STORMWATER MANAGEMENT REPORT
PEPPERMINT SUPERMARKET

PROPOSED PEPPERMINT SUPERMARKET
BLOCK 8, PROPOSED LOT 1
5 MANGIN ROAD
VILLAGE OF SOUTH BLOOMING GROVE
ORANGE COUNTY, NEW YORK

PREPARED FOR:
PEPPERMINT SUPERMARKET

PREPARED BY:
STONEFIELD ENGINEERING & DESIGN, LLC
584 BROADWAY, SUITE 310
NEW YORK, NEW YORK

REPORT DATE:
AUGUST 16, 2022

ZACHARY E. CHAPLIN, PE
NY PE LICENSE # 099748

REPORT CONTENTS

APPENDICES

1.0 PROJECT DESCRIPTION

Peppermint Supermarket is proposing to build a kosher supermarket on north end of 5 Mangin Road Village of South Blooming Grove with designated tax lot as Block 8, Lot 1. The subject property is surrounded by single-family uses and also fronts a New York State Right of Way. Additional site improvements include parking, utility services, and stormwater management devices. Access to the site is provided via Mangin Road.

Refer to **APPENDIX A** for project maps of the subject site.

The project site is 0.80 acres, the extent of land disturbance is 0.67 acres, and the project will result in a total of 0.20 acres of impervious surfaces, excluding gravel surfaces.

This Report has been prepared to analyze the potential stormwater runoff impacts of the proposed project site and outline proposed measures to conform to the stormwater management regulations set forth by the Village of South Blooming Grove.

2.0 EXISTING CONDITIONS

EXISTING SITE DEVELOPMENT

The project site is currently undeveloped with mostly grassed areas. The site previously had a single-family structure on the site which was recently demolished. The remaining property around the perimeter is wooded with moderate slopes throughout the parcel. A small stream runs alongside the northern property line. An Aerial Map depicting the existing site conditions can be found in **APPENDIX A**.

PROJECT SITE SOILS

Soil mapping was obtained from the National Resource Conservation Service (NRCS) for the project site and immediate area. Generally, the project site is underlain with two major soil groups: Erie gravelly silt loam, and Mardin gravelly silty loam. The table below provides a summary of the soils for the project site:

TABLE 1: NRCS SOIL MAPPING RESULTS

Soil Unit Code	Soil Description	Approximate Project Coverage	Hydrologic Soil Group
ErA	Erie gravelly silt loam, 0 to 3 percent slopes	93.0%	D
MdC	Mardin gravelly silt loam, 8 to 15 percent slopes	7.0%	D

Additional information regarding the NRCS soil mapping can be found in **APPENDIX B**.

EXISTING ENVIRONMENTAL INVENTORY

Per the NYSDEC EAF Mapper, there is no evidence of endangered or threatened species or any rare plants or animals to note on the subject property.

3.0 PROPOSED CONDITIONS

PROPOSED SITE DEVELOPMENT

Under the proposed development plan, the site will be developed with a supermarket. Additional site improvements include parking, utility services, stormwater management devices and driveway access to the site via Mangin Road.

4.0 STORMWATER MANAGEMENT METHODOLOGY & PARAMETERS

HYDROLOGIC METHODOLOGY

The analysis program “HydroCAD” Version 10.0 by HydroCAD Software Solutions was utilized to calculate and plot the runoff hydrographs. The program incorporates the time of concentration, C values, rainfall data, and project drainage areas to calculate the runoff characteristics. The existing and proposed drainage areas have been analyzed utilizing Intensity-Duration-Frequency data which was obtained from NOAA for the project area.

5.0 STORMWATER ANALYSIS

EXISTING DRAINAGE AREAS

Under current conditions, the project site is subdivided into one drainage area with one ultimate point of interest (POI) for the stormwater system. See below for a short summary of the area:

TABLE 1: SUMMARY OF EXISTING DRAINAGE AREAS

Drainage Area	Description	Area Extents	Impervious Area	Time of Concentration
E-1 / E-POI	Existing Area Tributary to North East	29,127 SF	3,812 SF	12.9 Minutes

The existing drainage area was delineated based on field surveying data. Hydrologic calculations and parameters for the existing drainage area can be found in **APPENDIX C.**

PROPOSED DRAINAGE AREAS

Under proposed conditions, the general drainage patterns and ultimate point of interest will be maintained. Since the parking lot will be gravel and temporary the 18” gravel section will be used as the stormwater management system area to collect and hold runoff. A series of underdrains will help convey the system to an outfall. The proposed gravel area has been designed to meet the Village of South Blooming Grove stormwater runoff requirements. See below for a short summary of the drainage area:

TABLE 2: SUMMARY OF PROPOSED DRAINAGE AREAS

Drainage Area	Description	Area Extents	Impervious Area	Time of Concentration
P-2	Existing Area Tributary to North East	29,127 SF	8,800 SF	6.0 Minutes

The proposed drainage area was delineated based on the proposed grading design overlain on field survey data. Hydrologic calculations and parameters for each drainage area can be found in **APPENDIX C.**

STORMWATER MANAGEMENT DESIGN PARAMETERS

Since the extent of the redevelopment area plans to disturb less than one acre of land, this project does not trigger the New York State Department of Environment Conservation requirements, as such, the Village of South Blooming Grove stormwater requirements have been met to handle quantity control.

STORMWATER RUNOFF QUANTITY

Runoff is controlled through the implementation of gravel storage. The following table summarizes the results for the 1-year, 10-year, and 100-year storm events for the project, as shown in the table below.

TABLE 3: STORMWATER RUNOFF QUANTITY COMPLIANCE SUMMARY AT POINT OF INTEREST

POI	Storm Event	Pre-Development Peak Discharge	Post-Development Peak Discharge	Difference
1	1-Year	0.94 CFS	0.00 CFS	-0.94
	10-Year	2.20 CFS	0.00 CFS	-2.20
	100-Year	4.41 CFS	1.27 CFS	-3.14

The proposed gravel area provides sufficient flow rate attenuation as to ensure that no adverse impacts are anticipated downstream of the project site. Detailed hydrologic calculations for each drainage area can be found in **APPENDIX C**.

6.0 CONCLUSIONS

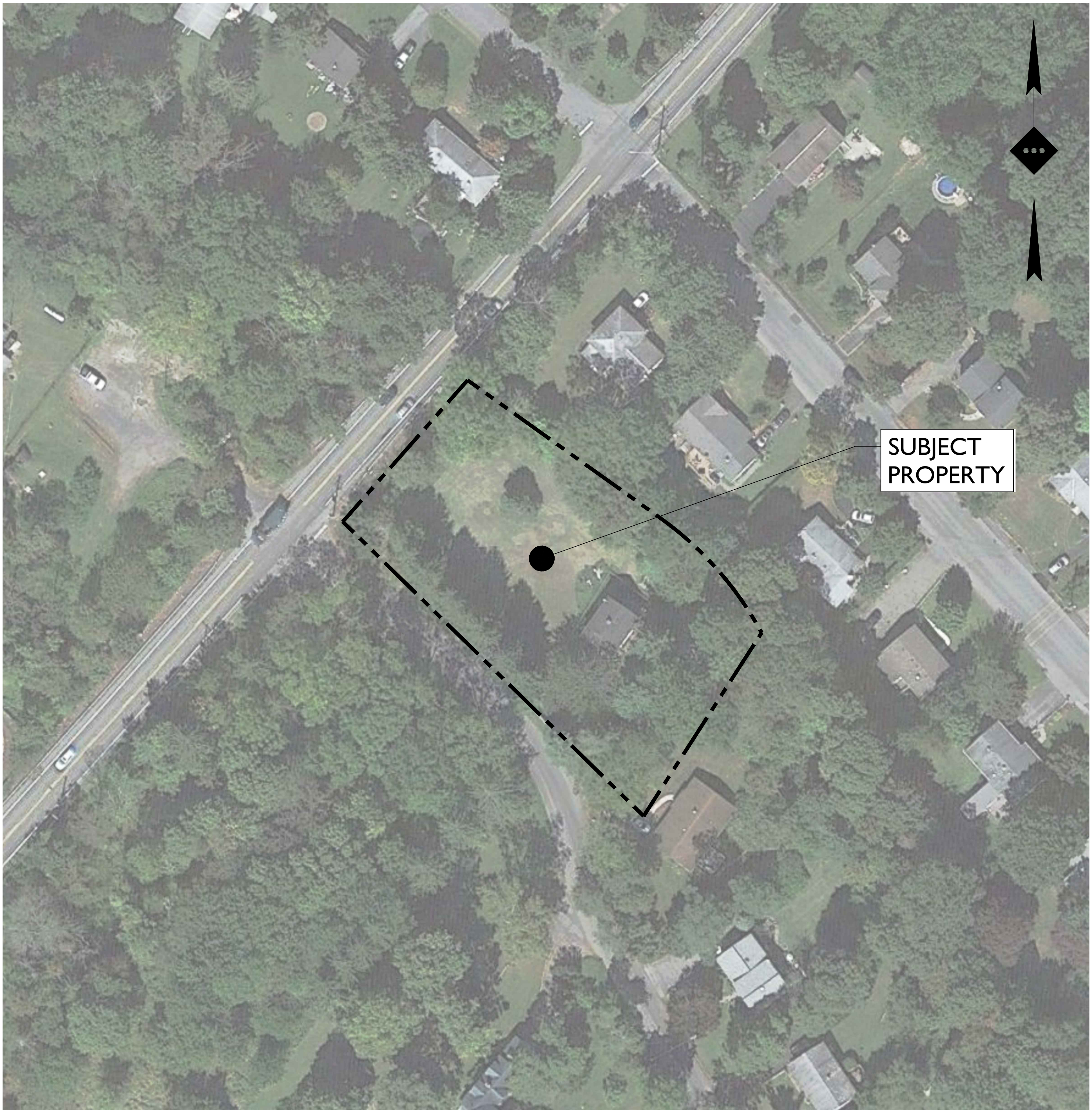
As demonstrated in this Report, the runoff flow rate and volume generated by the proposed redevelopment will be satisfactorily mitigated by the introduction of the gravel storage area.

The proposed project complies with all applicable stormwater management regulations and standards. As such, the project is not anticipated to have any adverse drainage impacts on neighboring properties, downstream watercourses, or adjoining conveyance systems.

APPENDIX A
PROJECT FIGURES

INVENTORY

FIGURE 1: AERIAL MAP



100' 0' 100' 200'

GRAPHIC SCALE IN FEET
1" = 100'

AERIAL MAP

SOURCE: GOOGLE EARTH PRO AERIAL IMAGERY.

PEPPERMINT SUPERMARKET

PARCEL 209-8-1
5 MANGIN ROAD
VILLAGE OF SOUTH BLOOMING GROVE
ORANGE COUNTY, NEW YORK

DRAWN BY:	DD
CHECKED BY:	ZEC
DATE:	06/06/2022
SCALE:	1" = 100'
PROJECT ID:	RUT-220143

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Z:\Rutherford\RUT\2022\RUT-220143 Brightview Management - 4 & 6 Merriewold Lane, 5 & 7 Mangin Road, S. Blooming Grove, NY\CADD\Exhibits\2022-06-06_Project Maps.dwg

APPENDIX B
NRCS SOILS 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

Orange County, New York

August 16, 2022

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.

