STORMWATER MANAGEMENT REPORT
Proposed Retail Motor Fuel Outlet
MAP 23 LOTS 167 & 190
249 SILVER LANE
EAST HARTFORD, CONNECTICUT

Prepared for:

Irving Oil Marketing, Inc.
190 Commerce Way
Portsmouth, NH 03801

May 9, 2018
Revised May 24, 2018
Revised May 31, 2018

Prepared By:

5/31/18

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SECTION 1 EXECUTIVE SUMMARY

This report contains a stormwater management analysis for the retail motor fuel outlet proposed at 249 Silver Lane in East Hartford, Connecticut. The analysis includes both pre- and post-development calculations of stormwater runoff rates at specific locations on the project site and has been prepared in accordance with both Town of East Hartford requirements and the guidelines contained in the Connecticut Department of Environmental Protection (DEP) Connecticut Stormwater Quality Manual.

The project site consists of 2 parcels (Map 23; Lots 167 & 190) totaling 1.92 acres +/- bounded by Silver Lane (Route 502) to the north, Mercer Ave & a commercial lot (Lot 168) to the west and residential properties to the south & east. The study watershed area is approximately 1.92 acres in size. Although the watershed area is essentially flat it can be reasonably assumed that there are contributing drainage areas to the surrounding properties as described above. Both lots are currently undeveloped grass fields.

Irving Oil Marketing, Inc. is proposing to develop this site, which includes the construction of a new retail motor fuel outlet facility consisting of a 5,000 sf building with convenience store & drive-thru quick service restaurant, an accessory fuel dispensing area with 5 dispensers (10 fueling positions), and a paved parking lot with 25 striped parking spaces. Site work will also include site grading, erosion control measures, utility connections and new DOT approved curb cuts along Silver Lane.

To accommodate the stormwater runoff from the new impervious surfaces on the property, a new closed drainage system consisting of deep-sump, hooded catch basins, two 2,500 gallon oil/water separators, two underground infiltration systems, and an above ground infiltration basin will be constructed. The BMP's included in the proposed stormwater system are designed in accordance with the DEP Stormwater Quality Manual to manage stormwater quality and quantity.

To analyze the stormwater runoff from this site, 5 design points were selected to compare the peak runoff rate under both existing and proposed conditions. Design point #1 is the existing 30" Town drain line located within the onsite drainage easement. Design Point #'s 2 & 4 are Silver Lane & Mercer Ave, respectively. Design Point #'s 3 & 5 are the surrounding commercial and residential properties, respectively.

Since the site is entirely undeveloped and the existing grassed field is situated on underlying hydrologic group "A" soils, there is essentially no existing runoff from the two lots. The proposed stormwater management system is designed to retain, treat, and infiltrate all onsite stormwater generated from storm events up to & including the 100-year storm.

There is an existing 18" RCP drain line stub on Lot 167 which ties into the 30" drain line constructed for the "Meadow Farms Subdivision." This subdivision project installed a new, separate drainage system which runs through Lot 167, crosses Silver Lane, and ultimately discharges to a large wetland system within the State Highway Layout. At the time of construction of this 30" drain line a provision was made for future development of the two frontage Lots along Silver Lane not included in the residential subdivision. The 18" stub was built to receive runoff from future development of Lots 167 & 190. As such, this development project proposes to use this connection point solely as an overflow outlet for storm events greater than the 100-year storm.

The results of the pre- and post-development stormwater analysis at the design point are summarized as shown in the following table:

Table 1: Analysis Summary (All values shown are peak rates in CFS)

Design Storm	Pre-Development (cfs)	Post-Development (cfs)	Change (cfs)
DESIGN POINT #1 (Exist 30" Drain Line)			
2-year	0.0	0.0	0.0
10-year	0.0	0.0	0.0
25-year	0.0	0.0	0.0
100-year	0.0	0.0	0.0
DESIGN POINT #2 (Silver Lane)			
2-year	0.0	0.0	0.0
10-year	0.0	0.0	0.0
25-year	0.0	0.0	0.0
100-year	0.0	0.0	0.0
DESIGN POINT #3 (Lot 168)			
2-year	0.0	0.0	0.0
10-year	0.0	0.0	0.0
25-year	0.0	0.0	0.0
100-year	0.0	0.0	0.0
DESIGN POINT #4 (Mercer Ave)			
2-year	0.0	0.0	0.0
10-year	0.0	0.0	0.0
25-year	0.0	0.0	0.0
100-year	0.1	0.1	0.0
DESIGN POINT #5 (Residential Abutters)			
2-year	0.0	0.0	0.0
10-year	0.0	0.0	0.0
25-year	0.0	0.0	0.0
100-year	0.0	0.0	0.0

In conclusion, by incorporating a new on-site drainage system that includes provisions for stormwater treatment, detention, and infiltration there will be no increase in peak rate of runoff for all design storms except the 100-year storm which will overflow as previously described.

SECTION 2 EXISTING CONDITIONS

The project site consists of 2 parcels (Map 23; Lots 167 & 190) totaling 1.92 acres +/- bounded by Silver Lane (Route 502) to the north, Mercer Ave & a commercial lot (Lot 168) to the west and residential properties to the south & east. The study watershed area is approximately 1.92 acres in size. Although the watershed area is essentially flat it can be reasonably assumed that there are contributing drainage areas to the surrounding properties as described above. Both lots are currently undeveloped grass fields.

There is an existing 18" RCP drain line stub on Lot 167 which ties into the 30" drain line constructed for the "Meadow Farms Subdivision." This subdivision project installed a new, separate drainage system which runs through Lot 167, crosses Silver Lane, and ultimately discharges to a large wetland system within the State Highway Layout. At the time of construction of this 30" drain line a provision was made for future development of the two frontage Lots along Silver Lane not included in the residential subdivision. The 18" stub was built to receive runoff from future development of Lots 167 & 190.

An examination of the soil map for the area as published on the NRCS Web Soil Survey website indicates that the soil in the area of the project site are identified as "Windsor" loamy sand having a hydrologic soil group classification "A."

On-site test pits were performed for purposes of identifying the seasonal high water table. The observed seasonal high water table was found to range from approximately 84" to >108". Test pit logs can be found in Appendix C of this report.

SECTION 3 PROPOSED CONDITIONS

Irving Oil Marketing, Inc. is proposing to develop this site, which includes the construction of a new retail motor fuel outlet facility consisting of a 5,000 sf building with convenience store & drive-thru quick service restaurant, an accessory fuel dispensing area with 5 dispensers (10 fueling positions), and a paved parking lot with 25 striped parking spaces. Site work will also include site grading, erosion control measures, utility connections and new DOT approved curb cuts along Silver Lane.

To accommodate the stormwater runoff from the new impervious surfaces on the property, a new closed drainage system consisting of deep-sump, hooded catch basins, two 2,500 gallon oil/water separators, two underground infiltration systems, and an above ground infiltration basin will be constructed. The BMP's included in the proposed stormwater system are designed in accordance with the DEP Stormwater Quality Manual to manage stormwater quality and quantity.

The proposed treatment train is designed to achieve 80% TSS removal through the use of deep sump, hooded catch basins, oil/water separators & stormtech *isolator rows* in order to safeguard against oil or gas introduction into the infiltration systems. Such pretreatment of stormwater reduces both suspended solids and oils in the drainage system and is recommended by DEP's Stormwater Quality Manual.

Stormwater recharge is implemented by the use of two underground infiltration systems designed with the required 3' of vertical separation to the ESHWT for primary treatment. The underground infiltration systems are each sized to hold the water quality volume (WQV) below the overflow outlet elevation (measured statically). Furthermore, the infiltration systems are sized to fully retain and infiltrate all onsite stormwater generated from storm events up to & including the 25-year storm, with overflow to the above ground infiltration basin for the 100-year storm. The infiltration basin will receive overflow from the underground stormtech systems and will recharge all excess stormwater volumes onsite. As a precaution, an emergency overflow outlet system is designed to connect to the existing 18" drain stub at the front of Lot 167. This is essentially a dry line, but would be used in the case of storm events greater than the 100-year intensity, and in the case that any of the infiltration BMP's require maintenance/replacement.

Another safeguard against future intrusion of contaminants into the groundwater is the implementation of an Operation & Maintenance Plan, which would assure proper function of drainage components and reduce TSS entering the system.

To prevent erosion and sedimentation during construction, Best Management Practices including stabilized construction exits, silt fence, catch basin inserts, and temporary and permanent seeding have been incorporated into the construction sequence.

The total area of disturbance related to the proposed construction on this property is approximately 63,500 square feet therefore the project is subject to the US EPA Construction General Permit requirements.

Storm water Quality Controls:

1. Secondary Treatment Measures (Pretreatment)

    - Deep sump, hooded catch basins
    - Oil/water separators
    - Stormtech Isolator Rows

2. Primary Treatment Measures:

    - Underground Infiltration Systems

Stormwater Quantity Controls:

The underground infiltration systems were designed such that they would control discharges for the 2, 10, 25 & 100-year events.

Water Quality Volume Calculation

Runoff to Underground Infiltration System #1:

WQV = IRA/12
= 1"(0.05+0.009[93.07%])(19,875sf)/12
= **1,470 c.f.**

Treatment Volume Provided within Infiltration System #1 = **1,745 c.f.** > 1,470 c.f. (√ ok)
(See attached stage storage chart)

Runoff to Underground Infiltration System #2:

WQV = IRA/12
= 1"(0.05+0.009[91.08%])(26,236)/12
= **1,901 c.f.**

Treatment Volume Provided within Infiltration System #1 = **5,209 c.f.** > 1,901 c.f. (√ ok)
(See attached stage storage chart)

Groundwater Recharge Volume Calculation

Proposed recharge method: Two underground Stormtech arch chamber & stone systems. In accordance with the DEP Stormwater Quality Manual, **A** soils require a volume to recharge of **0.4 inches of runoff**.

Total Proposed onsite impervious area = 42,393 sf

Volume required to be recharged:

A-soils = 0.4 inches x 1ft/ 12" x 42,393 sf = **1,413 c.f.**

Total Site Volume required to be recharged =1,413 c.f.

Site Volume recharge provided = Volume within the two underground infiltration systems below the lowest outlet elevation (measured statically).

Total Volume Provided = 6,954 c.f. >1,413 c.f. (√ ok)

(See attached Hydrocad Stage-Storage tables for Systems 1 & 2) Note: additional recharge volume provided within infiltration basin.

SECTION 4 STORMWATER MODELING METHODOLOGY

The drainage system for this project was modeled using HydroCAD, a stormwater modeling computer program that analyzes the hydrology, and hydraulics of stormwater runoff. HydroCAD is based largely on the hydrology techniques developed by the Soil Conservation Service (SCS/NRCS), combined with other hydrology and hydraulics calculations. For a given rainfall event, these techniques are used to generate hydrographs throughout a watershed. This provides verification that a given drainage system is adequate for the area under consideration, or to predict where flooding or erosion is likely to occur.

In HydroCAD, each watershed is modeled as a Subcatchment, streams and culverts as a Reach (or Pond, depending on available storage capacity), and large wetlands and other natural or artificial storage areas as a Pond. SCS hydrograph generation and routing procedures were used to model both Pre-development and Post-development runoff conditions.

The Pre-development and Post-development watershed limits and the subcatchment characteristics were determined using both USGS and on-the-ground topographic survey information and through visual, on-site inspection. Conservative estimates were used at all times in estimating the hydrologic characteristics of each watershed or subcatchment.

Stage-Area-Storage for Pond INF1: UNDERGROUND INFILTRATION SYSTEM #1

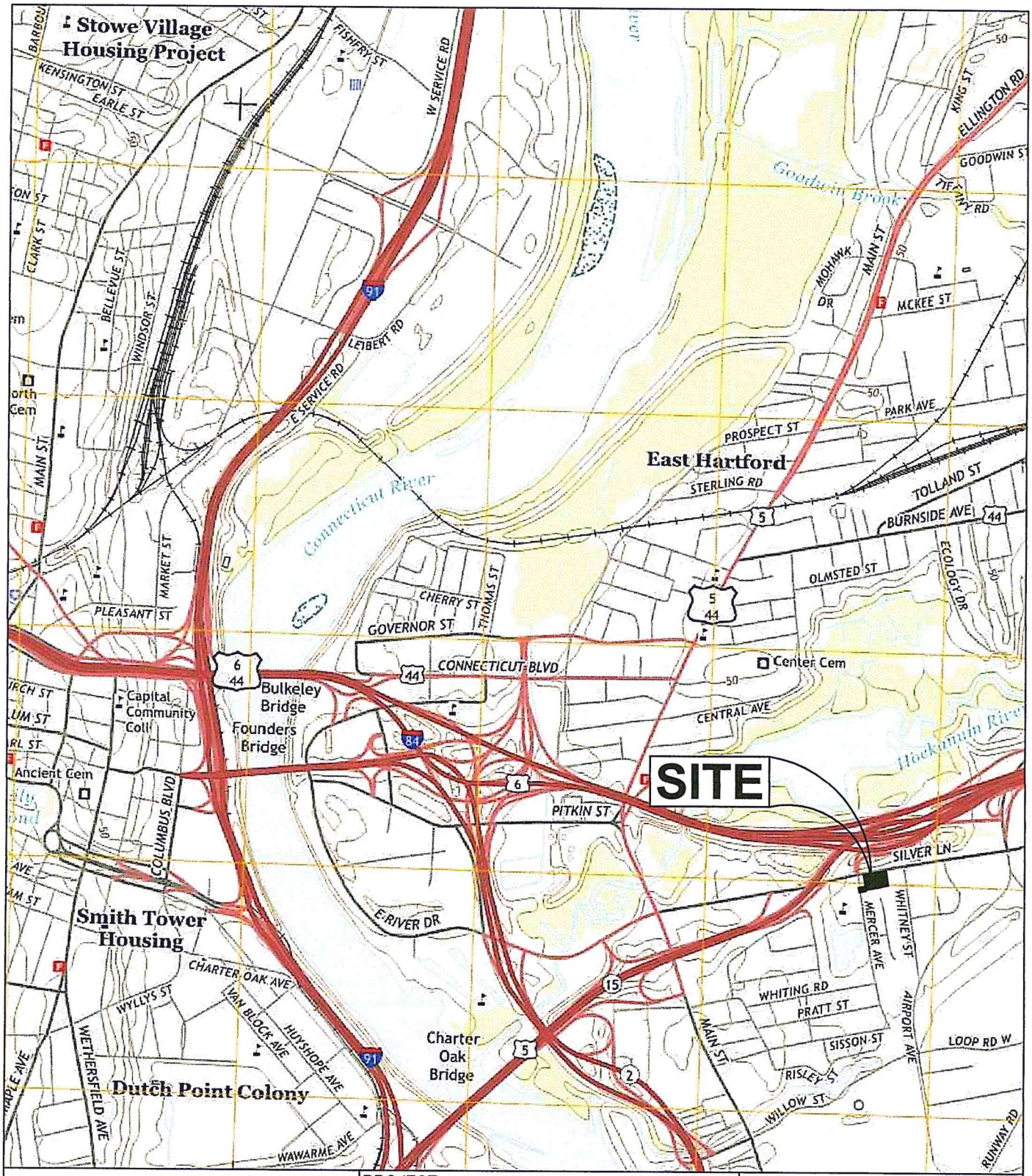
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
35.50	**3,273**	0
35.55	3,273	54
35.60	3,273	108
35.65	3,273	162
35.70	3,273	216
35.75	3,273	270
35.80	3,273	324
35.85	3,273	378
35.90	3,273	432
35.95	3,273	486
36.00	3,273	540
36.05	3,273	665
36.10	3,273	790
36.15	3,273	914
36.20	3,273	1,036
36.25	3,273	1,158
36.30	3,273	1,279
36.35	3,273	1,397
36.40	3,273	1,515
36.45	3,273	1,631
36.50	3,273	1,745
36.55	3,273	1,857
36.60	3,273	1,967
36.65	3,273	2,076
36.70	3,273	2,182
36.75	3,273	2,286
36.80	3,273	2,387
36.85	3,273	2,485
36.90	3,273	2,580
36.95	3,273	2,671
37.00	3,273	2,758
37.05	3,273	2,840
37.10	3,273	2,916
37.15	3,273	2,985
37.20	3,273	3,049
37.25	3,273	3,110
37.30	3,273	3,168
37.35	3,273	3,223
37.40	3,273	3,277
37.45	3,273	3,331
37.50	3,273	3,385
37.55	3,273	3,439
37.60	3,273	3,493
37.65	3,273	3,547
37.70	3,273	3,601
37.75	3,273	3,655
37.80	3,273	**3,709**

Stage-Area-Storage for Pond INF2: UNDERGROUND INFILTRATION SYSTEM #2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
35.00	**3,236**	0
35.05	3,236	53
35.10	3,236	107
35.15	3,236	160
35.20	3,236	214
35.25	3,236	267
35.30	3,236	320
35.35	3,236	374
35.40	3,236	427
35.45	3,236	481
35.50	3,236	534
35.55	3,236	665
35.60	3,236	797
35.65	3,236	928
35.70	3,236	1,059
35.75	3,236	1,189
35.80	3,236	1,319
35.85	3,236	1,448
35.90	3,236	1,577
35.95	3,236	1,705
36.00	3,236	1,833
36.05	3,236	1,960
36.10	3,236	2,086
36.15	3,236	2,212
36.20	3,236	2,337
36.25	3,236	2,461
36.30	3,236	2,584
36.35	3,236	2,707
36.40	3,236	2,829
36.45	3,236	2,950
36.50	3,236	3,070
36.55	3,236	3,189
36.60	3,236	3,308
36.65	3,236	3,425
36.70	3,236	3,541
36.75	3,236	3,656
36.80	3,236	3,770
36.85	3,236	3,883
36.90	3,236	3,994
36.95	3,236	4,104
37.00	3,236	4,213
37.05	3,236	4,321
37.10	3,236	4,427
37.15	3,236	4,532
37.20	3,236	4,634
37.25	3,236	4,735
37.30	3,236	4,834
37.35	3,236	4,931
37.40	3,236	5,026
37.45	3,236	5,119
37.50	3,236	5,209
37.55	3,236	5,297
37.60	3,236	5,382
37.65	3,236	5,464
37.70	3,236	5,541
37.75	3,236	5,613
37.80	3,236	5,680
37.85	3,236	5,742
37.90	3,236	5,801
37.95	3,236	5,858
38.00	3,236	5,913
38.05	3,236	5,966
38.10	3,236	6,020
38.15	3,236	6,073
38.20	3,236	6,126
38.25	3,236	6,180
38.30	3,236	6,233
38.35	3,236	6,287
38.40	3,236	6,340
38.45	3,236	6,393
38.50	3,236	**6,447**

APPENDIX A

USGS Map



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PROJECT:
Irving Oil Marketing
249-257 Silver Lane
East Hartford, CT
Map 23 Lots 190 & 167

PREPARED FOR:
Irving Oil Marketing, Inc.
190 Commerce Way
Portsmouth, NH 03801

TITLE:
USGS SITE LOCATION MAP
HARTFORD NORTH QUADRANGLE

DATE: May 9, 2018

PROJ. NO. 430817

SCALE: 1"=2,000'

APPENDIX B

NRCS Soil Information

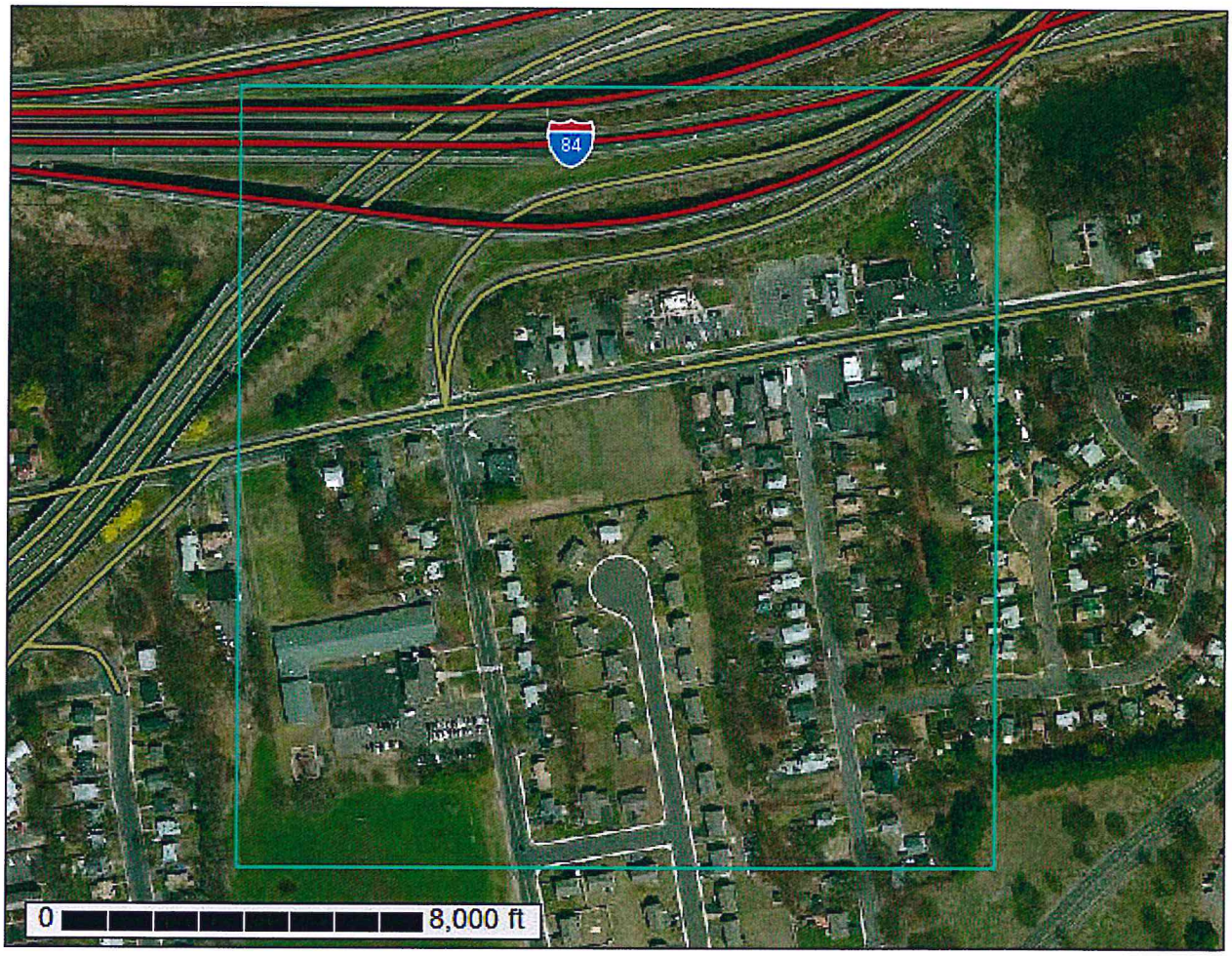
United States Department of Agriculture

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



May 7, 2018

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: 1:3,500 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

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

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 16, Sep 15, 2017

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

Date(s) aerial images were photographed: Sep 29, 2013—Oct 16, 2016

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
36A	Windsor loamy sand, 0 to 3 percent slopes	18.8	36.1%
108	Saco silt loam	0.0	0.0%
236B	Windsor-Urban land complex, 0 to 8 percent slopes	11.7	22.4%
304	Udorthents, loamy, very steep	0.1	0.2%
306	Udorthents-Urban land complex	19.5	37.6%
308	Udorthents, smoothed	1.9	3.6%
Totals for Area of Interest		**51.9**	**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

36A—Windsor loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svkg
Elevation: 0 to 990 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

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

Description of Windsor, Loamy Sand

Setting

Landform: Deltas, dunes, outwash plains, outwash terraces
Landform position (three-dimensional): Riser, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

O - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand
C - 25 to 65 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural 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
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Deerfield, loamy sand

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

Hinckley, loamy sand

Percent of map unit: 5 percent
Landform: Deltas, eskers, kames, outwash plains
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

108—Saco silt loam

Map Unit Setting

National map unit symbol: 9ljv
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

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

Description of Saco

Setting

Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-silty alluvium

Typical profile

A - 0 to 12 inches: silt loam
Cg1 - 12 to 32 inches: silt loam
Cg2 - 32 to 48 inches: silt loam
2Cg3 - 48 to 60 inches: stratified very gravelly coarse sand to loamy fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Available water storage in profile: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Lim

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Limerick

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Winooski

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

Rippowam

Percent of map unit: 3 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Bash

Percent of map unit: 2 percent
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Hadley

Percent of map unit: 2 percent

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

236B—Windsor-Urban land complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w2wq
Elevation: 0 to 920 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

Windsor and similar soils: 40 percent
Urban land: 40 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor

Setting

Landform: Deltas, dunes, outwash plains, outwash terraces
Landform position (three-dimensional): Riser, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

A - 0 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand
C - 25 to 65 inches: sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural 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
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Urban Land

Typical profile

M - 0 to 10 inches: cemented material

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 0 inches to manufactured layer
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Available water storage in profile: Very low (about 0.0 inches)

Interpretive groups

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

Minor Components

Udorthents

Percent of map unit: 10 percent
Landform: Dunes, outwash plains, outwash terraces, deltas
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

Hinckley

Percent of map unit: 5 percent
Landform: Kames, outwash plains, deltas, eskers
Landform position (two-dimensional): Backslope, summit, shoulder
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

Deerfield

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

304—Udorthents, loamy, very steep

Map Unit Setting

National map unit symbol: 9lmd
Elevation: 0 to 1,200 feet
Mean annual precipitation: 37 to 52 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

Udorthents and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Landform: Escarpments
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Glaciolacustrine deposits

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: 25 to 70 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very high
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 54 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Shaker

Percent of map unit: 3 percent
Landform: Depressions, terraces, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scitico

Percent of map unit: 3 percent
Landform: Depressions, terraces, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Maybid

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

Raynham

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

Unnamed, frequently flooded

Percent of map unit: 1 percent
Landform: Drainageways
Hydric soil rating: Yes

306—Udorthents-Urban land complex

Map Unit Setting

National map unit symbol: 9lmg
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: 50 percent
Urban land: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Drift

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 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: 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 54 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Urban Land

Typical profile

H - 0 to 6 inches: material

Interpretive groups

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

Minor Components

Unnamed, undisturbed soils

Percent of map unit: 8 percent
Hydric soil rating: No

Udorthents, wet substratum

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

Rock outcrop

Percent of map unit: 2 percent
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
Natural 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 storage in profile: 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

Udorthents, wet substratum

Percent of map unit: 7 percent
Hydric soil rating: No

Unnamed, undisturbed soils

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

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.

