# *Drainage Calculations and Stormwater Management Plan*

In Support of a

## *A Comprehensive Permit*

For:

## *The Cottages at Old Oaken Bucket*

279-281 Old Oaken Bucket Rd.
Scituate, MA

Submitted to:

## *Town of Scituate Zoning Board of Appeals*

Dated: December 12, 2022

Prepared By
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South Shore Survey Consultants, Inc.
167R Summer Street
Kingston, MA 02364

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Zoning Board of Appeals
Town of Scituate
600 Chief Justice Cushing Highway
Scituate, MA 02066

RE: Project Drainage Summary for The Cottages at Old Oaken Bucket
A Comprehensive Permit
279-281 Old Oaken Bucket Rd. Scituate, MA

Members of the Board,

We hereby submit these drainage calculations to accompany the site plans to support the construction of the proposed 32-unit Comprehensive Permit at 279-281 Old Oaken Bucket Rd. Scituate, MA.

We have complied with DEP Stormwater Management requirements as detailed in the following…

Standard 1 – No New Untreated Discharges

The proposed improvements to the property are designed so that new stormwater conveyances do not discharge untreated pavement runoff into or cause erosion to wetlands.

Standard 2 – Peak Rate Attenuation

The drainage study was completed using the SCS TR-20 computer program (HydroCAD) with the use of the Rainfall Depths of the Cornell method. The depths were provided for the 2, 10 and 100 year storms as required by MassDEP

The rainfall depths of the Cornell Method Rainfall Intensity Atlas were provided by the Northeast Regional Climate Center's Extreme Precipitation Estimates.

There is one Pre-Development watershed. The watershed on the east side of the site discharges west to Bordering Vegetated Wetland. This watershed is the Pre-development watershed considered in the calculations.

The Post-Development watershed plan details the proposed grading and construction of the development and drainage systems. It shows that drainage mitigation of peak runoff for the aforementioned storms will be provided by infiltration chambers.

Routing each of the storms through the Hydrocad model shows the following results…

***Pre-Development vs. Post-Development to wetlands***

| storm | Exist. (CFS) | Prop. runoff (CFS |
|---|---|---|
| 2-yr, 3.36 inches | 7.58 | 7.17 |
| 10-yr, 4.98 inches | 17.04 | 16.25 |
| 25-yr, 6.24 inches | 25.20 | 23.44 |
| 100-yr, 8.80 inches | 42.74 | 39.46 |

The results above show that the proposed runoff discharging off-site will not exceed the discharge under existing conditions. Mounding and drawdown calculations are also included.

Standard 3 – Groundwater Recharge

Runoff from impervious areas will be infiltrated by the use of infiltration chambers and rain gardens, which will meet the Stormwater Guidelines to include:

- Utilize the "Simple Dynamic method for sizing the storage volume, which takes into account the fact that stormwater is exfiltrating from the infiltration basin at the same time that the basin is filling.
- Hydraulic conductivity are based on soil survey information and values developed from Rawls, Brakensiek and Saxton, 1982, Estimation of Soil Water Properties, *Transactions of the American Society of Agricultural Engineers*, vol. 25, no.5. The Rawls rate for A soils were used to determine the required infiltration volumes. The Rawls rate for B soils were used to determine the provided infiltration volumes.
- Refer to the detail sheets for soil testing results.

Standard 4 – Water Quality

The proposed stormwater management system includes deep sump catch basins, proprietary separators, infiltration chambers to collect runoff. Stormwater runoff from the cul-de-sac is routed to a Oil & Water Separator and then to a rain garden.

Removal rates for all paved surfaces are:

Deep sump catch basins 25%
Proprietary Treatment units 80%

The proposed infiltration beds for the roof runoff do not require further water treatment.

The Standard is met.

