Issue for Permit

Drainage Calculations

Litchfield Civil Design

Silicon Ranch Corporation

Litchfield, Connecticut

June 9, 2023

(Revision 8)

Version Control

Version	Date	Description/Summary of Changes
Revision 0	9-30-20	Issued for Permit
Revision 1	1-18-21	Amended 1.1 Project Description
Revision 2	2-3-21	Amended 2.3.1 Wetland Description and updated maps in Appendix B & F
Revision 3	6-25-21	
Revision 4	4-8-22	
Revision 5	12-1-22	Revisions per CTDEEP comments
Revision 6	2-9-23	Revisions per CTDEEP comments
Revision 7	4-17-23	Revisions per CTDEEP comments
Revision 8	6-9-23	Revisions per CTDEEP and Dam Safety comments

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1. Narrative

1.1. Project Description

The owner intends to develop a photovoltaic solar site consisting of solar panels, inverters, and internal access roads. The panel and inverter layout was completed by Solvida. The project site is located on approximately 212 acres partially in the City of Torrington and Town of Litchfield. This report summarizes the proposed facilities and impacts to the stormwater runoff.

1.2. Existing Conditions

The area on site where project layout is proposed consists of a mix of vacant grassed, wooded, and previously farmed land. The parcels to the South are mostly fields with good crop residue and undeveloped adjacent properties. On the Northern half, some parcels are forested while others are cultivated areas with residential communities in the adjacent areas. For this project, the existing area was divided into fourteen drainage study areas based on areas of developable land for optimal solar panel orientation and placement. Analysis points were chosen for each of these areas to analyze drainage such that existing flow patterns are maintained, and offsite flows do not enter the study areas. Only one drainage area, Drainage Area 14, was determined to have run-on contributing to it and it was accounted for in the discharge and water quality requirements.

1.3. Proposed Conditions

Under post-developed conditions, the overland drainage pattern will mimic the existing conditions. The ground cover in the Limits of Disturbance will change from wooded areas to open spaces with grass covering the area and in good condition, which creates the largest impact to the peak flows. Graded areas will be stabilized with vegetation, therefore the only effect of the time of concentration for the runoff is due to a lower Manning's N number because the proposed site will consist of grass within the Limits of Disturbance. Refer to the drainage area map in **Appendix C**. In compliance with Appendix I of the CT DEEP manual, Stormwater Management at Solar Array Construction Projects, the proposed conditions of the 2-year (24 hour), 10-year (24 hour), 25-year (24 hour), 50-year (24 hour), and 100-year (24 hour) storms were analyzed. Peak outflows for pre-developed and post-developed analyzed storms are in **Tables 2-6.**

2. Methodology

Sub-basins were developed and analyzed based on the existing and proposed land covers and the hydrologic soil groups for the site found in the Soil Survey of Litchfield, Connecticut. Gravel roadways, transformer pads, and solar arrays were accounted for as impervious for the design of water quality in the Weighted Curve Numbers (CN) calculation which was based on the TR-55 method. For water quantity and peak flow calculations, solar arrays are accounted for as fair grassed areas. The CN calculations account for soil compaction activities during the construction of the solar array by increasing the hydrologic soil group present on-site by one-half of the next higher group type. If the grade is adjusting ground elevation by 2' or greater, the hydrologic soil group was raised by an entire group. The Time of Concentrations were generated by using the velocity factors from the NRCS Part 630 of the National Engineering Handbook, Chapter 15 and limited to 100 feet for sheet flow. The curve number calculations can be found in **Appendix D**. The Soil Resource Report for the site can be found in **Appendix A.** The results of the CN and Time of Concentration can be found

in Appendix D and E respectively. This data, along with the drainage area, was input into HydroCAD to generate hydrographs. The output of the HydroCAD model can be found in Appendix C. The entire site consists of type A, B, C, and D soils, but primarily consists of soil type "C". The land use area is both wooded and pasture. The wooded land cover is sparsely covered in wood therefore fair hydrologic condition was used to compute the CN. Fair hydrologic condition was used woods land cover because from historical satellite images it appears that there is some forest litter which covers the soil. The pasture land cover is also covered in long grass and therefore fair hydrologic condition was used to compute the CN. For the existing and proposed conditions, the 2-year (24 hour), 10-year (24 hour), 25-year (24 hour), 50-year (24 hour), and 100-year (24 hour) storms were analyzed.

A hydrologic routing model was completed using the HydroCAD software program. The calculated drainage area size, composite curve number and time of concentration for each sub-drainage area was entered into the software. The total rainfall depths for the 2-year, 10-year, 25-year, and 100-year, 24-hour storm events were obtained from the National Oceanic and Atmospheric Administration (NOAA)'s website. The table gives rainfall amounts for the 2-yr, 10-yr, 25-yr, and 100-yr, 24-hr rainstorm events. The 50-yr, 24-hr storm was logarithmically interpolated. **Table 1** shows the values used to calculate the flows for this study.

Table 1: County Design Rainfall Amounts for Litchfield from NOAA

County	24-Hour Rainfall Amount (inches)				
	2-yr	10-yr	25-yr	50-yr	100-yr
Litchfield	3.51	5.70	7.07	8.06	9.18

The total rainfall depth was entered into the model and ran utilizing the NRCS Type III rainfall distribution with a fifteen minute time interval and antecedent moisture condition II.

Table 2: Pre- and Post-development for the 2-yr, 24-hr storm

Name	Area (ac)	Pre-Inflow Q2 (cfs)	Post-Inflow Q2 (cfs)	Pre-Inflow vs. Post-Inflow Q2	Post-Outflow Q2 (cfs)	Pre-Inflow vs. Post-Outflow Q2
1	1.28	2.38	2.52	0.14	0.54	-1.95
2a	3.85	6.74	6.81	0.07	5.94	-1.62
2b	4.02	3.39	4.89	1.5	1.45	-1.94
3	7.89	12.29	15.48	3.19	4.99	-7.3
5	1.68	4.10	3.49	-0.61	0.32	-3.78
7	4.07	2.66	5.59	2.93	0.37	-2.29
8/10*	28.04	50.26	48.07	-2.19	16.50	-33.76
9	6.81	11.44	10.47	-0.97	2.47	-8.97
11	3.19	1.22	3.09	1.87	0.20	-1.02
12	1.93	3.64	3.70	0.06	1.62	-2.02
14	4.60	5.76	8.02	2.26	6.61	0.85
15**	1.93	2.74	3.03	0.29	3.03	0.29

* One pond is used for basins 8 and 10. The Pre-Inflow vs. Post-Outflow shows the difference between the Post-Outflow vs. the combined Pre-Inflow.

**Due to the size of the subbasin, no pond was designed for this area.

Table 3: Pre- and Post-development for the 10-yr, 24-hr storm

Name	Area (ac)	Pre-Inflow Q10 (cfs)	Post-Inflow Q10 (cfs)	Pre-Inflow vs. Post-Inflow Q10	Post-Outflow Q10 (cfs)	Pre-Inflow vs. Post-Outflow Q10
1	1.28	5.10	5.10	0.00	4.55	-0.66
2a	3.85	14.16	14.33	0.17	13.73	-0.92
2b	4.02	9.27	11.47	2.20	10.61	1.34
3	7.89	26.88	31.37	4.49	27.22	0.33
5	1.68	7.62	7.07	-0.55	4.41	-3.21
7	4.07	7.78	11.80	4.02	2.72	-5.06
8/10*	28.04	97.20	97.59	0.39	78.98	-19.22
9	6.81	22.41	21.28	-1.13	18.29	-4.12
11	3.19	4.14	7.42	3.28	4.88	0.74
12	1.93	7.16	7.63	0.47	7.21	0.05
14	4.60	12.56	15.99	3.43	15.69	3.13
15**	1.93	6.00	6.39	0.39	6.39	0.39

* One pond is used for basins 8 and 10. The Pre-Inflow vs. Post-Outflow shows the difference between the Post-Outflow vs. the combined Pre-Inflow.

**Due to the size of the subbasin, no pond was designed for this area.

Table 4: Pre- and Post-development for the 25-yr, 24-hr storm

Name	Area (ac)	Pre-Inflow Q25 (cfs)	Post-Inflow Q25 (cfs)	Pre-Inflow vs. Post-Inflow Q25	Post-Outflow Q25 (cfs)	Pre-Inflow vs. Post-Outflow Q25
1	1.28	6.85	6.75	-0.10	6.62	-0.24
2a	3.85	18.93	19.17	0.24	18.49	-0.33
2b	4.02	13.39	15.85	2.46	15.14	1.75
3	7.89	36.40	41.48	5.08	37.03	0.63
5	1.68	9.81	9.34	-0.47	8.53	-1.28
7	4.07	11.43	15.80	4.37	8.59	-2.84
8/10*	28.04	126.54	129.12	2.58	114.96	-13.39
9	6.81	29.34	28.17	-1.17	21.79	-7.6
11	3.19	6.32	10.34	4.02	9.24	2.92
12	1.93	9.37	10.15	0.78	9.45	0.08
14	4.60	17.03	21.04	4.01	21.04	3.01
15**	1.93	8.13	8.55	0.42	8.55	0.42

* One pond is used for basins 8 and 10. The Pre-Inflow vs. Post-Outflow shows the difference between the Post-Outflow vs. the combined Pre-Inflow.

**Due to the size of the subbasin, no pond was designed for this area.

Table 5: Pre- and Post-development for the 50-yr, 24-hr storm

Name	Area (ac)	Pre-Inflow Q50 (cfs)	Post-Inflow Q50 (cfs)	Pre-Inflow vs. Post-Inflow Q50	Post-Outflow Q50 (cfs)	Pre-Inflow vs. Post-Outflow Q50
1	1.28	8.13	7.94	-0.19	7.82	-0.31
2a	3.85	22.39	22.68	0.29	21.96	-0.17
2b	4.02	16.47	19.07	2.6.	18.29	1.82
3	7.89	43.33	48.78	5.45	38.10	-5.23
5	1.68	11.38	10.98	-0.40	10.50	-0.88
7	4.07	14.19	18.70	4.51	12.98	-1.21
8/10*	28.04	147.67	151.91	4.24	120.83	-26.74
9	6.81	34.33	33.13	-1.20	26.85	-7.27
11	3.19	7.98	12.48	4.50	11.92	3.94
12	1.93	10.96	11.97	1.01	11.97	0.2
14	4.60	20.29	24.69	4.40	23.26	2.97
15**	1.93	9.68	10.12	0.44	10.12	0.44

* One pond is used for basins 8 and 10. The Pre-Inflow vs. Post-Outflow shows the difference between the Post-Outflow vs. the combined Pre-Inflow.

**Due to the size of the subbasin, no pond was designed for this area.

Table 6: Pre- and Post-development for the 100-yr, 24-hr storm

Name	Area (ac)	Pre-Inflow Q100 (cfs)	Post-Inflow Q100 (cfs)	Pre-Inflow vs. Post-Inflow Q100	Post-Outflow Q100 (cfs)	Pre-Inflow vs. Post-Outflow Q100
1	1.28	9.57	9.28	-0.29	9.16	-0.41
2a	3.85	26.31	26.65	0.34	25.88	-0.06
2b	4.02	20.02	22.74	2.72	21.87	1.85
3	7.89	51.19	57.02	5.83	47.63	-3.56
5	1.68	13.15	12.83	-0.32	12.45	-0.7
7	4.07	17.38	21.98	4.60	17.92	0.54
8/10	28.04	171.46	177.55	6.09	138.07	-33.12
9	6.81	39.95	38.74	-1.21	32.92	-6.8
11	3.19	9.93	14.93	5.00	14.50	4.57
12	1.93	12.76	14.03	1.27	13.13	0.37
14	4.60	23.99	28.81	4.82	27.08	3.09
15**	1.93	11.44	11.89	0.45	11.89	0.45

* One pond is used for basins 8 and 10. The Pre-Inflow vs. Post-Outflow shows the difference between the Post-Outflow vs. the combined Pre-Inflow.

**Due to the size of the subbasin, no pond was designed for this area.

Table 7: Pre VS Post Discharge Summary (Entire site)

Condition	Pre VS Post Discharge Summary (cfs)				
	2-yr	10-yr	25-yr	50-yr	100-yr
Pre-Development	106.62	220.28	293.54	346.80	407.15
Post-Development	43.11	193.07	276.67	314.36	373.37

* Discharges totals for Pre and Post are the sum of all pre-inflow and post-outflow for all drainage areas, respectively.

Table 7 above summarizes the Pre vs Post discharges at the downstream analysis point. The post-development flows are less than the Pre-development discharges, therefore, demonstrating no net increase in peak flows for the entire project and no adverse impacts to downstream properties.

2.1. Water Quality

In compliance with CT DEEP regulations for water quality, the volume generated by one inch of rainfall over each subbasin is being retained and treated on site. The site meets the Water Quality Volume (WQV) with a combination of wet swales and pocket ponds. In pocket ponds, the invert of the orifice at the outlet structure was set to be at the WQV water surface elevation, accounting only for space above the assumed groundwater level (2 ft below ground surface). A minimum of 50% of the water quality volume is provided in the permanent pool and the remainder is provided in the extended detention volume. Sediment forebays have been provided above all pocket ponds to provide at least 25% of the water quality volume. For two subbasins that had high groundwater table constraints, wet swales with forebays were used for both water quality and quantity control. In the remaining subbasins, wet swales with forebays were used to hold the entire water quality volume which then discharge into dry detention basins for water quantity control. See **Appendix I** for summary of the water quality mitigation measures.

2.2. Pond Calculation

In every basin, the post-development discharge was greater than the pre-development discharges. As part of the Erosion and Sediment Control Plan (further discussed in Section 3), sediment basins and sediment traps will be used to mitigate the short-term impacts of construction. In order to keep the post-development flows at or below the pre-development flows, these sediment basins will be converted to ponds. For these basins, a pond was designed to attenuate the 100-year storm discharge. The pond will be converted from the erosion and sediment control sediment basin in Phase 3. The dry detention ponds consist of an outfall structure with orifice, a weir, culvert and a spillway for 100-year storm discharge. Riprap armoring is provided at pipe outlets and spillways. The pocket ponds have an outfall structure with a low flow orifice and a weir wall outletting to riprap aprons. Riprap aprons are positioned on slopes less than or equal to fifteen percent. Pond calculations can be found in **Appendix C** of this report.

There is one wetland culvert crossing, C-1, proposed on site. This is an existing crossing, which will be improved with a bottomless arch culvert. This culvert was designed using AutoCAD Hydraflow Hydrographs Extension and SCS Curve Number method. These culverts were designed in accordance

with CT DEEP Stream Crossing Guidelines and USACE Openness Ratio Calculations. For additional information on the culvert design calculations see **Appendix H**.

Where sheet flow was not feasible, permanent ditches or swales were incorporated to help the water flow to the stormwater management areas. The ditches were designed using AutoCAD Hydraflow Express using the 10-yr (24 hour) storm event and CT DEEP conveyance criteria. Where more than one ditch was needed for one drainage area, the flows were calculated as a percentage of the overall subbasin flows per the proposed HydroCAD modeling results. These ditches consist of both trapezoidal and triangular channels. For additional information on ditch design calculations see Appendix H.

2.3. Wetlands, FEMA Floodplains, and Coastal Boundaries

2.3.1. Wetlands

Wetlands have been delineated for the site and a map of the wetlands can be found in **Appendix F**. Design has been considered in a way to reduce impacts to wetlands.

2.3.2. FEMA Floodplains

FEMA Floodplains are not located on the site. FEMA Maps of the site can be found in **Appendix B**.

2.3.3. Coastal Boundaries

Coastal Boundaries are not located near the site and were not a necessary consideration for this project. See FEMA Maps located in **Appendix B**.

3. Erosion and Sediment Control Plan

3.1. Erosion and Sediment Controls

An Erosion and Sediment (E&S) Control Plan has been developed to mitigate the short-term impacts of the site improvements during construction and includes the following information: descriptive specifications concerning land grading, topsoiling, temporary vegetative cover, permanent vegetative cover, vegetative cover selection and mulching, sediment basins, sediment traps, filter rolls, and erosion checks. Details can be found in the E&S plans and have been provided for all erosion controls as necessary. In all cases, the E&S Control Plan shall be implemented in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control. See **Appendix G** for the Erosion and Sediment Control Calculations.

3.2. Temporary Stabilization

Temporary stabilization for the site includes silt fence, filter rolls, ditch checks, sediment basins, riprap outlet protection, and construction entrances to reduce vehicular tracking of sediment. All E&S control measures are designed in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

Sediment basins or traps will be constructed in each drainage area that will be converted to a permanent stormwater BMP at the end of the project to keep the post-development flows at or below the pre-development flows. Sediment basins are designed to retain the 10-year, 24-hour, Type III storm with a minimum retention time of 10 hours (600 minutes) in addition to dry and wet

storage volumes indicated in section 5-11 of the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

See **Appendix G** for the Erosion and Sediment Control calculations for the sediment basins. These stabilization practices shall be installed and reinforced on the site per the E&S plans before any construction occurs and in accordance with the progressing phases of the project.

3.3. Permanent Stabilization

Permanent stabilization practice on the site will include stabilization of the site with permanent seed. Sediment basins and traps will be constructed in each drainage area that will be converted to stormwater ponds, infiltration trenches, and wet swales at the end of the project to keep the post-development flows at or below the pre-development flows. Stabilization and permanent seed will be in accordance with the project specifications and plans. Construction of E&S control measures are in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

3.4. Sediment Tracking and Maintenance of Controls

The entrance of the construction site shall be installed and maintained to reduce vehicular tracking of sediment. The installation of these practices shall be according to the plans and all maintenance of controls shall be according to the E&S plans.

E&S controls will be installed and maintained throughout the construction in accordance with local, state, and federal requirements.

3.5. Sediment Removal Efficiency

In areas where disturbance is occurring within 100’ of a stream or wetland, the entire contributing drainage area was analyzed in SEDCAD to ensure 90% sediment removal efficiency. Sediment trap 5 and sediment basin 3 have been modified from the CTDEEP standard to ensure this amount of sediment removal. SEDCAD calculations can be seen in **Appendix G**.

Appendix A

Soil Resource Report and Geotechnical Report

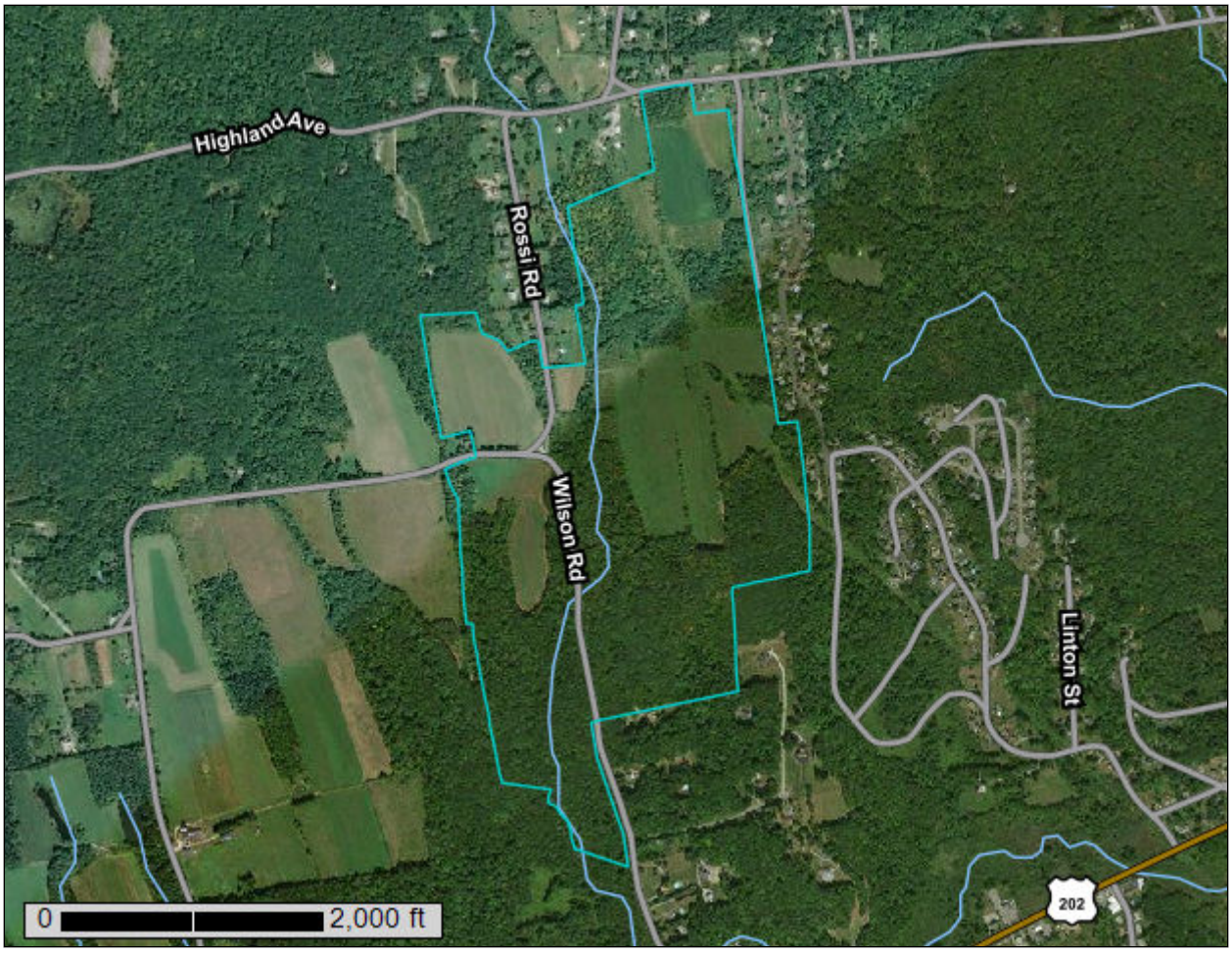
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for State of Connecticut



August 10, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

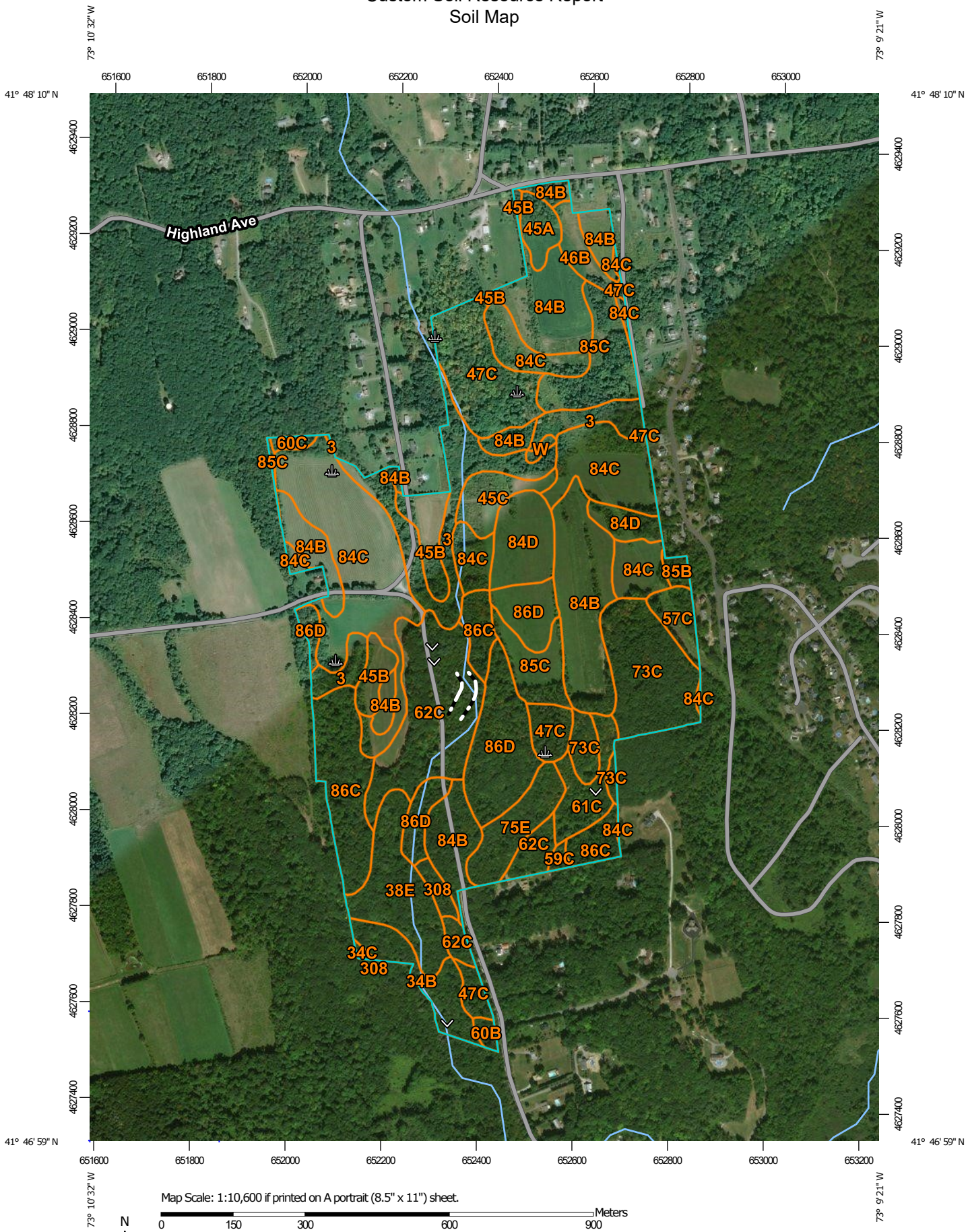
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:10,600 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

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.

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 2, 2015—Sep 17, 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
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	14.8	6.8%
34B	Merrimac fine sandy loam, 3 to 8 percent slopes	5.0	2.3%
34C	Merrimac fine sandy loam, 8 to 15 percent slopes	0.2	0.1%
38E	Hinckley loamy sand, 15 to 45 percent slopes	8.9	4.1%
45A	Woodbridge fine sandy loam, 0 to 3 percent slopes	2.3	1.1%
45B	Woodbridge fine sandy loam, 3 to 8 percent slopes	5.6	2.6%
45C	Woodbridge fine sandy loam, 8 to 15 percent slopes	3.4	1.6%
46B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	2.3	1.1%
47C	Woodbridge fine sandy loam, 3 to 15 percent slopes, extremely stony	13.2	6.0%
57C	Gloucester gravelly sandy loam, 8 to 15 percent slopes	2.4	1.1%
59C	Gloucester gravelly sandy loam, 3 to 15 percent slopes, extremely stony	0.5	0.2%
60B	Canton and Charlton fine sandy loams, 3 to 8 percent slopes	0.6	0.3%
60C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes	0.6	0.3%
61C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes, very stony	4.3	2.0%
62C	Canton and Charlton fine sandy loams, 3 to 15 percent slopes, extremely stony	17.4	8.0%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	12.9	5.9%
75E	Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	5.2	2.4%
84B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes	31.9	14.7%
84C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes	36.2	16.6%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
84D	Paxton and Montauk fine sandy loams, 15 to 25 percent slopes	7.8	3.6%
85B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes, very stony	0.8	0.4%
85C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony	11.1	5.1%
86C	Paxton and Montauk fine sandy loams, 3 to 15 percent slopes, extremely stony	13.4	6.2%
86D	Paxton and Montauk fine sandy loams, 15 to 35 percent slopes, extremely stony	15.6	7.2%
308	Udorthents, smoothed	1.1	0.5%
W	Water	0.4	0.2%
Totals for Area of Interest		**217.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

State of Connecticut

3—Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2t2qt
Elevation: 0 to 1,480 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Ridgebury, extremely stony, and similar soils: 40 percent
Leicester, extremely stony, and similar soils: 35 percent
Whitman, extremely stony, and similar soils: 17 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ridgebury, Extremely Stony

Setting

Landform: Drumlins, depressions, drainageways, hills, ground moraines
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 6 inches: fine sandy loam
Bw - 6 to 10 inches: sandy loam
Bg - 10 to 19 inches: gravelly sandy loam
Cd - 19 to 66 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 15 to 35 inches to densic material
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D
Ecological site: F144AY009CT - Wet Till Depressions
Hydric soil rating: Yes

Description of Leicester, Extremely Stony

Setting

Landform: Ground moraines, depressions, drainageways, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Parent material: Coarse-loamy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 7 inches: fine sandy loam
Bg - 7 to 18 inches: fine sandy loam
BC - 18 to 24 inches: fine sandy loam
C1 - 24 to 39 inches: gravelly fine sandy loam
C2 - 39 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 9.0 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 6 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B/D
Ecological site: F144AY009CT - Wet Till Depressions
Hydric soil rating: Yes

Description of Whitman, Extremely Stony

Setting

Landform: Depressions, drainageways, hills, ground moraines, drumlins
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 1 inches: peat

A - 1 to 10 inches: fine sandy loam
Bg - 10 to 17 inches: gravelly fine sandy loam
Cdg - 17 to 61 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 7 to 38 inches to densic material
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144AY009CT - Wet Till Depressions
Hydric soil rating: Yes

Minor Components

Woodbridge, extremely stony

Percent of map unit: 6 percent
Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Swansea

Percent of map unit: 2 percent
Landform: Swamps, bogs
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

34B—Merrimac fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tyqs
Elevation: 0 to 1,290 feet

Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Merrimac and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Merrimac

Setting

Landform: Kames, eskers, moraines, outwash terraces, outwash plains
Landform position (two-dimensional): Backslope, footslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile

Ap - 0 to 10 inches: fine sandy loam
Bw1 - 10 to 22 inches: fine sandy loam
Bw2 - 22 to 26 inches: stratified gravel to gravelly loamy sand
2C - 26 to 65 inches: stratified gravel to very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 1.4 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water capacity: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

Sudbury

Percent of map unit: 5 percent
Landform: Outwash plains, terraces, deltas
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip

Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Hinckley

Percent of map unit: 5 percent
Landform: Deltas, outwash plains, eskers, kames
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Windsor

Percent of map unit: 3 percent
Landform: Outwash plains, deltas, dunes, outwash terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Agawam

Percent of map unit: 2 percent
Landform: Outwash terraces, outwash plains, kames, eskers, stream terraces, moraines
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

34C—Merrimac fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2tyqt
Elevation: 0 to 1,030 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Merrimac and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Merrimac

Setting

Landform: Eskers, outwash terraces, kames, moraines, outwash plains

Landform position (two-dimensional): Backslope, footslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile

Ap - 0 to 10 inches: fine sandy loam
Bw1 - 10 to 22 inches: fine sandy loam
Bw2 - 22 to 26 inches: stratified gravel to gravelly loamy sand
2C - 26 to 65 inches: stratified gravel to very gravelly sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 1.4 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water capacity: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 5 percent
Landform: Outwash terraces, deltas, dunes, outwash plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Hinckley

Percent of map unit: 5 percent
Landform: Outwash plains, eskers, kames, deltas
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Outwash plains, terraces, deltas
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

38E—Hinckley loamy sand, 15 to 45 percent slopes

Map Unit Setting

National map unit symbol: 2svmj
Elevation: 0 to 1,280 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Hinckley and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Kames, eskers, kame terraces, outwash plains, moraines, outwash terraces, outwash deltas
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, riser
Down-slope shape: Linear, convex, concave
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 15 to 45 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Merrimac

Percent of map unit: 5 percent
Landform: Kames, eskers, moraines, outwash terraces, outwash plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, crest, head slope, nose slope, riser
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Windsor

Percent of map unit: 5 percent
Landform: Outwash deltas, moraines, kames, eskers, kame terraces, outwash plains, outwash terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, riser
Down-slope shape: Concave, linear, convex
Across-slope shape: Linear, concave, convex
Hydric soil rating: No

Agawam

Percent of map unit: 3 percent
Landform: Kames, moraines, outwash terraces, outwash deltas, kame terraces, eskers, outwash plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, riser
Down-slope shape: Linear, convex, concave
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Sudbury

Percent of map unit: 2 percent
Landform: Eskers, kames, moraines, outwash terraces, kame terraces, outwash plains, outwash deltas
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave

Hydric soil rating: No

45A—Woodbridge fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2w686
Elevation: 0 to 1,420 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Woodbridge and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 18 inches: fine sandy loam
Bw2 - 18 to 30 inches: fine sandy loam
Cd - 30 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D

Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Paxton
Percent of map unit: 7 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury
Percent of map unit: 6 percent
Landform: Drumlins, drainageways, ground moraines, depressions, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Whitman, extremely stony
Percent of map unit: 1 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sutton
Percent of map unit: 1 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

45B—Woodbridge fine sandy loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 2t2ql
Elevation: 0 to 1,470 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Woodbridge, fine sandy loam, and similar soils: 82 percent

Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Fine Sandy Loam

Setting

Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 18 inches: fine sandy loam
Bw2 - 18 to 30 inches: fine sandy loam
Cd - 30 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Paxton

Percent of map unit: 10 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury

Percent of map unit: 8 percent
Landform: Ground moraines, depressions, drainageways, hills
Landform position (two-dimensional): Toeslope, backslope, footslope
Landform position (three-dimensional): Base slope, head slope, dip
Down-slope shape: Concave

Across-slope shape: Concave
Hydric soil rating: Yes

45C—Woodbridge fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2w689
Elevation: 0 to 1,370 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Woodbridge and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 18 inches: fine sandy loam
Bw2 - 18 to 30 inches: fine sandy loam
Cd - 30 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C/D
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Paxton
Percent of map unit: 10 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury
Percent of map unit: 4 percent
Landform: Drainageways, hills, ground moraines, depressions, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sutton
Percent of map unit: 1 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

46B—Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting
National map unit symbol: 2t2qr
Elevation: 0 to 1,440 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Woodbridge, very stony, and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Very Stony

Setting

Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 9 inches: fine sandy loam
Bw1 - 9 to 20 inches: fine sandy loam
Bw2 - 20 to 32 inches: fine sandy loam
Cd - 32 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 19 to 27 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C/D
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Paxton, very stony

Percent of map unit: 10 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Ridgebury, very stony

Percent of map unit: 8 percent
Landform: Ground moraines, depressions, drumlins, drainageways, hills
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave

Across-slope shape: Concave
Hydric soil rating: Yes

47C—Woodbridge fine sandy loam, 3 to 15 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w685
Elevation: 10 to 1,470 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Woodbridge, extremely stony, and similar soils: 83 percent
Minor components: 17 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Extremely Stony

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 9 inches: fine sandy loam
Bw1 - 9 to 20 inches: fine sandy loam
Bw2 - 20 to 32 inches: fine sandy loam
Cd - 32 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 19 to 27 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C/D
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Paxton, extremely stony

Percent of map unit: 9 percent
Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Ridgebury, extremely stony

Percent of map unit: 5 percent
Landform: Drumlins, ground moraines, drainageways, hills, depressions
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sutton, extremely stony

Percent of map unit: 2 percent
Landform: Ground moraines, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Whitman, extremely stony

Percent of map unit: 1 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

57C—Gloucester gravelly sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9lpf
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F

Frost-free period: 140 to 185 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Gloucester

Setting

Landform: Hills
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 4 inches: gravelly sandy loam
Bw1 - 4 to 12 inches: gravelly sandy loam
Bw2 - 12 to 25 inches: very gravelly loamy sand
C1 - 25 to 35 inches: very gravelly loamy coarse sand
C2 - 35 to 60 inches: very gravelly loamy coarse sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: F144AY032NH - Dry Till Uplands
Hydric soil rating: No

Minor Components

Hinckley

Percent of map unit: 5 percent
Landform: Terraces, eskers, kames, outwash plains
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Canton

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Convex

Hydric soil rating: No

Charlton

Percent of map unit: 3 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Paxton

Percent of map unit: 3 percent
Landform: Drumlins, hills, till plains
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Sutton

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Leicester

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

59C—Gloucester gravelly sandy loam, 3 to 15 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 9lpk
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Gloucester

Setting

Landform: Hills
Down-slope shape: Convex

Across-slope shape: Convex
Parent material: Sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 4 inches: gravelly sandy loam
Bw1 - 4 to 12 inches: gravelly sandy loam
Bw2 - 12 to 25 inches: very gravelly loamy sand
C1 - 25 to 35 inches: very gravelly loamy coarse sand
C2 - 35 to 60 inches: very gravelly loamy coarse sand

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: F144AY032NH - Dry Till Uplands
Hydric soil rating: No

Minor Components

Hinckley

Percent of map unit: 5 percent
Landform: Eskers, kames, outwash plains, terraces
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Canton

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Paxton

Percent of map unit: 3 percent
Landform: Drumlins, hills, till plains
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Charlton

Percent of map unit: 3 percent
Landform: Hills
Down-slope shape: Linear

Across-slope shape: Linear
Hydric soil rating: No

Sutton

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Leicester

Percent of map unit: 2 percent
Landform: Drainageways, depressions
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

60B—Canton and Charlton fine sandy loams, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w81s
Elevation: 0 to 1,460 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Canton and similar soils: 50 percent
Charlton and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Landform: Ridges, moraines, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, nose slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: gravelly fine sandy loam
2C - 26 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Charlton

Setting

Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw - 7 to 22 inches: gravelly fine sandy loam
C - 22 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Sutton

Percent of map unit: 5 percent
Landform: Hills, ridges, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Leicester

Percent of map unit: 5 percent
Landform: Drainageways, ground moraines, hills, depressions
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: Yes

Chatfield

Percent of map unit: 5 percent
Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

60C—Canton and Charlton fine sandy loams, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2w81z
Elevation: 0 to 1,620 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Canton and similar soils: 50 percent
Charlton and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Landform: Ridges, moraines, hills

Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, nose slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: gravelly fine sandy loam
2C - 26 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Charlton

Setting

Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw - 7 to 22 inches: gravelly fine sandy loam
C - 22 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
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: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Chatfield

Percent of map unit: 5 percent
Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Leicester

Percent of map unit: 5 percent
Landform: Hills, depressions, drainageways, ground moraines
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: Yes

Sutton

Percent of map unit: 5 percent
Landform: Ground moraines, hills, ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

61C—Canton and Charlton fine sandy loams, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w820
Elevation: 0 to 1,540 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Canton, very stony, and similar soils: 50 percent
Charlton, very stony, and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton, Very Stony

Setting

Landform: Ridges, hills, moraines
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Charlton, Very Stony

Setting

Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex

Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam
Bw - 4 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Chatfield, very stony

Percent of map unit: 5 percent
Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Leicester, very stony

Percent of map unit: 5 percent
Landform: Hills, ground moraines, depressions, drainageways
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: Yes

Sutton, very stony

Percent of map unit: 5 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear

Hydric soil rating: No

62C—Canton and Charlton fine sandy loams, 3 to 15 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2wks7
Elevation: 0 to 1,310 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Canton, extremely stony, and similar soils: 50 percent
Charlton, extremely stony, and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton, Extremely Stony

Setting

Landform: Ridges, hills, moraines
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Charlton, Extremely Stony

Setting

Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam
Bw - 4 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Leicester, extremely stony

Percent of map unit: 5 percent
Landform: Depressions, drainageways, hills, ground moraines
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave

Hydric soil rating: Yes

Sutton, extremely stony

Percent of map unit: 5 percent
Landform: Ground moraines, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Chatfield, extremely stony

Percent of map unit: 5 percent
Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

73C—Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky

Map Unit Setting

National map unit symbol: 2w698
Elevation: 0 to 1,550 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Charlton, very stony, and similar soils: 50 percent
Chatfield, very stony, and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton, Very Stony

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam

Bw - 4 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Chatfield, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Sutton, very stony
Percent of map unit: 5 percent
Landform: Ground moraines, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop
Percent of map unit: 5 percent
Hydric soil rating: No

Hollis, very stony
Percent of map unit: 5 percent
Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Leicester, very stony
Percent of map unit: 5 percent
Landform: Drainageways, depressions
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

75E—Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes

Map Unit Setting
National map unit symbol: 9lqp
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition
Hollis and similar soils: 35 percent
Chatfield and similar soils: 30 percent
Rock outcrop: 15 percent

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

Description of Hollis

Setting

Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Oa - 0 to 1 inches: highly decomposed plant material
A - 1 to 6 inches: gravelly fine sandy loam
Bw1 - 6 to 9 inches: channery fine sandy loam
Bw2 - 9 to 15 inches: gravelly fine sandy loam
2R - 15 to 80 inches: bedrock

Properties and qualities

Slope: 15 to 45 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Chatfield

Setting

Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Oa - 0 to 1 inches: highly decomposed plant material
A - 1 to 6 inches: gravelly fine sandy loam
Bw1 - 6 to 15 inches: gravelly fine sandy loam
Bw2 - 15 to 29 inches: gravelly fine sandy loam
2R - 29 to 80 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 45 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Rock Outcrop

Properties and qualities

Slope: 15 to 45 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Runoff class: Very high

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Minor Components

Charlton

Percent of map unit: 7 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Leicester

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Sutton

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Unnamed, red parent material

Percent of map unit: 1 percent
Hydric soil rating: No

Brimfield

Percent of map unit: 1 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Unnamed, sandy subsoil

Percent of map unit: 1 percent
Hydric soil rating: No

84B—Paxton and Montauk fine sandy loams, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t2qn
Elevation: 0 to 1,570 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Paxton and similar soils: 55 percent
Montauk and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 18 to 39 inches to densic material
Drainage class: Well drained

Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Description of Montauk

Setting

Landform: Drumlins, hills
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

A - 0 to 4 inches: fine sandy loam
Bw1 - 4 to 14 inches: fine sandy loam
Bw2 - 14 to 25 inches: sandy loam
2Cd1 - 25 to 39 inches: gravelly loamy coarse sand
2Cd2 - 39 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 38 inches to densic material
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 24 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Ridgebury

Percent of map unit: 5 percent
Landform: Hills, ground moraines, depressions, drainageways
Landform position (two-dimensional): Toeslope, backslope, footslope

Landform position (three-dimensional): Base slope, head slope, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Woodbridge

Percent of map unit: 5 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Charlton

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

84C—Paxton and Montauk fine sandy loams, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2w67b
Elevation: 0 to 1,550 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Paxton and similar soils: 55 percent
Montauk and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam

Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Description of Montauk

Setting

Landform: Recessionial moraines, drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 4 inches: fine sandy loam
Bw1 - 4 to 26 inches: fine sandy loam
Bw2 - 26 to 34 inches: sandy loam
2Cd - 34 to 72 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Woodbridge
Percent of map unit: 6 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Charlton
Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury
Percent of map unit: 3 percent
Landform: Hills, depressions, drumlins, drainageways, ground moraines
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Stockbridge
Percent of map unit: 1 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

84D—Paxton and Montauk fine sandy loams, 15 to 25 percent slopes

Map Unit Setting
National map unit symbol: 2w67g
Elevation: 30 to 1,470 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Paxton and similar soils: 55 percent
Montauk and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Description of Montauk

Setting

Landform: Drumlins, hills, ground moraines, recessionial moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 4 inches: fine sandy loam
Bw1 - 4 to 26 inches: fine sandy loam
Bw2 - 26 to 34 inches: sandy loam
2Cd - 34 to 72 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Charlton

Percent of map unit: 6 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Woodbridge

Percent of map unit: 5 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury

Percent of map unit: 3 percent
Landform: Drainageways, hills, ground moraines, depressions, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Stockbridge

Percent of map unit: 1 percent

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

85B—Paxton and Montauk fine sandy loams, 3 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w679
Elevation: 0 to 1,530 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Paxton, very stony, and similar soils: 55 percent
Montauk, very stony, and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton, Very Stony

Setting

Landform: Drumlins, ground moraines, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 10 inches: fine sandy loam
Bw1 - 10 to 17 inches: fine sandy loam
Bw2 - 17 to 28 inches: fine sandy loam
Cd - 28 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Description of Montauk, Very Stony

Setting

Landform: Ground moraines, recessionial moraines, drumlins, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 6 inches: fine sandy loam
Bw1 - 6 to 28 inches: fine sandy loam
Bw2 - 28 to 36 inches: sandy loam
2Cd - 36 to 74 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Woodbridge, very stony
Percent of map unit: 8 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, summit, footslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Charlton, very stony
Percent of map unit: 3 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, summit, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury, very stony
Percent of map unit: 3 percent
Landform: Ground moraines, depressions, drumlins, drainageways, hills
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Stockbridge, very stony
Percent of map unit: 1 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

85C—Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony

Map Unit Setting
National map unit symbol: 2w67f
Elevation: 0 to 1,520 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Paxton, very stony, and similar soils: 55 percent
Montauk, very stony, and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton, Very Stony

Setting

Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 10 inches: fine sandy loam
Bw1 - 10 to 17 inches: fine sandy loam
Bw2 - 17 to 28 inches: fine sandy loam
Cd - 28 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Description of Montauk, Very Stony

Setting

Landform: Drumlins, hills, ground moraines, recessionial moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 6 inches: fine sandy loam
Bw1 - 6 to 28 inches: fine sandy loam
Bw2 - 28 to 36 inches: sandy loam
2Cd - 36 to 74 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Woodbridge, very stony

Percent of map unit: 6 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Charlton, very stony

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury, very stony

Percent of map unit: 3 percent
Landform: Ground moraines, depressions, drumlins, drainageways, hills
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Stockbridge, very stony

Percent of map unit: 1 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

86C—Paxton and Montauk fine sandy loams, 3 to 15 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w67d
Elevation: 20 to 1,490 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Paxton, extremely stony, and similar soils: 55 percent
Montauk, extremely stony, and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton, Extremely Stony

Setting

Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 10 inches: fine sandy loam
Bw1 - 10 to 17 inches: fine sandy loam
Bw2 - 17 to 28 inches: fine sandy loam
Cd - 28 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 43 inches to densic material

Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Description of Montauk, Extremely Stony

Setting

Landform: Drumlins, hills, ground moraines, recessionial moraines
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 6 inches: fine sandy loam
Bw1 - 6 to 28 inches: fine sandy loam
Bw2 - 28 to 36 inches: sandy loam
2Cd - 36 to 74 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Charlton, extremely stony
Percent of map unit: 6 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, summit, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Woodbridge, extremely stony
Percent of map unit: 5 percent
Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury, extremely stony
Percent of map unit: 3 percent
Landform: Drainageways, hills, ground moraines, depressions, drumlins
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Stockbridge, extremely stony
Percent of map unit: 1 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

86D—Paxton and Montauk fine sandy loams, 15 to 35 percent slopes, extremely stony

Map Unit Setting
National map unit symbol: 2w67c
Elevation: 0 to 1,400 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Paxton, extremely stony, and similar soils: 55 percent
Montauk, extremely stony, and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton, Extremely Stony

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 10 inches: fine sandy loam
Bw1 - 10 to 17 inches: fine sandy loam
Bw2 - 17 to 28 inches: fine sandy loam
Cd - 28 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Description of Montauk, Extremely Stony

Setting

Landform: Drumlins, ground moraines, recessionial moraines, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 6 inches: fine sandy loam
Bw1 - 6 to 28 inches: fine sandy loam
Bw2 - 28 to 36 inches: sandy loam
2Cd - 36 to 74 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Charlton, extremely stony

Percent of map unit: 6 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Woodbridge, extremely stony

Percent of map unit: 5 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury, extremely stony

Percent of map unit: 3 percent
Landform: Drainageways, hills, ground moraines, depressions, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Stockbridge, extremely stony

Percent of map unit: 1 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

308—Udorthents, smoothed

Map Unit Setting

National map unit symbol: 9lmj
Elevation: 0 to 2,000 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Udorthents

Setting

Down-slope shape: Convex
Across-slope shape: Linear

Typical profile

A - 0 to 5 inches: loam
C1 - 5 to 21 inches: gravelly loam
C2 - 21 to 80 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 35 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)
Depth to water table: About 24 to 54 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Unnamed, undisturbed soils
Percent of map unit: 7 percent
Hydric soil rating: No

Udorthents, wet substratum
Percent of map unit: 7 percent
Hydric soil rating: No

Urban land
Percent of map unit: 5 percent
Hydric soil rating: No

Rock outcrop
Percent of map unit: 1 percent
Hydric soil rating: No

W—Water

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Hydric Rating by Map Unit

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

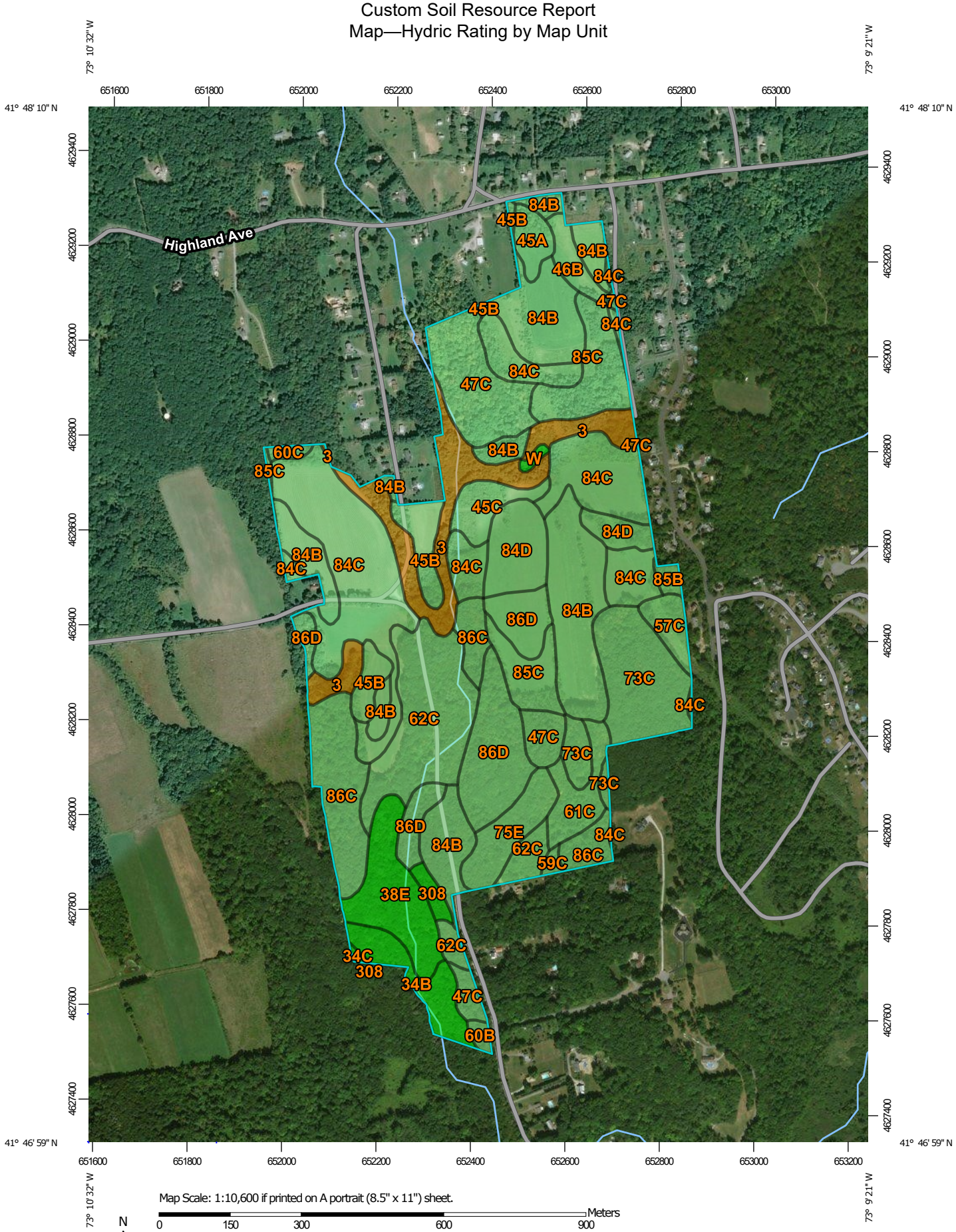
Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Custom Soil Resource Report
Map—Hydric Rating by Map Unit



Map Scale: 1:10,600 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

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 Rating Polygons
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

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.

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 2, 2015—Sep 17, 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.

Table—Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	94	14.8	6.8%
34B	Merrimac fine sandy loam, 3 to 8 percent slopes	0	5.0	2.3%
34C	Merrimac fine sandy loam, 8 to 15 percent slopes	0	0.2	0.1%
38E	Hinckley loamy sand, 15 to 45 percent slopes	0	8.9	4.1%
45A	Woodbridge fine sandy loam, 0 to 3 percent slopes	7	2.3	1.1%
45B	Woodbridge fine sandy loam, 3 to 8 percent slopes	8	5.6	2.6%
45C	Woodbridge fine sandy loam, 8 to 15 percent slopes	4	3.4	1.6%
46B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	8	2.3	1.1%
47C	Woodbridge fine sandy loam, 3 to 15 percent slopes, extremely stony	6	13.2	6.0%
57C	Gloucester gravelly sandy loam, 8 to 15 percent slopes	2	2.4	1.1%
59C	Gloucester gravelly sandy loam, 3 to 15 percent slopes, extremely stony	2	0.5	0.2%
60B	Canton and Charlton fine sandy loams, 3 to 8 percent slopes	5	0.6	0.3%
60C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes	5	0.6	0.3%
61C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes, very stony	5	4.3	2.0%
62C	Canton and Charlton fine sandy loams, 3 to 15 percent slopes, extremely stony	5	17.4	8.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	5	12.9	5.9%
75E	Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	5	5.2	2.4%
84B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes	5	31.9	14.7%
84C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes	3	36.2	16.6%
84D	Paxton and Montauk fine sandy loams, 15 to 25 percent slopes	3	7.8	3.6%
85B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes, very stony	3	0.8	0.4%
85C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony	3	11.1	5.1%
86C	Paxton and Montauk fine sandy loams, 3 to 15 percent slopes, extremely stony	3	13.4	6.2%
86D	Paxton and Montauk fine sandy loams, 15 to 35 percent slopes, extremely stony	3	15.6	7.2%
308	Udorthents, smoothed	0	1.1	0.5%
W	Water	0	0.4	0.2%
Totals for Area of Interest			**217.8**	**100.0%**

Rating Options—Hydric Rating by Map Unit

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

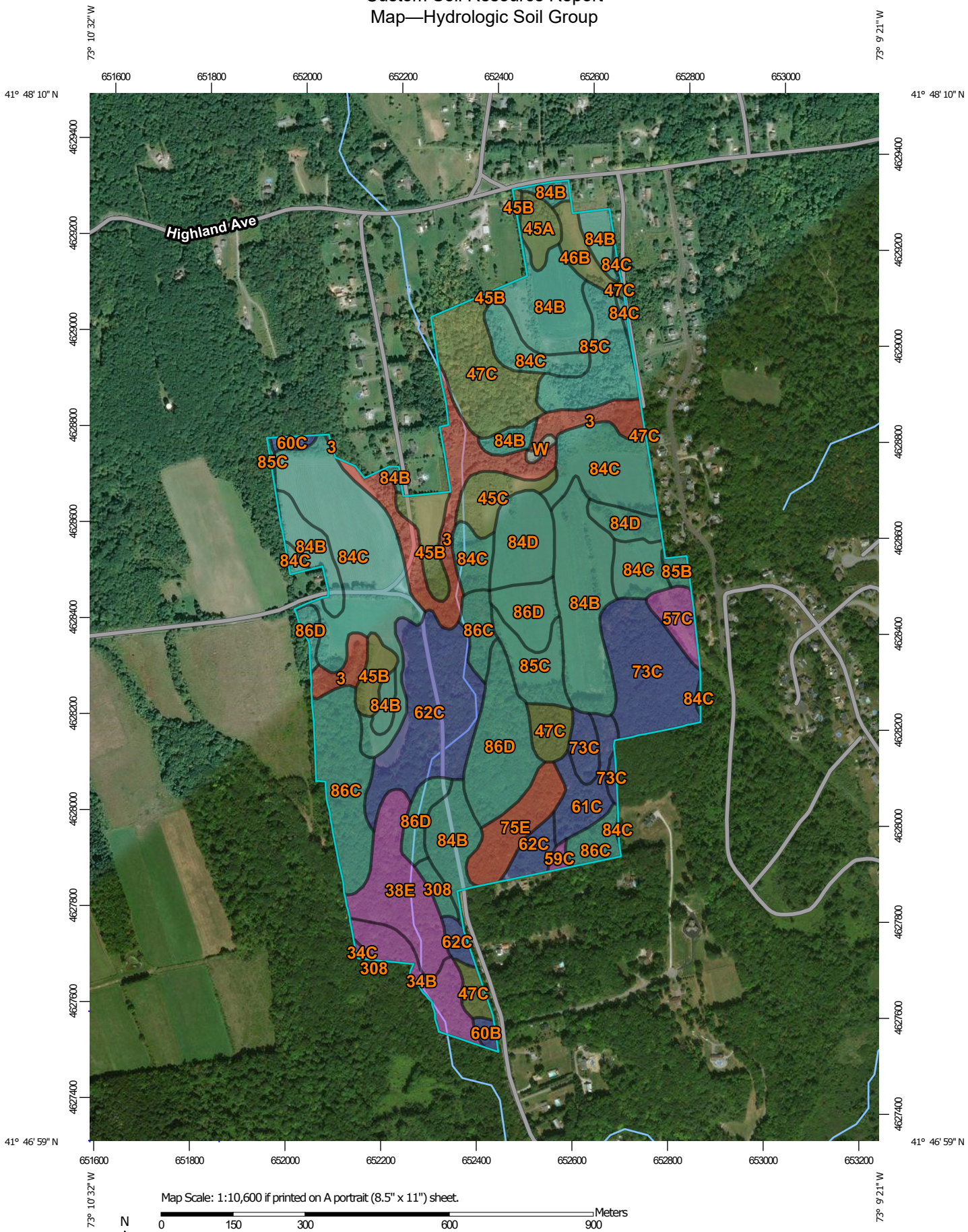
Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at

or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report
Map—Hydrologic Soil Group



Map Scale: 1:10,600 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

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 Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

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.

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 2, 2015—Sep 17, 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.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	D	14.8	6.8%
34B	Merrimac fine sandy loam, 3 to 8 percent slopes	A	5.0	2.3%
34C	Merrimac fine sandy loam, 8 to 15 percent slopes	A	0.2	0.1%
38E	Hinckley loamy sand, 15 to 45 percent slopes	A	8.9	4.1%
45A	Woodbridge fine sandy loam, 0 to 3 percent slopes	C/D	2.3	1.1%
45B	Woodbridge fine sandy loam, 3 to 8 percent slopes	C/D	5.6	2.6%
45C	Woodbridge fine sandy loam, 8 to 15 percent slopes	C/D	3.4	1.6%
46B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	C/D	2.3	1.1%
47C	Woodbridge fine sandy loam, 3 to 15 percent slopes, extremely stony	C/D	13.2	6.0%
57C	Gloucester gravelly sandy loam, 8 to 15 percent slopes	A	2.4	1.1%
59C	Gloucester gravelly sandy loam, 3 to 15 percent slopes, extremely stony	A	0.5	0.2%
60B	Canton and Charlton fine sandy loams, 3 to 8 percent slopes	B	0.6	0.3%
60C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes	B	0.6	0.3%
61C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes, very stony	B	4.3	2.0%
62C	Canton and Charlton fine sandy loams, 3 to 15 percent slopes, extremely stony	B	17.4	8.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	B	12.9	5.9%
75E	Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	D	5.2	2.4%
84B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes	C	31.9	14.7%
84C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes	C	36.2	16.6%
84D	Paxton and Montauk fine sandy loams, 15 to 25 percent slopes	C	7.8	3.6%
85B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes, very stony	C	0.8	0.4%
85C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony	C	11.1	5.1%
86C	Paxton and Montauk fine sandy loams, 3 to 15 percent slopes, extremely stony	C	13.4	6.2%
86D	Paxton and Montauk fine sandy loams, 15 to 35 percent slopes, extremely stony	C	15.6	7.2%
308	Udorthents, smoothed	C	1.1	0.5%
W	Water		0.4	0.2%
Totals for Area of Interest			**217.8**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Attachment C

Soil Investigations/Mapping
(Upland – Solar Array Fields)

MEMORANDUM

To: George T. Logan, Rema Ecological Services, LLC
From: Bill Jackson
Date: August 15, 2020 [February 15, 2021 – Revised]
Subject: Spade & Auger Test Holes to Determine Soil Drainage Class
North Stonington, CT Solar Project

Introduction

The project area for proposed ground-mounted solar arrays is predominately underlain by soils derived from glacial till parent materials. The Web Soil Survey[1] shows the glacial till uplands having well-drained and moderately-well-drained soils identified by the following soil map units: Canton and Charlton fine sandy loams, 0 to 8 percent slopes, very stony (61B); Canton and Charlton fine sandy loams, 8 to 15 percent slopes, very stony (61C); Paxton and Montauk fine sandy loams, 3 to 8 percent slopes, very stony (85B); Paxton and Montauk fine sandy loams, 3 to 15 percent slopes, extremely stony (86C); and, Sutton fine sandy loam, 0 to 8 percent slopes, very stony (51B). The Canton, Charlton and Sutton series are derived from ablation till. The Paxton and Montauk soil series are derived from glacial lodgment till and commonly exhibit a dense substratum. Spade & auger test holes were performed on the subject properties on July 6, 7, 8 and 13, 2020 to describe soil profiles and assign soil drainage classifications. The purpose of the investigation was to distinguish between well-drained and moderately-well-drained soils on the landscape. The test holes were identified in the field by pink flagging and the approximate locations shown on the project drawings. Soil profile descriptions for the test holes are included within a set of typed Soil Investigation Field Notes.

The following definition of moderately-well-drained soil was referenced:

Moderately-well-drained soils have a udic moisture regime and, between a depth of 16 to 40 inches below the soil surface, have one of the following: redoximorphic features:

1. *redoximorphic features: that are common to many, distinct or prominent, and that are chroma 3 or less.*
2. *a matrix chroma of 3 or less and mottles that are common to many, distinct or prominent, regardless of their chroma.*[2]

The glacial till uplands within the subject parcels were identified as ablation till; the soil profiles did not exhibit shallow depths to dense lodgment till and/or bedrock.

1. Southwestern Section of Project Area

This section is located south of the Providence-New London Tpk. (Route 184) and west-southwest of the dog kennel property (Creature Comforts Inn, LLC). Six test holes (TH-1 through TH-6) were conducted in areas identified by the Web Soil Survey as well-drained Canton and Charlton fine sandy loam. The soil profile for Test Hole TH-3 was classified as well-drained. The soil profiles for Test Holes TH-1, TH-2, TH-4 and TH-6 were classified as moderately-well-drained Sutton fine sandy loam. Test Hole TH-5 did not extend beyond 25-

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[1] The Web Soil Survey, USDA, Natural Resources Conservation Service. http://websoilsurvey.nrcs.usda.gov

[2] Guidelines for Soil Drainage Class Determination in New England
http://nesoil.com/properties/drainageclasses.htm

inches below surface grade. The land is described as mixed evergreen-deciduous woodlands. The following dominant vegetation was recorded:

TH-1 Woodlands ground cover: White pine, Low-bush blueberry. Sapling: White pine, White oak. Trees: White oak, Red oak, White pine, Grey birch.

TH-2/TH-3 Woodlands ground cover, 0-24": White pine, Low-bush blueberry Saplings & Trees: Pin oak, Sweet birch.

TH-4 Woodlands ground cover: Canada mayflower, vines, White pine. Trees: White pine (12-20"), Red maple (4-8")

TH-5 Woodlands ground cover: Low-bush blueberry, White pine, Marginal woodfern, Sassafras, unknown grass. Trees: White pine, White oak

TH-6 Woodlands ground cover: Low-bush blueberry, Sweet birch. Shrubs: White pine. Saplings: American beech, Red maple. Trees: Sweet birch (6-8"), White pine (6-12"), Red oak (12")

2. Central Section of Project Area

This section is located south of the Providence-New London Tpk. (Route 184) and immediately east of the dog kennel property. Two test holes (TH-7 and TH-8) were conducted in areas mapped as Canton and Charlton fine sandy loam, very stony. Test hole TH-7 was completed to 35-inches below surface grade. The soil boring exhibited well-drained soil conditions. The soil drainage class within TH-8 was not determined; however, its position on the landscape suggests moderately-well-drained conditions. The following dominant vegetation was recorded:

TH-7 Woodlands ground cover: Canada mayflower, Maple-leaf viburnum. Shrubs: White pine, Sweet birch, American bittersweet.

TH-8 Woodlands ground cover: unknown grass, Low-bush blueberry, Marginal fern, Maple-leaf viburnum. Shrubs: Burning bush. Trees: Sweet birch (6-8"), Pin oak (20"), Red oak (20").

3. Southeastern Section of Project Area

This section is located south of the Providence-New London Tpk. (Route 184) and was accessed via Boom Bridge Road. Five test holes (TH-9 through TH-13) were conducted in areas mapped as Paxton and Montauk fine sandy loam; however, dense lodgement till parent materials were not encountered in the test holes. The soil parent material was apparently very-stony ablation till. Well-drained Soil conditions were encountered in Test Holes Test Holes TH-9, TH-11 and TH-12. Soil drainage classes within Test Holes TH-10 and TH-13 were not determined. The following dominant vegetation was recorded:

TH-9 Woodlands ground cover: Lady fern, Maple-leaf viburnum, Spotted wintergreen. Shrubs: American beech, Buckthorn. Trees: Sweet birch, White pine, Red oak.

TH-10 Woodlands ground cover: pine needles. Trees: Sweet birch (4-8") , White oak (8"), Eastern hemlock (20").

TH-11 Woodlands ground cover: Canada mayflower, Low-bush blueberry. Shrubs: American beech, Sassafras, Buckthorn. Trees: Red maple (4"), Black oak.

TH-12 Woodlands ground cover: Maple-leaf viburnum, Canada mayflower, Sassafras, Scrub oak. Shrubs: American elm, American beech, White pine. Saplings: Red maple, Shagbark hickory. Trees: Red maple.

TH-13 Woodlands ground cover: Canada mayflower, Lady fern. Shrubs: American beech, Red maple. Sapling: Red Maple. Trees: American beech (12").

4. Northwestern Section of Project Area

This section is located north of the Providence-New London Tpk. (Route 184) and in the northwestern extent of the project area. Three test holes (TH-14 through TH-16) were conducted in areas identified by the Web Soil Survey as Canton and Charlton fine sandy loam, very stony. The soil profiles within the test holes were classified as moderately-well-drained Sutton fine sandy loam. The following dominant vegetation was recorded:

TH-14 Woodlands ground cover: Canada mayflower, Low-bush blueberry, Maple-leaf viburnum, NewYork fern, Spotted wintergreen. Sapling: Ironwood, White pine, Sweet birch.

TH-15 Woodlands ground cover: Canada mayflower, Low-bush blueberry, Lady fern, White pine. Saplings: Ironwood, Hickory, Red maple. Trees: Shagbark hickory, White oak, Sweet birch.

TH-16 Woodlands ground cover: Canada mayflower, White pine. Sapling: Hickory. Trees: Shagbark hickory, Red oak, Sweet birch, White pine.

5. Northeastern Section of Project Area

This section is located north of the Providence-New London Tpk. (Route 184) and within the northeastern extent of the project area. Two test holes (TH-17 and TH-18) were conducted in areas mapped as Canton and Charlton fine sandy loam, very stony. The soil profile within test hole TH-17 was classified as well-drained. Test hole TH-18 was located within a historical east-west orientated roadway that was cut into the landscape. The soil profile within Test Hole TH-18 was classified as moderately-well-drained. The following dominant vegetation was recorded:

TH-17 Woodlands ground cover: Canada mayflower. Shrubs: Burning bush. Sapling: Hickory. Trees: White oak (24"), Sweet birch (6"), White pine (4").

TH-18 Woodlands ground cover: Canada mayflower, Christmas fern. Shrub: Spicebush. Sapling: Hickory. Tree: Sweet birch.

SOIL INVESTIGATION/FIELD NOTES **REMA ECOLOGICAL SERVICES**

SPADE & AUGER

TEST HOLE#: TH-1

Field Investigation performed by W. A. Jackson

JOB NO.	CLIENT:
16-1958-NST3	Silicon Ranch Corporation

SITE LOCATION: North Stonington Solar Project
SW Project Area, approx. 220-feet ease of SW PC along stone wall, offset 20-feet north

DATE: July 6, 2020	TIME: 14:00	WEATHER: Clear, Sunny, 80s F
LAND USE: Forested Land	LANDFORM: Glacial Till Uplands	SLOPE: 0 to 8%
SOIL MAP UNIT: Sutton fine sandy loam		DEPTH TO GRNDWTR: N/A
SOIL DRAINAGE CLASS: Moderately Well Drained		DEPTH TO BEDROCK: N/A
PARENT MATERIAL: Glacial Till (Ablation Till)		DEPTH TO COMPACT SOIL: N/A

			SOIL PROFILE DESCRIPTION						
SOIL HORIZON	DEPTH (IN.)	BOUNDARY	SOIL TEXTURE	MATRIX COLOR, MOIST	SOIL REDOX COLORS, MOIST	STRUCTURE	CONSISTENCY DRY/MOIST/WET	% STONE	NOTES
Oi	2 - 0	abrupt	organic, fibric	5YR 3/5	- -	- -	friable	0%	many roots
A/E	0 - 2	abrupt	sandy loam	7.5YR 3/1	- -	- -	friable	0%	zone of eluviation
A	2 - 5	gradual	fine sandy loam	7.5YR 3/4	- -	- -	friable	10%	common to many roots
Bw1	5 - 12	gradual	fine sandy loam	10YR 4/4	- -	m. subang blky	friable	10%	few roots
Bw2	12 - 32	gradual	fine sandy loam	10YR 5/4	- -	m. subang blky	friable	10 - 20%	no roots
Bw3	32 - 36	gradual	loamy sand	10YR 6/4	10YR 6/1	- -	friable	20% +	Redox: c,c,d. no roots
C	36 - 37	N/A	sand	10YR 6/1	!0YR 6/6	- -	friable	N/R	Redox: f,f,p.

Hand Auger Refusal: 37-inches

NOTE: N/A = Not Applicable
N/R = Not Recorded
"- -" = Not Observed

SOIL INVESTIGATION/FIELD NOTES **REMA ECOLOGICAL SERVICES**

SPADE & AUGER

TEST HOLE#: TH-2 Field Investigation performed by W. A. Jackson

JOB NO.	CLIENT:
16-1958-NST3	Silicon Ranch Corporation

SITE LOCATION: North Stonington Solar Project
SW Project Area, swale, approx. 100-feet N of Proposed Stormwater Basin

DATE: July 6, 2020	TIME: 15:30	WEATHER: Clear, Sunny, 80s F
LAND USE: Forested Land	LANDFORM: Glacial Till Uplands	SLOPE: 0 to 8%
SOIL MAP UNIT: Sutton fine sandy loam		DEPTH TO GRNDWTR: N/A
SOIL DRAINAGE CLASS: Moderately Well Drained		DEPTH TO BEDROCK: N/A
PARENT MATERIAL: Glacial Till (Ablation Till)		DEPTH TO COMPACT SOIL: N/A

			SOIL PROFILE DESCRIPTION						
SOIL HORIZON	DEPTH (IN.)	BOUNDARY	SOIL TEXTURE	MATRIX COLOR, MOIST	SOIL REDOX COLORS, MOIST	STRUCTURE	CONSISTENCY DRY/MOIST/WET	% STONE	NOTES
Oi	2 - 0	abrupt	organic, fibric	- -	- -	- -	friable	0%	many roots
A	0 - 4	abrupt	fine sandy loam	7.5YR 3/2	- -	- -	friable	0%	many roots
Bw1	4 - 16	gradual	fine sandy loam	7.5YR 4/3	- -	m. subang blky	friable	10%	common to few roots
Bw2	16 - 27	gradual	fine sandy loam	10YR 5/4	- -	m. subang blky	friable	10 - 20%	no roots
Bw3	27 - 30	- -	fine sandy loam	10YR 5/4	10YR 6/2 10YR 4/3	- -	friable	20% +	Redox: f,m,d. No roots Redox: f,m,d.
Bw4	30 - 35	- -	fine sandy loam	10YR 5/3	10YR 6/1 7.5YR 5/8	- -	friable	20% +	Redox: c,m,d. Redox: c,f,p.

NOTE: N/A = Not Applicable
N/R = Not Recorded
"- -" = Not Observed

SOIL INVESTIGATION/FIELD NOTES **REMA ECOLOGICAL SERVICES**

SPADE & AUGER

TEST HOLE#: TH-3 Field Investigation performed by W. A. Jackson

JOB NO.	CLIENT:
16-1958-NST3	Silicon Ranch Corporation

SITE LOCATION: North Stonington Solar Project
SW Project Area, swale, approx. 60-feet N of TH-2

DATE: July 6, 2020	TIME: 16:15	WEATHER: Clear, Sunny, 80s F
LAND USE: Forested Land	LANDFORM: Glacial Till Uplands	SLOPE: 0 to 8%
SOIL MAP UNIT: Canton and Charlton fine sandy loam		DEPTH TO GRNDWTR: N/A
SOIL DRAINAGE CLASS: Well Drained		DEPTH TO BEDROCK: N/A
PARENT MATERIAL: Glacial Till (Ablation Till)		DEPTH TO COMPACT SOIL: N/A

			SOIL PROFILE DESCRIPTION						
SOIL HORIZON	DEPTH (IN.)	BOUNDARY	SOIL TEXTURE	MATRIX COLOR, MOIST	SOIL REDOX COLORS, MOIST	STRUCTURE	CONSISTENCY DRY/MOIST/WET	% STONE	NOTES
Oi	2 - 0	abrupt	organic, fibric	- -	- -	- -	friable	0%	many roots
A	0 - 3	gradual	fine sandy loam	7.5YR 3/3	- -	- -	friable	0%	many roots
Bw1	3 - 18	gradual	fine sandy loam	7.5YR 4/4	- -	m. subang blky	friable	10%	common to few roots
Bw2	18 - 33	gradual	fine sandy loam	10YR 5/4	- -	m. subang blky	friable	10 - 20%	no roots
Bw3	33 - 36	clear	fine sandy loam	10YR 5/3	10YR 6/2 10YR 4/3	- -	friable	20% +	Redox: f,m,f. No roots Redox: f,m,f.

NOTE: N/A = Not Applicable
N/R = Not Recorded
"- -" = Not Observed

SOIL INVESTIGATION/FIELD NOTES **REMA ECOLOGICAL SERVICES**

SPADE & AUGER

TEST HOLE#: TH-4 Field Investigation performed by W. A. Jackson

JOB NO.	CLIENT:
16-1958-NST3	Silicon Ranch Corporation

SITE LOCATION: North Stonington Solar Project
Western Project Area, approx. 240-feet west of property line with Kennel (Creature Comforts Inn, LLC)

DATE: July 7, 2020	TIME: 10:00	WEATHER: Clear, Sunny, 80s F
LAND USE: Forested Land	LANDFORM: Glacial Till Uplands	SLOPE: 0 to 8%
SOIL MAP UNIT: Sutton fine sandy loam		DEPTH TO GRNDWTR: N/A
SOIL DRAINAGE CLASS: Moderately Well Drained		DEPTH TO BEDROCK: N/A
PARENT MATERIAL: Glacial Till (Ablation Till)		DEPTH TO COMPACT SOIL: N/A

			SOIL PROFILE DESCRIPTION						
SOIL HORIZON	DEPTH (IN.)	BOUNDARY	SOIL TEXTURE	MATRIX COLOR, MOIST	SOIL REDOX COLORS, MOIST	STRUCTURE	CONSISTENCY DRY/MOIST/WET	% STONE	NOTES
Oi	1.5 - 0	abrupt	organic, fibric	- -	- -	- -	friable	0%	many roots
A	0 - 2	abrupt	fine sandy loam	10YR 3/2	- -	- -	friable	0%	common roots
Bw1	2 - 12	gradual	fine sandy loam	10YR 4/3	- -	m. subang blky	friable	10%	few roots
Bw2	12 - 16	- -	fine sandy loam	2.5Y 6/4	- -	m. subang blky	friable	10 - 20%	no roots
Bw3	16 - 27	- -	fine sandy loam	2.5Y 6/3	5Y 6/1 10YR 6/6	- -	friable	20% +	Redox: m,c,d. No roots Redox: f,m,p.

NOTE: N/A = Not Applicable
N/R = Not Recorded
"- -" = Not Observed

SOIL INVESTIGATION/FIELD NOTES **REMA ECOLOGICAL SERVICES**

SPADE & AUGER

TEST HOLE#: TH-5 Field Investigation performed by W. A. Jackson

JOB NO.	CLIENT:
16-1958-NST3	Silicon Ranch Corporation

SITE LOCATION: North Stonington Solar Project
Western Project Area, near topographic high, W-SW of SW PC for Kennel (Creature Comforts Inn, LLC)

DATE: July 7, 2020	TIME: 11:00	WEATHER: Clear, Sunny, 80s F
LAND USE: Forested Land	LANDFORM: Glacial Till Uplands	SLOPE: 0 to 8%
SOIL MAP UNIT: Not Determined		DEPTH TO GRNDWTR: N/A
SOIL DRAINAGE CLASS: Not Determined		DEPTH TO BEDROCK: N/A
PARENT MATERIAL: Glacial Till (Ablation Till)		DEPTH TO COMPACT SOIL: N/A

			SOIL PROFILE DESCRIPTION						
SOIL HORIZON	DEPTH (IN.)	BOUNDARY	SOIL TEXTURE	MATRIX COLOR, MOIST	SOIL REDOX COLORS, MOIST	STRUCTURE	CONSISTENCY DRY/MOIST/WET	% STONE	NOTES
Oi	2 - 0	abrupt	organic, fibric	- -	- -	- -	- -	0%	many roots
A	0 - 3	abrupt	fine sandy loam	10YR 3/2	- -	- -	friable	0%	common roots
Bw1	3 - 22	gradual	fine sandy loam	10YR 5/6	- -	m. subang blky	friable	5%	few roots
Bw2	22 - 25	- -	loamy sand	10YR 6/4	- -	m. subang blky	friable	5 - 10%	no roots, gravelly loamy sand

Hand Auger Refusal: 25-inches

NOTE: N/A = Not Applicable
N/R = Not Recorded
"- -" = Not Observed

SOIL INVESTIGATION/FIELD NOTES **REMA ECOLOGICAL SERVICES**

SPADE & AUGER

TEST HOLE#: TH-6 Field Investigation performed by W. A. Jackson

JOB NO.	CLIENT:
16-1958-NST3	Silicon Ranch Corporation

SITE LOCATION: North Stonington Solar Project
Western Project Area, approx. 200-feet south of SW PC for Kennel (Creature Comforts Inn, LLC)

DATE: July 7, 2020	TIME: 12:00	WEATHER: Clear, Sunny, 80s F
LAND USE: Forested Land	LANDFORM: Glacial Till Uplands	SLOPE: 0 to 8%
SOIL MAP UNIT: Sutton fine sandy loam		DEPTH TO GRNDWTR: N/A
SOIL DRAINAGE CLASS: Moderately Well Drained		DEPTH TO BEDROCK: N/A
PARENT MATERIAL: Glacial Till (Ablation Till)		DEPTH TO COMPACT SOIL: N/A

			SOIL PROFILE DESCRIPTION						
SOIL HORIZON	DEPTH (IN.)	BOUNDARY	SOIL TEXTURE	MATRIX COLOR, MOIST	SOIL REDOX COLORS, MOIST	STRUCTURE	CONSISTENCY DRY/MOIST/WET	% STONE	NOTES
Oi	2 - 0	abrupt	organic, fibric	5YR 3/2	- -	- -	- -	0%	many roots
A	0 - 3	abrupt	fine sandy loam	10YR 3/2	- -	- -	friable	0%	common roots
Bw1	3 - 29	gradual	fine sandy loam	10YR 5/6	- -	m. subang blky	friable	5%	few roots
Bw2	29 - 32	- -	fine sandy loam	10YR 5/6	5y 6/1 10YR 6/6	m. subang blky	friable	5 - 10%	Redox: m,c,d. No roots Redox: f,m,d.

NOTE: N/A = Not Applicable
N/R = Not Recorded
"- -" = Not Observed

SOIL INVESTIGATION/FIELD NOTES **REMA ECOLOGICAL SERVICES**

SPADE & AUGER

TEST HOLE#: TH-7

Field Investigation performed by W. A. Jackson

JOB NO. 16-1958-NST3	CLIENT: Silicon Ranch Corporation

SITE LOCATION: North Stonington Solar Project
Central Project Area, approx. 140-feet north of SE PC for Kennel (Creature Comforts Inn, LLC), offset 100-feet east

DATE: July 7, 2020	TIME: 13:00	WEATHER: Clear, Sunny, 80s F
LAND USE: Forested Land	LANDFORM: Glacial Till Uplands	SLOPE: 0 to 8%
SOIL MAP UNIT: Not Determined		DEPTH TO GRNDWTR: N/A
SOIL DRAINAGE CLASS: Not Determined		DEPTH TO BEDROCK: N/A
PARENT MATERIAL: Glacial Till (Ablation Till)		DEPTH TO COMPACT SOIL: N/A

			SOIL PROFILE DESCRIPTION						
SOIL HORIZON	DEPTH (IN.)	BOUNDARY	SOIL TEXTURE	MATRIX COLOR, MOIST	SOIL REDOX COLORS, MOIST	STRUCTURE	CONSISTENCY DRY/MOIST/WET	% STONE	NOTES
A	0 - 11	abrupt	fine sandy loam	10YR 3/3	- -	- -	loose	0%	common roots
Bw1	11 - 20	gradual	fine sandy loam	10YR 4/4	- -	m. subang blky	friable	10 -20%	few roots, very stony
Bw2	20 - 35	- -	sandy loam	10YR 5/4	- -	m. subang blky	loose	10 -20%	moist, very stony, no roots

Hand Auger Refusal: 35-inches

NOTE: N/A = Not Applicable
N/R = Not Recorded
"- -" = Not Observed

SOIL INVESTIGATION/FIELD NOTES **REMA ECOLOGICAL SERVICES**

SPADE & AUGER

TEST HOLE#: TH-8 Field Investigation performed by W. A. Jackson

JOB NO.	CLIENT:
16-1958-NST3	Silicon Ranch Corporation

SITE LOCATION: North Stonington Solar Project
Central Project Area, approx. 60-feet north of SE PC for Kennel (Creature Comforts Inn, LLC), offset 20-feet east

DATE: July 7, 2020	TIME: 14:00	WEATHER: Clear, Sunny, 80s F
LAND USE: Forested Land	LANDFORM: Glacial Till Uplands	SLOPE: 0 to 8%
SOIL MAP UNIT: Not Determined		DEPTH TO GRNDWTR: N/A
SOIL DRAINAGE CLASS: Not Determined		DEPTH TO BEDROCK: N/A
PARENT MATERIAL: Glacial Till (Ablation Till)		DEPTH TO COMPACT SOIL: N/A

			SOIL PROFILE DESCRIPTION						
SOIL HORIZON	DEPTH (IN.)	BOUNDARY	SOIL TEXTURE	MATRIX COLOR, MOIST	SOIL REDOX COLORS, MOIST	STRUCTURE	CONSISTENCY DRY/MOIST/WET	% STONE	NOTES
Oi	3 - 0	abrupt	organic, fibric	- -	- -	- -	- -	0%	many roots
A	0 - 11	abrupt	fine sandy loam	10YR 3/3	- -	- -	loose	0%	common roots
Bw1	11 - 24	gradual	fine sandy loam	10YR 4/4	- -	m. subang blky	friable	10 -20%	few roots, very stony
Bw2	24 - 26	- -	sandy loam	10YR 5/4	5y 6/1	m. subang blky	loose	10 -20%	moist, very stony, no roots Redox: f,m,d.

Hand Auger Refusal: 26-inches

NOTE: N/A = Not Applicable
N/R = Not Recorded
"- -" = Not Observed

SOIL INVESTIGATION/FIELD NOTES **REMA ECOLOGICAL SERVICES**

SPADE & AUGER

TEST HOLE#: TH-9 Field Investigation performed by W. A. Jackson

JOB NO.	CLIENT:
16-1958-NST3	Silicon Ranch Corporation

SITE LOCATION: North Stonington Solar Project
SE Project Area, approx. 130-feet south of N property line (stone wall), down-slope from horse barn on neighboring property

DATE: July 8, 2020	TIME: 12:00	WEATHER: Clear, Sunny, 80s F
LAND USE: Forested Land	LANDFORM: Glacial Till Uplands	SLOPE: 3 to 8%
SOIL MAP UNIT: Paxton and Montauk fine sandy loams		DEPTH TO GRNDWTR: N/A
SOIL DRAINAGE CLASS: Well Drained		DEPTH TO BEDROCK: N/A
PARENT MATERIAL: Glacial Till (Ablation Till)		DEPTH TO COMPACT SOIL: N/A

			SOIL PROFILE DESCRIPTION						
SOIL HORIZON	DEPTH (IN.)	BOUNDARY	SOIL TEXTURE	MATRIX COLOR, MOIST	SOIL REDOX COLORS, MOIST	STRUCTURE	CONSISTENCY DRY/MOIST/WET	% STONE	NOTES
A	0 - 5	abrupt	fine sandy loam	10YR 3/3	- -	- -	friable	0%	common roots
Bw1	5 - 9	gradual	fine sandy loam	10YR 4/4	- -	m. subang blky	friable	10 - 20%	few roots
Bw2	9 - 24	gradual	fine sandy loam	10YR 5/6	- -	m. subang blky	friable	10 - 20%	few roots
Bw3	24 - 28	abrupt	fine sandy loam	2.5Y 6/2	10YR 5/6	m. subang blky	friable	20%	Redox: f,m,p. No roots
C	28 - 34	- -	fine sandy loam	2.5Y 6/1	10YR 6/6			20%	Redox: f,m,p.

NOTE: N/A = Not Applicable
N/R = Not Recorded
"- -" = Not Observed

SOIL INVESTIGATION/FIELD NOTES **REMA ECOLOGICAL SERVICES**

SPADE & AUGER

TEST HOLE#: TH-10 Field Investigation performed by W. A. Jackson

JOB NO.	CLIENT:
16-1958-NST3	Silicon Ranch Corporation

SITE LOCATION: North Stonington Solar Project

SE Project Area, approx. 280-feet south of N property line (stone wall), 450-feet east of W. Project Area boundary, adjacent to stone wall

DATE: July 8, 2020	TIME: 13:30	WEATHER: Clear, Sunny, 80s F
LAND USE: Forested Land	LANDFORM: Glacial Till Uplands	SLOPE: 3 to 8%
SOIL MAP UNIT: Not Determined		DEPTH TO GRNDWTR: N/A
SOIL DRAINAGE CLASS: Not Determined		DEPTH TO BEDROCK: N/A
PARENT MATERIAL: Glacial Till (Ablation Till)		DEPTH TO COMPACT SOIL: N/A

			SOIL PROFILE DESCRIPTION						
SOIL HORIZON	DEPTH (IN.)	BOUNDARY	SOIL TEXTURE	MATRIX COLOR, MOIST	SOIL REDOX COLORS, MOIST	STRUCTURE	CONSISTENCY DRY/MOIST/WET	% STONE	NOTES
Oi	1 - 0	abrupt	organic, fibric	- -	- -	- -	- -	0%	many roots
A	0 - 3	gradual	fine sandy loam	10YR 3/2	- -	- -	friable	0%	common roots
Bw1	3 - 9	abrupt	fine sandy loam	10YR 4/4	- -	m. subang blky	friable	10 - 20%	few roots
Bw2	9 - 21	- -	loamy sand	10YR 5/6	- -	- -	loose	20 - 50%	very stony

Hand Auger Refusal: 21-inches

NOTE: N/A = Not Applicable
N/R = Not Recorded
"- -" = Not Observed

SOIL INVESTIGATION/FIELD NOTES **REMA ECOLOGICAL SERVICES**

SPADE & AUGER

TEST HOLE#: TH-11 Field Investigation performed by W. A. Jackson

JOB NO.	CLIENT:
16-1958-NST3	Silicon Ranch Corporation

SITE LOCATION: North Stonington Solar Project
SE Project Area, stone wall enclosure, NW Interior Corner

DATE: July 8, 2020	TIME: 14:00	WEATHER: Clear, Sunny, 80s F
LAND USE: Forested Land	LANDFORM: Glacial Till Uplands	SLOPE: 3 to 8%
SOIL MAP UNIT: Paxton and Montauk fine sandy loams		DEPTH TO GRNDWTR: N/A
SOIL DRAINAGE CLASS: Well Drained		DEPTH TO BEDROCK: N/A
PARENT MATERIAL: Glacial Till (Ablation Till)		DEPTH TO COMPACT SOIL: N/A

			SOIL PROFILE DESCRIPTION						
SOIL HORIZON	DEPTH (IN.)	BOUNDARY	SOIL TEXTURE	MATRIX COLOR, MOIST	SOIL REDOX COLORS, MOIST	STRUCTURE	CONSISTENCY DRY/MOIST/WET	% STONE	NOTES
A	0 - 8	gradual	fine sandy loam	10YR 4/3	- -	- -	friable	0%	common roots
Bw1	8 - 35	abrupt	fine sandy loam	10YR 5/4	- -	m. subang blky	friable	10 - 20%	few roots
C	35 - 41	- -	sand	10YR 6/3	10YR 5/2 10YR 5/6	- -	loose	20%	Redox: f,m,f. gravelly fine to med. sand Redox: f,m,d. no roots

Hand Auger Refusal: 41-inches

NOTE: N/A = Not Applicable
N/R = Not Recorded
"- -" = Not Observed

SOIL INVESTIGATION/FIELD NOTES **REMA ECOLOGICAL SERVICES**

SPADE & AUGER

TEST HOLE#: TH-12 Field Investigation performed by W. A. Jackson

JOB NO.	CLIENT:
16-1958-NST3	Silicon Ranch Corporation

SITE LOCATION: North Stonington Solar Project
SE Project Area, approx. 140-feet N of Proposed Stormwater Basin, North of stone wall

DATE: July 8, 2020	TIME: 14:45	WEATHER: Clear, Sunny, 80s F
LAND USE: Forested Land	LANDFORM: Glacial Till Uplands	SLOPE: 3 to 8%
SOIL MAP UNIT: Paxton and Montauk fine sandy loams		DEPTH TO GRNDWTR: N/A
SOIL DRAINAGE CLASS: Well Drained		DEPTH TO BEDROCK: N/A
PARENT MATERIAL: Glacial Till (Ablation Till)		DEPTH TO COMPACT SOIL: N/A

			SOIL PROFILE DESCRIPTION						
SOIL HORIZON	DEPTH (IN.)	BOUNDARY	SOIL TEXTURE	MATRIX COLOR, MOIST	SOIL REDOX COLORS, MOIST	STRUCTURE	CONSISTENCY DRY/MOIST/WET	% STONE	NOTES
Oi	2 - 0	abrupt	organic, fibric	- -	- -	- -	- -	0%	many roots
A	0 - 6	gradual	fine sandy loam	10YR 3/2	- -	- -	friable	0%	common roots
Bw1	6 - 16	gradual	fine sandy loam	10YR 4/4	- -	m. subang blky	friable	10 - 20%	few roots
Bw2	16 - 41	- -	fine sandy loam	10YR 5/4	- -	- -	friable	20%	no roots, very stony

NOTE: N/A = Not Applicable
N/R = Not Recorded
"- -" = Not Observed

SOIL INVESTIGATION/FIELD NOTES **REMA ECOLOGICAL SERVICES**

SPADE & AUGER

TEST HOLE#: TH-13 Field Investigation performed by W. A. Jackson

JOB NO.	CLIENT:
16-1958-NST3	Silicon Ranch Corporation

SITE LOCATION: North Stonington Solar Project
SE Project Area, approx. 70-feet N of Proposed Stormwater Basin, South of stone wall

DATE: July 8, 2020	TIME: 15:20	WEATHER: Clear, Sunny, 80s F
LAND USE: Forested Land	LANDFORM: Glacial Till Uplands	SLOPE: 3 to 8%
SOIL MAP UNIT: Not Determined		DEPTH TO GRNDWTR: N/A
SOIL DRAINAGE CLASS: Not Determined		DEPTH TO BEDROCK: N/A
PARENT MATERIAL: Glacial Till (Ablation Till)		DEPTH TO COMPACT SOIL: N/A

			SOIL PROFILE DESCRIPTION						
SOIL HORIZON	DEPTH (IN.)	BOUNDARY	SOIL TEXTURE	MATRIX COLOR, MOIST	SOIL REDOX COLORS, MOIST	STRUCTURE	CONSISTENCY DRY/MOIST/WET	% STONE	NOTES
Oi	2 - 0	abrupt	organic, fibric	5YR 3/2	- -	- -	- -	0%	many roots
A	0 - 3	gradual	fine sandy loam	10YR 3/2	- -	- -	friable	0%	common roots
Bw1	3 - 9	gradual	fine sandy loam	10YR 4/4	- -	m. subang blky	friable	10 - 20%	few roots
Bw2	9 - 20	- -	fine sandy loam	10YR 5/4	- -	- -	friable	20%	no roots, very stony

Hand Auger Refusal: 20-inches

NOTE: N/A = Not Applicable
N/R = Not Recorded
"- -" = Not Observed

SOIL INVESTIGATION/FIELD NOTES **REMA ECOLOGICAL SERVICES**

SPADE & AUGER

TEST HOLE#: TH-14 Field Investigation performed by W. A. Jackson

JOB NO.	CLIENT:
16-1958-NST3	Silicon Ranch Corporation

SITE LOCATION: North Stonington Solar Project
NW Project Area, historical stone-lined road, approx. 120-feet W of wetland boundary

DATE: July 13, 2020	TIME: 12:00	WEATHER: Clear, Sunny, 80s F
LAND USE: Forested Land	LANDFORM: Glacial Till Uplands	SLOPE: 0 to 8%
SOIL MAP UNIT: Sutton fine sandy loam		DEPTH TO GRNDWTR: N/A
SOIL DRAINAGE CLASS: Moderately Well Drained		DEPTH TO BEDROCK: N/A
PARENT MATERIAL: Glacial Till (Ablation Till)		DEPTH TO COMPACT SOIL: N/A

			SOIL PROFILE DESCRIPTION						
SOIL HORIZON	DEPTH (IN.)	BOUNDARY	SOIL TEXTURE	MATRIX COLOR, MOIST	SOIL REDOX COLORS, MOIST	STRUCTURE	CONSISTENCY DRY/MOIST/WET	% STONE	NOTES
Oi	3 - 0	abrupt	organic, fibric	- -	- -	- -	- -	0%	many roots
A	0 - 6	gradual	fine sandy loam	10YR 4/2	- -	- -	friable	0%	common roots
Bw1	6 - 10	abrupt	fine sandy loam	10YR 4/3	- -	m. subang blky	friable	10 - 20%	common to few roots
Bw2	10 - 22	gradual	fine sandy loam	2.5Y 5/4	- -	m. subang blky	friable	20%	few roots
Bw3	22 - 26	- -	v. f. sandy loam	2.5Y 5/4	2.5Y 6/1	- -	friable	20%	Redox: c,c,d.
					10YR 5/8				Redox: c,m,p.

NOTE: N/A = Not Applicable
N/R = Not Recorded
"- -" = Not Observed

SOIL INVESTIGATION/FIELD NOTES **REMA ECOLOGICAL SERVICES**

SPADE & AUGER

TEST HOLE#: TH-15 Field Investigation performed by W. A. Jackson

JOB NO.	CLIENT:
16-1958-NST3	Silicon Ranch Corporation

SITE LOCATION: North Stonington Solar Project
NW Project Area, historical stone-lined road, south of residence to north

DATE: July 13, 2020	TIME: 13:00	WEATHER: Clear, Sunny, 80s F
LAND USE: Forested Land	LANDFORM: Glacial Till Uplands	SLOPE: 0 to 8%
SOIL MAP UNIT: Sutton fine sandy loam		DEPTH TO GRNDWTR: N/A
SOIL DRAINAGE CLASS: Moderately Well Drained		DEPTH TO BEDROCK: N/A
PARENT MATERIAL: Glacial Till (Ablation Till)		DEPTH TO COMPACT SOIL: N/A

			SOIL PROFILE DESCRIPTION						
SOIL HORIZON	DEPTH (IN.)	BOUNDARY	SOIL TEXTURE	MATRIX COLOR, MOIST	SOIL REDOX COLORS, MOIST	STRUCTURE	CONSISTENCY DRY/MOIST/WET	% STONE	NOTES
Oi	2 - 0	abrupt	organic, fibric	- -	- -	- -	- -	0%	many roots
A	0 - 2	gradual	fine sandy loam	10YR 4/2	- -	- -	friable	0%	common roots
Bw1	2 - 18	abrupt	fine sandy loam	10YR 5/4	- -	m. subang blky	friable	10 - 20%	few roots
Bw2	18 - 24	abrupt	v. f. sandy loam	2.5Y 5/4	5Y 5/1 7.5YR 4/4	- -	friable	20%	Redox: c,m,d. no roots Redox: f,f,d.

NOTE: N/A = Not Applicable
N/R = Not Recorded
"- -" = Not Observed

SOIL INVESTIGATION/FIELD NOTES **REMA ECOLOGICAL SERVICES**

SPADE & AUGER

TEST HOLE#: TH-16 Field Investigation performed by W. A. Jackson

JOB NO.	CLIENT:
16-1958-NST3	Silicon Ranch Corporation

SITE LOCATION: North Stonington Solar Project
NW Project Area, up-slope, approx. 160-feet NE of TH-15 near N Property line

DATE: July 13, 2020	TIME: 14:00	WEATHER: Clear, Sunny, 80s F
LAND USE: Forested Land	LANDFORM: Glacial Till Uplands	SLOPE: 0 to 8%
SOIL MAP UNIT: Sutton fine sandy loam		DEPTH TO GRNDWTR: N/A
SOIL DRAINAGE CLASS: Moderately Well Drained		DEPTH TO BEDROCK: N/A
PARENT MATERIAL: Glacial Till (Ablation Till)		DEPTH TO COMPACT SOIL: N/A

			SOIL PROFILE DESCRIPTION						
SOIL HORIZON	DEPTH (IN.)	BOUNDARY	SOIL TEXTURE	MATRIX COLOR, MOIST	SOIL REDOX COLORS, MOIST	STRUCTURE	CONSISTENCY DRY/MOIST/WET	% STONE	NOTES
Oi	4 - 0	abrupt	organic, fibric	- -	- -	- -	- -	0%	many roots
A	0 - 9	gradual	fine sandy loam	10YR 3/2	- -	- -	friable	0%	common roots
A/B	9 - 12	gradual	fine sandy loam	10YR 3/3				10 - 20%	common roots
Bw1	12 - 20	abrupt	fine sandy loam	10YR 5/4	- -	m. subang blky	friable	10 - 20%	few roots
Bw2	20 - 26	gradual	v. f. sandy loam	10YR 6/4	7.5YR 5/8	- -	friable	20%	Redox: f,f,p. no roots
Bw3	26 - 29	- -	v. f. sandy loam	10YR 6/4	10YR 4/2	- -	friable	20%	Redox: c,m,d.
					7.5YR 4/6				Redox: c,m,d.

NOTE: N/A = Not Applicable
N/R = Not Recorded
"- -" = Not Observed

SOIL INVESTIGATION/FIELD NOTES **REMA ECOLOGICAL SERVICES**

SPADE & AUGER

TEST HOLE#: TH-17 Field Investigation performed by W. A. Jackson

JOB NO.	CLIENT:
16-1958-NST3	Silicon Ranch Corporation

SITE LOCATION: North Stonington Solar Project
NE Project Area, approx. 55-feet E of N-S Stone Wall, approx. 70-feet from Flag IWC-10

DATE: July 13, 2020	TIME: 15:00	WEATHER: Clear, Sunny, 80s F
LAND USE: Forested Land	LANDFORM: Glacial Till Uplands	SLOPE: 0 to 8%
SOIL MAP UNIT: Canton and Charlton fine sandy loam		DEPTH TO GRNDWTR: N/A
SOIL DRAINAGE CLASS: Well Drained		DEPTH TO BEDROCK: N/A
PARENT MATERIAL: Glacial Till (Ablation Till)		DEPTH TO COMPACT SOIL: N/A

			SOIL PROFILE DESCRIPTION						
SOIL HORIZON	DEPTH (IN.)	BOUNDARY	SOIL TEXTURE	MATRIX COLOR, MOIST	SOIL REDOX COLORS, MOIST	STRUCTURE	CONSISTENCY DRY/MOIST/WET	% STONE	NOTES
A	0 - 6	gradual	fine sandy loam	10YR 3/3	- -	- -	loose	10%	common roots
A/B	6 - 13	gradual	fine sandy loam	10YR 4/3	- -	- -	friable	20 - 30%	common roots, stony
Bw1	13 - 28	gradual	sandy loam	10YR 5/4	- -	m. subang blky	friable	20 - 30%	common roots, very stony
Bw2	28 - 32	- -	sandy loam	10YR 5/4	- -	m. subang blky	friable	20 - 30%	few roots, very stony

Hand Auger Refusal: 32-inches

NOTE: N/A = Not Applicable
N/R = Not Recorded
"- -" = Not Observed

SOIL INVESTIGATION/FIELD NOTES **REMA ECOLOGICAL SERVICES**

SPADE & AUGER

TEST HOLE#: TH-18 Field Investigation performed by W. A. Jackson

JOB NO.	CLIENT:
16-1958-NST3	Silicon Ranch Corporation

SITE LOCATION: North Stonington Solar Project
NE Project Area, cut within historical stone-lined road

DATE: July 13, 2020	TIME: 16:00	WEATHER: Clear, Sunny, 80s F
LAND USE: Forested Land	LANDFORM: Glacial Till Uplands	SLOPE: 3 to 8%
SOIL MAP UNIT: Sutton fine sandy loam		DEPTH TO GRNDWTR: N/A
SOIL DRAINAGE CLASS: Moderately Well Drained		DEPTH TO BEDROCK: N/A
PARENT MATERIAL: Glacial Till (Ablation Till)		DEPTH TO COMPACT SOIL: N/A

			SOIL PROFILE DESCRIPTION						
SOIL HORIZON	DEPTH (IN.)	BOUNDARY	SOIL TEXTURE	MATRIX COLOR, MOIST	SOIL REDOX COLORS, MOIST	STRUCTURE	CONSISTENCY DRY/MOIST/WET	% STONE	NOTES
A	0 - 3	abrupt	sandy loam	2.5Y 3/3	- -	- -	friable	0%	common roots
Bw1	3 - 8	abrupt	sandy loam	2.5Y 6/4	- -	m. subang blky	friable	10 - 20%	few roots
Bw2	8 - 18	gradual	loamy sand	2.5Y 6/4	2.5Y 6/2 2.5Y 4/3	- -	friable	20%	Redox: f,m,f. no roots Redox: f,f,d.
Bw3	18 - 20	gradual	loamy sand	2.5Y 6/3	2.5Y 6/1 10YR 6/8	- -	friable	20%	Redox: c,m,d. no roots Redox: f,f,p.

NOTE: N/A = Not Applicable
N/R = Not Recorded
"- -" = Not Observed

December 12, 2021

Silicon Ranch Corporation
222 Second Ave. S. Suite 1900
Nashville, TN 37201

Attn: Ms. Dee Koehler – Senior Project Manager
P: (512) 924-3595
E: dee.koehler@siliconranch.com

Re: In-situ Infiltration Testing Services Report
Litchfield Solar Infiltration
Wilson Road
Litchfield, Connecticut
Terracon Project No. J2215049

Dear Ms. Koehler:

At your request, we have prepared this report to provide the results of the in-situ infiltration testing for the above-referenced project. Specifically, fourteen (14) in-situ infiltration tests and seventy-one (71) soil borings were performed between November 1 and November 16, 2021. The services described in this report were performed in general accordance with Terracon Proposal No. PJ2215049 dated October 16, 2021.

PROJECT UNDERSTANDING AND SCOPE

The project area comprises three parcels located to the east and west of Rossi Road / Wilson Road, approximately ½ mile north of its intersection with Torrington Road (Route 202), in the town of Litchfield, Connecticut. The first parcel is located west of Wilson Road, north of Litchfield Town Road, and totals an approximate 17 acres in size. The second parcel is located west of Wilson Road, south of Litchfield Town Farm Road, and totals an approximate 45 acres. The remaining parcel is located east of Wilson Road and totals an approximate 208 acres. The approximate site center coordinates are: 41.7889°N, 73.1665°W (see **Site Location**).

Our Scope of Services is based on our understanding of the project as described by Silicon Ranch Corporation and the expected subsurface conditions as described in our previous geotechnical engineering report dated January 15, 2021 and our Infiltration Test Letter Report dated May 11, 2021. The purpose of this study is to obtain additional infiltration rates of subsurface soil materials at selected locations of the proposed stormwater BMP features shown in **BMP Location Plan**. A total of seventy-one of the eighty-five soil borings proposed for this study were drilled due to the site conditions. The omitted borings would have required excessive site clearing to access.

GEOTECHNICAL CHARACTERIZATION

A general characterization of the subsurface conditions was previously developed based on the investigation performed in May 2019 throughout the project area for a design purpose of solar array. The characterization of the subsurface conditions provided herein was based on the seventy-one soil borings drilled for performing in-situ infiltration tests. The test locations are shown in **Test Location Plan**. Auger spoils were observed and classified, and two Standard Penetration Test (SPT) soil samples were collected at every location for four consecutive feet above the bottom of infiltration test depths. A general subsurface profile presented below is based on the test borings from this investigation.

Profile Layer	Soil Type	General Description
1	**Topsoil / Subsoil**	Sandy Silt (ML) to Silty Sand (SM), trace to with roots, brown to dark brown, occasional cobbles, loose to medium dense.
2	**Native Material**	Silty Sand (SM) to Sandy Silt (ML), some elastic silt, trace to with gravel and clay, occasional to frequent cobbles, brown, loose to very dense.
3	**Weathered Bedrock**	Weathered Bedrock, gray.

SUMMARY OF FIELD EXPLORATION AND TESTING

Terracon laid out the borings during our site reconnaissance. We used handheld GPS equipment to locate borings with an estimated horizontal accuracy of +/-15 feet. If elevations and a more precise boring layout are desired, we recommend borings be surveyed following completion of fieldwork.

Terracon observed the advancement of seventy-one soil borings from November 1 to November 16, 2021 using an all-terrain vehicle (ATV)-mounted rotary drill rig. The soil borings were advanced using 4¼-inch inside diameter continuous flight hollow-stem augers. Soil sampling was performed at every location for four consecutive feet above the bottom of infiltration test depths using split-barrel sampling procedures using a standard 2-inch outer diameter split-barrel sampling spoon driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The split-barrel samplers were driven in accordance with ASTM D 1586 Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils. The number of blows required to advance the sampling spoon the middle 12 inches of a normal 24-inch penetration was recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the depths where they are performed. Drilling refusal and/or groundwater were encountered prior to the proposed testing

depths at many proposed test locations and a detail field work is provided in **Drilling and Testing Summary Sheet**.

Descriptive classifications of the soils indicated on the soil boring logs are in accordance with the General Notes and the Unified Soil Classification System (USCS). USCS symbols are also shown. The depths of soil sampling, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for future testing. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples performed in our previous investigation program.

The boreholes were observed while drilling and after completion for the presence and level of groundwater. The water levels observed in the boreholes can be found on the boring logs in **Exploration Results**.

Terracon performed *in-situ* soil infiltration testing at fourteen soil boring locations using falling head infiltration testing techniques. Testing was performed by installing 4-inch diameter PVC well pipe to the bottom of the test hole. Granular filter media, i.e., coarse sand, was placed at the bottom of the pipe to prevent scouring and silting. The pipes were then filled with water to the top of pipe and allowed to presoak. Following the presoak period, infiltration testing was performed in general accordance with the *2004 Connecticut Stormwater Quality Manual* by the Connecticut Department of Environmental Protection. Material at the appropriate test depths from each location were collected and classified using the Unified Soil Classification System (USCS).

FINDINGS

Based on our visual classification and the findings from our previous subsurface investigations, the subsurface soil materials throughout the locations consist of sandy silt and silty sand with varying amounts of gravel and cobbles. Due to the amounts of gravel, cobbles and silt at the testing depth in each borehole, the infiltration rates ranged between 0.02 inches per hour (in./hr.) to 0.94 in./hr. A summary of the infiltration rates and the testing data sheets are presented in **Exploration Results**. Individual test only measures the hydraulic conductivity in the immediate vicinity of the test location and may not be representative of the average hydraulic conductivity of the soil; additionally, field hydraulic conductivity values are generally accurate only to an order-of-magnitude. Various factors may influence field permeability testing results, including lack of soil saturation, a non-homogenous soil profile surrounding the test interval, or variation in soil density.

Test Location	Testing Depth (ft) [1]	Infiltration Rate (inches/hour)
B3-1	8.5	0.08
B3-2	7.9	0.06
B3-3	8.1	0.02
B7-1	4.3	0.002
B12-4	5.0	0.68
S11-2	4.1	0.27
T1-1	2.0	0.19
T1-2	1.9	0.23
T2b-1	2.0	0.84
T2b-2	1.9	0.94
T2b-3	2.0	0.57
T4-1	3.1	0.21
T4-2	3.1	0.16
T4-3	3.2	0.23

1. Below ground surface.

For Infiltration Trench:

Infiltration Rate

- *A minimum field-measured soil infiltration rate of 0.3 inches per hour is recommended as a practical lower limit for the feasibility of infiltration practices. Lower infiltration rates may be acceptable provided that the water quality volume and drain time criteria can be met. Field-measured soil infiltration rates should not exceed 5.0 inches per hour.*

Shallow groundwater, ranging approximately between 0.4 to 5.4 feet below grade, was encountered in Basin 8/10, Basin 9, Trench 2a, soil borings B12-1 through B12-3, S11-6, and S14-1 thru S14-3. Upon the agreement with Silicon Ranch, the infiltration tests at these locations were canceled. Basin 8/10, Basin 9, and Trench 2a were located at the bottom of slopes; a stream was observed to the west of Basin 8/10. Swale 14 was located at the bottom of a slope with a power transmission right-of-way (ROW) to the east and a local live stream to the west. B12-1 through B12-3 and S11-6 were observed to be at lower elevations in comparison to the other testing locations within their respective basin/swale. The soil materials encountered in these boreholes were classified as sandy silt and silty sand with gravel. In addition, overland flow (runoff) was observed in the areas of Basin 8/10, Basin 9, Trench 2a, and Swale 14 due to recent rainfall.

Groundwater was not observed in the other test locations in the areas of Basin 3, Basin 7, soil borings B12-4 through B12-5, Basin 13, Trench 1, Trench 2b, Trench 4, and soil borings S11-1 through S11-5 and S11-7 within the depth of drilling. It is believed that the groundwater is below the depth of drilling at the time of drilling. Please note that groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the stormwater BMP features may be higher or lower than the levels indicated on the soil boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

Drilling refusal (probable bedrock), ranging approximately between 0.7 to 5.0 feet below grade, was encountered in Basin 7, Basin 13, soil boring S11-1, S11-3 through S11-5, S11-7, and B12-5. Besides the location of soil boring B12-5, these areas were located within a wooded area where multiple rock outcrops were observed. Upon the agreement with Silicon Ranch, the infiltration tests at these locations were canceled.

Excessive effort of site clearing would be required to access three testing locations in Basin 5, thick, seven testing locations in Basin 8/10, and four testing locations in Swale 14 due to thick and overgrown bushes and vegetation. Silicon Ranch was in an agreement that these areas could be tested at a later date when appropriate means of clearing can take place prior to drilling and testing.

Testing depths ranged between approximately 2 and 8 feet below ground surface. If probable bedrock refusal was encountered at depths above the testing depths, offset borings were performed within a 10 foot range from the original testing location.

We collected photographs at the time of our field exploration program. Representative photos are provided in our **Photography Log**.

LIMITATIONS

This work has been done in accordance with our authorized scope of work stated in our Terracon Proposal No. PJ2215049 dated October 16, 2021. The field testing was completed in accordance with modified ASTM D6391 and with generally accepted practice in performing in-situ cased-borehole infiltration test. No warranty is express or implied. The testing data of the in-situ cased-borehole infiltration test could be affected by the subsurface soil conditions encountered within the borehole, amount of precipitation prior to the testing, temperature, geographic condition, etc. Our findings are based on the data revealed by the field observation at seventy-one soil borings and performing a total of fourteen infiltration tests. Since the project site consists of three parcels with more than 200 acres, the infiltration rates provided herein represent the capability of infiltration at the testing locations and depths. If the subsurface conditions during the construction are different from the conditions stated herein, the infiltration rates should be re-evaluated. We are not responsible for any conclusions or opinions drawn from the data included herein, other than those specifically stated. This report is intended for use with regard to the specific project discussed herein.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this letter report or if we may be of further service, please do not hesitate to contact us.

Sincerely,
Terracon Consultants, Inc.

S. Kai Tu, P.E.
Department Manager

Erich L. Christiansen, P.E. (NJ)
Principal

ATTACHMENTS

SITE LOCATION AND PLANS

Contents:

Site Location
BMP Location Plan
Test Location Plan

Note: All attachments are one page unless noted above.

SITE LOCATION

Litchfield Solar Infiltration ■ Litchfield, Connecticut
December 12, 2021 ■ Terracon Project No. J2215049

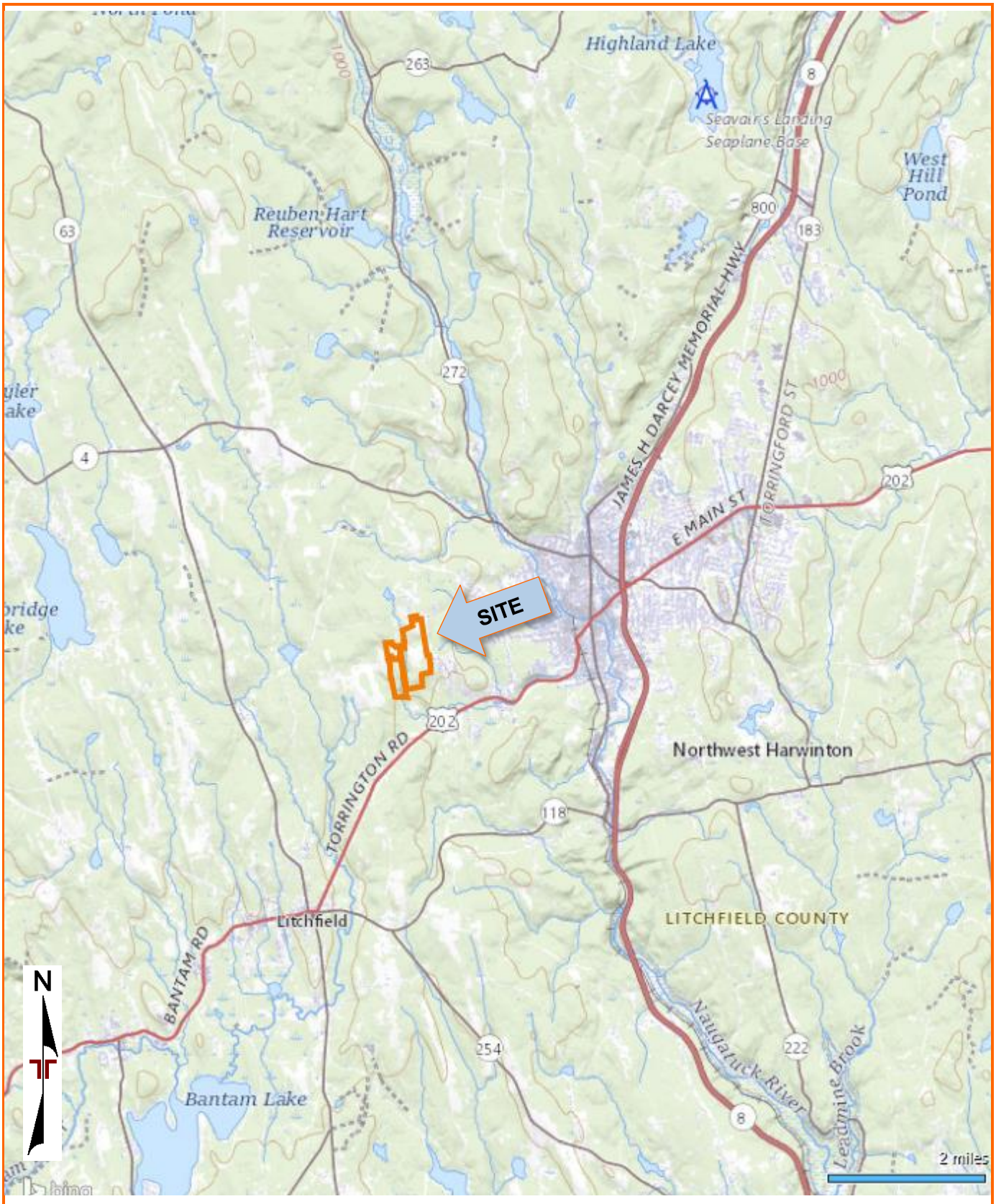


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

BMP LOCATION PLAN

Litchfield Solar Infiltration ■ Litchfield, Connecticut
December 12, 2021 ■ Terracon Project No. J2215049

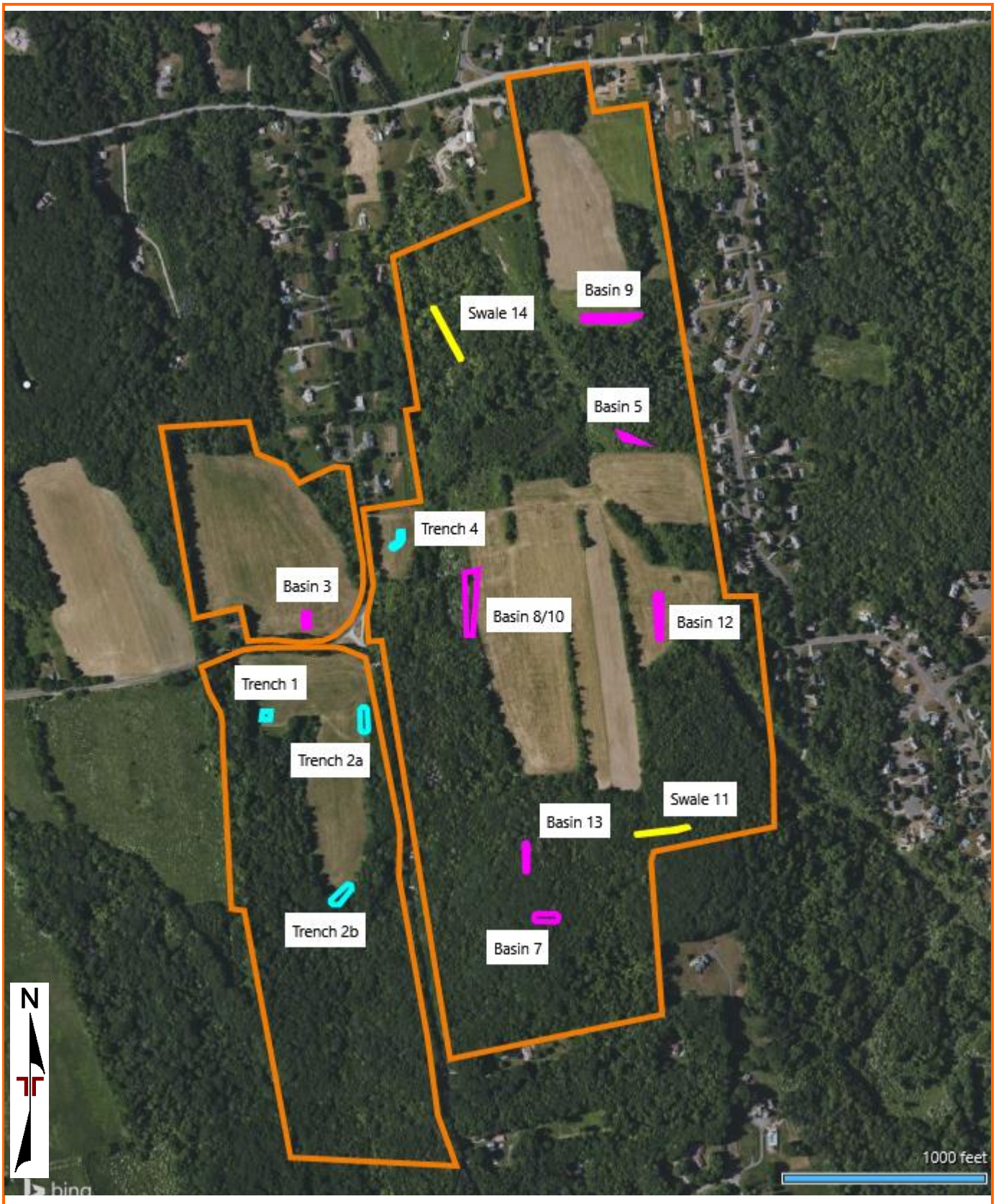


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Test Location Plan – Basin 3

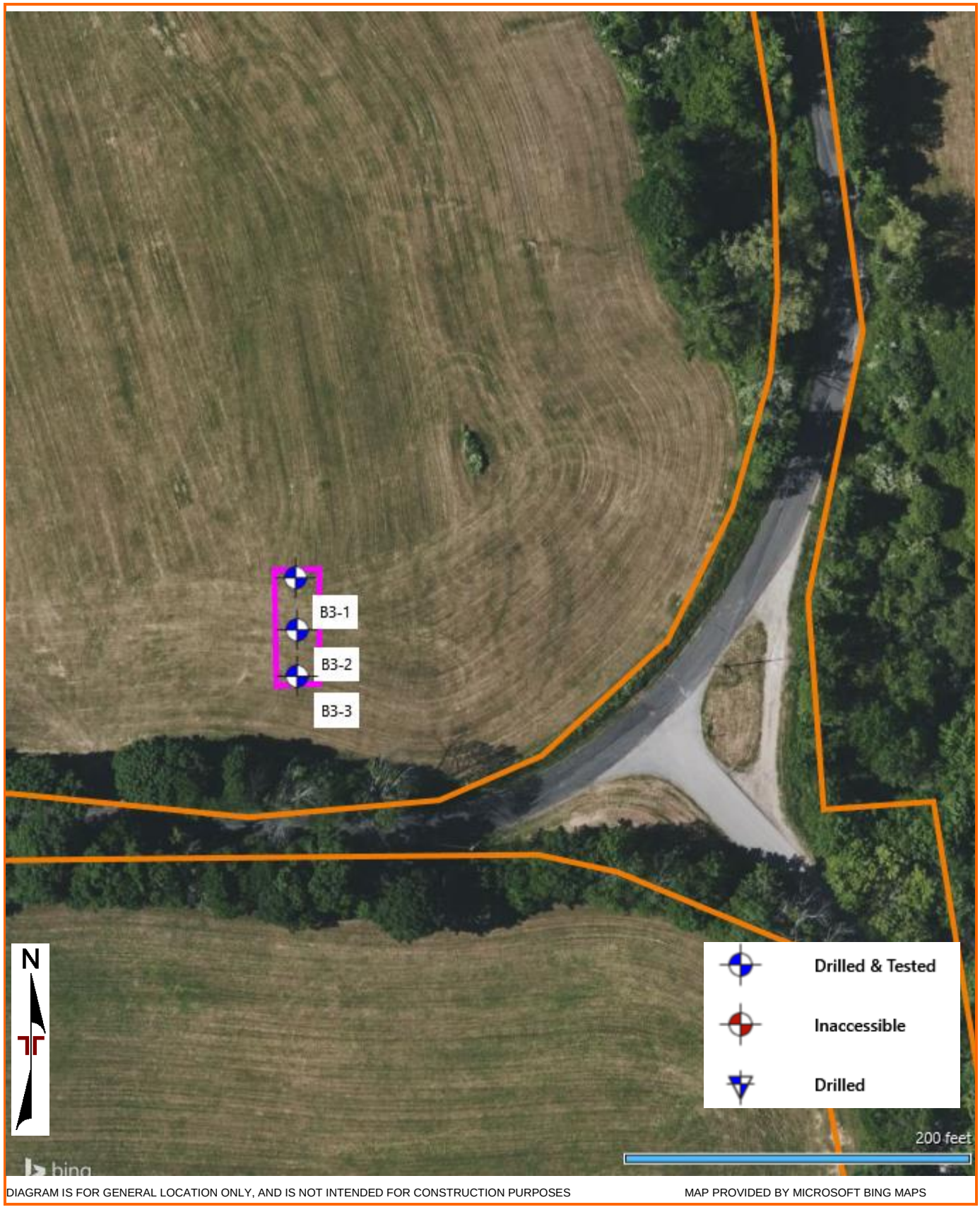


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Test Location Plan – Basin 5

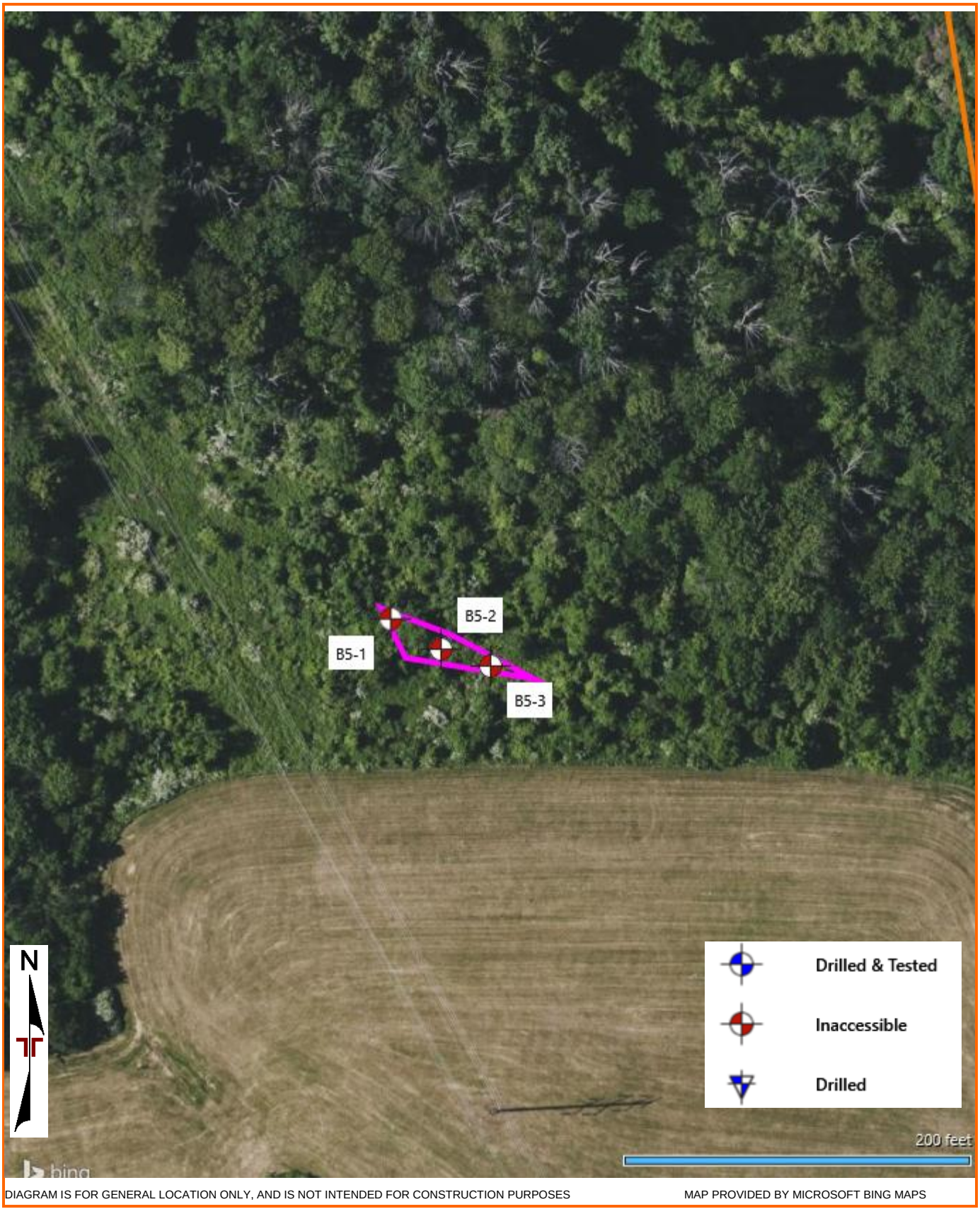


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Test Location Plan – Basin 7 & Basin 13

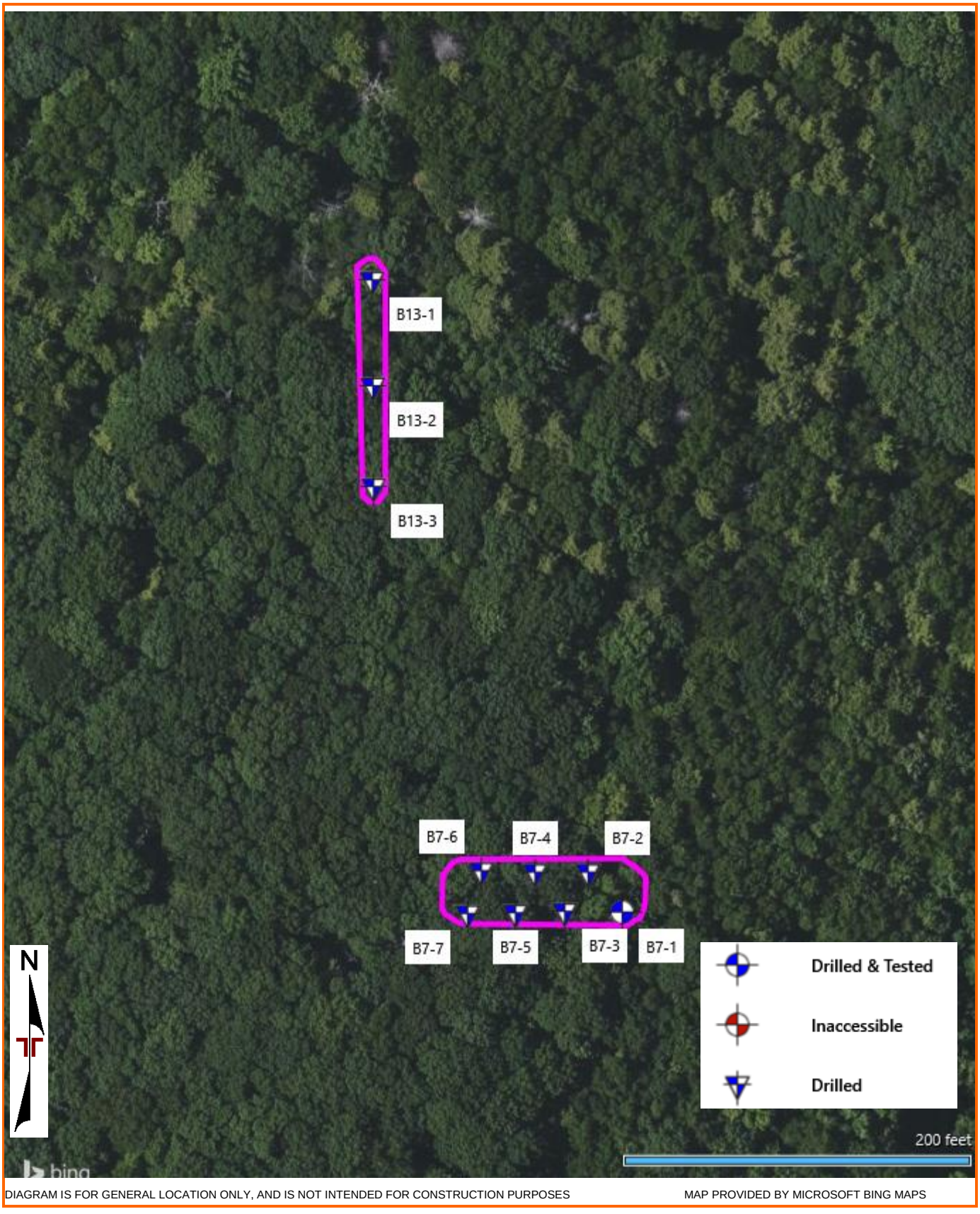


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Test Location Plan – Basin 9

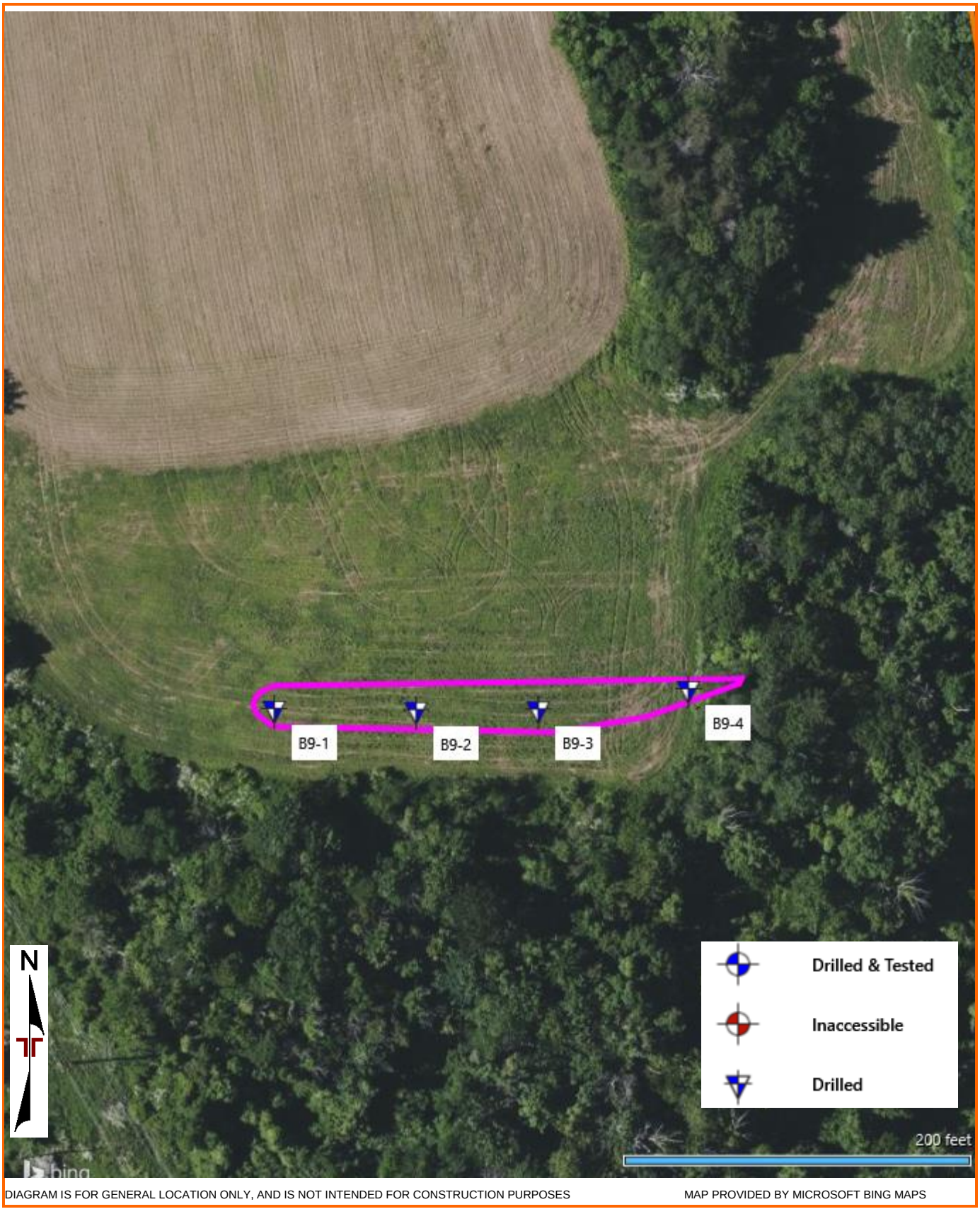


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Test Location Plan – Basin 8 and Basin 10

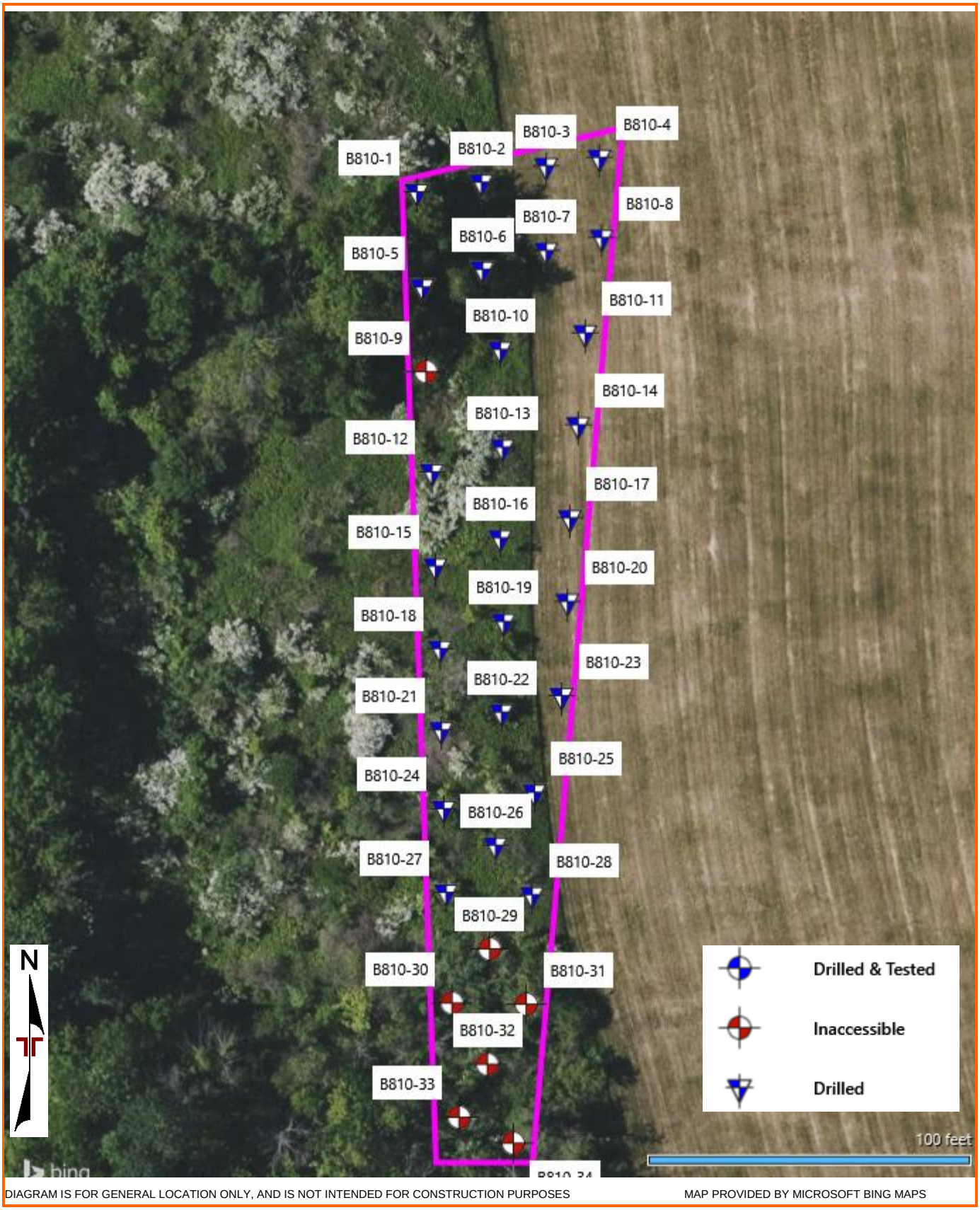


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Test Location Plan – Basin 12