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: 1:3,500 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

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.

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

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

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

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

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 16, Sep 15, 2017

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

Date(s) aerial images were photographed: Sep 29, 2013—Oct 16, 2016

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
36A	Windsor loamy sand, 0 to 3 percent slopes	A	18.8	36.1%
108	Saco silt loam	B/D	0.0	0.0%
236B	Windsor-Urban land complex, 0 to 8 percent slopes	A	11.7	22.4%
304	Udorthents, loamy, very steep	B	0.1	0.2%
306	Udorthents-Urban land complex	B	19.5	37.6%
308	Udorthents, smoothed	C	1.9	3.6%
Totals for Area of Interest			**51.9**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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APPENDIX C

Test Pit Logs

MHF Design Consultants, Inc.

44 Stiles Road • Suite One • Salem, New Hampshire 03079
TEL (603) 893-0720 • FAX (603) 893-0733
www.mhfdesign.com

TEST PIT DATA

Client: Irving Oil Marketing
Project Address: 249-257 Silver Lane
Town, State: East Hartford, CT
Job Number: 430818
Date: May 7, 2018
Performed by: Diane Pantermoller
Witnessed by: Allyn Tarbel, Engineer – Town of East Hartford

Test Pit No. **1** SCS Soil: Windsor
ESHWT: >96" Standing Water: None
Refusal: None Roots: None

Depth	Horizon	Soil Texture	Color	Consistence	Mottles; Quantity/Contrast
0-24"	A	Loamy Sand	10yr 4/3	FR	
24-36"	B	Sand	10yr 5/4	FR	
36-96"	C	Medium Sand	5yr 4/4	FR	

Test Pit No. **2** SCS Soil: Windsor
ESHWT: >108" Standing Water: None
Refusal: None Roots: None

Depth	Horizon	Soil Texture	Color	Consistence	Mottles; Quantity/Contrast
0-10"	A	Loamy Sand	10yr 4/3	FR	
10-30"	B	Sand	10yr 5/4	FR	
30-108"	C	Medium Sand	5yr 4/4	FR	

Test Pit No. **3** SCS Soil: Windsor
ESHWT: 84" Standing Water: None
Refusal: None Roots: None

Depth	Horizon	Soil Texture	Color	Consistence	Mottles; Quantity/Contrast
0-7"	A	Loamy Sand	10yr 4/3	FR	
7-27"	B	Sand	10yr 5/4	FR	
27-108"	C	Medium Sand	5yr 4/4	FR	@ 84" 2.5y 4/4

Test Pit No. **4** SCS Soil: Windsor
ESHWT: >108" Standing Water: None
Refusal: None Roots: None

Depth	Horizon	Soil Texture	Color	Consistence	Mottles; Quantity/Contrast
0-12"	A	Loamy Sand	10yr 4/3	FR	
12-24"	B	Sand	10yr 5/4	FR	
24-108"	C	Medium Sand	5yr 4/4	FR	

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Test Pit No.	**5**	SCS Soil:	Windsor
ESHWT:	>108"	Standing Water:	None
Refusal:	None	Roots:	None

Depth	Horizon	Soil Texture	Color	Consistence	Mottles; Quantity/Contrast
0-13"	A	Loamy Sand	10yr 4/3	FR	
13-36"	B	Sand	10yr 5/4	FR	
36-108"	C	Medium Sand	5yr 4/4	FR	

Test Pit No.	**6**	SCS Soil:	Windsor
ESHWT:	>108"	Standing Water:	None
Refusal:	None	Roots:	None

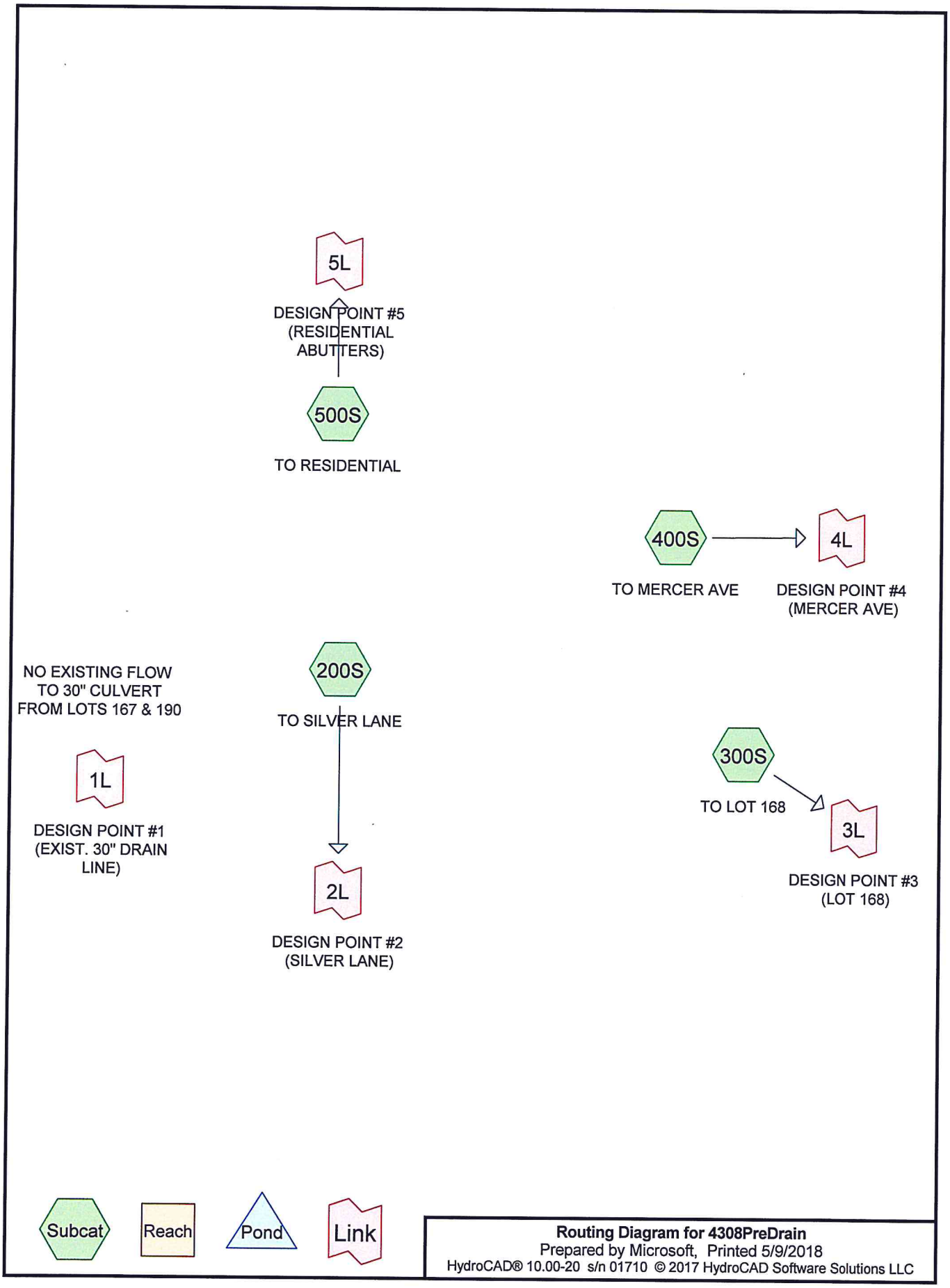
Depth	Horizon	Soil Texture	Color	Consistence	Mottles; Quantity/Contrast
0-24"	A	Loamy Sand	10yr 4/3	FR	
24-36"	B	Sand	10yr 5/4	FR	
36-108"	C	Medium Sand	5yr 4/4	FR	

Test Pit No.	**7**	SCS Soil:	Windsor
ESHWT:	>103"	Standing Water:	None
Refusal:	None	Roots:	48"

Depth	Horizon	Soil Texture	Color	Consistence	Mottles; Quantity/Contrast
0-8"	A	Loamy Sand	10yr 4/3	FR	
8-29"	B	Sand	10yr 5/4	FR	
29-103"	C	Medium Sand	5yr 4/4	FR	

APPENDIX D

Pre-Development HydroCAD Printouts



Routing Diagram for 4308PreDrain
Prepared by Microsoft, Printed 5/9/2018

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
82,568	30	Meadow, non-grazed, HSG A (200S, 300S, 400S, 500S)
967	98	Paved parking, HSG A (400S)
83,535	**31**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
83,535	HSG A	200S, 300S, 400S, 500S
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
83,535		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Nur
82,568	0	0	0	0	82,568	Meadow, non-grazed	
967	0	0	0	0	967	Paved parking	
83,535	**0**	**0**	**0**	**0**	**83,535**	**TOTAL AREA**	

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 200S: TO SILVER LANE Runoff Area=45,783 sf 0.00% Impervious Runoff Depth=0.00"
Tc=30.0 min CN=30 Runoff=0.00 cfs 0 cf

Subcatchment 300S: TO LOT 168 Runoff Area=13,439 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=70' Slope=0.0050 '/' Tc=18.7 min CN=30 Runoff=0.00 cfs 0 cf

Subcatchment 400S: TO MERCER AVE Runoff Area=3,962 sf 24.41% Impervious Runoff Depth=0.07"
Flow Length=55' Slope=0.0050 '/' Tc=15.4 min CN=47 Runoff=0.00 cfs 24 cf

Subcatchment 500S: TO RESIDENTIAL Runoff Area=20,351 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=70' Slope=0.0050 '/' Tc=18.7 min CN=30 Runoff=0.00 cfs 0 cf

Link 1L: DESIGN POINT #1 (EXIST. 30" DRAIN LINE)
Primary=0.00 cfs 0 cf

Link 2L: DESIGN POINT #2 (SILVER LANE) Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link 3L: DESIGN POINT #3 (LOT 168) Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link 4L: DESIGN POINT #4 (MERCER AVE) Inflow=0.00 cfs 24 cf
Primary=0.00 cfs 24 cf

Link 5L: DESIGN POINT #5 (RESIDENTIAL ABUTTERS) Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Total Runoff Area = 83,535 sf Runoff Volume = 24 cf Average Runoff Depth = 0.00"
98.84% Pervious = 82,568 sf 1.16% Impervious = 967 sf

Summary for Subcatchment 200S: TO SILVER LANE

NOTE: Tc VALUE FOR PRE-DEVELOPMENT CONDITIONS IS ASSUMED SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
45,783	30	Meadow, non-grazed, HSG A
45,783		100.00% Pervious Area

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

Summary for Subcatchment 300S: TO LOT 168

NOTE: Tc VALUE FOR PRE-DEVELOPMENT CONDITIONS IS ASSUMED SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
13,439	30	Meadow, non-grazed, HSG A
13,439		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.7	70	0.0050	0.06		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"

Summary for Subcatchment 400S: TO MERCER AVE

NOTE: Tc VALUES FOR PRE-DEVELOPMENT CONDITIONS ARE ASSUMED VALUES SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.00 cfs @ 14.94 hrs, Volume= 24 cf, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
2,995	30	Meadow, non-grazed, HSG A
967	98	Paved parking, HSG A
3,962	47	Weighted Average
2,995		75.59% Pervious Area
967		24.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	55	0.0050	0.06		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"

Summary for Subcatchment 500S: TO RESIDENTIAL

NOTE: Tc VALUES FOR PRE-DEVELOPMENT CONDITIONS ARE ASSUMED VALUES SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
20,351	30	Meadow, non-grazed, HSG A
20,351		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.7	70	0.0050	0.06		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"

Summary for Link 1L: DESIGN POINT #1 (EXIST. 30" DRAIN LINE)

[43] Hint: Has no inflow (Outflow=Zero)

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 2L: DESIGN POINT #2 (SILVER LANE)

Inflow Area = 45,783 sf, 0.00% Impervious, Inflow Depth = 0.00" for 2-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= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 3L: DESIGN POINT #3 (LOT 168)

Inflow Area = 13,439 sf, 0.00% Impervious, Inflow Depth = 0.00" for 2-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= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 4L: DESIGN POINT #4 (MERCER AVE)

Inflow Area = 3,962 sf, 24.41% Impervious, Inflow Depth = 0.07" for 2-year event
Inflow = 0.00 cfs @ 14.94 hrs, Volume= 24 cf
Primary = 0.00 cfs @ 14.94 hrs, Volume= 24 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 5L: DESIGN POINT #5 (RESIDENTIAL ABUTTERS)

Inflow Area = 20,351 sf, 0.00% Impervious, Inflow Depth = 0.00" for 2-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= 0.00-30.00 hrs, dt= 0.01 hrs

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 200S: TO SILVER LANE Runoff Area=45,783 sf 0.00% Impervious Runoff Depth=0.00"
Tc=30.0 min CN=30 Runoff=0.00 cfs 9 cf

Subcatchment 300S: TO LOT 168 Runoff Area=13,439 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=70' Slope=0.0050 '/' Tc=18.7 min CN=30 Runoff=0.00 cfs 3 cf

Subcatchment 400S: TO MERCER AVE Runoff Area=3,962 sf 24.41% Impervious Runoff Depth=0.50"
Flow Length=55' Slope=0.0050 '/' Tc=15.4 min CN=47 Runoff=0.02 cfs 166 cf

Subcatchment 500S: TO RESIDENTIAL Runoff Area=20,351 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=70' Slope=0.0050 '/' Tc=18.7 min CN=30 Runoff=0.00 cfs 4 cf

Link 1L: DESIGN POINT #1 (EXIST. 30" DRAIN LINE)
Primary=0.00 cfs 0 cf

Link 2L: DESIGN POINT #2 (SILVER LANE)
Inflow=0.00 cfs 9 cf
Primary=0.00 cfs 9 cf

Link 3L: DESIGN POINT #3 (LOT 168)
Inflow=0.00 cfs 3 cf
Primary=0.00 cfs 3 cf

Link 4L: DESIGN POINT #4 (MERCER AVE)
Inflow=0.02 cfs 166 cf
Primary=0.02 cfs 166 cf

Link 5L: DESIGN POINT #5 (RESIDENTIAL ABUTTERS)
Inflow=0.00 cfs 4 cf
Primary=0.00 cfs 4 cf

Total Runoff Area = 83,535 sf Runoff Volume = 181 cf Average Runoff Depth = 0.03"
98.84% Pervious = 82,568 sf 1.16% Impervious = 967 sf

Summary for Subcatchment 200S: TO SILVER LANE

NOTE: Tc VALUE FOR PRE-DEVELOPMENT CONDITIONS IS ASSUMED SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.00 cfs @ 24.07 hrs, Volume= 9 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
45,783	30	Meadow, non-grazed, HSG A
45,783		100.00% Pervious Area

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

Summary for Subcatchment 300S: TO LOT 168

NOTE: Tc VALUE FOR PRE-DEVELOPMENT CONDITIONS IS ASSUMED SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.00 cfs @ 24.04 hrs, Volume= 3 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
13,439	30	Meadow, non-grazed, HSG A
13,439		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.7	70	0.0050	0.06		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"

Summary for Subcatchment 400S: TO MERCER AVE

NOTE: Tc VALUES FOR PRE-DEVELOPMENT CONDITIONS ARE ASSUMED VALUES SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.02 cfs @ 12.41 hrs, Volume= 166 cf, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
2,995	30	Meadow, non-grazed, HSG A
967	98	Paved parking, HSG A
3,962	47	Weighted Average
2,995		75.59% Pervious Area
967		24.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	55	0.0050	0.06		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"

Summary for Subcatchment 500S: TO RESIDENTIAL

NOTE: Tc VALUES FOR PRE-DEVELOPMENT CONDITIONS ARE ASSUMED VALUES SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.00 cfs @ 24.04 hrs, Volume= 4 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
20,351	30	Meadow, non-grazed, HSG A
20,351		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.7	70	0.0050	0.06		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"

Summary for Link 1L: DESIGN POINT #1 (EXIST. 30" DRAIN LINE)

[43] Hint: Has no inflow (Outflow=Zero)

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 2L: DESIGN POINT #2 (SILVER LANE)

Inflow Area = 45,783 sf, 0.00% Impervious, Inflow Depth = 0.00" for 10-year event
Inflow = 0.00 cfs @ 24.07 hrs, Volume= 9 cf
Primary = 0.00 cfs @ 24.07 hrs, Volume= 9 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 3L: DESIGN POINT #3 (LOT 168)

Inflow Area = 13,439 sf, 0.00% Impervious, Inflow Depth = 0.00" for 10-year event
Inflow = 0.00 cfs @ 24.04 hrs, Volume= 3 cf
Primary = 0.00 cfs @ 24.04 hrs, Volume= 3 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 4L: DESIGN POINT #4 (MERCER AVE)

Inflow Area = 3,962 sf, 24.41% Impervious, Inflow Depth = 0.50" for 10-year event
Inflow = 0.02 cfs @ 12.41 hrs, Volume= 166 cf
Primary = 0.02 cfs @ 12.41 hrs, Volume= 166 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 5L: DESIGN POINT #5 (RESIDENTIAL ABUTTERS)

Inflow Area = 20,351 sf, 0.00% Impervious, Inflow Depth = 0.00" for 10-year event
Inflow = 0.00 cfs @ 24.04 hrs, Volume= 4 cf
Primary = 0.00 cfs @ 24.04 hrs, Volume= 4 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 200S: TO SILVER LANE Runoff Area=45,783 sf 0.00% Impervious Runoff Depth=0.04"
Tc=30.0 min CN=30 Runoff=0.00 cfs 137 cf

Subcatchment 300S: TO LOT 168 Runoff Area=13,439 sf 0.00% Impervious Runoff Depth=0.04"
Flow Length=70' Slope=0.0050 '/' Tc=18.7 min CN=30 Runoff=0.00 cfs 40 cf

Subcatchment 400S: TO MERCER AVE Runoff Area=3,962 sf 24.41% Impervious Runoff Depth=0.77"
Flow Length=55' Slope=0.0050 '/' Tc=15.4 min CN=47 Runoff=0.04 cfs 253 cf

Subcatchment 500S: TO RESIDENTIAL Runoff Area=20,351 sf 0.00% Impervious Runoff Depth=0.04"
Flow Length=70' Slope=0.0050 '/' Tc=18.7 min CN=30 Runoff=0.00 cfs 61 cf

Link 1L: DESIGN POINT #1 (EXIST. 30" DRAIN LINE)
Primary=0.00 cfs 0 cf

Link 2L: DESIGN POINT #2 (SILVER LANE)
Inflow=0.00 cfs 137 cf
Primary=0.00 cfs 137 cf

Link 3L: DESIGN POINT #3 (LOT 168)
Inflow=0.00 cfs 40 cf
Primary=0.00 cfs 40 cf

Link 4L: DESIGN POINT #4 (MERCER AVE)
Inflow=0.04 cfs 253 cf
Primary=0.04 cfs 253 cf

Link 5L: DESIGN POINT #5 (RESIDENTIAL ABUTTERS)
Inflow=0.00 cfs 61 cf
Primary=0.00 cfs 61 cf

Total Runoff Area = 83,535 sf Runoff Volume = 491 cf Average Runoff Depth = 0.07"
98.84% Pervious = 82,568 sf 1.16% Impervious = 967 sf

Summary for Subcatchment 200S: TO SILVER LANE

NOTE: Tc VALUE FOR PRE-DEVELOPMENT CONDITIONS IS ASSUMED SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.00 cfs @ 17.63 hrs, Volume= 137 cf, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.60"

Area (sf)	CN	Description
45,783	30	Meadow, non-grazed, HSG A
45,783		100.00% Pervious Area

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

Summary for Subcatchment 300S: TO LOT 168

NOTE: Tc VALUE FOR PRE-DEVELOPMENT CONDITIONS IS ASSUMED SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.00 cfs @ 17.43 hrs, Volume= 40 cf, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.60"

Area (sf)	CN	Description
13,439	30	Meadow, non-grazed, HSG A
13,439		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.7	70	0.0050	0.06		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"

Summary for Subcatchment 400S: TO MERCER AVE

NOTE: Tc VALUES FOR PRE-DEVELOPMENT CONDITIONS ARE ASSUMED VALUES SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.04 cfs @ 12.31 hrs, Volume= 253 cf, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.60"

Area (sf)	CN	Description
2,995	30	Meadow, non-grazed, HSG A
967	98	Paved parking, HSG A
3,962	47	Weighted Average
2,995		75.59% Pervious Area
967		24.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	55	0.0050	0.06		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"

Summary for Subcatchment 500S: TO RESIDENTIAL

NOTE: Tc VALUES FOR PRE-DEVELOPMENT CONDITIONS ARE ASSUMED VALUES SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.00 cfs @ 17.43 hrs, Volume= 61 cf, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.60"

Area (sf)	CN	Description
20,351	30	Meadow, non-grazed, HSG A
20,351		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.7	70	0.0050	0.06		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"

Summary for Link 1L: DESIGN POINT #1 (EXIST. 30" DRAIN LINE)

[43] Hint: Has no inflow (Outflow=Zero)

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 2L: DESIGN POINT #2 (SILVER LANE)

Inflow Area = 45,783 sf, 0.00% Impervious, Inflow Depth = 0.04" for 25-year event
Inflow = 0.00 cfs @ 17.63 hrs, Volume= 137 cf
Primary = 0.00 cfs @ 17.63 hrs, Volume= 137 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 3L: DESIGN POINT #3 (LOT 168)

Inflow Area = 13,439 sf, 0.00% Impervious, Inflow Depth = 0.04" for 25-year event
Inflow = 0.00 cfs @ 17.43 hrs, Volume= 40 cf
Primary = 0.00 cfs @ 17.43 hrs, Volume= 40 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 4L: DESIGN POINT #4 (MERCER AVE)

Inflow Area = 3,962 sf, 24.41% Impervious, Inflow Depth = 0.77" for 25-year event
Inflow = 0.04 cfs @ 12.31 hrs, Volume= 253 cf
Primary = 0.04 cfs @ 12.31 hrs, Volume= 253 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 5L: DESIGN POINT #5 (RESIDENTIAL ABUTTERS)

Inflow Area = 20,351 sf, 0.00% Impervious, Inflow Depth = 0.04" for 25-year event
Inflow = 0.00 cfs @ 17.43 hrs, Volume= 61 cf
Primary = 0.00 cfs @ 17.43 hrs, Volume= 61 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 200S: TO SILVER LANE Runoff Area=45,783 sf 0.00% Impervious Runoff Depth=0.21"
Tc=30.0 min CN=30 Runoff=0.03 cfs 809 cf

Subcatchment 300S: TO LOT 168 Runoff Area=13,439 sf 0.00% Impervious Runoff Depth=0.21"
Flow Length=70' Slope=0.0050 '/' Tc=18.7 min CN=30 Runoff=0.01 cfs 238 cf

Subcatchment 400S: TO MERCER AVE Runoff Area=3,962 sf 24.41% Impervious Runoff Depth=1.41"
Flow Length=55' Slope=0.0050 '/' Tc=15.4 min CN=47 Runoff=0.09 cfs 464 cf

Subcatchment 500S: TO RESIDENTIAL Runoff Area=20,351 sf 0.00% Impervious Runoff Depth=0.21"
Flow Length=70' Slope=0.0050 '/' Tc=18.7 min CN=30 Runoff=0.01 cfs 360 cf

Link 1L: DESIGN POINT #1 (EXIST. 30" DRAIN LINE)
Primary=0.00 cfs 0 cf

Link 2L: DESIGN POINT #2 (SILVER LANE) Inflow=0.03 cfs 809 cf
Primary=0.03 cfs 809 cf

Link 3L: DESIGN POINT #3 (LOT 168) Inflow=0.01 cfs 238 cf
Primary=0.01 cfs 238 cf

Link 4L: DESIGN POINT #4 (MERCER AVE) Inflow=0.09 cfs 464 cf
Primary=0.09 cfs 464 cf

Link 5L: DESIGN POINT #5 (RESIDENTIAL ABUTTERS) Inflow=0.01 cfs 360 cf
Primary=0.01 cfs 360 cf

Total Runoff Area = 83,535 sf Runoff Volume = 1,871 cf Average Runoff Depth = 0.27"
98.84% Pervious = 82,568 sf 1.16% Impervious = 967 sf

Summary for Subcatchment 200S: TO SILVER LANE

NOTE: Tc VALUE FOR PRE-DEVELOPMENT CONDITIONS IS ASSUMED SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.03 cfs @ 14.17 hrs, Volume= 809 cf, Depth= 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
45,783	30	Meadow, non-grazed, HSG A
45,783		100.00% Pervious Area

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

Summary for Subcatchment 300S: TO LOT 168

NOTE: Tc VALUE FOR PRE-DEVELOPMENT CONDITIONS IS ASSUMED SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.01 cfs @ 13.98 hrs, Volume= 238 cf, Depth= 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
13,439	30	Meadow, non-grazed, HSG A
13,439		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.7	70	0.0050	0.06		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"

Summary for Subcatchment 400S: TO MERCER AVE

NOTE: Tc VALUES FOR PRE-DEVELOPMENT CONDITIONS ARE ASSUMED VALUES SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.09 cfs @ 12.25 hrs, Volume= 464 cf, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
2,995	30	Meadow, non-grazed, HSG A
967	98	Paved parking, HSG A
3,962	47	Weighted Average
2,995		75.59% Pervious Area
967		24.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	55	0.0050	0.06		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"

Summary for Subcatchment 500S: TO RESIDENTIAL

NOTE: Tc VALUES FOR PRE-DEVELOPMENT CONDITIONS ARE ASSUMED VALUES SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.01 cfs @ 13.98 hrs, Volume= 360 cf, Depth= 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
20,351	30	Meadow, non-grazed, HSG A
20,351		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.7	70	0.0050	0.06		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"

Summary for Link 1L: DESIGN POINT #1 (EXIST. 30" DRAIN LINE)

[43] Hint: Has no inflow (Outflow=Zero)

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 2L: DESIGN POINT #2 (SILVER LANE)

Inflow Area = 45,783 sf, 0.00% Impervious, Inflow Depth = 0.21" for 100-year event
Inflow = 0.03 cfs @ 14.17 hrs, Volume= 809 cf
Primary = 0.03 cfs @ 14.17 hrs, Volume= 809 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 3L: DESIGN POINT #3 (LOT 168)

