Stormwater Management Report

Unitex
150 South Satellite, Road
South Windsor, Connecticut

Prepared for:

Unitex
145 South Satellite Road
South Windsor, CT 06074

Prepared by:

Design Professionals, Inc.
21 Jeffrey Drive
South Windsor, CT 06074

April 30, 2021

Table of Contents

Introduction

Unitex is proposing a 50-space parking lot on the subject property. The 1.4± acre parcel is located at 150 South Satellite, South Windsor, Connecticut. The property is referenced on the Town of South Windsor Tax Assessors map as GIS#84000150. The proposed development will include the construction of the parking lot and associated site improvements to include, but not be limited to, sidewalk, landscaping, lighting, and stormwater management BMP's.

Of the 1.4± acre parcel, approximately 1.0± acres are proposed to be disturbed for the construction of the parking lot. For more information, please refer to the plans entitled "Unitex Site Plan of Development ~ 150 South Satellite Road ~ South Windsor, CT" prepared by Design Professionals, Inc., and dated May 3, 2021, as amended.

Pre-Development Site Conditions

The existing site is undeveloped. The existing condition is gently sloped woodland with a small area of wetlands along the western property line.

All runoff generated on site sheet flows toward the wetland on the western property line, which serves as our design point. Existing condition watershed delineation is identified in the Existing Conditions Drainage Map located in **Appendix E**.

Based on Natural Resources Conservation Service (NRCS) Hydrologic Soil Group (HSG) mapping, type B/D and A/D soils are located on site. See **Appendix C** for The NRCS Soil Map & Data.

The Natural Resources Conservation Service's TR-55 Manual was followed in predicting the peak rates of runoff and volumes. HydroCAD computer modeling software was utilized. Pre-Development Drainage HydroCAD Report located in **Appendix A**.

Post-Development Site Conditions

The subject project proposes the construction of a 50-space parking lot and associated site improvements. A proposed detention/infiltration basin will provide attenuation of onsite flows and was included in the proposed condition stormwater model. The detention basin will also serve as water quality treatment of surface runoff from proposed pavement. NRCS Soil Group information was reviewed for expected infiltration rate and a conservative rate of 5 in/hr was utilized. The water quality basin is expected to drain between storm events: it will remain in a predominantly dry state. Underdrains connected to the South Satellite Road drainage system will serve as an additional safeguard.

For more information, please refer to the enclosed Post-Development Drainage HydroCAD Report located in **Appendix B**.

Analysis of Results

The pre-development and post-development conditions were analyzed using HydroCAD consistent with National Resource Conservation Service (NRCS) hydrology methods. The comparison of the existing vs proposed peak flows are shown in the table below along with the elevation in the proposed detention basin for the design storms.

Design Point	Existing cfs	Proposed cfs	Detention Basin Elevation
2-year storm	0.0	0.0	69.52
10-year storm	0.03	0.02	69.82
25-year storm	0.14	0.09	70.04
50-year storm	0.33	0.21	70.22
100-year storm	0.65	0.40	70.43

As seen in the table above, the subject project will result in slight decreases of flow to the Design Point. Flow from the proposed parking lot and surround grass will be contained within the detention basin as the elevation of the emergency spillway is 70.50.

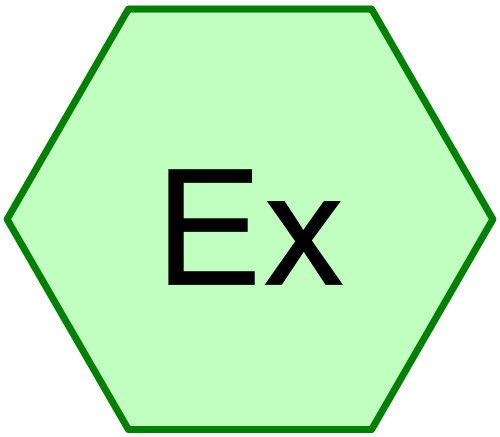
Water Quality

The proposed detention basin will also provide storage for more than 100% of the determined water quality volume for the new pavement area. Water quality volume calculations and stage storage volumes for the basin are included in **Appendix D** of this report.

Conclusion

The proposed stormwater management as discussed herein and shown on the referenced plans is appropriate for the proposed development on the subject site It is consistent with Town and State requirements and should not pose any detrimental impacts to the surrounding stormwater conditions.

APPENDIX A
Watershed Computations
(Pre-Development Drainage HydroCAD Report)



Existing Runoff

Subcat Reach Pond Link

Summary for Subcatchment Ex: Existing Runoff

[45] Hint: Runoff=Zero

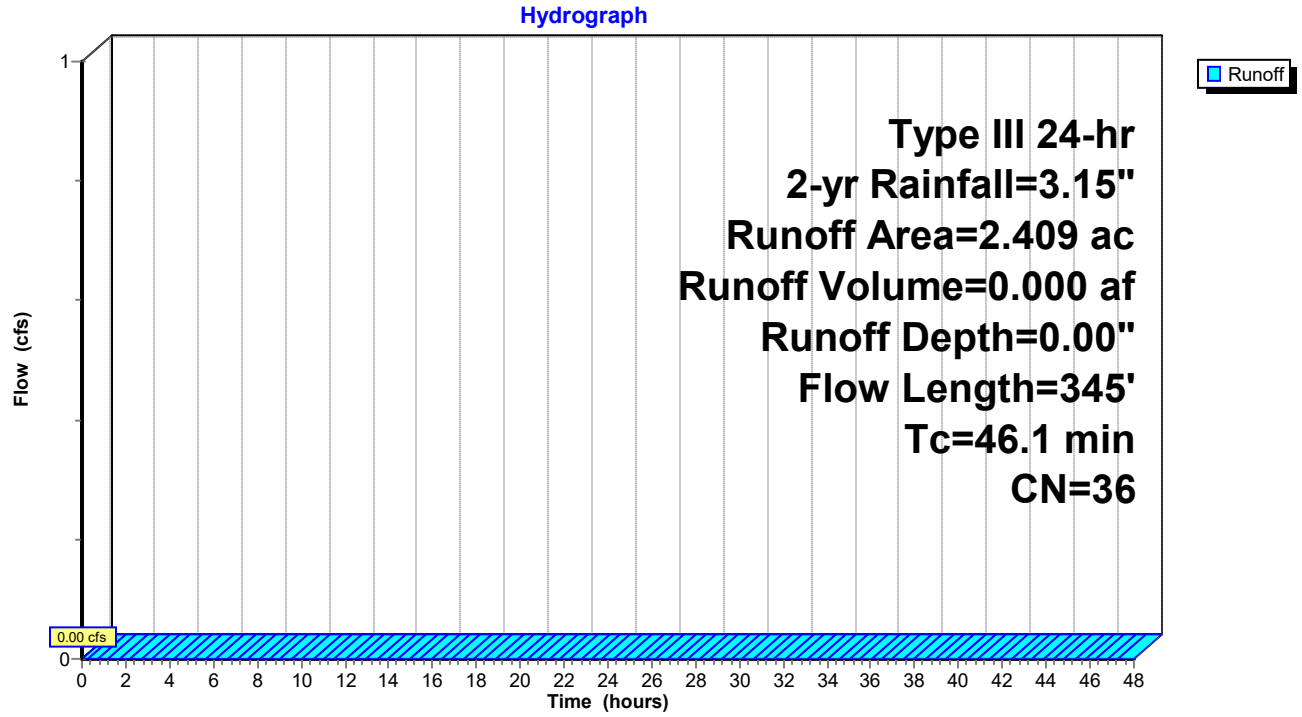
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.15"

Area (ac)	CN	Description
2.409	36	Woods, Fair, HSG A
2.409		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3	100	0.0050	0.04		**Sheet Flow, A** Woods: Light underbrush n= 0.400 P2= 3.22"
8.8	245	0.0086	0.46		**Shallow Concentrated Flow, B** Woodland Kv= 5.0 fps
46.1	345	Total			

Subcatchment Ex: Existing Runoff



Summary for Subcatchment Ex: Existing Runoff

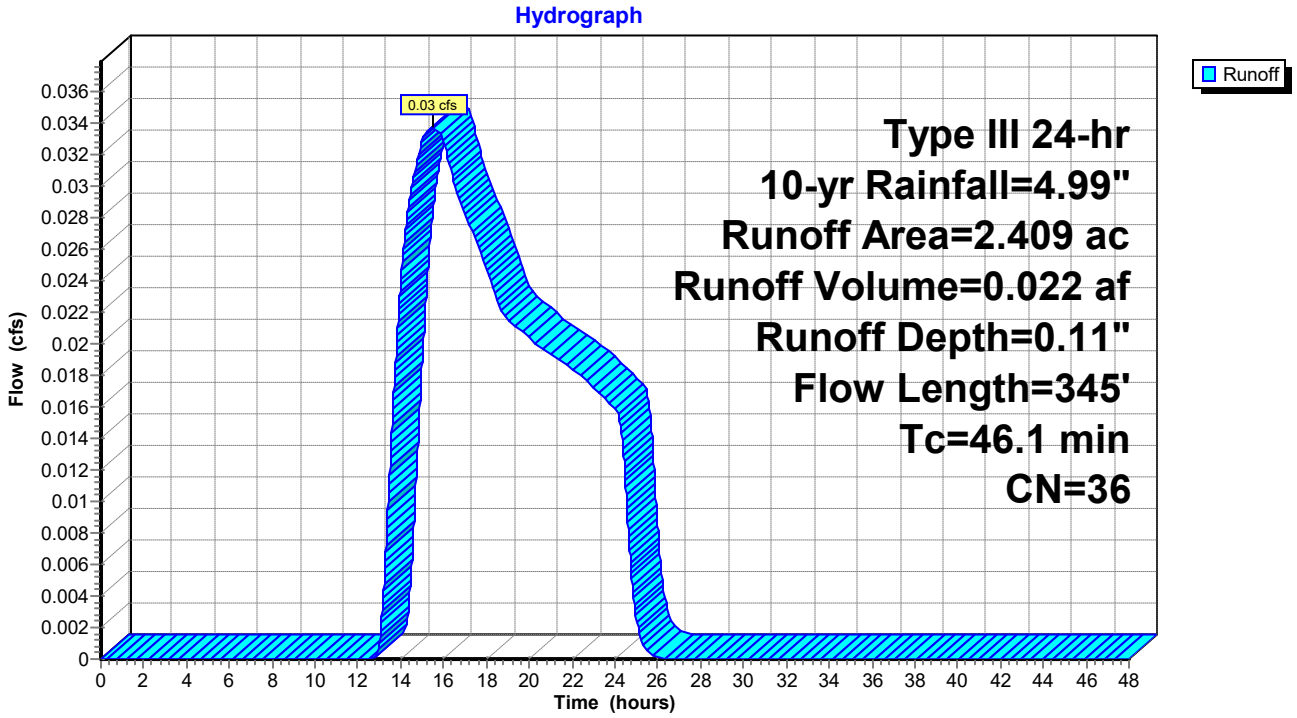
Runoff = 0.03 cfs @ 15.52 hrs, Volume= 0.022 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.99"

Area (ac)	CN	Description
2.409	36	Woods, Fair, HSG A
2.409		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3	100	0.0050	0.04		**Sheet Flow, A** Woods: Light underbrush n= 0.400 P2= 3.22"
8.8	245	0.0086	0.46		**Shallow Concentrated Flow, B** Woodland Kv= 5.0 fps
46.1	345	Total			

Subcatchment Ex: Existing Runoff



Summary for Subcatchment Ex: Existing Runoff

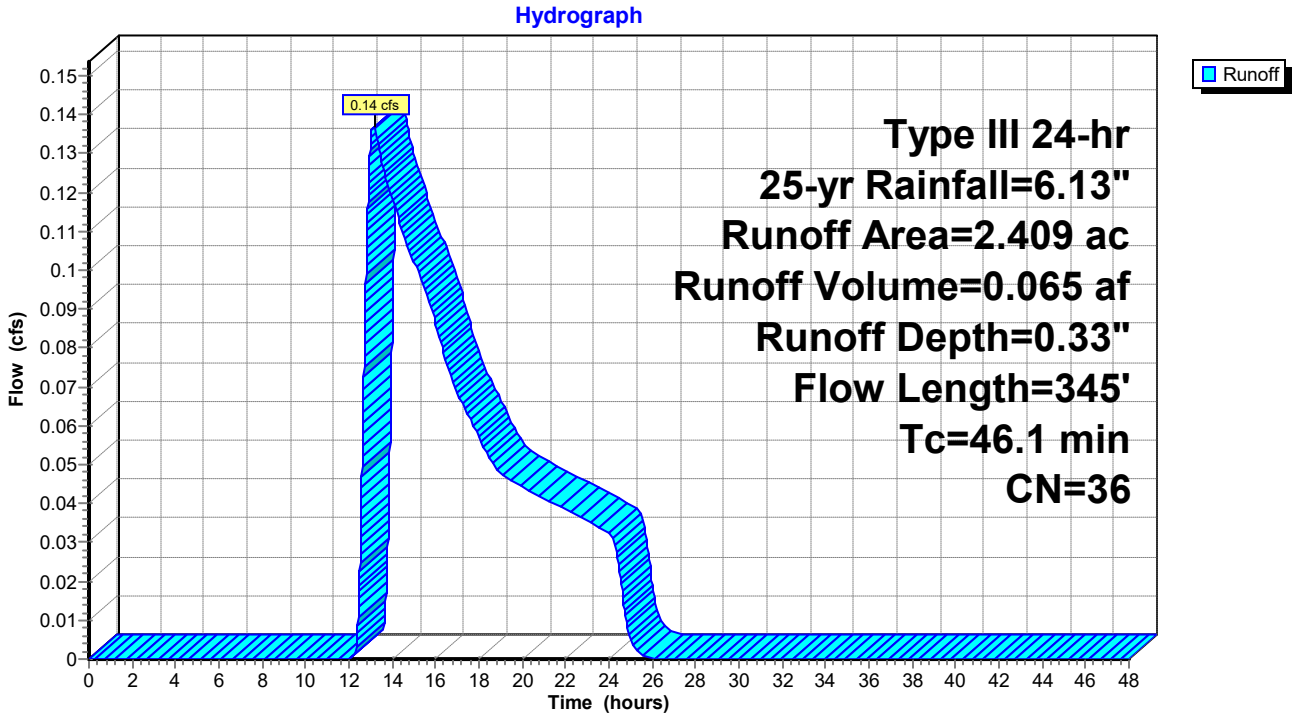
Runoff = 0.14 cfs @ 13.16 hrs, Volume= 0.065 af, Depth= 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.13"