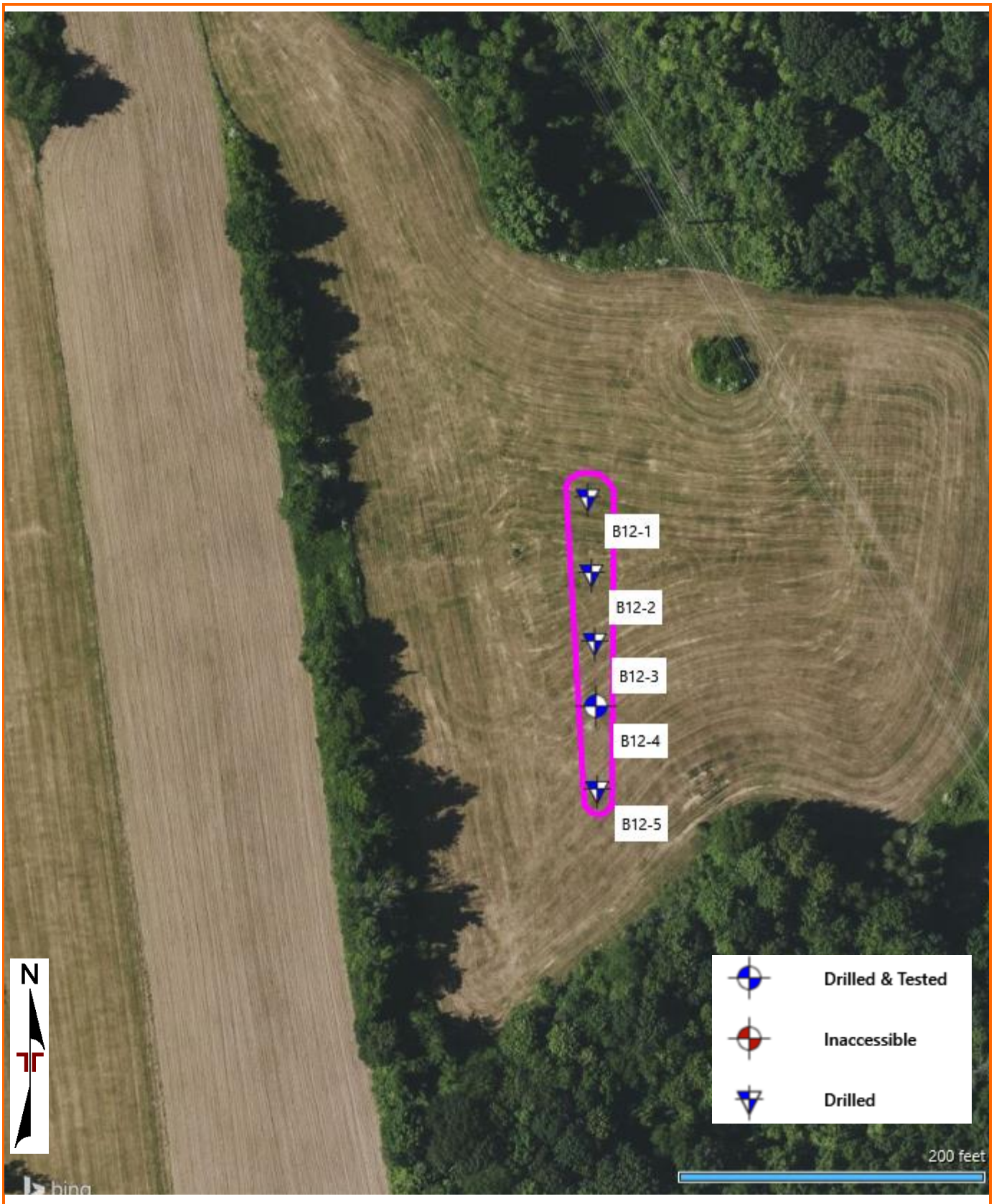


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Test Location Plan – Swale 11

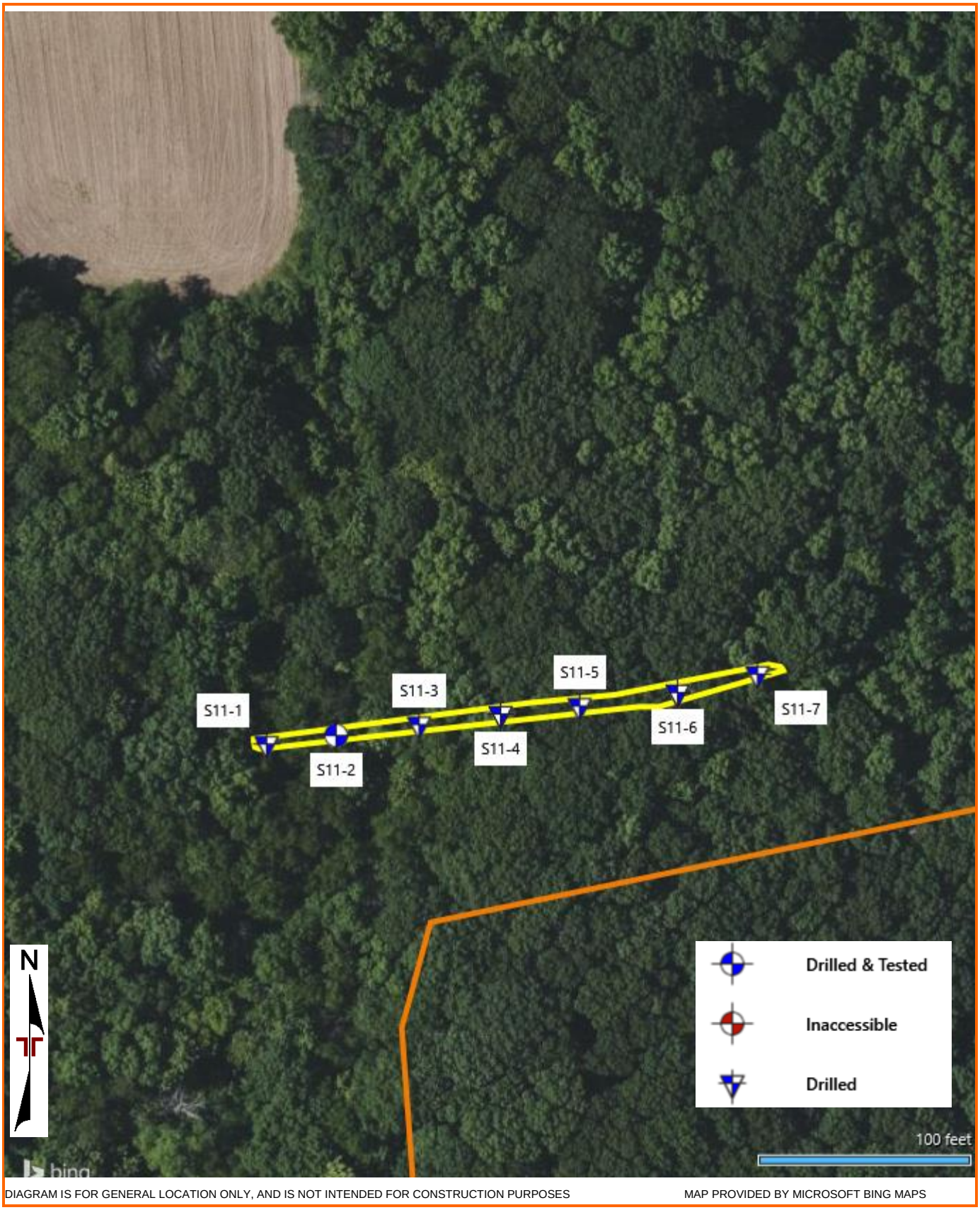


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Test Location Plan – 14

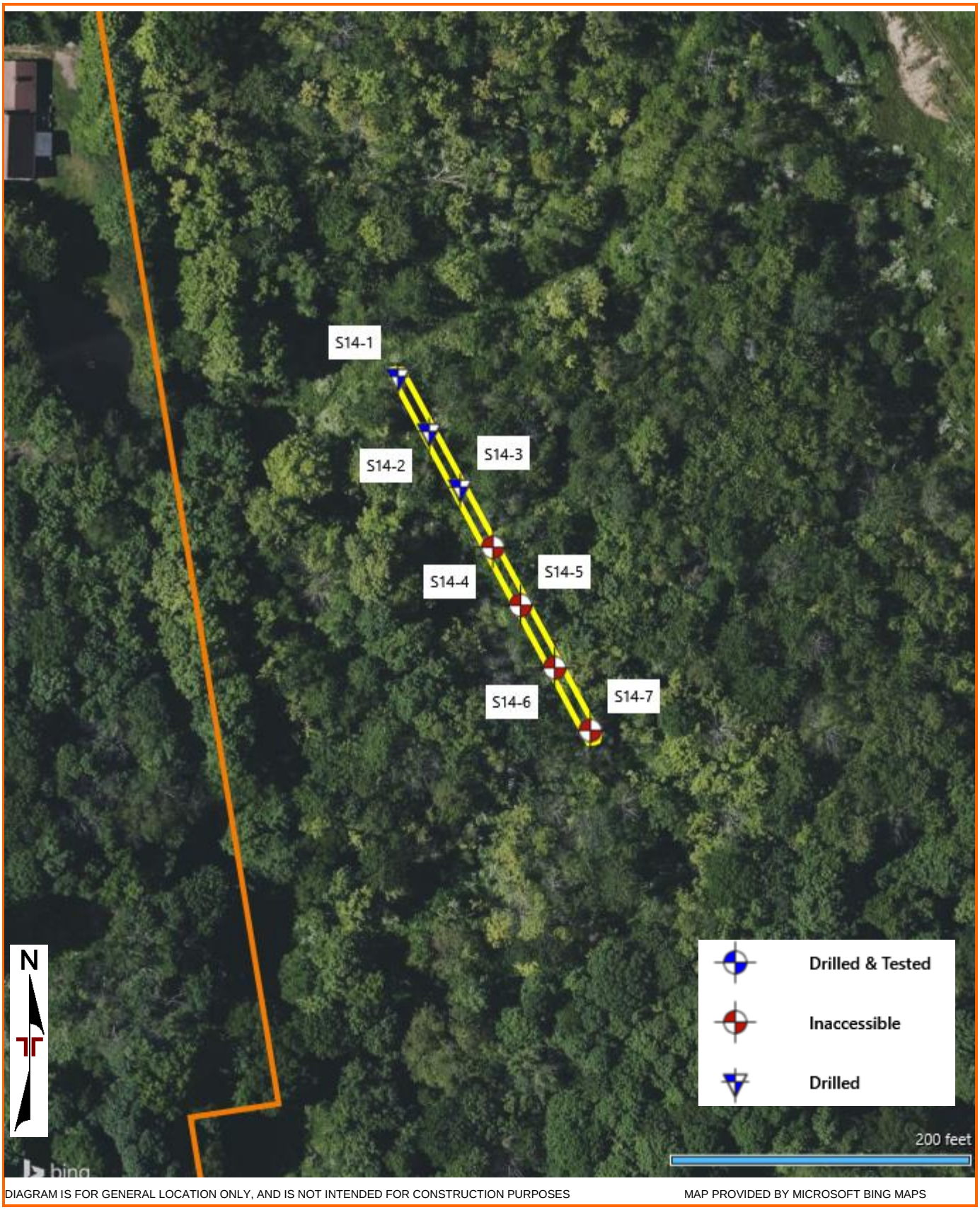


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Test Location Plan – Trench 1 and Trench 2a

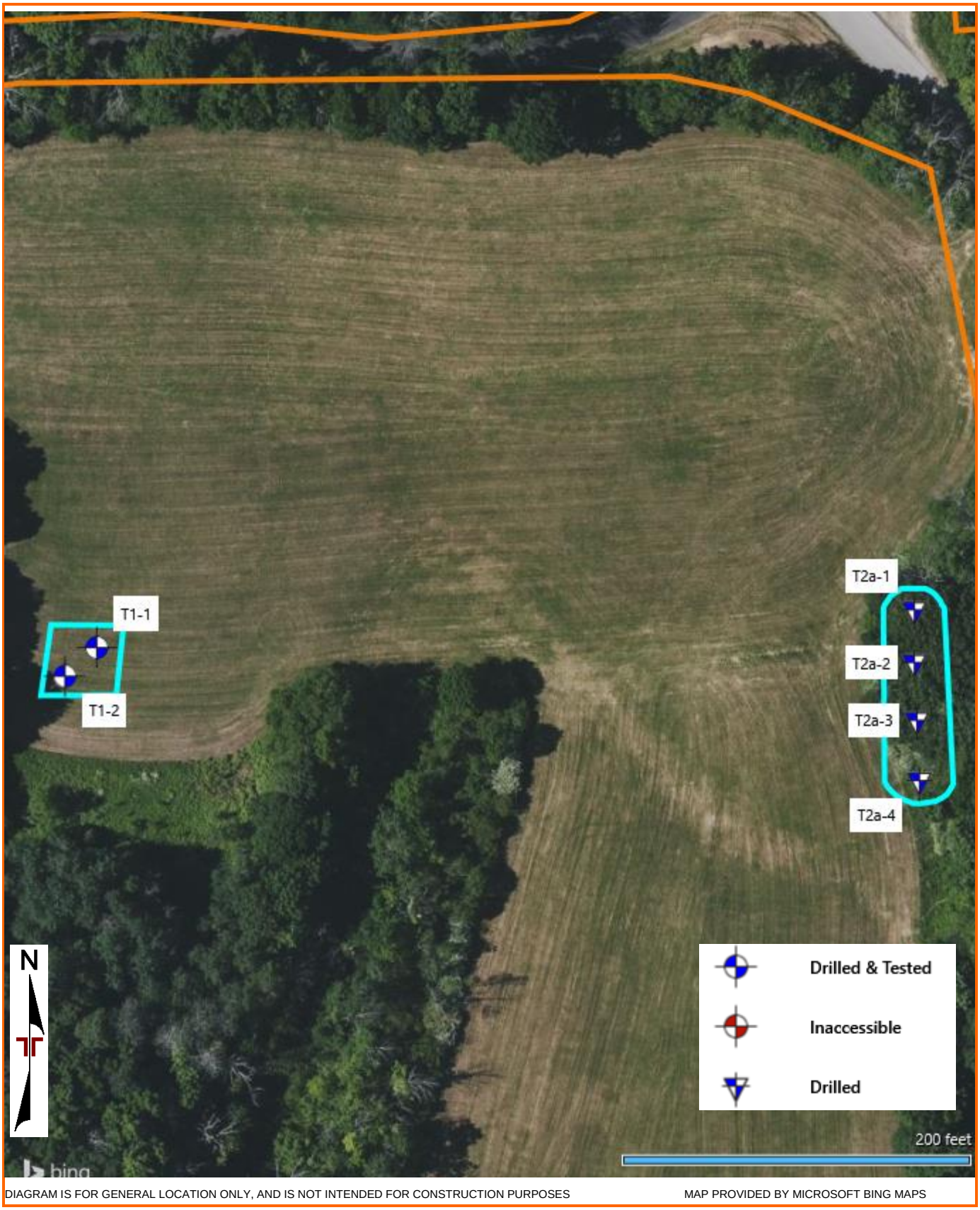


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Test Location Plan – Trench 2b

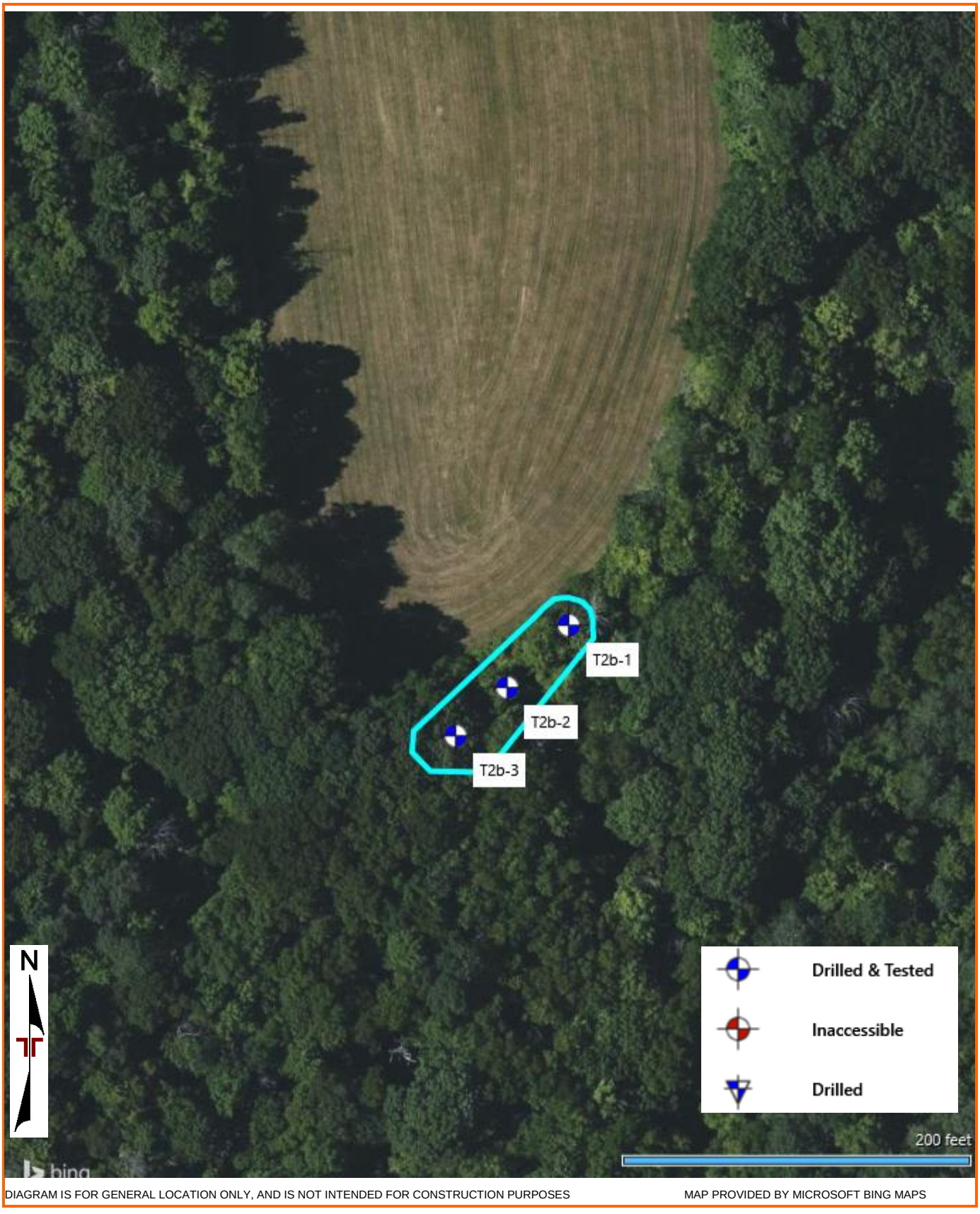


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Test Location Plan – Trench 4

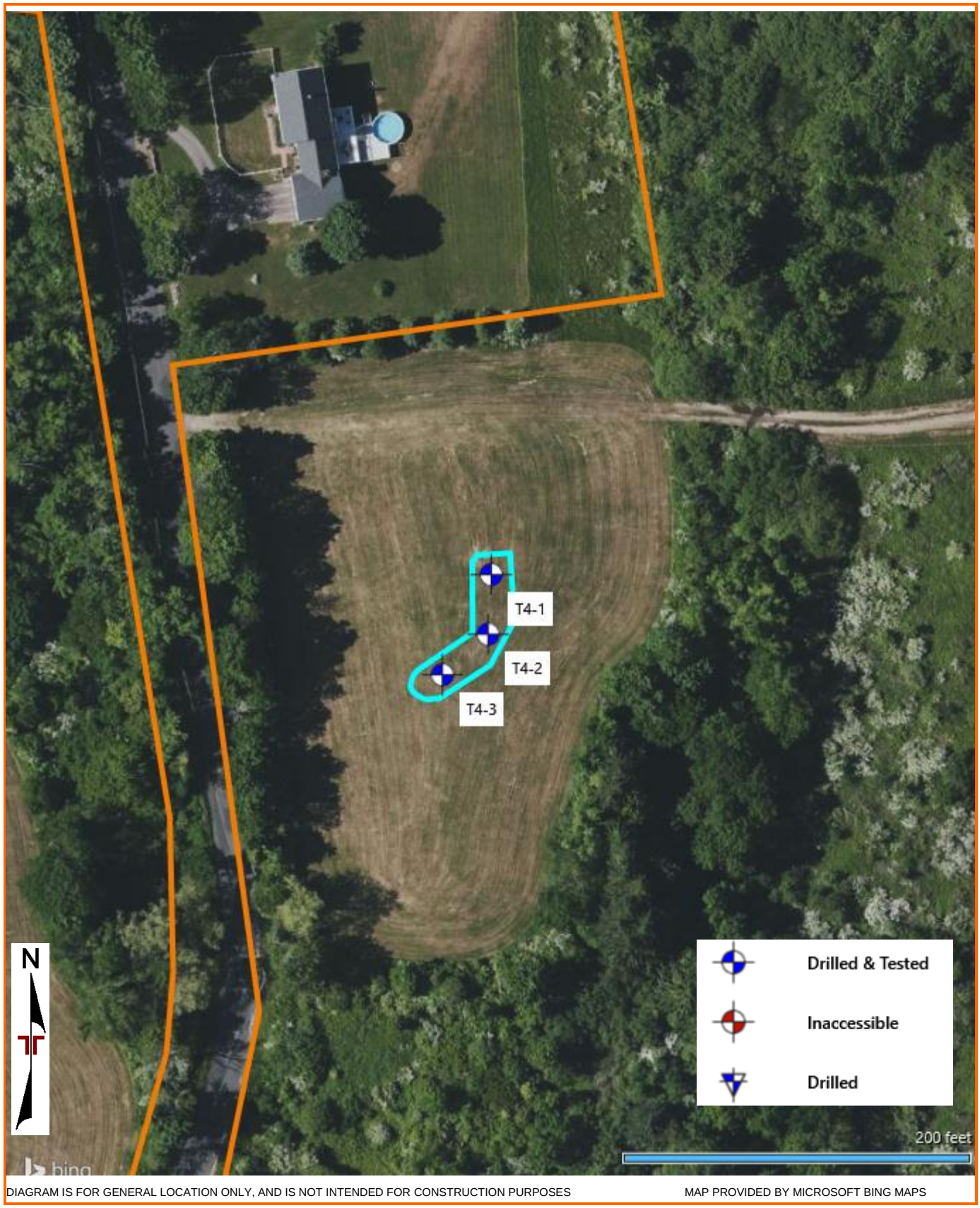


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION RESULTS

Contents:

Note: All attachments are one page unless noted above.

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS
Litchfield Solar Infiltration ■ Litchfield, Connecticut
Terracon Project No. J2215049

Terracon GeoReport

SAMPLING	WATER LEVEL	FIELD TESTS
Standard Penetration Test	**Water Initially Encountered** **Water Level After a Specified Period of Time** **Water Level After a Specified Period of Time** **Cave In Encountered** Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	**N** Standard Penetration Test Resistance (Blows/Ft.) **(HP)** Hand Penetrometer **(T)** Torvane **(DCP)** Dynamic Cone Penetrometer **UC** Unconfined Compressive Strength **(PID)** Photo-Ionization Detector **(OVA)** Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

LOCATION AND ELEVATION NOTES

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength Qu, (tsf)**	**Standard Penetration or N-Value Blows/Ft.**
Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
Medium Dense	10 - 29	Medium Stiff	0.50 to 1.00	4 - 8
Dense	30 - 50	Stiff	1.00 to 2.00	8 - 15
Very Dense	> 50	Very Stiff	2.00 to 4.00	15 - 30
		Hard	> 4.00	> 30

RELEVANCE OF SOIL BORING LOG

The soil boring logs contained within this document are intended for application to the project as described in this document. Use of these soil boring logs for any other purpose may not be appropriate.

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or [$Cc<1$ or $Cc>3.0$] [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or [$Cc<1$ or $Cc>3.0$] [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A"		CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OL	Organic clay [K, L, M, N] / Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K, L, M]
			PI plots below "A" line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OH	Organic clay [K, L, M, P] / Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

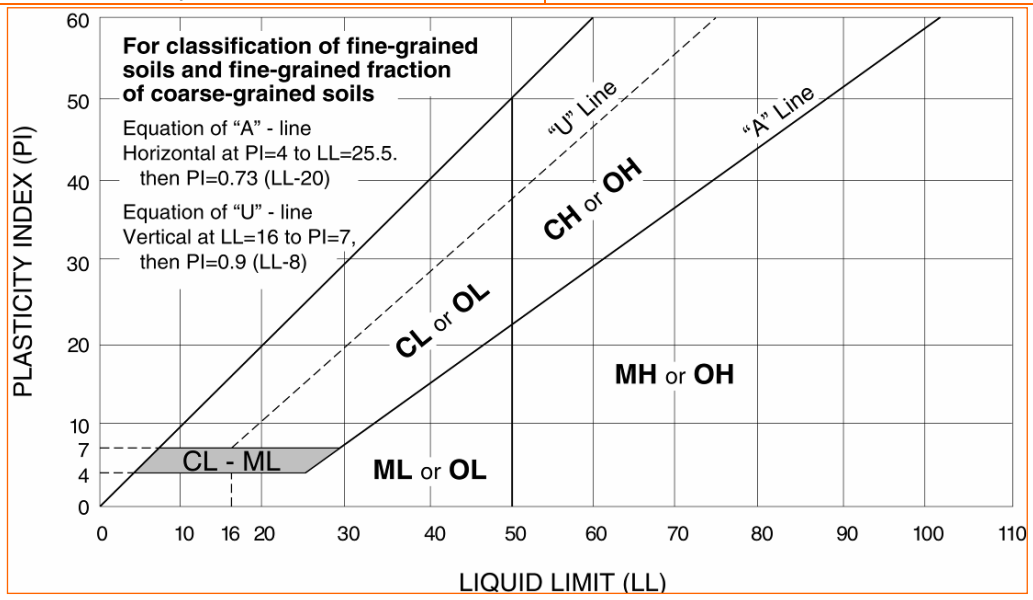
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



BORING LOG NO. B3-1

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7938° Longitude: -73.1688°

Approximate Surface Elev.: 1140 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)		INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.3	1139.5+/-	**TOPSOIL**							
2				**SILTY SAND WITH GRAVEL (SM)**, occasional to frequent cobbles, brown, medium dense							
		5.0	1135+/-			5			14	9-7-5-4 N=12	
				SANDY SILT WITH GRAVEL (ML), pockets of silty sand, occasional to frequent cobbles, brown, medium dense					12	8-6-8-7 N=14	
		8.0	1132+/-								
				Boring Terminated at 8 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Perched water at 7.5 ft.
Groundwater possibly delayed and observed during infiltratin test.

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-10-2021 | Boring Completed: 11-10-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B3-2

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7938° Longitude: -73.1688°

Approximate Surface Elev.: 1141 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, frequent cobbles, brown							
		2.0	1139+/-							
			SILTY SAND (SM), occasional cobbles, brown							
		4.0	1137+/-							
2			**SANDY SILT (ML)**, trace gravel, pockets of poorly graded sand, occasional to frequent cobbles, brown, medium dense		5			18	11-5-7-6 N=12	
								24	5-8-11-13 N=19	
		8.0	1133+/-							
			Boring Terminated at 8 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Groundwater possibly delayed and observed during infiltratin test.

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-10-2021 | Boring Completed: 11-10-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B3-3

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7937° Longitude: -73.1688°

Approximate Surface Elev.: 1139 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, frequent cobbles, brown							
		3.0	1136+/-							
2			**SILTY SAND (SM)**, brown							
		4.0	1135+/-							
			SILT WITH SAND (ML), with gravel, brown to gray, stiff		5		X	18	6-6-5-8 N=11	
		6.5	1132.5+/-							
			SILTY SAND WITH GRAVEL (SM), brown, dense				X	18	6-17-16-14 N=33	
		8.0	1131+/-							
			Boring Terminated at 8 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Perched water at 6 ft.
Groundwater possibly delayed and observed during infiltratin test.

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-10-2021 | Boring Completed: 11-10-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B7-1

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7897° Longitude: -73.1643°

Approximate Surface Elev.: 1164 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.0	1164+/-							
		SILTY SAND (SM), with roots, dark brown								
		1.0	1163+/-							
2		**SILTY SAND (SM)**, with rock fragments, brown-gray to brown, loose to medium dense						12	4-3-5-4 N=8	
								4	8-16-12-11 N=28	
		5.0	1159+/-		5					
		Boring Terminated at 5 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-03-2021 | Boring Completed: 11-03-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B7-2

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7898° Longitude: -73.1644°

Approximate Surface Elev.: 1168 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.0	1168+/-							
			SILTY SAND (SM), trace to with roots, dark brown to brown, medium dense							
		2.0	1166+/-				X	10	2-7-29-50/1" N=36	
3			**WEATHERED BEDROCK**, gray							
		3.0	1165+/-							
			Auger Refusal on Probable Bedrock at 3 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Offset once due to bedrock.
Do not perform infiltration test because of bedrock.

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-03-2021 | Boring Completed: 11-03-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B7-3

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7897° Longitude: -73.1644°

Approximate Surface Elev.: 1166 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH		ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.5	**SILTY SAND (SM)**, with roots, dark brown	1165.5+/-							
3		1.0	**WEATHERED BEDROCK**, gray	1165+/-							
			Auger Refusal on Probable Bedrock at 1 Foot								

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Offset once due to bedrock.
Do not perform infiltration test because of bedrock.

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-03-2021 | Boring Completed: 11-03-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B7-4

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7898° Longitude: -73.1645°

Approximate Surface Elev.: 1169 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.0	1169+/-							
			SANDY SILT (ML), with roots, dark brown							
2		1.0	1168+/-							
			SILTY SAND (SM), trace roots, brown, very dense				X	4	50/5"	
3		1.3	1167.5+/-							
		2.0	**WEATHERED BEDROCK**, gray							
			1167+/-							
			Auger Refusal on Probable Bedrock at 2 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Offset once due to bedrock.
Do not perform infiltration test because of bedrock.

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-03-2021	Boring Completed: 11-03-2021
Drill Rig: Diedrich D-50	Driller: C. Johnston
Project No.: J2215049	

BORING LOG NO. B7-5

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7897° Longitude: -73.1645°

Approximate Surface Elev.: 1166 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.0	**SILTY SAND (SM)**, with roots, dark brown							
		1.0	1165+/-							
			WEATHERED BEDROCK, gray				X	6	28-50/2"	
3		4.5	1161.5+/-							
			Auger Refusal on Probable Bedrock at 4.5 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Offset once due to bedrock.
Do not perform infiltration test because of bedrock.

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-03-2021 | Boring Completed: 11-03-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B7-6

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7898° Longitude: -73.1646°

Approximate Surface Elev.: 1167 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SILTY SAND (SM)**, with roots, dark brown to brown, loose							
		2.0	1165+/-				X	6	1-2-50/5"	
3			**WEATHERED BEDROCK**, gray							
		4.0	1163+/-							
			Auger Refusal on Probable Bedrock at 4 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Offset once due to bedrock.
Do not perform infiltration test because of bedrock.

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-03-2021 | Boring Completed: 11-03-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B7-7

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7897° Longitude: -73.1646°

Approximate Surface Elev.: 1165 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH		ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		1.0	**SILTY SAND (SM)**, with roots, dark brown	1164+/-							
2		1.7	**SANDY SILT (ML)**, trace roots, brown, loose	1163.5+/-				X	5	2-50/5"	
3		3.0	**WEATHERED BEDROCK**, gray	1162+/-							
			Auger Refusal on Probable Bedrock at 3 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Offset once due to bedrock
Do not perform infiltration test because of bedrock.

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-03-2021	Boring Completed: 11-03-2021
Drill Rig: Diedrich D-50	Driller: C. Johnston
Project No.: J2215049	

BORING LOG NO. B9-1

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7978° Longitude: -73.1638°

Approximate Surface Elev.: 1188 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
2			**SILT WITH SAND (ML)**, trace roots, dark brown, medium stiff to stiff			▽		23	1-2-3-4 N=5	
								24	5-6-6-7 N=12	
		4.0	1184+/-							
			Boring Terminated at 4 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Do not perform infiltration test due to delayed groundwater presence.

WATER LEVEL OBSERVATIONS

▽ *After 24 hours*

▽ *After 48 hours*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-11-2021 | Boring Completed: 11-11-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B9-2

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7978° Longitude: -73.1635°

Approximate Surface Elev.: 1188 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, trace roots, dark brown, loose			▽		21	1-1-3-5 N=4	
		2.0	1186+/-							
2			**SILT WITH SAND (ML)**, dark brown, stiff					21	5-6-7-6 N=13	
		4.0	1184+/-							
			Boring Terminated at 4 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Do not perform infiltration test due to delayed groundwater presence.

WATER LEVEL OBSERVATIONS

▽ *After 24 hours*

▽ *After 48 hours*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-11-2021 | Boring Completed: 11-11-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B9-3

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7978° Longitude: -73.1632°

Approximate Surface Elev.: 1186 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
2			**SILT WITH SAND (ML)**, trace roots, dark brown, medium stiff to stiff			▽		22	1-2-4-4 N=6	
								22	5-8-7-7 N=15	
		4.0	1182+/-							
			Boring Terminated at 4 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Do not perform infiltration test due to delayed groundwater presence.

WATER LEVEL OBSERVATIONS

▽ *After 24 hours*

▽ *After 48 hours*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-11-2021 | Boring Completed: 11-11-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B9-4

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7978° Longitude: -73.1629°

Approximate Surface Elev.: 1185 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
2			**SILT WITH SAND (ML)**, trace roots, dark brown, soft to stiff			▽		21	2-1-2-5 N=3	
								22	5-5-6-6 N=11	
		4.0	1181+/-							
			Boring Terminated at 4 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Do not perform infiltration test due to delayed groundwater presence.

WATER LEVEL OBSERVATIONS

▽ *After 24 hours*

▽ *After 48 hours*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-11-2021 | Boring Completed: 11-11-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-1

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7944° Longitude: -73.1659°

Approximate Surface Elev.: 1128 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
2			**SANDY SILT (ML)**, brown, medium dense			▽				
		5.0	1123+/-		5		X	21	9-9-8-6 N=17	
			SILTY SAND (SM), trace gravel, brown, loose				X	10	2-2-3-2 N=5	
		7.0	1121+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-04-2021 | Boring Completed: 11-04-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-2

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7944° Longitude: -73.1658°

Approximate Surface Elev.: 1128 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SILTY SAND (SM)**, trace roots, brown							
		2.0	1126+/-							
2			**SANDY SILT (ML)**, brown, very loose to loose		5			19	6-4-5-4 N=9	
								12	2-woh-1-2	
		7.0	1121+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-04-2021 | Boring Completed: 11-04-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-3

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7944° Longitude: -73.1658°

Approximate Surface Elev.: 1129 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, trace roots, occasional cobbles, brown			▽				
		3.0	1126+/-							
2			**SILTY SAND WITH GRAVEL (SM)**, brown, loose to medium dense		5	▽		22	6-6-6-4 N=12	
								12	2-2-2-3 N=4	
		7.0	1122+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-04-2021 | Boring Completed: 11-04-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-4

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7944° Longitude: -73.1657°

Approximate Surface Elev.: 1130 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, trace roots, brown							
		2.0	1128+/-							
2			**SILTY SAND WITH GRAVEL (SM)**, occasional to frequent cobbles, brown, loose			▽				
		5.0	1125+/-			▽		24	5-5-4-4 N=9	
			SANDY SILT (ML), trace gravel, brown, loose		5			14	2-2-1-4 N=3	
		7.0	1123+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-04-2021 | Boring Completed: 11-04-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-5

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7943° Longitude: -73.1659°

Approximate Surface Elev.: 1130 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, trace roots, occasional cobbles, brown							
		2.5	1127.5+/-							
2			**SILTY SAND WITH GRAVEL (SM)**, brown, medium dense					24	5-8-9-11 N=17	
		6.0	1124+/-		5					
			SANDY SILT (ML), trace gravel, brown, loose					16	6-4-2-4 N=6	
		7.0	1123+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-09-2021 | Boring Completed: 11-09-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-6

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7943° Longitude: -73.1658°

Approximate Surface Elev.: 1130 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, occasional cobbles, brown							
		2.0	1128+/-							
2			**SILTY SAND (SM)**, trace gravel, occasional to frequent cobbles, brown, medium dense					22	6-5-5-5 N=10	
		5.0	1125+/-		5					
			SANDY SILT (ML), trace gravel, brown, loose					16	2-2-1-3 N=3	
		7.0	1123+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-09-2021 | Boring Completed: 11-09-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-7

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7943° Longitude: -73.1658°

Approximate Surface Elev.: 1130 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, trace roots, brown							
		2.5	1127.5+/-							
2			**SILTY SAND (SM)**, trace gravel, brown, loose		5	▽		22	4-4-4-5 N=8	
						▽		12	3-2-2-5 N=4	
		7.0	1123+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-08-2021 | Boring Completed: 11-08-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-8

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7943° Longitude: -73.1657°

Approximate Surface Elev.: 1130 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, trace roots, occasional cobbles, brown							
		3.0	1127+/-							
2			**SILTY SAND WITH GRAVEL (SM)**, occasional to frequent cobbles, brown, loose to medium dense		5	▽ ▽		22	5-5-5-5 N=10	
								12	3-2-2-2 N=4	
		7.0	1123+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-05-2021 | Boring Completed: 11-05-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-10

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7942° Longitude: -73.1658°

Approximate Surface Elev.: 1130 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, trace roots, occasional cobbles, brown							
		3.0	1127+/-							
2			**SILTY SAND WITH GRAVEL (SM)**, occasional to frequent cobbles, brown, loose to medium dense		5	▽		24	5-6-7-8 N=13	
						▽		14	6-4-3-3 N=7	
		7.0	1123+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-08-2021 | Boring Completed: 11-08-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-11

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7943° Longitude: -73.1657°

Approximate Surface Elev.: 1130 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0								
			SANDY SILT (ML), trace roots, dark brown							
		2.0	1128+/-							
2			**SILTY SAND WITH GRAVEL (SM)**, occasional to frequent cobbles, brown, loose to medium dense					24	5-5-5-5 N=10	
					5			12	4-2-2-3 N=4	
		7.0	1123+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-05-2021 | Boring Completed: 11-05-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-12

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7941° Longitude: -73.1659°

Approximate Surface Elev.: 1128 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, brown							
		3.0	1125+/-							
2			**SILTY SAND (SM)**, occasional to frequent cobbles, brown, medium dense					24	7-8-7-7 N=15	
		5.0	1123+/-		5					
			SANDY SILT (ML), trace gravel, pockets of silty sand, brown, loose					18	3-2-2-2 N=4	
		7.0	1121+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-08-2021 | Boring Completed: 11-08-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-13

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7942° Longitude: -73.1658°

Approximate Surface Elev.: 1129 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.0								
		SANDY SILT (ML), occasional cobbles, brown								
		2.0	1127+/-							
2		**SILTY SAND WITH GRAVEL (SM)**, occasional to frequent cobbles, pockets of sandy silt, brown, medium dense						24	6-6-6-6 N=12	
		5.0	1124+/-		5					
		SANDY SILT (ML), trace gravel, brown, loose						16	2-2-2-3 N=4	
		7.0	1122+/-							
		Boring Terminated at 7 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-08-2021 | Boring Completed: 11-08-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-14

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7942° Longitude: -73.1657°

Approximate Surface Elev.: 1130 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, trace roots, occasional cobbles, dark brown							
		3.0	1127+/-							
2			**SILTY SAND (SM)**, trace gravel, brown, medium dense					20	7-10-10-9 N=20	
		5.0	1125+/-		5					
			SANDY SILT (ML), trace gravel, pocket of poorly graded sand, brown, loose					14	3-3-4-4 N=7	
		7.0	1123+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-05-2021 | Boring Completed: 11-05-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-15

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7941° Longitude: -73.1659°

Approximate Surface Elev.: 1127 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, trace roots, occasional cobbles, brown							
		2.0	1125+/-							
2			**SILTY SAND WITH GRAVEL (SM)**, brown, medium dense					24	5-5-7-5 N=12	
		5.0	1122+/-		5					
			SANDY SILT WITH GRAVEL (ML), brown, loose					14	3-2-2-1 N=4	
		7.0	1120+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-05-2021 | Boring Completed: 11-05-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-16

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7941° Longitude: -73.1658°

Approximate Surface Elev.: 1128 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0	1128+/-							
			SANDY SILT (ML), trace roots, dark brown							
		2.0	1126+/-							
2			**SILTY SAND WITH GRAVEL (SM)**, occasional to frequent cobbles, brown, loose to medium dense					24	5-6-5-7 N=11	
					5	▽		22	3-3-2-3 N=5	
		7.0	1121+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-05-2021 | Boring Completed: 11-05-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-17

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7941° Longitude: -73.1657°

Approximate Surface Elev.: 1130 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, trace roots, dark brown							
		3.0	1127+/-							
2			**SILTY SAND WITH GRAVEL (SM)**, brown, loose to medium dense		5			24	6-6-7-9 N=13	
								12	6-3-4-3 N=7	
		7.0	1123+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-05-2021 | Boring Completed: 11-05-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-18

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.794° Longitude: -73.1659°

Approximate Surface Elev.: 1127 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, trace roots, occasional cobbles, brown							
		3.0	1124+/-							
2			**SILTY SAND WITH GRAVEL (SM)**, occasional to frequent cobbles, brown, medium dense		5	▽		24	6-7-8-8 N=15	
						▽		12	4-5-6-6 N=11	
		7.0	1120+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-08-2021 | Boring Completed: 11-08-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-19

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.794° Longitude: -73.1658°

Approximate Surface Elev.: 1128 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, occasional cobbles, brown							
		3.0	1125+/-							
2			**SILTY SAND (SM)**, trace to with gravel, occasional cobbles, pockets of sandy silt, brown, loose to medium dense		5	▽		24	6-7-7-6 N=14	
								20	4-4-4-4 N=8	
		7.0	1121+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-08-2021 | Boring Completed: 11-08-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-20

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.794° Longitude: -73.1657°

Approximate Surface Elev.: 1130 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, occasional cobbles, brown							
		3.0	1127+/-							
2			**SILTY SAND WITH GRAVEL (SM)**, occaisonal to frequent cobbles, brown, medium dense			▽		22	6-6-8-8 N=14	
		5.0	1125+/-		5					
			SANDY SILT (ML), trace gravel, brown, loose					24	4-2-1-3 N=3	
		7.0	1123+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-05-2021 | Boring Completed: 11-05-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-21

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7939° Longitude: -73.1659°

Approximate Surface Elev.: 1126 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, occasional cobbles, brown							
		2.0	1124+/-							
2			**SILTY SAND WITH GRAVEL (SM)**, occasional to frequent cobbles, brown to black, medium dense		5	▽ ▽		24	6-6-6-6 N=12	
								20	7-9-7-6 N=16	
		7.0	1119+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-09-2021 | Boring Completed: 11-09-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-22

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7939° Longitude: -73.1658°

Approximate Surface Elev.: 1128 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, occasional cobbles, brown							
		3.0	1125+/-							
2			**SILTY SAND WITH GRAVEL (SM)**, occasional to frequent cobbles, brown, loose to medium dense		5	▽		24	5-6-6-6 N=12	
								18	2-3-6-4 N=9	
		7.0	1121+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-08-2021 | Boring Completed: 11-08-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-23

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.794° Longitude: -73.1658°

Approximate Surface Elev.: 1129 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, brown							
		3.0	1126+/-							
2			**SILTY SAND (SM)**, trace gravel, occasional cobbles, brown, medium dense					22	6-5-6-6 N=11	
		5.0	1124+/-		5					
			SANDY SILT (ML), trace gravel, brown, medium dense					16	5-9-6-3 N=15	
		6.5	1122.5+/-							
		7.0	**SILTY SAND (SM)**, pocket of poorly graded sand with gravel, loose							
			1122+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-05-2021 | Boring Completed: 11-05-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-24

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7939° Longitude: -73.1659°

Approximate Surface Elev.: 1126 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.0								
			SANDY SILT (ML), dark brown							
		1.5	1124.5+/-							
2			**SILTY SAND WITH GRAVEL (SM)**, occasional cobbles, brown, medium dense					24	4-6-6-7 N=12	
		5.0	1121+/-		5					
			SANDY SILT (ML), trace gravel, pockets of silty sand, brown, loose					24	4-4-5-6 N=9	
		7.0	1119+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-08-2021 | Boring Completed: 11-08-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-25

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7939° Longitude: -73.1658°

Approximate Surface Elev.: 1129 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, occasional cobbles, brown							
		3.0	1126+/-							
2			**SILTY SAND (SM)**, trace gravel, occasional to frequent cobbles, brown, medium dense		5	▽		20	3-4-10-9 N=14	
						▽		24	3-6-6-6 N=12	
		7.0	1122+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-08-2021 | Boring Completed: 11-08-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-26

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7938° Longitude: -73.1658°

Approximate Surface Elev.: 1128 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, occasional cobbles, brown							
		3.0	1125+/-							
2			**SILTY SAND (SM)**, trace gravel, occasional cobbles, brown, medium dense					24	5-7-8-6 N=15	
		5.0	1123+/-		5	▽				
			SANDY SILT WITH GRAVEL (ML), brown, loose			▽		22	3-4-5-3 N=9	
		7.0	1121+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-08-2021 | Boring Completed: 11-08-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-27

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7938° Longitude: -73.1659°

Approximate Surface Elev.: 1126 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, occasional cobbles, brown			▽				
		2.5	1123.5+/-							
2			**SILTY SAND (SM)**, trace gravel, occasional cobbles, brown, medium dense			▽		24	5-7-6-7 N=13	
		5.0	1121+/-		5					
			SANDY SILT (ML), trace gravel, brown, loose					24	3-2-4-4 N=6	
		7.0	1119+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-08-2021 | Boring Completed: 11-08-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B810-28

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7938° Longitude: -73.1658°

Approximate Surface Elev.: 1129 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, occasional cobbles, brown							
		3.0	1126+/-							
2			**SILTY SAND WITH GRAVEL (SM)**, brown, medium dense					24	4-5-5-5 N=10	
		5.0	1124+/-		5					
			SANDY SILT WITH GRAVEL (ML), brown, loose					20	3-2-3-3 N=5	
		7.0	1122+/-							
			Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-in. continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-08-2021 | Boring Completed: 11-08-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B12-1

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7941° Longitude: -73.1624°

Approximate Surface Elev.: 1190 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)		INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.3	1189.5+/-	**TOPSOIL**							
		1.0	1189+/-	**SANDY SILT (ML)**, with roots, brown							
2				**SILTY SAND (SM)**, trace gravel, brown, medium dense			▽		20	4-5-5-5 N=10	
									12	4-5-5-4 N=10	
		5.0	1185+/-			5					
				Boring Terminated at 5 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-04-2021 | Boring Completed: 11-04-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B12-2

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7939° Longitude: -73.1624°

Approximate Surface Elev.: 1190 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.3	1189.5+/-							
		TOPSOIL								
		1.0	1189+/-							
		SANDY SILT (ML), with roots, dark brown								
2		**SILTY SAND (SM)**, trace gravel, brown, loose						12	1-2-4-5 N=6	
		3.0	1187+/-							
		SANDY SILT (ML), trace gravel, brown, medium dense				▽		16	4-4-6-6 N=10	
		5.0	1185+/-		5					
		Boring Terminated at 5 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-04-2021 | Boring Completed: 11-04-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B12-3

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7938° Longitude: -73.1624°

Approximate Surface Elev.: 1189 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.3	1188.5+/-							
		TOPSOIL								
		1.0	1188+/-							
		SANDY SILT (ML), with roots, dark brown								
2		**SILTY SAND WITH GRAVEL (SM)**, brown, loose to medium dense				▼		22	1-4-4-5 N=8	
						▽		24	6-6-6-8 N=12	
		5.0	1184+/-		5	▽				
		Boring Terminated at 5 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*
▽ *After 4 hours*
▼ *After 24 hours*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-04-2021 | Boring Completed: 11-04-2021
Drill Rig: Diedrich D-50 | Driller: C. Johnston
Project No.: J2215049

BORING LOG NO. B12-4

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7937° Longitude: -73.1624°

Approximate Surface Elev.: 1190 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.3	1189.5+/-							
		TOPSOIL								
		1.0	1189+/-							
		SANDY SILT (ML), with roots, dark brown								
2		**SILTY SAND (SM)**, trace roots and gravel, brown, loose to medium dense						14	3-1-6-7 N=7	
								22	9-7-9-11 N=16	
		5.0	1185+/-		5					
		Boring Terminated at 5 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-04-2021	Boring Completed: 11-04-2021
Drill Rig: Diedrich D-50	Driller: C. Johnston
Project No.: J2215049	

BORING LOG NO. B12-5

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7935° Longitude: -73.1624°

Approximate Surface Elev.: 1195 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.3 **TOPSOIL**	1194.5+/-							
		1.0 **SANDY SILT (ML)**, with roots, dark brown	1194+/-							
2		**SILTY SAND WITH GRAVEL (SM)**, brown, medium dense						20	woh-5-6-7	
		3.0	1192+/-							
3		4.0 **WEATHERED BEDROCK**, gray	1191+/-					3	50/5"	
		Auger Refusal on Probable Bedrock at 4 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Offset once due to bedrock.
Do not perform infiltration test because of bedrock.

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-04-2021	Boring Completed: 11-04-2021
Drill Rig: Diedrich D-50	Driller: C. Johnston
Project No.: J2215049	

BORING LOG NO. B13-1

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7907° Longitude: -73.1648°

Approximate Surface Elev.: 1167 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, trace roots, brown							
		2.0	1165+/-							
2			**SILTY SAND WITH GRAVEL (SM)**, brown, medium dense					20	12-14-14-28 N=28	
		4.0	1163+/-							
3			**WEATHERED BEDROCK**, gray					2	50/2"	
		5.5	1161.5+/-		5					
			Auger Refusal on Probable Bedrock at 5.5 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Offset once due to bedrock.
Do not perform infiltration test because of bedrock.

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-02-2021	Boring Completed: 11-02-2021
Drill Rig: Diedrich D-50	Driller: C. Johnston
Project No.: J2215049	

BORING LOG NO. B13-2

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7906° Longitude: -73.1648°

Approximate Surface Elev.: 1171 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		**SILTY SAND (SM)**, trace roots, brown								
		2.3	1168.5+/-				X	4	50/5"	
3		3.0 **WEATHERED BEDROCK**, gray	1168+/-							
		Auger Refusal on Probable Bedrock at 3 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Offset once due to bedrock.
Do not perform infiltration test due to bedrock.

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-02-2021 | Boring Completed: 11-02-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. B13-3

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7904° Longitude: -73.1648°

Approximate Surface Elev.: 1166 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SILT (ML)**, trace roots, brown-gray							
		2.0	1164+/-							
3			**WEATHERED BEDROCK**, gray				X	4	36-50/1"	
		4.0	1162+/-							
			Auger Refusal on Probable Bedrock at 4 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Perched water at 3 ft.
Offset once due to bedrock.
Do not perform infiltration test because of bedrock.

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-02-2021 | Boring Completed: 11-02-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. T1-1

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7925° Longitude: -73.1695°

Approximate Surface Elev.: 1130 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, trace roots, brown, loose					23	1-3-4-5 N=7	
		2.0	1128+/-							
			Boring Terminated at 2 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-10-2021 | Boring Completed: 11-10-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. T1-2

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7925° Longitude: -73.1695°

Approximate Surface Elev.: 1129 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, trace roots, brown, loose					22	2-2-3-4 N=5	
		2.0	1127+/-							
			Boring Terminated at 2 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-10-2021 | Boring Completed: 11-10-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. T2a-1

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7926° Longitude: -73.1677°

Approximate Surface Elev.: 1093 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.0	1093+/-							
			SANDY SILT (ML), trace gravel and roots, brown to dark brown, loose					12	3-2-1-1 N=3	
		2.0	1091+/-							
			Boring Terminated at 2 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-09-2021 | Boring Completed: 11-09-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. T2a-2

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7925° Longitude: -73.1678°

Approximate Surface Elev.: 1091 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0	1091+/-							
		SILTY SAND (SM), occasional cobbles and boulders, brown, medium dense						12	3-4-11-6 N=15	
		2.0	1089+/-							
		Boring Terminated at 2 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Offset approximately 15 ft W due to trees/brush.
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-09-2021 | Boring Completed: 11-09-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. T2a-3

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7924° Longitude: -73.1678°

Approximate Surface Elev.: 1089 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0	1089+/-							
			SANDY SILT (ML), trace roots, occasional cobbles, brown, loose					12	1-1-2-12 N=3	
		2.0	1087+/-							
			Boring Terminated at 2 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Offset approximately 10 ft W due to trees/brush.
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-09-2021 | Boring Completed: 11-09-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. T2a-4

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7923° Longitude: -73.1677°

Approximate Surface Elev.: 1088 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.0	**SANDY SILT (ML)**, with roots, dark brown, very loose					12	1-1-1-3 N=2	
		2.0	1086+/-							
			Boring Terminated at 2 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-09-2021 | Boring Completed: 11-09-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. T2b-1

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7902° Longitude: -73.168°

Approximate Surface Elev.: 1050 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, trace roots, brown, loose					15	2-1-3-3 N=4	
		2.0	1048+/-							
			Boring Terminated at 2 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-10-2021 | Boring Completed: 11-10-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. T2b-2

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7901° Longitude: -73.1681°

Approximate Surface Elev.: 1050 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, trace roots, brown, medium dense					12	6-10-4-2 N=14	
		2.0	1048+/-							
			Boring Terminated at 2 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-10-2021 | Boring Completed: 11-10-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. T2b-3

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.79° Longitude: -73.1683°

Approximate Surface Elev.: 1051 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, trace roots, brown, loose					19	2-1-2-2 N=3	
		2.0	1049+/-							
			Boring Terminated at 2 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-10-2021 | Boring Completed: 11-10-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. T4-1

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7949° Longitude: -73.1671°

Approximate Surface Elev.: 1117 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.3	1116.5+/-							
		TOPSOIL								
2		**SILTY SAND (SM)**, trace gravel, brown, loose						20	2-1-2-6 N=3	
		3.0	1114+/-					6	6-6	
		Boring Terminated at 3 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-09-2021 | Boring Completed: 11-09-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. T4-2

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7948° Longitude: -73.1671°

Approximate Surface Elev.: 1117 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.3	1116.5+/-							
		TOPSOIL								
2		**SILTY SAND (SM)**, trace gravel, brown, loose						20	2-2-2-5 N=4	
								12	6-7	
		3.0	1114+/-							
		Boring Terminated at 3 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-09-2021 | Boring Completed: 11-09-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. T4-3

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7948° Longitude: -73.1672°

Approximate Surface Elev.: 1118 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.3	1117.5+/-							
		TOPSOIL								
2		**SILTY SAND (SM)**, trace gravel and roots, brown, loose						18	2-2-3-6 N=5	
		3.0	1115+/-					12	6-5	
		Boring Terminated at 3 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-09-2021	Boring Completed: 11-09-2021
Drill Rig: Diedrich D-50	Driller: C. Johnston
Project No.: J2215049	

BORING LOG NO. S11-1

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7909° Longitude: -73.1628°

Approximate Surface Elev.: 1204 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.3	1203.5+/-							
			TOPSOIL							
			SANDY SILT (ML), trace gravel and roots, dark brown to brown, loose					12	1-1-1-2 N=2	
		2.5	1201.5+/-					14	9-25-28-28 N=53	
3			**WEATHERED BEDROCK**, gray							
		4.0	1200+/-							
			Auger Refusal on Probable Bedrock at 4 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Offset twice due to bedrock.
Do not perform infiltration test because of bedrock.

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-01-2021 | Boring Completed: 11-01-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. S11-2

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7909° Longitude: -73.1627°

Approximate Surface Elev.: 1204 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.2	1204+/-							
			TOPSOIL							
			SANDY SILT (ML), trace roots, dark brown to brown, very loose					16	1-1-1-2 N=2	
		2.0	1202+/-							
2			**SILTY SAND WITH GRAVEL (SM)**, brown, medium dense					20	7-9-8-7 N=17	
		4.0	1200+/-							
			Boring Terminated at 4 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-01-2021 | Boring Completed: 11-01-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. S11-3

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7909° Longitude: -73.1625°

Approximate Surface Elev.: 1204 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.0	**SILTY SAND (SM)**, trace roots, brown, loose					10	1-3-50/2"	
		1.0	1203+/-							
3			**WEATHERED BEDROCK**, gray							
		3.5	1200.5+/-							
			Auger Refusal on Probable Bedrock at 3.5 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Offset twice due to bedrock.
Do not perform infiltration test because of bedrock.

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-01-2021 | Boring Completed: 11-01-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. S11-4

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7909° Longitude: -73.1624°

Approximate Surface Elev.: 1204 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH		ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.3	**SANDY SILT (ML)**, trace roots, dark brown, loose	1203.5+/-					5	50/5"	
3		1.0	**WEATHERED BEDROCK**, gray	1203+/-							
			Auger Refusal on Probable Bedrock at 1 Foot								

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Offset twice due to bedrock.
Do not perform infiltration test because of bedrock.

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-01-2021 | Boring Completed: 11-01-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. S11-5

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7909° Longitude: -73.1623°

Approximate Surface Elev.: 1202 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)		INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.2	1202+/-	**TOPSOIL**							
				SANDY SILT (ML), trace roots, brown, very loose					10	woh-woh-woh-2	
		2.5	1199.5+/-							5-50/5"	
3				**WEATHERED BEDROCK**, gray							
		4.0	1198+/-								
				Auger Refusal on Probable Bedrock at 4 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Offset twice due to bedrock.
Do not perform infiltration test because of bedrock.

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-01-2021 | Boring Completed: 11-01-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. S11-6

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7909° Longitude: -73.1621°

Approximate Surface Elev.: 1198 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)		INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.2	1198+/-	**TOPSOIL**							
				SANDY SILT (ML), trace gravel and roots, brown, very loose			▼		14	woh-woh-1-6	
		2.0	1196+/-				▽				
2				**SILTY SAND WITH GRAVEL (SM)**, brown, medium dense					12	6-6-6-7 N=12	
		4.0	1194+/-								
				Boring Terminated at 4 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*
▽ *After 24 hours*
▼ *After 48 hours*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-01-2021 | Boring Completed: 11-01-2021
Drill Rig: Diedrich D-50 | Driller: C. Johnston
Project No.: J2215049

BORING LOG NO. S11-7

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.791° Longitude: -73.162°

Approximate Surface Elev.: 1199 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1			**SANDY SILT (ML)**, trace gravel and roots, brown, very loose			▽		10	1-1-1-1 N=2	
		2.0	1197+/-							
2			**SILTY SAND WITH GRAVEL (SM)**, brown, very dense					12	8-28-30-25 N=58	
		4.0	1195+/-							
			Boring Terminated at 4 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:

Do not perform infiltration test due to delayed groundwater or highly weathered bedrock that did not allow water from pre-soak to drain.

WATER LEVEL OBSERVATIONS

▽ *After 18 hours*
▽ *After 24 hours*
▼ *After 48 hours*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-01-2021 | Boring Completed: 11-01-2021
Drill Rig: Diedrich D-50 | Driller: C. Johnston
Project No.: J2215049

BORING LOG NO. S14-1

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7979° Longitude: -73.1665°

Approximate Surface Elev.: 1157 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.3	1156.5+/-							
		TOPSOIL								
2		**SANDY SILT (ML)**, trace to with clay, trace gravel, pocket of silty sand, black, loose to medium dense				▽	X	22	woh-woh-5-5	
						▽	X	24	6-7-8-7 N=15	
		4.0	1153+/-							
		Boring Terminated at 4 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-16-2021 | Boring Completed: 11-16-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. S14-2

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7978° Longitude: -73.1664°

Approximate Surface Elev.: 1156 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.3	1155.5+/-							
		TOPSOIL								
2		**SANDY SILT WITH GRAVEL (ML)**, with clay, pockets of poorly graded sand, brown, loose to medium dense						4	woh-woh-5-6	
						▽		20	5-7-8-5 N=15	
		4.0	1152+/-							
		Boring Terminated at 4 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-16-2021 | Boring Completed: 11-16-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

BORING LOG NO. S14-3

PROJECT: Litchfield Solar Infiltration

CLIENT: Silicon Ranch Corp
Nashville, Tennessee

SITE: Wilson Road
Litchfield, Connecticut

LOCATION See Exploration Plan

Latitude: 41.7977° Longitude: -73.1663°

Approximate Surface Elev.: 1154 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)		INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.2	1154+/-	**TOPSOIL**							
		1.0	1153+/-	**SANDY SILT (ML)**, trace roots, brown, loose					20	woh-4-4-5	
2				**SILTY SAND (SM)**, trace gravel and silt, brown to brown-gray, loose to medium dense			▽		24	4-4-6-6 N=10	
		4.0	1150+/-				▽				
				Boring Terminated at 4 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Automatic

Advancement Method:
3-inch continuous flight solid stem augers

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations taken from Google Earth

Notes:
Do not perform infiltration test due to groundwater.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd
Rocky Hill, CT

Boring Started: 11-16-2021 | Boring Completed: 11-16-2021

Drill Rig: Diedrich D-50 | Driller: C. Johnston

Project No.: J2215049

Boring ID	Date Drilled	Depth below Grade (ft)						Test Date
		Weathered Rock	Rock Refusal	Refusal at Offset	Groundwater	Propsed	Tested	
B3-1	11/10/21	not encountered	not encountered	n/a	not encountered	8.0	8.5	11/15/21
B3-2	11/10/21	not encountered	not encountered	n/a	not encountered	8.0	7.9	11/15/21
B3-3	11/10/21	not encountered	not encountered	n/a	not encountered	8.0	8.1	11/15/21
B5-1	Inaccessible	n/a	n/a	n/a	n/a	4.0	n/a	n/a
B5-2	Inaccessible	n/a	n/a	n/a	n/a	4.0	n/a	n/a
B5-3	Inaccessible	n/a	n/a	n/a	n/a	4.0	n/a	n/a
B7-1	11/03/21	not encountered	not encountered	n/a	not encountered	5.0	4.3	11/08/21
B7-2	11/03/21	2.0	3.0	3.0	not encountered	5.0	3.0	n/a
B7-3	11/03/21	0.5	0.7	0.7	not encountered	5.0	0.7	n/a
B7-4	11/03/21	1.3	2.0	0.8	not encountered	5.0	2.0	n/a
B7-5	11/03/21	1.0	4.5	3.0	not encountered	5.0	4.5	n/a
B7-6	11/03/21	2.0	4.0	3.0	not encountered	5.0	4.0	n/a
B7-7	11/03/21	1.7	3.0	3.0	not encountered	5.0	3.0	n/a
B9-1	11/11/21	not encountered	not encountered	n/a	0.8	4.0	4.0	n/a
B9-2	11/11/21	not encountered	not encountered	n/a	0.7	4.0	4.0	n/a
B9-3	11/11/21	not encountered	not encountered	n/a	0.8	4.0	4.0	n/a
B9-4	11/11/21	not encountered	not encountered	n/a	0.4	4.0	4.0	n/a
B810-1	11/04/21	not encountered	not encountered	n/a	2.0	7.0	7.0	n/a
B810-2	11/04/21	not encountered	not encountered	n/a	2.5	7.0	7.0	n/a
B810-3	11/04/21	not encountered	not encountered	n/a	2.5	7.0	7.0	n/a
B810-4	11/04/21	not encountered	not encountered	n/a	3.5	7.0	7.0	n/a
B810-5	11/09/21	not encountered	not encountered	n/a	5.4	7.0	7.0	n/a
B810-6	11/09/21	not encountered	not encountered	n/a	2.5	7.0	7.0	n/a
B810-7	11/08/21	not encountered	not encountered	n/a	2.9	7.0	7.0	n/a
B810-8	11/05/21	not encountered	not encountered	n/a	2.9	7.0	7.0	n/a
B810-9	Inaccessible	n/a	n/a	n/a	n/a	7.0	n/a	n/a
B810-10	11/08/21	not encountered	not encountered	n/a	3.9	7.0	7.0	n/a
B810-11	11/05/21	not encountered	not encountered	n/a	1.4	7.0	7.0	n/a
B810-12	11/08/21	not encountered	not encountered	n/a	1.7	7.0	7.0	n/a
B810-13	11/08/21	not encountered	not encountered	n/a	2.4	7.0	7.0	n/a
B810-14	11/05/21	not encountered	not encountered	n/a	2.3	7.0	7.0	n/a
B810-15	11/05/21	not encountered	not encountered	n/a	3.4	7.0	7.0	n/a
B810-16	11/05/21	not encountered	not encountered	n/a	2.3	7.0	7.0	n/a
B810-17	11/05/21	not encountered	not encountered	n/a	4.3	7.0	7.0	n/a
B810-18	11/08/21	not encountered	not encountered	n/a	4.0	7.0	7.0	n/a
B810-19	11/08/21	not encountered	not encountered	n/a	4.6	7.0	7.0	n/a
B810-20	11/05/21	not encountered	not encountered	n/a	4.5	7.0	7.0	n/a
B810-21	11/09/21	not encountered	not encountered	n/a	2.7	7.0	7.0	n/a
B810-22	11/08/21	not encountered	not encountered	n/a	1.7	7.0	7.0	n/a
B810-23	11/05/21	not encountered	not encountered	n/a	3.45	7.0	7.0	n/a
B810-24	11/08/21	not encountered	not encountered	n/a	5.1	7.0	7.0	n/a
B810-25	11/08/21	not encountered	not encountered	n/a	4.5	7.0	7.0	n/a
B810-26	11/08/21	not encountered	not encountered	n/a	2.0	7.0	7.0	n/a
B810-27	11/08/21	not encountered	not encountered	n/a	4.1	7.0	7.0	n/a
B810-28	11/08/21	not encountered	not encountered	n/a	5.4	7.0	7.0	n/a
B810-29	Inaccessible	n/a	n/a	n/a	n/a	7.0	n/a	n/a
B810-30	Inaccessible	n/a	n/a	n/a	n/a	7.0	n/a	n/a
B810-31	Inaccessible	n/a	n/a	n/a	n/a	7.0	n/a	n/a
B810-32	Inaccessible	n/a	n/a	n/a	n/a	7.0	n/a	n/a
B810-33	Inaccessible	n/a	n/a	n/a	n/a	7.0	n/a	n/a
B810-34	Inaccessible	n/a	n/a	n/a	n/a	7.0	n/a	n/a
B12-1	11/04/21	not encountered	not encountered	n/a	3.0	5.0	5.0	n/a
B12-2	11/04/21	not encountered	not encountered	n/a	4.7	5.0	5.0	n/a
B12-3	11/04/21	not encountered	not encountered	n/a	4.8	5.0	5.0	n/a
B12-4	11/04/21	not encountered	not encountered	n/a	not encountered	5.0	5.0	11/04/21
B12-5	11/04/21	3.0	3.0	4.0	not encountered	5.0	4.0	n/a
B13-1	11/02/21	4.0	5.0	5.5	not encountered	6.0	5.5	n/a
B13-2	11/02/21	2.0	2.5	3.0	not encountered	6.0	3.0	n/a
B13-3	11/02/21	2.5	4.0	3.5	not encountered	6.0	3.5	n/a
T1-1	11/10/21	not encountered	not encountered	n/a	not encountered	2.0	2.0	11/11/21
T1-2	11/10/21	not encountered	not encountered	n/a	not encountered	2.0	1.9	11/11/21
T2a-1	11/09/21	not encountered	not encountered	n/a	1.8	2.0	2.0	n/a
T2a-2	11/09/21	not encountered	not encountered	n/a	2.0	2.0	2.0	n/a
T2a-3	11/09/21	not encountered	not encountered	n/a	2.0	2.0	2.0	n/a
T2a-4	11/09/21	not encountered	not encountered	n/a	1.9	2.0	2.0	n/a
T2b-1	11/10/21	not encountered	not encountered	n/a	not encountered	2.0	2.0	11/11/21
T2b-2	11/10/21	not encountered	not encountered	n/a	not encountered	2.0	1.9	11/11/21
T2b-3	11/10/21	not encountered	not encountered	n/a	not encountered	2.0	2.0	11/11/21
T4-1	11/09/21	not encountered	not encountered	n/a	not encountered	3.0	3.1	11/10/21
T4-2	11/09/21	not encountered	not encountered	n/a	not encountered	3.0	3.1	11/10/21
T4-3	11/09/21	not encountered	not encountered	n/a	not encountered	3.0	3.2	11/10/21
S11-1	11/01/21	2.5	2.5	n/a	not encountered	4.0	2.5	n/a
S11-2	11/01/21	not encountered	not encountered	n/a	not encountered	4.0	4.1	11/02/21
S11-3	11/01/21	1.0	2.5	3.0	not encountered	4.0	3.0	n/a
S11-4	11/01/21	0.4	1.0	1.0	not encountered	4.0	1.0	n/a
S11-5	11/01/21	2.5	4.0	4.0	not encountered	4.0	4.0	n/a
S11-6	11/01/21	not encountered	not encountered	n/a	2.3	4.0	4.0	n/a
S11-7	11/01/21	not encountered	4.0	not encountered	not encountered	4.0	4.0	n/a
S14-1	11/16/21	not encountered	not encountered	n/a	2.0	4.0	4.0	n/a
S14-2	11/16/21	not encountered	not encountered	n/a	3.0	4.0	4.0	n/a
S14-3	11/16/21	not encountered	not encountered	n/a	3.0	4.0	4.0	n/a
S14-4	Inaccessible	n/a	n/a	n/a	n/a	4.0	n/a	n/a
S14-5	Inaccessible	n/a	n/a	n/a	n/a	4.0	n/a	n/a
S14-6	Inaccessible	n/a	n/a	n/a	n/a	4.0	n/a	n/a
S14-7	Inaccessible	n/a	n/a	n/a	n/a	4.0	n/a	n/a

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2215049	**Date:**	11/15/2021
Location ID:	B3-1	**Weather:**	Sunny
Ground EL (ft):	1140.0	**Temperature:**	40.0
Initial Water Depth[1] (ft):	3.25	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	1.60	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	10.10	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0.0	Dark brown silty sand with roots	Topsoil / 0.3
0.3	Brown silty sand with gravel	Native material / 4.7
5.0	Brown sandy silt with gravel	Native material / 3.0

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	**0**	**14.52**		
30	**30**	**17.28**	**2.76**	
60	**30**	**19.32**	**2.04**	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	**0**	**14.52**	**n/a**	**n/a**	
10	**10**	**15.60**	**1.08**	**0.12**	
20	**10**	**16.32**	**0.72**	**0.08**	
30	**10**	**17.16**	**0.84**	**0.09**	
40	**10**	**17.88**	**0.72**	**0.08**	
50	**10**	**18.60**	**0.72**	**0.08**	
60	**10**	**19.20**	**0.60**	**0.07**	
70	**10**	**20.04**	**0.84**	**0.09**	
80	**10**	**20.52**	**0.48**	**0.05**	
140	**60**	**24.00**		**0.07**	
200	**60**	**26.88**		**0.06**	
260	**60**	**28.20**		**0.03**	
			Stabilized Infiltration Testing Rate (inches per hour):	**0.08**	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2215049	**Date:**	11/15/2021
Location ID:	B3-2	**Weather:**	Sunny
Ground EL (ft):	1141.0	**Temperature:**	40.0
Initial Water Depth[1] (ft):	4.84	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	2.10	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	10.00	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0.0	Brown sandy silt	Subsoil / 2.0
2.0	Brown silty sand	Native material / 2.0
4.0	Brown sandy silt, trace gravel	Native material / 4.0

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	**0**	**30.60**		
30	**30**	**32.52**	**1.92**	
60	**30**	**33.84**	**1.32**	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	**0**	**29.04**	**n/a**	**n/a**	
10	**10**	**29.40**	**0.36**	**0.04**	
20	**10**	**30.00**	**0.60**	**0.08**	
30	**10**	**30.60**	**0.60**	**0.08**	
40	**10**	**31.08**	**0.48**	**0.06**	
50	**10**	**31.44**	**0.36**	**0.05**	
60	**10**	**31.92**	**0.48**	**0.06**	
70	**10**	**32.52**	**0.60**	**0.08**	
80	**10**	**32.88**	**0.36**	**0.05**	
140	**60**	**35.40**	**2.52**	**0.06**	
200	**60**	**37.80**	**2.40**	**0.05**	
260	**60**	**38.64**	**0.84**	**0.02**	
			Stabilized Infiltration Testing Rate (inches per hour):	**0.06**	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2215049	**Date:**	11/15/2021
Location ID:	B3-3	**Weather:**	Sunny
Ground EL (ft):	1139.0	**Temperature:**	40.0
Initial Water Depth[1] (ft):	4.00	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	2.00	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	10.10	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0.0	Brown sandy silt	Subsoil / 3.0
3.0	Brown silty sand	Native material / 1.0
4.0	Brown to gray silt with sand and clay	Native material / 2.5
6.5	Brown silty sand with gravel	Native material / 1.5

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	**0**	**23.40**		
30	**30**	**24.00**	**0.60**	
60	**30**	**24.48**	**0.48**	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	**0**	**22.20**	**n/a**	**n/a**	
30	**30**	**22.68**	**0.48**	**0.02**	
60	**30**	**23.40**	**0.72**	**0.03**	
90	**30**	**24.00**	**0.60**	**0.02**	
120	**30**	**24.60**	**0.60**	**0.02**	
150	**30**	**25.32**	**0.72**	**0.03**	
180	**30**	**25.80**	**0.48**	**0.02**	
210	**30**	**26.64**	**0.84**	**0.03**	
240	**30**	**26.88**	**0.24**	**0.01**	
Stabilized Infiltration Testing Rate (inches per hour):				**0.02**	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2215049	**Date:**	11/8/2021
Location ID:	B7-1	**Weather:**	Sunny
Ground EL (ft):	1164.0	**Temperature:**	45.0
Initial Water Depth[1] (ft):	0.83	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	0.17	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	4.51	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0.0	Dark brown silty sand with roots	Topsoil / 1.0
1.0	Brown-gray to brown silty sand	Native material / 4.0

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	**0**	**9.96**		
30	**30**	**9.96**	**0.00**	
60	**30**	**9.96**	**0.00**	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	**0**	**9.96**	**n/a**	**n/a**	
30	**30**	**9.96**	**0.00**	**0.00**	
60	**30**	**9.96**	**0.00**	**0.00**	
90	**30**	**9.96**	**0.00**	**0.00**	
120	**30**	**10.08**	**0.12**	**0.01**	
150	**30**	**10.08**	**0.00**	**0.00**	
180	**30**	**10.08**	**0.00**	**0.00**	
210	**30**	**10.20**	**0.12**	**0.01**	
240	**30**	**10.20**	**0.00**	**0.00**	
			Stabilized Infiltration Testing Rate (inches per hour):	**0.002**	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2215049	**Date:**	11/4/2021
Location ID:	B12-4	**Weather:**	Sunny
Ground EL (ft):	1190.0	**Temperature:**	40.0
Initial Water Depth[1] (ft):	N/A	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	0.60	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	5.61	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0.0	Dark brown silty sand with roots	Topsoil / 0.3
0.3	Dark brown sandy silt	Subsoil / 0.7
0.7	Brown silty sand, trace gravel	Native material / 4.3

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	**0**	**42.00**		
30	**30**	**57.60**	**15.60**	
60	**30**	**58.20**	**0.60**	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	**0**	**40.20**	**n/a**	**n/a**	
10	**10**	**48.60**	**8.40**	**4.21**	
20	**10**	**49.08**	**0.48**	**0.29**	
30	**10**	**49.32**	**0.24**	**0.15**	
40	**10**	**49.80**	**0.48**	**0.31**	
50	**10**	**49.92**	**0.12**	**0.08**	
60	**10**	**50.16**	**0.24**	**0.16**	
70	**10**	**50.16**	**0.00**	**0.00**	
80	**10**	**50.52**	**0.36**	**0.24**	
			Stabilized Infiltration Testing Rate (inches per hour):	**0.68**	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2215049	**Date:**	11/2/2021
Location ID:	S11-2	**Weather:**	Sunny
Ground EL (ft):	1204.0	**Temperature:**	50.0
Initial Water Depth[1] (ft):	3.60	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	0.10	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	4.15	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0.0	Dark brown silty sand with roots	Topsoil / 0.2
0.2	Dark brown to brown sandy silt	Native Material / 1.8
2.0	Brown silty sand with gravel	Native material / 2.0

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	**0**	**19.20**		
30	**30**	**24.00**	**4.80**	
60	**30**	**25.20**	**1.20**	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	**0**	**19.20**	**n/a**	**n/a**	
10	**10**	**21.00**	**1.80**	**0.55**	
20	**10**	**21.60**	**0.60**	**0.19**	
30	**10**	**22.68**	**1.08**	**0.35**	
40	**10**	**23.16**	**0.48**	**0.16**	
50	**10**	**24.00**	**0.84**	**0.29**	
60	**10**	**24.60**	**0.60**	**0.21**	
70	**10**	**24.96**	**0.36**	**0.13**	
80	**10**	**25.80**	**0.84**	**0.31**	
		Stabilized Infiltration Testing Rate (inches per hour):		**0.27**	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2215049	**Date:**	11/11/2021
Location ID:	T1-1	**Weather:**	Sunny
Ground EL (ft):	1130.0	**Temperature:**	40.0
Initial Water Depth[1] (ft):	4.09	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	3.00	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	4.95	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0.0	Brown sandy silt, trace roots	Subsoil / 2.0

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	**0**	**22.44**		
30	**30**	**26.88**	**4.44**	
60	**30**	**28.92**	**2.04**	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	**0**	**23.04**	**n/a**	**n/a**	
10	**10**	**24.00**	**0.96**	**0.30**	
20	**10**	**24.48**	**0.48**	**0.15**	
30	**10**	**25.08**	**0.60**	**0.20**	
40	**10**	**25.68**	**0.60**	**0.20**	
50	**10**	**26.16**	**0.48**	**0.16**	
60	**10**	**26.76**	**0.60**	**0.21**	
70	**10**	**27.12**	**0.36**	**0.13**	
80	**10**	**27.60**	**0.48**	**0.17**	
			Stabilized Infiltration Testing Rate (inches per hour):	**0.19**	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2215049	**Date:**	11/11/2021
Location ID:	T1-2	**Weather:**	Sunny
Ground EL (ft):	1129.0	**Temperature:**	40.0
Initial Water Depth[1] (ft):	3.85	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	2.90	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	4.80	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0.0	Brown sandy silt, trace roots	Subsoil / 2.0

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	**0**	**20.88**		
30	**30**	**27.72**	**6.84**	
60	**30**	**29.52**	**1.80**	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	**0**	**21.60**	**n/a**	**n/a**	
10	**10**	**22.68**	**1.08**	**0.35**	
20	**10**	**23.40**	**0.72**	**0.24**	
30	**10**	**24.00**	**0.60**	**0.20**	
40	**10**	**24.60**	**0.60**	**0.20**	
50	**10**	**25.20**	**0.60**	**0.21**	
60	**10**	**25.80**	**0.60**	**0.21**	
70	**10**	**26.40**	**0.60**	**0.22**	
80	**10**	**27.00**	**0.60**	**0.22**	
		Stabilized Infiltration Testing Rate (inches per hour):		**0.23**	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2215049	**Date:**	11/11/2021
Location ID:	T2B-1	**Weather:**	Sunny
Ground EL (ft):	1050.0	**Temperature:**	50.0
Initial Water Depth[1] (ft):	N/A	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	2.80	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	4.80	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0.0	Brown sandy silt, trace roots	Subsoil / 2.0

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	**0**	**39.00**		
30	**30**	**44.40**	**5.40**	
60	**30**	**46.80**	**2.40**	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	**0**	**36.00**	**n/a**	**n/a**	
10	**10**	**40.92**	**4.92**	**2.34**	
20	**10**	**43.68**	**2.76**	**1.64**	
30	**10**	**43.80**	**0.12**	**0.08**	
40	**10**	**44.16**	**0.36**	**0.24**	
50	**10**	**45.00**	**0.84**	**0.58**	
60	**10**	**45.60**	**0.60**	**0.44**	
70	**10**	**46.20**	**0.60**	**0.46**	
80	**10**	**47.28**	**1.08**	**0.90**	
	Stabilized Infiltration Testing Rate (inches per hour):			**0.84**	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2215049	**Date:**	11/11/2021
Location ID:	T2B-2	**Weather:**	Sunny
Ground EL (ft):	1050.0	**Temperature:**	50.0
Initial Water Depth[1] (ft):	N/A	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	2.80	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	4.65	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0.0	Brown sandy silt, trace roots	Subsoil / 2.0

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	**0**	**31.20**		
30	**30**	**34.80**	**3.60**	
60	**30**	**38.28**	**3.48**	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	**0**	**31.20**	**n/a**	**n/a**	
10	**10**	**35.04**	**3.84**	**1.54**	
20	**10**	**37.32**	**2.28**	**1.05**	
30	**10**	**40.20**	**2.88**	**1.53**	
40	**10**	**40.80**	**0.60**	**0.35**	
50	**10**	**42.72**	**1.92**	**1.24**	
60	**10**	**43.68**	**0.96**	**0.69**	
70	**10**	**44.28**	**0.60**	**0.46**	
80	**10**	**45.12**	**0.84**	**0.68**	
Stabilized Infiltration Testing Rate (inches per hour):				**0.94**	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2215049	**Date:**	11/11/2021
Location ID:	T2B-3	**Weather:**	Sunny
Ground EL (ft):	1051.0	**Temperature:**	50.0
Initial Water Depth[1] (ft):	N/A	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	3.75	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	5.70	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0.0	Brown sandy silt, trace roots	Subsoil / 2.0

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	**0**	**44.64**		
30	**30**	**52.20**	**7.56**	
60	**30**	**54.00**	**1.80**	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	**0**	**40.68**	**n/a**	**n/a**	
10	**10**	**43.80**	**3.12**	**1.08**	
20	**10**	**45.60**	**1.80**	**0.69**	
30	**10**	**46.56**	**0.96**	**0.39**	
40	**10**	**47.76**	**1.20**	**0.51**	
50	**10**	**48.84**	**1.08**	**0.49**	
60	**10**	**49.80**	**0.96**	**0.46**	
70	**10**	**50.76**	**0.96**	**0.48**	
80	**10**	**51.72**	**0.96**	**0.51**	
			Stabilized Infiltration Testing Rate (inches per hour):	**0.57**	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2215049	**Date:**	11/10/2021
Location ID:	T4-1	**Weather:**	Partly Cloudy
Ground EL (ft):	1117.0	**Temperature:**	55.0
Initial Water Depth[1] (ft):	2.65	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	1.00	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	4.10	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0.0	Dark brown silty sand with roots	Topsoil / 0.3
0.3	Brown silty sand, trace gravel	Native material / 2.7

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	**0**	**13.20**		
30	**30**	**19.80**	**6.60**	
60	**30**	**20.52**	**0.72**	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	**0**	**13.20**	**n/a**	**n/a**	
10	**10**	**17.40**	**4.20**	**1.03**	
20	**10**	**17.76**	**0.36**	**0.09**	
30	**10**	**18.12**	**0.36**	**0.10**	
40	**10**	**18.48**	**0.36**	**0.10**	
50	**10**	**18.96**	**0.48**	**0.13**	
60	**10**	**19.20**	**0.24**	**0.07**	
70	**10**	**19.44**	**0.24**	**0.07**	
80	**10**	**19.92**	**0.48**	**0.13**	
Stabilized Infiltration Testing Rate (inches per hour):				**0.21**	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2215049	**Date:**	11/10/2021
Location ID:	T4-2	**Weather:**	Partly Cloudy
Ground EL (ft):	1117.0	**Temperature:**	55.0
Initial Water Depth[1] (ft):	3.14	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	1.00	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	4.10	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0.0	Dark brown silty sand with roots	Topsoil / 0.3
0.3	Brown silty sand, trace gravel	Native material / 2.7

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	**0**	**14.88**		
30	**30**	**21.12**	**6.24**	
60	**30**	**22.08**	**0.96**	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	**0**	**0.00**	**n/a**	**n/a**	
10	**10**	**1.20**	**1.20**	**0.20**	
20	**10**	**2.45**	**1.25**	**0.22**	
30	**10**	**3.56**	**1.11**	**0.20**	
40	**10**	**4.33**	**0.77**	**0.14**	
50	**10**	**4.97**	**0.64**	**0.12**	
60	**10**	**5.68**	**0.71**	**0.13**	
70	**10**	**6.47**	**0.79**	**0.15**	
80	**10**	**7.15**	**0.68**	**0.13**	
			Stabilized Infiltration Testing Rate (inches per hour):	**0.16**	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2215049	**Date:**	11/10/2021
Location ID:	T4-3	**Weather:**	Partly Cloudy
Ground EL (ft):	1118.0	**Temperature:**	55.0
Initial Water Depth[1] (ft):	3.66	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	1.15	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	4.30	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0.0	Dark brown silty sand with roots	Topsoil / 0.3
0.3	Brown silty sand, trace gravel	Native material / 2.7

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	**0**	**22.80**		
30	**30**	**26.40**	**3.60**	
60	**30**	**27.48**	**1.08**	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	**0**	**20.88**	**n/a**	**n/a**	
10	**10**	**24.84**	**3.96**	**1.15**	
20	**10**	**24.96**	**0.12**	**0.04**	
30	**10**	**25.20**	**0.24**	**0.08**	
40	**10**	**25.68**	**0.48**	**0.15**	
50	**10**	**25.92**	**0.24**	**0.08**	
60	**10**	**26.40**	**0.48**	**0.16**	
70	**10**	**26.64**	**0.24**	**0.08**	
80	**10**	**27.00**	**0.36**	**0.12**	
			Stabilized Infiltration Testing Rate (inches per hour):	**0.23**	

Remarks:

PHOTOGRAPHY LOG

Figure 1: Overgrown vegetation in Basin 5

Figure 2: Rock outcrops in Swale 11

Figure 3: Wet path in Swale 14

Figure 4: Rock outcrop in Basin 7

Figure 5: Overgrowth in Basin 8/10

Figure 6: Overgrowth in Swale 14

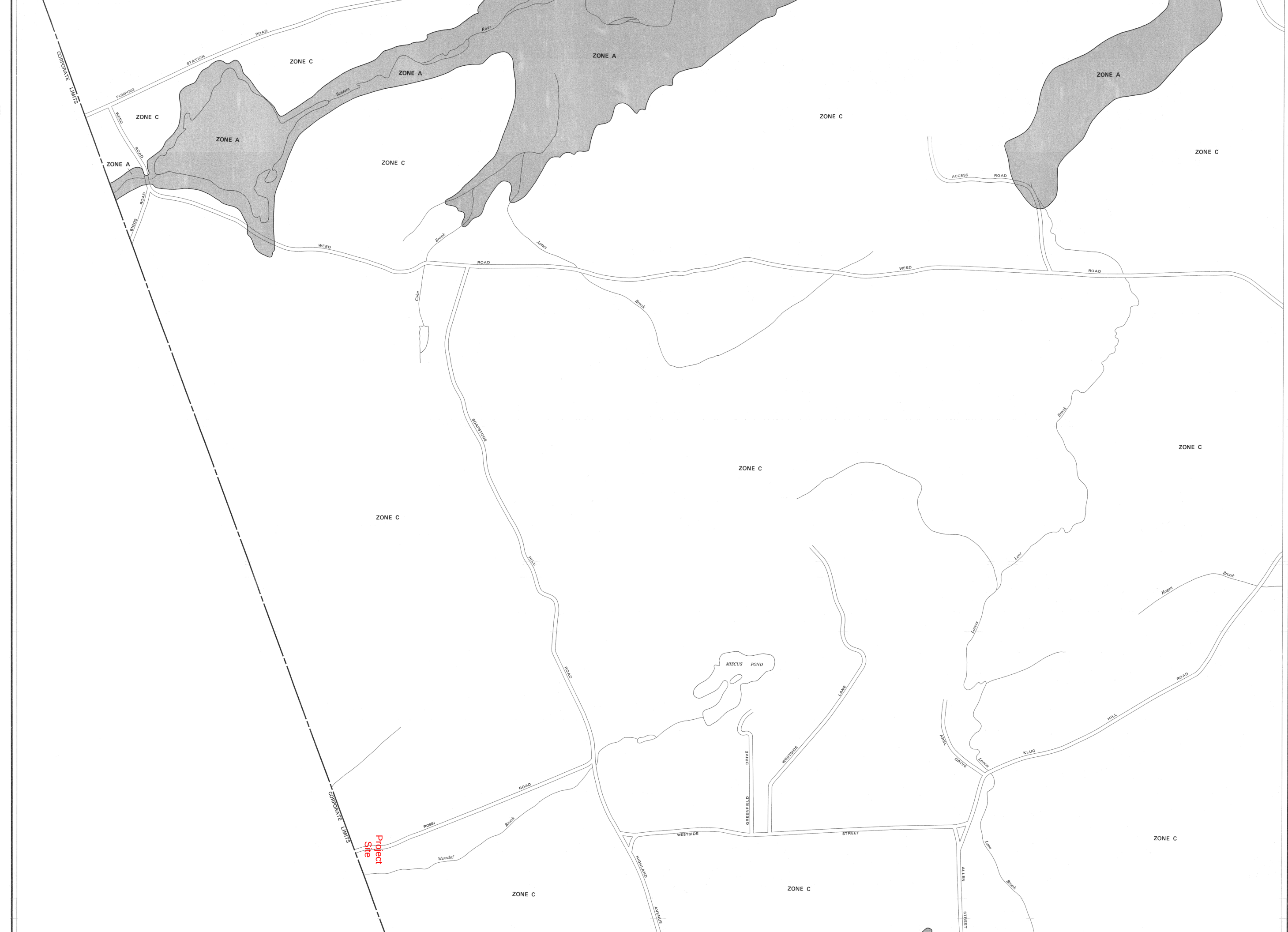
Figure 7: Drill rig setup near outcrop (Basin 7)

Figure 8: Drill rig setup in Basin 8/10

Figure 9: Stagnant water (Basin 9)

Appendix B

USGS & FEMA Firm Maps



100-Year Flood Boundary ——— ZONE B

Zone Designations* With Date of Identification e.g., 12/2/74 ——— ZONE A1 DATE / ZONE A5 DATE

100-Year Flood Boundary ——— ZONE B

500-Year Flood Boundary ———

Base Flood Elevation Line With Elevation In Feet** ——— 513

Base Flood Elevation in Feet Where Uniform Within Zone** (EL 987)

Elevation Reference Mark RM7×

Zone D Boundary ———

River Mile •M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

INITIAL IDENTIFICATION:
JULY 1, 1970

FLOOD HAZARD BOUNDARY MAP REVISIONS:
NONE

FLOOD INSURANCE RATE MAP EFFECTIVE:
MAY 19, 1972

FLOOD INSURANCE RATE MAP REVISIONS:

July 1, 1974 - to change zone designations.

March 5, 1976 - to reflect curvilinear flood boundary and to add special flood hazard areas.

April 4, 1983 - to add special flood hazard areas, to change base flood elevations, to change zone designations.

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

APPROXIMATE SCALE
400 0 400 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
TORRINGTON,
CONNECTICUT
LITCHFIELD COUNTY

PANEL 1 OF 14
(SEE MAP INDEX FOR PANELS NOT PRINTED)

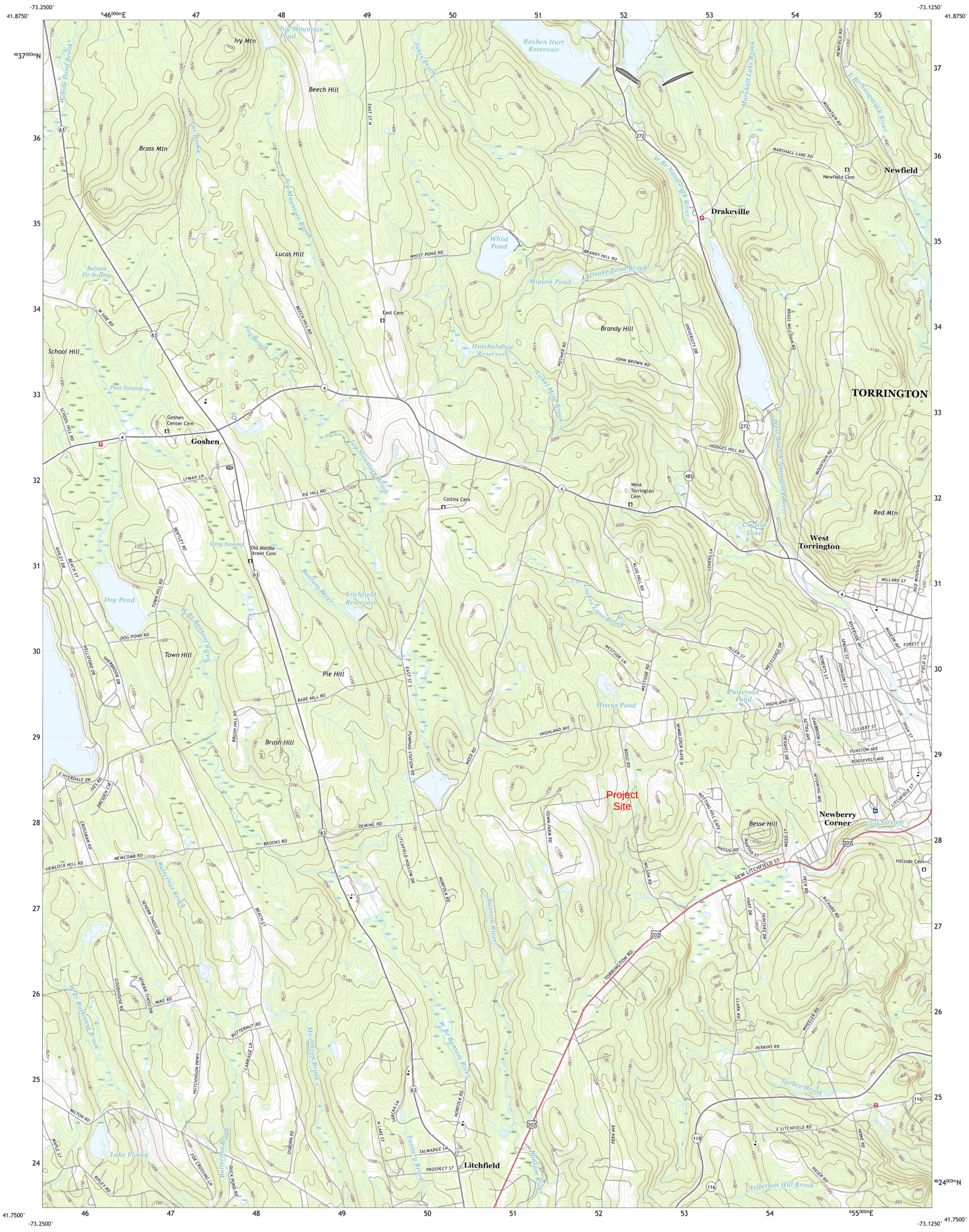
COMMUNITY-PANEL NUMBER
095081 0001 B

MAP REVISED:
APRIL 4, 1983

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

WEST TORRINGTON QUADRANGLE
CONNECTICUT - LITCHFIELD COUNTY
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 18T

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery	NAIP,	July 2016 - September 2016
Roads	U.S. Census Bureau,	2016
Names	GNIS,	1979 - 2017
Hydrography	National Hydrography Dataset,	2004 - 2016
Contours	National Elevation Dataset,	2012
Boundaries	Multiple sources; see metadata file	2016 - 2017
Wetlands	FWS National Wetlands Inventory	2010

MN GN
13°35' 241 MILS
1°13' 22 MILS
UTM GRID AND 2017 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
XM
Grid Zone Designation 18T

SCALE 1:24 000
1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.18

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 South Canaan
2 Norfolk
3 Winsted
4 Cornwall
5 Torrington
6 New Preston
7 Litchfield
8 Thomaston

ADJOINING QUADRANGLES

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

WEST TORRINGTON, CT
2018

Appendix C

Stormwater Drainage Area Map and Peak Flow Calculations

HDR

SILICON RANCH

NOT FOR CONSTRUCTION

LITCHFIELD SOLAR

2-298 ROSSI RD
TORRINGTON, CT 06790, USA
LAT: 41.794157°N
LON: 73.168028°W

LITCHFIELD, CT

REV. NO	DESCRIPTION	DATE
9	RE-ISSUED FOR PERMIT	02/06/23
7	RE-ISSUED FOR PERMIT	12/01/22
6	RE-ISSUED FOR PERMIT	09/02/22
5	RE-ISSUED FOR PERMIT	06/29/22
4	RE-ISSUED FOR PERMIT	05/31/22

SHEET TITLE:

DRAINAGE AREA EXHIBIT EXISTING CONDITIONS

PROJ. MGR.	PROJ. ENGR.	DATE:
CM	MB	02/06/23
DRAWN BY:	CHECKED BY:	SCALE:
JP	CP	1"=200'

DRAWING NO.

EXHIBIT

HDR

SILICON RANCH

NOT FOR CONSTRUCTION

LITCHFIELD SOLAR

2-298 ROSSI RD
TORRINGTON, CT 06790, USA
LAT: 41.794157°N
LON: 73.168028°W

LITCHFIELD, CT

REV. NO	DESCRIPTION	DATE
11	RE-ISSUED FOR PERMIT	06/02/23
10	RE-ISSUED FOR PERMIT	04/17/23
9	RE-ISSUED FOR PERMIT	02/09/23
7	RE-ISSUED FOR PERMIT	12/01/22
6	RE-ISSUED FOR PERMIT	09/02/22

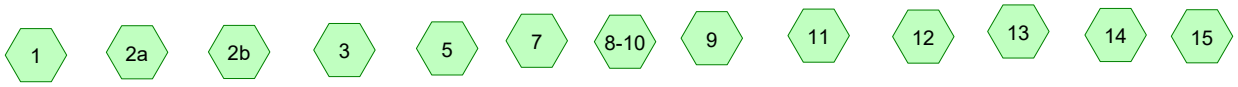
SHEET TITLE:

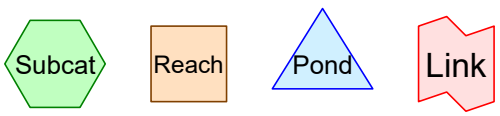
DRAINAGE AREA EXHIBIT
PROPOSED CONDITIONS

PROJ. MGR.	PROJ. ENGR.	DATE:
CM	MB	06/02/23
DRAWN BY:	CHECKED BY:	SCALE:
JP	CP	1"=200'

DRAWING NO.

EXHIBIT





Routing Diagram for HydroCAD Litchfield Existing - Quantity - 12-22
Prepared by HDR, Inc, Printed 2/3/2023

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR STORM	Type III 24-hr		Default	24.00	1	3.51	2
2	10-YR STORM	Type III 24-hr		Default	24.00	1	5.70	2
3	25-YR STORM	Type III 24-hr		Default	24.00	1	7.07	2
4	50-YR STORM	Type III 24-hr		Default	24.00	1	8.06	2
5	100-YR STORM	Type III 24-hr		Default	24.00	1	9.18	2

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 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 1: Runoff Area=1.280 ac 0.00% Impervious Runoff Depth>1.64"
Tc=6.4 min CN=80 Runoff=2.38 cfs 0.175 af

Subcatchment 2a: Runoff Area=3.850 ac 0.00% Impervious Runoff Depth>1.71"
Tc=9.6 min CN=81 Runoff=6.74 cfs 0.550 af

Subcatchment 2b: Runoff Area=4.020 ac 0.00% Impervious Runoff Depth>1.01"
Tc=13.9 min CN=70 Runoff=3.39 cfs 0.339 af

Subcatchment 3: Runoff Area=7.890 ac 0.00% Impervious Runoff Depth>1.57"
Tc=10.5 min CN=79 Runoff=12.29 cfs 1.033 af

Subcatchment 5: Runoff Area=1.680 ac 0.00% Impervious Runoff Depth>2.28"
Tc=8.1 min CN=88 Runoff=4.10 cfs 0.319 af

Subcatchment 7: Runoff Area=4.070 ac 0.00% Impervious Runoff Depth>0.90"
Tc=18.5 min CN=68 Runoff=2.66 cfs 0.306 af

Subcatchment 8-10: Runoff Area=28.040 ac 0.00% Impervious Runoff Depth>2.10"
Tc=16.4 min CN=86 Runoff=50.26 cfs 4.909 af

Subcatchment 9: Runoff Area=6.810 ac 0.00% Impervious Runoff Depth>2.02"
Tc=17.6 min CN=85 Runoff=11.44 cfs 1.146 af

Subcatchment 11: Runoff Area=3.190 ac 0.00% Impervious Runoff Depth>0.70"
Tc=30.4 min CN=64 Runoff=1.22 cfs 0.187 af

Subcatchment 12: Runoff Area=1.930 ac 0.00% Impervious Runoff Depth>2.02"
Tc=12.8 min CN=85 Runoff=3.64 cfs 0.325 af

Subcatchment 13: Runoff Area=1.630 ac 0.00% Impervious Runoff Depth>0.49"
Tc=14.4 min CN=59 Runoff=0.46 cfs 0.067 af

Subcatchment 14: Runoff Area=4.600 ac 0.00% Impervious Runoff Depth>1.57"
Tc=19.3 min CN=79 Runoff=5.73 cfs 0.601 af

Subcatchment 15: Runoff Area=1.930 ac 0.00% Impervious Runoff Depth>1.57"
Tc=13.7 min CN=79 Runoff=2.74 cfs 0.252 af

Total Runoff Area = 70.920 ac Runoff Volume = 10.208 af Average Runoff Depth = 1.73"
100.00% Pervious = 70.920 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1:

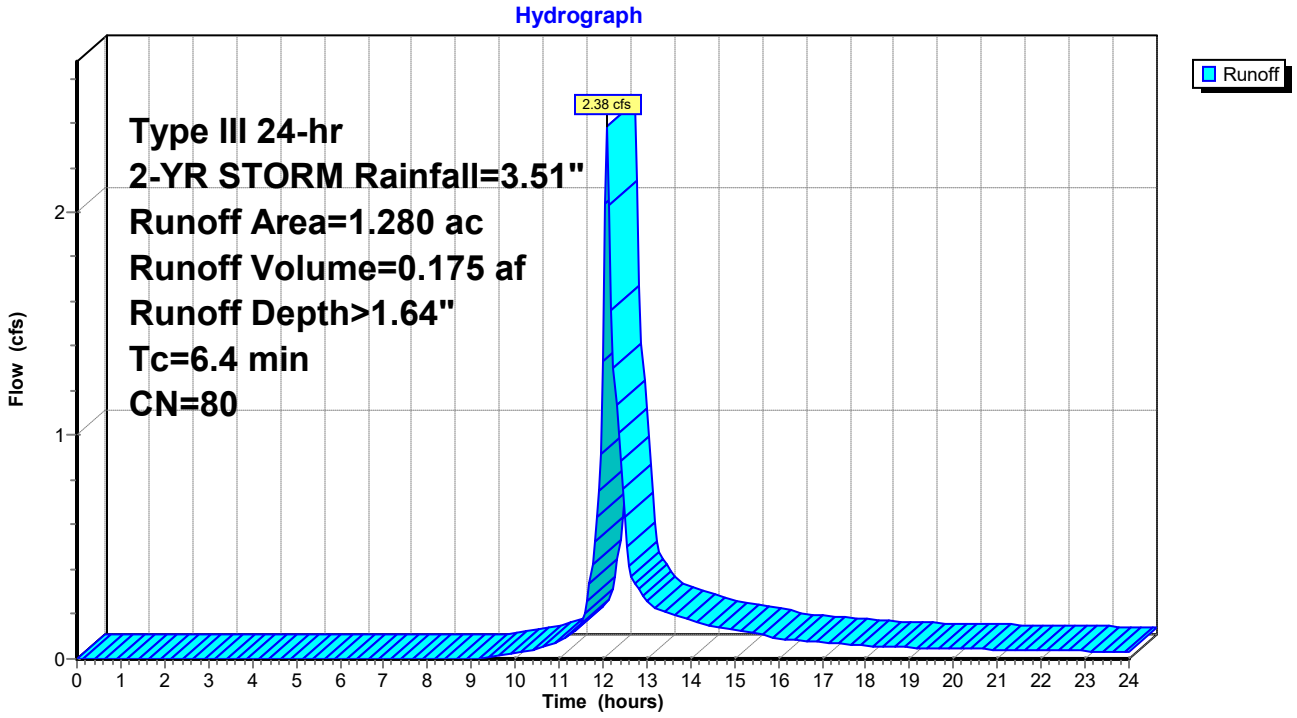
Runoff = 2.38 cfs @ 12.10 hrs, Volume= 0.175 af, Depth> 1.64"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	1.280	80	
	1.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

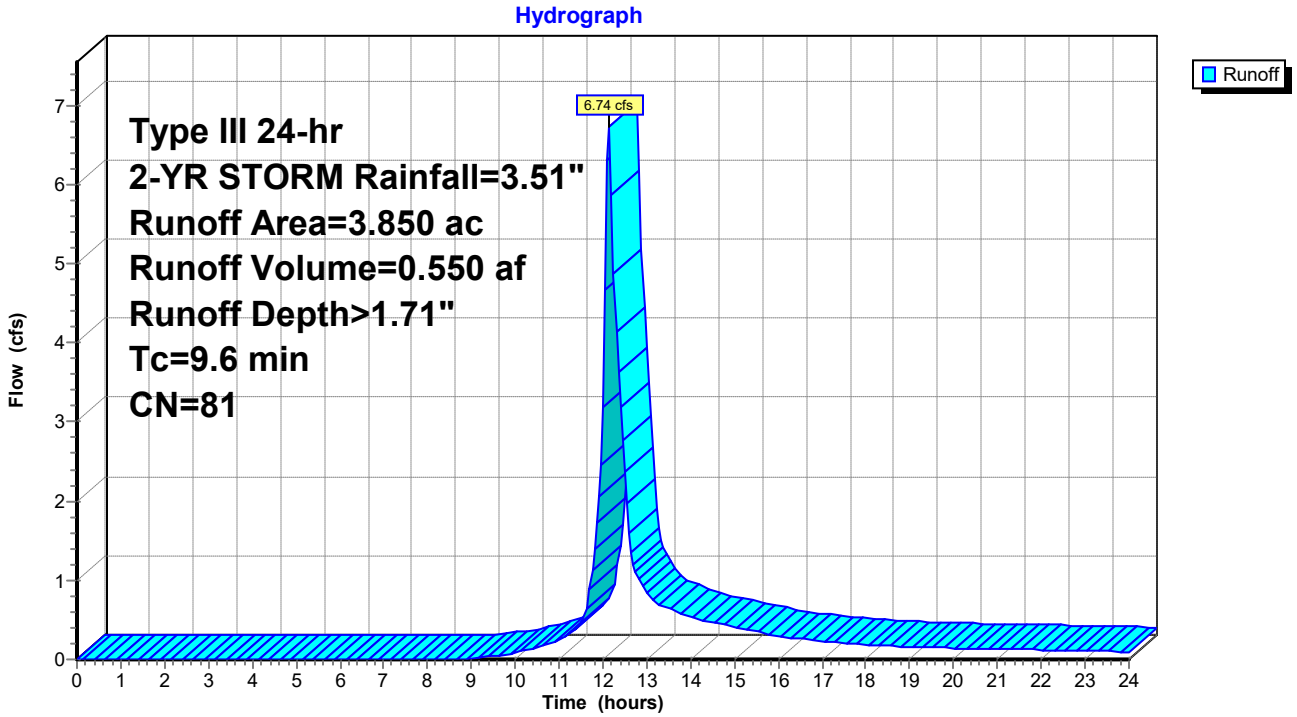
Runoff = 6.74 cfs @ 12.14 hrs, Volume= 0.550 af, Depth> 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	3.850	81	
	3.850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

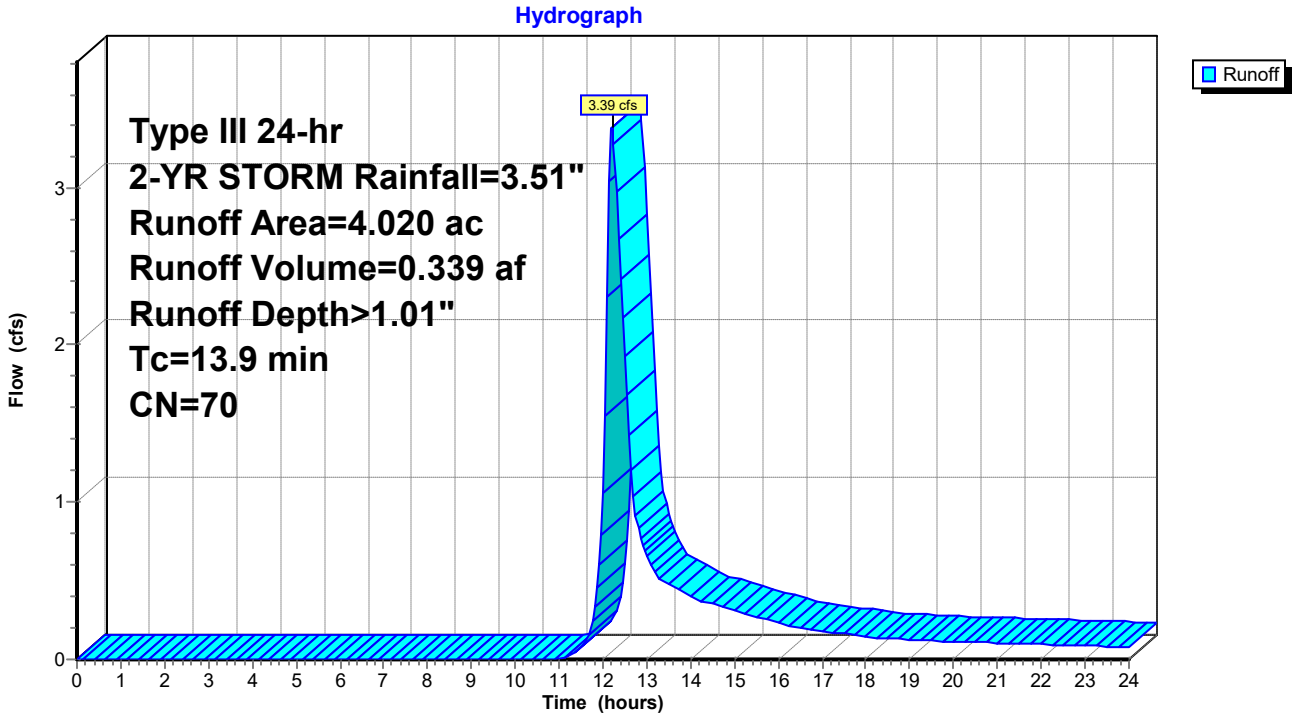
Runoff = 3.39 cfs @ 12.21 hrs, Volume= 0.339 af, Depth> 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	4.020	70	
	4.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

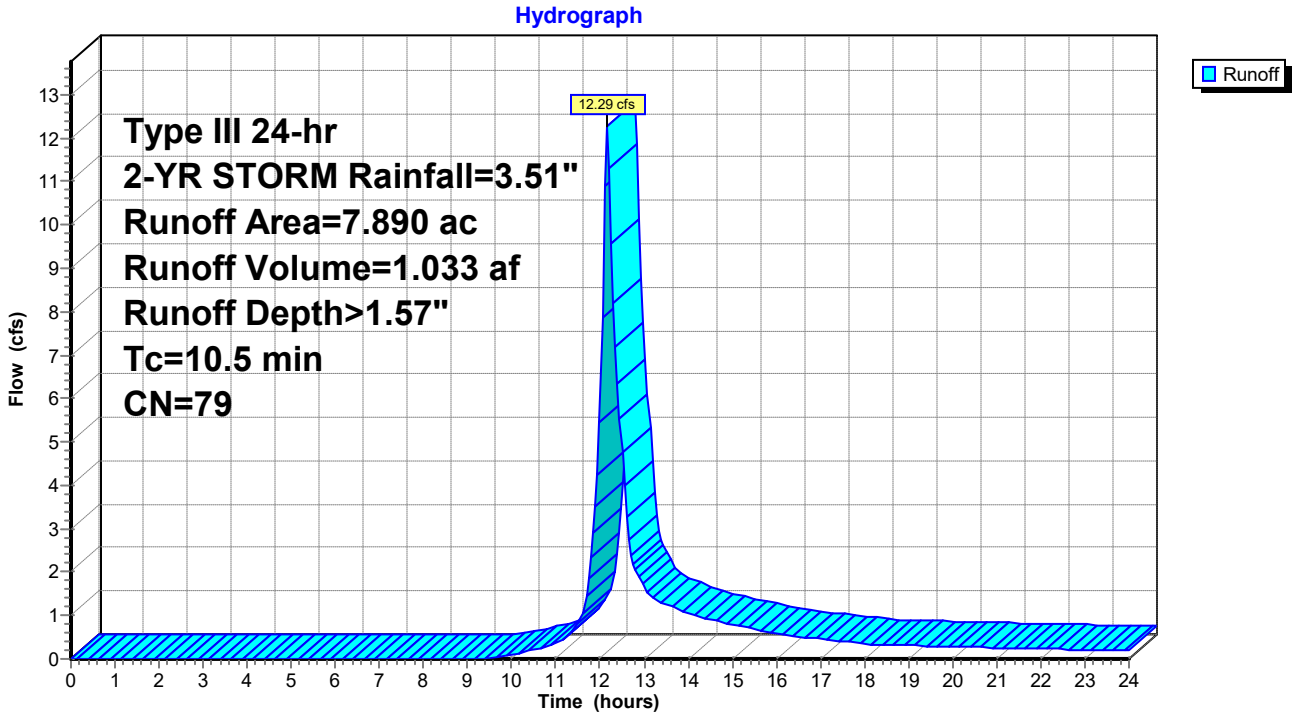
Runoff = 12.29 cfs @ 12.15 hrs, Volume= 1.033 af, Depth> 1.57"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	7.890	79	
	7.890		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 5:

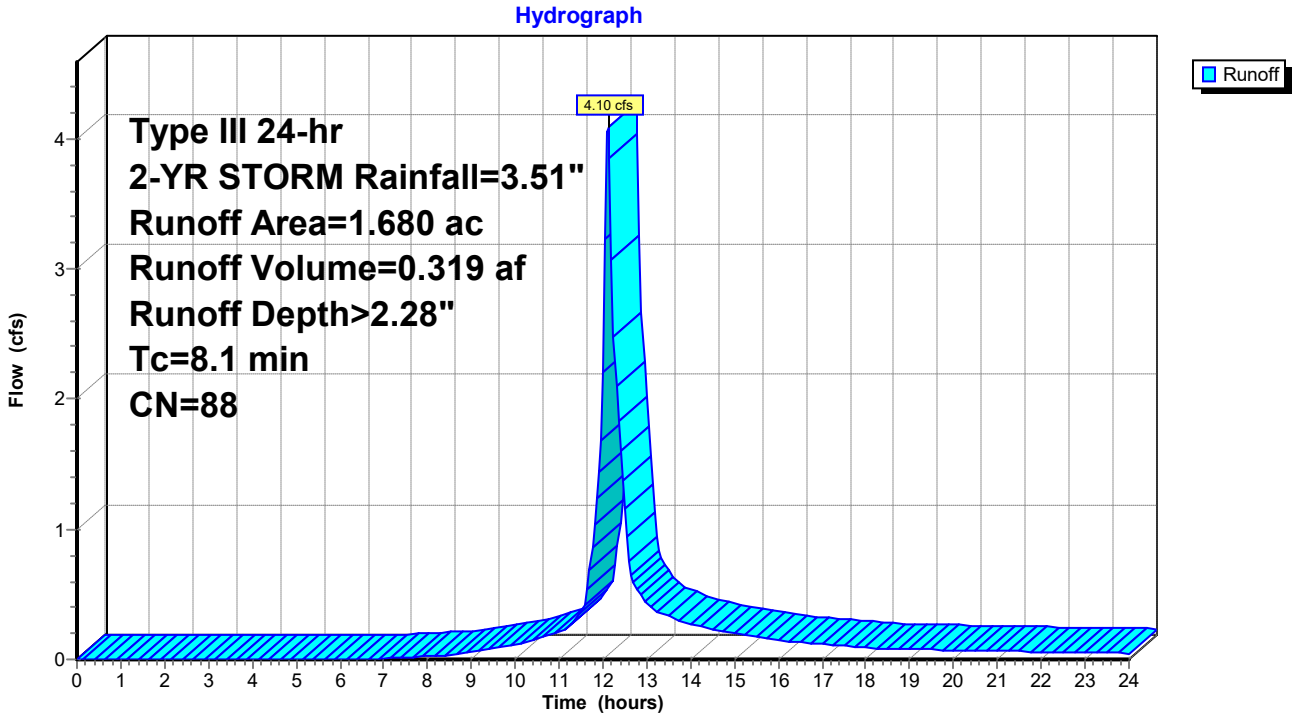
Runoff = 4.10 cfs @ 12.11 hrs, Volume= 0.319 af, Depth> 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	1.680	88	
	1.680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

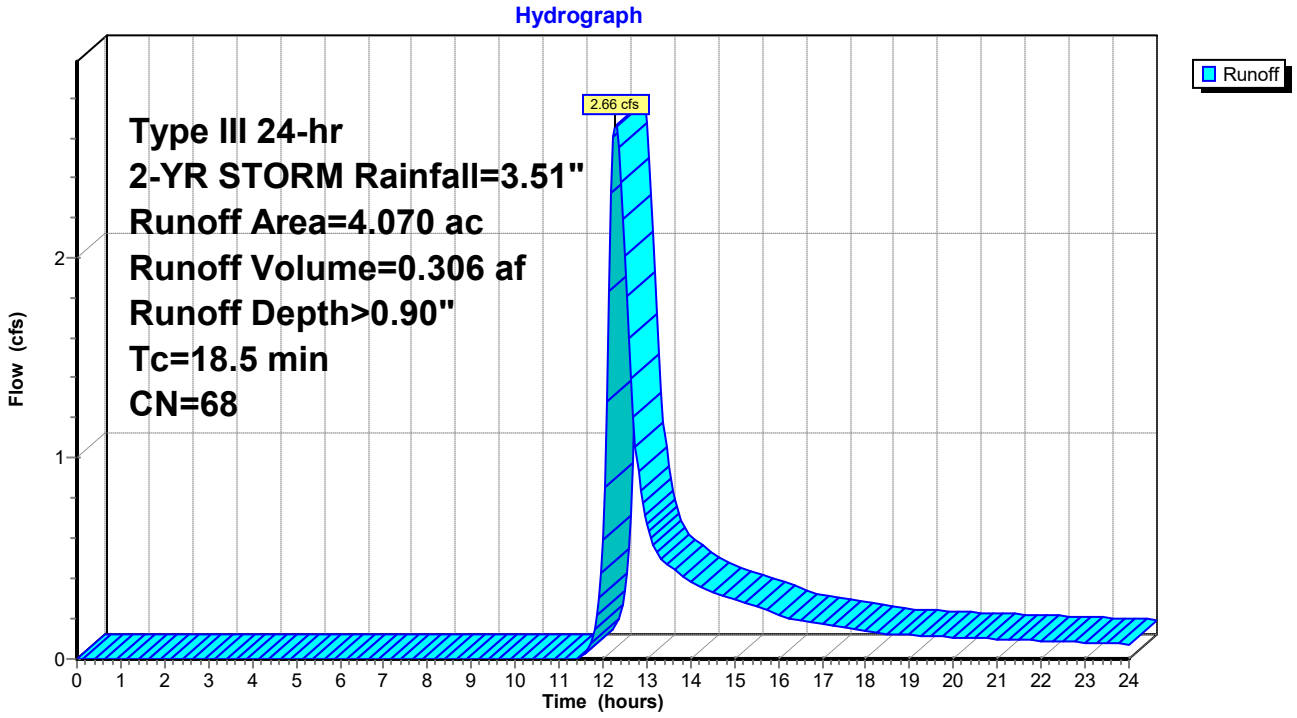
Runoff = 2.66 cfs @ 12.29 hrs, Volume= 0.306 af, Depth> 0.90"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	4.070	68	
	4.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8-10:

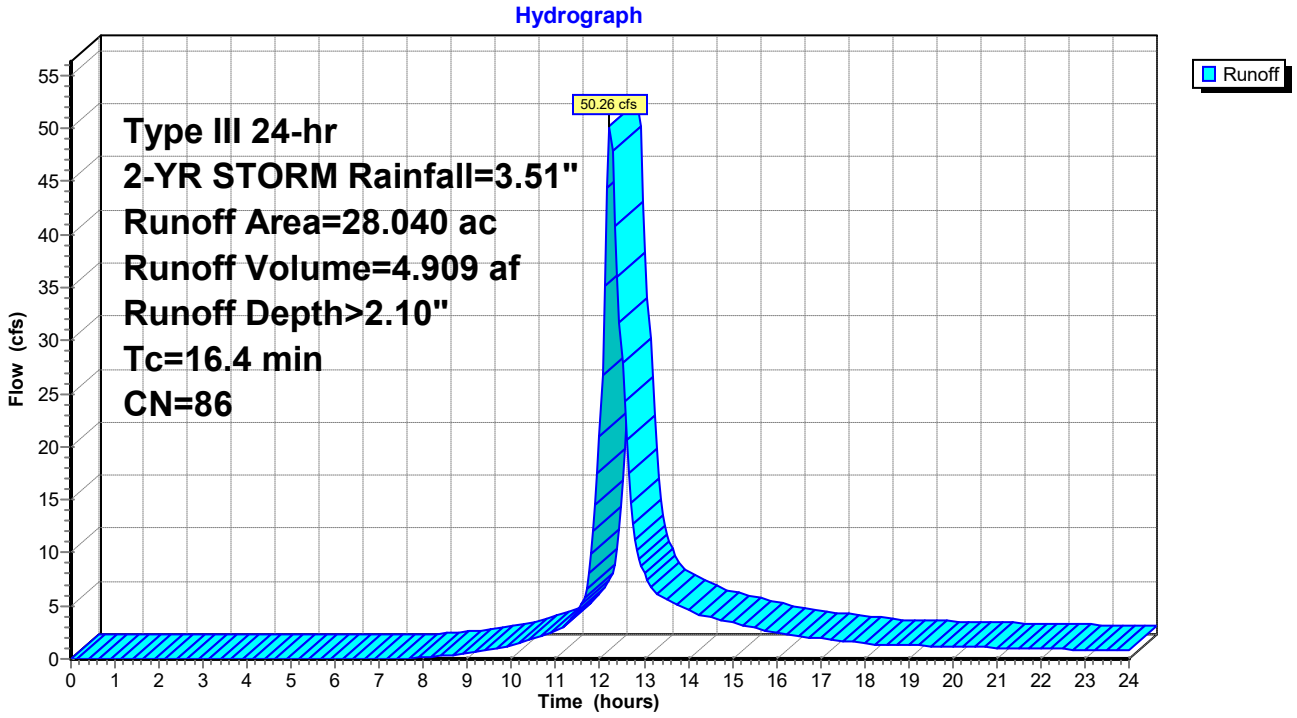
Runoff = 50.26 cfs @ 12.23 hrs, Volume= 4.909 af, Depth> 2.10"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	28.040	86	
	28.040		100.00% Pervious Area

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

Subcatchment 8-10:



Summary for Subcatchment 9:

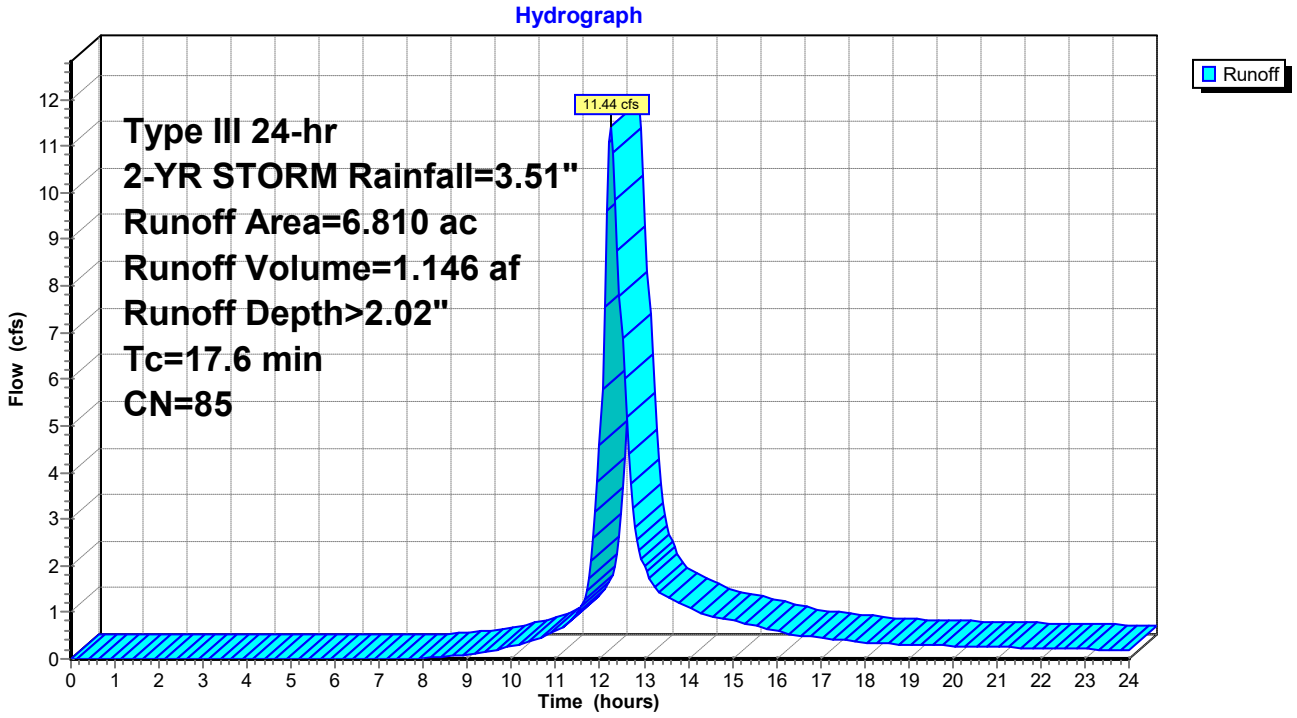
Runoff = 11.44 cfs @ 12.24 hrs, Volume= 1.146 af, Depth> 2.02"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	6.810	85	
	6.810		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

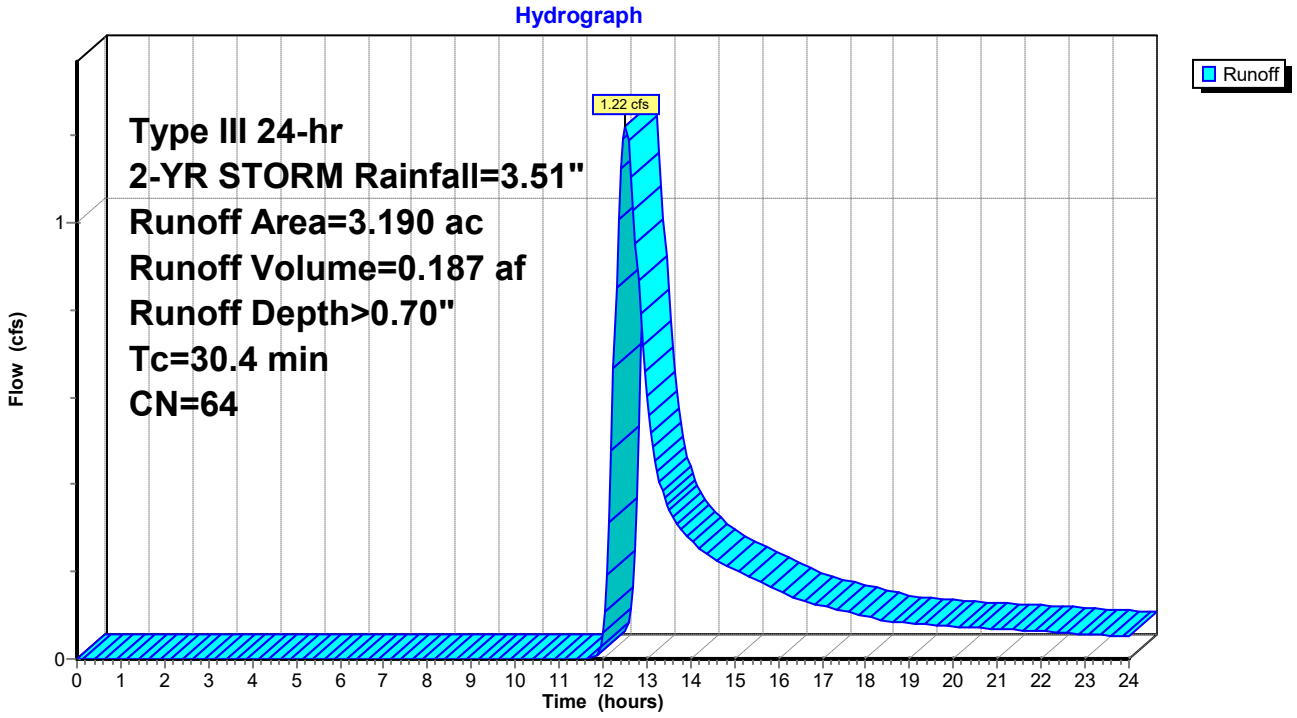
Runoff = 1.22 cfs @ 12.51 hrs, Volume= 0.187 af, Depth> 0.70"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	3.190	64	
	3.190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

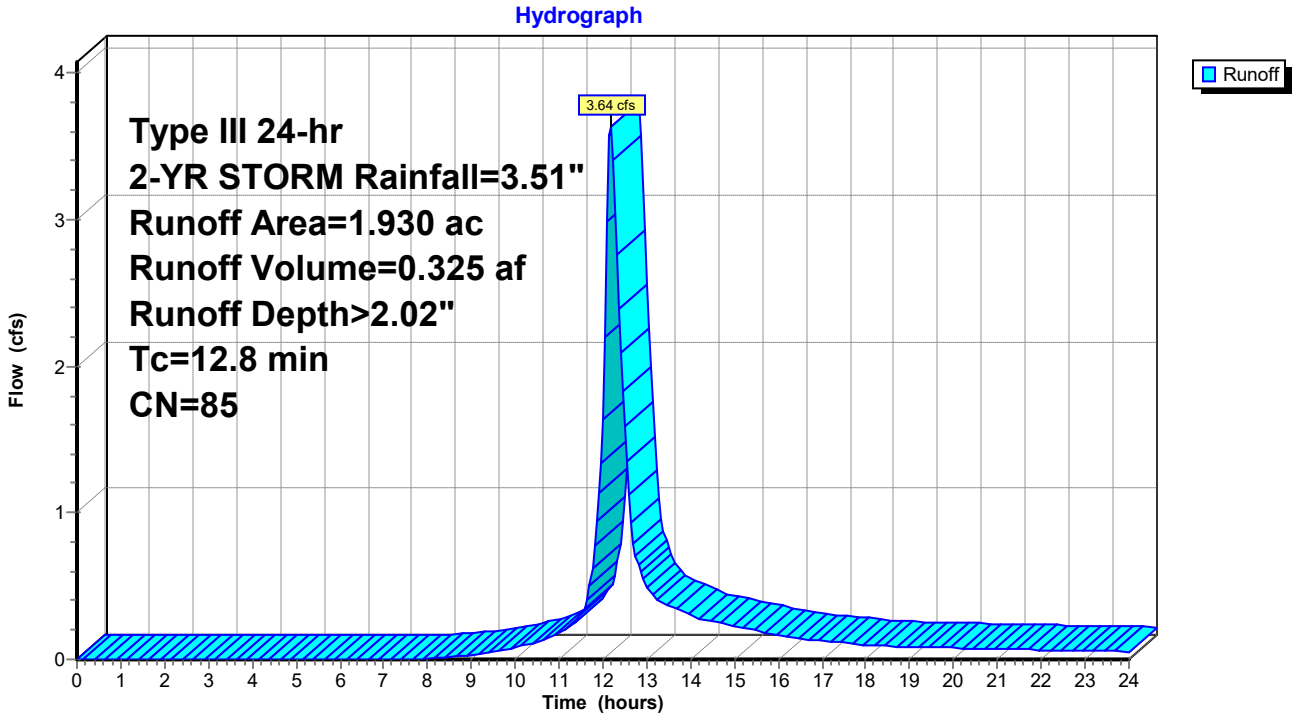
Runoff = 3.64 cfs @ 12.18 hrs, Volume= 0.325 af, Depth> 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	1.930	85	
	1.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 13:

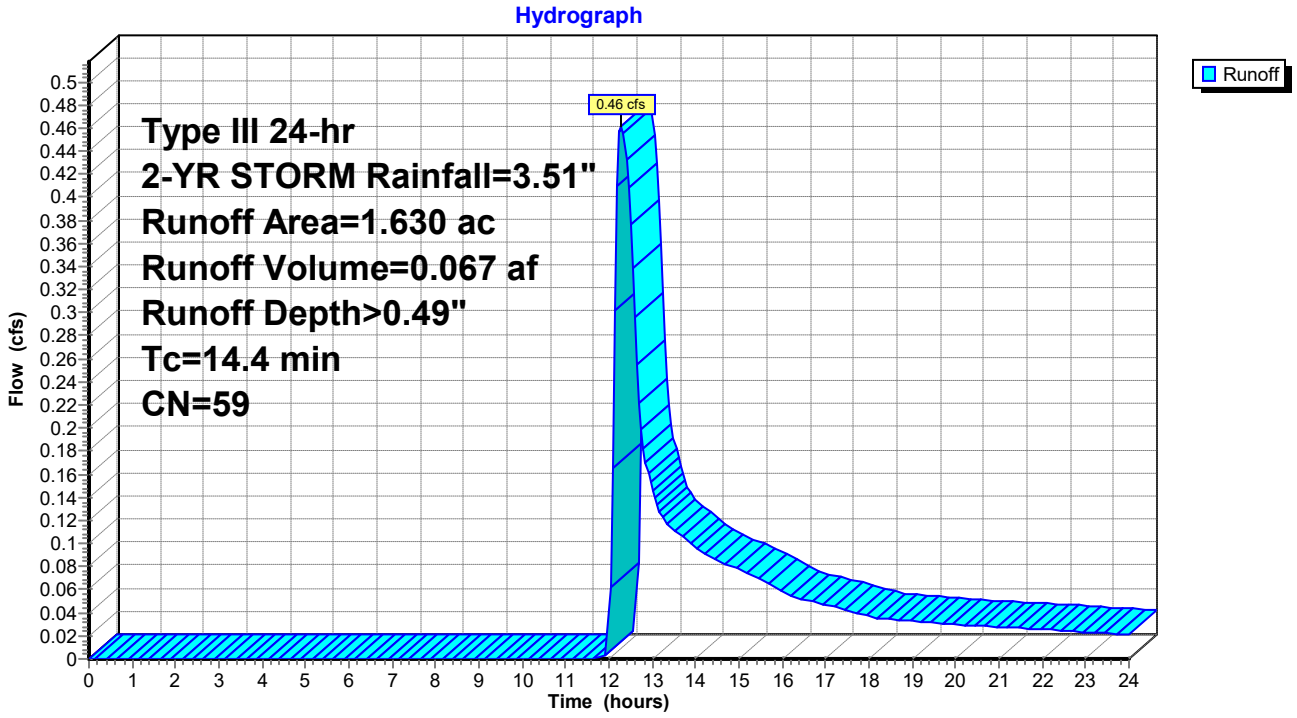
Runoff = 0.46 cfs @ 12.29 hrs, Volume= 0.067 af, Depth> 0.49"
Routed to nonexistent node 6P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	1.630	59	
	1.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4					**Direct Entry, NRCS Part 630**

Subcatchment 13:



Summary for Subcatchment 14:

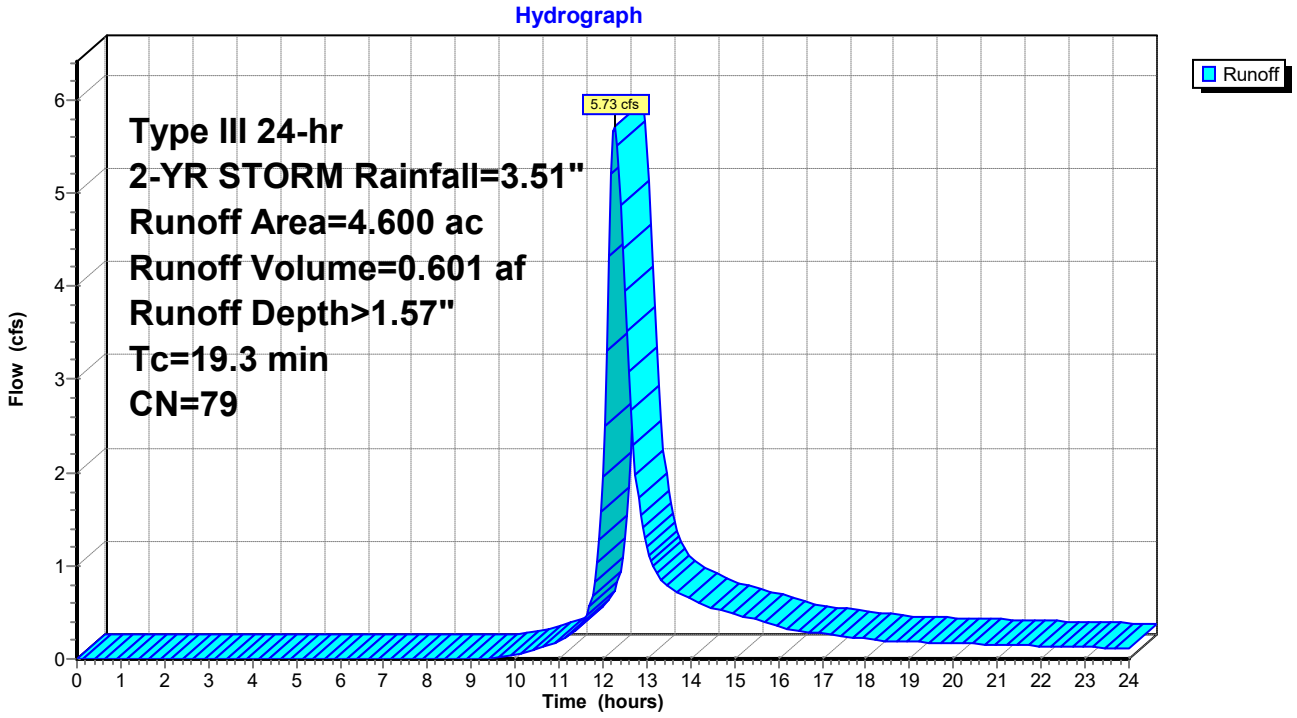
Runoff = 5.73 cfs @ 12.27 hrs, Volume= 0.601 af, Depth> 1.57"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	4.600	79	
	4.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