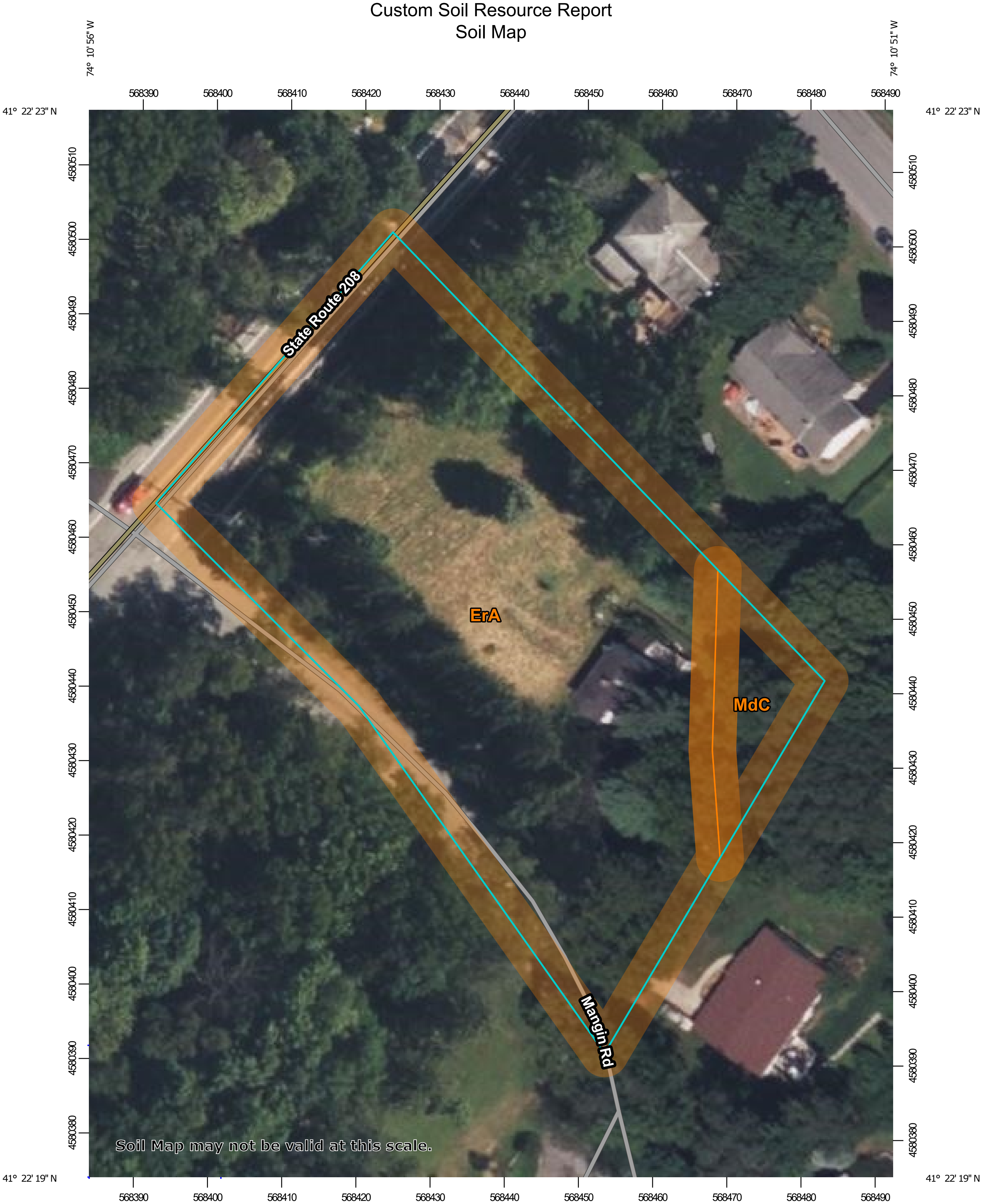
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree 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.

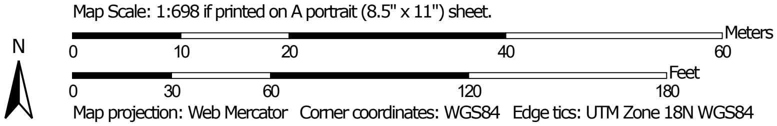
Soil Map

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.

Soil Map



Map Scale: 1:698 if printed on A portrait (8.5" x 11") sheet.



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 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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

Soil Survey Area: Orange County, New York
Survey Area Data: Version 22, Aug 29, 2021

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

Date(s) aerial images were photographed: Aug 13, 2021—Aug 15, 2021

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
ErA	Erie gravelly silt loam, 0 to 3 percent slopes	1.0	93.4%
MdC	Mardin gravelly silt loam, 8 to 15 percent slopes	0.1	6.6%
Totals for Area of Interest		**1.1**	**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.

Orange County, New York

ErA—Erie gravelly silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9vv8
Elevation: 100 to 1,360 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Erie and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Erie

Setting

Landform: Drumlinoid ridges, hills, till plains
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from siltstone, sandstone, shale, and limestone

Typical profile

H1 - 0 to 10 inches: gravelly silt loam
H2 - 10 to 18 inches: channery silt loam
H3 - 18 to 56 inches: channery silt loam
H4 - 56 to 70 inches: channery silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 10 to 21 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Wurtsboro

Percent of map unit: 5 percent

Hydric soil rating: No

Bath

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

Mardin

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

Alden

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Swartswood

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: No

MdC—Mardin gravelly silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2v30l
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Mardin

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: gravelly silt loam
Bw - 8 to 15 inches: gravelly silt loam
E - 15 to 20 inches: gravelly silt loam
Bx - 20 to 72 inches: gravelly silt loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Drainage class: Moderately well drained
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 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F144AY008CT - Moist Till Uplands
Hydric soil rating: No

Minor Components

Bath

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

Lordstown

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Volusia

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve, base slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Soil Information for All Uses

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.

Depth to Bedrock

The term bedrock in soil survey refers to a continuous root and water restrictive layer of rock that occurs within the soil profile.

There are many types of restrictions that can occur within the soil profile but this theme only includes the three restrictions that use the term bedrock. These are:

1) Lithic Bedrock

2) Paralithic Bedrock

3) Densic Bedrock

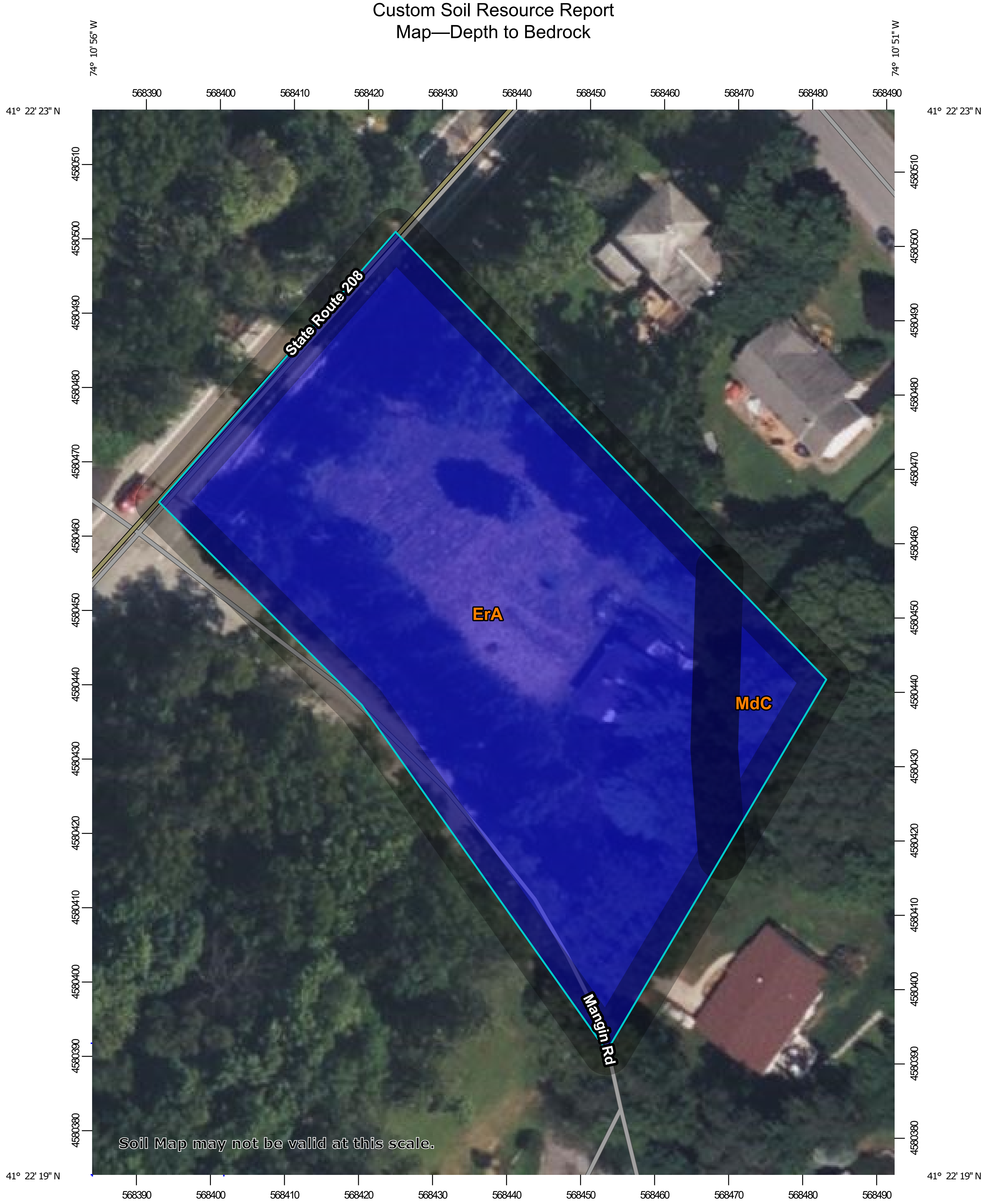
Lithic bedrock and paralithic bedrock are comprised of igneous, metamorphic, and sedimentary rocks, which are coherent and consolidated into rock through pressure, heat, cementation, or fusion. Lithic bedrock represents the hardest type of bedrock, with a hardness of strongly coherent to indurated. Paralithic bedrock has a hardness of extremely weakly coherent to moderately coherent. It can occur as a thin layer of weathered bedrock above harder lithic bedrock. Paralithic bedrock can also be much thicker, extending well below the soil profile.

Densic bedrock represents a unique kind of bedrock recognized within the soil survey. It is non-coherent and consolidated, dense root restrictive material, formed by pressure, heat, and dewatering of earth materials or sediments. Densic bedrock differs from densic materials, which formed under the compaction of glaciers, mudflows, and or human-caused compaction.

If more than one type of bedrock is described for an individual soil type, the depth to the shallowest one is given. If no bedrock is described in a map unit, it is represented by the "greater than 200" depth class.

Depth to bedrock is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Map—Depth to Bedrock



Map Scale: 1:698 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 10, 20, 40, 60

Feet: 0, 30, 60, 120, 180

N

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

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Lines

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Points

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- 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 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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

Soil Survey Area: Orange County, New York
Survey Area Data: Version 22, Aug 29, 2021

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

Date(s) aerial images were photographed: Aug 13, 2021—Aug 15, 2021

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—Depth to Bedrock

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
ErA	Erie gravelly silt loam, 0 to 3 percent slopes	>200	1.0	93.4%
MdC	Mardin gravelly silt loam, 8 to 15 percent slopes	>200	0.1	6.6%
Totals for Area of Interest			**1.1**	**100.0%**