Inflow Area = 13,439 sf, 0.00% Impervious, Inflow Depth = 0.21" for 100-year event
Inflow = 0.01 cfs @ 13.98 hrs, Volume= 238 cf
Primary = 0.01 cfs @ 13.98 hrs, Volume= 238 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 4L: DESIGN POINT #4 (MERCER AVE)

Inflow Area = 3,962 sf, 24.41% Impervious, Inflow Depth = 1.41" for 100-year event
Inflow = 0.09 cfs @ 12.25 hrs, Volume= 464 cf
Primary = 0.09 cfs @ 12.25 hrs, Volume= 464 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

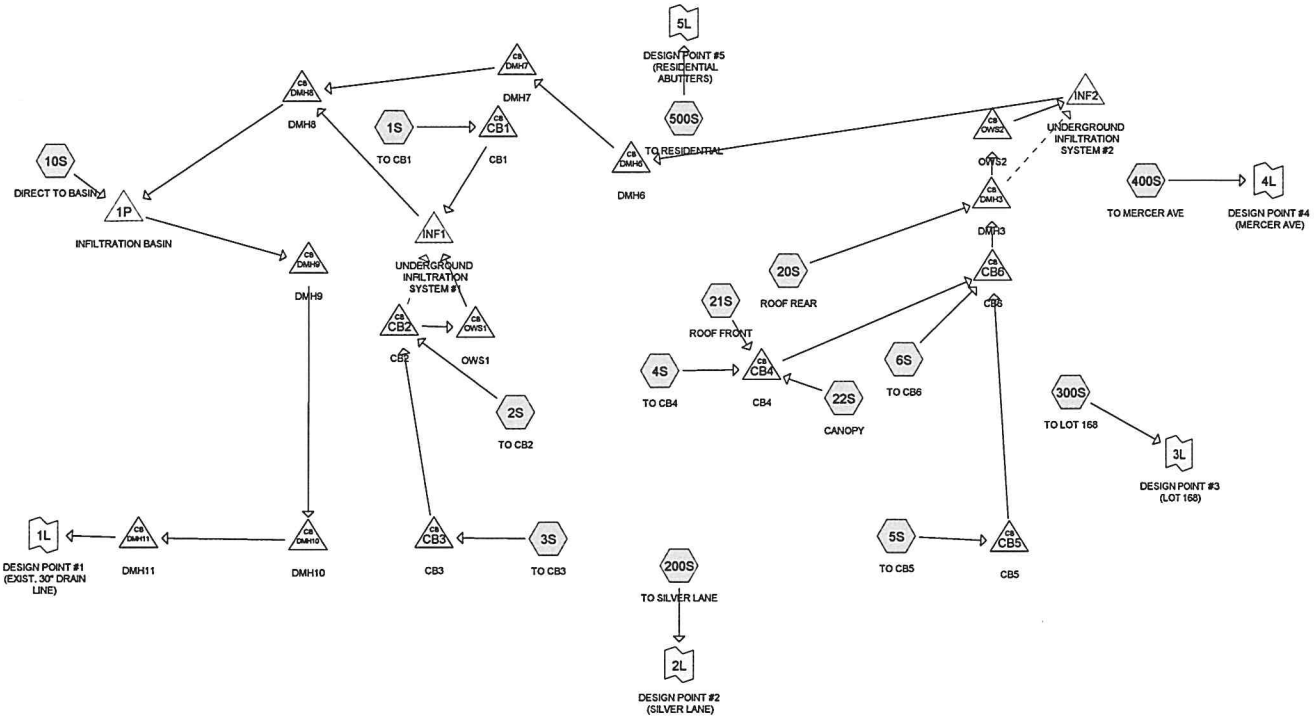
Summary for Link 5L: DESIGN POINT #5 (RESIDENTIAL ABUTTERS)

Inflow Area = 20,351 sf, 0.00% Impervious, Inflow Depth = 0.21" for 100-year event
Inflow = 0.01 cfs @ 13.98 hrs, Volume= 360 cf
Primary = 0.01 cfs @ 13.98 hrs, Volume= 360 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

APPENDIX E

Post-Development HydroCAD Printouts



Subcat Reach Pond Link

Routing Diagram for 4308PostDrain REV1
Prepared by Microsoft, Printed 5/24/2018
HydroCAD® 10.00-20 s/n 01710 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
6,711	39	>75% Grass cover, Good, HSG A (1S, 2S, 3S, 5S, 6S, 400S)
33,462	30	Meadow, non-grazed, HSG A (10S, 200S, 300S, 500S)
34,912	98	Paved parking, HSG A (1S, 2S, 3S, 4S, 5S, 6S, 400S)
8,450	98	Roofs, HSG A (20S, 21S, 22S)
83,535	**66**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
83,535	HSG A	1S, 2S, 3S, 4S, 5S, 6S, 10S, 20S, 21S, 22S, 200S, 300S, 400S, 500S
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
83,535		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
6,711	0	0	0	0	6,711	>75% Grass cover, Good
33,462	0	0	0	0	33,462	Meadow, non-grazed
34,912	0	0	0	0	34,912	Paved parking
8,450	0	0	0	0	8,450	Roofs
83,535	**0**	**0**	**0**	**0**	**83,535**	**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	36.00	34.20	102.0	0.0176	0.013	12.0	0.0	0.0
2	CB1	36.25	36.05	6.0	0.0333	0.013	12.0	0.0	0.0
3	CB2	36.45	36.35	10.0	0.0100	0.010	6.0	0.0	0.0
4	CB2	37.25	37.00	7.0	0.0357	0.013	12.0	0.0	0.0
5	CB3	37.00	36.45	102.0	0.0054	0.013	12.0	0.0	0.0
6	CB4	37.70	37.00	86.0	0.0081	0.013	12.0	0.0	0.0
7	CB5	36.65	36.00	138.0	0.0047	0.013	12.0	0.0	0.0
8	CB6	36.00	35.90	20.0	0.0050	0.013	12.0	0.0	0.0
9	DMH10	33.50	33.00	74.0	0.0068	0.013	12.0	0.0	0.0
10	DMH11	33.00	31.96	30.0	0.0347	0.013	18.0	0.0	0.0
11	DMH3	35.90	35.85	10.0	0.0050	0.010	6.0	0.0	0.0
12	DMH3	37.20	36.50	25.0	0.0280	0.013	12.0	0.0	0.0
13	DMH6	36.65	36.50	32.0	0.0047	0.013	12.0	0.0	0.0
14	DMH7	36.50	36.30	40.0	0.0050	0.013	12.0	0.0	0.0
15	DMH8	36.20	36.00	32.0	0.0063	0.013	12.0	0.0	0.0
16	DMH9	34.10	33.50	106.0	0.0057	0.013	12.0	0.0	0.0
17	INF1	36.50	36.30	11.0	0.0182	0.010	12.0	0.0	0.0
18	INF2	37.50	36.65	168.0	0.0051	0.013	12.0	0.0	0.0
19	OWS1	36.10	36.05	3.0	0.0167	0.010	6.0	0.0	0.0
20	OWS2	35.60	35.55	10.0	0.0050	0.010	6.0	0.0	0.0

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: TO CB1 Runoff Area=5,709 sf 95.45% Impervious Runoff Depth=2.64"
Flow Length=108' Slope=0.0140 '/' Tc=1.0 min CN=95 Runoff=0.46 cfs 1,258 cf

Subcatchment 2S: TO CB2 Runoff Area=8,149 sf 96.37% Impervious Runoff Depth=2.75"
Flow Length=65' Tc=2.7 min CN=96 Runoff=0.63 cfs 1,867 cf

Subcatchment 3S: TO CB3 Runoff Area=6,017 sf 86.36% Impervious Runoff Depth=2.17"
Flow Length=103' Slope=0.0100 '/' Tc=4.3 min CN=90 Runoff=0.37 cfs 1,087 cf

Subcatchment 4S: TO CB4 Runoff Area=4,267 sf 100.00% Impervious Runoff Depth=2.97"
Flow Length=50' Slope=0.0140 '/' Tc=0.6 min CN=98 Runoff=0.37 cfs 1,055 cf

Subcatchment 5S: TO CB5 Runoff Area=6,307 sf 79.31% Impervious Runoff Depth=1.84"
Flow Length=128' Tc=4.4 min CN=86 Runoff=0.33 cfs 965 cf

Subcatchment 6S: TO CB6 Runoff Area=7,212 sf 85.66% Impervious Runoff Depth=2.17"
Flow Length=45' Tc=3.3 min CN=90 Runoff=0.46 cfs 1,303 cf

Subcatchment 10S: DIRECT TO BASIN Runoff Area=5,696 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=16' Slope=0.0100 '/' Tc=3.0 min CN=30 Runoff=0.00 cfs 0 cf

Subcatchment 20S: ROOF REAR Runoff Area=2,500 sf 100.00% Impervious Runoff Depth=2.97"
Tc=0.0 min CN=98 Runoff=0.22 cfs 618 cf

Subcatchment 21S: ROOF FRONT Runoff Area=2,500 sf 100.00% Impervious Runoff Depth=2.97"
Tc=0.0 min CN=98 Runoff=0.22 cfs 618 cf

Subcatchment 22S: CANOPY Runoff Area=3,450 sf 100.00% Impervious Runoff Depth=2.97"
Tc=0.0 min CN=98 Runoff=0.30 cfs 853 cf

Subcatchment 200S: TO SILVER LANE Runoff Area=18,832 sf 0.00% Impervious Runoff Depth=0.00"
Tc=30.0 min CN=30 Runoff=0.00 cfs 0 cf

Subcatchment 300S: TO LOT 168 Runoff Area=2,294 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=20' Slope=0.0050 '/' Tc=4.7 min CN=30 Runoff=0.00 cfs 0 cf

Subcatchment 400S: TO MERCER AVE Runoff Area=3,962 sf 24.41% Impervious Runoff Depth=0.20"
Flow Length=55' Slope=0.0050 '/' Tc=10.6 min CN=53 Runoff=0.01 cfs 65 cf

Subcatchment 500S: TO RESIDENTIAL Runoff Area=6,640 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=50' Slope=0.0050 '/' Tc=9.8 min CN=30 Runoff=0.00 cfs 0 cf

Pond 1P: INFILTRATION BASIN Peak Elev=36.00' Storage=0 cf Inflow=0.00 cfs 0 cf
Discarded=0.00 cfs 0 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Pond CB1: CB1 Peak Elev=36.59' Inflow=0.46 cfs 1,258 cf
12.0" Round Culvert n=0.013 L=6.0' S=0.0333 '/' Outflow=0.46 cfs 1,258 cf

Pond CB2: CB2 Peak Elev=37.50' Inflow=0.98 cfs 2,954 cf
Primary=0.72 cfs 2,876 cf Secondary=0.27 cfs 79 cf Outflow=0.98 cfs 2,954 cf

Pond CB3: CB3 Peak Elev=37.60' Inflow=0.37 cfs 1,087 cf
12.0" Round Culvert n=0.013 L=102.0' S=0.0054 '/' Outflow=0.37 cfs 1,087 cf

Pond CB4: CB4 Peak Elev=38.27' Inflow=0.88 cfs 2,527 cf
12.0" Round Culvert n=0.013 L=86.0' S=0.0081 '/' Outflow=0.88 cfs 2,527 cf

Pond CB5: CB5 Peak Elev=37.82' Inflow=0.33 cfs 965 cf
12.0" Round Culvert n=0.013 L=138.0' S=0.0047 '/' Outflow=0.33 cfs 965 cf

Pond CB6: CB6 Peak Elev=37.81' Inflow=1.49 cfs 4,794 cf
12.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=1.49 cfs 4,794 cf

Pond DMH10: DMH10 Peak Elev=33.50' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=74.0' S=0.0068 '/' Outflow=0.00 cfs 0 cf

Pond DMH11: DMH11 Peak Elev=33.00' Inflow=0.00 cfs 0 cf
18.0" Round Culvert n=0.013 L=30.0' S=0.0347 '/' Outflow=0.00 cfs 0 cf

Pond DMH3: DMH3 Peak Elev=37.65' Inflow=1.69 cfs 5,413 cf
Primary=0.90 cfs 5,048 cf Secondary=0.80 cfs 364 cf Outflow=1.69 cfs 5,413 cf

Pond DMH6: DMH6 Peak Elev=36.65' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=32.0' S=0.0047 '/' Outflow=0.00 cfs 0 cf

Pond DMH7: DMH7 Peak Elev=36.50' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=0.00 cfs 0 cf

Pond DMH8: DMH8 Peak Elev=36.20' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=32.0' S=0.0063 '/' Outflow=0.00 cfs 0 cf

Pond DMH9: DMH9 Peak Elev=34.10' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=106.0' S=0.0057 '/' Outflow=0.00 cfs 0 cf

Pond INF1: UNDERGROUND INFILTRATION Peak Elev=36.39' Storage=1,483 cf Inflow=1.39 cfs 4,213 cf
Discarded=0.14 cfs 4,213 cf Primary=0.00 cfs 0 cf Outflow=0.14 cfs 4,213 cf

Pond INF2: UNDERGROUND INFILTRATION Peak Elev=36.08' Storage=2,046 cf Inflow=1.69 cfs 5,413 cf
Discarded=0.15 cfs 5,414 cf Primary=0.00 cfs 0 cf Outflow=0.15 cfs 5,414 cf

Pond OWS1: OWS1 Peak Elev=36.93' Inflow=0.72 cfs 2,876 cf
6.0" Round Culvert n=0.010 L=3.0' S=0.0167 '/' Outflow=0.72 cfs 2,876 cf

Pond OWS2: OWS2 Peak Elev=36.76' Inflow=0.90 cfs 5,048 cf
6.0" Round Culvert n=0.010 L=10.0' S=0.0050 '/' Outflow=0.90 cfs 5,048 cf

Link 1L: DESIGN POINT #1 (EXIST. 30" DRAIN LINE) Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link 2L: DESIGN POINT #2 (SILVER LANE)
Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link 3L: DESIGN POINT #3 (LOT 168)
Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link 4L: DESIGN POINT #4 (MERCER AVE)
Inflow=0.01 cfs 65 cf
Primary=0.01 cfs 65 cf

Link 5L: DESIGN POINT #5 (RESIDENTIAL ABUTTERS)
Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Total Runoff Area = 83,535 sf Runoff Volume = 9,690 cf Average Runoff Depth = 1.39"
48.09% Pervious = 40,173 sf 51.91% Impervious = 43,362 sf

Summary for Subcatchment 1S: TO CB1

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.46 cfs @ 12.01 hrs, Volume= 1,258 cf, Depth= 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
260	39	>75% Grass cover, Good, HSG A
5,449	98	Paved parking, HSG A
5,709	95	Weighted Average
260		4.55% Pervious Area
5,449		95.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0140	0.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.20"
0.6	88	0.0140	2.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	108	Total			

Summary for Subcatchment 2S: TO CB2

Runoff = 0.63 cfs @ 12.04 hrs, Volume= 1,867 cf, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
296	39	>75% Grass cover, Good, HSG A
7,853	98	Paved parking, HSG A
8,149	96	Weighted Average
296		3.63% Pervious Area
7,853		96.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	15	0.0150	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.3	50	0.0180	2.72		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.7	65	Total			

Summary for Subcatchment 3S: TO CB3

Runoff = 0.37 cfs @ 12.06 hrs, Volume= 1,087 cf, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
821	39	>75% Grass cover, Good, HSG A
5,196	98	Paved parking, HSG A
6,017	90	Weighted Average
821		13.64% Pervious Area
5,196		86.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	20	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.7	83	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3	103	Total			

Summary for Subcatchment 4S: TO CB4

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.37 cfs @ 12.01 hrs, Volume= 1,055 cf, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
4,267	98	Paved parking, HSG A
4,267		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0140	0.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.20"
0.2	30	0.0140	2.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	50	Total			

Summary for Subcatchment 5S: TO CB5

Runoff = 0.33 cfs @ 12.07 hrs, Volume= 965 cf, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
1,305	39	>75% Grass cover, Good, HSG A
5,002	98	Paved parking, HSG A
6,307	86	Weighted Average
1,305		20.69% Pervious Area
5,002		79.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	20	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.8	108	0.0110	2.13		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.4	128	Total			

Summary for Subcatchment 6S: TO CB6

Runoff = 0.46 cfs @ 12.05 hrs, Volume= 1,303 cf, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
1,034	39	>75% Grass cover, Good, HSG A
6,178	98	Paved parking, HSG A
7,212	90	Weighted Average
1,034		14.34% Pervious Area
6,178		85.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	25	0.0200	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	20	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.3	45	Total			

Summary for Subcatchment 10S: DIRECT TO BASIN

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
5,696	30	Meadow, non-grazed, HSG A
5,696		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	16	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"

Summary for Subcatchment 20S: ROOF REAR

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.22 cfs @ 12.00 hrs, Volume= 618 cf, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
2,500	98	Roofs, HSG A
2,500		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry, 0**

Summary for Subcatchment 21S: ROOF FRONT

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.22 cfs @ 12.00 hrs, Volume= 618 cf, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
2,500	98	Roofs, HSG A
2,500		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry, 0**

Summary for Subcatchment 22S: CANOPY

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.30 cfs @ 12.00 hrs, Volume= 853 cf, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
3,450	98	Roofs, HSG A
3,450		100.00% Impervious Area

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

Summary for Subcatchment 200S: TO SILVER LANE

NOTE: Tc VALUE FOR PRE-DEVELOPMENT CONDITIONS IS ASSUMED SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
18,832	30	Meadow, non-grazed, HSG A
18,832		100.00% Pervious Area

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

Summary for Subcatchment 300S: TO LOT 168

NOTE: Tc VALUE FOR PRE-DEVELOPMENT CONDITIONS IS ASSUMED SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
2,294	30	Meadow, non-grazed, HSG A
2,294		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	20	0.0050	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"

Summary for Subcatchment 400S: TO MERCER AVE

NOTE: Tc VALUES FOR PRE-DEVELOPMENT CONDITIONS ARE ASSUMED VALUES SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.01 cfs @ 12.45 hrs, Volume= 65 cf, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
2,995	39	>75% Grass cover, Good, HSG A
967	98	Paved parking, HSG A
3,962	53	Weighted Average
2,995		75.59% Pervious Area
967		24.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	55	0.0050	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"

Summary for Subcatchment 500S: TO RESIDENTIAL

NOTE: Tc VALUES FOR PRE-DEVELOPMENT CONDITIONS ARE ASSUMED VALUES SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
6,640	30	Meadow, non-grazed, HSG A
6,640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	50	0.0050	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"

Summary for Pond 1P: INFILTRATION BASIN

DESIGN NOTES:

1) ESHWT BASED ON TP-5.

2) TREATMENT VOLUME WITHIN SYSTEM IS MEASURED STATICALLY BELOW OVERFLOW OUTLET ELEVATION.

3) Ksat VALUE OF 1.42in/hr FOR WINDSOR SOILS BASED ON NRCS SOIL REPORT.

Inflow Area = 51,807 sf, 81.83% Impervious, Inflow Depth = 0.00" for 2-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 36.00' @ 0.00 hrs Surf.Area= 417 sf Storage= 0 cf
Flood Elev= 40.00' Surf.Area= 2,907 sf Storage= 6,509 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	36.00'	6,509 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
36.00	417	126.0	0	0	417
37.00	1,062	176.0	715	715	1,628
38.00	1,619	195.0	1,331	2,046	2,219
40.00	2,907	232.0	4,464	6,509	3,547

Device	Routing	Invert	Outlet Devices
#1	Discarded	36.00'	**1.420 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 32.50'
#2	Primary	36.00'	**12.0" Round Culvert** L= 102.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.00' / 34.20' S= 0.0176 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	39.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=36.00' (Free Discharge)
└**1=Exfiltration** (Passes 0.00 cfs of 0.01 cfs potential flow)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=36.00' TW=34.10' (Dynamic Tailwater)
└**2=Culvert** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CB1: CB1

Inflow Area = 5,709 sf, 95.45% Impervious, Inflow Depth = 2.64" for 2-year event
Inflow = 0.46 cfs @ 12.01 hrs, Volume= 1,258 cf
Outflow = 0.46 cfs @ 12.01 hrs, Volume= 1,258 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.46 cfs @ 12.01 hrs, Volume= 1,258 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 36.59' @ 12.01 hrs
Flood Elev= 41.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.25'	**12.0" Round Culvert** L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.25' / 36.05' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.46 cfs @ 12.01 hrs HW=36.59' TW=36.03' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.46 cfs @ 1.97 fps)

Summary for Pond CB2: CB2

Inflow Area = 14,166 sf, 92.11% Impervious, Inflow Depth = 2.50" for 2-year event
Inflow = 0.98 cfs @ 12.05 hrs, Volume= 2,954 cf
Outflow = 0.98 cfs @ 12.05 hrs, Volume= 2,954 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.72 cfs @ 12.04 hrs, Volume= 2,876 cf
Secondary = 0.27 cfs @ 12.05 hrs, Volume= 79 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.50' @ 12.05 hrs
Flood Elev= 41.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.45'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.45' / 36.35' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#2	Secondary	37.25'	**12.0" Round Culvert** L= 7.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.25' / 37.00' S= 0.0357 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.72 cfs @ 12.04 hrs HW=37.50' TW=36.93' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.72 cfs @ 3.65 fps)

Secondary OutFlow Max=0.26 cfs @ 12.05 hrs HW=37.50' TW=36.09' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 0.26 cfs @ 1.71 fps)

Summary for Pond CB3: CB3

Inflow Area = 6,017 sf, 86.36% Impervious, Inflow Depth = 2.17" for 2-year event
Inflow = 0.37 cfs @ 12.06 hrs, Volume= 1,087 cf
Outflow = 0.37 cfs @ 12.06 hrs, Volume= 1,087 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.37 cfs @ 12.06 hrs, Volume= 1,087 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.60' @ 12.06 hrs
Flood Elev= 41.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.00'	**12.0" Round Culvert** L= 102.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.00' / 36.45' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.39 cfs @ 12.06 hrs HW=37.59' TW=37.49' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.39 cfs @ 1.14 fps)

Summary for Pond CB4: CB4

Inflow Area = 10,217 sf,100.00% Impervious, Inflow Depth = 2.97" for 2-year event
Inflow = 0.88 cfs @ 12.00 hrs, Volume= 2,527 cf
Outflow = 0.88 cfs @ 12.00 hrs, Volume= 2,527 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.88 cfs @ 12.00 hrs, Volume= 2,527 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 38.27' @ 12.01 hrs
Flood Elev= 41.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.70'	**12.0" Round Culvert** L= 86.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.70' / 37.00' S= 0.0081 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.83 cfs @ 12.00 hrs HW=38.26' TW=37.77' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.83 cfs @ 2.62 fps)

Summary for Pond CB5: CB5

Inflow Area = 6,307 sf, 79.31% Impervious, Inflow Depth = 1.84" for 2-year event
Inflow = 0.33 cfs @ 12.07 hrs, Volume= 965 cf
Outflow = 0.33 cfs @ 12.07 hrs, Volume= 965 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.33 cfs @ 12.07 hrs, Volume= 965 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.82' @ 12.03 hrs
Flood Elev= 40.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.65'	**12.0" Round Culvert** L= 138.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.65' / 36.00' S= 0.0047 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.56 cfs @ 12.07 hrs HW=37.78' TW=37.73' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.56 cfs @ 0.79 fps)

Summary for Pond CB6: CB6

[80] Warning: Exceeded Pond CB5 by 0.14' @ 11.93 hrs (0.49 cfs 170 cf)

Inflow Area =	23,736 sf,	90.15% Impervious,	Inflow Depth =	2.42"	for 2-year event
Inflow =	1.49 cfs @	12.02 hrs, Volume=	4,794 cf		
Outflow =	1.49 cfs @	12.02 hrs, Volume=	4,794 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	1.49 cfs @	12.02 hrs, Volume=	4,794 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.81' @ 12.02 hrs
Flood Elev= 41.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.00'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.00' / 35.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.50 cfs @ 12.02 hrs HW=37.81' TW=37.65' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.50 cfs @ 1.91 fps)

Summary for Pond DMH10: DMH10

Inflow Area =	51,807 sf,	81.83% Impervious,	Inflow Depth =	0.00"	for 2-year event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf		
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 33.50' @ 0.00 hrs
Flood Elev= 42.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.50'	**12.0" Round Culvert** L= 74.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 33.50' / 33.00' S= 0.0068 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=33.50' TW=33.00' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond DMH11: DMH11

Inflow Area = 51,807 sf, 81.83% Impervious, Inflow Depth = 0.00" for 2-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 33.00' @ 0.00 hrs
Flood Elev= 42.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.00'	**18.0" Round Culvert** L= 30.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 33.00' / 31.96' S= 0.0347 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=33.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond DMH3: DMH3

[80] Warning: Exceeded Pond CB6 by 0.11' @ 11.92 hrs (1.26 cfs 155 cf)

Inflow Area = 26,236 sf, 91.08% Impervious, Inflow Depth = 2.48" for 2-year event
Inflow = 1.69 cfs @ 12.01 hrs, Volume= 5,413 cf
Outflow = 1.69 cfs @ 12.01 hrs, Volume= 5,413 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.90 cfs @ 12.00 hrs, Volume= 5,048 cf
Secondary = 0.80 cfs @ 12.01 hrs, Volume= 364 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.65' @ 12.01 hrs
Flood Elev= 41.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.90'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.90' / 35.85' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#2	Secondary	37.20'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.20' / 36.50' S= 0.0280 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.89 cfs @ 12.00 hrs HW=37.64' TW=36.75' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.89 cfs @ 4.54 fps)

Secondary OutFlow Max=0.79 cfs @ 12.01 hrs HW=37.65' TW=35.65' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 0.79 cfs @ 2.29 fps)

Summary for Pond DMH6: DMH6

Inflow Area = 26,236 sf, 91.08% Impervious, Inflow Depth = 0.00" for 2-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 36.65' @ 0.00 hrs
Flood Elev= 41.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.65'	**12.0" Round Culvert** L= 32.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.65' / 36.50' S= 0.0047 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=36.65' TW=36.50' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond DMH7: DMH7

Inflow Area = 26,236 sf, 91.08% Impervious, Inflow Depth = 0.00" for 2-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 36.50' @ 0.00 hrs
Flood Elev= 41.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.50'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.50' / 36.30' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=36.50' TW=36.20' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond DMH8: DMH8

Inflow Area = 46,111 sf, 91.94% Impervious, Inflow Depth = 0.00" for 2-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 36.20' @ 0.00 hrs
Flood Elev= 41.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.20'	**12.0" Round Culvert** L= 32.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.20' / 36.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=36.20' TW=36.00' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond DMH9: DMH9

Inflow Area = 51,807 sf, 81.83% Impervious, Inflow Depth = 0.00" for 2-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 34.10' @ 0.00 hrs
Flood Elev= 42.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.10'	**12.0" Round Culvert** L= 106.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 34.10' / 33.50' S= 0.0057 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=34.10' TW=33.50' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond INF1: UNDERGROUND INFILTRATION SYSTEM #1

DESIGN NOTES:

1) ESHWT BASED ON TP-5.