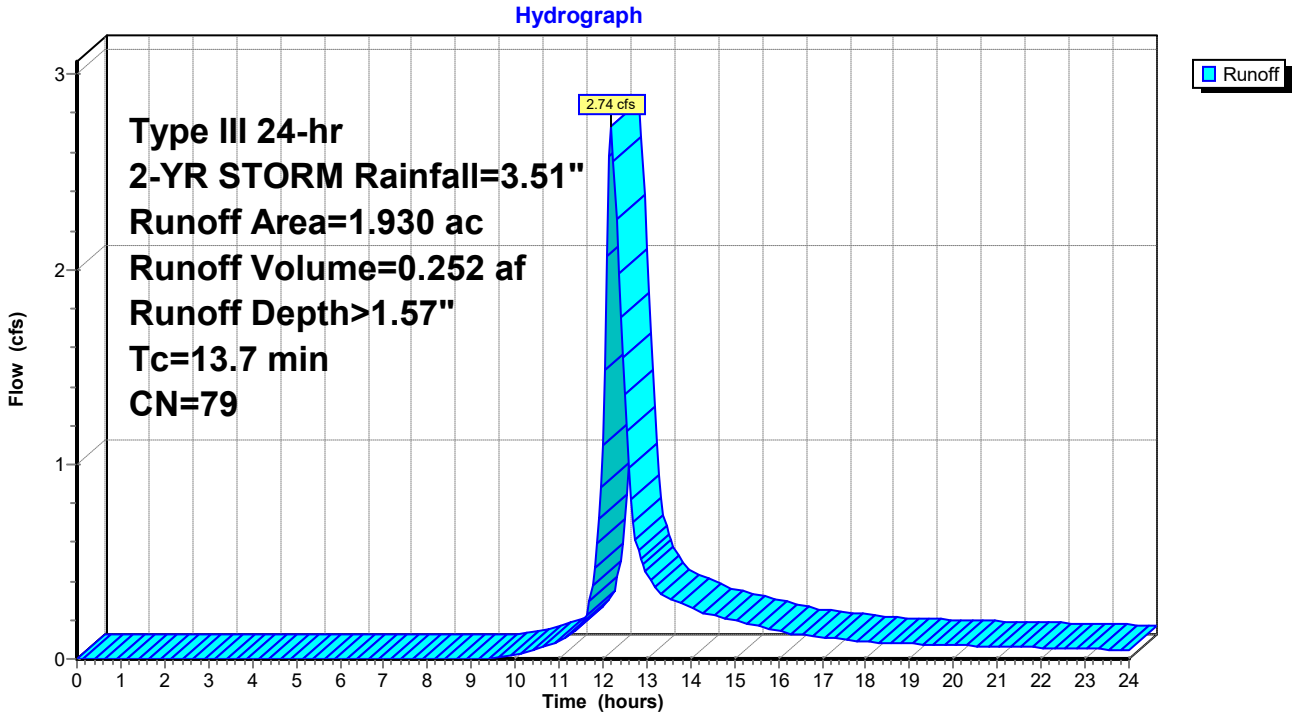
Runoff = 2.74 cfs @ 12.20 hrs, Volume= 0.252 af, Depth> 1.57"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	1.930	79	
	1.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 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 1: Runoff Area=1.280 ac 0.00% Impervious Runoff Depth>3.51"
Tc=6.4 min CN=80 Runoff=5.10 cfs 0.374 af

Subcatchment 2a: Runoff Area=3.850 ac 0.00% Impervious Runoff Depth>3.61"
Tc=9.6 min CN=81 Runoff=14.16 cfs 1.157 af

Subcatchment 2b: Runoff Area=4.020 ac 0.00% Impervious Runoff Depth>2.56"
Tc=13.9 min CN=70 Runoff=9.27 cfs 0.858 af

Subcatchment 3: Runoff Area=7.890 ac 0.00% Impervious Runoff Depth>3.41"
Tc=10.5 min CN=79 Runoff=26.88 cfs 2.240 af

Subcatchment 5: Runoff Area=1.680 ac 0.00% Impervious Runoff Depth>4.33"
Tc=8.1 min CN=88 Runoff=7.62 cfs 0.607 af

Subcatchment 7: Runoff Area=4.070 ac 0.00% Impervious Runoff Depth>2.38"
Tc=18.5 min CN=68 Runoff=7.78 cfs 0.808 af

Subcatchment 8-10: Runoff Area=28.040 ac 0.00% Impervious Runoff Depth>4.11"
Tc=16.4 min CN=86 Runoff=97.20 cfs 9.614 af

Subcatchment 9: Runoff Area=6.810 ac 0.00% Impervious Runoff Depth>4.01"
Tc=17.6 min CN=85 Runoff=22.41 cfs 2.275 af

Subcatchment 11: Runoff Area=3.190 ac 0.00% Impervious Runoff Depth>2.04"
Tc=30.4 min CN=64 Runoff=4.14 cfs 0.541 af

Subcatchment 12: Runoff Area=1.930 ac 0.00% Impervious Runoff Depth>4.01"
Tc=12.8 min CN=85 Runoff=7.16 cfs 0.645 af

Subcatchment 13: Runoff Area=1.630 ac 0.00% Impervious Runoff Depth>1.64"
Tc=14.4 min CN=59 Runoff=2.21 cfs 0.223 af

Subcatchment 14: Runoff Area=4.600 ac 0.00% Impervious Runoff Depth>3.40"
Tc=19.3 min CN=79 Runoff=12.56 cfs 1.304 af

Subcatchment 15: Runoff Area=1.930 ac 0.00% Impervious Runoff Depth>3.40"
Tc=13.7 min CN=79 Runoff=6.00 cfs 0.548 af

Total Runoff Area = 70.920 ac Runoff Volume = 21.194 af Average Runoff Depth = 3.59"
100.00% Pervious = 70.920 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1:

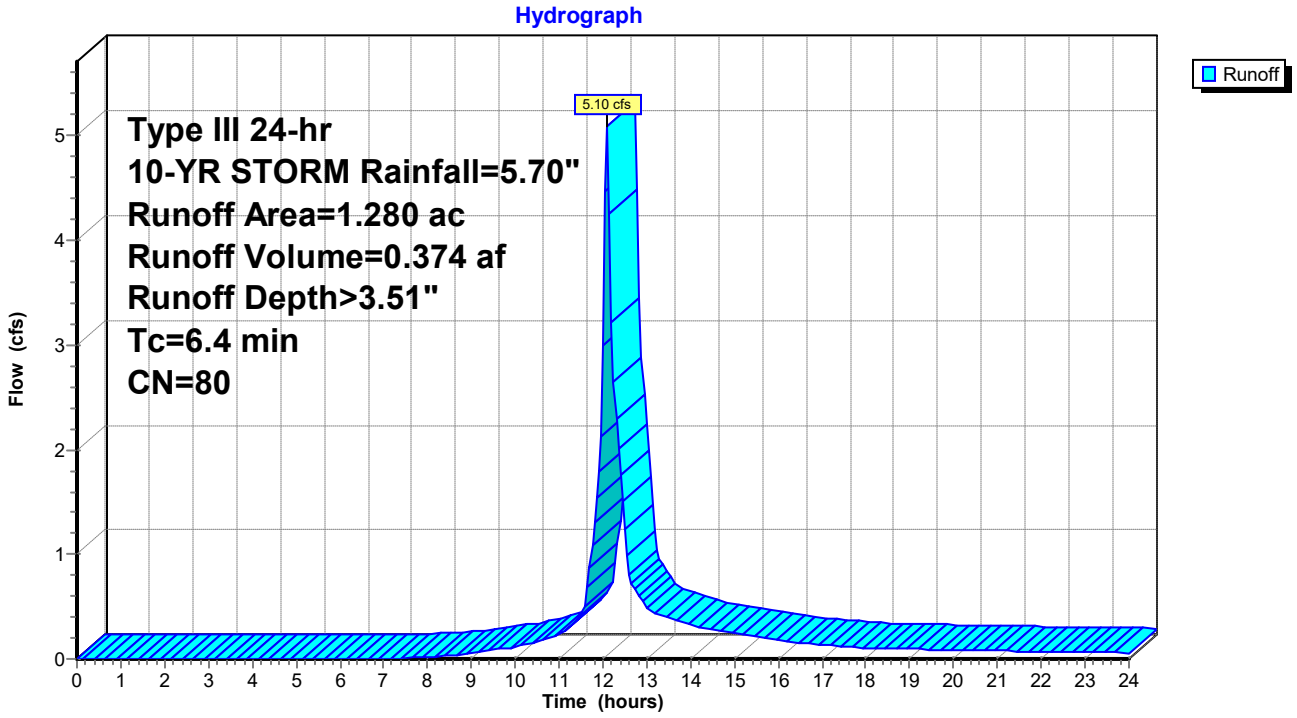
Runoff = 5.10 cfs @ 12.10 hrs, Volume= 0.374 af, Depth> 3.51"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	1.280	80	
	1.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

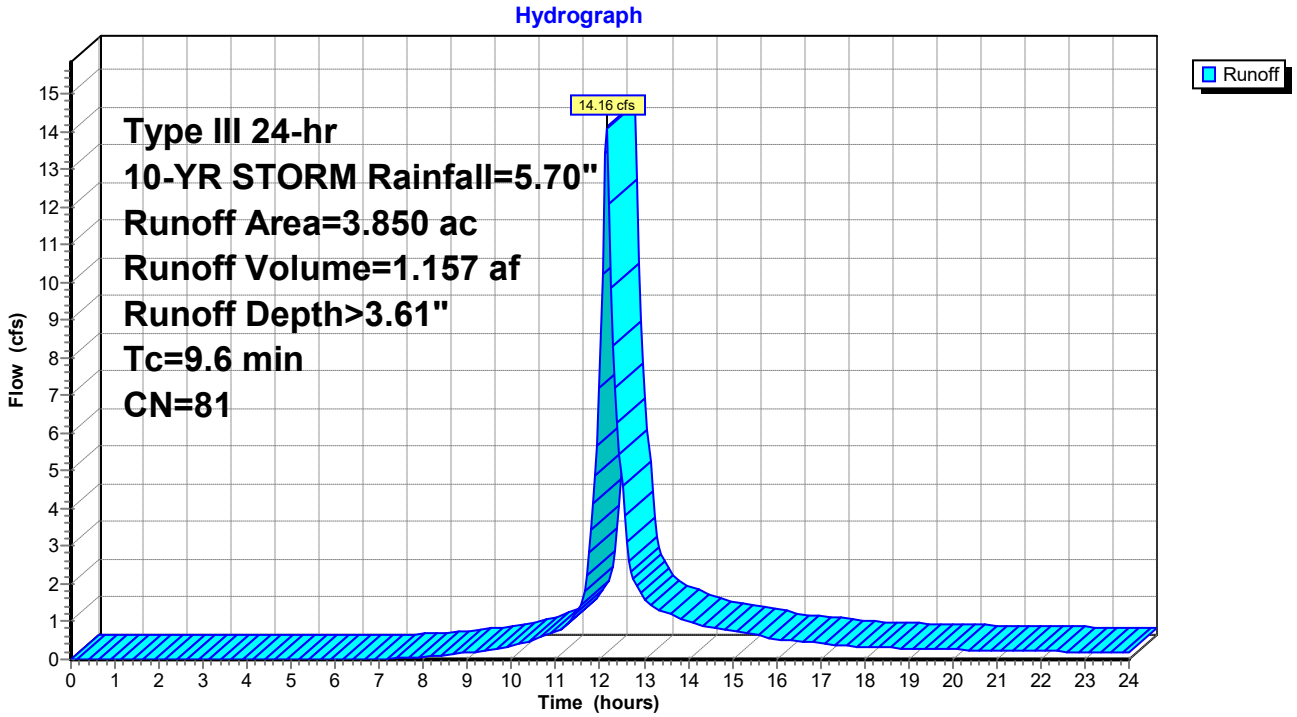
Runoff = 14.16 cfs @ 12.14 hrs, Volume= 1.157 af, Depth> 3.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	3.850	81	
	3.850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

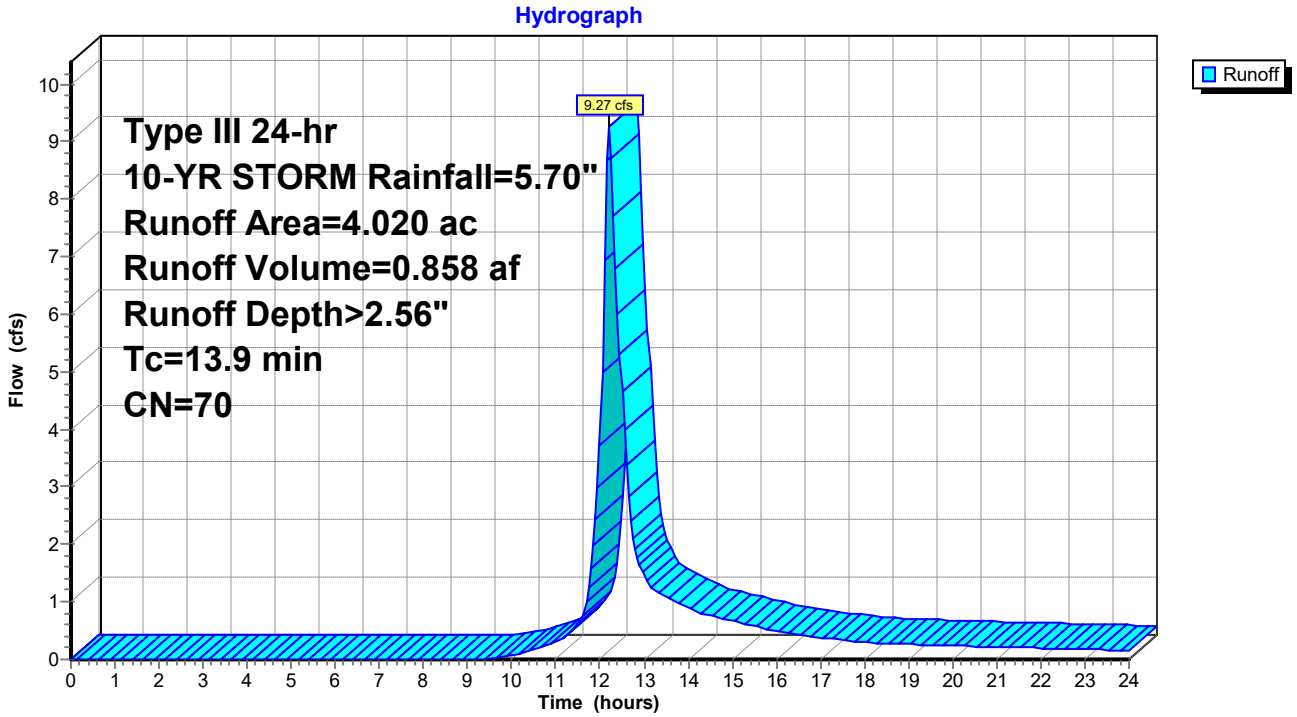
Runoff = 9.27 cfs @ 12.20 hrs, Volume= 0.858 af, Depth> 2.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	4.020	70	
	4.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

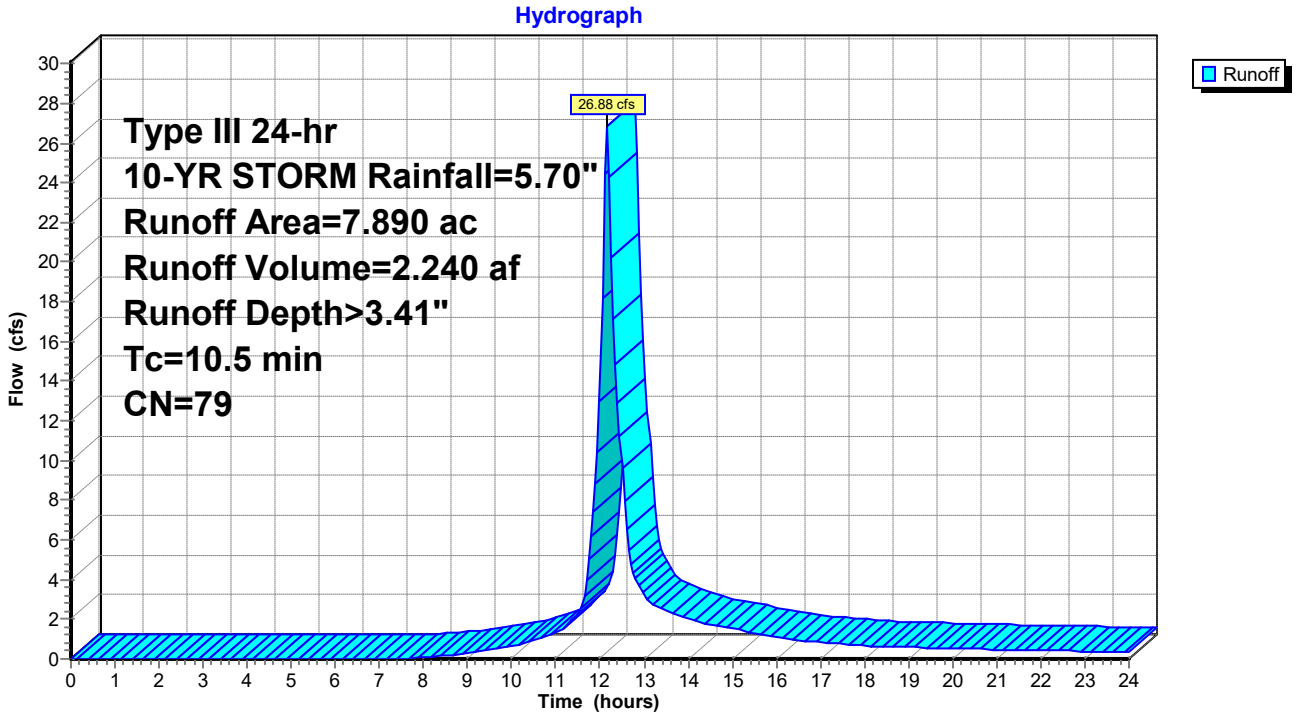
Runoff = 26.88 cfs @ 12.15 hrs, Volume= 2.240 af, Depth> 3.41"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	7.890	79	
	7.890		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 5:

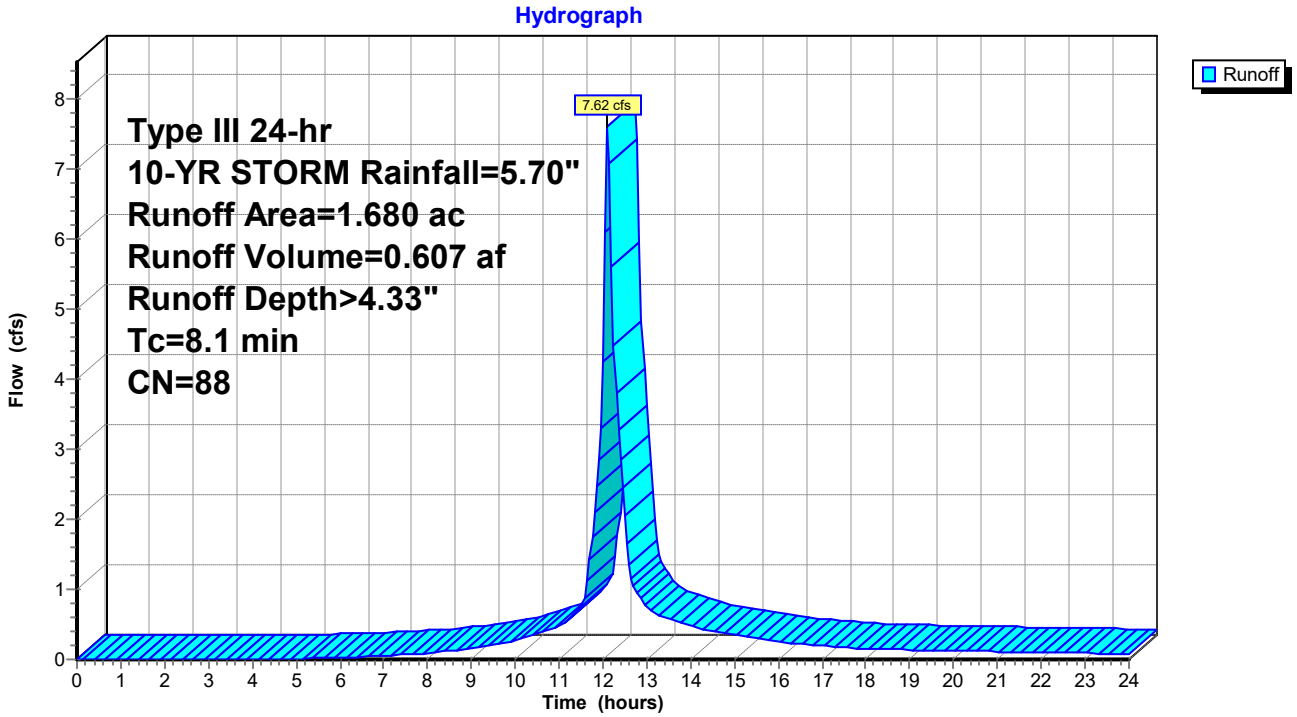
Runoff = 7.62 cfs @ 12.11 hrs, Volume= 0.607 af, Depth> 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	1.680	88	
	1.680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

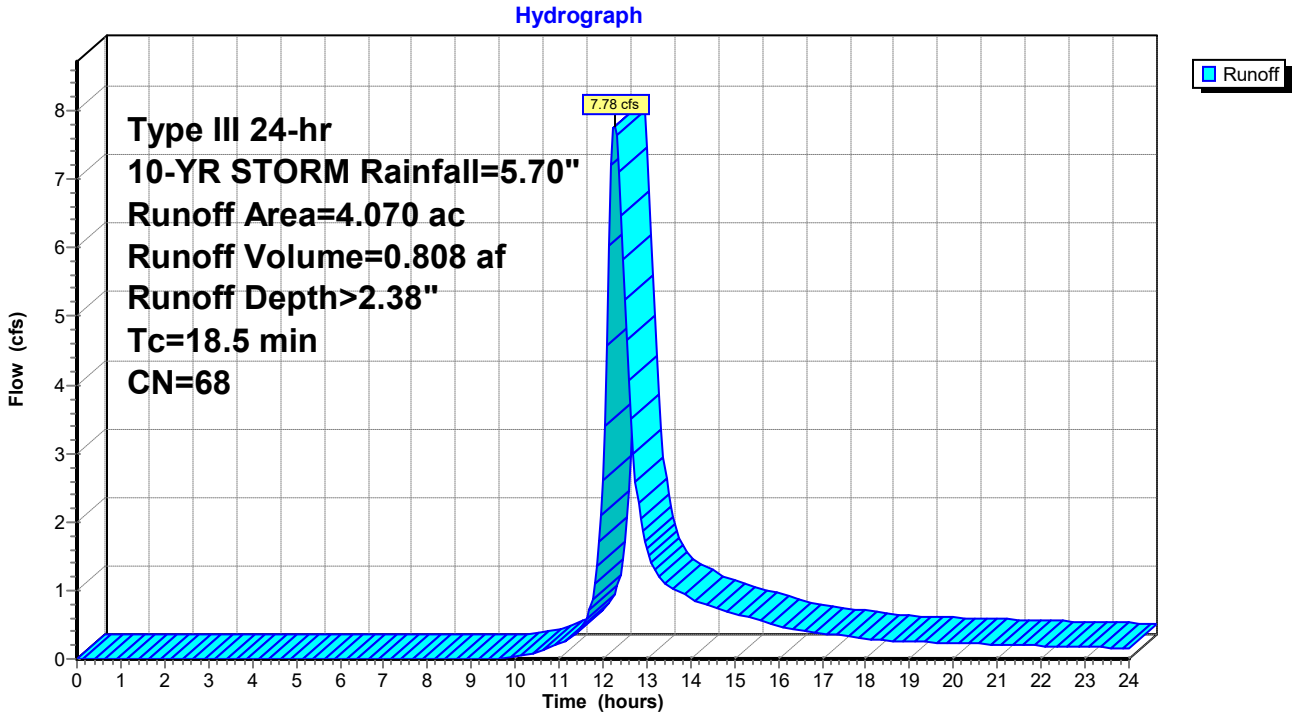
Runoff = 7.78 cfs @ 12.27 hrs, Volume= 0.808 af, Depth> 2.38"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	4.070	68	
	4.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8-10:

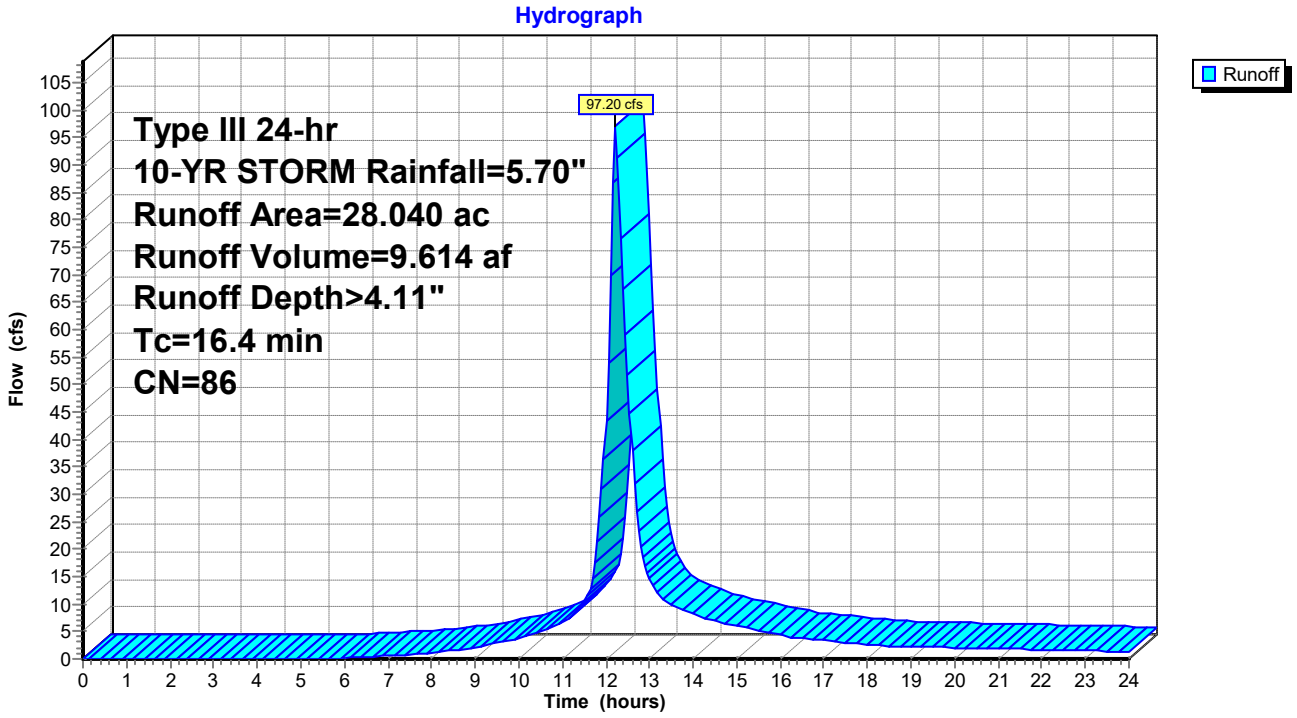
Runoff = 97.20 cfs @ 12.22 hrs, Volume= 9.614 af, Depth> 4.11"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	28.040	86	
	28.040		100.00% Pervious Area

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

Subcatchment 8-10:



Summary for Subcatchment 9:

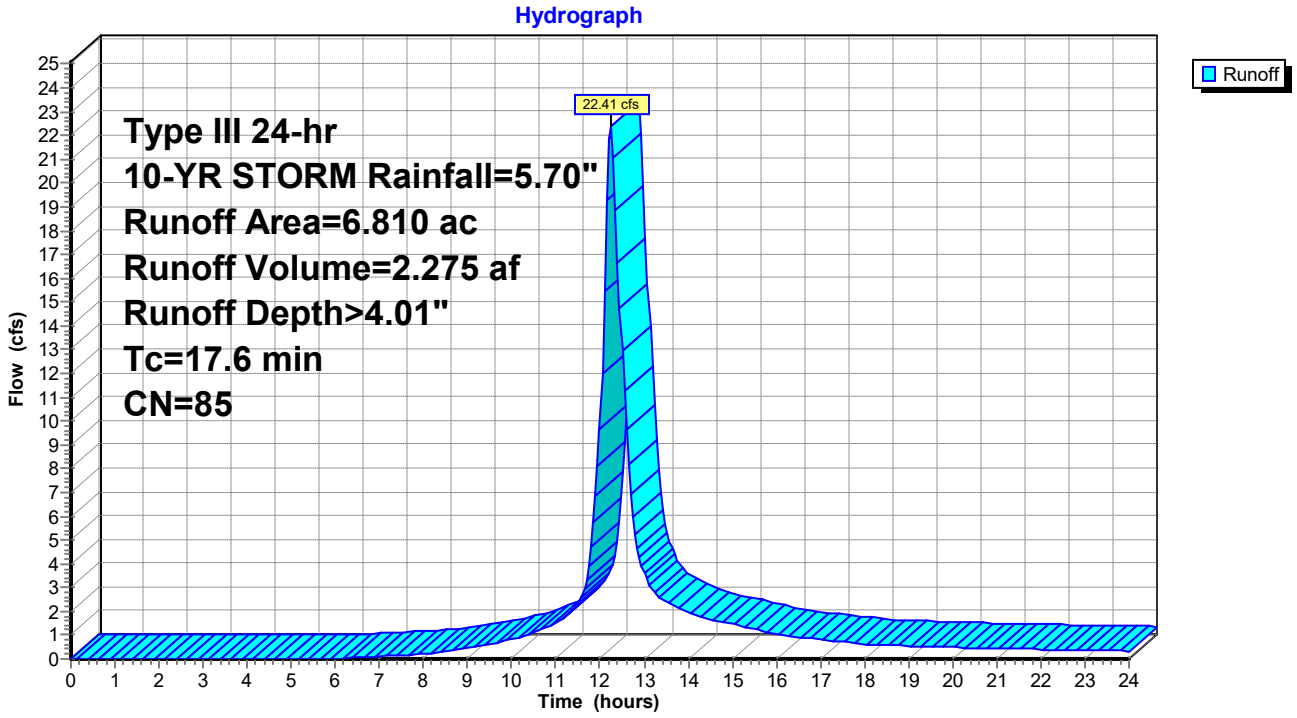
Runoff = 22.41 cfs @ 12.24 hrs, Volume= 2.275 af, Depth> 4.01"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	6.810	85	
	6.810		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

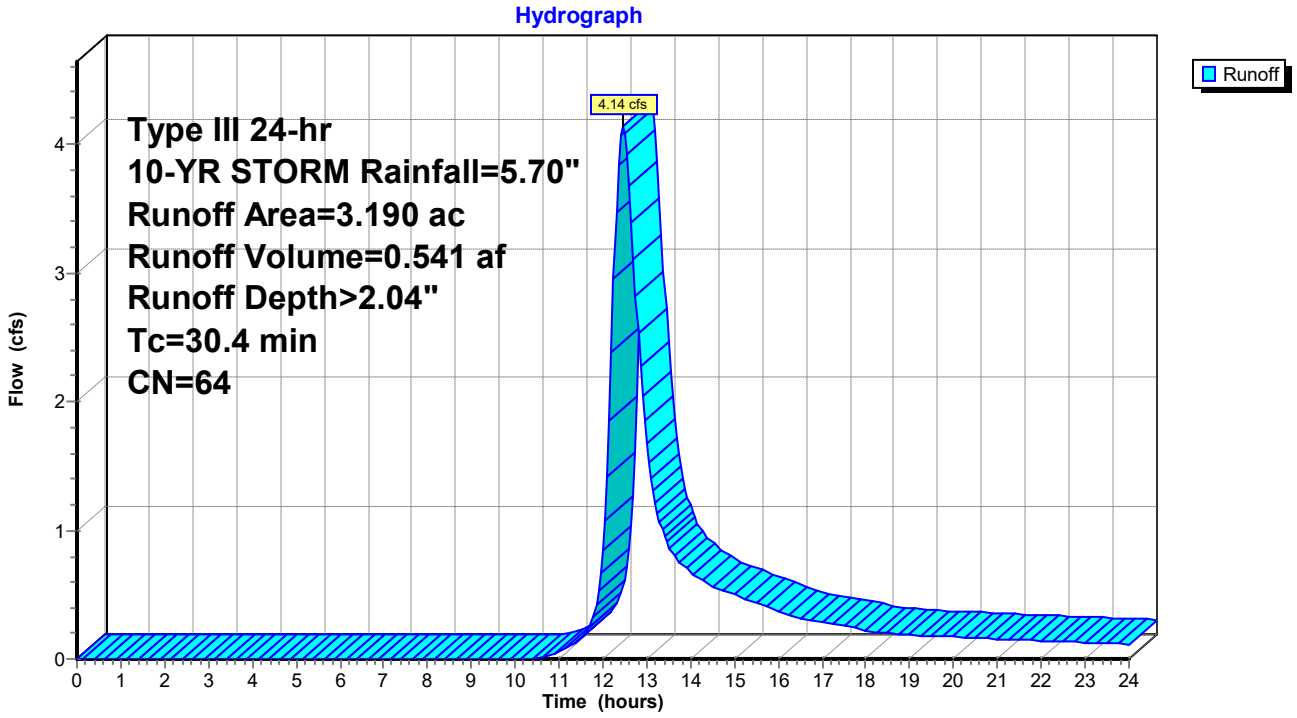
Runoff = 4.14 cfs @ 12.45 hrs, Volume= 0.541 af, Depth> 2.04"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	3.190	64	
	3.190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

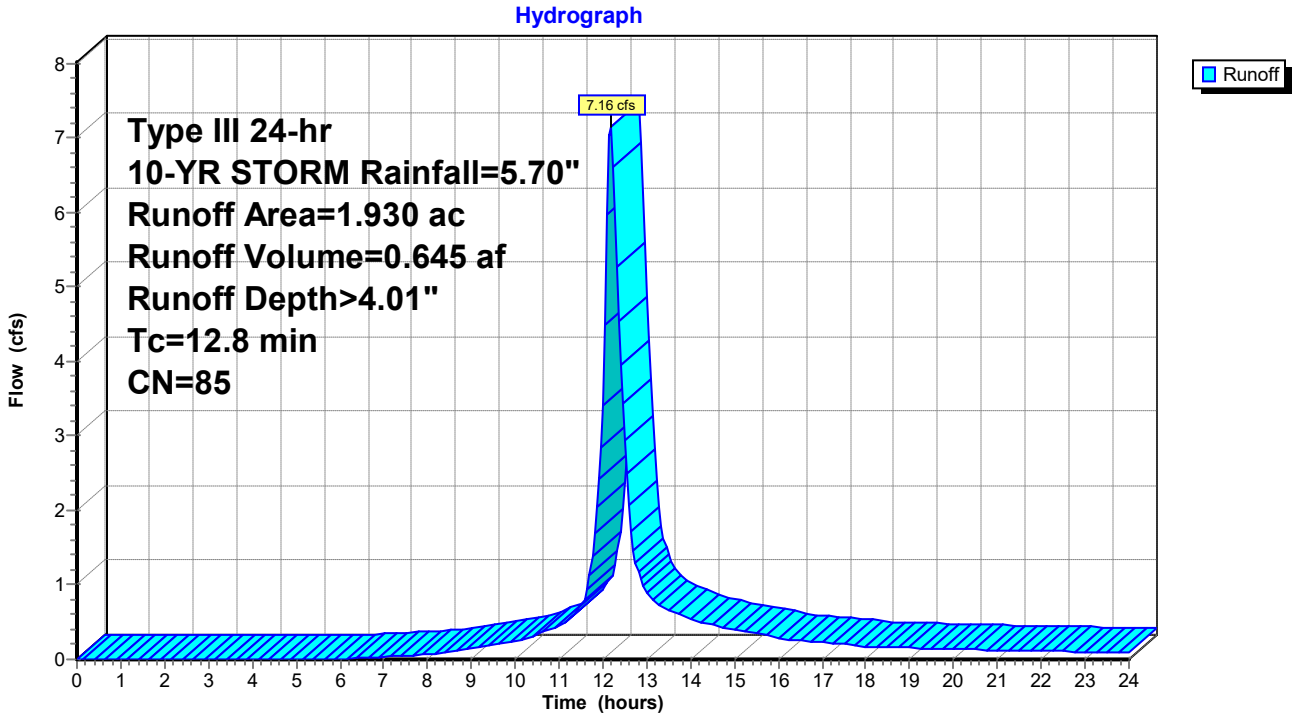
Runoff = 7.16 cfs @ 12.17 hrs, Volume= 0.645 af, Depth> 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	1.930	85	
	1.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 13:

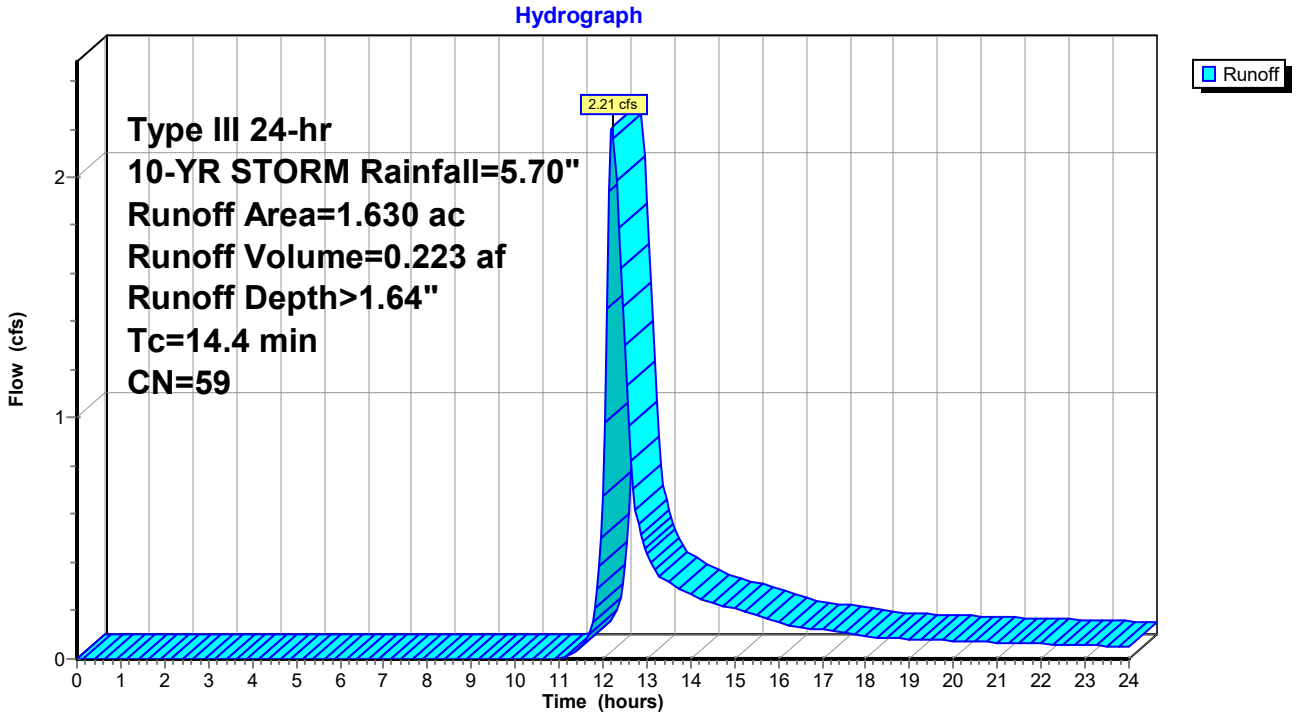
Runoff = 2.21 cfs @ 12.22 hrs, Volume= 0.223 af, Depth> 1.64"
Routed to nonexistent node 6P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	1.630	59	
	1.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4					**Direct Entry, NRCS Part 630**

Subcatchment 13:



Summary for Subcatchment 14:

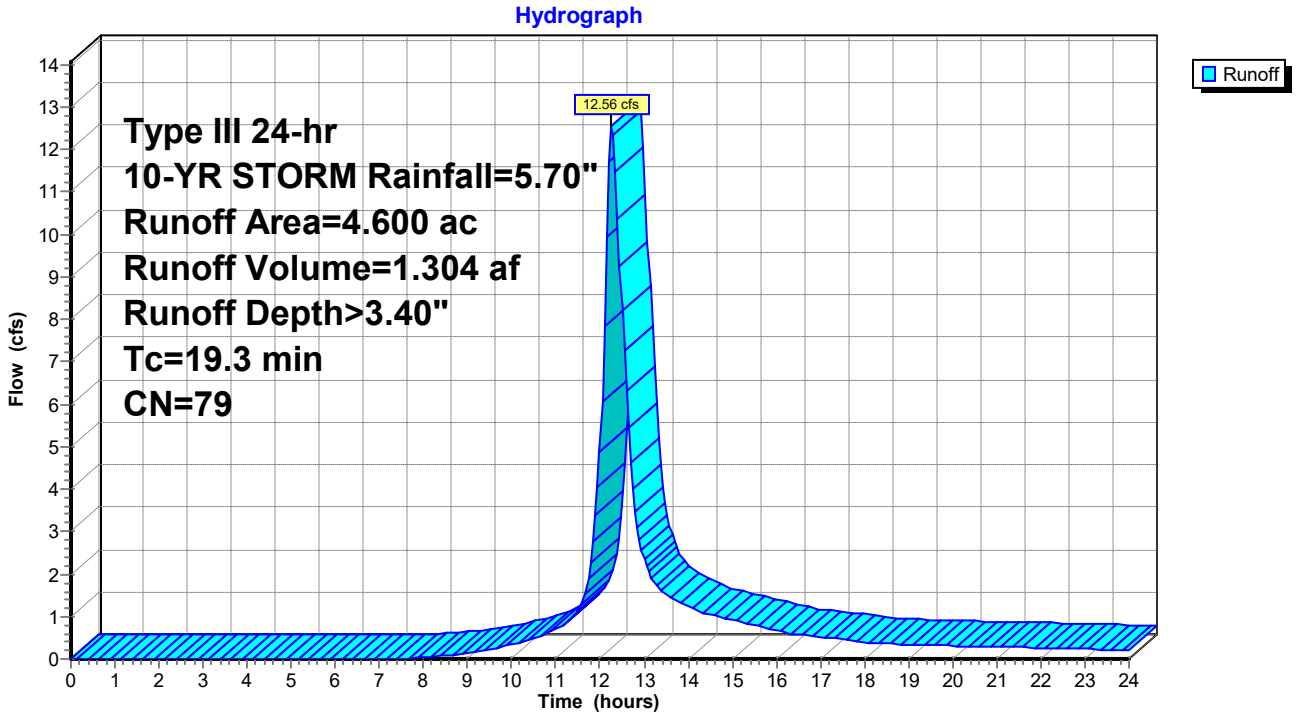
Runoff = 12.56 cfs @ 12.27 hrs, Volume= 1.304 af, Depth> 3.40"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	4.600	79	
	4.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

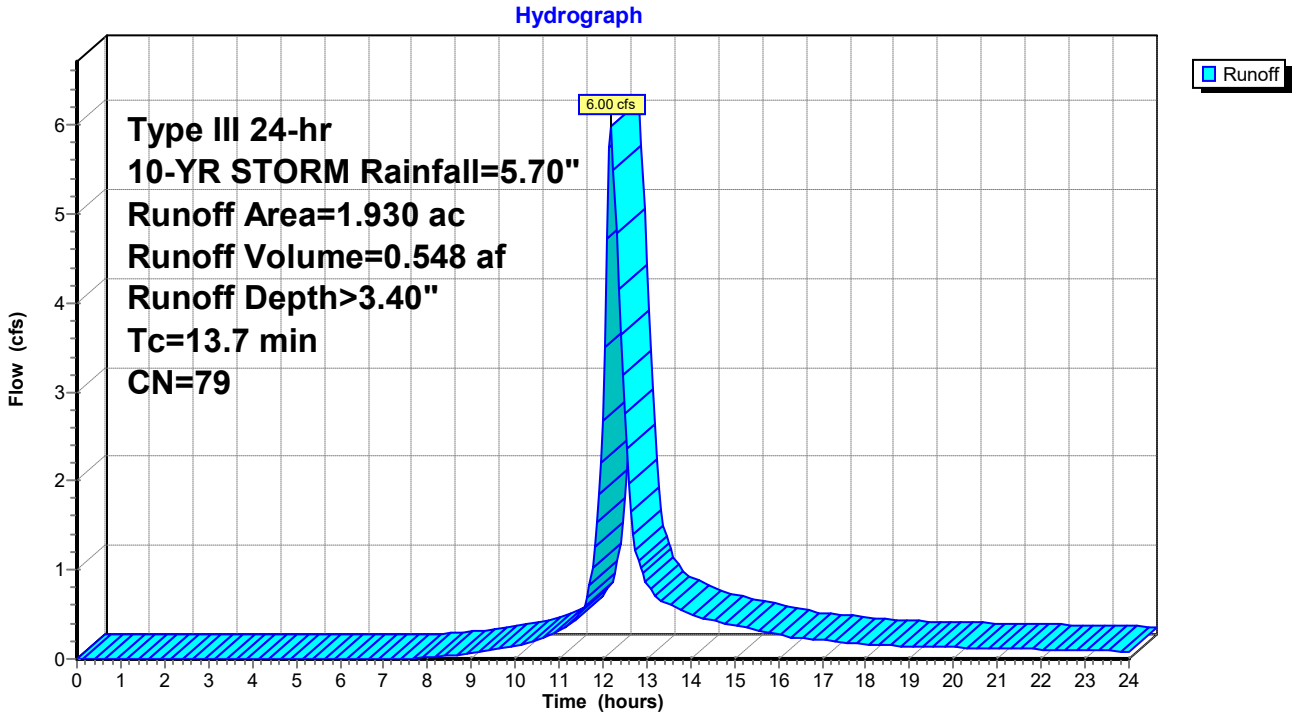
Runoff = 6.00 cfs @ 12.19 hrs, Volume= 0.548 af, Depth> 3.40"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	1.930	79	
	1.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 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 1: Runoff Area=1.280 ac 0.00% Impervious Runoff Depth>4.75"
Tc=6.4 min CN=80 Runoff=6.85 cfs 0.507 af

Subcatchment 2a: Runoff Area=3.850 ac 0.00% Impervious Runoff Depth>4.86"
Tc=9.6 min CN=81 Runoff=18.93 cfs 1.560 af

Subcatchment 2b: Runoff Area=4.020 ac 0.00% Impervious Runoff Depth>3.67"
Tc=13.9 min CN=70 Runoff=13.39 cfs 1.228 af

Subcatchment 3: Runoff Area=7.890 ac 0.00% Impervious Runoff Depth>4.64"
Tc=10.5 min CN=79 Runoff=36.40 cfs 3.051 af

Subcatchment 5: Runoff Area=1.680 ac 0.00% Impervious Runoff Depth>5.66"
Tc=8.1 min CN=88 Runoff=9.81 cfs 0.792 af

Subcatchment 7: Runoff Area=4.070 ac 0.00% Impervious Runoff Depth>3.45"
Tc=18.5 min CN=68 Runoff=11.43 cfs 1.171 af

Subcatchment 8-10: Runoff Area=28.040 ac 0.00% Impervious Runoff Depth>5.42"
Tc=16.4 min CN=86 Runoff=126.54 cfs 12.664 af

Subcatchment 9: Runoff Area=6.810 ac 0.00% Impervious Runoff Depth>5.31"
Tc=17.6 min CN=85 Runoff=29.34 cfs 3.011 af

Subcatchment 11: Runoff Area=3.190 ac 0.00% Impervious Runoff Depth>3.03"
Tc=30.4 min CN=64 Runoff=6.32 cfs 0.806 af

Subcatchment 12: Runoff Area=1.930 ac 0.00% Impervious Runoff Depth>5.31"
Tc=12.8 min CN=85 Runoff=9.37 cfs 0.854 af

Subcatchment 13: Runoff Area=1.630 ac 0.00% Impervious Runoff Depth>2.55"
Tc=14.4 min CN=59 Runoff=3.59 cfs 0.346 af

Subcatchment 14: Runoff Area=4.600 ac 0.00% Impervious Runoff Depth>4.63"
Tc=19.3 min CN=79 Runoff=17.03 cfs 1.776 af

Subcatchment 15: Runoff Area=1.930 ac 0.00% Impervious Runoff Depth>4.64"
Tc=13.7 min CN=79 Runoff=8.13 cfs 0.746 af

Total Runoff Area = 70.920 ac Runoff Volume = 28.513 af Average Runoff Depth = 4.82"
100.00% Pervious = 70.920 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1:

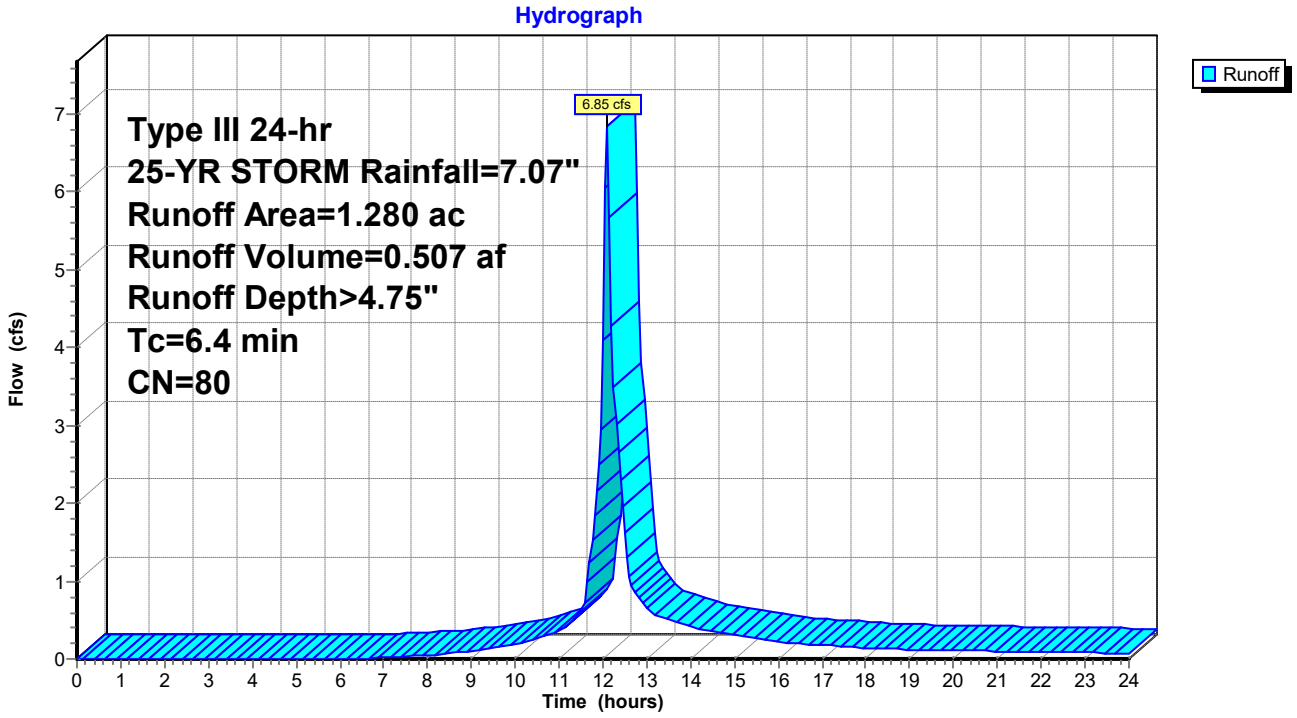
Runoff = 6.85 cfs @ 12.10 hrs, Volume= 0.507 af, Depth> 4.75"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	1.280	80	
	1.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

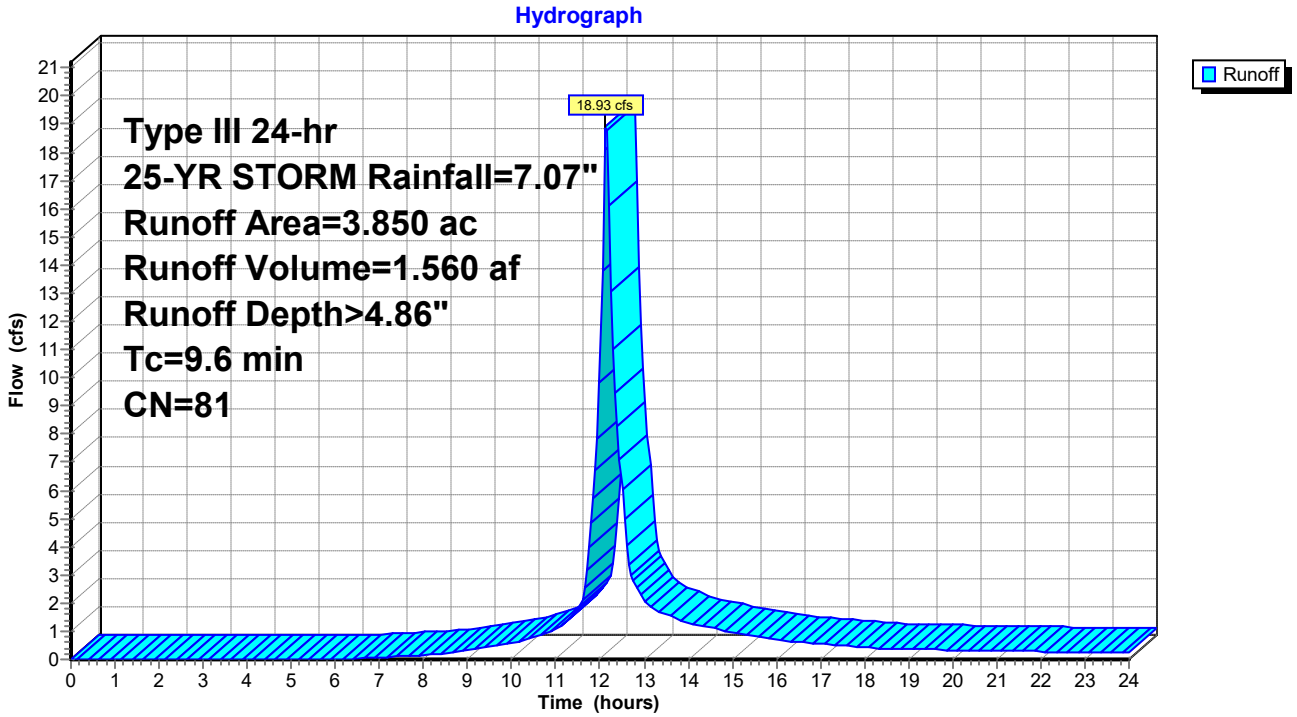
Runoff = 18.93 cfs @ 12.14 hrs, Volume= 1.560 af, Depth> 4.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	3.850	81	
	3.850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

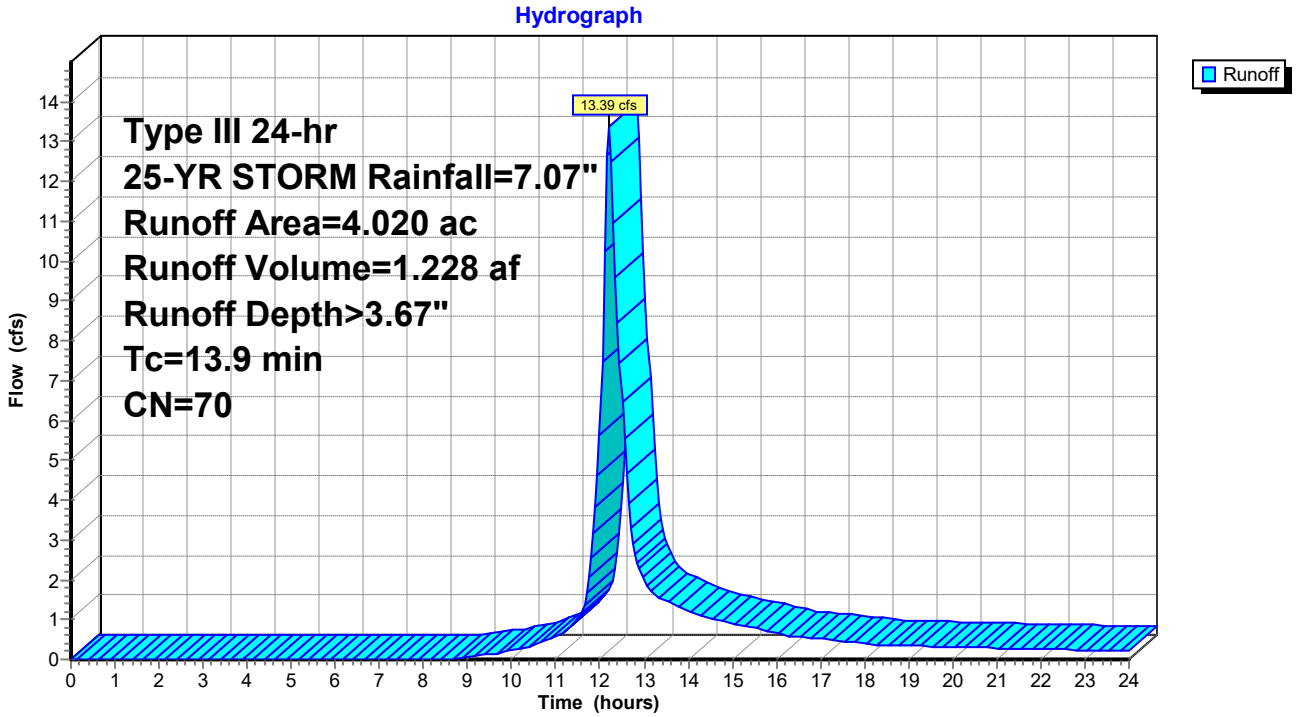
Runoff = 13.39 cfs @ 12.20 hrs, Volume= 1.228 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	4.020	70	
	4.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

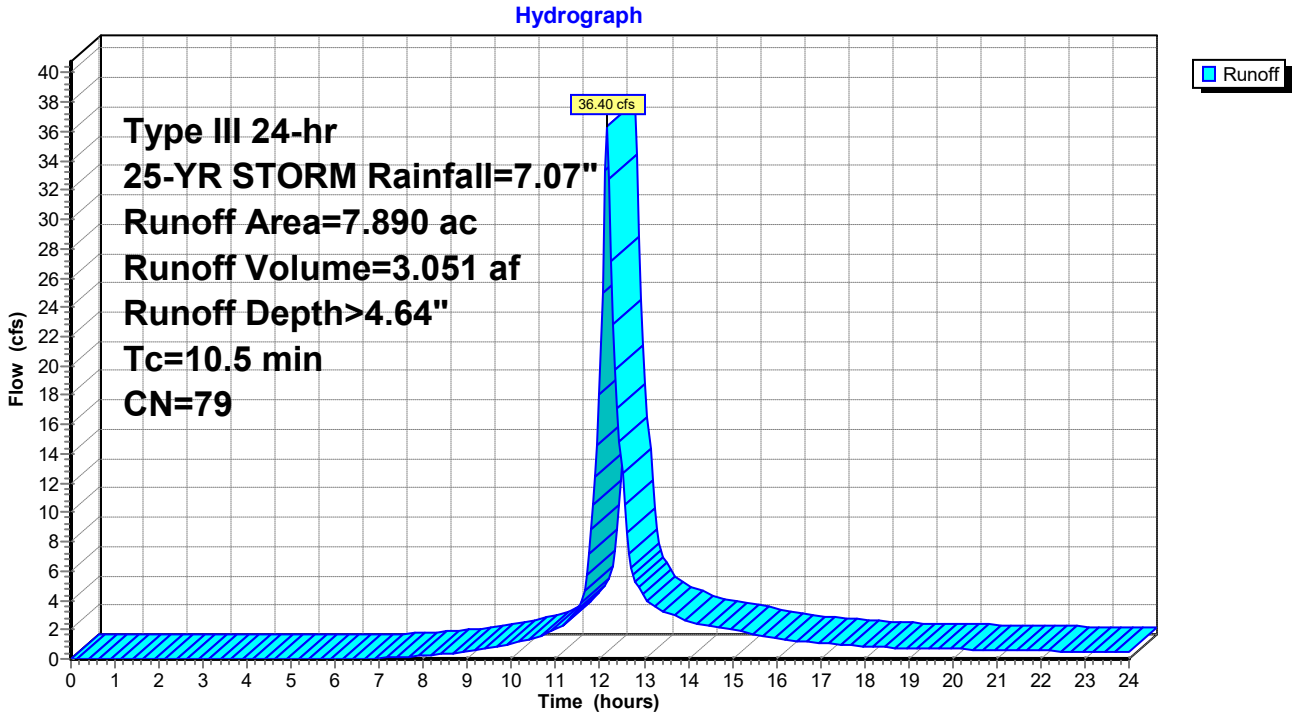
Runoff = 36.40 cfs @ 12.15 hrs, Volume= 3.051 af, Depth> 4.64"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	7.890	79	
	7.890		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 5:

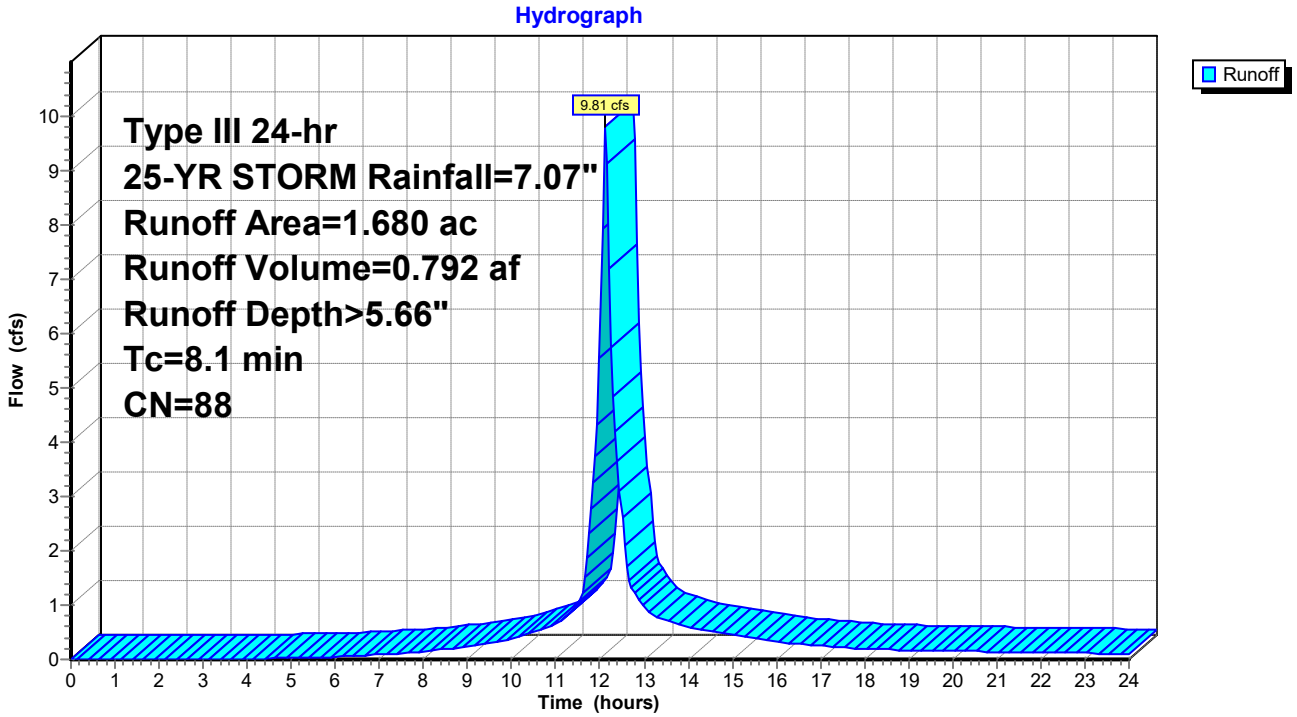
Runoff = 9.81 cfs @ 12.11 hrs, Volume= 0.792 af, Depth> 5.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	1.680	88	
	1.680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

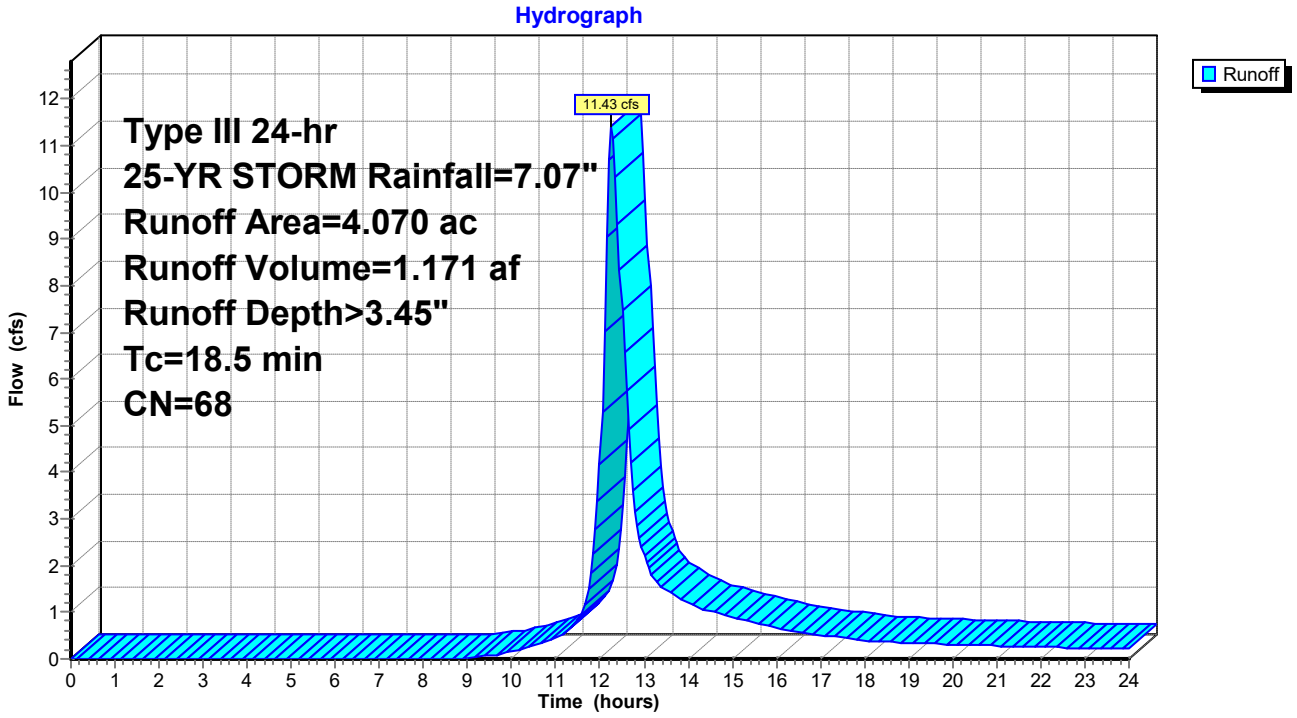
Runoff = 11.43 cfs @ 12.26 hrs, Volume= 1.171 af, Depth> 3.45"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	4.070	68	
	4.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8-10:

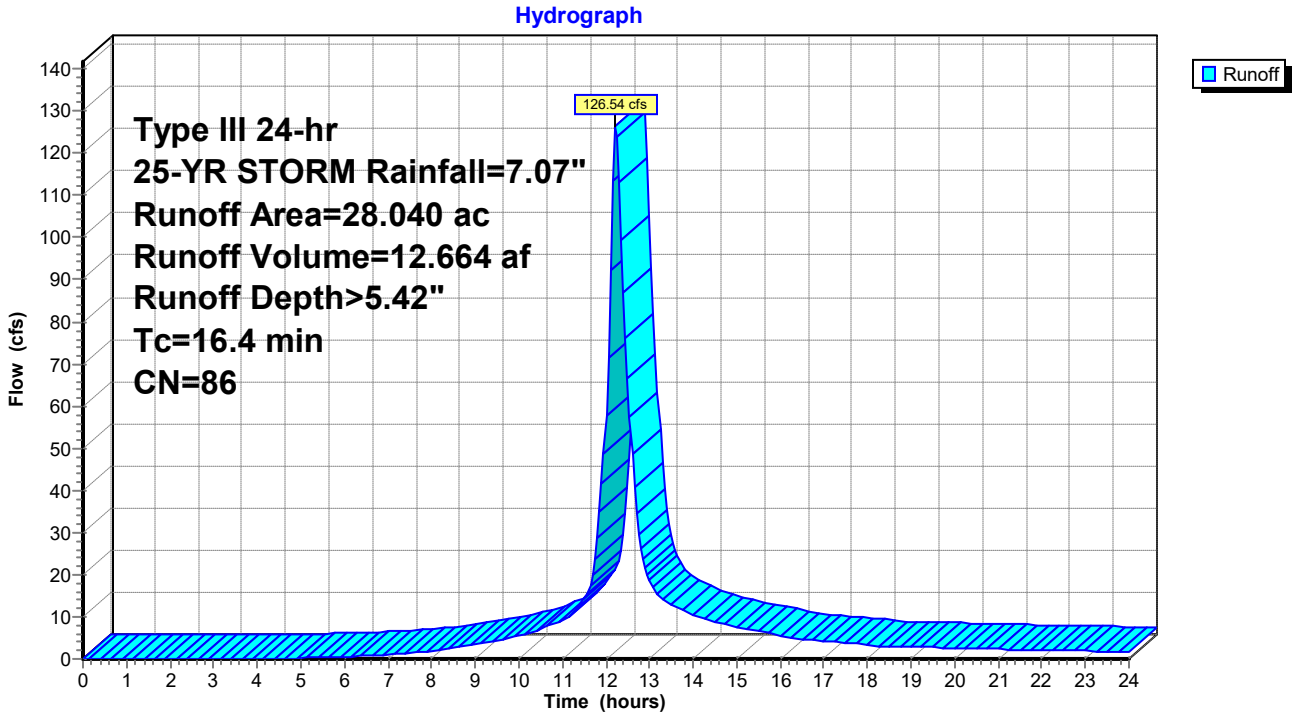
Runoff = 126.54 cfs @ 12.22 hrs, Volume= 12.664 af, Depth> 5.42"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	28.040	86	
	28.040		100.00% Pervious Area

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

Subcatchment 8-10:



Summary for Subcatchment 9:

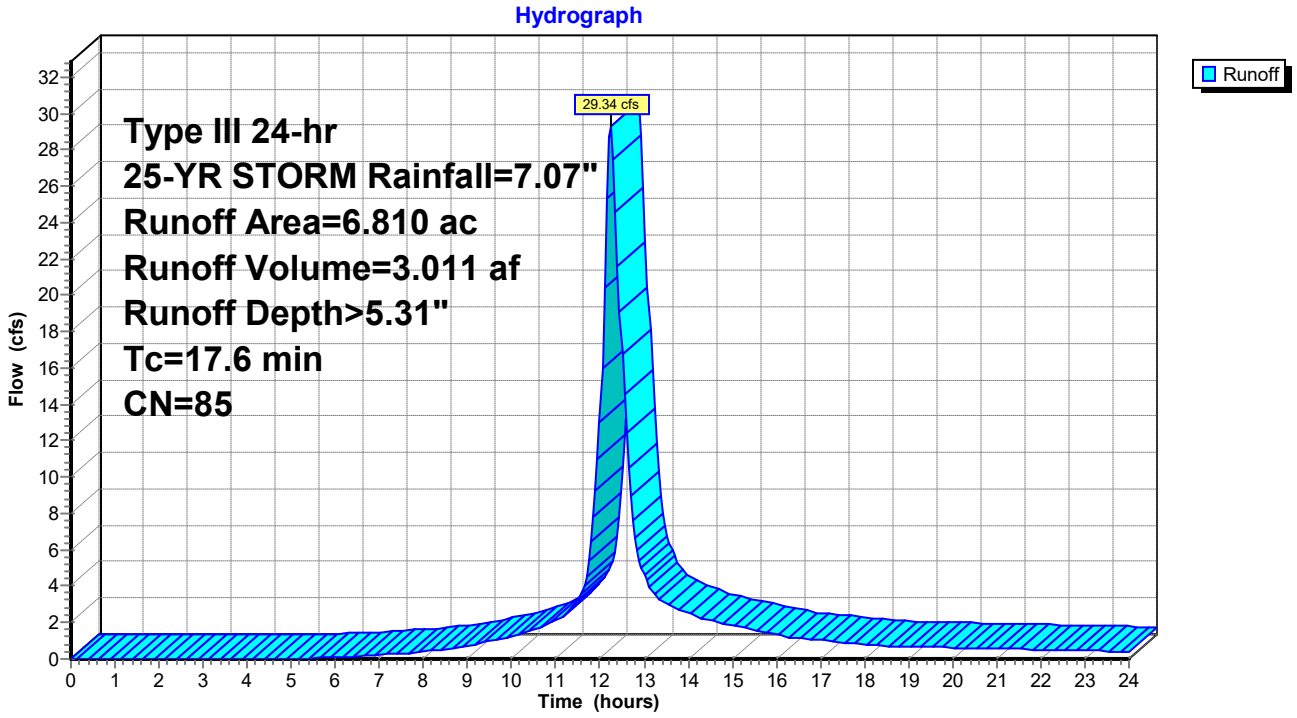
Runoff = 29.34 cfs @ 12.24 hrs, Volume= 3.011 af, Depth> 5.31"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	6.810	85	
	6.810		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

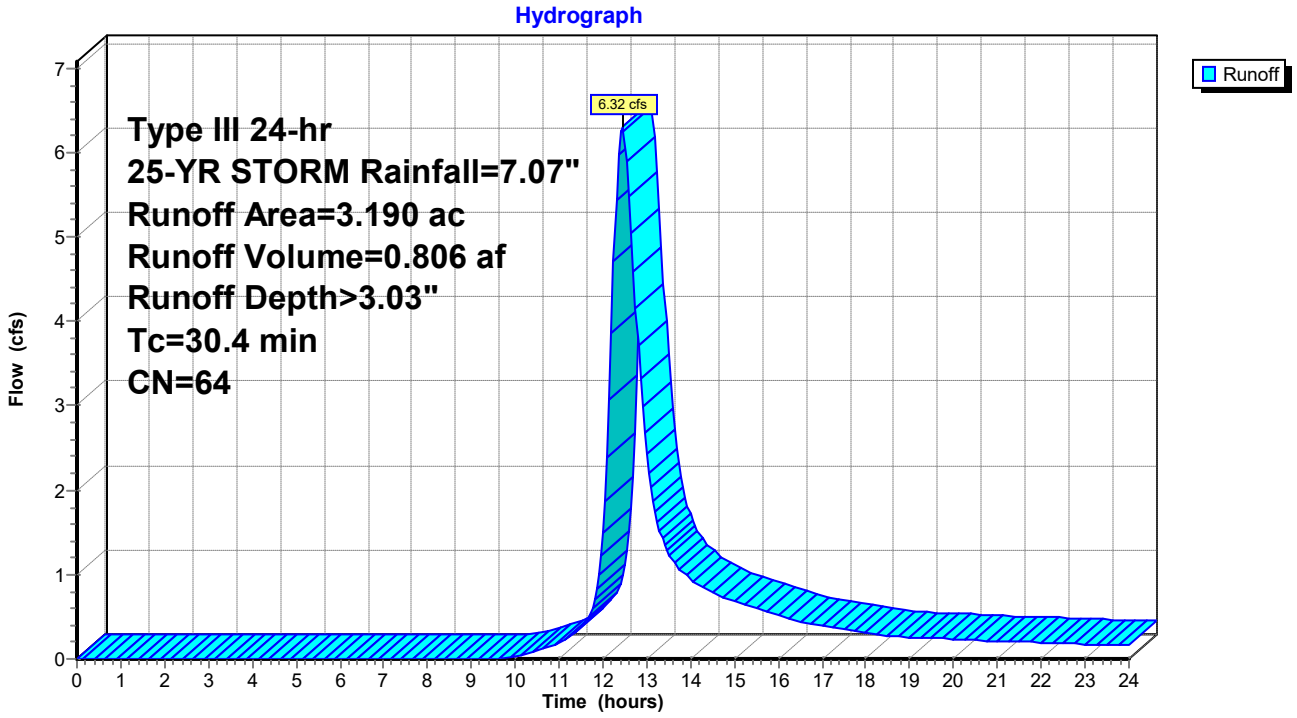
Runoff = 6.32 cfs @ 12.44 hrs, Volume= 0.806 af, Depth> 3.03"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	3.190	64	
	3.190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

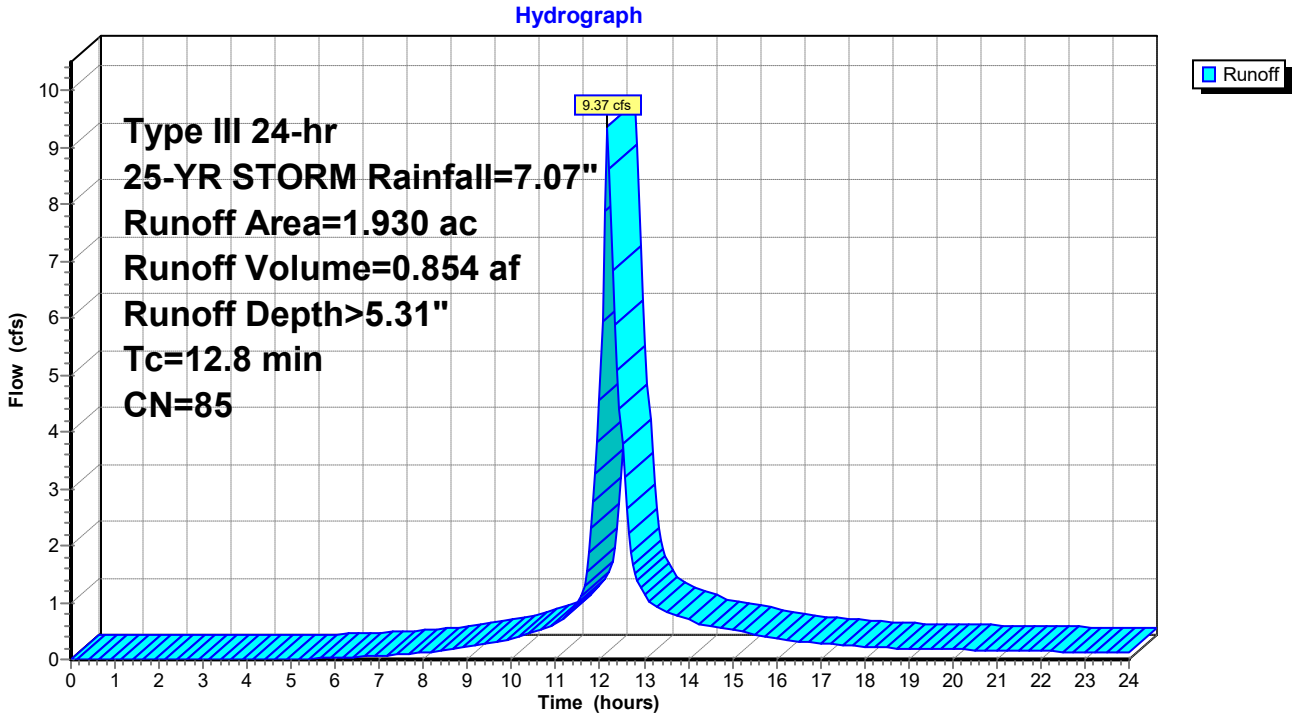
Runoff = 9.37 cfs @ 12.17 hrs, Volume= 0.854 af, Depth> 5.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	1.930	85	
	1.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 13:

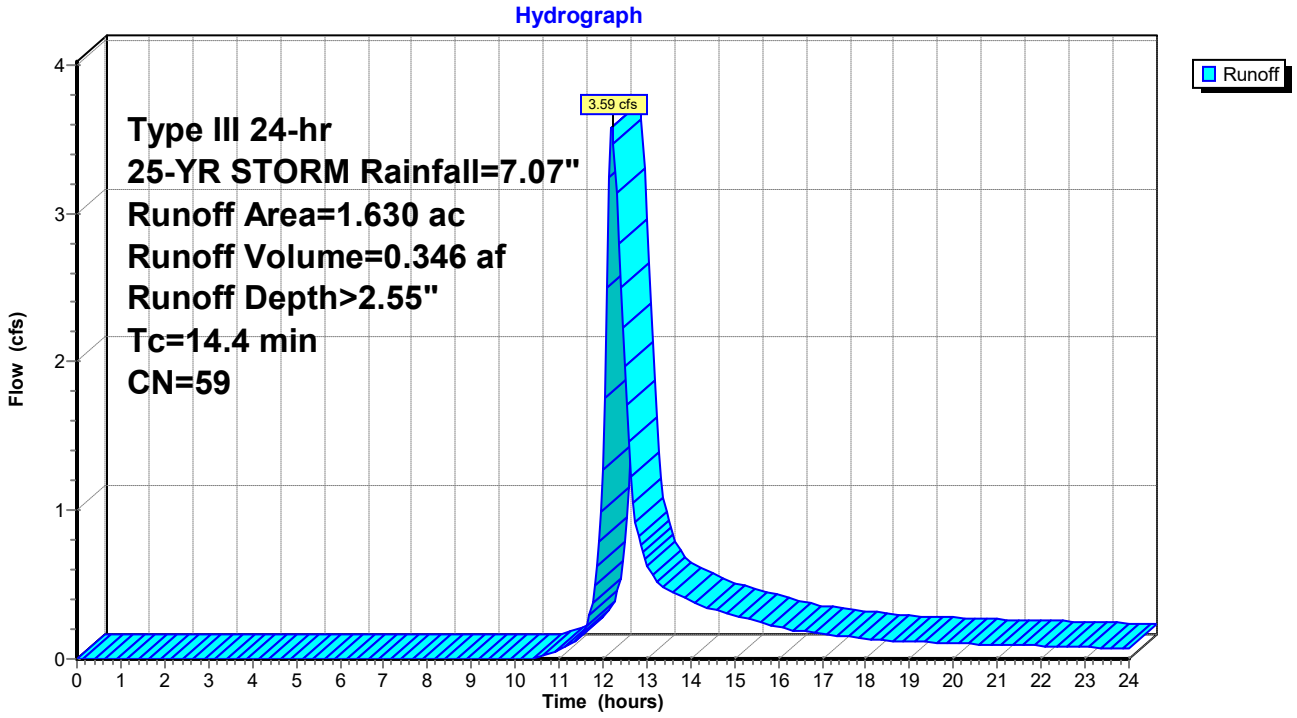
Runoff = 3.59 cfs @ 12.21 hrs, Volume= 0.346 af, Depth> 2.55"
Routed to nonexistent node 6P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	1.630	59	
	1.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4					**Direct Entry, NRCS Part 630**

Subcatchment 13:



Summary for Subcatchment 14:

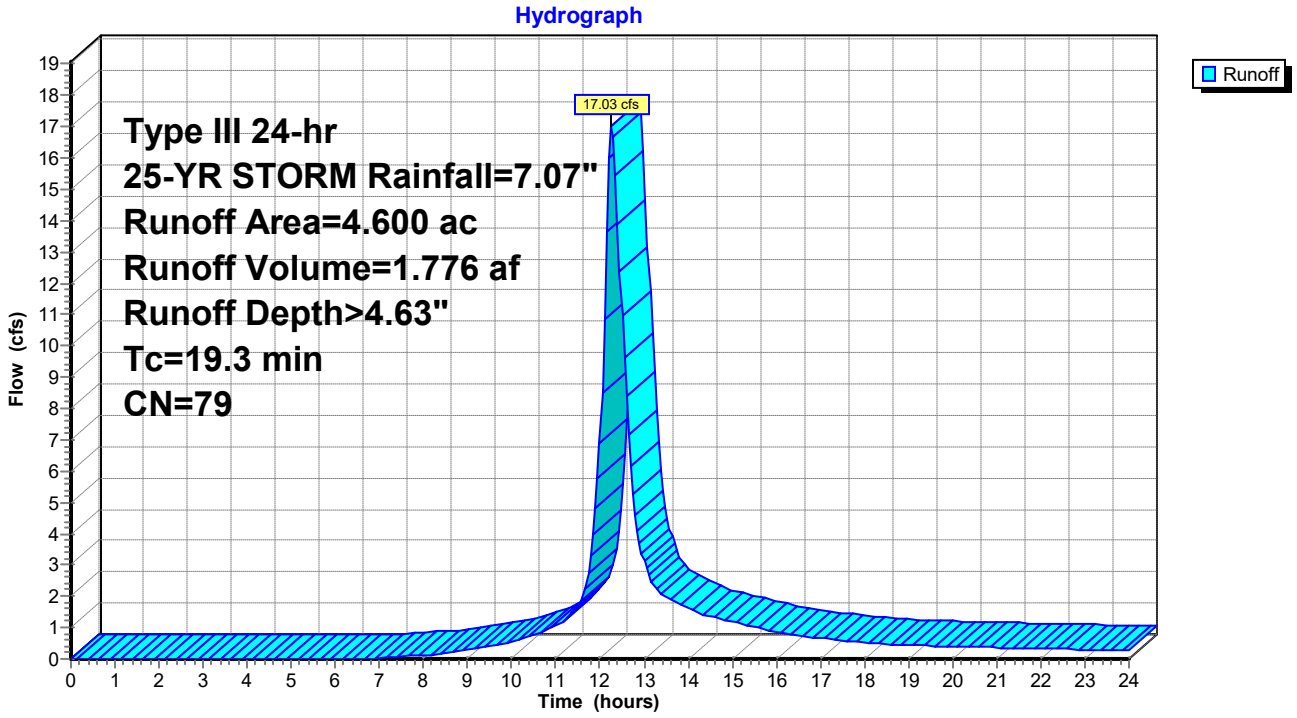
Runoff = 17.03 cfs @ 12.26 hrs, Volume= 1.776 af, Depth> 4.63"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	4.600	79	
	4.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

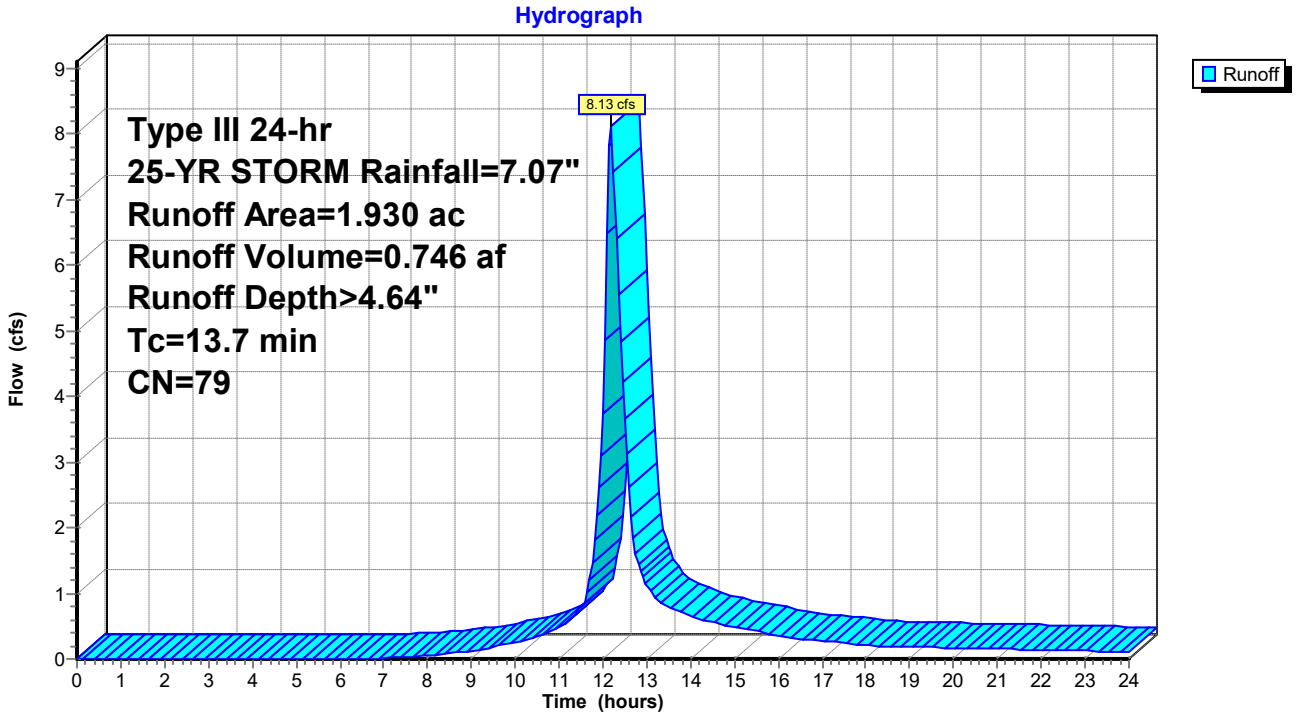
Runoff = 8.13 cfs @ 12.19 hrs, Volume= 0.746 af, Depth> 4.64"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	1.930	79	
	1.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 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 1: Runoff Area=1.280 ac 0.00% Impervious Runoff Depth>5.68"
Tc=6.4 min CN=80 Runoff=8.13 cfs 0.605 af

Subcatchment 2a: Runoff Area=3.850 ac 0.00% Impervious Runoff Depth>5.79"
Tc=9.6 min CN=81 Runoff=22.39 cfs 1.858 af

Subcatchment 2b: Runoff Area=4.020 ac 0.00% Impervious Runoff Depth>4.50"
Tc=13.9 min CN=70 Runoff=16.47 cfs 1.509 af

Subcatchment 3: Runoff Area=7.890 ac 0.00% Impervious Runoff Depth>5.55"
Tc=10.5 min CN=79 Runoff=43.33 cfs 3.652 af

Subcatchment 5: Runoff Area=1.680 ac 0.00% Impervious Runoff Depth>6.62"
Tc=8.1 min CN=88 Runoff=11.38 cfs 0.927 af

Subcatchment 7: Runoff Area=4.070 ac 0.00% Impervious Runoff Depth>4.27"
Tc=18.5 min CN=68 Runoff=14.19 cfs 1.448 af

Subcatchment 8-10: Runoff Area=28.040 ac 0.00% Impervious Runoff Depth>6.37"
Tc=16.4 min CN=86 Runoff=147.67 cfs 14.894 af

Subcatchment 9: Runoff Area=6.810 ac 0.00% Impervious Runoff Depth>6.25"
Tc=17.6 min CN=85 Runoff=34.33 cfs 3.549 af

Subcatchment 11: Runoff Area=3.190 ac 0.00% Impervious Runoff Depth>3.80"
Tc=30.4 min CN=64 Runoff=7.98 cfs 1.011 af

Subcatchment 12: Runoff Area=1.930 ac 0.00% Impervious Runoff Depth>6.26"
Tc=12.8 min CN=85 Runoff=10.96 cfs 1.007 af

Subcatchment 13: Runoff Area=1.630 ac 0.00% Impervious Runoff Depth>3.26"
Tc=14.4 min CN=59 Runoff=4.67 cfs 0.442 af

Subcatchment 14: Runoff Area=4.600 ac 0.00% Impervious Runoff Depth>5.55"
Tc=19.3 min CN=79 Runoff=20.29 cfs 2.126 af

Subcatchment 15: Runoff Area=1.930 ac 0.00% Impervious Runoff Depth>5.55"
Tc=13.7 min CN=79 Runoff=9.68 cfs 0.893 af

Total Runoff Area = 70.920 ac Runoff Volume = 33.923 af Average Runoff Depth = 5.74"
100.00% Pervious = 70.920 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1:

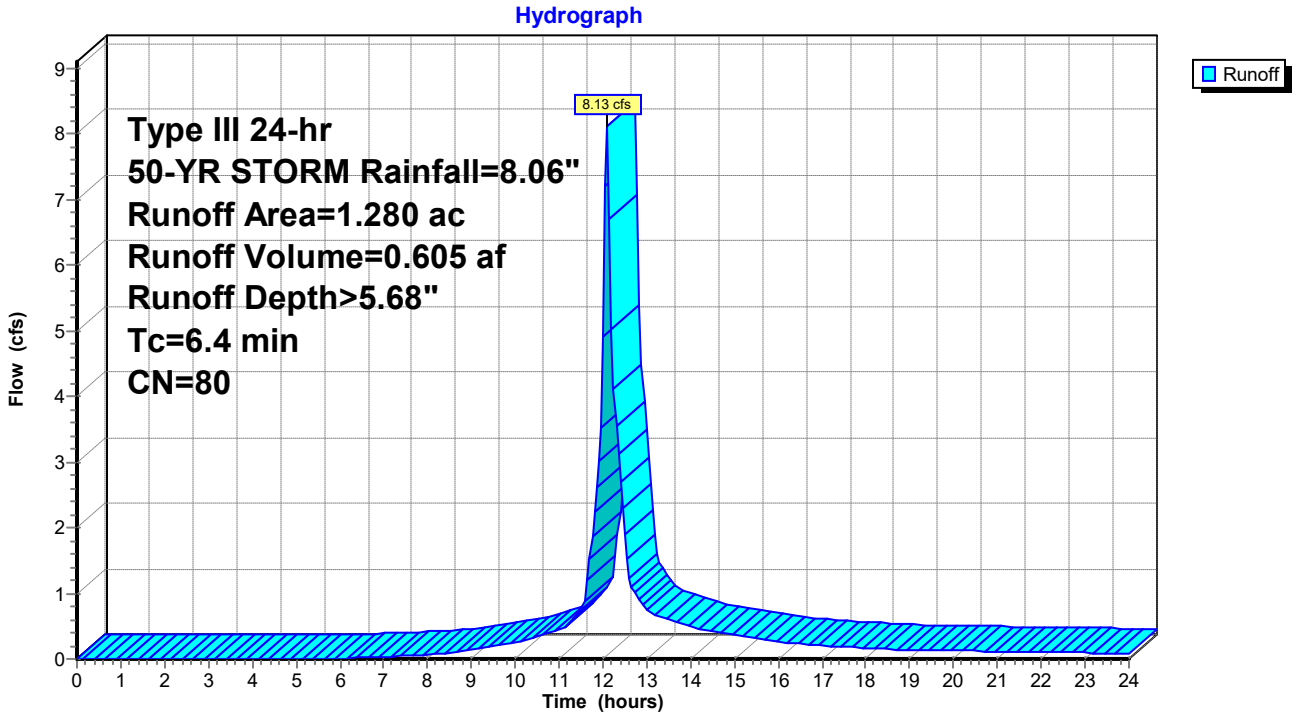
Runoff = 8.13 cfs @ 12.09 hrs, Volume= 0.605 af, Depth> 5.68"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	1.280	80	
	1.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

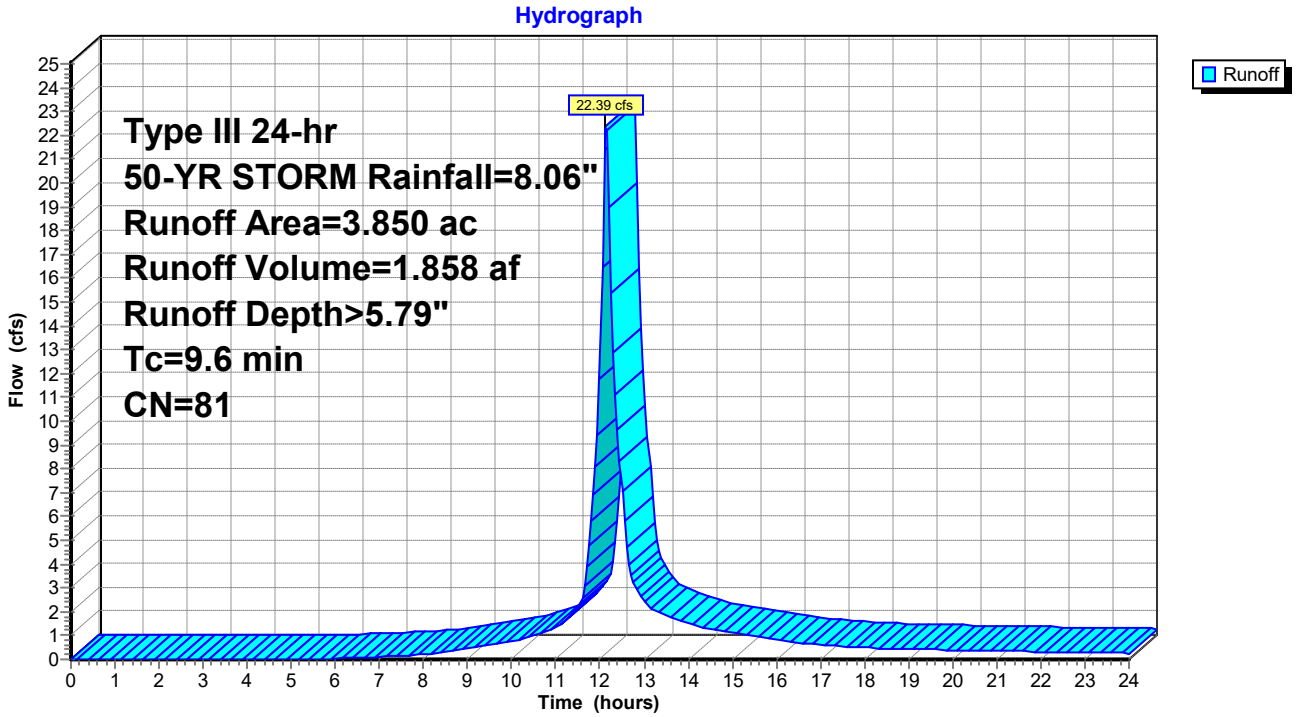
Runoff = 22.39 cfs @ 12.13 hrs, Volume= 1.858 af, Depth> 5.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	3.850	81	
	3.850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

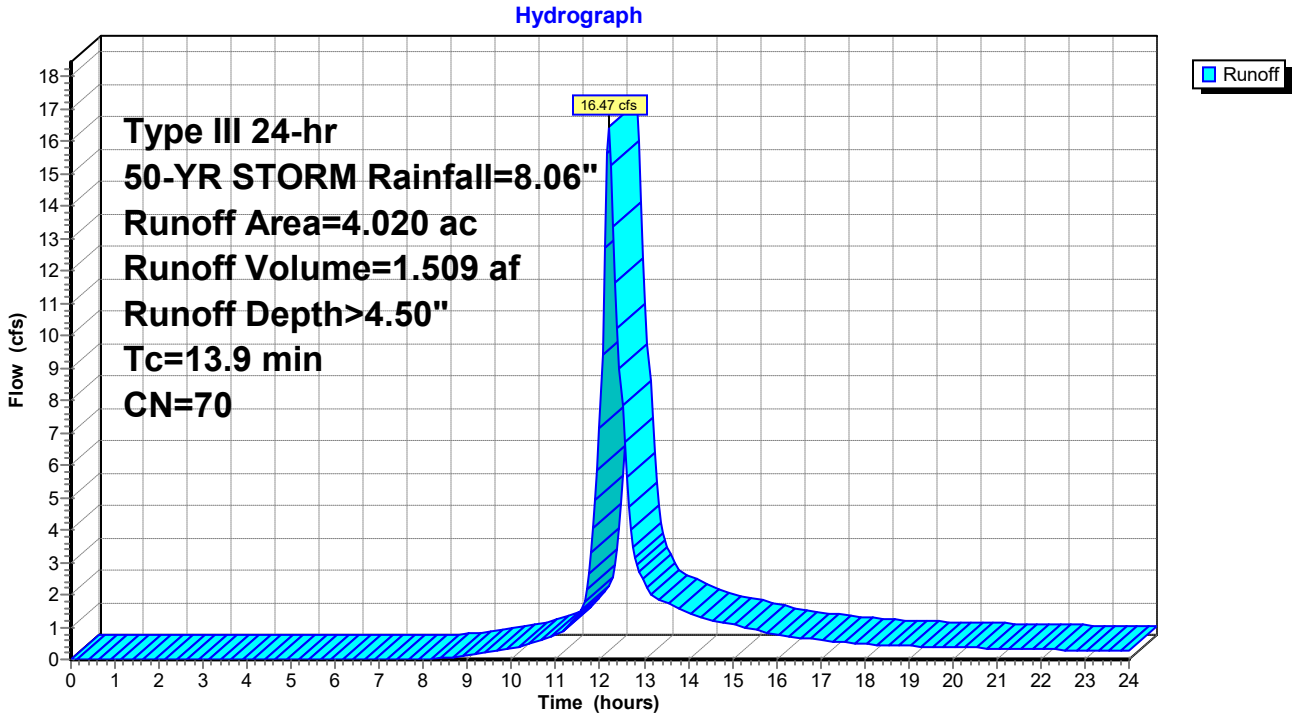
Runoff = 16.47 cfs @ 12.20 hrs, Volume= 1.509 af, Depth> 4.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	4.020	70	
	4.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

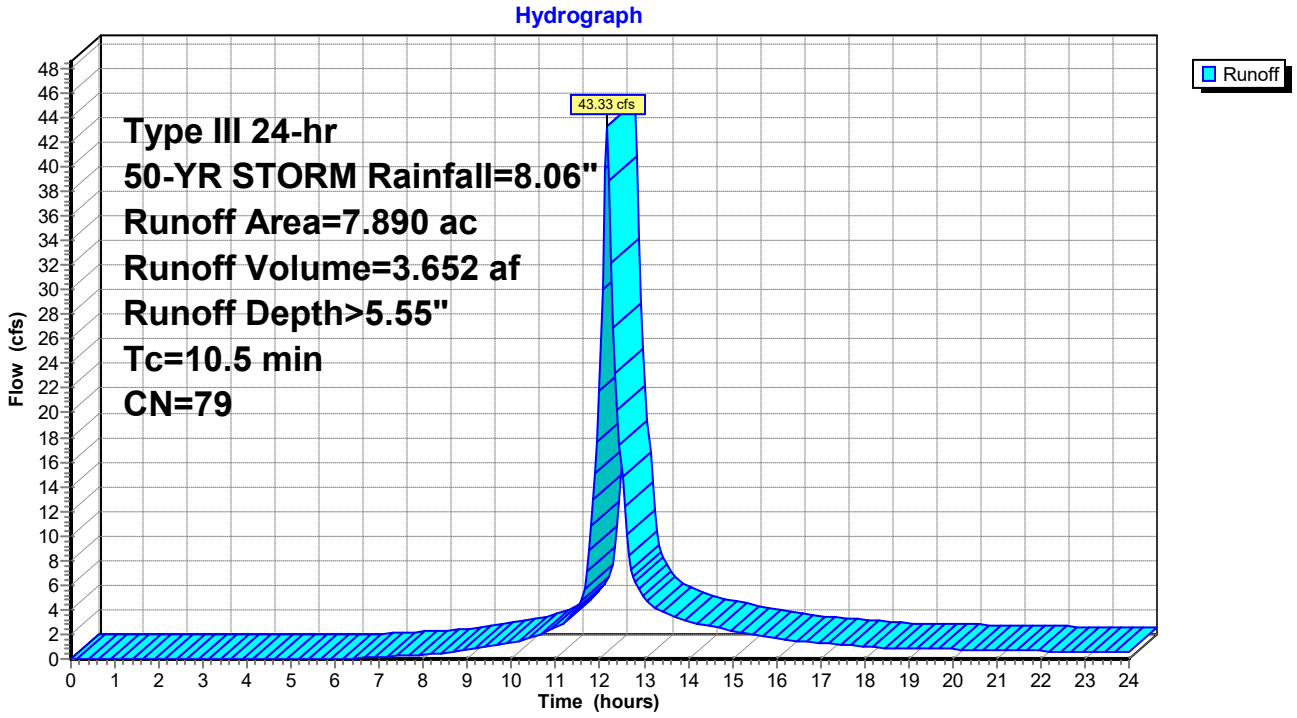
Runoff = 43.33 cfs @ 12.15 hrs, Volume= 3.652 af, Depth> 5.55"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	7.890	79	
	7.890		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 5:

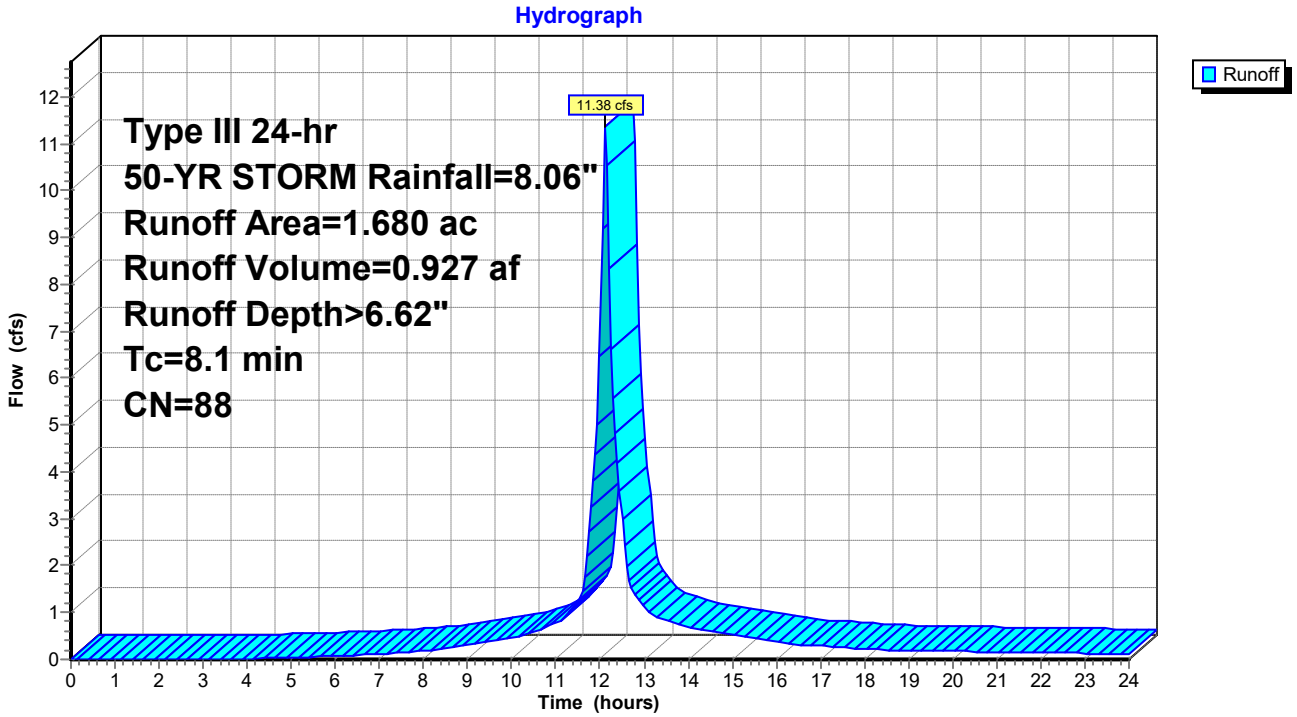
Runoff = 11.38 cfs @ 12.11 hrs, Volume= 0.927 af, Depth> 6.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	1.680	88	
	1.680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

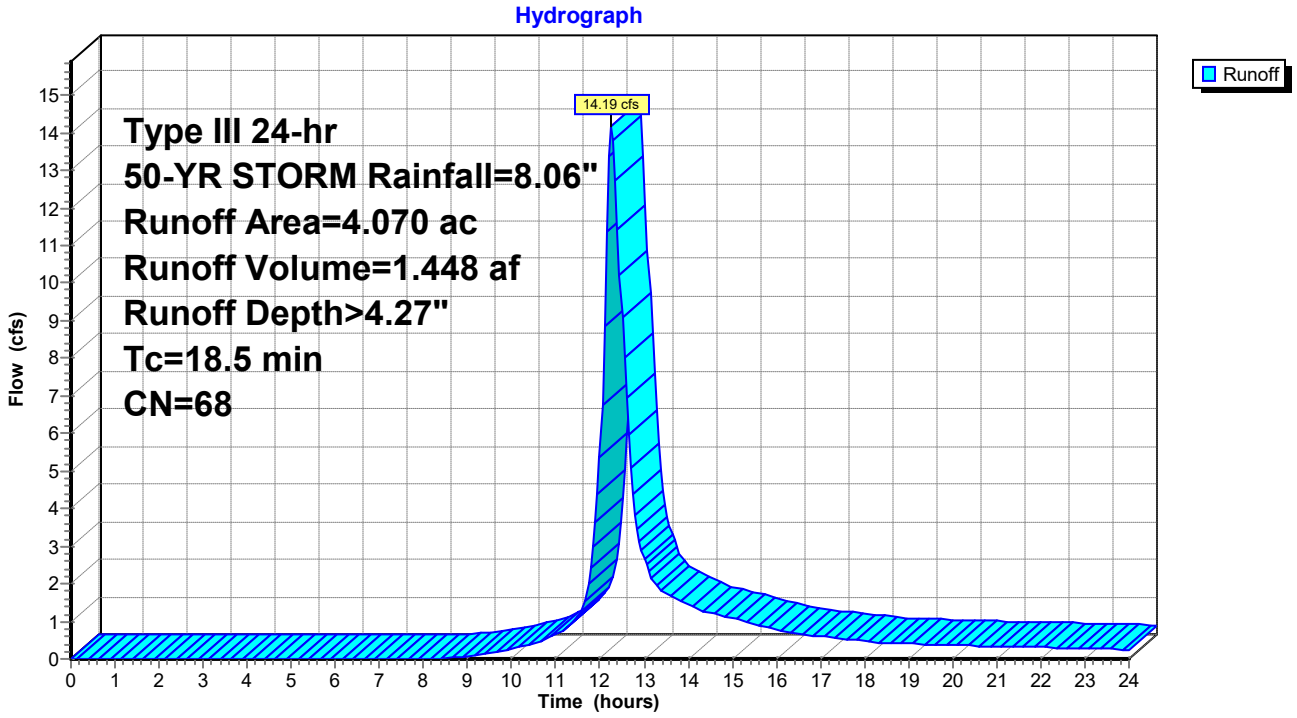
Runoff = 14.19 cfs @ 12.26 hrs, Volume= 1.448 af, Depth> 4.27"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	4.070	68	
	4.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8-10:

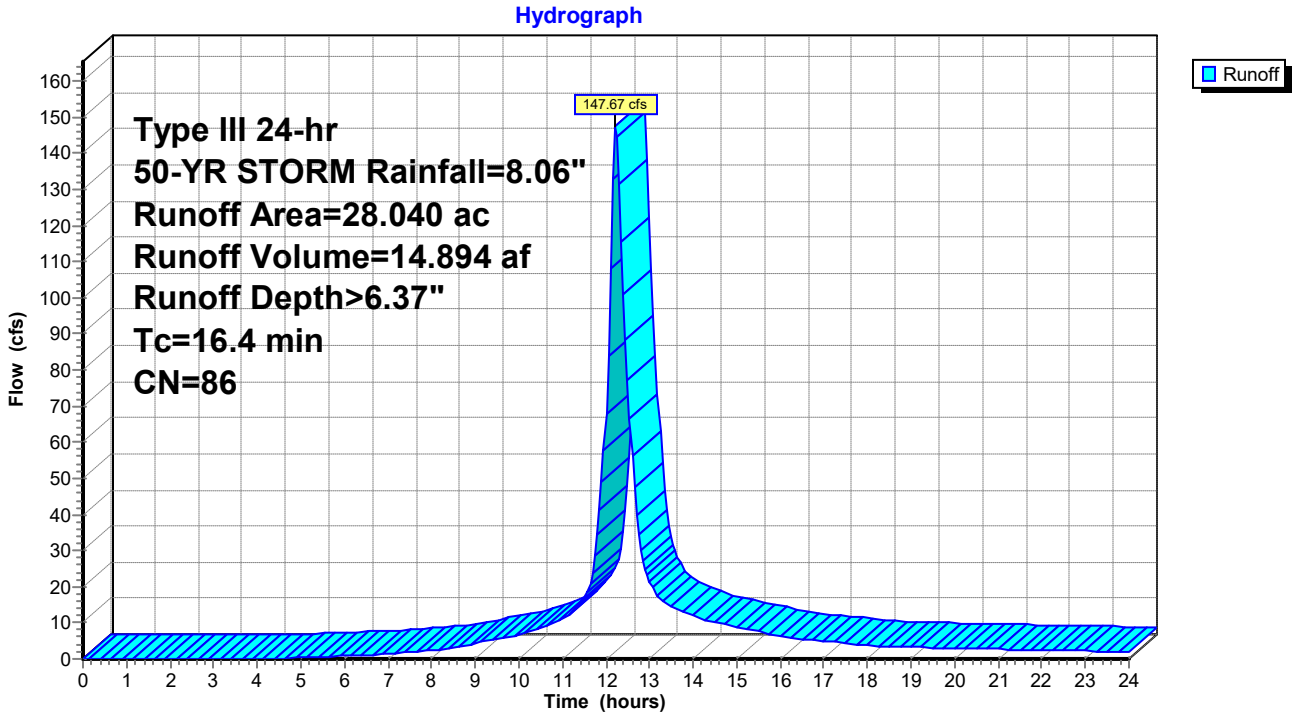
Runoff = 147.67 cfs @ 12.22 hrs, Volume= 14.894 af, Depth> 6.37"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	28.040	86	
	28.040		100.00% Pervious Area

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

Subcatchment 8-10:



Summary for Subcatchment 9:

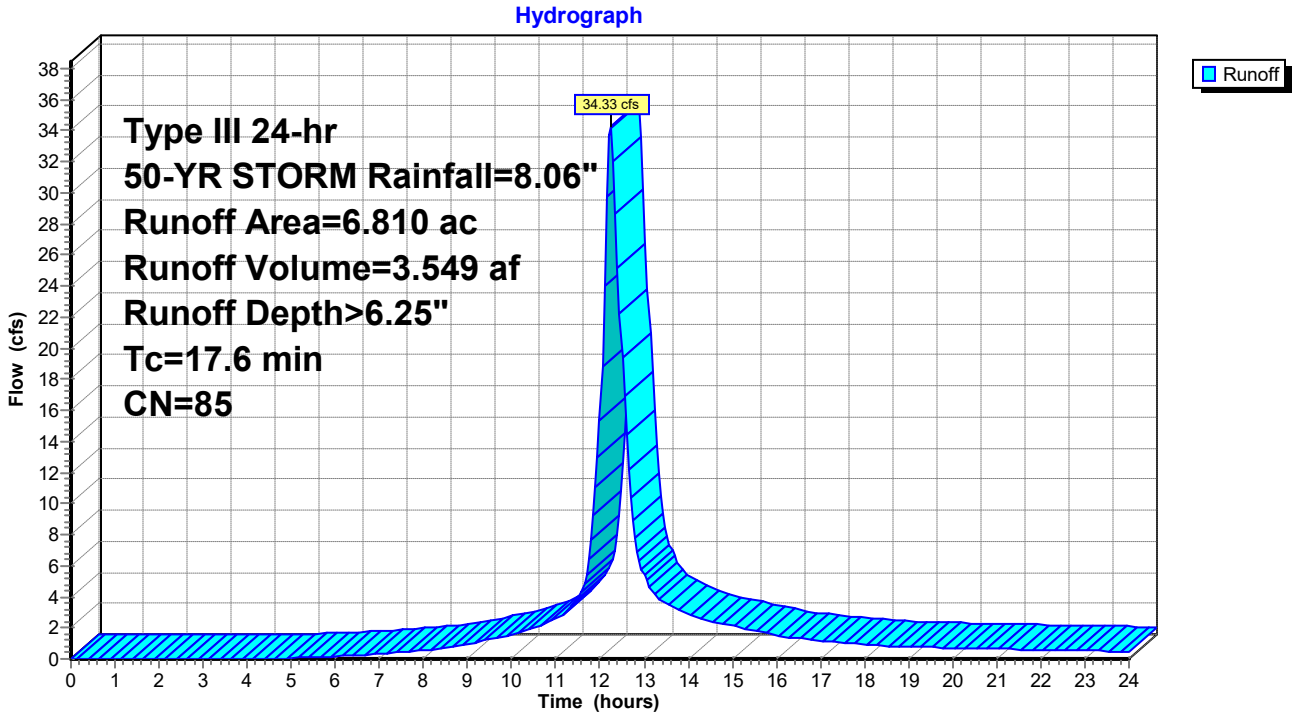
Runoff = 34.33 cfs @ 12.24 hrs, Volume= 3.549 af, Depth> 6.25"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	6.810	85	
	6.810		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

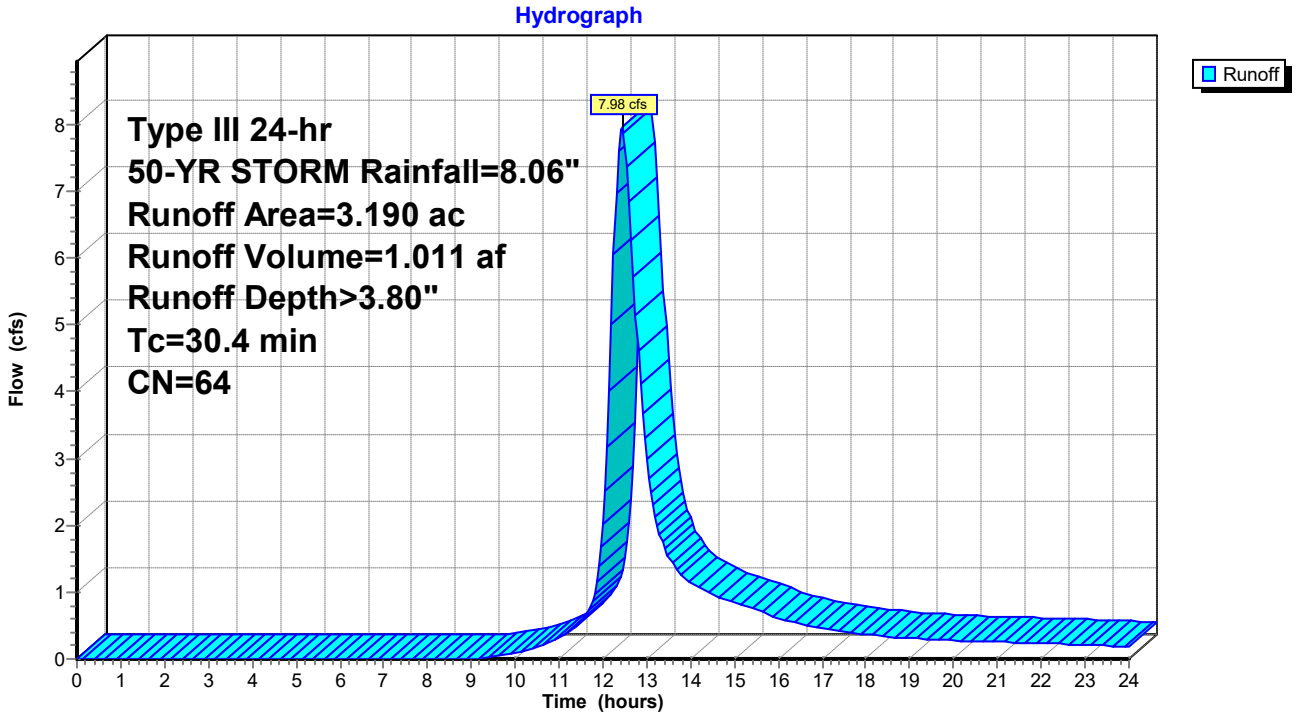
Runoff = 7.98 cfs @ 12.43 hrs, Volume= 1.011 af, Depth> 3.80"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	3.190	64	
	3.190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

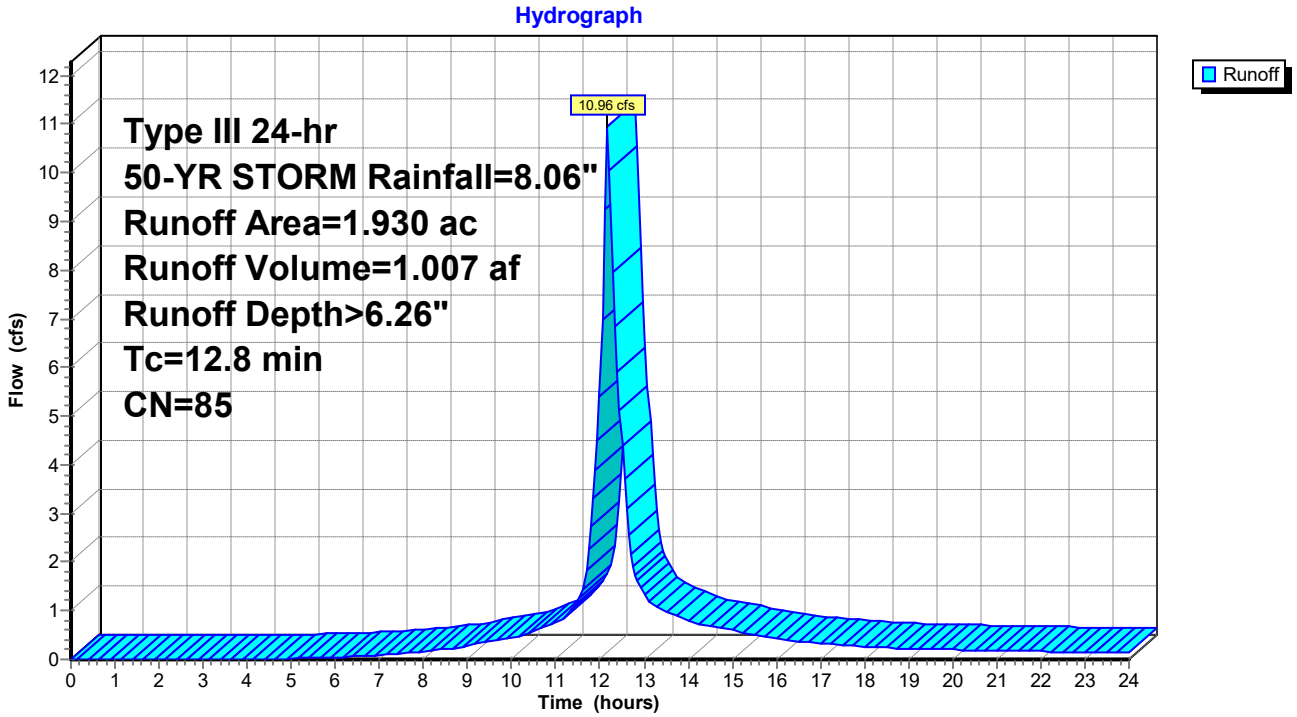
Runoff = 10.96 cfs @ 12.17 hrs, Volume= 1.007 af, Depth> 6.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	1.930	85	
	1.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 13:

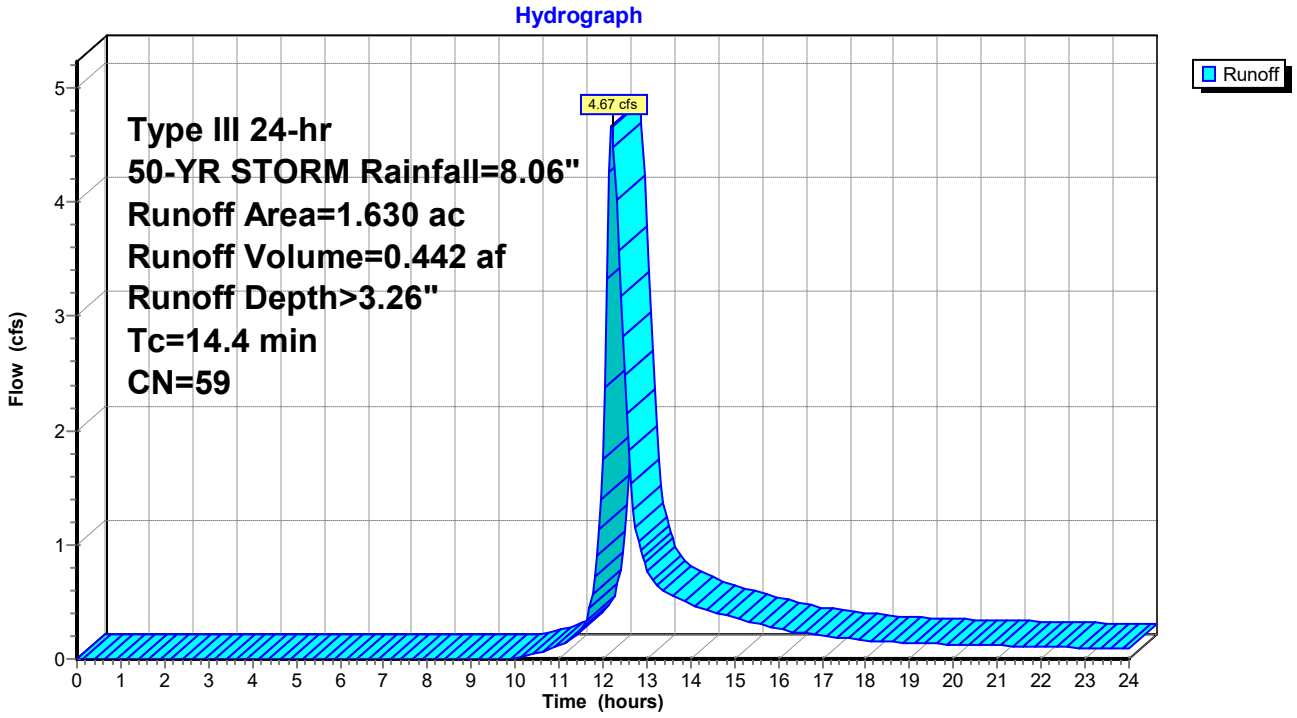
Runoff = 4.67 cfs @ 12.21 hrs, Volume= 0.442 af, Depth> 3.26"
Routed to nonexistent node 6P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	1.630	59	
	1.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4					**Direct Entry, NRCS Part 630**

Subcatchment 13:



Summary for Subcatchment 14:

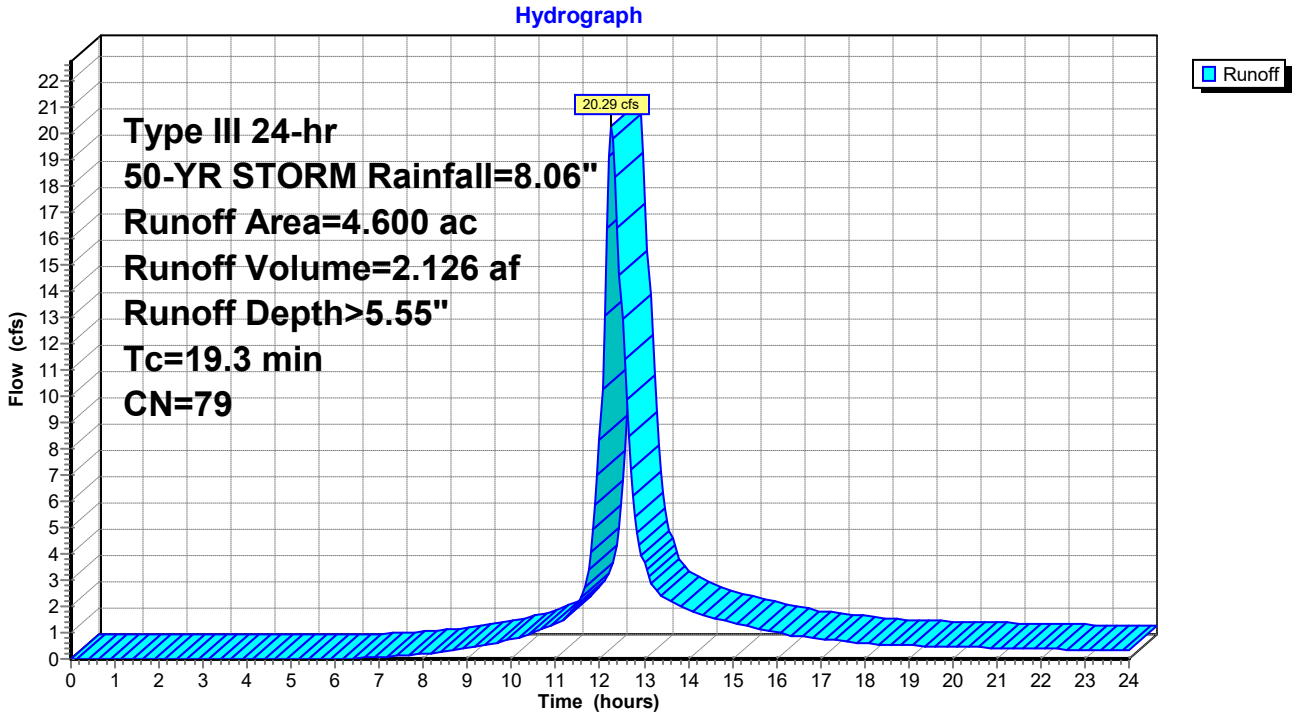
Runoff = 20.29 cfs @ 12.26 hrs, Volume= 2.126 af, Depth> 5.55"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	4.600	79	
	4.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

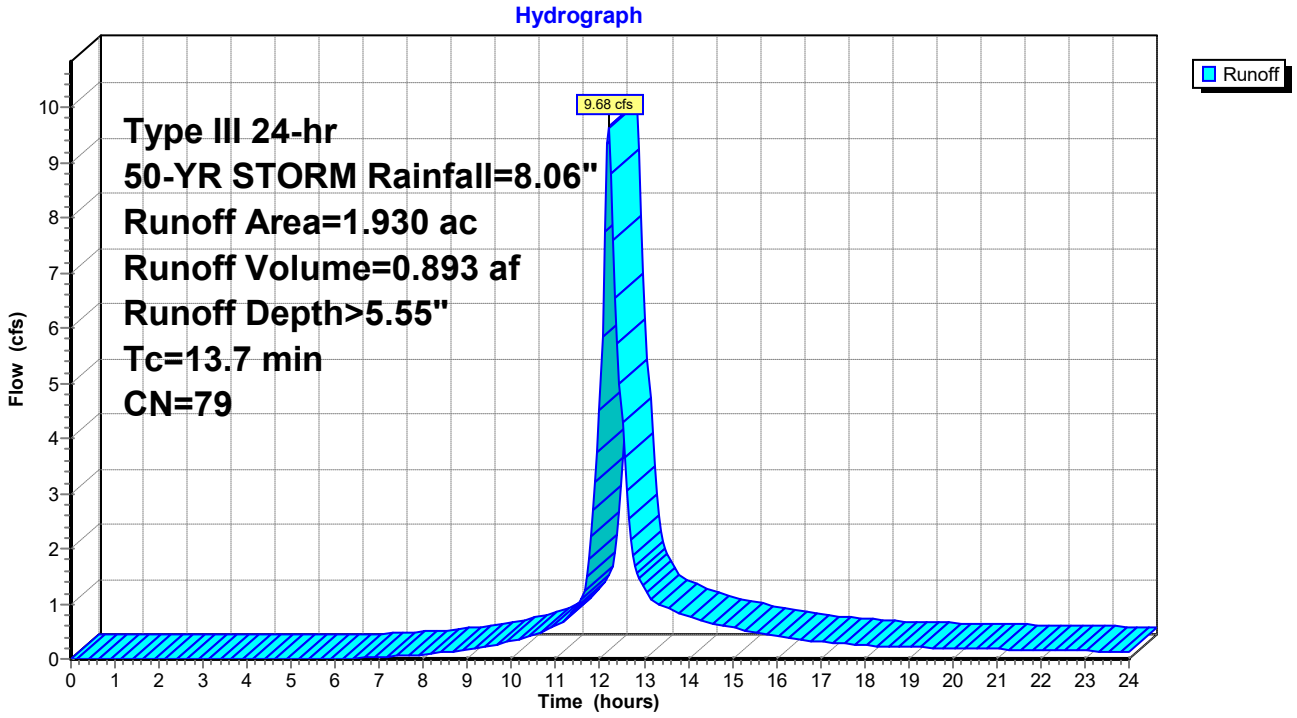
Runoff = 9.68 cfs @ 12.19 hrs, Volume= 0.893 af, Depth> 5.55"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	1.930	79	
	1.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 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 1: Runoff Area=1.280 ac 0.00% Impervious Runoff Depth>6.73"
Tc=6.4 min CN=80 Runoff=9.57 cfs 0.718 af

Subcatchment 2a: Runoff Area=3.850 ac 0.00% Impervious Runoff Depth>6.85"
Tc=9.6 min CN=81 Runoff=26.31 cfs 2.199 af

Subcatchment 2b: Runoff Area=4.020 ac 0.00% Impervious Runoff Depth>5.48"
Tc=13.9 min CN=70 Runoff=20.02 cfs 1.836 af

Subcatchment 3: Runoff Area=7.890 ac 0.00% Impervious Runoff Depth>6.60"
Tc=10.5 min CN=79 Runoff=51.19 cfs 4.343 af

Subcatchment 5: Runoff Area=1.680 ac 0.00% Impervious Runoff Depth>7.72"
Tc=8.1 min CN=88 Runoff=13.15 cfs 1.080 af

Subcatchment 7: Runoff Area=4.070 ac 0.00% Impervious Runoff Depth>5.23"
Tc=18.5 min CN=68 Runoff=17.38 cfs 1.772 af

Subcatchment 8-10: Runoff Area=28.040 ac 0.00% Impervious Runoff Depth>7.46"
Tc=16.4 min CN=86 Runoff=171.46 cfs 17.435 af

Subcatchment 9: Runoff Area=6.810 ac 0.00% Impervious Runoff Depth>7.34"
Tc=17.6 min CN=85 Runoff=39.95 cfs 4.164 af

Subcatchment 11: Runoff Area=3.190 ac 0.00% Impervious Runoff Depth>4.71"
Tc=30.4 min CN=64 Runoff=9.93 cfs 1.253 af

Subcatchment 12: Runoff Area=1.930 ac 0.00% Impervious Runoff Depth>7.34"
Tc=12.8 min CN=85 Runoff=12.76 cfs 1.181 af

Subcatchment 13: Runoff Area=1.630 ac 0.00% Impervious Runoff Depth>4.11"
Tc=14.4 min CN=59 Runoff=5.95 cfs 0.558 af

Subcatchment 14: Runoff Area=4.600 ac 0.00% Impervious Runoff Depth>6.59"
Tc=19.3 min CN=79 Runoff=23.99 cfs 2.528 af

Subcatchment 15: Runoff Area=1.930 ac 0.00% Impervious Runoff Depth>6.60"
Tc=13.7 min CN=79 Runoff=11.44 cfs 1.062 af

Total Runoff Area = 70.920 ac Runoff Volume = 40.129 af Average Runoff Depth = 6.79"
100.00% Pervious = 70.920 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1:

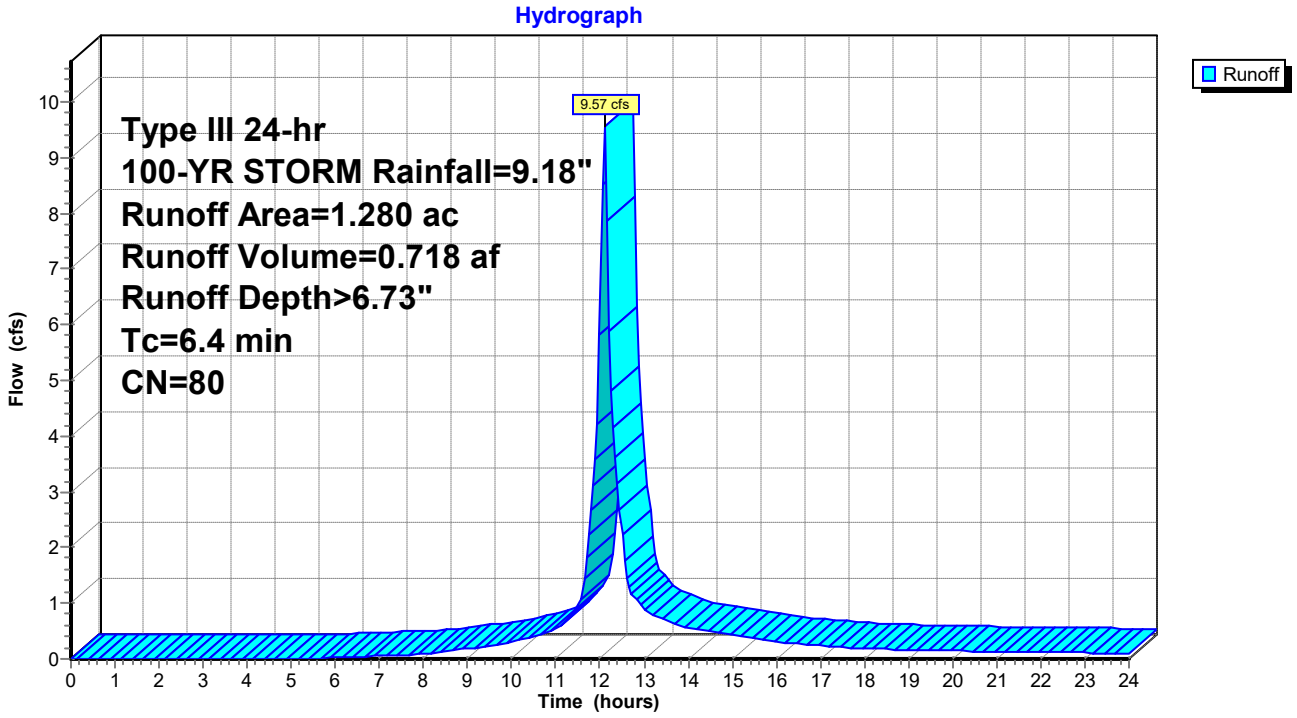
Runoff = 9.57 cfs @ 12.09 hrs, Volume= 0.718 af, Depth> 6.73"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	1.280	80	
	1.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