Area (ac)	CN	Description
2.409	36	Woods, Fair, HSG A
2.409		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3	100	0.0050	0.04		**Sheet Flow, A** Woods: Light underbrush n= 0.400 P2= 3.22"
8.8	245	0.0086	0.46		**Shallow Concentrated Flow, B** Woodland Kv= 5.0 fps
46.1	345	Total			

Subcatchment Ex: Existing Runoff



Summary for Subcatchment Ex: Existing Runoff

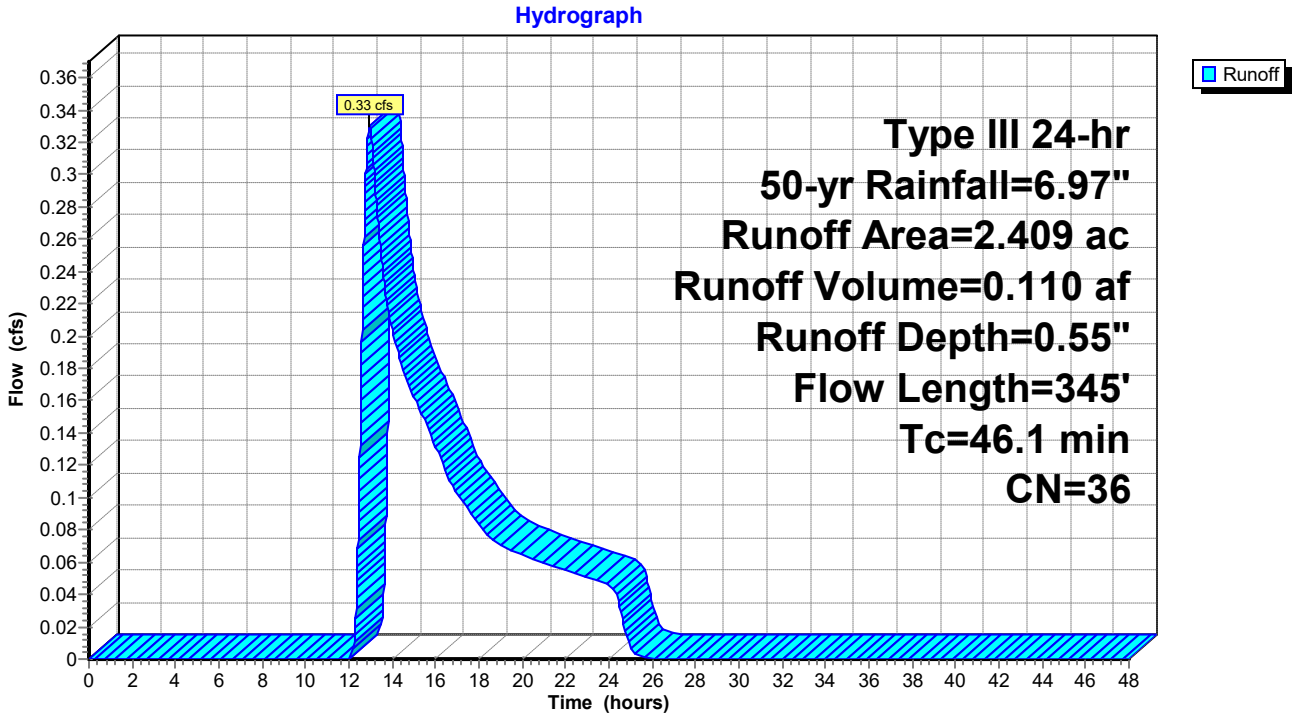
Runoff = 0.33 cfs @ 12.96 hrs, Volume= 0.110 af, Depth= 0.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=6.97"

Area (ac)	CN	Description
2.409	36	Woods, Fair, HSG A
2.409		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3	100	0.0050	0.04		**Sheet Flow, A** Woods: Light underbrush n= 0.400 P2= 3.22"
8.8	245	0.0086	0.46		**Shallow Concentrated Flow, B** Woodland Kv= 5.0 fps
46.1	345	Total			

Subcatchment Ex: Existing Runoff



Summary for Subcatchment Ex: Existing Runoff

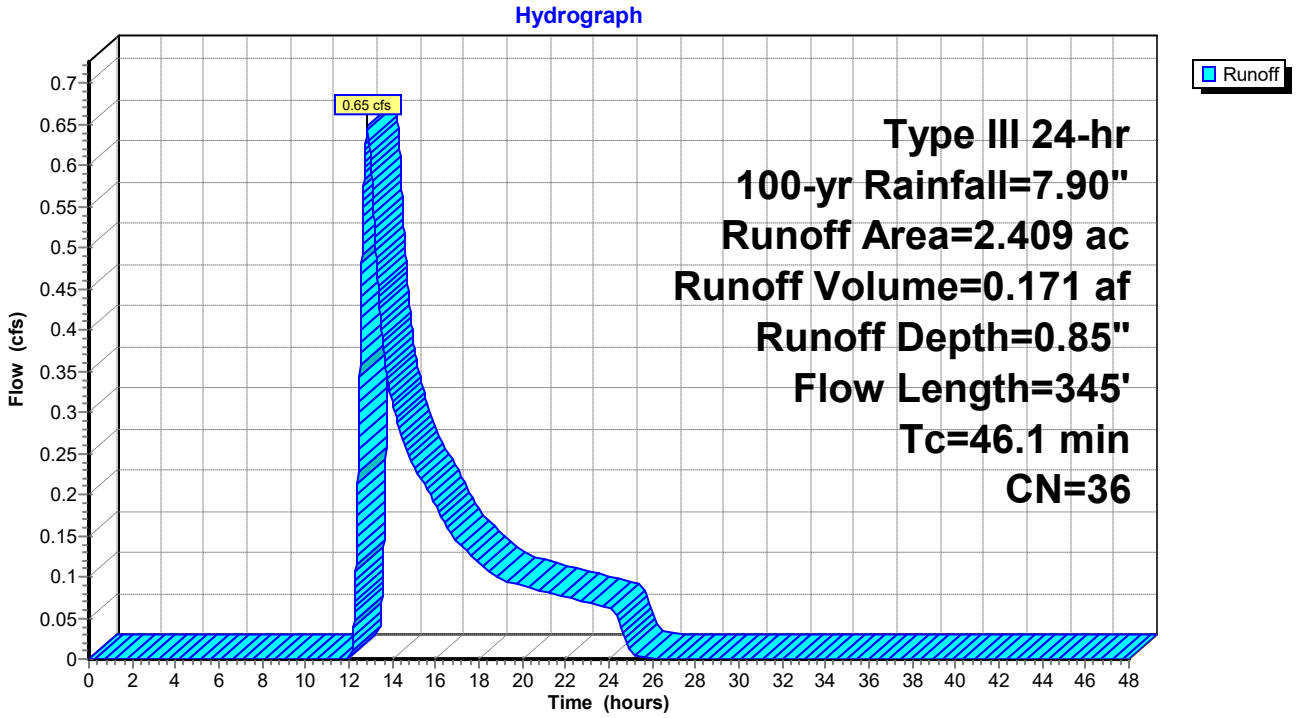
Runoff = 0.65 cfs @ 12.86 hrs, Volume= 0.171 af, Depth= 0.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.90"

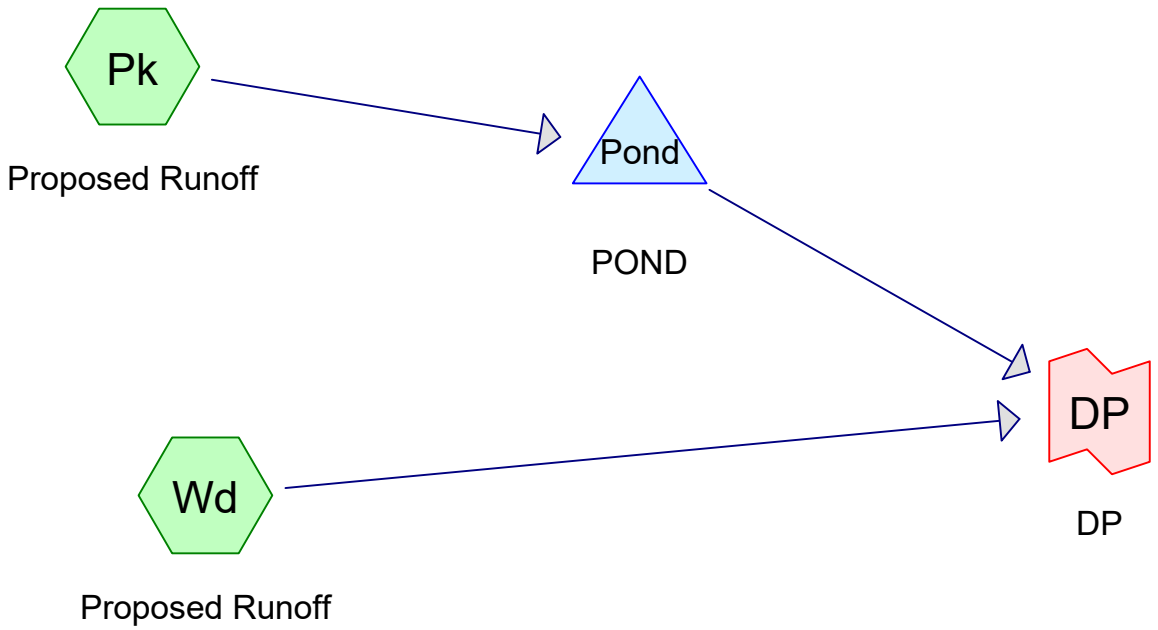
Area (ac)	CN	Description
2.409	36	Woods, Fair, HSG A
2.409		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3	100	0.0050	0.04		**Sheet Flow, A** Woods: Light underbrush n= 0.400 P2= 3.22"
8.8	245	0.0086	0.46		**Shallow Concentrated Flow, B** Woodland Kv= 5.0 fps
46.1	345	Total			

Subcatchment Ex: Existing Runoff



APPENDIX B
Watershed Computations
(Post-Development Drainage HydroCAD Report)



Subcat Reach Pond Link

Routing Diagram for 4652 Hydrocad
Prepared by {enter your company name here}, Printed 4/30/2021

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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 Pk: Proposed Runoff Runoff Area=0.913 ac 46.22% Impervious Runoff Depth=0.90"
Flow Length=336' Slope=0.0050 '/' Tc=19.4 min CN=72 Runoff=0.60 cfs 0.068 af

Subcatchment Wd: Proposed Runoff Runoff Area=1.496 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=345' Tc=46.1 min CN=36 Runoff=0.00 cfs 0.000 af

Pond Pond: POND Peak Elev=69.52' Storage=108 cf Inflow=0.60 cfs 0.068 af
Discarded=0.51 cfs 0.068 af Primary=0.00 cfs 0.000 af Outflow=0.51 cfs 0.068 af

Link DP: DP Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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 Pk: Proposed Runoff Runoff Area=0.913 ac 46.22% Impervious Runoff Depth=2.19"
Flow Length=336' Slope=0.0050 '/' Tc=19.4 min CN=72 Runoff=1.58 cfs 0.167 af

Subcatchment Wd: Proposed Runoff Runoff Area=1.496 ac 0.00% Impervious Runoff Depth=0.11"
Flow Length=345' Tc=46.1 min CN=36 Runoff=0.02 cfs 0.013 af

Pond Pond: POND Peak Elev=69.82' Storage=1,489 cf Inflow=1.58 cfs 0.167 af
Discarded=0.59 cfs 0.167 af Primary=0.00 cfs 0.000 af Outflow=0.59 cfs 0.167 af