Standard 5 – Land Uses with Higher Potential Pollutant Loads (LUHPPLs)

The proposed project is not in a land use with higher potential pollutant loads. The standard is met

Standard 6 – Critical Areas

The proposed project is partially located within a critical area. A Zone 2 Aquifer Protection District

Standard 7 – Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

The proposed project is not a Redevelopment project. Not applicable.

Standard 8 – Construction Period Pollution Prevention and Erosion and Sedimentation Control

Filtermitt will be used for erosion control devices in place of haybales and siltation fence and will be placed at the down-gradient limit of work prior to the commencement of any construction activity. The integrity of the wattles will be maintained by periodic inspection and replacement as necessary. The wattles will remain in place for the duration of the project. Refer to the plans for the locations of the erosion and sedimentation controls as well as the construction details.

Also, a Construction Phase Pollution Prevention and Erosion and Sedimentation Plan has been developed for the project and is attached to this report, see the Appendices. The Standard is met.

Standard 9 – Operation and Maintenance Plan

The Long-Term Pollution Prevention Plan has been incorporated into the Post-Development Operation and Maintenance Plan. Refer to Appendices for BMP Operation and Maintenance Plans.

The Standard is met.

Standard 10 – Prohibition of Illicit Discharges

No illicit discharges have been observed on site. Furthermore, measures to prevent illicit discharges are included in the Long-Term Pollution Prevention Plan. Therefore, provisions have been made to prevent illicit discharges.

The Standard is met.

If you have any questions, please contact us.

Very Truly Yours,
*Anthony Esposito*

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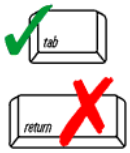
**Massachusetts Department of Environmental Protection**
Bureau of Resource Protection - Wetlands Program

# Checklist for Stormwater Report

## A. Introduction

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.




A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

**Massachusetts Department of Environmental Protection**
Bureau of Resource Protection - Wetlands Program

# Checklist for Stormwater Report

## B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

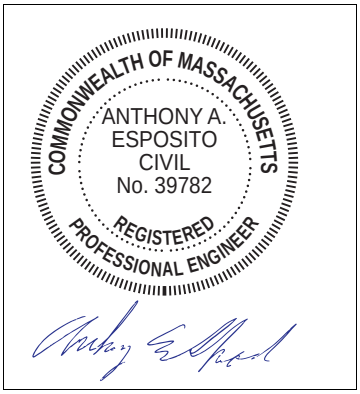
*Note:* Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

## Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature




Anthony Esposito

Signature and Date

## Checklist

**Project Type:** Is the application for new development, redevelopment, or a mix of new and redevelopment?

☒ New development

☐ Redevelopment

☐ Mix of New Development and Redevelopment

# Checklist for Stormwater Report

## Checklist (continued)

**LID Measures:** Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☐ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☒ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

**Standard 1: No New Untreated Discharges**

- ☒ No new untreated discharges
- ☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☒ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

# Checklist for Stormwater Report

## Checklist (continued)

**Standard 2: Peak Rate Attenuation**

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☒ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

**Standard 3: Recharge**

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

# Checklist for Stormwater Report

## Checklist (continued)

**Standard 3: Recharge** (continued)

☒ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

**Standard 4: Water Quality**

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

# Checklist for Stormwater Report

## Checklist (continued)

**Standard 4: Water Quality** (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

**Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)**

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

**Standard 6: Critical Areas**

☒ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☒ Critical areas and BMPs are identified in the Stormwater Report.