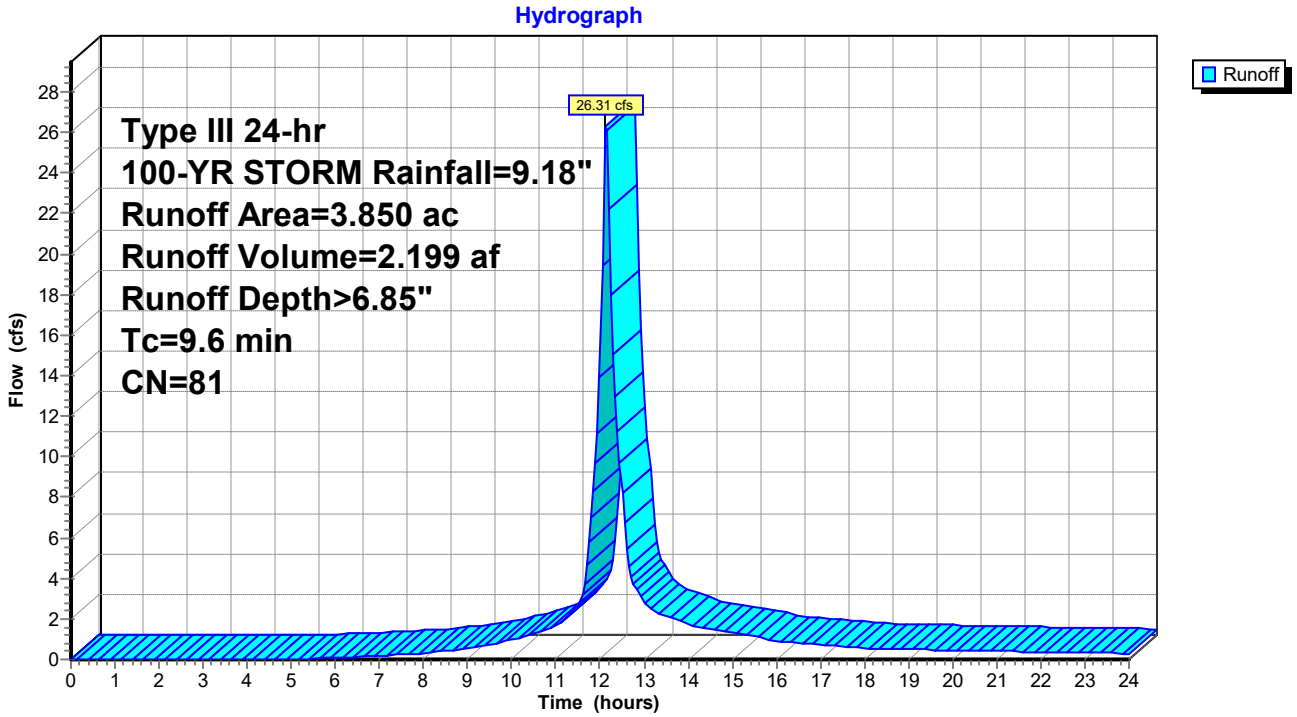
Runoff = 26.31 cfs @ 12.13 hrs, Volume= 2.199 af, Depth> 6.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	3.850	81	
	3.850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

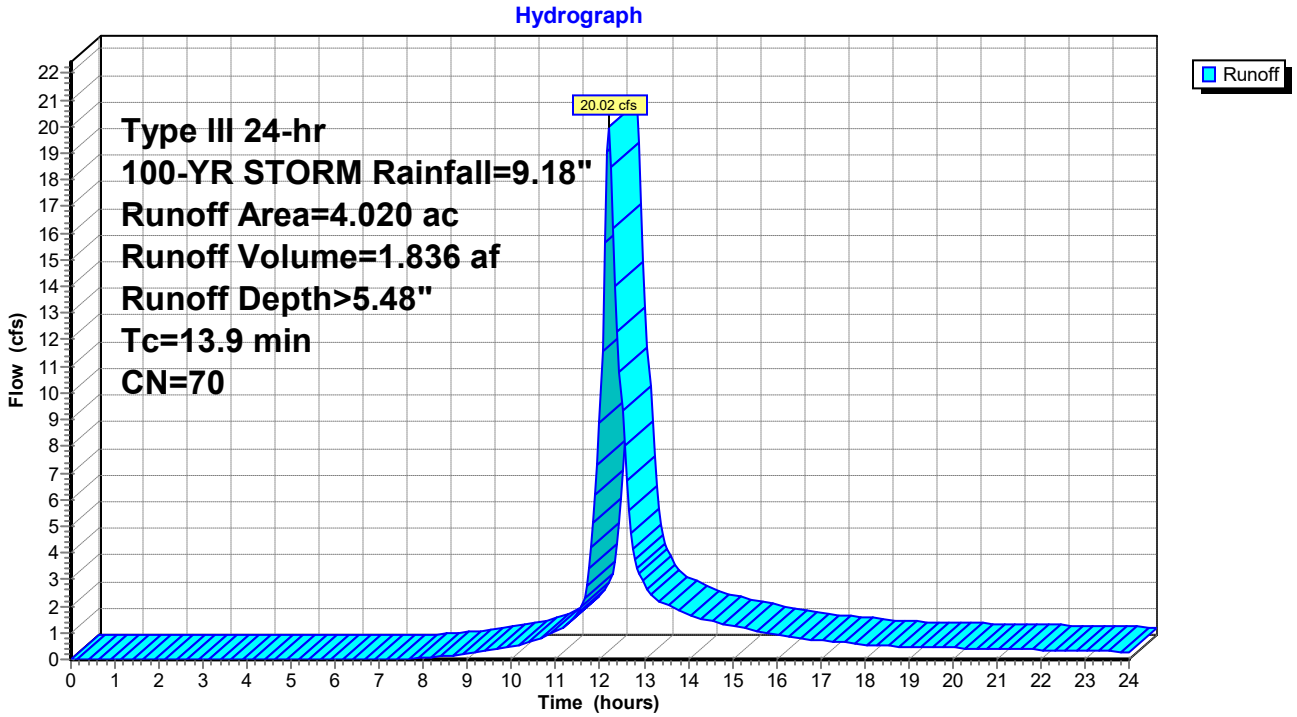
Runoff = 20.02 cfs @ 12.19 hrs, Volume= 1.836 af, Depth> 5.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	4.020	70	
	4.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

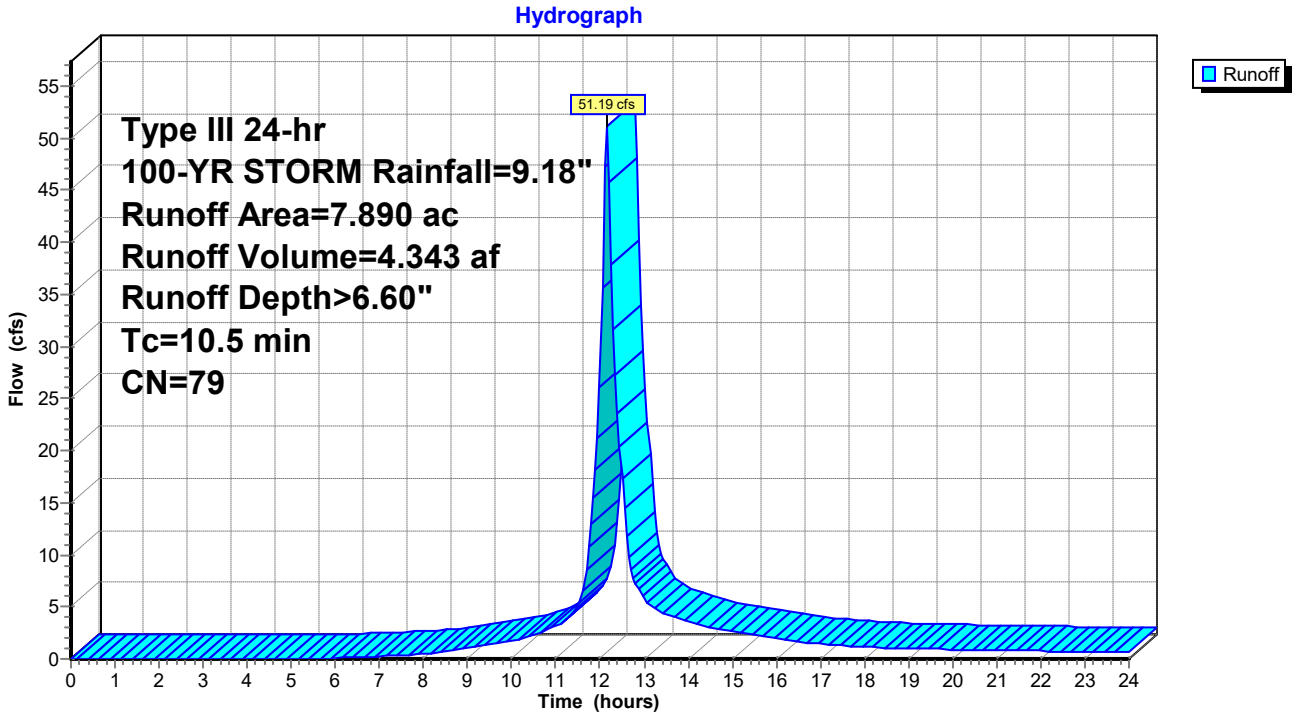
Runoff = 51.19 cfs @ 12.15 hrs, Volume= 4.343 af, Depth> 6.60"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	7.890	79	
	7.890		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 5:

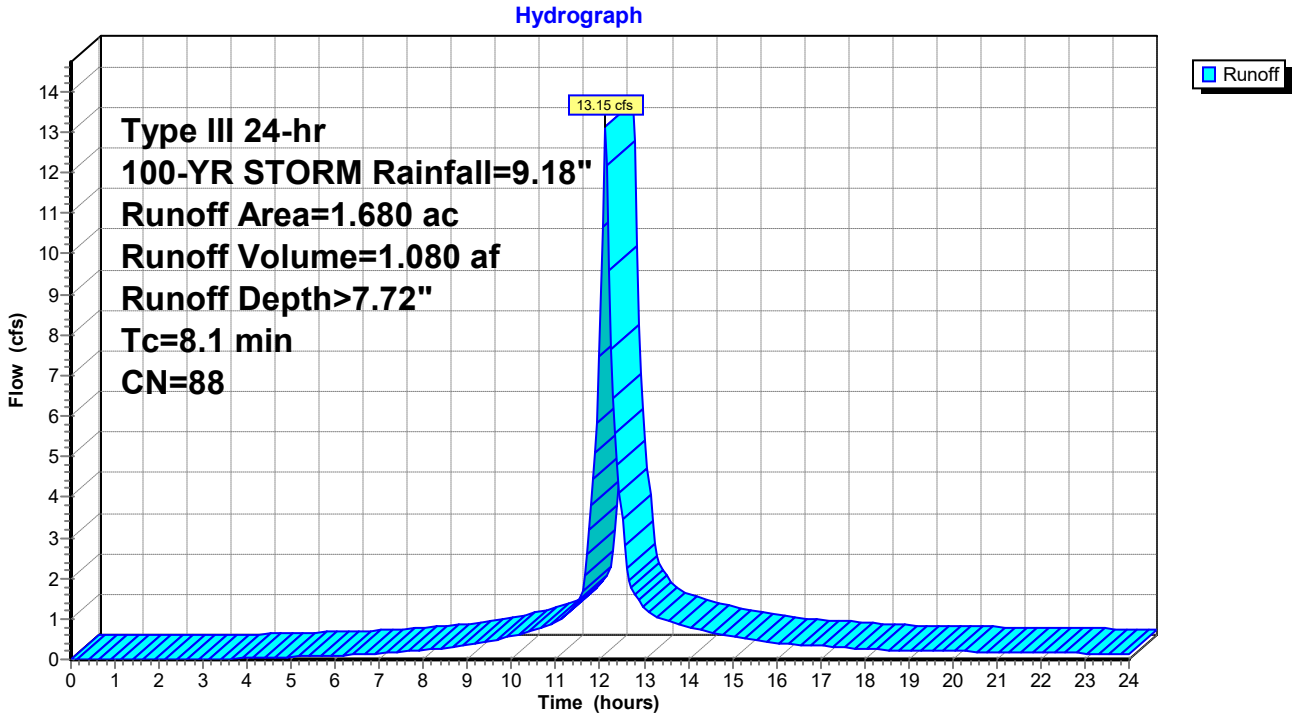
Runoff = 13.15 cfs @ 12.11 hrs, Volume= 1.080 af, Depth> 7.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	1.680	88	
	1.680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

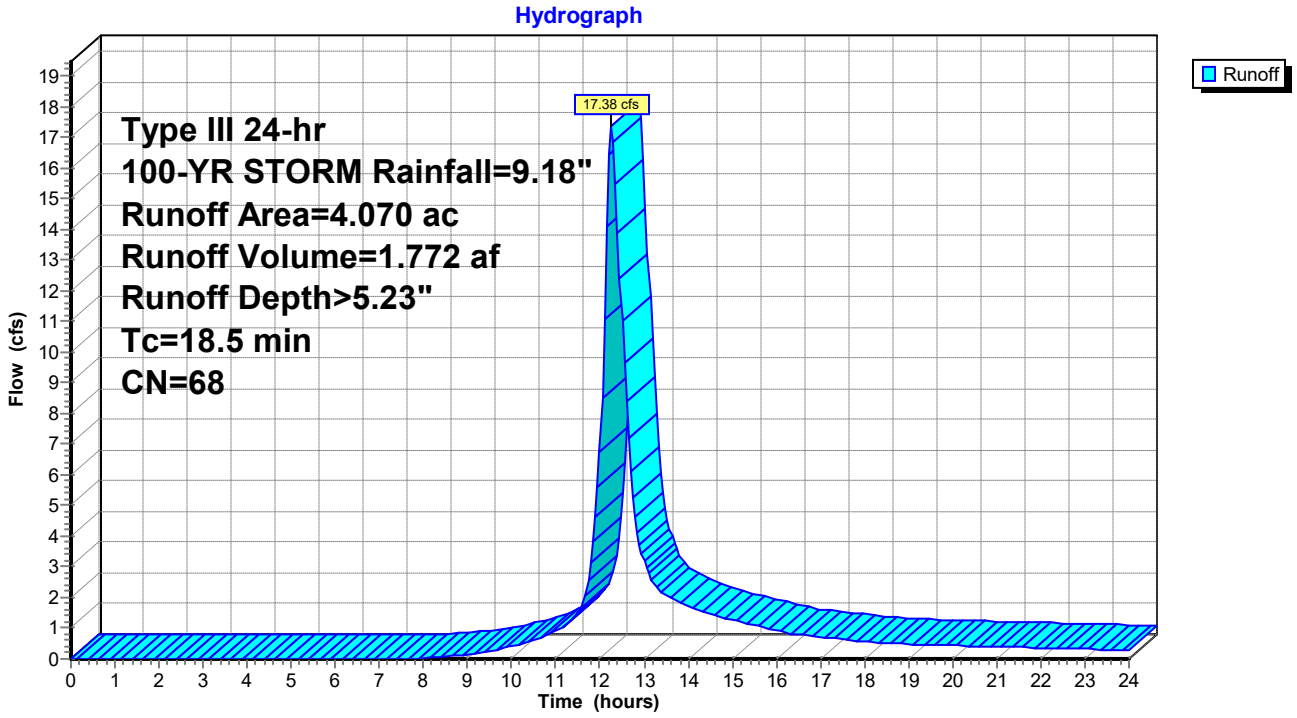
Runoff = 17.38 cfs @ 12.26 hrs, Volume= 1.772 af, Depth> 5.23"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	4.070	68	
	4.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8-10:

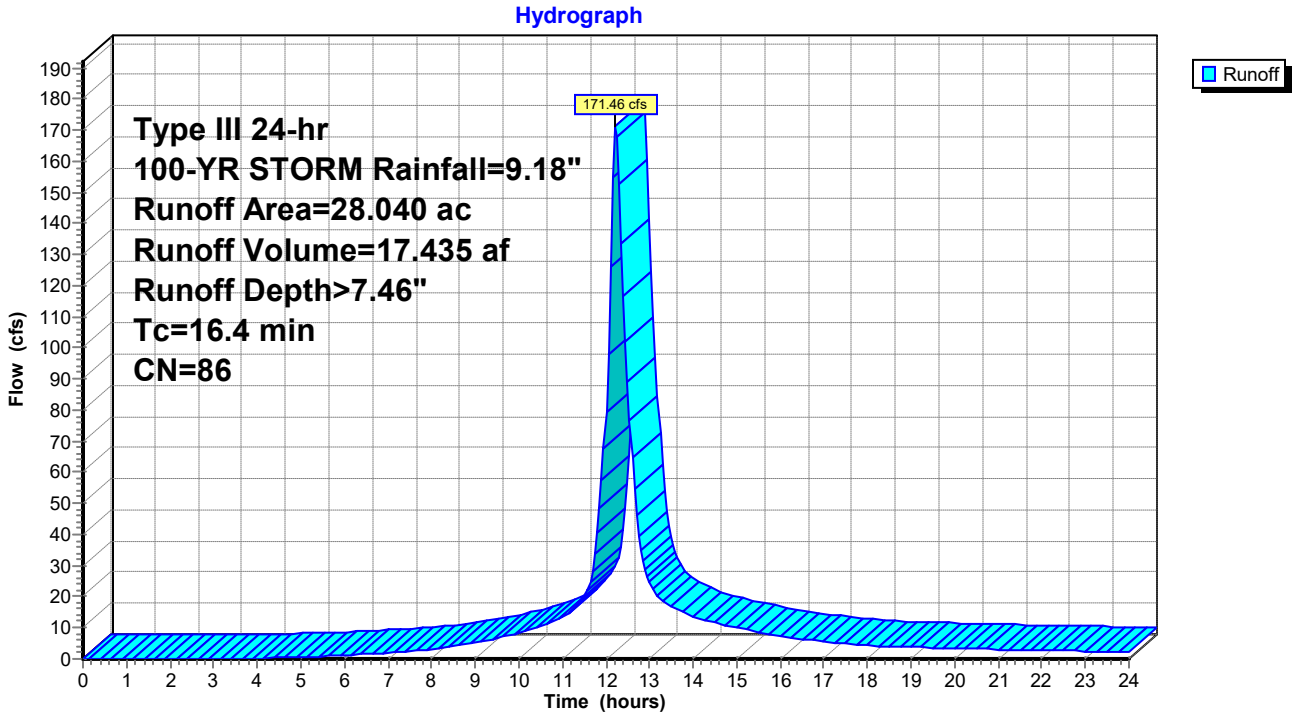
Runoff = 171.46 cfs @ 12.22 hrs, Volume= 17.435 af, Depth> 7.46"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	28.040	86	
	28.040		100.00% Pervious Area

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

Subcatchment 8-10:



Summary for Subcatchment 9:

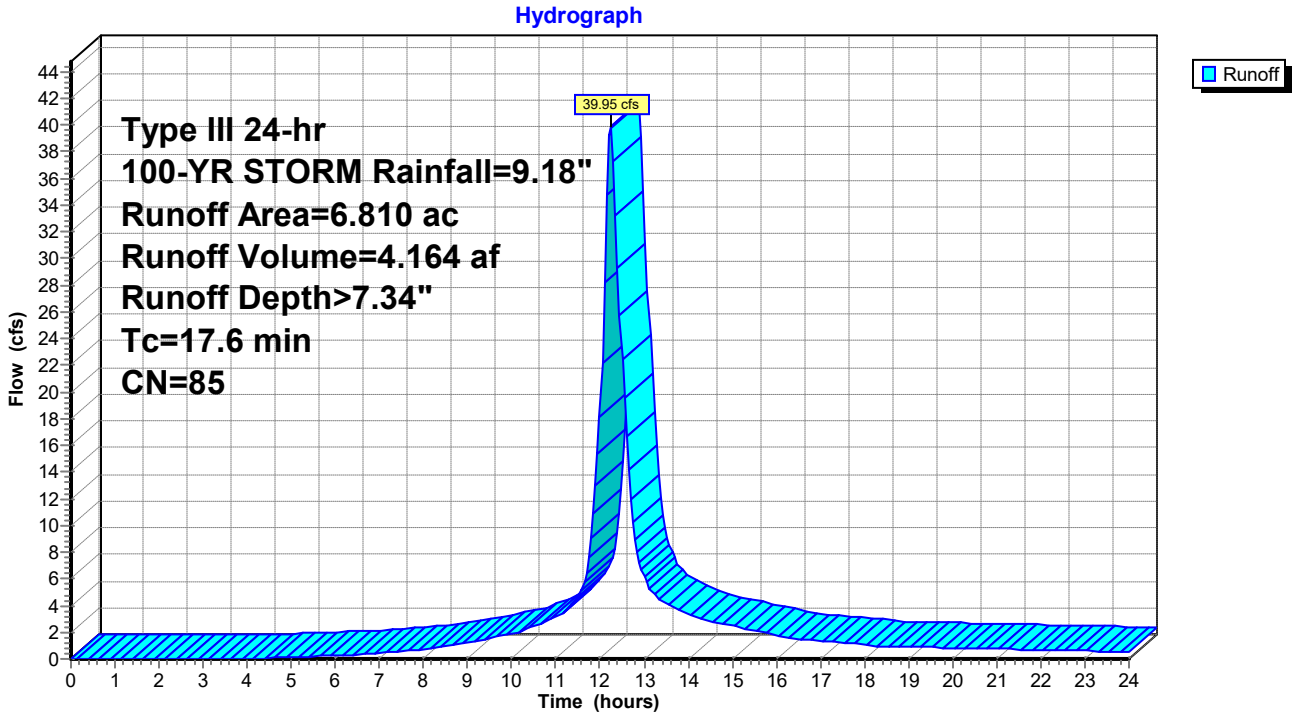
Runoff = 39.95 cfs @ 12.23 hrs, Volume= 4.164 af, Depth> 7.34"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	6.810	85	
	6.810		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

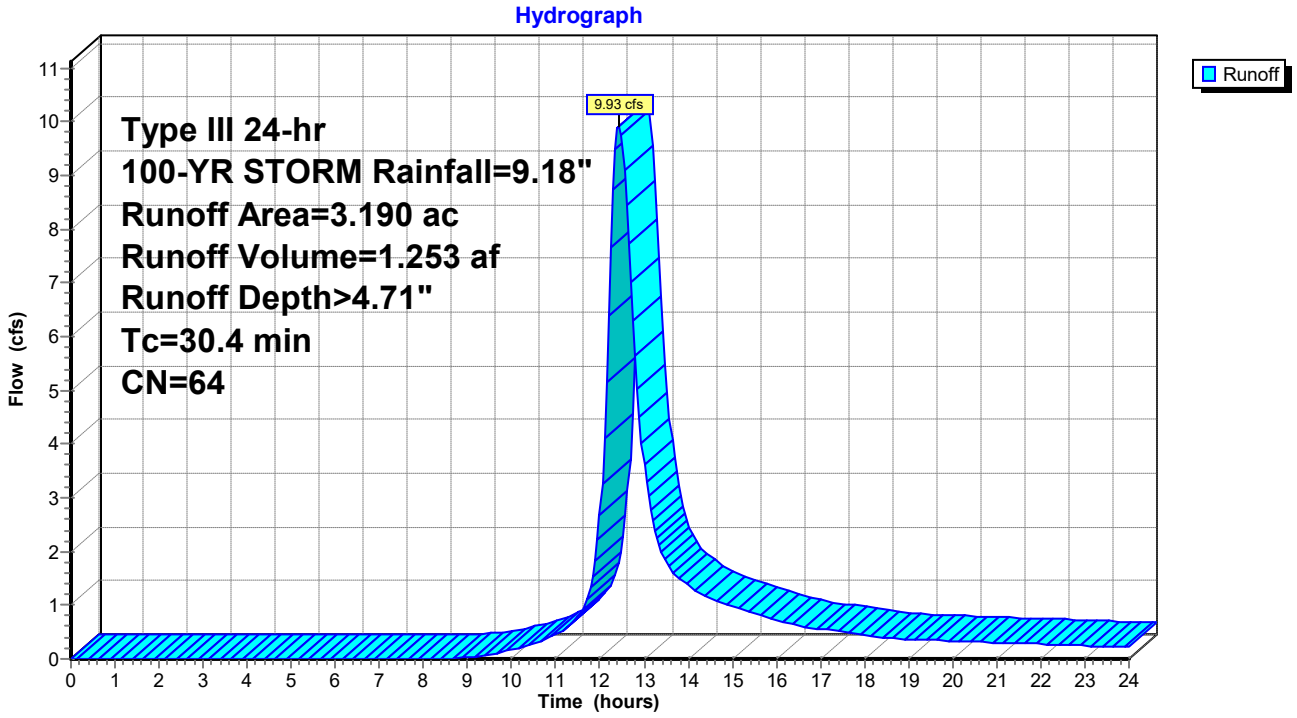
Runoff = 9.93 cfs @ 12.43 hrs, Volume= 1.253 af, Depth> 4.71"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	3.190	64	
	3.190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

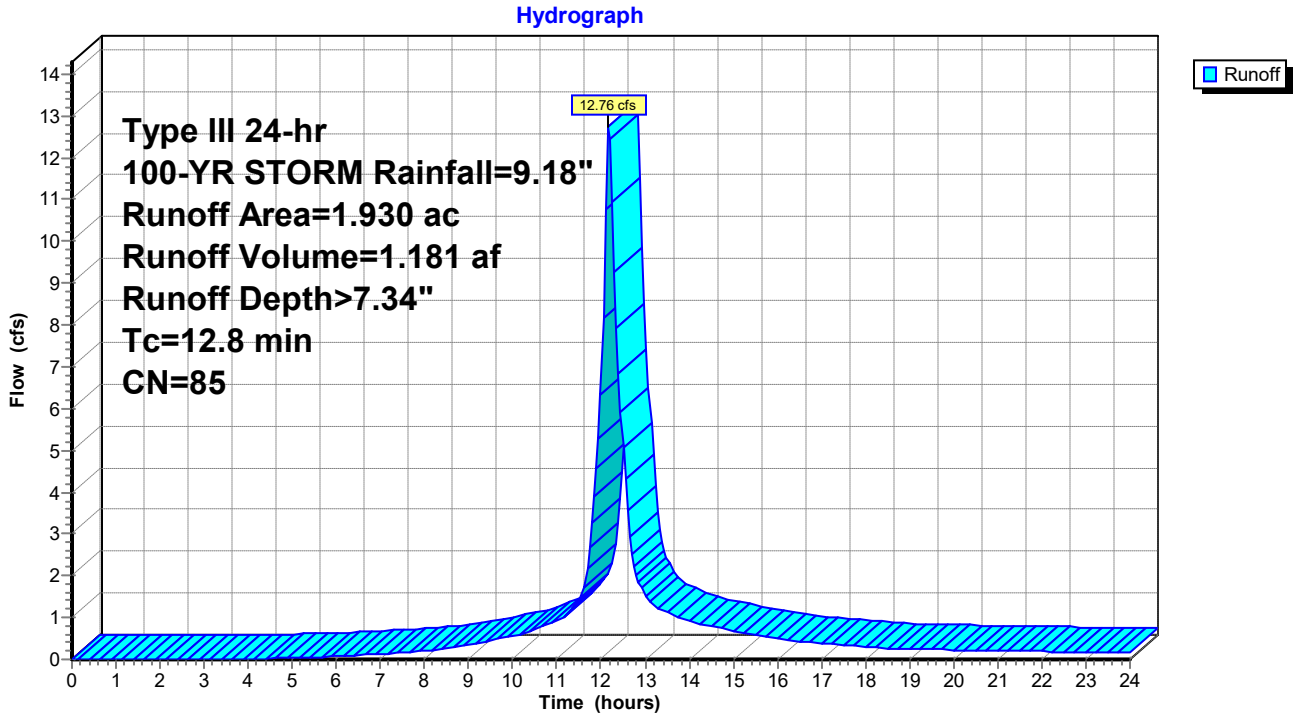
Runoff = 12.76 cfs @ 12.17 hrs, Volume= 1.181 af, Depth> 7.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	1.930	85	
	1.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 13:

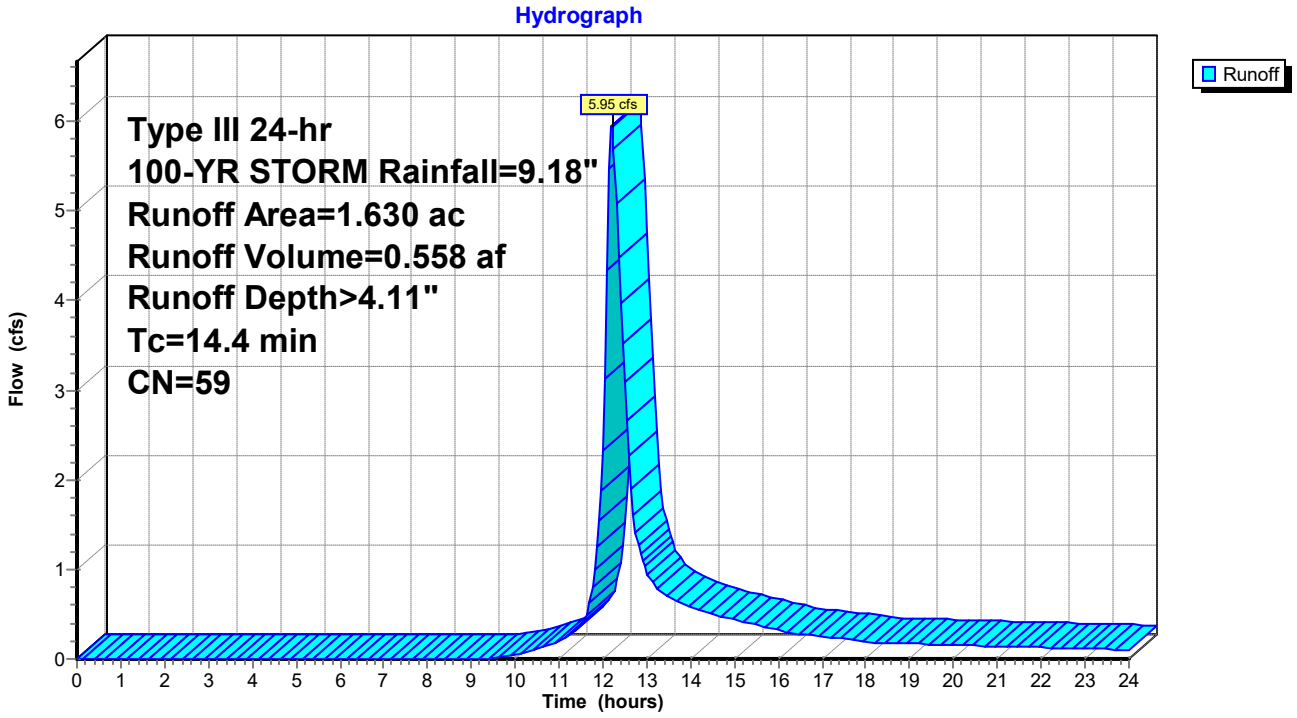
Runoff = 5.95 cfs @ 12.21 hrs, Volume= 0.558 af, Depth> 4.11"
Routed to nonexistent node 6P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	1.630	59	
	1.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4					**Direct Entry, NRCS Part 630**

Subcatchment 13:



Summary for Subcatchment 14:

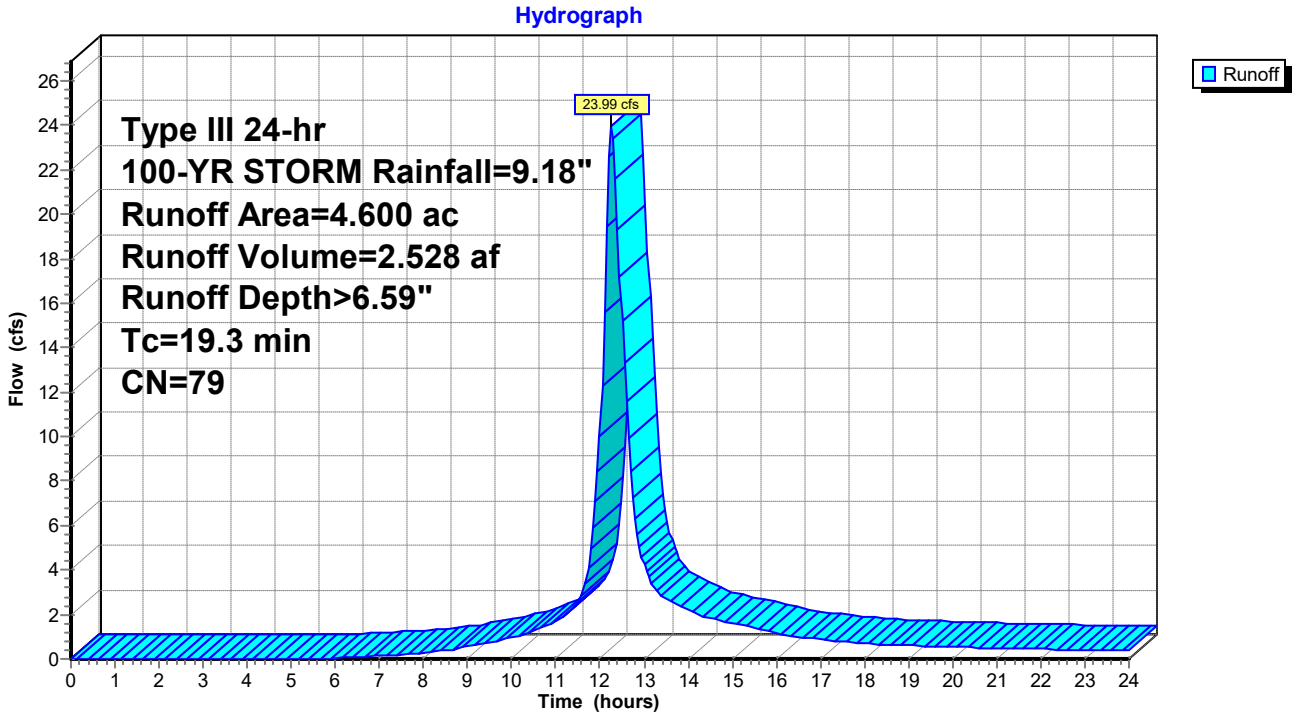
Runoff = 23.99 cfs @ 12.26 hrs, Volume= 2.528 af, Depth> 6.59"
Routed to nonexistent node O8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	4.600	79	
	4.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

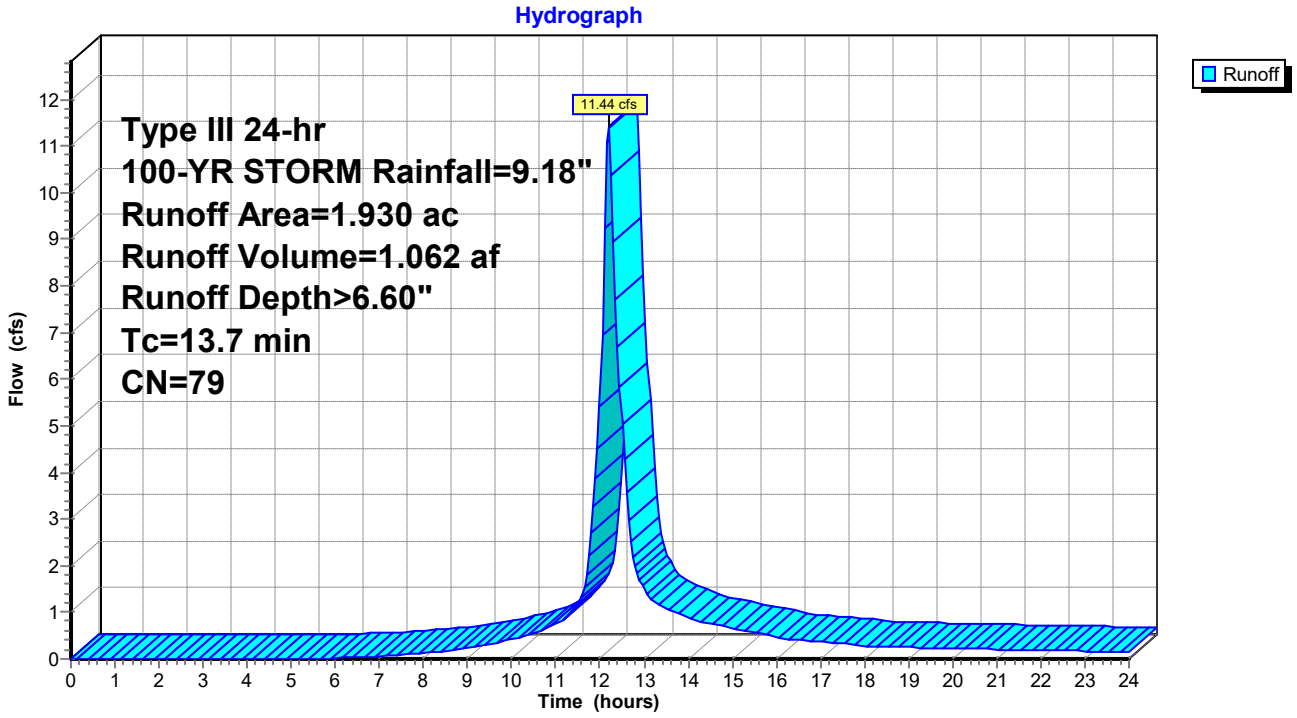
Runoff = 11.44 cfs @ 12.19 hrs, Volume= 1.062 af, Depth> 6.60"
Routed to nonexistent node O8

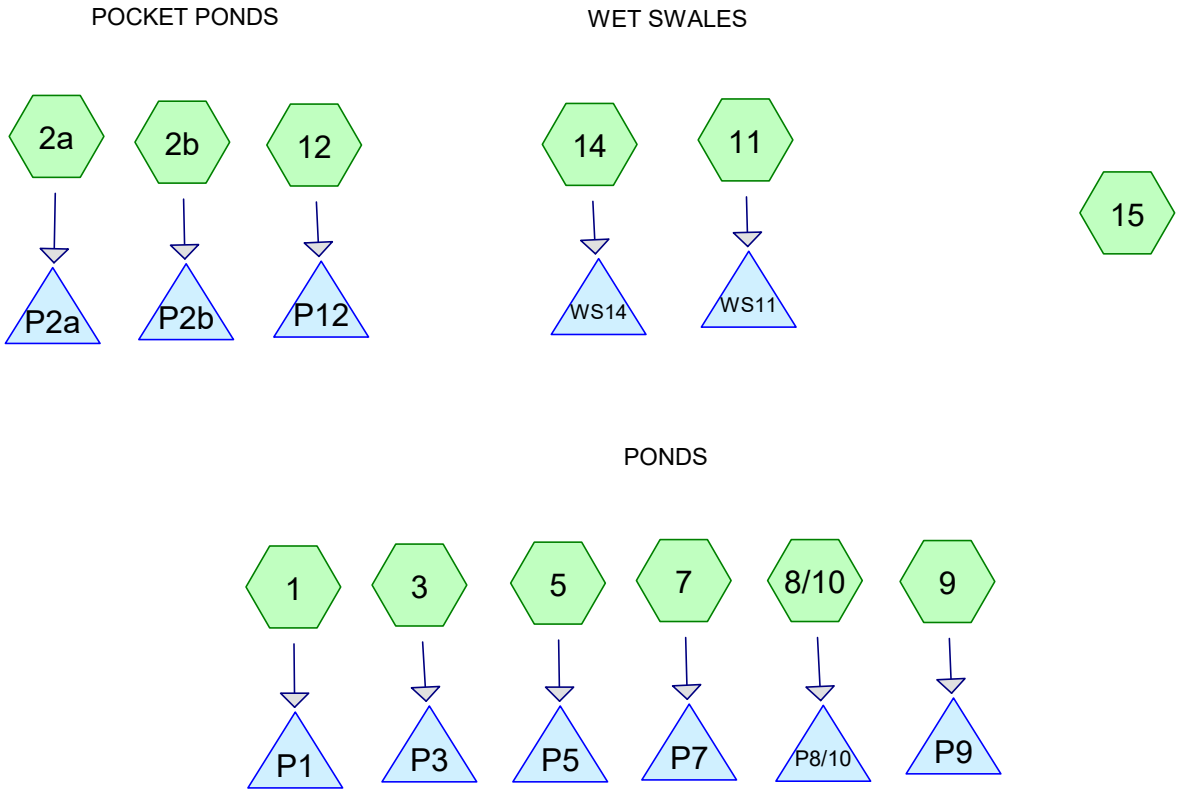
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	1.930	79	
	1.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:





Subcat Reach Pond Link

Routing Diagram for HydroCAD Litchfield Proposed - Quantity - 5-23
Prepared by HDR, Inc, Printed 5/31/2023

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 1: Runoff Area=1.280 ac Runoff Depth=1.87"
Tc=9.1 min CN=83 Runoff=2.52 cfs 0.199 af

Subcatchment 2a: Runoff Area=3.850 ac Runoff Depth=1.72"
Tc=9.7 min CN=81 Runoff=6.81 cfs 0.551 af

Subcatchment 2b: Runoff Area=4.020 ac Runoff Depth=1.37"
Tc=13.9 min CN=76 Runoff=4.89 cfs 0.460 af

Subcatchment 3: Runoff Area=7.890 ac Runoff Depth=1.87"
Tc=9.2 min CN=83 Runoff=15.48 cfs 1.228 af

Subcatchment 5: Runoff Area=1.680 ac Runoff Depth=1.87"
Tc=7.5 min CN=83 Runoff=3.49 cfs 0.261 af

Subcatchment 7: Runoff Area=4.070 ac Runoff Depth=1.72"
Tc=19.2 min CN=81 Runoff=5.59 cfs 0.582 af

Subcatchment 8/10: Runoff Area=28.040 ac Runoff Depth=1.87"
Tc=13.7 min CN=83 Runoff=48.07 cfs 4.363 af

Subcatchment 9: Runoff Area=6.810 ac Runoff Depth=1.87"
Tc=18.1 min CN=83 Runoff=10.47 cfs 1.060 af

Subcatchment 11: Runoff Area=3.190 ac Runoff Depth=1.31"
Tc=21.4 min CN=75 Runoff=3.09 cfs 0.348 af

Subcatchment 12: Runoff Area=1.930 ac Runoff Depth=1.79"
Tc=8.6 min CN=82 Runoff=3.70 cfs 0.288 af

Subcatchment 14: Runoff Area=4.600 ac Runoff Depth=1.95"
Tc=14.6 min CN=84 Runoff=8.02 cfs 0.746 af

Subcatchment 15: Runoff Area=1.930 ac Runoff Depth=1.72"
Tc=13.7 min CN=81 Runoff=3.03 cfs 0.276 af

Pond P1: Peak Elev=1,125.03' Storage=3,496 cf Inflow=2.52 cfs 0.199 af
Primary=0.43 cfs 0.199 af Secondary=0.00 cfs 0.000 af Outflow=0.43 cfs 0.199 af

Pond P12: Peak Elev=1,187.28' Storage=5,216 cf Inflow=3.70 cfs 0.288 af
Primary=0.16 cfs 0.130 af Secondary=1.46 cfs 0.079 af Outflow=1.62 cfs 0.209 af

Pond P2a: Peak Elev=1,084.95' Storage=6,421 cf Inflow=6.81 cfs 0.551 af
Primary=5.12 cfs 0.501 af Secondary=0.00 cfs 0.000 af Outflow=5.12 cfs 0.501 af

Pond P2b: Peak Elev=1,040.61' Storage=8,683 cf Inflow=4.89 cfs 0.460 af
Primary=0.25 cfs 0.277 af Secondary=1.20 cfs 0.100 af Outflow=1.45 cfs 0.377 af

Pond P3: Peak Elev=1,127.90' Storage=22,842 cf Inflow=15.48 cfs 1.228 af
Primary=4.99 cfs 1.228 af Secondary=0.00 cfs 0.000 af Outflow=4.99 cfs 1.228 af

Pond P5: Peak Elev=1,141.80' Storage=5,311 cf Inflow=3.49 cfs 0.261 af
Primary=0.32 cfs 0.261 af Secondary=0.00 cfs 0.000 af Outflow=0.32 cfs 0.261 af

Pond P7: Peak Elev=1,149.61' Storage=15,072 cf Inflow=5.59 cfs 0.582 af
Primary=0.37 cfs 0.577 af Secondary=0.00 cfs 0.000 af Outflow=0.37 cfs 0.577 af

Pond P8/10: Peak Elev=1,112.14' Storage=84,226 cf Inflow=48.07 cfs 4.363 af
Primary=16.50 cfs 3.609 af Secondary=0.00 cfs 0.000 af Outflow=16.50 cfs 3.609 af

Pond P9: Peak Elev=1,179.25' Storage=22,542 cf Inflow=10.47 cfs 1.060 af
Primary=2.47 cfs 1.026 af Secondary=0.00 cfs 0.000 af Outflow=2.47 cfs 1.026 af

Pond WS11: Peak Elev=1,191.02' Storage=11,595 cf Inflow=3.09 cfs 0.348 af
Outflow=0.20 cfs 0.087 af

Pond WS14: Peak Elev=1,147.76' Storage=10,166 cf Inflow=8.02 cfs 0.746 af
Outflow=6.61 cfs 0.545 af

Total Runoff Area = 69.290 ac Runoff Volume = 10.361 af Average Runoff Depth = 1.79"

Summary for Subcatchment 1:

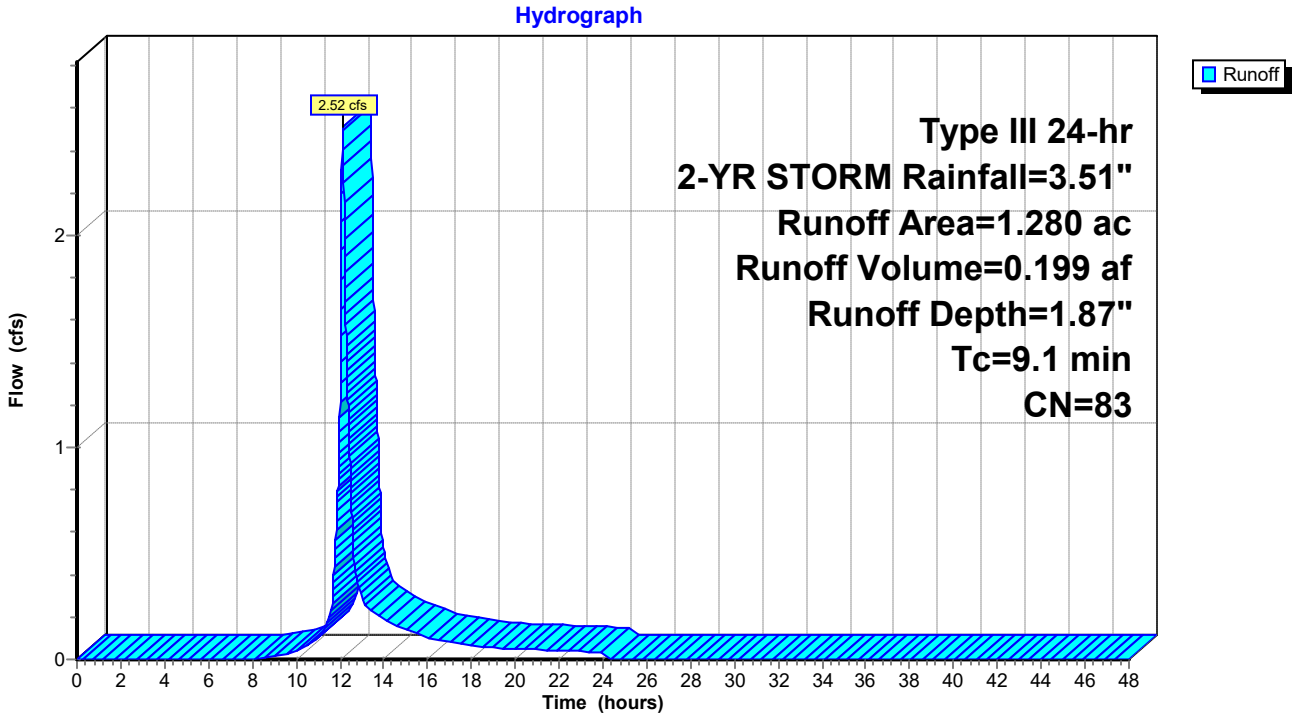
Runoff = 2.52 cfs @ 12.13 hrs, Volume= 0.199 af, Depth= 1.87"
Routed to Pond P1 :

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 STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	1.280	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

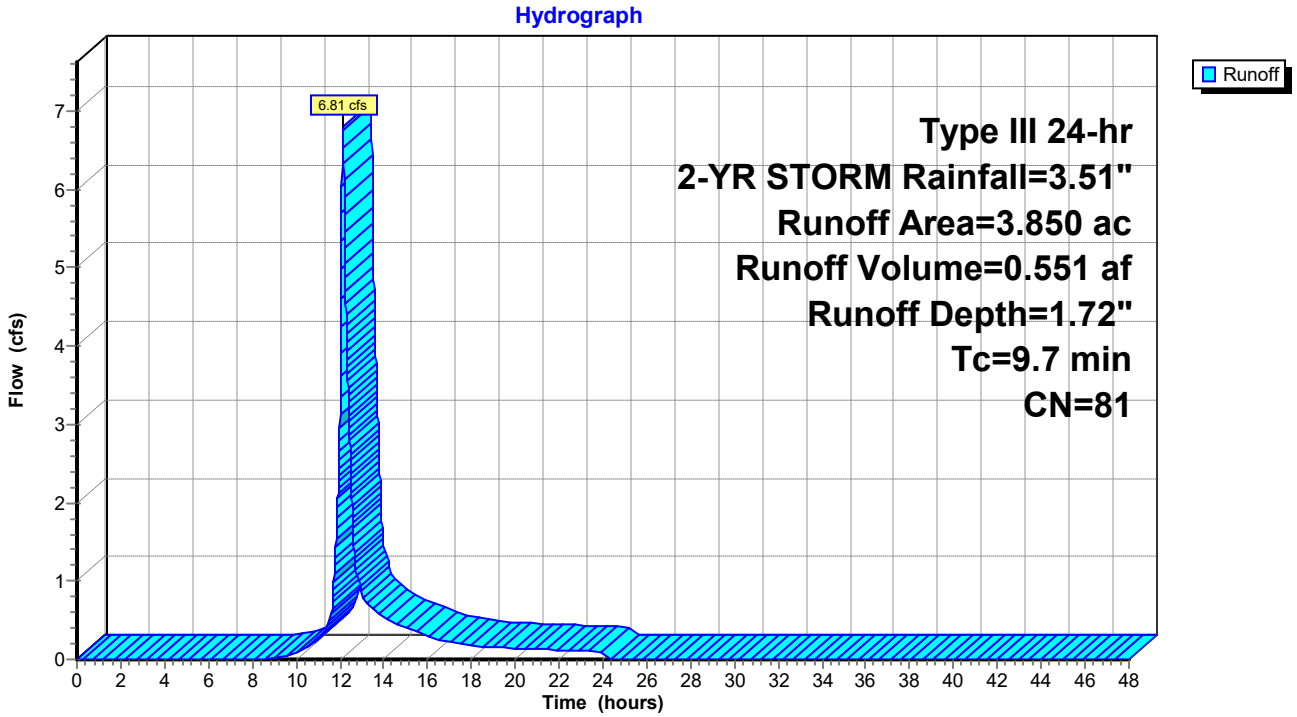
Runoff = 6.81 cfs @ 12.14 hrs, Volume= 0.551 af, Depth= 1.72"
Routed to Pond P2a :

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 STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	3.850	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

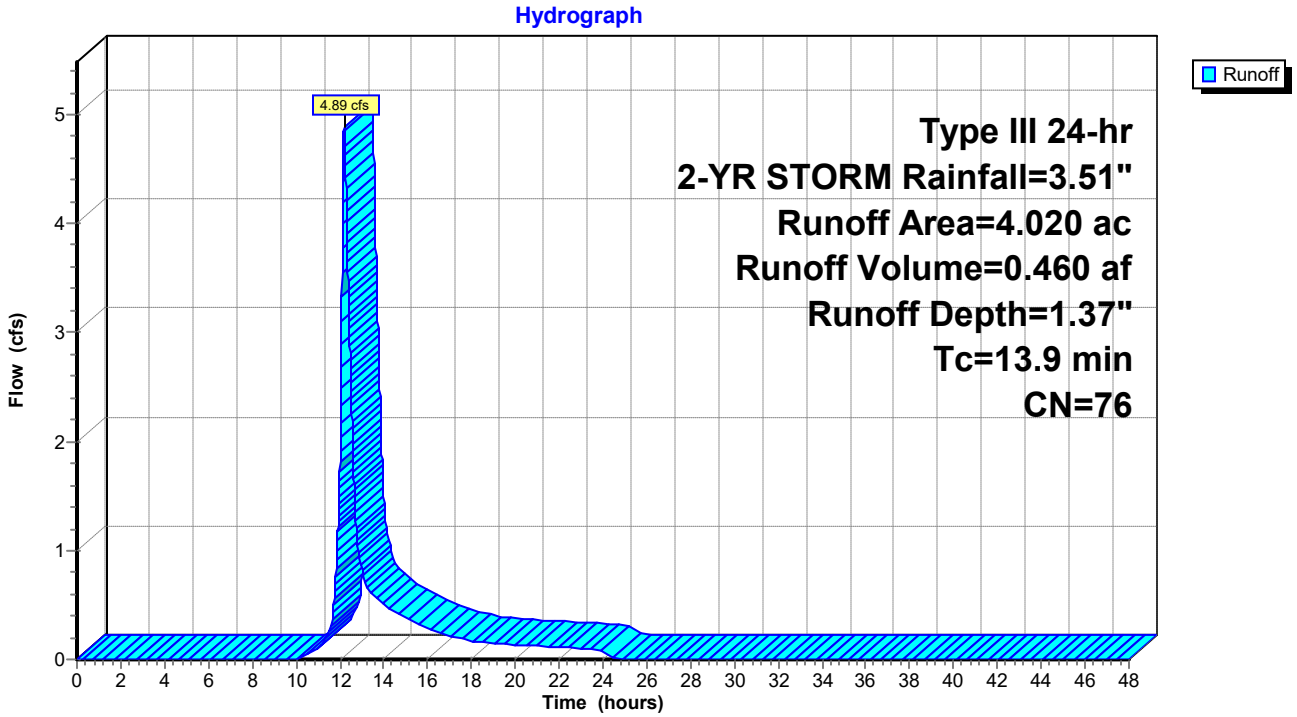
Runoff = 4.89 cfs @ 12.20 hrs, Volume= 0.460 af, Depth= 1.37"
Routed to Pond P2b :

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 STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	4.020	76	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

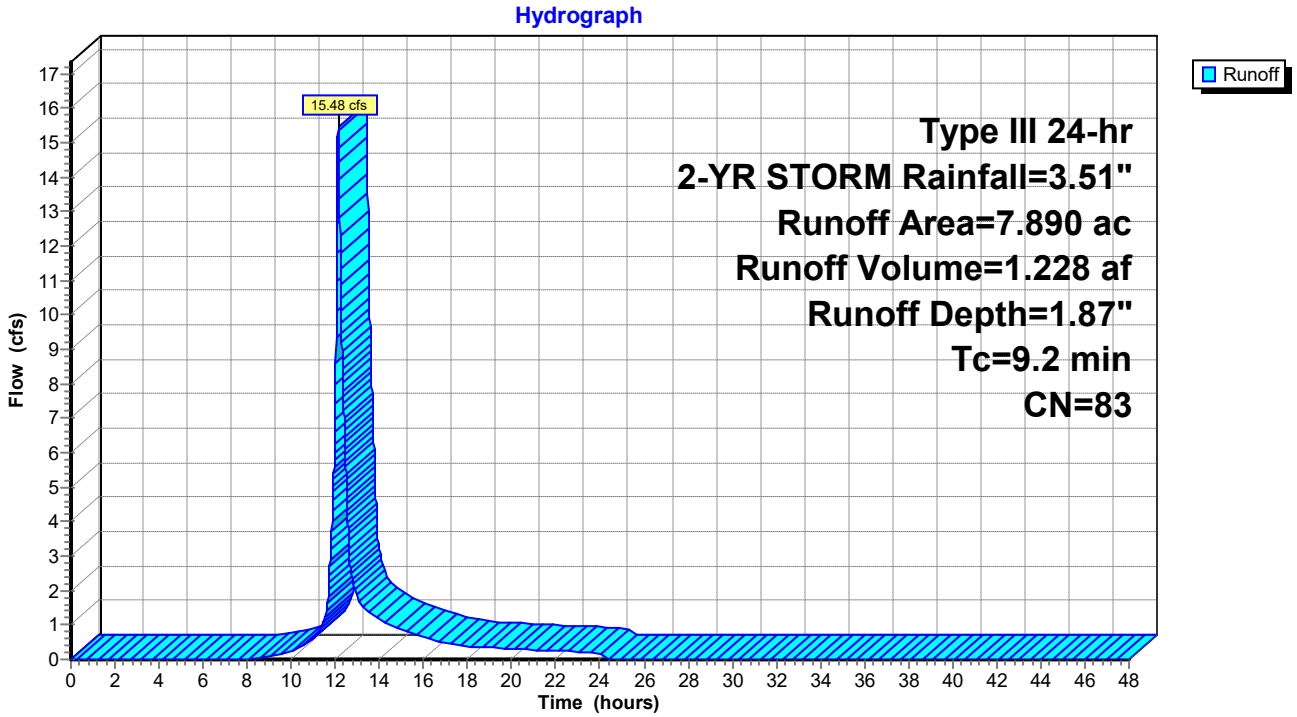
Runoff = 15.48 cfs @ 12.13 hrs, Volume= 1.228 af, Depth= 1.87"
Routed to Pond P3 :

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 STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	7.890	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 5:

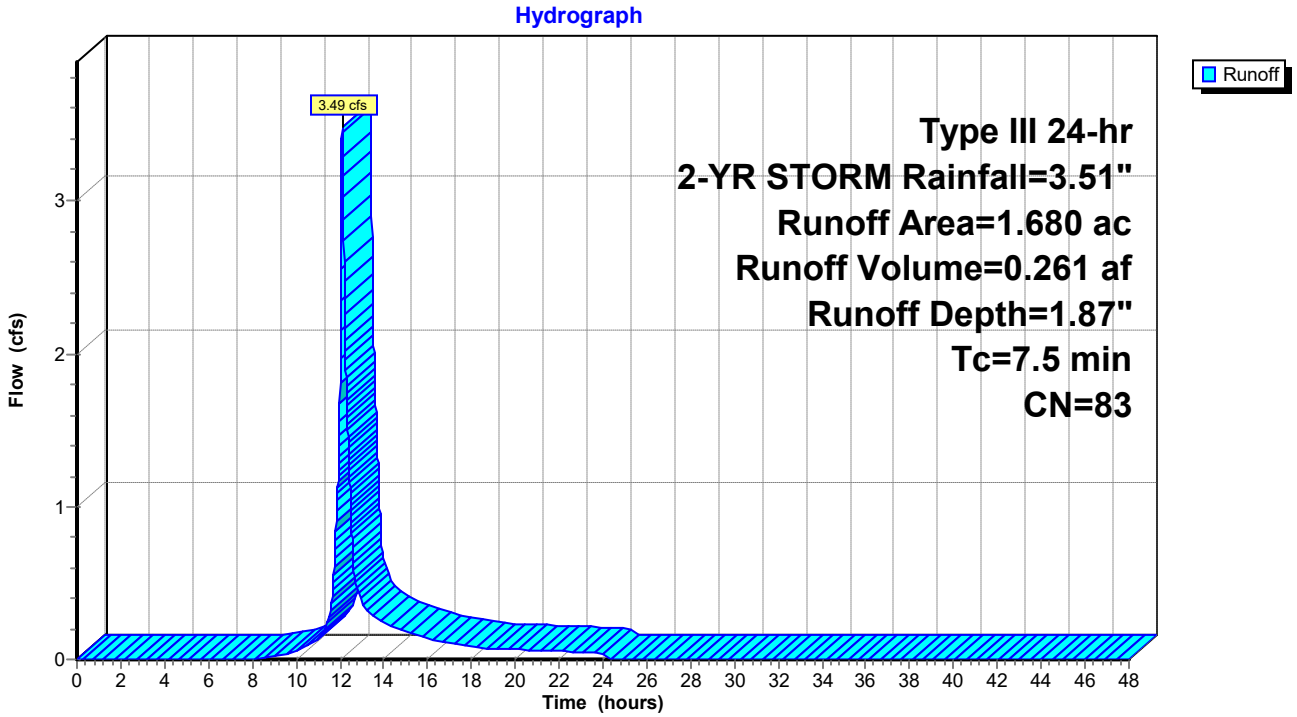
Runoff = 3.49 cfs @ 12.11 hrs, Volume= 0.261 af, Depth= 1.87"
Routed to Pond P5 :

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 STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	1.680	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

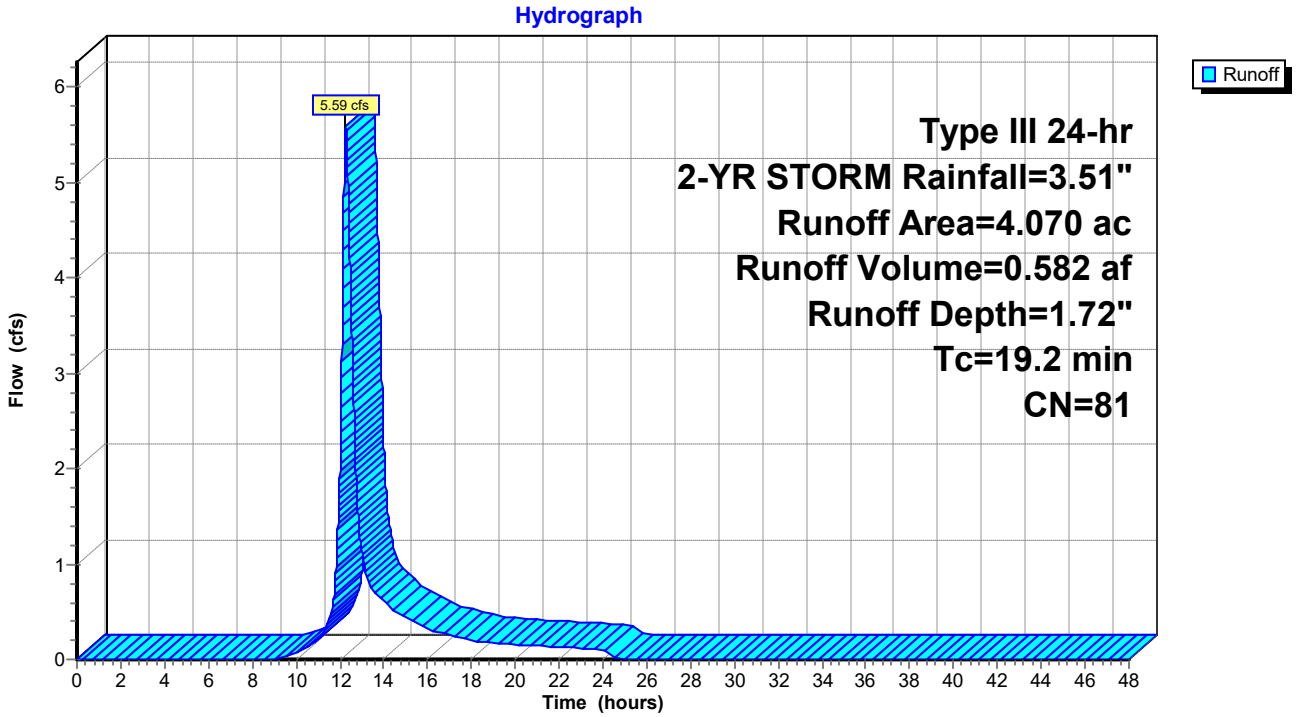
Runoff = 5.59 cfs @ 12.27 hrs, Volume= 0.582 af, Depth= 1.72"
Routed to Pond P7 :

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 STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	4.070	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8/10:

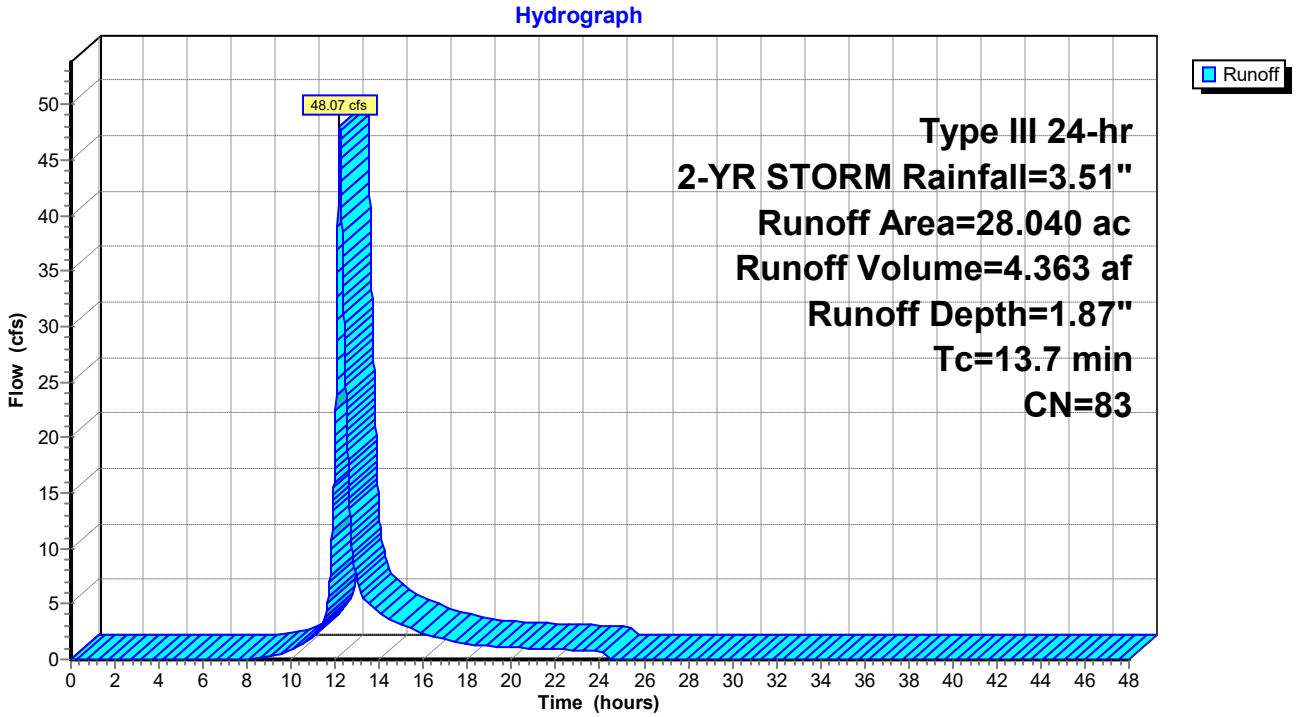
Runoff = 48.07 cfs @ 12.19 hrs, Volume= 4.363 af, Depth= 1.87"
Routed to Pond P8/10 :

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 STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	28.040	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 8/10:



Summary for Subcatchment 9:

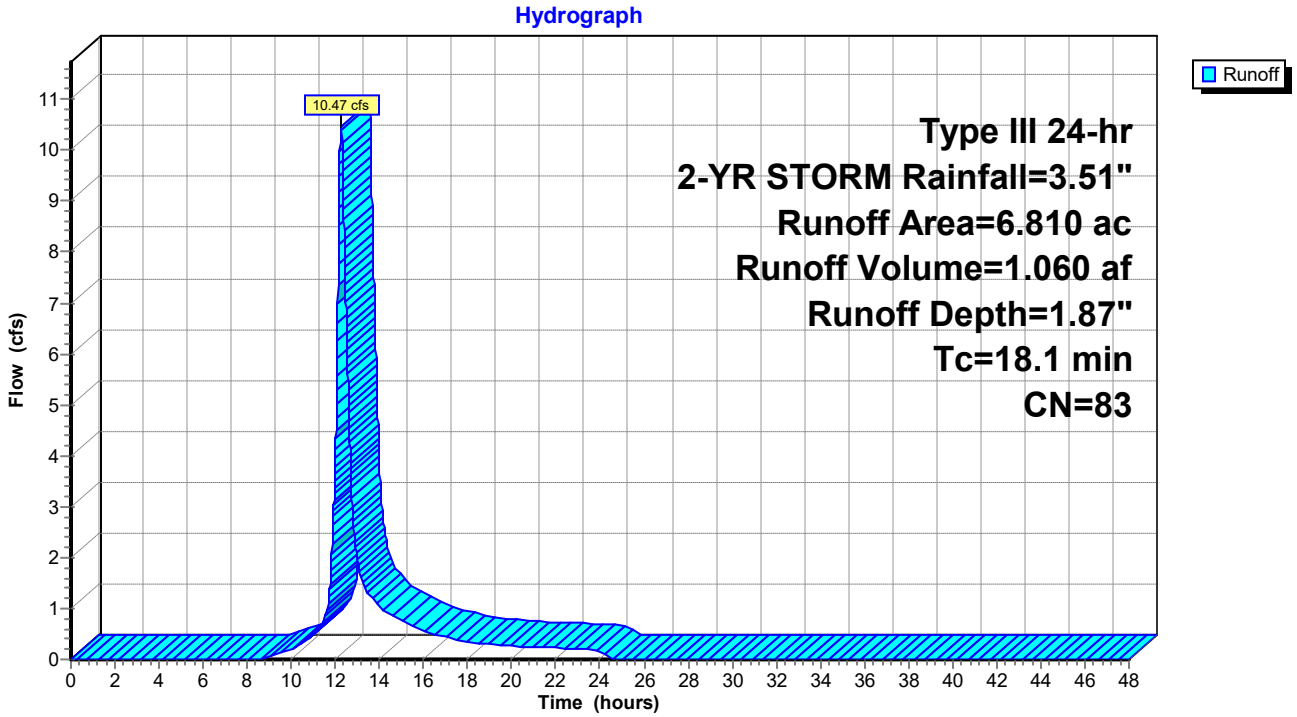
Runoff = 10.47 cfs @ 12.25 hrs, Volume= 1.060 af, Depth= 1.87"
Routed to Pond P9 :

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 STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	6.810	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

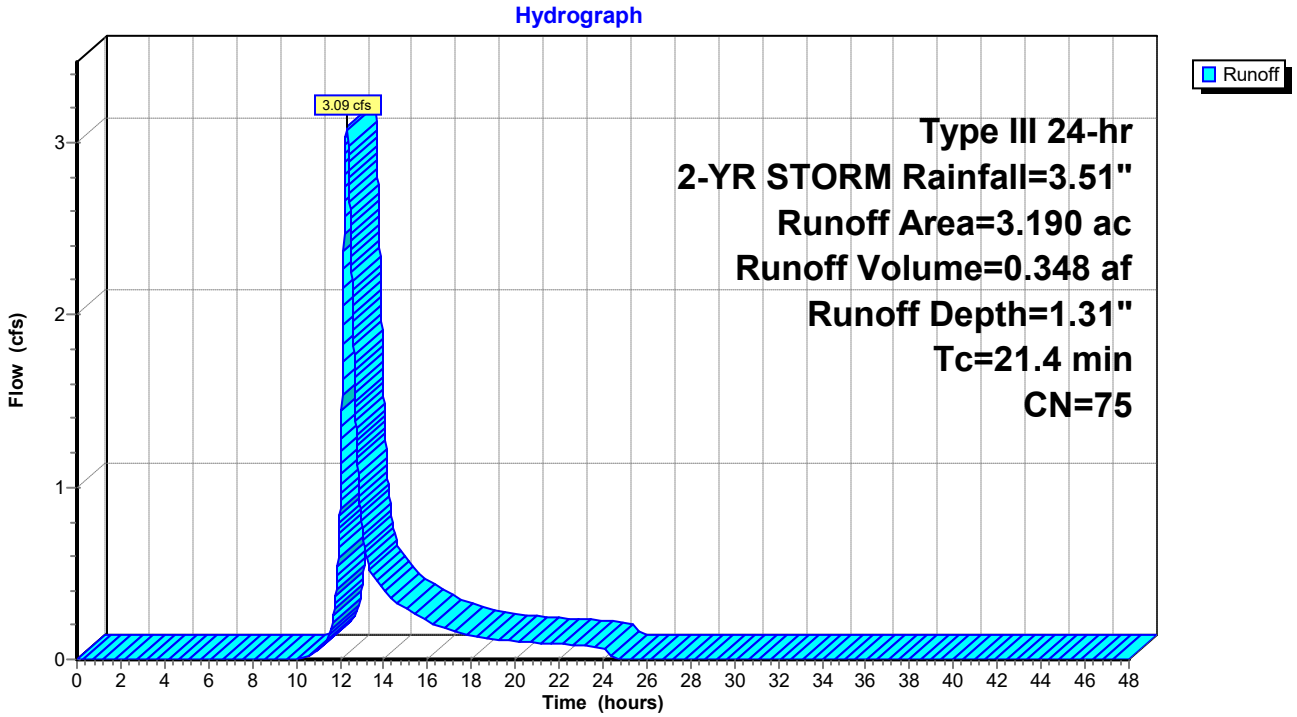
Runoff = 3.09 cfs @ 12.31 hrs, Volume= 0.348 af, Depth= 1.31"
Routed to Pond WS11 :

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 STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	3.190	75	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

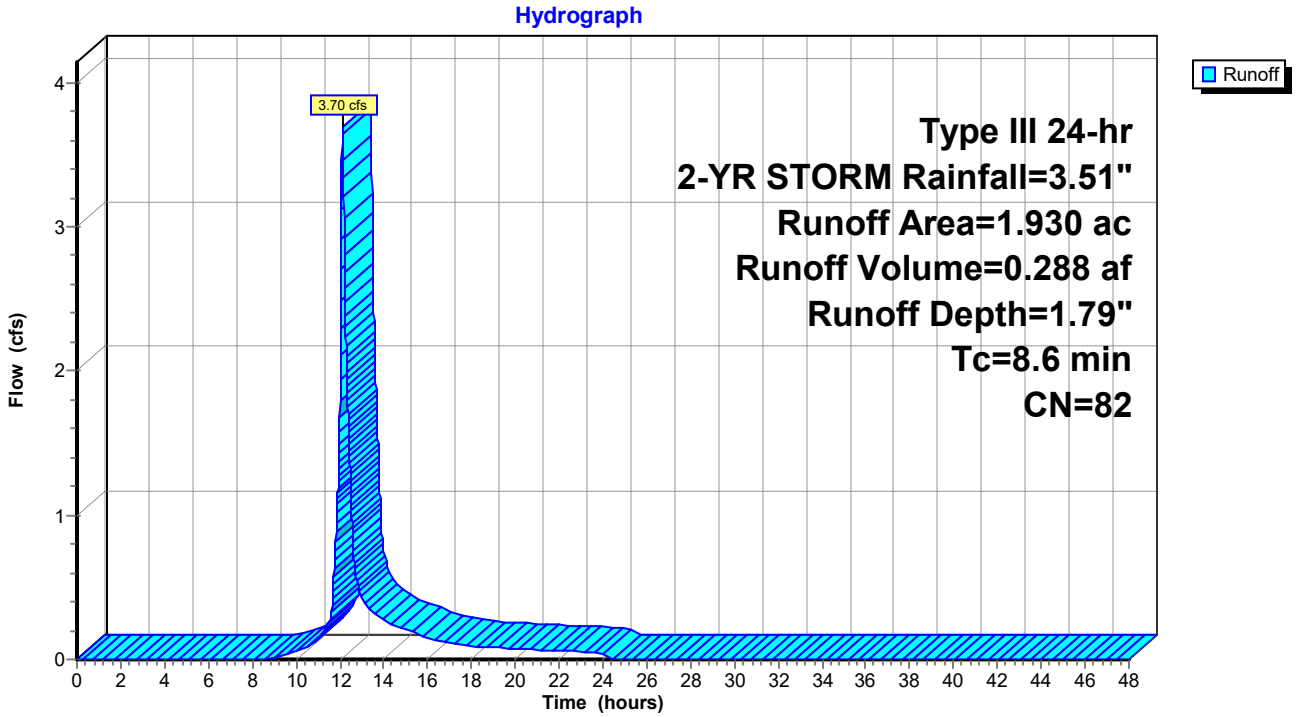
Runoff = 3.70 cfs @ 12.12 hrs, Volume= 0.288 af, Depth= 1.79"
Routed to Pond P12 :

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 STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	1.930	82	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 14:

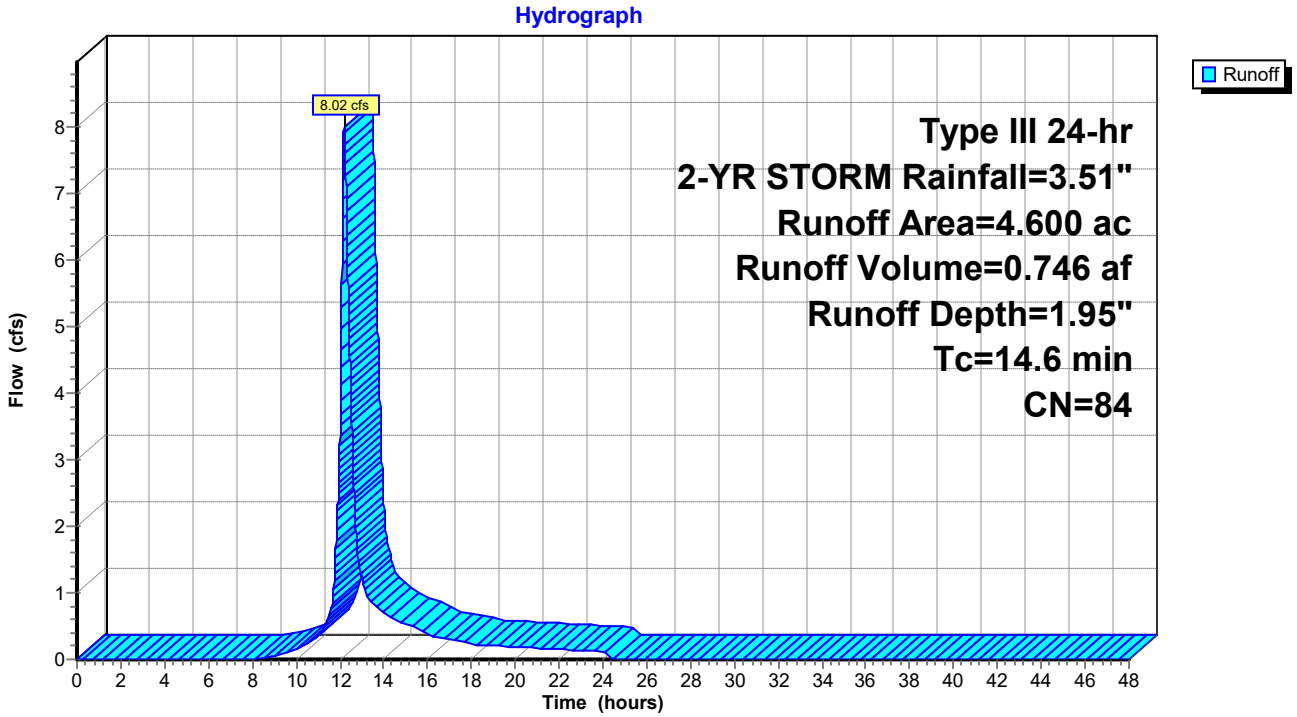
Runoff = 8.02 cfs @ 12.20 hrs, Volume= 0.746 af, Depth= 1.95"
Routed to Pond WS14 :

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 STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	4.600	84	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

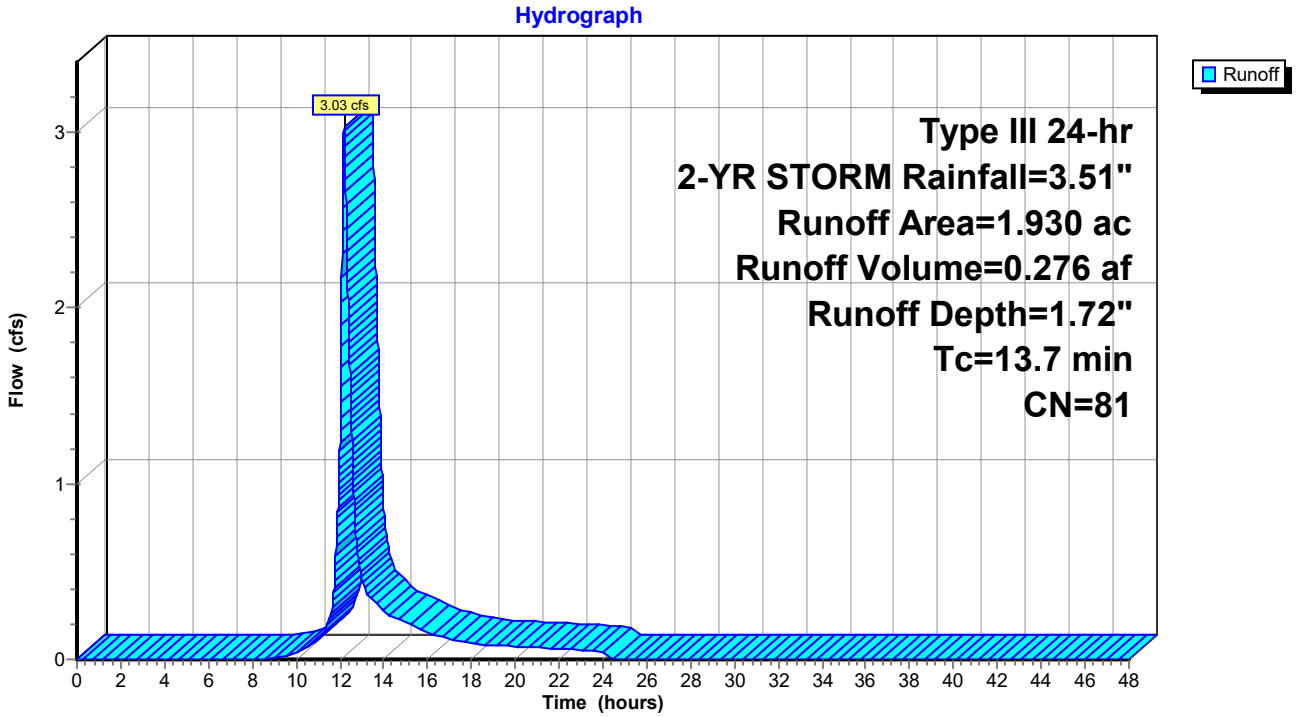
Runoff = 3.03 cfs @ 12.19 hrs, Volume= 0.276 af, Depth= 1.72"
Routed to nonexistent node 6L

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 STORM Rainfall=3.51"

	Area (ac)	CN	Description
*	1.930	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:



Summary for Pond P1:

Inflow Area = 1.280 ac, Inflow Depth = 1.87" for 2-YR STORM event
Inflow = 2.52 cfs @ 12.13 hrs, Volume= 0.199 af
Outflow = 0.43 cfs @ 12.68 hrs, Volume= 0.199 af, Atten= 83%, Lag= 32.9 min
Primary = 0.43 cfs @ 12.68 hrs, Volume= 0.199 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,125.03' @ 12.68 hrs Surf.Area= 2,216 sf Storage= 3,496 cf

Plug-Flow detention time= 114.9 min calculated for 0.199 af (100% of inflow)
Center-of-Mass det. time= 115.0 min (946.6 - 831.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,123.00'	5,895 cf	**Custom Stage Data (Prismatic)** Listed below

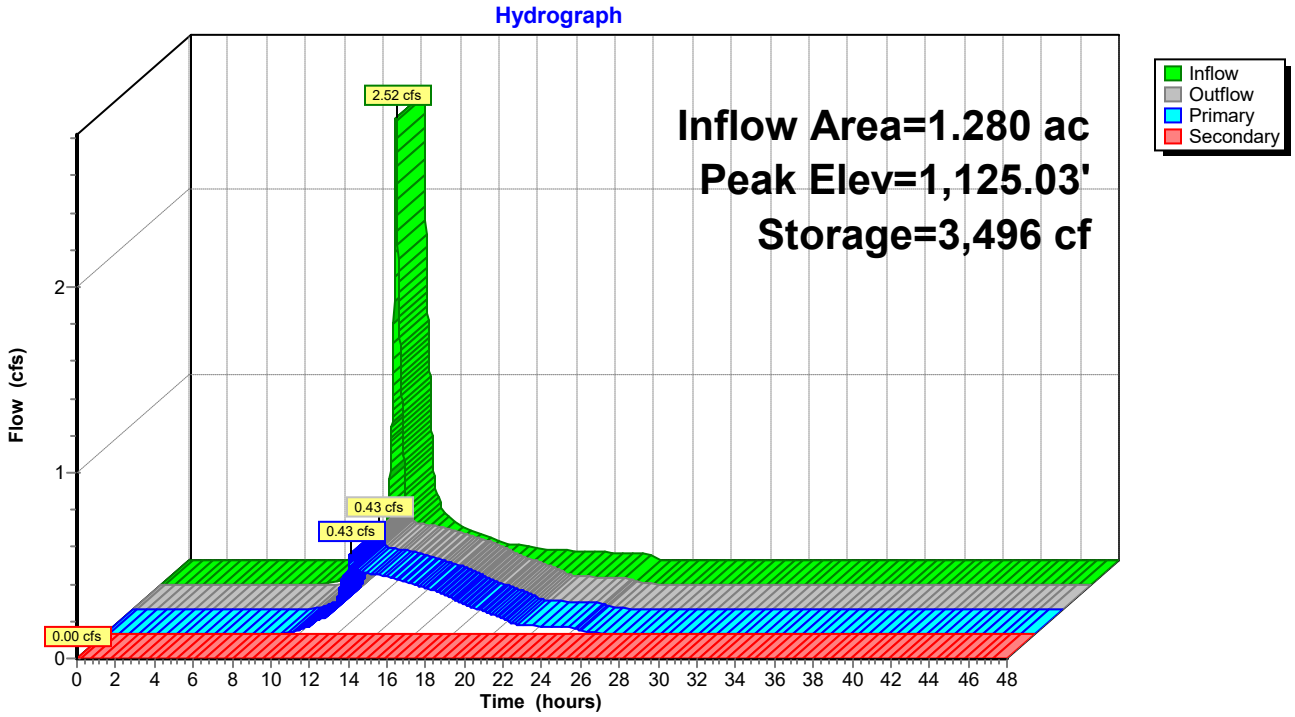
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,123.00	1,247	0	0
1,124.00	1,698	1,473	1,473
1,125.00	2,199	1,949	3,421
1,126.00	2,749	2,474	5,895

Device	Routing	Invert	Outlet Devices
#1	Primary	1,123.00'	**18.0" Round Culvert** L= 35.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,123.00' / 1,122.00' S= 0.0286 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	1,125.30'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,125.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,125.60'	**20.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,123.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.42 cfs @ 12.68 hrs HW=1,125.03' (Free Discharge)
└**1=Culvert** (Passes 0.42 cfs of 9.63 cfs potential flow)
  ├**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  ├**3=Sharp-Crested Rectangular Weir** (Weir Controls 0.09 cfs @ 0.57 fps)
  └**5=Orifice/Grate** (Orifice Controls 0.34 cfs @ 6.86 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,123.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P1:


Hydrograph
Inflow Area=1.280 ac
Peak Elev=1,125.03'
Storage=3,496 cf
Inflow
Outflow
Primary
Secondary
2.52 cfs
0.43 cfs
0.43 cfs
0.00 cfs
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2

Summary for Pond P12:

Inflow Area = 1.930 ac, Inflow Depth = 1.79" for 2-YR STORM event
Inflow = 3.70 cfs @ 12.12 hrs, Volume= 0.288 af
Outflow = 1.62 cfs @ 12.39 hrs, Volume= 0.209 af, Atten= 56%, Lag= 16.0 min
Primary = 0.16 cfs @ 12.39 hrs, Volume= 0.130 af
Routed to nonexistent node 6L
Secondary = 1.46 cfs @ 12.39 hrs, Volume= 0.079 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,187.28' @ 12.39 hrs Surf.Area= 3,895 sf Storage= 5,216 cf

Plug-Flow detention time= 250.7 min calculated for 0.209 af (72% of inflow)
Center-of-Mass det. time= 157.2 min (991.4 - 834.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,184.00'	8,424 cf	**Custom Stage Data (Prismatic)** Listed below

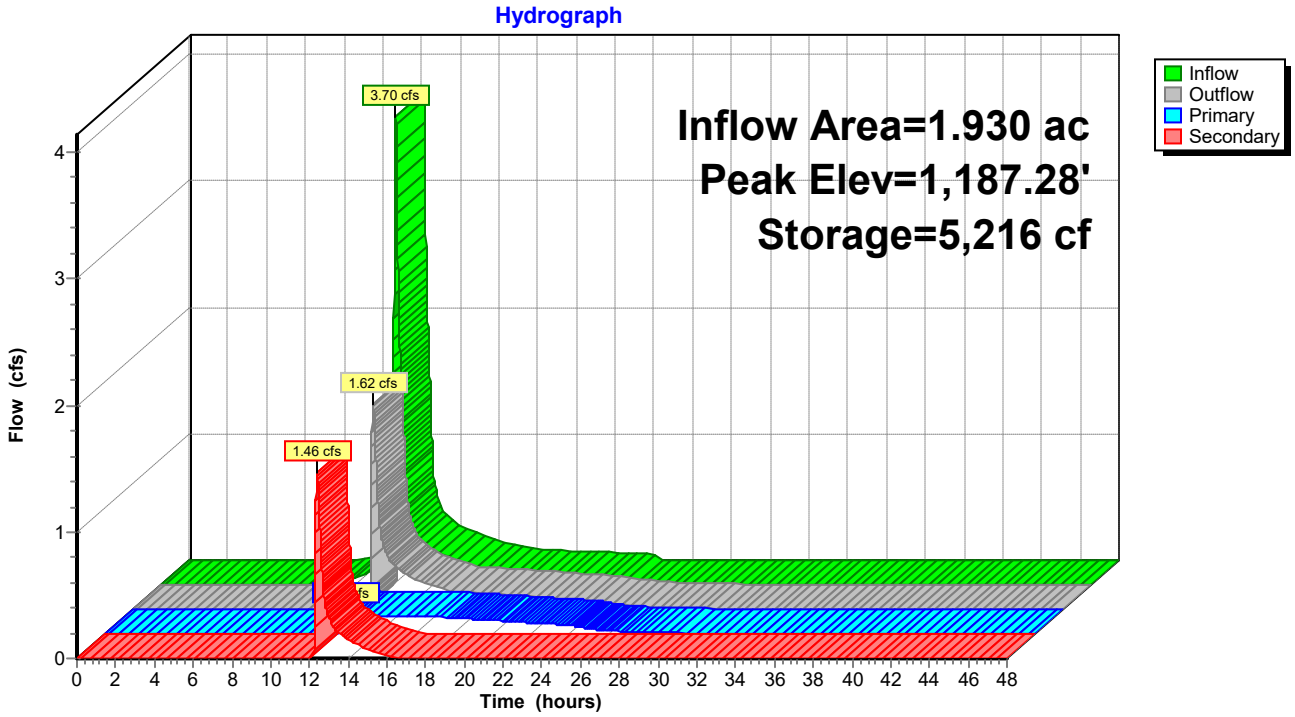
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,184.00	401	0	0
1,184.50	791	298	298
1,185.50	1,200	996	1,294
1,186.50	1,772	1,486	2,780
1,187.50	4,508	3,140	5,920
1,188.00	5,509	2,504	8,424

Device	Routing	Invert	Outlet Devices
#1	Primary	1,186.70'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Secondary	1,187.15'	**10.0' long Weir** 2 End Contraction(s)

Primary OutFlow Max=0.16 cfs @ 12.39 hrs HW=1,187.28' (Free Discharge)
1=Orifice (Orifice Controls 0.16 cfs @ 3.23 fps)

Secondary OutFlow Max=1.46 cfs @ 12.39 hrs HW=1,187.28' (Free Discharge)
2=Weir (Weir Controls 1.46 cfs @ 1.16 fps)

Pond P12:


Hydrograph
Inflow Area=1.930 ac
Peak Elev=1,187.28'
Storage=5,216 cf
3.70 cfs
1.62 cfs
1.46 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
3
4
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P2a:

Inflow Area = 3.850 ac, Inflow Depth = 1.72" for 2-YR STORM event
Inflow = 6.81 cfs @ 12.14 hrs, Volume= 0.551 af
Outflow = 5.12 cfs @ 12.24 hrs, Volume= 0.501 af, Atten= 25%, Lag= 5.9 min
Primary = 5.12 cfs @ 12.24 hrs, Volume= 0.501 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,084.95' @ 12.24 hrs Surf.Area= 3,768 sf Storage= 6,421 cf

Plug-Flow detention time= 151.0 min calculated for 0.501 af (91% of inflow)
Center-of-Mass det. time= 105.8 min (944.3 - 838.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,082.75'	9,641 cf	**Custom Stage Data (Prismatic)** Listed below

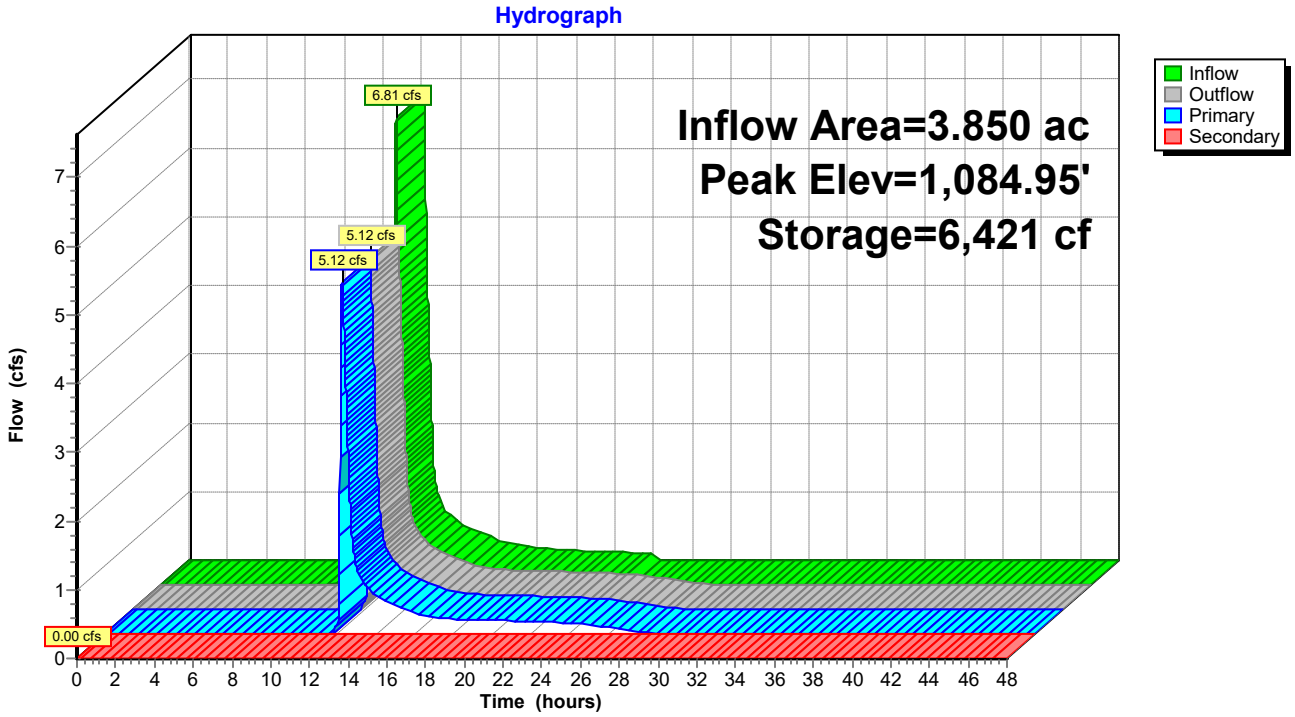
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,082.75	2,048	0	0
1,083.75	2,794	2,421	2,421
1,084.75	3,596	3,195	5,616
1,085.75	4,454	4,025	9,641

Device	Routing	Invert	Outlet Devices
#1	Device 3	1,084.50'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Device 3	1,083.65'	**3.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Primary	1,083.65'	**18.0" Round Culvert** L= 59.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,083.65' / 1,083.00' S= 0.0110 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 3	1,085.00'	**72.0" x 72.0" Horiz. Top of Riser** C= 0.600 Limited to weir flow at low heads
#5	Secondary	1,085.25'	**20.0' long + 3.0 '/' SideZ x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=5.12 cfs @ 12.24 hrs HW=1,084.95' (Free Discharge)
└**3=Culvert** (Passes 5.12 cfs of 6.23 cfs potential flow)
├**1=Sharp-Crested Rectangular Weir** (Weir Controls 4.85 cfs @ 2.19 fps)
├**2=Orifice** (Orifice Controls 0.27 cfs @ 5.49 fps)
└**4=Top of Riser** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,082.75' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P2a:


Hydrograph
Inflow Area=3.850 ac
Peak Elev=1,084.95'
Storage=6,421 cf
6.81 cfs
5.12 cfs
5.12 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P2b:

Inflow Area = 4.020 ac, Inflow Depth = 1.37" for 2-YR STORM event
Inflow = 4.89 cfs @ 12.20 hrs, Volume= 0.460 af
Outflow = 1.45 cfs @ 12.67 hrs, Volume= 0.377 af, Atten= 70%, Lag= 28.4 min
Primary = 0.25 cfs @ 12.67 hrs, Volume= 0.277 af
Routed to nonexistent node 6L
Secondary = 1.20 cfs @ 12.67 hrs, Volume= 0.100 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,040.61' @ 12.67 hrs Surf.Area= 5,077 sf Storage= 8,683 cf

Plug-Flow detention time= 306.5 min calculated for 0.377 af (82% of inflow)
Center-of-Mass det. time= 231.4 min (1,089.1 - 857.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,038.50'	13,587 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

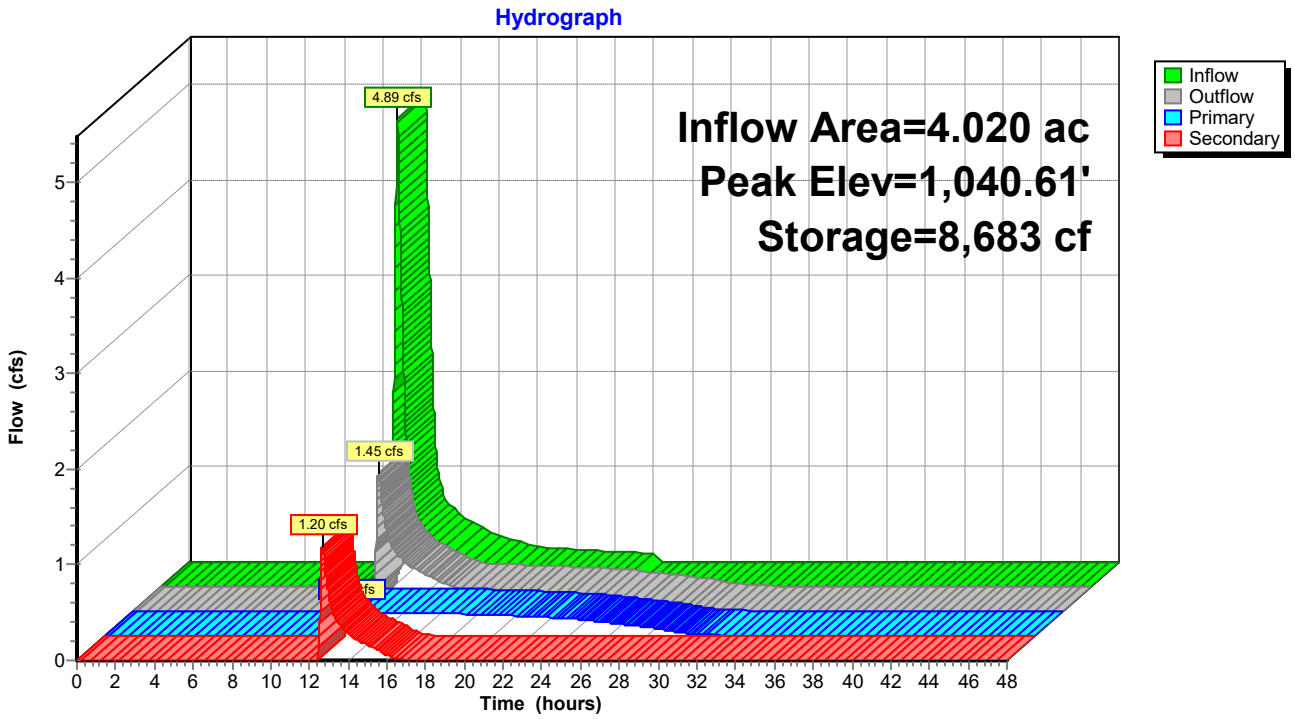
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,038.50	3,189	0	0
1,039.50	4,051	3,620	3,620
1,040.50	4,969	4,510	8,130
1,041.50	5,945	5,457	13,587

Device	Routing	Invert	Outlet Devices
#1	Secondary	1,040.50'	**10.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	1,039.50'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.25 cfs @ 12.67 hrs HW=1,040.61' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 0.25 cfs @ 5.07 fps)

Secondary OutFlow Max=1.19 cfs @ 12.67 hrs HW=1,040.61' (Free Discharge)
↑—**1=Sharp-Crested Rectangular Weir** (Weir Controls 1.19 cfs @ 1.09 fps)

Pond P2b:


Hydrograph
Inflow Area=4.020 ac
Peak Elev=1,040.61'
Storage=8,683 cf
4.89 cfs
1.45 cfs
1.20 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P3:

Inflow Area = 7.890 ac, Inflow Depth = 1.87" for 2-YR STORM event
Inflow = 15.48 cfs @ 12.13 hrs, Volume= 1.228 af
Outflow = 4.99 cfs @ 12.50 hrs, Volume= 1.228 af, Atten= 68%, Lag= 22.4 min
Primary = 4.99 cfs @ 12.50 hrs, Volume= 1.228 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,127.90' @ 12.50 hrs Surf.Area= 6,301 sf Storage= 22,842 cf

Plug-Flow detention time= 347.6 min calculated for 1.228 af (100% of inflow)
Center-of-Mass det. time= 347.5 min (1,179.2 - 831.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,122.00'	38,268 cf	**Custom Stage Data (Prismatic)** Listed below

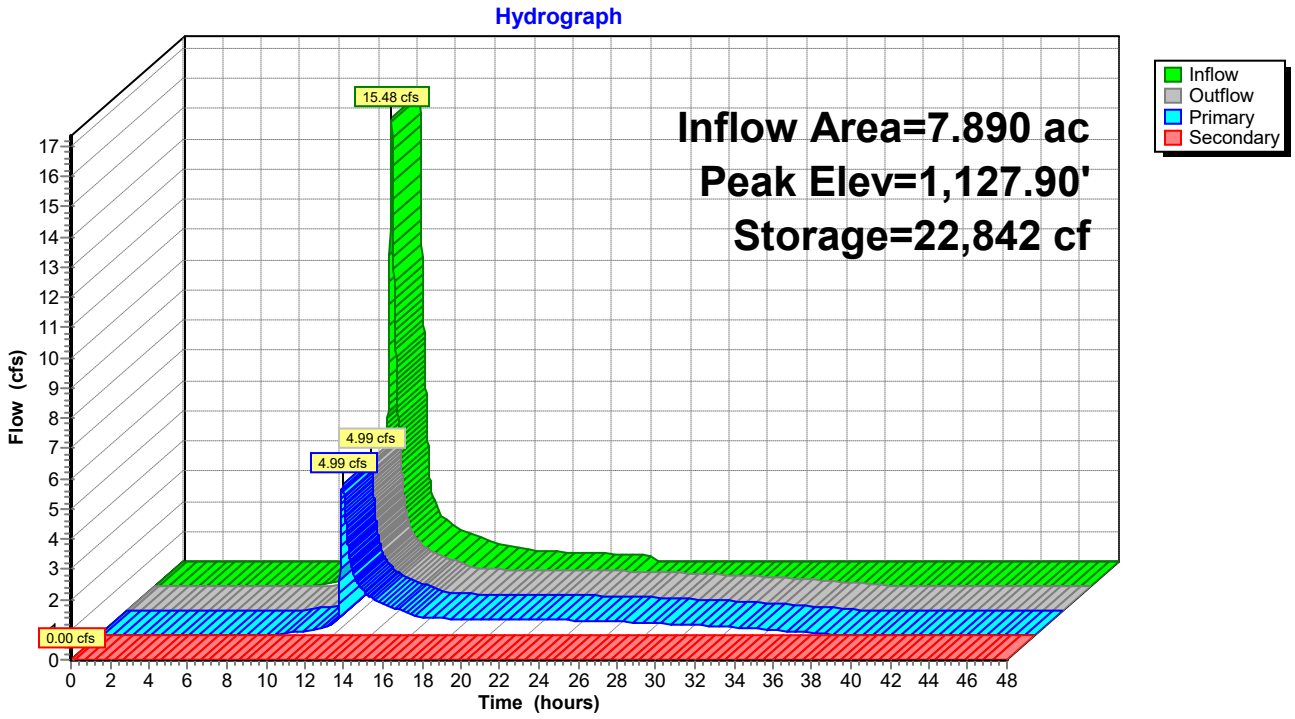
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,122.00	1,797	0	0
1,123.00	2,400	2,099	2,099
1,124.00	3,074	2,737	4,836
1,125.00	3,810	3,442	8,278
1,126.00	4,608	4,209	12,487
1,127.00	5,471	5,040	17,526
1,128.00	6,397	5,934	23,460
1,129.00	7,388	6,893	30,353
1,130.00	8,442	7,915	38,268

Device	Routing	Invert	Outlet Devices
#1	Primary	1,122.00'	**24.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,122.00' / 1,121.50' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,129.00'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,127.50'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,129.50'	**40.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,122.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.97 cfs @ 12.50 hrs HW=1,127.90' (Free Discharge)
└─**1=Culvert** (Passes 4.97 cfs of 33.47 cfs potential flow)
  ├─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  ├─**3=Sharp-Crested Rectangular Weir** (Weir Controls 4.39 cfs @ 2.26 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.57 cfs @ 11.69 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,122.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P3:



Summary for Pond P5:

Inflow Area = 1.680 ac, Inflow Depth = 1.87" for 2-YR STORM event
Inflow = 3.49 cfs @ 12.11 hrs, Volume= 0.261 af
Outflow = 0.32 cfs @ 13.29 hrs, Volume= 0.261 af, Atten= 91%, Lag= 71.0 min
Primary = 0.32 cfs @ 13.29 hrs, Volume= 0.261 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,141.80' @ 13.29 hrs Surf.Area= 3,768 sf Storage= 5,311 cf

Plug-Flow detention time= 201.9 min calculated for 0.261 af (100% of inflow)
Center-of-Mass det. time= 201.8 min (1,031.9 - 830.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,140.00'	10,517 cf	**Custom Stage Data (Prismatic)** Listed below

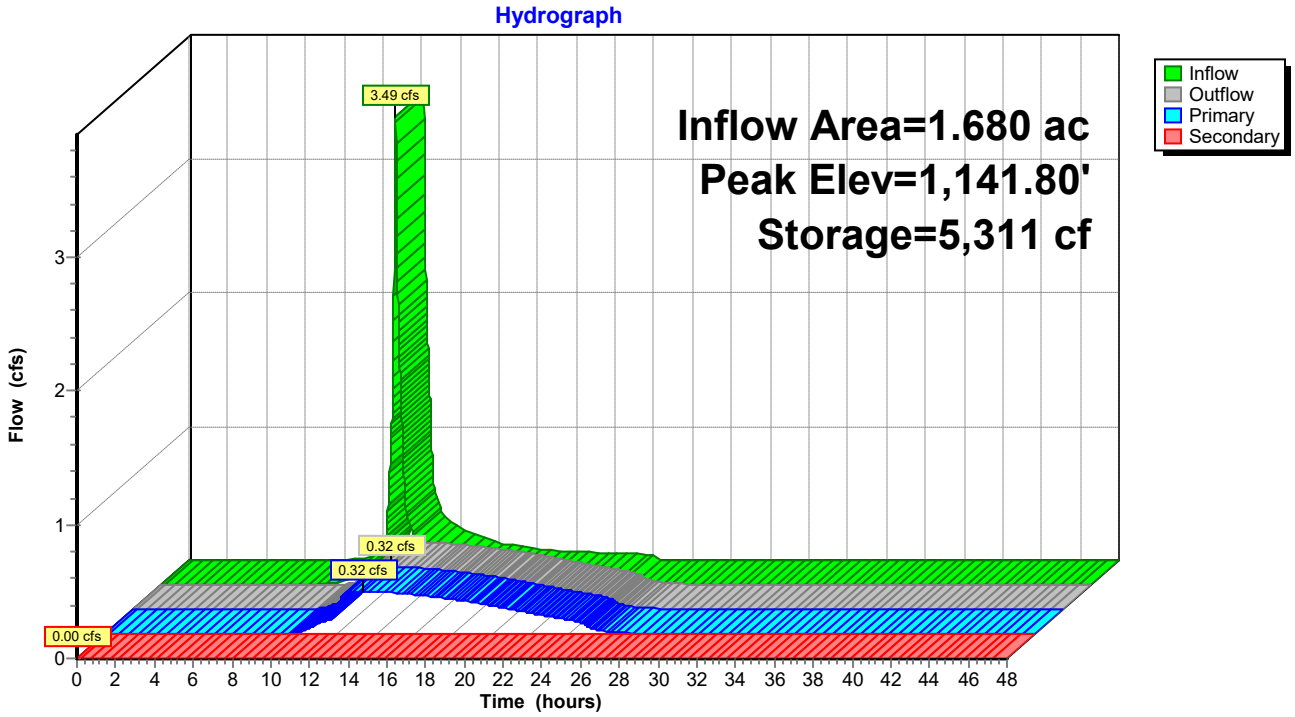
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,140.00	2,092	0	0
1,141.00	2,986	2,539	2,539
1,142.00	3,967	3,477	6,016
1,143.00	5,036	4,502	10,517

Device	Routing	Invert	Outlet Devices
#1	Primary	1,140.00'	**24.0" Round Culvert** L= 30.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,140.00' / 1,139.50' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,142.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,142.25'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,142.50'	**30.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,140.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.32 cfs @ 13.29 hrs HW=1,141.80' (Free Discharge)
└**1=Culvert** (Passes 0.32 cfs of 13.28 cfs potential flow)
  ├**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  ├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**5=Orifice/Grate** (Orifice Controls 0.32 cfs @ 6.46 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,140.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P5:


Hydrograph
Inflow Area=1.680 ac
Peak Elev=1,141.80'
Storage=5,311 cf
Inflow
Outflow
Primary
Secondary
3.49 cfs
0.32 cfs
0.32 cfs
0.00 cfs
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3

Summary for Pond P7:

Inflow Area = 4.070 ac, Inflow Depth = 1.72" for 2-YR STORM event
Inflow = 5.59 cfs @ 12.27 hrs, Volume= 0.582 af
Outflow = 0.37 cfs @ 15.65 hrs, Volume= 0.577 af, Atten= 93%, Lag= 202.7 min
Primary = 0.37 cfs @ 15.65 hrs, Volume= 0.577 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,149.61' @ 15.65 hrs Surf.Area= 6,968 sf Storage= 15,072 cf

Plug-Flow detention time= 515.4 min calculated for 0.577 af (99% of inflow)
Center-of-Mass det. time= 510.0 min (1,357.2 - 847.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,147.00'	44,832 cf	**Custom Stage Data (Prismatic)** Listed below

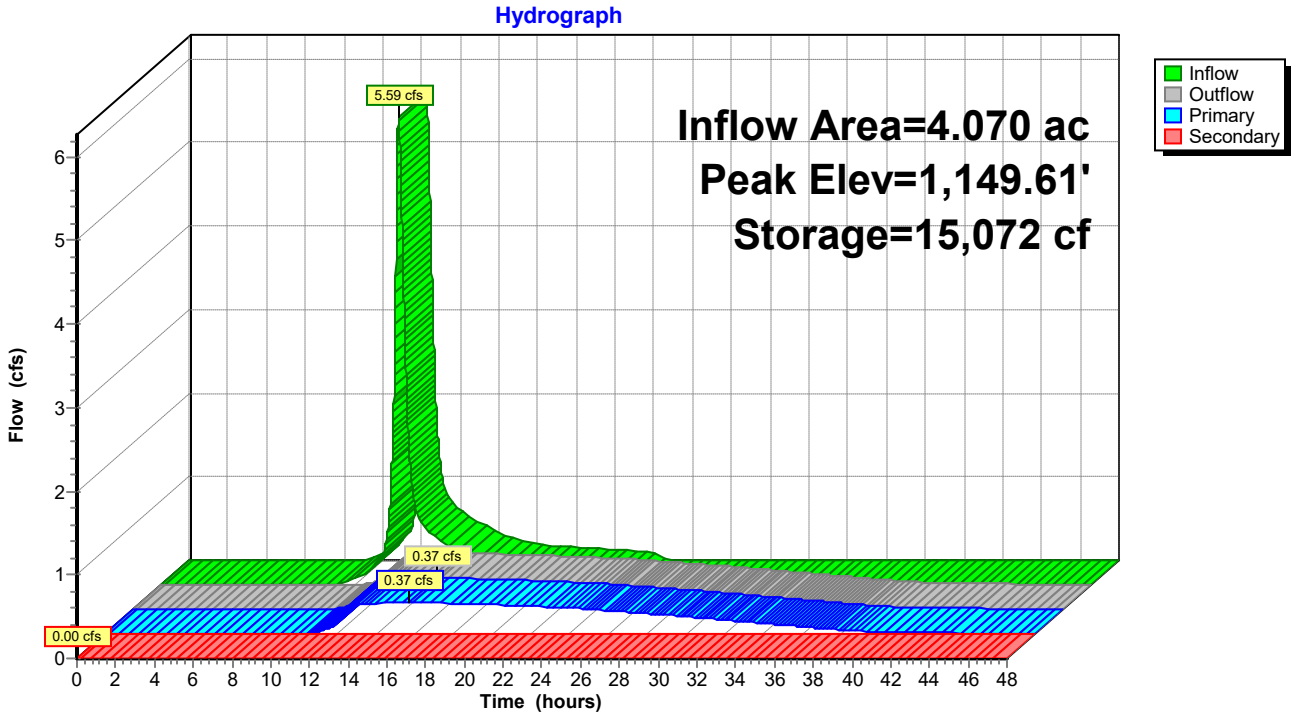
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,147.00	4,554	0	0
1,148.00	5,432	4,993	4,993
1,149.00	6,361	5,897	10,890
1,150.00	7,356	6,859	17,748
1,151.00	8,425	7,891	25,639
1,152.00	9,578	9,002	34,640
1,153.00	10,805	10,192	44,832

Device	Routing	Invert	Outlet Devices
#1	Primary	1,147.00'	**30.0" Round Culvert** L= 106.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,147.00' / 1,146.10' S= 0.0085 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	1,152.00'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,150.95'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,152.50'	**30.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,147.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.37 cfs @ 15.65 hrs HW=1,149.61' (Free Discharge)
└**1=Culvert** (Passes 0.37 cfs of 27.56 cfs potential flow)
├**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└**5=Orifice/Grate** (Orifice Controls 0.37 cfs @ 7.59 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,147.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P7:


Hydrograph
Inflow Area=4.070 ac
Peak Elev=1,149.61'
Storage=15,072 cf
Inflow
Outflow
Primary
Secondary
5.59 cfs
0.37 cfs
0.37 cfs
0.00 cfs
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6

Summary for Pond P8/10:

Inflow Area = 28.040 ac, Inflow Depth = 1.87" for 2-YR STORM event
Inflow = 48.07 cfs @ 12.19 hrs, Volume= 4.363 af
Outflow = 16.50 cfs @ 12.60 hrs, Volume= 3.609 af, Atten= 66%, Lag= 24.3 min
Primary = 16.50 cfs @ 12.60 hrs, Volume= 3.609 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,112.14' @ 12.60 hrs Storage= 84,226 cf

Plug-Flow detention time= 402.0 min calculated for 3.609 af (83% of inflow)
Center-of-Mass det. time= 330.6 min (1,166.4 - 835.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,108.00'	166,405 cf	**Custom Stage Data** Listed below

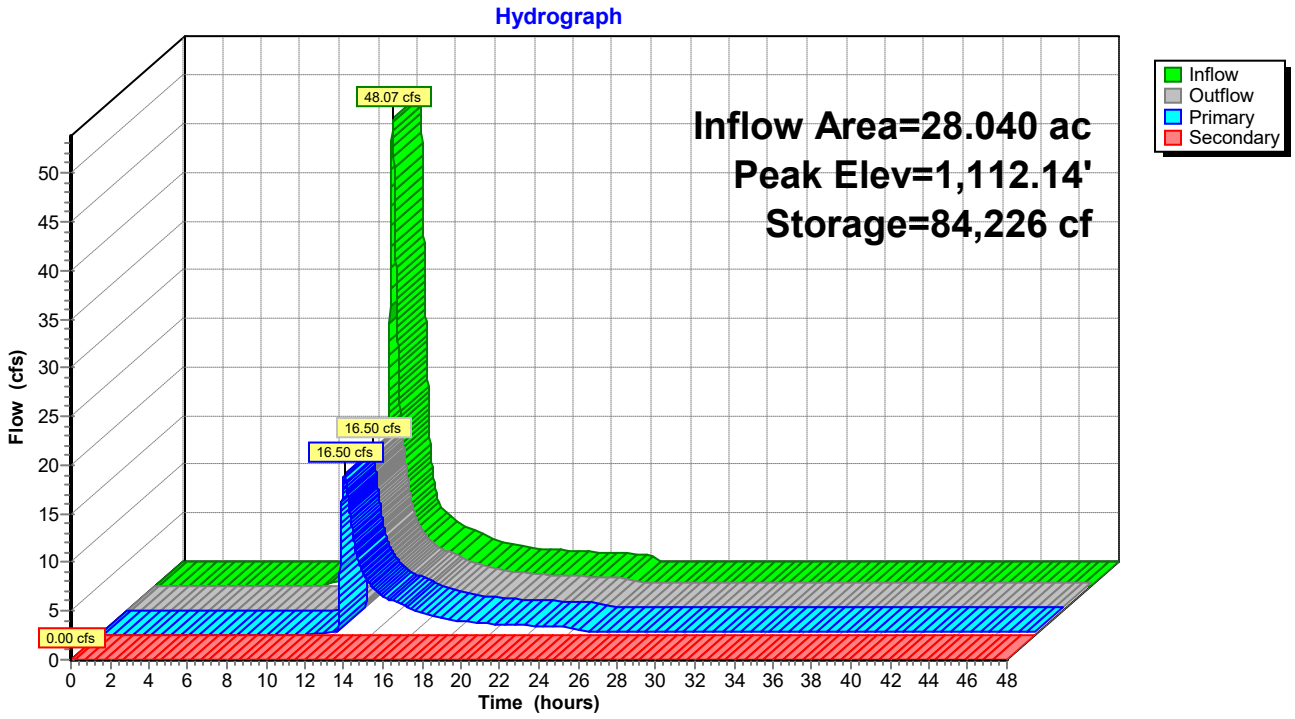
Elevation (feet)	Cum.Store (cubic-feet)
1,108.00	0
1,109.00	16,747
1,110.00	35,732
1,111.00	57,018
1,112.00	80,666
1,113.00	106,738
1,114.00	135,298
1,115.00	166,405

Device	Routing	Invert	Outlet Devices
#1	Primary	1,108.00'	**48.0" Round Culvert** L= 44.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,108.00' / 1,107.50' S= 0.0114 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,113.00'	**19.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,111.25'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,114.25'	**50.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,108.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.49 cfs @ 12.60 hrs HW=1,112.14' (Free Discharge)
└─**1=Culvert** (Passes 16.49 cfs of 81.09 cfs potential flow)
  ├─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  ├─**3=Sharp-Crested Rectangular Weir** (Weir Controls 16.02 cfs @ 3.75 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.47 cfs @ 9.64 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,108.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P8/10:



Summary for Pond P9:

Inflow Area = 6.810 ac, Inflow Depth = 1.87" for 2-YR STORM event
Inflow = 10.47 cfs @ 12.25 hrs, Volume= 1.060 af
Outflow = 2.47 cfs @ 12.85 hrs, Volume= 1.026 af, Atten= 76%, Lag= 35.8 min
Primary = 2.47 cfs @ 12.85 hrs, Volume= 1.026 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,179.25' @ 12.85 hrs Surf.Area= 12,760 sf Storage= 22,542 cf

Plug-Flow detention time= 520.7 min calculated for 1.026 af (97% of inflow)
Center-of-Mass det. time= 502.8 min (1,342.7 - 839.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,177.00'	48,733 cf	**Custom Stage Data (Prismatic)** Listed below

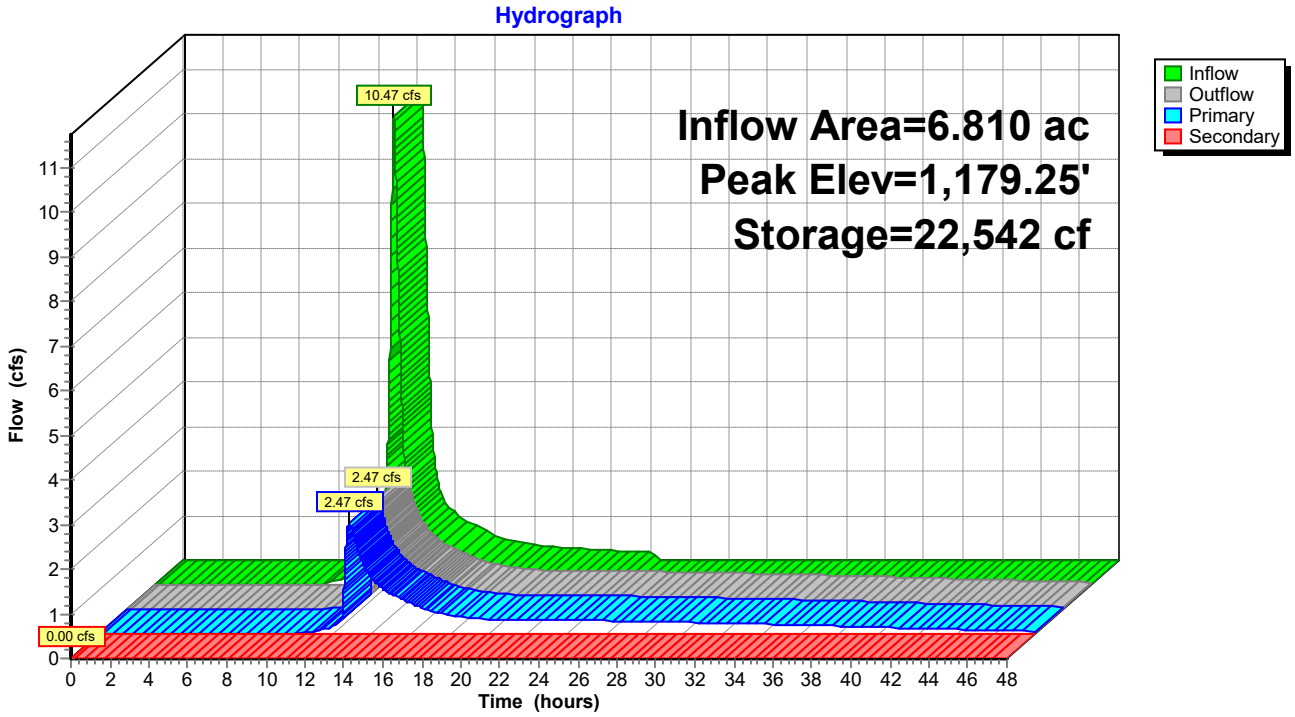
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,177.00	7,155	0	0
1,178.00	9,581	8,368	8,368
1,179.00	12,108	10,845	19,213
1,180.00	14,735	13,422	32,634
1,181.00	17,463	16,099	48,733

Device	Routing	Invert	Outlet Devices
#1	Primary	1,177.00'	**24.0" Round Culvert** L= 64.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,177.00' / 1,176.50' S= 0.0078 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,179.50'	**19.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,179.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,180.00'	**20.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,177.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.47 cfs @ 12.85 hrs HW=1,179.25' (Free Discharge)
└**1=Culvert** (Passes 2.47 cfs of 16.43 cfs potential flow)
├**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
├**3=Sharp-Crested Rectangular Weir** (Weir Controls 2.12 cfs @ 1.73 fps)
└**5=Orifice/Grate** (Orifice Controls 0.34 cfs @ 7.02 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,177.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P9:


Hydrograph
Inflow Area=6.810 ac
Peak Elev=1,179.25'
Storage=22,542 cf
10.47 cfs
2.47 cfs
2.47 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8 9 10 11

Summary for Pond WS11:

Inflow Area = 3.190 ac, Inflow Depth = 1.31" for 2-YR STORM event
Inflow = 3.09 cfs @ 12.31 hrs, Volume= 0.348 af
Outflow = 0.20 cfs @ 16.25 hrs, Volume= 0.087 af, Atten= 93%, Lag= 236.3 min
Primary = 0.20 cfs @ 16.25 hrs, Volume= 0.087 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 1,191.02' @ 16.25 hrs Surf.Area= 7,547 sf Storage= 11,595 cf

Plug-Flow detention time= 442.5 min calculated for 0.086 af (25% of inflow)
Center-of-Mass det. time= 300.1 min (1,167.8 - 867.6)

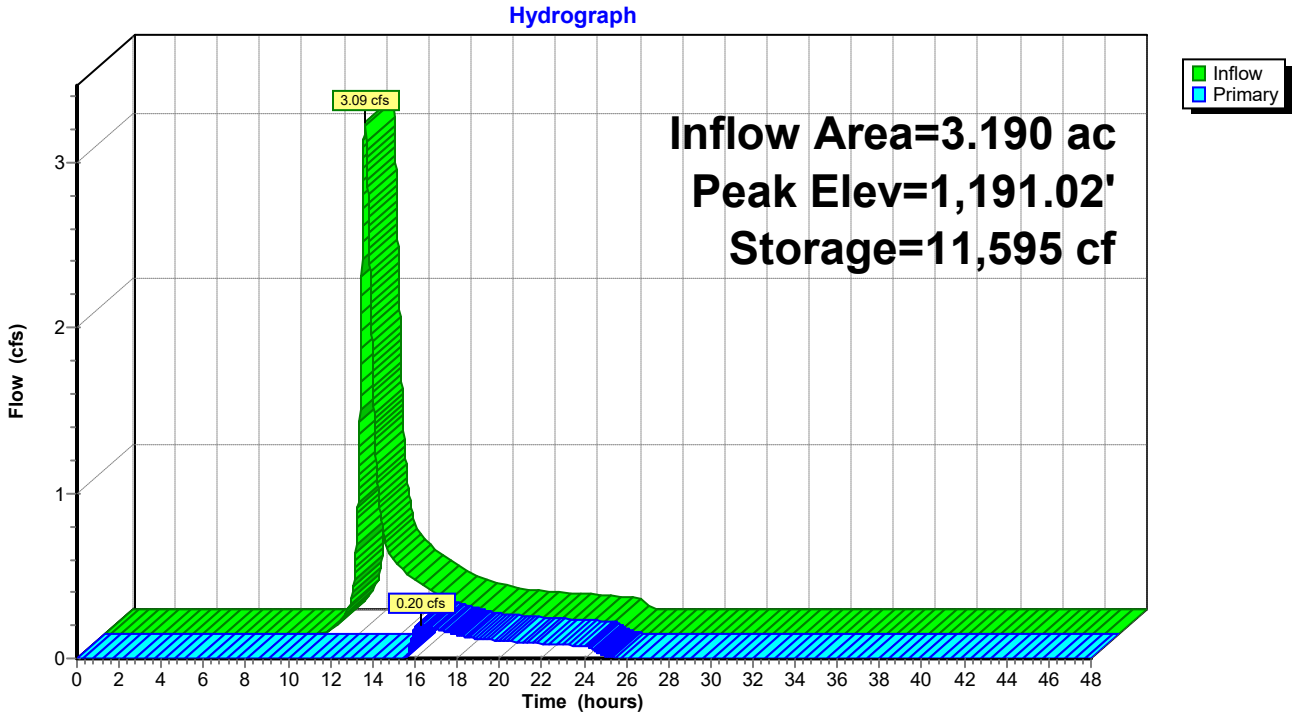
Volume	Invert	Avail.Storage	Storage Description
#1	1,188.00'	25,568 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,188.00	220	0	0
1,189.00	2,537	1,379	1,379
1,190.00	4,998	3,768	5,146
1,191.00	7,486	6,242	11,388
1,192.00	10,087	8,787	20,175
1,192.50	11,488	5,394	25,568

Device	Routing	Invert	Outlet Devices
#1	Primary	1,191.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Device 1	1,189.80'	**90.0 deg x 4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)

Primary OutFlow Max=0.17 cfs @ 16.25 hrs HW=1,191.02' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.17 cfs @ 0.37 fps)
↑—**2=Sharp-Crested Vee/Trap Weir** (Passes 0.17 cfs of 6.51 cfs potential flow)

Pond WS11:


Hydrograph
Inflow
Primary
3.09 cfs
0.20 cfs
Inflow Area=3.190 ac
Peak Elev=1,191.02'
Storage=11,595 cf
Flow (cfs)
0
1
2
3
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
Time (hours)

Summary for Pond WS14:

Inflow Area = 4.600 ac, Inflow Depth = 1.95" for 2-YR STORM event
Inflow = 8.02 cfs @ 12.20 hrs, Volume= 0.746 af
Outflow = 6.61 cfs @ 12.31 hrs, Volume= 0.545 af, Atten= 17%, Lag= 6.3 min
Primary = 6.61 cfs @ 12.31 hrs, Volume= 0.545 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,147.76' @ 12.31 hrs Surf.Area= 5,843 sf Storage= 10,166 cf

Plug-Flow detention time= 148.5 min calculated for 0.545 af (73% of inflow)
Center-of-Mass det. time= 57.0 min (890.4 - 833.4)

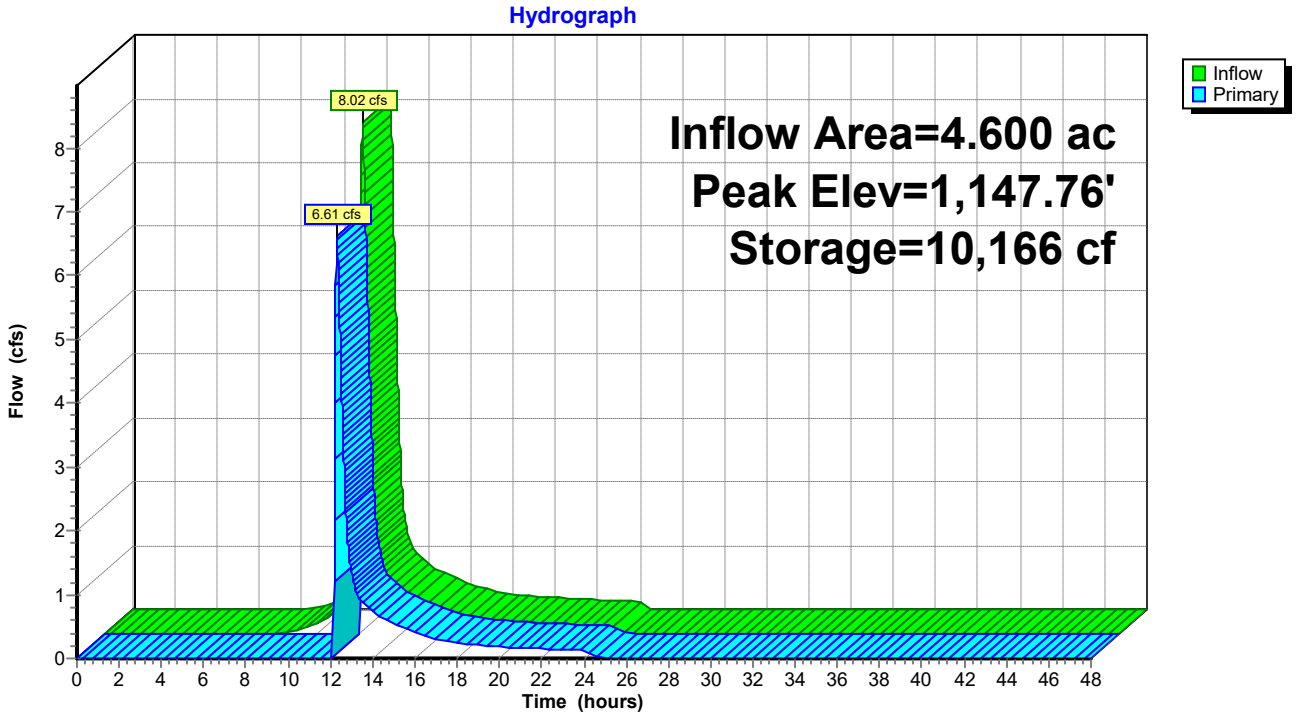
Volume	Invert	Avail.Storage	Storage Description
#1	1,145.00'	14,985 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,145.00	724	0	0
1,146.00	3,306	2,015	2,015
1,147.00	4,678	3,992	6,007
1,148.00	6,202	5,440	11,447
1,148.50	7,948	3,538	14,985

Device	Routing	Invert	Outlet Devices
#1	Device 2	1,146.80'	**90.0 deg x 4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)
#2	Primary	1,147.50'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=6.61 cfs @ 12.31 hrs HW=1,147.76' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 6.61 cfs @ 1.25 fps)
↑—**1=Sharp-Crested Vee/Trap Weir** (Passes 6.61 cfs of 11.23 cfs potential flow)

Pond WS14:


Hydrograph
Inflow
Primary
8.02 cfs
6.61 cfs
Inflow Area=4.600 ac
Peak Elev=1,147.76'
Storage=10,166 cf
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

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 1: Runoff Area=1.280 ac Runoff Depth=3.81"
Tc=9.1 min CN=83 Runoff=5.10 cfs 0.407 af

Subcatchment 2a: Runoff Area=3.850 ac Runoff Depth=3.61"
Tc=9.7 min CN=81 Runoff=14.33 cfs 1.159 af

Subcatchment 2b: Runoff Area=4.020 ac Runoff Depth=3.12"
Tc=13.9 min CN=76 Runoff=11.47 cfs 1.046 af

Subcatchment 3: Runoff Area=7.890 ac Runoff Depth=3.81"
Tc=9.2 min CN=83 Runoff=31.37 cfs 2.508 af

Subcatchment 5: Runoff Area=1.680 ac Runoff Depth=3.81"
Tc=7.5 min CN=83 Runoff=7.07 cfs 0.534 af

Subcatchment 7: Runoff Area=4.070 ac Runoff Depth=3.61"
Tc=19.2 min CN=81 Runoff=11.80 cfs 1.225 af

Subcatchment 8/10: Runoff Area=28.040 ac Runoff Depth=3.81"
Tc=13.7 min CN=83 Runoff=97.59 cfs 8.912 af

Subcatchment 9: Runoff Area=6.810 ac Runoff Depth=3.81"
Tc=18.1 min CN=83 Runoff=21.28 cfs 2.164 af

Subcatchment 11: Runoff Area=3.190 ac Runoff Depth=3.03"
Tc=21.4 min CN=75 Runoff=7.42 cfs 0.805 af

Subcatchment 12: Runoff Area=1.930 ac Runoff Depth=3.71"
Tc=8.6 min CN=82 Runoff=7.63 cfs 0.597 af

Subcatchment 14: Runoff Area=4.600 ac Runoff Depth=3.92"
Tc=14.6 min CN=84 Runoff=15.99 cfs 1.501 af

Subcatchment 15: Runoff Area=1.930 ac Runoff Depth=3.61"
Tc=13.7 min CN=81 Runoff=6.39 cfs 0.581 af

Pond P1: Peak Elev=1,125.35' Storage=4,290 cf Inflow=5.10 cfs 0.407 af
Primary=4.44 cfs 0.407 af Secondary=0.00 cfs 0.000 af Outflow=4.44 cfs 0.407 af

Pond P12: Peak Elev=1,187.51' Storage=5,969 cf Inflow=7.63 cfs 0.597 af
Primary=0.20 cfs 0.166 af Secondary=7.01 cfs 0.352 af Outflow=7.21 cfs 0.518 af

Pond P2a: Peak Elev=1,085.45' Storage=8,430 cf Inflow=14.33 cfs 1.159 af
Primary=8.71 cfs 1.056 af Secondary=4.53 cfs 0.053 af Outflow=13.24 cfs 1.109 af

Pond P2b: Peak Elev=1,040.97' Storage=10,555 cf Inflow=11.47 cfs 1.046 af
Primary=0.29 cfs 0.342 af Secondary=10.33 cfs 0.621 af Outflow=10.61 cfs 0.963 af

Pond P3: Peak Elev=1,128.70' Storage=28,308 cf Inflow=31.37 cfs 2.508 af
Primary=27.21 cfs 2.508 af Secondary=0.00 cfs 0.000 af Outflow=27.21 cfs 2.508 af

Pond P5: Peak Elev=1,142.33' Storage=7,487 cf Inflow=7.07 cfs 0.534 af
Primary=4.41 cfs 0.534 af Secondary=0.00 cfs 0.000 af Outflow=4.41 cfs 0.534 af

Pond P7: Peak Elev=1,151.21' Storage=27,499 cf Inflow=11.80 cfs 1.225 af
Primary=2.72 cfs 1.211 af Secondary=0.00 cfs 0.000 af Outflow=2.72 cfs 1.211 af

Pond P8/10: Peak Elev=1,113.30' Storage=115,384 cf Inflow=97.59 cfs 8.912 af
Primary=77.98 cfs 8.147 af Secondary=0.00 cfs 0.000 af Outflow=77.98 cfs 8.147 af

Pond P9: Peak Elev=1,179.72' Storage=28,829 cf Inflow=21.28 cfs 2.164 af
Primary=18.29 cfs 2.123 af Secondary=0.00 cfs 0.000 af Outflow=18.29 cfs 2.123 af

Pond WS11: Peak Elev=1,191.22' Storage=13,298 cf Inflow=7.42 cfs 0.805 af
Outflow=4.88 cfs 0.544 af

Pond WS14: Peak Elev=1,147.95' Storage=11,187 cf Inflow=15.99 cfs 1.501 af
Outflow=15.69 cfs 1.301 af

Total Runoff Area = 69.290 ac Runoff Volume = 21.438 af Average Runoff Depth = 3.71"

Summary for Subcatchment 1:

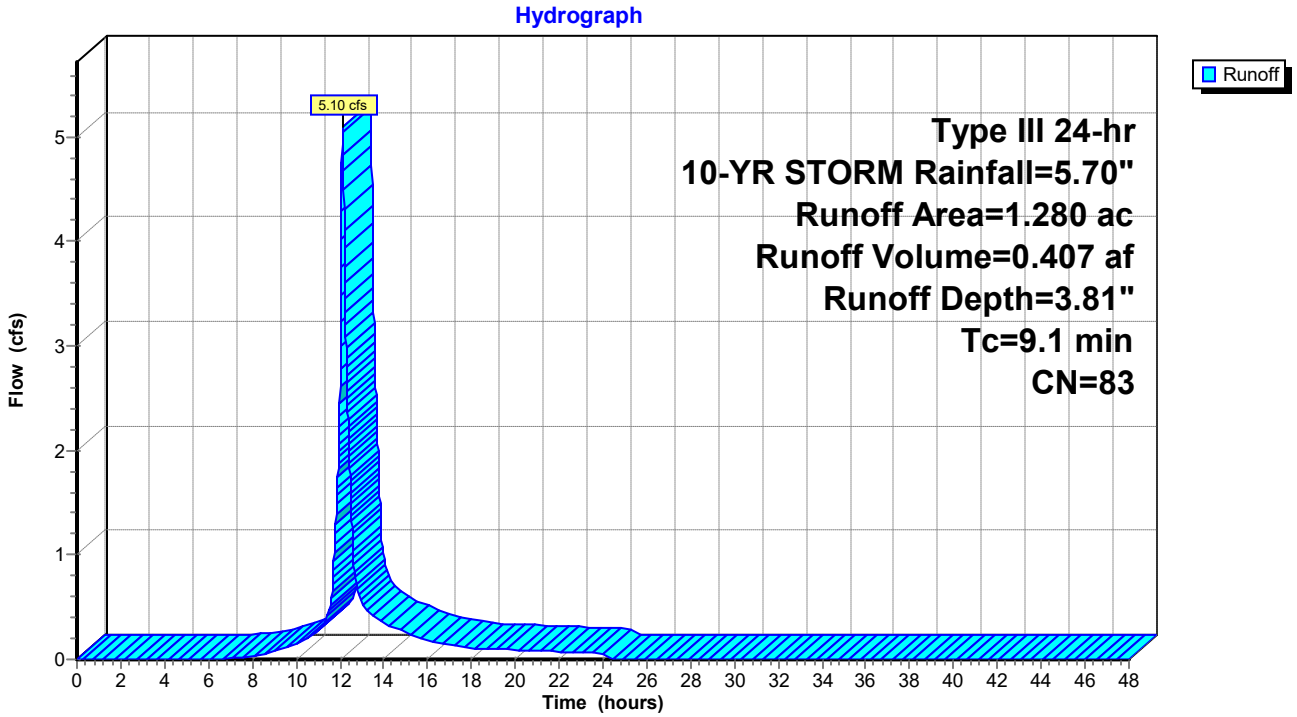
Runoff = 5.10 cfs @ 12.13 hrs, Volume= 0.407 af, Depth= 3.81"
Routed to Pond P1 :

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 STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	1.280	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

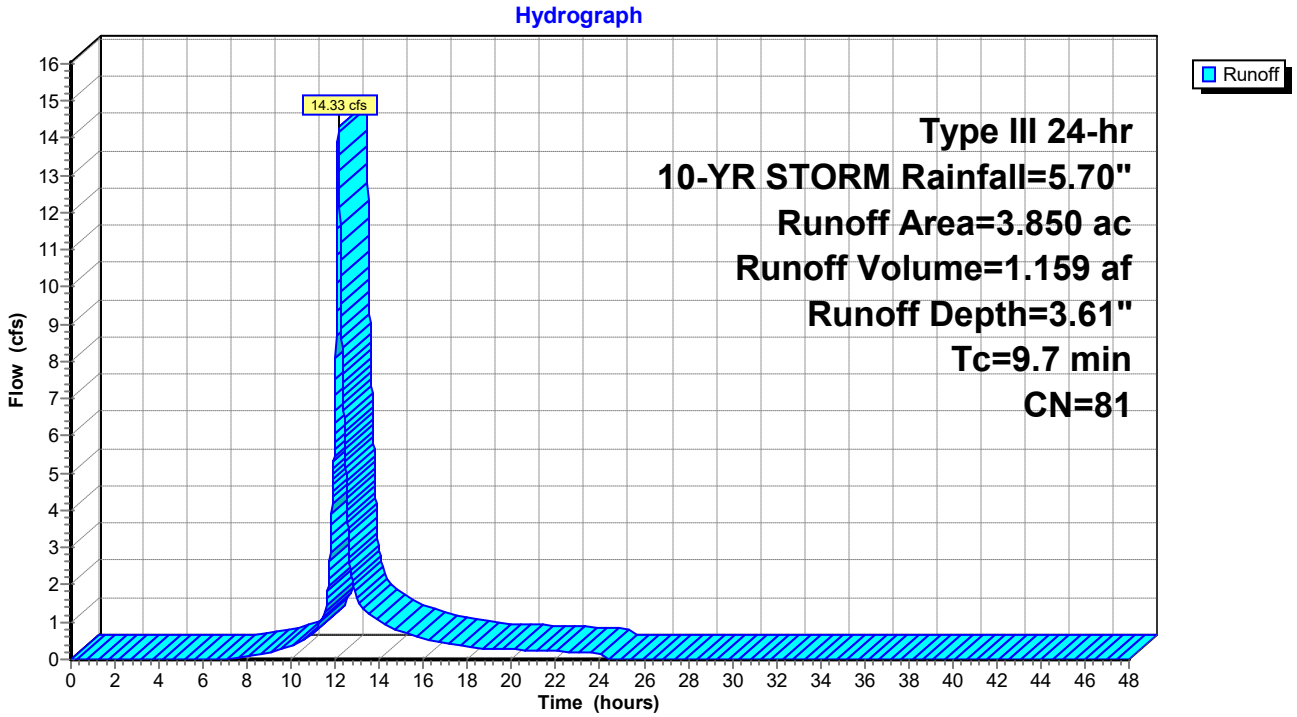
Runoff = 14.33 cfs @ 12.13 hrs, Volume= 1.159 af, Depth= 3.61"
Routed to Pond P2a :

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 STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	3.850	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

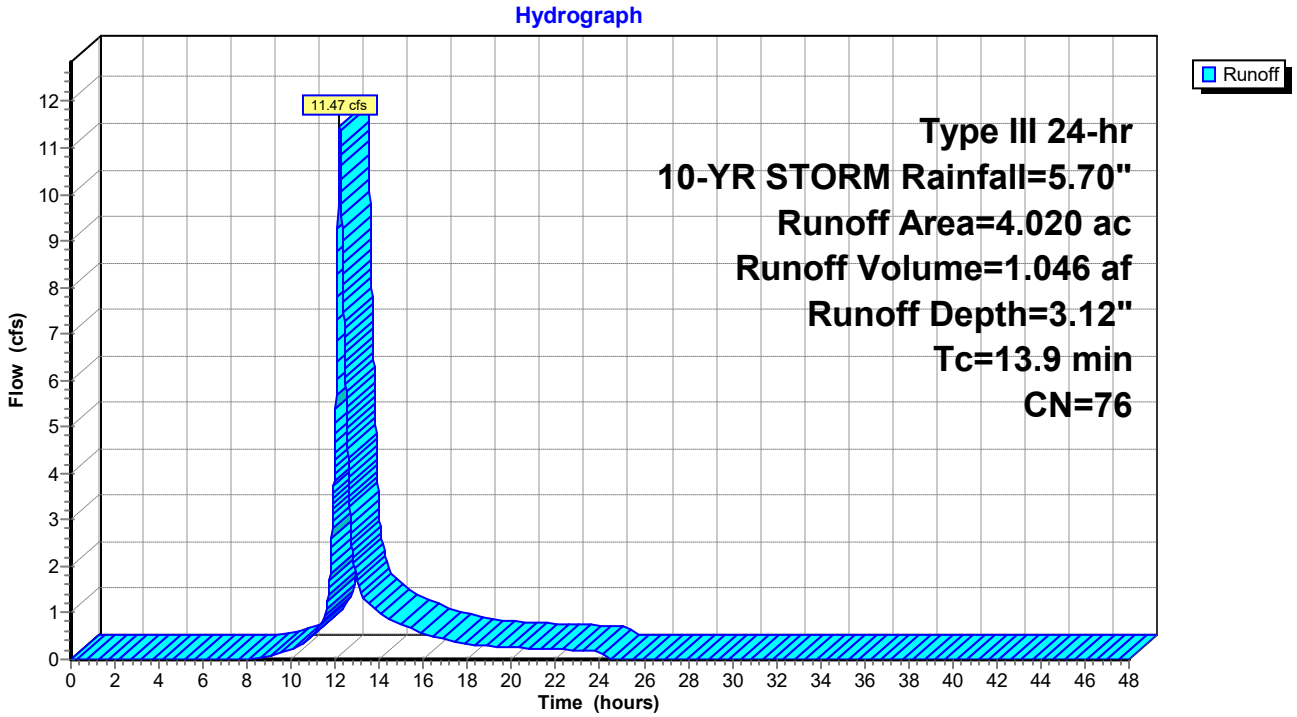
Runoff = 11.47 cfs @ 12.19 hrs, Volume= 1.046 af, Depth= 3.12"
Routed to Pond P2b :

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 STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	4.020	76	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

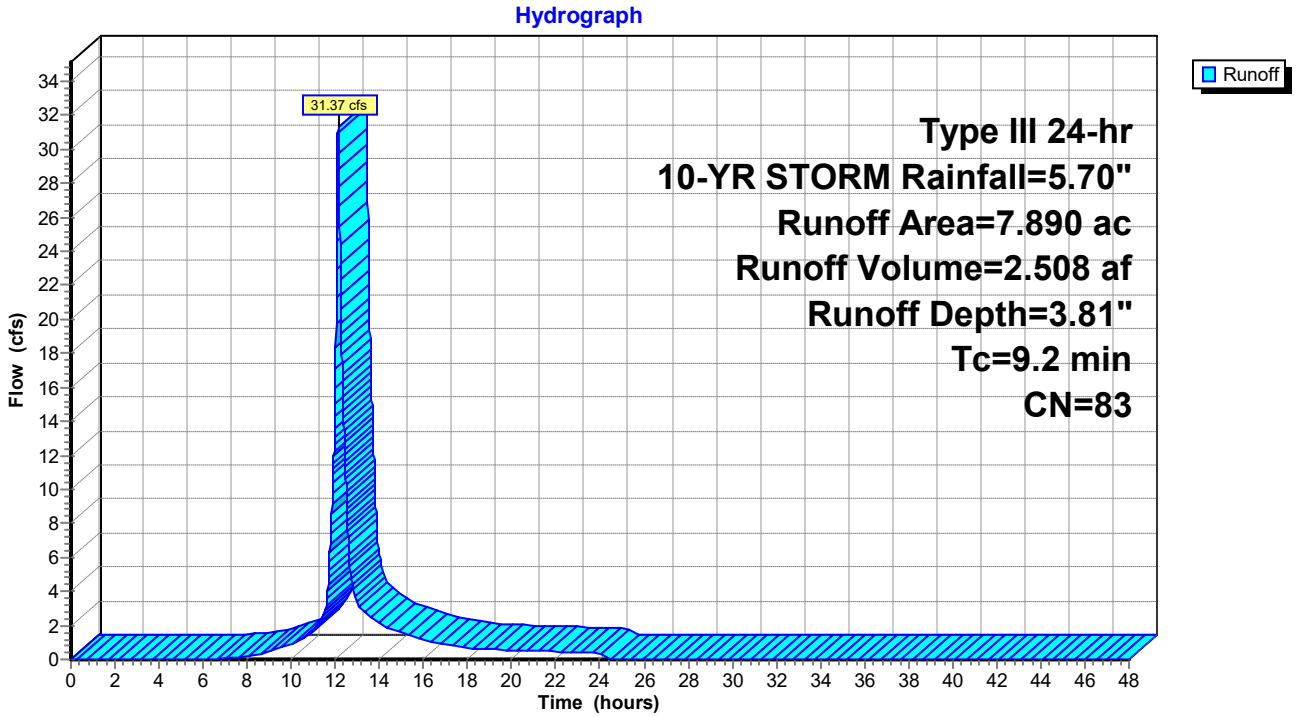
Runoff = 31.37 cfs @ 12.13 hrs, Volume= 2.508 af, Depth= 3.81"
Routed to Pond P3 :

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 STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	7.890	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 5:

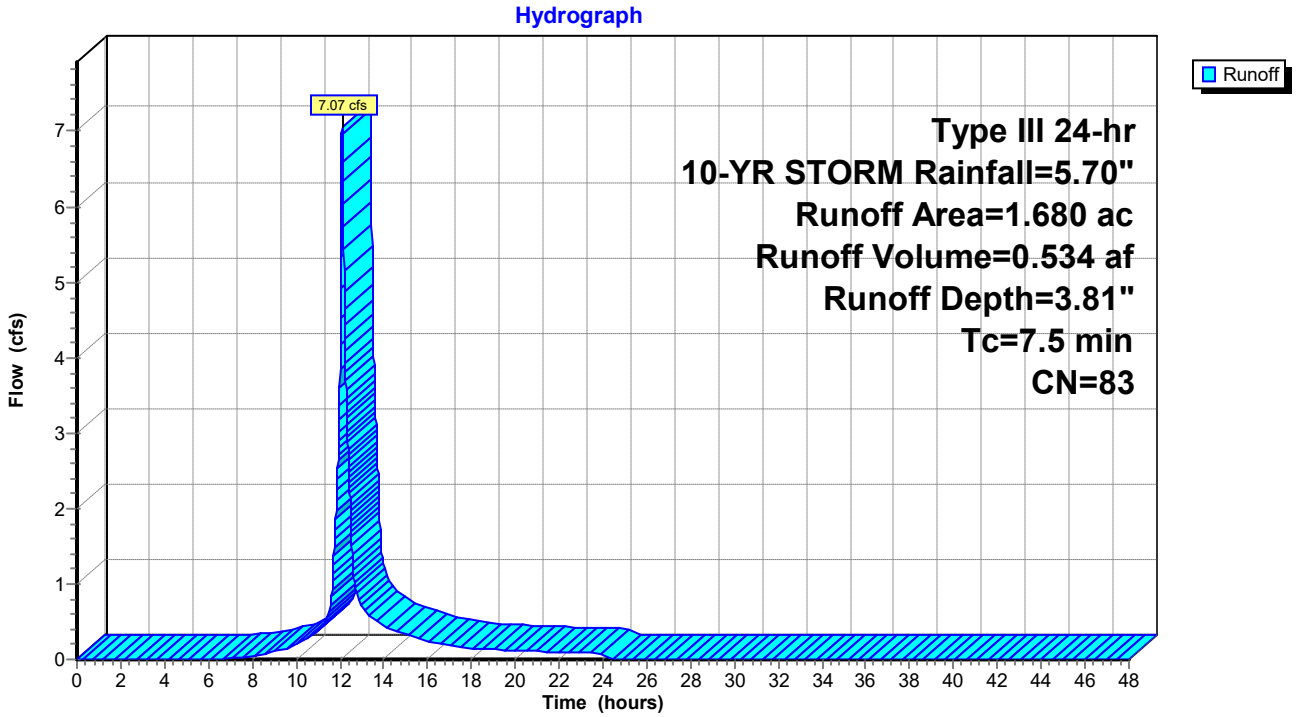
Runoff = 7.07 cfs @ 12.11 hrs, Volume= 0.534 af, Depth= 3.81"
Routed to Pond P5 :

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 STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	1.680	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

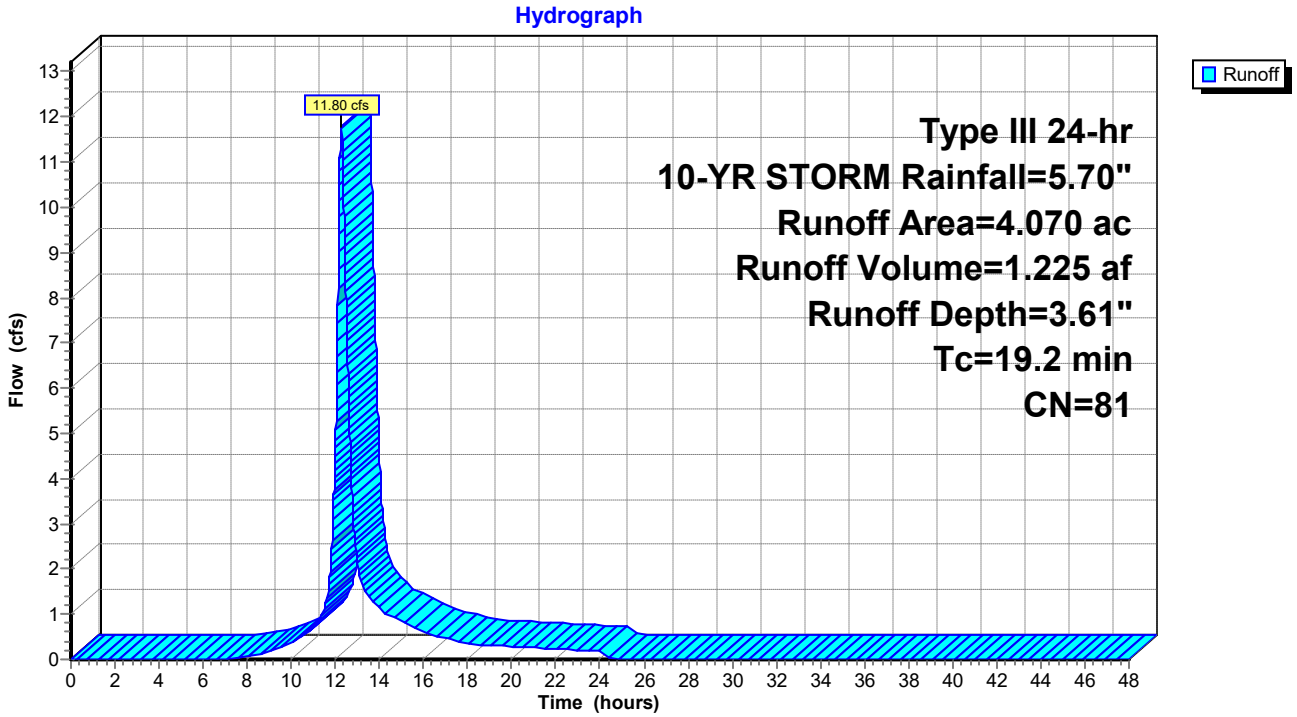
Runoff = 11.80 cfs @ 12.26 hrs, Volume= 1.225 af, Depth= 3.61"
Routed to Pond P7 :

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 STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	4.070	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8/10:

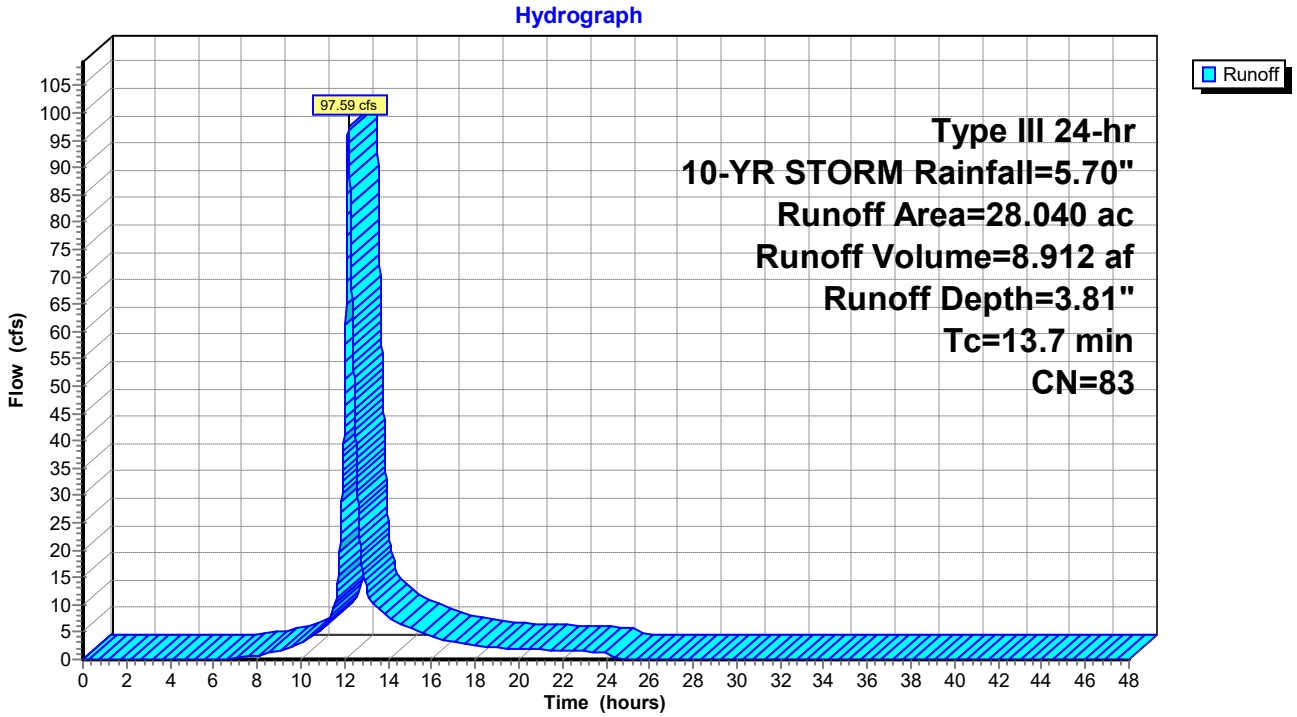
Runoff = 97.59 cfs @ 12.19 hrs, Volume= 8.912 af, Depth= 3.81"
Routed to Pond P8/10 :

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 STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	28.040	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 8/10:



Summary for Subcatchment 9:

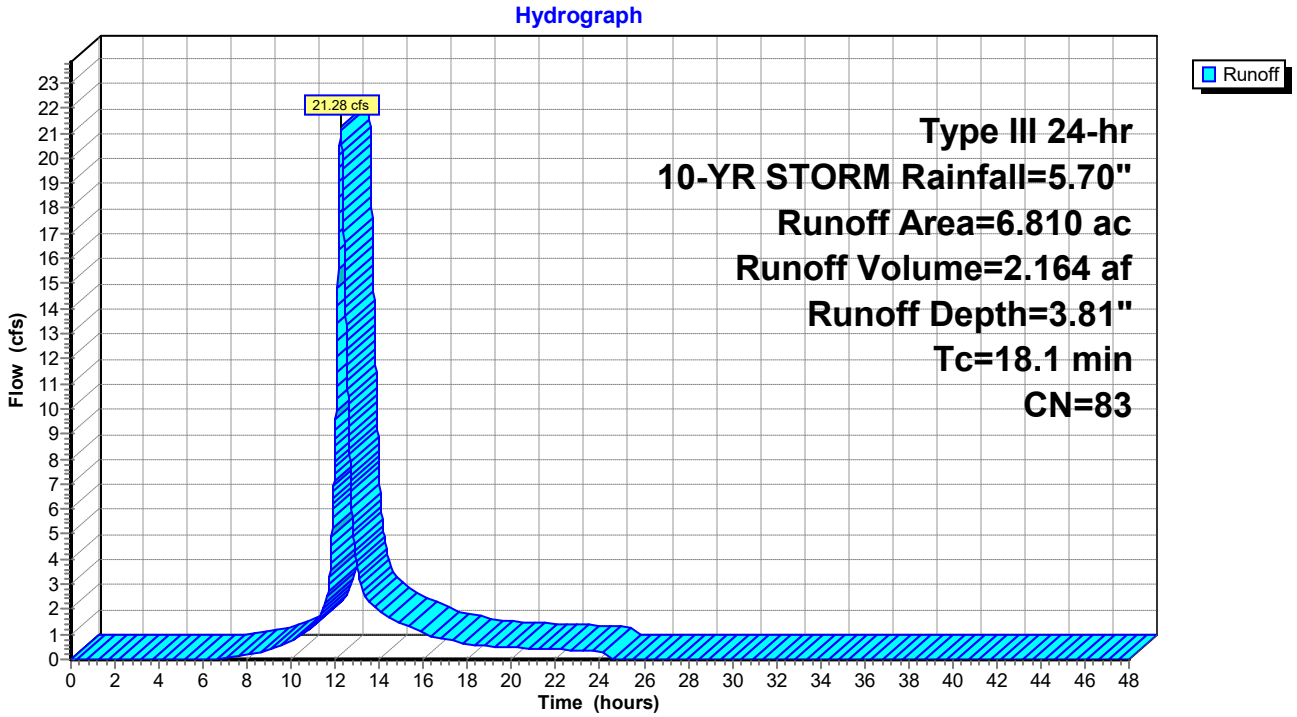
Runoff = 21.28 cfs @ 12.25 hrs, Volume= 2.164 af, Depth= 3.81"
Routed to Pond P9 :

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 STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	6.810	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

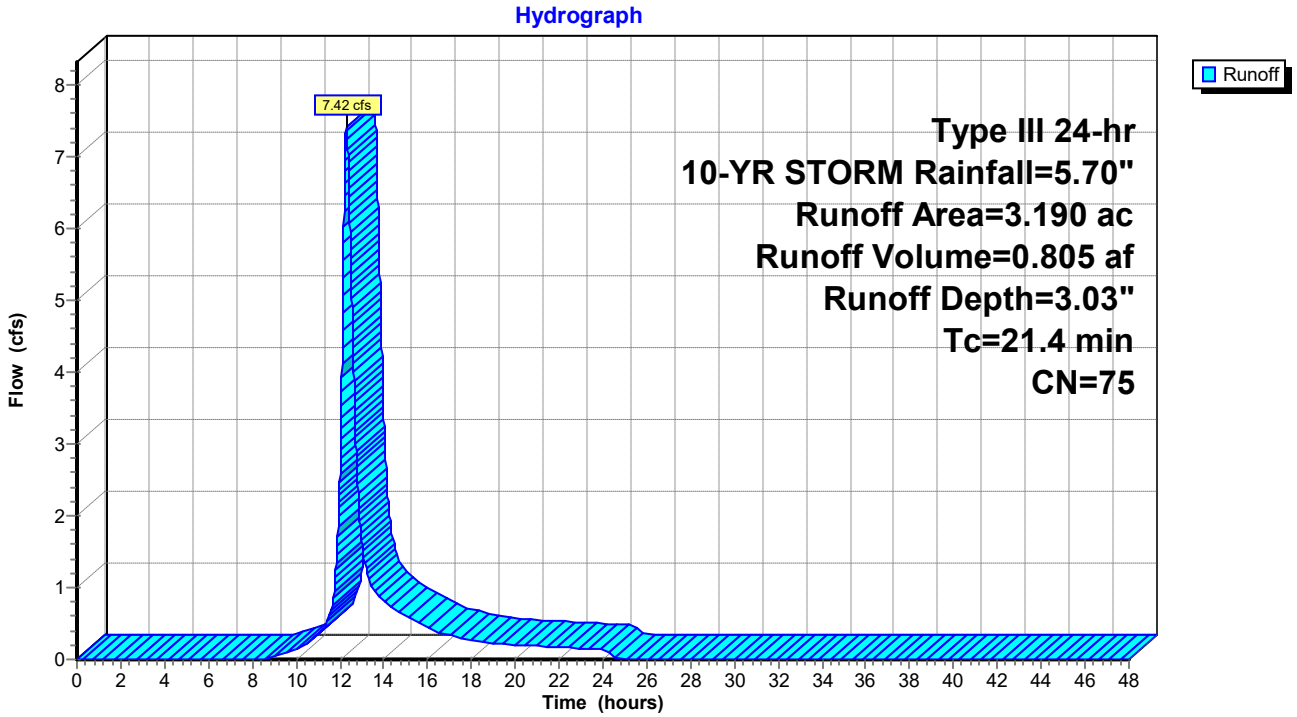
Runoff = 7.42 cfs @ 12.29 hrs, Volume= 0.805 af, Depth= 3.03"
Routed to Pond WS11 :

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 STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	3.190	75	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

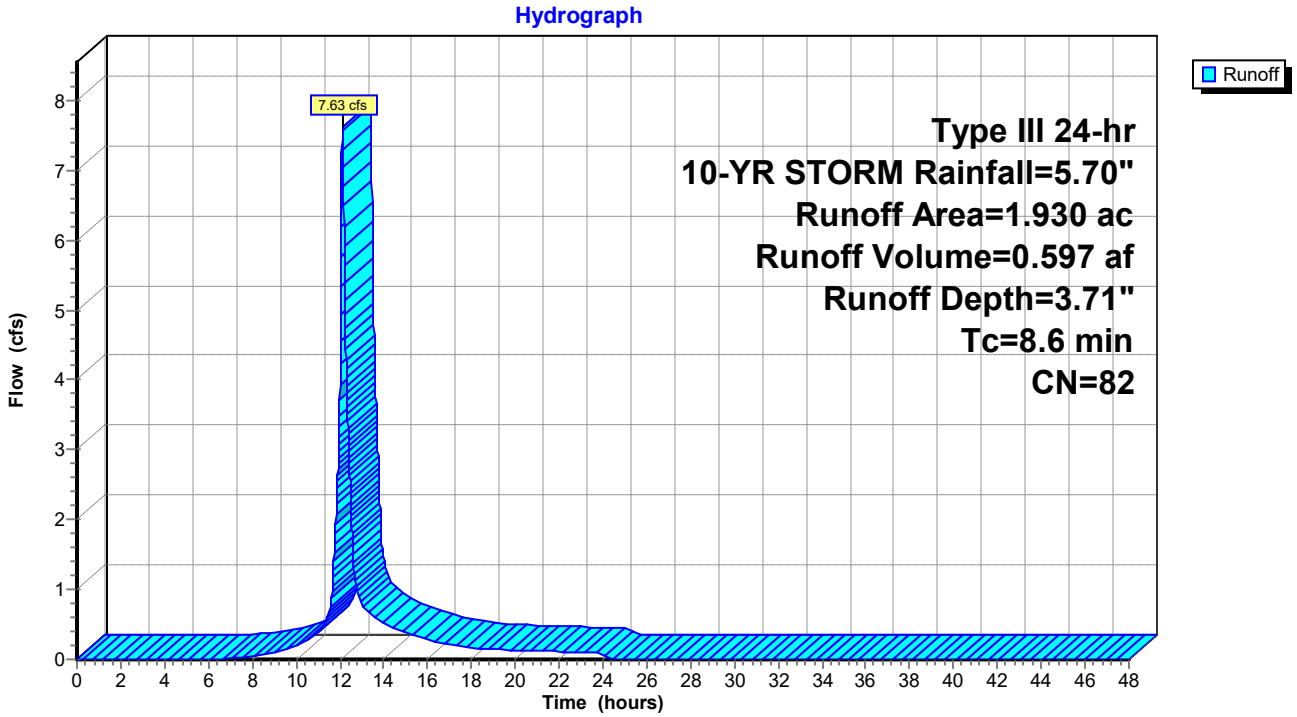
Runoff = 7.63 cfs @ 12.12 hrs, Volume= 0.597 af, Depth= 3.71"
Routed to Pond P12 :

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 STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	1.930	82	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 14:

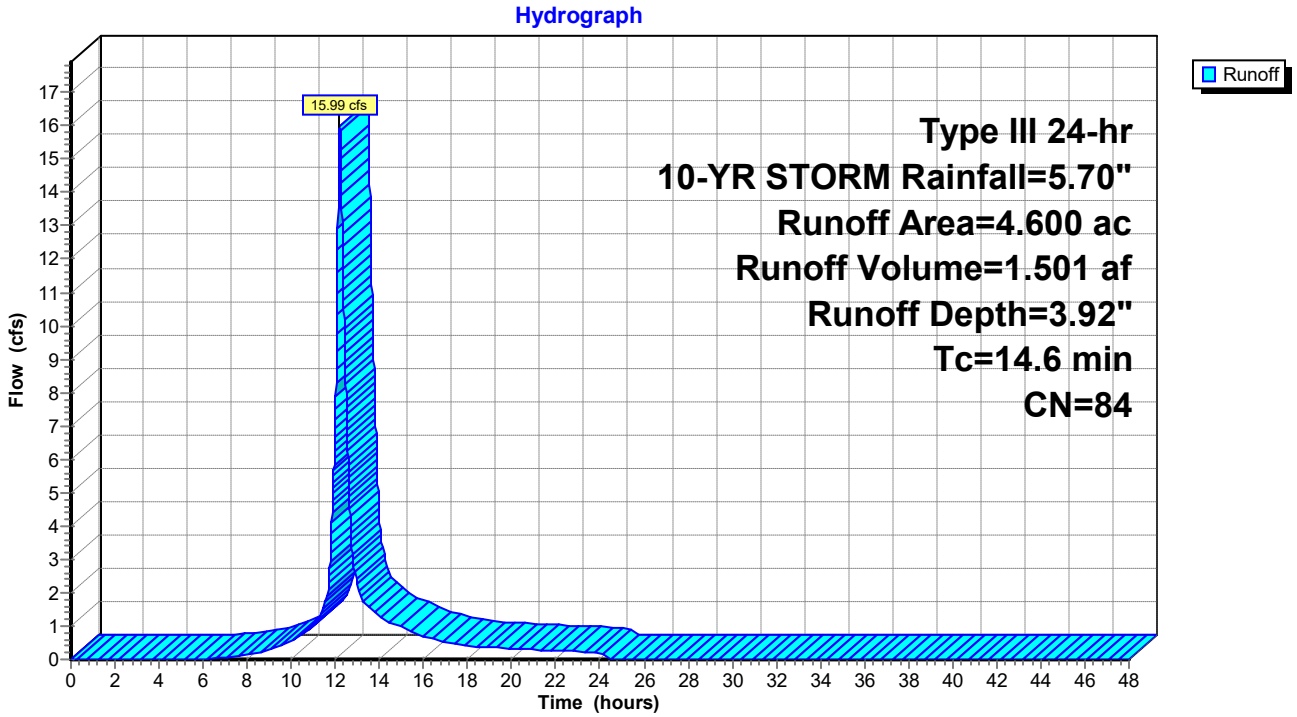
Runoff = 15.99 cfs @ 12.20 hrs, Volume= 1.501 af, Depth= 3.92"
Routed to Pond WS14 :

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 STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	4.600	84	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

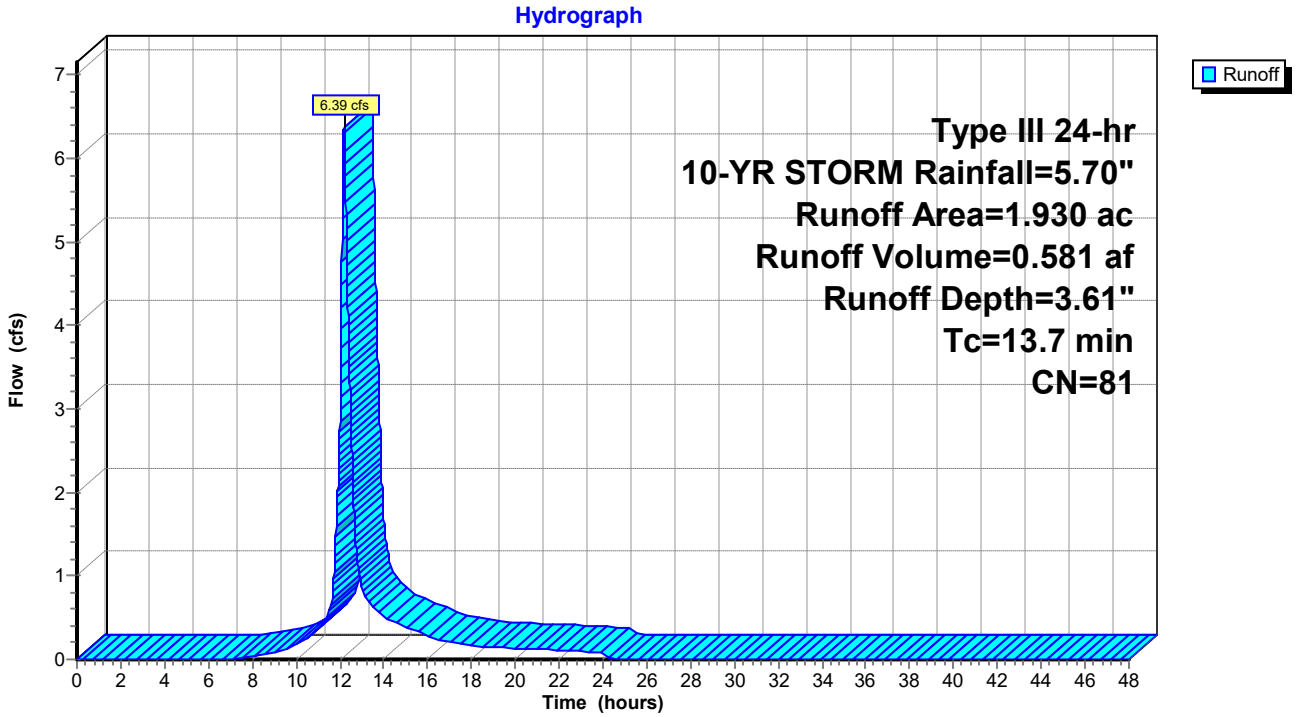
Runoff = 6.39 cfs @ 12.19 hrs, Volume= 0.581 af, Depth= 3.61"
Routed to nonexistent node 6L

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 STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	1.930	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:



Summary for Pond P1:

Inflow Area = 1.280 ac, Inflow Depth = 3.81" for 10-YR STORM event
Inflow = 5.10 cfs @ 12.13 hrs, Volume= 0.407 af
Outflow = 4.44 cfs @ 12.18 hrs, Volume= 0.407 af, Atten= 13%, Lag= 3.5 min
Primary = 4.44 cfs @ 12.18 hrs, Volume= 0.407 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,125.35' @ 12.18 hrs Surf.Area= 2,392 sf Storage= 4,290 cf

Plug-Flow detention time= 86.4 min calculated for 0.407 af (100% of inflow)
Center-of-Mass det. time= 86.5 min (897.6 - 811.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,123.00'	5,895 cf	**Custom Stage Data (Prismatic)** Listed below

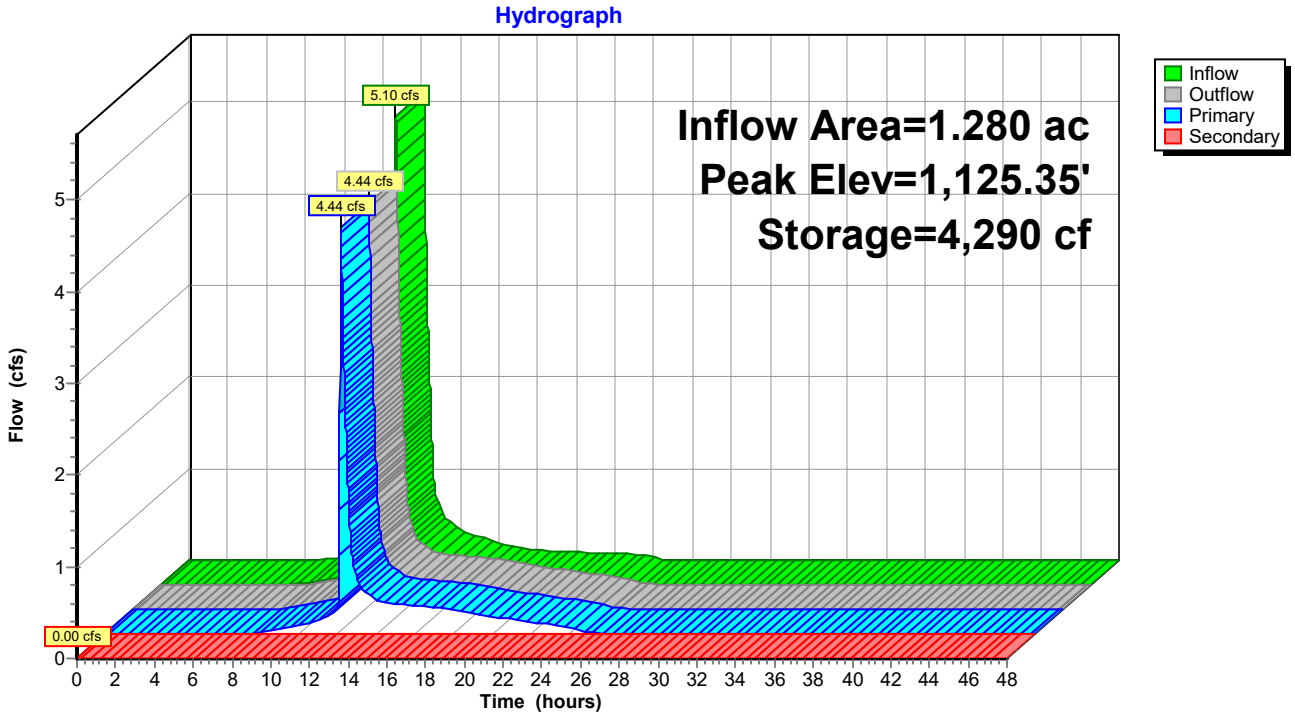
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,123.00	1,247	0	0
1,124.00	1,698	1,473	1,473
1,125.00	2,199	1,949	3,421
1,126.00	2,749	2,474	5,895

Device	Routing	Invert	Outlet Devices
#1	Primary	1,123.00'	**18.0" Round Culvert** L= 35.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,123.00' / 1,122.00' S= 0.0286 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	1,125.30'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,125.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,125.60'	**20.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,123.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.42 cfs @ 12.18 hrs HW=1,125.35' (Free Discharge)
└**1=Culvert** (Passes 4.42 cfs of 10.77 cfs potential flow)
├**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.42 cfs @ 0.75 fps)
├**3=Sharp-Crested Rectangular Weir** (Weir Controls 3.64 cfs @ 2.10 fps)
└**5=Orifice/Grate** (Orifice Controls 0.36 cfs @ 7.38 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,123.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P1:


Hydrograph
Inflow Area=1.280 ac
Peak Elev=1,125.35'
Storage=4,290 cf
5.10 cfs
4.44 cfs
4.44 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P12:

Inflow Area = 1.930 ac, Inflow Depth = 3.71" for 10-YR STORM event
Inflow = 7.63 cfs @ 12.12 hrs, Volume= 0.597 af
Outflow = 7.21 cfs @ 12.15 hrs, Volume= 0.518 af, Atten= 6%, Lag= 2.0 min
Primary = 0.20 cfs @ 12.15 hrs, Volume= 0.166 af
Routed to nonexistent node 6L
Secondary = 7.01 cfs @ 12.15 hrs, Volume= 0.352 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,187.51' @ 12.15 hrs Surf.Area= 4,528 sf Storage= 5,969 cf

Plug-Flow detention time= 142.9 min calculated for 0.518 af (87% of inflow)
Center-of-Mass det. time= 83.9 min (897.3 - 813.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,184.00'	8,424 cf	**Custom Stage Data (Prismatic)** Listed below

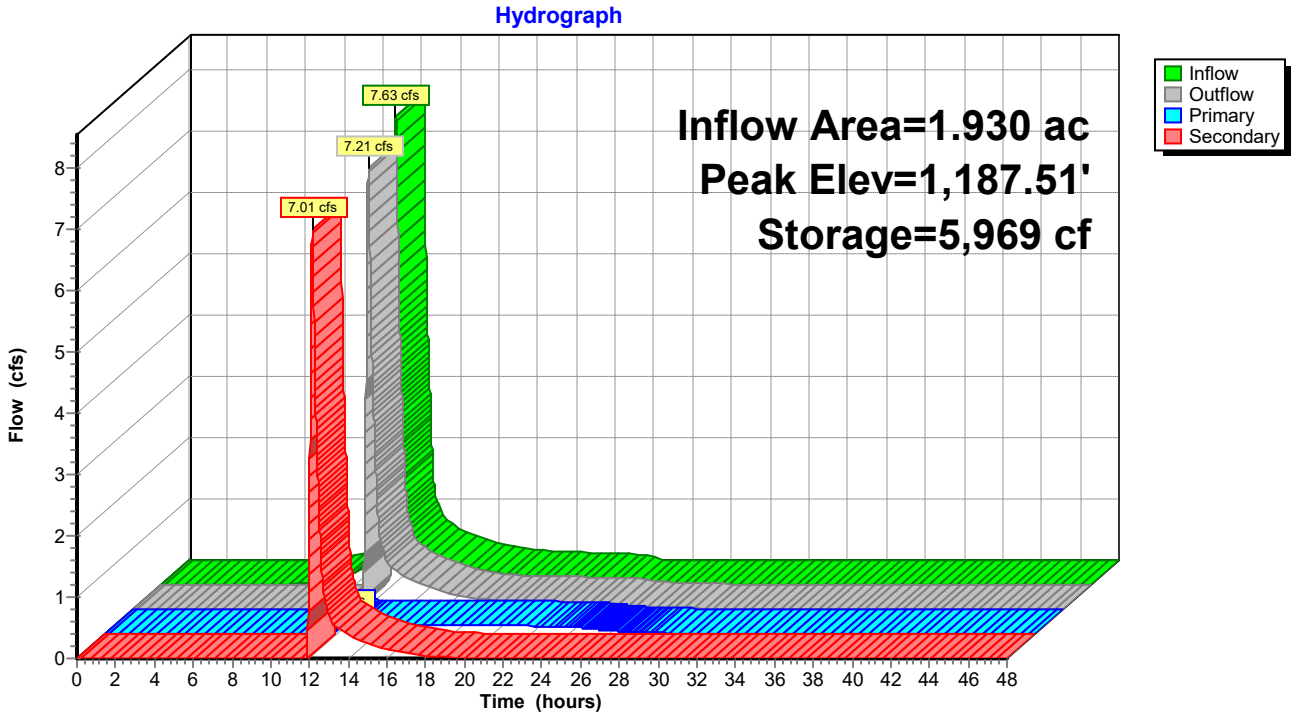
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,184.00	401	0	0
1,184.50	791	298	298
1,185.50	1,200	996	1,294
1,186.50	1,772	1,486	2,780
1,187.50	4,508	3,140	5,920
1,188.00	5,509	2,504	8,424

Device	Routing	Invert	Outlet Devices
#1	Primary	1,186.70'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Secondary	1,187.15'	**10.0' long Weir** 2 End Contraction(s)

Primary OutFlow Max=0.20 cfs @ 12.15 hrs HW=1,187.51' (Free Discharge)
1=Orifice (Orifice Controls 0.20 cfs @ 3.98 fps)

Secondary OutFlow Max=7.01 cfs @ 12.15 hrs HW=1,187.51' (Free Discharge)
2=Weir (Weir Controls 7.01 cfs @ 1.96 fps)

Pond P12:


Hydrograph
Inflow Area=1.930 ac
Peak Elev=1,187.51'
Storage=5,969 cf
7.63 cfs
7.21 cfs
7.01 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P2a:

Inflow Area = 3.850 ac, Inflow Depth = 3.61" for 10-YR STORM event
Inflow = 14.33 cfs @ 12.13 hrs, Volume= 1.159 af
Outflow = 13.24 cfs @ 12.18 hrs, Volume= 1.109 af, Atten= 8%, Lag= 2.6 min
Primary = 8.71 cfs @ 12.18 hrs, Volume= 1.056 af
Routed to nonexistent node 6L
Secondary = 4.53 cfs @ 12.18 hrs, Volume= 0.053 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,085.45' @ 12.18 hrs Surf.Area= 4,196 sf Storage= 8,430 cf

Plug-Flow detention time= 90.7 min calculated for 1.109 af (96% of inflow)
Center-of-Mass det. time= 66.4 min (883.5 - 817.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,082.75'	9,641 cf	**Custom Stage Data (Prismatic)** Listed below

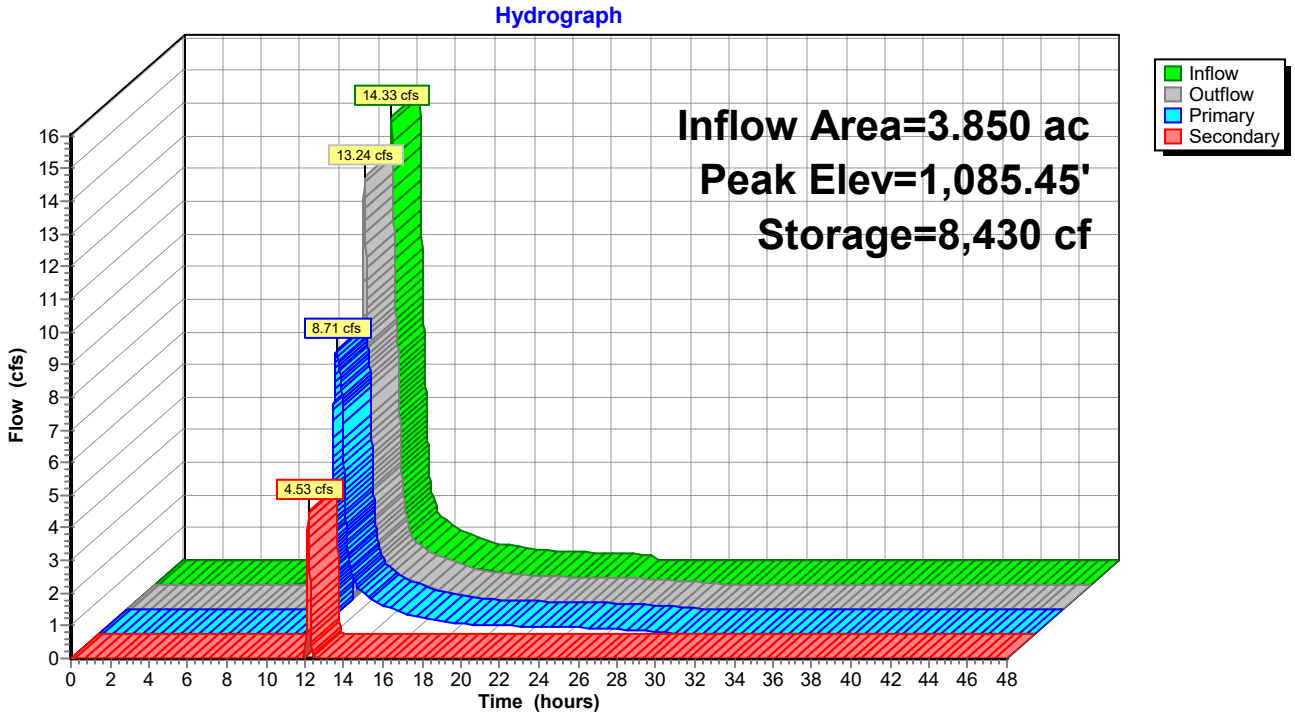
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,082.75	2,048	0	0
1,083.75	2,794	2,421	2,421
1,084.75	3,596	3,195	5,616
1,085.75	4,454	4,025	9,641

Device	Routing	Invert	Outlet Devices
#1	Device 3	1,084.50'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Device 3	1,083.65'	**3.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Primary	1,083.65'	**18.0" Round Culvert** L= 59.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,083.65' / 1,083.00' S= 0.0110 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 3	1,085.00'	**72.0" x 72.0" Horiz. Top of Riser** C= 0.600 Limited to weir flow at low heads
#5	Secondary	1,085.25'	**20.0' long + 3.0 '/' SideZ x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=8.71 cfs @ 12.18 hrs HW=1,085.45' (Free Discharge)
└**3=Culvert** (Inlet Controls 8.71 cfs @ 4.93 fps)
├**1=Sharp-Crested Rectangular Weir** (Passes < 14.53 cfs potential flow)
├**2=Orifice** (Passes < 0.32 cfs potential flow)
└**4=Top of Riser** (Passes < 23.59 cfs potential flow)

Secondary OutFlow Max=4.52 cfs @ 12.18 hrs HW=1,085.45' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Weir Controls 4.52 cfs @ 1.10 fps)

Pond P2a:


Hydrograph
Inflow Area=3.850 ac
Peak Elev=1,085.45'
Storage=8,430 cf
14.33 cfs
13.24 cfs
8.71 cfs
4.53 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P2b:

Inflow Area = 4.020 ac, Inflow Depth = 3.12" for 10-YR STORM event
Inflow = 11.47 cfs @ 12.19 hrs, Volume= 1.046 af
Outflow = 10.61 cfs @ 12.25 hrs, Volume= 0.963 af, Atten= 7%, Lag= 3.5 min
Primary = 0.29 cfs @ 12.25 hrs, Volume= 0.342 af
Routed to nonexistent node 6L
Secondary = 10.33 cfs @ 12.25 hrs, Volume= 0.621 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,040.97' @ 12.25 hrs Surf.Area= 5,424 sf Storage= 10,555 cf

Plug-Flow detention time= 160.3 min calculated for 0.963 af (92% of inflow)
Center-of-Mass det. time= 119.7 min (953.3 - 833.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,038.50'	13,587 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

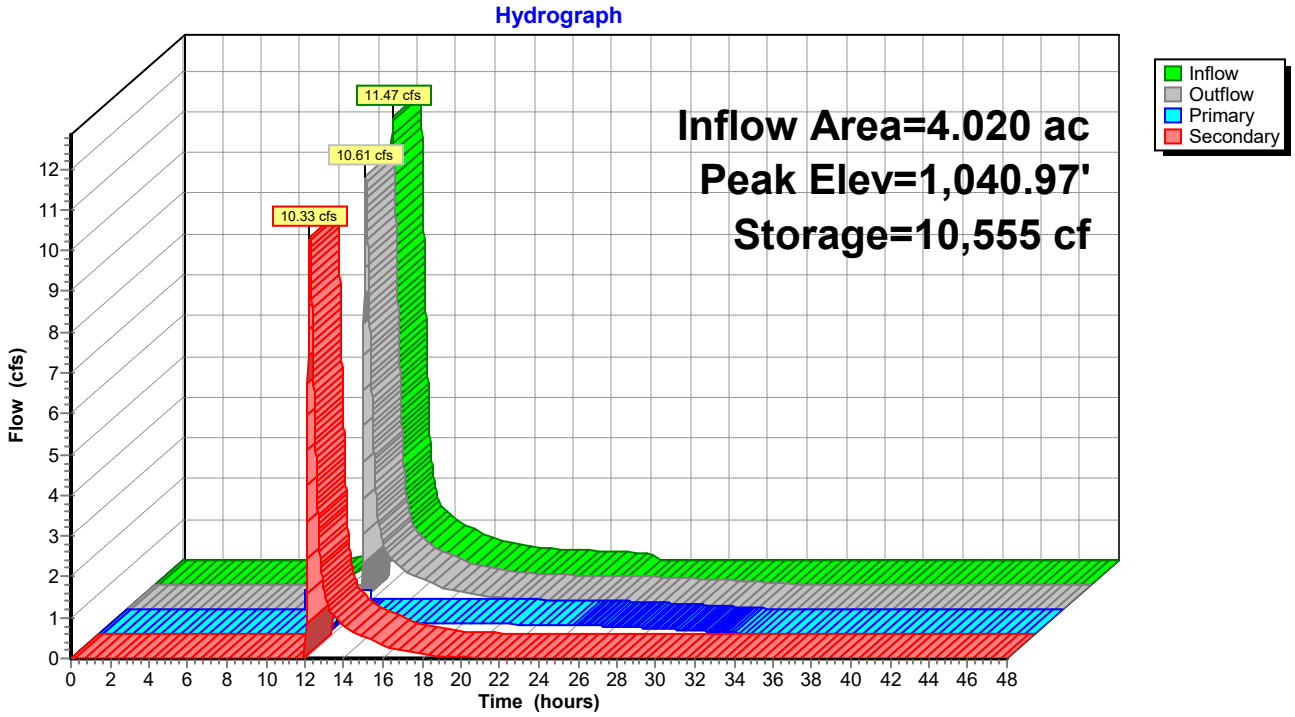
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,038.50	3,189	0	0
1,039.50	4,051	3,620	3,620
1,040.50	4,969	4,510	8,130
1,041.50	5,945	5,457	13,587

Device	Routing	Invert	Outlet Devices
#1	Secondary	1,040.50'	**10.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	1,039.50'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.29 cfs @ 12.25 hrs HW=1,040.97' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 0.29 cfs @ 5.83 fps)

Secondary OutFlow Max=10.32 cfs @ 12.25 hrs HW=1,040.97' (Free Discharge)
↑—**1=Sharp-Crested Rectangular Weir** (Weir Controls 10.32 cfs @ 2.23 fps)

Pond P2b:


Hydrograph
Inflow Area=4.020 ac
Peak Elev=1,040.97'
Storage=10,555 cf
11.47 cfs
10.61 cfs
10.33 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8 9 10 11 12

Summary for Pond P3:

Inflow Area = 7.890 ac, Inflow Depth = 3.81" for 10-YR STORM event
Inflow = 31.37 cfs @ 12.13 hrs, Volume= 2.508 af
Outflow = 27.21 cfs @ 12.19 hrs, Volume= 2.508 af, Atten= 13%, Lag= 3.4 min
Primary = 27.21 cfs @ 12.19 hrs, Volume= 2.508 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,128.70' @ 12.19 hrs Surf.Area= 7,094 sf Storage= 28,308 cf

Plug-Flow detention time= 212.1 min calculated for 2.507 af (100% of inflow)
Center-of-Mass det. time= 212.3 min (1,023.5 - 811.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,122.00'	38,268 cf	**Custom Stage Data (Prismatic)** Listed below

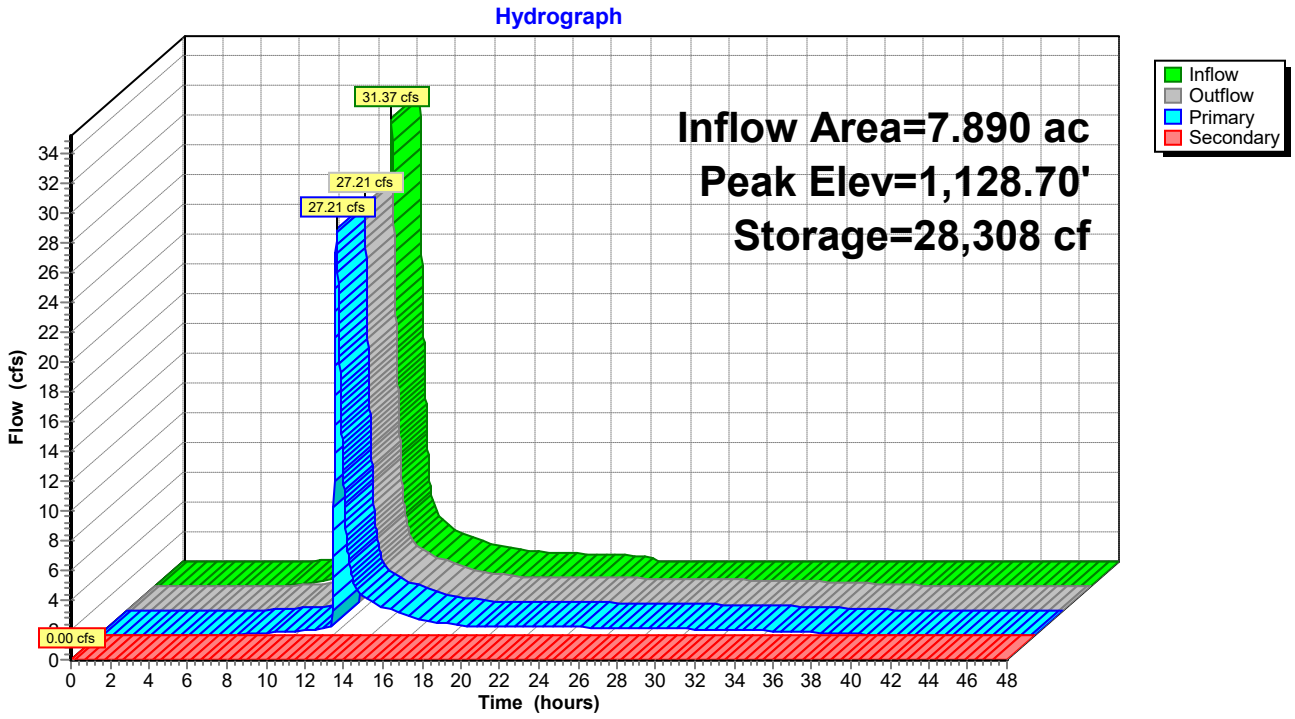
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,122.00	1,797	0	0
1,123.00	2,400	2,099	2,099
1,124.00	3,074	2,737	4,836
1,125.00	3,810	3,442	8,278
1,126.00	4,608	4,209	12,487
1,127.00	5,471	5,040	17,526
1,128.00	6,397	5,934	23,460
1,129.00	7,388	6,893	30,353
1,130.00	8,442	7,915	38,268

Device	Routing	Invert	Outlet Devices
#1	Primary	1,122.00'	**24.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,122.00' / 1,121.50' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,129.00'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,127.50'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,129.50'	**40.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,122.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=27.18 cfs @ 12.19 hrs HW=1,128.70' (Free Discharge)
└─**1=Culvert** (Passes 27.18 cfs of 36.12 cfs potential flow)
  ├─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  ├─**3=Sharp-Crested Rectangular Weir** (Weir Controls 26.57 cfs @ 4.64 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.61 cfs @ 12.47 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,122.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P3:



Summary for Pond P5:

Inflow Area = 1.680 ac, Inflow Depth = 3.81" for 10-YR STORM event
Inflow = 7.07 cfs @ 12.11 hrs, Volume= 0.534 af
Outflow = 4.41 cfs @ 12.22 hrs, Volume= 0.534 af, Atten= 38%, Lag= 6.9 min
Primary = 4.41 cfs @ 12.22 hrs, Volume= 0.534 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,142.33' @ 12.22 hrs Surf.Area= 4,316 sf Storage= 7,487 cf

Plug-Flow detention time= 160.4 min calculated for 0.534 af (100% of inflow)
Center-of-Mass det. time= 160.4 min (970.0 - 809.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,140.00'	10,517 cf	**Custom Stage Data (Prismatic)** Listed below

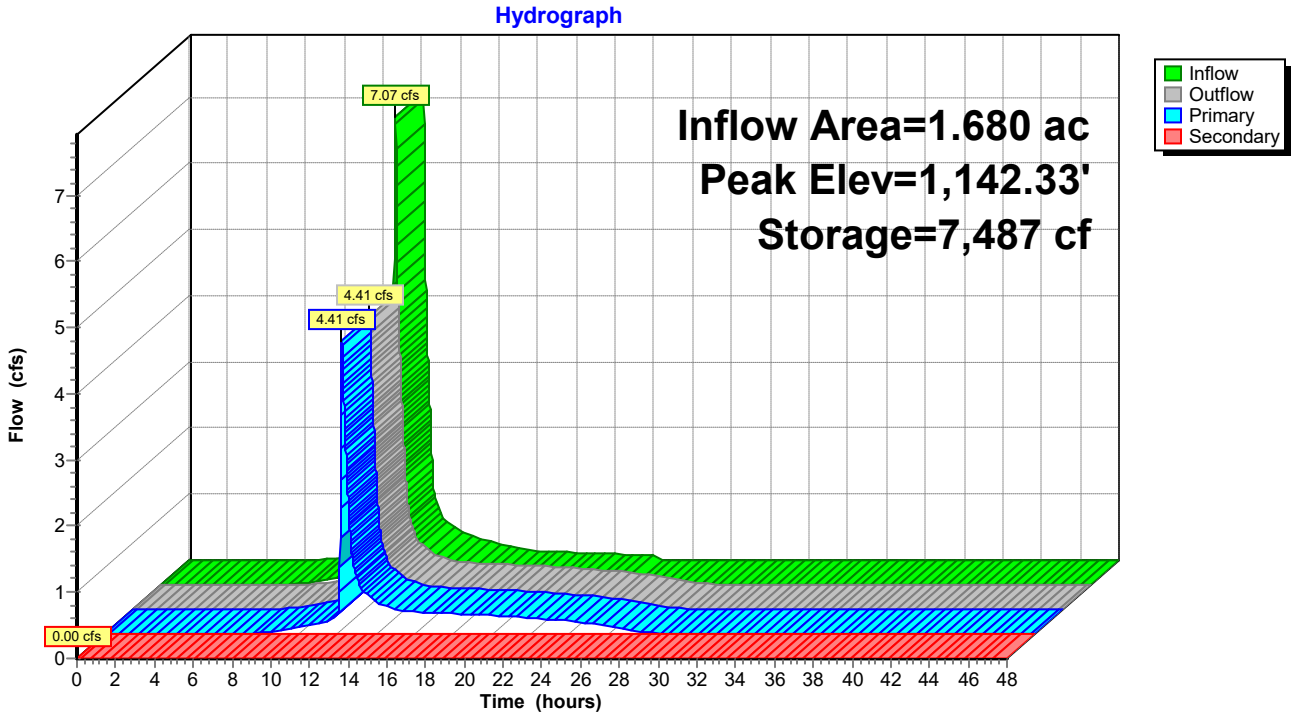
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,140.00	2,092	0	0
1,141.00	2,986	2,539	2,539
1,142.00	3,967	3,477	6,016
1,143.00	5,036	4,502	10,517

Device	Routing	Invert	Outlet Devices
#1	Primary	1,140.00'	**24.0" Round Culvert** L= 30.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,140.00' / 1,139.50' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,142.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,142.25'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,142.50'	**30.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,140.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.39 cfs @ 12.22 hrs HW=1,142.33' (Free Discharge)
└**1=Culvert** (Passes 4.39 cfs of 17.42 cfs potential flow)
├**2=Sharp-Crested Rectangular Weir** (Weir Controls 3.25 cfs @ 2.02 fps)
├**3=Sharp-Crested Rectangular Weir** (Weir Controls 0.78 cfs @ 0.92 fps)
└**5=Orifice/Grate** (Orifice Controls 0.36 cfs @ 7.34 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,140.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P5:


Hydrograph
Inflow Area=1.680 ac
Peak Elev=1,142.33'
Storage=7,487 cf
7.07 cfs
4.41 cfs
4.41 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P7:

Inflow Area = 4.070 ac, Inflow Depth = 3.61" for 10-YR STORM event
Inflow = 11.80 cfs @ 12.26 hrs, Volume= 1.225 af
Outflow = 2.72 cfs @ 12.87 hrs, Volume= 1.211 af, Atten= 77%, Lag= 36.2 min
Primary = 2.72 cfs @ 12.87 hrs, Volume= 1.211 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,151.21' @ 12.87 hrs Surf.Area= 8,663 sf Storage= 27,499 cf

Plug-Flow detention time= 539.0 min calculated for 1.211 af (99% of inflow)
Center-of-Mass det. time= 532.1 min (1,357.9 - 825.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,147.00'	44,832 cf	**Custom Stage Data (Prismatic)** Listed below

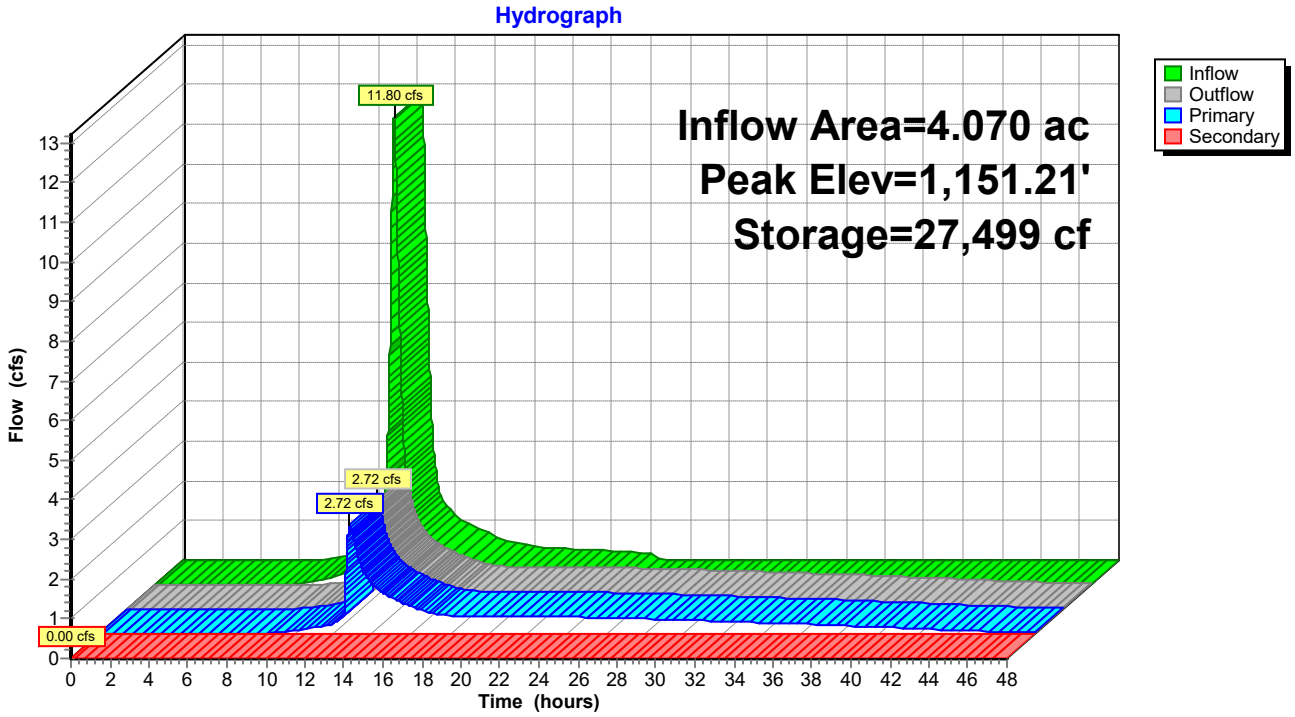
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,147.00	4,554	0	0
1,148.00	5,432	4,993	4,993
1,149.00	6,361	5,897	10,890
1,150.00	7,356	6,859	17,748
1,151.00	8,425	7,891	25,639
1,152.00	9,578	9,002	34,640
1,153.00	10,805	10,192	44,832

Device	Routing	Invert	Outlet Devices
#1	Primary	1,147.00'	**30.0" Round Culvert** L= 106.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,147.00' / 1,146.10' S= 0.0085 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	1,152.00'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,150.95'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,152.50'	**30.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,147.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.71 cfs @ 12.87 hrs HW=1,151.21' (Free Discharge)
└**1=Culvert** (Passes 2.71 cfs of 40.64 cfs potential flow)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└**3=Sharp-Crested Rectangular Weir** (Weir Controls 2.24 cfs @ 1.76 fps)
└**5=Orifice/Grate** (Orifice Controls 0.48 cfs @ 9.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,147.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P7:


Hydrograph
Inflow Area=4.070 ac
Peak Elev=1,151.21'
Storage=27,499 cf
11.80 cfs
2.72 cfs
2.72 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8 9 10 11 12 13

Summary for Pond P8/10:

Inflow Area = 28.040 ac, Inflow Depth = 3.81" for 10-YR STORM event
Inflow = 97.59 cfs @ 12.19 hrs, Volume= 8.912 af
Outflow = 77.98 cfs @ 12.29 hrs, Volume= 8.147 af, Atten= 20%, Lag= 6.3 min
Primary = 77.98 cfs @ 12.29 hrs, Volume= 8.147 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,113.30' @ 12.29 hrs Storage= 115,384 cf

Plug-Flow detention time= 207.6 min calculated for 8.147 af (91% of inflow)
Center-of-Mass det. time= 164.4 min (979.7 - 815.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,108.00'	166,405 cf	**Custom Stage Data** Listed below

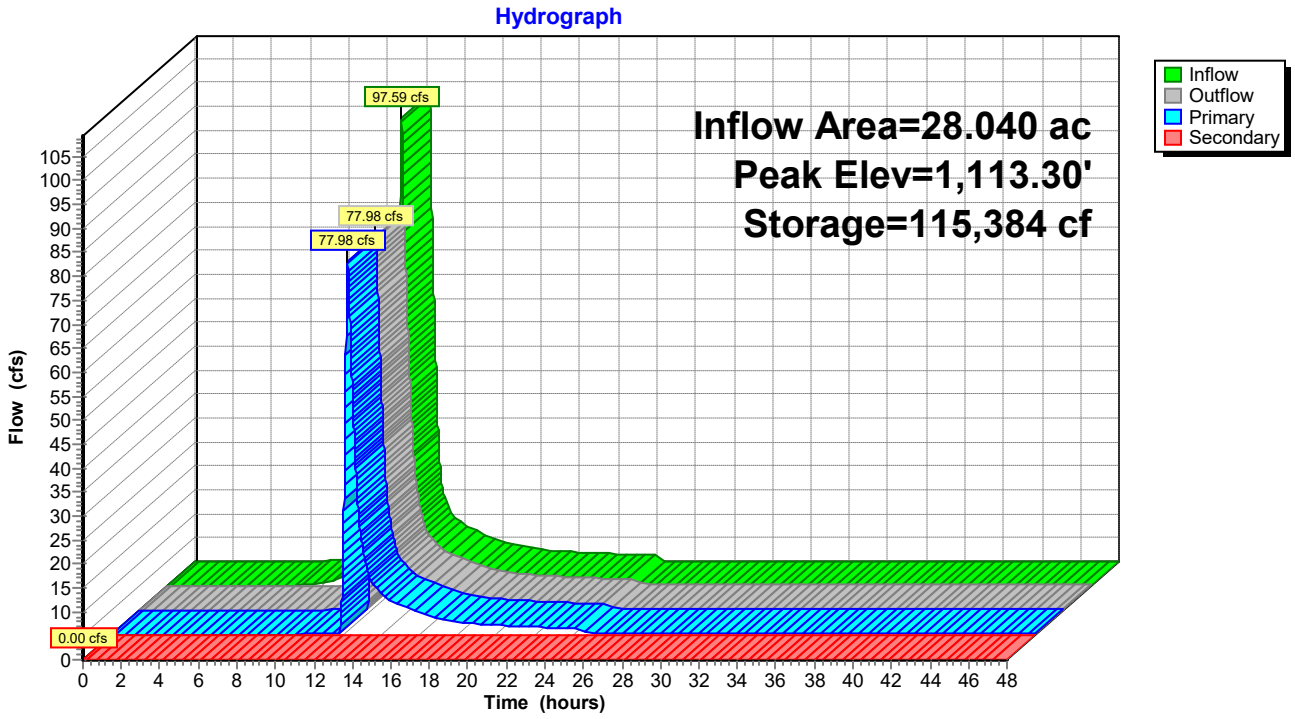
Elevation (feet)	Cum.Store (cubic-feet)
1,108.00	0
1,109.00	16,747
1,110.00	35,732
1,111.00	57,018
1,112.00	80,666
1,113.00	106,738
1,114.00	135,298
1,115.00	166,405

Device	Routing	Invert	Outlet Devices
#1	Primary	1,108.00'	**48.0" Round Culvert** L= 44.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,108.00' / 1,107.50' S= 0.0114 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,113.00'	**19.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,111.25'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,114.25'	**50.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,108.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=77.89 cfs @ 12.29 hrs HW=1,113.30' (Free Discharge)
└**1=Culvert** (Passes 77.89 cfs of 105.24 cfs potential flow)
  └**2=Sharp-Crested Rectangular Weir** (Weir Controls 11.06 cfs @ 1.93 fps)
  └**3=Sharp-Crested Rectangular Weir** (Weir Controls 66.29 cfs @ 7.04 fps)
  └**5=Orifice/Grate** (Orifice Controls 0.54 cfs @ 10.96 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,108.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P8/10:



Summary for Pond P9:

Inflow Area = 6.810 ac, Inflow Depth = 3.81" for 10-YR STORM event
Inflow = 21.28 cfs @ 12.25 hrs, Volume= 2.164 af
Outflow = 18.29 cfs @ 12.35 hrs, Volume= 2.123 af, Atten= 14%, Lag= 6.3 min
Primary = 18.29 cfs @ 12.35 hrs, Volume= 2.123 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,179.72' @ 12.35 hrs Surf.Area= 13,990 sf Storage= 28,829 cf

Plug-Flow detention time= 283.4 min calculated for 2.123 af (98% of inflow)
Center-of-Mass det. time= 272.3 min (1,091.8 - 819.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,177.00'	48,733 cf	**Custom Stage Data (Prismatic)** Listed below

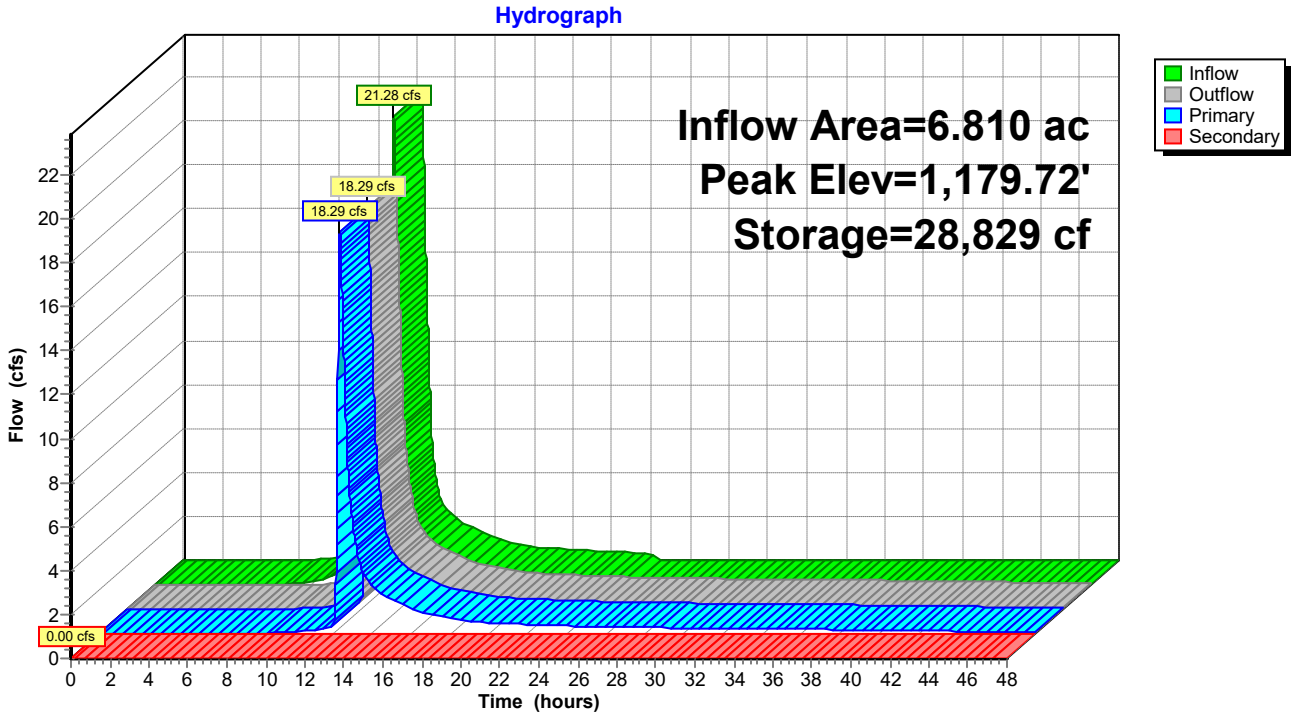
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,177.00	7,155	0	0
1,178.00	9,581	8,368	8,368
1,179.00	12,108	10,845	19,213
1,180.00	14,735	13,422	32,634
1,181.00	17,463	16,099	48,733

Device	Routing	Invert	Outlet Devices
#1	Primary	1,177.00'	**24.0" Round Culvert** L= 64.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,177.00' / 1,176.50' S= 0.0078 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,179.50'	**19.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,179.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,180.00'	**20.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,177.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=18.27 cfs @ 12.35 hrs HW=1,179.72' (Free Discharge)
└**1=Culvert** (Passes 18.27 cfs of 18.83 cfs potential flow)
├**2=Sharp-Crested Rectangular Weir** (Weir Controls 6.57 cfs @ 1.60 fps)
├**3=Sharp-Crested Rectangular Weir** (Weir Controls 11.32 cfs @ 3.25 fps)
└**5=Orifice/Grate** (Orifice Controls 0.38 cfs @ 7.75 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,177.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P9:


Hydrograph
Inflow Area=6.810 ac
Peak Elev=1,179.72'
Storage=28,829 cf
21.28 cfs
18.29 cfs
18.29 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond WS11:

Inflow Area = 3.190 ac, Inflow Depth = 3.03" for 10-YR STORM event
Inflow = 7.42 cfs @ 12.29 hrs, Volume= 0.805 af
Outflow = 4.88 cfs @ 12.55 hrs, Volume= 0.544 af, Atten= 34%, Lag= 15.4 min
Primary = 4.88 cfs @ 12.55 hrs, Volume= 0.544 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 1,191.22' @ 12.55 hrs Surf.Area= 8,052 sf Storage= 13,298 cf

Plug-Flow detention time= 175.3 min calculated for 0.544 af (68% of inflow)
Center-of-Mass det. time= 74.5 min (917.5 - 843.0)

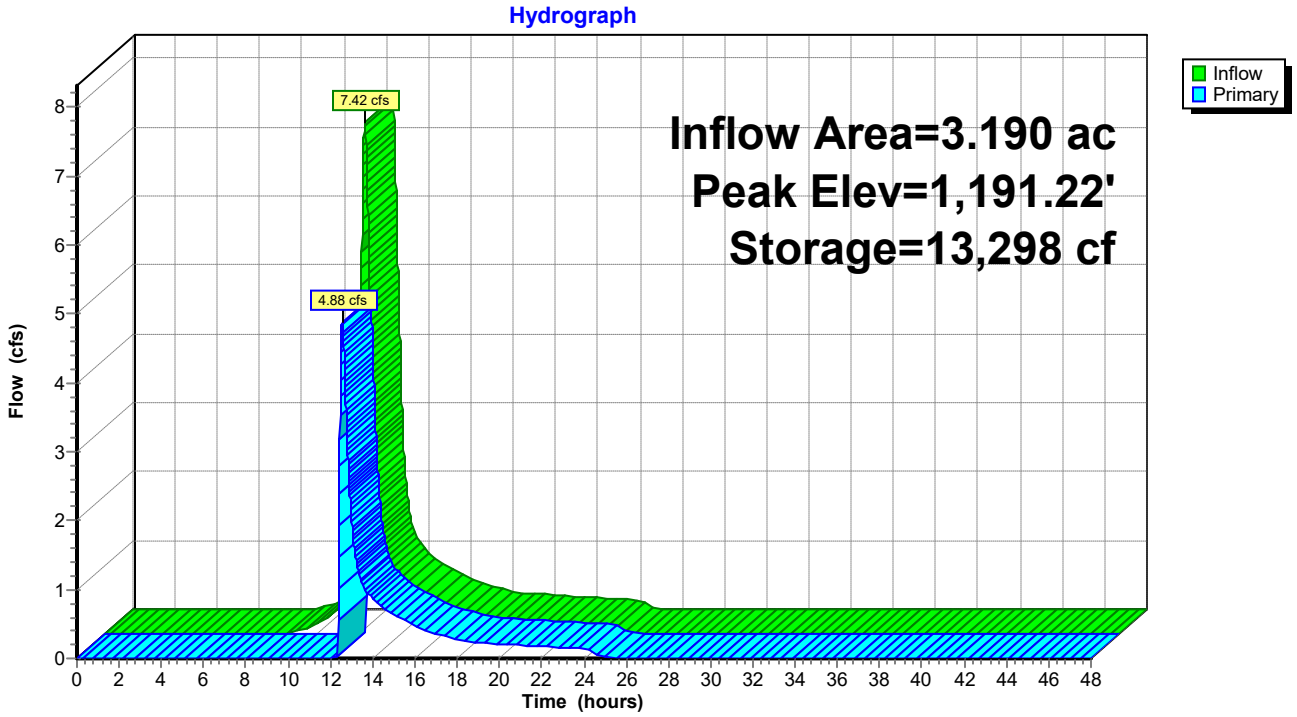
Volume	Invert	Avail.Storage	Storage Description
#1	1,188.00'	25,568 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,188.00	220	0	0
1,189.00	2,537	1,379	1,379
1,190.00	4,998	3,768	5,146
1,191.00	7,486	6,242	11,388
1,192.00	10,087	8,787	20,175
1,192.50	11,488	5,394	25,568

Device	Routing	Invert	Outlet Devices
#1	Primary	1,191.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Device 1	1,189.80'	**90.0 deg x 4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)

Primary OutFlow Max=4.85 cfs @ 12.55 hrs HW=1,191.22' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 4.85 cfs @ 1.12 fps)
↑—**2=Sharp-Crested Vee/Trap Weir** (Passes 4.85 cfs of 17.88 cfs potential flow)

Pond WS11:


Hydrograph
Inflow
Primary
7.42 cfs
4.88 cfs
Inflow Area=3.190 ac
Peak Elev=1,191.22'
Storage=13,298 cf
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond WS14:

Inflow Area = 4.600 ac, Inflow Depth = 3.92" for 10-YR STORM event
Inflow = 15.99 cfs @ 12.20 hrs, Volume= 1.501 af
Outflow = 15.69 cfs @ 12.22 hrs, Volume= 1.301 af, Atten= 2%, Lag= 1.7 min
Primary = 15.69 cfs @ 12.22 hrs, Volume= 1.301 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,147.95' @ 12.22 hrs Surf.Area= 6,129 sf Storage= 11,187 cf

Plug-Flow detention time= 94.0 min calculated for 1.301 af (87% of inflow)
Center-of-Mass det. time= 34.6 min (848.0 - 813.4)

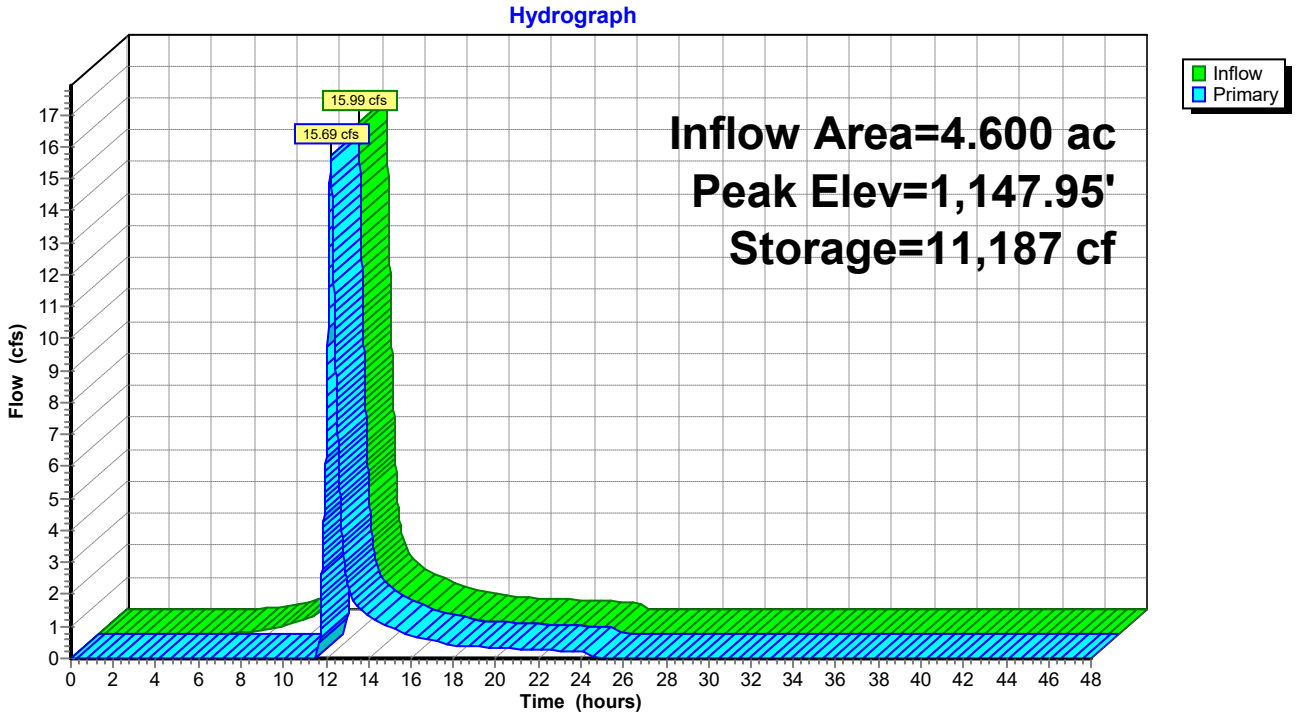
Volume	Invert	Avail.Storage	Storage Description
#1	1,145.00'	14,985 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,145.00	724	0	0
1,146.00	3,306	2,015	2,015
1,147.00	4,678	3,992	6,007
1,148.00	6,202	5,440	11,447
1,148.50	7,948	3,538	14,985

Device	Routing	Invert	Outlet Devices
#1	Device 2	1,146.80'	**90.0 deg x 4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)
#2	Primary	1,147.50'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=15.67 cfs @ 12.22 hrs HW=1,147.95' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 15.67 cfs @ 1.73 fps)
↑—**1=Sharp-Crested Vee/Trap Weir** (Passes 15.67 cfs of 16.69 cfs potential flow)

Pond WS14:


Hydrograph
Inflow
Primary
15.99 cfs
15.69 cfs
Inflow Area=4.600 ac
Peak Elev=1,147.95'
Storage=11,187 cf
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

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 1: Runoff Area=1.280 ac Runoff Depth=5.09"
Tc=9.1 min CN=83 Runoff=6.75 cfs 0.543 af

Subcatchment 2a: Runoff Area=3.850 ac Runoff Depth=4.87"
Tc=9.7 min CN=81 Runoff=19.17 cfs 1.563 af

Subcatchment 2b: Runoff Area=4.020 ac Runoff Depth=4.32"
Tc=13.9 min CN=76 Runoff=15.85 cfs 1.447 af

Subcatchment 3: Runoff Area=7.890 ac Runoff Depth=5.09"
Tc=9.2 min CN=83 Runoff=41.48 cfs 3.349 af

Subcatchment 5: Runoff Area=1.680 ac Runoff Depth=5.09"
Tc=7.5 min CN=83 Runoff=9.34 cfs 0.713 af

Subcatchment 7: Runoff Area=4.070 ac Runoff Depth=4.87"
Tc=19.2 min CN=81 Runoff=15.80 cfs 1.652 af

Subcatchment 8/10: Runoff Area=28.040 ac Runoff Depth=5.09"
Tc=13.7 min CN=83 Runoff=129.12 cfs 11.903 af

Subcatchment 9: Runoff Area=6.810 ac Runoff Depth=5.09"
Tc=18.1 min CN=83 Runoff=28.17 cfs 2.891 af

Subcatchment 11: Runoff Area=3.190 ac Runoff Depth=4.21"
Tc=21.4 min CN=75 Runoff=10.34 cfs 1.119 af

Subcatchment 12: Runoff Area=1.930 ac Runoff Depth=4.98"
Tc=8.6 min CN=82 Runoff=10.15 cfs 0.801 af

Subcatchment 14: Runoff Area=4.600 ac Runoff Depth=5.21"
Tc=14.6 min CN=84 Runoff=21.04 cfs 1.996 af

Subcatchment 15: Runoff Area=1.930 ac Runoff Depth=4.87"
Tc=13.7 min CN=81 Runoff=8.55 cfs 0.783 af

Pond P1: Peak Elev=1,125.42' Storage=4,451 cf Inflow=6.75 cfs 0.543 af
Primary=6.61 cfs 0.543 af Secondary=0.00 cfs 0.000 af Outflow=6.61 cfs 0.543 af

Pond P12: Peak Elev=1,187.58' Storage=6,336 cf Inflow=10.15 cfs 0.801 af
Primary=0.21 cfs 0.180 af Secondary=9.25 cfs 0.542 af Outflow=9.45 cfs 0.722 af

Pond P2a: Peak Elev=1,085.57' Storage=8,907 cf Inflow=19.17 cfs 1.563 af
Primary=9.19 cfs 1.360 af Secondary=9.41 cfs 0.152 af Outflow=18.60 cfs 1.512 af

Pond P2b: Peak Elev=1,041.10' Storage=11,261 cf Inflow=15.85 cfs 1.447 af
Primary=0.30 cfs 0.362 af Secondary=14.84 cfs 1.002 af Outflow=15.14 cfs 1.364 af

Pond P3: Peak Elev=1,128.99' Storage=30,295 cf Inflow=41.48 cfs 3.349 af
Primary=37.03 cfs 3.349 af Secondary=0.00 cfs 0.000 af Outflow=37.03 cfs 3.349 af

Pond P5: Peak Elev=1,142.44' Storage=7,981 cf Inflow=9.34 cfs 0.713 af
Primary=8.53 cfs 0.713 af Secondary=0.00 cfs 0.000 af Outflow=8.53 cfs 0.713 af

Pond P7: Peak Elev=1,151.53' Storage=30,419 cf Inflow=15.80 cfs 1.652 af
Primary=8.59 cfs 1.635 af Secondary=0.00 cfs 0.000 af Outflow=8.59 cfs 1.635 af

Pond P8/10: Peak Elev=1,113.62' Storage=124,505 cf Inflow=129.12 cfs 11.903 af
Primary=113.15 cfs 11.134 af Secondary=0.00 cfs 0.000 af Outflow=113.15 cfs 11.134 af

Pond P9: Peak Elev=1,180.05' Storage=33,366 cf Inflow=28.17 cfs 2.891 af
Primary=21.23 cfs 2.844 af Secondary=0.51 cfs 0.005 af Outflow=21.74 cfs 2.849 af

Pond WS11: Peak Elev=1,191.33' Storage=14,252 cf Inflow=10.34 cfs 1.119 af
Outflow=9.24 cfs 0.858 af

Pond WS14: Peak Elev=1,148.06' Storage=11,876 cf Inflow=21.04 cfs 1.996 af
Outflow=20.04 cfs 1.795 af

Total Runoff Area = 69.290 ac Runoff Volume = 28.760 af Average Runoff Depth = 4.98"

Summary for Subcatchment 1:

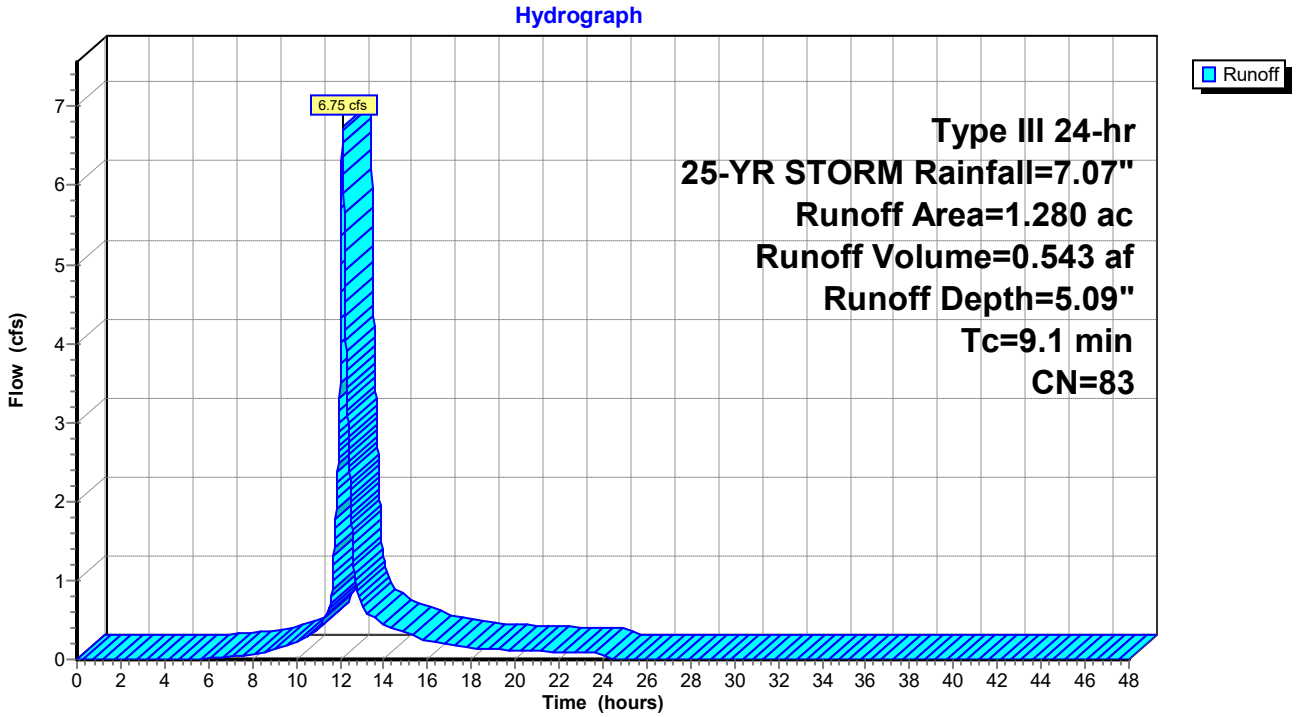
Runoff = 6.75 cfs @ 12.12 hrs, Volume= 0.543 af, Depth= 5.09"
Routed to Pond P1 :

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 STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	1.280	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

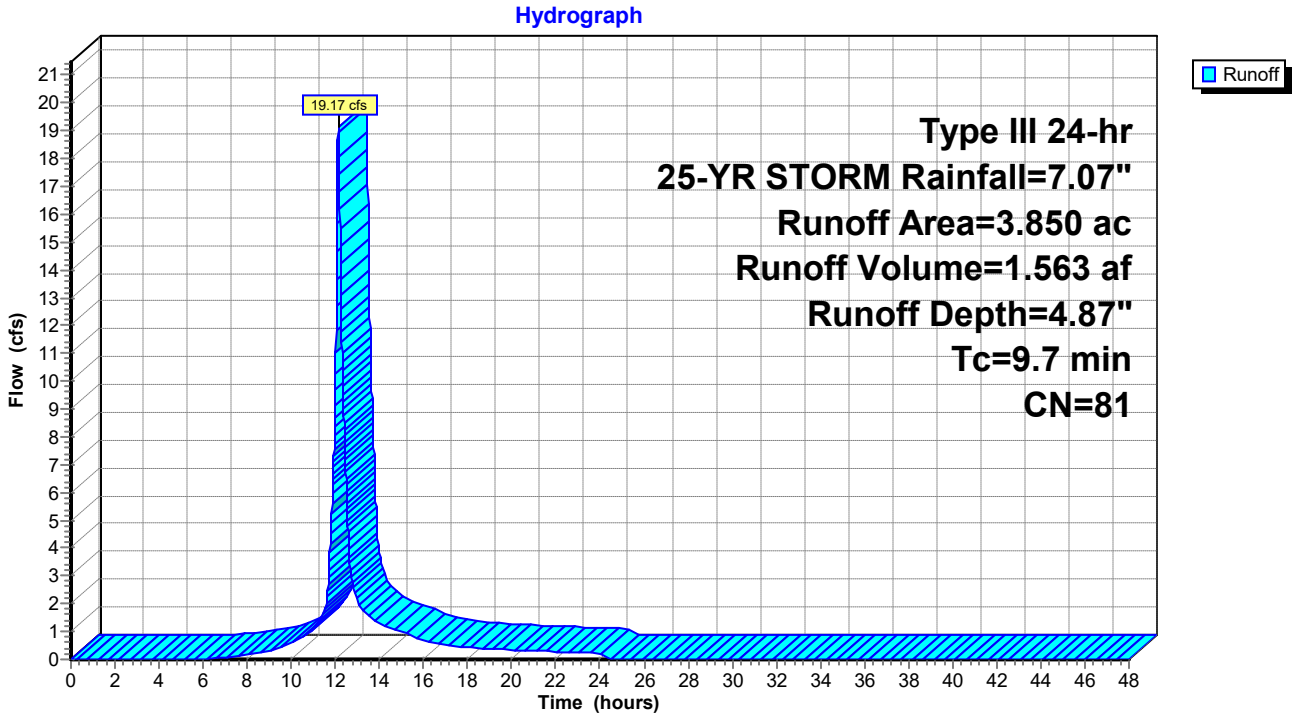
Runoff = 19.17 cfs @ 12.13 hrs, Volume= 1.563 af, Depth= 4.87"
Routed to Pond P2a :

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 STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	3.850	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

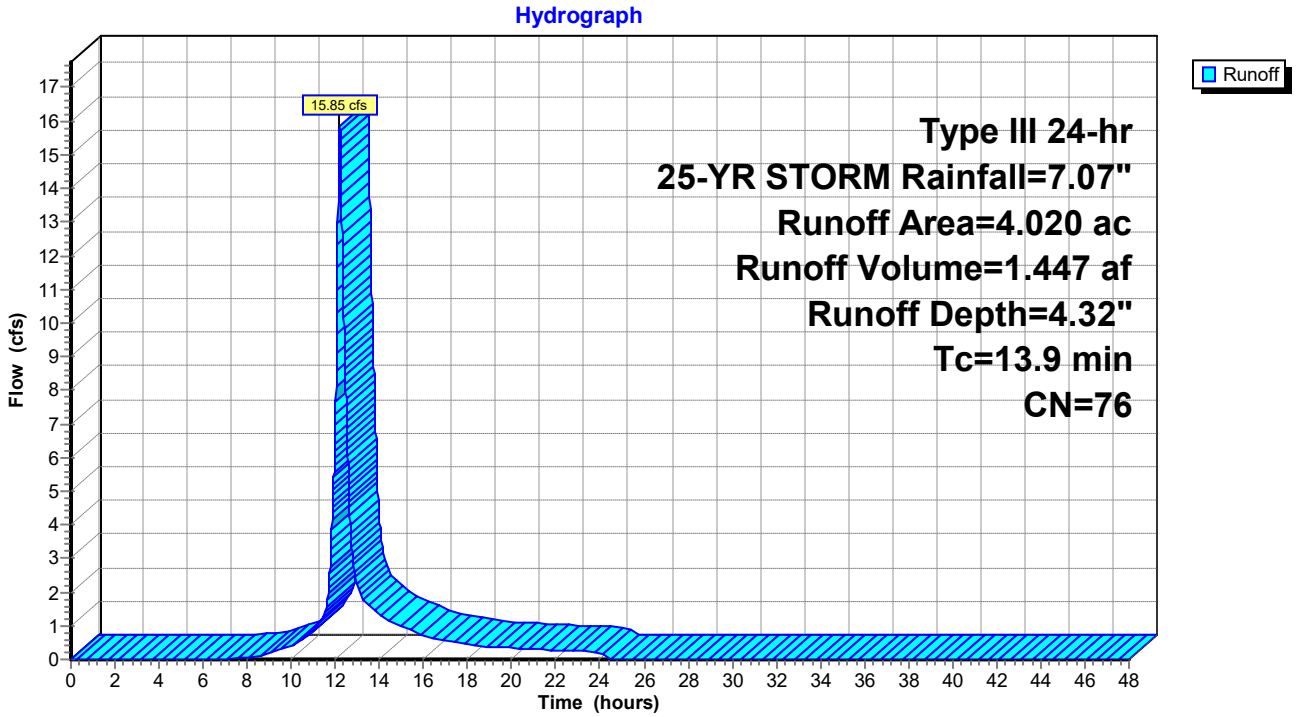
Runoff = 15.85 cfs @ 12.19 hrs, Volume= 1.447 af, Depth= 4.32"
Routed to Pond P2b :

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 STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	4.020	76	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

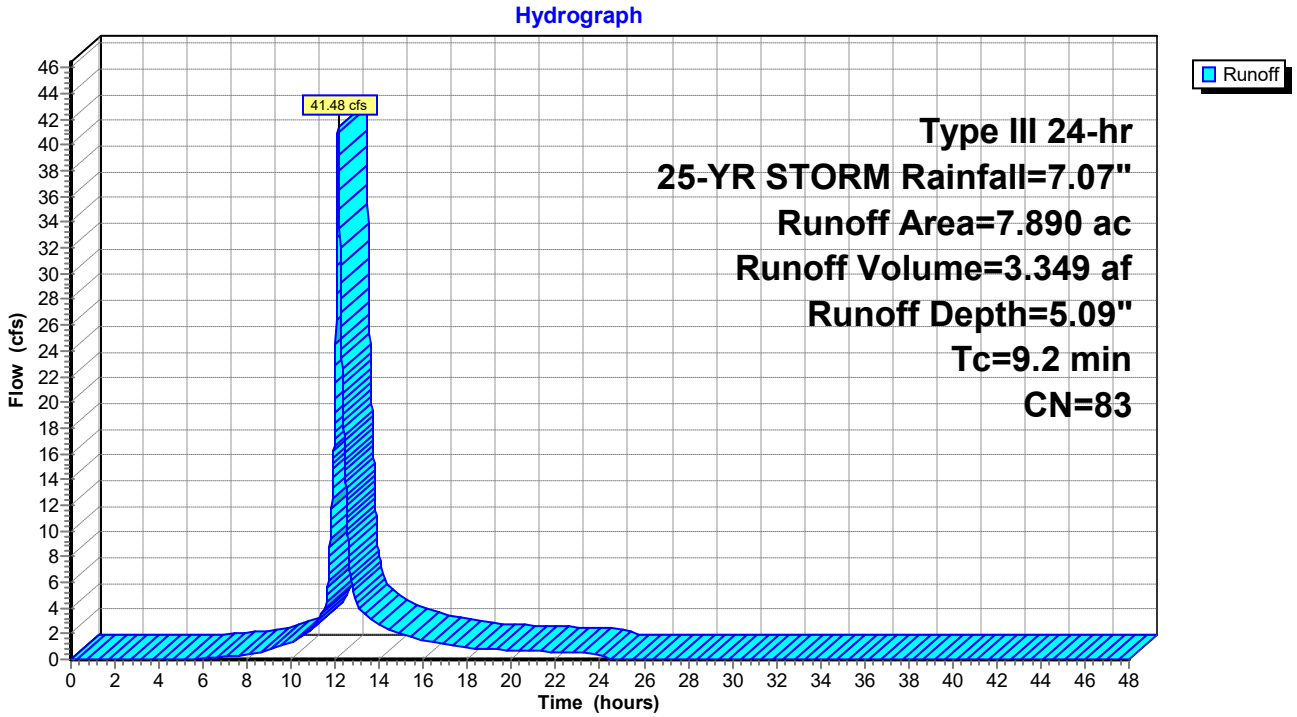
Runoff = 41.48 cfs @ 12.13 hrs, Volume= 3.349 af, Depth= 5.09"
Routed to Pond P3 :

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 STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	7.890	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 5:

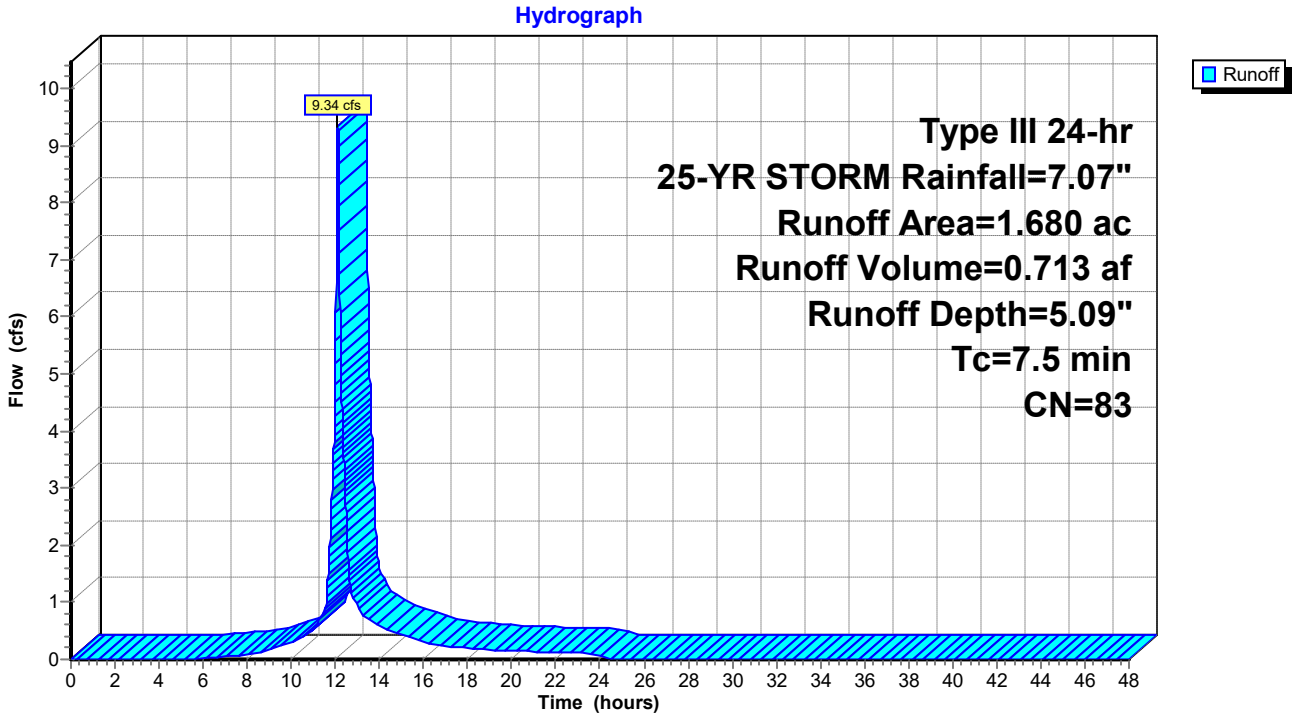
Runoff = 9.34 cfs @ 12.11 hrs, Volume= 0.713 af, Depth= 5.09"
Routed to Pond P5 :

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 STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	1.680	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

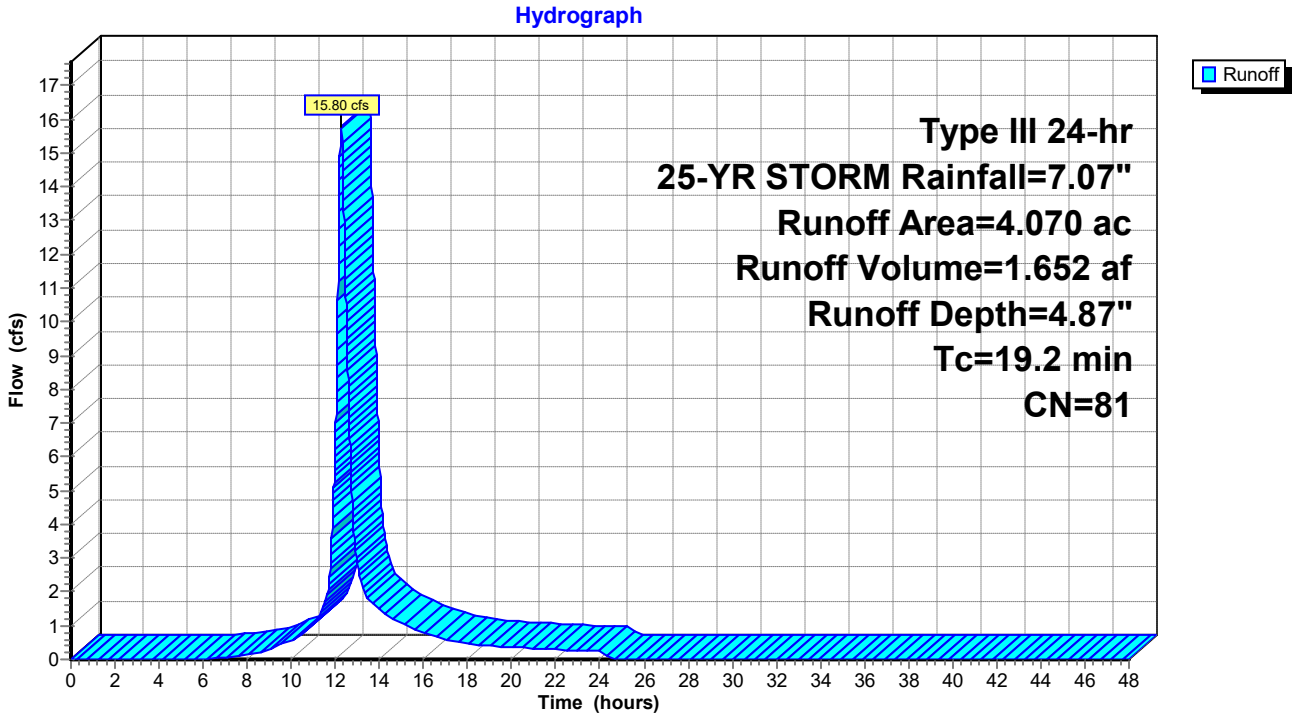
Runoff = 15.80 cfs @ 12.26 hrs, Volume= 1.652 af, Depth= 4.87"
Routed to Pond P7 :

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 STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	4.070	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8/10:

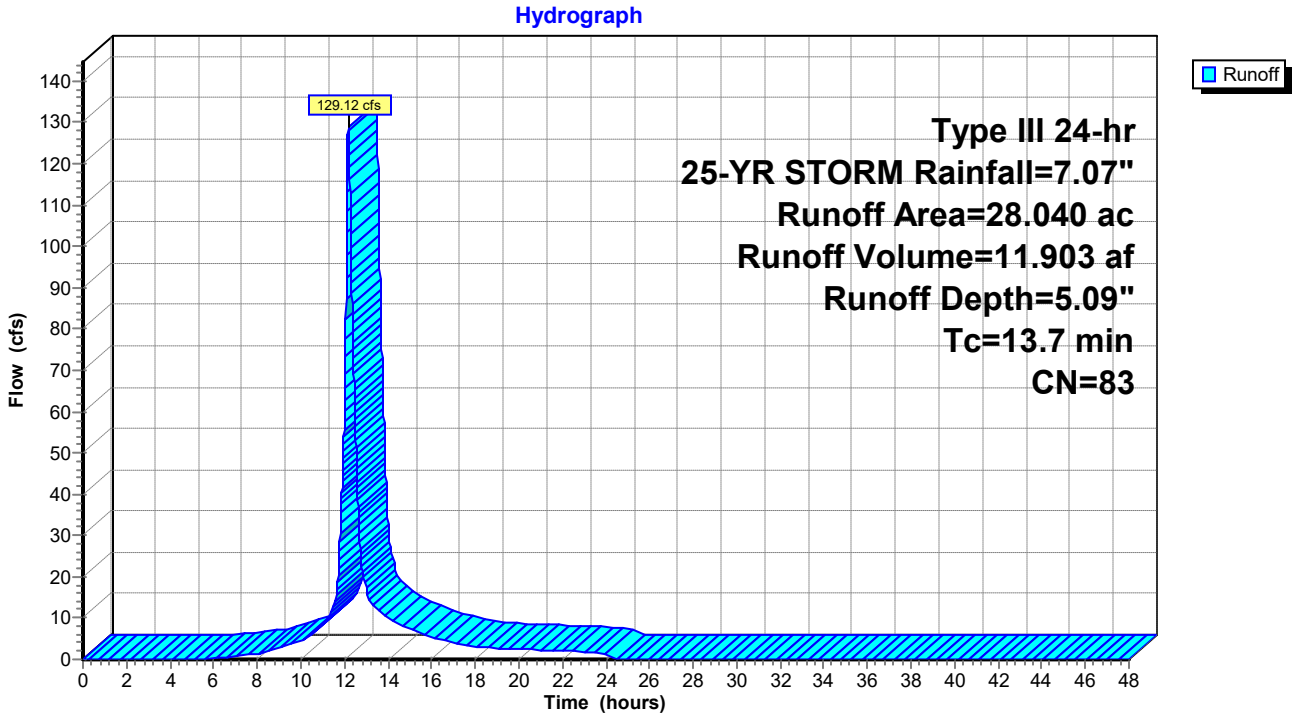
Runoff = 129.12 cfs @ 12.19 hrs, Volume= 11.903 af, Depth= 5.09"
Routed to Pond P8/10 :

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 STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	28.040	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 8/10:



Summary for Subcatchment 9:

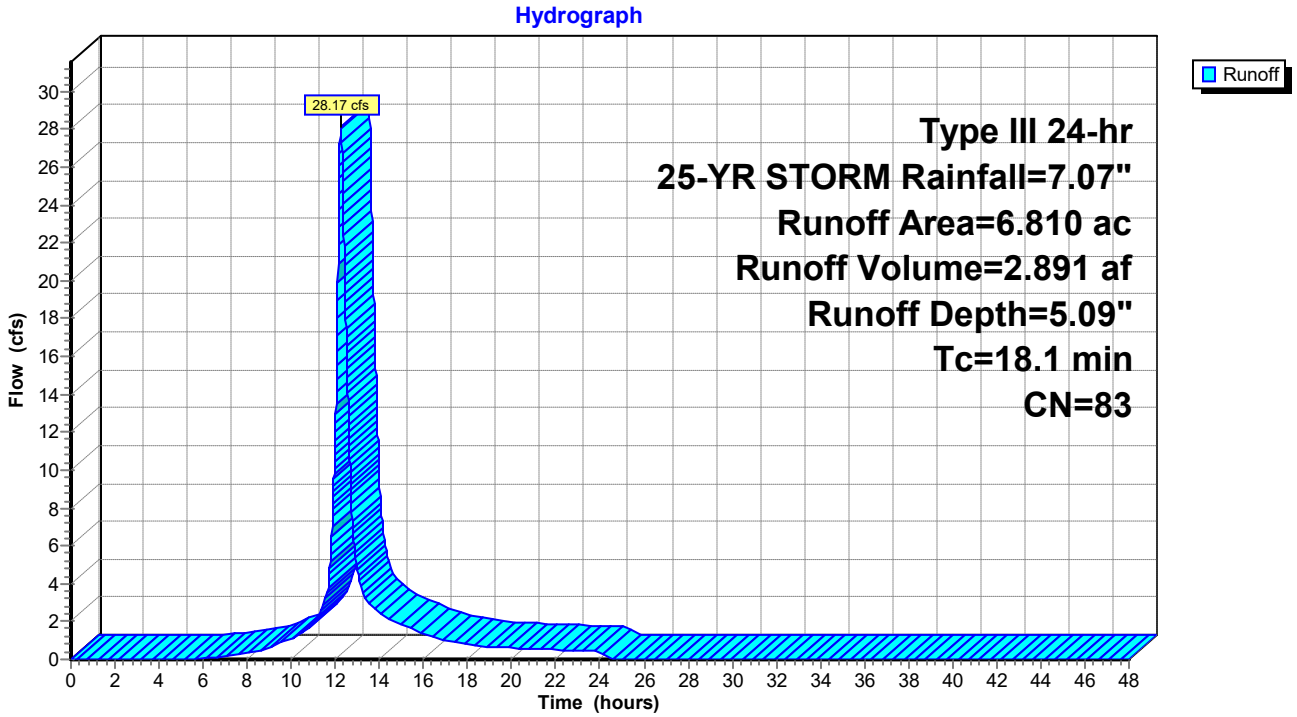
Runoff = 28.17 cfs @ 12.25 hrs, Volume= 2.891 af, Depth= 5.09"
Routed to Pond P9 :

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 STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	6.810	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

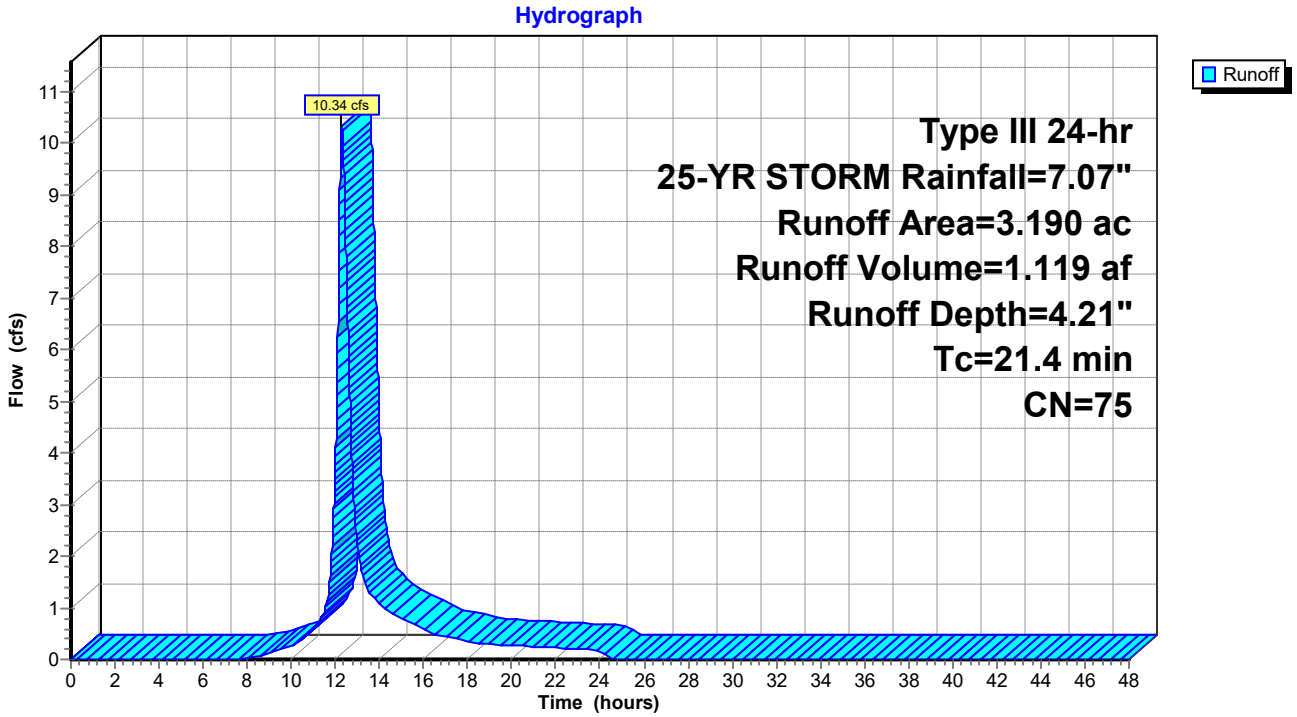
Runoff = 10.34 cfs @ 12.29 hrs, Volume= 1.119 af, Depth= 4.21"
Routed to Pond WS11 :

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 STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	3.190	75	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

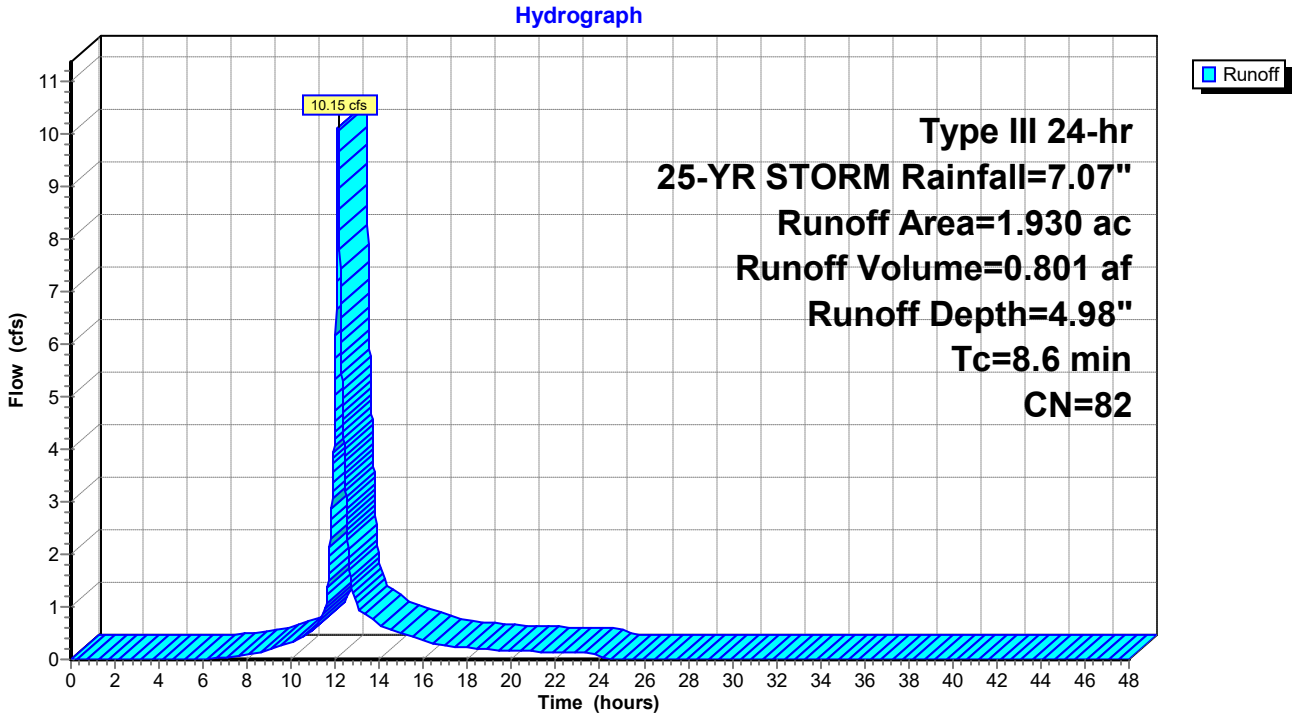
Runoff = 10.15 cfs @ 12.12 hrs, Volume= 0.801 af, Depth= 4.98"
Routed to Pond P12 :

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 STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	1.930	82	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 14:

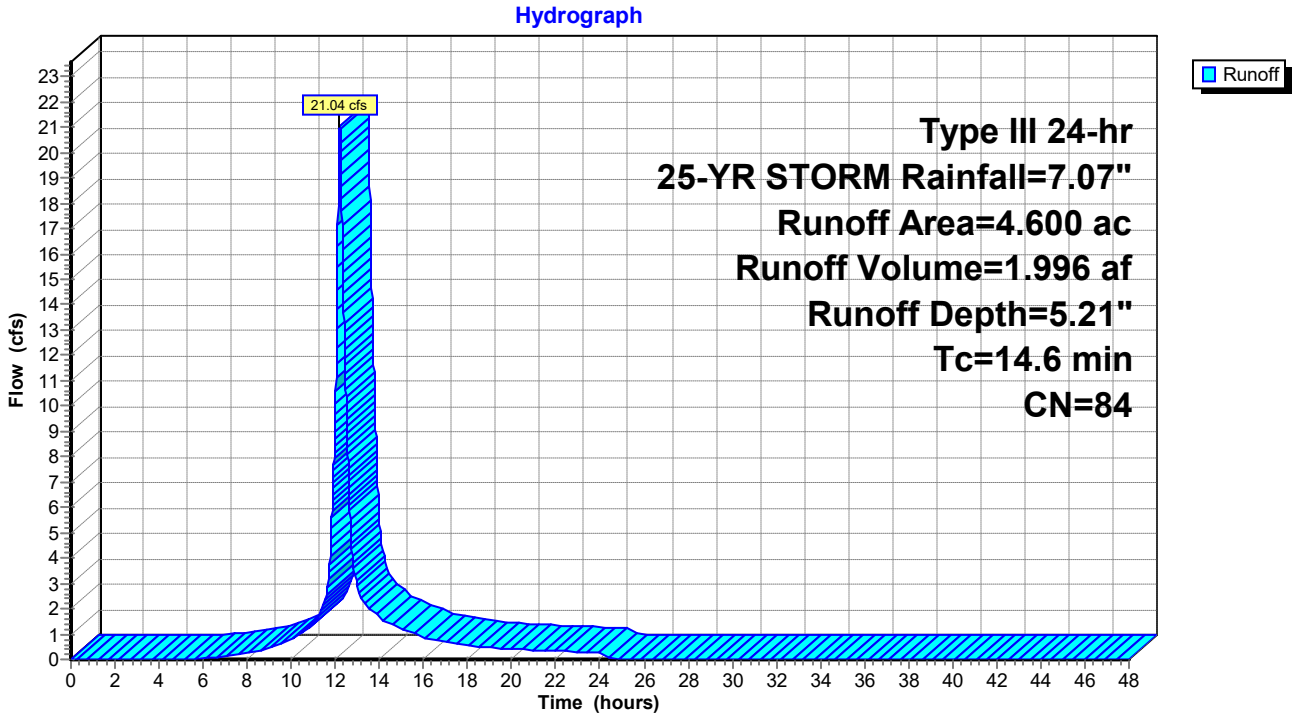
Runoff = 21.04 cfs @ 12.19 hrs, Volume= 1.996 af, Depth= 5.21"
Routed to Pond WS14 :

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 STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	4.600	84	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

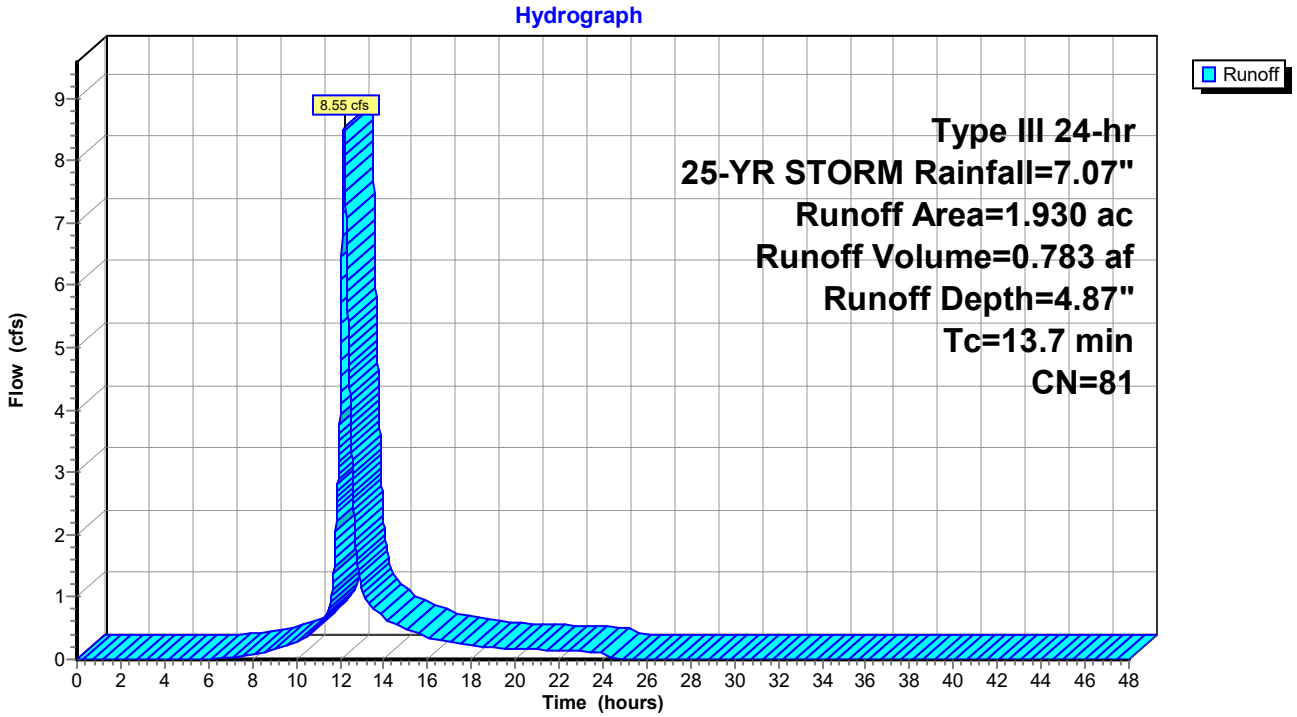
Runoff = 8.55 cfs @ 12.19 hrs, Volume= 0.783 af, Depth= 4.87"
Routed to nonexistent node 6L

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 STORM Rainfall=7.07"

	Area (ac)	CN	Description
*	1.930	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:



Summary for Pond P1:

Inflow Area = 1.280 ac, Inflow Depth = 5.09" for 25-YR STORM event
Inflow = 6.75 cfs @ 12.12 hrs, Volume= 0.543 af
Outflow = 6.61 cfs @ 12.15 hrs, Volume= 0.543 af, Atten= 2%, Lag= 1.3 min
Primary = 6.61 cfs @ 12.15 hrs, Volume= 0.543 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,125.42' @ 12.15 hrs Surf.Area= 2,428 sf Storage= 4,451 cf

Plug-Flow detention time= 77.1 min calculated for 0.543 af (100% of inflow)
Center-of-Mass det. time= 77.2 min (880.1 - 803.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,123.00'	5,895 cf	**Custom Stage Data (Prismatic)** Listed below

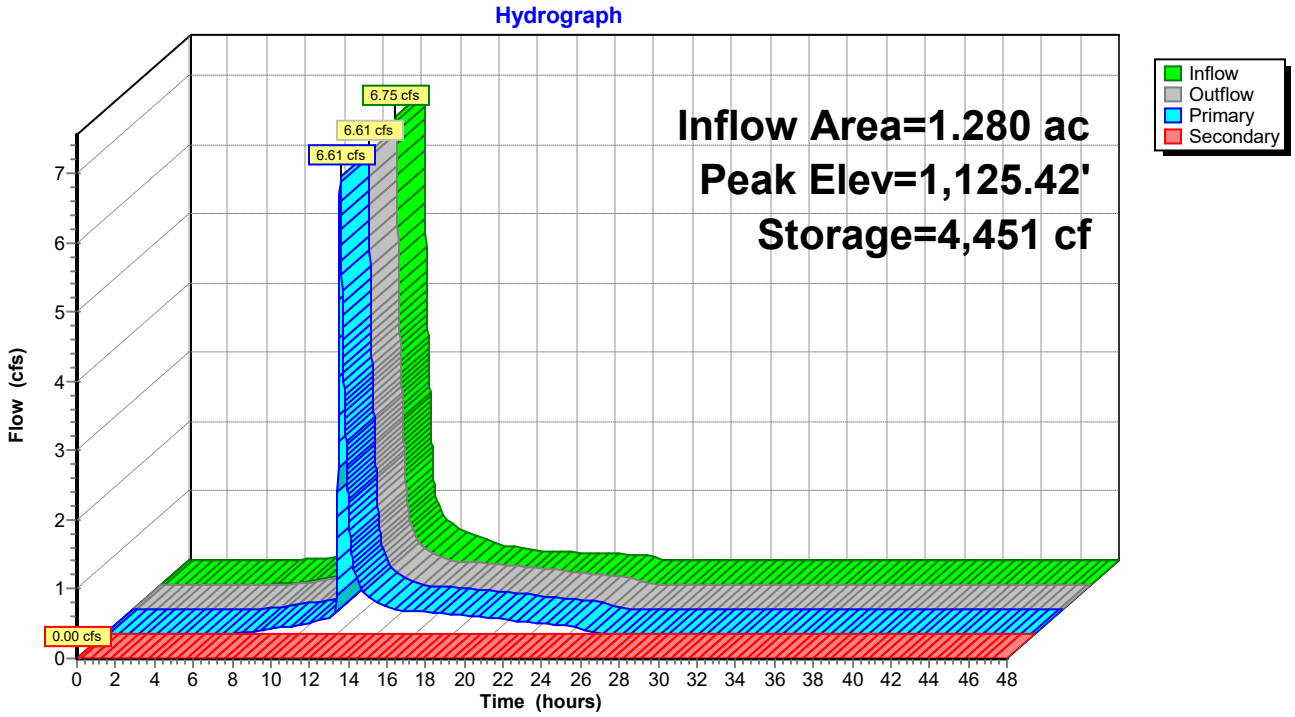
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,123.00	1,247	0	0
1,124.00	1,698	1,473	1,473
1,125.00	2,199	1,949	3,421
1,126.00	2,749	2,474	5,895

Device	Routing	Invert	Outlet Devices
#1	Primary	1,123.00'	**18.0" Round Culvert** L= 35.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,123.00' / 1,122.00' S= 0.0286 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	1,125.30'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,125.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,125.60'	**20.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,123.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.59 cfs @ 12.15 hrs HW=1,125.42' (Free Discharge)
└**1=Culvert** (Passes 6.59 cfs of 10.98 cfs potential flow)
├**2=Sharp-Crested Rectangular Weir** (Weir Controls 1.46 cfs @ 1.15 fps)
├**3=Sharp-Crested Rectangular Weir** (Weir Controls 4.76 cfs @ 2.32 fps)
└**5=Orifice/Grate** (Orifice Controls 0.37 cfs @ 7.48 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,123.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P1:


Hydrograph
Inflow Area=1.280 ac
Peak Elev=1,125.42'
Storage=4,451 cf
6.75 cfs
6.61 cfs
6.61 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P12:

Inflow Area = 1.930 ac, Inflow Depth = 4.98" for 25-YR STORM event
Inflow = 10.15 cfs @ 12.12 hrs, Volume= 0.801 af
Outflow = 9.45 cfs @ 12.16 hrs, Volume= 0.722 af, Atten= 7%, Lag= 2.3 min
Primary = 0.21 cfs @ 12.16 hrs, Volume= 0.180 af
Routed to nonexistent node 6L
Secondary = 9.25 cfs @ 12.16 hrs, Volume= 0.542 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,187.58' @ 12.16 hrs Surf.Area= 4,674 sf Storage= 6,336 cf

Plug-Flow detention time= 116.1 min calculated for 0.722 af (90% of inflow)
Center-of-Mass det. time= 68.3 min (873.3 - 805.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,184.00'	8,424 cf	**Custom Stage Data (Prismatic)** Listed below

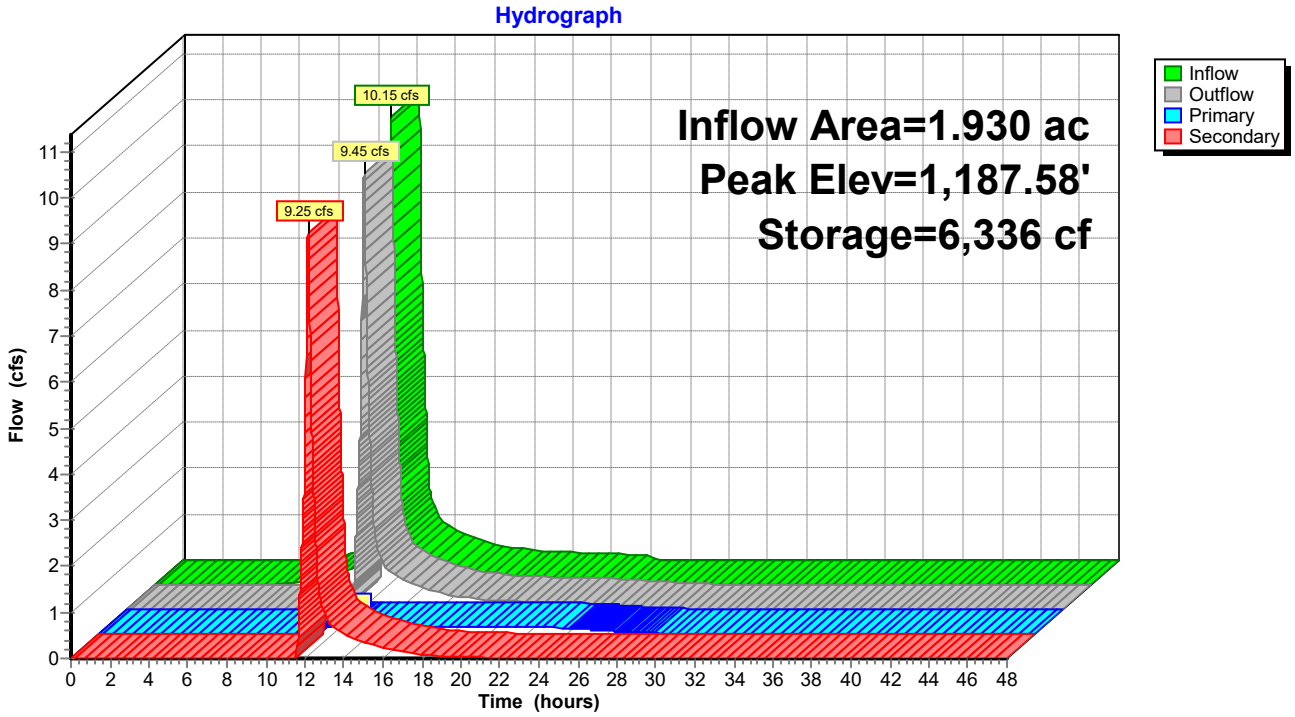
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,184.00	401	0	0
1,184.50	791	298	298
1,185.50	1,200	996	1,294
1,186.50	1,772	1,486	2,780
1,187.50	4,508	3,140	5,920
1,188.00	5,509	2,504	8,424