Link DP: DP Inflow=0.02 cfs 0.013 af
Primary=0.02 cfs 0.013 af

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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 Pk: Proposed Runoff Runoff Area=0.913 ac 46.22% Impervious Runoff Depth=3.10"
Flow Length=336' Slope=0.0050 '/' Tc=19.4 min CN=72 Runoff=2.26 cfs 0.236 af

Subcatchment Wd: Proposed Runoff Runoff Area=1.496 ac 0.00% Impervious Runoff Depth=0.33"
Flow Length=345' Tc=46.1 min CN=36 Runoff=0.09 cfs 0.041 af

Pond Pond: POND Peak Elev=70.04' Storage=2,700 cf Inflow=2.26 cfs 0.236 af
Discarded=0.64 cfs 0.236 af Primary=0.00 cfs 0.000 af Outflow=0.64 cfs 0.236 af

Link DP: DP Inflow=0.09 cfs 0.041 af
Primary=0.09 cfs 0.041 af

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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 Pk: Proposed Runoff Runoff Area=0.913 ac 46.22% Impervious Runoff Depth=3.80"
Flow Length=336' Slope=0.0050 '/' Tc=19.4 min CN=72 Runoff=2.78 cfs 0.289 af

Subcatchment Wd: Proposed Runoff Runoff Area=1.496 ac 0.00% Impervious Runoff Depth=0.55"
Flow Length=345' Tc=46.1 min CN=36 Runoff=0.21 cfs 0.069 af

Pond Pond: POND Peak Elev=70.22' Storage=3,718 cf Inflow=2.78 cfs 0.289 af
Discarded=0.67 cfs 0.289 af Primary=0.00 cfs 0.000 af Outflow=0.67 cfs 0.289 af

Link DP: DP Inflow=0.21 cfs 0.069 af
Primary=0.21 cfs 0.069 af

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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 Pk: Proposed Runoff Runoff Area=0.913 ac 46.22% Impervious Runoff Depth=4.61"
Flow Length=336' Slope=0.0050 '/' Tc=19.4 min CN=72 Runoff=3.37 cfs 0.351 af

Subcatchment Wd: Proposed Runoff Runoff Area=1.496 ac 0.00% Impervious Runoff Depth=0.85"
Flow Length=345' Tc=46.1 min CN=36 Runoff=0.40 cfs 0.106 af

Pond Pond: POND Peak Elev=70.43' Storage=4,929 cf Inflow=3.37 cfs 0.351 af
Discarded=0.70 cfs 0.351 af Primary=0.00 cfs 0.000 af Outflow=0.70 cfs 0.351 af

Link DP: DP Inflow=0.40 cfs 0.106 af
Primary=0.40 cfs 0.106 af

Summary for Subcatchment Pk: Proposed Runoff

Hydro of Lot

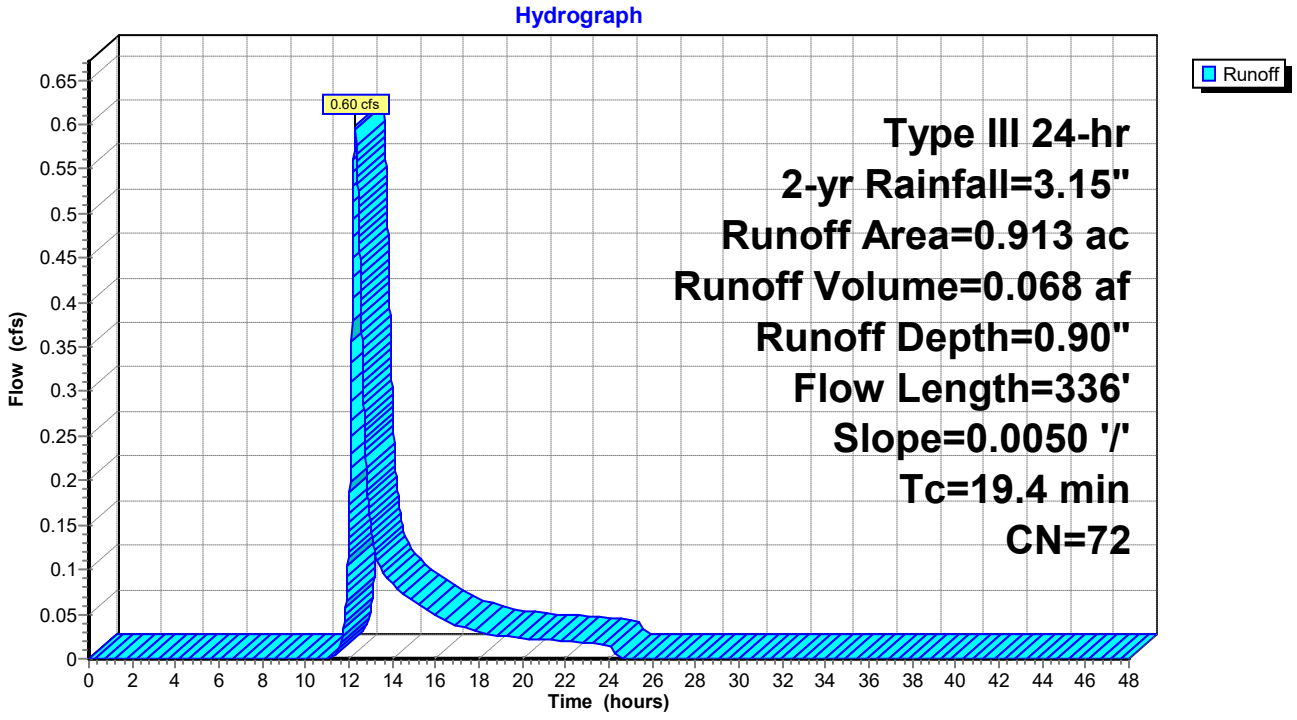
Runoff = 0.60 cfs @ 12.30 hrs, Volume= 0.068 af, Depth= 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.15"

	Area (ac)	CN	Description
*	0.422	98	IMPERVIOUS PAVEMENT
*	0.491	49	FAIR GRASS A
	0.913	72	Weighted Average
	0.491		53.78% Pervious Area
	0.422		46.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	50	0.0050	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 3.22"
9.6	286	0.0050	0.49		**Shallow Concentrated Flow, swale** Short Grass Pasture Kv= 7.0 fps
19.4	336	Total			

Subcatchment Pk: Proposed Runoff



Summary for Subcatchment Wd: Proposed Runoff

Hydro of Lot

[45] Hint: Runoff=Zero

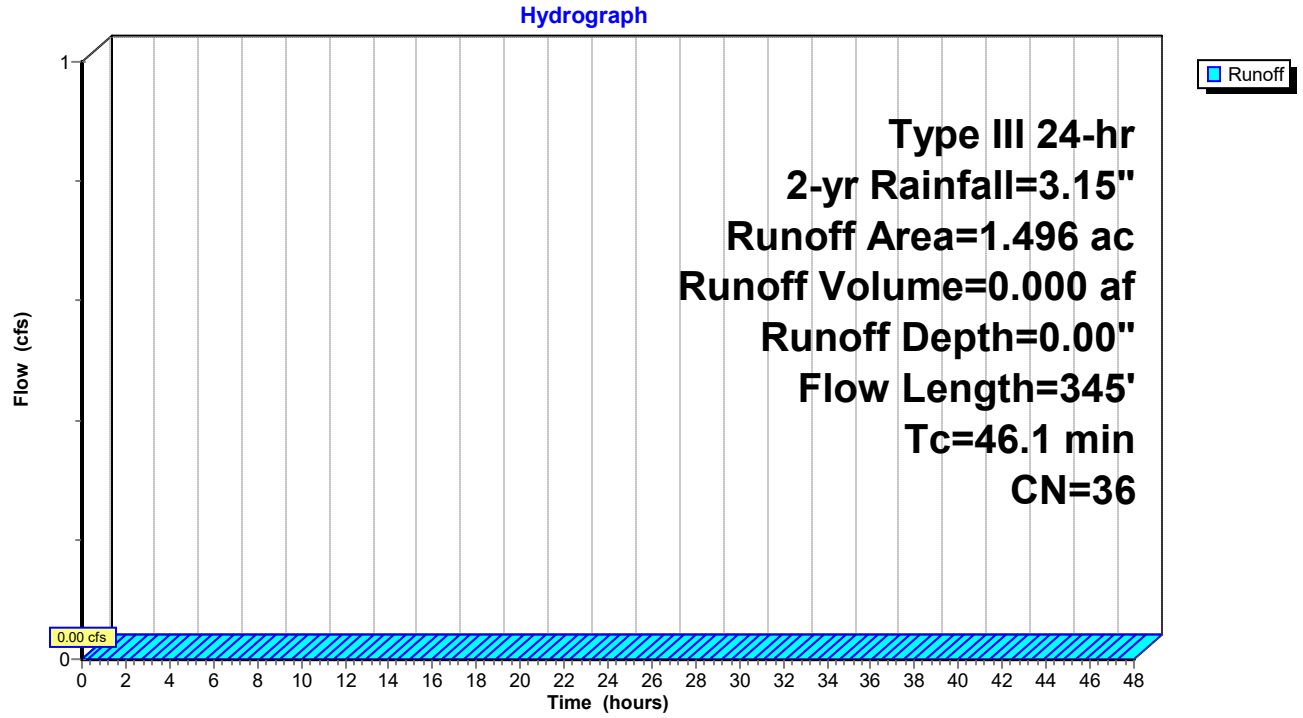
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.15"

	Area (ac)	CN	Description
*	1.496	36	FAIR WOODS A
	1.496		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3	100	0.0050	0.04		**Sheet Flow, A** Woods: Light underbrush n= 0.400 P2= 3.22"
8.8	245	0.0086	0.46		**Shallow Concentrated Flow, B** Woodland Kv= 5.0 fps
46.1	345	Total			

Subcatchment Wd: Proposed Runoff



Summary for Pond Pond: POND

Inflow Area = 0.913 ac, 46.22% Impervious, Inflow Depth = 0.90" for 2-yr event
Inflow = 0.60 cfs @ 12.30 hrs, Volume= 0.068 af
Outflow = 0.51 cfs @ 12.43 hrs, Volume= 0.068 af, Atten= 14%, Lag= 8.1 min
Discarded = 0.51 cfs @ 12.43 hrs, Volume= 0.068 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 69.52' @ 12.43 hrs Surf.Area= 4,432 sf Storage= 108 cf

Plug-Flow detention time= 2.3 min calculated for 0.068 af (100% of inflow)
Center-of-Mass det. time= 2.3 min (884.6 - 882.3)

Volume	Invert	Avail.Storage	Storage Description
#1	69.50'	8,549 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

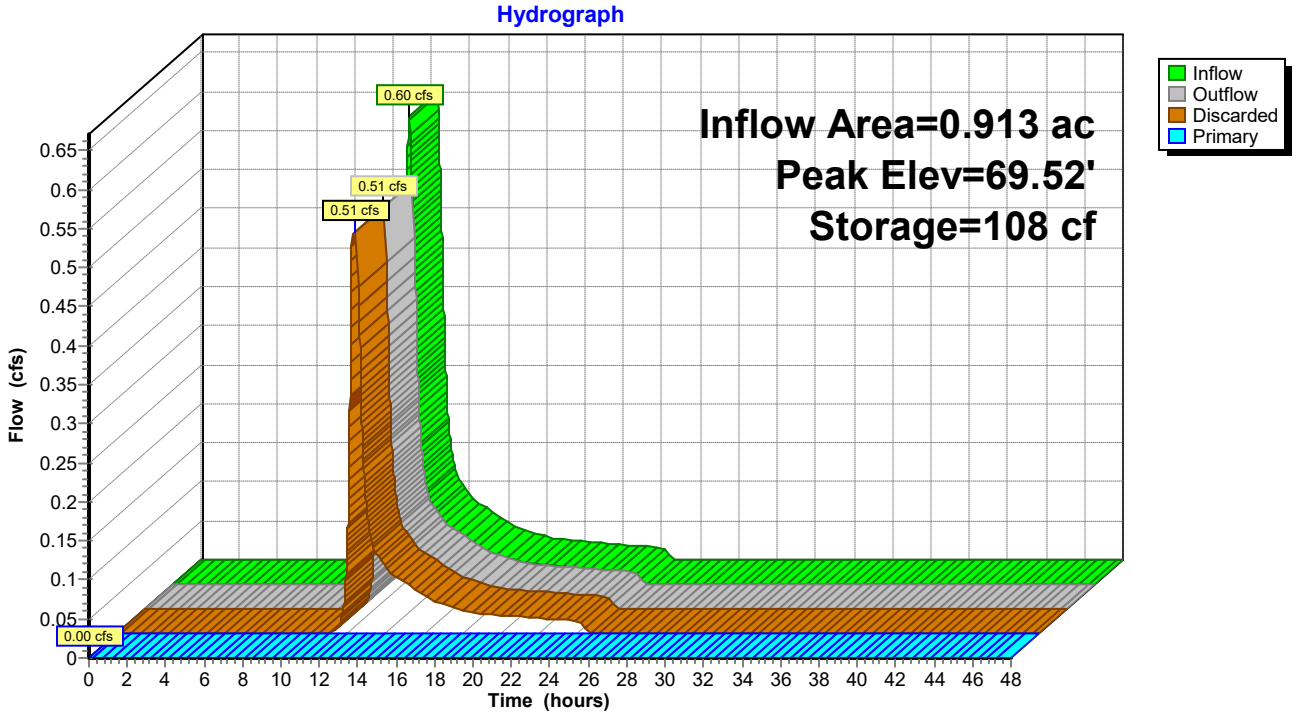
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
69.50	4,380	0	0	4,380
70.00	5,503	2,465	2,465	5,510
71.00	6,683	6,083	8,549	6,722

