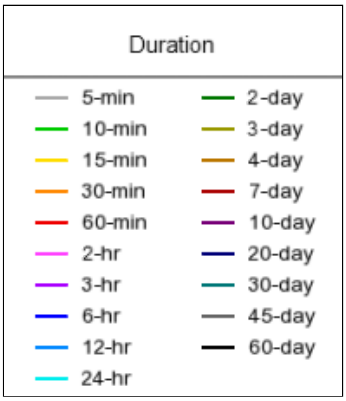
PF graphical

PDS-based intensity-duration-frequency (IDF) curves
Latitude: 41.3468°, Longitude: -72.4094°









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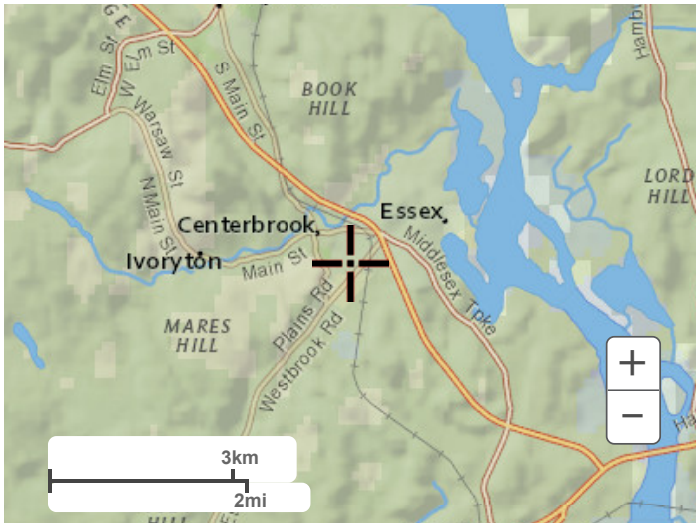
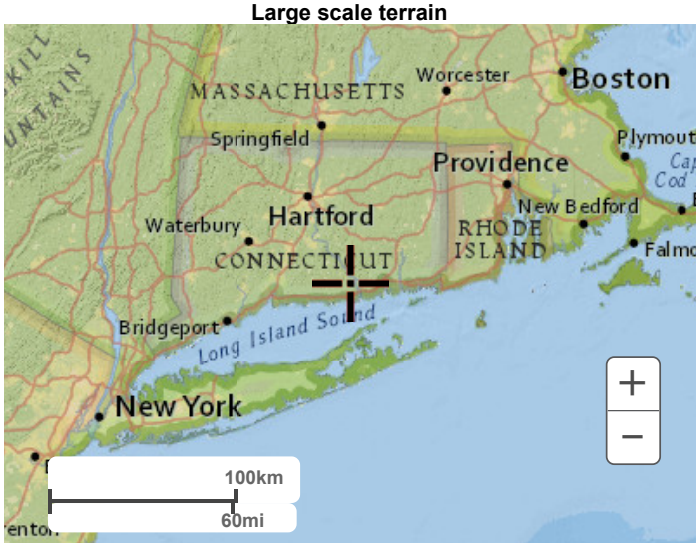
Maps & aerials

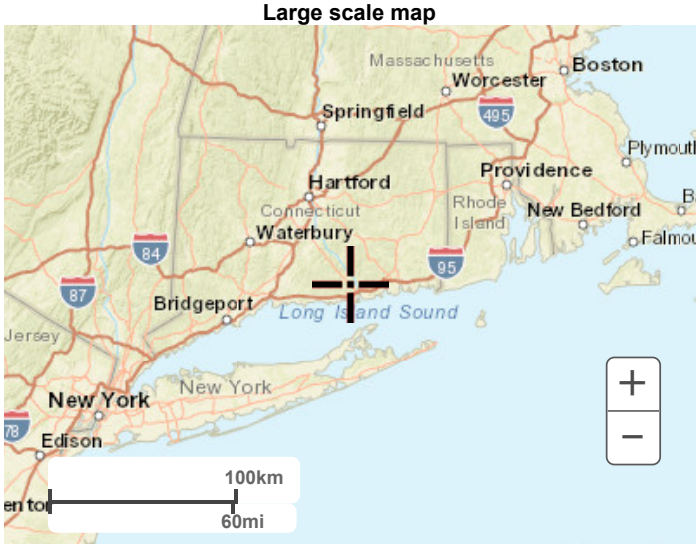
Small scale terrain



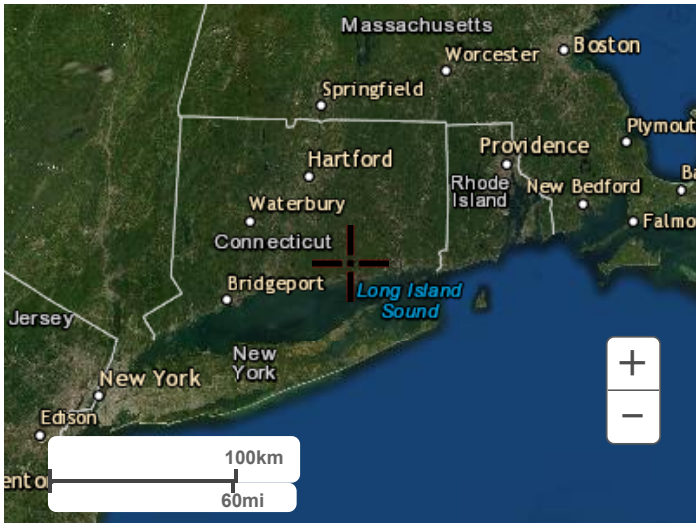
Large scale terrain



Large scale map



Large scale aerial



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

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Appendix F
Domestic Water Usage Data