Device	Routing	Invert	Outlet Devices
#1	Primary	1,186.70'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Secondary	1,187.15'	**10.0' long Weir** 2 End Contraction(s)

Primary OutFlow Max=0.21 cfs @ 12.16 hrs HW=1,187.58' (Free Discharge)
1=Orifice (Orifice Controls 0.21 cfs @ 4.19 fps)

Secondary OutFlow Max=9.23 cfs @ 12.16 hrs HW=1,187.58' (Free Discharge)
2=Weir (Weir Controls 9.23 cfs @ 2.15 fps)

Pond P12:


Hydrograph
Inflow Area=1.930 ac
Peak Elev=1,187.58'
Storage=6,336 cf
10.15 cfs
9.45 cfs
9.25 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P2a:

Inflow Area = 3.850 ac, Inflow Depth = 4.87" for 25-YR STORM event
Inflow = 19.17 cfs @ 12.13 hrs, Volume= 1.563 af
Outflow = 18.60 cfs @ 12.16 hrs, Volume= 1.512 af, Atten= 3%, Lag= 1.6 min
Primary = 9.19 cfs @ 12.16 hrs, Volume= 1.360 af
Routed to nonexistent node 6L
Secondary = 9.41 cfs @ 12.16 hrs, Volume= 0.152 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,085.57' @ 12.16 hrs Surf.Area= 4,297 sf Storage= 8,907 cf

Plug-Flow detention time= 72.5 min calculated for 1.512 af (97% of inflow)
Center-of-Mass det. time= 54.0 min (862.6 - 808.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,082.75'	9,641 cf	**Custom Stage Data (Prismatic)** Listed below

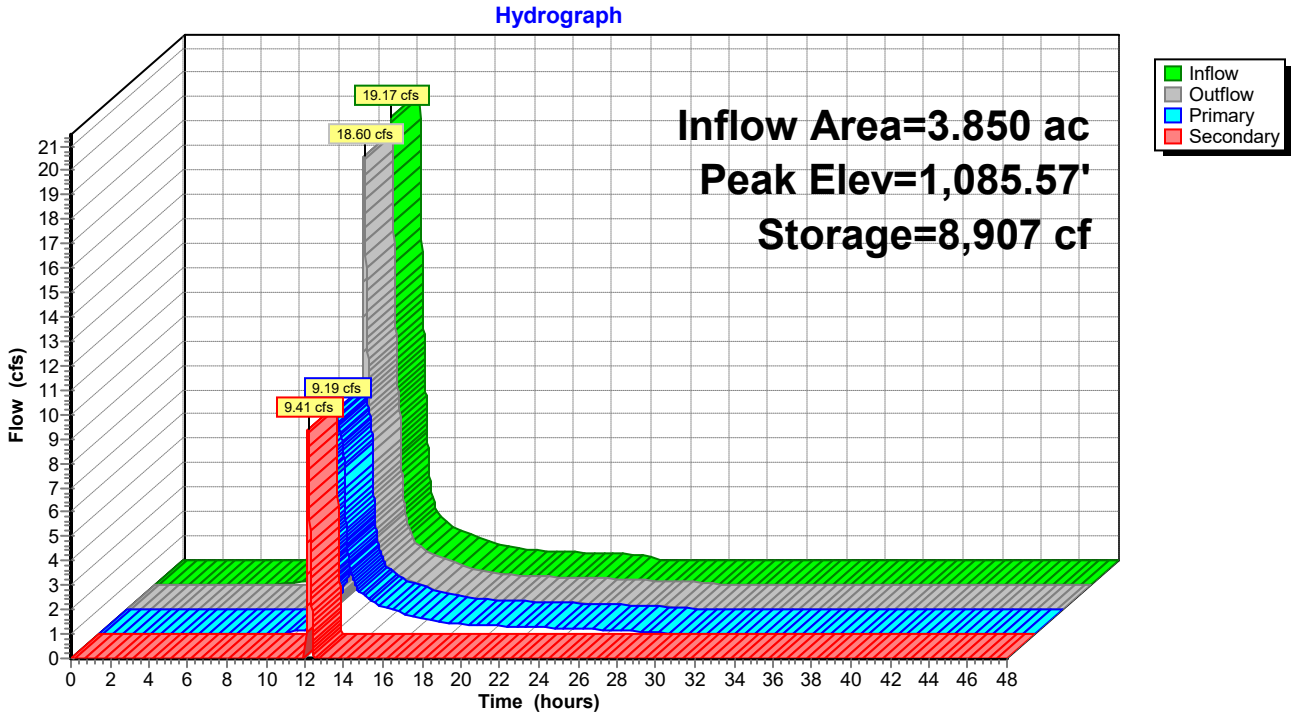
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,082.75	2,048	0	0
1,083.75	2,794	2,421	2,421
1,084.75	3,596	3,195	5,616
1,085.75	4,454	4,025	9,641

Device	Routing	Invert	Outlet Devices
#1	Device 3	1,084.50'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Device 3	1,083.65'	**3.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Primary	1,083.65'	**18.0" Round Culvert** L= 59.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,083.65' / 1,083.00' S= 0.0110 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 3	1,085.00'	**72.0" x 72.0" Horiz. Top of Riser** C= 0.600 Limited to weir flow at low heads
#5	Secondary	1,085.25'	**20.0' long + 3.0 '/' SideZ x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=9.19 cfs @ 12.16 hrs HW=1,085.57' (Free Discharge)
└**3=Culvert** (Inlet Controls 9.19 cfs @ 5.20 fps)
├**1=Sharp-Crested Rectangular Weir** (Passes < 17.26 cfs potential flow)
├**2=Orifice** (Passes < 0.33 cfs potential flow)
└**4=Top of Riser** (Passes < 33.55 cfs potential flow)

Secondary OutFlow Max=9.40 cfs @ 12.16 hrs HW=1,085.57' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Weir Controls 9.40 cfs @ 1.41 fps)

Pond P2a:


Hydrograph
Inflow Area=3.850 ac
Peak Elev=1,085.57'
Storage=8,907 cf
19.17 cfs
18.60 cfs
9.19 cfs
9.41 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P2b:

Inflow Area = 4.020 ac, Inflow Depth = 4.32" for 25-YR STORM event
Inflow = 15.85 cfs @ 12.19 hrs, Volume= 1.447 af
Outflow = 15.14 cfs @ 12.23 hrs, Volume= 1.364 af, Atten= 4%, Lag= 2.6 min
Primary = 0.30 cfs @ 12.23 hrs, Volume= 0.362 af
Routed to nonexistent node 6L
Secondary = 14.84 cfs @ 12.23 hrs, Volume= 1.002 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,041.10' @ 12.23 hrs Surf.Area= 5,550 sf Storage= 11,261 cf

Plug-Flow detention time= 123.2 min calculated for 1.364 af (94% of inflow)
Center-of-Mass det. time= 92.1 min (916.4 - 824.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,038.50'	13,587 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

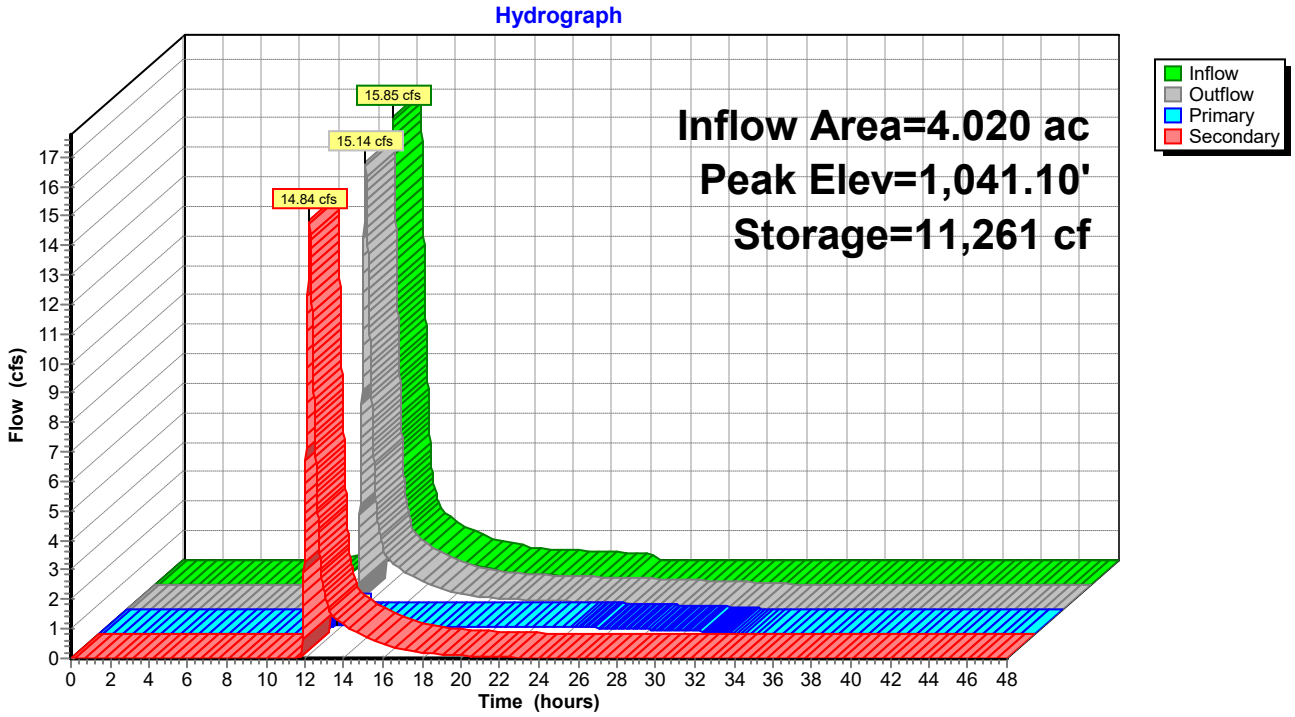
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,038.50	3,189	0	0
1,039.50	4,051	3,620	3,620
1,040.50	4,969	4,510	8,130
1,041.50	5,945	5,457	13,587

Device	Routing	Invert	Outlet Devices
#1	Secondary	1,040.50'	**10.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	1,039.50'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.30 cfs @ 12.23 hrs HW=1,041.10' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 0.30 cfs @ 6.08 fps)

Secondary OutFlow Max=14.83 cfs @ 12.23 hrs HW=1,041.10' (Free Discharge)
↑—**1=Sharp-Crested Rectangular Weir** (Weir Controls 14.83 cfs @ 2.52 fps)

Pond P2b:


Hydrograph
Inflow Area=4.020 ac
Peak Elev=1,041.10'
Storage=11,261 cf
15.85 cfs
15.14 cfs
14.84 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P3:

Inflow Area = 7.890 ac, Inflow Depth = 5.09" for 25-YR STORM event
Inflow = 41.48 cfs @ 12.13 hrs, Volume= 3.349 af
Outflow = 37.03 cfs @ 12.18 hrs, Volume= 3.349 af, Atten= 11%, Lag= 3.0 min
Primary = 37.03 cfs @ 12.18 hrs, Volume= 3.349 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,128.99' @ 12.18 hrs Surf.Area= 7,380 sf Storage= 30,295 cf

Plug-Flow detention time= 170.6 min calculated for 3.348 af (100% of inflow)
Center-of-Mass det. time= 170.8 min (973.8 - 803.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,122.00'	38,268 cf	**Custom Stage Data (Prismatic)** Listed below

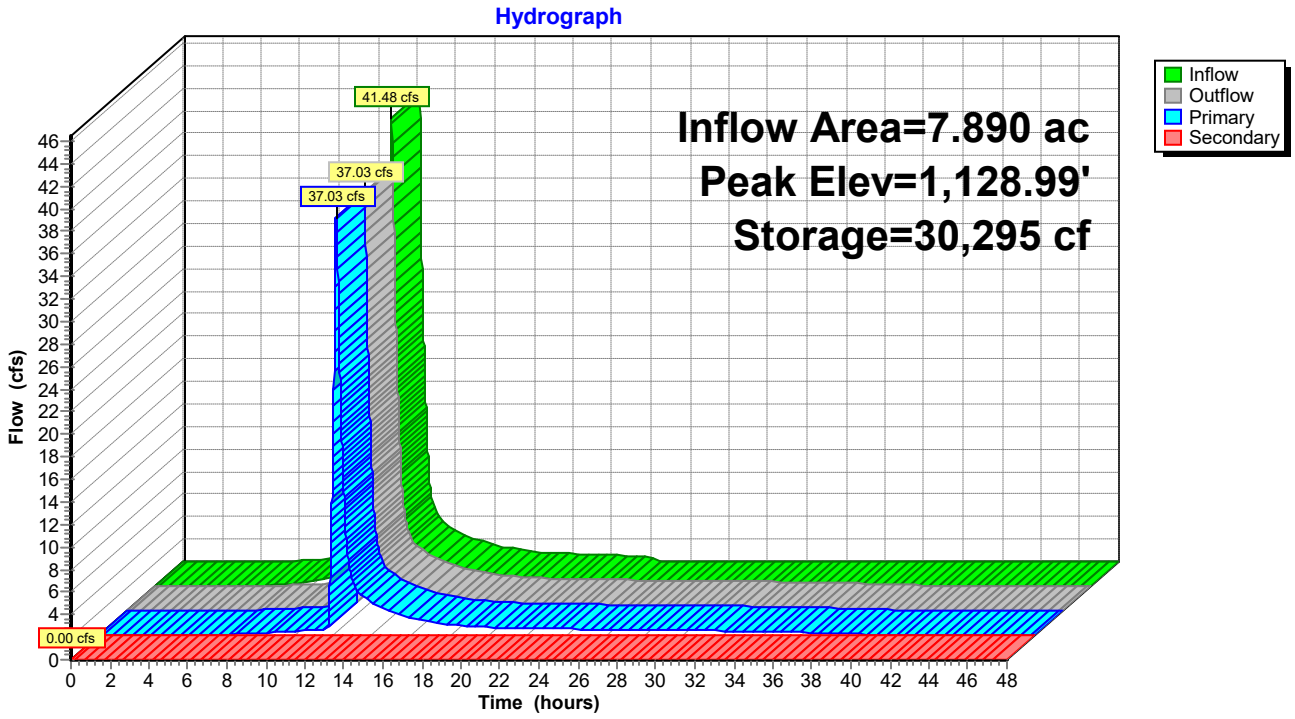
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,122.00	1,797	0	0
1,123.00	2,400	2,099	2,099
1,124.00	3,074	2,737	4,836
1,125.00	3,810	3,442	8,278
1,126.00	4,608	4,209	12,487
1,127.00	5,471	5,040	17,526
1,128.00	6,397	5,934	23,460
1,129.00	7,388	6,893	30,353
1,130.00	8,442	7,915	38,268

Device	Routing	Invert	Outlet Devices
#1	Primary	1,122.00'	**24.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,122.00' / 1,121.50' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,129.00'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,127.50'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,129.50'	**40.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,122.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=37.02 cfs @ 12.18 hrs HW=1,128.99' (Free Discharge)
└─**1=Culvert** (Inlet Controls 37.02 cfs @ 11.79 fps)
  ├─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  ├─**3=Sharp-Crested Rectangular Weir** (Passes < 38.19 cfs potential flow)
  └─**5=Orifice/Grate** (Passes < 0.62 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,122.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P3:



Summary for Pond P5:

Inflow Area = 1.680 ac, Inflow Depth = 5.09" for 25-YR STORM event
Inflow = 9.34 cfs @ 12.11 hrs, Volume= 0.713 af
Outflow = 8.53 cfs @ 12.14 hrs, Volume= 0.713 af, Atten= 9%, Lag= 2.4 min
Primary = 8.53 cfs @ 12.14 hrs, Volume= 0.713 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,142.44' @ 12.14 hrs Surf.Area= 4,434 sf Storage= 7,981 cf

Plug-Flow detention time= 137.7 min calculated for 0.713 af (100% of inflow)
Center-of-Mass det. time= 137.6 min (939.1 - 801.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,140.00'	10,517 cf	**Custom Stage Data (Prismatic)** Listed below

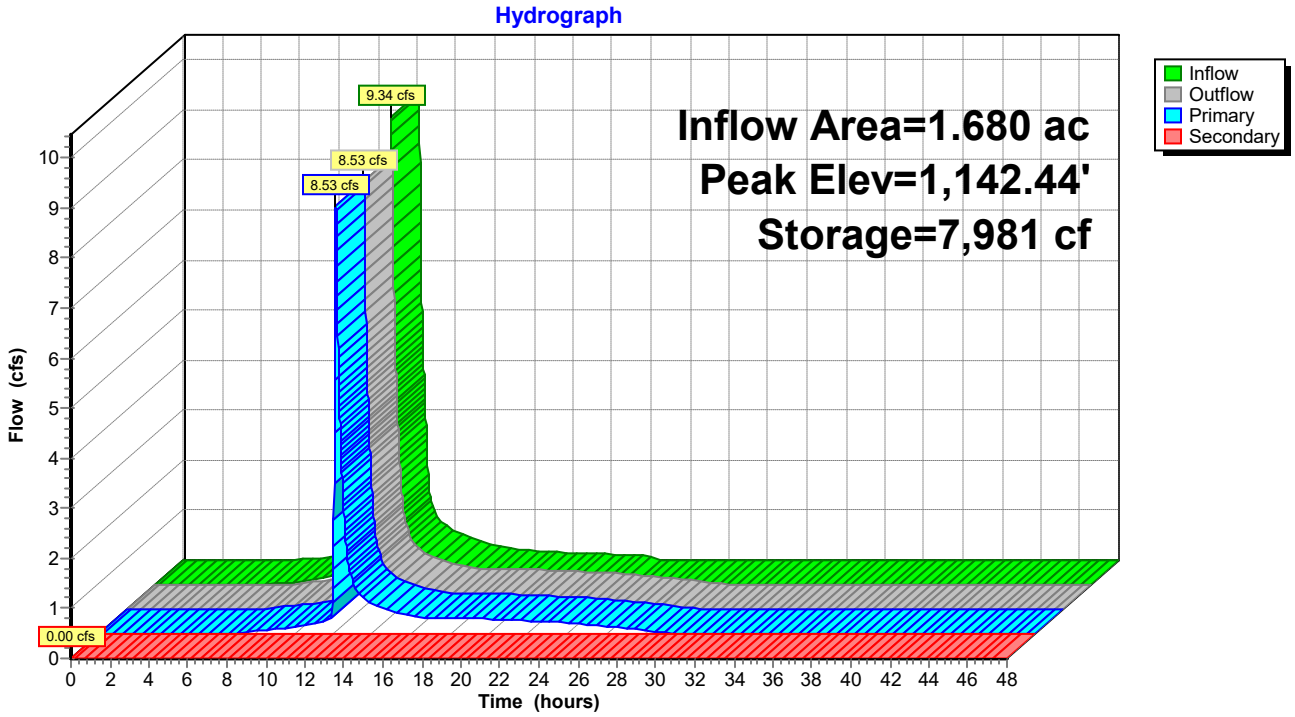
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,140.00	2,092	0	0
1,141.00	2,986	2,539	2,539
1,142.00	3,967	3,477	6,016
1,143.00	5,036	4,502	10,517

Device	Routing	Invert	Outlet Devices
#1	Primary	1,140.00'	**24.0" Round Culvert** L= 30.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,140.00' / 1,139.50' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,142.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,142.25'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,142.50'	**30.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,140.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.50 cfs @ 12.14 hrs HW=1,142.44' (Free Discharge)
└**1=Culvert** (Passes 8.50 cfs of 18.13 cfs potential flow)
  ├**2=Sharp-Crested Rectangular Weir** (Weir Controls 5.12 cfs @ 2.39 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Weir Controls 3.01 cfs @ 1.48 fps)
  └**5=Orifice/Grate** (Orifice Controls 0.37 cfs @ 7.52 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,140.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P5:


Hydrograph
Inflow Area=1.680 ac
Peak Elev=1,142.44'
Storage=7,981 cf
9.34 cfs
8.53 cfs
8.53 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8 9 10

Summary for Pond P7:

Inflow Area = 4.070 ac, Inflow Depth = 4.87" for 25-YR STORM event
Inflow = 15.80 cfs @ 12.26 hrs, Volume= 1.652 af
Outflow = 8.59 cfs @ 12.56 hrs, Volume= 1.635 af, Atten= 46%, Lag= 17.9 min
Primary = 8.59 cfs @ 12.56 hrs, Volume= 1.635 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,151.53' @ 12.56 hrs Surf.Area= 9,037 sf Storage= 30,419 cf

Plug-Flow detention time= 429.8 min calculated for 1.635 af (99% of inflow)
Center-of-Mass det. time= 423.8 min (1,241.2 - 817.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,147.00'	44,832 cf	**Custom Stage Data (Prismatic)** Listed below

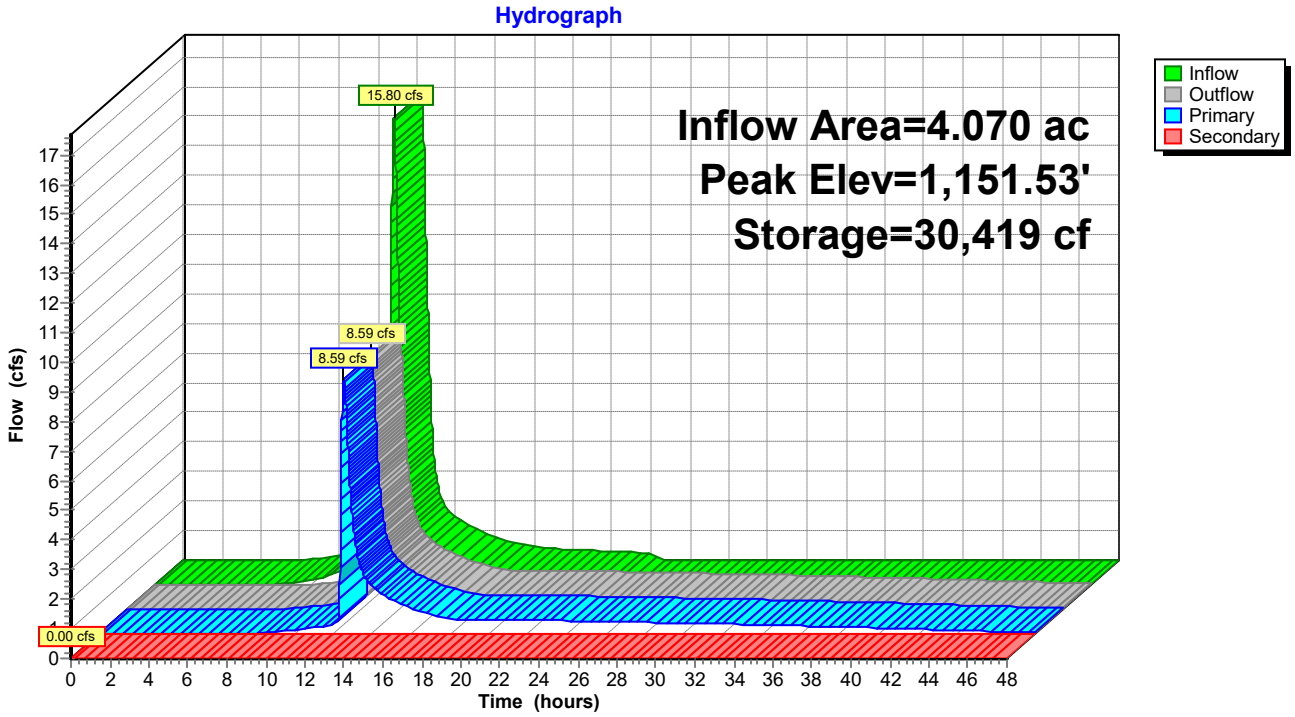
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,147.00	4,554	0	0
1,148.00	5,432	4,993	4,993
1,149.00	6,361	5,897	10,890
1,150.00	7,356	6,859	17,748
1,151.00	8,425	7,891	25,639
1,152.00	9,578	9,002	34,640
1,153.00	10,805	10,192	44,832

Device	Routing	Invert	Outlet Devices
#1	Primary	1,147.00'	**30.0" Round Culvert** L= 106.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,147.00' / 1,146.10' S= 0.0085 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	1,152.00'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,150.95'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,152.50'	**30.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,147.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.57 cfs @ 12.56 hrs HW=1,151.53' (Free Discharge)
└**1=Culvert** (Passes 8.57 cfs of 42.81 cfs potential flow)
  ├**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  ├**3=Sharp-Crested Rectangular Weir** (Weir Controls 8.08 cfs @ 2.85 fps)
  └**5=Orifice/Grate** (Orifice Controls 0.50 cfs @ 10.11 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,147.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P7:


Hydrograph
Inflow Area=4.070 ac
Peak Elev=1,151.53'
Storage=30,419 cf
15.80 cfs
8.59 cfs
8.59 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

Summary for Pond P8/10:

Inflow Area = 28.040 ac, Inflow Depth = 5.09" for 25-YR STORM event
Inflow = 129.12 cfs @ 12.19 hrs, Volume= 11.903 af
Outflow = 113.15 cfs @ 12.26 hrs, Volume= 11.134 af, Atten= 12%, Lag= 4.4 min
Primary = 113.15 cfs @ 12.26 hrs, Volume= 11.134 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,113.62' @ 12.26 hrs Storage= 124,505 cf

Plug-Flow detention time= 163.1 min calculated for 11.132 af (94% of inflow)
Center-of-Mass det. time= 128.9 min (936.1 - 807.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,108.00'	166,405 cf	**Custom Stage Data** Listed below

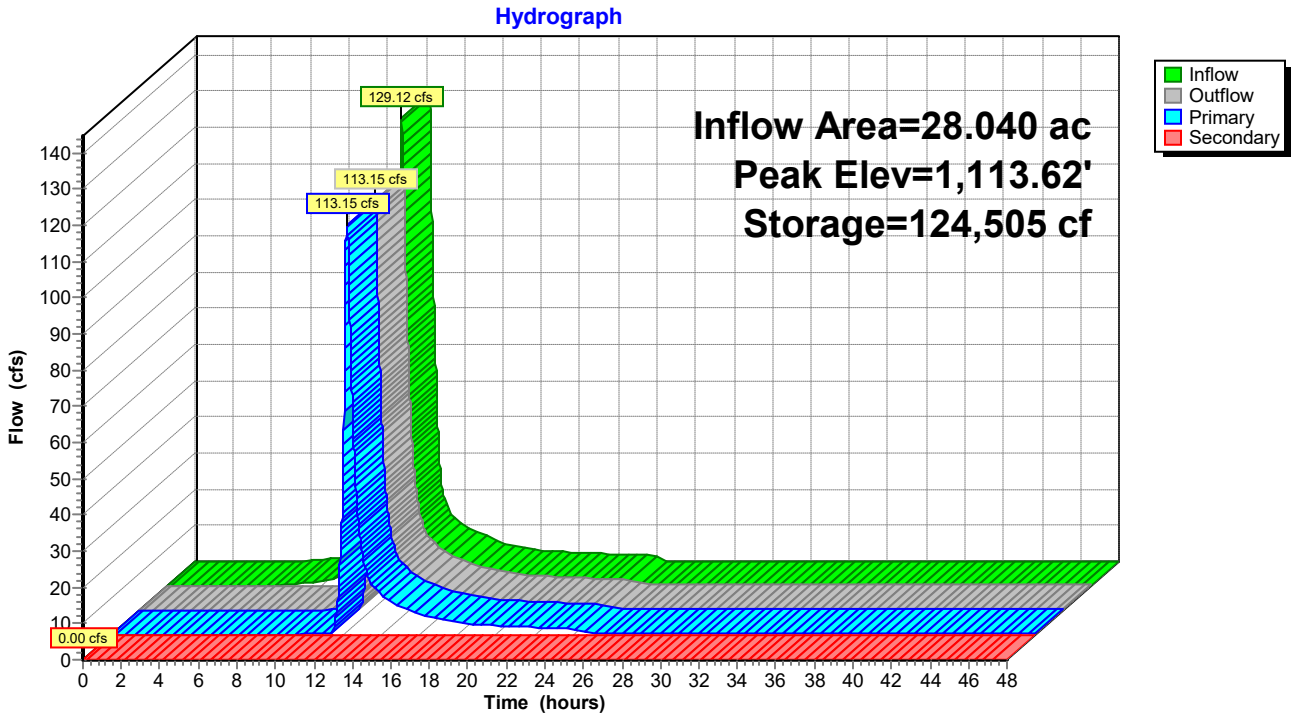
Elevation (feet)	Cum.Store (cubic-feet)
1,108.00	0
1,109.00	16,747
1,110.00	35,732
1,111.00	57,018
1,112.00	80,666
1,113.00	106,738
1,114.00	135,298
1,115.00	166,405

Device	Routing	Invert	Outlet Devices
#1	Primary	1,108.00'	**48.0" Round Culvert** L= 44.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,108.00' / 1,107.50' S= 0.0114 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,113.00'	**19.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,111.25'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,114.25'	**50.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,108.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=113.15 cfs @ 12.26 hrs HW=1,113.62' (Free Discharge)
└─**1=Culvert** (Barrel Controls 113.15 cfs @ 9.00 fps)
  ├─**2=Sharp-Crested Rectangular Weir** (Passes < 34.88 cfs potential flow)
  ├─**3=Sharp-Crested Rectangular Weir** (Passes < 85.43 cfs potential flow)
  └─**5=Orifice/Grate** (Passes < 0.55 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,108.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P8/10:



Summary for Pond P9:

Inflow Area = 6.810 ac, Inflow Depth = 5.09" for 25-YR STORM event
Inflow = 28.17 cfs @ 12.25 hrs, Volume= 2.891 af
Outflow = 21.74 cfs @ 12.39 hrs, Volume= 2.849 af, Atten= 23%, Lag= 8.8 min
Primary = 21.23 cfs @ 12.39 hrs, Volume= 2.844 af
Routed to nonexistent node 6L
Secondary = 0.51 cfs @ 12.39 hrs, Volume= 0.005 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,180.05' @ 12.39 hrs Surf.Area= 14,859 sf Storage= 33,366 cf

Plug-Flow detention time= 221.9 min calculated for 2.848 af (99% of inflow)
Center-of-Mass det. time= 213.2 min (1,024.5 - 811.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,177.00'	48,733 cf	**Custom Stage Data (Prismatic)** Listed below

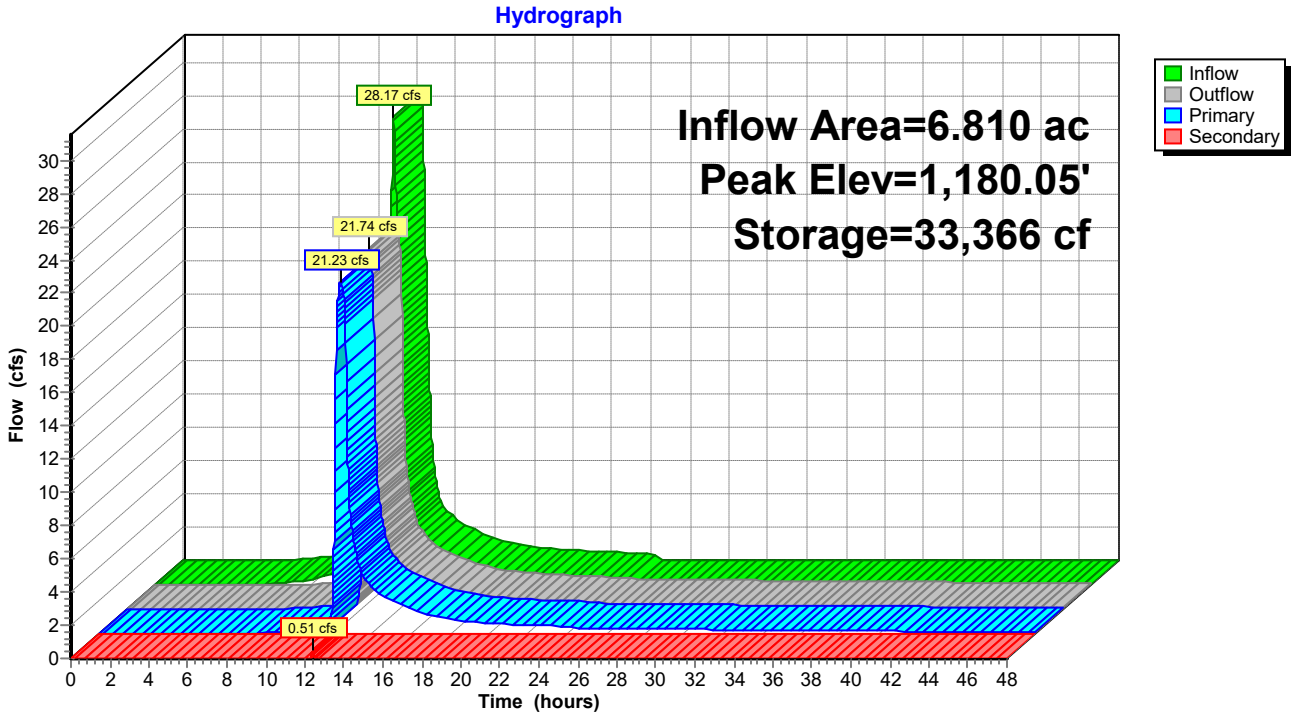
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,177.00	7,155	0	0
1,178.00	9,581	8,368	8,368
1,179.00	12,108	10,845	19,213
1,180.00	14,735	13,422	32,634
1,181.00	17,463	16,099	48,733

Device	Routing	Invert	Outlet Devices
#1	Primary	1,177.00'	**24.0" Round Culvert** L= 64.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,177.00' / 1,176.50' S= 0.0078 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,179.50'	**19.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,179.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,180.00'	**20.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,177.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=21.23 cfs @ 12.39 hrs HW=1,180.05' (Free Discharge)
└**1=Culvert** (Barrel Controls 21.23 cfs @ 6.76 fps)
├**2=Sharp-Crested Rectangular Weir** (Passes < 28.20 cfs potential flow)
├**3=Sharp-Crested Rectangular Weir** (Passes < 21.03 cfs potential flow)
└**5=Orifice/Grate** (Passes < 0.40 cfs potential flow)

Secondary OutFlow Max=0.50 cfs @ 12.39 hrs HW=1,180.05' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 0.50 cfs @ 0.55 fps)

Pond P9:


Hydrograph
Inflow Area=6.810 ac
Peak Elev=1,180.05'
Storage=33,366 cf
28.17 cfs
21.74 cfs
21.23 cfs
0.51 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30

Summary for Pond WS11:

Inflow Area = 3.190 ac, Inflow Depth = 4.21" for 25-YR STORM event
Inflow = 10.34 cfs @ 12.29 hrs, Volume= 1.119 af
Outflow = 9.24 cfs @ 12.40 hrs, Volume= 0.858 af, Atten= 11%, Lag= 6.4 min
Primary = 9.24 cfs @ 12.40 hrs, Volume= 0.858 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 1,191.33' @ 12.40 hrs Surf.Area= 8,334 sf Storage= 14,252 cf

Plug-Flow detention time= 137.5 min calculated for 0.858 af (77% of inflow)
Center-of-Mass det. time= 53.5 min (887.0 - 833.6)

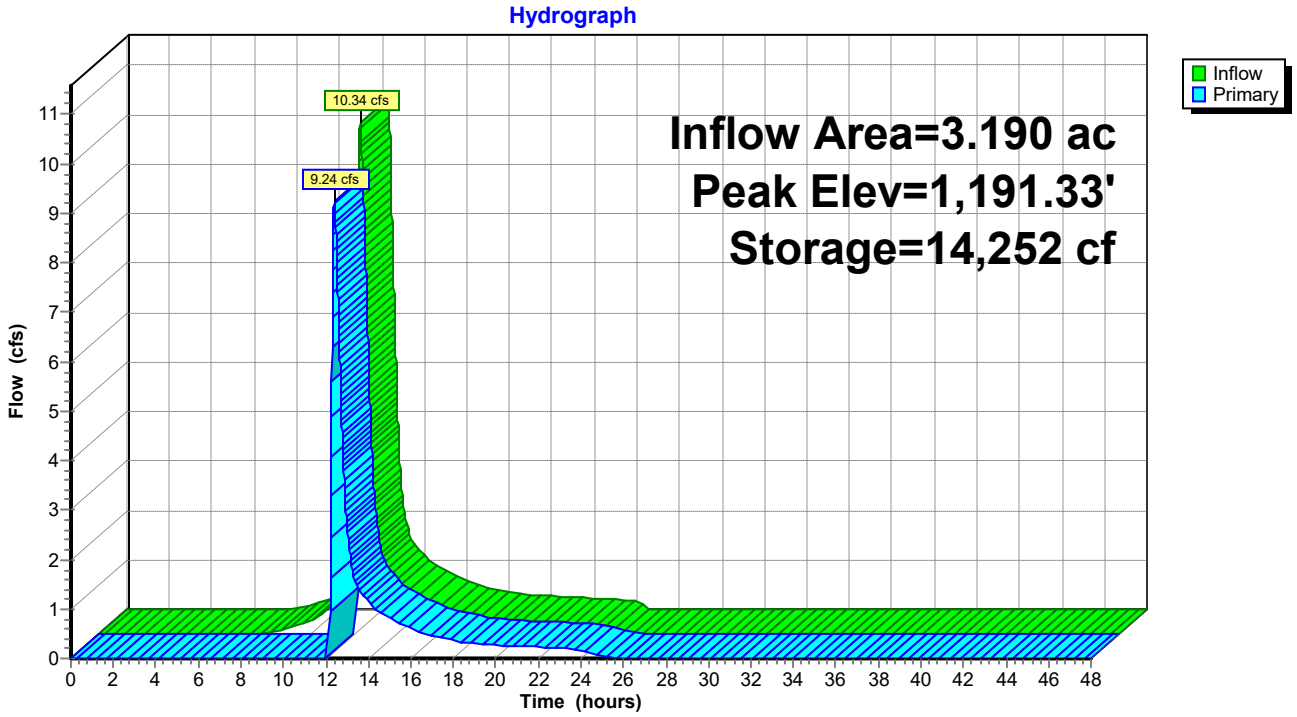
Volume	Invert	Avail.Storage	Storage Description
#1	1,188.00'	25,568 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,188.00	220	0	0
1,189.00	2,537	1,379	1,379
1,190.00	4,998	3,768	5,146
1,191.00	7,486	6,242	11,388
1,192.00	10,087	8,787	20,175
1,192.50	11,488	5,394	25,568

Device	Routing	Invert	Outlet Devices
#1	Primary	1,191.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Device 1	1,189.80'	**90.0 deg x 4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)

Primary OutFlow Max=9.23 cfs @ 12.40 hrs HW=1,191.33' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 9.23 cfs @ 1.42 fps)
↑—**2=Sharp-Crested Vee/Trap Weir** (Passes 9.23 cfs of 22.65 cfs potential flow)

Pond WS11:


Hydrograph
Inflow
Primary
10.34 cfs
9.24 cfs
Inflow Area=3.190 ac
Peak Elev=1,191.33'
Storage=14,252 cf
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond WS14:

Inflow Area = 4.600 ac, Inflow Depth = 5.21" for 25-YR STORM event
Inflow = 21.04 cfs @ 12.19 hrs, Volume= 1.996 af
Outflow = 20.04 cfs @ 12.24 hrs, Volume= 1.795 af, Atten= 5%, Lag= 2.8 min
Primary = 20.04 cfs @ 12.24 hrs, Volume= 1.795 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,148.06' @ 12.24 hrs Surf.Area= 6,414 sf Storage= 11,876 cf

Plug-Flow detention time= 79.2 min calculated for 1.795 af (90% of inflow)
Center-of-Mass det. time= 30.5 min (836.0 - 805.4)

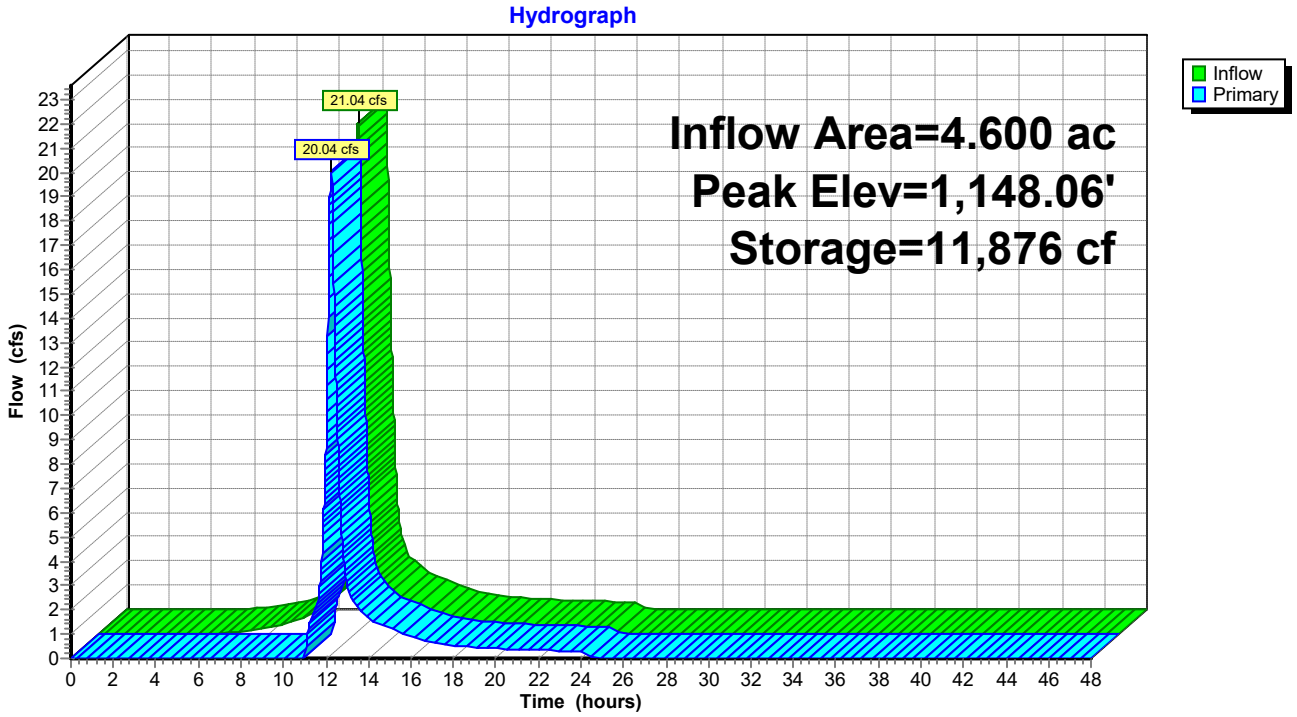
Volume	Invert	Avail.Storage	Storage Description
#1	1,145.00'	14,985 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,145.00	724	0	0
1,146.00	3,306	2,015	2,015
1,147.00	4,678	3,992	6,007
1,148.00	6,202	5,440	11,447
1,148.50	7,948	3,538	14,985

Device	Routing	Invert	Outlet Devices
#1	Device 2	1,146.80'	**90.0 deg x 4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)
#2	Primary	1,147.50'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=20.03 cfs @ 12.24 hrs HW=1,148.06' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Passes 20.03 cfs of 22.33 cfs potential flow)
↑**1=Sharp-Crested Vee/Trap Weir** (Weir Controls 20.03 cfs @ 3.02 fps)

Pond WS14:


Hydrograph
Inflow
Primary
21.04 cfs
20.04 cfs
Inflow Area=4.600 ac
Peak Elev=1,148.06'
Storage=11,876 cf
Flow (cfs)
Time (hours)

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 1: Runoff Area=1.280 ac Runoff Depth=6.03"
Tc=9.1 min CN=83 Runoff=7.94 cfs 0.644 af

Subcatchment 2a: Runoff Area=3.850 ac Runoff Depth=5.80"
Tc=9.7 min CN=81 Runoff=22.68 cfs 1.860 af

Subcatchment 2b: Runoff Area=4.020 ac Runoff Depth=5.21"
Tc=13.9 min CN=76 Runoff=19.07 cfs 1.746 af

Subcatchment 3: Runoff Area=7.890 ac Runoff Depth=6.03"
Tc=9.2 min CN=83 Runoff=48.78 cfs 3.968 af

Subcatchment 5: Runoff Area=1.680 ac Runoff Depth=6.03"
Tc=7.5 min CN=83 Runoff=10.98 cfs 0.845 af

Subcatchment 7: Runoff Area=4.070 ac Runoff Depth=5.80"
Tc=19.2 min CN=81 Runoff=18.70 cfs 1.967 af

Subcatchment 8/10: Runoff Area=28.040 ac Runoff Depth=6.03"
Tc=13.7 min CN=83 Runoff=151.91 cfs 14.101 af

Subcatchment 9: Runoff Area=6.810 ac Runoff Depth=6.03"
Tc=18.1 min CN=83 Runoff=33.13 cfs 3.425 af

Subcatchment 11: Runoff Area=3.190 ac Runoff Depth=5.10"
Tc=21.4 min CN=75 Runoff=12.48 cfs 1.355 af

Subcatchment 12: Runoff Area=1.930 ac Runoff Depth=5.92"
Tc=8.6 min CN=82 Runoff=11.97 cfs 0.952 af

Subcatchment 14: Runoff Area=4.600 ac Runoff Depth=6.15"
Tc=14.6 min CN=84 Runoff=24.69 cfs 2.359 af

Subcatchment 15: Runoff Area=1.930 ac Runoff Depth=5.80"
Tc=13.7 min CN=81 Runoff=10.12 cfs 0.933 af

Pond P1: Peak Elev=1,125.45' Storage=4,528 cf Inflow=7.94 cfs 0.644 af
Primary=7.82 cfs 0.644 af Secondary=0.00 cfs 0.000 af Outflow=7.82 cfs 0.644 af

Pond P12: Peak Elev=1,187.64' Storage=6,597 cf Inflow=11.97 cfs 0.952 af
Primary=0.21 cfs 0.188 af Secondary=10.95 cfs 0.684 af Outflow=11.16 cfs 0.872 af

Pond P2a: Peak Elev=1,085.63' Storage=9,177 cf Inflow=22.68 cfs 1.860 af
Primary=9.45 cfs 1.571 af Secondary=12.77 cfs 0.239 af Outflow=22.22 cfs 1.810 af

Pond P2b: Peak Elev=1,041.18' Storage=11,719 cf Inflow=19.07 cfs 1.746 af
Primary=0.31 cfs 0.373 af Secondary=17.98 cfs 1.290 af Outflow=18.29 cfs 1.663 af

Pond P3: Peak Elev=1,129.34' Storage=33,071 cf Inflow=48.78 cfs 3.968 af
Primary=38.10 cfs 3.968 af Secondary=0.00 cfs 0.000 af Outflow=38.10 cfs 3.968 af

Pond P5: Peak Elev=1,142.48' Storage=8,175 cf Inflow=10.98 cfs 0.845 af
Primary=10.50 cfs 0.845 af Secondary=0.00 cfs 0.000 af Outflow=10.50 cfs 0.845 af

Pond P7: Peak Elev=1,151.71' Storage=32,031 cf Inflow=18.70 cfs 1.967 af
Primary=12.98 cfs 1.948 af Secondary=0.00 cfs 0.000 af Outflow=12.98 cfs 1.948 af

Pond P8/10: Peak Elev=1,113.99' Storage=135,136 cf Inflow=151.91 cfs 14.101 af
Primary=120.93 cfs 13.331 af Secondary=0.00 cfs 0.000 af Outflow=120.93 cfs 13.331 af

Pond P9: Peak Elev=1,180.20' Storage=35,928 cf Inflow=33.13 cfs 3.425 af
Primary=22.30 cfs 3.299 af Secondary=4.77 cfs 0.083 af Outflow=27.06 cfs 3.382 af

Pond WS11: Peak Elev=1,191.38' Storage=14,742 cf Inflow=12.48 cfs 1.355 af
Outflow=11.92 cfs 1.093 af

Pond WS14: Peak Elev=1,148.16' Storage=12,580 cf Inflow=24.69 cfs 2.359 af
Outflow=23.26 cfs 2.158 af

Total Runoff Area = 69.290 ac Runoff Volume = 34.153 af Average Runoff Depth = 5.91"

Summary for Subcatchment 1:

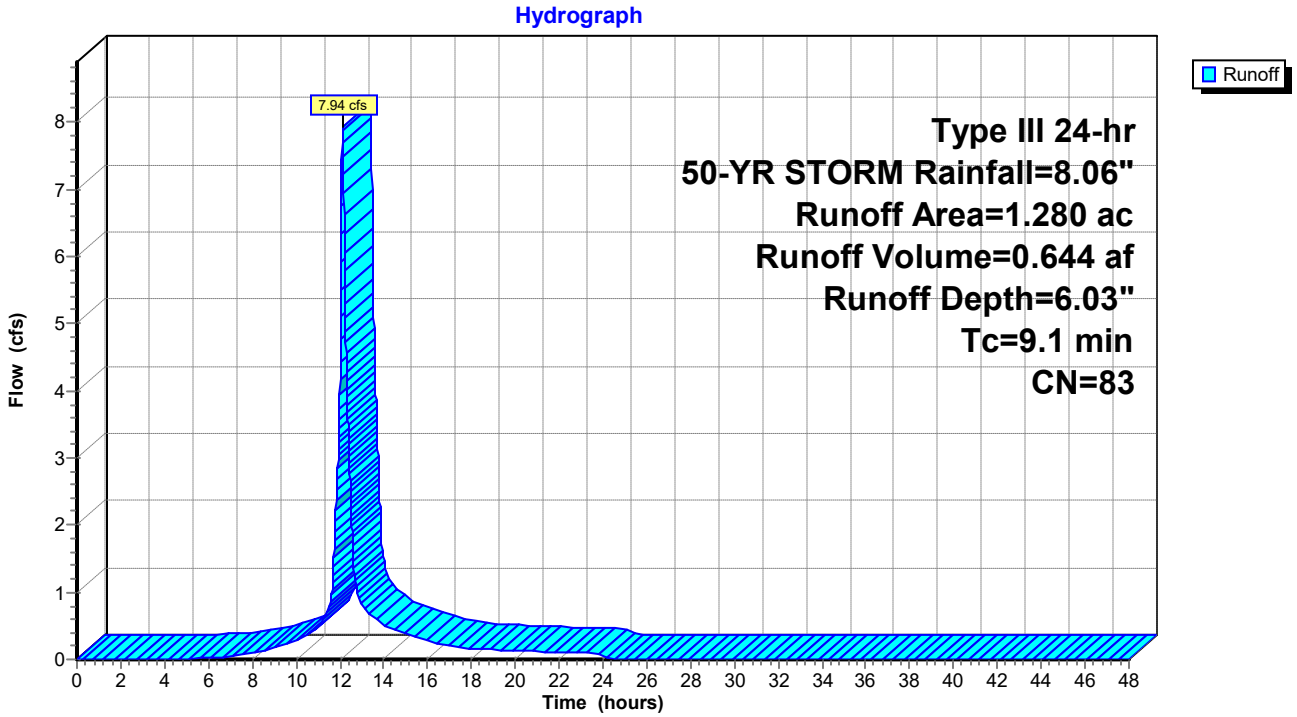
Runoff = 7.94 cfs @ 12.12 hrs, Volume= 0.644 af, Depth= 6.03"
Routed to Pond P1 :

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 STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	1.280	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

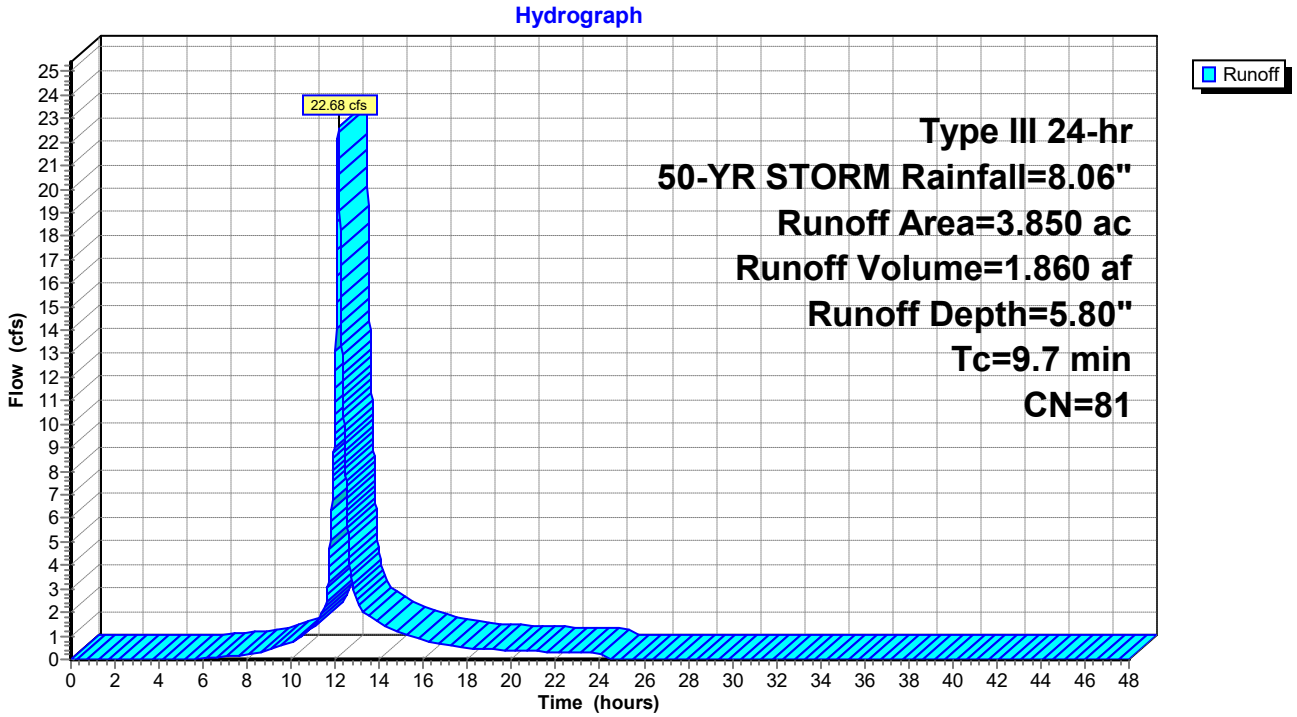
Runoff = 22.68 cfs @ 12.13 hrs, Volume= 1.860 af, Depth= 5.80"
Routed to Pond P2a :

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 STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	3.850	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

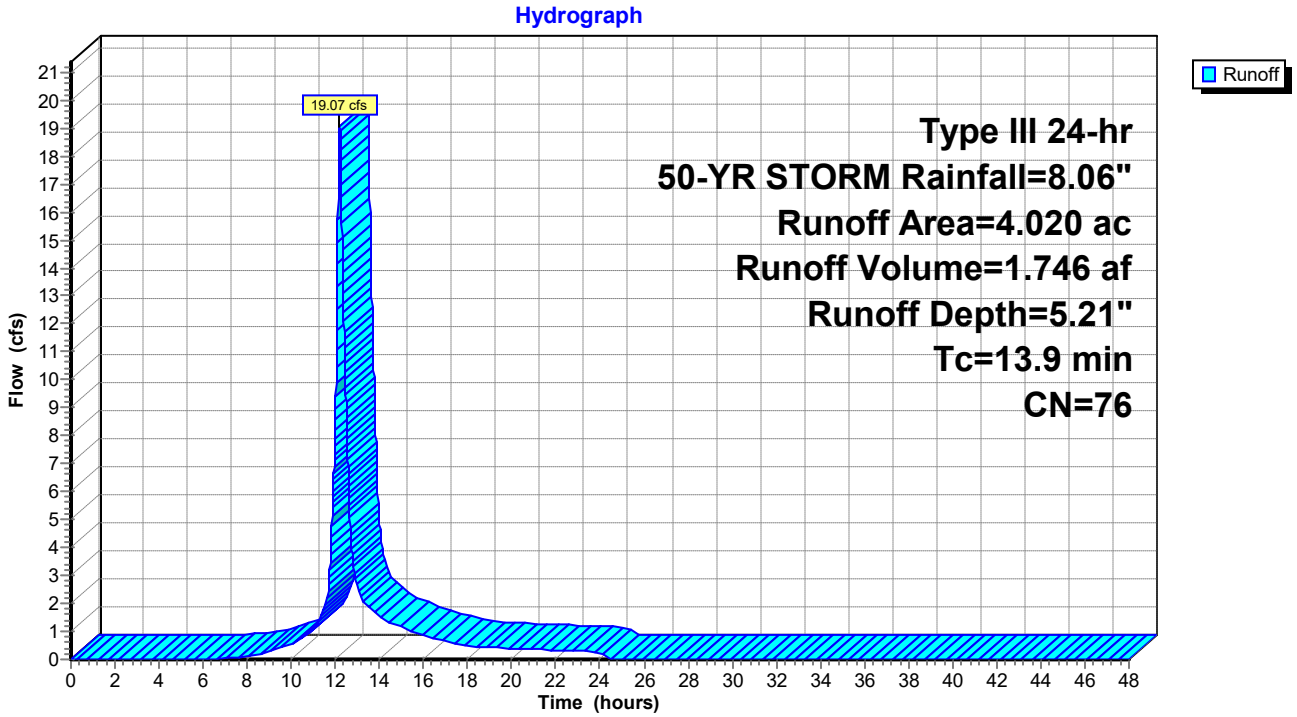
Runoff = 19.07 cfs @ 12.19 hrs, Volume= 1.746 af, Depth= 5.21"
Routed to Pond P2b :

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 STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	4.020	76	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

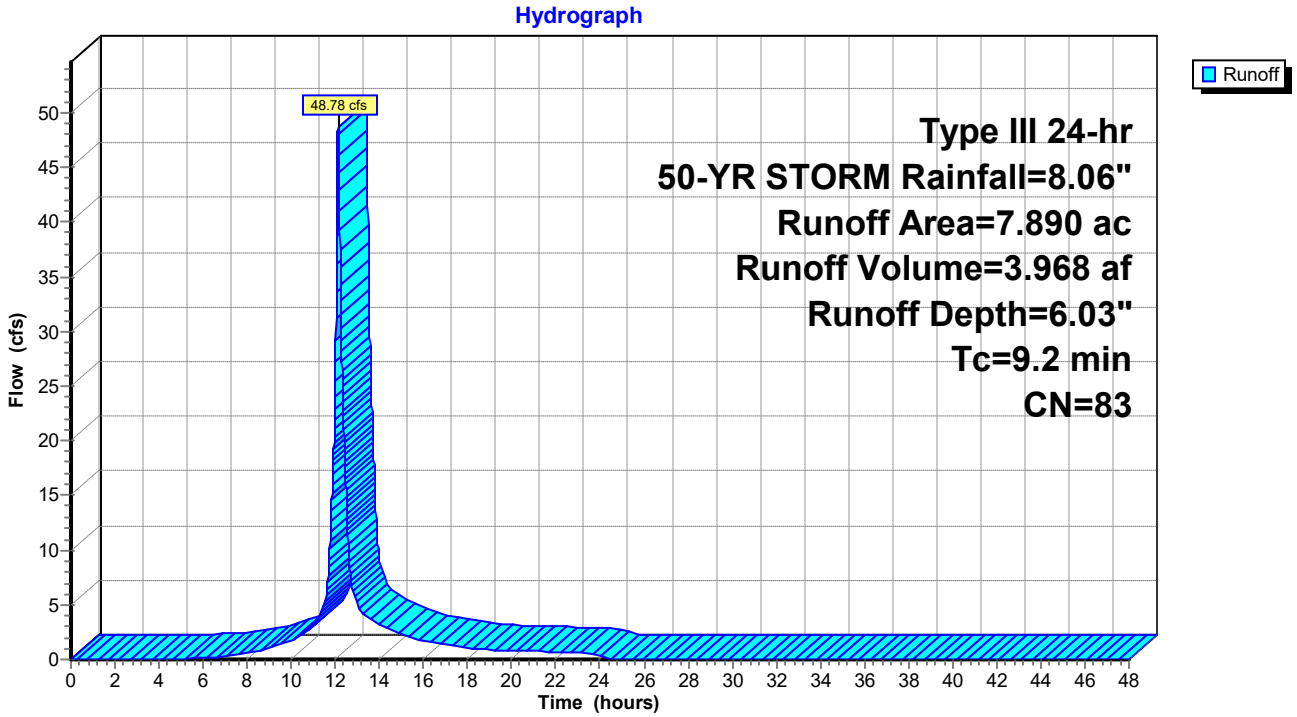
Runoff = 48.78 cfs @ 12.13 hrs, Volume= 3.968 af, Depth= 6.03"
Routed to Pond P3 :

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 STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	7.890	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 5:

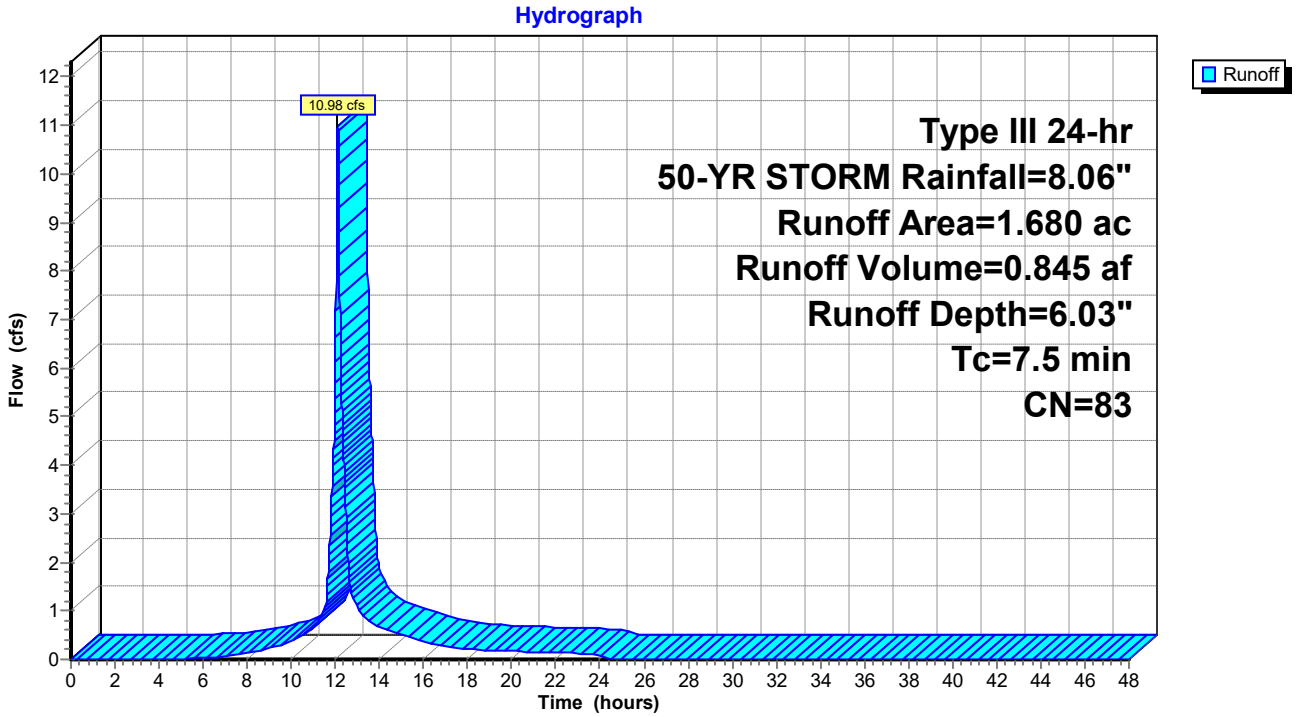
Runoff = 10.98 cfs @ 12.11 hrs, Volume= 0.845 af, Depth= 6.03"
Routed to Pond P5 :

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 STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	1.680	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

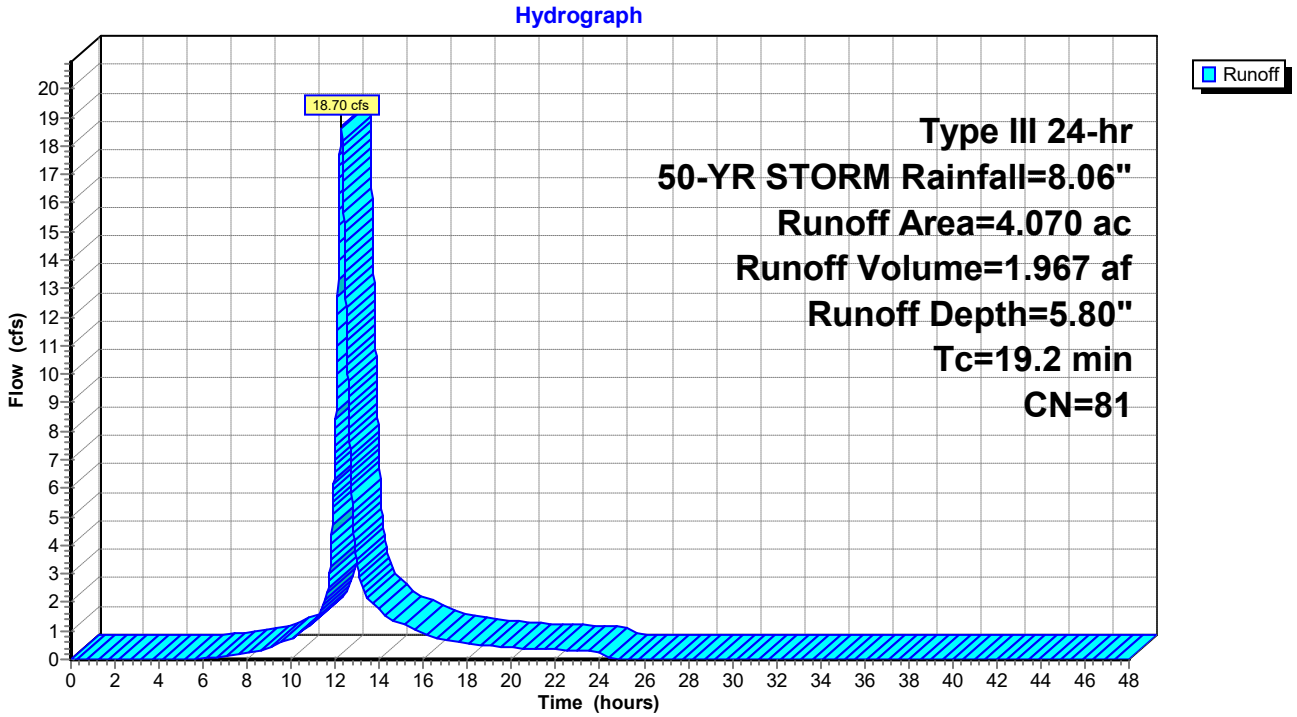
Runoff = 18.70 cfs @ 12.26 hrs, Volume= 1.967 af, Depth= 5.80"
Routed to Pond P7 :

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 STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	4.070	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8/10:

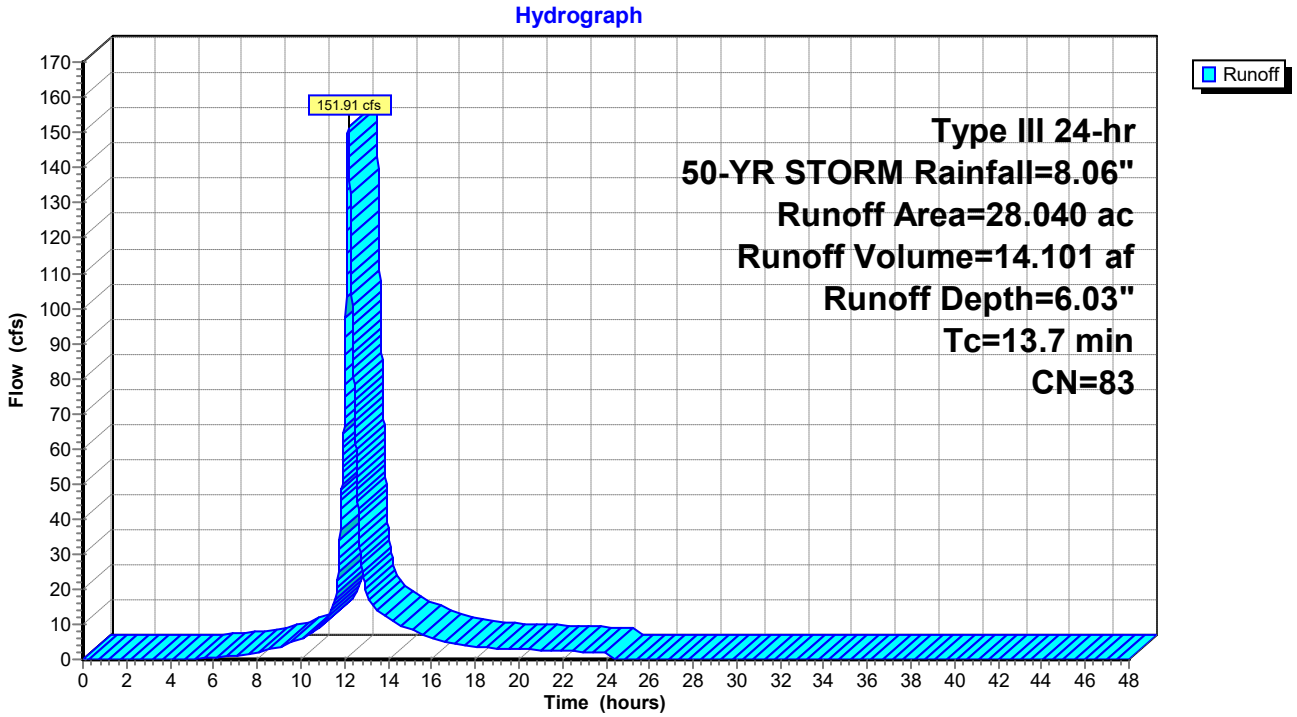
Runoff = 151.91 cfs @ 12.19 hrs, Volume= 14.101 af, Depth= 6.03"
Routed to Pond P8/10 :

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 STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	28.040	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 8/10:



Summary for Subcatchment 9:

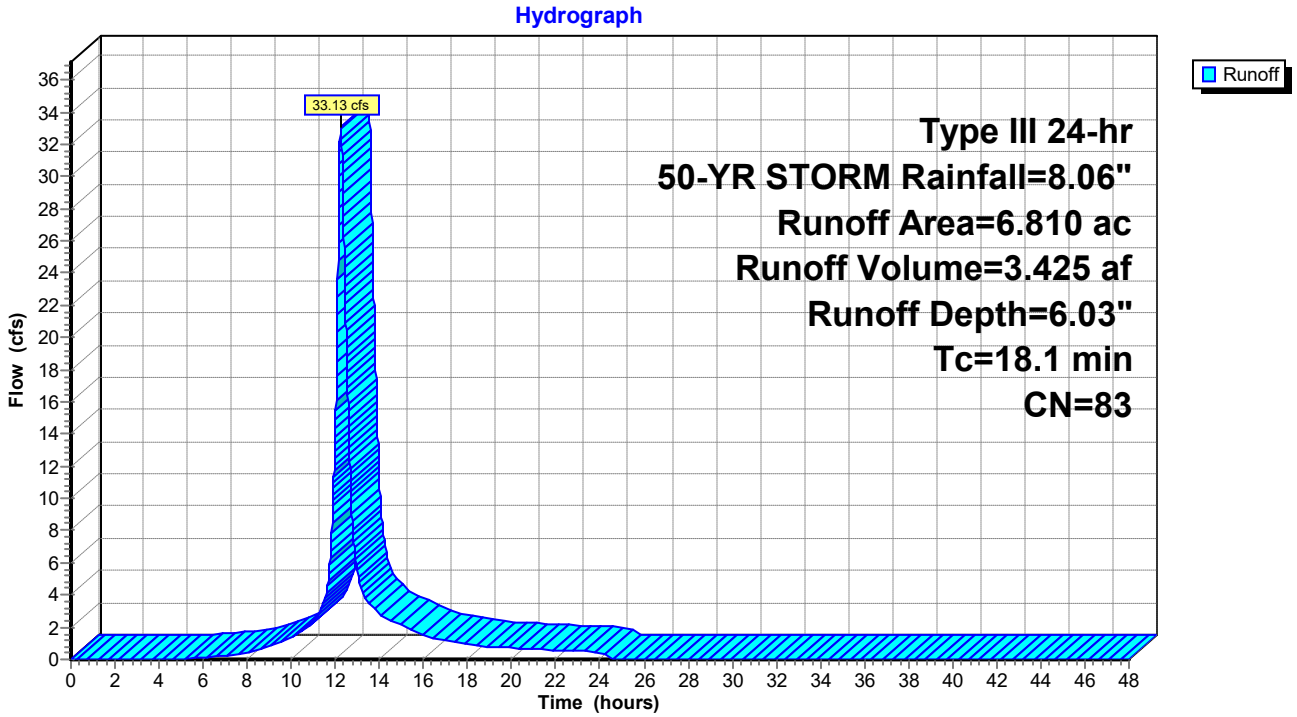
Runoff = 33.13 cfs @ 12.24 hrs, Volume= 3.425 af, Depth= 6.03"
Routed to Pond P9 :

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 STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	6.810	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

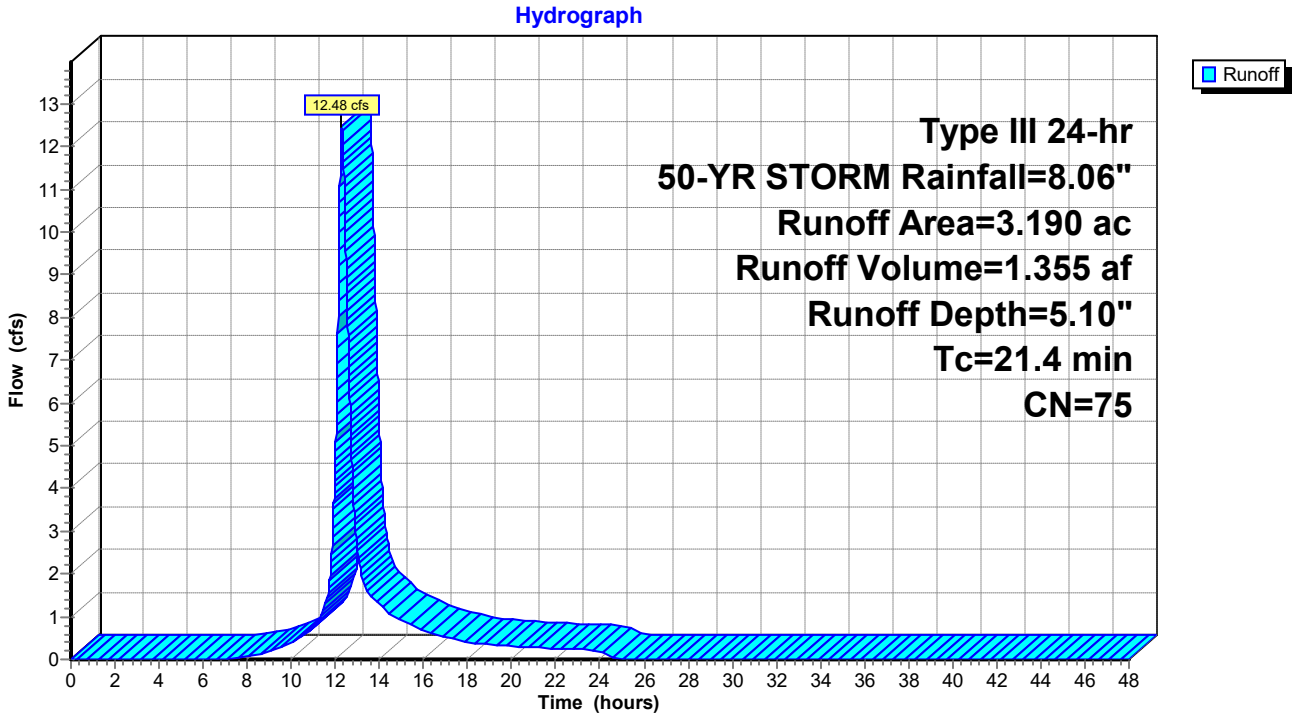
Runoff = 12.48 cfs @ 12.29 hrs, Volume= 1.355 af, Depth= 5.10"
Routed to Pond WS11 :

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 STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	3.190	75	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

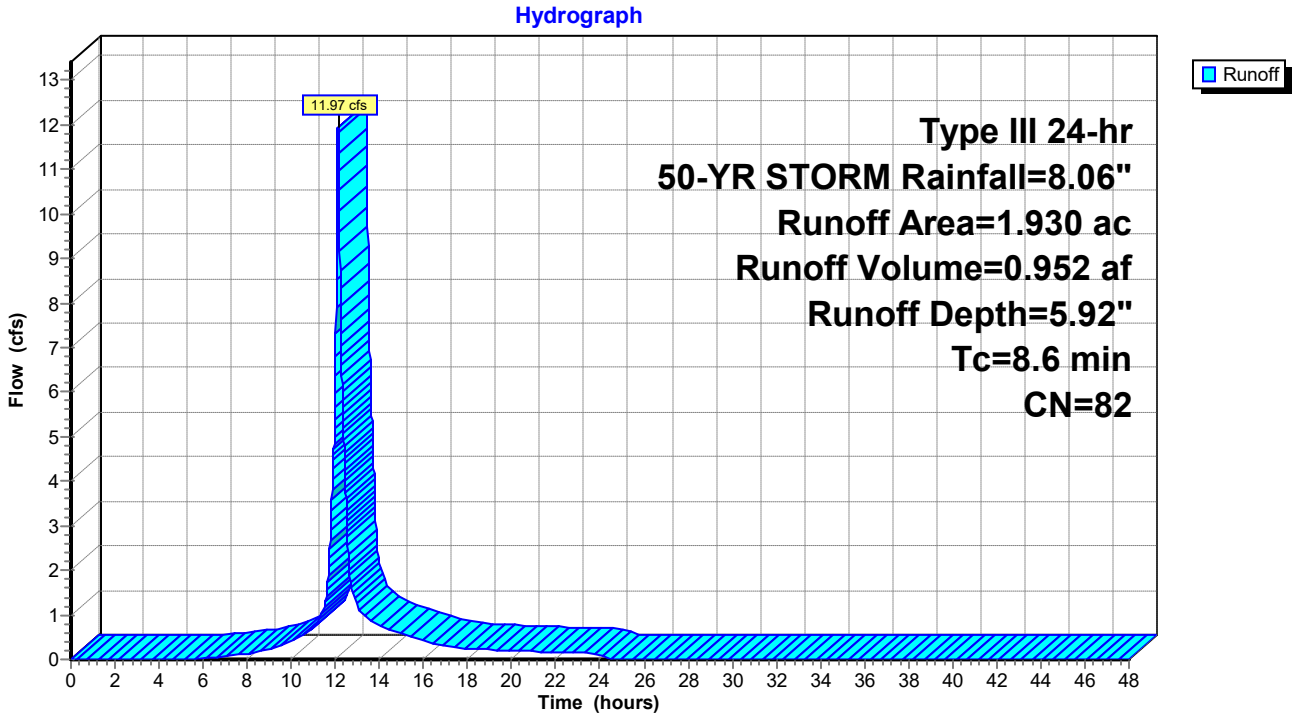
Runoff = 11.97 cfs @ 12.12 hrs, Volume= 0.952 af, Depth= 5.92"
Routed to Pond P12 :

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 STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	1.930	82	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 14:

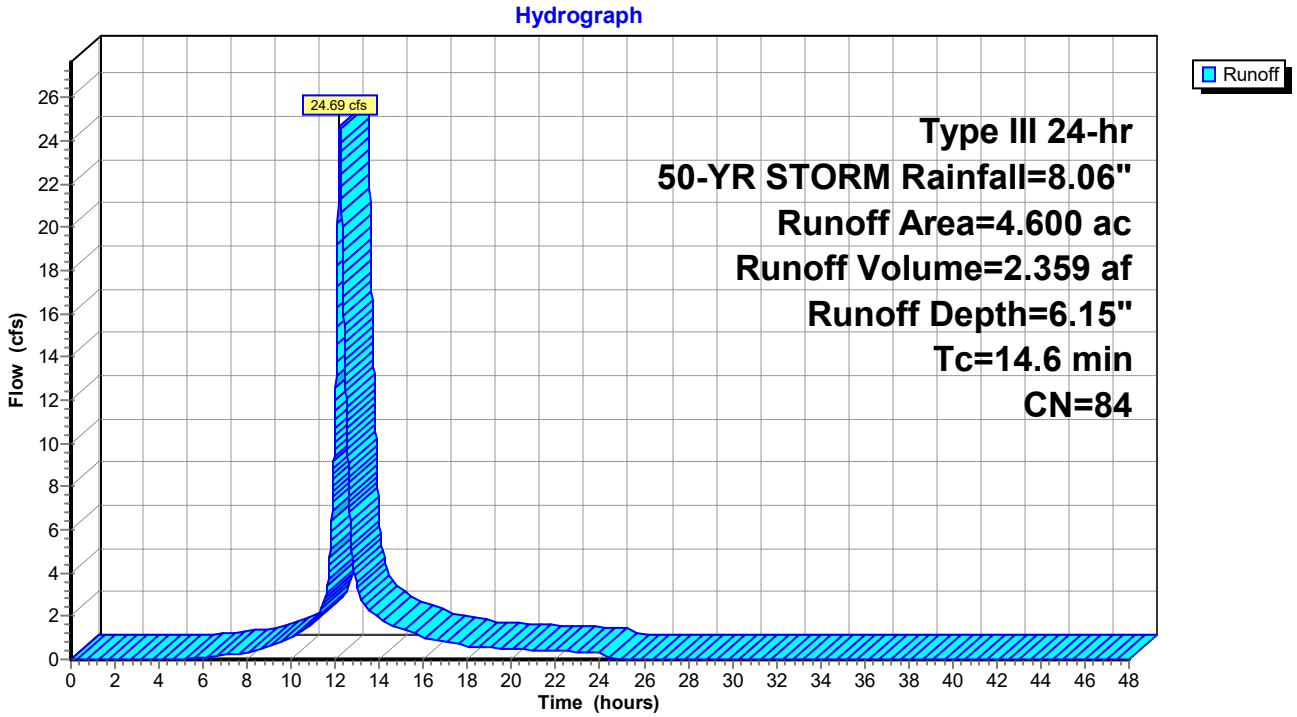
Runoff = 24.69 cfs @ 12.19 hrs, Volume= 2.359 af, Depth= 6.15"
Routed to Pond WS14 :

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 STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	4.600	84	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

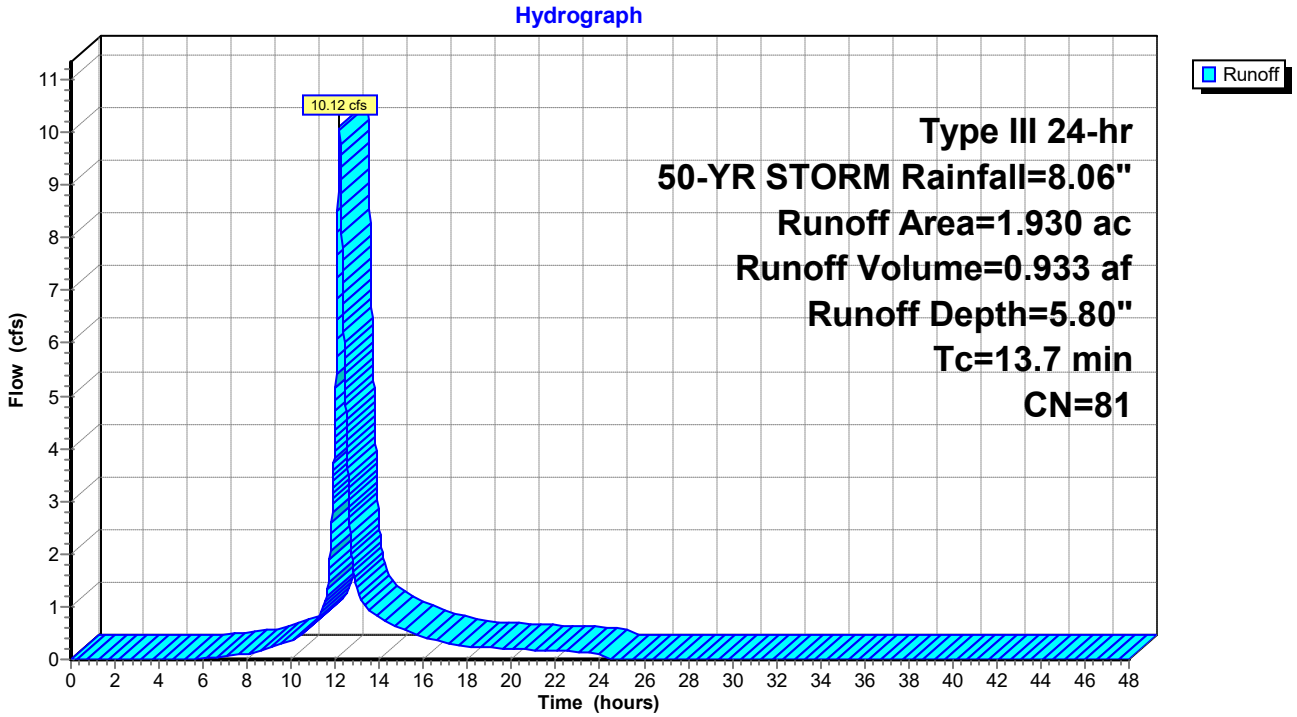
Runoff = 10.12 cfs @ 12.19 hrs, Volume= 0.933 af, Depth= 5.80"
Routed to nonexistent node 6L

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 STORM Rainfall=8.06"

	Area (ac)	CN	Description
*	1.930	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:



Summary for Pond P1:

Inflow Area = 1.280 ac, Inflow Depth = 6.03" for 50-YR STORM event
Inflow = 7.94 cfs @ 12.12 hrs, Volume= 0.644 af
Outflow = 7.82 cfs @ 12.14 hrs, Volume= 0.644 af, Atten= 2%, Lag= 1.1 min
Primary = 7.82 cfs @ 12.14 hrs, Volume= 0.644 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,125.45' @ 12.14 hrs Surf.Area= 2,445 sf Storage= 4,528 cf

Plug-Flow detention time= 72.0 min calculated for 0.644 af (100% of inflow)
Center-of-Mass det. time= 72.1 min (870.4 - 798.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,123.00'	5,895 cf	**Custom Stage Data (Prismatic)** Listed below

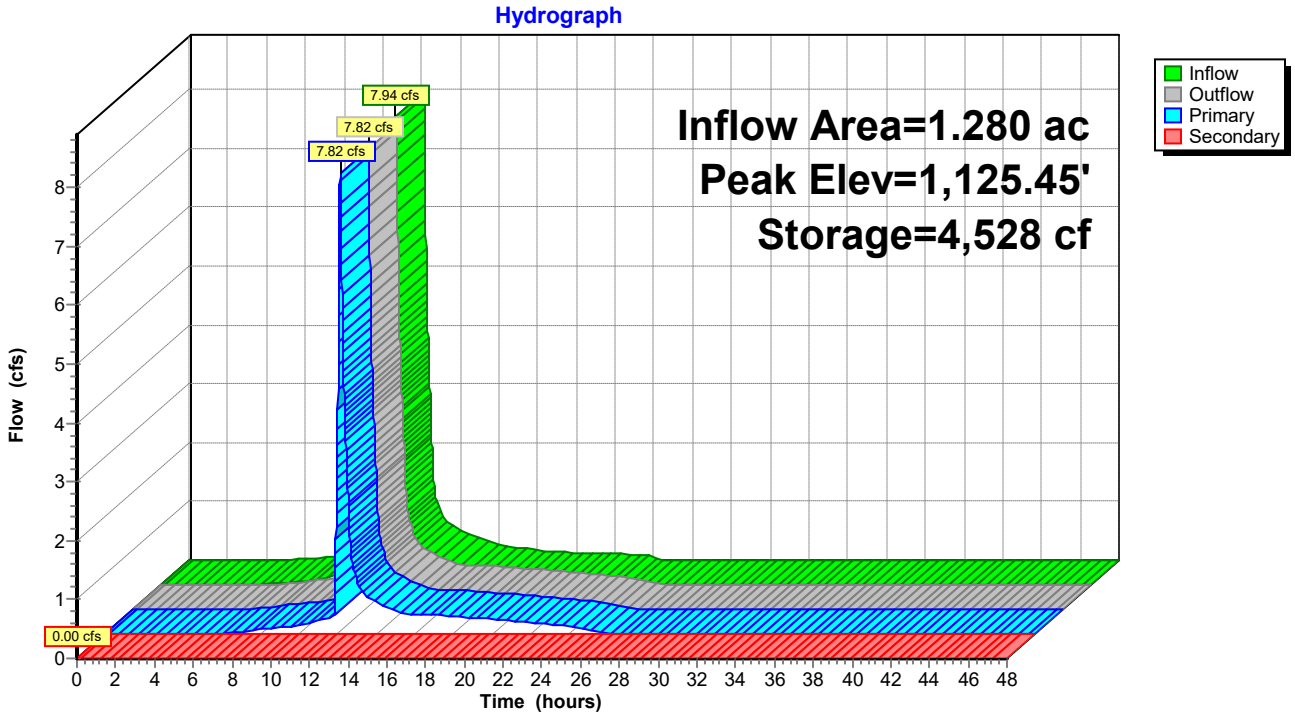
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,123.00	1,247	0	0
1,124.00	1,698	1,473	1,473
1,125.00	2,199	1,949	3,421
1,126.00	2,749	2,474	5,895

Device	Routing	Invert	Outlet Devices
#1	Primary	1,123.00'	**18.0" Round Culvert** L= 35.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,123.00' / 1,122.00' S= 0.0286 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	1,125.30'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,125.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,125.60'	**20.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,123.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.80 cfs @ 12.14 hrs HW=1,125.45' (Free Discharge)
└**1=Culvert** (Passes 7.80 cfs of 11.09 cfs potential flow)
├**2=Sharp-Crested Rectangular Weir** (Weir Controls 2.10 cfs @ 1.30 fps)
├**3=Sharp-Crested Rectangular Weir** (Weir Controls 5.33 cfs @ 2.43 fps)
└**5=Orifice/Grate** (Orifice Controls 0.37 cfs @ 7.53 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,123.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P1:


Hydrograph
Inflow Area=1.280 ac
Peak Elev=1,125.45'
Storage=4,528 cf
7.94 cfs
7.82 cfs
7.82 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8

Summary for Pond P12:

Inflow Area = 1.930 ac, Inflow Depth = 5.92" for 50-YR STORM event
Inflow = 11.97 cfs @ 12.12 hrs, Volume= 0.952 af
Outflow = 11.16 cfs @ 12.16 hrs, Volume= 0.872 af, Atten= 7%, Lag= 2.2 min
Primary = 0.21 cfs @ 12.16 hrs, Volume= 0.188 af
Routed to nonexistent node 6L
Secondary = 10.95 cfs @ 12.16 hrs, Volume= 0.684 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,187.64' @ 12.16 hrs Surf.Area= 4,779 sf Storage= 6,597 cf

Plug-Flow detention time= 102.7 min calculated for 0.872 af (92% of inflow)
Center-of-Mass det. time= 60.7 min (860.9 - 800.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,184.00'	8,424 cf	**Custom Stage Data (Prismatic)** Listed below

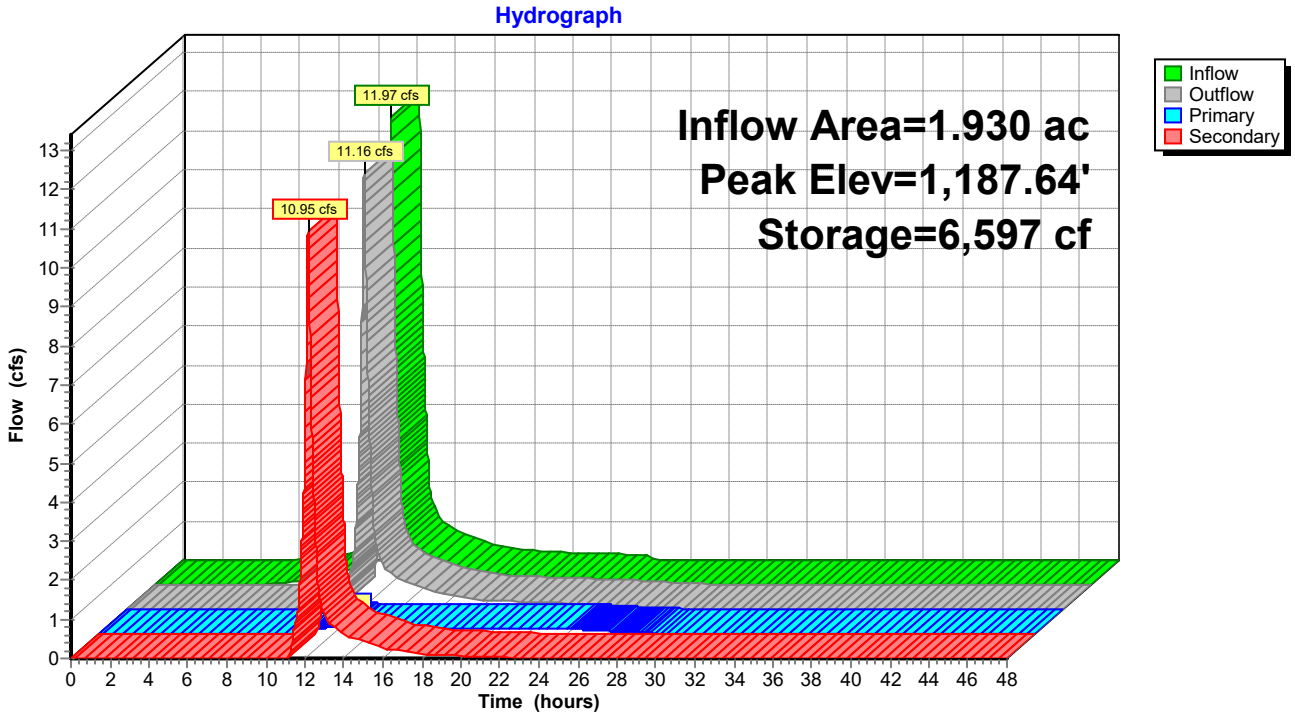
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,184.00	401	0	0
1,184.50	791	298	298
1,185.50	1,200	996	1,294
1,186.50	1,772	1,486	2,780
1,187.50	4,508	3,140	5,920
1,188.00	5,509	2,504	8,424

Device	Routing	Invert	Outlet Devices
#1	Primary	1,186.70'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Secondary	1,187.15'	**10.0' long Weir** 2 End Contraction(s)

Primary OutFlow Max=0.21 cfs @ 12.16 hrs HW=1,187.63' (Free Discharge)
1=Orifice (Orifice Controls 0.21 cfs @ 4.33 fps)

Secondary OutFlow Max=10.93 cfs @ 12.16 hrs HW=1,187.63' (Free Discharge)
2=Weir (Weir Controls 10.93 cfs @ 2.28 fps)

Pond P12:


Hydrograph
Inflow Area=1.930 ac
Peak Elev=1,187.64'
Storage=6,597 cf
11.97 cfs
11.16 cfs
10.95 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8 9 10 11 12 13

Summary for Pond P2a:

Inflow Area = 3.850 ac, Inflow Depth = 5.80" for 50-YR STORM event
Inflow = 22.68 cfs @ 12.13 hrs, Volume= 1.860 af
Outflow = 22.22 cfs @ 12.15 hrs, Volume= 1.810 af, Atten= 2%, Lag= 1.3 min
Primary = 9.45 cfs @ 12.15 hrs, Volume= 1.571 af
Routed to nonexistent node 6L
Secondary = 12.77 cfs @ 12.15 hrs, Volume= 0.239 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,085.63' @ 12.15 hrs Surf.Area= 4,355 sf Storage= 9,177 cf

Plug-Flow detention time= 63.8 min calculated for 1.810 af (97% of inflow)
Center-of-Mass det. time= 47.8 min (851.5 - 803.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,082.75'	9,641 cf	**Custom Stage Data (Prismatic)** Listed below

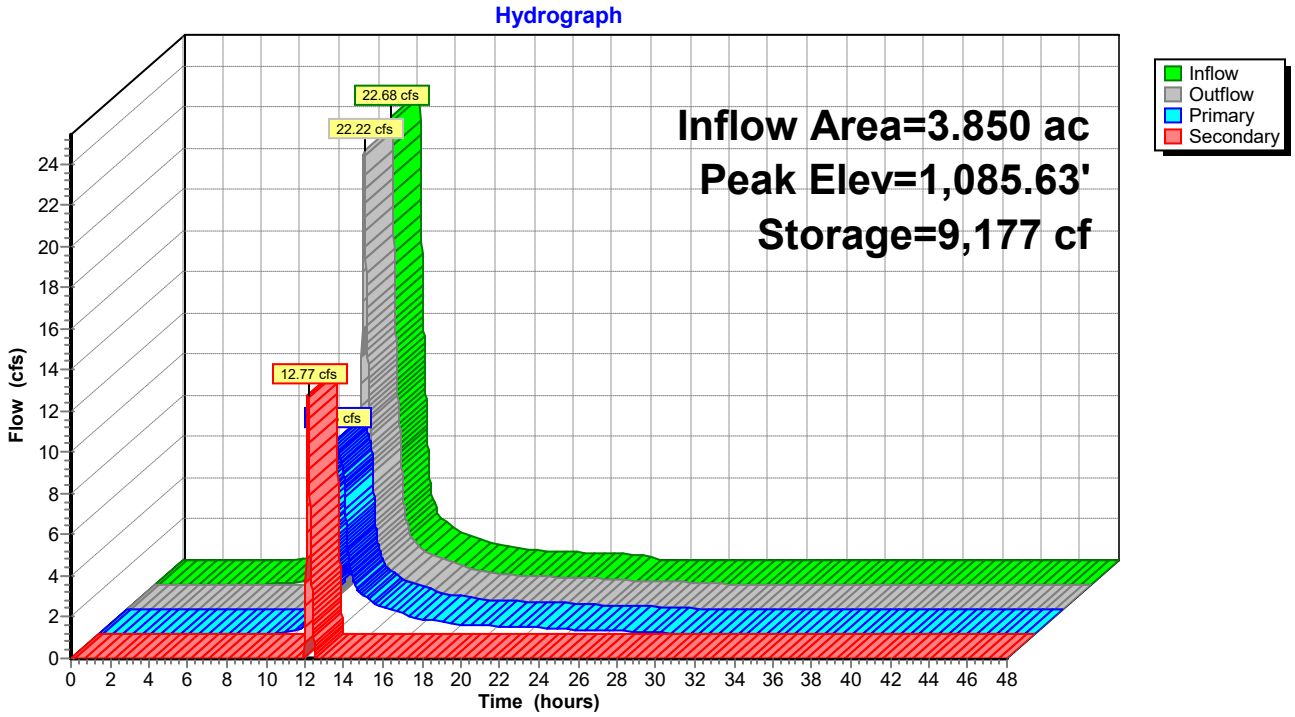
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,082.75	2,048	0	0
1,083.75	2,794	2,421	2,421
1,084.75	3,596	3,195	5,616
1,085.75	4,454	4,025	9,641

Device	Routing	Invert	Outlet Devices
#1	Device 3	1,084.50'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Device 3	1,083.65'	**3.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Primary	1,083.65'	**18.0" Round Culvert** L= 59.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,083.65' / 1,083.00' S= 0.0110 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 3	1,085.00'	**72.0" x 72.0" Horiz. Top of Riser** C= 0.600 Limited to weir flow at low heads
#5	Secondary	1,085.25'	**20.0' long + 3.0 '/' SideZ x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=9.45 cfs @ 12.15 hrs HW=1,085.63' (Free Discharge)
└**3=Culvert** (Inlet Controls 9.45 cfs @ 5.35 fps)
├**1=Sharp-Crested Rectangular Weir** (Passes < 18.86 cfs potential flow)
├**2=Orifice** (Passes < 0.33 cfs potential flow)
└**4=Top of Riser** (Passes < 39.65 cfs potential flow)

Secondary OutFlow Max=12.74 cfs @ 12.15 hrs HW=1,085.63' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Weir Controls 12.74 cfs @ 1.57 fps)

Pond P2a:


Hydrograph
Inflow Area=3.850 ac
Peak Elev=1,085.63'
Storage=9,177 cf
22.68 cfs
22.22 cfs
12.77 cfs
cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P2b:

Inflow Area = 4.020 ac, Inflow Depth = 5.21" for 50-YR STORM event
Inflow = 19.07 cfs @ 12.19 hrs, Volume= 1.746 af
Outflow = 18.29 cfs @ 12.23 hrs, Volume= 1.663 af, Atten= 4%, Lag= 2.4 min
Primary = 0.31 cfs @ 12.23 hrs, Volume= 0.373 af
Routed to nonexistent node 6L
Secondary = 17.98 cfs @ 12.23 hrs, Volume= 1.290 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,041.18' @ 12.23 hrs Surf.Area= 5,630 sf Storage= 11,719 cf

Plug-Flow detention time= 105.5 min calculated for 1.663 af (95% of inflow)
Center-of-Mass det. time= 79.3 min (898.2 - 819.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,038.50'	13,587 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

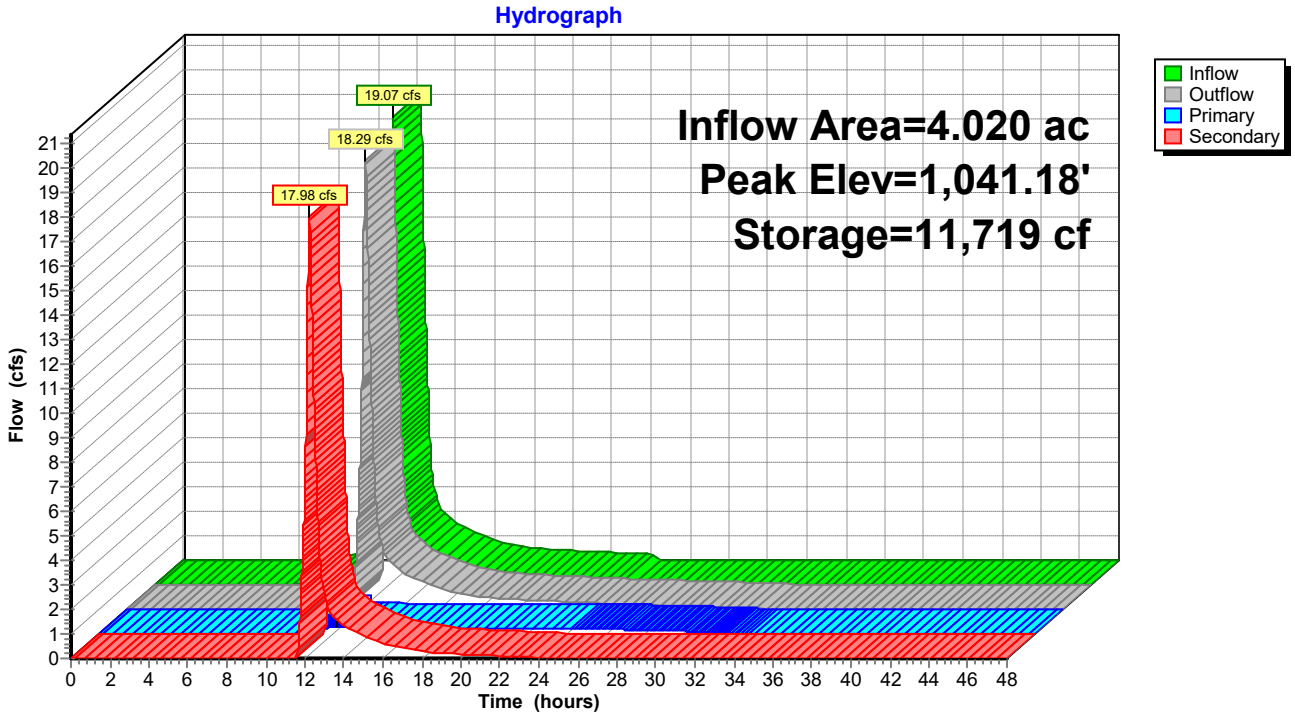
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,038.50	3,189	0	0
1,039.50	4,051	3,620	3,620
1,040.50	4,969	4,510	8,130
1,041.50	5,945	5,457	13,587

Device	Routing	Invert	Outlet Devices
#1	Secondary	1,040.50'	**10.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	1,039.50'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.31 cfs @ 12.23 hrs HW=1,041.18' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 0.31 cfs @ 6.24 fps)

Secondary OutFlow Max=17.98 cfs @ 12.23 hrs HW=1,041.18' (Free Discharge)
↑—**1=Sharp-Crested Rectangular Weir** (Weir Controls 17.98 cfs @ 2.69 fps)

Pond P2b:


Hydrograph
Inflow Area=4.020 ac
Peak Elev=1,041.18'
Storage=11,719 cf
19.07 cfs
18.29 cfs
17.98 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P3:

Inflow Area = 7.890 ac, Inflow Depth = 6.03" for 50-YR STORM event
Inflow = 48.78 cfs @ 12.13 hrs, Volume= 3.968 af
Outflow = 38.10 cfs @ 12.21 hrs, Volume= 3.968 af, Atten= 22%, Lag= 4.8 min
Primary = 38.10 cfs @ 12.21 hrs, Volume= 3.968 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,129.34' @ 12.21 hrs Surf.Area= 7,750 sf Storage= 33,071 cf

Plug-Flow detention time= 149.2 min calculated for 3.967 af (100% of inflow)
Center-of-Mass det. time= 149.4 min (947.7 - 798.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,122.00'	38,268 cf	**Custom Stage Data (Prismatic)** Listed below

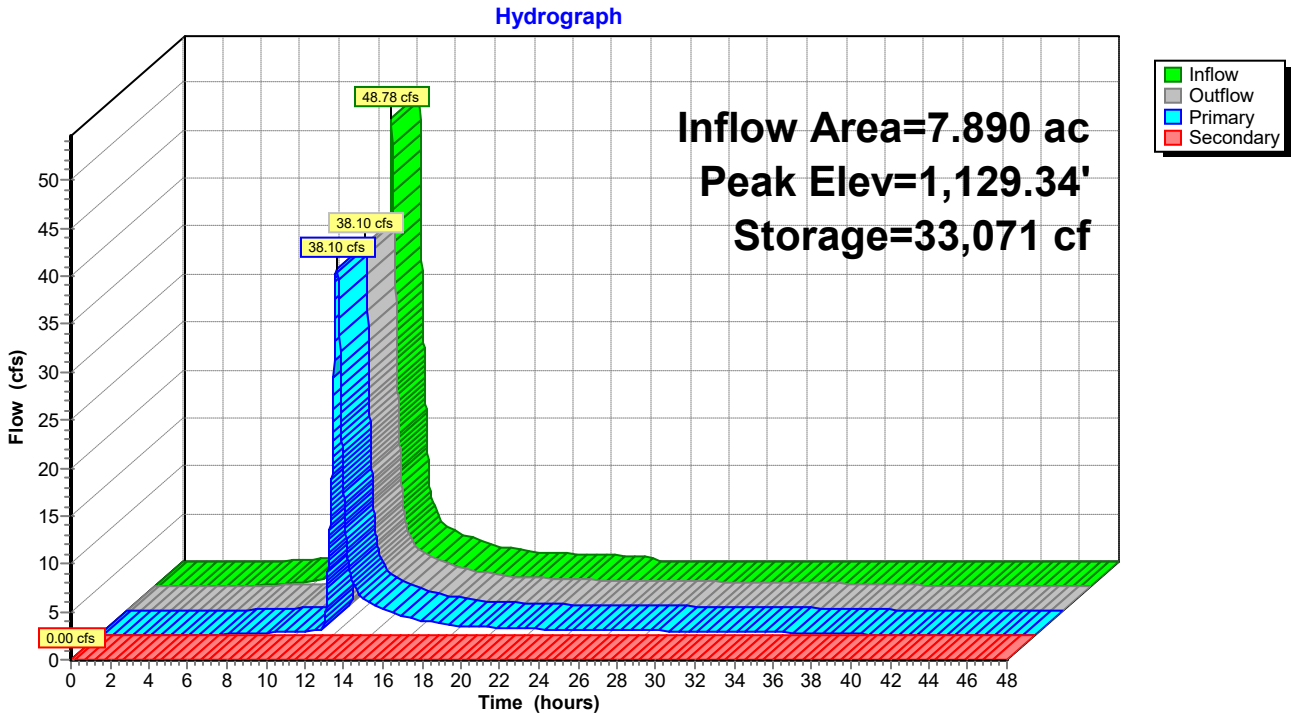
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,122.00	1,797	0	0
1,123.00	2,400	2,099	2,099
1,124.00	3,074	2,737	4,836
1,125.00	3,810	3,442	8,278
1,126.00	4,608	4,209	12,487
1,127.00	5,471	5,040	17,526
1,128.00	6,397	5,934	23,460
1,129.00	7,388	6,893	30,353
1,130.00	8,442	7,915	38,268

Device	Routing	Invert	Outlet Devices
#1	Primary	1,122.00'	**24.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,122.00' / 1,121.50' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,129.00'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,127.50'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,129.50'	**40.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,122.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=38.10 cfs @ 12.21 hrs HW=1,129.34' (Free Discharge)
└─**1=Culvert** (Inlet Controls 38.10 cfs @ 12.13 fps)
  ├─**2=Sharp-Crested Rectangular Weir** (Passes < 7.77 cfs potential flow)
  ├─**3=Sharp-Crested Rectangular Weir** (Passes < 54.96 cfs potential flow)
  └─**5=Orifice/Grate** (Passes < 0.64 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,122.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P3:



Summary for Pond P5:

Inflow Area = 1.680 ac, Inflow Depth = 6.03" for 50-YR STORM event
Inflow = 10.98 cfs @ 12.11 hrs, Volume= 0.845 af
Outflow = 10.50 cfs @ 12.13 hrs, Volume= 0.845 af, Atten= 4%, Lag= 1.6 min
Primary = 10.50 cfs @ 12.13 hrs, Volume= 0.845 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,142.48' @ 12.13 hrs Surf.Area= 4,480 sf Storage= 8,175 cf

Plug-Flow detention time= 126.3 min calculated for 0.845 af (100% of inflow)
Center-of-Mass det. time= 126.3 min (923.1 - 796.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,140.00'	10,517 cf	**Custom Stage Data (Prismatic)** Listed below

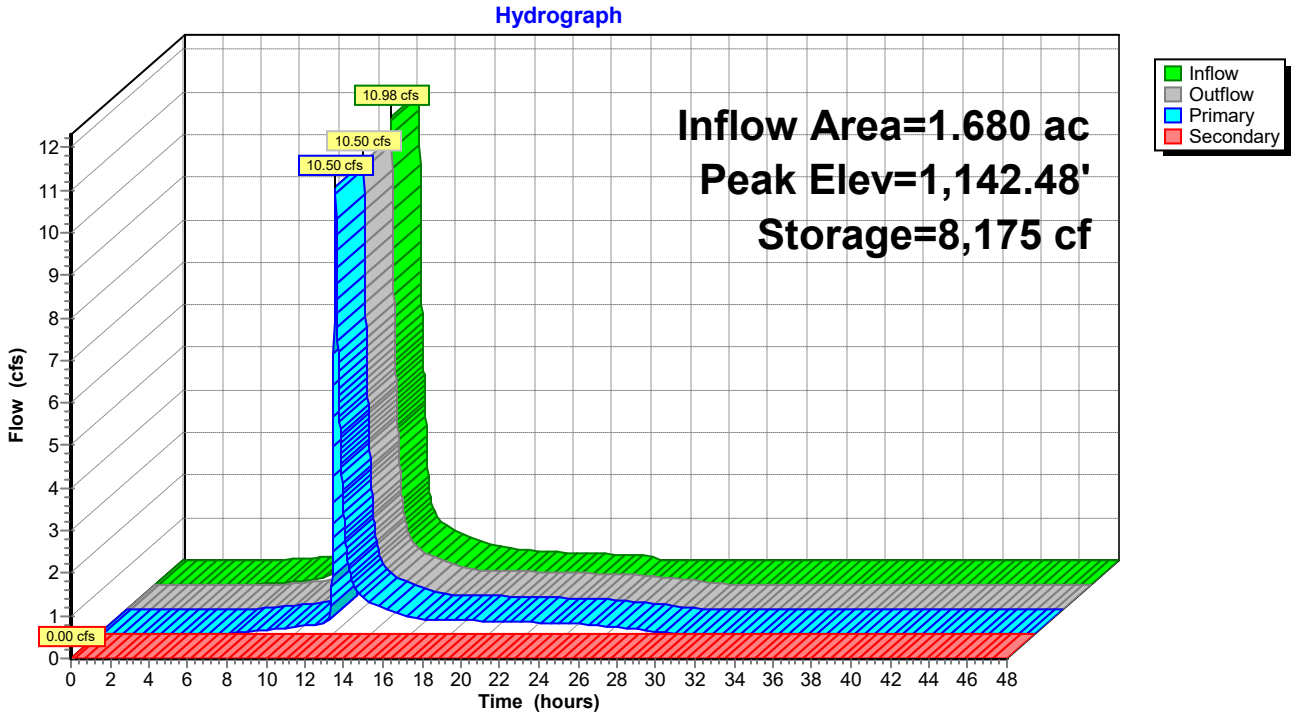
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,140.00	2,092	0	0
1,141.00	2,986	2,539	2,539
1,142.00	3,967	3,477	6,016
1,143.00	5,036	4,502	10,517

Device	Routing	Invert	Outlet Devices
#1	Primary	1,140.00'	**24.0" Round Culvert** L= 30.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,140.00' / 1,139.50' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,142.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,142.25'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,142.50'	**30.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,140.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.48 cfs @ 12.13 hrs HW=1,142.48' (Free Discharge)
└**1=Culvert** (Passes 10.48 cfs of 18.40 cfs potential flow)
├**2=Sharp-Crested Rectangular Weir** (Weir Controls 5.95 cfs @ 2.53 fps)
├**3=Sharp-Crested Rectangular Weir** (Weir Controls 4.16 cfs @ 1.65 fps)
└**5=Orifice/Grate** (Orifice Controls 0.37 cfs @ 7.58 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,140.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P5:


Hydrograph
Inflow Area=1.680 ac
Peak Elev=1,142.48'
Storage=8,175 cf
10.98 cfs
10.50 cfs
10.50 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8 9 10 11 12

Summary for Pond P7:

Inflow Area = 4.070 ac, Inflow Depth = 5.80" for 50-YR STORM event
Inflow = 18.70 cfs @ 12.26 hrs, Volume= 1.967 af
Outflow = 12.98 cfs @ 12.46 hrs, Volume= 1.948 af, Atten= 31%, Lag= 12.0 min
Primary = 12.98 cfs @ 12.46 hrs, Volume= 1.948 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,151.71' @ 12.46 hrs Surf.Area= 9,244 sf Storage= 32,031 cf

Plug-Flow detention time= 376.3 min calculated for 1.948 af (99% of inflow)
Center-of-Mass det. time= 370.6 min (1,183.0 - 812.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,147.00'	44,832 cf	**Custom Stage Data (Prismatic)** Listed below

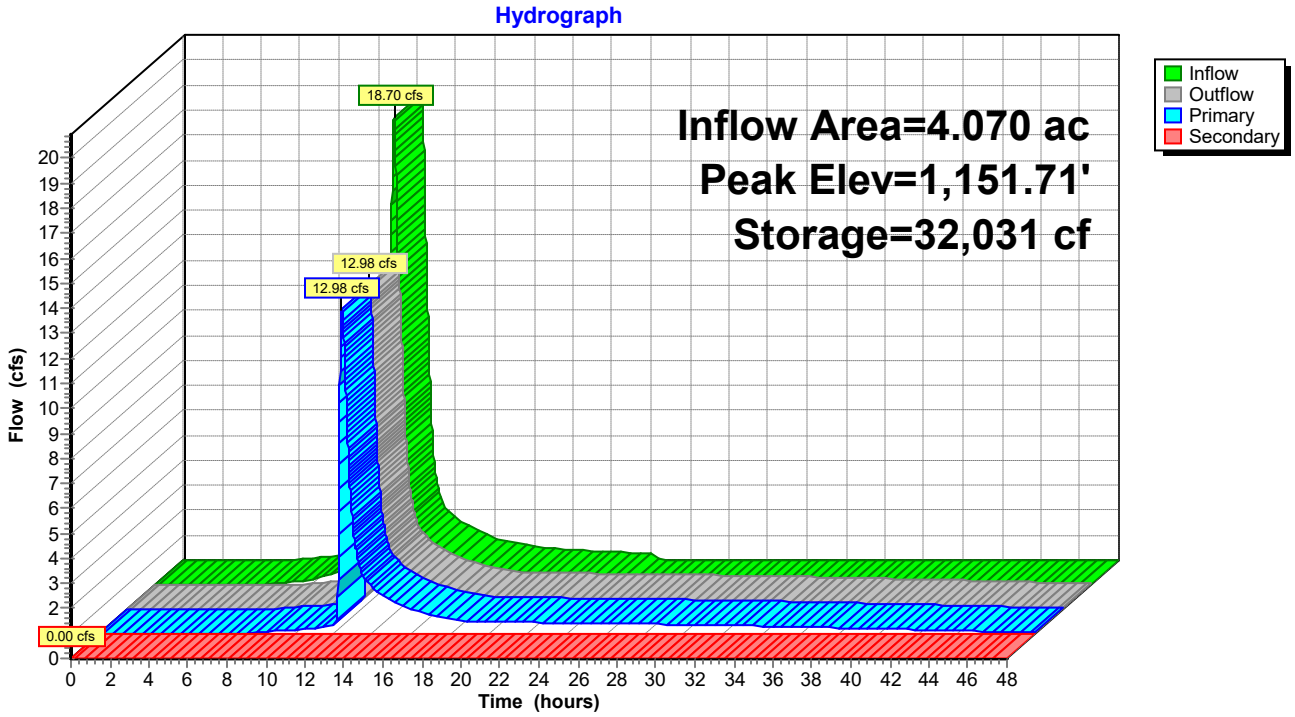
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,147.00	4,554	0	0
1,148.00	5,432	4,993	4,993
1,149.00	6,361	5,897	10,890
1,150.00	7,356	6,859	17,748
1,151.00	8,425	7,891	25,639
1,152.00	9,578	9,002	34,640
1,153.00	10,805	10,192	44,832

Device	Routing	Invert	Outlet Devices
#1	Primary	1,147.00'	**30.0" Round Culvert** L= 106.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,147.00' / 1,146.10' S= 0.0085 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	1,152.00'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,150.95'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,152.50'	**30.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,147.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=12.96 cfs @ 12.46 hrs HW=1,151.71' (Free Discharge)
└**1=Culvert** (Passes 12.96 cfs of 43.97 cfs potential flow)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└**3=Sharp-Crested Rectangular Weir** (Weir Controls 12.46 cfs @ 3.38 fps)
└**5=Orifice/Grate** (Orifice Controls 0.51 cfs @ 10.31 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,147.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P7:


Hydrograph
Inflow Area=4.070 ac
Peak Elev=1,151.71'
Storage=32,031 cf
18.70 cfs
12.98 cfs
12.98 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P8/10:

Inflow Area = 28.040 ac, Inflow Depth = 6.03" for 50-YR STORM event
Inflow = 151.91 cfs @ 12.19 hrs, Volume= 14.101 af
Outflow = 120.93 cfs @ 12.29 hrs, Volume= 13.331 af, Atten= 20%, Lag= 6.3 min
Primary = 120.93 cfs @ 12.29 hrs, Volume= 13.331 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,113.99' @ 12.29 hrs Storage= 135,136 cf

Plug-Flow detention time= 142.8 min calculated for 13.328 af (95% of inflow)
Center-of-Mass det. time= 112.9 min (915.4 - 802.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,108.00'	166,405 cf	**Custom Stage Data** Listed below

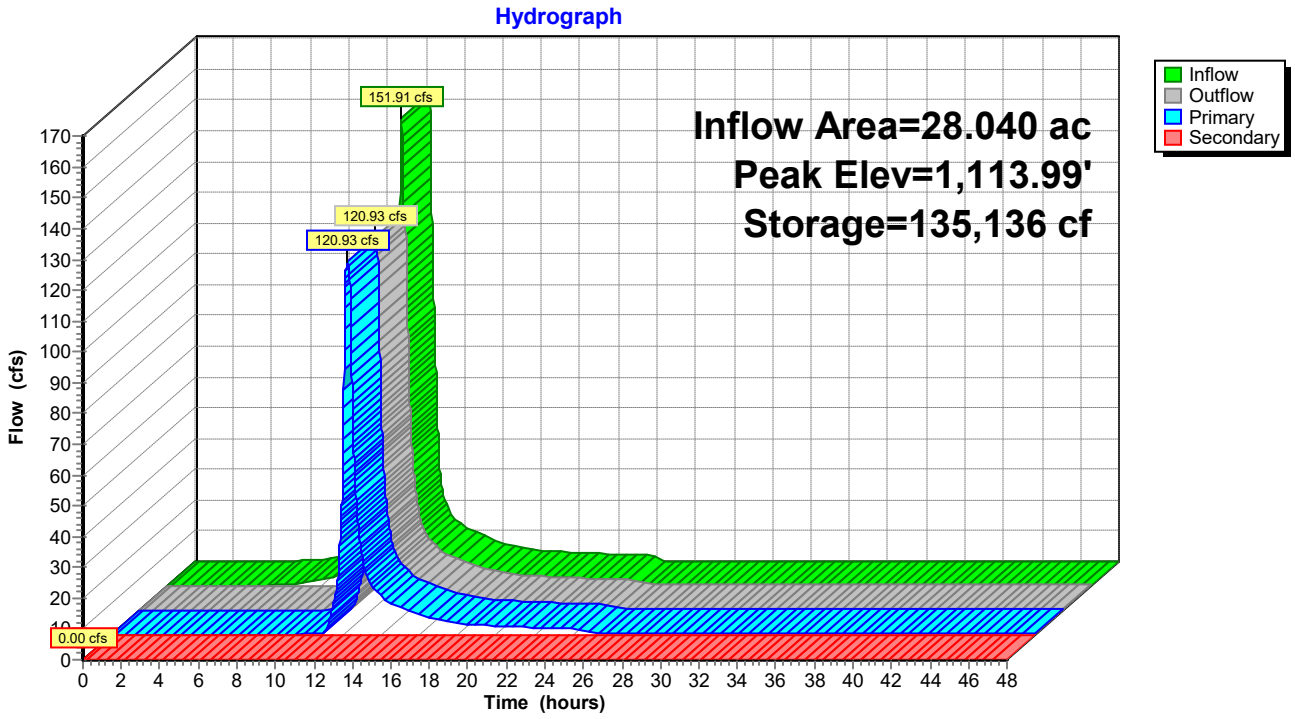
Elevation (feet)	Cum.Store (cubic-feet)
1,108.00	0
1,109.00	16,747
1,110.00	35,732
1,111.00	57,018
1,112.00	80,666
1,113.00	106,738
1,114.00	135,298
1,115.00	166,405

Device	Routing	Invert	Outlet Devices
#1	Primary	1,108.00'	**48.0" Round Culvert** L= 44.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,108.00' / 1,107.50' S= 0.0114 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,113.00'	**19.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,111.25'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,114.25'	**50.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,108.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=120.93 cfs @ 12.29 hrs HW=1,113.99' (Free Discharge)
└**1=Culvert** (Inlet Controls 120.93 cfs @ 9.62 fps)
  └**2=Sharp-Crested Rectangular Weir** (Passes < 75.77 cfs potential flow)
  └**3=Sharp-Crested Rectangular Weir** (Passes < 110.59 cfs potential flow)
  └**5=Orifice/Grate** (Passes < 0.57 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,108.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P8/10:



Summary for Pond P9:

Inflow Area = 6.810 ac, Inflow Depth = 6.03" for 50-YR STORM event
Inflow = 33.13 cfs @ 12.24 hrs, Volume= 3.425 af
Outflow = 27.06 cfs @ 12.37 hrs, Volume= 3.382 af, Atten= 18%, Lag= 7.4 min
Primary = 22.30 cfs @ 12.37 hrs, Volume= 3.299 af
Routed to nonexistent node 6L
Secondary = 4.77 cfs @ 12.37 hrs, Volume= 0.083 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,180.20' @ 12.37 hrs Surf.Area= 15,293 sf Storage= 35,928 cf

Plug-Flow detention time= 193.4 min calculated for 3.382 af (99% of inflow)
Center-of-Mass det. time= 185.5 min (992.1 - 806.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,177.00'	48,733 cf	**Custom Stage Data (Prismatic)** Listed below

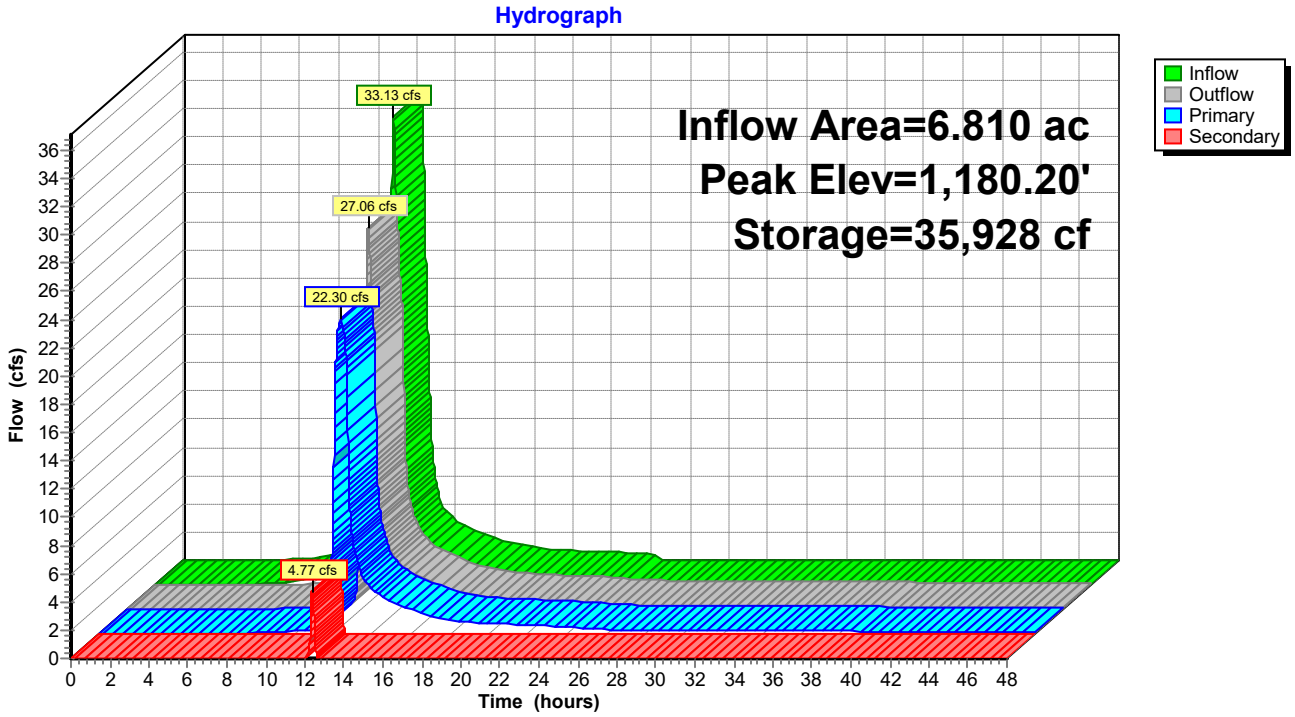
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,177.00	7,155	0	0
1,178.00	9,581	8,368	8,368
1,179.00	12,108	10,845	19,213
1,180.00	14,735	13,422	32,634
1,181.00	17,463	16,099	48,733

Device	Routing	Invert	Outlet Devices
#1	Primary	1,177.00'	**24.0" Round Culvert** L= 64.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,177.00' / 1,176.50' S= 0.0078 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,179.50'	**19.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,179.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,180.00'	**20.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,177.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=22.29 cfs @ 12.37 hrs HW=1,180.20' (Free Discharge)
└**1=Culvert** (Barrel Controls 22.29 cfs @ 7.10 fps)
├**2=Sharp-Crested Rectangular Weir** (Passes < 42.75 cfs potential flow)
├**3=Sharp-Crested Rectangular Weir** (Passes < 26.63 cfs potential flow)
└**5=Orifice/Grate** (Passes < 0.41 cfs potential flow)

Secondary OutFlow Max=4.75 cfs @ 12.37 hrs HW=1,180.20' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 4.75 cfs @ 1.16 fps)

Pond P9:


Hydrograph
Inflow Area=6.810 ac
Peak Elev=1,180.20'
Storage=35,928 cf
33.13 cfs
27.06 cfs
22.30 cfs
4.77 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36

Summary for Pond WS11:

Inflow Area = 3.190 ac, Inflow Depth = 5.10" for 50-YR STORM event
Inflow = 12.48 cfs @ 12.29 hrs, Volume= 1.355 af
Outflow = 11.92 cfs @ 12.35 hrs, Volume= 1.093 af, Atten= 5%, Lag= 3.8 min
Primary = 11.92 cfs @ 12.35 hrs, Volume= 1.093 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 1,191.38' @ 12.35 hrs Surf.Area= 8,479 sf Storage= 14,742 cf

Plug-Flow detention time= 121.3 min calculated for 1.093 af (81% of inflow)
Center-of-Mass det. time= 46.2 min (874.3 - 828.1)

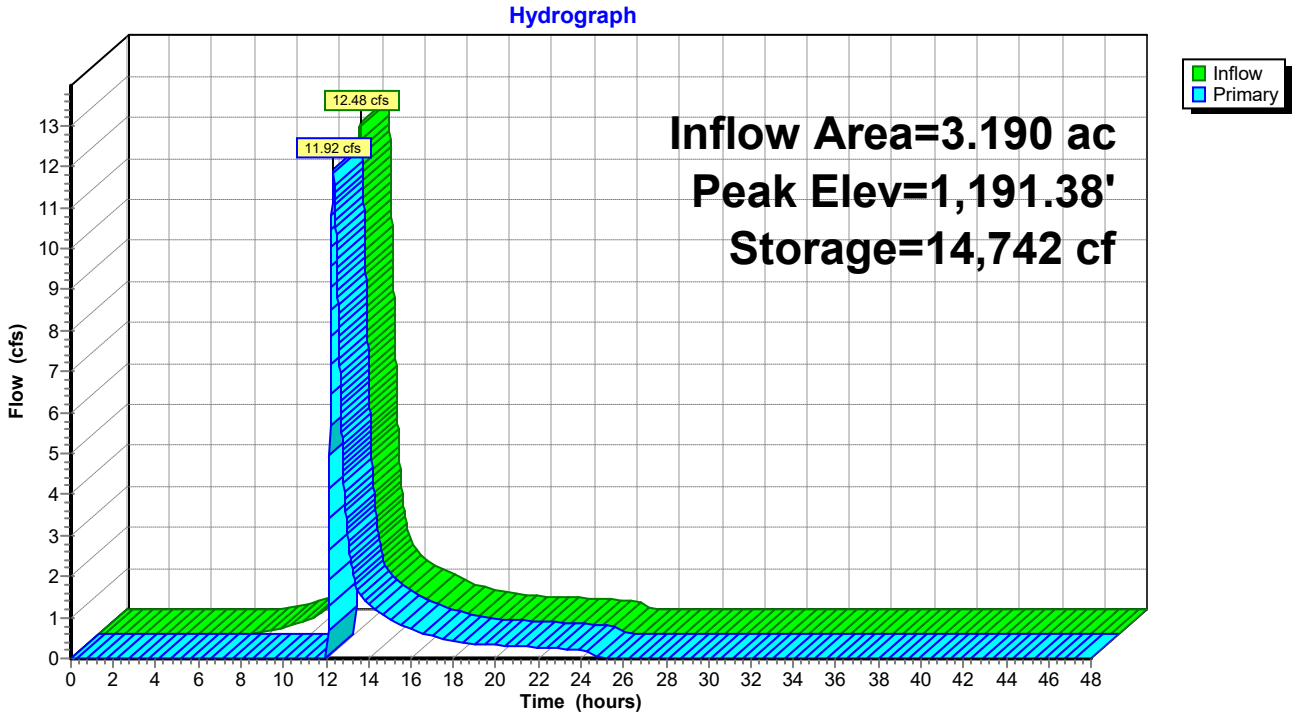
Volume	Invert	Avail.Storage	Storage Description
#1	1,188.00'	25,568 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,188.00	220	0	0
1,189.00	2,537	1,379	1,379
1,190.00	4,998	3,768	5,146
1,191.00	7,486	6,242	11,388
1,192.00	10,087	8,787	20,175
1,192.50	11,488	5,394	25,568

Device	Routing	Invert	Outlet Devices
#1	Primary	1,191.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Device 1	1,189.80'	**90.0 deg x 4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)

Primary OutFlow Max=11.90 cfs @ 12.35 hrs HW=1,191.38' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 11.90 cfs @ 1.56 fps)
↑—**2=Sharp-Crested Vee/Trap Weir** (Passes 11.90 cfs of 25.03 cfs potential flow)

Pond WS11:


Hydrograph
Inflow
Primary
12.48 cfs
11.92 cfs
Inflow Area=3.190 ac
Peak Elev=1,191.38'
Storage=14,742 cf
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond WS14:

Inflow Area = 4.600 ac, Inflow Depth = 6.15" for 50-YR STORM event
Inflow = 24.69 cfs @ 12.19 hrs, Volume= 2.359 af
Outflow = 23.26 cfs @ 12.25 hrs, Volume= 2.158 af, Atten= 6%, Lag= 3.1 min
Primary = 23.26 cfs @ 12.25 hrs, Volume= 2.158 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,148.16' @ 12.25 hrs Surf.Area= 6,761 sf Storage= 12,580 cf

Plug-Flow detention time= 71.6 min calculated for 2.158 af (92% of inflow)
Center-of-Mass det. time= 28.5 min (829.3 - 800.8)

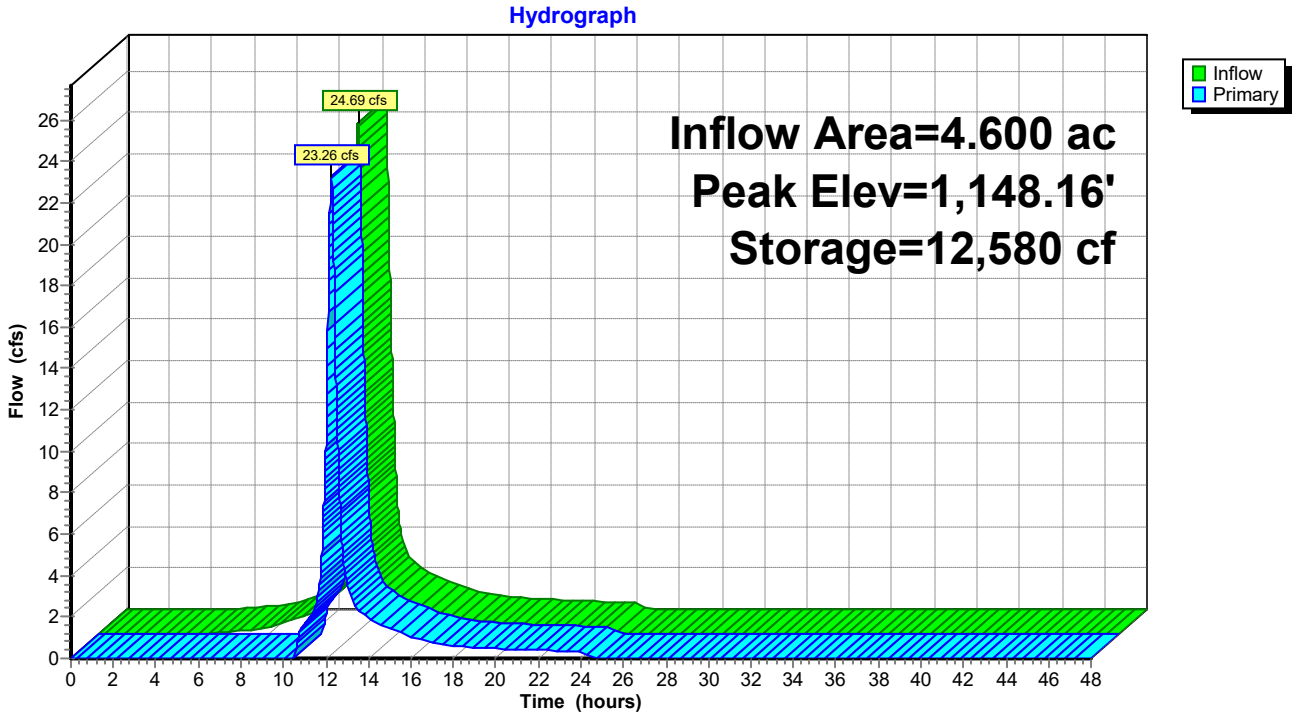
Volume	Invert	Avail.Storage	Storage Description
#1	1,145.00'	14,985 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,145.00	724	0	0
1,146.00	3,306	2,015	2,015
1,147.00	4,678	3,992	6,007
1,148.00	6,202	5,440	11,447
1,148.50	7,948	3,538	14,985

Device	Routing	Invert	Outlet Devices
#1	Device 2	1,146.80'	**90.0 deg x 4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)
#2	Primary	1,147.50'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=23.25 cfs @ 12.25 hrs HW=1,148.16' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Passes 23.25 cfs of 28.81 cfs potential flow)
↑—**1=Sharp-Crested Vee/Trap Weir** (Weir Controls 23.25 cfs @ 3.19 fps)

Pond WS14:


Hydrograph
Inflow
Primary
24.69 cfs
23.26 cfs
Inflow Area=4.600 ac
Peak Elev=1,148.16'
Storage=12,580 cf
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 2 4 6 8 10 12 14 16 18 20 22 24 26

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 1: Runoff Area=1.280 ac Runoff Depth=7.11"
Tc=9.1 min CN=83 Runoff=9.28 cfs 0.758 af

Subcatchment 2a: Runoff Area=3.850 ac Runoff Depth=6.86"
Tc=9.7 min CN=81 Runoff=26.65 cfs 2.202 af