2) TREATMENT VOLUME WITHIN SYSTEM IS MEASURED STATICALLY BELOW OVERFLOW OUTLET ELEVATION.

3) Ksat VALUE OF 1.42in/hr FOR WINDSOR SOILS BASED ON NRCS SOIL REPORT.

4) 33% STONE VOID STORAGE PER EAST HARTFORD MANUAL OF TECHNICAL DESIGN.

5) SYSTEM FULL ELEVATION IS TOP OF STONE.

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=292)

Inflow Area = 19,875 sf, 93.07% Impervious, Inflow Depth = 2.54" for 2-year event
Inflow = 1.39 cfs @ 12.04 hrs, Volume= 4,213 cf
Outflow = 0.14 cfs @ 12.74 hrs, Volume= 4,213 cf, Atten= 90%, Lag= 42.5 min
Discarded = 0.14 cfs @ 12.74 hrs, Volume= 4,213 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 36.39' @ 12.74 hrs Surf.Area= 3,273 sf Storage= 1,483 cf
Flood Elev= 37.83' Surf.Area= 3,273 sf Storage= 3,741 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 80.1 min (861.5 - 781.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	35.50'	1,509 cf	**34.83'W x 74.40'L x 2.33'H Field A** 6,047 cf Overall - 1,474 cf Embedded = 4,573 cf x 33.0% Voids
#2A	36.00'	1,474 cf	**ADS_StormTech SC-310 +Cap** x 100 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 10 Rows of 10 Chambers
#3B	35.50'	408 cf	**14.83'W x 45.92'L x 2.33'H Field B** 1,589 cf Overall - 354 cf Embedded = 1,236 cf x 33.0% Voids
#4B	36.00'	354 cf	**ADS_StormTech SC-310 +Cap** x 24 Inside #3 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 4 Rows of 6 Chambers
		3,745 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	36.50'	**12.0" Round Culvert** L= 11.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.50' / 36.30' S= 0.0182 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Discarded	35.50'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 32.50'

Discarded OutFlow Max=0.14 cfs @ 12.74 hrs HW=36.39' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.14 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=35.50' TW=36.20' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond INF2: UNDERGROUND INFILTRATION SYSTEM #2

DESIGN NOTES:

1) ESHWT BASED ON TP-7.

2) TREATMENT VOLUME WITHIN SYSTEM IS MEASURED STATICALLY BELOW OVERFLOW OUTLET ELEVATION.

3) Ksat VALUE OF 1.42in/hr FOR WINDSOR SOILS BASED ON NRCS SOIL REPORT.

4) 33% STONE VOID STORAGE PER EAST HARTFORD MANUAL OF TECHNICAL DESIGN.

5) SYSTEM FULL ELEVATION IS TOP OF STONE.

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=195)

Inflow Area =	26,236 sf,	91.08% Impervious,	Inflow Depth =	2.48"	for 2-year event
Inflow =	1.69 cfs @	12.01 hrs, Volume=	5,413 cf		
Outflow =	0.15 cfs @	12.93 hrs, Volume=	5,414 cf,	Atten= 91%,	Lag= 54.9 min
Discarded =	0.15 cfs @	12.93 hrs, Volume=	5,414 cf		
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 36.08' @ 12.93 hrs Surf.Area= 3,236 sf Storage= 2,046 cf
Flood Elev= 38.50' Surf.Area= 3,236 sf Storage= 6,447 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 113.2 min (889.6 - 776.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	35.00'	2,404 cf	**39.50'W x 81.94'L x 3.50'H Field A** 11,328 cf Overall - 4,043 cf Embedded = 7,285 cf x 33.0% Voids
#2A	35.50'	4,043 cf	**ADS_StormTech SC-740 +Cap** x 88 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 8 Rows of 11 Chambers
		6,447 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	35.00'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 32.15'
#2	Primary	37.50'	**12.0" Round Culvert** L= 168.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.50' / 36.65' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.15 cfs @ 12.93 hrs HW=36.08' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.15 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=35.00' TW=36.65' (Dynamic Tailwater)
↑—**2=Culvert** (Controls 0.00 cfs)

Summary for Pond OWS1: OWS1

Inflow Area =	14,166 sf,	92.11% Impervious,	Inflow Depth =	2.44"	for 2-year event
Inflow =	0.72 cfs @	12.04 hrs, Volume=	2,876 cf		
Outflow =	0.72 cfs @	12.04 hrs, Volume=	2,876 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.72 cfs @	12.04 hrs, Volume=	2,876 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 36.93' @ 12.04 hrs
Flood Elev= 41.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.10'	**6.0" Round Culvert** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.10' / 36.05' S= 0.0167 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.72 cfs @ 12.04 hrs HW=36.93' TW=36.08' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.72 cfs @ 3.66 fps)

Summary for Pond OWS2: OWS2

Inflow Area =	26,236 sf,	91.08% Impervious,	Inflow Depth =	2.31"	for 2-year event
Inflow =	0.90 cfs @	12.00 hrs, Volume=	5,048 cf		
Outflow =	0.90 cfs @	12.00 hrs, Volume=	5,048 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.90 cfs @	12.00 hrs, Volume=	5,048 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 36.76' @ 12.00 hrs
Flood Elev= 41.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.60'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.60' / 35.55' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.90 cfs @ 12.00 hrs HW=36.75' TW=35.63' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.90 cfs @ 4.58 fps)

Summary for Link 1L: DESIGN POINT #1 (EXIST. 30" DRAIN LINE)

Inflow Area =	51,807 sf,	81.83% Impervious,	Inflow Depth =	0.00"	for 2-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= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 2L: DESIGN POINT #2 (SILVER LANE)

Inflow Area =	18,832 sf,	0.00% Impervious,	Inflow Depth =	0.00"	for 2-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= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 3L: DESIGN POINT #3 (LOT 168)

Inflow Area = 2,294 sf, 0.00% Impervious, Inflow Depth = 0.00" for 2-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= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 4L: DESIGN POINT #4 (MERCER AVE)

Inflow Area = 3,962 sf, 24.41% Impervious, Inflow Depth = 0.20" for 2-year event
Inflow = 0.01 cfs @ 12.45 hrs, Volume= 65 cf
Primary = 0.01 cfs @ 12.45 hrs, Volume= 65 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 5L: DESIGN POINT #5 (RESIDENTIAL ABUTTERS)

Inflow Area = 6,640 sf, 0.00% Impervious, Inflow Depth = 0.00" for 2-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= 0.00-30.00 hrs, dt= 0.01 hrs

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: TO CB1 Runoff Area=5,709 sf 95.45% Impervious Runoff Depth=4.32"
Flow Length=108' Slope=0.0140 '/' Tc=1.0 min CN=95 Runoff=0.73 cfs 2,055 cf

Subcatchment 2S: TO CB2 Runoff Area=8,149 sf 96.37% Impervious Runoff Depth=4.43"
Flow Length=65' Tc=2.7 min CN=96 Runoff=0.99 cfs 3,010 cf

Subcatchment 3S: TO CB3 Runoff Area=6,017 sf 86.36% Impervious Runoff Depth=3.78"
Flow Length=103' Slope=0.0100 '/' Tc=4.3 min CN=90 Runoff=0.63 cfs 1,895 cf

Subcatchment 4S: TO CB4 Runoff Area=4,267 sf 100.00% Impervious Runoff Depth=4.66"
Flow Length=50' Slope=0.0140 '/' Tc=0.6 min CN=98 Runoff=0.57 cfs 1,658 cf

Subcatchment 5S: TO CB5 Runoff Area=6,307 sf 79.31% Impervious Runoff Depth=3.37"
Flow Length=128' Tc=4.4 min CN=86 Runoff=0.60 cfs 1,773 cf

Subcatchment 6S: TO CB6 Runoff Area=7,212 sf 85.66% Impervious Runoff Depth=3.78"
Flow Length=45' Tc=3.3 min CN=90 Runoff=0.78 cfs 2,272 cf

Subcatchment 10S: DIRECT TO BASIN Runoff Area=5,696 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=16' Slope=0.0100 '/' Tc=3.0 min CN=30 Runoff=0.00 cfs 1 cf

Subcatchment 20S: ROOF REAR Runoff Area=2,500 sf 100.00% Impervious Runoff Depth=4.66"
Tc=0.0 min CN=98 Runoff=0.34 cfs 972 cf

Subcatchment 21S: ROOF FRONT Runoff Area=2,500 sf 100.00% Impervious Runoff Depth=4.66"
Tc=0.0 min CN=98 Runoff=0.34 cfs 972 cf

Subcatchment 22S: CANOPY Runoff Area=3,450 sf 100.00% Impervious Runoff Depth=4.66"
Tc=0.0 min CN=98 Runoff=0.46 cfs 1,341 cf

Subcatchment 200S: TO SILVER LANE Runoff Area=18,832 sf 0.00% Impervious Runoff Depth=0.00"
Tc=30.0 min CN=30 Runoff=0.00 cfs 4 cf

Subcatchment 300S: TO LOT 168 Runoff Area=2,294 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=20' Slope=0.0050 '/' Tc=4.7 min CN=30 Runoff=0.00 cfs 0 cf

Subcatchment 400S: TO MERCER AVE Runoff Area=3,962 sf 24.41% Impervious Runoff Depth=0.81"
Flow Length=55' Slope=0.0050 '/' Tc=10.6 min CN=53 Runoff=0.05 cfs 269 cf

Subcatchment 500S: TO RESIDENTIAL Runoff Area=6,640 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=50' Slope=0.0050 '/' Tc=9.8 min CN=30 Runoff=0.00 cfs 1 cf

Pond 1P: INFILTRATION BASIN Peak Elev=36.74' Storage=469 cf Inflow=0.36 cfs 745 cf
Discarded=0.05 cfs 746 cf Primary=0.00 cfs 0 cf Outflow=0.05 cfs 746 cf

Pond CB1: CB1 Peak Elev=36.81' Inflow=0.73 cfs 2,055 cf
12.0" Round Culvert n=0.013 L=6.0' S=0.0333 '/' Outflow=0.73 cfs 2,055 cf

Pond CB2: CB2 Peak Elev=37.71' Inflow=1.59 cfs 4,906 cf
Primary=0.78 cfs 4,475 cf Secondary=0.81 cfs 431 cf Outflow=1.59 cfs 4,906 cf

Pond CB3: CB3 Peak Elev=37.81' Inflow=0.63 cfs 1,895 cf
12.0" Round Culvert n=0.013 L=102.0' S=0.0054 '/' Outflow=0.63 cfs 1,895 cf

Pond CB4: CB4 Peak Elev=38.61' Inflow=1.35 cfs 3,970 cf
12.0" Round Culvert n=0.013 L=86.0' S=0.0081 '/' Outflow=1.35 cfs 3,970 cf

Pond CB5: CB5 Peak Elev=38.40' Inflow=0.60 cfs 1,773 cf
12.0" Round Culvert n=0.013 L=138.0' S=0.0047 '/' Outflow=0.60 cfs 1,773 cf

Pond CB6: CB6 Peak Elev=38.36' Inflow=2.45 cfs 8,015 cf
12.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=2.45 cfs 8,015 cf

Pond DMH10: DMH10 Peak Elev=33.50' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=74.0' S=0.0068 '/' Outflow=0.00 cfs 0 cf

Pond DMH11: DMH11 Peak Elev=33.00' Inflow=0.00 cfs 0 cf
18.0" Round Culvert n=0.013 L=30.0' S=0.0347 '/' Outflow=0.00 cfs 0 cf

Pond DMH3: DMH3 Peak Elev=37.94' Inflow=2.76 cfs 8,987 cf
Primary=0.95 cfs 7,501 cf Secondary=1.81 cfs 1,486 cf Outflow=2.76 cfs 8,987 cf

Pond DMH6: DMH6 Peak Elev=36.70' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=32.0' S=0.0047 '/' Outflow=0.00 cfs 0 cf

Pond DMH7: DMH7 Peak Elev=36.70' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=0.00 cfs 0 cf

Pond DMH8: DMH8 Peak Elev=36.75' Inflow=0.36 cfs 744 cf
12.0" Round Culvert n=0.013 L=32.0' S=0.0063 '/' Outflow=0.36 cfs 744 cf

Pond DMH9: DMH9 Peak Elev=34.10' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=106.0' S=0.0057 '/' Outflow=0.00 cfs 0 cf

Pond INF1: UNDERGROUND INFILTRATION Peak Elev=36.80' Storage=2,389 cf Inflow=2.24 cfs 6,961 cf
Discarded=0.15 cfs 6,218 cf Primary=0.36 cfs 744 cf Outflow=0.52 cfs 6,962 cf

Pond INF2: UNDERGROUND INFILTRATION Peak Elev=36.89' Storage=3,974 cf Inflow=2.76 cfs 8,987 cf
Discarded=0.18 cfs 8,988 cf Primary=0.00 cfs 0 cf Outflow=0.18 cfs 8,988 cf

Pond OWS1: OWS1 Peak Elev=37.08' Inflow=0.78 cfs 4,475 cf
6.0" Round Culvert n=0.010 L=3.0' S=0.0167 '/' Outflow=0.78 cfs 4,475 cf

Pond OWS2: OWS2 Peak Elev=37.05' Inflow=0.95 cfs 7,501 cf
6.0" Round Culvert n=0.010 L=10.0' S=0.0050 '/' Outflow=0.95 cfs 7,501 cf

Link 1L: DESIGN POINT #1 (EXIST. 30" DRAIN LINE) Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link 2L: DESIGN POINT #2 (SILVER LANE)
Inflow=0.00 cfs 4 cf
Primary=0.00 cfs 4 cf

Link 3L: DESIGN POINT #3 (LOT 168)
Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link 4L: DESIGN POINT #4 (MERCER AVE)
Inflow=0.05 cfs 269 cf
Primary=0.05 cfs 269 cf

Link 5L: DESIGN POINT #5 (RESIDENTIAL ABUTTERS)
Inflow=0.00 cfs 1 cf
Primary=0.00 cfs 1 cf

Total Runoff Area = 83,535 sf Runoff Volume = 16,224 cf Average Runoff Depth = 2.33"
48.09% Pervious = 40,173 sf 51.91% Impervious = 43,362 sf

Summary for Subcatchment 1S: TO CB1

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.73 cfs @ 12.01 hrs, Volume= 2,055 cf, Depth= 4.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
260	39	>75% Grass cover, Good, HSG A
5,449	98	Paved parking, HSG A
5,709	95	Weighted Average
260		4.55% Pervious Area
5,449		95.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0140	0.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.20"
0.6	88	0.0140	2.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	108	Total			

Summary for Subcatchment 2S: TO CB2

Runoff = 0.99 cfs @ 12.04 hrs, Volume= 3,010 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
296	39	>75% Grass cover, Good, HSG A
7,853	98	Paved parking, HSG A
8,149	96	Weighted Average
296		3.63% Pervious Area
7,853		96.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	15	0.0150	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.3	50	0.0180	2.72		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.7	65	Total			

Summary for Subcatchment 3S: TO CB3

Runoff = 0.63 cfs @ 12.06 hrs, Volume= 1,895 cf, Depth= 3.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
821	39	>75% Grass cover, Good, HSG A
5,196	98	Paved parking, HSG A
6,017	90	Weighted Average
821		13.64% Pervious Area
5,196		86.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	20	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.7	83	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3	103	Total			

Summary for Subcatchment 4S: TO CB4

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.57 cfs @ 12.01 hrs, Volume= 1,658 cf, Depth= 4.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
4,267	98	Paved parking, HSG A
4,267		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0140	0.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.20"
0.2	30	0.0140	2.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	50	Total			

Summary for Subcatchment 5S: TO CB5

Runoff = 0.60 cfs @ 12.06 hrs, Volume= 1,773 cf, Depth= 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
1,305	39	>75% Grass cover, Good, HSG A
5,002	98	Paved parking, HSG A
6,307	86	Weighted Average
1,305		20.69% Pervious Area
5,002		79.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	20	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.8	108	0.0110	2.13		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.4	128	Total			

Summary for Subcatchment 6S: TO CB6

Runoff = 0.78 cfs @ 12.05 hrs, Volume= 2,272 cf, Depth= 3.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
1,034	39	>75% Grass cover, Good, HSG A
6,178	98	Paved parking, HSG A
7,212	90	Weighted Average
1,034		14.34% Pervious Area
6,178		85.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	25	0.0200	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	20	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.3	45	Total			

Summary for Subcatchment 10S: DIRECT TO BASIN

Runoff = 0.00 cfs @ 24.00 hrs, Volume= 1 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
5,696	30	Meadow, non-grazed, HSG A
5,696		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	16	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"

Summary for Subcatchment 20S: ROOF REAR

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.34 cfs @ 12.00 hrs, Volume= 972 cf, Depth= 4.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
2,500	98	Roofs, HSG A
2,500		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry, 0**

Summary for Subcatchment 21S: ROOF FRONT

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.34 cfs @ 12.00 hrs, Volume= 972 cf, Depth= 4.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
2,500	98	Roofs, HSG A
2,500		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry, 0**

Summary for Subcatchment 22S: CANOPY

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.46 cfs @ 12.00 hrs, Volume= 1,341 cf, Depth= 4.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
3,450	98	Roofs, HSG A
3,450		100.00% Impervious Area

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

Summary for Subcatchment 200S: TO SILVER LANE

NOTE: Tc VALUE FOR PRE-DEVELOPMENT CONDITIONS IS ASSUMED SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.00 cfs @ 24.07 hrs, Volume= 4 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
18,832	30	Meadow, non-grazed, HSG A
18,832		100.00% Pervious Area

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

Summary for Subcatchment 300S: TO LOT 168

NOTE: Tc VALUE FOR PRE-DEVELOPMENT CONDITIONS IS ASSUMED SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
2,294	30	Meadow, non-grazed, HSG A
2,294		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	20	0.0050	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"

Summary for Subcatchment 400S: TO MERCER AVE

NOTE: Tc VALUES FOR PRE-DEVELOPMENT CONDITIONS ARE ASSUMED VALUES SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.05 cfs @ 12.19 hrs, Volume= 269 cf, Depth= 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
2,995	39	>75% Grass cover, Good, HSG A
967	98	Paved parking, HSG A
3,962	53	Weighted Average
2,995		75.59% Pervious Area
967		24.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	55	0.0050	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"

Summary for Subcatchment 500S: TO RESIDENTIAL

NOTE: Tc VALUES FOR PRE-DEVELOPMENT CONDITIONS ARE ASSUMED VALUES SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.00 cfs @ 24.01 hrs, Volume= 1 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
6,640	30	Meadow, non-grazed, HSG A
6,640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	50	0.0050	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"

Summary for Pond 1P: INFILTRATION BASIN

DESIGN NOTES:

1) ESHWT BASED ON TP-5.

2) TREATMENT VOLUME WITHIN SYSTEM IS MEASURED STATICALLY BELOW OVERFLOW OUTLET ELEVATION.

3) Ksat VALUE OF 1.42in/hr FOR WINDSOR SOILS BASED ON NRCS SOIL REPORT.

[80] Warning: Exceeded Pond DMH8 by 0.27' @ 15.44 hrs (0.24 cfs 204 cf)

Inflow Area = 51,807 sf, 81.83% Impervious, Inflow Depth = 0.17" for 10-year event
Inflow = 0.36 cfs @ 12.36 hrs, Volume= 745 cf
Outflow = 0.05 cfs @ 12.92 hrs, Volume= 746 cf, Atten= 87%, Lag= 33.2 min
Discarded = 0.05 cfs @ 12.92 hrs, Volume= 746 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 36.74' @ 12.92 hrs Surf.Area= 869 sf Storage= 469 cf
Flood Elev= 40.00' Surf.Area= 2,907 sf Storage= 6,509 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 124.8 min (890.7 - 765.9)

Volume	Invert	Avail.Storage	Storage Description
#1	36.00'	6,509 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
36.00	417	126.0	0	0	417
37.00	1,062	176.0	715	715	1,628
38.00	1,619	195.0	1,331	2,046	2,219
40.00	2,907	232.0	4,464	6,509	3,547

Device	Routing	Invert	Outlet Devices
#1	Discarded	36.00'	**1.420 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 32.50'
#2	Primary	36.00'	**12.0" Round Culvert** L= 102.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.00' / 34.20' S= 0.0176 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	39.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.05 cfs @ 12.92 hrs HW=36.74' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=36.00' TW=34.10' (Dynamic Tailwater)
↑—**2=Culvert** (Controls 0.00 cfs)
↑—**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CB1: CB1

Inflow Area = 5,709 sf, 95.45% Impervious, Inflow Depth = 4.32" for 10-year event
Inflow = 0.73 cfs @ 12.01 hrs, Volume= 2,055 cf
Outflow = 0.73 cfs @ 12.01 hrs, Volume= 2,055 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.73 cfs @ 12.01 hrs, Volume= 2,055 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 36.81' @ 12.41 hrs
Flood Elev= 41.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.25'	**12.0" Round Culvert** L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.25' / 36.05' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.72 cfs @ 12.01 hrs HW=36.68' TW=36.30' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.72 cfs @ 2.23 fps)

Summary for Pond CB2: CB2

Inflow Area =	14,166 sf,	92.11% Impervious,	Inflow Depth =	4.16" for 10-year event
Inflow =	1.59 cfs @	12.05 hrs, Volume=	4,906 cf	
Outflow =	1.59 cfs @	12.05 hrs, Volume=	4,906 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.78 cfs @	12.04 hrs, Volume=	4,475 cf	
Secondary =	0.81 cfs @	12.05 hrs, Volume=	431 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.71' @ 12.05 hrs
Flood Elev= 41.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.45'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.45' / 36.35' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#2	Secondary	37.25'	**12.0" Round Culvert** L= 7.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.25' / 37.00' S= 0.0357 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.78 cfs @ 12.04 hrs HW=37.71' TW=37.03' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.78 cfs @ 3.95 fps)

Secondary OutFlow Max=0.81 cfs @ 12.05 hrs HW=37.71' TW=36.41' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 0.81 cfs @ 2.31 fps)

Summary for Pond CB3: CB3

Inflow Area =	6,017 sf,	86.36% Impervious,	Inflow Depth =	3.78" for 10-year event
Inflow =	0.63 cfs @	12.06 hrs, Volume=	1,895 cf	
Outflow =	0.63 cfs @	12.06 hrs, Volume=	1,895 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.63 cfs @	12.06 hrs, Volume=	1,895 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Peak Elev= 37.81' @ 12.06 hrs
Flood Elev= 41.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.00'	**12.0" Round Culvert** L= 102.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.00' / 36.45' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.64 cfs @ 12.06 hrs HW=37.81' TW=37.70' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.64 cfs @ 1.29 fps)

Summary for Pond CB4: CB4

Inflow Area = 10,217 sf,100.00% Impervious, Inflow Depth = 4.66" for 10-year event
Inflow = 1.35 cfs @ 12.00 hrs, Volume= 3,970 cf
Outflow = 1.35 cfs @ 12.00 hrs, Volume= 3,970 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.35 cfs @ 12.00 hrs, Volume= 3,970 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 38.61' @ 12.02 hrs
Flood Elev= 41.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.70'	**12.0" Round Culvert** L= 86.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.70' / 37.00' S= 0.0081 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.16 cfs @ 12.00 hrs HW=38.56' TW=38.28' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.16 cfs @ 2.18 fps)

Summary for Pond CB5: CB5

Inflow Area = 6,307 sf, 79.31% Impervious, Inflow Depth = 3.37" for 10-year event
Inflow = 0.60 cfs @ 12.06 hrs, Volume= 1,773 cf
Outflow = 0.60 cfs @ 12.06 hrs, Volume= 1,773 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.60 cfs @ 12.06 hrs, Volume= 1,773 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 38.40' @ 12.04 hrs
Flood Elev= 40.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.65'	**12.0" Round Culvert** L= 138.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.65' / 36.00' S= 0.0047 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.84 cfs @ 12.06 hrs HW=38.35' TW=38.25' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.84 cfs @ 1.07 fps)

Summary for Pond CB6: CB6

[80] Warning: Exceeded Pond CB5 by 0.08' @ 11.99 hrs (0.73 cfs 324 cf)

Inflow Area =	23,736 sf,	90.15% Impervious,	Inflow Depth =	4.05"	for 10-year event
Inflow =	2.45 cfs @	12.02 hrs, Volume=	8,015 cf		
Outflow =	2.45 cfs @	12.02 hrs, Volume=	8,015 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	2.45 cfs @	12.02 hrs, Volume=	8,015 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 38.36' @ 12.03 hrs
Flood Elev= 41.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.00'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.00' / 35.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.45 cfs @ 12.02 hrs HW=38.36' TW=37.94' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.45 cfs @ 3.12 fps)

Summary for Pond DMH10: DMH10

Inflow Area =	51,807 sf,	81.83% Impervious,	Inflow Depth =	0.00"	for 10-year event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf		
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 33.50' @ 0.00 hrs
Flood Elev= 42.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.50'	**12.0" Round Culvert** L= 74.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 33.50' / 33.00' S= 0.0068 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=33.50' TW=33.00' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond DMH11: DMH11

Inflow Area =	51,807 sf,	81.83% Impervious,	Inflow Depth =	0.00"	for 10-year event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf		
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Peak Elev= 33.00' @ 0.00 hrs
Flood Elev= 42.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.00'	**18.0" Round Culvert** L= 30.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 33.00' / 31.96' S= 0.0347 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=33.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond DMH3: DMH3

[80] Warning: Exceeded Pond CB6 by 0.04' @ 11.73 hrs (0.71 cfs 175 cf)

Inflow Area =	26,236 sf, 91.08% Impervious,	Inflow Depth =	4.11"	for 10-year event
Inflow =	2.76 cfs @ 12.01 hrs, Volume=		8,987 cf	
Outflow =	2.76 cfs @ 12.01 hrs, Volume=		8,987 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.95 cfs @ 12.00 hrs, Volume=		7,501 cf	
Secondary =	1.81 cfs @ 12.02 hrs, Volume=		1,486 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.94' @ 12.02 hrs
Flood Elev= 41.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.90'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.90' / 35.85' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#2	Secondary	37.20'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.20' / 36.50' S= 0.0280 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.93 cfs @ 12.00 hrs HW=37.91' TW=36.94' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.93 cfs @ 4.73 fps)

Secondary OutFlow Max=1.81 cfs @ 12.02 hrs HW=37.94' TW=36.05' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 1.81 cfs @ 2.92 fps)

Summary for Pond DMH6: DMH6

Inflow Area =	26,236 sf, 91.08% Impervious,	Inflow Depth =	0.00"	for 10-year event
Inflow =	0.00 cfs @ 0.00 hrs, Volume=		0 cf	
Outflow =	0.00 cfs @ 0.00 hrs, Volume=		0 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.00 cfs @ 0.00 hrs, Volume=		0 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Peak Elev= 36.70' @ 12.65 hrs
Flood Elev= 41.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.65'	**12.0" Round Culvert** L= 32.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.65' / 36.50' S= 0.0047 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=36.65' TW=36.50' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond DMH7: DMH7

[80] Warning: Exceeded Pond DMH6 by 0.05' @ 12.64 hrs (0.00 cfs 2 cf)

Inflow Area =	26,236 sf,	91.08% Impervious,	Inflow Depth =	0.00"	for 10-year event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf		
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 36.70' @ 12.64 hrs
Flood Elev= 41.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.50'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.50' / 36.30' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=36.50' TW=36.20' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond DMH8: DMH8

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)
[80] Warning: Exceeded Pond DMH7 by 0.06' @ 12.35 hrs (0.00 cfs 303 cf)

Inflow Area =	46,111 sf,	91.94% Impervious,	Inflow Depth =	0.19"	for 10-year event
Inflow =	0.36 cfs @	12.36 hrs, Volume=	744 cf		
Outflow =	0.36 cfs @	12.36 hrs, Volume=	744 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.36 cfs @	12.36 hrs, Volume=	744 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 36.75' @ 12.92 hrs
Flood Elev= 41.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.20'	**12.0" Round Culvert** L= 32.0' CPP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 36.20' / 36.00' S= 0.0063 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.35 cfs @ 12.36 hrs HW=36.57' TW=36.37' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.35 cfs @ 1.96 fps)

Summary for Pond DMH9: DMH9

Inflow Area =	51,807 sf,	81.83% Impervious,	Inflow Depth =	0.00"	for 10-year event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf		
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 34.10' @ 0.00 hrs
Flood Elev= 42.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.10'	**12.0" Round Culvert**
			L= 106.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 34.10' / 33.50' S= 0.0057 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=34.10' TW=33.50' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond INF1: UNDERGROUND INFILTRATION SYSTEM #1

DESIGN NOTES:

1) ESHWT BASED ON TP-5.