Rating Options—Depth to Bedrock

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Water Features

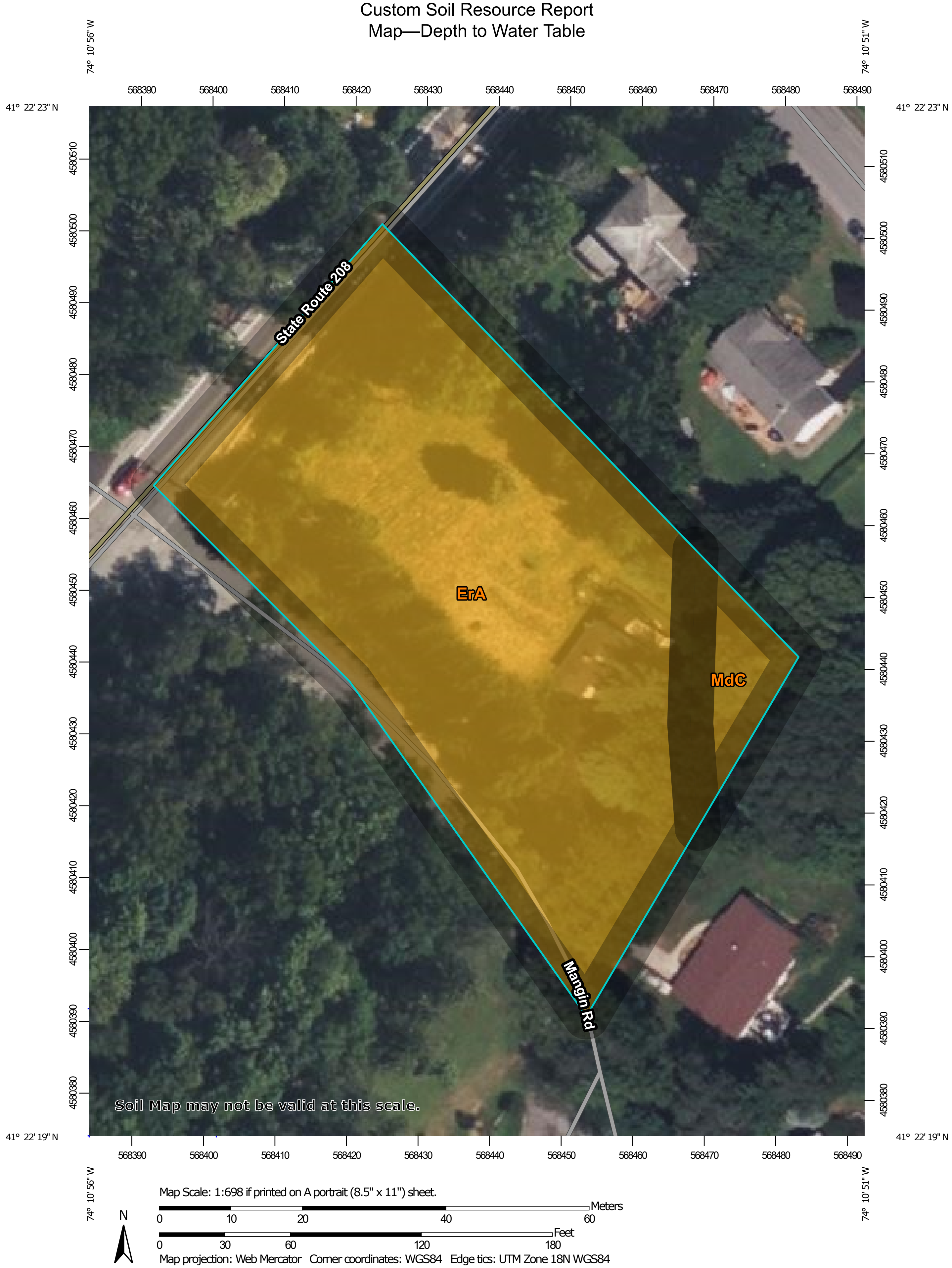
Water Features include ponding frequency, flooding frequency, and depth to water table.

Depth to Water Table

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Map—Depth to Water Table



Map Scale: 1:698 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 10, 20, 40, 60

Feet: 0, 30, 60, 120, 180

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

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Lines

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Points

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

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 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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

Soil Survey Area: Orange County, New York
Survey Area Data: Version 22, Aug 29, 2021

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

Date(s) aerial images were photographed: Aug 13, 2021—Aug 15, 2021

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—Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
ErA	Erie gravelly silt loam, 0 to 3 percent slopes	31	1.0	93.4%
MdC	Mardin gravelly silt loam, 8 to 15 percent slopes	43	0.1	6.6%
Totals for Area of Interest			**1.1**	**100.0%**

Rating Options—Depth to Water Table

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

References

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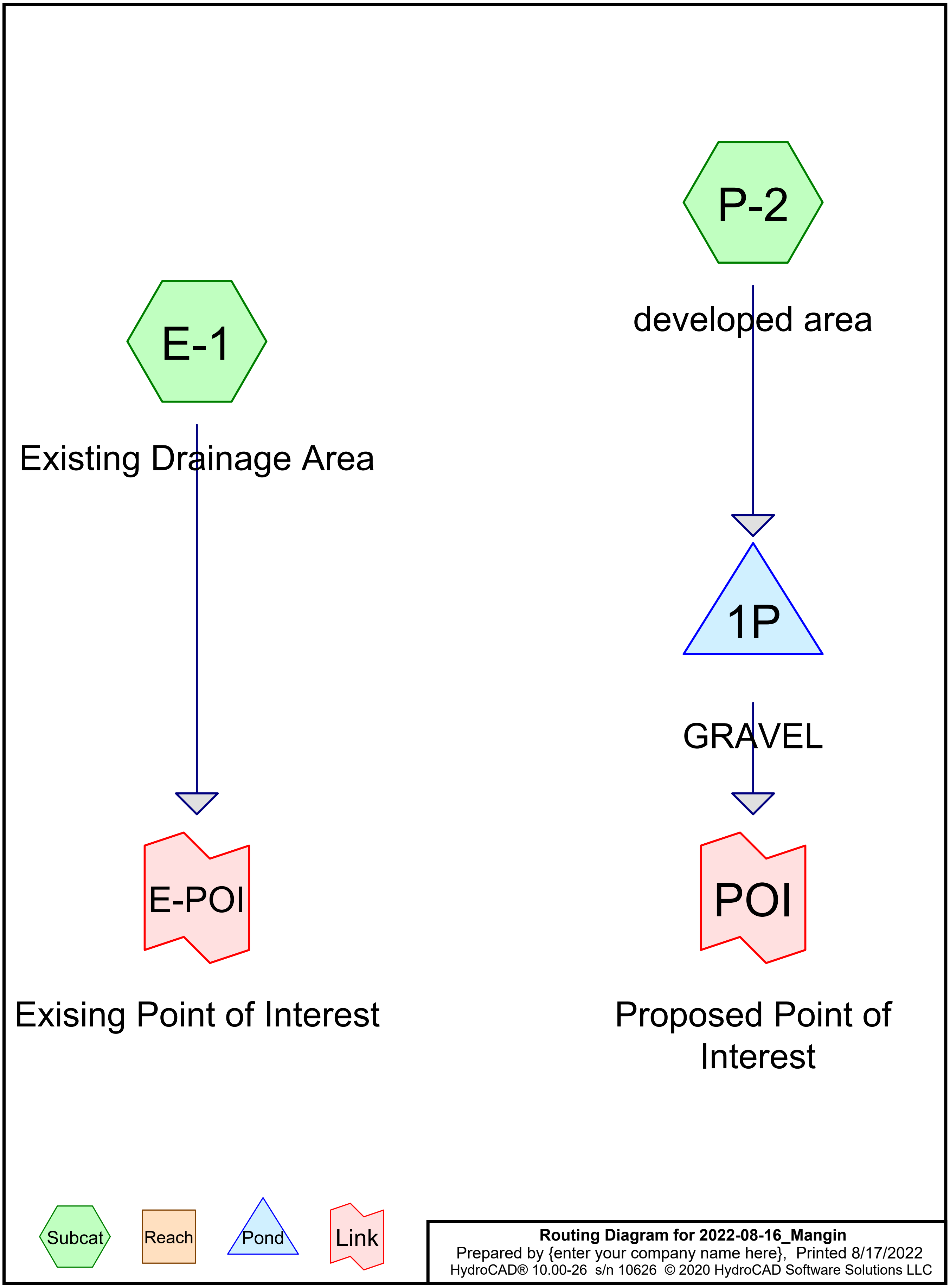
APPENDIX C
HYDROLOGIC CALCULATIONS


P-2
developed area
E-1
Existing Drainage Area
1P
GRAVEL
E-POI
Exising Point of Interest
POI
Proposed Point of Interest
Subcat
Reach
Pond
Link
Routing Diagram for 2022-08-16_Mangin
Prepared by {enter your company name here}, Printed 8/17/2022
HydroCAD® 10.00-26 s/n 10626 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment E-1: Existing Drainage Area

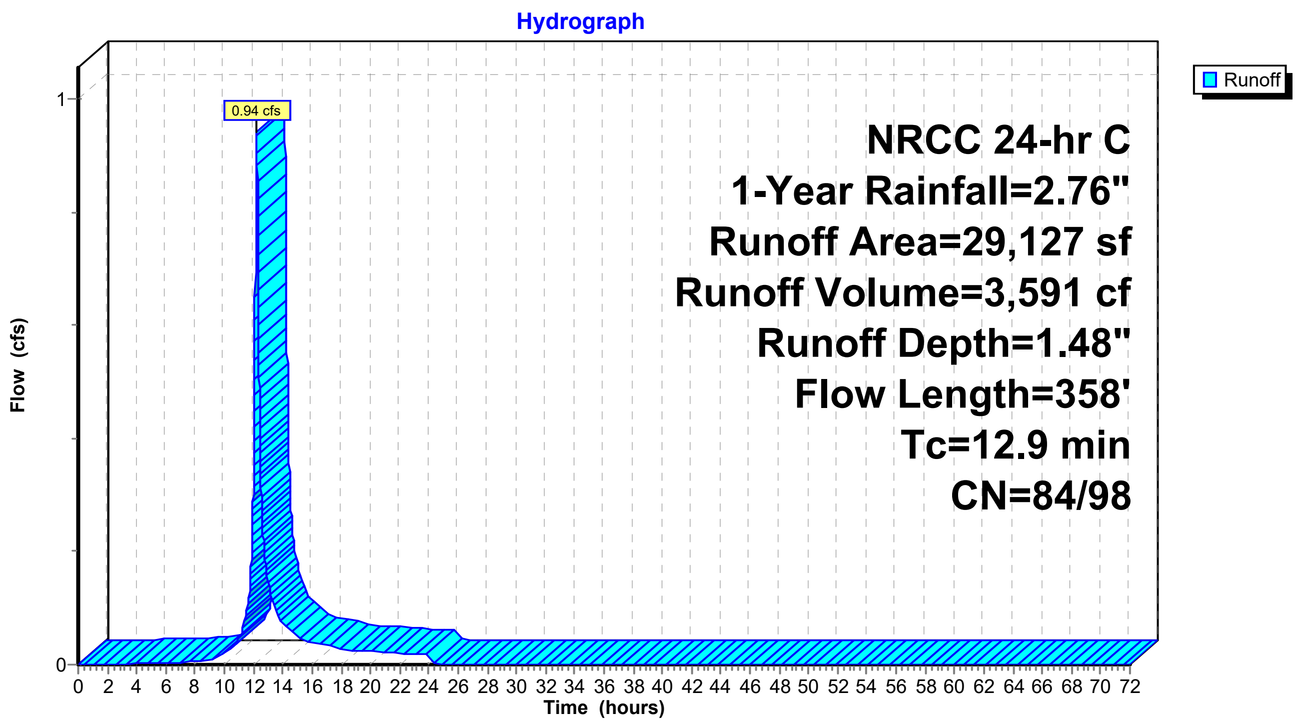
Runoff = 0.94 cfs @ 12.21 hrs, Volume= 3,591 cf, Depth= 1.48"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr C 1-Year Rainfall=2.76"

Area (sf)	CN	Description
3,812	98	Paved parking, HSG D
25,315	84	50-75% Grass cover, Fair, HSG D
29,127	86	Weighted Average
25,315	84	86.91% Pervious Area
3,812	98	13.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
1.9	258	0.2000	2.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.9	358	Total			

Subcatchment E-1: Existing Drainage Area



Summary for Subcatchment P-2: developed area

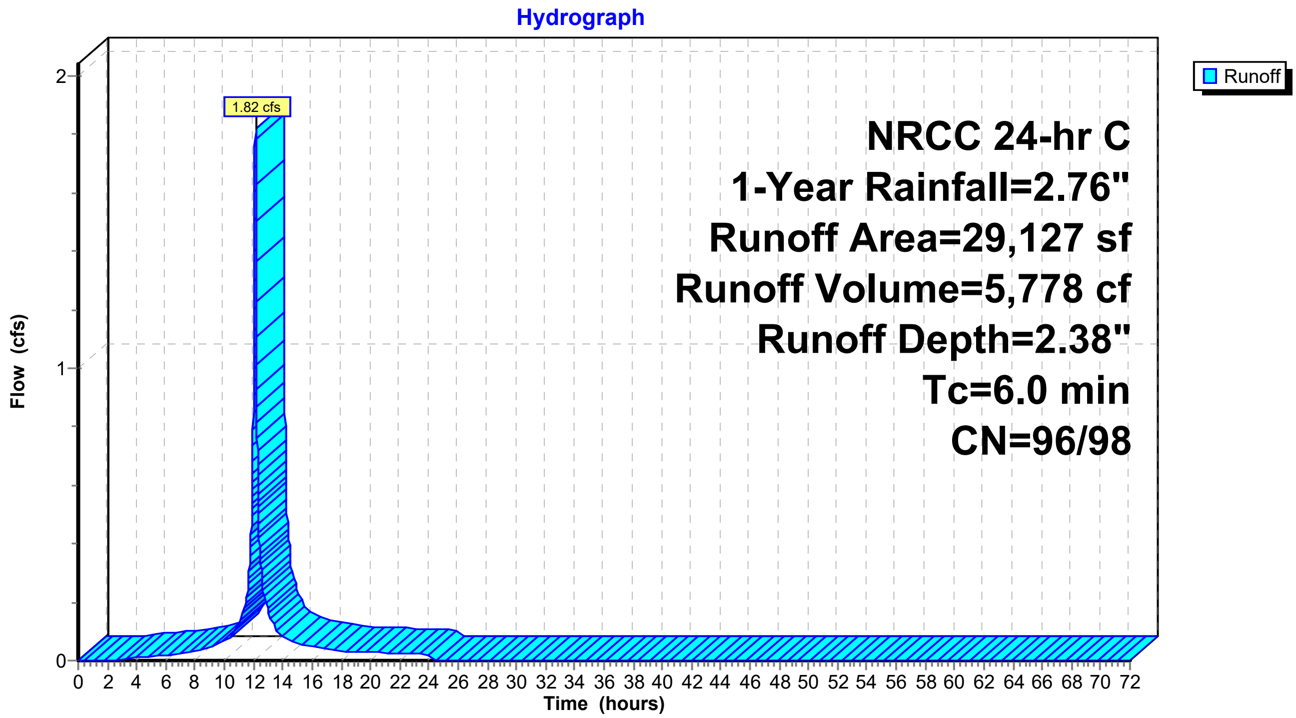
Runoff = 1.82 cfs @ 12.13 hrs, Volume= 5,778 cf, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr C 1-Year Rainfall=2.76"