Subcatchment 2b: Runoff Area=4.020 ac Runoff Depth=6.24"
Tc=13.9 min CN=76 Runoff=22.74 cfs 2.091 af

Subcatchment 3: Runoff Area=7.890 ac Runoff Depth=7.11"
Tc=9.2 min CN=83 Runoff=57.02 cfs 4.675 af

Subcatchment 5: Runoff Area=1.680 ac Runoff Depth=7.11"
Tc=7.5 min CN=83 Runoff=12.83 cfs 0.995 af

Subcatchment 7: Runoff Area=4.070 ac Runoff Depth=6.86"
Tc=19.2 min CN=81 Runoff=21.98 cfs 2.328 af

Subcatchment 8/10: Runoff Area=28.040 ac Runoff Depth=7.11"
Tc=13.7 min CN=83 Runoff=177.55 cfs 16.614 af

Subcatchment 9: Runoff Area=6.810 ac Runoff Depth=7.11"
Tc=18.1 min CN=83 Runoff=38.74 cfs 4.035 af

Subcatchment 11: Runoff Area=3.190 ac Runoff Depth=6.12"
Tc=21.4 min CN=75 Runoff=14.93 cfs 1.626 af

Subcatchment 12: Runoff Area=1.930 ac Runoff Depth=6.99"
Tc=8.6 min CN=82 Runoff=14.03 cfs 1.124 af

Subcatchment 14: Runoff Area=4.600 ac Runoff Depth=7.23"
Tc=14.6 min CN=84 Runoff=28.81 cfs 2.773 af

Subcatchment 15: Runoff Area=1.930 ac Runoff Depth=6.86"
Tc=13.7 min CN=81 Runoff=11.89 cfs 1.104 af

Pond P1: Peak Elev=1,125.48' Storage=4,606 cf Inflow=9.28 cfs 0.758 af
Primary=9.16 cfs 0.758 af Secondary=0.00 cfs 0.000 af Outflow=9.16 cfs 0.758 af

Pond P12: Peak Elev=1,187.69' Storage=6,881 cf Inflow=14.03 cfs 1.124 af
Primary=0.22 cfs 0.196 af Secondary=12.91 cfs 0.848 af Outflow=13.13 cfs 1.044 af

Pond P2a: Peak Elev=1,085.70' Storage=9,443 cf Inflow=26.65 cfs 2.202 af
Primary=9.68 cfs 1.803 af Secondary=16.57 cfs 0.349 af Outflow=26.25 cfs 2.152 af

Pond P2b: Peak Elev=1,041.27' Storage=12,219 cf Inflow=22.74 cfs 2.091 af
Primary=0.31 cfs 0.385 af Secondary=21.56 cfs 1.623 af Outflow=21.87 cfs 2.008 af

Pond P3: Peak Elev=1,129.69' Storage=35,806 cf Inflow=57.02 cfs 4.675 af
Primary=39.12 cfs 4.618 af Secondary=8.51 cfs 0.057 af Outflow=47.63 cfs 4.675 af

Pond P5: Peak Elev=1,142.52' Storage=8,337 cf Inflow=12.83 cfs 0.995 af
Primary=12.28 cfs 0.995 af Secondary=0.17 cfs 0.001 af Outflow=12.45 cfs 0.995 af

Pond P7: Peak Elev=1,151.88' Storage=33,579 cf Inflow=21.98 cfs 2.328 af
Primary=17.92 cfs 2.307 af Secondary=0.00 cfs 0.000 af Outflow=17.92 cfs 2.307 af

Pond P8/10: Peak Elev=1,114.44' Storage=149,045 cf Inflow=177.55 cfs 16.614 af
Primary=127.52 cfs 15.745 af Secondary=10.81 cfs 0.096 af Outflow=138.34 cfs 15.841 af

Pond P9: Peak Elev=1,180.33' Storage=38,003 cf Inflow=38.74 cfs 4.035 af
Primary=23.11 cfs 3.776 af Secondary=10.04 cfs 0.215 af Outflow=33.15 cfs 3.991 af

Pond WS11: Peak Elev=1,191.43' Storage=15,171 cf Inflow=14.93 cfs 1.626 af
Outflow=14.50 cfs 1.365 af

Pond WS14: Peak Elev=1,148.27' Storage=13,372 cf Inflow=28.81 cfs 2.773 af
Outflow=27.08 cfs 2.572 af

Total Runoff Area = 69.290 ac Runoff Volume = 40.324 af Average Runoff Depth = 6.98"

Summary for Subcatchment 1:

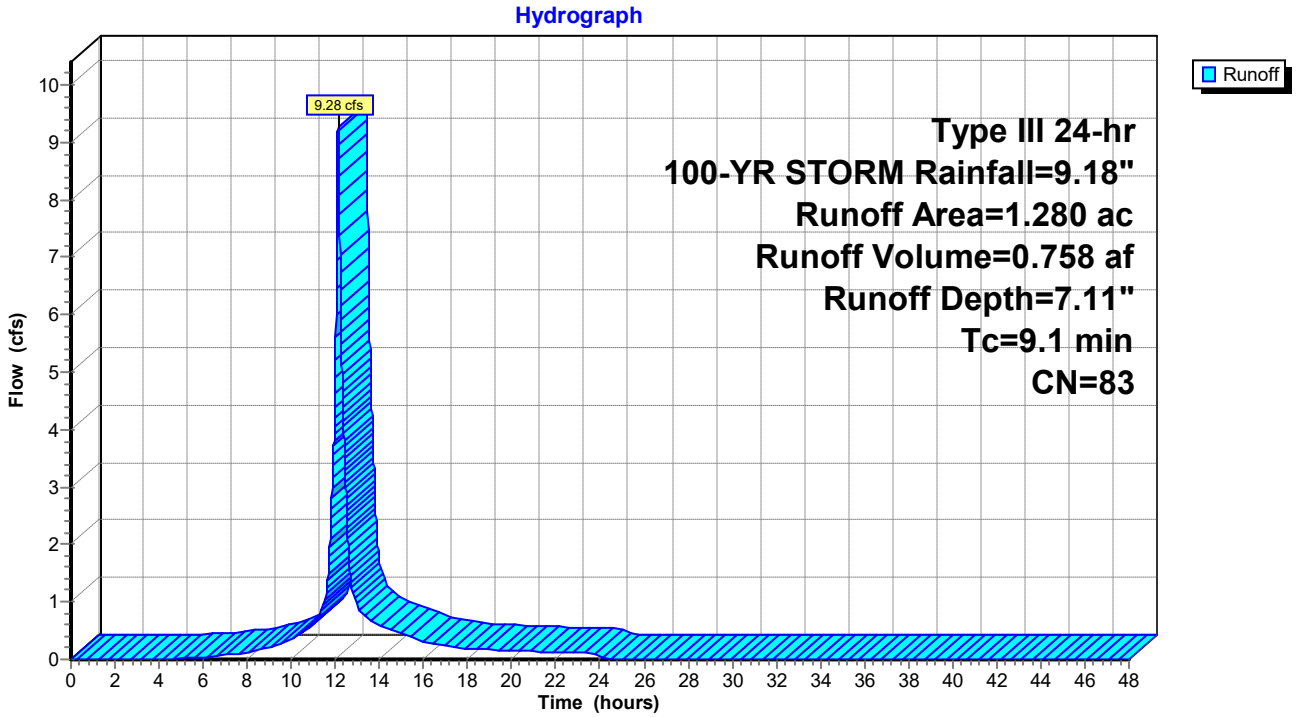
Runoff = 9.28 cfs @ 12.12 hrs, Volume= 0.758 af, Depth= 7.11"
Routed to Pond P1 :

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 STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	1.280	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

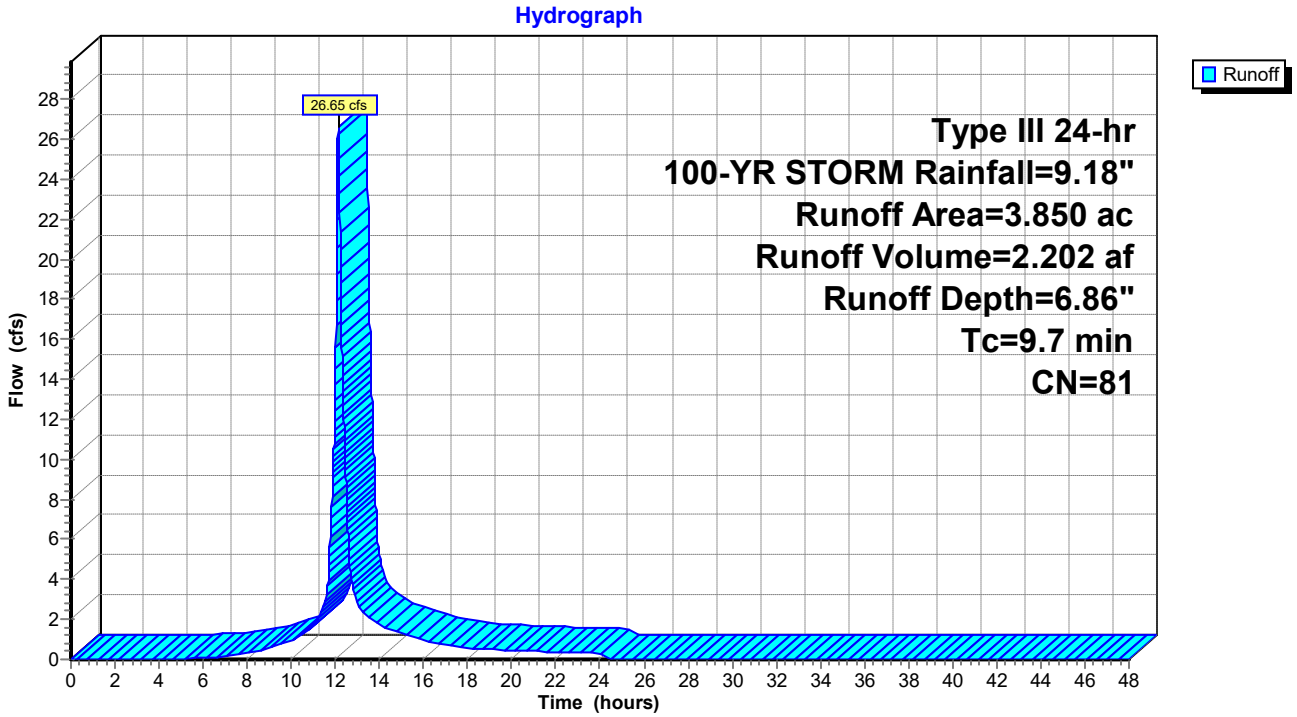
Runoff = 26.65 cfs @ 12.13 hrs, Volume= 2.202 af, Depth= 6.86"
Routed to Pond P2a :

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 STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	3.850	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

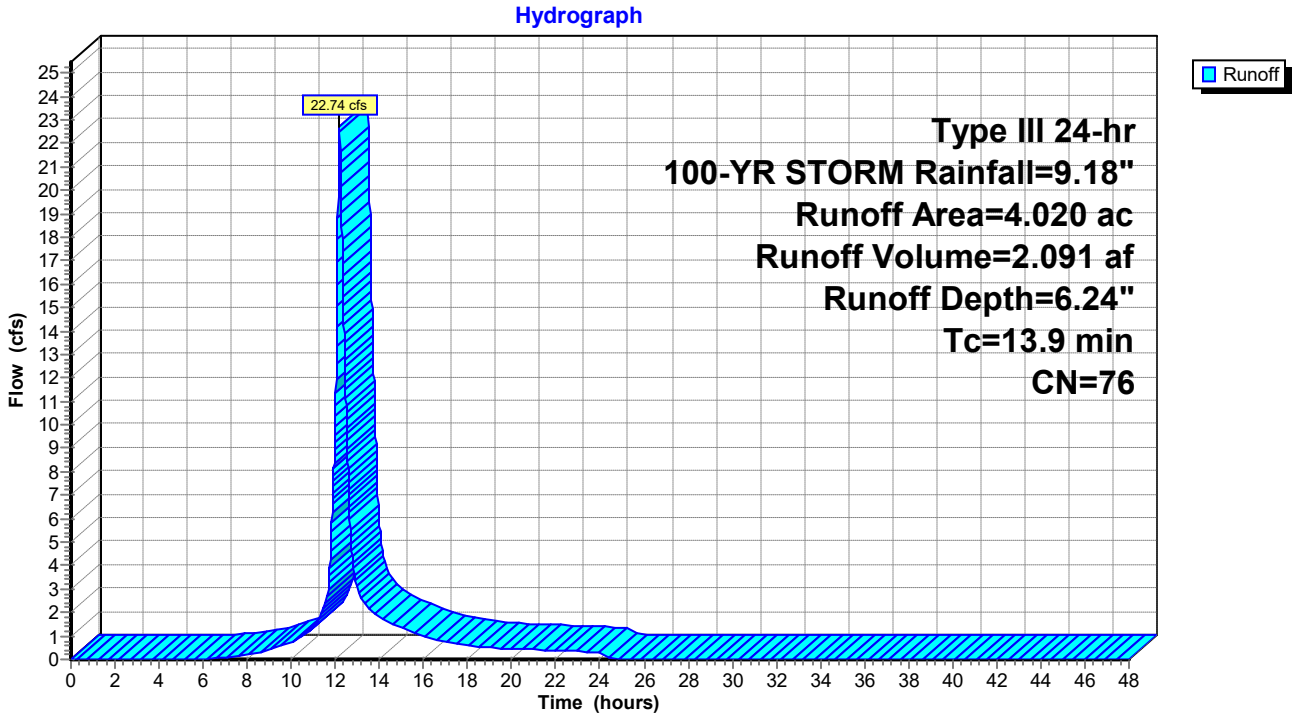
Runoff = 22.74 cfs @ 12.19 hrs, Volume= 2.091 af, Depth= 6.24"
Routed to Pond P2b :

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 STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	4.020	76	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

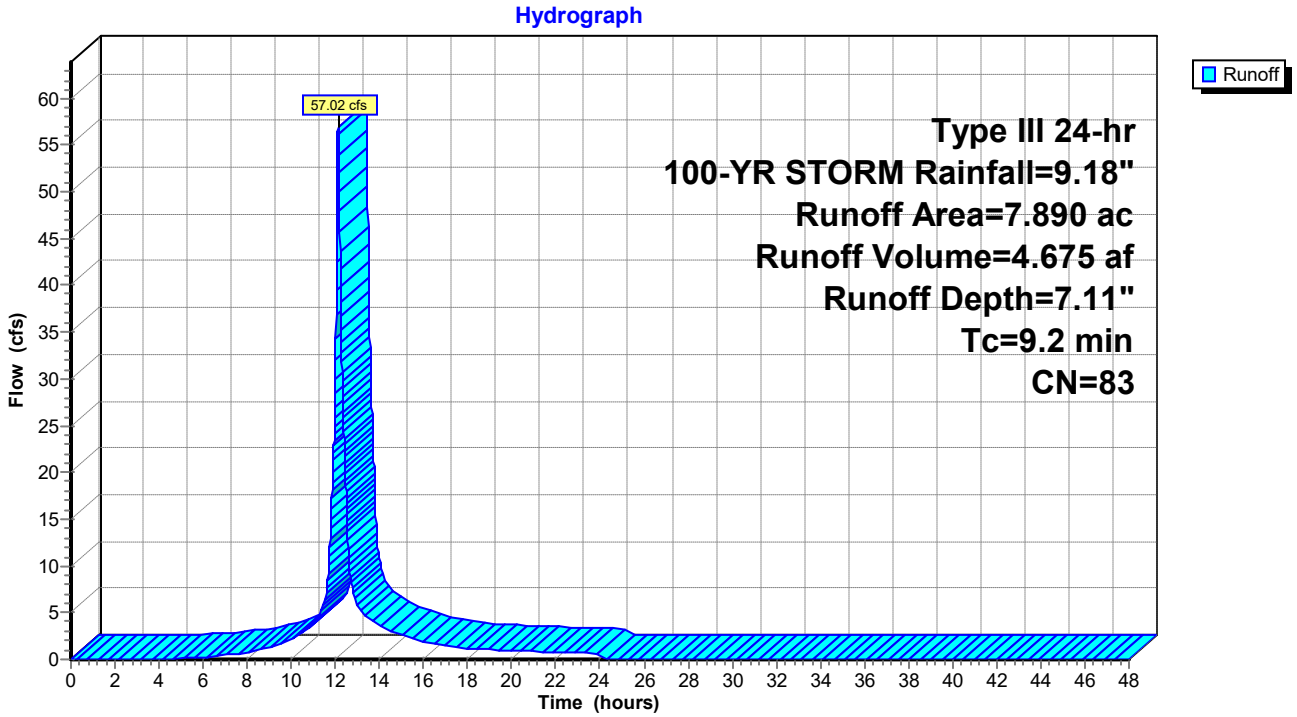
Runoff = 57.02 cfs @ 12.13 hrs, Volume= 4.675 af, Depth= 7.11"
Routed to Pond P3 :

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 STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	7.890	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 5:

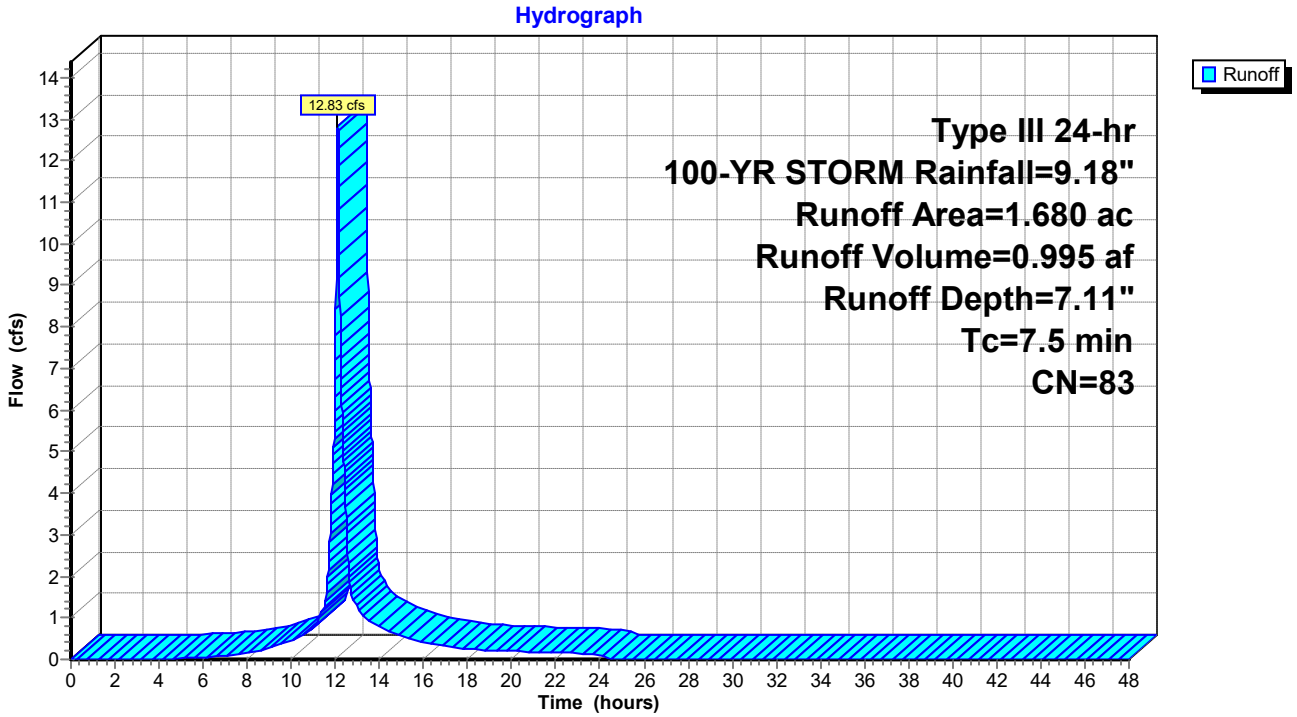
Runoff = 12.83 cfs @ 12.10 hrs, Volume= 0.995 af, Depth= 7.11"
Routed to Pond P5 :

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 STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	1.680	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

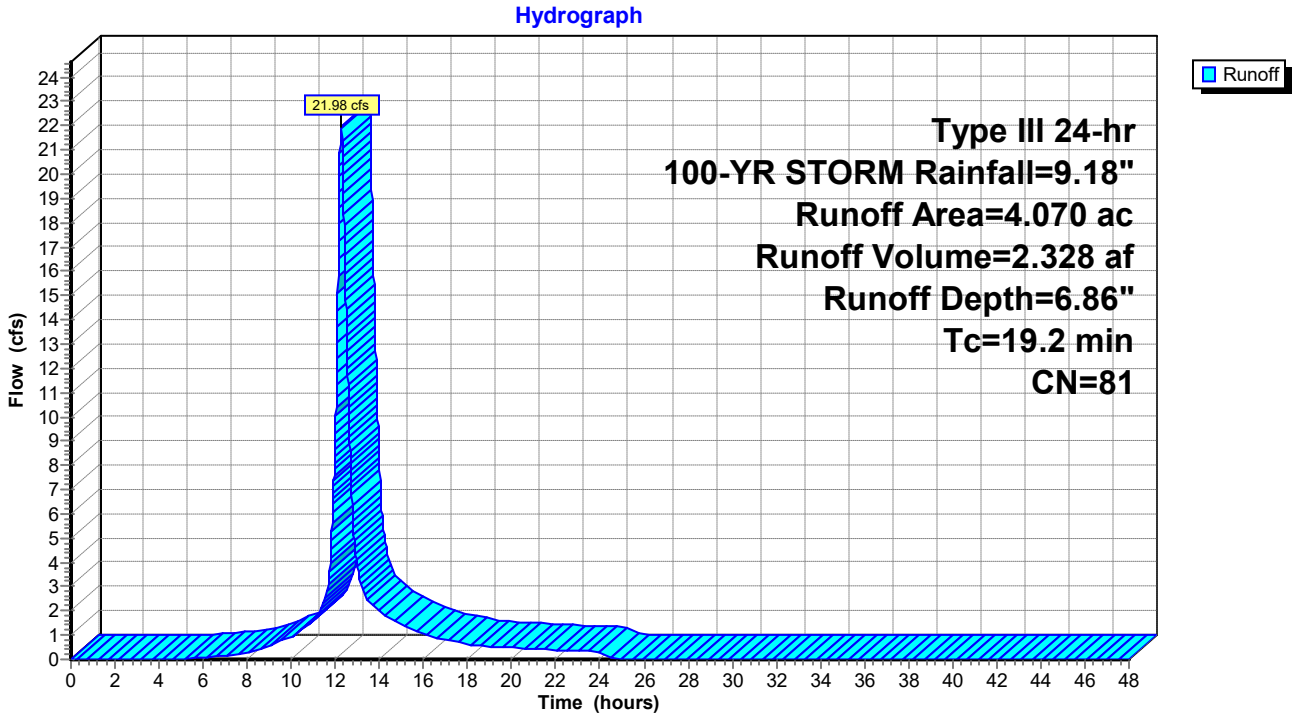
Runoff = 21.98 cfs @ 12.26 hrs, Volume= 2.328 af, Depth= 6.86"
Routed to Pond P7 :

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 STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	4.070	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8/10:

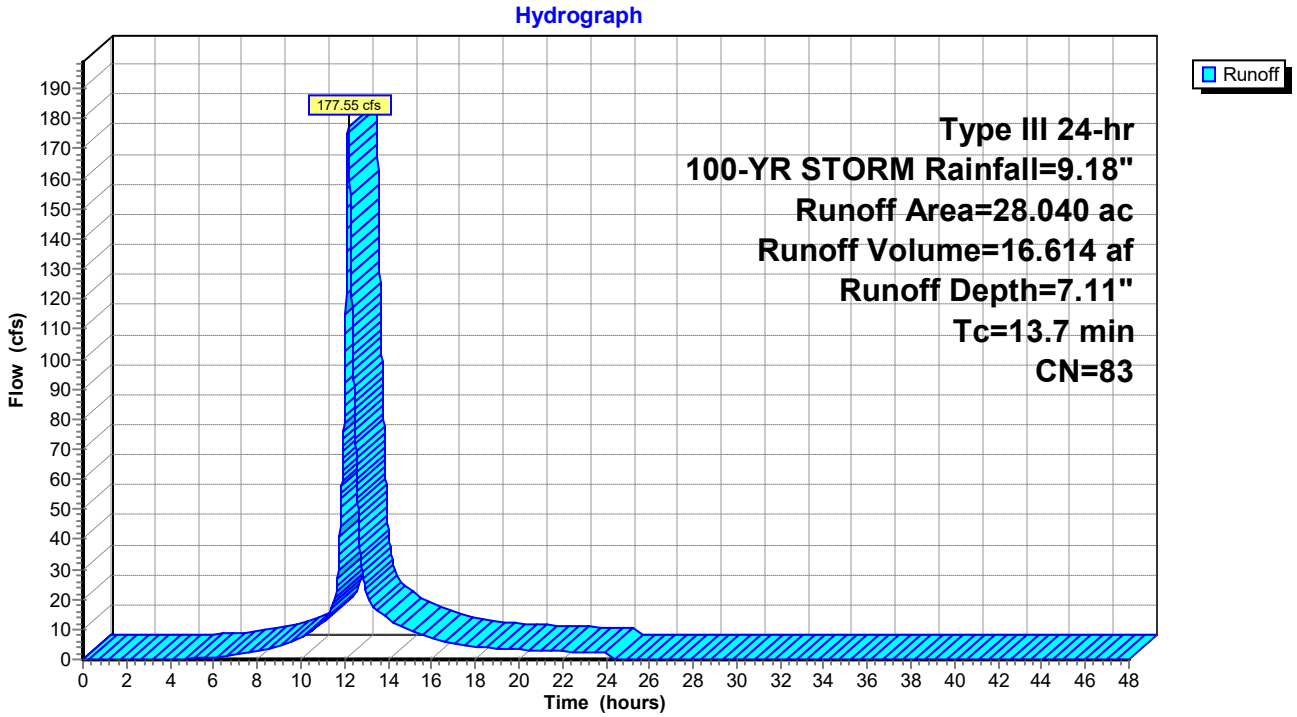
Runoff = 177.55 cfs @ 12.18 hrs, Volume= 16.614 af, Depth= 7.11"
Routed to Pond P8/10 :

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 STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	28.040	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 8/10:



Summary for Subcatchment 9:

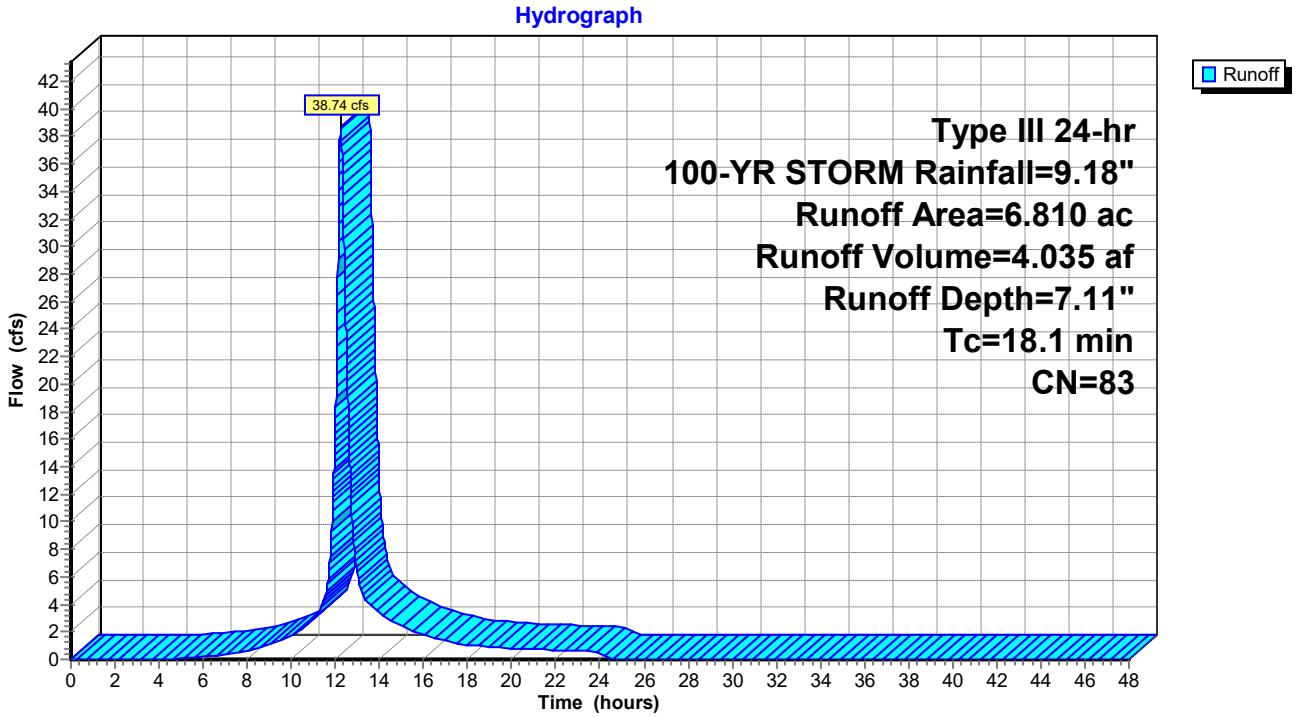
Runoff = 38.74 cfs @ 12.24 hrs, Volume= 4.035 af, Depth= 7.11"
Routed to Pond P9 :

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 STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	6.810	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

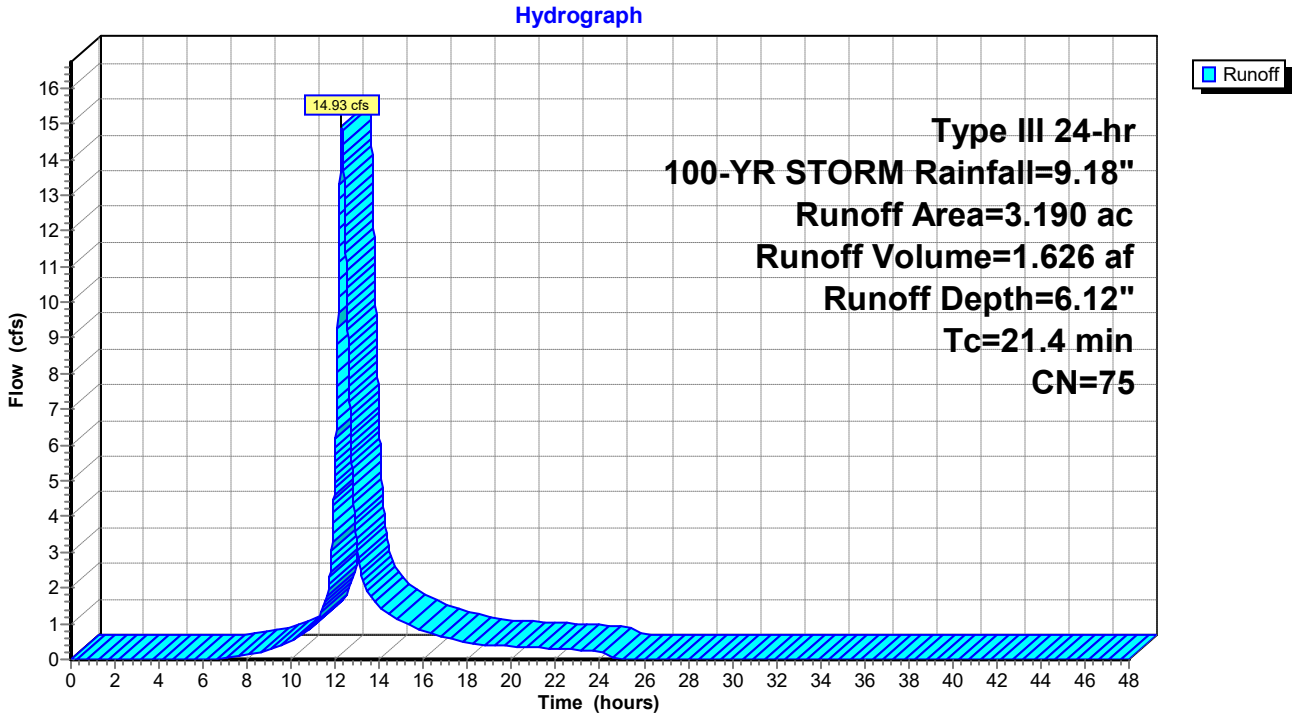
Runoff = 14.93 cfs @ 12.29 hrs, Volume= 1.626 af, Depth= 6.12"
Routed to Pond WS11 :

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 STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	3.190	75	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

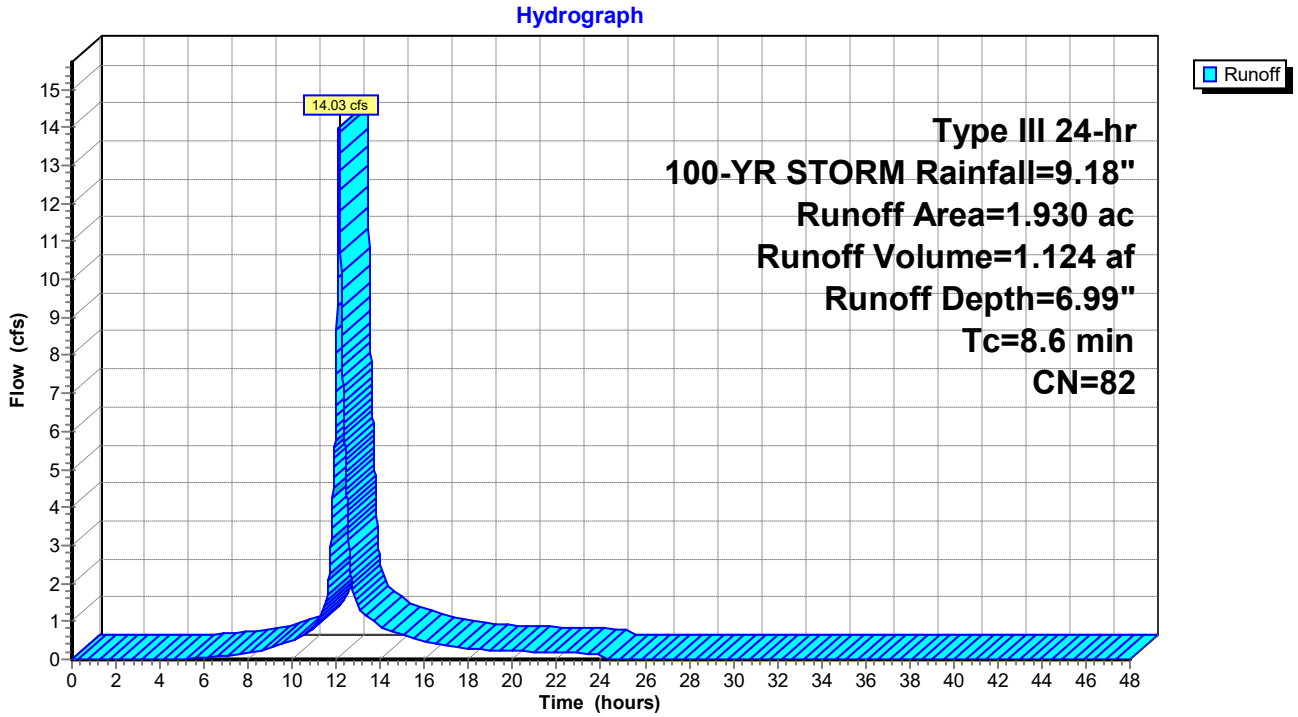
Runoff = 14.03 cfs @ 12.12 hrs, Volume= 1.124 af, Depth= 6.99"
Routed to Pond P12 :

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 STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	1.930	82	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 14:

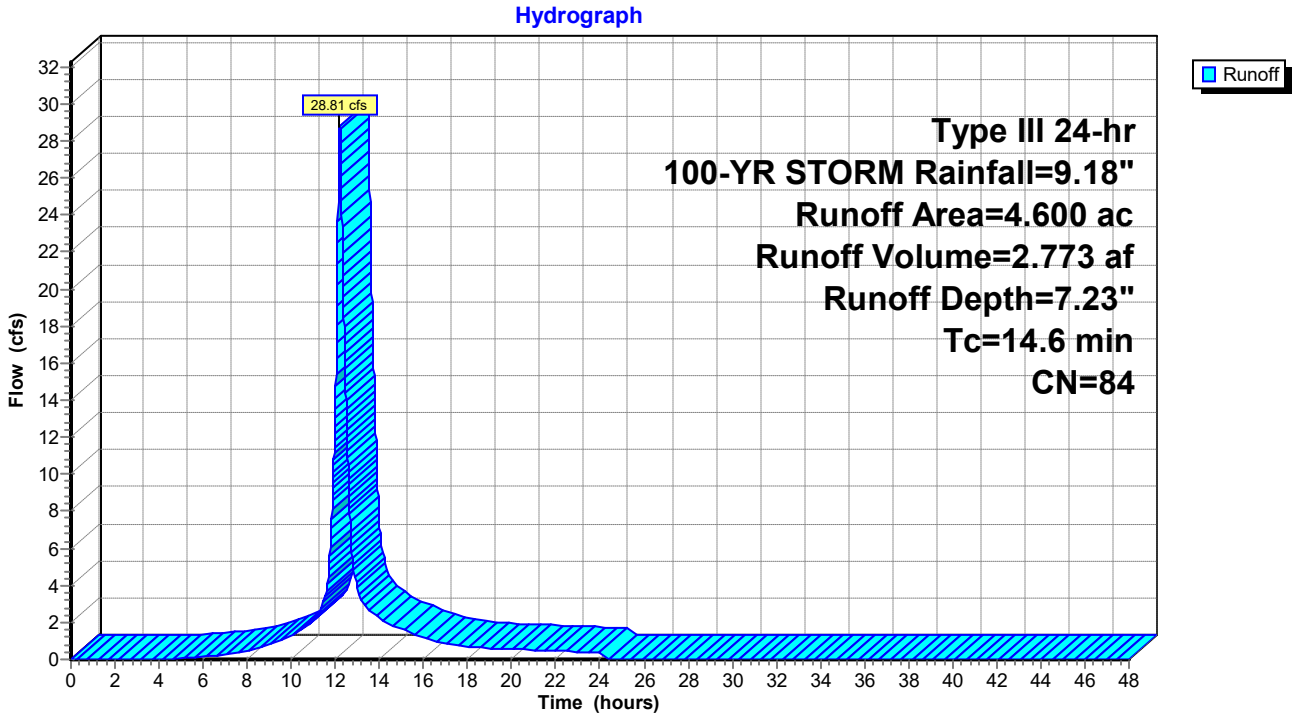
Runoff = 28.81 cfs @ 12.19 hrs, Volume= 2.773 af, Depth= 7.23"
Routed to Pond WS14 :

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 STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	4.600	84	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

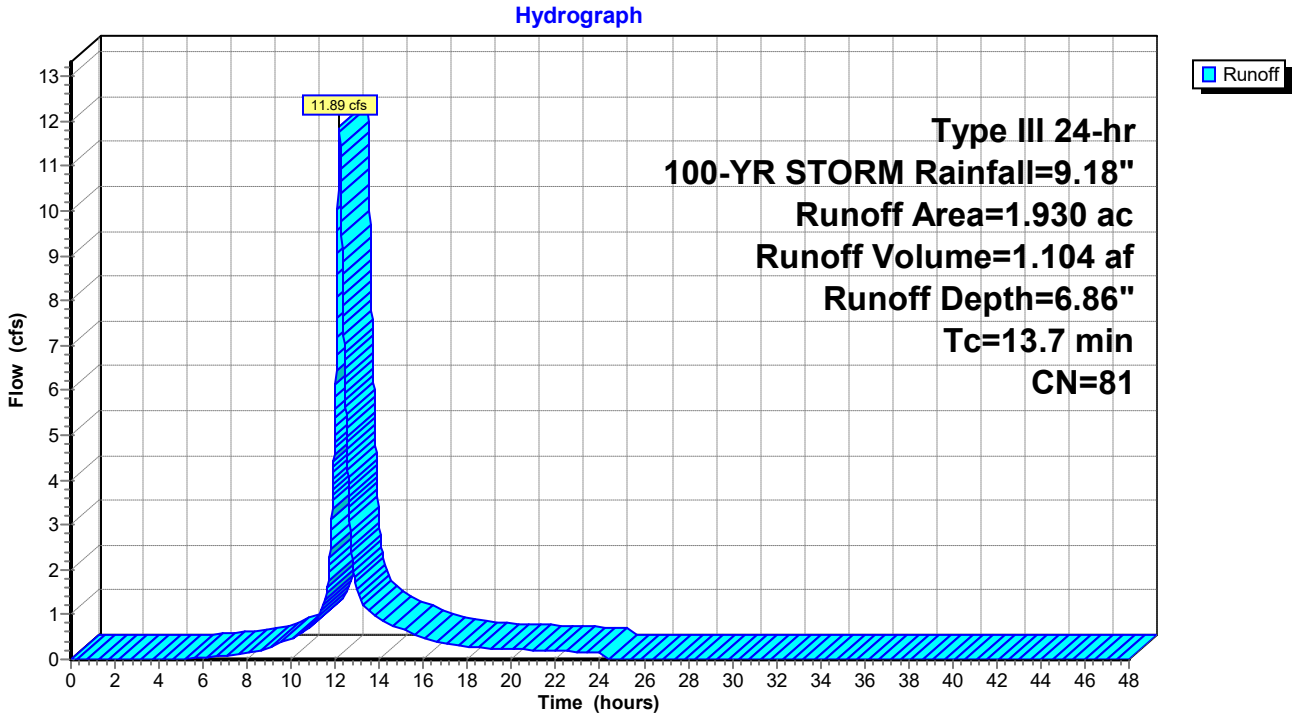
Runoff = 11.89 cfs @ 12.19 hrs, Volume= 1.104 af, Depth= 6.86"
Routed to nonexistent node 6L

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 STORM Rainfall=9.18"

	Area (ac)	CN	Description
*	1.930	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:



Summary for Pond P1:

Inflow Area = 1.280 ac, Inflow Depth = 7.11" for 100-YR STORM event
Inflow = 9.28 cfs @ 12.12 hrs, Volume= 0.758 af
Outflow = 9.16 cfs @ 12.14 hrs, Volume= 0.758 af, Atten= 1%, Lag= 1.0 min
Primary = 9.16 cfs @ 12.14 hrs, Volume= 0.758 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,125.48' @ 12.14 hrs Surf.Area= 2,463 sf Storage= 4,606 cf

Plug-Flow detention time= 67.8 min calculated for 0.758 af (100% of inflow)
Center-of-Mass det. time= 67.7 min (861.4 - 793.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,123.00'	5,895 cf	**Custom Stage Data (Prismatic)** Listed below

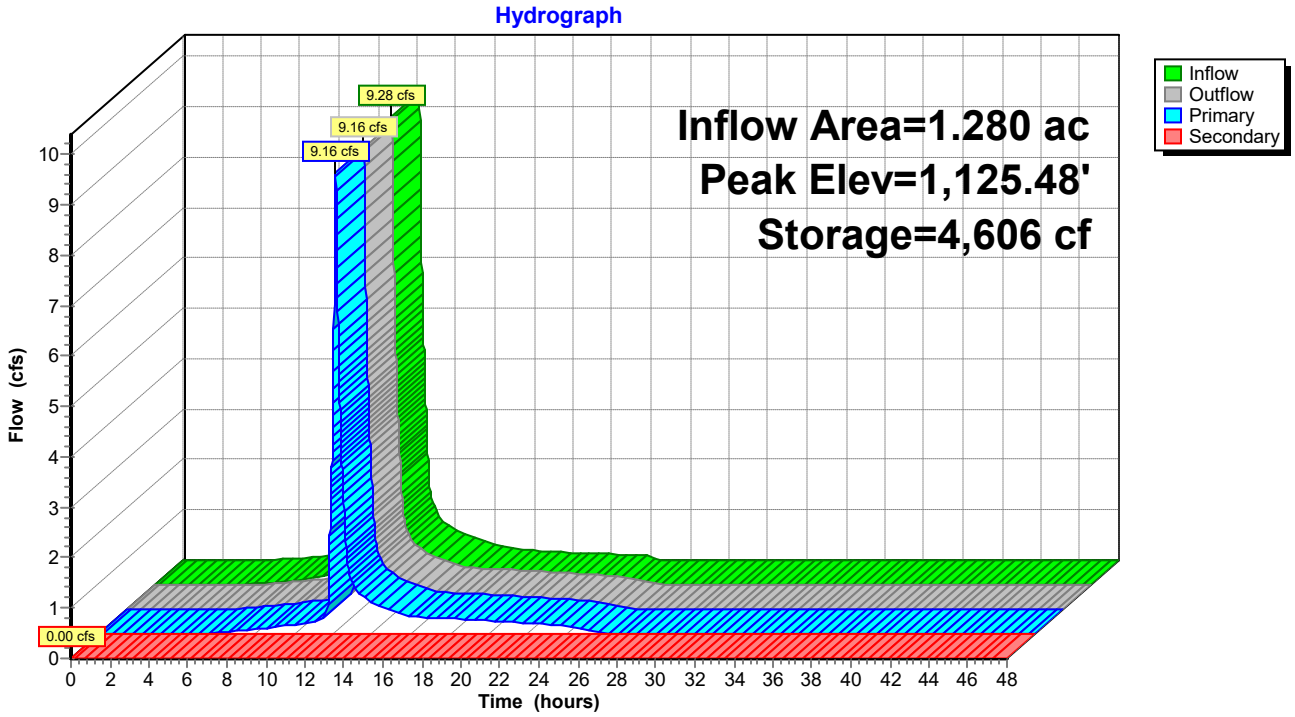
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,123.00	1,247	0	0
1,124.00	1,698	1,473	1,473
1,125.00	2,199	1,949	3,421
1,126.00	2,749	2,474	5,895

Device	Routing	Invert	Outlet Devices
#1	Primary	1,123.00'	**18.0" Round Culvert** L= 35.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,123.00' / 1,122.00' S= 0.0286 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	1,125.30'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,125.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,125.60'	**20.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,123.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.15 cfs @ 12.14 hrs HW=1,125.48' (Free Discharge)
└**1=Culvert** (Passes 9.15 cfs of 11.19 cfs potential flow)
├**2=Sharp-Crested Rectangular Weir** (Weir Controls 2.84 cfs @ 1.44 fps)
├**3=Sharp-Crested Rectangular Weir** (Weir Controls 5.94 cfs @ 2.53 fps)
└**5=Orifice/Grate** (Orifice Controls 0.37 cfs @ 7.58 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,123.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P1:


Hydrograph
Inflow Area=1.280 ac
Peak Elev=1,125.48'
Storage=4,606 cf
9.28 cfs
9.16 cfs
9.16 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8 9 10

Summary for Pond P12:

Inflow Area = 1.930 ac, Inflow Depth = 6.99" for 100-YR STORM event
Inflow = 14.03 cfs @ 12.12 hrs, Volume= 1.124 af
Outflow = 13.13 cfs @ 12.15 hrs, Volume= 1.044 af, Atten= 6%, Lag= 2.2 min
Primary = 0.22 cfs @ 12.15 hrs, Volume= 0.196 af
Routed to nonexistent node 6L
Secondary = 12.91 cfs @ 12.15 hrs, Volume= 0.848 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,187.69' @ 12.15 hrs Surf.Area= 4,892 sf Storage= 6,881 cf

Plug-Flow detention time= 91.2 min calculated for 1.044 af (93% of inflow)
Center-of-Mass det. time= 54.2 min (849.8 - 795.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,184.00'	8,424 cf	**Custom Stage Data (Prismatic)** Listed below

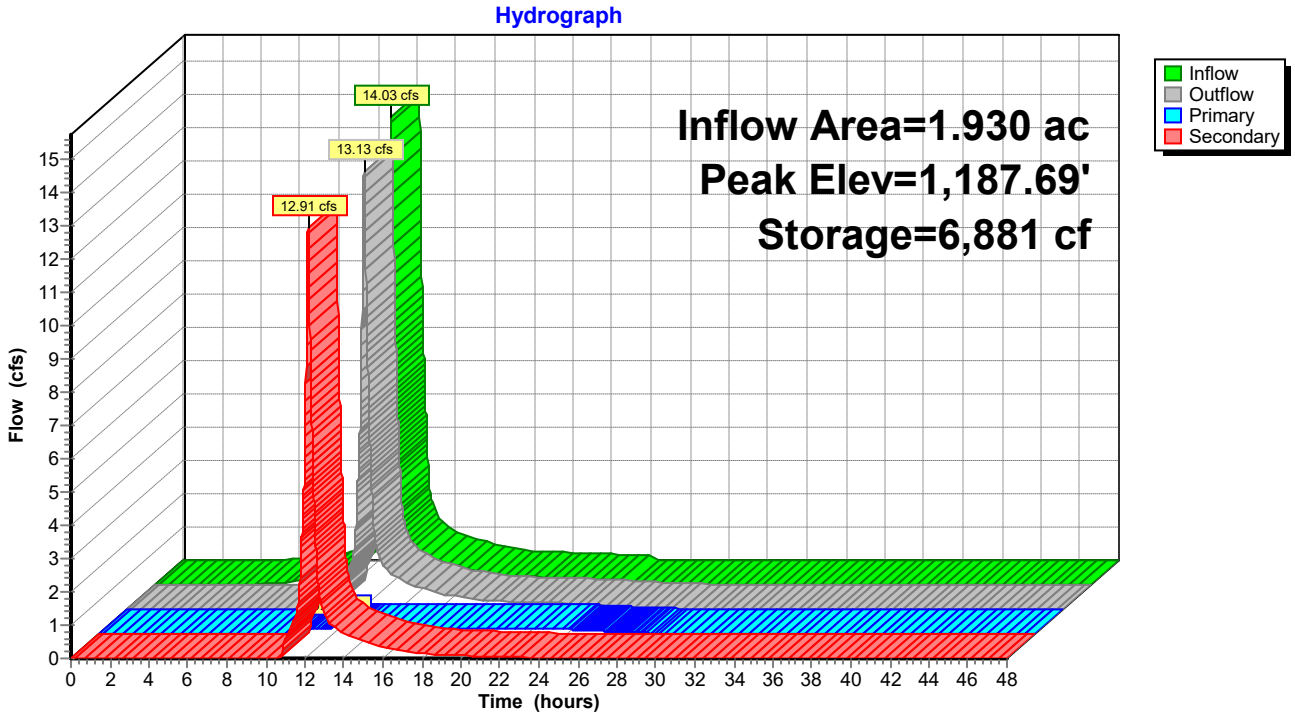
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,184.00	401	0	0
1,184.50	791	298	298
1,185.50	1,200	996	1,294
1,186.50	1,772	1,486	2,780
1,187.50	4,508	3,140	5,920
1,188.00	5,509	2,504	8,424

Device	Routing	Invert	Outlet Devices
#1	Primary	1,186.70'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Secondary	1,187.15'	**10.0' long Weir** 2 End Contraction(s)

Primary OutFlow Max=0.22 cfs @ 12.15 hrs HW=1,187.69' (Free Discharge)
1=Orifice (Orifice Controls 0.22 cfs @ 4.48 fps)

Secondary OutFlow Max=12.89 cfs @ 12.15 hrs HW=1,187.69' (Free Discharge)
2=Weir (Weir Controls 12.89 cfs @ 2.41 fps)

Pond P12:


Hydrograph
Inflow Area=1.930 ac
Peak Elev=1,187.69'
Storage=6,881 cf
14.03 cfs
13.13 cfs
12.91 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P2a:

Inflow Area = 3.850 ac, Inflow Depth = 6.86" for 100-YR STORM event
Inflow = 26.65 cfs @ 12.13 hrs, Volume= 2.202 af
Outflow = 26.25 cfs @ 12.15 hrs, Volume= 2.152 af, Atten= 2%, Lag= 1.1 min
Primary = 9.68 cfs @ 12.15 hrs, Volume= 1.803 af
Routed to nonexistent node 6L
Secondary = 16.57 cfs @ 12.15 hrs, Volume= 0.349 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,085.70' @ 12.15 hrs Surf.Area= 4,412 sf Storage= 9,443 cf

Plug-Flow detention time= 56.3 min calculated for 2.152 af (98% of inflow)
Center-of-Mass det. time= 42.5 min (841.5 - 799.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,082.75'	9,641 cf	**Custom Stage Data (Prismatic)** Listed below

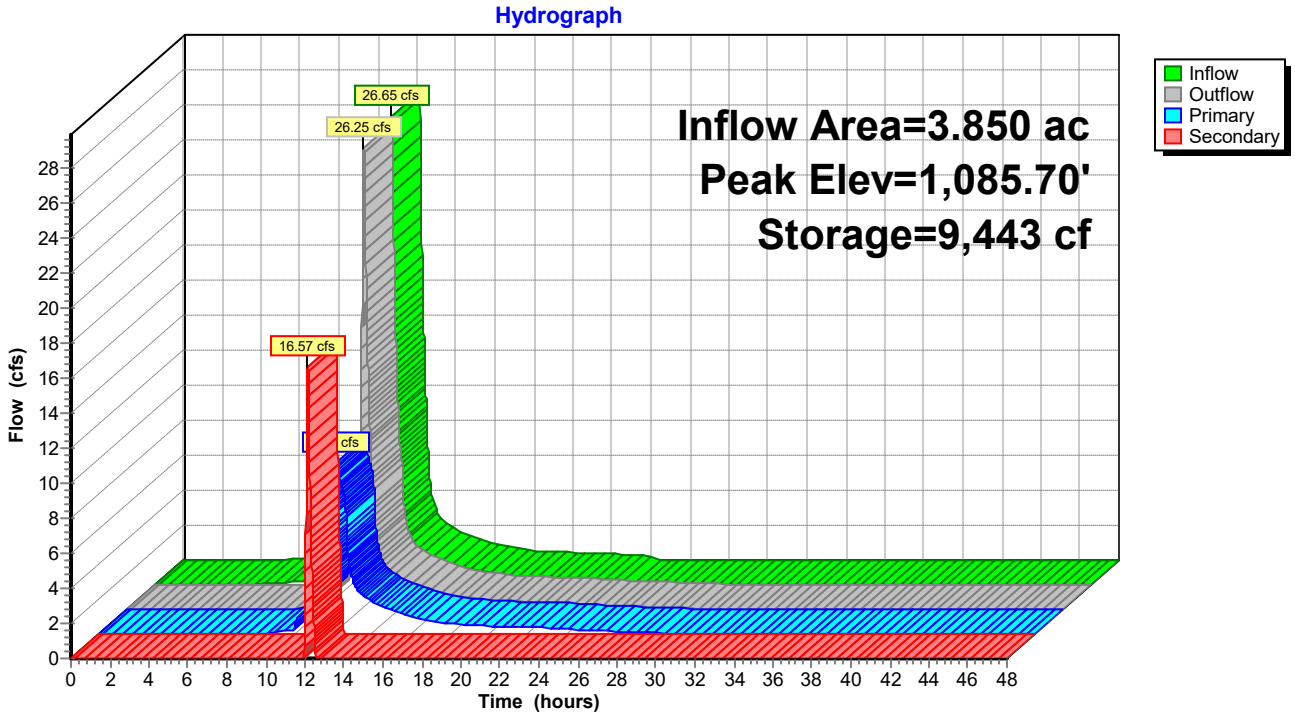
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,082.75	2,048	0	0
1,083.75	2,794	2,421	2,421
1,084.75	3,596	3,195	5,616
1,085.75	4,454	4,025	9,641

Device	Routing	Invert	Outlet Devices
#1	Device 3	1,084.50'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Device 3	1,083.65'	**3.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Primary	1,083.65'	**18.0" Round Culvert** L= 59.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,083.65' / 1,083.00' S= 0.0110 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 3	1,085.00'	**72.0" x 72.0" Horiz. Top of Riser** C= 0.600 Limited to weir flow at low heads
#5	Secondary	1,085.25'	**20.0' long + 3.0 '/' SideZ x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=9.68 cfs @ 12.15 hrs HW=1,085.70' (Free Discharge)
└**3=Culvert** (Barrel Controls 9.68 cfs @ 5.48 fps)
├**1=Sharp-Crested Rectangular Weir** (Passes < 20.48 cfs potential flow)
├**2=Orifice** (Passes < 0.34 cfs potential flow)
└**4=Top of Riser** (Passes < 46.03 cfs potential flow)

Secondary OutFlow Max=16.56 cfs @ 12.15 hrs HW=1,085.70' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Weir Controls 16.56 cfs @ 1.72 fps)

Pond P2a:


Hydrograph
Inflow Area=3.850 ac
Peak Elev=1,085.70'
Storage=9,443 cf
26.65 cfs
26.25 cfs
16.57 cfs
cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28

Summary for Pond P2b:

Inflow Area = 4.020 ac, Inflow Depth = 6.24" for 100-YR STORM event
Inflow = 22.74 cfs @ 12.19 hrs, Volume= 2.091 af
Outflow = 21.87 cfs @ 12.23 hrs, Volume= 2.008 af, Atten= 4%, Lag= 2.3 min
Primary = 0.31 cfs @ 12.23 hrs, Volume= 0.385 af
Routed to nonexistent node 6L
Secondary = 21.56 cfs @ 12.23 hrs, Volume= 1.623 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,041.27' @ 12.23 hrs Surf.Area= 5,716 sf Storage= 12,219 cf

Plug-Flow detention time= 91.6 min calculated for 2.008 af (96% of inflow)
Center-of-Mass det. time= 69.0 min (882.8 - 813.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,038.50'	13,587 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

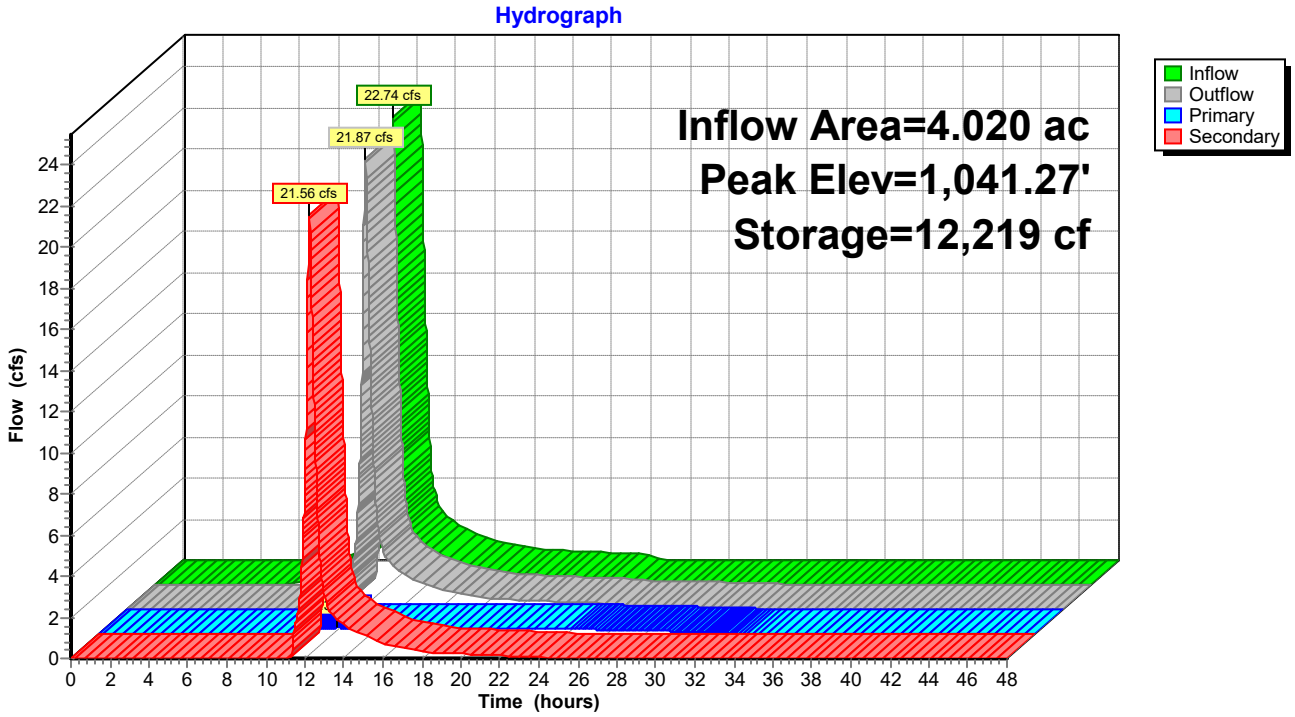
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,038.50	3,189	0	0
1,039.50	4,051	3,620	3,620
1,040.50	4,969	4,510	8,130
1,041.50	5,945	5,457	13,587

Device	Routing	Invert	Outlet Devices
#1	Secondary	1,040.50'	**10.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	1,039.50'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.31 cfs @ 12.23 hrs HW=1,041.27' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 0.31 cfs @ 6.40 fps)

Secondary OutFlow Max=21.55 cfs @ 12.23 hrs HW=1,041.27' (Free Discharge)
↑—**1=Sharp-Crested Rectangular Weir** (Weir Controls 21.55 cfs @ 2.86 fps)

Pond P2b:


Hydrograph
Inflow
Outflow
Primary
Secondary
22.74 cfs
21.87 cfs
21.56 cfs
Inflow Area=4.020 ac
Peak Elev=1,041.27'
Storage=12,219 cf
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P3:

Inflow Area = 7.890 ac, Inflow Depth = 7.11" for 100-YR STORM event
Inflow = 57.02 cfs @ 12.13 hrs, Volume= 4.675 af
Outflow = 47.63 cfs @ 12.19 hrs, Volume= 4.675 af, Atten= 16%, Lag= 4.0 min
Primary = 39.12 cfs @ 12.19 hrs, Volume= 4.618 af
Routed to nonexistent node 6L
Secondary = 8.51 cfs @ 12.19 hrs, Volume= 0.057 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,129.69' @ 12.19 hrs Surf.Area= 8,114 sf Storage= 35,806 cf

Plug-Flow detention time= 130.9 min calculated for 4.674 af (100% of inflow)
Center-of-Mass det. time= 131.1 min (924.9 - 793.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,122.00'	38,268 cf	**Custom Stage Data (Prismatic)** Listed below

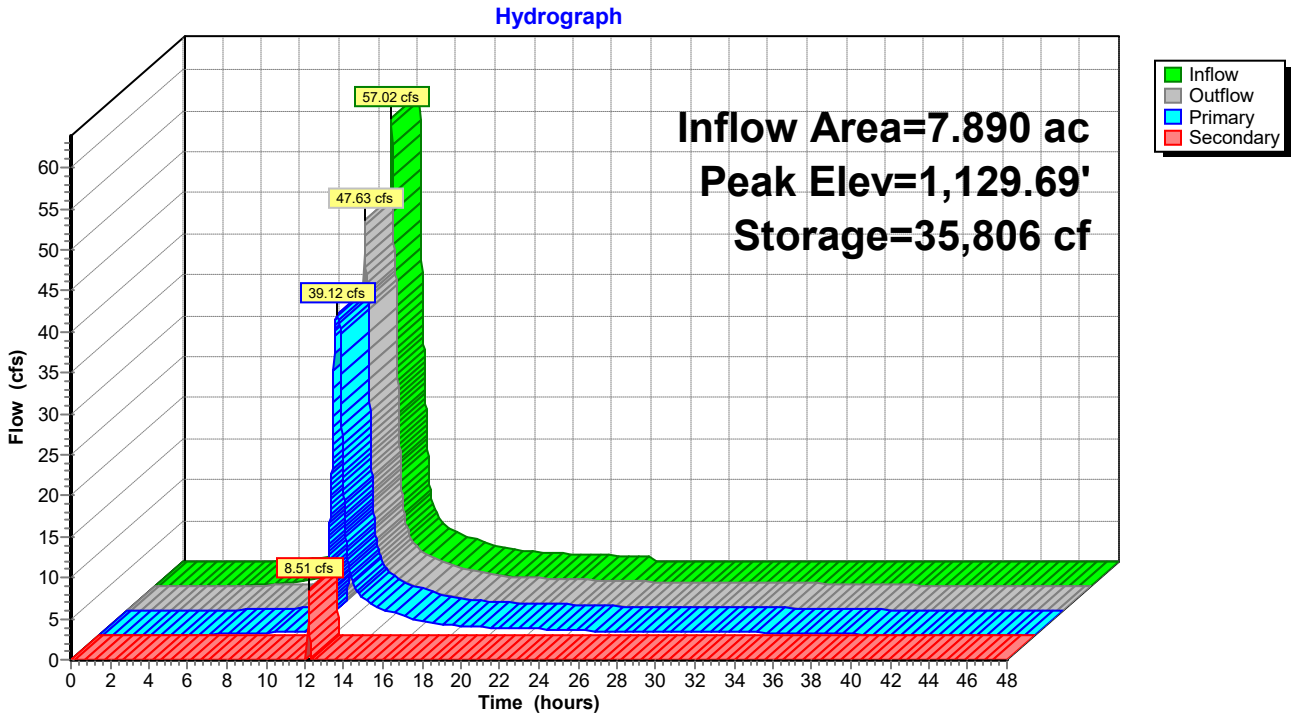
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,122.00	1,797	0	0
1,123.00	2,400	2,099	2,099
1,124.00	3,074	2,737	4,836
1,125.00	3,810	3,442	8,278
1,126.00	4,608	4,209	12,487
1,127.00	5,471	5,040	17,526
1,128.00	6,397	5,934	23,460
1,129.00	7,388	6,893	30,353
1,130.00	8,442	7,915	38,268

Device	Routing	Invert	Outlet Devices
#1	Primary	1,122.00'	**24.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,122.00' / 1,121.50' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,129.00'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,127.50'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,129.50'	**40.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,122.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=39.12 cfs @ 12.19 hrs HW=1,129.69' (Free Discharge)
└**1=Culvert** (Inlet Controls 39.12 cfs @ 12.45 fps)
  └**2=Sharp-Crested Rectangular Weir** (Passes < 23.70 cfs potential flow)
  └**3=Sharp-Crested Rectangular Weir** (Passes < 74.15 cfs potential flow)
  └**5=Orifice/Grate** (Passes < 0.66 cfs potential flow)

Secondary OutFlow Max=8.40 cfs @ 12.19 hrs HW=1,129.69' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 8.40 cfs @ 1.12 fps)

Pond P3:



Summary for Pond P5:

Inflow Area = 1.680 ac, Inflow Depth = 7.11" for 100-YR STORM event
Inflow = 12.83 cfs @ 12.10 hrs, Volume= 0.995 af
Outflow = 12.45 cfs @ 12.13 hrs, Volume= 0.995 af, Atten= 3%, Lag= 1.3 min
Primary = 12.28 cfs @ 12.13 hrs, Volume= 0.995 af
Routed to nonexistent node 6L
Secondary = 0.17 cfs @ 12.13 hrs, Volume= 0.001 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,142.52' @ 12.13 hrs Surf.Area= 4,518 sf Storage= 8,337 cf

Plug-Flow detention time= 116.4 min calculated for 0.995 af (100% of inflow)
Center-of-Mass det. time= 116.4 min (908.6 - 792.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,140.00'	10,517 cf	**Custom Stage Data (Prismatic)** Listed below

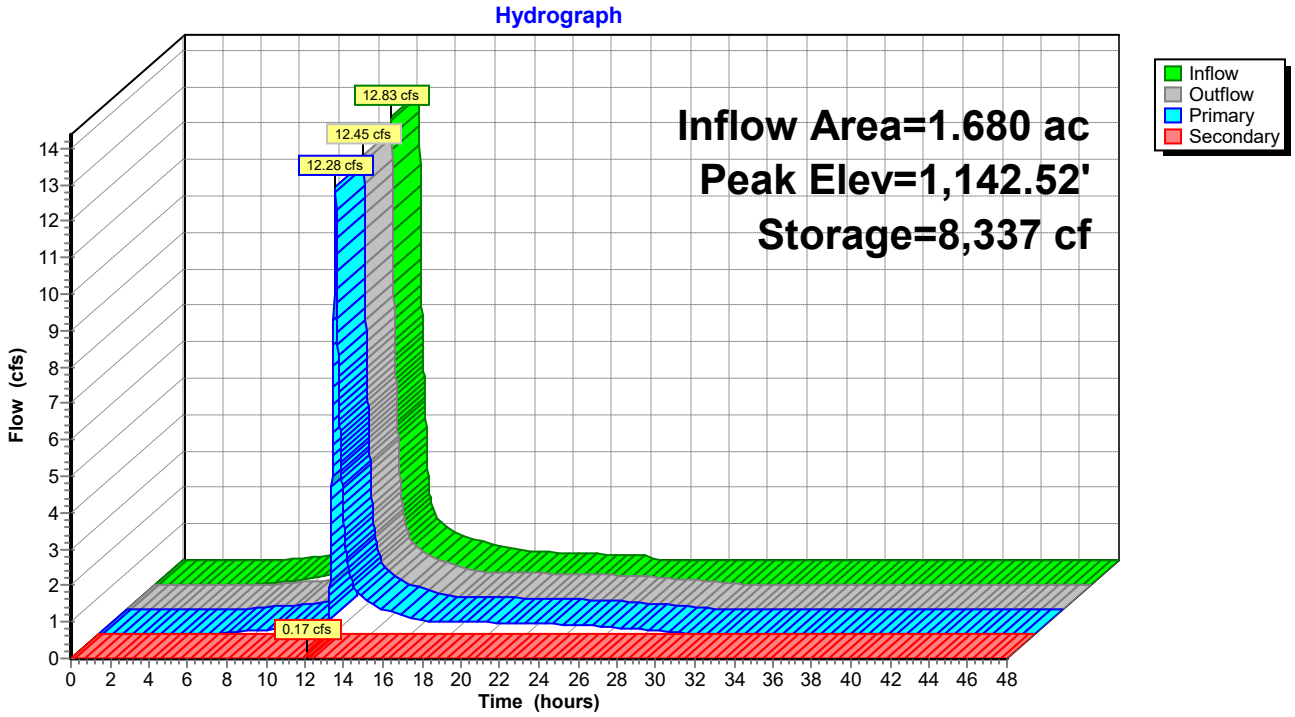
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,140.00	2,092	0	0
1,141.00	2,986	2,539	2,539
1,142.00	3,967	3,477	6,016
1,143.00	5,036	4,502	10,517

Device	Routing	Invert	Outlet Devices
#1	Primary	1,140.00'	**24.0" Round Culvert** L= 30.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,140.00' / 1,139.50' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,142.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,142.25'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,142.50'	**30.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,140.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=12.26 cfs @ 12.13 hrs HW=1,142.52' (Free Discharge)
└**1=Culvert** (Passes 12.26 cfs of 18.62 cfs potential flow)
├**2=Sharp-Crested Rectangular Weir** (Weir Controls 6.67 cfs @ 2.64 fps)
├**3=Sharp-Crested Rectangular Weir** (Weir Controls 5.21 cfs @ 1.79 fps)
└**5=Orifice/Grate** (Orifice Controls 0.37 cfs @ 7.64 fps)

Secondary OutFlow Max=0.15 cfs @ 12.13 hrs HW=1,142.52' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 0.15 cfs @ 0.32 fps)

Pond P5:


Hydrograph
Inflow Area=1.680 ac
Peak Elev=1,142.52'
Storage=8,337 cf
12.83 cfs
12.45 cfs
12.28 cfs
0.17 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Summary for Pond P7:

Inflow Area = 4.070 ac, Inflow Depth = 6.86" for 100-YR STORM event
Inflow = 21.98 cfs @ 12.26 hrs, Volume= 2.328 af
Outflow = 17.92 cfs @ 12.39 hrs, Volume= 2.307 af, Atten= 18%, Lag= 7.9 min
Primary = 17.92 cfs @ 12.39 hrs, Volume= 2.307 af
Routed to nonexistent node 6L
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,151.88' @ 12.39 hrs Surf.Area= 9,442 sf Storage= 33,579 cf

Plug-Flow detention time= 329.9 min calculated for 2.306 af (99% of inflow)
Center-of-Mass det. time= 324.5 min (1,132.3 - 807.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,147.00'	44,832 cf	**Custom Stage Data (Prismatic)** Listed below

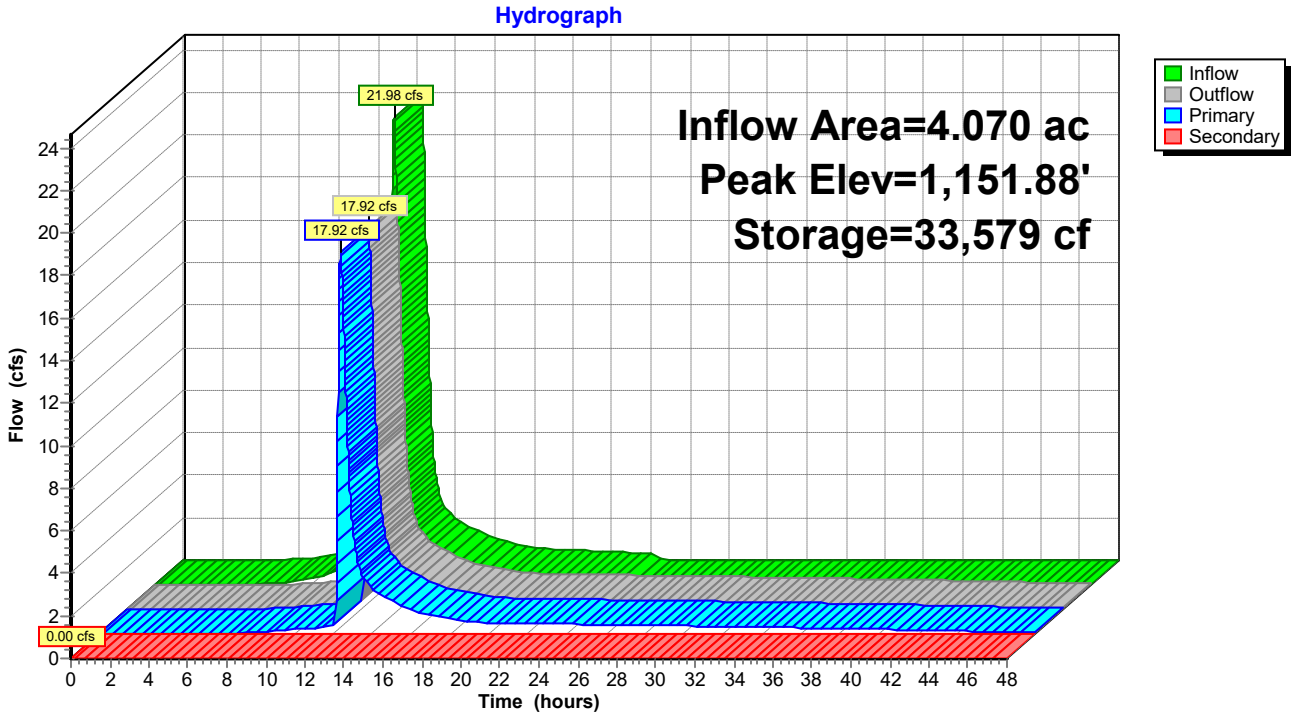
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,147.00	4,554	0	0
1,148.00	5,432	4,993	4,993
1,149.00	6,361	5,897	10,890
1,150.00	7,356	6,859	17,748
1,151.00	8,425	7,891	25,639
1,152.00	9,578	9,002	34,640
1,153.00	10,805	10,192	44,832

Device	Routing	Invert	Outlet Devices
#1	Primary	1,147.00'	**30.0" Round Culvert** L= 106.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,147.00' / 1,146.10' S= 0.0085 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	1,152.00'	**11.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,150.95'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,152.50'	**30.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,147.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=17.91 cfs @ 12.39 hrs HW=1,151.88' (Free Discharge)
└**1=Culvert** (Passes 17.91 cfs of 45.04 cfs potential flow)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└**3=Sharp-Crested Rectangular Weir** (Weir Controls 17.39 cfs @ 3.88 fps)
└**5=Orifice/Grate** (Orifice Controls 0.52 cfs @ 10.50 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,147.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P7:


Hydrograph
Inflow Area=4.070 ac
Peak Elev=1,151.88'
Storage=33,579 cf
21.98 cfs
17.92 cfs
17.92 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P8/10:

Inflow Area = 28.040 ac, Inflow Depth = 7.11" for 100-YR STORM event
Inflow = 177.55 cfs @ 12.18 hrs, Volume= 16.614 af
Outflow = 138.34 cfs @ 12.30 hrs, Volume= 15.841 af, Atten= 22%, Lag= 6.7 min
Primary = 127.52 cfs @ 12.30 hrs, Volume= 15.745 af
Routed to nonexistent node 6L
Secondary = 10.81 cfs @ 12.30 hrs, Volume= 0.096 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,114.44' @ 12.30 hrs Storage= 149,045 cf

Plug-Flow detention time= 126.1 min calculated for 15.838 af (95% of inflow)
Center-of-Mass det. time= 100.0 min (898.0 - 798.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,108.00'	166,405 cf	**Custom Stage Data** Listed below

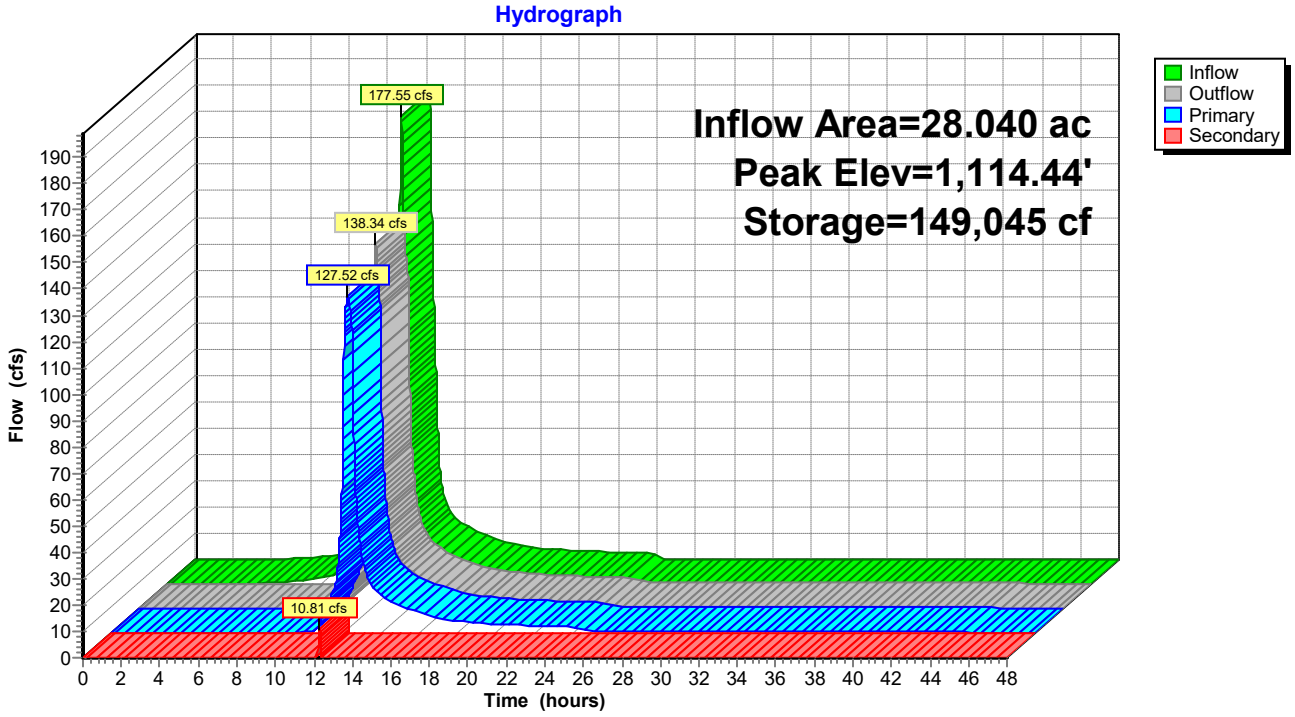
Elevation (feet)	Cum.Store (cubic-feet)
1,108.00	0
1,109.00	16,747
1,110.00	35,732
1,111.00	57,018
1,112.00	80,666
1,113.00	106,738
1,114.00	135,298
1,115.00	166,405

Device	Routing	Invert	Outlet Devices
#1	Primary	1,108.00'	**48.0" Round Culvert** L= 44.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,108.00' / 1,107.50' S= 0.0114 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,113.00'	**19.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,111.25'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,114.25'	**50.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,108.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=127.51 cfs @ 12.30 hrs HW=1,114.44' (Free Discharge)
└**1=Culvert** (Inlet Controls 127.51 cfs @ 10.15 fps)
  └**2=Sharp-Crested Rectangular Weir** (Passes < 143.21 cfs potential flow)
  └**3=Sharp-Crested Rectangular Weir** (Passes < 144.80 cfs potential flow)
  └**5=Orifice/Grate** (Passes < 0.59 cfs potential flow)

Secondary OutFlow Max=10.75 cfs @ 12.30 hrs HW=1,114.44' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 10.75 cfs @ 1.12 fps)

Pond P8/10:



Summary for Pond P9:

Inflow Area = 6.810 ac, Inflow Depth = 7.11" for 100-YR STORM event
Inflow = 38.74 cfs @ 12.24 hrs, Volume= 4.035 af
Outflow = 33.15 cfs @ 12.35 hrs, Volume= 3.991 af, Atten= 14%, Lag= 6.3 min
Primary = 23.11 cfs @ 12.35 hrs, Volume= 3.776 af
Routed to nonexistent node 6L
Secondary = 10.04 cfs @ 12.35 hrs, Volume= 0.215 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,180.33' @ 12.35 hrs Surf.Area= 15,645 sf Storage= 38,003 cf

Plug-Flow detention time= 169.4 min calculated for 3.991 af (99% of inflow)
Center-of-Mass det. time= 162.6 min (964.7 - 802.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,177.00'	48,733 cf	**Custom Stage Data (Prismatic)** Listed below

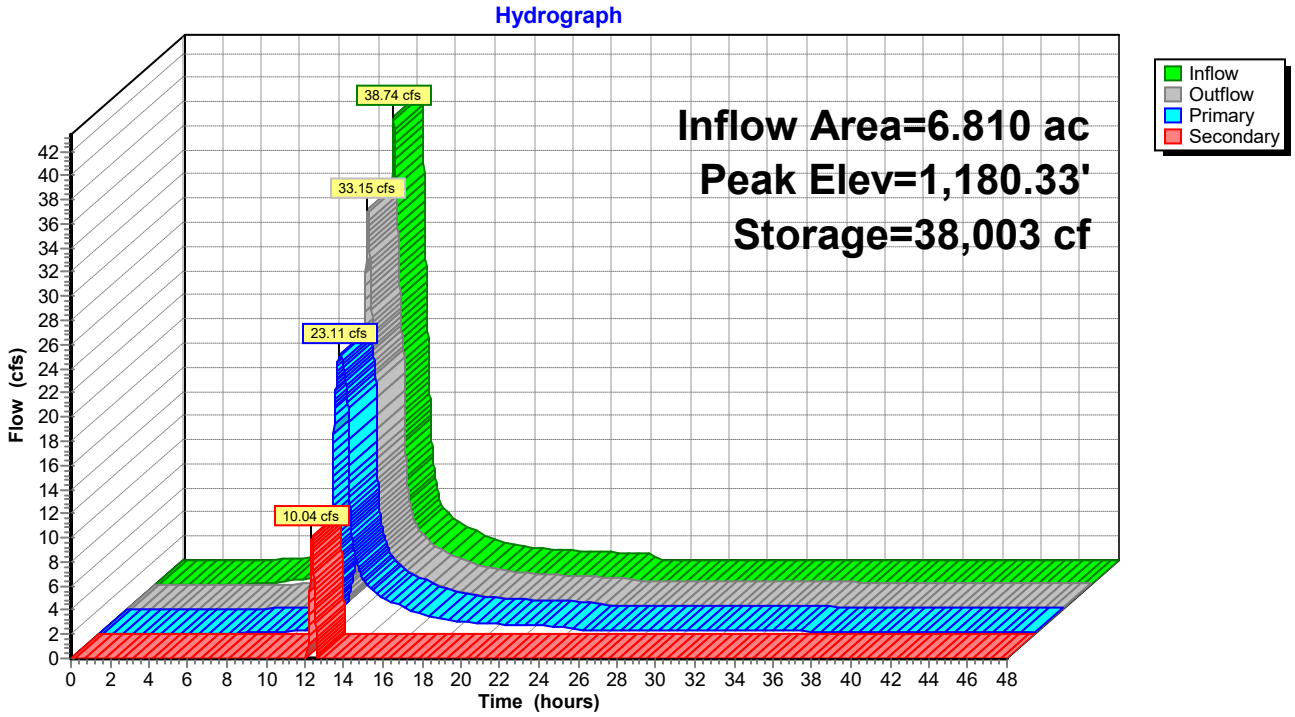
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,177.00	7,155	0	0
1,178.00	9,581	8,368	8,368
1,179.00	12,108	10,845	19,213
1,180.00	14,735	13,422	32,634
1,181.00	17,463	16,099	48,733

Device	Routing	Invert	Outlet Devices
#1	Primary	1,177.00'	**24.0" Round Culvert** L= 64.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,177.00' / 1,176.50' S= 0.0078 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,179.50'	**19.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Device 1	1,179.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#4	Secondary	1,180.00'	**20.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#5	Device 1	1,177.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=23.11 cfs @ 12.35 hrs HW=1,180.33' (Free Discharge)
└**1=Culvert** (Inlet Controls 23.11 cfs @ 7.36 fps)
├**2=Sharp-Crested Rectangular Weir** (Passes < 56.40 cfs potential flow)
├**3=Sharp-Crested Rectangular Weir** (Passes < 31.60 cfs potential flow)
└**5=Orifice/Grate** (Passes < 0.42 cfs potential flow)

Secondary OutFlow Max=10.02 cfs @ 12.35 hrs HW=1,180.33' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 10.02 cfs @ 1.50 fps)

Pond P9:


Hydrograph
Inflow Area=6.810 ac
Peak Elev=1,180.33'
Storage=38,003 cf
38.74 cfs
33.15 cfs
23.11 cfs
10.04 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond WS11:

Inflow Area = 3.190 ac, Inflow Depth = 6.12" for 100-YR STORM event
Inflow = 14.93 cfs @ 12.29 hrs, Volume= 1.626 af
Outflow = 14.50 cfs @ 12.34 hrs, Volume= 1.365 af, Atten= 3%, Lag= 2.9 min
Primary = 14.50 cfs @ 12.34 hrs, Volume= 1.365 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 1,191.43' @ 12.34 hrs Surf.Area= 8,606 sf Storage= 15,171 cf

Plug-Flow detention time= 108.3 min calculated for 1.365 af (84% of inflow)
Center-of-Mass det. time= 41.3 min (864.2 - 822.9)

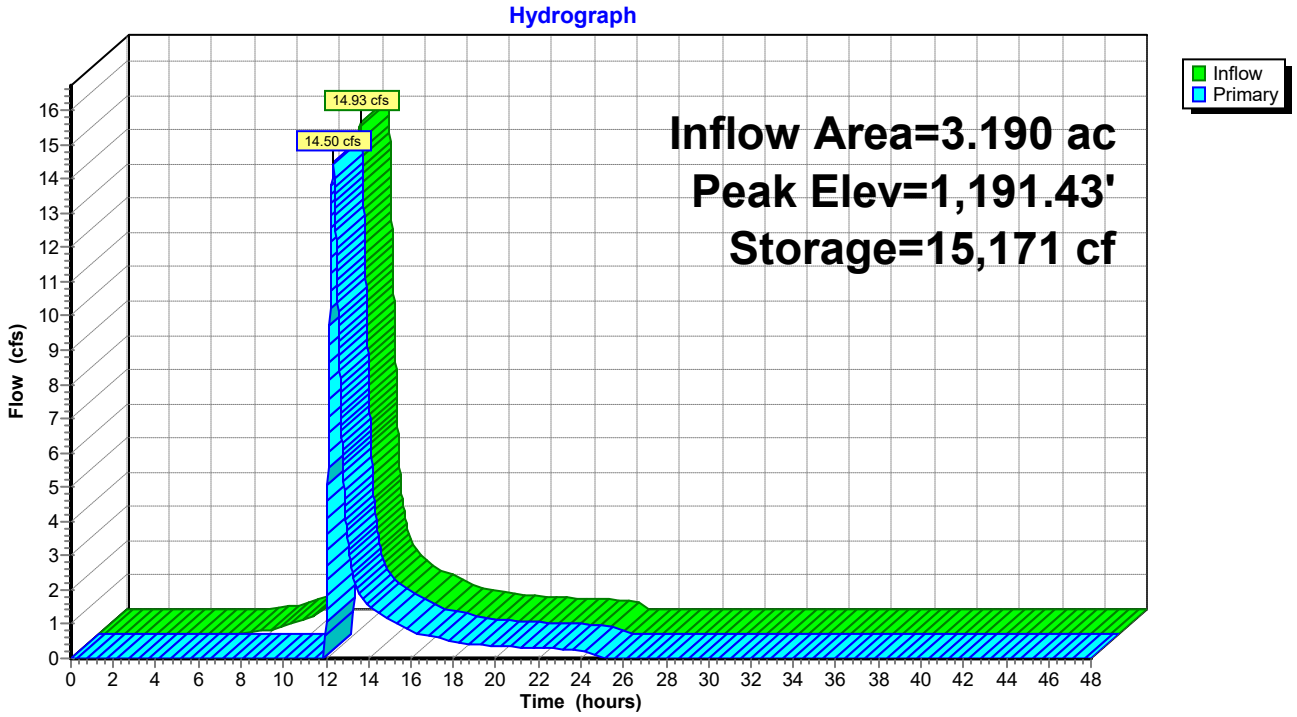
Volume	Invert	Avail.Storage	Storage Description
#1	1,188.00'	25,568 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,188.00	220	0	0
1,189.00	2,537	1,379	1,379
1,190.00	4,998	3,768	5,146
1,191.00	7,486	6,242	11,388
1,192.00	10,087	8,787	20,175
1,192.50	11,488	5,394	25,568

Device	Routing	Invert	Outlet Devices
#1	Primary	1,191.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Device 1	1,189.80'	**90.0 deg x 4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)

Primary OutFlow Max=14.48 cfs @ 12.34 hrs HW=1,191.43' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 14.48 cfs @ 1.68 fps)
↑—**2=Sharp-Crested Vee/Trap Weir** (Passes 14.48 cfs of 27.13 cfs potential flow)

Pond WS11:


Hydrograph
Inflow
Primary
14.93 cfs
14.50 cfs
Inflow Area=3.190 ac
Peak Elev=1,191.43'
Storage=15,171 cf
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Summary for Pond WS14:

Inflow Area = 4.600 ac, Inflow Depth = 7.23" for 100-YR STORM event
Inflow = 28.81 cfs @ 12.19 hrs, Volume= 2.773 af
Outflow = 27.08 cfs @ 12.25 hrs, Volume= 2.572 af, Atten= 6%, Lag= 3.2 min
Primary = 27.08 cfs @ 12.25 hrs, Volume= 2.572 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,148.27' @ 12.25 hrs Surf.Area= 7,152 sf Storage= 13,372 cf

Plug-Flow detention time= 64.7 min calculated for 2.572 af (93% of inflow)
Center-of-Mass det. time= 26.6 min (823.0 - 796.4)

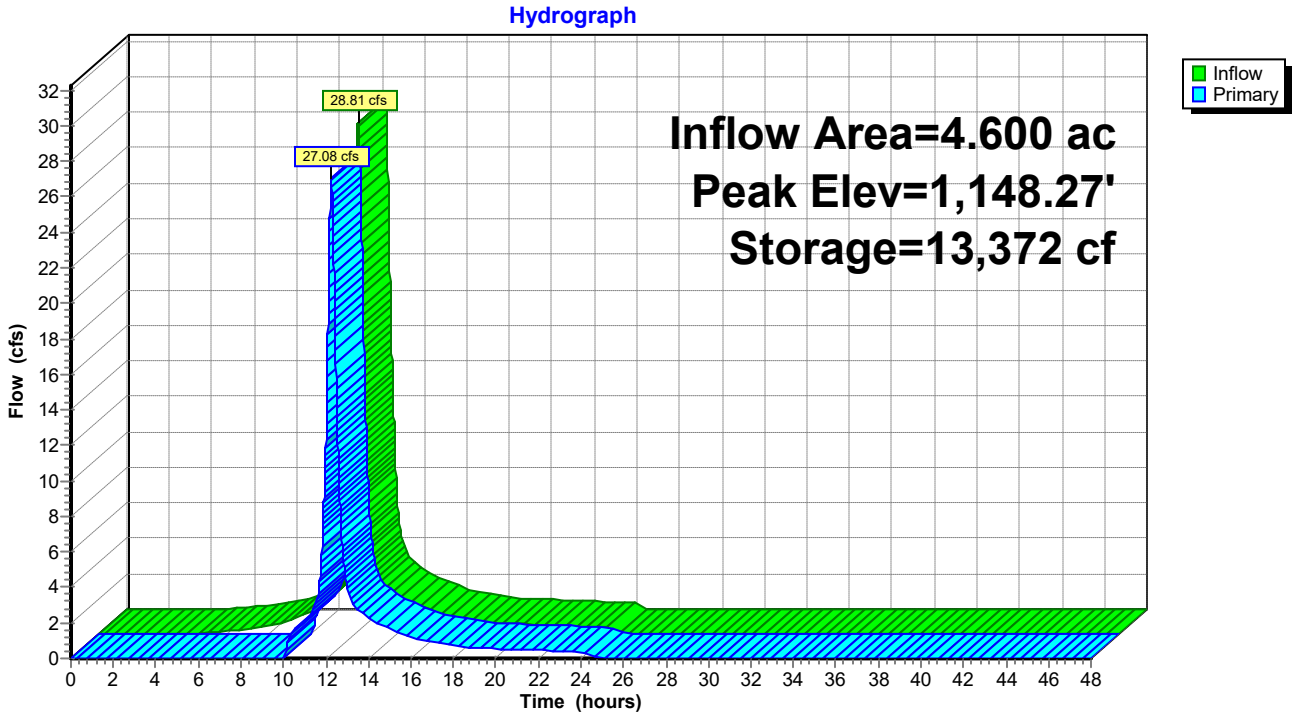
Volume	Invert	Avail.Storage	Storage Description
#1	1,145.00'	14,985 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,145.00	724	0	0
1,146.00	3,306	2,015	2,015
1,147.00	4,678	3,992	6,007
1,148.00	6,202	5,440	11,447
1,148.50	7,948	3,538	14,985

Device	Routing	Invert	Outlet Devices
#1	Device 2	1,146.80'	**90.0 deg x 4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)
#2	Primary	1,147.50'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=27.06 cfs @ 12.25 hrs HW=1,148.27' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Passes 27.06 cfs of 36.36 cfs potential flow)
↑—**1=Sharp-Crested Vee/Trap Weir** (Weir Controls 27.06 cfs @ 3.36 fps)

Pond WS14:


Hydrograph
Inflow
Primary
28.81 cfs
27.08 cfs
Inflow Area=4.600 ac
Peak Elev=1,148.27'
Storage=13,372 cf
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32

Appendix D

Curve Number

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Pre-development
DATE: 4/16/2021
PREPARED BY: JRP

Drainage Area: 8/10 — **Total Drainage Area:** 28.04 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69	0.76	79	0.74	84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60	4.60	73	0.20	79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74	0.02	83	20.4	88	1.36	90		78.5		85.5		89		90
Total HSG Areas:			**0.02**		**25.72**		**2.30**									

Calculated Total Drainage Area: 28.04 Ac
Calculated Composite Curve Number: 86

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development (For Peak Flow Calcs)
DATE: 4/16/2021
PREPARED BY: JRP

Drainage Area: 8/10 **Total Drainage Area:** 28.04 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59	0.02	74	23.03	81.5	3.67	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	0.61	98	0.10	98
Paved streets and roads; curbs and storm sewers (excluding right-of-way)		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65	0.61	75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:											**0.02**		**24.25**		**3.77**	

Calculated Total Drainage Area: 28.04 Ac
Calculated Composite Curve Number: 83

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development (For Water Quality)
DATE: 4/16/2021
PREPARED BY: JRP

Drainage Area: 8/10 — **Total Drainage Area:** 28.04 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59	0.01	74	13.21	81.5	2.84	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98	0.01	98	10.43	98	0.93	98
Paved streets and roads; curbs and storm sewers (excluding right-of-way)		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65	0.61	75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:											**0.02**		**24.25**		**3.77**	

Calculated Total Drainage Area: 28.04 Ac
Calculated Composite Curve Number: 89

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Pre-development **PREPARED BY:** YA

Drainage Area: 14 **Total Drainage Area:** 4.60 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69	0.73	79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60	0.99	73	2.60	79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83	0.28	88		90		78.5		85.5		89		90
Total HSG Areas:					**2.00**		**2.60**									

Calculated Total Drainage Area: **4.60 Ac**

Calculated Composite Curve Number: **79**

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development (For Peak Flow Calcs)
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 14 — **Total Drainage Area:** 4.60 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74	0.60	81.5	2.58	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	0.21	98	0.07	98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5	0.647	77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5	0.237	73.5	0.03	77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5	0.224	89		90
Total HSG Areas:													**1.92**		**2.68**	

Calculated Total Drainage Area: 4.60 Ac
Calculated Composite Curve Number: 84

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Post-development (For Water Quality) **PREPARED BY:** YA

Drainage Area: 14 **Total Drainage Area:** 4.60 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74	0.402	81.5	1.75	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	0.408	98	0.90	98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5	0.647	77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5	0.237	73.5	0.03	77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5	0.224	89		90
Total HSG Areas:													**1.92**		**2.68**	

Calculated Total Drainage Area: **4.60 Ac**

Calculated Composite Curve Number: **87**

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Pre-development **PREPARED BY:** YA

Drainage Area: 1 **Total Drainage Area:** 1.28 Ac

Cover Description	Hydrologic Soil Group								Hydrologic Soil Group							
	A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69	1.07	79	0.21	84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:					**1.07**		**0.21**									

Calculated Total Drainage Area: **1.28 Ac**

Calculated Composite Curve Number: **80**

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Post-development (For Peak Flow Calcs) **PREPARED BY:** YA

Drainage Area: 1 **Total Drainage Area:** 1.28 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74	0.96	81.5	0.32	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:													**0.96**		**0.32**	

Calculated Total Drainage Area: 1.28 Ac

Calculated Composite Curve Number: 83

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development (For Water Quality)
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 1 — **Total Drainage Area:** 1.28 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74	0.54	81.5	0.28	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	0.42	98	0.04	98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:													**0.96**		**0.32**	

Calculated Total Drainage Area: 1.28 Ac
Calculated Composite Curve Number: 88

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 1/31/2023

SCENARIO: Pre-development **PREPARED BY:** JRP

Drainage Area: 7 **Total Drainage Area:** 4.07 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36	1.93	60	1.39	73	0.75	79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:			**1.93**		**1.39**		**0.75**									

Calculated Total Drainage Area: 4.07 Ac

Calculated Composite Curve Number: 68

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development (For Peak Flow Calcs)
DATE: 1/31/2023
PREPARED BY: JRP

Drainage Area: 7 **Total Drainage Area:** 4.07 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69	0.66	79		84		59	1.11	74	0.44	81.5	1.68	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98	0.06	98		98		98	0.1	98	0.02	98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:					**0.72**						**1.21**		**0.46**		**1.68**	

Calculated Total Drainage Area: 4.07 Ac
Calculated Composite Curve Number: 81

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development (For Water Quality)
DATE: 1/31/2023
PREPARED BY: JRP

Drainage Area: 7 **Total Drainage Area:** 4.07 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69	0.36	79		84		59	0.92	74	0.23	81.5	1.06	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98	0.36	98		98		98	0.29	98	0.23	98	0.62	98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:					**0.72**						**1.21**		**0.46**		**1.68**	

Calculated Total Drainage Area: 4.07 Ac
Calculated Composite Curve Number: 87

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Pre-development **PREPARED BY:** YA

Drainage Area: 3 **Total Drainage Area:** 7.89 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69	7.89	79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:					7.89											

Calculated Total Drainage Area: 7.89 Ac

Calculated Composite Curve Number: 79

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Post-development (For Peak Flow Calcs) **PREPARED BY:** YA

Drainage Area: 3 **Total Drainage Area:** 7.89 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74	7.16	81.5	0.53	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	0.170	98	0.030	98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:													**7.33**		**0.56**	

Calculated Total Drainage Area: 7.89 Ac

Calculated Composite Curve Number: 83

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development (For Water Quality)
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 3 — **Total Drainage Area:** 7.89 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74	4.15	81.5	0.53	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	3.180	98	0.030	98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:													**7.33**		**0.56**	

Calculated Total Drainage Area: 7.89 Ac
Calculated Composite Curve Number: 89

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Pre-development **PREPARED BY:** YA

Drainage Area: 9 **Total Drainage Area:** 6.81 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69	2.89	79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83	3.63	88	0.290	90		78.5		85.5		89		90
Total HSG Areas:					**6.52**		**0.29**									

Calculated Total Drainage Area: **6.81 Ac**

Calculated Composite Curve Number: **85**

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Post-development (For Peak Flow Calcs) **PREPARED BY:** YA

Drainage Area: 9 **Total Drainage Area:** 6.81 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74	5.720	81.5	0.93	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	0.160	98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:													**5.88**		**0.93**	

Calculated Total Drainage Area: 6.81 Ac

Calculated Composite Curve Number: 83

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development (For Water Quality)
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 9 — **Total Drainage Area:** 6.81 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74	2.970	81.5	0.84	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	2.910	98	0.095	98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:													**5.88**		**0.93**	

Calculated Total Drainage Area: 6.81 Ac
Calculated Composite Curve Number: 90

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Pre-development **PREPARED BY:** YA

Drainage Area: 2a **Total Drainage Area:** 3.85 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36	0.33	60	0.17	73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74	3.35	83		88		90		78.5		85.5		89		90
Total HSG Areas:			**3.68**		**0.17**											

Calculated Total Drainage Area: 3.85 Ac

Calculated Composite Curve Number: 81

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development (For Peak Flow Calcs)
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 2a
Total Drainage Area: 3.85 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69	0.14	79	0.01	84		59	0.62	74	2.830	81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98	0.02	98		98		98	0.01	98	0.050	98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5	0.17	89		90
Total HSG Areas:					**0.16**		**0.01**				**0.63**		**3.05**			

Calculated Total Drainage Area: 3.85 Ac
Calculated Composite Curve Number: 81

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development (For Water Quality)
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 2a
Total Drainage Area: 3.85 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69	0.14	79	0.01	84		59	0.419	74	2.130	81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98	0.02	98		98		98	0.209	98	0.751	98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5	0.17	89		90
Total HSG Areas:					**0.16**		**0.01**				**0.63**		**3.05**			

Calculated Total Drainage Area: 3.85 Ac
Calculated Composite Curve Number: 86

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Pre-development **PREPARED BY:** YA

Drainage Area: 2b **Total Drainage Area:** 4.02 Ac

Cover Description	Hydrologic Soil Group								Hydrologic Soil Group							
	A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49	3.15	69		79	0.39	84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36	0.48	60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:			**3.63**				**0.39**									

Calculated Total Drainage Area: **4.02 Ac**

Calculated Composite Curve Number: **70**

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Post-development (For Peak Flow Calcs) **PREPARED BY:** YA

Drainage Area: 2b **Total Drainage Area:** 4.02 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69	0.313	79		84		59	3.307	74		81.5	0.402	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:					**0.31**						**3.31**				**0.40**	

Calculated Total Drainage Area: **4.02 Ac**

Calculated Composite Curve Number: **76**

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development (For Water Quality)
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 2b
Total Drainage Area: 4.02 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69	0.31	79		84		59	1.807	74		81.5	0.320	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98	1.500	98		98	0.082	98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:					**0.31**						**3.31**				**0.40**	

Calculated Total Drainage Area: 4.02 Ac
Calculated Composite Curve Number: 85

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Pre-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 11 **Total Drainage Area:** 3.19 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36	2.45	60	0.57	73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83	0.17	88		90		78.5		85.5		89		90
Total HSG Areas:			**2.45**		**0.74**											

Calculated Total Drainage Area: 3.19 Ac
Calculated Composite Curve Number: 64

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development (For Peak Flow Calcs)
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 11 — **Total Drainage Area:** 3.19 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69	0.22	79		84		59	2.030	74	0.594	81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5	0.201	62.5	0.144	73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:					**0.22**						**2.23**		**0.74**			

Calculated Total Drainage Area: 3.19 Ac
Calculated Composite Curve Number: 75

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development (For Water Quality)
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 11 — **Total Drainage Area:** 3.19 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69	0.22	79		84		59	1.196	74	0.302	81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98	0.834	98	0.292	98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5	0.201	62.5	0.144	73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:					**0.22**						**2.23**		**0.74**			

Calculated Total Drainage Area: 3.19 Ac
Calculated Composite Curve Number: 83

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Pre-development **PREPARED BY:** YA

Drainage Area: 12 **Total Drainage Area:** 1.93 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		Hydrologic Soil Group A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60	0.40	73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83	1.53	88		90		78.5		85.5		89		90
Total HSG Areas:					**1.93**											

Calculated Total Drainage Area: **1.93 Ac**

Calculated Composite Curve Number: **85**

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Post-development (For Peak Flow Calcs) **PREPARED BY:** YA

Drainage Area: 12 **Total Drainage Area:** 1.93 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74	1.784	81.5	0.146	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:													**1.78**		**0.15**	

Calculated Total Drainage Area: 1.93 Ac

Calculated Composite Curve Number: 82

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Post-development (For Water Quality) **PREPARED BY:** YA

Drainage Area: 12 **Total Drainage Area:** 1.93 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74	1.014	81.5	0.146	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	0.766	98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:													**1.78**		**0.15**	

Calculated Total Drainage Area: 1.93 Ac

Calculated Composite Curve Number: 89

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Pre-development **PREPARED BY:** YA

Drainage Area: 5 **Total Drainage Area:** 1.68 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83	1.68	88		90		78.5		85.5		89		90
Total HSG Areas:					**1.68**											

Calculated Total Drainage Area: **1.68 Ac**

Calculated Composite Curve Number: **88**

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Post-development (For Peak Flow Calcs) **PREPARED BY:** YA

Drainage Area: 5 **Total Drainage Area:** 1.68 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74	1.517	81.5	0.073	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	0.090	98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:													**1.61**		**0.07**	

Calculated Total Drainage Area: **1.68 Ac**

Calculated Composite Curve Number: **83**

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Post-development (For Water Quality) **PREPARED BY:** YA

Drainage Area: 5 **Total Drainage Area:** 1.68 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74	0.927	81.5	0.073	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	0.676	98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:													**1.60**		**0.07**	

Calculated Total Drainage Area: **1.68 Ac**

Calculated Composite Curve Number: **89**

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Pre-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 15 **Total Drainage Area:** 1.93 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69	1.93	79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:					**1.93**											

Calculated Total Drainage Area: 1.93 Ac
Calculated Composite Curve Number: 79

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Post-development (For Peak Flow Calcs) **PREPARED BY:** YA

Drainage Area: 15 **Total Drainage Area:** 1.93 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74	1.457	81.5	0.01	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98	0.002	98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5	0.46	77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:													**1.92**		**0.01**	

Calculated Total Drainage Area: 1.93 Ac

Calculated Composite Curve Number: 81

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development (For Water Quality)
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 15 **Total Drainage Area:** 1.93 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74	0.902	81.5	0.01	84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	0.555	98	0.002	98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5	0.46	77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:													**1.92**		**0.01**	

Calculated Total Drainage Area: 1.93 Ac
Calculated Composite Curve Number: 86

Appendix E

Time of Concentration

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	1
TOTAL BASIN LENGTH:	348.3 ft
TOTAL ELEVATION UP:	1152.93
TOTAL ELEVATION DOWN:	1119.17
TOTAL ACRES:	28.08

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	27.15	4.8 mins.
Shallow Concentrated Flow	248.3	6.61	1.6 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**348.3**	**33.76**	**6.4 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1152.93		
Elevation Down (ft)	1125.78		
Land Slope (ft/ft)	0.272		
Time Of Concentration (Mins)	4.80		
Total Sheet Flow Tc (Minutes):			**4.8 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	248.3 ft		
Elevation Up (ft)	1125.78		
Elevation Down (ft)	1119.17		
Watercourse Slope (ft/ft)	0.027		
Average Velocity (ft/Sec)	2.6		
Time Of Concentration (Mins)	1.57		
Total Shallow Concentrated Tc (Mins):			**1.6 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Rectangular Channel Tc (Mins):	**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**6.4 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	2a
TOTAL BASIN LENGTH:	739.0 ft
TOTAL ELEVATION UP:	1152.88
TOTAL ELEVATION DOWN:	1086.60
TOTAL ACRES:	4.43

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	9.11	7.4 mins.
Shallow Concentrated Flow	639.0	57.17	2.2 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**739.0**	**66.28**	**9.6 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1152.88		
Elevation Down (ft)	1143.77		
Land Slope (ft/ft)	0.091		
Time Of Concentration (Mins)	7.43		
Total Sheet Flow Tc (Minutes):			**7.4 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	639.0 ft		
Elevation Up (ft)	1143.77		
Elevation Down (ft)	1086.60		
Watercourse Slope (ft/ft)	0.089		
Average Velocity (ft/Sec)	4.8		
Time Of Concentration (Mins)	2.21		
Total Shallow Concentrated Tc (Mins):			**2.2 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Triangular Channel Tc	**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**9.6 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information

DRAINAGE AREA ID:	2b
TOTAL BASIN LENGTH:	566.0 ft
TOTAL ELEVATION UP:	1102.55
TOTAL ELEVATION DOWN:	1054.00
TOTAL ACRES:	4.02

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	2.55	12.4 mins.
Shallow Concentrated Flow	466.0	46.00	1.5 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**566.0**	**48.55**	**13.9 mins.**

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1102.55		
Elevation Down (ft)	1100.00		
Land Slope (ft/ft)	0.025		
Time Of Concentration (Mins)	12.36		
Total Sheet Flow Tc (Minutes):			**12.4 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed	Unpaved	Unpaved
Flow Length (ft)	466.0 ft		
Elevation Up (ft)	1100.00		
Elevation Down (ft)	1054.00		
Watercourse Slope (ft/ft)	0.099		
Average Velocity (ft/Sec)	5.1		
Time Of Concentration (Mins)	1.53		
Total Shallow Concentrated Tc (Mins):			**1.5 min.**

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									

Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									

Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**
7. Total Basin Time of Concentration (Mintues)									
							Total Basin Tc (Mins):		**13.9 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	3
TOTAL BASIN LENGTH:	705.3 ft
TOTAL ELEVATION UP:	1182.78
TOTAL ELEVATION DOWN:	1130.58
TOTAL ACRES:	7.89

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	7.02	8.2 mins.
Shallow Concentrated Flow	605.3	45.18	2.3 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**705.3**	**52.20**	**10.5 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1182.78		
Elevation Down (ft)	1175.76		
Land Slope (ft/ft)	0.070		
Time Of Concentration (Mins)	8.25		
Total Sheet Flow Tc (Minutes):			**8.2 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	605.3 ft		
Elevation Up (ft)	1175.76		
Elevation Down (ft)	1130.58		
Watercourse Slope (ft/ft)	0.075		
Average Velocity (ft/Sec)	4.4		
Time Of Concentration (Mins)	2.29		
Total Shallow Concentrated Tc (Mins):			**2.3 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Triangular Channel Tc	**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**10.5 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	5
TOTAL BASIN LENGTH:	273.3 ft
TOTAL ELEVATION UP:	1175.39
TOTAL ELEVATION DOWN:	1146.87
TOTAL ACRES:	1.68

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	8.57	7.6 mins.
Shallow Concentrated Flow	173.3	19.95	0.5 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**273.3**	**28.52**	**8.1 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1175.39		
Elevation Down (ft)	1166.82		
Land Slope (ft/ft)	0.086		
Time Of Concentration (Mins)	7.61		
Total Sheet Flow Tc (Minutes):			**7.6 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	173.3 ft		
Elevation Up (ft)	1166.82		
Elevation Down (ft)	1146.87		
Watercourse Slope (ft/ft)	0.115		
Average Velocity (ft/Sec)	5.5		
Time Of Concentration (Mins)	0.53		
Total Shallow Concentrated Tc (Mins):			**0.5 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Triangular Channel Tc	**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**8.1 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 02/03/23
PREPARED BY: JP

Drainage Area Information	
DRAINAGE AREA ID:	7
TOTAL BASIN LENGTH:	476.2 ft
TOTAL ELEVATION UP:	1201.41
TOTAL ELEVATION DOWN:	1148.32
TOTAL ACRES:	4.07

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	9.03	11.2 mins.
Shallow Concentrated Flow	376.2	44.06	7.3 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**476.2**	**53.09**	**18.5 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Woods		
Manning's "n"	0.40		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1201.41		
Elevation Down (ft)	1192.38		
Land Slope (ft/ft)	0.090		
Time Of Concentration (Mins)	11.22		
Total Sheet Flow Tc (Minutes):			**11.2 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Forest		
Flow Length (ft)	376.2 ft		
Elevation Up (ft)	1192.38		
Elevation Down (ft)	1148.32		
Watercourse Slope (ft/ft)	0.117		
Average Velocity (ft/Sec)	0.9		
Time Of Concentration (Mins)	7.28		
Total Shallow Concentrated Tc (Mins):			**7.3 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 02/03/23
PREPARED BY: JP

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Rectangular Channel Tc (Mins):	**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 02/03/23
PREPARED BY: JP

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**18.5 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	8/10
TOTAL BASIN LENGTH:	797.6 ft
TOTAL ELEVATION UP:	1209.53
TOTAL ELEVATION DOWN:	1126.00
TOTAL ACRES:	28.04

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	1.08	13.2 mins.
Shallow Concentrated Flow	697.6	82.45	3.1 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**797.6**	**83.53**	**16.4 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Other		
Manning's "n"	0.17		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1209.53		
Elevation Down (ft)	1208.45		
Land Slope (ft/ft)	0.011		
Time Of Concentration (Mins)	13.23		
Total Sheet Flow Tc (Minutes):			**13.2 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Cultivated	Grassed	
Flow Length (ft)	157.3 ft	540.4 ft	
Elevation Up (ft)	1208.45	1203.32	
Elevation Down (ft)	1203.32	1126.00	
Watercourse Slope (ft/ft)	0.033	0.143	
Average Velocity (ft/Sec)	1.6	6.1	
Time Of Concentration (Mins)	1.66	1.48	
Total Shallow Concentrated Tc (Mins):			**3.1 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Triangular Channel Tc	**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**16.4 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	9
TOTAL BASIN LENGTH:	745.8 ft
TOTAL ELEVATION UP:	1220.00
TOTAL ELEVATION DOWN:	1186.23
TOTAL ACRES:	7.97

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	1.26	12.4 mins.
Shallow Concentrated Flow	645.8	32.51	5.1 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**745.8**	**33.77**	**17.6 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Other		
Manning's "n"	0.17		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1220.00		
Elevation Down (ft)	1218.74		
Land Slope (ft/ft)	0.013		
Time Of Concentration (Mins)	12.44		
Total Sheet Flow Tc (Minutes):			**12.4 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Cultivated	Grassed	
Flow Length (ft)	455.0 ft	190.8 ft	
Elevation Up (ft)	1218.74	1201.47	
Elevation Down (ft)	1201.47	1186.23	
Watercourse Slope (ft/ft)	0.038	0.080	
Average Velocity (ft/Sec)	1.7	4.6	
Time Of Concentration (Mins)	4.44	0.70	
Total Shallow Concentrated Tc (Mins):			**5.1 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Triangular Channel Tc	**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**17.6 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/08/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	11
TOTAL BASIN LENGTH:	481.6 ft
TOTAL ELEVATION UP:	1208.00
TOTAL ELEVATION DOWN:	1191.00
TOTAL ACRES:	3.19

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	3.15	17.1 mins.
Shallow Concentrated Flow	381.6	13.85	13.3 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**481.6**	**17.00**	**30.4 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Woods		
Manning's "n"	0.40		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1208.00		
Elevation Down (ft)	1204.85		
Land Slope (ft/ft)	0.032		
Time Of Concentration (Mins)	17.10		
Total Sheet Flow Tc (Minutes):			**17.1 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Forest		
Flow Length (ft)	381.6 ft		
Elevation Up (ft)	1204.85		
Elevation Down (ft)	1191.00		
Watercourse Slope (ft/ft)	0.036		
Average Velocity (ft/Sec)	0.5		
Time Of Concentration (Mins)	13.27		
Total Shallow Concentrated Tc (Mins):			**13.3 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/08/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Rectangular Channel Tc (Mins):	**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/08/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**30.4 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	12
TOTAL BASIN LENGTH:	282.0 ft
TOTAL ELEVATION UP:	1207.56
TOTAL ELEVATION DOWN:	1188.32
TOTAL ACRES:	1.93

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	7.62	12.0 mins.
Shallow Concentrated Flow	182.0	11.62	0.7 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**282.0**	**19.24**	**12.8 mins.**

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Woods		
Manning's "n"	0.40		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1207.56		
Elevation Down (ft)	1199.94		
Land Slope (ft/ft)	0.076		
Time Of Concentration (Mins)	12.01		
Total Sheet Flow Tc (Minutes):			**12.0 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	182.0 ft		
Elevation Up (ft)	1199.94		
Elevation Down (ft)	1188.32		
Watercourse Slope (ft/ft)	0.064		
Average Velocity (ft/Sec)	4.1		
Time Of Concentration (Mins)	0.74		
Total Shallow Concentrated Tc (Mins):			**0.7 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Triangular Channel Tc	**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**12.8 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information

DRAINAGE AREA ID:	14
TOTAL BASIN LENGTH:	768.0 ft
TOTAL ELEVATION UP:	1220.02
TOTAL ELEVATION DOWN:	1151.52
TOTAL ACRES:	4.60

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	3.31	10.3 mins.
Shallow Concentrated Flow	668.0	65.19	8.9 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**768.0**	**68.50**	**19.3 mins.**

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Other	Woods	
Manning's "n"	0.17	0.40	
2- Year, 24- Hr. Rain Fall (In)	3.51	3.51	
Flow Length (ft)	90.5 ft	9.5 ft	
Elevation Up (ft)	1220.02	1217.03	
Elevation Down (ft)	1217.03	1216.71	
Land Slope (ft/ft)	0.033	0.034	
Time Of Concentration (Mins)	7.81	2.53	
Total Sheet Flow Tc (Minutes):			**10.3 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Forest	Grassed	Forest
Flow Length (ft)	45.0 ft	292.6 ft	330.4 ft
Elevation Up (ft)	1216.71	1213.72	1186.00
Elevation Down (ft)	1213.72	1186.00	1151.52
Watercourse Slope (ft/ft)	0.066	0.095	0.104
Average Velocity (ft/Sec)	0.6	5.0	0.8
Time Of Concentration (Mins)	1.16	0.98	6.78
Total Shallow Concentrated Tc (Mins):			**8.9 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Triangular Channel Tc	**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**19.3 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/10
PREPARED BY: YA

Drainage Area Information

DRAINAGE AREA ID:	15
TOTAL BASIN LENGTH:	411.5 ft
TOTAL ELEVATION UP:	1220.03
TOTAL ELEVATION DOWN:	1203.66
TOTAL ACRES:	1.93

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	2.63	12.2 mins.
Shallow Concentrated Flow	311.5	13.74	1.5 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**411.5**	**16.37**	**13.7 mins.**

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1220.03		
Elevation Down (ft)	1217.40		
Land Slope (ft/ft)	0.026		
Time Of Concentration (Mins)	12.21		
Total Sheet Flow Tc (Minutes):			**12.2 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	311.5 ft		
Elevation Up (ft)	1217.40		
Elevation Down (ft)	1203.66		
Watercourse Slope (ft/ft)	0.044		
Average Velocity (ft/Sec)	3.4		
Time Of Concentration (Mins)	1.53		
Total Shallow Concentrated Tc (Mins):			**1.5 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/10
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Triangular Channel Tc	**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/10
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**13.7 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Runon Diversion Area - R1
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information

DRAINAGE AREA ID:	R1
TOTAL BASIN LENGTH:	976.6 ft
TOTAL ELEVATION UP:	1154.71
TOTAL ELEVATION DOWN:	1088.00
TOTAL ACRES:	2.77

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	5.91	6.7 mins.
Shallow Concentrated Flow	0.0	0.00	0.0 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	876.6	60.80	1.4 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**976.6**	**66.71**	**8.1 mins.**

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Woods		
Manning's "n"	0.17		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1154.71		
Elevation Down (ft)	1148.80		
Land Slope (ft/ft)	0.059		
Time Of Concentration (Mins)	6.70		
Total Sheet Flow Tc (Minutes):			**6.7 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description			
Flow Length (ft)			
Elevation Up (ft)			
Elevation Down (ft)			
Watercourse Slope (ft/ft)			
Average Velocity (ft/Sec)			
Time Of Concentration (Mins)			
Total Shallow Concentrated Tc (Mins):			**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Runon Diversion Area - R1
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description	Grass								
Top Width (ft)	8.0								
Depth (ft)	1.5								
Area (Sq. ft)	6.0								
Wetted Perimeter (ft)	8.5								
Hydraulic Radius (ft)	0.7								
Flow Length (ft)	876.6								
Elevation Up (ft)	1148.80								
Elevation Down (ft)	1088.00								
Channel Slope (ft/ft)	0.069								
Manning's "n"	0.030								
Average Velocity (ft/Sec)	10.3								
Time Of Concentration (Mins)	1.42								
								Total Triangular Channel Tc	**1.4 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Runon Diversion Area - R1
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**8.1 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	1
TOTAL BASIN LENGTH:	348.3 ft
TOTAL ELEVATION UP:	1152.88
TOTAL ELEVATION DOWN:	1119.17
TOTAL ACRES:	1.28

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	6.85	8.3 mins.
Shallow Concentrated Flow	248.3	26.86	0.8 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**348.3**	**33.71**	**9.1 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1152.88		
Elevation Down (ft)	1146.03		
Land Slope (ft/ft)	0.069		
Time Of Concentration (Mins)	8.33		
Total Sheet Flow Tc (Minutes):			**8.3 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	248.3 ft		
Elevation Up (ft)	1146.03		
Elevation Down (ft)	1119.17		
Watercourse Slope (ft/ft)	0.108		
Average Velocity (ft/Sec)	5.3		
Time Of Concentration (Mins)	0.78		
Total Shallow Concentrated Tc (Mins):			**0.8 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Rectangular Channel Tc (Mins):	**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**9.1 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	2a
TOTAL BASIN LENGTH:	751.5 ft
TOTAL ELEVATION UP:	1152.88
TOTAL ELEVATION DOWN:	1084.60
TOTAL ACRES:	4.43

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	9.11	7.4 mins.
Shallow Concentrated Flow	651.5	59.17	2.2 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**751.5**	**68.28**	**9.7 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1152.88		
Elevation Down (ft)	1143.77		
Land Slope (ft/ft)	0.091		
Time Of Concentration (Mins)	7.43		
Total Sheet Flow Tc (Minutes):			**7.4 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed	Grassed	Grassed
Flow Length (ft)	651.5 ft		
Elevation Up (ft)	1143.77		
Elevation Down (ft)	1084.60		
Watercourse Slope (ft/ft)	0.091		
Average Velocity (ft/Sec)	4.9		
Time Of Concentration (Mins)	2.23		
Total Shallow Concentrated Tc (Mins):			**2.2 min.**

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**9.7 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	2b
TOTAL BASIN LENGTH:	566.0 ft
TOTAL ELEVATION UP:	1102.55
TOTAL ELEVATION DOWN:	1054.00
TOTAL ACRES:	4.02

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	2.55	12.4 mins.
Shallow Concentrated Flow	466.0	46.00	1.5 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**566.0**	**48.55**	**13.9 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1102.55		
Elevation Down (ft)	1100.00		
Land Slope (ft/ft)	0.025		
Time Of Concentration (Mins)	12.36		
Total Sheet Flow Tc (Minutes):			**12.4 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	466.0 ft		
Elevation Up (ft)	1100.00		
Elevation Down (ft)	1054.00		
Watercourse Slope (ft/ft)	0.099		
Average Velocity (ft/Sec)	5.1		
Time Of Concentration (Mins)	1.53		
Total Shallow Concentrated Tc (Mins):			**1.5 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Triangular Channel Tc	**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**13.9 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	3
TOTAL BASIN LENGTH:	785.0 ft
TOTAL ELEVATION UP:	1191.20
TOTAL ELEVATION DOWN:	1140.00
TOTAL ACRES:	7.89

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	10.68	7.0 mins.
Shallow Concentrated Flow	236.6	28.52	0.7 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	448.4	12.00	1.5 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**785.0**	**51.20**	**9.2 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1191.20		
Elevation Down (ft)	1180.52		
Land Slope (ft/ft)	0.107		
Time Of Concentration (Mins)	6.97		
Total Sheet Flow Tc (Minutes):			**7.0 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	236.6 ft		
Elevation Up (ft)	1180.52		
Elevation Down (ft)	1152.00		
Watercourse Slope (ft/ft)	0.121		
Average Velocity (ft/Sec)	5.6		
Time Of Concentration (Mins)	0.70		
Total Shallow Concentrated Tc (Mins):			**0.7 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description	Grass								
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description	Grass								
Top Width (ft)	8.0								
Depth (ft)	1.0								
Area (Sq. ft)	4.0								
Wetted Perimeter (ft)	8.2								
Hydraulic Radius (ft)	0.5								
Flow Length (ft)	448.4								
Elevation Up (ft)	1152.00								
Elevation Down (ft)	1140.00								
Channel Slope (ft/ft)	0.027								
Manning's "n"	0.030								
Average Velocity (ft/Sec)	5.0								
Time Of Concentration (Mins)	1.49								
								Total Triangular Channel Tc	**1.5 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**9.2 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	FID 5
TOTAL BASIN LENGTH:	273.3 ft
TOTAL ELEVATION UP:	1175.39
TOTAL ELEVATION DOWN:	1146.87
TOTAL ACRES:	1.68

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	8.57	7.0 mins.
Shallow Concentrated Flow	173.3	19.95	0.5 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**273.3**	**28.52**	**7.6 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Asphalt	Grass	
Manning's "n"	0.01	0.24	
2- Year, 24- Hr. Rain Fall (In)	3.51	3.51	
Flow Length (ft)	9.0 ft	91.0 ft	
Elevation Up (ft)	1175.39	1175.18	
Elevation Down (ft)	1175.18	1166.82	
Land Slope (ft/ft)	0.023	0.092	
Time Of Concentration (Mins)	0.16	6.87	
Total Sheet Flow Tc (Minutes):			**7.0 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	173.3 ft		
Elevation Up (ft)	1166.82		
Elevation Down (ft)	1146.87		
Watercourse Slope (ft/ft)	0.115		
Average Velocity (ft/Sec)	5.5		
Time Of Concentration (Mins)	0.53		
Total Shallow Concentrated Tc (Mins):			**0.5 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Triangular Channel Tc	**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**7.6 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 01/31/23
PREPARED BY: JRP

Drainage Area Information

DRAINAGE AREA ID:	7
TOTAL BASIN LENGTH:	1877.0 ft
TOTAL ELEVATION UP:	1208.00
TOTAL ELEVATION DOWN:	1159.00
TOTAL ACRES:	4.10

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	5.85	8.9 mins.
Shallow Concentrated Flow	1517.0	39.62	9.7 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	260.0	3.53	0.6 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**1877.0**	**49.00**	**19.2 mins.**

NOTES:

This time of concentration calculation is based on survey data, aerial photography, and field investigation.

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1208.00		
Elevation Down (ft)	1202.15		
Land Slope (ft/ft)	0.058		
Time Of Concentration (Mins)	8.87		
Total Sheet Flow Tc (Minutes):			**8.9 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	1517.0 ft		
Elevation Up (ft)	1202.15		
Elevation Down (ft)	1162.53		
Watercourse Slope (ft/ft)	0.026		
Average Velocity (ft/Sec)	2.6		
Time Of Concentration (Mins)	9.70		
Total Shallow Concentrated Tc (Mins):			**9.7 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 01/31/23
PREPARED BY: JRP

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Rectangular Channel Tc (Mins):	**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 01/31/23
PREPARED BY: JRP

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description	Grass								
Bottom Width (ft)	8.0								
Depth (ft)	2.0								
Side Slopes (?H:1V) (ft)	3.0								
Area (Sq. ft)	28.0								
Wetted Perimeter (ft)	20.6								
Hydraulic Radius (ft)	1.4								
Flow Length (ft)	260.0								
Elevation Up (ft)	1162.53								
Elevation Down (ft)	1159.00								
Channel Slope (ft/ft)	0.014								
Manning's "n"	0.030								
Average Velocity (ft/Sec)	7.1								
Time Of Concentration (Mins)	0.61								
							Total Trapezoidal Channel Tc		**0.6 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**19.2 min.**

Time of Concentration Worksheet
SCS TR-55 Method

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 04/19/21
PREPARED BY: JRP

Drainage Area Information	
DRAINAGE AREA ID:	8/10
TOTAL BASIN LENGTH:	1056.0 ft
TOTAL ELEVATION UP:	1208.55
TOTAL ELEVATION DOWN:	1121.00
TOTAL ACRES:	28.04

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	2.17	13.2 mins.
Shallow Concentrated Flow	601.0	74.17	1.8 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	355.0	8.71	0.8 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**1056.0**	**85.05**	**15.7 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1208.55		
Elevation Down (ft)	1206.38		
Land Slope (ft/ft)	0.022		
Time Of Concentration (Mins)	13.19		
Total Sheet Flow Tc (Minutes):			**13.2 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Unpaved		
Flow Length (ft)	601.0 ft		
Elevation Up (ft)	1206.38		
Elevation Down (ft)	1132.21		
Watercourse Slope (ft/ft)	0.123		
Average Velocity (ft/Sec)	5.7		
Time Of Concentration (Mins)	1.77		
Total Shallow Concentrated Tc (Mins):			**1.8 min.**

Time of Concentration Worksheet
SCS TR-55 Method

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 04/19/21
PREPARED BY: JRP

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description	Grass								
Top Width (ft)	12.0								
Depth (ft)	2.0								
Area (Sq. ft)	12.0								
Wetted Perimeter (ft)	12.6								
Hydraulic Radius (ft)	0.9								
Flow Length (ft)	355.0								
Elevation Up (ft)	1132.21								
Elevation Down (ft)	1123.50								
Channel Slope (ft/ft)	0.025								
Manning's "n"	0.030								
Average Velocity (ft/Sec)	7.5								
Time Of Concentration (Mins)	0.79								
								Total Triangular Channel Tc	**0.8 min.**

Time of Concentration Worksheet
SCS TR-55 Method

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 04/19/21
PREPARED BY: JRP

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**15.7 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/08/21
PREPARED BY: JRP

Drainage Area Information	
DRAINAGE AREA ID:	8/10
TOTAL BASIN LENGTH:	1321.0 ft
TOTAL ELEVATION UP:	1208.55
TOTAL ELEVATION DOWN:	1123.50
TOTAL ACRES:	28.04

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	2.14	9.4 mins.
Shallow Concentrated Flow	719.0	74.20	2.3 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	502.0	8.71	2.1 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**1321.0**	**85.05**	**13.7 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Asphalt	Grass	
Manning's "n"	0.01	0.24	
2- Year, 24- Hr. Rain Fall (In)	3.51	3.12	
Flow Length (ft)	45.0 ft	55.0 ft	
Elevation Up (ft)	1208.55	1207.57	
Elevation Down (ft)	1207.57	1206.41	
Land Slope (ft/ft)	0.022	0.021	
Time Of Concentration (Mins)	0.59	8.77	
Total Sheet Flow Tc (Minutes):			**9.4 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	719.0 ft		
Elevation Up (ft)	1206.41		
Elevation Down (ft)	1132.21		
Watercourse Slope (ft/ft)	0.103		
Average Velocity (ft/Sec)	5.2		
Time Of Concentration (Mins)	2.31		
Total Shallow Concentrated Tc (Mins):			**2.3 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/08/21
PREPARED BY: JRP

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description	Grass								
Top Width (ft)	8.0								
Depth (ft)	1.0								
Area (Sq. ft)	4.0								
Wetted Perimeter (ft)	8.2								
Hydraulic Radius (ft)	0.5								
Flow Length (ft)	502.0								
Elevation Up (ft)	1132.21								
Elevation Down (ft)	1123.50								
Channel Slope (ft/ft)	0.017								
Manning's "n"	0.030								
Average Velocity (ft/Sec)	4.0								
Time Of Concentration (Mins)	2.08								
								Total Triangular Channel Tc	**2.1 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/08/21
PREPARED BY: JRP

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**13.7 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	9
TOTAL BASIN LENGTH:	1063.6 ft
TOTAL ELEVATION UP:	1220.92
TOTAL ELEVATION DOWN:	1180.00
TOTAL ACRES:	6.81

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	1.77	14.3 mins.
Shallow Concentrated Flow	103.6	1.60	1.6 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	860.0	37.55	2.2 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**1063.6**	**40.92**	**18.1 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1220.92		
Elevation Down (ft)	1219.15		
Land Slope (ft/ft)	0.018		
Time Of Concentration (Mins)	14.31		
Total Sheet Flow Tc (Minutes):			**14.3 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Cultivated		
Flow Length (ft)	103.6 ft		
Elevation Up (ft)	1219.15		
Elevation Down (ft)	1217.55		
Watercourse Slope (ft/ft)	0.015		
Average Velocity (ft/Sec)	1.1		
Time Of Concentration (Mins)	1.59		
Total Shallow Concentrated Tc (Mins):			**1.6 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description	Grass								
Top Width (ft)	8.0								
Depth (ft)	1.0								
Area (Sq. ft)	4.0								
Wetted Perimeter (ft)	8.2								
Hydraulic Radius (ft)	0.5								
Flow Length (ft)	860.0								
Elevation Up (ft)	1217.55								
Elevation Down (ft)	1180.00								
Channel Slope (ft/ft)	0.044								
Manning's "n"	0.030								
Average Velocity (ft/Sec)	6.4								
Time Of Concentration (Mins)	2.24								
								Total Triangular Channel Tc	**2.2 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**18.1 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/08/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	11
TOTAL BASIN LENGTH:	456.0 ft
TOTAL ELEVATION UP:	1208.00
TOTAL ELEVATION DOWN:	1194.12
TOTAL ACRES:	3.41

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	3.15	17.1 mins.
Shallow Concentrated Flow	356.0	10.73	4.3 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**456.0**	**13.88**	**21.4 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Woods		
Manning's "n"	0.40		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1208.00		
Elevation Down (ft)	1204.85		
Land Slope (ft/ft)	0.032		
Time Of Concentration (Mins)	17.10		
Total Sheet Flow Tc (Minutes):			**17.1 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Forest	Grassed	
Flow Length (ft)	54.0 ft	302.0 ft	
Elevation Up (ft)	1204.85	1203.83	
Elevation Down (ft)	1203.83	1194.12	
Watercourse Slope (ft/ft)	0.019	0.032	
Average Velocity (ft/Sec)	0.3	2.9	
Time Of Concentration (Mins)	2.60	1.74	
Total Shallow Concentrated Tc (Mins):			**4.3 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/08/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Triangular Channel Tc	**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/08/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**21.4 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	12
TOTAL BASIN LENGTH:	248.0 ft
TOTAL ELEVATION UP:	1207.56
TOTAL ELEVATION DOWN:	1191.65
TOTAL ACRES:	1.93

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	7.62	8.0 mins.
Shallow Concentrated Flow	148.0	8.29	0.6 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**248.0**	**15.91**	**8.6 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1207.56		
Elevation Down (ft)	1199.94		
Land Slope (ft/ft)	0.076		
Time Of Concentration (Mins)	7.98		
Total Sheet Flow Tc (Minutes):			**8.0 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	148.0 ft		
Elevation Up (ft)	1199.94		
Elevation Down (ft)	1191.65		
Watercourse Slope (ft/ft)	0.056		
Average Velocity (ft/Sec)	3.8		
Time Of Concentration (Mins)	0.65		
Total Shallow Concentrated Tc (Mins):			**0.6 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Triangular Channel Tc	**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**8.6 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	14
TOTAL BASIN LENGTH:	768.0 ft
TOTAL ELEVATION UP:	1220.02
TOTAL ELEVATION DOWN:	1186.00
TOTAL ACRES:	4.60

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	3.31	10.3 mins.
Shallow Concentrated Flow	668.0	30.71	4.2 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**768.0**	**34.02**	**14.6 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Other	Woods	
Manning's "n"	0.17	0.40	
2- Year, 24- Hr. Rain Fall (In)	3.51	3.51	
Flow Length (ft)	90.5 ft	9.5 ft	
Elevation Up (ft)	1220.02	1217.03	
Elevation Down (ft)	1217.03	1216.71	
Land Slope (ft/ft)	0.033	0.034	
Time Of Concentration (Mins)	7.81	2.53	
Total Sheet Flow Tc (Minutes):			**10.3 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Forest	Grassed	
Flow Length (ft)	45.0 ft	623.0 ft	
Elevation Up (ft)	1216.71	1213.72	
Elevation Down (ft)	1213.72	1186.00	
Watercourse Slope (ft/ft)	0.066	0.044	
Average Velocity (ft/Sec)	0.6	3.4	
Time Of Concentration (Mins)	1.16	3.05	
Total Shallow Concentrated Tc (Mins):			**4.2 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Rectangular Channel Tc (Mins):	**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**14.6 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	15
TOTAL BASIN LENGTH:	411.5 ft
TOTAL ELEVATION UP:	1220.03
TOTAL ELEVATION DOWN:	1203.66
TOTAL ACRES:	1.93

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	2.63	12.2 mins.
Shallow Concentrated Flow	311.5	13.74	1.5 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**411.5**	**16.37**	**13.7 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1220.03		
Elevation Down (ft)	1217.40		
Land Slope (ft/ft)	0.026		
Time Of Concentration (Mins)	12.21		
Total Sheet Flow Tc (Minutes):			**12.2 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	311.5 ft		
Elevation Up (ft)	1217.40		
Elevation Down (ft)	1203.66		
Watercourse Slope (ft/ft)	0.044		
Average Velocity (ft/Sec)	3.4		
Time Of Concentration (Mins)	1.53		
Total Shallow Concentrated Tc (Mins):			**1.5 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Triangular Channel Tc	**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

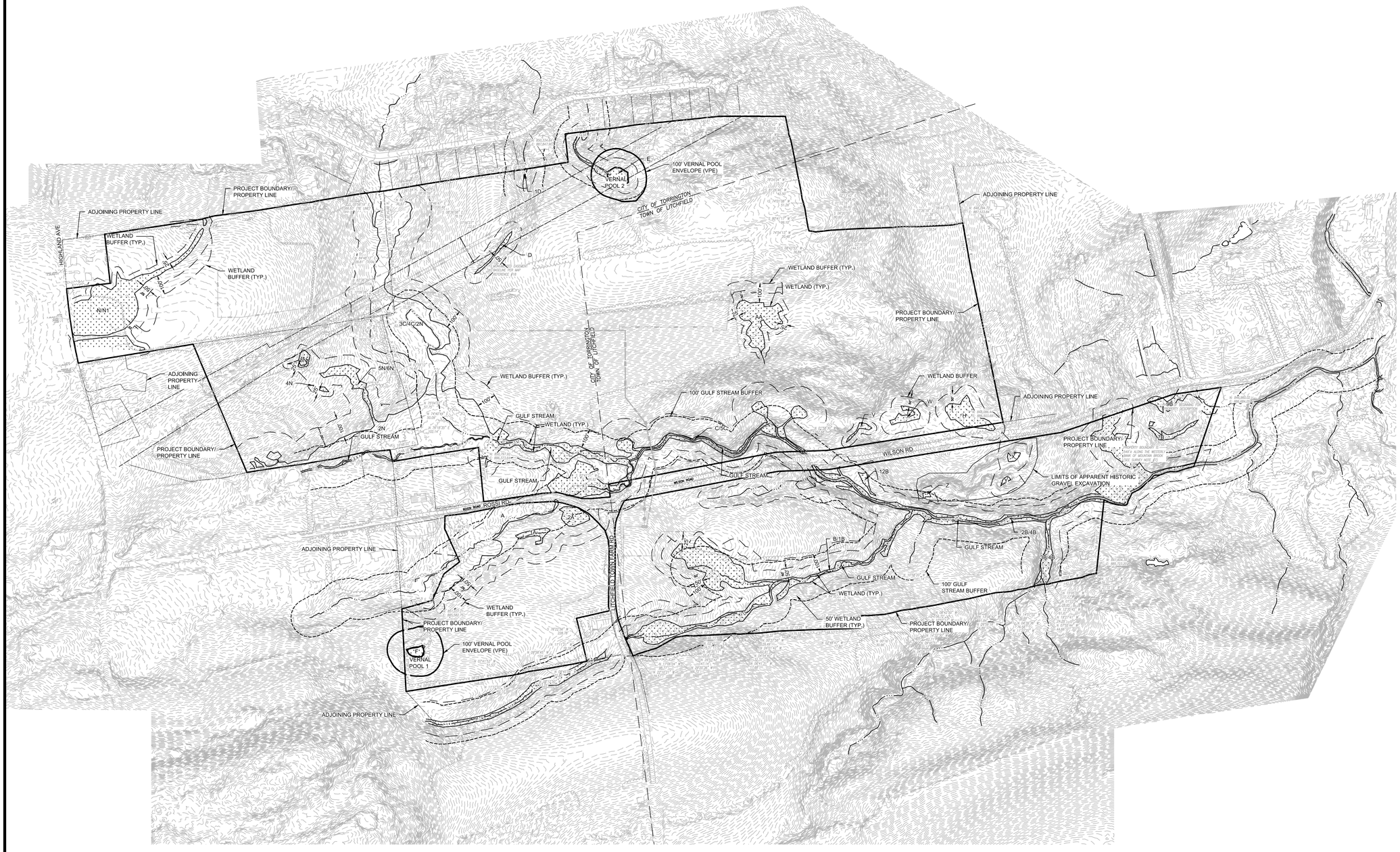
	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**13.7 min.**

Appendix F

Map of Wetlands



SILICON RANCH

NOT FOR CONSTRUCTION

LITCHFIELD SOLAR

2-298 ROSSI RD
TORRINGTON, CT 06790, USA
LAT: 41.794157°N
LON: 73.168028°W

LITCHFIELD, CT

REV. NO	DESCRIPTION	DATE
6	RE-ISSUED FOR PERMIT	12/01/22
5	RE-ISSUED FOR PERMIT	09/02/22
4	RE-ISSUED FOR PERMIT	06/29/22
3	RE-ISSUED FOR PERMIT	01/28/22
2	RE-ISSUED FOR PERMIT	06/25/21

SHEET TITLE:

WETLAND EXHIBIT

PROJ. MGR.	PROJ. ENGR.	DATE:
CM	MB	12/01/22
DRAWN BY:	CHECKED BY:	SCALE:
JP	CP	1"=250'

DRAWING NO.