2) TREATMENT VOLUME WITHIN SYSTEM IS MEASURED STATICALLY BELOW OVERFLOW OUTLET ELEVATION.

3) Ksat VALUE OF 1.42in/hr FOR WINDSOR SOILS BASED ON NRCS SOIL REPORT.

4) 33% STONE VOID STORAGE PER EAST HARTFORD MANUAL OF TECHNICAL DESIGN.

5) SYSTEM FULL ELEVATION IS TOP OF STONE.

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=153)

Inflow Area =	19,875 sf,	93.07% Impervious,	Inflow Depth =	4.20"	for 10-year event
Inflow =	2.24 cfs @	12.04 hrs, Volume=	6,961 cf		
Outflow =	0.52 cfs @	12.36 hrs, Volume=	6,962 cf,	Atten= 77%,	Lag= 19.8 min
Discarded =	0.15 cfs @	12.41 hrs, Volume=	6,218 cf		
Primary =	0.36 cfs @	12.36 hrs, Volume=	744 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Peak Elev= 36.80' @ 12.41 hrs Surf.Area= 3,273 sf Storage= 2,389 cf
Flood Elev= 37.83' Surf.Area= 3,273 sf Storage= 3,741 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 108.2 min (877.5 - 769.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	35.50'	1,509 cf	**34.83'W x 74.40'L x 2.33'H Field A** 6,047 cf Overall - 1,474 cf Embedded = 4,573 cf x 33.0% Voids
#2A	36.00'	1,474 cf	**ADS_StormTech SC-310 +Cap** x 100 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 10 Rows of 10 Chambers
#3B	35.50'	408 cf	**14.83'W x 45.92'L x 2.33'H Field B** 1,589 cf Overall - 354 cf Embedded = 1,236 cf x 33.0% Voids
#4B	36.00'	354 cf	**ADS_StormTech SC-310 +Cap** x 24 Inside #3 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 4 Rows of 6 Chambers
		3,745 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	36.50'	**12.0" Round Culvert** L= 11.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.50' / 36.30' S= 0.0182 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Discarded	35.50'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 32.50'

Discarded OutFlow Max=0.15 cfs @ 12.41 hrs HW=36.80' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.15 cfs)

Primary OutFlow Max=0.36 cfs @ 12.36 hrs HW=36.80' TW=36.57' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.36 cfs @ 2.74 fps)

Summary for Pond INF2: UNDERGROUND INFILTRATION SYSTEM #2

DESIGN NOTES:

1) ESHWT BASED ON TP-7.

2) TREATMENT VOLUME WITHIN SYSTEM IS MEASURED STATICALLY BELOW OVERFLOW OUTLET ELEVATION.

3) Ksat VALUE OF 1.42in/hr FOR WINDSOR SOILS BASED ON NRCS SOIL REPORT.

4) 33% STONE VOID STORAGE PER EAST HARTFORD MANUAL OF TECHNICAL DESIGN.

5) SYSTEM FULL ELEVATION IS TOP OF STONE.

Inflow Area = 26,236 sf, 91.08% Impervious, Inflow Depth = 4.11" for 10-year event
Inflow = 2.76 cfs @ 12.01 hrs, Volume= 8,987 cf
Outflow = 0.18 cfs @ 13.49 hrs, Volume= 8,988 cf, Atten= 94%, Lag= 88.4 min
Discarded = 0.18 cfs @ 13.49 hrs, Volume= 8,988 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 36.89' @ 13.49 hrs Surf.Area= 3,236 sf Storage= 3,974 cf
Flood Elev= 38.50' Surf.Area= 3,236 sf Storage= 6,447 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 210.2 min (976.7 - 766.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	35.00'	2,404 cf	**39.50'W x 81.94'L x 3.50'H Field A** 11,328 cf Overall - 4,043 cf Embedded = 7,285 cf x 33.0% Voids
#2A	35.50'	4,043 cf	**ADS_StormTech SC-740 +Cap** x 88 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 8 Rows of 11 Chambers
		6,447 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	35.00'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 32.15'
#2	Primary	37.50'	**12.0" Round Culvert** L= 168.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.50' / 36.65' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.18 cfs @ 13.49 hrs HW=36.89' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.18 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=35.00' TW=36.65' (Dynamic Tailwater)
↑—**2=Culvert** (Controls 0.00 cfs)

Summary for Pond OWS1: OWS1

Inflow Area = 14,166 sf, 92.11% Impervious, Inflow Depth = 3.79" for 10-year event
Inflow = 0.78 cfs @ 12.04 hrs, Volume= 4,475 cf
Outflow = 0.78 cfs @ 12.04 hrs, Volume= 4,475 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.78 cfs @ 12.04 hrs, Volume= 4,475 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.08' @ 12.09 hrs
Flood Elev= 41.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.10'	**6.0" Round Culvert** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.10' / 36.05' S= 0.0167 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.76 cfs @ 12.04 hrs HW=37.03' TW=36.38' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.76 cfs @ 3.88 fps)

Summary for Pond OWS2: OWS2

Inflow Area = 26,236 sf, 91.08% Impervious, Inflow Depth = 3.43" for 10-year event
Inflow = 0.95 cfs @ 12.00 hrs, Volume= 7,501 cf
Outflow = 0.95 cfs @ 12.00 hrs, Volume= 7,501 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.95 cfs @ 12.00 hrs, Volume= 7,501 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.05' @ 12.35 hrs
Flood Elev= 41.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.60'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.60' / 35.55' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.93 cfs @ 12.00 hrs HW=36.94' TW=35.97' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.93 cfs @ 4.75 fps)

Summary for Link 1L: DESIGN POINT #1 (EXIST. 30" DRAIN LINE)

Inflow Area = 51,807 sf, 81.83% 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= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 2L: DESIGN POINT #2 (SILVER LANE)

Inflow Area = 18,832 sf, 0.00% Impervious, Inflow Depth = 0.00" for 10-year event
Inflow = 0.00 cfs @ 24.07 hrs, Volume= 4 cf
Primary = 0.00 cfs @ 24.07 hrs, Volume= 4 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 3L: DESIGN POINT #3 (LOT 168)

Inflow Area = 2,294 sf, 0.00% Impervious, Inflow Depth = 0.00" for 10-year event
Inflow = 0.00 cfs @ 24.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 24.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 4L: DESIGN POINT #4 (MERCER AVE)

Inflow Area = 3,962 sf, 24.41% Impervious, Inflow Depth = 0.81" for 10-year event
Inflow = 0.05 cfs @ 12.19 hrs, Volume= 269 cf
Primary = 0.05 cfs @ 12.19 hrs, Volume= 269 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 5L: DESIGN POINT #5 (RESIDENTIAL ABUTTERS)

Inflow Area = 6,640 sf, 0.00% Impervious, Inflow Depth = 0.00" for 10-year event
Inflow = 0.00 cfs @ 24.01 hrs, Volume= 1 cf
Primary = 0.00 cfs @ 24.01 hrs, Volume= 1 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: TO CB1 Runoff Area=5,709 sf 95.45% Impervious Runoff Depth=5.01"
Flow Length=108' Slope=0.0140 '/' Tc=1.0 min CN=95 Runoff=0.84 cfs 2,386 cf

Subcatchment 2S: TO CB2 Runoff Area=8,149 sf 96.37% Impervious Runoff Depth=5.13"
Flow Length=65' Tc=2.7 min CN=96 Runoff=1.14 cfs 3,483 cf

Subcatchment 3S: TO CB3 Runoff Area=6,017 sf 86.36% Impervious Runoff Depth=4.46"
Flow Length=103' Slope=0.0100 '/' Tc=4.3 min CN=90 Runoff=0.73 cfs 2,235 cf

Subcatchment 4S: TO CB4 Runoff Area=4,267 sf 100.00% Impervious Runoff Depth=5.36"
Flow Length=50' Slope=0.0140 '/' Tc=0.6 min CN=98 Runoff=0.65 cfs 1,907 cf

Subcatchment 5S: TO CB5 Runoff Area=6,307 sf 79.31% Impervious Runoff Depth=4.03"
Flow Length=128' Tc=4.4 min CN=86 Runoff=0.71 cfs 2,118 cf

Subcatchment 6S: TO CB6 Runoff Area=7,212 sf 85.66% Impervious Runoff Depth=4.46"
Flow Length=45' Tc=3.3 min CN=90 Runoff=0.91 cfs 2,679 cf

Subcatchment 10S: DIRECT TO BASIN Runoff Area=5,696 sf 0.00% Impervious Runoff Depth=0.04"
Flow Length=16' Slope=0.0100 '/' Tc=3.0 min CN=30 Runoff=0.00 cfs 17 cf

Subcatchment 20S: ROOF REAR Runoff Area=2,500 sf 100.00% Impervious Runoff Depth=5.36"
Tc=0.0 min CN=98 Runoff=0.38 cfs 1,117 cf

Subcatchment 21S: ROOF FRONT Runoff Area=2,500 sf 100.00% Impervious Runoff Depth=5.36"
Tc=0.0 min CN=98 Runoff=0.38 cfs 1,117 cf

Subcatchment 22S: CANOPY Runoff Area=3,450 sf 100.00% Impervious Runoff Depth=5.36"
Tc=0.0 min CN=98 Runoff=0.53 cfs 1,542 cf

Subcatchment 200S: TO SILVER LANE Runoff Area=18,832 sf 0.00% Impervious Runoff Depth=0.04"
Tc=30.0 min CN=30 Runoff=0.00 cfs 56 cf

Subcatchment 300S: TO LOT 168 Runoff Area=2,294 sf 0.00% Impervious Runoff Depth=0.04"
Flow Length=20' Slope=0.0050 '/' Tc=4.7 min CN=30 Runoff=0.00 cfs 7 cf

Subcatchment 400S: TO MERCER AVE Runoff Area=3,962 sf 24.41% Impervious Runoff Depth=1.15"
Flow Length=55' Slope=0.0050 '/' Tc=10.6 min CN=53 Runoff=0.09 cfs 381 cf

Subcatchment 500S: TO RESIDENTIAL Runoff Area=6,640 sf 0.00% Impervious Runoff Depth=0.04"
Flow Length=50' Slope=0.0050 '/' Tc=9.8 min CN=30 Runoff=0.00 cfs 20 cf

Pond 1P: INFILTRATION BASIN Peak Elev=36.95' Storage=660 cf Inflow=0.57 cfs 1,102 cf
Discarded=0.06 cfs 1,102 cf Primary=0.00 cfs 0 cf Outflow=0.06 cfs 1,102 cf

Pond CB1: CB1 Peak Elev=36.95' Inflow=0.84 cfs 2,386 cf
12.0" Round Culvert n=0.013 L=6.0' S=0.0333 '/' Outflow=0.84 cfs 2,386 cf

Pond CB2: CB2 Peak Elev=37.79' Inflow=1.84 cfs 5,718 cf
Primary=0.78 cfs 5,022 cf Secondary=1.08 cfs 696 cf Outflow=1.84 cfs 5,718 cf

Pond CB3: CB3 Peak Elev=37.90' Inflow=0.73 cfs 2,235 cf
12.0" Round Culvert n=0.013 L=102.0' S=0.0054 '/' Outflow=0.73 cfs 2,235 cf

Pond CB4: CB4 Peak Elev=38.82' Inflow=1.55 cfs 4,566 cf
12.0" Round Culvert n=0.013 L=86.0' S=0.0081 '/' Outflow=1.55 cfs 4,566 cf

Pond CB5: CB5 Peak Elev=38.69' Inflow=0.71 cfs 2,118 cf
12.0" Round Culvert n=0.013 L=138.0' S=0.0047 '/' Outflow=0.71 cfs 2,118 cf

Pond CB6: CB6 Peak Elev=38.63' Inflow=2.85 cfs 9,363 cf
12.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=2.85 cfs 9,363 cf

Pond DMH10: DMH10 Peak Elev=33.50' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=74.0' S=0.0068 '/' Outflow=0.00 cfs 0 cf

Pond DMH11: DMH11 Peak Elev=33.00' Inflow=0.00 cfs 0 cf
18.0" Round Culvert n=0.013 L=30.0' S=0.0347 '/' Outflow=0.00 cfs 0 cf

Pond DMH3: DMH3 Peak Elev=38.06' Inflow=3.19 cfs 10,480 cf
Primary=0.94 cfs 7,982 cf Secondary=2.27 cfs 2,498 cf Outflow=3.19 cfs 10,480 cf

Pond DMH6: DMH6 Peak Elev=36.89' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=32.0' S=0.0047 '/' Outflow=0.00 cfs 0 cf

Pond DMH7: DMH7 Peak Elev=36.90' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=0.00 cfs 0 cf

Pond DMH8: DMH8 Peak Elev=36.95' Inflow=0.57 cfs 1,085 cf
12.0" Round Culvert n=0.013 L=32.0' S=0.0063 '/' Outflow=0.57 cfs 1,085 cf

Pond DMH9: DMH9 Peak Elev=34.10' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=106.0' S=0.0057 '/' Outflow=0.00 cfs 0 cf

Pond INF1: UNDERGROUND INFILTRATION Peak Elev=36.95' Storage=2,670 cf Inflow=2.58 cfs 8,104 cf
Discarded=0.16 cfs 7,020 cf Primary=0.57 cfs 1,085 cf Outflow=0.73 cfs 8,104 cf

Pond INF2: UNDERGROUND INFILTRATION Peak Elev=37.30' Storage=4,835 cf Inflow=3.19 cfs 10,480 cf
Discarded=0.19 cfs 10,480 cf Primary=0.00 cfs 0 cf Outflow=0.19 cfs 10,480 cf

Pond OWS1: OWS1 Peak Elev=37.21' Inflow=0.78 cfs 5,022 cf
6.0" Round Culvert n=0.010 L=3.0' S=0.0167 '/' Outflow=0.78 cfs 5,022 cf

Pond OWS2: OWS2 Peak Elev=37.33' Inflow=0.94 cfs 7,982 cf
6.0" Round Culvert n=0.010 L=10.0' S=0.0050 '/' Outflow=0.94 cfs 7,982 cf

Link 1L: DESIGN POINT #1 (EXIST. 30" DRAIN LINE) Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link 2L: DESIGN POINT #2 (SILVER LANE)

Inflow=0.00 cfs 56 cf
Primary=0.00 cfs 56 cf

Link 3L: DESIGN POINT #3 (LOT 168)

Inflow=0.00 cfs 7 cf
Primary=0.00 cfs 7 cf

Link 4L: DESIGN POINT #4 (MERCER AVE)

Inflow=0.09 cfs 381 cf
Primary=0.09 cfs 381 cf

Link 5L: DESIGN POINT #5 (RESIDENTIAL ABUTTERS)

Inflow=0.00 cfs 20 cf
Primary=0.00 cfs 20 cf

Total Runoff Area = 83,535 sf Runoff Volume = 19,064 cf Average Runoff Depth = 2.74"
48.09% Pervious = 40,173 sf 51.91% Impervious = 43,362 sf

Summary for Subcatchment 1S: TO CB1

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.84 cfs @ 12.01 hrs, Volume= 2,386 cf, Depth= 5.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.60"

Area (sf)	CN	Description
260	39	>75% Grass cover, Good, HSG A
5,449	98	Paved parking, HSG A
5,709	95	Weighted Average
260		4.55% Pervious Area
5,449		95.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0140	0.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.20"
0.6	88	0.0140	2.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	108	Total			

Summary for Subcatchment 2S: TO CB2

Runoff = 1.14 cfs @ 12.04 hrs, Volume= 3,483 cf, Depth= 5.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.60"

Area (sf)	CN	Description
296	39	>75% Grass cover, Good, HSG A
7,853	98	Paved parking, HSG A
8,149	96	Weighted Average
296		3.63% Pervious Area
7,853		96.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	15	0.0150	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.3	50	0.0180	2.72		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.7	65	Total			

Summary for Subcatchment 3S: TO CB3

Runoff = 0.73 cfs @ 12.06 hrs, Volume= 2,235 cf, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.60"

Area (sf)	CN	Description
821	39	>75% Grass cover, Good, HSG A
5,196	98	Paved parking, HSG A
6,017	90	Weighted Average
821		13.64% Pervious Area
5,196		86.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	20	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.7	83	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3	103	Total			

Summary for Subcatchment 4S: TO CB4

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.65 cfs @ 12.01 hrs, Volume= 1,907 cf, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.60"

Area (sf)	CN	Description
4,267	98	Paved parking, HSG A
4,267		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0140	0.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.20"
0.2	30	0.0140	2.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	50	Total			

Summary for Subcatchment 5S: TO CB5

Runoff = 0.71 cfs @ 12.06 hrs, Volume= 2,118 cf, Depth= 4.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.60"

Area (sf)	CN	Description
1,305	39	>75% Grass cover, Good, HSG A
5,002	98	Paved parking, HSG A
6,307	86	Weighted Average
1,305		20.69% Pervious Area
5,002		79.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	20	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.8	108	0.0110	2.13		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.4	128	Total			

Summary for Subcatchment 6S: TO CB6

Runoff = 0.91 cfs @ 12.05 hrs, Volume= 2,679 cf, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.60"

Area (sf)	CN	Description
1,034	39	>75% Grass cover, Good, HSG A
6,178	98	Paved parking, HSG A
7,212	90	Weighted Average
1,034		14.34% Pervious Area
6,178		85.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	25	0.0200	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	20	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.3	45	Total			

Summary for Subcatchment 10S: DIRECT TO BASIN

Runoff = 0.00 cfs @ 17.20 hrs, Volume= 17 cf, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.60"

Area (sf)	CN	Description
5,696	30	Meadow, non-grazed, HSG A
5,696		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	16	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"

Summary for Subcatchment 20S: ROOF REAR

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.38 cfs @ 12.00 hrs, Volume= 1,117 cf, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.60"

Area (sf)	CN	Description
2,500	98	Roofs, HSG A
2,500		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry, 0**

Summary for Subcatchment 21S: ROOF FRONT

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.38 cfs @ 12.00 hrs, Volume= 1,117 cf, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.60"

Area (sf)	CN	Description
2,500	98	Roofs, HSG A
2,500		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry, 0**

Summary for Subcatchment 22S: CANOPY

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.53 cfs @ 12.00 hrs, Volume= 1,542 cf, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.60"

Area (sf)	CN	Description
3,450	98	Roofs, HSG A
3,450		100.00% Impervious Area

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

Summary for Subcatchment 200S: TO SILVER LANE

NOTE: Tc VALUE FOR PRE-DEVELOPMENT CONDITIONS IS ASSUMED SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.00 cfs @ 17.63 hrs, Volume= 56 cf, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.60"

Area (sf)	CN	Description
18,832	30	Meadow, non-grazed, HSG A
18,832		100.00% Pervious Area

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

Summary for Subcatchment 300S: TO LOT 168

NOTE: Tc VALUE FOR PRE-DEVELOPMENT CONDITIONS IS ASSUMED SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.00 cfs @ 17.23 hrs, Volume= 7 cf, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.60"

Area (sf)	CN	Description
2,294	30	Meadow, non-grazed, HSG A
2,294		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	20	0.0050	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"

Summary for Subcatchment 400S: TO MERCER AVE

NOTE: Tc VALUES FOR PRE-DEVELOPMENT CONDITIONS ARE ASSUMED VALUES SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.09 cfs @ 12.17 hrs, Volume= 381 cf, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.60"

Area (sf)	CN	Description
2,995	39	>75% Grass cover, Good, HSG A
967	98	Paved parking, HSG A
3,962	53	Weighted Average
2,995		75.59% Pervious Area
967		24.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	55	0.0050	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"

Summary for Subcatchment 500S: TO RESIDENTIAL

NOTE: Tc VALUES FOR PRE-DEVELOPMENT CONDITIONS ARE ASSUMED VALUES SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.00 cfs @ 17.28 hrs, Volume= 20 cf, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.60"

Area (sf)	CN	Description
6,640	30	Meadow, non-grazed, HSG A
6,640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	50	0.0050	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"

Summary for Pond 1P: INFILTRATION BASIN

DESIGN NOTES:

1) ESHWT BASED ON TP-5.

2) TREATMENT VOLUME WITHIN SYSTEM IS MEASURED STATICALLY BELOW OVERFLOW OUTLET ELEVATION.

3) Ksat VALUE OF 1.42in/hr FOR WINDSOR SOILS BASED ON NRCS SOIL REPORT.