Area (sf)	CN	Description
20,327	96	Gravel surface, HSG D
8,800	98	Paved parking, HSG D
29,127	97	Weighted Average
20,327	96	69.79% Pervious Area
8,800	98	30.21% Impervious Area

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

Subcatchment P-2: developed area



Summary for Pond 1P: GRAVEL

Inflow Area = 29,127 sf, 30.21% Impervious, Inflow Depth = 2.38" for 1-Year event
Inflow = 1.82 cfs @ 12.13 hrs, Volume= 5,778 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 505.79' @ 24.34 hrs Surf.Area= 21,080 sf Storage= 5,778 cf

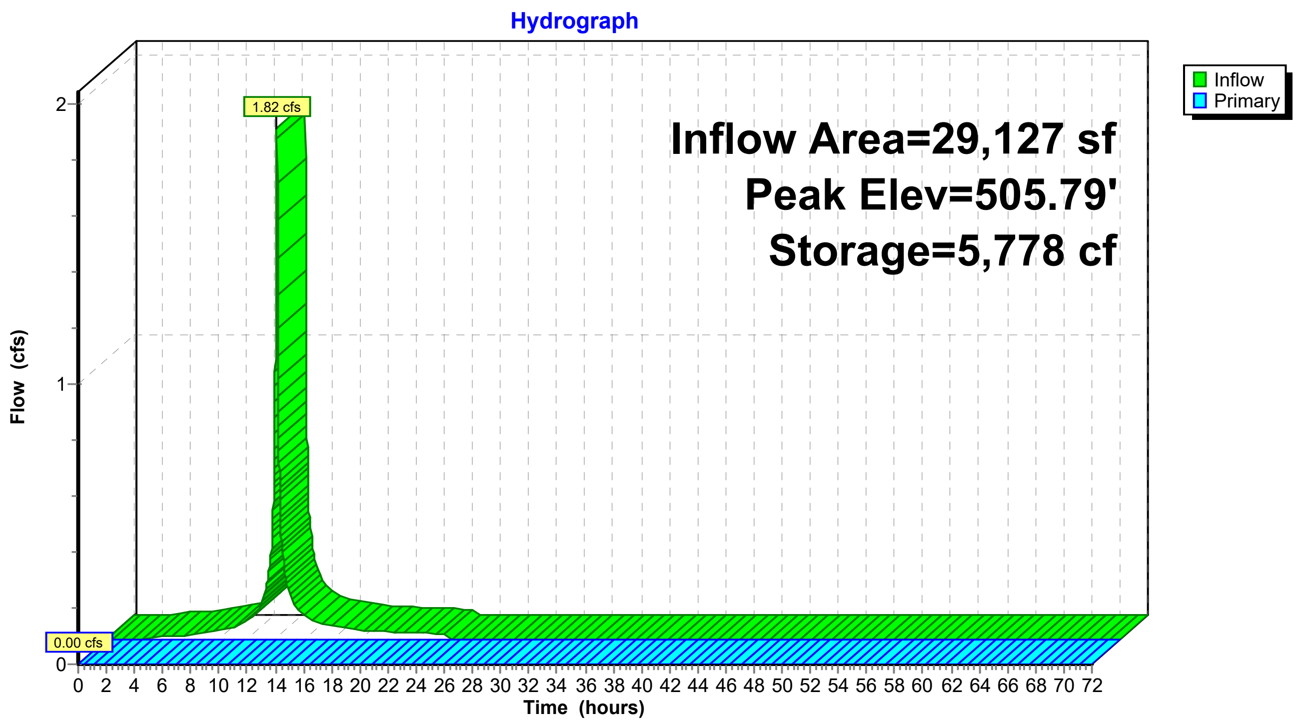
Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	505.10'	12,648 cf	**136.00'W x 155.00'L x 1.50'H Prismatoid** 31,620 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	506.50'	**18.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=505.10' TW=0.00' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

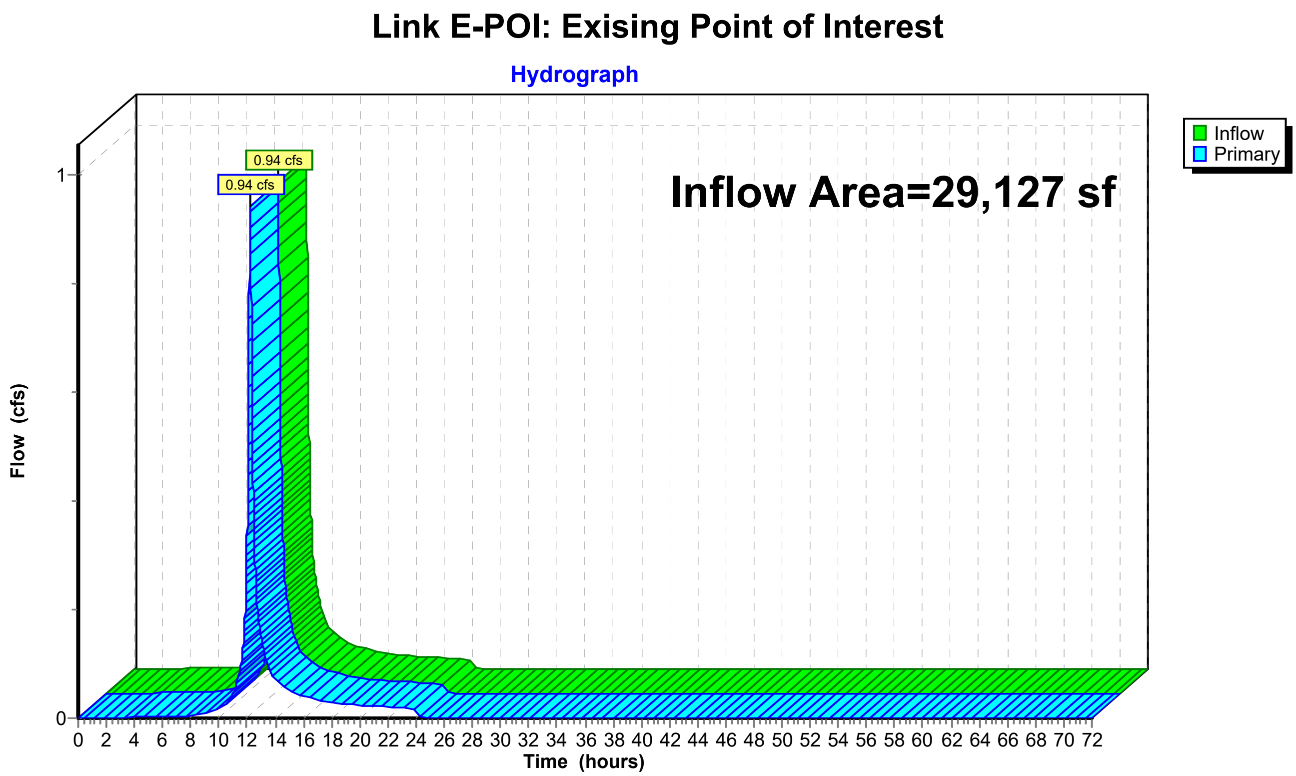
Pond 1P: GRAVEL



Summary for Link E-POI: Exising Point of Interest

Inflow Area = 29,127 sf, 13.09% Impervious, Inflow Depth = 1.48" for 1-Year event
Inflow = 0.94 cfs @ 12.21 hrs, Volume= 3,591 cf
Primary = 0.94 cfs @ 12.21 hrs, Volume= 3,591 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

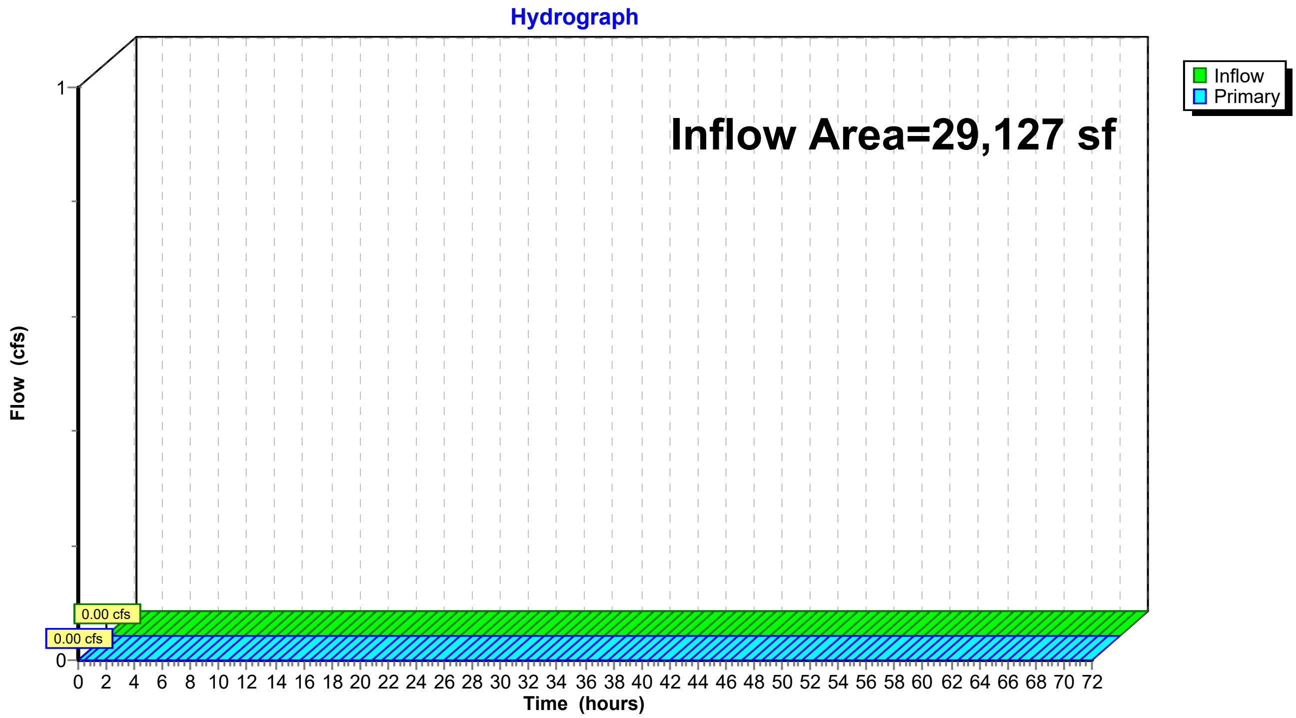


Summary for Link POI: Proposed Point of Interest

Inflow Area =	29,127 sf,	30.21% Impervious,	Inflow Depth = 0.00"	for 1-Year event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf, Atten= 0%, Lag= 0.0 min	

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POI: Proposed Point of Interest