EXHIBIT

Appendix G

Erosion and Sediment Control Calculations

SRC Litchfield

Sed Pond 3

Jared Bramblett

General Information

Storm Information:

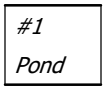
Storm Type:	NRCS Type III
Design Storm:	10 yr - 24 hr
Rainfall Depth:	4.700 inches

Particle Size Distribution:

Size (mm)	PX
2.0000	94.800%
1.0000	87.800%
0.5000	81.200%
0.2500	60.800%
0.1000	45.700%
0.0500	35.200%
0.0200	19.100%
0.0020	9.000%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	End	0.000	0.000	Pond 5



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc. (ml/l)	24VW (ml/l)
#1	In	7.890	7.890	9.77	1.42	1.6	1,437	0.95	0.56
	Out			2.42	0.88	0.2	200	0.00	0.00

Particle Size Distribution(s) at Each Structure

Structure #1:

Size (mm)	In	Out
2.0000	96.198%	100.000%
1.0000	89.095%	100.000%
0.5000	82.398%	100.000%
0.2500	61.697%	100.000%
0.1000	46.374%	100.000%
0.0500	35.719%	100.000%
0.0200	19.382%	100.000%
0.0020	9.133%	95.279%

Structure Detail:

Structure #1 (Pond)

Pond 5

Pond Inputs:

Initial Pool Elev:	1,127.10 ft
Initial Pool:	0.00 ac-ft
*Sediment Storage:	0.00 ac-ft
Dead Space:	20.00 %

**Sediment capacity based on Average Annual R of 100.0 for 1 year(s)*

Drop Inlet

Riser Diameter (in)	Riser Height (ft)	Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)
18.00	6.00	15.00	100.00	0.50	0.0120	1,134.00

Riser Diameter (in)	Riser Height (ft)	Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)
18.00	6.00	15.00	100.00	0.50	0.0120	1,134.00

Pond Results:

Peak Elevation:	1,134.23 ft
H'graph Detention Time:	5.72 hrs
Pond Model:	CSTRS
Dewater Time:	6.38 days
Trap Efficiency:	90.41 %

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
1,127.04	0.041	0.000	0.000		Top of Sed. Storage
1,127.10	0.042	0.003	0.000		
1,127.50	0.048	0.021	0.072	3.02*	
1,128.00	0.055	0.046	0.072	4.30*	
1,128.50	0.063	0.076	0.072	4.93*	
1,129.00	0.071	0.109	0.072	5.60*	
1,129.50	0.079	0.147	0.072	6.27*	
1,130.00	0.087	0.188	0.072	6.94*	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
1,130.50	0.096	0.234	0.072	7.68*	
1,131.00	0.106	0.284	0.072	8.47*	
1,131.50	0.116	0.340	0.072	9.29*	
1,132.00	0.126	0.400	0.072	10.13*	
1,132.50	0.136	0.466	0.072	10.99*	
1,133.00	0.147	0.537	0.072	11.87*	
1,133.50	0.158	0.613	0.072	12.77*	
1,133.75	0.163	0.653	0.072	6.73*	
1,134.00	0.169	0.695	0.072	6.96*	Spillway #1
1,134.23	0.175	0.734	2.420	36.85	Peak Stage
1,134.50	0.181	0.782	5.237		
1,134.60	0.184	0.800	6.663		
1,135.00	0.194	0.876	8.581		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation (ft)	Drop Inlet (cfs)	User-input discharge (cfs)	Combined Total Discharge (cfs)
1,127.04	0.000	0.000	0.000
1,127.10	0.000	0.000	0.000
1,127.50	0.000	0.072	0.072
1,128.00	0.000	0.072	0.072
1,128.50	0.000	0.072	0.072
1,129.00	0.000	0.072	0.072
1,129.50	0.000	0.072	0.072
1,130.00	0.000	0.072	0.072
1,130.50	0.000	0.072	0.072
1,131.00	0.000	0.072	0.072
1,131.50	0.000	0.072	0.072
1,132.00	0.000	0.072	0.072
1,132.50	0.000	0.072	0.072
1,133.00	0.000	0.072	0.072
1,133.50	0.000	0.072	0.072
1,133.75	0.000	0.072	0.072
1,134.00	0.000	0.072	0.072
1,134.50	5.165	0.072	5.237
1,134.60	6.591	0.072	6.663
1,135.00	8.509	0.072	8.581

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	7.890	0.167	0.000	0.000	74.000	TR55	9.77	1.420
	Σ	**7.890**						**9.77**	**1.420**

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.240	300.00	6.00	0.0130	1.0000	1	1.6	1,437	0.95	0.56
	Σ							**1.6**	**1,437**	**0.95**	**0.56**

SRC Litchfield
Sed Trap 5

Jared Bramblett

General Information

Storm Information:

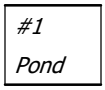
Storm Type:	NRCS Type III
Design Storm:	10 yr - 24 hr
Rainfall Depth:	4.700 inches

Particle Size Distribution:

Size (mm)	PX
2.0000	94.800%
1.0000	87.800%
0.5000	81.200%
0.2500	60.800%
0.1000	45.700%
0.0500	35.200%
0.0200	19.100%
0.0020	9.000%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	End	0.000	0.000	Sed Trap 5



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc. (ml/l)	24VW (ml/l)
#1	In	2.720	2.720	3.46	0.48	0.6	1,471	0.98	0.57
	Out			1.92	0.44	0.1	111	0.00	0.00

Particle Size Distribution(s) at Each Structure

Structure #1:

Size (mm)	In	Out
2.0000	94.800%	100.000%
1.0000	87.800%	100.000%
0.5000	81.200%	100.000%
0.2500	60.800%	100.000%
0.1000	45.700%	100.000%
0.0500	35.200%	100.000%
0.0200	19.100%	100.000%
0.0020	9.000%	96.120%

Structure Detail:

Structure #1 (Pond)

Sed Trap 5

Pond Inputs:

Initial Pool Elev:	1,144.70 ft
Initial Pool:	0.11 ac-ft
*Sediment Storage:	0.00 ac-ft
Dead Space:	20.00 %

**Sediment capacity based on Average Annual R of 100.0 for 1 year(s)*

Broad-crested Weir

Weir Width (ft)	Spillway Elev (ft)
5.00	1,146.75

Pond Results:

Peak Elevation:	1,146.99 ft
H'graph Detention Time:	9.20 hrs
Pond Model:	CSTRS
Dewater Time:	1.55 days
Trap Efficiency:	90.64 %

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
1,143.01	0.055	0.000	0.000		Top of Sed. Storage
1,143.01	0.055	0.000	0.000		
1,143.50	0.062	0.029	0.000		
1,143.70	0.065	0.041	0.000		
1,144.00	0.069	0.061	0.000		
1,144.50	0.077	0.098	0.000		
1,144.70	0.080	0.114	0.000		
1,145.00	0.085	0.138	0.072	4.16*	
1,145.50	0.093	0.183	0.072	7.48*	
1,146.00	0.101	0.231	0.072	8.15*	
1,146.50	0.109	0.284	0.072	8.82*	
1,146.70	0.112	0.306	0.072	3.71*	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
1,146.75	0.113	0.312	0.072	0.95*	Spillway #2
1,146.80	0.114	0.317	0.245	0.28*	
1,146.85	0.114	0.323	0.560	2.60	
1,146.90	0.115	0.329	0.969	0.85	
1,146.99	0.117	0.339	1.918	0.25	Peak Stage
1,147.00	0.117	0.340	2.001		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation (ft)	User-input discharge (cfs)	Broad-crested Weir (cfs)	Combined Total Discharge (cfs)
1,143.01	0.000	0.000	0.000
1,143.01	0.000	0.000	0.000
1,143.50	0.000	0.000	0.000
1,143.70	0.000	0.000	0.000
1,144.00	0.000	0.000	0.000
1,144.50	0.000	0.000	0.000
1,144.70	0.000	0.000	0.000
1,145.00	0.072	0.000	0.072
1,145.50	0.072	0.000	0.072
1,146.00	0.072	0.000	0.072
1,146.50	0.072	0.000	0.072
1,146.70	0.072	0.000	0.072
1,146.75	0.072	0.000	0.072
1,146.80	0.072	0.173	0.245
1,146.85	0.072	0.488	0.560
1,146.90	0.072	0.897	0.969
1,147.00	0.072	1.929	2.001

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	2.720	0.120	0.000	0.000	74.000	TR55	3.46	0.482
	Σ	**2.720**						**3.46**	**0.482**

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.170	300.00	9.00	0.0130	1.0000	1	0.6	1,471	0.98	0.57
	Σ							**0.6**	**1,471**	**0.98**	**0.57**

SEDIMENT TRAP CALCULATIONS			
Litchfield Solar			
HDR PROJECT NO.:	-		
DATE:	5/31/2023	BY:	JRP
REVISED:		RVW:	

Sediment Trap T-1 **Scenario:** Erosion Control

Drainage Area Characteristics		
Total drainage area (TDA)[1]	0.76	ac

Required Storage Volume			
Req'd Min. Wet Storage Volume[3]	(1811 cf	per ac of DA)[5]	1,376 cf
Req'd Min. Dry Storage Volume[3]	(1811 cf	per ac of DA)[5]	1,376 cf

Design Criteria		
Bottom Elevation	1123.00	msl
Depth of Wet Storage	1.00	ft
Depth of Dry Storage	1.00	ft
1 ft over Weir	1.00	ft

Basin Configuration		
Bottom Elevation	1123.00	msl
Wet Storage Elevation (Base of Stone Outlet)	1124.00	msl
Dry Storage Elevation (Weir Crest)	1125.00	msl
Top of Berm	1126.00	msl

Spillway Outlet		
Bottom of Embankment Elevation	1126.00	msl
Height of Embankment[2]	0.00	ft
Top Width of Embankment	2.00	ft

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1123.00	0.00	1,247	0
1124.00	1.00	1,698	1,467
1125.00	2.00	2,119	3,371
1126.00	3.00	2,749	5,799

Basin Size Check		
Wet Storage Volume Provided	1,443	sf
Dry Storage Volume provided	1,909	cf

Notes

1. See attached drainage area map.
2. Maximum height of embankment is 5 ft.
3. Per 2002 Connecticut Guidelines for Soil and Sediment Control, 134 cubic yards per acre of drainage area are provided. Half of this storage is wet and half of this storage is dry.

SEDIMENT TRAP CALCULATIONS			
Litchfield Solar			
HDR PROJECT NO.:	-		
DATE:	5/31/2023	BY:	JRP
REVISED:		RVW:	

Sediment Trap T-2a

Scenario: Erosion Control

Drainage Area Characteristics		
Total drainage area (TDA)[1]	3.85	ac

Required Storage Volume			
Req'd Min. Wet Storage Volume[3]	(1811 cf	per ac of DA)[5]	6,972 cf
Req'd Min. Dry Storage Volume[3]	(1811 cf	per ac of DA)[5]	6,972 cf

Design Criteria		
Bottom Elevation	1084.00	msl
Depth of Wet Storage	2.35	ft
Depth of Dry Storage	1.65	ft
1 ft over Weir	1.00	ft

Basin Configuration		
Bottom Elevation	1084.00	msl
Wet Storage Elevation (Base of Stone Outlet)	1086.35	msl
Dry Storage Elevation (Weir Crest)	1088.00	msl
Top of Berm	1089.00	msl

Spillway Outlet		
Bottom of Embankment Elevation	1084.00	msl
Height of Embankment[2]	5.00	ft
Top Width of Embankment	4.50	ft

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1084.00	0.00	2,026	0
1085.00	1.00	2,685	2,348
1086.00	2.00	3,381	5,374
1087.00	3.00	4,115	9,116
1088.00	4.00	4,887	13,612
1089.00	5.00	5,696	18,898

Basin Size Check		
Wet Storage Volume Provided	7,267	sf
Dry Storage Volume provided	7,033	cf

Notes

1. See attached drainage area map.
2. Maximum height of embankment is 5 ft.
3. Per 2002 Connecticut Guidelines for Soil and Sediment Control, 134 cubic yards per acre of drainage area are provided. Half of this storage is wet and half of this storage is dry.

SEDIMENT TRAP CALCULATIONS			
Litchfield Solar			
HDR PROJECT NO.:	-		
DATE:	5/31/2023	BY:	JRP
REVISED:		RVW:	

Sediment Trap T-2b

Scenario: Erosion Control

Drainage Area Characteristics		
Total drainage area (TDA)[1]	3.88	ac

Required Storage Volume			
Req'd Min. Wet Storage Volume[3]	(1811 cf	per ac of DA)[5]	7,026 cf
Req'd Min. Dry Storage Volume[3]	(1811 cf	per ac of DA)[5]	7,026 cf

Design Criteria		
Bottom Elevation	1040.00	msl
Depth of Wet Storage	2.30	ft
Depth of Dry Storage	1.70	ft
1 ft over Weir	1.00	ft

Basin Configuration		
Bottom Elevation	1040.00	msl
Wet Storage Elevation (Base of Stone Outlet)	1042.30	msl
Dry Storage Elevation (Weir Crest)	1044.00	msl
Top of Berm	1045.00	msl

Spillway Outlet		
Bottom of Embankment Elevation	1040.00	msl
Height of Embankment[2]	5.00	ft
Top Width of Embankment	4.50	ft

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1040.00	0.00	2,470	0
1041.00	1.00	2,996	2,729
1042.00	2.00	3,546	5,996
1043.00	3.00	4,122	9,826
1044.00	4.00	4,723	14,245
1045.00	5.00	5,350	19,279

Basin Size Check		
Wet Storage Volume Provided	7,270	sf
Dry Storage Volume provided	7,176	cf

Notes

1. See attached drainage area map.
2. Maximum height of embankment is 5 ft.
3. Per 2002 Connecticut Guidelines for Soil and Sediment Control, 134 cubic yards per acre of drainage area are provided. Half of this storage is wet and half of this storage is dry.

SEDIMENT TRAP CALCULATIONS			
Litchfield Solar			
HDR PROJECT NO.:	-		
DATE:	5/31/2023	BY:	JRP
REVISED:		RVW:	

Sediment Trap T-5 **Scenario:** Erosion Control

Drainage Area Characteristics		
Total drainage area (TDA)[1]	2.68	ac

Required Storage Volume			
Req'd Min. Wet Storage Volume[3]	(1811 cf per ac of DA)[5]	4,853	cf
Req'd Min. Dry Storage Volume[3]	(1811 cf per ac of DA)[5]	4,853	cf

Design Criteria		
Bottom Elevation	1138.00	msl
Depth of Wet Storage	2.40	ft
Depth of Dry Storage	1.60	ft
1 ft over Weir	1.00	ft

Basin Configuration		
Bottom Elevation	1138.00	msl
Wet Storage Elevation (Base of Stone Outlet)	1140.40	msl
Dry Storage Elevation (Weir Crest)	1142.00	msl
Top of Berm	1143.00	msl

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1138.00	0.00	726	0
1139.00	1.00	1,322	1,009
1140.00	2.00	2,092	2,702
1141.00	3.00	3,014	5,241
1142.00	4.00	4,027	8,749
1143.00	5.00	5,097	13,300

Spillway Outlet		
Bottom of Embankment Elevation	1142.00	msl
Height of Embankment[2]	1.00	ft
Top Width of Embankment	2.00	ft

Basin Size Check		
Wet Storage Volume Provided	5,020	sf
Dry Storage Volume provided	5,190	cf

Skimmer Outlet		
Desired Skimmer Drawdown Time (t_d)	36	hrs
Desired Skimmer Drawdown Rate (Q_d)	6,471	ft^3/day
Skimer Size	3.0	in
Head on Orifice (H)	0.250	ft
Calculated Orifice Diameter	2.367	in
Actual Orifice Diameter	2.250	in
Actual Skimmer Drawdown Time	40	hrs

Notes

1. See attached drainage area map.
2. Maximum height of embankment is 5 ft.
3. Per 2002 Connecticut Guidelines for Soil and Sediment Control, 134 cubic yards per acre of drainage area are provided. Half of this storage is wet and half of this storage is dry.

SEDIMENT TRAP CALCULATIONS			
Litchfield Solar			
HDR PROJECT NO.:	-		
DATE:	5/31/2023	BY:	JRP
REVISED:		RVW:	

Sediment Trap T-2b

Scenario: Erosion Control

Drainage Area Characteristics		
Total drainage area (TDA)[1]	3.55	ac

Required Storage Volume			
Req'd Min. Wet Storage Volume[3]	(1811 cf	per ac of DA)[5]	6,428 cf
Req'd Min. Dry Storage Volume[3]	(1811 cf	per ac of DA)[5]	6,428 cf

Design Criteria		
Bottom Elevation	1136.00	msl
Depth of Wet Storage	2.30	ft
Depth of Dry Storage	1.70	ft
1 ft over Weir	1.00	ft

Basin Configuration		
Bottom Elevation	1136.00	msl
Wet Storage Elevation (Base of Stone Outlet)	1138.30	msl
Dry Storage Elevation (Weir Crest)	1140.00	msl
Top of Berm	1141.00	msl

Spillway Outlet		
Bottom of Embankment Elevation	1136.00	msl
Height of Embankment[2]	5.00	ft
Top Width of Embankment	4.50	ft

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1136.00	0.00	2,230	0
1137.00	1.00	2,725	2,473
1138.00	2.00	3,245	5,455
1139.00	3.00	3,790	8,969
1140.00	4.00	4,360	13,040
1141.00	5.00	4,956	17,695

Basin Size Check		
Wet Storage Volume Provided	6,664	sf
Dry Storage Volume provided	6,603	cf

Notes

1. See attached drainage area map.
2. Maximum height of embankment is 5 ft.
3. Per 2002 Connecticut Guidelines for Soil and Sediment Control, 134 cubic yards per acre of drainage area are provided. Half of this storage is wet and half of this storage is dry.

SEDIMENT TRAP CALCULATIONS			
Litchfield Solar			
HDR PROJECT NO.:	-		
DATE:	5/31/2023	BY:	JRP
REVISED:		RVW:	

Sediment Trap T-2b

Scenario: Erosion Control

Drainage Area Characteristics		
Total drainage area (TDA)[1]	3.32	ac

Required Storage Volume			
Req'd Min. Wet Storage Volume[3]	(1811 cf	per ac of DA)[5]	6,012 cf
Req'd Min. Dry Storage Volume[3]	(1811 cf	per ac of DA)[5]	6,012 cf

Design Criteria		
Bottom Elevation	1122.00	msl
Depth of Wet Storage	2.30	ft
Depth of Dry Storage	1.70	ft
1 ft over Weir	1.00	ft

Basin Configuration		
Bottom Elevation	1122.00	msl
Wet Storage Elevation (Base of Stone Outlet)	1124.30	msl
Dry Storage Elevation (Weir Crest)	1126.00	msl
Top of Berm	1127.00	msl

Spillway Outlet		
Bottom of Embankment Elevation	1123.00	msl
Height of Embankment[2]	4.00	ft
Top Width of Embankment	3.00	ft

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1122.00	0.00	2,230	0
1123.00	1.00	2,725	2,473
1124.00	2.00	3,245	5,455
1125.00	3.00	3,790	8,969
1126.00	4.00	4,360	13,040
1127.00	5.00	4,956	17,695

Basin Size Check	
Wet Storage Volume Provided	6,664 sf
Dry Storage Volume provided	6,603 cf

Notes

1. See attached drainage area map.
2. Maximum height of embankment is 5 ft.
3. Per 2002 Connecticut Guidelines for Soil and Sediment Control, 134 cubic yards per acre of drainage area are provided. Half of this storage is wet and half of this storage is dry.

SEDIMENT TRAP CALCULATIONS			
Litchfield Solar			
HDR PROJECT NO.:	-		
DATE:	5/31/2023	BY:	JRP
REVISED:		RVW:	

Sediment Trap T-11 **Scenario:** Erosion Control

Drainage Area Characteristics		
Total drainage area (TDA)[1]	3.14	ac

Required Storage Volume			
Req'd Min. Wet Storage Volume[3]	(1811 cf	per ac of DA)[5]	5,686 cf
Req'd Min. Dry Storage Volume[3]	(1811 cf	per ac of DA)[5]	5,686 cf

Design Criteria		
Bottom Elevation	1189.00	msl
Depth of Wet Storage	2.30	ft
Depth of Dry Storage	1.70	ft
1 ft over Weir	1.00	ft

Basin Configuration		
Bottom Elevation	1189.00	msl
Wet Storage Elevation (Base of Stone Outlet)	1191.30	msl
Dry Storage Elevation (Weir Crest)	1193.00	msl
Top of Berm	1194.00	msl

Spillway Outlet		
Bottom of Embankment Elevation	1192.00	msl
Height of Embankment[2]	2.00	ft
Top Width of Embankment	2.00	ft

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1189.00	0.00	1,823	0
1190.00	1.00	2,332	2,072
1191.00	2.00	2,867	4,667
1192.00	3.00	3,426	7,810
1193.00	4.00	4,011	11,524
1194.00	5.00	4,621	15,837

Basin Size Check		
Wet Storage Volume Provided	5,933	sf
Dry Storage Volume provided	5,989	cf

Notes

1. See attached drainage area map.
2. Maximum height of embankment is 5 ft.
3. Per 2002 Connecticut Guidelines for Soil and Sediment Control, 134 cubic yards per acre of drainage area are provided. Half of this storage is wet and half of this storage is dry.

SEDIMENT TRAP CALCULATIONS			
Litchfield Solar			
HDR PROJECT NO.:	-		
DATE:	5/31/2023	BY:	JRP
REVISED:		RVW:	

Sediment Trap T-12 **Scenario:** Erosion Control

Drainage Area Characteristics		
Total drainage area (TDA)[1]	3.18	ac

Required Storage Volume			
Req'd Min. Wet Storage Volume[3]	(1811 cf	per ac of DA)[5]	5,758 cf
Req'd Min. Dry Storage Volume[3]	(1811 cf	per ac of DA)[5]	5,758 cf

Design Criteria		
Bottom Elevation	1184.00	msl
Depth of Wet Storage	2.50	ft
Depth of Dry Storage	1.50	ft
1 ft over Weir	1.00	ft

Basin Configuration		
Bottom Elevation	1184.00	msl
Wet Storage Elevation (Base of Stone Outlet)	1186.50	msl
Dry Storage Elevation (Weir Crest)	1188.00	msl
Top of Berm	1189.00	msl

Spillway Outlet		
Bottom of Embankment Elevation	1187.50	msl
Height of Embankment[2]	1.50	ft
Top Width of Embankment	2.00	ft

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1184.00	0.00	398	0
1185.00	1.00	1,429	860
1186.00	2.00	2,725	2,903
1187.00	3.00	4,078	6,282
1188.00	4.00	5,488	11,047
1189.00	5.00	6,956	17,255

Basin Size Check		
Wet Storage Volume Provided	7,228	sf
Dry Storage Volume provided	6,667	cf

Notes

1. See attached drainage area map.
2. Maximum height of embankment is 5 ft.
3. Per 2002 Connecticut Guidelines for Soil and Sediment Control, 134 cubic yards per acre of drainage area are provided. Half of this storage is wet and half of this storage is dry.

SEDIMENT TRAP CALCULATIONS			
Litchfield Solar			
HDR PROJECT NO.:	-		
DATE:	3/27/2023	BY:	JRP
REVISED:		RVW:	

Sediment Trap T-14 **Scenario:** Erosion Control

Drainage Area Characteristics		
Total drainage area (TDA)[1]	4.60	ac

Required Storage Volume			
Req'd Min. Wet Storage Volume[3]	(1811 cf	per ac of DA)[5]	8,330 cf
Req'd Min. Dry Storage Volume[3]	(1811 cf	per ac of DA)[5]	8,330 cf

Design Criteria		
Bottom Elevation	1144.00	msl
Depth of Wet Storage	2.30	ft
Depth of Dry Storage	1.70	ft
1 ft over Weir	1.00	ft

Basin Configuration		
Bottom Elevation	1144.00	msl
Wet Storage Elevation (Base of Stone Outlet)	1146.30	msl
Dry Storage Elevation (Weir Crest)	1148.00	msl
Top of Berm	1149.00	msl

Spillway Outlet		
Bottom of Embankment Elevation	1147.00	msl
Height of Embankment[2]	2.00	ft
Top Width of Embankment	2.00	ft

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1144.00	0.00	2,732	0
1145.00	1.00	3,424	3,071
1146.00	2.00	4,141	6,848
1147.00	3.00	4,883	11,355
1148.00	4.00	5,650	16,617
1149.00	5.00	6,442	22,659

Basin Size Check	
Wet Storage Volume Provided	8,531 sf
Dry Storage Volume provided	8,512 cf

Notes

1. See attached drainage area map.
2. Maximum height of embankment is 5 ft.
3. Per 2002 Connecticut Guidelines for Soil and Sediment Control, 134 cubic yards per acre of drainage area are provided. Half of this storage is wet and half of this storage is dry.

SEDIMENT TRAP CALCULATIONS			
Litchfield Solar			
HDR PROJECT NO.:	-		
DATE:	3/27/2023	BY:	JRP
REVISED:		RVW:	

Sediment Trap T-15 **Scenario:** Erosion Control

Drainage Area Characteristics		
Total drainage area (TDA)[1]	1.89	ac

Required Storage Volume			
Req'd Min. Wet Storage Volume[3]	(1811 cf	per ac of DA)[5]	3,422 cf
Req'd Min. Dry Storage Volume[3]	(1811 cf	per ac of DA)[5]	3,422 cf

Design Criteria		
Bottom Elevation	1202.00	msl
Depth of Wet Storage	1.75	ft
Depth of Dry Storage	1.25	ft
1 ft over Weir	1.00	ft

Basin Configuration		
Bottom Elevation	1202.00	msl
Wet Storage Elevation (Base of Stone Outlet)	1203.75	msl
Dry Storage Elevation (Weir Crest)	1205.00	msl
Top of Berm	1206.00	msl

Spillway Outlet		
Bottom of Embankment Elevation	1204.50	msl
Height of Embankment[2]	1.50	ft
Top Width of Embankment	2.00	ft

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1202.00	0.00	1,935	0
1203.00	1.00	2,398	2,162
1204.00	2.00	2,885	4,800
1205.00	3.00	3,398	7,938
1206.00	4.00	3,936	11,602

Basin Size Check	
Wet Storage Volume Provided	4,110 sf
Dry Storage Volume provided	3,851 cf

Notes

1. See attached drainage area map.
2. Maximum height of embankment is 5 ft.
3. Per 2002 Connecticut Guidelines for Soil and Sediment Control, 134 cubic yards per acre of drainage area are provided. Half of this storage is wet and half of this storage is dry.

RISER SEDIMENT BASIN CALCULATIONS

SRC Litchfield

HDR PROJECT NO.: -

DATE: 5/31/2023 BY: JP

REVISED: RVW: MB

Riser Sediment Basin : Pond-3 **Scenario:** E&SC

Drainage Area Characteristics		
Total drainage area (TDA)[1]	7.33	ac
Disturbed area (DA)	7.33	ac
Time of Concentration (T_c)	10.5	min
10 Yr Storm Rainfall Intensity (I)[4]	0.2	in/hr

Required Storage Volume		
10 Yr Peak Flow (Q_{10})	21.63	cfs
Req'd Sediment Storage Volume[3]	58.64	cf
Req'd Basin Storage Volume (V_s)[5]	42,573	cf
Total Basin Storage Volume[5]	42,631	cf

Design Criteria		
Bottom Elevation	1122.00	msl
Depth of Sediment Storage Volume	0.50	ft
Depth of Flow Over Riser	0.19	ft
Depth of Wet Storage Volume (Min 2 ft)	5.70	
Runoff Depth from Hydrographs (V_r)	2.93	inch

Basin Size

Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1122.00	0.00	4,073	0
1123.00	1.00	5,222	4,636
1124.00	2.00	6,442	10,457
1125.00	3.00	7,733	17,535
1126.00	4.00	9,096	25,940
1127.00	5.00	10,527	35,743
1128.00	6.00	12,024	47,010
1129.00	7.00	13,578	59,803
1130.00	8.00	15,189	74,179

Basin Configuration		
Bottom Elevation	1122.00	msl
Sediment Storage Elevation	1122.50	msl
Riser Crest	1127.70	msl
Emergency Spillway	1128.70	msl
Top of Berm	1130.00	msl
Highwater elevation (10-yr) from Hydrograph	1127.89	msl

OK

Basin Size Check		
Storage Volume Provided Below Riser Crest	43,805	cf

Q10/DA Ratio	2.95		
Qo/Qi Ratio from Figure SB-13	0.07		
Outflow rate (Qo)	1.51	cfs	
Release rate	132	csm	
Storage in watershed (Vs) from Figure DB-6	1.60	inch	

Average annual erosion[7]	1	tons/ac	Figure SB-1
Delivery Ratio[8]	0.45		Figure SB-12
Trap Efficiency[5]	0.80		
Sediment Density[16]	90	lbs/cu.ft	Figure SB-2

Required Riser Diameter 24

Barrel			
Riser Diameter[9]	24	in	Riser Flow as Weir[13] 1.61 cfs
Barrel Diameter (15 in min)[5]	15	in	Riser Flow as Orifice[14] 6.59 cfs
Barrel Invert Elevation	1122.00	msl	
Barrel Length	60.00	ft	Barrel Flow as Orifice[14] 14.56 cfs
Barrel Manning's N[10]	0.014		Barrel Flow as Pipe[15] 12.76 cfs
Sharp Crested Weir Coefficient (C)[11]	3.1		
Orifice Coefficient (C)[12]	0.6		Controlling Flow through Riser and Barrel Spillway 1.61 cfs

Emergency Spillway Design		
Minimum Allowable Spillway Length	20	ft

Notes

1. See attached drainage area map.
2. Entire area is denuded. Rational coefficient for smooth bare packed soil is 0.45.
3. Volume required is calculated using volume equation from section 5-11 - 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

$$V = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

4. Rainfall intensity at project location was acquired from the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html.
5. From Section 5-11 - 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.
6. Design Elevations from section 5-11 - 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.
7. Obtained from Figure SB-1 from 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.
8. Obtained from Figure SB-12 from 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.
9. Riser cross-sectional area is required to be more than 2 times the barrel cross-sectional area.
10. Use 0.025 for CMP and 0.012 for RCP.
11. 3.1 for corrugated metal pipe risers
12. 0.6 for corrugated metal pipe risers
13. Weir equation: $Q = CLH^{1.5}$ (see note 11)
14. Orifice equation: $Q = CA\,(2gH)^{0.5}$ (see note 12)
15. Pipe Flow equation: $Q = a\left[\frac{2gh}{1 + K_m + K_p L}\right]^{0.5}$
16. Obtained from Figure SB-2 from 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

RISER SEDIMENT BASIN CALCULATIONS			
SRC Litchfield			
HDR PROJECT NO.:	-		
DATE:	5/31/2023	BY:	JP
REVISED:		RVW:	MB

Riser Sediment Basin : Pond-7 **Scenario:** E&SC

Drainage Area Characteristics		
Total drainage area (TDA)[1]	4.35	ac
Disturbed area (DA)	4.35	ac
Time of Concentration (T_c)	18.5	min
10 Yr Storm Rainfall Intensity (I)[4]	0.2	in/hr

Required Storage Volume		
10 Yr Peak Flow (Q_{10})	6.65	cfs
Req'd Sediment Storage Volume[3]	28.61	cf
Req'd Basin Storage Volume (V_s)[5]	16,580	cf
Total Basin Storage Volume[5]	16,609	cf

Design Criteria		
Bottom Elevation	1148.00	msl
Depth of Storage Volume	0.50	ft
Depth of Flow Over Riser	0.25	ft
Depth of Wet Storage Volume (Min 2 ft)	3.50	
Runoff Depth from Hydrographs (V_r)	1.97	inch

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1148.00	0.00	5,406	0
1149.00	1.00	6,335	5,864
1150.00	2.00	7,326	12,689
1151.00	3.00	8,380	20,536
1152.00	4.00	9,497	29,469
1153.00	5.00	10,672	39,547
1154.00	6.00	11,903	50,829

Basin Configuration		
Bottom Elevation	1148.00	msl
Depth of Sediment Storage Volume	1148.50	msl
Riser Crest	1151.50	msl
Emergency Spillway	1152.50	msl
Top of Berm	1154.00	msl
Highwater elevation (10-yr) from Hydrograph	1150.87	msl

OK

Basin Size Check		
Storage Volume Provided Below Riser Crest	25,261	cf

Q10/DA Ratio	1.53		
Qo/Qi Ratio from Figure SB-13	0.08		
Outflow rate (Qo)	0.53	cfs	
Release rate	78	csm	
Storage in watershed (Vs) from Figure DB-6	1.05	inch	

Average annual erosion[7]	1	tons/ac	Figure SB-1
Delivery Ratio[8]	0.37		Figure SB-12
Trap Efficiency[5]	0.80		
Sediment Density[16]	90	lbs/cu.ft	Figure SB-2

Required Riser Diameter 25

Barrel				
Riser Diameter[9]	24	in	Riser Flow as Weir[13]	2.43 cfs
Barrel Diameter (15 in min)[5]	18	in	Riser Flow as Orifice[14]	7.56 cfs
Barrel Invert Elevation	1148.00	msl		
Barrel Length	106.00	ft	Barrel Flow as Orifice[14]	16.48 cfs
Barrel Manning's N[10]	0.025		Barrel Flow as Pipe[15]	9.08 cfs
Sharp Crested Weir Coefficient (C)[11]	3.1			
Orifice Coefficient (C)[12]	0.6		Controlling Flow through Riser and Barrel Spillway	2.43 cfs

Emergency Spillway Design		
Minimum Allowable Spillway Length	20	ft

Notes

1. See attached drainage area map.
2. Entire area is denuded. Rational coefficient for smooth bare packed soil is 0.45.
3. Volume required is calculated using volume equation from section 5-11 - 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

$$V = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

4. Rainfall intensity at project location was acquired from the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html.
5. From Section 5-11 - 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.
6. Design Elevations from section 5-11 - 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.
7. Obtained from Figure SB-1 from 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.
8. Obtained from Figure SB-12 from 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.
9. Riser cross-sectional area is required to be more than 2 times the barrel cross-sectional area.
10. Use 0.025 for CMP and 0.012 for RCP.
11. 3.1 for corrugated metal pipe risers
12. 0.6 for corrugated metal pipe risers
13. Weir equation: $Q = CLH^{1.5}$ (see note 11)
14. Orifice equation: $Q = CA\,(2gH)^{0.5}$ (see note 12)
15. Pipe Flow equation: $Q = a\left[\frac{2gh}{1 + K_m + K_p L}\right]^{0.5}$
16. Obtained from Figure SB-2 from 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

RISER SEDIMENT BASIN CALCULATIONS			
SRC Litchfield			
HDR PROJECT NO.:	-		
DATE:	5/31/2023	BY:	JP
REVISED:		RVW:	MB

Riser Sediment Basin : Pond 8/10 **Scenario:** E&SC

Drainage Area Characteristics		
Total drainage area (TDA)[1]	15.65	ac
Disturbed area (DA)	15.65	ac
Time of Concentration (T_c)	16.4	min
10 Yr Storm Rainfall Intensity (I)[4]	0.2	in/hr

Required Storage Volume		
10 Yr Peak Flow (Q_{10})	53.25	cfs
Req'd Sediment Storage Volume[3]	111.29	cf
Req'd Basin Storage Volume (V_s)[5]	127,821	cf
Total Basin Storage Volume[5]	127,933	cf

Design Criteria		
Bottom Elevation	1106.00	msl
Depth of Storage Volume	0.50	ft
Depth of Flow Over Riser	0.26	ft
Depth of Wet Storage Volume (Min 2 ft)	7.00	
Runoff Depth from Hydrographs (V_r)	4.02	inch

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1106.00	0.00	10,432	0
1107.00	1.00	12,476	11,439
1108.00	2.00	14,587	24,957
1109.00	3.00	17,071	40,769
1110.00	4.00	19,633	59,106
1111.00	5.00	22,274	80,046
1112.00	6.00	24,993	103,666
1113.00	7.00	27,791	130,046
1114.00	8.00	30,664	159,262
1115.00	9.00	33,612	191,388

Basin Configuration			
Bottom Elevation	1106.00	msl	
Depth of Sediment Storage Volume	1106.50	msl	
Riser Crest	1113.00	msl	
Emergency Spillway	1114.00	msl	
Top of Berm	1115.00	msl	OK
Highwater elevation (10-yr) from Hydrograph	1113.26	msl	

Basin Size Check		
Storage Volume Provided Below Riser Crest	130,956	cf

Q10/DA Ratio	3.40		
Qo/Qi Ratio from Figure SB-13	0.08		
Outflow rate (Qo)	4.26	cfs	
Release rate	174	csm	
Storage in watershed (Vs) from Figure DB-6	2.25	inch	

Average annual erosion[7]	1	tons/ac	Figure SB-1
Delivery Ratio[8]	0.40		Figure SB-12
Trap Efficiency[5]	0.80		
Sediment Density[16]	90	lbs/cu.ft	Figure SB-2

Required Riser Diameter 68

Barrel				
Riser Diameter[9]	60	in	Riser Flow as Weir[13]	6.46 cfs
Barrel Diameter (15 in min)[5]	48	in	Riser Flow as Orifice[14]	48.21 cfs
Barrel Invert Elevation	122.00	msl		
Barrel Length	44.00	ft	Barrel Flow as Orifice[14]	1903.80 cfs
Barrel Manning's N[10]	0.025		Barrel Flow as Pipe[15]	1895.58 cfs
Sharp Crested Weir Coefficient (C)[11]	3.1			
Orifice Coefficient (C)[12]	0.6		Controlling Flow through Riser and Barrel Spillway	6.46 cfs

Emergency Spillway Design		
Minimum Allowable Spillway Length	50	ft

Notes

1. See attached drainage area map.
2. Entire area is denuded. Rational coefficient for smooth bare packed soil is 0.45.
3. Volume required is calculated using volume equation from section 5-11 - 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

$$V = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

4. Rainfall intensity at project location was acquired from the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html.
5. From Section 5-11 - 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.
6. Design Elevations from section 5-11 - 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.
7. Obtained from Figure SB-1 from 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.
8. Obtained from Figure SB-12 from 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.
9. Riser cross-sectional area is required to be more than 2 times the barrel cross-sectional area.
10. Use 0.025 for CMP and 0.012 for RCP.
11. 3.1 for corrugated metal pipe risers
12. 0.6 for corrugated metal pipe risers
13. Weir equation: $Q = CLH^{1.5}$ (see note 11)
14. Orifice equation: $Q = CA(2gH)^{0.5}$ (see note 12)
15. Pipe Flow equation: $Q = a\left[\frac{2gh}{1 + K_m + K_p L}\right]^{0.5}$
16. Obtained from Figure SB-2 from 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

RISER SEDIMENT BASIN CALCULATIONS			
SRC Litchfield			
HDR PROJECT NO.:	-		
DATE:	5/31/2023	BY:	JP
REVISED:		RVW:	MB

Riser Sediment Basin : Pond-9 **Scenario:** E&SC

Drainage Area Characteristics		
Total drainage area (TDA)[1]	6.83	ac
Disturbed area (DA)	6.83	ac
Time of Concentration (T_c)	17.6	min
10 Yr Storm Rainfall Intensity (I)[4]	0.2	in/hr

Required Storage Volume		
10 Yr Peak Flow (Q_{10})	21.54	cfs
Req'd Sediment Storage Volume[3]	44.93	cf
Req'd Basin Storage Volume (V_s)[5]	54,544	cf
Total Basin Storage Volume[5]	54,589	cf

Design Criteria		
Bottom Elevation	1175.00	msl
Depth of Sediment Storage Volume	0.50	ft
Depth of Flow Over Riser	0.19	ft
Depth of Wet Storage Volume (Min 2 ft)	4.00	ft
Runoff Depth from Hydrographs (V_r)	3.81	inch

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1175.00	0.00	9,665	0
1176.00	1.00	11,829	10,729
1177.00	2.00	14,049	23,652
1178.00	3.00	16,326	38,825
1179.00	4.00	18,659	56,305
1180.00	5.00	21,049	76,147
1181.00	6.00	23,495	98,407

Basin Configuration			
Bottom Elevation	1175.00	msl	
Sediment Storage Elevation	1175.50	msl	
Riser Crest	1179.00	msl	
Emergency Spillway	1180.00	msl	
Top of Berm	1181.00	msl	OK
Highwater elevation (10-yr) from Hydrograph	1179.19	msl	

Basin Size Check		
Storage Volume Provided Below Riser Crest	56,080	cf

Q10/DA Ratio	3.15		
Qo/Qi Ratio from Figure SB-13	0.08		
Outflow rate (Qo)	1.72	cfs	
Release rate	161	csm	
Storage in watershed (Vs) from Figure DB-6	2.20	inch	

Average annual erosion[7]	1	tons/ac	Figure SB-1
Delivery Ratio[8]	0.37		Figure SB-12
Trap Efficiency[5]	0.80		
Sediment Density[16]	90	lbs/cu.ft	Figure SB-2

Required Riser Diameter 25

Barrel					
Riser Diameter[9]	24	in	Riser Flow as Weir[13]	1.61	cfs
Barrel Diameter (15 in min)[5]	18	in	Riser Flow as Orifice[14]	6.59	cfs
Barrel Invert Elevation	1175.00	msl			
Barrel Length	60.00	ft	Barrel Flow as Orifice[14]	17.54	cfs
Barrel Manning's N[10]	0.025		Barrel Flow as Pipe[15]	11.89	cfs
Sharp Crested Weir Coefficient (C)[11]	3.1				
Orifice Coefficient (C)[12]	0.6		Controlling Flow through Riser and Barrel Spillway	1.61	cfs

Emergency Spillway Design		
Minimum Allowable Spillway Length	20	ft

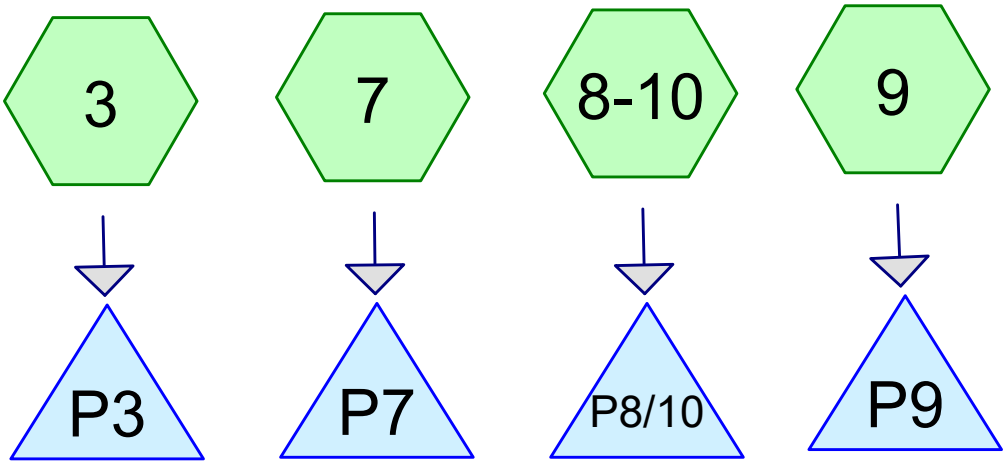
Notes

1. See attached drainage area map.
2. Entire area is denuded. Rational coefficient for smooth bare packed soil is 0.45.
3. Volume required is calculated using volume equation from section 5-11 - 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

$$V = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

4. Rainfall intensity at project location was acquired from the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html.
5. From Section 5-11 - 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.
6. Design Elevations from section 5-11 - 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.
7. Obtained from Figure SB-1 from 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.
8. Obtained from Figure SB-12 from 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.
9. Riser cross-sectional area is required to be more than 2 times the barrel cross-sectional area.
10. Use 0.025 for CMP and 0.012 for RCP.
11. 3.1 for corrugated metal pipe risers
12. 0.6 for corrugated metal pipe risers
13. Weir equation: $Q = CLH^{1.5}$ (see note 11)
14. Orifice equation: $Q = CA\,(2gH)^{0.5}$ (see note 12)
15. Pipe Flow equation: $Q = a\left[\frac{2gh}{1 + K_m + K_p L}\right]^{0.5}$
16. Obtained from Figure SB-2 from 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

Sediment Basins



Subcat Reach Pond Link

Routing Diagram for HydroCAD Litchfield Proposed - ESC Basins
Prepared by HDR, Inc, Printed 5/31/2023

Time span=0.00-60.00 hrs, dt=0.02 hrs, 3001 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 3: Runoff Area=7.330 ac 0.00% Impervious Runoff Depth=2.93"
Tc=10.5 min CN=74 Runoff=21.63 cfs 1.792 af

Subcatchment 7: Runoff Area=4.350 ac 0.00% Impervious Runoff Depth=1.97"
Tc=18.5 min CN=63 Runoff=6.65 cfs 0.714 af

Subcatchment 8-10: Runoff Area=15.650 ac 0.00% Impervious Runoff Depth=4.02"
Tc=16.4 min CN=85 Runoff=53.25 cfs 5.243 af

Subcatchment 9: Runoff Area=6.830 ac 0.00% Impervious Runoff Depth=3.81"
Tc=17.6 min CN=83 Runoff=21.54 cfs 2.171 af

Pond P3: Peak Elev=1,127.89' Storage=45,831 cf Inflow=21.63 cfs 1.792 af
Primary=2.04 cfs 1.522 af Secondary=0.00 cfs 0.000 af Outflow=2.04 cfs 1.522 af

Pond P7: Peak Elev=1,150.87' Storage=19,507 cf Inflow=6.65 cfs 0.714 af
Primary=0.36 cfs 0.647 af Secondary=0.00 cfs 0.000 af Outflow=0.36 cfs 0.647 af

Pond P8/10: Peak Elev=1,113.26' Storage=137,610 cf Inflow=53.25 cfs 5.243 af
Primary=7.86 cfs 4.423 af Secondary=0.00 cfs 0.000 af Outflow=7.86 cfs 4.423 af

Pond P9: Peak Elev=1,179.19' Storage=60,176 cf Inflow=21.54 cfs 2.171 af
Primary=2.07 cfs 1.677 af Secondary=0.00 cfs 0.000 af Outflow=2.07 cfs 1.677 af

Total Runoff Area = 34.160 ac Runoff Volume = 9.920 af Average Runoff Depth = 3.48"
100.00% Pervious = 34.160 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3:

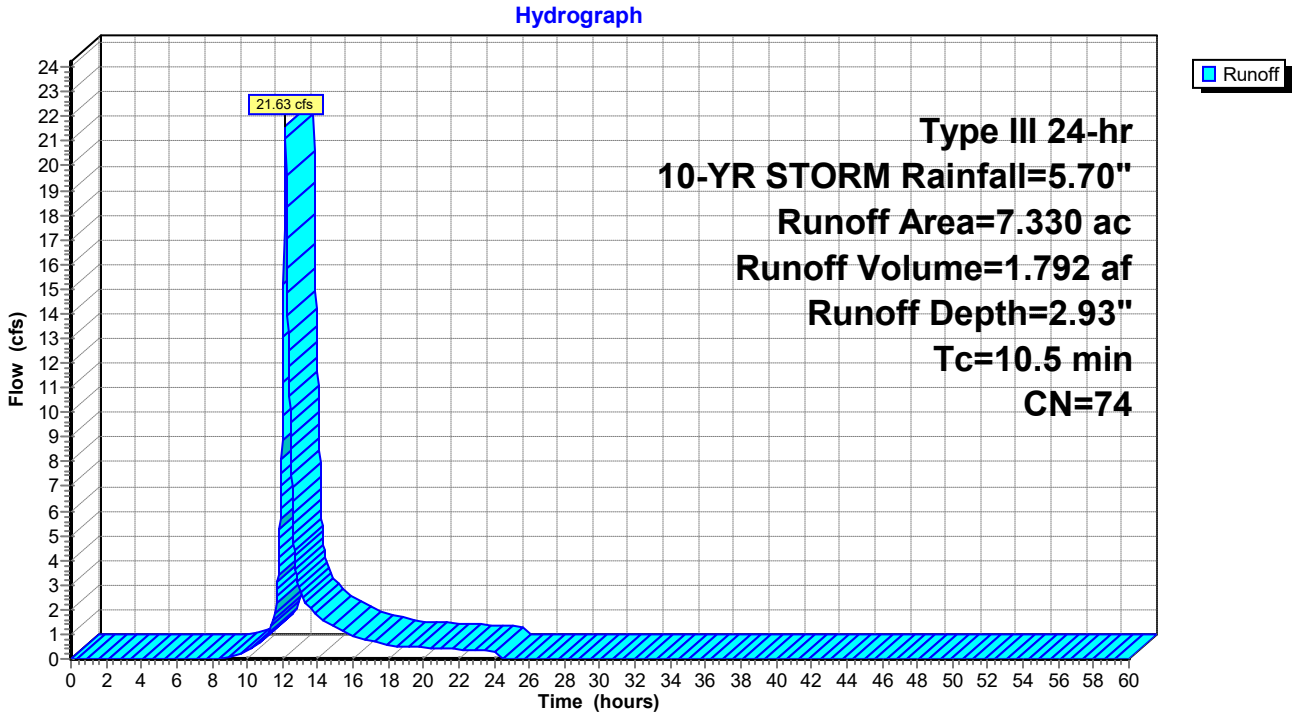
Runoff = 21.63 cfs @ 12.15 hrs, Volume= 1.792 af, Depth= 2.93"
Routed to Pond P3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	7.330	74	
	7.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 7:

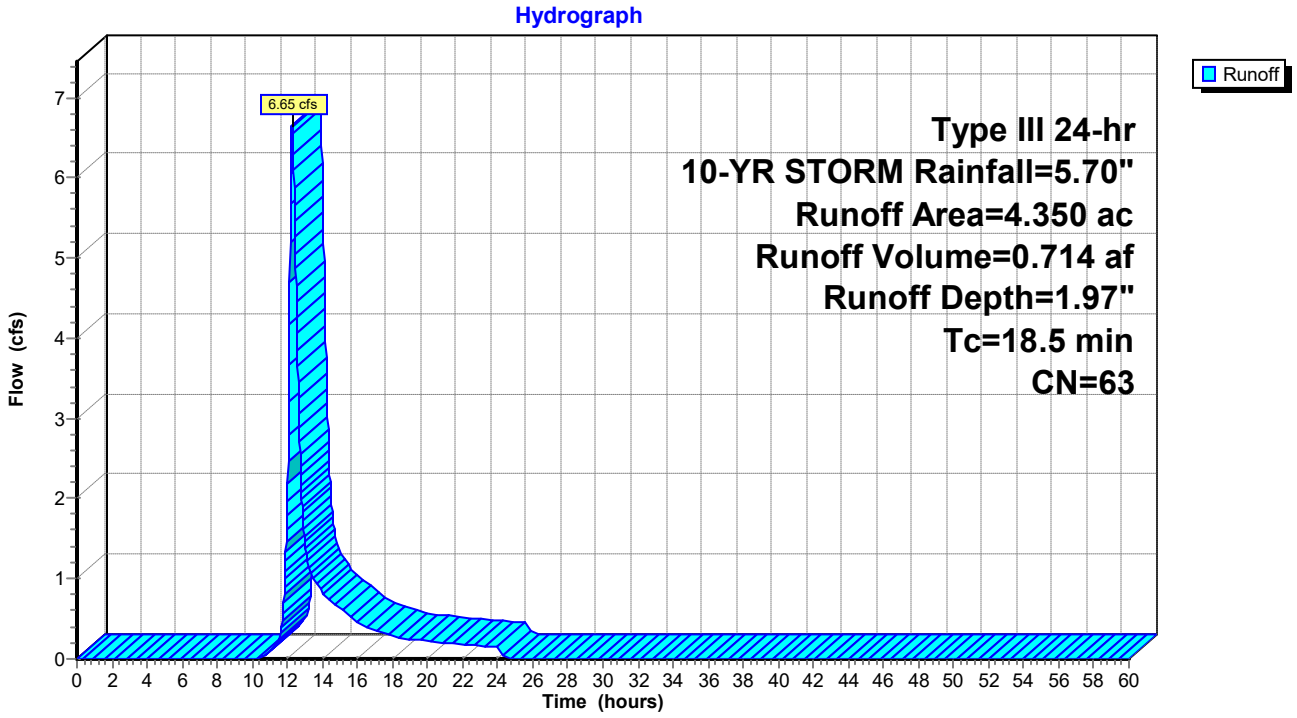
Runoff = 6.65 cfs @ 12.27 hrs, Volume= 0.714 af, Depth= 1.97"
Routed to Pond P7 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	4.350	63	
	4.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8-10:

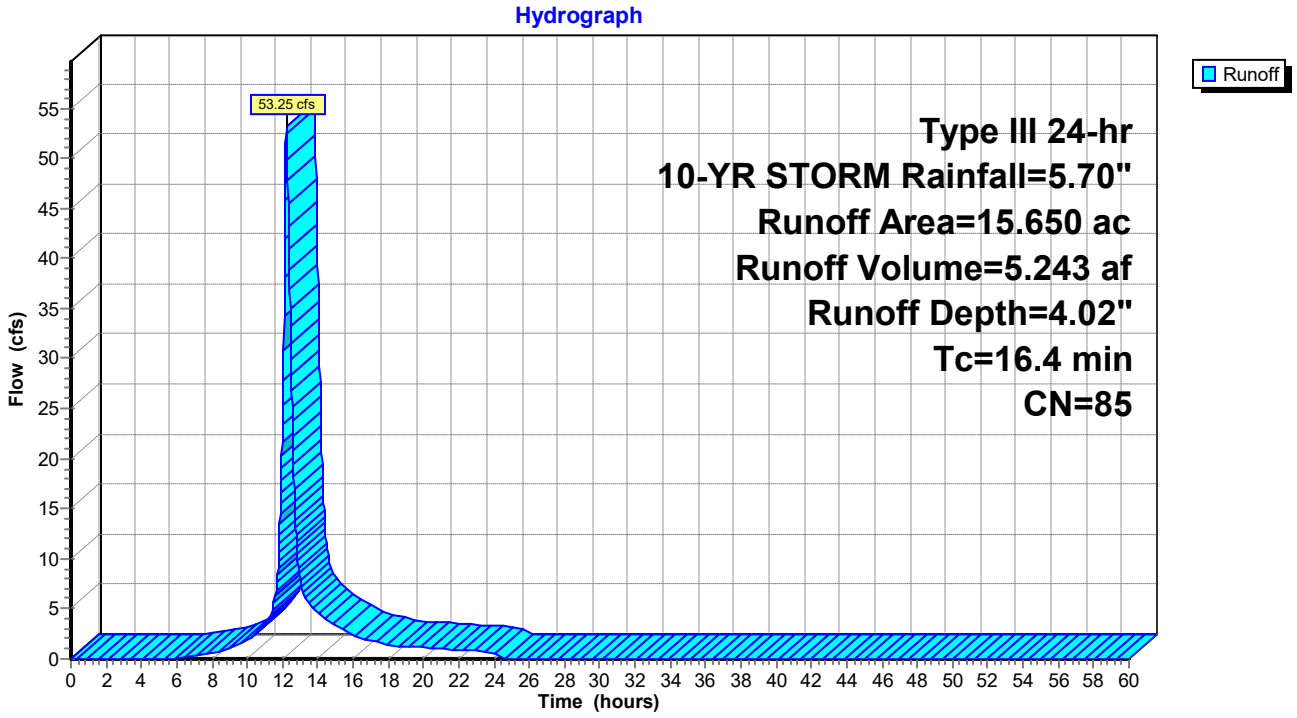
Runoff = 53.25 cfs @ 12.22 hrs, Volume= 5.243 af, Depth= 4.02"
Routed to Pond P8/10 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	15.650	85	
	15.650		100.00% Pervious Area

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

Subcatchment 8-10:



Summary for Subcatchment 9:

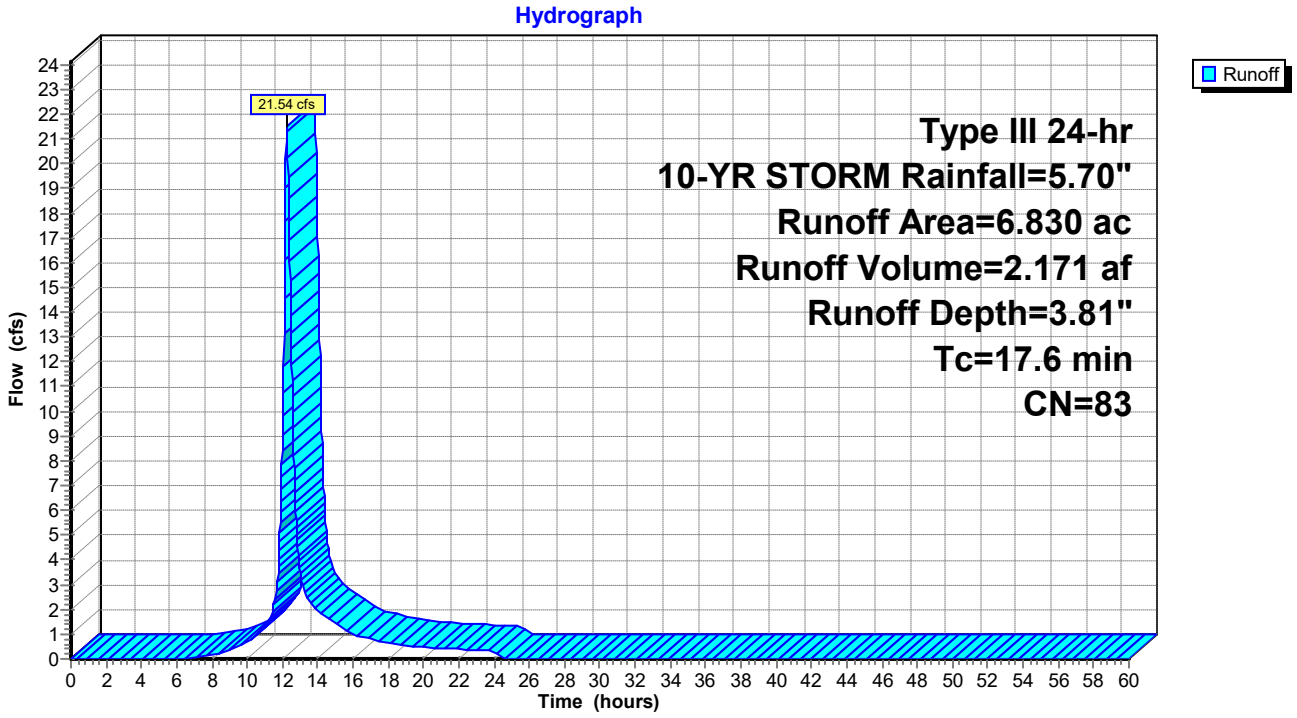
Runoff = 21.54 cfs @ 12.24 hrs, Volume= 2.171 af, Depth= 3.81"
Routed to Pond P9 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR STORM Rainfall=5.70"

	Area (ac)	CN	Description
*	6.830	83	
	6.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Pond P3:

Inflow Area = 7.330 ac, 0.00% Impervious, Inflow Depth = 2.93" for 10-YR STORM event
Inflow = 21.63 cfs @ 12.15 hrs, Volume= 1.792 af
Outflow = 2.04 cfs @ 13.57 hrs, Volume= 1.522 af, Atten= 91%, Lag= 85.1 min
Primary = 2.04 cfs @ 13.57 hrs, Volume= 1.522 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 1,127.89' @ 13.57 hrs Surf.Area= 11,860 sf Storage= 45,831 cf

Plug-Flow detention time= 920.2 min calculated for 1.522 af (85% of inflow)
Center-of-Mass det. time= 855.3 min (1,690.6 - 835.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,122.00'	74,253 cf	**Custom Stage Data (Prismatic)** Listed below

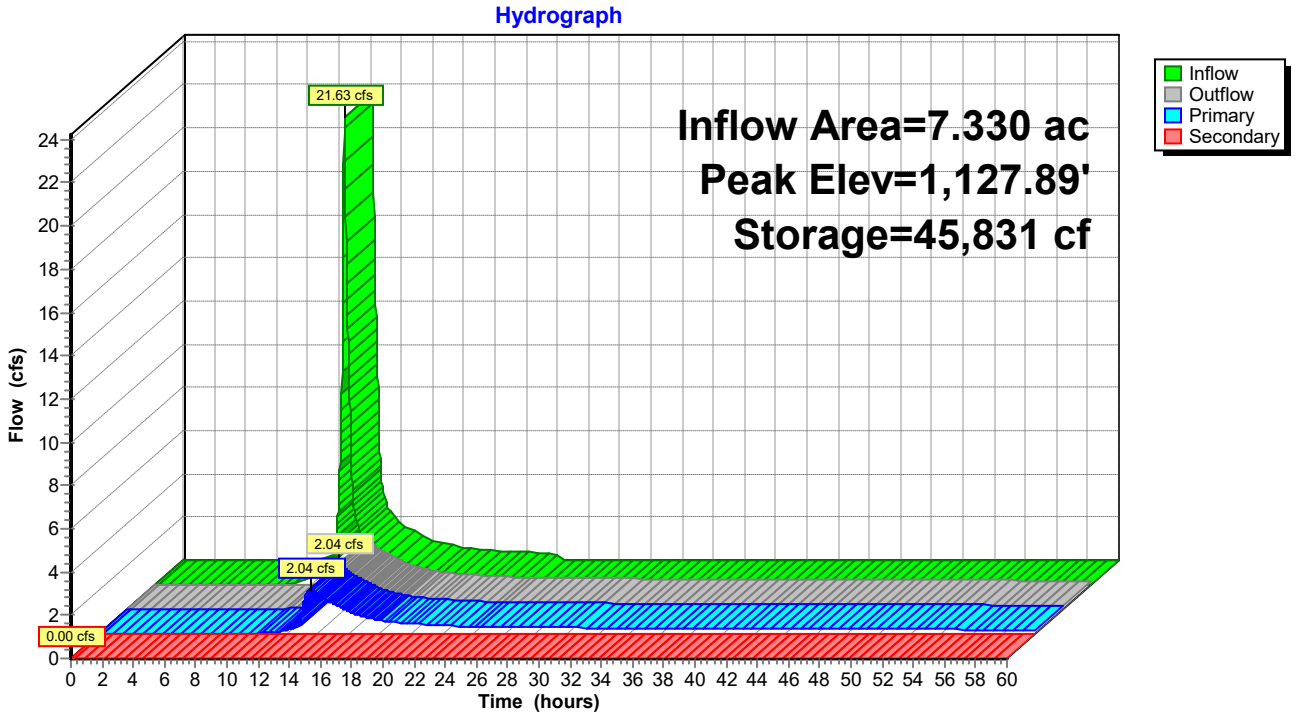
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,122.00	4,073	0	0
1,123.00	5,222	4,648	4,648
1,124.00	6,442	5,832	10,480
1,125.00	7,733	7,088	17,567
1,126.00	9,096	8,415	25,982
1,127.00	10,527	9,812	35,793
1,128.00	12,024	11,276	47,069
1,129.00	13,578	12,801	59,870
1,130.00	15,189	14,384	74,253

Device	Routing	Invert	Outlet Devices
#1	Primary	1,122.00'	**15.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,122.00' / 1,121.50' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Secondary	1,128.70'	**40.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#3	Device 1	1,127.70'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,122.00'	**2.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.01 cfs @ 13.57 hrs HW=1,127.89' (Free Discharge)
└**1=Culvert** (Passes 2.01 cfs of 13.56 cfs potential flow)
  ├**3=Orifice/Grate** (Weir Controls 1.71 cfs @ 1.43 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.31 cfs @ 11.59 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,122.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P3:


Hydrograph
Inflow Area=7.330 ac
Peak Elev=1,127.89'
Storage=45,831 cf
21.63 cfs
2.04 cfs
2.04 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P7:

Inflow Area = 4.350 ac, 0.00% Impervious, Inflow Depth = 1.97" for 10-YR STORM event
Inflow = 6.65 cfs @ 12.27 hrs, Volume= 0.714 af
Outflow = 0.36 cfs @ 16.97 hrs, Volume= 0.647 af, Atten= 95%, Lag= 281.8 min
Primary = 0.36 cfs @ 16.97 hrs, Volume= 0.647 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Peak Elev= 1,150.87' @ 16.97 hrs Surf.Area= 8,239 sf Storage= 19,507 cf

Plug-Flow detention time= 646.6 min calculated for 0.647 af (91% of inflow)
Center-of-Mass det. time= 600.1 min (1,469.8 - 869.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,148.00'	50,865 cf	**Custom Stage Data (Prismatic)** Listed below

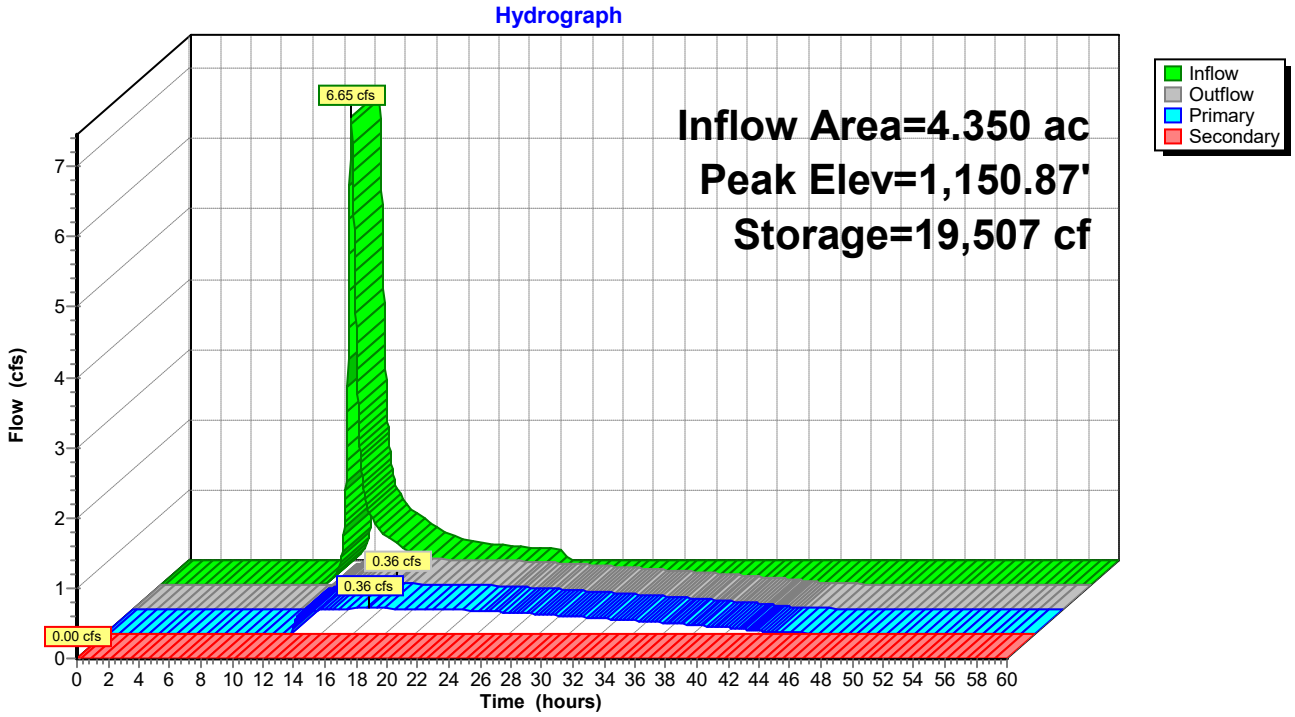
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,148.00	5,406	0	0
1,149.00	6,335	5,871	5,871
1,150.00	7,326	6,831	12,701
1,151.00	8,380	7,853	20,554
1,152.00	9,497	8,939	29,493
1,153.00	10,672	10,085	39,577
1,154.00	11,903	11,288	50,865

Device	Routing	Invert	Outlet Devices
#1	Primary	1,148.00'	**18.0" Round Culvert** L= 106.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,148.00' / 1,146.10' S= 0.0179 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	1,152.50'	**30.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#3	Device 1	1,151.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,148.50'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.36 cfs @ 16.97 hrs HW=1,150.87' (Free Discharge)
└**1=Culvert** (Passes 0.36 cfs of 12.38 cfs potential flow)
  └**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Orifice Controls 0.36 cfs @ 7.41 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,148.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P7:


Hydrograph
Inflow Area=4.350 ac
Peak Elev=1,150.87'
Storage=19,507 cf
6.65 cfs
0.36 cfs
0.36 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60

Summary for Pond P8/10:

Inflow Area = 15.650 ac, 0.00% Impervious, Inflow Depth = 4.02" for 10-YR STORM event
Inflow = 53.25 cfs @ 12.22 hrs, Volume= 5.243 af
Outflow = 7.86 cfs @ 13.02 hrs, Volume= 4.423 af, Atten= 85%, Lag= 48.1 min
Primary = 7.86 cfs @ 13.02 hrs, Volume= 4.423 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Peak Elev= 1,113.26' @ 13.02 hrs Surf.Area= 28,525 sf Storage= 137,610 cf

Plug-Flow detention time= 861.6 min calculated for 4.423 af (84% of inflow)
Center-of-Mass det. time= 795.9 min (1,608.1 - 812.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,106.00'	191,511 cf	**Custom Stage Data (Prismatic)** Listed below

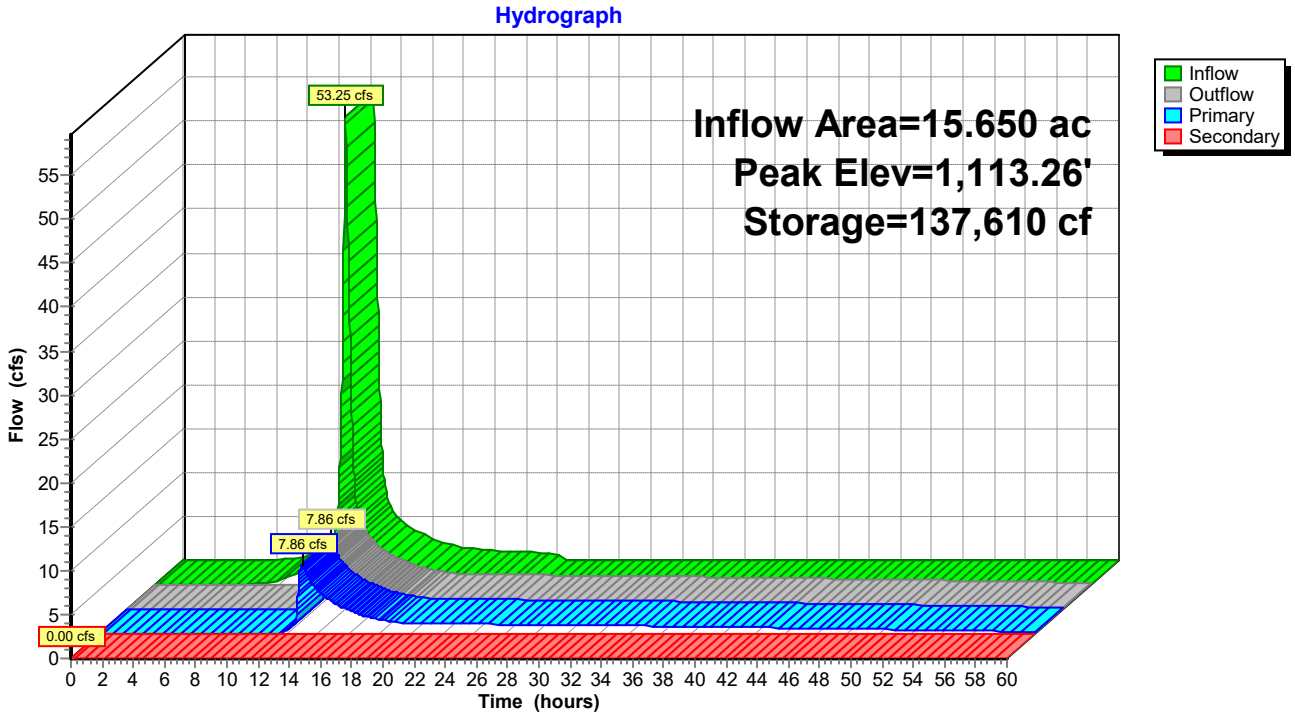
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,106.00	10,432	0	0
1,107.00	12,476	11,454	11,454
1,108.00	14,587	13,532	24,986
1,109.00	17,071	15,829	40,815
1,110.00	19,633	18,352	59,167
1,111.00	22,274	20,954	80,120
1,112.00	24,993	23,634	103,754
1,113.00	27,791	26,392	130,146
1,114.00	30,664	29,228	159,373
1,115.00	33,612	32,138	191,511

Device	Routing	Invert	Outlet Devices
#1	Primary	1,108.00'	**48.0" Round Culvert** L= 44.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,108.00' / 1,107.50' S= 0.0114 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Secondary	1,114.00'	**60.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#3	Device 1	1,113.00'	**60.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,108.50'	**4.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.79 cfs @ 13.02 hrs HW=1,113.26' (Free Discharge)
└**1=Culvert** (Passes 7.79 cfs of 104.87 cfs potential flow)
  ├**3=Orifice/Grate** (Weir Controls 6.63 cfs @ 1.65 fps)
  └**4=Orifice/Grate** (Orifice Controls 1.16 cfs @ 10.50 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,106.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P8/10:


Hydrograph
Inflow Area=15.650 ac
Peak Elev=1,113.26'
Storage=137,610 cf
53.25 cfs
7.86 cfs
7.86 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60
0 5 10 15 20 25 30 35 40 45 50 55

Summary for Pond P9:

Inflow Area = 6.830 ac, 0.00% Impervious, Inflow Depth = 3.81" for 10-YR STORM event
Inflow = 21.54 cfs @ 12.24 hrs, Volume= 2.171 af
Outflow = 2.07 cfs @ 13.84 hrs, Volume= 1.677 af, Atten= 90%, Lag= 96.5 min
Primary = 2.07 cfs @ 13.84 hrs, Volume= 1.677 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Peak Elev= 1,179.19' @ 13.84 hrs Surf.Area= 19,118 sf Storage= 60,176 cf

Plug-Flow detention time= 960.5 min calculated for 1.677 af (77% of inflow)
Center-of-Mass det. time= 878.7 min (1,697.6 - 819.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,175.00'	98,492 cf	**Custom Stage Data (Prismatic)** Listed below

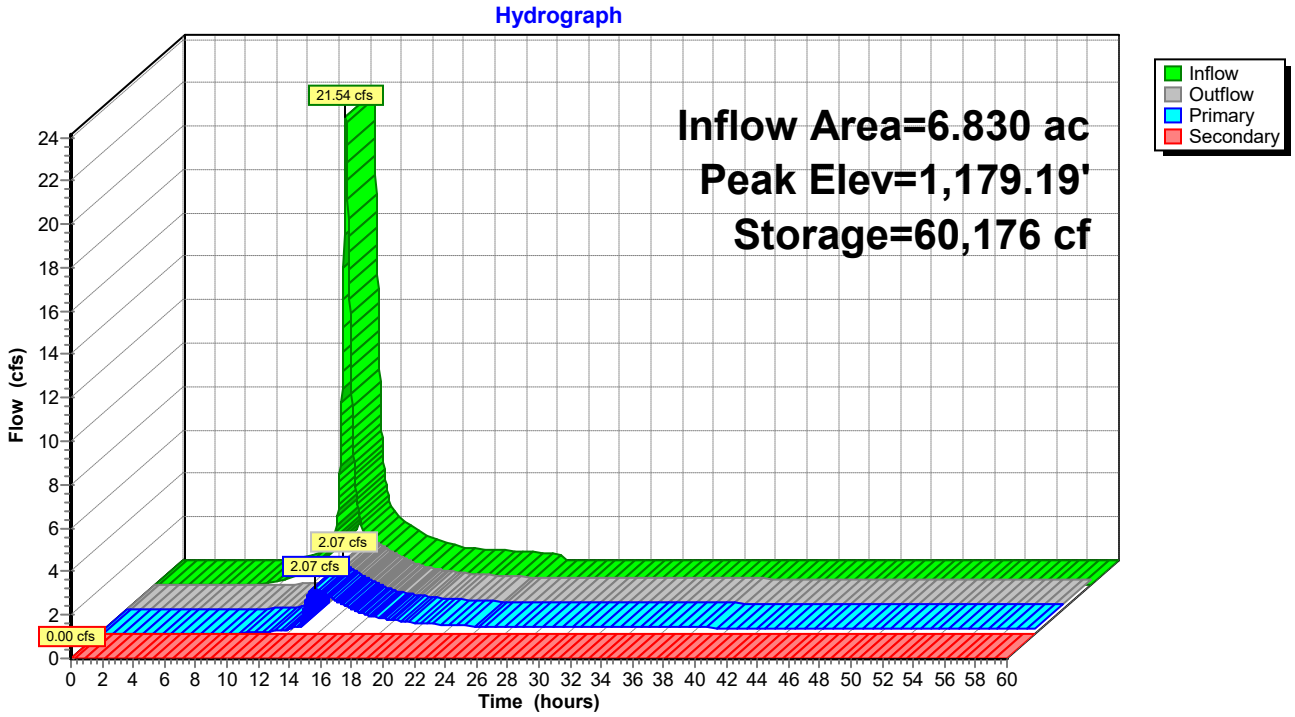
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,175.00	9,665	0	0
1,176.00	11,829	10,747	10,747
1,177.00	14,049	12,939	23,686
1,178.00	16,326	15,188	38,874
1,179.00	18,659	17,493	56,366
1,180.00	21,049	19,854	76,220
1,181.00	23,495	22,272	98,492

Device	Routing	Invert	Outlet Devices
#1	Primary	1,175.00'	**15.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,175.00' / 1,174.50' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Secondary	1,180.00'	**20.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#3	Device 1	1,179.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,175.00'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.06 cfs @ 13.84 hrs HW=1,179.19' (Free Discharge)
└**1=Culvert** (Passes 2.06 cfs of 11.14 cfs potential flow)
  └**3=Orifice/Grate** (Weir Controls 1.73 cfs @ 1.43 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.33 cfs @ 9.74 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,175.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P9:


Hydrograph
Inflow Area=6.830 ac
Peak Elev=1,179.19'
Storage=60,176 cf
21.54 cfs
2.07 cfs
2.07 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60

Litchfield Solar Array Facility
Litchfield, CT
SRC

5/31/2023

RipRap Calculations

Storm Event: 25-yr, 24-hr

Culvert #	Q (cfs)	D_O (ft)	TW (ft)	L_a (ft)	W (ft)	d_{50} (ft)
POND-3	37.03	2	1.69	38.3	21.3	0.58
POND-5	8.53	2	0.52	21.1	27.1	0.27
POND-8/10	113.15	4	2.31	56.0	34.4	0.75
POND-9	21.23	4	0.74	36.5	48.5	0.25

Litchfield Solar Array Facility
Litchfield, CT
SRC

5/31/2023

Outlet Level Spreader Calculations

Storm Event: 25-yr, 24-hr

Culvert #	Q (cfs)	Min. Length (ft)	Design Length (ft)	Height of Flow (ft)	Flow Velocity (ft/s)	Elev
POND-1	6.61	85.93	86	0.09	0.84	1121.00
POND-7	8.59	111.67	132	0.08	0.80	1146.00

Note:
1. L=13 LF for every 1 cfs of flow
2. Outlet Velocity < 3ft/s
3. Weir Equation: Q = CLH^3/2

Appendix H

Culvert and Ditch Calculations

Litchfield Solar Array Facility
Litchfield, CT
SRC

9/29/2020

Culvert Calculations

Storm Event: 50-yr
Min. Openness Ratio (OR) Required: 0.25

Rainfall (in.): 25-yr 5.5 50-yr 6.3 100-yr 7.0

0.30 min

Culvert	Type	Drainage Area	CN	Est. Peak Flow Q 25 (cfs)	Est. Peak Flow Q 50-yr (cfs)	Est. Peak Flow Q 100-yr (cfs)	Length (ft)	Shape	Span (ft)	Rise (ft)		Area (sf)	Open Area (sf)	OR (Open Area) / Length	Rise/ Span	Req'd Cover (in)	US Inv.	Min. Roadway Elev.	TOW Elev. (+6")	Ex Stream Slope (%)	Arch Req'd
C-1	New	11.51	80.4	28.13	34.03	N/A	16	Arch (Bottomless)	6	2.292	2' - 3.5"	13.752	13.75	0.86	0.38	12.00	1194.76	1198.05	1198.55	8.40	Yes

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

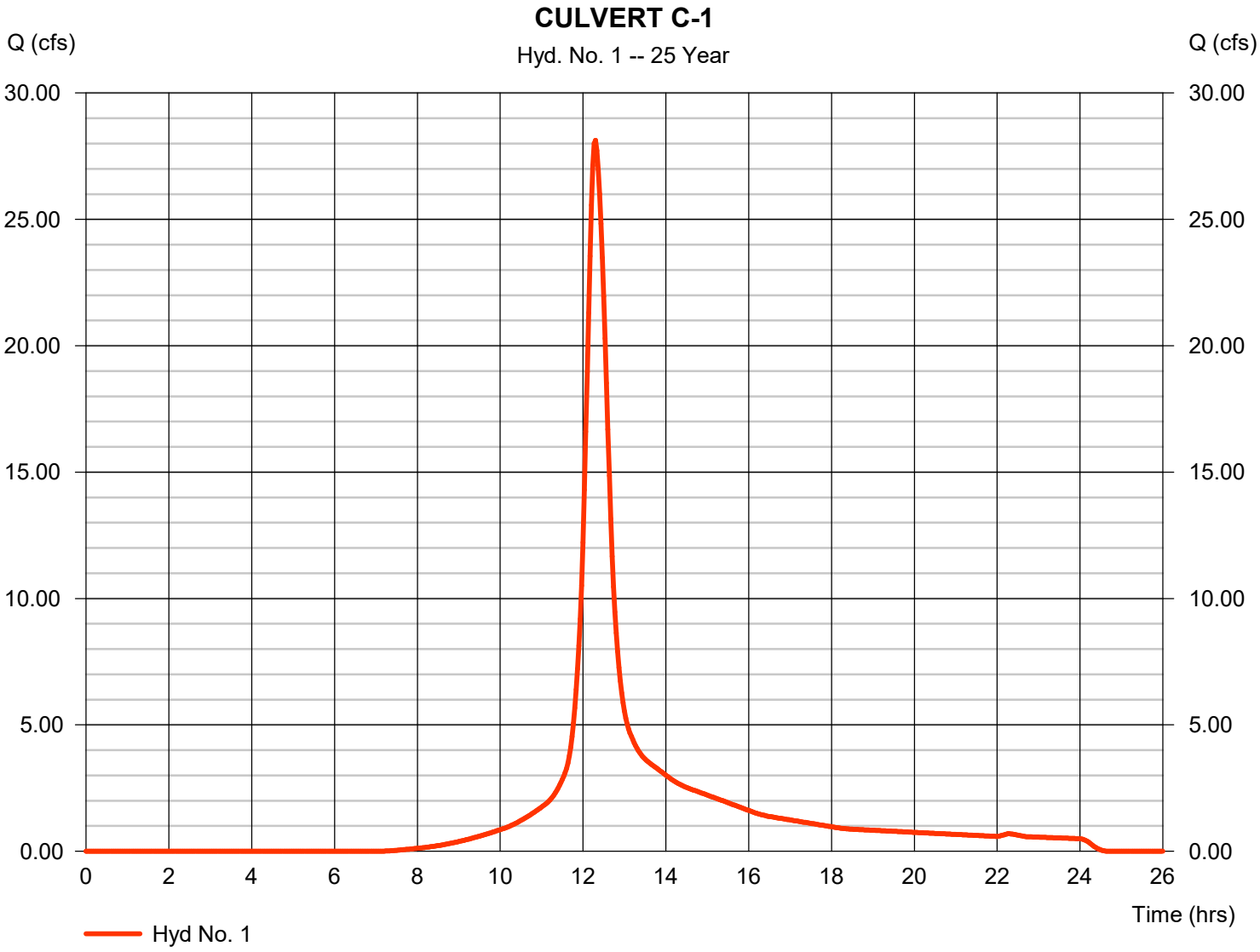
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	28.13	2	738	138,698	------	------	------	CULVERT C-1

Hydrograph Report

Hyd. No. 1

CULVERT C-1

Hydrograph type	=	SCS Runoff	Peak discharge	=	28.13 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.30 hrs
Time interval	=	2 min	Hyd. volume	=	138,698 cuft
Drainage area	=	11.510 ac	Curve number	=	80.4
Basin Slope	=	2.7 %	Hydraulic length	=	1403 ft
Tc method	=	LAG	Time of conc. (Tc)	=	25.00 min
Total precip.	=	5.50 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

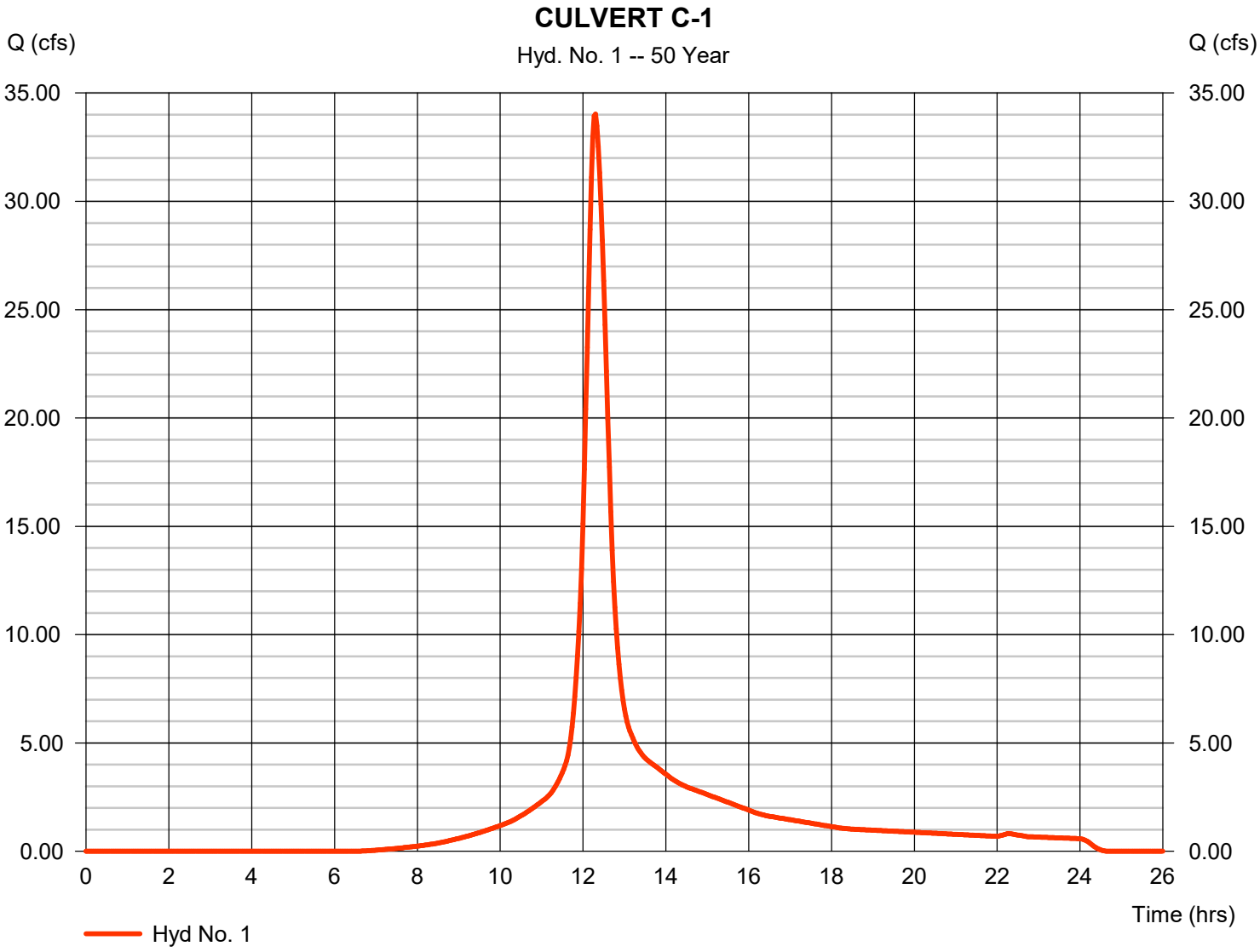
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	34.03	2	738	168,419	------	------	------	CULVERT C-1

Hydrograph Report

Hyd. No. 1

CULVERT C-1

Hydrograph type	= SCS Runoff	Peak discharge	= 34.03 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 168,419 cuft
Drainage area	= 11.510 ac	Curve number	= 80.4
Basin Slope	= 2.7 %	Hydraulic length	= 1403 ft
Tc method	= LAG	Time of conc. (Tc)	= 25.00 min
Total precip.	= 6.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

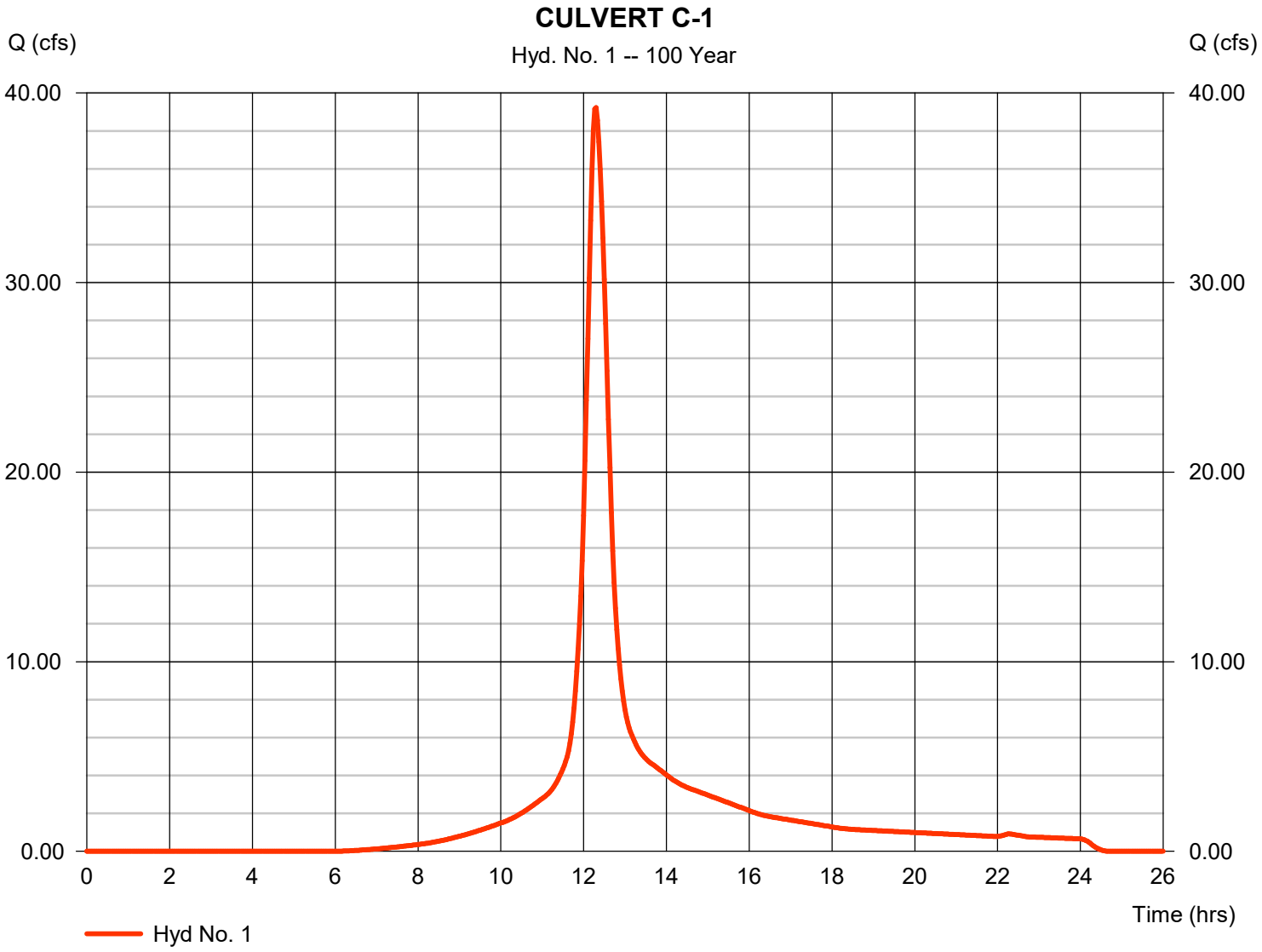
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	39.23	2	738	194,892	------	------	------	CULVERT C-1

Hydrograph Report

Hyd. No. 1

CULVERT C-1

Hydrograph type	=	SCS Runoff	Peak discharge	=	39.23 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.30 hrs
Time interval	=	2 min	Hyd. volume	=	194,892 cuft
Drainage area	=	11.510 ac	Curve number	=	80.4
Basin Slope	=	2.7 %	Hydraulic length	=	1403 ft
Tc method	=	LAG	Time of conc. (Tc)	=	25.00 min
Total precip.	=	7.00 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	69.8703	13.1000	0.8658	--------
3	0.0000	0.0000	0.0000	--------
5	79.2597	14.6000	0.8369	--------
10	88.2351	15.5000	0.8279	--------
25	102.6072	16.5000	0.8217	--------
50	114.8193	17.2000	0.8199	--------
100	127.1596	17.8000	0.8186	--------

File name: SampleFHA.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.69	4.61	3.89	3.38	2.99	2.69	2.44	2.24	2.07	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.57	5.43	4.65	4.08	3.65	3.30	3.02	2.79	2.59	2.42	2.27	2.15
10	7.24	6.04	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.80	4.38	4.02	3.73	3.48	3.26	3.07	2.91
50	9.04	7.65	6.66	5.92	5.34	4.87	4.49	4.16	3.88	3.65	3.44	3.25
100	9.83	8.36	7.30	6.50	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

Precip. file name: Sample.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	2.20	0.00	3.30	4.25	5.50	6.30	7.00
SCS 6-Hr	0.00	1.80	0.00	0.00	2.60	0.00	0.00	0.00
Huff-1st	0.00	1.55	0.00	2.75	4.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	1.75	0.00	2.80	3.90	0.00	0.00	0.00

HY-8 Culvert Analysis Report

Water Surface Profile Plot for Culvert: CULV C-1

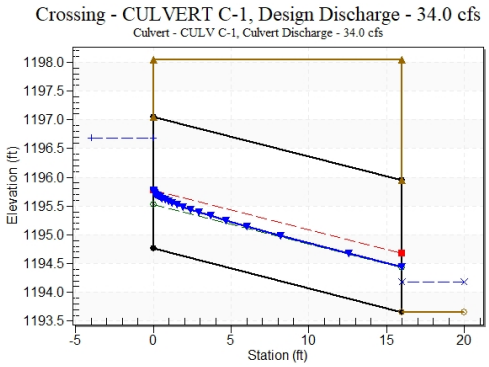


Table 1 - Culvert Summary Table: CULV C-1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
10.00	10.00	1195.53	0.768	0.0*	1-S2n	0.340	0.445	0.340	0.262	4.990	6.306
12.40	12.40	1195.65	0.890	0.0*	1-S2n	0.390	0.514	0.390	0.296	5.403	6.769
14.81	14.81	1195.77	1.006	0.0*	1-S2n	0.438	0.578	0.438	0.327	5.764	7.167
17.21	17.21	1195.88	1.116	0.0*	1-S2n	0.484	0.640	0.484	0.356	6.084	7.519
19.61	19.61	1195.99	1.231	0.0*	1-S2n	0.528	0.698	0.528	0.383	6.370	7.836
22.02	22.02	1196.11	1.350	0.0*	1-S2n	0.571	0.755	0.574	0.408	6.611	8.126
24.42	24.42	1196.23	1.468	0.0*	1-S2n	0.613	0.810	0.613	0.433	6.883	8.388
26.82	26.82	1196.35	1.587	0.065	1-S2n	0.654	0.863	0.654	0.455	7.109	8.634
29.22	29.22	1196.47	1.705	0.173	1-S2n	0.694	0.913	0.694	0.477	7.322	8.863
31.63	31.63	1196.58	1.819	0.284	1-S2n	0.733	0.962	0.738	0.498	7.480	9.079
34.03	34.03	1196.69	1.927	0.398	1-S2n	0.773	1.011	0.779	0.518	7.644	9.278

* Full Flow Headwater elevation is below inlet invert.

****

Straight Culvert

Inlet Elevation (invert): 1194.76 ft, Outlet Elevation (invert): 1193.66 ft

Culvert Length: 16.04 ft, Culvert Slope: 0.0687

****

Site Data - CULV C-1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 1194.76 ft

Outlet Station: 16.00 ft

Outlet Elevation: 1193.66 ft

Number of Barrels: 1

Culvert Data Summary - CULV C-1

Barrel Shape: Arch, Open Bottom

Barrel Span: 6.00 ft

Barrel Rise: 2.29 ft

Barrel Material: Corrugated Steel

Embedment: 0.00 in

Barrel Manning's n: 0.0350 (top and sides)

Manning's n: 0.0350 (bottom)

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting

Inlet Depression: None

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 10 cfs

Design Flow: 34.03 cfs

Maximum Flow: 34.03 cfs

Table 2 - Summary of Culvert Flows at Crossing: CULVERT C-1

Headwater Elevation (ft)	Total Discharge (cfs)	CULV C-1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1195.53	10.00	10.00	0.00	1
1195.65	12.40	12.40	0.00	1
1195.77	14.81	14.81	0.00	1
1195.88	17.21	17.21	0.00	1
1195.99	19.61	19.61	0.00	1
1196.11	22.02	22.02	0.00	1
1196.23	24.42	24.42	0.00	1
1196.35	26.82	26.82	0.00	1
1196.47	29.22	29.22	0.00	1
1196.58	31.63	31.63	0.00	1
1196.69	34.03	34.03	0.00	1
1198.05	63.22	63.22	0.00	Overtopping

Table 3 - Downstream Channel Rating Curve (Crossing: CULVERT C-1)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
10.00	1193.92	0.26	6.31	1.37	2.35
12.40	1193.96	0.30	6.77	1.55	2.39
14.81	1193.99	0.33	7.17	1.72	2.43
17.21	1194.02	0.36	7.52	1.87	2.45
19.61	1194.04	0.38	7.84	2.01	2.48
22.02	1194.07	0.41	8.13	2.14	2.50
24.42	1194.09	0.43	8.39	2.27	2.52
26.82	1194.12	0.46	8.63	2.39	2.54
29.22	1194.14	0.48	8.86	2.50	2.55
31.63	1194.16	0.50	9.08	2.61	2.57
34.03	1194.18	0.52	9.28	2.72	2.58

Tailwater Channel Data - CULVERT C-1

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 5.00 ft

Side Slope (H:V): 4.00 (_:1)

Channel Slope: 0.0840

Channel Manning's n: 0.0250

Channel Invert Elevation: 1193.66 ft

Roadway Data for Crossing: CULVERT C-1

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 200.00 ft

Crest Elevation: 1198.05 ft

Roadway Surface: Gravel

Roadway Top Width: 16.00 ft

Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Feb 3 2023

Culvert C7

Invert Elev Dn (ft)	=	1160.00
Pipe Length (ft)	=	65.00
Slope (%)	=	6.92
Invert Elev Up (ft)	=	1164.50
Rise (in)	=	18.0
Shape	=	Circular
Span (in)	=	18.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Groove end projecting (C)
Coeff. K,M,c,Y,k	=	0.0045, 2, 0.0317, 0.69, 0.2

Embankment

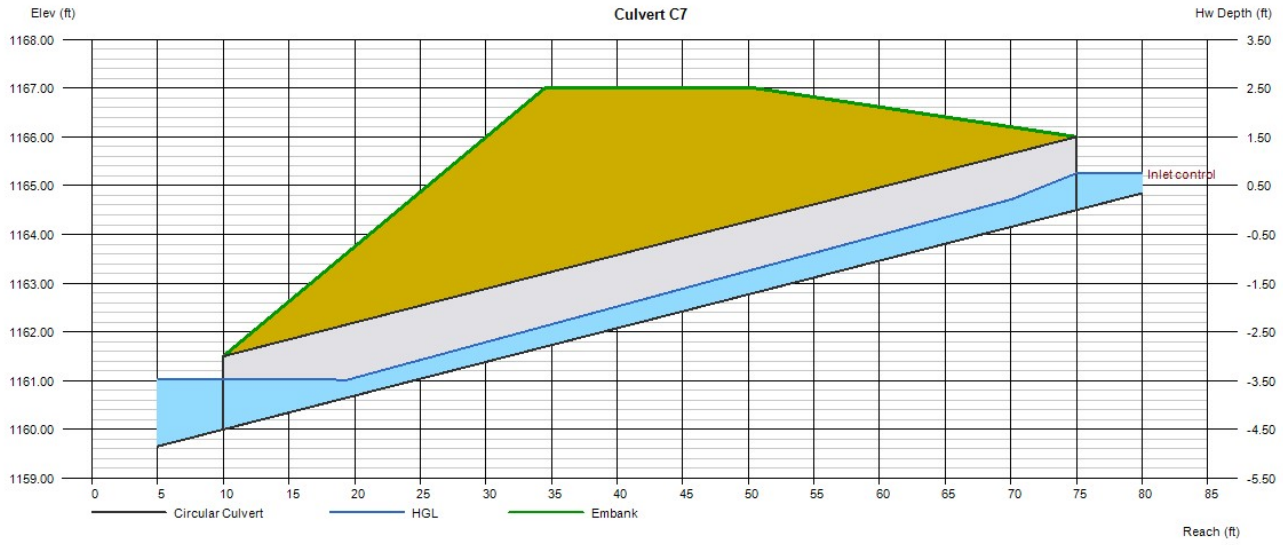
Top Elevation (ft)	=	1167.00
Top Width (ft)	=	16.00
Crest Width (ft)	=	40.00

Calculations

Qmin (cfs)	=	2.36
Qmax (cfs)	=	2.36
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	2.36
Qpipe (cfs)	=	2.36
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	1.80
Veloc Up (ft/s)	=	3.74
HGL Dn (ft)	=	1161.04
HGL Up (ft)	=	1165.08
Hw Elev (ft)	=	1165.25
Hw/D (ft)	=	0.50
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Jun 16 2021

Culvert C9

Invert Elev Dn (ft)	=	1202.45
Pipe Length (ft)	=	63.50
Slope (%)	=	1.65
Invert Elev Up (ft)	=	1203.50
Rise (in)	=	24.0
Shape	=	Circular
Span (in)	=	24.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Groove end projecting (C)
Coeff. K,M,c,Y,k	=	0.0045, 2, 0.0317, 0.69, 0.2

Embankment

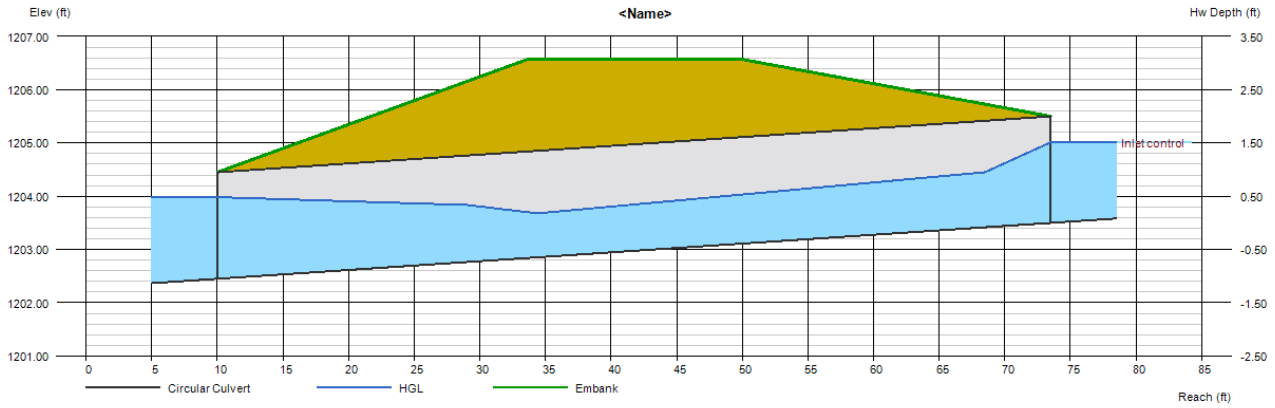
Top Elevation (ft)	=	1206.58
Top Width (ft)	=	16.00
Crest Width (ft)	=	40.00

Calculations

Qmin (cfs)	=	8.93
Qmax (cfs)	=	10.13
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	8.93
Qpipe (cfs)	=	8.93
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	3.46
Veloc Up (ft/s)	=	5.25
HGL Dn (ft)	=	1203.98
HGL Up (ft)	=	1204.57
Hw Elev (ft)	=	1205.01
Hw/D (ft)	=	0.76
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Nov 17 2022

Culvert C8/10

Invert Elev Dn (ft)	=	1146.00
Pipe Length (ft)	=	71.00
Slope (%)	=	0.70
Invert Elev Up (ft)	=	1146.50
Rise (in)	=	24.0
Shape	=	Circular
Span (in)	=	24.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Groove end projecting (C)
Coeff. K,M,c,Y,k	=	0.0045, 2, 0.0317, 0.69, 0.2

Embankment

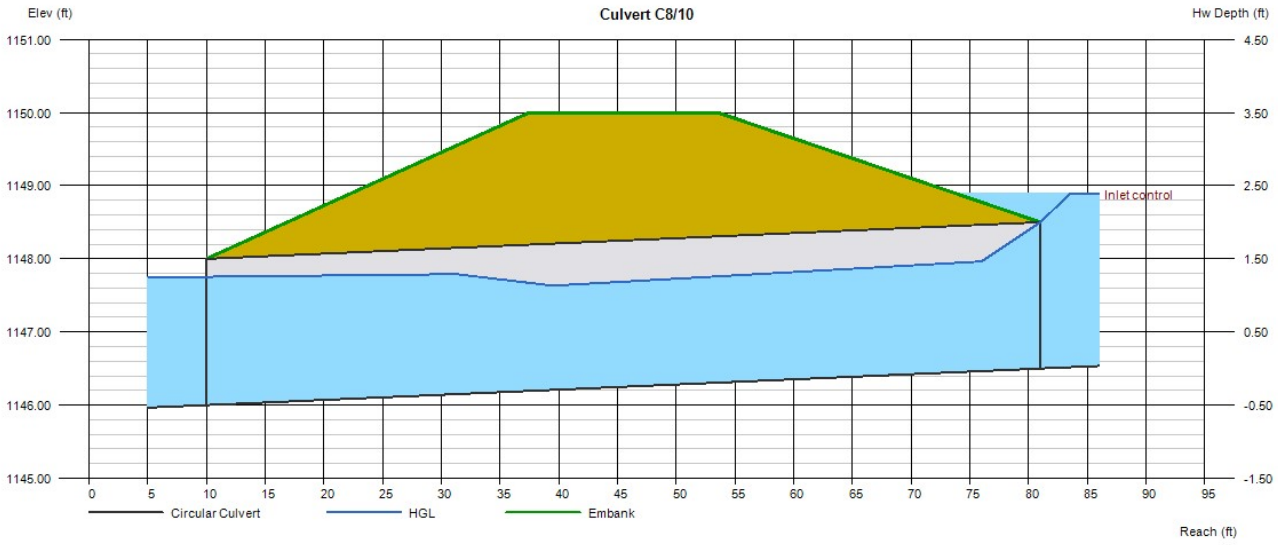
Top Elevation (ft)	=	1150.00
Top Width (ft)	=	16.00
Crest Width (ft)	=	40.00

Calculations

Qmin (cfs)	=	17.57
Qmax (cfs)	=	17.57
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	17.57
Qpipe (cfs)	=	17.57
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	6.02
Veloc Up (ft/s)	=	6.91
HGL Dn (ft)	=	1147.76
HGL Up (ft)	=	1148.01
Hw Elev (ft)	=	1148.89
Hw/D (ft)	=	1.19
Flow Regime	=	Inlet Control



Culvert Report

Driveway Culvert

Invert Elev Dn (ft)	=	1162.50
Pipe Length (ft)	=	34.00
Slope (%)	=	1.47
Invert Elev Up (ft)	=	1163.00
Rise (in)	=	18.0
Shape	=	Circular
Span (in)	=	18.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Groove end projecting (C)
Coeff. K,M,c,Y,k	=	0.0045, 2, 0.0317, 0.69, 0.2

Embankment

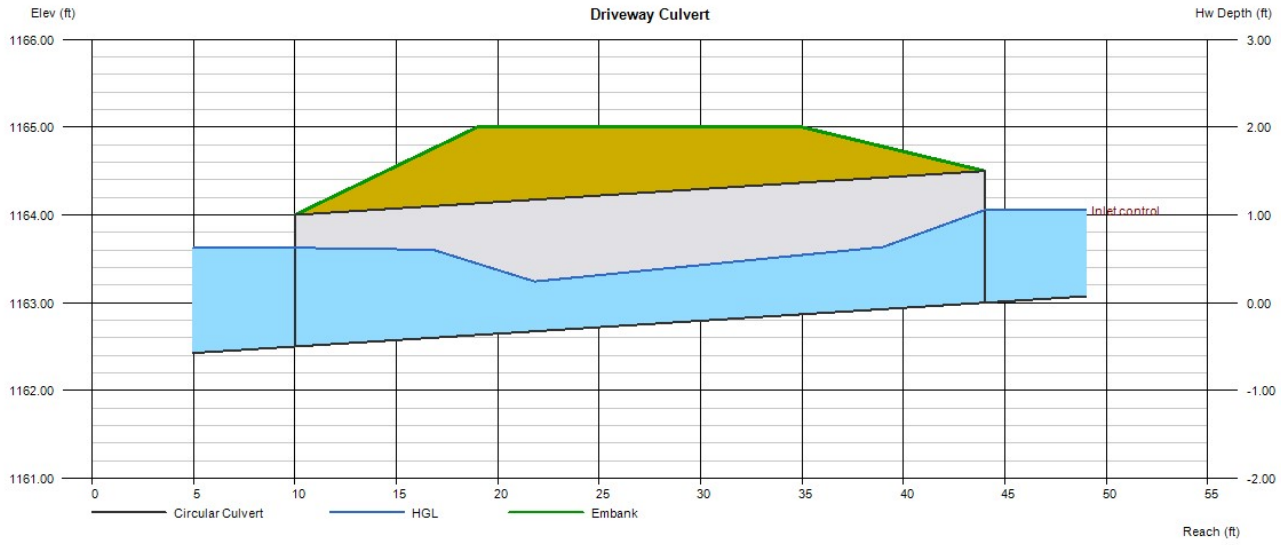
Top Elevation (ft)	=	1165.00
Top Width (ft)	=	16.00
Crest Width (ft)	=	40.00

Calculations

Qmin (cfs)	=	3.85
Qmax (cfs)	=	3.85
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	3.85
Qpipe (cfs)	=	3.85
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	2.71
Veloc Up (ft/s)	=	4.36
HGL Dn (ft)	=	1163.63
HGL Up (ft)	=	1163.75
Hw Elev (ft)	=	1164.06
Hw/D (ft)	=	0.70
Flow Regime	=	Inlet Control



Litchfield Solar Array Facility
5/26/2023

Ditch Calculations

Storm Event: 10-yr, 24-hr (Conveyance Protection, per DEEP storm manual 2004 Table 7-1)

Manning's "n": 0.025
Desired Freeboard: 6"

Drainage Area and Design Flow						Ditch Slope					Ditch Dims and Results							
Drainage Area	Total Peak Runoff 10-yr Event (cfs)	Ditch	Ditch Type	% of Drainage Area	Weighted Peak Runoff 10-yr Event (cfs)	Length	Starting Inv.	Ending Inv.	Fall (ft)	Avg. Slope (%)	Shape	Side Slope z:1	Bott. (ft)	Depth (ft)	Top Width (ft)	10yr, 24hr Flow Depth (ft)	Free-board (ft)	Free-board (in)
1	5.1	1	Wet Swale (WQ)	100%	5.10	110	1127.1	1126.5	0.55	0.50%	Trap.	3	8	2	20	0.23	1.77	21.24
2a	14.33	2a	Conveyance	100%	14.33	167	1108	1090	18	10.78%	Tri.	3	0	1.75	9	1.08	0.67	8.04
2b	11.47	2b	Conveyance	100%	11.47	537	1086.8	1052	34.75	6.47%	Tri.	3	0	1.5	9	0.99	0.51	6.12
3	31.37	3	Wet Swale (WQ)	80%	25.10	623	1150.5	1136	14.46	2.32%	Trap.	3	4	2	16	0.86	1.14	13.68
5	7.07	5	Wet Swale (WQ)	100%	7.07	501	1167	1142	25	4.99%	Trap.	3	4	1	10	0.42	0.58	6.96
7	11.8	7	Wet Swale (WQ)	47%	5.55	363	1162.6	1158	4.61	1.27%	Trap.	3	6	2	18	0.29	1.71	20.52
		7a	Conveyance	20%	2.36	243	1191.5	1164.2	27.3	11.23%	Trap.	3	4	2	16	0.21	1.79	21.48
8/10	97.59	8/10a	Wet Swale (WQ)	17%	16.36	604	1144.5	1125.5	19	3.15%	Trap.	3	8	2	20	0.48	1.52	18.24
		8/10b	Wet Swale (WQ)	16%	15.66	525	1144.3	1127	17.25	3.29%	Trap.	3	4	1.5	13	0.66	0.84	10.08
		8/10c	Wet Swale (WQ)	25%	24.01	318	1133.1	1124.5	8.6	2.70%	Trap.	3	8	2.5	23	0.61	1.89	22.68
		8/10d	Wet Swale (WQ)	22%	21.58	845	1166.5	1124.5	42	4.97%	Trap.	3	8	1.5	17	0.57	0.93	11.16
		8/10a - upper	Conveyance	18%	17.57	166	1150.7	1145.7	5	3.01%	Trap.	3	4	1.5	13	0.71	0.79	9.48
9	21.28	9	Wet Swale (WQ)	100%	21.28	414	1202.5	1182	20.5	4.95%	Trap.	3	8	2	20	0.57	1.43	17.16
12	7.63	12	Conveyance	26%	1.98	78	1188.7	1188	0.7	0.90%	Tri.	3	0	1.25	7.5	0.49	0.76	9.12
		12a	Conveyance	16%	1.22	164	1203	1189	14	8.54%	Tri.	3	0	1	6	0.41	0.59	7.08
14	15.99	14	Conveyance	100%	15.99	204	1161.7	1152	9.7	4.75%	Tri.	3	0	2	8	0.93	1.07	12.84

Appendix I

Water Quality Calculations

Revised 5/26/2023
Litchfield Solar Array Facility
Litchfield, CT
SRC

Water Quality Calculations

WQV = (1")(R)(A)/12

I = % Impervious Cover
R = Volumetric Runoff Coeff. = 0.05 + 0.009 (I)
A = Site Area (Ac)

Table 7-1 Summary of Stormwater Treatment Practice Sizing Criteria

Sizing Criteria	Description	Post-Development Storm Magnitude
Pollutant Reduction	***Water Quality Volume (WQV)*** Volume of runoff generated by one inch of rainfall on the site WQV = (1")(R)(A)/12 WQV = water quality volume (ac-ft) R = volumetric runoff coefficient = 0.05+0.009(I) I = percent impervious cover A = site area in acres ***Water Quality Flow (WQF)*** Peak flow associated with the water quality volume calculated using the NRCS Graphical Peak Discharge Method	First one inch of rainfall

	Available WQV (cf)	Vol. Under Groundwater (cf)	Actual WQV (cf)
Ditch 9	13552.11	1830.87	11721.24
Ditch 7	8333.28	0	8333.28
Ditches to 8-10	50857.74	4848.39	46009.35
Ditch 3	17031.86	0	17031.86
Ditch 1	2,967.30	766.26	2,201.04
Ditch 5	3407.94	660.15	2747.79
Swale 11	25600.05	0*	25600.05
Swale 14	18977.76	0*	18977.76
Pocket Pond 2a	2179	0*	2179
Pocket Pond 2b	3620	0*	3620
Pocket Pond 12	3408	0*	3408

*Impermeable liner in these BMPs

Pond Trib Area	Area (A) (ac)	Impervious Area (ac)	Imp. Cover (I) (%)	Vol. Runoff Coeff. (R)	RequiredWQV (Ac-ft)	RequiredWQV (Cu-ft)	Treatment and Capture Method	Provided WQV In Permanent Pool (Cu-ft) *	Pond Stage Elev. *	% of WQV in Permanent Pool	Provided WQV In Wet Swale (Cu-ft)	% of WQV in Wet Swale	Pretreatment, required (Cu-ft) **	Pretreatment, Provided (Cu-ft)	% of WQV in Pretreatment
1	1.28	0.486	38%	0.392	0.042	1,821	Wet Swale to Pond 1				2,201	121%	455	1,044	57%
2a	4.43	0.98	22%	0.248	0.092	3,988	Pocket Pond 2a	2,179	1081.65	55%			399	1,006	25%
2b	4.02	1.58	39%	0.401	0.134	5,852	Pocket Pond 2b	3,620	1039.50	62%			585	2,165	37%
3	7.89	3.21	41%	0.419	0.275	12,000	Wet Swale to Pond 3				17,032	142%	3,000	3,273	27%
5	1.68	0.676	40%	0.410	0.057	2,500	Wet Swale to Pond 5				2,748	110%	625	721	29%
7	3.89	1.514	39%	0.590	0.191	8,331	Wet Swale to Pond 7				8,333	100%	2,083	2,173	26%
8/10	28.04	11.37	41%	0.419	0.979	42,648	Wet Swales to Pond 8/10				46,009	108%	10,662	12,213	29%
9	6.81	3.005	44%	0.446	0.253	11,025	Wet Swale to Pond 9				11,721	106%	2,756	2,914	26%
11	3.19	1.126	35%	0.365	0.097	4,227	Wet Swale 11				25,600	606%	1,057	2,417	57%
12	1.92	0.766	40%	0.410	0.066	2,858	Pocket Pond 12	3,408	1186.70	119%			286	1,447	51%
14	4.43	1.31	30%	0.320	0.118	5,146	Wet Swale 14				18,978	369%	1,286	2,091	41%
15	1.93	0.557	29%	0.311	0.050	2,179	N/A								

*In pocket ponds, an orifice has been provided at the elevation in each pond where the required WQV is met. The remaining WQV is met in the extended detention pool.
**10% of WQV required in forebay for pocket ponds, 25% of WQV required in forebay for wet swales

May 11, 2021

Silicon Ranch Corporation
222 Second Ave. S. Suite 1900
Nashville, TN 37201

Attn: Ms. Ali Weaver
P: (615) 577 4786
E: Ali.weaver@siliconranch.com

Re: In-situ Infiltration Test Services Letter Report
Litchfield Solar Facility
Wilson Road
Litchfield, Connecticut
Terracon Project No. J2185197

Dear Ms. Weaver:

At your request, we have prepared this letter report to provide our findings based on six (6) in-situ infiltration tests performed on May 5 and 6, 2021. The services described in this letter were performed in general accordance with our Supplement to Agreement for Services approved on April 29, 2021.

PROJECT UNDERSTANDING AND SCOPE

The project area comprises of three parcels located to the east and west of Rossi Road / Wilson Road, approximately ½ mile north of its intersection with Torrington Road (Route 202), in the town of Litchfield, Connecticut. One parcel is located west of Wilson Road, north of Litchfield Town Road, and totals an approximate 17 acres in size. One parcel is located west of Wilson Road, south of Litchfield Town Farm Road, and totals an approximate 50 acres. The remaining parcel is located east of Wilson Road and totals an approximate 105 acres. The approximate site center coordinates are: 41.7889°N, 73.1665°W.

Our Scope of Services is based on our understanding of the project as described by Silicon Ranch Corporation and the expected subsurface conditions as described in our previous geotechnical engineering report dated January 15, 2021. The purpose of this study is to obtain infiltration rates of subsurface soil materials at selected locations of the proposed stormwater BMP.

GEOTECHNICAL CHARACTERIZATION

A geotechnical investigation was previously performed in May 2019 throughout the project area for a design purpose of solar array. A total of eight (8) auger boreholes was drilled for performing in-situ infiltration tests. A test location plan is provided in the **Attachment A**. Auger spoils were observed and classified at each borehole location and the soil materials are in an agreement with the previous investigation's findings. Please refer to our previous geotechnical engineering report for detailed subsurface conditions. A general subsurface profile presented below is based on the test borings performed previously.

Profile Layer	Soil Type	General Description
1	**Surface Material**	Topsoil
2	**Subsoil**	Silty Sand (SM), with gravel, trace roots, to Sandy Lean Clay (CL), trace gravel, brown
3	**Glacial Till**	Sandy Silt (ML) to Silty Sand (SM), with gravel, occasional cobbles and boulders, gray to brown

FINDINGS

Based on our visual classification, the subsurface soil materials at six (6) locations (IN-3 to IN-8) consist of silty sand with varying amounts of gravel and cobbles. Due to the amounts of gravel and cobbles at the testing depth in each borehole, the infiltration rates varied in a range between 0.04 inches per hour (in./hr.) to 2.2 in./hr. A summary of the infiltration rates is provided in the **Attachment B** and the testing data sheets are presented in the **Attachment C**.

Shallow groundwater, at approximately 2 feet below grade, was encountered in two (2) testing locations labeled as IN-1 and IN-2. Upon the agreement with Silicon Ranch, the infiltration tests at these locations were canceled. This area of the proposed stormwater BMP is located at the bottom of a slope with a power transmission right-of-way (ROW) to the east and a local live stream to the west. The soil materials encountered in the boreholes were classified as sandy silt with trace of clay. In addition, overland flow (runoff) was observed due to the rain from the previous day.

Groundwater was not observed in the other six (6) test locations (IN-3 to IN-8) within the depth of drilling. It is believed that the groundwater is below the depth of drilling at the time of drilling. Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed.

Testing depths ranged between approximately 2 and 4 feet below ground surface. The depths drilled depended on the amount of cobbles and boulders present. Offsets, when necessary, were completed within a 10 foot range from the original testing location.

A photography log is provided below to present the soil materials of silt and clay in the test boreholes IN-1 and IN-2.

LIMITATIONS

This work has been done in accordance with our authorized scope of work stated in our Supplement to Agreement for Services approved on April 29, 2021. The field testing was completed in accordance with modified ASTM D6391 and with generally accepted practice in performing in-situ cased-borehole infiltration test. No warranty is expressed or implied. The testing data of the in-situ cased-borehole infiltration test could be affected by the subsurface soil conditions encountered within the borehole, amount of precipitation prior to the testing, temperature, geographic condition, etc. Our findings are based on the data revealed by the field observation at four (4) proposed stormwater BMP locations and performing two (2) infiltration tests at each location. Since the project site consists of three parcels with a total of 172 acres, the infiltration rates provided herein represent the capability of infiltration at the testing locations and depths. If the subsurface conditions during the construction are different from the conditions stated herein, the infiltration rates should be re-evaluated. We are not responsible for any conclusions or opinions drawn from the data included herein, other than those specifically stated. This letter report is intended for use with regard to the specific project discussed herein.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this letter report or if we may be of further service, please do not hesitate to contact us.

Sincerely,
Terracon Consultants, Inc.

Shengkai Tu, P.E.
Geotechnical Department Manager

Reviewed by Authorized Project Reviewer (APR): Carl W. Thunberg, P.E.

ATTACHMENTS

ATTACHMENT A

TEST LOCATION PLAN

Litchfield Solar Facility ■ Litchfield, Connecticut
May 11, 2021 ■ Terracon Project No. J2185197

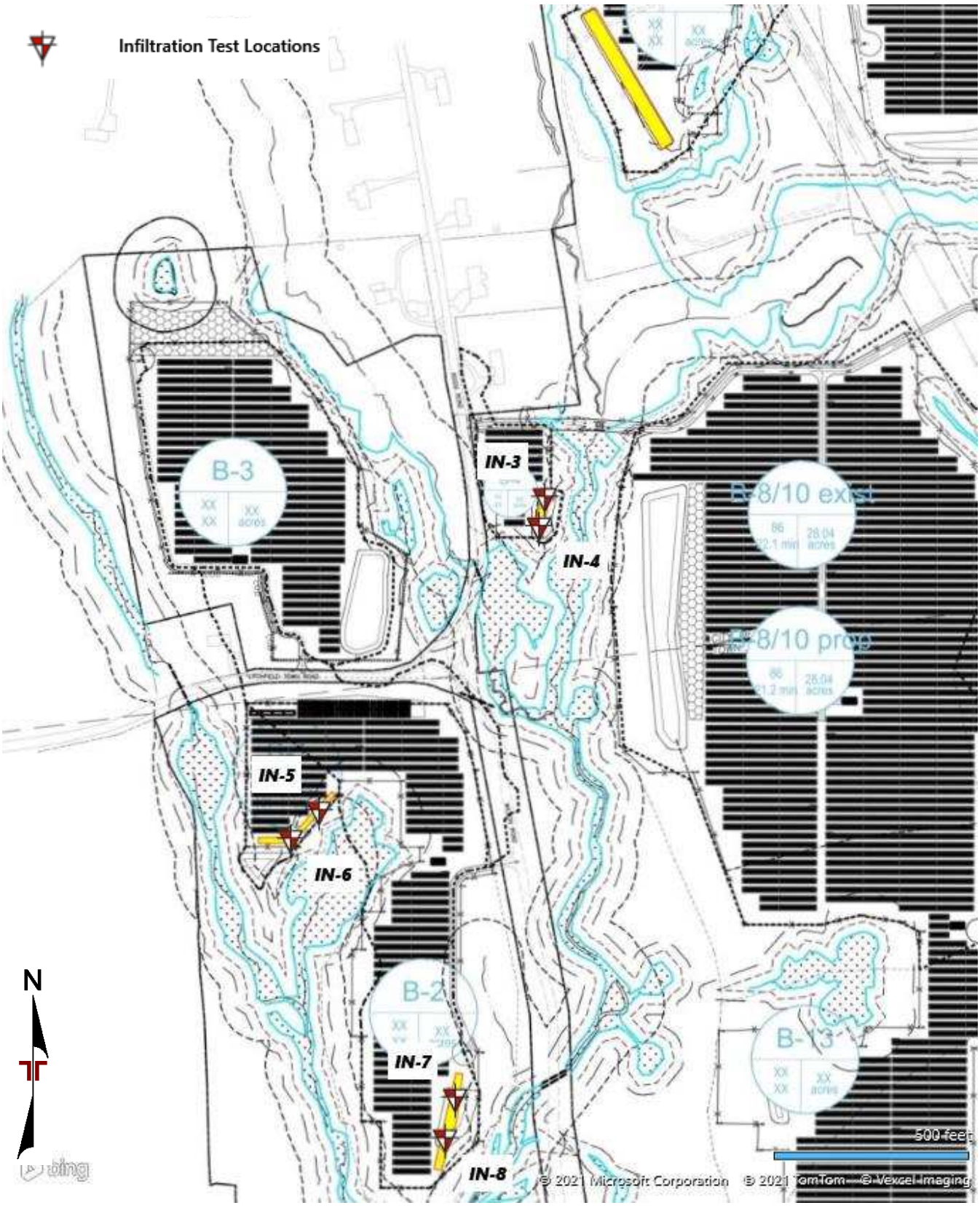


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

ATTACHMENT B

Summary of Infiltration Test

Test I.D.	Coordinates		Infiltration Rate (inches/hour)	Groundwater Depth (ft)	Soil Conditions	Remarks
IN-1	41.797902	-73.166488	N/A	2.1	Sandy Silt, trace clay	
IN-2	41.797298	-73.166019	N/A	2.2	Sandy Silt, trace clay	
IN-3	41.794654	-73.166999	0.06	Not Encountered	Silty Sand with gravel, cobbles & boulders	
IN-4	41.794451	-73.167053	0.61	Not Encountered	Silty Sand with gravel, cobbles & boulders	Offset 3 times due to cobbles
IN-5	41.792472	-73.169109	2.20	Not Encountered	Silty Sand with gravel, cobbles & boulders	
IN-6	41.792274	-73.169374	1.45	Not Encountered	Silty Sand with gravel, cobbles & boulders	Offset 5 times due to roots and cobbles
IN-7	41.790473	-73.167836	0.04	Not Encountered	Silty Sand with gravel, cobbles & boulders	
IN-8	41.790189	-73.167931	1.81	Not Encountered	Silty Sand with gravel, cobbles & boulders	Offset 6 times due to roots and cobbles

ATTACHMENT C

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2185197	**Date:**	5/5/2021
Location ID:	IN-3	**Weather:**	Cloudy
Ground EL (ft):	1114.0	**Temperature:**	56.0
Initial Water Depth[1] (ft):	1.18	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	0.83	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	4.83	[1] Referenced to top of casing	
Groundwater[1] (ft):	None	[2] Referenced to existing grade	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0-1	Brown silty sand with roots	Topsoil/subsoil (1)
1-4	Brown silty sand with gravel and cobbles	Native material (3)

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	0	13.20		
30	30	14.88	1.68	
60	30	15.60	0.72	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	0	14.16	n/a	n/a	
10	10	14.52	0.36	0.07	
20	10	14.76	0.24	0.05	
30	10	15.24	0.48	0.09	
40	10	15.72	0.48	0.09	
50	10	15.96	0.24	0.05	
60	10	16.20	0.24	0.05	
70	10	16.68	0.48	0.09	
80	10	16.80	0.12	0.02	
			Stabilized Infiltration Testing Rate (inches per hour):	0.06	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2185197	**Date:**	5/5/2021
Location ID:	IN-4	**Weather:**	Cloudy
Ground EL (ft):	1110.0	**Temperature:**	56.0
Initial Water Depth[1] (ft):	1.85	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	2.00	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	4.00	[1] **Referenced to top of casing**	
Groundwater[1] (ft):	None	[2] **Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0-1	Brown silty sand with roots	Topsoil/Subsoi (1)
1-2	Brown silty sand with gravel and cobbles	Native Material (1)

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	**0**	**22.80**		
30	**30**	**27.60**	**4.80**	
60	**30**	**31.20**	**3.60**	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	**0**	**22.20**	**n/a**	**n/a**	
10	**10**	**25.08**	**2.88**	**0.97**	
20	**10**	**27.00**	**1.92**	**0.71**	
30	**10**	**28.44**	**1.44**	**0.58**	
40	**10**	**29.64**	**1.20**	**0.52**	
50	**10**	**30.96**	**1.32**	**0.61**	
60	**10**	**32.16**	**1.20**	**0.60**	
70	**10**	**33.00**	**0.84**	**0.45**	
80	**10**	**33.84**	**0.84**	**0.47**	
			Stabilized Infiltration Testing Rate (inches per hour):	**0.61**	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2185197	**Date:**	5/5/2021
Location ID:	IN-5	**Weather:**	Cloudy
Ground EL (ft):	1121.0	**Temperature:**	56.0
Initial Water Depth[1] (ft):	1.85	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	0.50	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	4.00	[1] **Referenced to top of casing**	
Groundwater[1] (ft):	None	[2] **Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0-1	Brown silty sand with roots	Topsoil/Subsoil (1)
1-3.17	Brown silty sand with gravel and cobbles	Native Material (2.17)

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)
0	0	23.40	
30	30	40.68	17.28
60	30	44.76	4.08

> 2", 10-min. increment
< 2", 30-min. increment

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	0	22.20	n/a	n/a	
10	10	33.00	10.80	4.43	
20	10	35.40	2.40	1.42	
30	10	37.80	2.40	1.73	
40	10	39.96	2.16	1.94	
50	10	41.40	1.44	1.61	
60	10	42.60	1.20	1.64	
70	10	43.80	1.20	2.05	
80	10	45.00	1.20	2.75	

Stabilized Infiltration Testing Rate (inches per hour): **2.20**

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2185197	**Date:**	5/5/2021
Location ID:	IN-6	**Weather:**	Cloudy
Ground EL (ft):	1120.0	**Temperature:**	56.0
Initial Water Depth[1] (ft):	1.84	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	1.88	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	3.90	[1] Referenced to top of casing	
Groundwater[1] (ft):	None	[2] Referenced to existing grade	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0-1	Brown silty sand with roots	Topsoil/Subsoil (1)
1-2.02	Brown silty sand with gravel and cobbles	Native Material (1.02)

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	0	22.80		
30	30	33.00	10.20	
60	30	36.96	3.96	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	0	22.08	n/a	n/a	
10	10	30.12	8.04	3.21	
20	10	31.20	1.08	0.55	
30	10	34.20	3.00	1.74	
40	10	36.00	1.80	1.26	
50	10	37.20	1.20	0.96	
60	10	38.40	1.20	1.09	
70	10	39.60	1.20	1.26	
80	10	40.80	1.20	1.49	
			Stabilized Infiltration Testing Rate (inches per hour):	1.45	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2185197	**Date:**	5/6/2021
Location ID:	IN-7	**Weather:**	Sunny
Ground EL (ft):	1053.0	**Temperature:**	56.0
Initial Water Depth[1] (ft):	1.40	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	1.25	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	3.95	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0-1	Brown silty sand with roots	Topsil/Subsoil (1)
1-2.7	Brown silty sand with gravel and cobbles	Native Material (1.7)

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	0	17.04		
30	30	18.24	1.20	
60	30	19.20	0.96	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	0	16.80	n/a	n/a	
30	30	17.04	0.24	0.02	
60	30	17.40	0.36	0.03	
90	30	18.12	0.72	0.07	
120	30	18.48	0.36	0.03	
150	30	18.84	0.36	0.03	
180	30	19.44	0.60	0.06	
210	30	19.68	0.24	0.02	
240	30	20.16	0.48	0.05	
			Stabilized Infiltration Testing Rate (inches per hour):	0.04	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2185197	**Date:**	5/6/2021
Location ID:	IN-8	**Weather:**	Sunny
Ground EL (ft):	1050.0	**Temperature:**	56.0
Initial Water Depth[1] (ft):	1.86	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	1.50	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	3.90	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0-1	Brown silty sand with roots	Topsoil/Subsoil (1)
1-2.4	Brown silty sand with gravel and cobbles	Native Material (1.4)

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	0	24.60		
30	30	40.92	16.32	
60	30	46.80	5.88	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	0	22.32	n/a	n/a	
30	30	30.00	7.68	1.03	
60	30	33.96	3.96	0.73	
90	30	36.00	2.04	0.47	
120	30	37.92	1.92	0.53	
150	30	39.60	1.68	0.57	
180	30	41.76	2.16	0.97	
210	30	44.40	2.64	2.02	
240	30	46.68	2.28	8.16	
			Stabilized Infiltration Testing Rate (inches per hour):	1.81	

Remarks:

PHOTOGRAPHY LOG

Test Location IN-1

Test Location IN-1

Shallow groundwater