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=178)
[80] Warning: Exceeded Pond DMH8 by 0.35' @ 16.40 hrs (0.38 cfs 437 cf)

Inflow Area =	51,807 sf,	81.83% Impervious,	Inflow Depth =	0.26"	for 25-year event
Inflow =	0.57 cfs @	12.25 hrs, Volume=	1,102 cf		
Outflow =	0.06 cfs @	12.89 hrs, Volume=	1,102 cf,	Atten= 90%,	Lag= 38.9 min
Discarded =	0.06 cfs @	12.89 hrs, Volume=	1,102 cf		
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 36.95' @ 12.89 hrs Surf.Area= 1,020 sf Storage= 660 cf
Flood Elev= 40.00' Surf.Area= 2,907 sf Storage= 6,509 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 145.0 min (919.7 - 774.7)

Volume	Invert	Avail.Storage	Storage Description
#1	36.00'	6,509 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
36.00	417	126.0	0	0	417
37.00	1,062	176.0	715	715	1,628
38.00	1,619	195.0	1,331	2,046	2,219
40.00	2,907	232.0	4,464	6,509	3,547

Device	Routing	Invert	Outlet Devices
#1	Discarded	36.00'	**1.420 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 32.50'
#2	Primary	36.00'	**12.0" Round Culvert** L= 102.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.00' / 34.20' S= 0.0176 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	39.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 12.89 hrs HW=36.95' (Free Discharge)
└**1=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=36.00' TW=34.10' (Dynamic Tailwater)
└**2=Culvert** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CB1: CB1

Inflow Area =	5,709 sf,	95.45% Impervious,	Inflow Depth =	5.01"	for 25-year event
Inflow =	0.84 cfs @	12.01 hrs, Volume=	2,386 cf		
Outflow =	0.84 cfs @	12.01 hrs, Volume=	2,386 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.84 cfs @	12.01 hrs, Volume=	2,386 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 36.95' @ 12.90 hrs
Flood Elev= 41.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.25'	**12.0" Round Culvert** L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.25' / 36.05' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.80 cfs @ 12.01 hrs HW=36.72' TW=36.43' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.80 cfs @ 3.23 fps)

Summary for Pond CB2: CB2

Inflow Area =	14,166 sf,	92.11% Impervious,	Inflow Depth =	4.84" for 25-year event
Inflow =	1.84 cfs @	12.05 hrs, Volume=	5,718 cf	
Outflow =	1.84 cfs @	12.05 hrs, Volume=	5,718 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.78 cfs @	12.01 hrs, Volume=	5,022 cf	
Secondary =	1.08 cfs @	12.05 hrs, Volume=	696 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.79' @ 12.05 hrs
Flood Elev= 41.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.45'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.45' / 36.35' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#2	Secondary	37.25'	**12.0" Round Culvert** L= 7.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.25' / 37.00' S= 0.0357 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.76 cfs @ 12.01 hrs HW=37.71' TW=37.07' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.76 cfs @ 3.85 fps)

Secondary OutFlow Max=1.08 cfs @ 12.05 hrs HW=37.79' TW=36.57' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 1.08 cfs @ 2.50 fps)

Summary for Pond CB3: CB3

Inflow Area =	6,017 sf,	86.36% Impervious,	Inflow Depth =	4.46" for 25-year event
Inflow =	0.73 cfs @	12.06 hrs, Volume=	2,235 cf	
Outflow =	0.73 cfs @	12.06 hrs, Volume=	2,235 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.73 cfs @	12.06 hrs, Volume=	2,235 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Peak Elev= 37.90' @ 12.06 hrs
Flood Elev= 41.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.00'	**12.0" Round Culvert** L= 102.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.00' / 36.45' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.75 cfs @ 12.06 hrs HW=37.90' TW=37.78' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.75 cfs @ 1.34 fps)

Summary for Pond CB4: CB4

Inflow Area = 10,217 sf,100.00% Impervious, Inflow Depth = 5.36" for 25-year event
Inflow = 1.55 cfs @ 12.00 hrs, Volume= 4,566 cf
Outflow = 1.55 cfs @ 12.00 hrs, Volume= 4,566 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.55 cfs @ 12.00 hrs, Volume= 4,566 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 38.82' @ 12.03 hrs
Flood Elev= 41.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.70'	**12.0" Round Culvert** L= 86.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.70' / 37.00' S= 0.0081 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.23 cfs @ 12.00 hrs HW=38.73' TW=38.53' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.23 cfs @ 1.89 fps)

Summary for Pond CB5: CB5

Inflow Area = 6,307 sf, 79.31% Impervious, Inflow Depth = 4.03" for 25-year event
Inflow = 0.71 cfs @ 12.06 hrs, Volume= 2,118 cf
Outflow = 0.71 cfs @ 12.06 hrs, Volume= 2,118 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.71 cfs @ 12.06 hrs, Volume= 2,118 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 38.69' @ 12.04 hrs
Flood Elev= 40.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.65'	**12.0" Round Culvert** L= 138.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.65' / 36.00' S= 0.0047 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.97 cfs @ 12.06 hrs HW=38.63' TW=38.49' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.97 cfs @ 1.24 fps)

Summary for Pond CB6: CB6

[80] Warning: Exceeded Pond CB5 by 0.09' @ 11.99 hrs (0.80 cfs 376 cf)

Inflow Area = 23,736 sf, 90.15% Impervious, Inflow Depth = 4.73" for 25-year event
Inflow = 2.85 cfs @ 12.03 hrs, Volume= 9,363 cf
Outflow = 2.85 cfs @ 12.03 hrs, Volume= 9,363 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.85 cfs @ 12.03 hrs, Volume= 9,363 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 38.63' @ 12.03 hrs
Flood Elev= 41.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.00'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.00' / 35.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.84 cfs @ 12.03 hrs HW=38.62' TW=38.06' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 2.84 cfs @ 3.62 fps)

Summary for Pond DMH10: DMH10

Inflow Area = 51,807 sf, 81.83% Impervious, Inflow Depth = 0.00" for 25-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 33.50' @ 0.00 hrs
Flood Elev= 42.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.50'	**12.0" Round Culvert** L= 74.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 33.50' / 33.00' S= 0.0068 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=33.50' TW=33.00' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.00 cfs)

Summary for Pond DMH11: DMH11

Inflow Area = 51,807 sf, 81.83% Impervious, Inflow Depth = 0.00" for 25-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Peak Elev= 33.00' @ 0.00 hrs
Flood Elev= 42.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.00'	**18.0" Round Culvert** L= 30.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 33.00' / 31.96' S= 0.0347 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=33.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond DMH3: DMH3

[80] Warning: Exceeded Pond CB6 by 0.05' @ 11.69 hrs (0.81 cfs 186 cf)

Inflow Area =	26,236 sf,	91.08% Impervious,	Inflow Depth =	4.79"	for 25-year event
Inflow =	3.19 cfs @	12.02 hrs, Volume=	10,480 cf		
Outflow =	3.19 cfs @	12.02 hrs, Volume=	10,480 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.94 cfs @	12.00 hrs, Volume=	7,982 cf		
Secondary =	2.27 cfs @	12.02 hrs, Volume=	2,498 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 38.06' @ 12.02 hrs
Flood Elev= 41.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.90'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.90' / 35.85' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#2	Secondary	37.20'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.20' / 36.50' S= 0.0280 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.91 cfs @ 12.00 hrs HW=38.02' TW=37.08' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.91 cfs @ 4.66 fps)

Secondary OutFlow Max=2.27 cfs @ 12.02 hrs HW=38.06' TW=36.24' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 2.27 cfs @ 3.16 fps)

Summary for Pond DMH6: DMH6

Inflow Area =	26,236 sf,	91.08% Impervious,	Inflow Depth =	0.00"	for 25-year event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf		
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Peak Elev= 36.89' @ 12.51 hrs
Flood Elev= 41.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.65'	**12.0" Round Culvert** L= 32.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.65' / 36.50' S= 0.0047 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=36.65' TW=36.50' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond DMH7: DMH7

[80] Warning: Exceeded Pond DMH6 by 0.05' @ 12.50 hrs (0.09 cfs 179 cf)

Inflow Area =	26,236 sf,	91.08% Impervious,	Inflow Depth =	0.00"	for 25-year event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf		
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 36.90' @ 12.50 hrs
Flood Elev= 41.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.50'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.50' / 36.30' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=36.50' TW=36.20' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond DMH8: DMH8

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=2)
[80] Warning: Exceeded Pond DMH7 by 0.06' @ 12.14 hrs (0.01 cfs 1,371 cf)

Inflow Area =	46,111 sf,	91.94% Impervious,	Inflow Depth =	0.28"	for 25-year event
Inflow =	0.57 cfs @	12.25 hrs, Volume=	1,085 cf		
Outflow =	0.57 cfs @	12.25 hrs, Volume=	1,085 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.57 cfs @	12.25 hrs, Volume=	1,085 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 36.95' @ 12.90 hrs
Flood Elev= 41.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.20'	**12.0" Round Culvert** L= 32.0' CPP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 36.20' / 36.00' S= 0.0063 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.54 cfs @ 12.25 hrs HW=36.67' TW=36.46' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.54 cfs @ 2.16 fps)

Summary for Pond DMH9: DMH9

Inflow Area =	51,807 sf,	81.83% Impervious,	Inflow Depth =	0.00" for 25-year event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf	
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 34.10' @ 0.00 hrs
Flood Elev= 42.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.10'	**12.0" Round Culvert** L= 106.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 34.10' / 33.50' S= 0.0057 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=34.10' TW=33.50' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond INF1: UNDERGROUND INFILTRATION SYSTEM #1

DESIGN NOTES:

1) ESHWT BASED ON TP-5.

2) TREATMENT VOLUME WITHIN SYSTEM IS MEASURED STATICALLY BELOW OVERFLOW OUTLET ELEVATION.

3) Ksat VALUE OF 1.42in/hr FOR WINDSOR SOILS BASED ON NRCS SOIL REPORT.

4) 33% STONE VOID STORAGE PER EAST HARTFORD MANUAL OF TECHNICAL DESIGN.

5) SYSTEM FULL ELEVATION IS TOP OF STONE.

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=106)

Inflow Area =	19,875 sf,	93.07% Impervious,	Inflow Depth =	4.89" for 25-year event
Inflow =	2.58 cfs @	12.04 hrs, Volume=	8,104 cf	
Outflow =	0.73 cfs @	12.25 hrs, Volume=	8,104 cf,	Atten= 72%, Lag= 12.8 min
Discarded =	0.16 cfs @	12.89 hrs, Volume=	7,020 cf	
Primary =	0.57 cfs @	12.25 hrs, Volume=	1,085 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Peak Elev= 36.95' @ 12.89 hrs Surf.Area= 3,273 sf Storage= 2,670 cf
Flood Elev= 37.83' Surf.Area= 3,273 sf Storage= 3,741 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 120.3 min (886.0 - 765.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	35.50'	1,509 cf	**34.83'W x 74.40'L x 2.33'H Field A** 6,047 cf Overall - 1,474 cf Embedded = 4,573 cf x 33.0% Voids
#2A	36.00'	1,474 cf	**ADS_StormTech SC-310 +Cap** x 100 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 10 Rows of 10 Chambers
#3B	35.50'	408 cf	**14.83'W x 45.92'L x 2.33'H Field B** 1,589 cf Overall - 354 cf Embedded = 1,236 cf x 33.0% Voids
#4B	36.00'	354 cf	**ADS_StormTech SC-310 +Cap** x 24 Inside #3 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 4 Rows of 6 Chambers
		3,745 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	36.50'	**12.0" Round Culvert** L= 11.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.50' / 36.30' S= 0.0182 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Discarded	35.50'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 32.50'

Discarded OutFlow Max=0.16 cfs @ 12.89 hrs HW=36.95' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.16 cfs)

Primary OutFlow Max=0.56 cfs @ 12.25 hrs HW=36.90' TW=36.67' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.56 cfs @ 2.82 fps)

Summary for Pond INF2: UNDERGROUND INFILTRATION SYSTEM #2

DESIGN NOTES:

1) ESHWT BASED ON TP-7.

2) TREATMENT VOLUME WITHIN SYSTEM IS MEASURED STATICALLY BELOW OVERFLOW OUTLET ELEVATION.

3) Ksat VALUE OF 1.42in/hr FOR WINDSOR SOILS BASED ON NRCS SOIL REPORT.

4) 33% STONE VOID STORAGE PER EAST HARTFORD MANUAL OF TECHNICAL DESIGN.

5) SYSTEM FULL ELEVATION IS TOP OF STONE.

[80] Warning: Exceeded Pond OWS2 by 0.10' @ 24.26 hrs (0.02 cfs 15 cf)

Inflow Area =	26,236 sf,	91.08% Impervious,	Inflow Depth =	4.79"	for 25-year event
Inflow =	3.19 cfs @	12.02 hrs, Volume=	10,480 cf		
Outflow =	0.19 cfs @	13.64 hrs, Volume=	10,480 cf,	Atten= 94%,	Lag= 97.4 min
Discarded =	0.19 cfs @	13.64 hrs, Volume=	10,480 cf		
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.30' @ 13.64 hrs Surf.Area= 3,236 sf Storage= 4,835 cf
Flood Elev= 38.50' Surf.Area= 3,236 sf Storage= 6,447 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 244.8 min (1,008.5 - 763.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	35.00'	2,404 cf	**39.50'W x 81.94'L x 3.50'H Field A** 11,328 cf Overall - 4,043 cf Embedded = 7,285 cf x 33.0% Voids
#2A	35.50'	4,043 cf	**ADS_StormTech SC-740 +Cap** x 88 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 8 Rows of 11 Chambers
		6,447 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	35.00'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 32.15'
#2	Primary	37.50'	**12.0" Round Culvert** L= 168.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.50' / 36.65' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.19 cfs @ 13.64 hrs HW=37.30' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=35.00' TW=36.65' (Dynamic Tailwater)
↑—**2=Culvert** (Controls 0.00 cfs)

Summary for Pond OWS1: OWS1

Inflow Area =	14,166 sf,	92.11% Impervious,	Inflow Depth =	4.25"	for 25-year event
Inflow =	0.78 cfs @	12.01 hrs, Volume=	5,022 cf		
Outflow =	0.78 cfs @	12.01 hrs, Volume=	5,022 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.78 cfs @	12.01 hrs, Volume=	5,022 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Peak Elev= 37.21' @ 12.09 hrs
Flood Elev= 41.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.10'	**6.0" Round Culvert** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.10' / 36.05' S= 0.0167 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.76 cfs @ 12.01 hrs HW=37.07' TW=36.42' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.76 cfs @ 3.87 fps)

Summary for Pond OWS2: OWS2

Inflow Area = 26,236 sf, 91.08% Impervious, Inflow Depth = 3.65" for 25-year event
Inflow = 0.94 cfs @ 12.00 hrs, Volume= 7,982 cf
Outflow = 0.94 cfs @ 12.00 hrs, Volume= 7,982 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.94 cfs @ 12.00 hrs, Volume= 7,982 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.33' @ 13.51 hrs
Flood Elev= 41.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.60'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.60' / 35.55' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.92 cfs @ 12.00 hrs HW=37.08' TW=36.14' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.92 cfs @ 4.67 fps)

Summary for Link 1L: DESIGN POINT #1 (EXIST. 30" DRAIN LINE)

Inflow Area = 51,807 sf, 81.83% Impervious, Inflow Depth = 0.00" for 25-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= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 2L: DESIGN POINT #2 (SILVER LANE)

Inflow Area = 18,832 sf, 0.00% Impervious, Inflow Depth = 0.04" for 25-year event
Inflow = 0.00 cfs @ 17.63 hrs, Volume= 56 cf
Primary = 0.00 cfs @ 17.63 hrs, Volume= 56 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 3L: DESIGN POINT #3 (LOT 168)

Inflow Area = 2,294 sf, 0.00% Impervious, Inflow Depth = 0.04" for 25-year event
Inflow = 0.00 cfs @ 17.23 hrs, Volume= 7 cf
Primary = 0.00 cfs @ 17.23 hrs, Volume= 7 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 4L: DESIGN POINT #4 (MERCER AVE)

Inflow Area = 3,962 sf, 24.41% Impervious, Inflow Depth = 1.15" for 25-year event
Inflow = 0.09 cfs @ 12.17 hrs, Volume= 381 cf
Primary = 0.09 cfs @ 12.17 hrs, Volume= 381 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 5L: DESIGN POINT #5 (RESIDENTIAL ABUTTERS)

Inflow Area = 6,640 sf, 0.00% Impervious, Inflow Depth = 0.04" for 25-year event
Inflow = 0.00 cfs @ 17.28 hrs, Volume= 20 cf
Primary = 0.00 cfs @ 17.28 hrs, Volume= 20 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: TO CB1 Runoff Area=5,709 sf 95.45% Impervious Runoff Depth=6.41"
Flow Length=108' Slope=0.0140 '/' Tc=1.0 min CN=95 Runoff=1.06 cfs 3,048 cf

Subcatchment 2S: TO CB2 Runoff Area=8,149 sf 96.37% Impervious Runoff Depth=6.52"
Flow Length=65' Tc=2.7 min CN=96 Runoff=1.43 cfs 4,430 cf

Subcatchment 3S: TO CB3 Runoff Area=6,017 sf 86.36% Impervious Runoff Depth=5.82"
Flow Length=103' Slope=0.0100 '/' Tc=4.3 min CN=90 Runoff=0.95 cfs 2,920 cf

Subcatchment 4S: TO CB4 Runoff Area=4,267 sf 100.00% Impervious Runoff Depth=6.76"
Flow Length=50' Slope=0.0140 '/' Tc=0.6 min CN=98 Runoff=0.81 cfs 2,404 cf

Subcatchment 5S: TO CB5 Runoff Area=6,307 sf 79.31% Impervious Runoff Depth=5.37"
Flow Length=128' Tc=4.4 min CN=86 Runoff=0.93 cfs 2,820 cf

Subcatchment 6S: TO CB6 Runoff Area=7,212 sf 85.66% Impervious Runoff Depth=5.82"
Flow Length=45' Tc=3.3 min CN=90 Runoff=1.17 cfs 3,500 cf

Subcatchment 10S: DIRECT TO BASIN Runoff Area=5,696 sf 0.00% Impervious Runoff Depth=0.21"
Flow Length=16' Slope=0.0100 '/' Tc=3.0 min CN=30 Runoff=0.00 cfs 101 cf

Subcatchment 20S: ROOF REAR Runoff Area=2,500 sf 100.00% Impervious Runoff Depth=6.76"
Tc=0.0 min CN=98 Runoff=0.48 cfs 1,409 cf

Subcatchment 21S: ROOF FRONT Runoff Area=2,500 sf 100.00% Impervious Runoff Depth=6.76"
Tc=0.0 min CN=98 Runoff=0.48 cfs 1,409 cf

Subcatchment 22S: CANOPY Runoff Area=3,450 sf 100.00% Impervious Runoff Depth=6.76"
Tc=0.0 min CN=98 Runoff=0.66 cfs 1,944 cf

Subcatchment 200S: TO SILVER LANE Runoff Area=18,832 sf 0.00% Impervious Runoff Depth=0.21"
Tc=30.0 min CN=30 Runoff=0.01 cfs 333 cf

Subcatchment 300S: TO LOT 168 Runoff Area=2,294 sf 0.00% Impervious Runoff Depth=0.21"
Flow Length=20' Slope=0.0050 '/' Tc=4.7 min CN=30 Runoff=0.00 cfs 41 cf

Subcatchment 400S: TO MERCER AVE Runoff Area=3,962 sf 24.41% Impervious Runoff Depth=1.94"
Flow Length=55' Slope=0.0050 '/' Tc=10.6 min CN=53 Runoff=0.16 cfs 640 cf

Subcatchment 500S: TO RESIDENTIAL Runoff Area=6,640 sf 0.00% Impervious Runoff Depth=0.21"
Flow Length=50' Slope=0.0050 '/' Tc=9.8 min CN=30 Runoff=0.00 cfs 117 cf

Pond 1P: INFILTRATION BASIN Peak Elev=37.87' Storage=1,842 cf Inflow=2.85 cfs 2,813 cf
Discarded=0.09 cfs 2,813 cf Primary=0.00 cfs 0 cf Outflow=0.09 cfs 2,813 cf

Pond CB1: CB1 Peak Elev=37.76' Inflow=1.06 cfs 3,048 cf
12.0" Round Culvert n=0.013 L=6.0' S=0.0333 '/' Outflow=1.06 cfs 3,048 cf

Pond CB2: CB2 Peak Elev=37.94' Inflow=2.34 cfs 7,350 cf
Primary=0.74 cfs 5,081 cf Secondary=1.64 cfs 2,268 cf Outflow=2.34 cfs 7,350 cf

Pond CB3: CB3 Peak Elev=38.06' Inflow=0.95 cfs 2,920 cf
12.0" Round Culvert n=0.013 L=102.0' S=0.0054 '/' Outflow=0.95 cfs 2,920 cf

Pond CB4: CB4 Peak Elev=39.61' Inflow=1.94 cfs 5,756 cf
12.0" Round Culvert n=0.013 L=86.0' S=0.0081 '/' Outflow=1.94 cfs 5,756 cf

Pond CB5: CB5 Peak Elev=39.43' Inflow=0.93 cfs 2,820 cf
12.0" Round Culvert n=0.013 L=138.0' S=0.0047 '/' Outflow=0.93 cfs 2,820 cf

Pond CB6: CB6 Peak Elev=39.32' Inflow=3.64 cfs 12,076 cf
12.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=3.64 cfs 12,076 cf

Pond DMH10: DMH10 Peak Elev=33.50' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=74.0' S=0.0068 '/' Outflow=0.00 cfs 0 cf

Pond DMH11: DMH11 Peak Elev=33.00' Inflow=0.00 cfs 0 cf
18.0" Round Culvert n=0.013 L=30.0' S=0.0347 '/' Outflow=0.00 cfs 0 cf

Pond DMH3: DMH3 Peak Elev=38.40' Inflow=4.06 cfs 13,485 cf
Primary=0.93 cfs 7,684 cf Secondary=3.16 cfs 5,801 cf Outflow=4.06 cfs 13,485 cf

Pond DMH6: DMH6 Peak Elev=38.25' Inflow=0.45 cfs 1,151 cf
12.0" Round Culvert n=0.013 L=32.0' S=0.0047 '/' Outflow=0.45 cfs 1,151 cf

Pond DMH7: DMH7 Peak Elev=38.26' Inflow=0.45 cfs 1,151 cf
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=0.45 cfs 1,151 cf

Pond DMH8: DMH8 Peak Elev=38.30' Inflow=2.85 cfs 2,713 cf
12.0" Round Culvert n=0.013 L=32.0' S=0.0063 '/' Outflow=2.85 cfs 2,713 cf

Pond DMH9: DMH9 Peak Elev=34.10' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=106.0' S=0.0057 '/' Outflow=0.00 cfs 0 cf

Pond INF1: UNDERGROUND INFILTRATION Peak Elev=37.76' Storage=3,665 cf Inflow=3.27 cfs 10,397 cf
Discarded=0.19 cfs 8,837 cf Primary=2.81 cfs 1,562 cf Outflow=3.00 cfs 10,399 cf

Pond INF2: UNDERGROUND INFILTRATION Peak Elev=37.96' Storage=5,874 cf Inflow=4.06 cfs 13,485 cf
Discarded=0.22 cfs 12,334 cf Primary=0.45 cfs 1,151 cf Outflow=0.67 cfs 13,485 cf

Pond OWS1: OWS1 Peak Elev=37.76' Inflow=0.74 cfs 5,081 cf
6.0" Round Culvert n=0.010 L=3.0' S=0.0167 '/' Outflow=0.74 cfs 5,081 cf

Pond OWS2: OWS2 Peak Elev=37.98' Inflow=0.93 cfs 7,684 cf
6.0" Round Culvert n=0.010 L=10.0' S=0.0050 '/' Outflow=0.93 cfs 7,684 cf

Link 1L: DESIGN POINT #1 (EXIST. 30" DRAIN LINE) Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link 2L: DESIGN POINT #2 (SILVER LANE) Inflow=0.01 cfs 333 cf
Primary=0.01 cfs 333 cf

Link 3L: DESIGN POINT #3 (LOT 168) Inflow=0.00 cfs 41 cf
Primary=0.00 cfs 41 cf

Link 4L: DESIGN POINT #4 (MERCER AVE) Inflow=0.16 cfs 640 cf
Primary=0.16 cfs 640 cf

Link 5L: DESIGN POINT #5 (RESIDENTIAL ABUTTERS) Inflow=0.00 cfs 117 cf
Primary=0.00 cfs 117 cf

Total Runoff Area = 83,535 sf Runoff Volume = 25,114 cf Average Runoff Depth = 3.61"
48.09% Pervious = 40,173 sf 51.91% Impervious = 43,362 sf

Summary for Subcatchment 1S: TO CB1

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.06 cfs @ 12.01 hrs, Volume= 3,048 cf, Depth= 6.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
260	39	>75% Grass cover, Good, HSG A
5,449	98	Paved parking, HSG A
5,709	95	Weighted Average
260		4.55% Pervious Area
5,449		95.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0140	0.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.20"
0.6	88	0.0140	2.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	108	Total			

Summary for Subcatchment 2S: TO CB2

Runoff = 1.43 cfs @ 12.04 hrs, Volume= 4,430 cf, Depth= 6.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
296	39	>75% Grass cover, Good, HSG A
7,853	98	Paved parking, HSG A
8,149	96	Weighted Average
296		3.63% Pervious Area
7,853		96.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	15	0.0150	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.3	50	0.0180	2.72		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.7	65	Total			

Summary for Subcatchment 3S: TO CB3

Runoff = 0.95 cfs @ 12.06 hrs, Volume= 2,920 cf, Depth= 5.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
821	39	>75% Grass cover, Good, HSG A
5,196	98	Paved parking, HSG A
6,017	90	Weighted Average
821		13.64% Pervious Area
5,196		86.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	20	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.7	83	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3	103	Total			

Summary for Subcatchment 4S: TO CB4

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.81 cfs @ 12.01 hrs, Volume= 2,404 cf, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
4,267	98	Paved parking, HSG A
4,267		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0140	0.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.20"
0.2	30	0.0140	2.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	50	Total			

Summary for Subcatchment 5S: TO CB5

Runoff = 0.93 cfs @ 12.06 hrs, Volume= 2,820 cf, Depth= 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
1,305	39	>75% Grass cover, Good, HSG A
5,002	98	Paved parking, HSG A
6,307	86	Weighted Average
1,305		20.69% Pervious Area
5,002		79.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	20	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.8	108	0.0110	2.13		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.4	128	Total			

Summary for Subcatchment 6S: TO CB6

Runoff = 1.17 cfs @ 12.05 hrs, Volume= 3,500 cf, Depth= 5.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
1,034	39	>75% Grass cover, Good, HSG A
6,178	98	Paved parking, HSG A
7,212	90	Weighted Average
1,034		14.34% Pervious Area
6,178		85.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	25	0.0200	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	20	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.3	45	Total			

Summary for Subcatchment 10S: DIRECT TO BASIN

Runoff = 0.00 cfs @ 13.72 hrs, Volume= 101 cf, Depth= 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
5,696	30	Meadow, non-grazed, HSG A
5,696		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	16	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"

Summary for Subcatchment 20S: ROOF REAR

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.48 cfs @ 12.00 hrs, Volume= 1,409 cf, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
2,500	98	Roofs, HSG A
2,500		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry, 0**

Summary for Subcatchment 21S: ROOF FRONT

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.48 cfs @ 12.00 hrs, Volume= 1,409 cf, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
2,500	98	Roofs, HSG A
2,500		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry, 0**

Summary for Subcatchment 22S: CANOPY

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.66 cfs @ 12.00 hrs, Volume= 1,944 cf, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
3,450	98	Roofs, HSG A
3,450		100.00% Impervious Area

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

Summary for Subcatchment 200S: TO SILVER LANE

NOTE: Tc VALUE FOR PRE-DEVELOPMENT CONDITIONS IS ASSUMED SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.01 cfs @ 14.17 hrs, Volume= 333 cf, Depth= 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
18,832	30	Meadow, non-grazed, HSG A
18,832		100.00% Pervious Area

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

Summary for Subcatchment 300S: TO LOT 168

NOTE: Tc VALUE FOR PRE-DEVELOPMENT CONDITIONS IS ASSUMED SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.00 cfs @ 13.75 hrs, Volume= 41 cf, Depth= 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
2,294	30	Meadow, non-grazed, HSG A
2,294		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	20	0.0050	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"

Summary for Subcatchment 400S: TO MERCER AVE

NOTE: Tc VALUES FOR PRE-DEVELOPMENT CONDITIONS ARE ASSUMED VALUES SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.16 cfs @ 12.16 hrs, Volume= 640 cf, Depth= 1.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
2,995	39	>75% Grass cover, Good, HSG A
967	98	Paved parking, HSG A
3,962	53	Weighted Average
2,995		75.59% Pervious Area
967		24.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	55	0.0050	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"

Summary for Subcatchment 500S: TO RESIDENTIAL

NOTE: Tc VALUES FOR PRE-DEVELOPMENT CONDITIONS ARE ASSUMED VALUES SINCE THE EXISTING SITE TOPOGRAPHY IS FLAT AND NO DEFINED FLOW COURSES CAN BE IDENTIFIED.

Runoff = 0.00 cfs @ 13.84 hrs, Volume= 117 cf, Depth= 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
6,640	30	Meadow, non-grazed, HSG A
6,640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	50	0.0050	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"

Summary for Pond 1P: INFILTRATION BASIN

DESIGN NOTES:

1) ESHWT BASED ON TP-5.