Device	Routing	Invert	Outlet Devices
#1	Discarded	69.50'	**5.000 in/hr Exfiltration over Wetted area**
#2	Primary	70.50'	**135.0' long (Profile 1) Broad-Crested Rectangular Weir**
			Head (feet) 0.49 0.98 1.48
			Coef. (English) 2.92 3.37 3.59

Discarded OutFlow Max=0.51 cfs @ 12.43 hrs HW=69.52' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.51 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=69.50' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Pond: POND

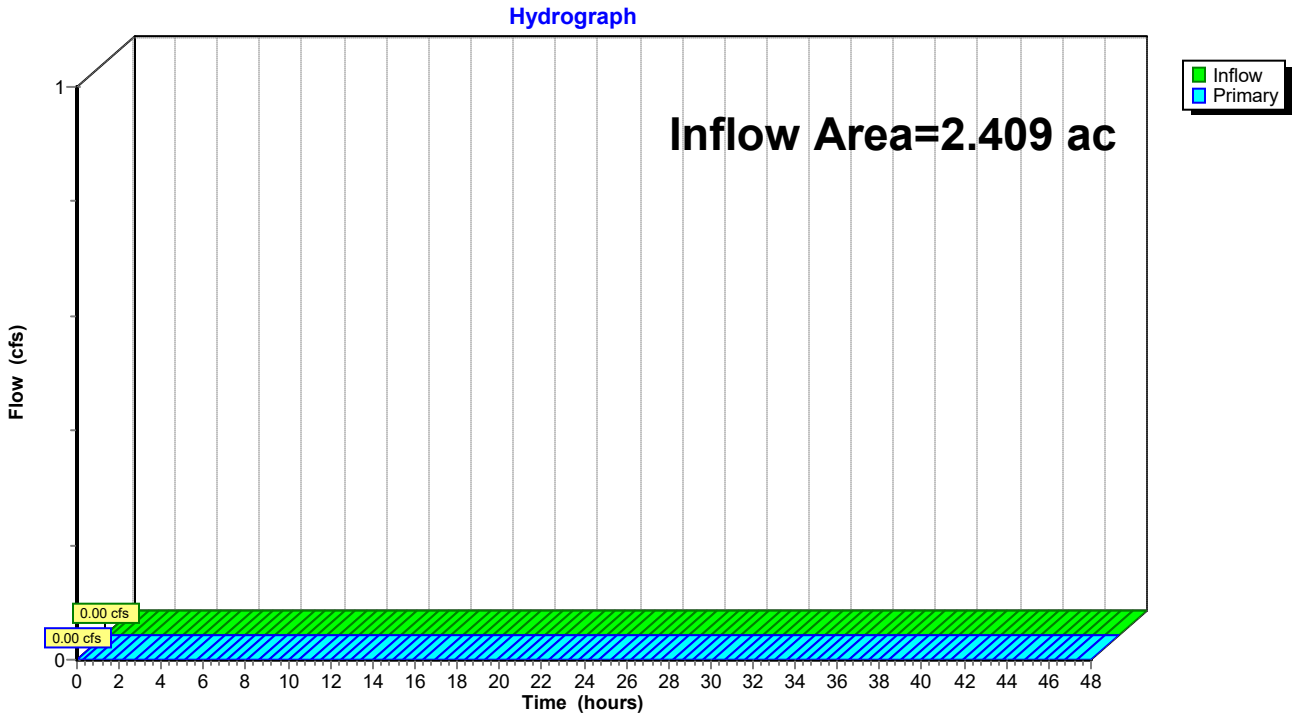


Summary for Link DP: DP

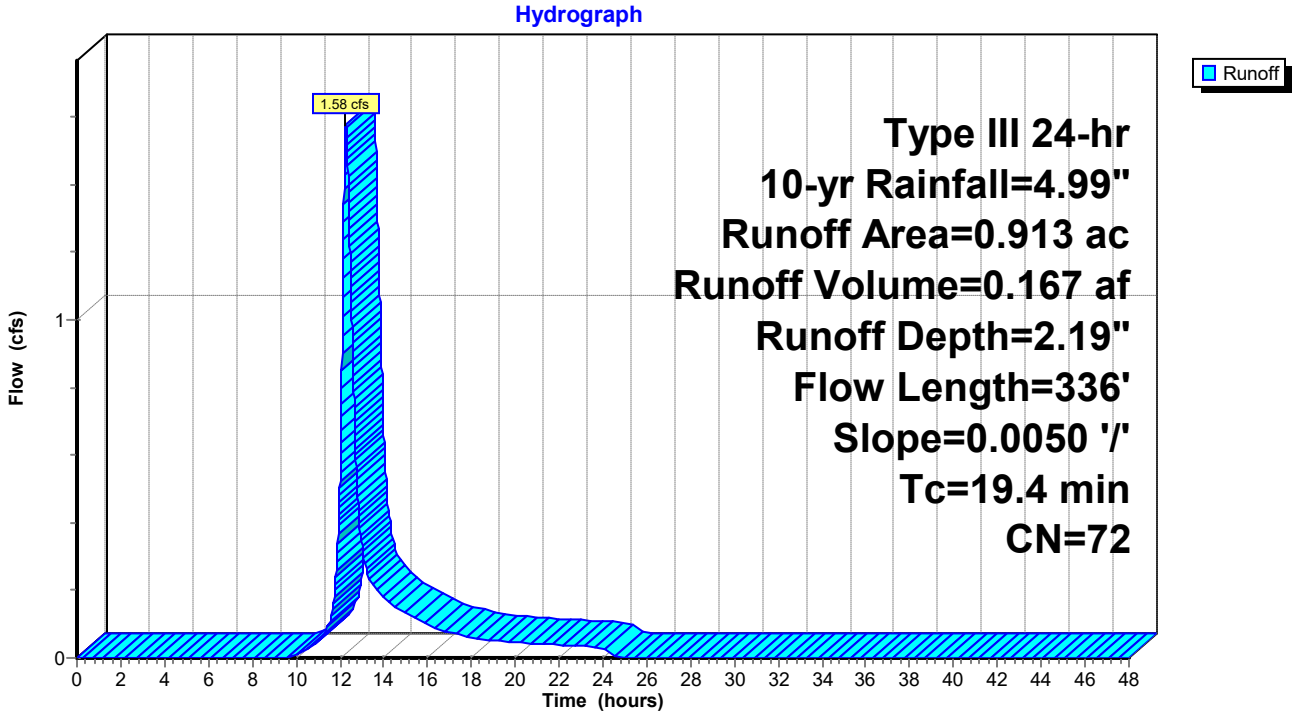
Inflow Area = 2.409 ac, 17.52% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