Summary for Subcatchment E-1: Existing Drainage Area

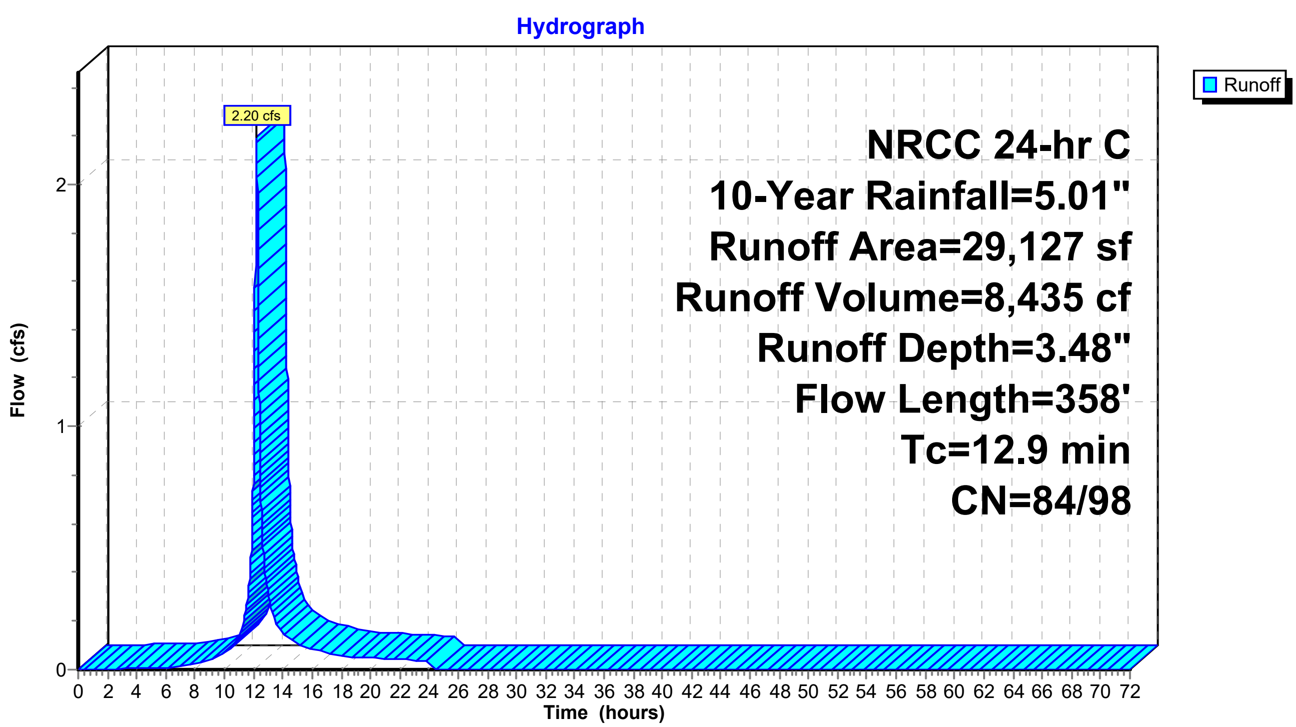
Runoff = 2.20 cfs @ 12.20 hrs, Volume= 8,435 cf, Depth= 3.48"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr C 10-Year Rainfall=5.01"

Area (sf)	CN	Description
3,812	98	Paved parking, HSG D
25,315	84	50-75% Grass cover, Fair, HSG D
29,127	86	Weighted Average
25,315	84	86.91% Pervious Area
3,812	98	13.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
1.9	258	0.2000	2.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.9	358	Total			

Subcatchment E-1: Existing Drainage Area



Summary for Subcatchment P-2: developed area

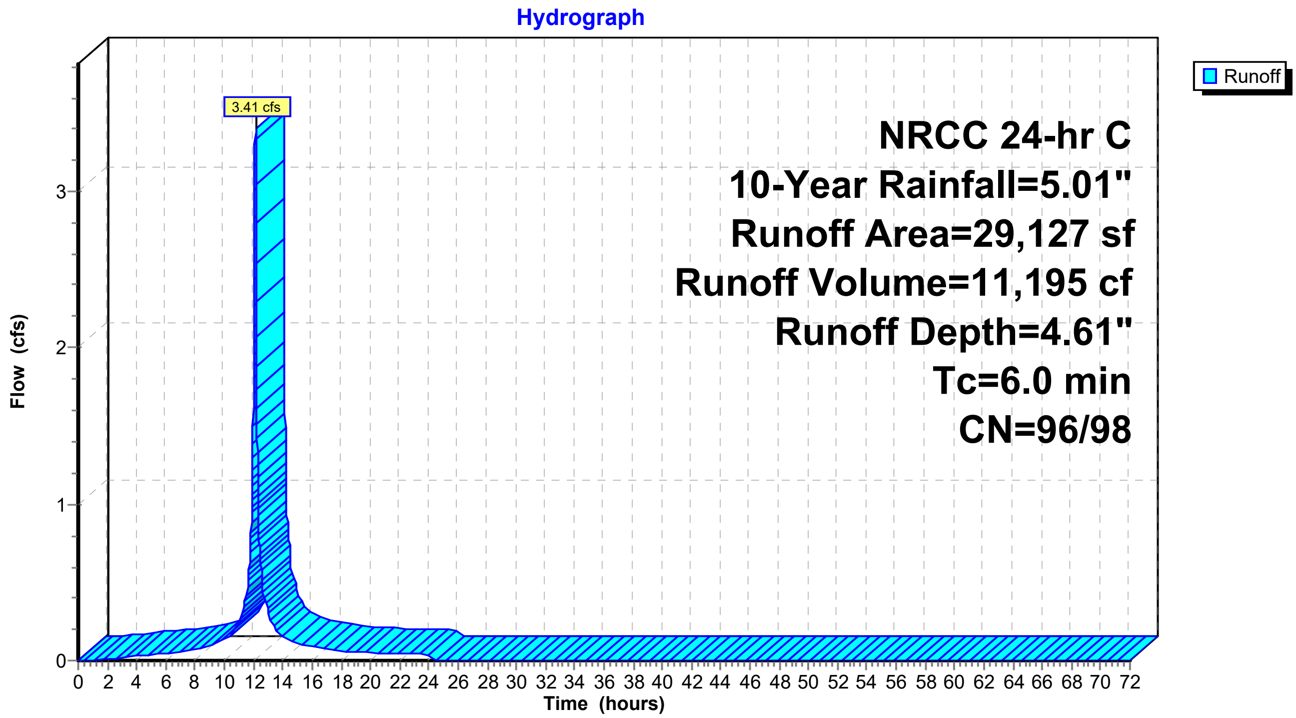
Runoff = 3.41 cfs @ 12.13 hrs, Volume= 11,195 cf, Depth= 4.61"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr C 10-Year Rainfall=5.01"

Area (sf)	CN	Description
20,327	96	Gravel surface, HSG D
8,800	98	Paved parking, HSG D
29,127	97	Weighted Average
20,327	96	69.79% Pervious Area
8,800	98	30.21% Impervious Area

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

Subcatchment P-2: developed area



Summary for Pond 1P: GRAVEL

Inflow Area =	29,127 sf, 30.21% Impervious,	Inflow Depth = 4.61"	for 10-Year event
Inflow =	3.41 cfs @ 12.13 hrs,	Volume=	11,195 cf
Outflow =	0.00 cfs @ 0.00 hrs,	Volume=	0 cf, Atten= 100%, Lag= 0.0 min
Primary =	0.00 cfs @ 0.00 hrs,	Volume=	0 cf

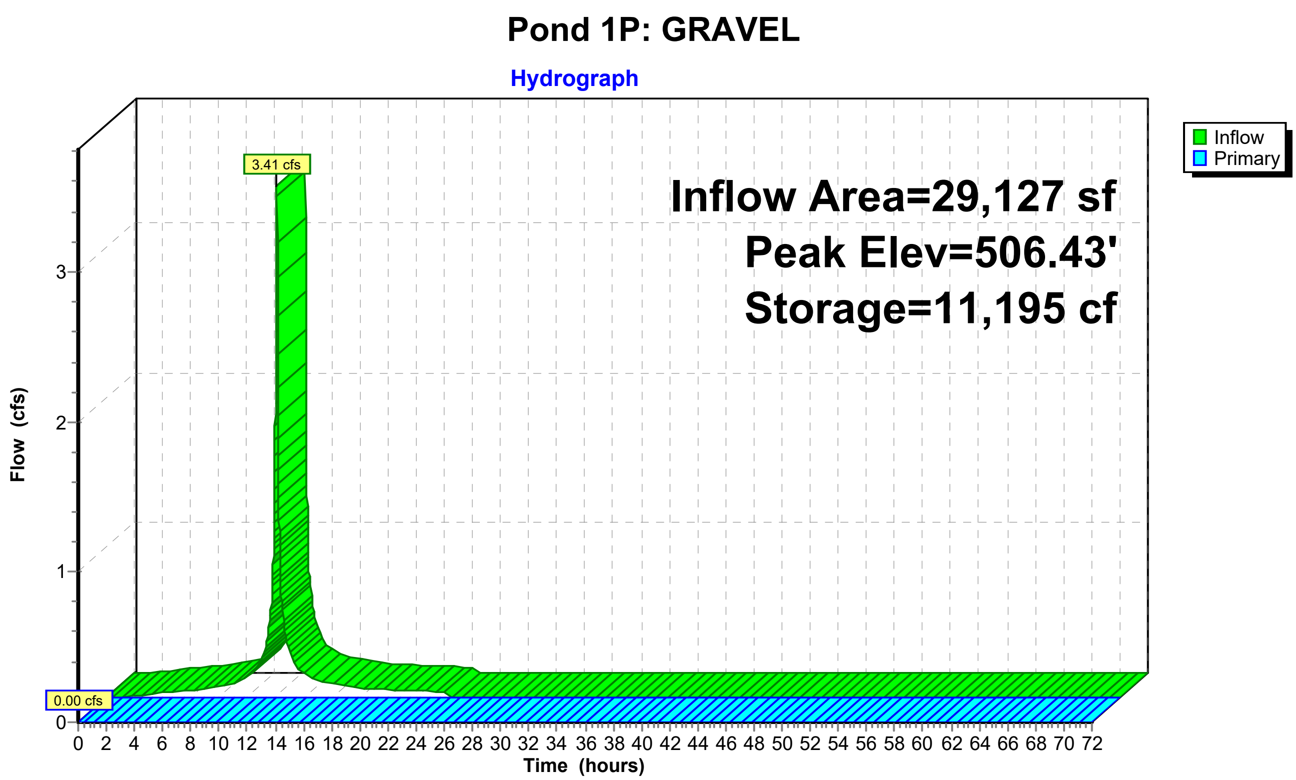
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 506.43' @ 24.34 hrs Surf.Area= 21,080 sf Storage= 11,195 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	505.10'	12,648 cf	**136.00'W x 155.00'L x 1.50'H Prismatoid** 31,620 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	506.50'	**18.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=505.10' TW=0.00' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

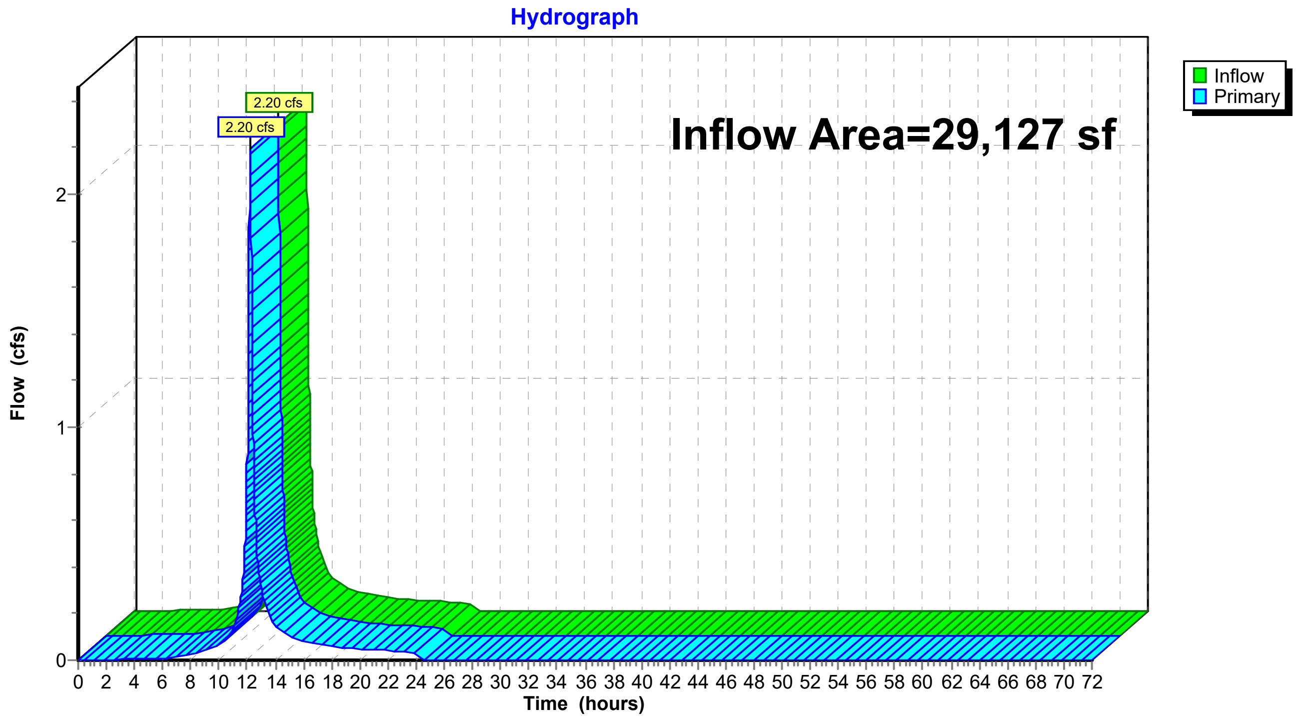


Summary for Link E-POI: Exising Point of Interest

Inflow Area = 29,127 sf, 13.09% Impervious, Inflow Depth = 3.48" for 10-Year event
Inflow = 2.20 cfs @ 12.20 hrs, Volume= 8,435 cf
Primary = 2.20 cfs @ 12.20 hrs, Volume= 8,435 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link E-POI: Exising Point of Interest