# Checklist for Stormwater Report

## Checklist (continued)

**Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable**

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

**Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control**

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

# Checklist for Stormwater Report

## Checklist (continued)

**Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control** (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

**Standard 9: Operation and Maintenance Plan**

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☐ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☐ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

**Standard 10: Prohibition of Illicit Discharges**

☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

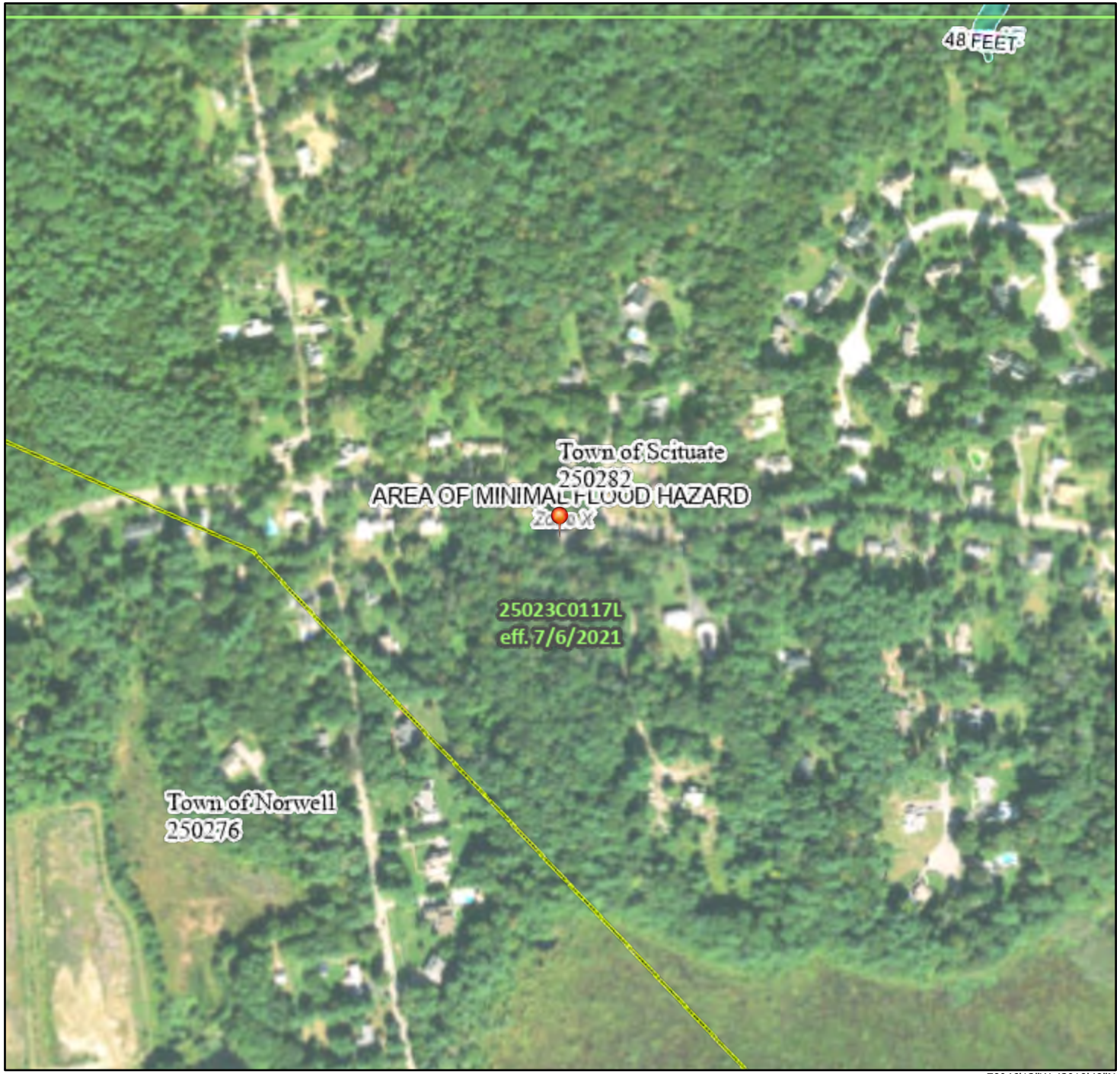
☒ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