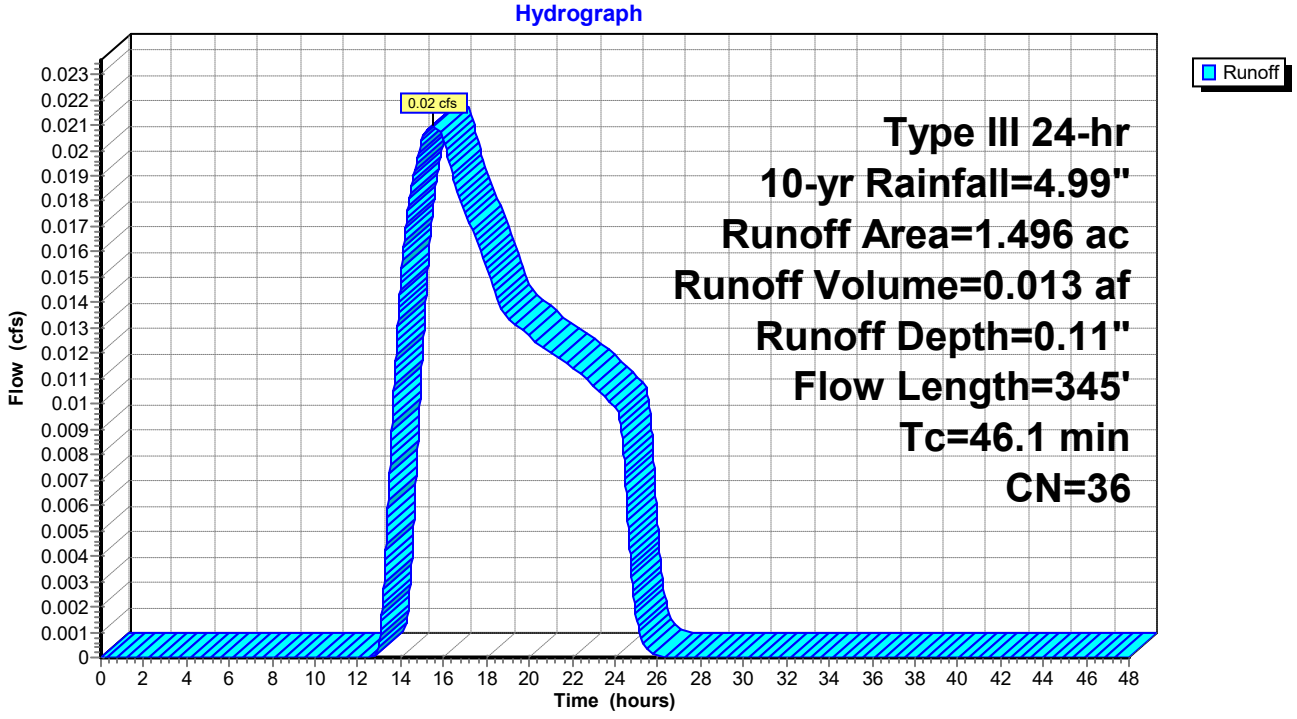
Link DP: DP



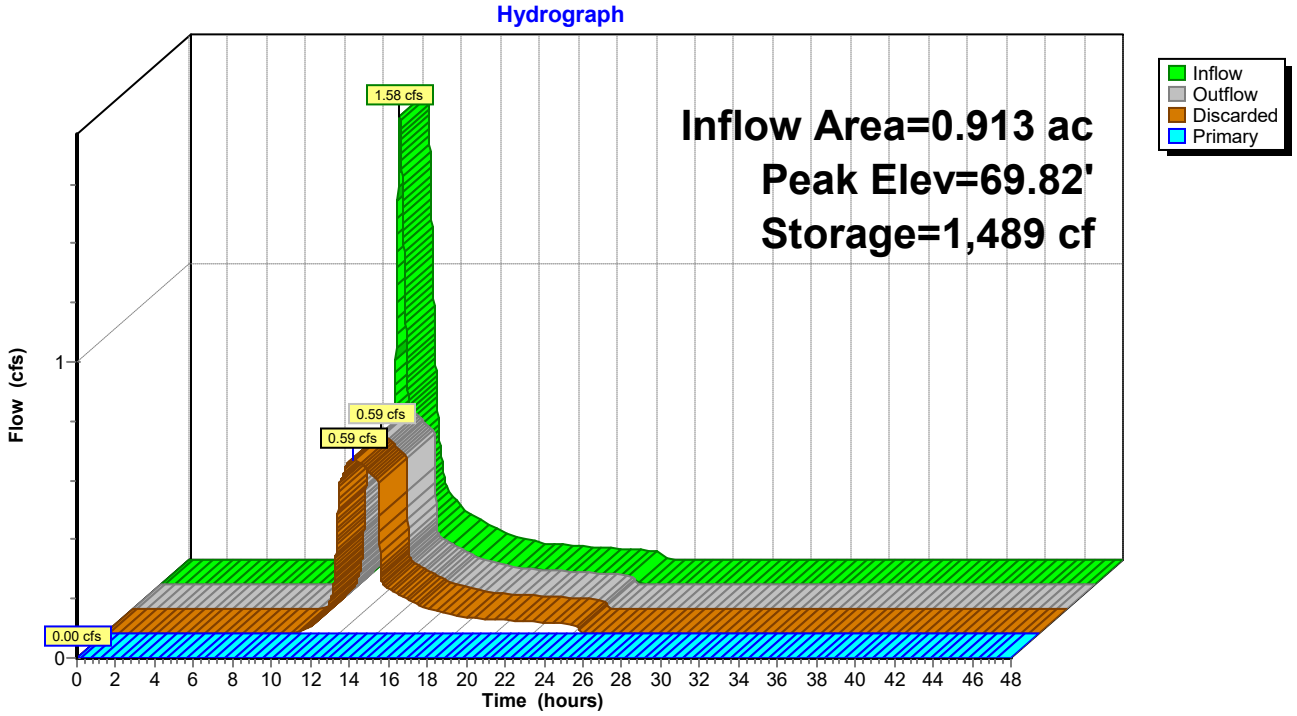
Subcatchment Pk: Proposed Runoff



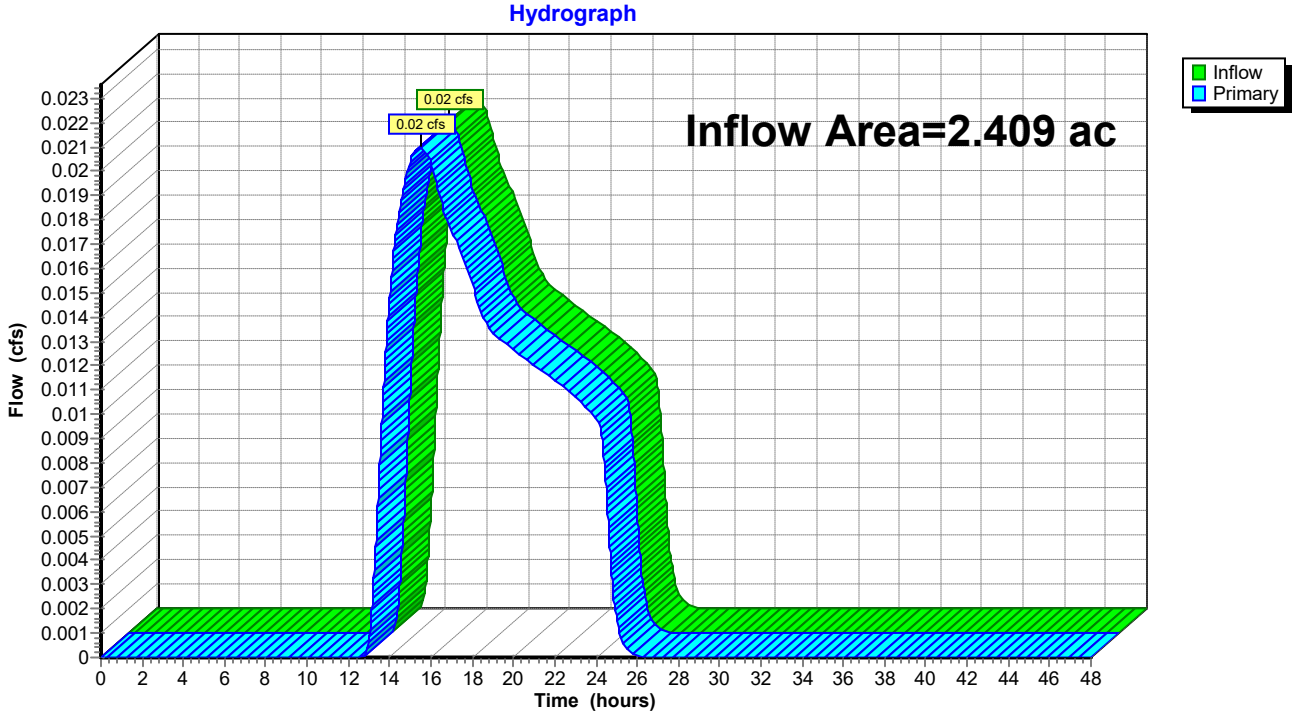
Subcatchment Wd: Proposed Runoff



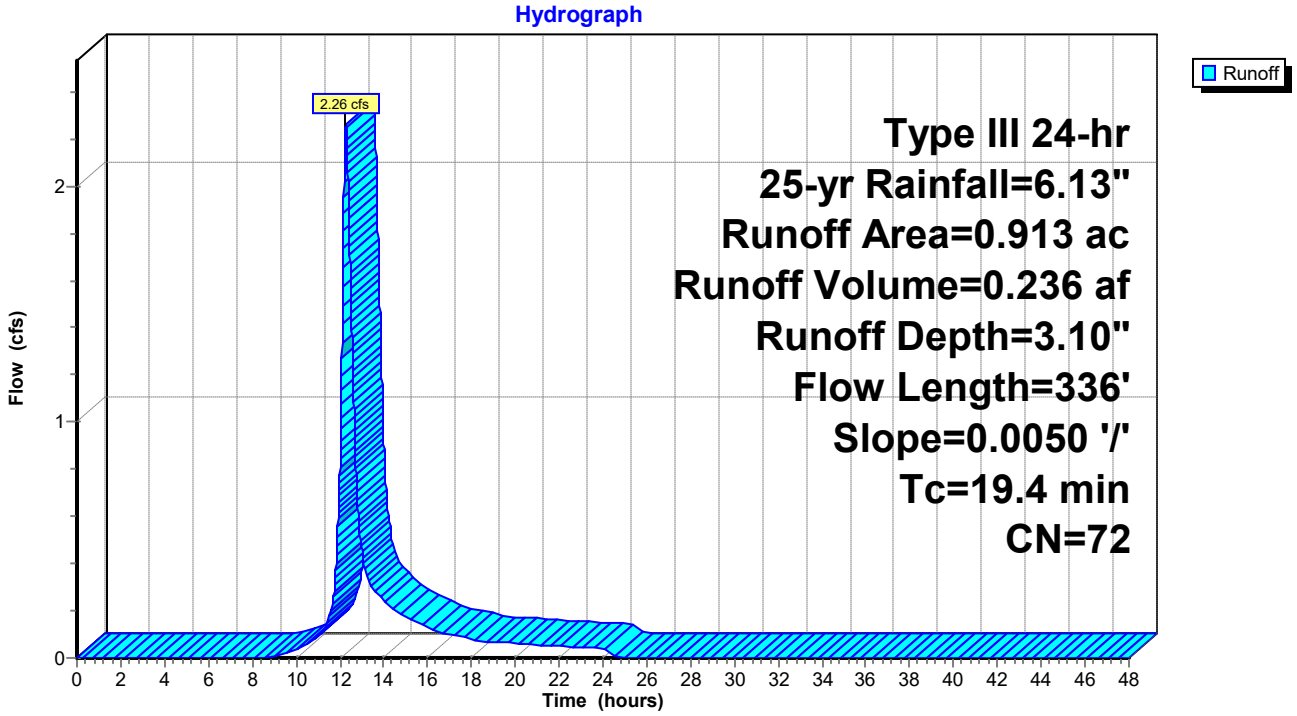
Pond Pond: POND



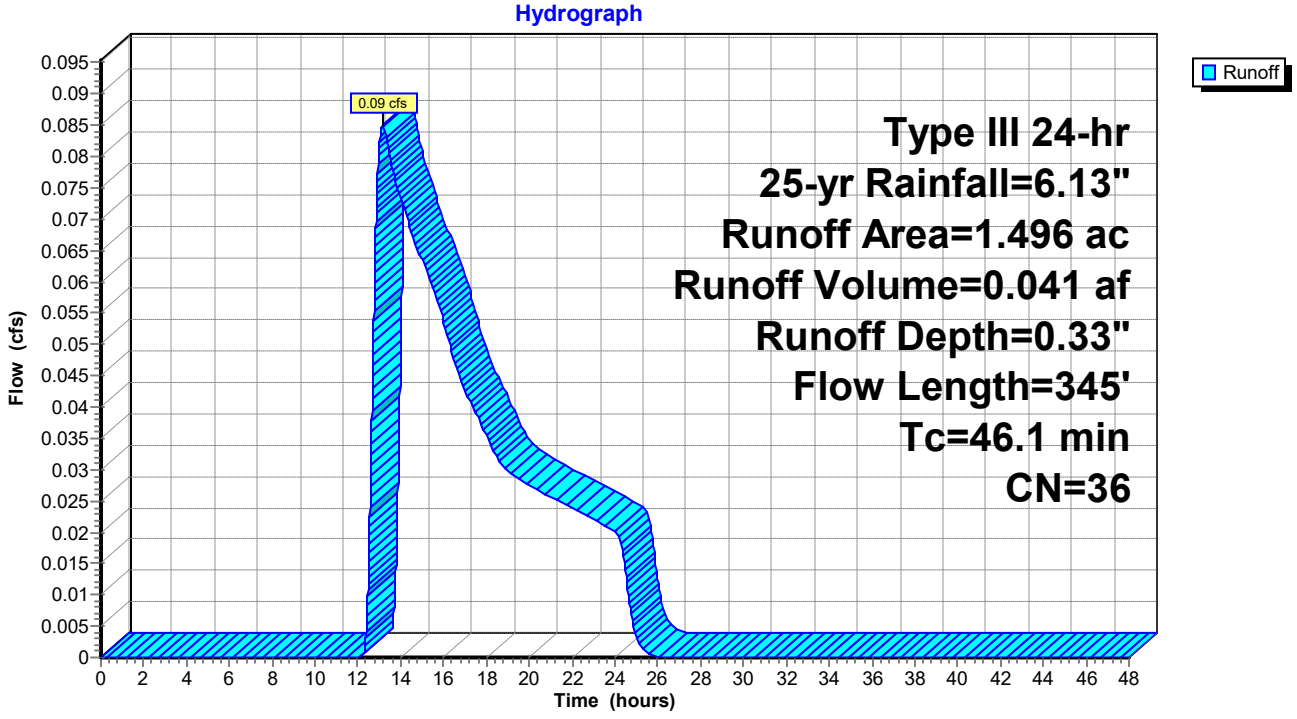
Link DP: DP



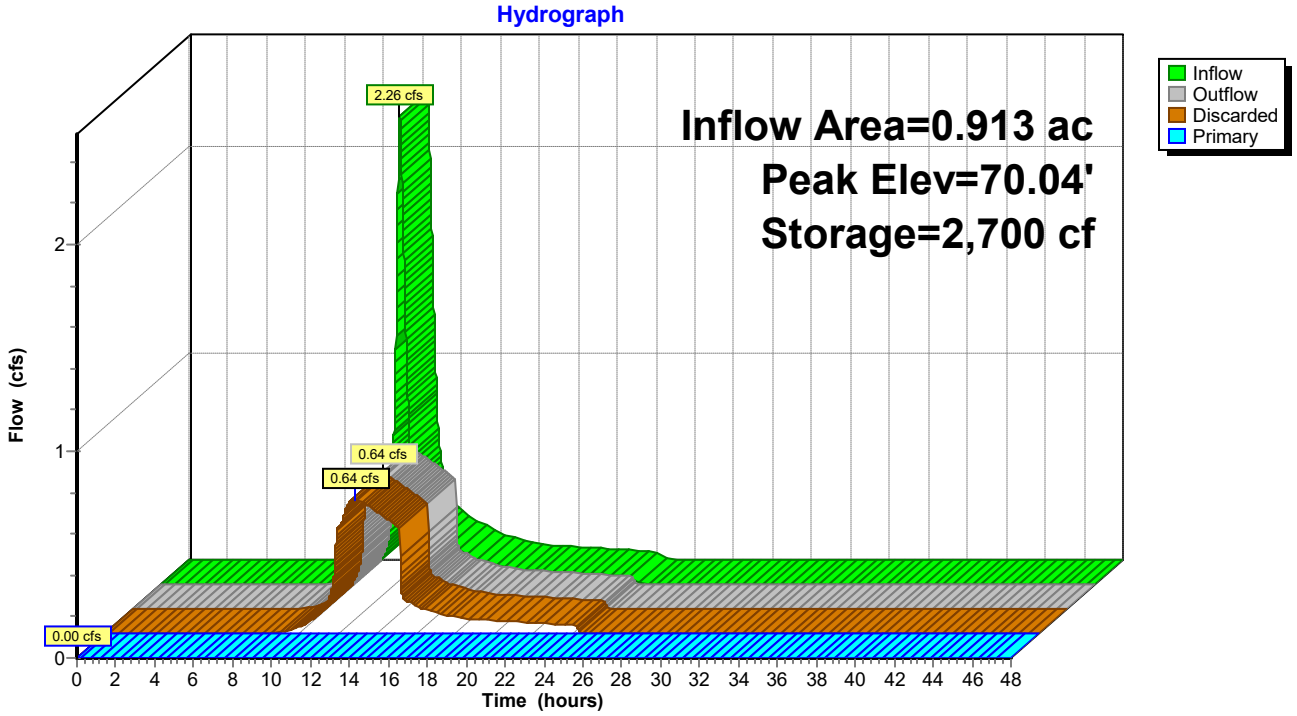
Subcatchment Pk: Proposed Runoff



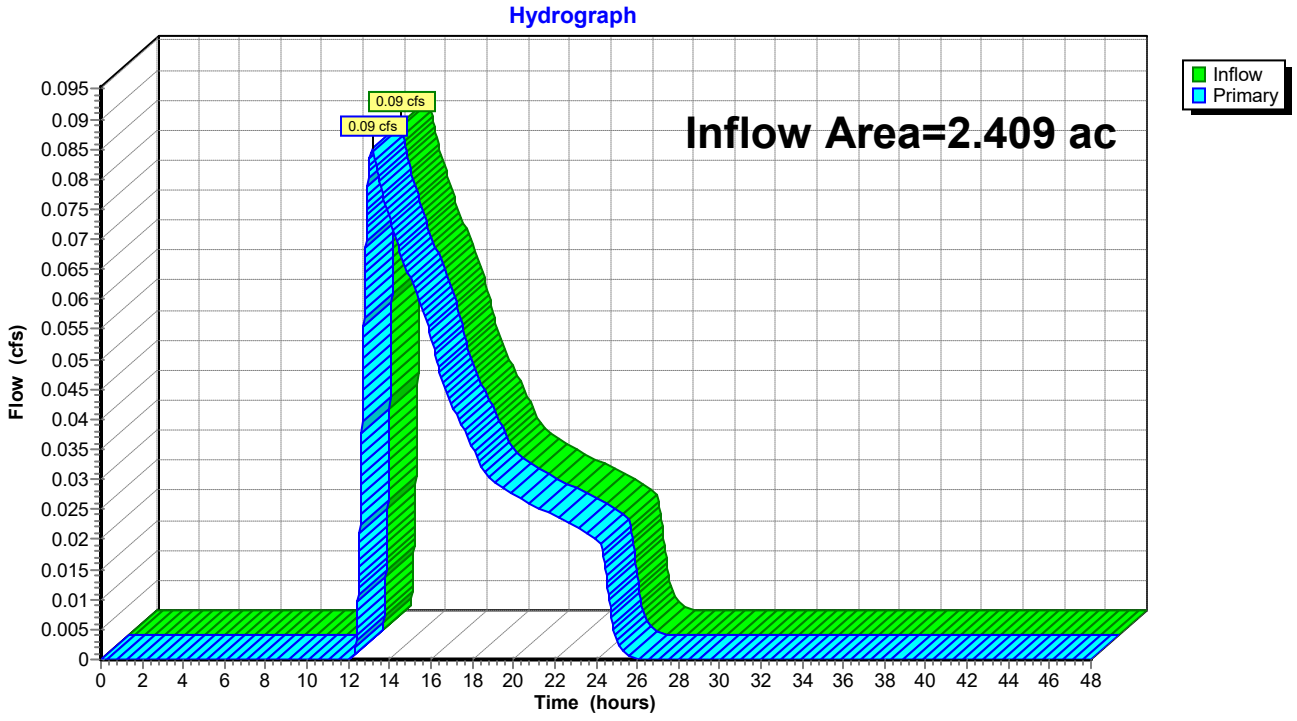
Subcatchment Wd: Proposed Runoff



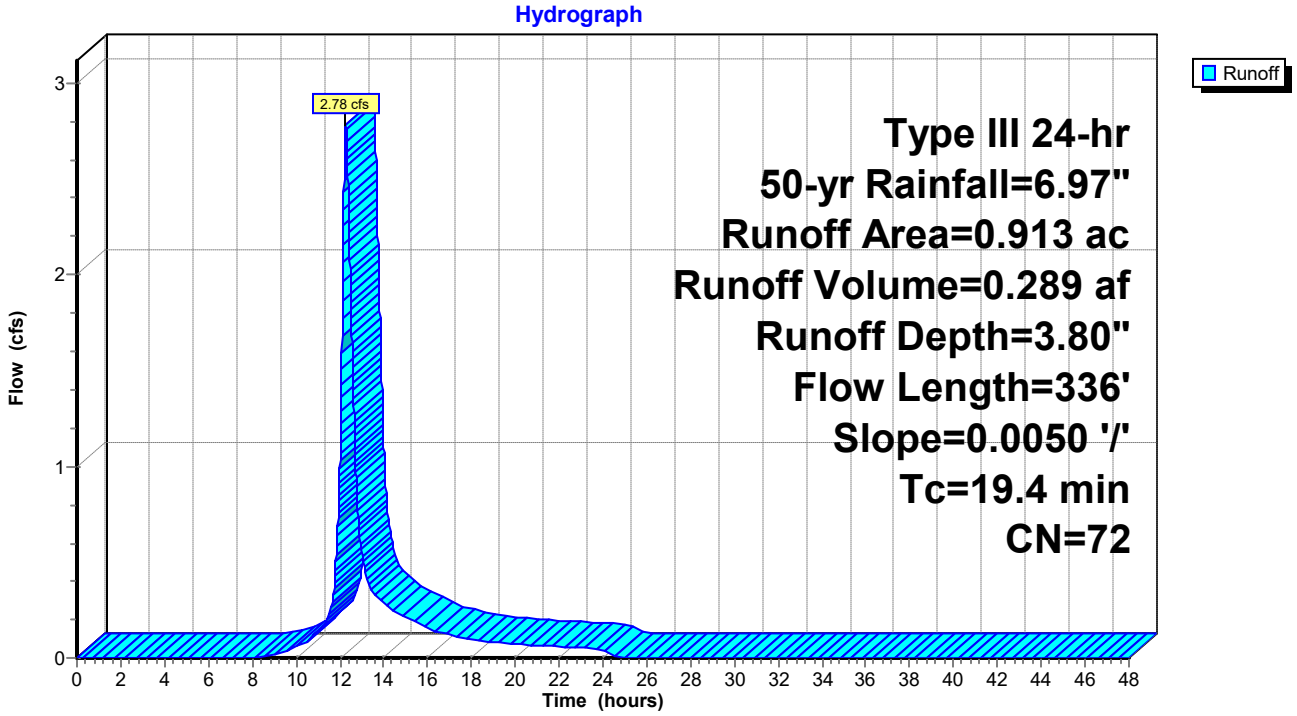
Pond Pond: POND