Water Data Usage 49 Plains Road

Date	Meter Reading Gallons Used	Number of Days	Gallons Per Day
6/6/2019	7000	97	72
9/6/2019	13000	92	141
10/23/2019	5000	47	106
12/6/2019	3000	44	68
3/4/2020	7000	89	79
6/2/2020	8000	90	89
9/4/2020	11000	94	117
12/8/2020	10000	95	105
3/4/2021	13000	86	151
6/4/2021	44000	92	478
9/9/2021	40000	97	412
12/9/2021	7000	91	77
3/7/2022	157000	88	1784
3/9/2022	4000	2	2000
6/7/2022	29000	90	322
9/7/2022	8000	92	87
Average Gallons Per Day			144

Appendix G
Ground Water Monitoring Data

GROUNDWATER MONITORING
Prepared for
49 PLAINS ROAD
ESSEX, CT.

TEST HOLE	**#4**		
ELEVATION TOP OF PIPE =		**40.77'(-3.65')**	
ELEVATION OF GROUND =		**37.12'**	
DATE	**TOP OF PIPE TO GROUNDWATER**	**SURFACE TO GROUNDWATER**	**WATER ELEV.**
1/21/22	7.80'	4.15'	32.97'
2/2/22	8.20'	4.55'	32.57'
2/11/22	7.80'	4.15'	32.97'
2/22/22	6.80'	3.15'	33.97'
3/4/22	6.70'	3.05'	34.07'
3/15/22	6.70'	3.05'	34.07'
3/29/22	7.00'	3.35'	33.77'
4/18/22	7.20'	3.55'	33.57
5/17/22	7.30'	3.65'	33.47'

TEST HOLE	**#3**		
ELEVATION TOP OF PIPE =		**40.52'(3.57')**	
ELEVATION OF GROUND =		**36.95**	
DATE	**TOP OF PIPE TO GROUNDWATER**	**SURFACE TO GROUNDWATER**	**WATER ELEV.**
1/21/22	7.60'	4.03'	32.92'
2/2/22	8.00'	4.43'	32.52'
2/11/22	7.70'	4.13'	32.82
2/22/22	6.80'	3.23'	33.72'
3/4/22	6.90'	3.33'	33.62'
3/15/22	6.60'	3.03'	33.92'
3/29/22	6.90'	3.33'	33.62'
4/18/22	7.10'	3.53'	33.42'
5/17/22	7.30'	3.73'	33.22'

GROUNDWATER MONITORING
Prepared for
49 PLAINS ROAD
ESSEX, CT.

TEST HOLE	#1		
ELEVATION TOP OF PIPE =		40.48'(3.43')	
ELEVATION OF GROUND =		37.05	
DATE	TOP OF PIPE TO GROUNDWATER	SURFACE TO GROUNDWATER	WATER ELEV.
1/21/22	7.80'	4.37'	32.68'
2/2/22	8.30'	4.87'	32.18'
2/11/22	7.10'	3.67'	33.38'
2/22/22	7.00'	3.57'	33.48'
3/4/22	6.90'	3.47'	33.58'
3/15/22	6.90'	3.47'	33.58'
3/29/22	7.10'	3.67'	33.38'
4/18/22	7.30'	3.87'	33.18'
5/17/22	7.40'	3.97'	33.08'

TEST HOLE	#10		
ELEVATION TOP OF PIPE =		39.26(-3.40')	
ELEVATION OF GROUND =		35.86	
DATE	TOP OF PIPE TO GROUNDWATER	SURFACE TO GROUNDWATER	WATER ELEV.
1/21/22	7.60'	4.20'	31.66'
2/2/22	8.00'	4.60'	31.26'
2/11/22	7.00'	3.60'	32.26'
2/22/22	6.60'	3.20'	32.66'
3/4/22	6.70'	3.30'	32.56'
3/15/22	6.60'	3.20'	32.66'
3/29/22	6.90'	3.50'	32.36'
4/18/22	7.00'	3.60'	32.26'
5/17/22	7.00'	3.60'	32.26'

GROUNDWATER MONITORING
Prepared for
49 PLAINS ROAD
ESSEX, CT.

TEST HOLE	**#9**		
ELEVATION TOP OF PIPE =		**38.09'(-1.40')**	
ELEVATION OF GROUND =		**37.09**	
DATE	**TOP OF PIPE TO GROUNDWATER**	**SURFACE TO GROUNDWATER**	**WATER ELEV.**
1/21/22	6.50'	5.10'	31.99'
2/2/22	6.80'	5.40'	31.69'
2/11/22	6.00'	4.60'	32.49'
2/22/22	6.00'	4.60'	32.49'
3/4/22	6.10'	4.70'	32.39'
3/15/22	5.90'	4.50'	32.59'
3/29/22	6.20'	4.80'	32.29'
4/18/22	6.30'	4.90'	32.19'
5/17/22	6.20'	4.80'	32.29'