# National Flood Hazard Layer FIRMette

FEMA

70°46'49"W 42°11'15"N




70°46'12"W 42°10'49"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

*Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020*

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

**SPECIAL FLOOD HAZARD AREAS**
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

**OTHER AREAS OF FLOOD HAZARD**
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

**OTHER AREAS**
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

**GENERAL STRUCTURES**
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

**OTHER FEATURES**
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

**MAP PANELS**
- Digital Data Available
- No Digital Data Available
- Unmapped

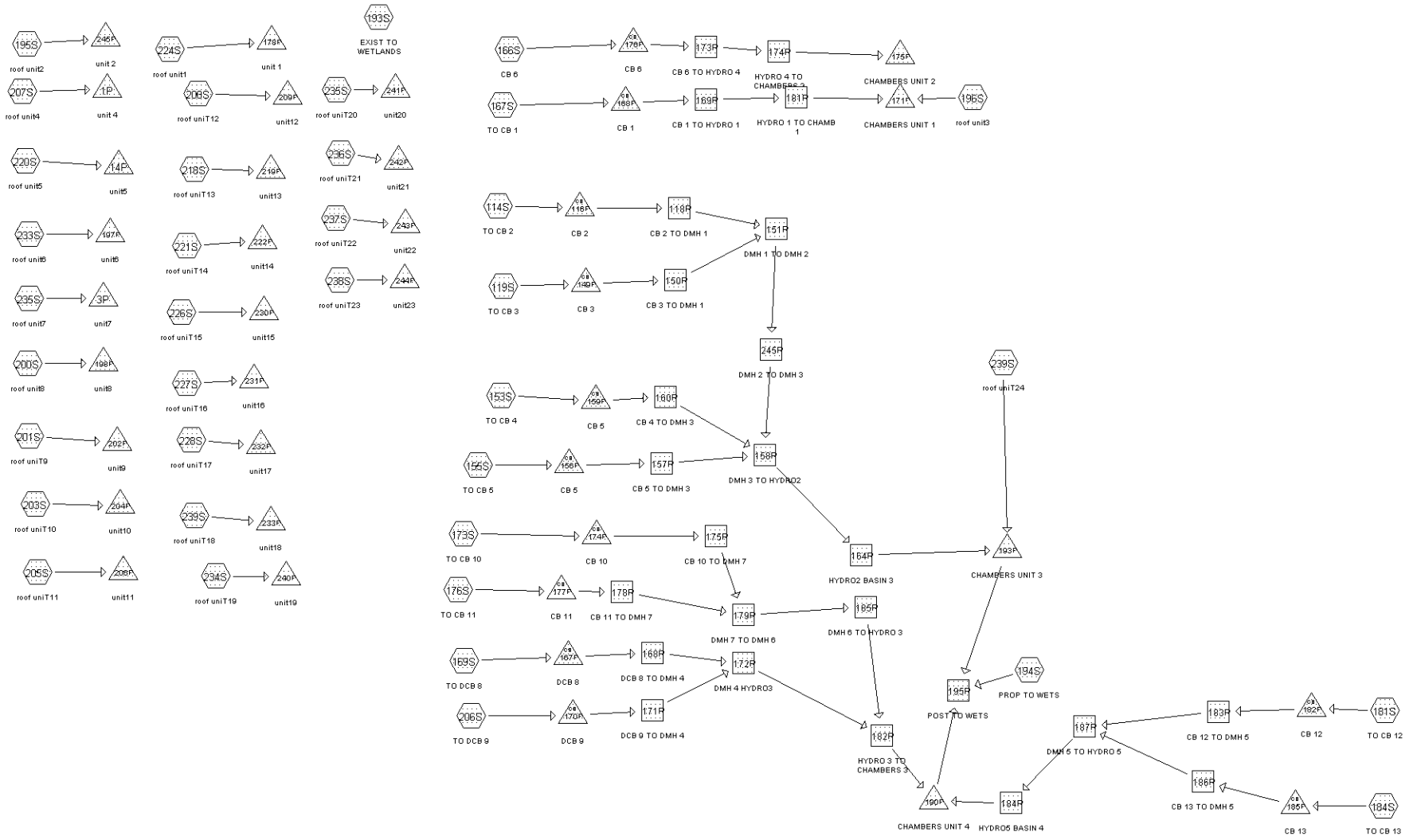
N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 12/8/2022 at 4:34 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.