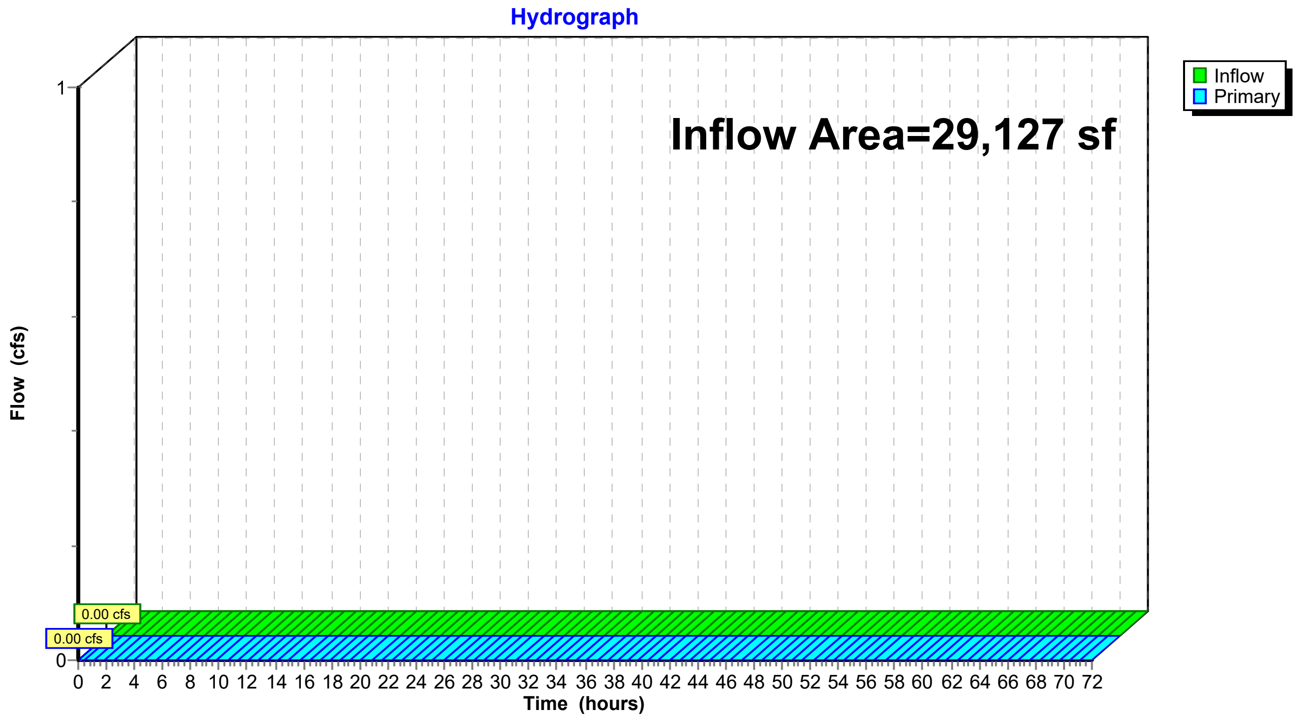


Summary for Link POI: Proposed Point of Interest

Inflow Area =	29,127 sf,	30.21% Impervious,	Inflow Depth = 0.00"	for 10-Year event	
Inflow =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POI: Proposed Point of Interest



Summary for Subcatchment E-1: Existing Drainage Area

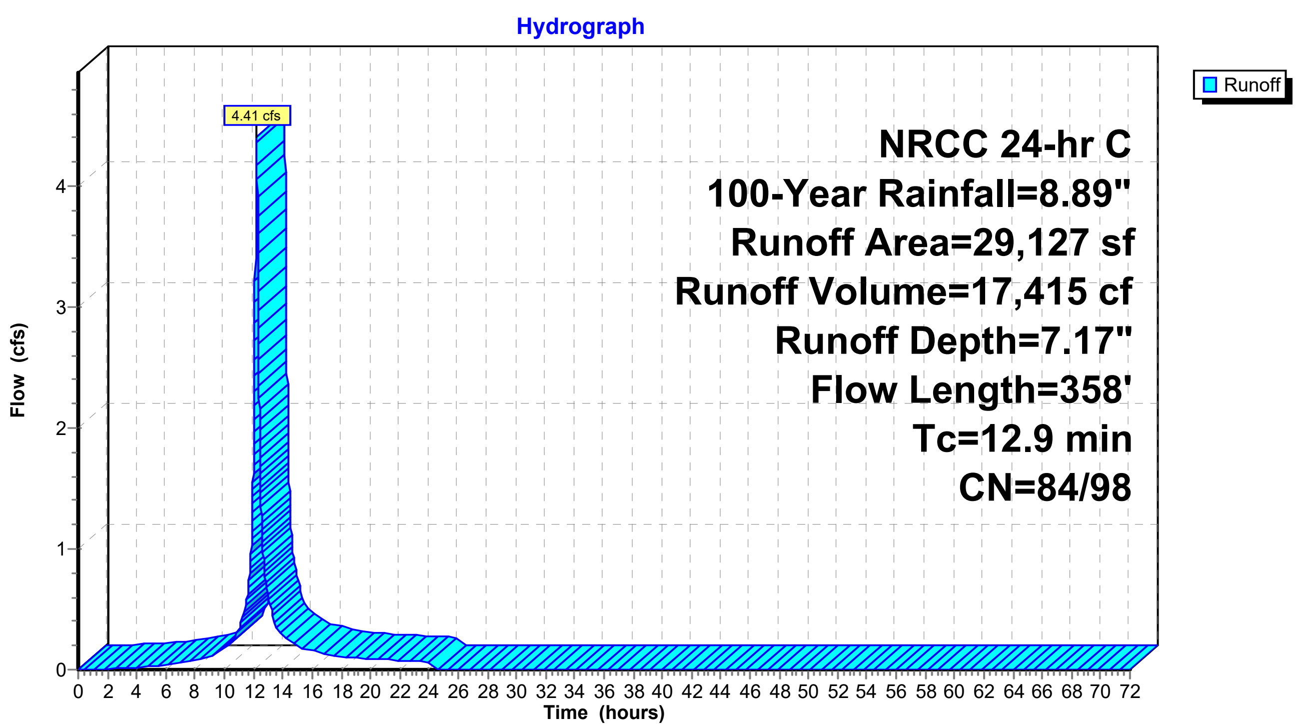
Runoff = 4.41 cfs @ 12.20 hrs, Volume= 17,415 cf, Depth= 7.17"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr C 100-Year Rainfall=8.89"

Area (sf)	CN	Description
3,812	98	Paved parking, HSG D
25,315	84	50-75% Grass cover, Fair, HSG D
29,127	86	Weighted Average
25,315	84	86.91% Pervious Area
3,812	98	13.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
1.9	258	0.2000	2.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.9	358	Total			

Subcatchment E-1: Existing Drainage Area



Summary for Subcatchment P-2: developed area

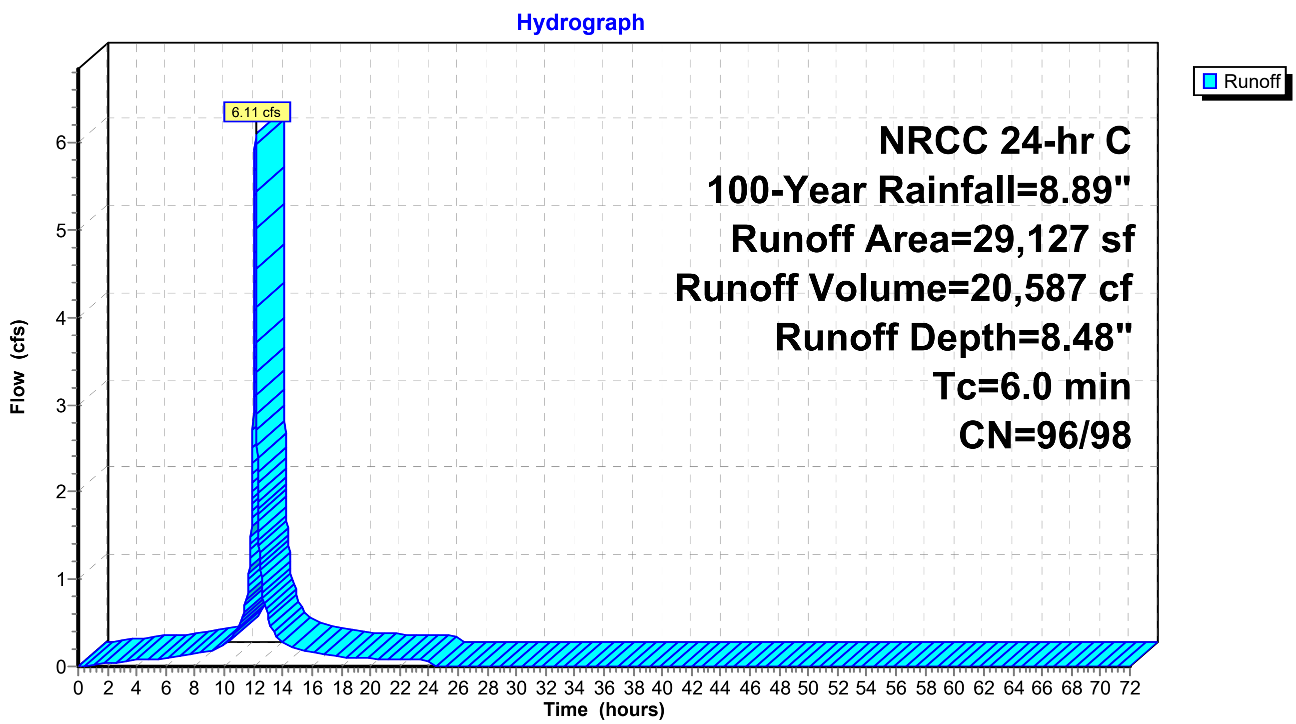
Runoff = 6.11 cfs @ 12.13 hrs, Volume= 20,587 cf, Depth= 8.48"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr C 100-Year Rainfall=8.89"

Area (sf)	CN	Description
20,327	96	Gravel surface, HSG D
8,800	98	Paved parking, HSG D
29,127	97	Weighted Average
20,327	96	69.79% Pervious Area
8,800	98	30.21% Impervious Area

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

Subcatchment P-2: developed area



Summary for Pond 1P: GRAVEL

Inflow Area = 29,127 sf, 30.21% Impervious, Inflow Depth = 8.48" for 100-Year event
Inflow = 6.11 cfs @ 12.13 hrs, Volume= 20,587 cf
Outflow = 1.27 cfs @ 12.40 hrs, Volume= 8,782 cf, Atten= 79%, Lag= 16.3 min
Primary = 1.27 cfs @ 12.40 hrs, Volume= 8,782 cf