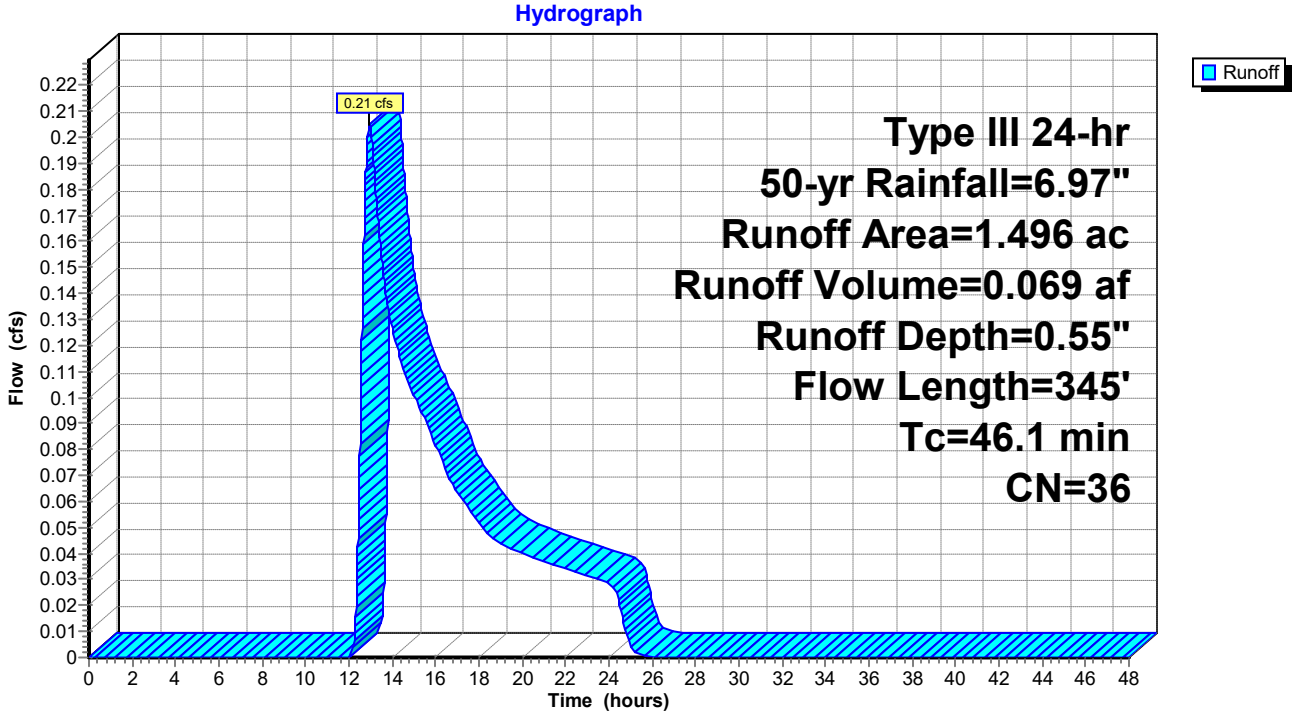
Link DP: DP



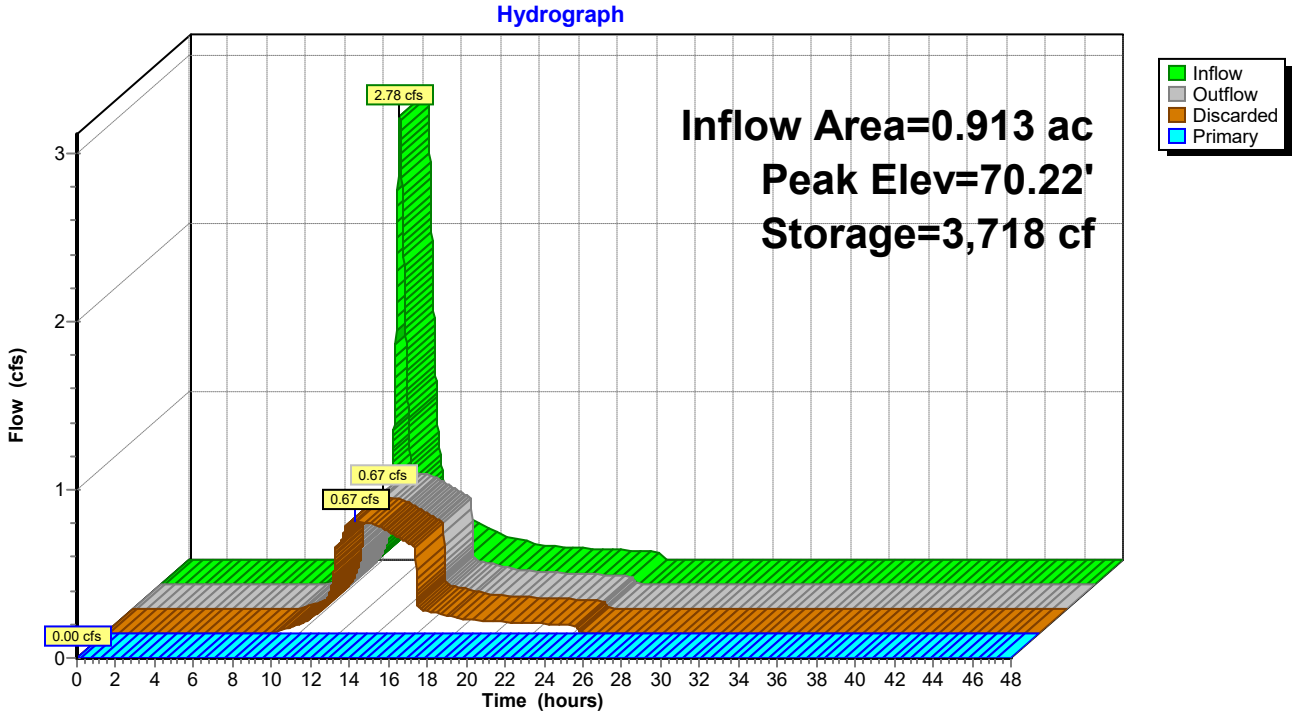
Subcatchment Pk: Proposed Runoff



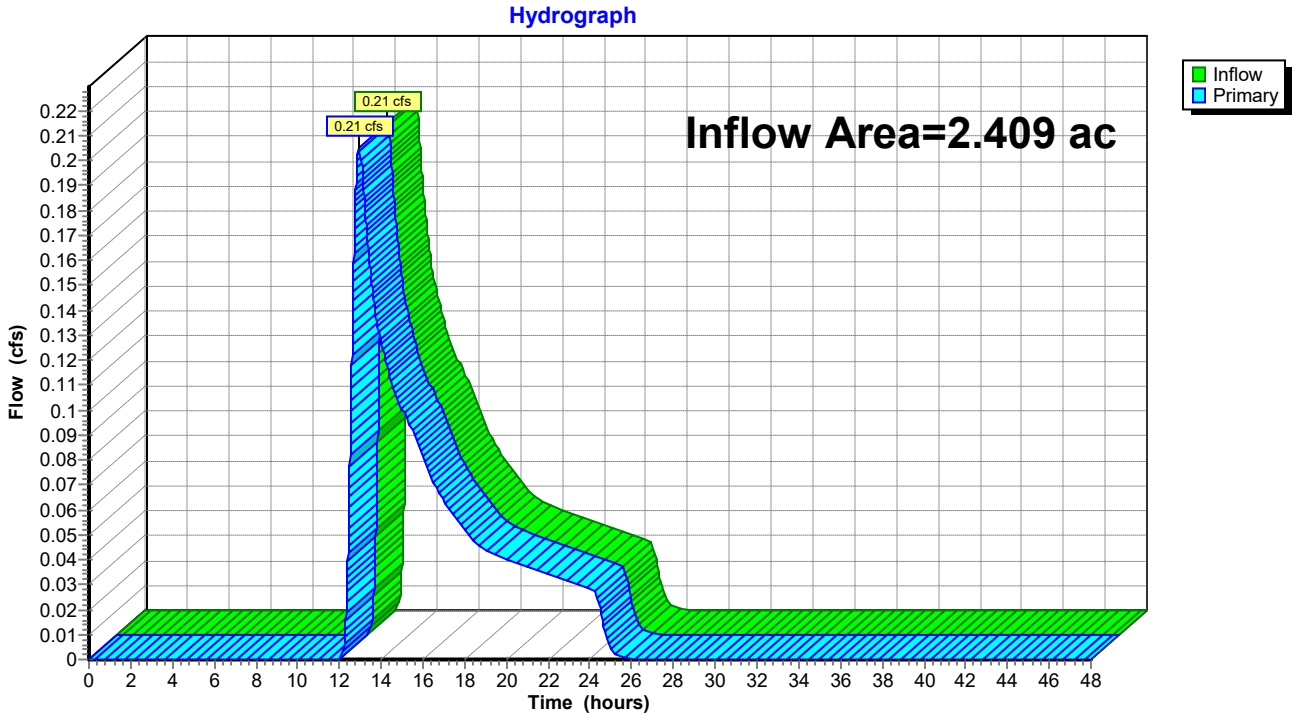
Subcatchment Wd: Proposed Runoff



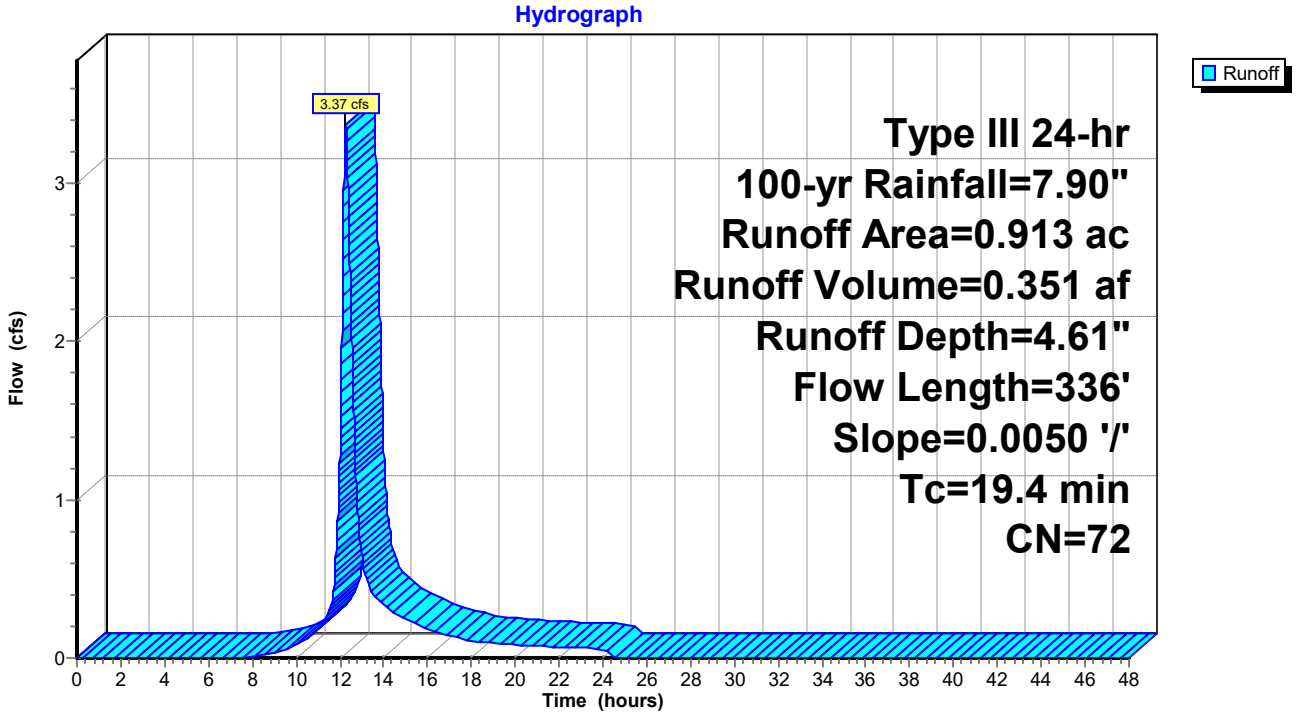
Pond Pond: POND



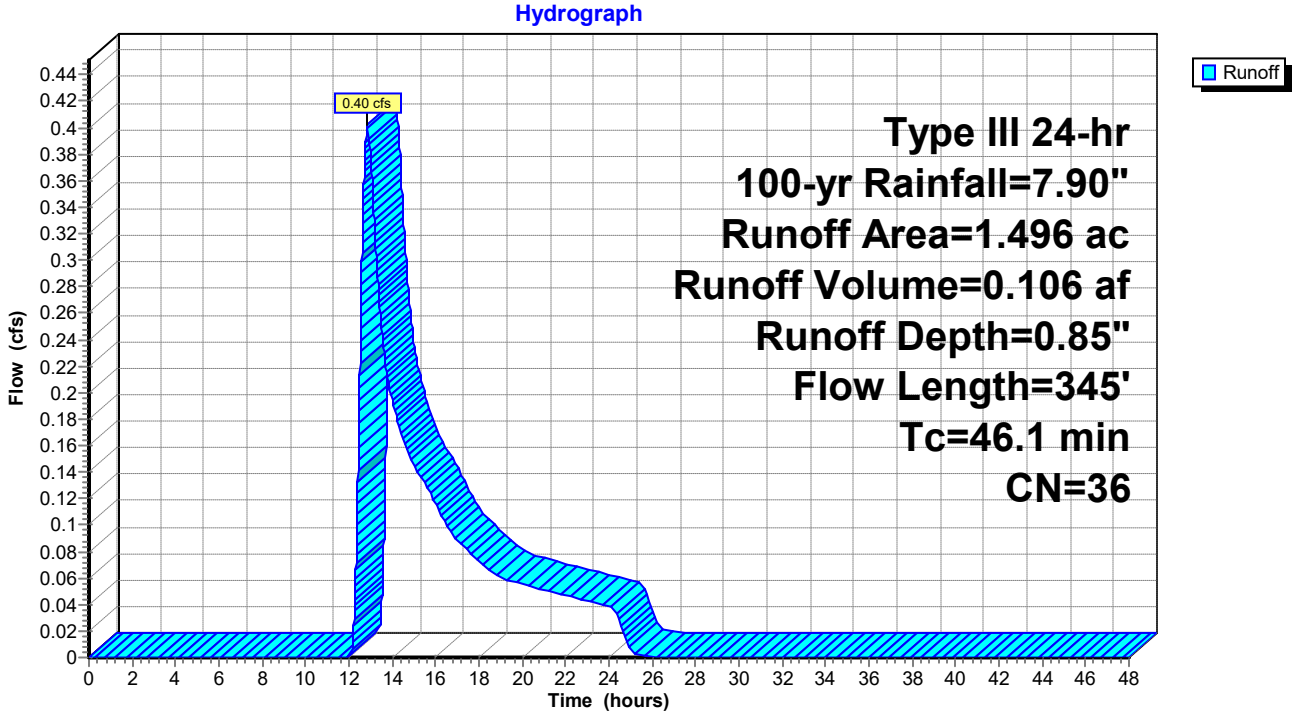
Link DP: DP



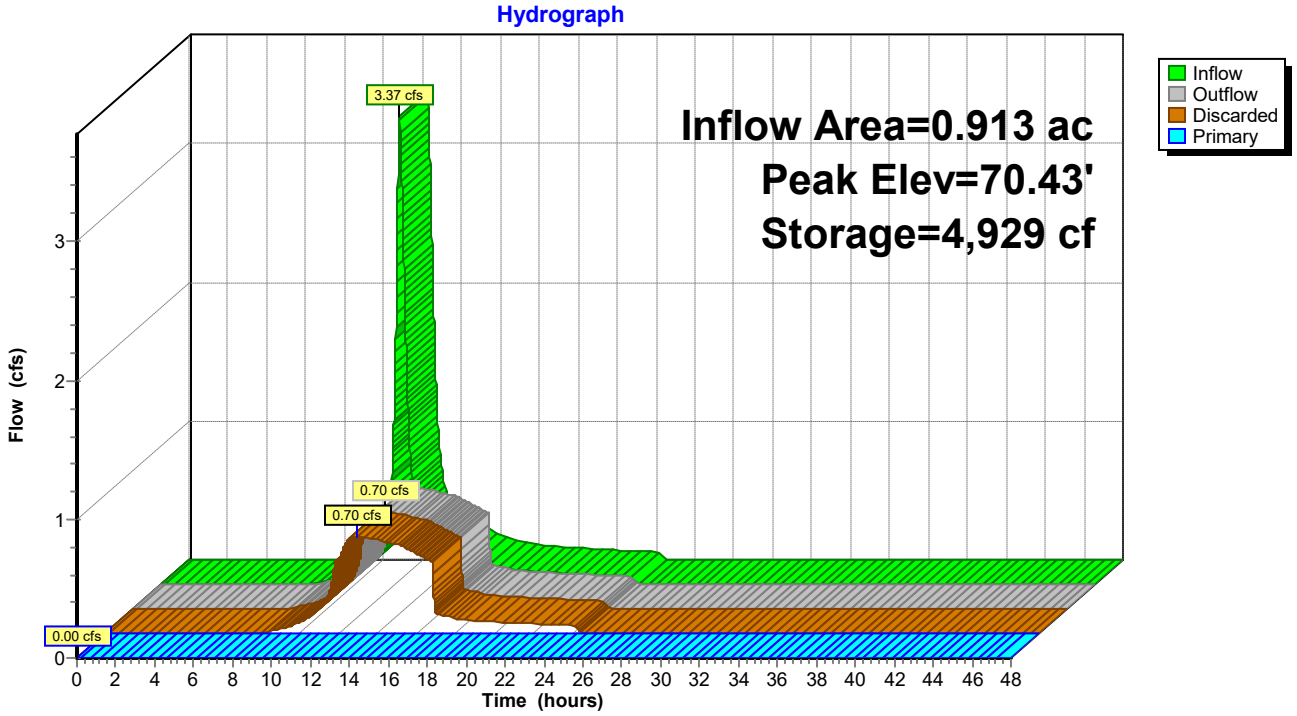
Subcatchment Pk: Proposed Runoff



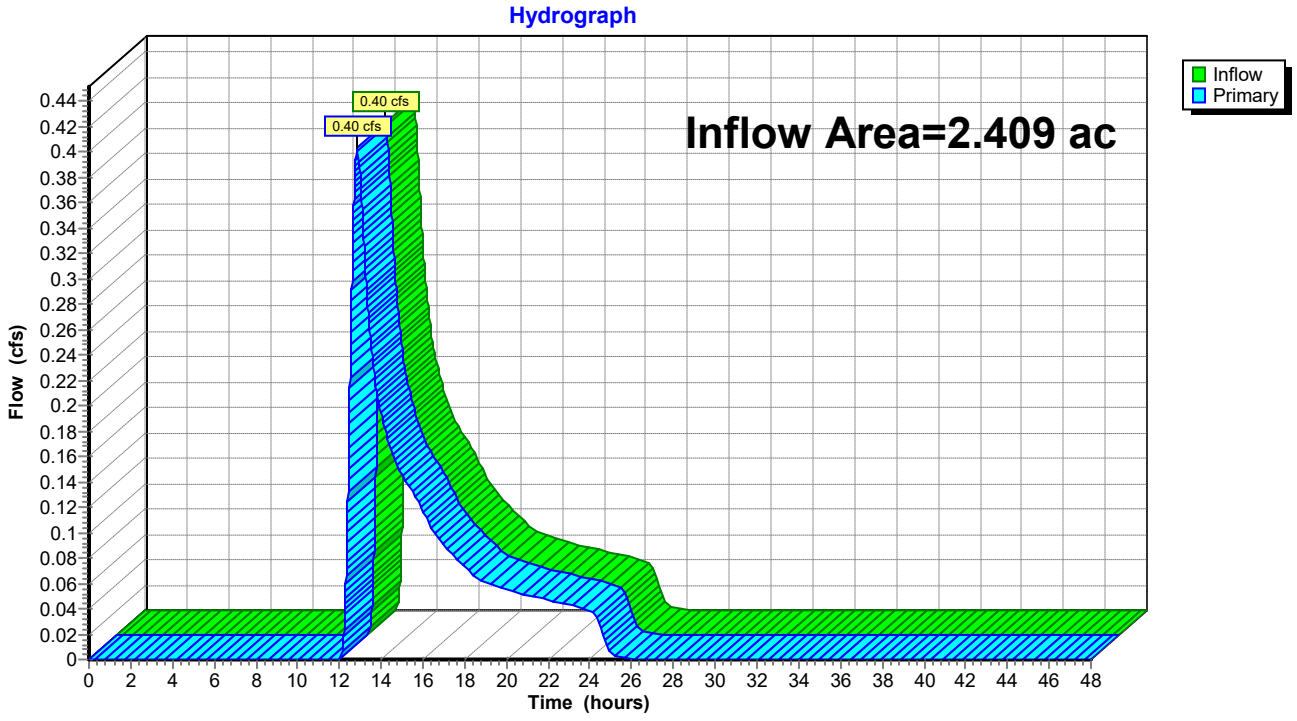
Subcatchment Wd: Proposed Runoff



Pond Pond: POND



Link DP: DP



APPENDIX C
NRCS Soil Map & Data

Soil Map—State of Connecticut

Map Scale: 1:1,350 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

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 20, Jun 9, 2020

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

Date(s) aerial images were photographed: Jul 15, 2019—Aug 29, 2019

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
13	Walpole sandy loam, 0 to 3 percent slopes	5.8	65.0%
15	Scarboro muck, 0 to 3 percent slopes	1.8	20.1%
306	Udorthents-Urban land complex	1.3	15.0%
Totals for Area of Interest		**8.9**	**100.0%**