2) TREATMENT VOLUME WITHIN SYSTEM IS MEASURED STATICALLY BELOW OVERFLOW OUTLET ELEVATION.

3) Ksat VALUE OF 1.42in/hr FOR WINDSOR SOILS BASED ON NRCS SOIL REPORT.

[80] Warning: Exceeded Pond DMH8 by 1.63' @ 15.05 hrs (3.64 cfs 10,872 cf)

Inflow Area =	51,807 sf, 81.83% Impervious,	Inflow Depth =	0.65"	for 100-year event
Inflow =	2.85 cfs @ 14.81 hrs, Volume=	2,813 cf		
Outflow =	0.09 cfs @ 15.07 hrs, Volume=	2,813 cf,	Atten= 97%,	Lag= 15.9 min
Discarded =	0.09 cfs @ 15.07 hrs, Volume=	2,813 cf		
Primary =	0.00 cfs @ 0.00 hrs, Volume=	0 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.87' @ 15.07 hrs Surf.Area= 1,541 sf Storage= 1,842 cf
Flood Elev= 40.00' Surf.Area= 2,907 sf Storage= 6,509 cf

Plug-Flow detention time= 243.1 min calculated for 2,812 cf (100% of inflow)
Center-of-Mass det. time= 243.0 min (1,029.2 - 786.2)

Volume	Invert	Avail.Storage	Storage Description
#1	36.00'	6,509 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
36.00	417	126.0	0	0	417
37.00	1,062	176.0	715	715	1,628
38.00	1,619	195.0	1,331	2,046	2,219
40.00	2,907	232.0	4,464	6,509	3,547

Device	Routing	Invert	Outlet Devices
#1	Discarded	36.00'	**1.420 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 32.50'
#2	Primary	36.00'	**12.0" Round Culvert** L= 102.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.00' / 34.20' S= 0.0176 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	39.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.09 cfs @ 15.07 hrs HW=37.87' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=36.00' TW=34.10' (Dynamic Tailwater)
↑—**2=Culvert** (Controls 0.00 cfs)
↑—**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CB1: CB1

Inflow Area =	5,709 sf, 95.45% Impervious,	Inflow Depth =	6.41"	for 100-year event
Inflow =	1.06 cfs @ 12.01 hrs, Volume=	3,048 cf		
Outflow =	1.06 cfs @ 12.01 hrs, Volume=	3,048 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	1.06 cfs @ 12.01 hrs, Volume=	3,048 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.76' @ 13.51 hrs
Flood Elev= 41.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.25'	**12.0" Round Culvert** L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.25' / 36.05' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.92 cfs @ 12.01 hrs HW=36.90' TW=36.74' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.92 cfs @ 2.45 fps)

Summary for Pond CB2: CB2

[80] Warning: Exceeded Pond CB3 by 0.40' @ 14.85 hrs (0.60 cfs 27 cf)

Inflow Area =	14,166 sf,	92.11% Impervious,	Inflow Depth =	6.23"	for 100-year event
Inflow =	2.34 cfs @	12.05 hrs, Volume=	7,350 cf		
Outflow =	2.34 cfs @	12.05 hrs, Volume=	7,350 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.74 cfs @	12.01 hrs, Volume=	5,081 cf		
Secondary =	1.64 cfs @	12.05 hrs, Volume=	2,268 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.94' @ 12.05 hrs
Flood Elev= 41.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.45'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.45' / 36.35' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#2	Secondary	37.25'	**12.0" Round Culvert** L= 7.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.25' / 37.00' S= 0.0357 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.71 cfs @ 12.01 hrs HW=37.84' TW=37.27' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.71 cfs @ 3.61 fps)

Secondary OutFlow Max=1.64 cfs @ 12.05 hrs HW=37.94' TW=36.91' (Dynamic Tailwater)
↑—**2=Culvert** (Barrel Controls 1.64 cfs @ 3.99 fps)

Summary for Pond CB3: CB3

Inflow Area =	6,017 sf,	86.36% Impervious,	Inflow Depth =	5.82"	for 100-year event
Inflow =	0.95 cfs @	12.06 hrs, Volume=	2,920 cf		
Outflow =	0.95 cfs @	12.06 hrs, Volume=	2,920 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.95 cfs @	12.06 hrs, Volume=	2,920 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Peak Elev= 38.06' @ 12.06 hrs
Flood Elev= 41.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.00'	**12.0" Round Culvert** L= 102.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.00' / 36.45' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.97 cfs @ 12.06 hrs HW=38.06' TW=37.93' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.97 cfs @ 1.45 fps)

Summary for Pond CB4: CB4

Inflow Area = 10,217 sf,100.00% Impervious, Inflow Depth = 6.76" for 100-year event
Inflow = 1.94 cfs @ 12.00 hrs, Volume= 5,756 cf
Outflow = 1.94 cfs @ 12.00 hrs, Volume= 5,756 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.94 cfs @ 12.00 hrs, Volume= 5,756 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 39.61' @ 12.03 hrs
Flood Elev= 41.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.70'	**12.0" Round Culvert** L= 86.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.70' / 37.00' S= 0.0081 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.34 cfs @ 12.00 hrs HW=39.33' TW=39.14' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.34 cfs @ 1.71 fps)

Summary for Pond CB5: CB5

Inflow Area = 6,307 sf, 79.31% Impervious, Inflow Depth = 5.37" for 100-year event
Inflow = 0.93 cfs @ 12.06 hrs, Volume= 2,820 cf
Outflow = 0.93 cfs @ 12.06 hrs, Volume= 2,820 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.93 cfs @ 12.06 hrs, Volume= 2,820 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 39.43' @ 12.04 hrs
Flood Elev= 40.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.65'	**12.0" Round Culvert** L= 138.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.65' / 36.00' S= 0.0047 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.26 cfs @ 12.06 hrs HW=39.34' TW=39.10' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.26 cfs @ 1.61 fps)

Summary for Pond CB6: CB6

[80] Warning: Exceeded Pond CB5 by 0.15' @ 12.00 hrs (1.03 cfs 494 cf)

Inflow Area =	23,736 sf,	90.15% Impervious,	Inflow Depth =	6.11"	for 100-year event
Inflow =	3.64 cfs @	12.03 hrs, Volume=	12,076 cf		
Outflow =	3.64 cfs @	12.03 hrs, Volume=	12,076 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	3.64 cfs @	12.03 hrs, Volume=	12,076 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 39.32' @ 12.03 hrs
Flood Elev= 41.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.00'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.00' / 35.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.63 cfs @ 12.03 hrs HW=39.32' TW=38.39' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 3.63 cfs @ 4.62 fps)

Summary for Pond DMH10: DMH10

Inflow Area =	51,807 sf,	81.83% Impervious,	Inflow Depth =	0.00"	for 100-year event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf		
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 33.50' @ 0.00 hrs
Flood Elev= 42.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.50'	**12.0" Round Culvert** L= 74.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 33.50' / 33.00' S= 0.0068 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=33.50' TW=33.00' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.00 cfs)

Summary for Pond DMH11: DMH11

Inflow Area =	51,807 sf,	81.83% Impervious,	Inflow Depth =	0.00"	for 100-year event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf		
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Peak Elev= 33.00' @ 0.00 hrs
Flood Elev= 42.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.00'	**18.0" Round Culvert** L= 30.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 33.00' / 31.96' S= 0.0347 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=33.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond DMH3: DMH3

[80] Warning: Exceeded Pond CB6 by 0.06' @ 11.62 hrs (0.94 cfs 197 cf)

Inflow Area =	26,236 sf,	91.08% Impervious,	Inflow Depth =	6.17"	for 100-year event
Inflow =	4.06 cfs @	12.02 hrs, Volume=	13,485 cf		
Outflow =	4.06 cfs @	12.02 hrs, Volume=	13,485 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.93 cfs @	12.00 hrs, Volume=	7,684 cf		
Secondary =	3.16 cfs @	12.02 hrs, Volume=	5,801 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 38.40' @ 12.02 hrs
Flood Elev= 41.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.90'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.90' / 35.85' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#2	Secondary	37.20'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.20' / 36.50' S= 0.0280 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.89 cfs @ 12.00 hrs HW=38.34' TW=37.44' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.89 cfs @ 4.55 fps)

Secondary OutFlow Max=3.15 cfs @ 12.02 hrs HW=38.40' TW=36.67' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 3.15 cfs @ 4.02 fps)

Summary for Pond DMH6: DMH6

[80] Warning: Exceeded Pond INF2 by 0.54' @ 14.83 hrs (0.97 cfs 316 cf)

Inflow Area =	26,236 sf,	91.08% Impervious,	Inflow Depth =	0.53"	for 100-year event
Inflow =	0.45 cfs @	12.46 hrs, Volume=	1,151 cf		
Outflow =	0.45 cfs @	12.46 hrs, Volume=	1,151 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.45 cfs @	12.46 hrs, Volume=	1,151 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 38.25' @ 14.83 hrs
Flood Elev= 41.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.65'	**12.0" Round Culvert** L= 32.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.65' / 36.50' S= 0.0047 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.47 cfs @ 12.46 hrs HW=37.49' TW=37.46' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.47 cfs @ 0.91 fps)

Summary for Pond DMH7: DMH7

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=2)
[80] Warning: Exceeded Pond DMH6 by 1.46' @ 14.82 hrs (3.34 cfs 5,457 cf)

Inflow Area =	26,236 sf,	91.08% Impervious,	Inflow Depth =	0.53"	for 100-year event
Inflow =	0.45 cfs @	12.46 hrs, Volume=	1,151 cf		
Outflow =	0.45 cfs @	12.46 hrs, Volume=	1,151 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.45 cfs @	12.46 hrs, Volume=	1,151 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 38.26' @ 14.82 hrs
Flood Elev= 41.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.50'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.50' / 36.30' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.09 cfs @ 12.46 hrs HW=37.46' TW=37.46' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.09 cfs @ 0.15 fps)

Summary for Pond DMH8: DMH8

[80] Warning: Exceeded Pond DMH7 by 1.59' @ 14.81 hrs (3.61 cfs 8,182 cf)
[80] Warning: Exceeded Pond INF1 by 0.80' @ 15.06 hrs (3.39 cfs 40,019 cf)

Inflow Area =	46,111 sf,	91.94% Impervious,	Inflow Depth =	0.71"	for 100-year event
Inflow =	2.85 cfs @	14.81 hrs, Volume=	2,713 cf		
Outflow =	2.85 cfs @	14.81 hrs, Volume=	2,713 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	2.85 cfs @	14.81 hrs, Volume=	2,713 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 38.30' @ 14.81 hrs
Flood Elev= 41.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.20'	**12.0" Round Culvert** L= 32.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.20' / 36.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.76 cfs @ 14.81 hrs HW=38.20' TW=37.67' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 2.76 cfs @ 3.52 fps)

Summary for Pond DMH9: DMH9

Inflow Area = 51,807 sf, 81.83% Impervious, Inflow Depth = 0.00" for 100-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 34.10' @ 0.00 hrs
Flood Elev= 42.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.10'	**12.0" Round Culvert** L= 106.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 34.10' / 33.50' S= 0.0057 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=34.10' TW=33.50' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.00 cfs)

Summary for Pond INF1: UNDERGROUND INFILTRATION SYSTEM #1

DESIGN NOTES:

1) ESHWT BASED ON TP-5.

2) TREATMENT VOLUME WITHIN SYSTEM IS MEASURED STATICALLY BELOW OVERFLOW OUTLET ELEVATION.

3) Ksat VALUE OF 1.42in/hr FOR WINDSOR SOILS BASED ON NRCS SOIL REPORT.

4) 33% STONE VOID STORAGE PER EAST HARTFORD MANUAL OF TECHNICAL DESIGN.

5) SYSTEM FULL ELEVATION IS TOP OF STONE.

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[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=20)
[80] Warning: Exceeded Pond CB1 by 0.01' @ 12.43 hrs (0.42 cfs 859 cf)
[80] Warning: Exceeded Pond CB2 by 0.87' @ 14.84 hrs (0.26 cfs 13 cf)
[80] Warning: Exceeded Pond OWS1 by 1.40' @ 14.83 hrs (1.02 cfs 46 cf)

Inflow Area = 19,875 sf, 93.07% Impervious, Inflow Depth = 6.28" for 100-year event
Inflow = 3.27 cfs @ 12.04 hrs, Volume= 10,397 cf
Outflow = 3.00 cfs @ 14.81 hrs, Volume= 10,399 cf, Atten= 8%, Lag= 166.5 min
Discarded = 0.19 cfs @ 13.50 hrs, Volume= 8,837 cf
Primary = 2.81 cfs @ 14.81 hrs, Volume= 1,562 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.76' @ 13.50 hrs Surf.Area= 3,273 sf Storage= 3,665 cf
Flood Elev= 37.83' Surf.Area= 3,273 sf Storage= 3,741 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 151.1 min (911.4 - 760.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	35.50'	1,509 cf	**34.83'W x 74.40'L x 2.33'H Field A** 6,047 cf Overall - 1,474 cf Embedded = 4,573 cf x 33.0% Voids
#2A	36.00'	1,474 cf	**ADS_StormTech SC-310 +Cap** x 100 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 10 Rows of 10 Chambers
#3B	35.50'	408 cf	**14.83'W x 45.92'L x 2.33'H Field B** 1,589 cf Overall - 354 cf Embedded = 1,236 cf x 33.0% Voids
#4B	36.00'	354 cf	**ADS_StormTech SC-310 +Cap** x 24 Inside #3 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 4 Rows of 6 Chambers
		3,745 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	36.50'	**12.0" Round Culvert** L= 11.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.50' / 36.30' S= 0.0182 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Discarded	35.50'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 32.50'

Discarded OutFlow Max=0.19 cfs @ 13.50 hrs HW=37.76' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 14.81 hrs HW=37.55' TW=38.20' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond INF2: UNDERGROUND INFILTRATION SYSTEM #2

DESIGN NOTES:

1) ESHWT BASED ON TP-7.

2) TREATMENT VOLUME WITHIN SYSTEM IS MEASURED STATICALLY BELOW OVERFLOW OUTLET ELEVATION.

3) Ksat VALUE OF 1.42in/hr FOR WINDSOR SOILS BASED ON NRCS SOIL REPORT.

4) 33% STONE VOID STORAGE PER EAST HARTFORD MANUAL OF TECHNICAL DESIGN.

5) SYSTEM FULL ELEVATION IS TOP OF STONE.

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[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=10)
[80] Warning: Exceeded Pond OWS2 by 0.43' @ 24.13 hrs (0.31 cfs 435 cf)

Inflow Area =	26,236 sf,	91.08% Impervious,	Inflow Depth =	6.17"	for 100-year event
Inflow =	4.06 cfs @	12.02 hrs, Volume=	13,485 cf		
Outflow =	0.67 cfs @	12.46 hrs, Volume=	13,485 cf,	Atten= 83%,	Lag= 26.5 min
Discarded =	0.22 cfs @	12.48 hrs, Volume=	12,334 cf		
Primary =	0.45 cfs @	12.46 hrs, Volume=	1,151 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.96' @ 12.48 hrs Surf.Area= 3,236 sf Storage= 5,874 cf
Flood Elev= 38.50' Surf.Area= 3,236 sf Storage= 6,447 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 250.6 min (1,009.7 - 759.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	35.00'	2,404 cf	**39.50'W x 81.94'L x 3.50'H Field A** 11,328 cf Overall - 4,043 cf Embedded = 7,285 cf x 33.0% Voids
#2A	35.50'	4,043 cf	**ADS_StormTech SC-740 +Cap** x 88 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 8 Rows of 11 Chambers
		6,447 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	35.00'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 32.15'
#2	Primary	37.50'	**12.0" Round Culvert** L= 168.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.50' / 36.65' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.22 cfs @ 12.48 hrs HW=37.96' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.22 cfs)

Primary OutFlow Max=0.44 cfs @ 12.46 hrs HW=37.96' TW=37.49' (Dynamic Tailwater)
↑—**2=Culvert** (Outlet Controls 0.44 cfs @ 1.83 fps)

Summary for Pond OWS1: OWS1

[80] Warning: Exceeded Pond CB2 by 0.88' @ 14.84 hrs (0.85 cfs 40 cf)

Inflow Area = 14,166 sf, 92.11% Impervious, Inflow Depth = 4.30" for 100-year event
Inflow = 0.74 cfs @ 12.01 hrs, Volume= 5,081 cf
Outflow = 0.74 cfs @ 12.01 hrs, Volume= 5,081 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.74 cfs @ 12.01 hrs, Volume= 5,081 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.76' @ 13.50 hrs
Flood Elev= 41.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.10'	**6.0" Round Culvert** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.10' / 36.05' S= 0.0167 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.71 cfs @ 12.01 hrs HW=37.27' TW=36.71' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.71 cfs @ 3.61 fps)

Summary for Pond OWS2: OWS2

[80] Warning: Exceeded Pond DMH3 by 0.11' @ 24.17 hrs (0.03 cfs 8 cf)

Inflow Area = 26,236 sf, 91.08% Impervious, Inflow Depth = 3.51" for 100-year event
Inflow = 0.93 cfs @ 12.00 hrs, Volume= 7,684 cf
Outflow = 0.93 cfs @ 12.00 hrs, Volume= 7,684 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.93 cfs @ 12.00 hrs, Volume= 7,684 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.98' @ 12.47 hrs
Flood Elev= 41.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.60'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.60' / 35.55' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.90 cfs @ 12.00 hrs HW=37.44' TW=36.54' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.90 cfs @ 4.58 fps)

Summary for Link 1L: DESIGN POINT #1 (EXIST. 30" DRAIN LINE)

Inflow Area = 51,807 sf, 81.83% Impervious, Inflow Depth = 0.00" for 100-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= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 2L: DESIGN POINT #2 (SILVER LANE)

Inflow Area = 18,832 sf, 0.00% Impervious, Inflow Depth = 0.21" for 100-year event
Inflow = 0.01 cfs @ 14.17 hrs, Volume= 333 cf
Primary = 0.01 cfs @ 14.17 hrs, Volume= 333 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 3L: DESIGN POINT #3 (LOT 168)

Inflow Area = 2,294 sf, 0.00% Impervious, Inflow Depth = 0.21" for 100-year event
Inflow = 0.00 cfs @ 13.75 hrs, Volume= 41 cf
Primary = 0.00 cfs @ 13.75 hrs, Volume= 41 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 4L: DESIGN POINT #4 (MERCER AVE)

Inflow Area = 3,962 sf, 24.41% Impervious, Inflow Depth = 1.94" for 100-year event
Inflow = 0.16 cfs @ 12.16 hrs, Volume= 640 cf
Primary = 0.16 cfs @ 12.16 hrs, Volume= 640 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link 5L: DESIGN POINT #5 (RESIDENTIAL ABUTTERS)

Inflow Area = 6,640 sf, 0.00% Impervious, Inflow Depth = 0.21" for 100-year event
Inflow = 0.00 cfs @ 13.84 hrs, Volume= 117 cf
Primary = 0.00 cfs @ 13.84 hrs, Volume= 117 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

APPENDIX F

72-hour Drawdown Calculations

MHF Design Consultants, Inc.
ENGINEERS • PLANNERS • SURVEYORS

MHF Project No.	430817	Sheet	1 of 1
Project Description	IOM - e. Hartford, CT		
Task	Pond Drawdown Calculations		
Calculated By	PWM	Date	REV 5/24/18
Checked By		Date	

Drawdown within 72 hours Analysis for Static Method

Proposed Underground Infiltration System #1

Infiltration Rate:	1.42	inches/hour (From NRCS)
Design Infiltration Rate:	1.42	inches/hour
Volume Provide for Infiltration:	1,745	cf
Basin bottom area:	3,273	sf

Time $_{drawdown}$ = (Required Recharge Volume in cubic feet as determined by the Static Method)(1/Design Infiltration Rate in inches per hour)(conversion for inches to feet)(1/bottom area in feet)

Time $_{drawdown}$ = (1,745 cf) (1 / 1.42 in/hr) (1ft/12 in.) (1 / 3,273 sf)

= 4.51 hours

Drawdown within 72 hours Analysis for Static Method

Proposed Underground Infiltration System #2

Infiltration Rate:	1.42	inches/hour (From NRCS)
Design Infiltration Rate:	1.42	inches/hour
Volume Provide for Infiltration:	5,209	cf
Basin bottom area:	3,236	sf

Time $_{drawdown}$ = (Required Recharge Volume in cubic feet as determined by the Static Method)(1/Design Infiltration Rate in inches per hour)(conversion for inches to feet)(1/bottom area in feet)

Time $_{drawdown}$ = (5,209 cf) (1 / 1.42 in/hr) (1ft/12 in.) (1 / 3,236 sf)

= 13.60 hours

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MHF Project No.	430817	Sheet	1 of 1
Project Description	IOM - e. Hartford, CT		
Task	Pond Drawdown Calculations		
Calculated By	PWM	Date	REV 5/24/18
Checked By		Date	

Drawdown within 72 hours Analysis for Static Method

Proposed Infiltration Basin

Infiltration Rate: 1.42 inches/hour (From NRCS)

Design Infiltration Rate: 1.42 inches/hour

Volume Provide for Infiltration: 3,955 cf

Basin bottom area: 2,216 sf

Time $_{drawdown}$ = (Required Recharge Volume in cubic feet as determined by the Static Method)(1/Design Infiltration Rate in inches per hour)(conversion for inches to feet)(1/bottom area in feet)

Time $_{drawdown}$ = (3,955 cf) (1 / 1.42 in/hr) (1ft/12 in.) (1 / 2,216 sf)

= 15.08 hours

APPENDIX F

Outlet Apron Sizing Calculations

OUTLET APRON DESIGN

Project: IOM E. Hartford, CT Job # 430817
Date: 24-May-18

FES#1 OUTLET APRON
(from HydroCAD **POND DMH8)**
Q25= 0.57 cfs
D_o = 12 inches
Tw = 0.36 feet

MHF Design Consultants, Inc.
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Design Criteria
Apron Dimensions

The dimensions of the apron at the outlet of the pipe shall be determined as follows:

1.) The width of the apron at the outlet of the pipe or channel shall be 3 times the diameter of the pipe or width of the channel.

USE THIS W= **3** feet

2.) The length of the apron shall be determined from the following formula when the tailwater depth at the outlet of the pipe or channel is less than one-half the diameter of the pipe or one-half the width of the channel.

USE THIS La=1.8*Q/ Do^3/2+ 7Do
La= **8.03** feet

Where: La is the length of the apron
Q is the discharge from the pipe or channel
D_o is the diameter of pipe of width of channel

3.) The length of the apron shall be determined from the following formula when the tailwater depth at the outlet of the pipe or channel is greater than one-half the diameter of the pipe or one-half the width of the channel.

La=3.0*Qo/ Do^1.5 +7D_o
La= **8.71** feet

4.) Where there is no well defined channel downstream of the outlet the width of the downstream end of the apron shall be determined as follows:

a. For minimum tailwater conditions where the tailwater depth is less than one-half the pipe diameter:

USE THIS W=3*Do+La
W= **11.03** feet

b. For maximum tailwater conditions where the tailwater depth is greater than one-half the diameter of the pipe:

W=3*Do+0.4*La
W= **6.48** feet

5.) Where there is a stable well-defined channel downstream of the apron, the bottom of the apron shall be equal to the width of the channel.

W= **8** feet

6.) The side of the apron in a well-defined channel shall be 2:1 (horizontal to vertical) or flatter. The height of the structural lining along the channel sides shall begin at the elevation equal to the top of conduit and taper down to the channel bottom through the length of the apron.

7.) The bottom grade of the apron shall be level (0% grade). No overfall is allowable at the end of the apron.

8.) The apron shall be located so that there are no bends in the horizontal alignment of the apron

Rock Riprap

The following criteria shall be used to determine the dimensions of the rock riprap used for the apron:

1.) The median stone diameter shall be determined using the formula:

$d_{50}=0.02*Q^{4/3}/(Tw*D_o)$

d_{50}= **0.32** inches **USE** **3** inches

d_{50} minimum 3 inches

Where: d_{50} is the median stone diameter in feet
Tw is the tailwater depth above the invert of the pipe channel in feet
Q is the discharge from the pipe or channel in cubic feet per second
D_o is the diameter of the pipe or width of the channel in feet

2.) Fifty percent by weight of the riprap mixture shall be smaller the than median stone size designated as d_{50}. The largest stone size in the mixtureshall be 1.5 times the d_{50} size.

3.) The quality and gradation of the rock, the thickness of the riprap lining, filter material and the quality of the stone shall meet the requirements in the Rock Riprap BMP. The minimum depth shall be 6 inches or 1.5 times the largest stone size in the mixture whichever is larger (d).