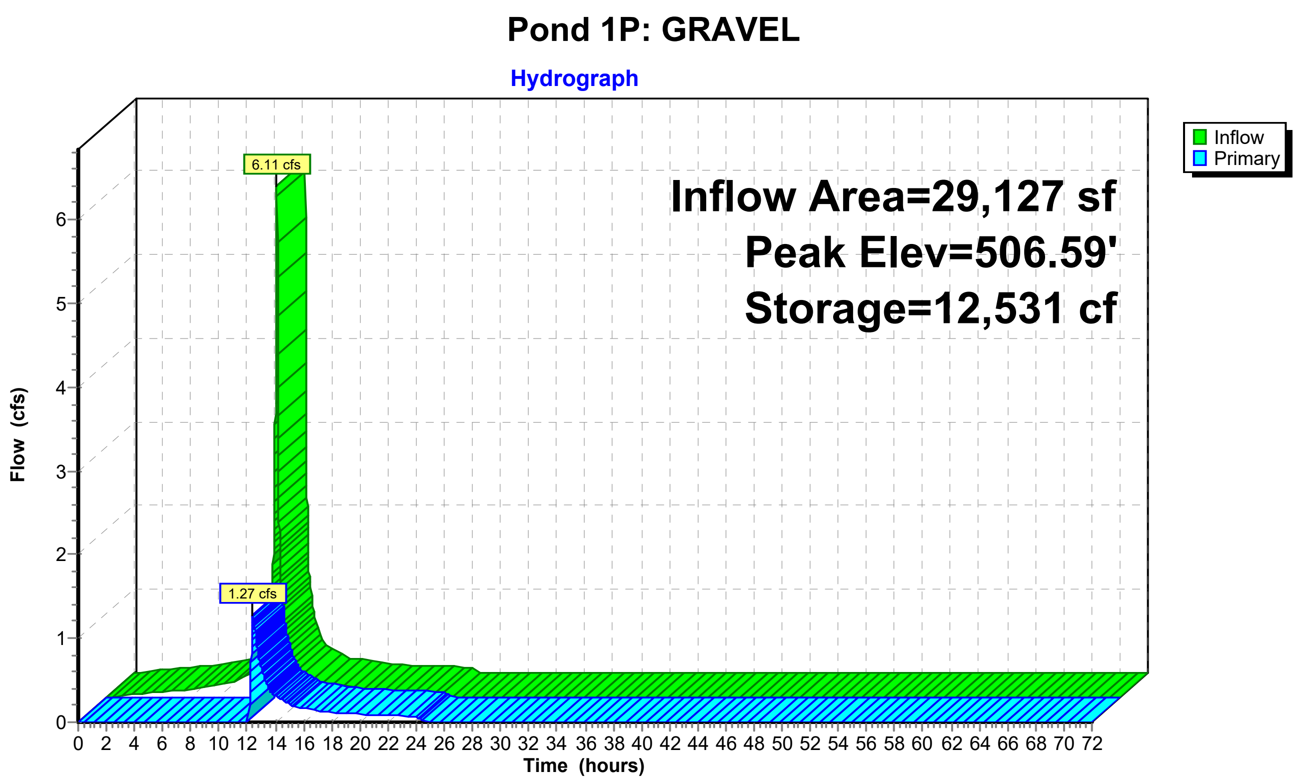
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 506.59' @ 12.40 hrs Surf.Area= 21,080 sf Storage= 12,531 cf

Plug-Flow detention time= 352.0 min calculated for 8,781 cf (43% of inflow)
Center-of-Mass det. time= 187.9 min (936.3 - 748.5)

Volume	Invert	Avail.Storage	Storage Description
#1	505.10'	12,648 cf	**136.00'W x 155.00'L x 1.50'H Prismatoid** 31,620 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	506.50'	**18.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=1.27 cfs @ 12.40 hrs HW=506.59' TW=0.00' (Dynamic Tailwater)
└—**1=Broad-Crested Rectangular Weir** (Weir Controls 1.27 cfs @ 0.82 fps)

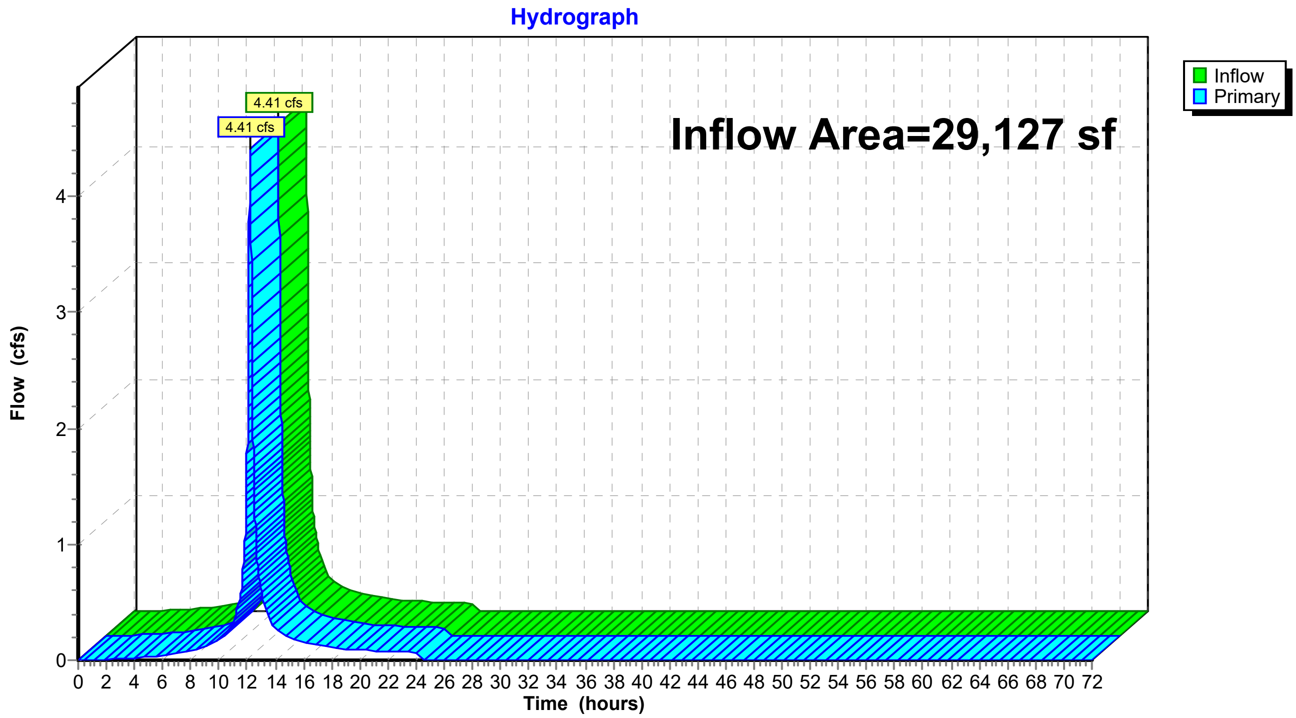


Summary for Link E-POI: Exising Point of Interest

Inflow Area = 29,127 sf, 13.09% Impervious, Inflow Depth = 7.17" for 100-Year event
Inflow = 4.41 cfs @ 12.20 hrs, Volume= 17,415 cf
Primary = 4.41 cfs @ 12.20 hrs, Volume= 17,415 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link E-POI: Exising Point of Interest

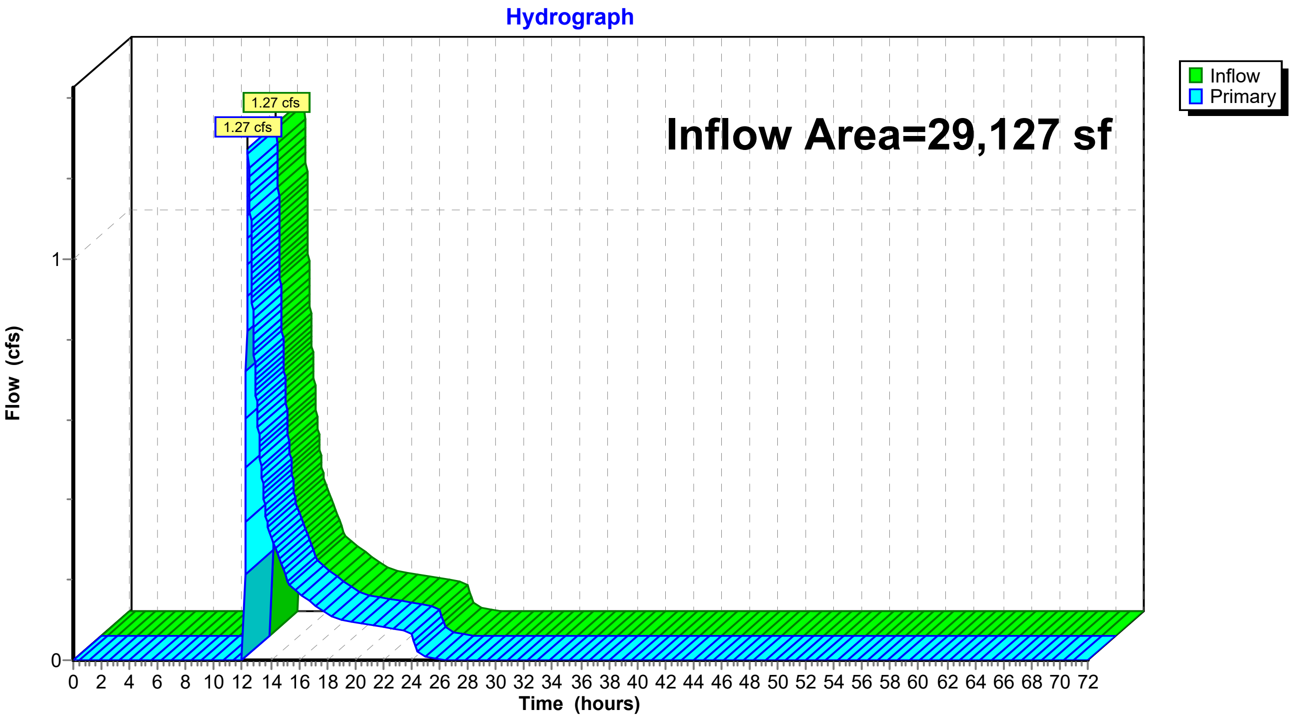


Summary for Link POI: Proposed Point of Interest

Inflow Area = 29,127 sf, 30.21% Impervious, Inflow Depth = 3.62" for 100-Year event
Inflow = 1.27 cfs @ 12.40 hrs, Volume= 8,782 cf
Primary = 1.27 cfs @ 12.40 hrs, Volume= 8,782 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POI: Proposed Point of Interest



Summary for Subcatchment E-1: Existing Drainage Area

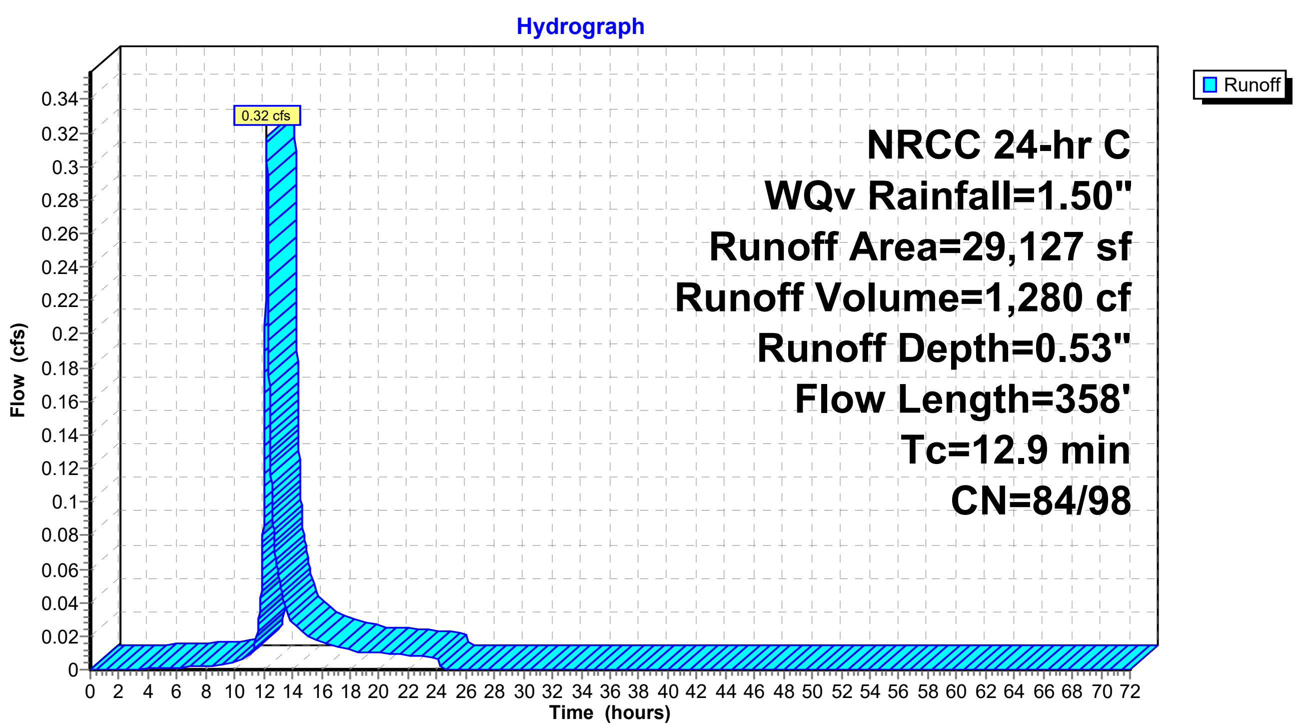
Runoff = 0.32 cfs @ 12.21 hrs, Volume= 1,280 cf, Depth= 0.53"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr C WQv Rainfall=1.50"