State of Connecticut

13—Walpole sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svkl
Elevation: 0 to 1,020 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Walpole and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Walpole

Setting

Landform: Outwash terraces, outwash plains, depressions, deltas, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy glaciofluvial deposits derived from igneous, metamorphic and sedimentary rock

Typical profile

Oe - 0 to 1 inches: mucky peat
A - 1 to 7 inches: sandy loam
Bg - 7 to 21 inches: sandy loam
BC - 21 to 25 inches: gravelly sandy loam
C - 25 to 65 inches: very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 4 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

Minor Components

Sudbury

Percent of map unit: 10 percent
Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Scarboro

Percent of map unit: 10 percent
Landform: Outwash terraces, deltas, outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: State of Connecticut
Survey Area Data: Version 20, Jun 9, 2020

APPENDIX D
Water Quality Calculations

150 South Satellite Road – DPI Project No.:4652
April 30, 2021

Water Quality Volume Calculations
Per 2004 Connecticut Stormwater Quality Manual, Section 7.4.1:

Areas for Calculation: On Site to Water Quality Basin PP1 (P2)

	Drainage Area (acres)
Impervious	0.422
Pervious	0.491
Total Area	0.913
%Impervious	46.2%

Water Quality Volume (WQV) = (1")(R)(A)/12, where:

R = unitless volumetric runoff coefficient = 0.05 + 0.009(I), where:
I = percent impervious cover of drainage area = 46.2%
R = 0.05 + 0.009(I)
R = 0.05 + 0.009(46.2)
R = 0.466

A = drainage area in acres = 0.913 acres

WQV = (1")(R)(A acres)/12 inches per foot
WQV = (1")(0.466)(0.913 acres)/12 inches per foot

WQV = 0.035 acre-feet required = **1,544 cft**

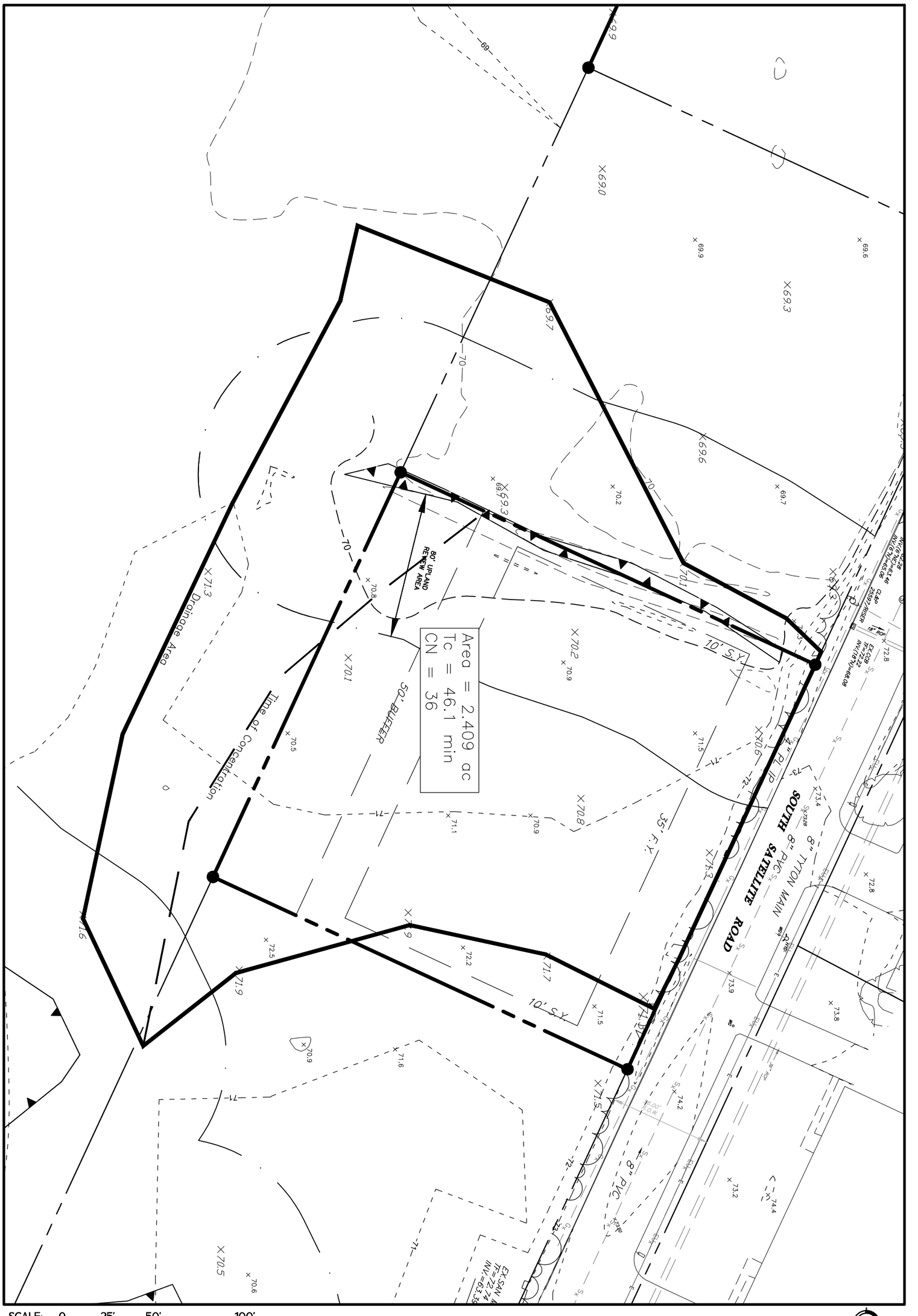
Proposed BMP
The proposed basin is proposed to provide **5,360 cft** (below orifice at Elev. 70.5). The basin will provide storage for **347%** of the determined water quality volume draining to the basin.

Stage-Area-Storage for Pond Pond: POND

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
69.50	4,380	4,380	0
69.55	4,487	4,487	222
69.60	4,594	4,596	449
69.65	4,703	4,705	681
69.70	4,814	4,816	919
69.75	4,925	4,929	1,163
69.80	5,038	5,042	1,412
69.85	5,153	5,157	1,666
69.90	5,268	5,274	1,927
69.95	5,385	5,391	2,193
70.00	5,503	5,510	2,465
70.05	5,559	5,568	2,742
70.10	5,616	5,626	3,021
70.15	5,673	5,684	3,304
70.20	5,730	5,743	3,589
70.25	5,787	5,802	3,877
70.30	5,845	5,861	4,167
70.35	5,903	5,921	4,461
70.40	5,961	5,981	4,758
70.45	6,020	6,041	5,057
70.50	6,079	6,101	5,360
70.55	6,138	6,162	5,665
70.60	6,197	6,223	5,973
70.65	6,257	6,284	6,285
70.70	6,317	6,346	6,599
70.75	6,377	6,408	6,916
70.80	6,438	6,470	7,237
70.85	6,499	6,533	7,560
70.90	6,560	6,595	7,887
70.95	6,621	6,658	8,216
71.00	**6,683**	**6,722**	**8,549**

APPENDIX E
Drainage Area Maps

File: C:\jobs\4652\Engineering\AutoCAD\4652 Drainage.dwg Layout: EXISTING 11X17 Plotted: 4/30/2021 1:07 PM Last Saved: 4/30/2021 12:59 PM Last Saved By: suzanne.choate



SCALE: 1" = 50' 0 25' 50' 100'

NO.	DATE	REVISIONS	BY

DRAWING

4652 DRAINAGE

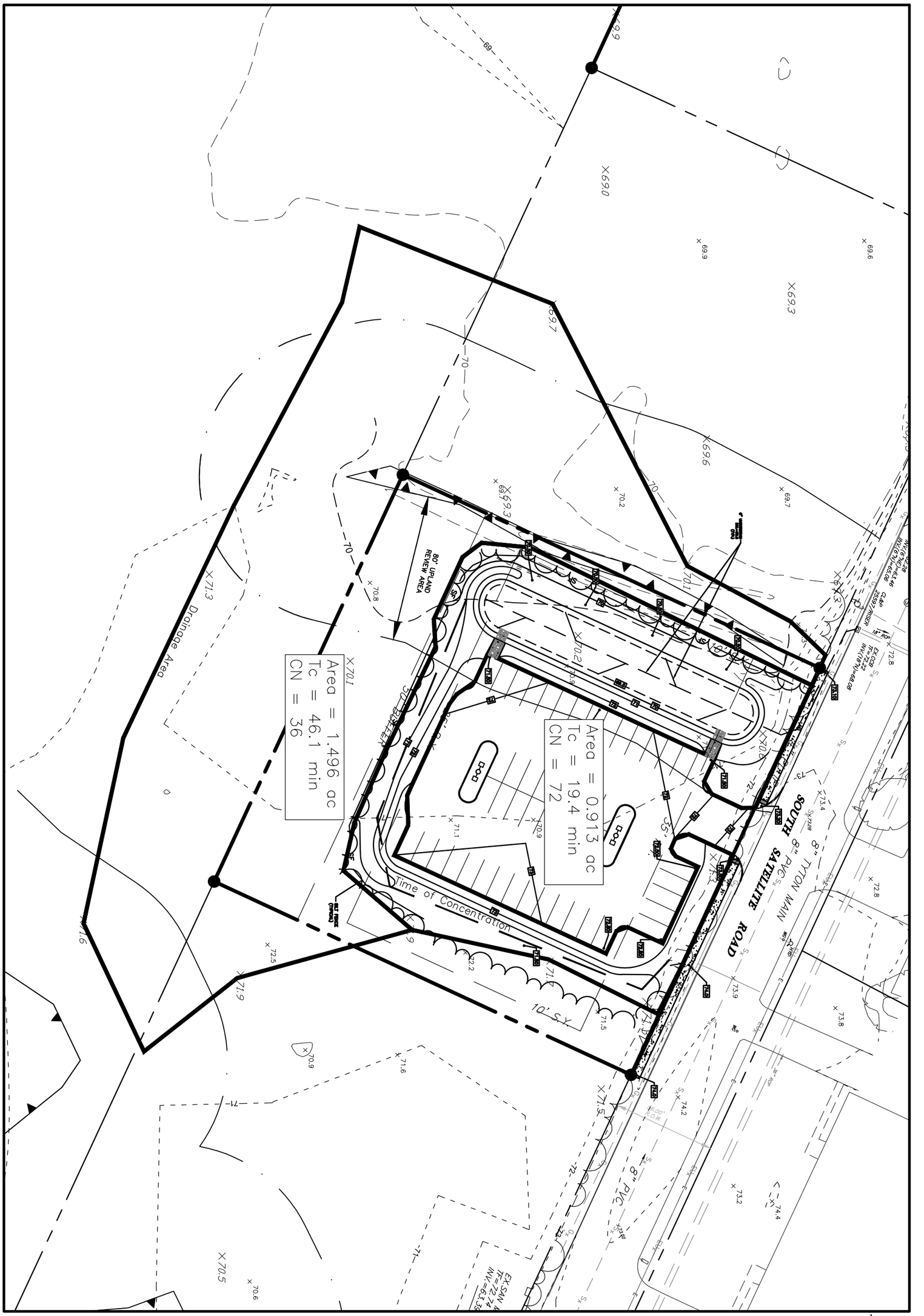
EXISTING CONDITIONS

UNITEX

150 SOUTH SATELLITE ROAD
SOUTH WINDSOR, CT

PROJECT NO.:	4652
DATE:	4/30/21
DESIGN BY:	SPC
DRAWN BY:	SPC

pd Design Professionals
CIVIL & TRAFFIC ENGINEERS / PLANNERS / SURVEYORS
GIS ANALYSTS / LANDSCAPE ARCHITECTS
21 JEFFREY DRIVE
P.O. BOX 1167
SOUTH WINDSOR, CT 06074
860-291-8755 - T
860-291-8757 - F
www.designprofessionalsinc.com



SCALE: 1" = 50'

0 25' 50' 100'

NO.	DATE	REVISIONS	BY

DRAWING

4652 DRAINAGE

PROPOSED CONDITIONS

UNITEX

150 SOUTH SATELLITE ROAD
SOUTH WINDSOR, CT

PROJECT NO.:	4652
DATE:	4/30/21
DESIGN BY:	SPC
DRAWN BY:	SPC

design professionals
CIVIL & TRAFFIC ENGINEERS / PLANNERS / SURVEYORS
GIS ANALYSTS / LANDSCAPE ARCHITECTS
21 JEFFREY DRIVE
P.O. BOX 1167
SOUTH WINDSOR, CT 06074
860-291-8755 - T
860-291-8757 - F
www.designprofessionalsinc.com