Thickness of the riprap
$d = 1.5*(1.5*d_{50}$(largest stone size))

d= **7** inches*

* must use a minimum of 6"

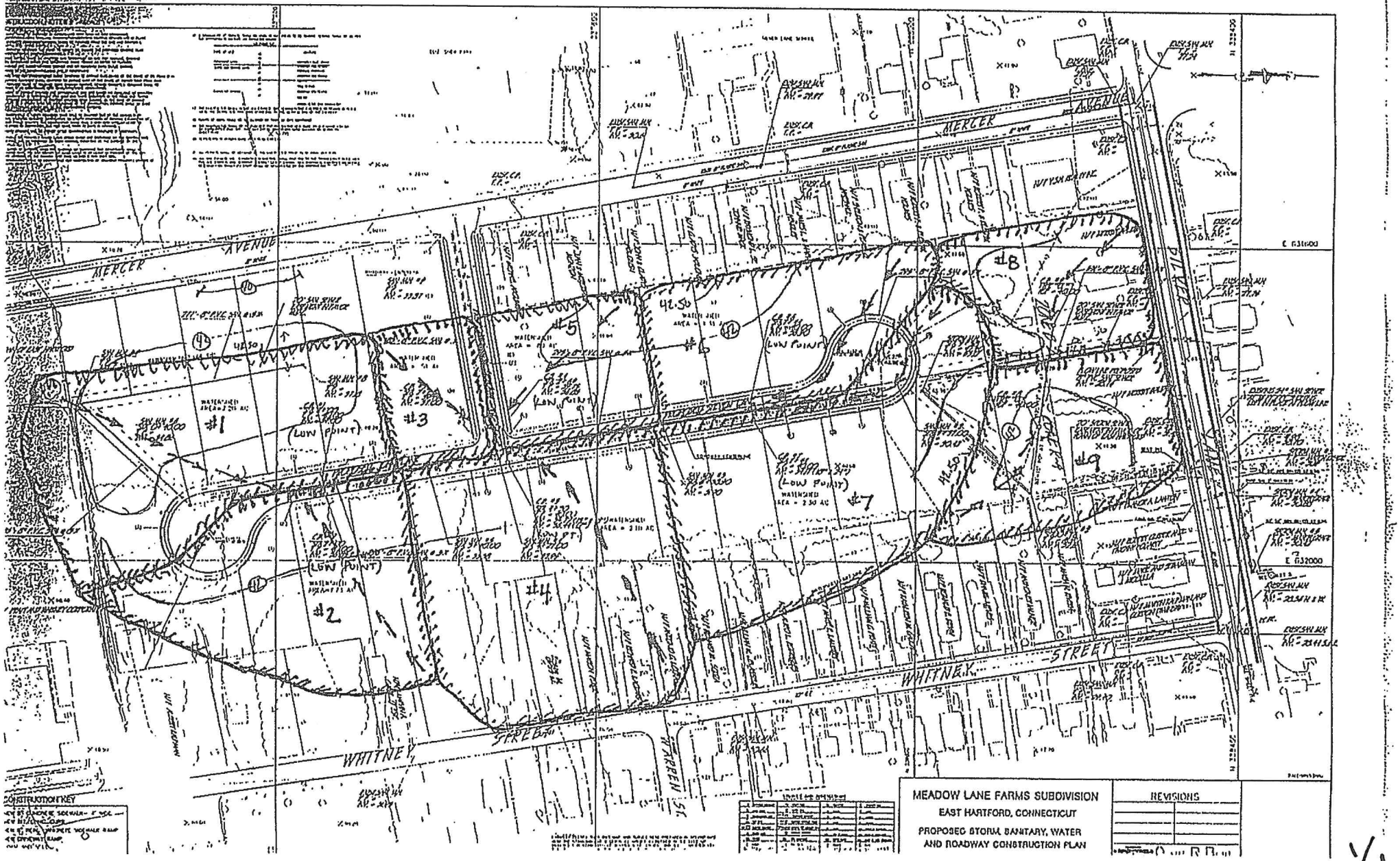
Rock Rip Rap Gradation

% of weight smaller than the given size	size of stone in inches
100	**4.5** to **6.0**
85	**3.9** to **5.4**
50	**3.0** to **4.5**
15	**0.9** to **1.5**

FIGURE #2 - DRAINAGE AREAS FOR MEADOW FARMS

APPROXIMATE CONTRIBUTING WATERSHED AREAS.

N.T.S.



1/1

LEGEND

SGC	SLOPED GRANITE CURB		PULL BOX
VGC	VERTICAL GRANITE CURB		SIGN
CCB	CAPE COD BERM	+38.89	SPOT ELEVATION
G	GAS LINE		DRAIN MANHOLE
T	UNDERGROUND TELEPHONE		CATCH BASIN
W	WATER LINE	S	SEWER MANHOLE
	CHAIN LINK FENCE		MANHOLE
90	CONTOUR ELEVATION		GAS VALVE
	TREE		WATER VALVE
	UTILITY POLE		WATER SHUT OFF
	GUY WIRE		FIRE HYDRANT
	OVERHEAD WIRE		BOLLARD
	TREELINE	GM	GAS METER
C.O.	PROP. CLEANOUT	MEG	MEET EXISTING GRADE
CB-1	PROP. CATCH BASIN	91.75	PROP. SPOT ELEVATION
DMH-1	PROP. DRAIN MANHOLE		PROP. CONTOUR ELEVATION

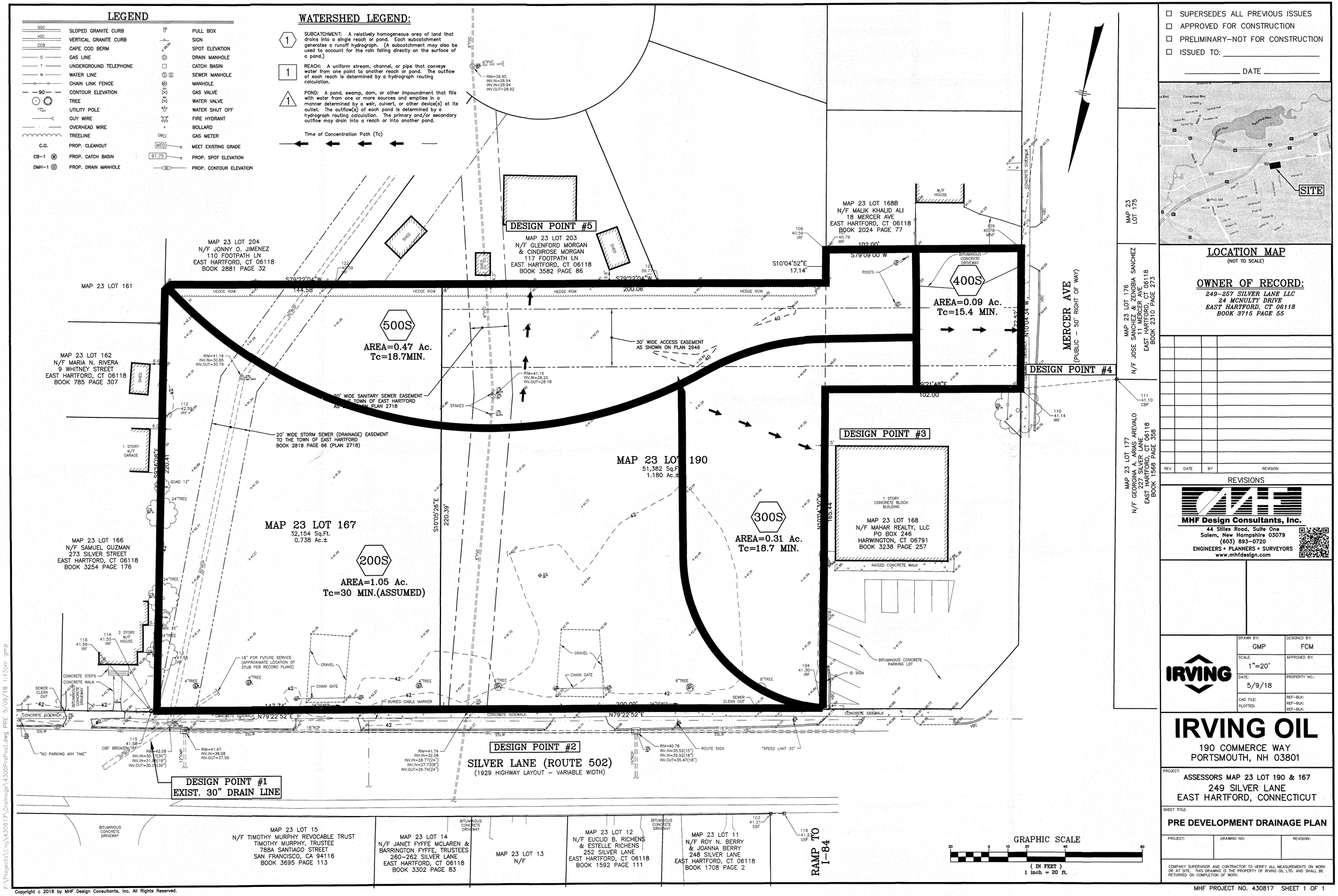
WATERSHED LEGEND:

1 — SUBCATCHMENT: A relatively homogeneous area of land that drains into a single reach or pond. Each subcatchment generates a runoff hydrograph. (A subcatchment may also be used to account for the rain falling directly on the surface of a pond.)

1 — REACH: A uniform stream, channel, or pipe that conveys water from one point to another reach or pond. The outflow of each reach is determined by a hydrograph routing calculation.

1 — POND: A pond, swamp, dam, or other impoundment that fills with water from one or more sources and empties in a manner determined by a weir, culvert, or other device(s) at its outlet. The outflow(s) of each pond is determined by a hydrograph routing calculation. The primary and/or secondary outflow may drain into a reach or into another pond.

Time of Concentration Path (Tc)



- ☐ SUPERSEDES ALL PREVIOUS ISSUES
- ☐ APPROVED FOR CONSTRUCTION
- ☐ PRELIMINARY–NOT FOR CONSTRUCTION
- ☐ ISSUED TO: _____

_____ DATE _____

LOCATION MAP

(NOT TO SCALE)

OWNER OF RECORD:

249-257 SILVER LANE LLC
24 MCNULTY DRIVE
EAST HARTFORD, CT 06118
BOOK 3715 PAGE 55

REV	DATE	BY	REVISION

REVISIONS

MHF Design Consultants, Inc.
44 Stiles Road, Suite One
Salem, New Hampshire 03079
(603) 893-0720
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www.mhfdesign.com

IRVING

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SCALE: 1"=20'	APPROVED BY:
DATE: 5/9/18	PROPERTY NO.:
CAD FILE: / PLOTTED:	REF-BLK: / REF-BLK: / REF-BLK:

IRVING OIL

190 COMMERCE WAY
PORTSMOUTH, NH 03801

PROJECT:
ASSESSORS MAP 23 LOT 190 & 167
249 SILVER LANE
EAST HARTFORD, CONNECTICUT

SHEET TITLE:
PRE DEVELOPMENT DRAINAGE PLAN

PROJECT:	DRAWING NO:	REVISION:

COMPANY SUPERVISOR AND CONTRACTOR TO VERIFY ALL MEASUREMENTS ON WORK OR AT SITE. THIS DRAWING IS THE PROPERTY OF IRVING OIL LTD. AND SHALL BE RETURNED ON COMPLETION OF WORK.

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LEGEND

SGC	SLOPED GRANITE CURB	PB	PULL BOX
VGC	VERTICAL GRANITE CURB		SIGN
CCB	CAPE COD BERM	+46.49	SPOT ELEVATION
G	GAS LINE	D	DRAIN MANHOLE
T	UNDERGROUND TELEPHONE		CATCH BASIN
W	WATER LINE	S	SEWER MANHOLE
	CHAIN LINK FENCE	M	MANHOLE
90	CONTOUR ELEVATION		GAS VALVE
	TREE		WATER VALVE
	UTILITY POLE		WATER SHUT OFF
	GUY WIRE		FIRE HYDRANT
	OVERHEAD WIRE		BOLLARD
	TREELINE	GM	GAS METER
C.O.	PROP. CLEANOUT	MEG	MEET EXISTING GRADE
CB-1	PROP. CATCH BASIN	91.75	PROP. SPOT ELEVATION
DMH-1	PROP. DRAIN MANHOLE	90	PROP. CONTOUR ELEVATION

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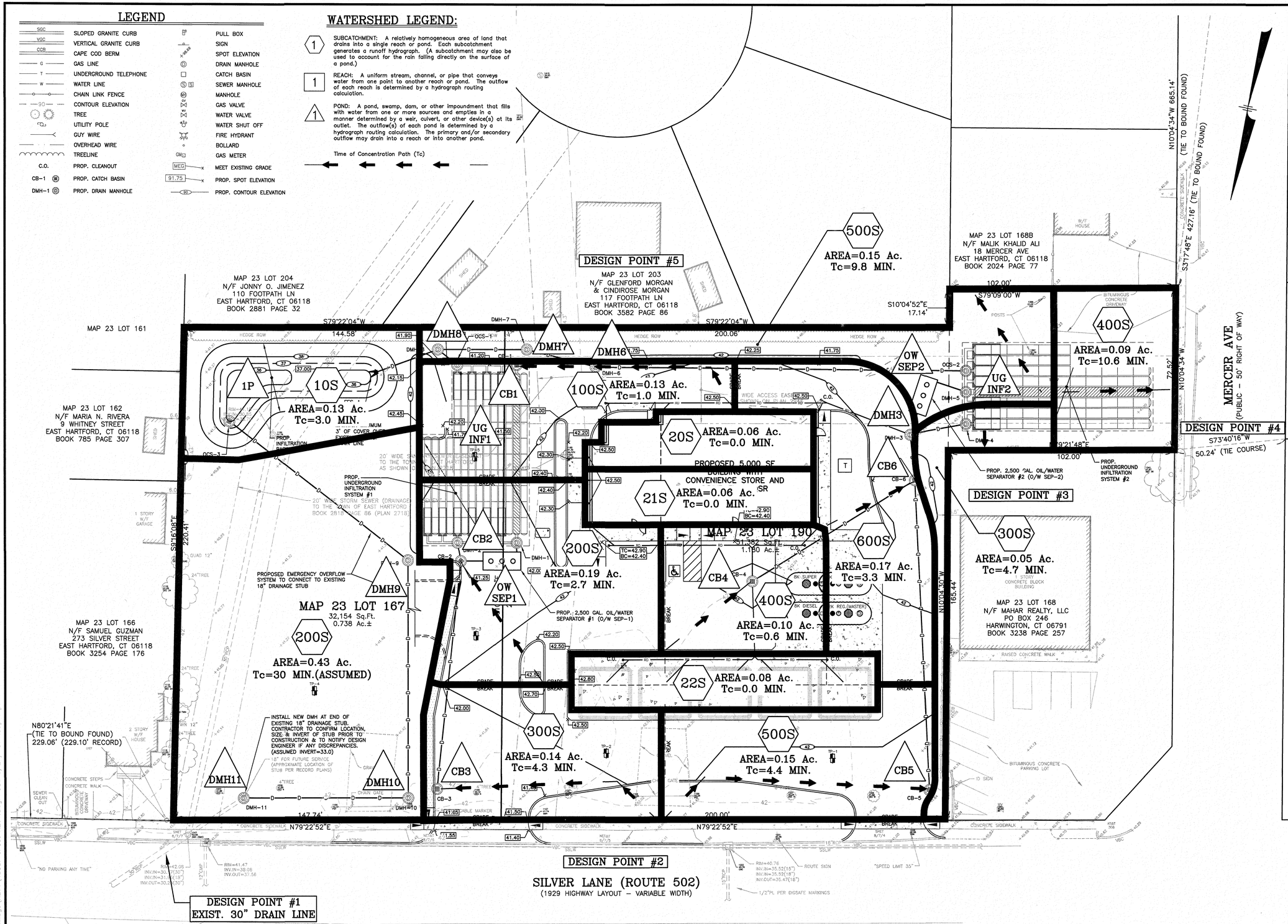
Time of Concentration Path (Tc)



- ☐ SUPERSEDES ALL PREVIOUS ISSUES
- ☐ APPROVED FOR CONSTRUCTION
- ☐ PRELIMINARY–NOT FOR CONSTRUCTION
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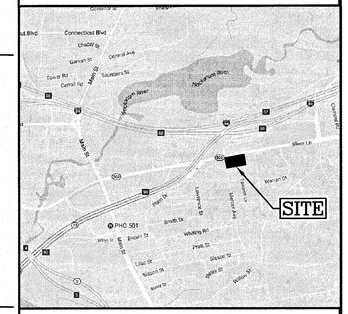
_____ DATE _____



LOCATION MAP

(NOT TO SCALE)

OWNER OF RECORD:

249-257 SILVER LANE LLC
24 MCNULTY DRIVE
EAST HARTFORD, CT 06118
BOOK 3715 PAGE 55

REV	DATE	BY	REVISION
REV	5/24/18	PWM	REVISE PER DESIGN REVIEW COMMENTS

REVISIONS

MHF Design Consultants, Inc.
44 Stiles Road, Suite One
Salem, New Hampshire 03079
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IRVING

DRAWN BY: GMP	DESIGNED BY: FCM
SCALE: 1"=20'	APPROVED BY:
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CAD FILE: PLOTTED:	REF-BLK: REF-BLK: REF-BLK:

IRVING OIL

190 COMMERCE WAY
PORTSMOUTH, NH 03801

PROJECT:
ASSESSORS MAP 23 LOT 190 & 167
249 SILVER LANE
EAST HARTFORD, CONNECTICUT

SHEET TITLE:
POST DEVELOPMENT DRAINAGE PLAN

PROJECT:	DRAWING NO:	REVISION:

COMPANY SUPERVISOR AND CONTRACTOR TO VERIFY ALL MEASUREMENTS ON WORK OR AT SITE. THIS DRAWING IS THE PROPERTY OF IRVING OIL LTD. AND SHALL BE RETURNED ON COMPLETION OF WORK.

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20' DRAINAGE EASEMENT
PIZZA HUT OF AMERICA, INC.
300 SILVERLANE
EAST HARTFORD, CONNECTICUT

Being a 20' wide Drainage Easement taken out of that certain tract of land owned by Pizza Hut of America, Inc. located at 300 Silver Lane, East Hartford, Connecticut and being described more particularly as follows:

BEGINNING at a set drill hole in the North highway line of Silver Lane, said drill hole being the southeast property corner of the property now or formerly owned by William Grant, Jr. and the south-west corner of subject easement;

THENCE: N10°51'50"W, along property now or formerly owned by William F. Grant, Jr. a distance of 153.48 feet to a found iron pin in the south right-of-way line of Interstate 84;

THENCE: N78°24'00"E, a distance of 20.00 feet to a point for corner;

THENCE: S10°51'50"E, a distance of 154.21 feet to a point for corner, said point being in the north right-of-way line of Silver Lane;

THENCE: S80°29'20"W, a distance of 20.01 feet to the POINT OF BEGINNING and containing 3,076.89 square feet or 0.071 Acres of land.

INSTALLATION OF PIPE AND RIP-RAP WITHIN THE REGULATED AREAS

1. THE STONE SHALL BE STOCKPILED OUTSIDE THE BUFFER.
2. MATERIAL EXCAVATED WITHIN THE REGULATED AREA SHALL NOT BE REUSED UNLESS AUTHORIZED BY THE TOWN ENGINEER.
3. BACKFILL SHALL BE A SUITABLE MATERIAL AS APPROVED BY THE TOWN ENGINEER.
4. RIP RAP SHALL BE INSTALLED BY THE USE OF AN EXCAVATOR.
5. CARE SHALL BE TAKEN TO PREVENT EROSION OF THE EMBANKMENT.
6. BACKHOE REACH SHALL BE SUFFICIENT TO FACILITATE GENTLE PLACING OF RIP RAP.
7. DISTURBANCE OF SOIL WITHIN REGULATED AREA SHALL BE AS MINIMAL AS POSSIBLE.

SNET POLE #877

SNET #877 WILL REQUIRE SUPPORT FROM THE EAST SIDE DURING INSTALLATION OF STORM MH#3 AND OUTGOING 24" RCP. POLE SHALL BE THOROUGHLY SECURED FROM THE EAST SIDE PRIOR TO REMOVAL OF THE GUY WIRE. UPON INSTALLATION AND COMPLETE RESTORATION OF GROUNDS IN THE AREA OF MH#3, GUY WIRE SHALL BE REATTACHED AND TENSION REAPPLIED. CONTRACTOR SHALL COORDINATE OPERATIONS WITH SNET.

REQUIREMENTS FOR WORK CROSSING SILVER LANE AND WITHIN THE DOT RIGHT-OF-WAY

- Two police officers will be required for control of traffic during construction.
- At least one lane of traffic must be maintained at all times.
- Two lanes must be open to traffic at any time construction work is not in progress.
- If steel plates are used in the roadway, warning signs must be posted before the construction area.
- No water will be allowed to be discharged to the surface of Silver Lane.
- Contractor shall be required to ensure that any water discharged to the storm sewer from de-watering of the excavation shall be clear and clean.
- Only acceptable construction material (clean sand and gravel) will be allowed as backfill in trench beneath Silver Lane.
- Compaction of trench backfill within right-of-way shall be with a "hoe-pack" or equivalent method approved by State inspector prior to use.
- At least 30 days, and preferably 60 days, shall pass between time of the last temporary patch and application of permanent patches in Silver Lane.
- Any/all sidewalks disturbed by the contractor shall be replaced to proper line and grade, and shall conform to the Town of East Hartford specifications.
- Further requirements will be issued the contractor at the time of procurement of an encroachment permit.

RESTORATION OF SITE AND STAGES OF CONSTRUCTION

When the site is grubbed and treed, topsoil where practical shall be stripped and stocked piled in the designated area.

When the pipe is installed from the wetlands to the first manhole, that area will be finished graded and topsoil applied. The area will then be seeded and covered with hay on a mat fast said by EPA/DOT, to stabilize the area until the grass is grown and matured. The erosion controls will be reestablished. The balance of the job will be graded and seeded which will complete the job to Silver Lane.

The stages of the installation of the off-site storm sewer pipe from the inland wetlands to the south side of Silver Lane:

1) The Town Engineering Department will be notified 24 hours before work commences.

2) The installation of all necessary erosion controls, including the silt fence at the edge of the water at the inland wetlands detention area will be completed.

3) The cutting, grubbing, and stumping of areas required to complete the job will be completed. All this material, except the chips that could be used for restoration, will be trucked off the site.

4) As practical, all materials for the job will be placed in the area where the work is to occur. Some materials for the job will be placed in the stock pile area. The materials may arrive in two stages in order to least disturb any business affected by this installation. The two access ways used to deliver materials will be the Queen Pizza and the 20' Right-Of-Way between the Pizza Hut and the Taco Bell restaurants.

5) The installation of the pipe will begin by creating a slope from the edge of the water to the top of the bank making this area accessible to machinery, mainly an excavator, bull dozer and front end loader.

6) The front end loader will transport the necessary rip rap to the proper location, and it will do this by working the machine and stone to the necessary area in the inland wetlands area. This may require the use of the excavator to afford the necessary swing and reach in order to deposit the material where required.

7) When the excavation for the pipe begins material will be placed to the side of the ditch to be back filled. Extra material will be trucked to the stock side area or off the site.

8) The installation will proceed in this same manner to the north side of Silver Lane.

9) Before crossing Silver Lane, proper traffic control and traffic personnel will be in place. The one call will be made/Call Before You Dig, and the contractor must know where all underground installation are located. The use of metal plates may be required to accommodate traffic.

10) Proper back fill and temporary patch of the road will be completed as required.

11) The scheduling of the permanant patch will be directed by the Engineering Department.

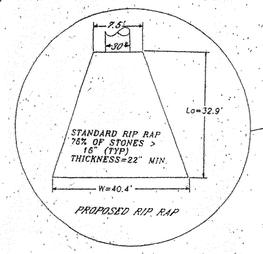
NOTE THAT IN ALL CASES, PAVEMENT IS TO BE "SAW-CUT" CLEANLY.

EXISTING STORM DRAIN TO BE ABANDONED SHALL BE REMOVED OR FILLED AND BURIED TO EXTENT POSSIBLE. SECTIONS WHICH WILL REMAIN INTACT SHALL BE PLUGGED BRICK-HEADED TO PREVENT MOVEMENT OF SOIL/WATER INTO THE PIPE. SEALING OF ENDS TO BE APPROVED BY TOWN AUTHORITY PRIOR TO BACKFILLING.

RIP RAP OUTLET PROTECTION:

$Lo = \frac{1.7\,Q}{Do^{1.5}} + 8Do = \frac{1.7\,(30)}{(2.5)^{1.5}} + 8(2.5) = 32.9'$

$W = 3Do + Lo = 3(2.5) + 32.9 = 40.4$



PROPOSED RIP RAP

OFF-SITE STORM SEWER CONSTRUCTION

ALL WORK DEPICTED ON THIS SHEET SHALL BE APPROVED BY THE CT DOT AND CONFORM TO ANY SPECIFICATIONS THEREOF, INCLUDING FORM 814A.

IN PARTICULAR, WORK REQUIRING DOT APPROVAL INCLUDES ABANDONMENT OF EXISTING 24" STORM SEWER, SHEETING AND SHORING OF EXCAVATION ALONG BASE OF I-84 FROM MH#6 TO 80' PAST MH#8, AND CROSSING OF SILVER LANE.

ALL STATE DOT PERMITS SHALL BE IN ORDER BEFORE COMMENCEMENT OF ANY OFF-SITE WORK.

FIGURE #1

NOTE: water from the wetlands area (detention pond) runs northerly under I-84 to Hockanum River.

NOTE
THE DEVELOPER SHALL NOTIFY THE TOWN OF EAST HARTFORD ENGINEERING DIVISION TWENTY-FOUR HOURS PRIOR TO BEGINNING STORM DRAINAGE, ROADWAY PREPARATION, PAVING, SIDEWALKS, CURBING, STREET LINE MONUMENTATION, PROPERTY CORNER PINS, ETC. TO SCHEDULE INSPECTIONS. THE DIVISION CAN BE REACHED BETWEEN 8:30 A.M. AND 4:30 P.M. AT 291-7380

MAP REFERENCE:

SURVEY PROPERTY OF ROSE T. NEARY
FOR PIZZA HUT OF AMERICA, INC.
OCT. 14, 1985 & JAN.22, 1986
288-300 SILVER LANE
EAST HARTFORD, CT.
ALFORD ASSOCIATES, INC.
WINDSOR, CONNECTICUT
BEARING SYTEM BASED ON
CONNECTICUT BEARING SYSTEM

LEGEND

- STORM MANHOLE
- SANITARY MANHOLE
- CATCH BASIN
- HYDRANT
- PROPERTY LINE
- STREET LINE
- UTILITY POLE
- SILT FENCE
- WETLANDS
- T.B.R.(TREE TO BE REMOVED)

CALL BEFORE YOU DIG: 1-800-922-4455

40 20 0 20 40
GRAPHIC SCALE - IN FEET
1" = 40'

REVISIONS	
TOWN COMMENTS	6-10-98
TOWN COMMENTS	4-23-98
STORMSEWER ELEV./TOWN COMMENTS	2-26-98
FINAL PLANS	1-26-98

MEADOW LANE FARMS SUBDIVISION
EAST HARTFORD, CONNECTICUT
PROPOSED 40 LOT SUBDIVISION
38 LOTS R-4; 2 LOTS B-2/R-4; TOTAL TRACT 12.72 AC.
11.52 AC. R-4; 1.20 AC. B-2

PROPOSED OFF-SITE STORM SEWER CONSTRUCTION & EROSION CONTROL PLAN

BALOFF.DWG

sheet 6 of 10

CES
CIVIL•ENVIRONMENTAL•SITE ENGINEERING
203 BOSTON HILL ROAD
ANDOVER CT. 06232

AESCHLIMAN LAND SURVEYING, PC
345 BELL STREET