Area (sf)	CN	Description
3,812	98	Paved parking, HSG D
25,315	84	50-75% Grass cover, Fair, HSG D
29,127	86	Weighted Average
25,315	84	86.91% Pervious Area
3,812	98	13.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
1.9	258	0.2000	2.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.9	358	Total			

Subcatchment E-1: Existing Drainage Area



Summary for Subcatchment P-2: developed area

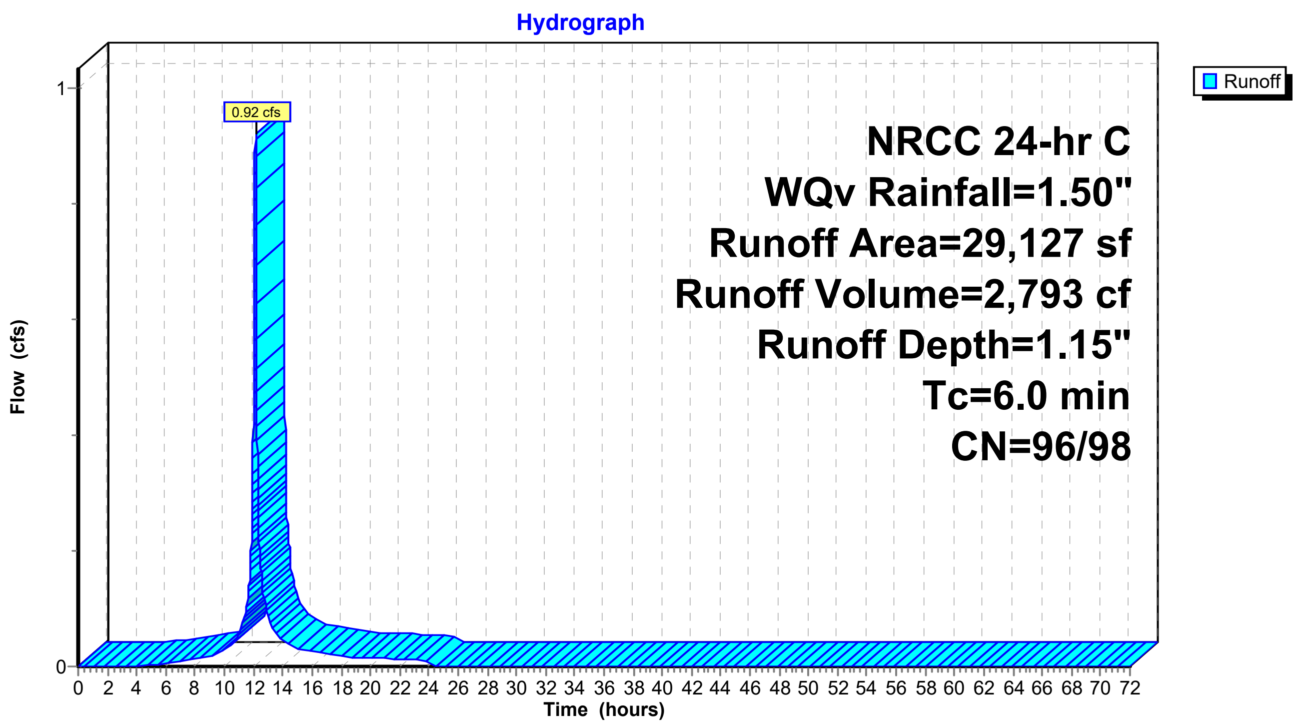
Runoff = 0.92 cfs @ 12.13 hrs, Volume= 2,793 cf, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr C WQv Rainfall=1.50"

Area (sf)	CN	Description
20,327	96	Gravel surface, HSG D
8,800	98	Paved parking, HSG D
29,127	97	Weighted Average
20,327	96	69.79% Pervious Area
8,800	98	30.21% Impervious Area

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

Subcatchment P-2: developed area



Summary for Pond 1P: GRAVEL

Inflow Area = 29,127 sf, 30.21% Impervious, Inflow Depth = 1.15" for WQv event
Inflow = 0.92 cfs @ 12.13 hrs, Volume= 2,793 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 505.43' @ 24.34 hrs Surf.Area= 21,080 sf Storage= 2,793 cf

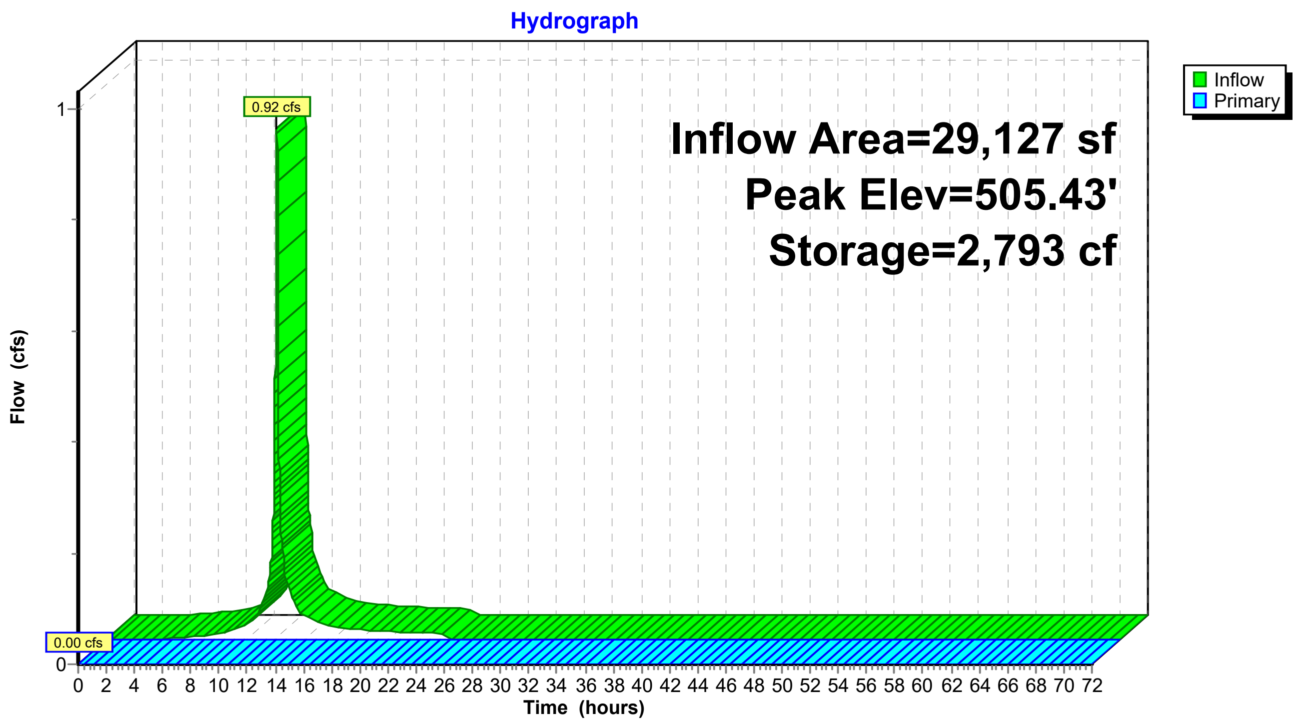
Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	505.10'	12,648 cf	**136.00'W x 155.00'L x 1.50'H Prismatoid** 31,620 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	506.50'	**18.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=505.10' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: GRAVEL

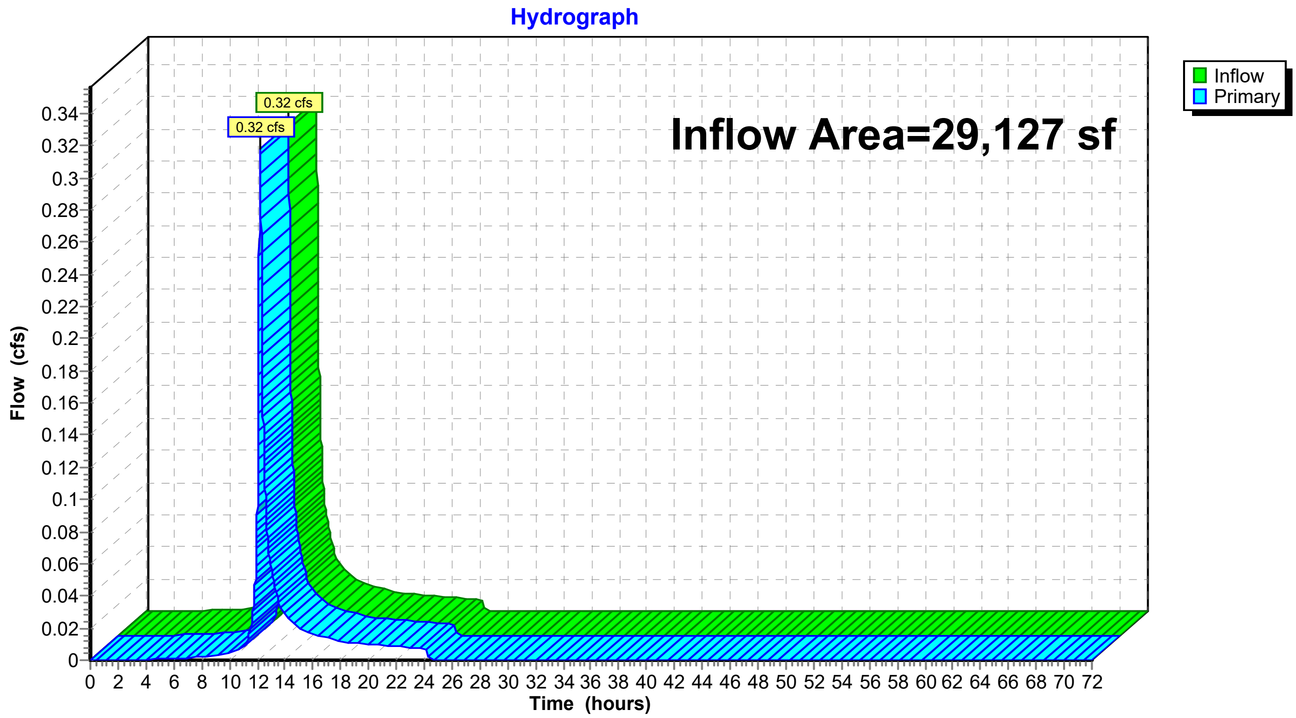


Summary for Link E-POI: Exising Point of Interest

Inflow Area =	29,127 sf,	13.09% Impervious,	Inflow Depth = 0.53"	for WQv event	
Inflow =	0.32 cfs @	12.21 hrs,	Volume=	1,280 cf	
Primary =	0.32 cfs @	12.21 hrs,	Volume=	1,280 cf,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link E-POI: Exising Point of Interest



Summary for Link POI: Proposed Point of Interest

Inflow Area = 29,127 sf, 30.21% Impervious, Inflow Depth = 0.00" for WQv event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POI: Proposed Point of Interest