Subcat Reach Pond Link

**Routing Diagram for oldoakenbucket2t**

Prepared by ANTHONY A. ESPOSITO, Printed 12/12/2022

## Summary for Subcatchment 114S: TO CB 2

Runoff = 0.46 cfs @ 12.09 hrs, Volume= 0.033 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 4,511 | 98 | IMPERVIOUS |
| | 3,863 | 74 | >75% Grass cover, Good, HSG C |
| | 8,374 | 87 | Weighted Average |
| | 3,863 | | 46.13% Pervious Area |
| | 4,511 | | 53.87% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr55 min.** |

## Summary for Subcatchment 119S: TO CB 3

Runoff = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,172 | 98 | IMPERVIOUS |
| | 1,200 | 74 | >75% Grass cover, Good, HSG C |
| | 4,372 | 91 | Weighted Average |
| | 1,200 | | 27.45% Pervious Area |
| | 3,172 | | 72.55% Impervious Area |

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

## Summary for Subcatchment 153S: TO CB 4

Runoff = 0.44 cfs @ 12.18 hrs, Volume= 0.040 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 5,335 | 98 | IMPERVIOUS |
| | 4,754 | 74 | >75% Grass cover, Good, HSG C |
| | 10,089 | 87 | Weighted Average |
| | 4,754 | | 47.12% Pervious Area |
| | 5,335 | | 52.88% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.0 | 50 | 0.0800 | 0.07 | | **Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 1.1 | 188 | 0.0320 | 2.88 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 0.2 | 47 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, DE** Paved Kv= 20.3 fps |
| 13.3 | 292 | Total | | | |

## Summary for Subcatchment 155S: TO CB 5

Runoff = 0.28 cfs @ 12.09 hrs, Volume= 0.021 af, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,072 | 98 | IMPERVIOUS |
| | 1,382 | 74 | >75% Grass cover, Good, HSG C |
| | 4,454 | 91 | Weighted Average |
| | 1,382 | | 31.03% Pervious Area |
| | 3,072 | | 68.97% Impervious Area |

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

## Summary for Subcatchment 166S: CB 6

Runoff = 0.75 cfs @ 12.09 hrs, Volume= 0.054 af, Depth= 1.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 8,834 | 74 | >75% Grass cover, Good, HSG C |
| * | 6,602 | 98 | PAVEMENT, HSG C |
| | 15,436 | 84 | Weighted Average |
| | 8,834 | | 57.23% Pervious Area |
| | 6,602 | | 42.77% Impervious Area |

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

## Summary for Subcatchment 167S: TO CB 1

Runoff = 0.19 cfs @ 12.09 hrs, Volume= 0.014 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,341 | 98 | IMPERVIOUS |
| | 562 | 74 | >75% Grass cover, Good, HSG C |
| | 2,903 | 93 | Weighted Average |
| | 562 | | 19.36% Pervious Area |
| | 2,341 | | 80.64% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.1 | 50 | 0.0600 | 0.16 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37" |
| 0.1 | 22 | 0.0600 | 3.94 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 1.1 | 185 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 6.3 | 257 | Total | | | |

## Summary for Subcatchment 169S: TO DCB 8

Runoff = 3.20 cfs @ 12.39 hrs, Volume= 0.394 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 16,852 | 98 | pavement |
| * | 2,343 | 98 | EXIST HSE |
| | 97,544 | 74 | >75% Grass cover, Good, HSG C |
| | 54,320 | 70 | Woods, Good, HSG C |
| * | 183 | 98 | WALL |
| | 171,242 | 75 | Weighted Average |
| | 151,864 | | 88.68% Pervious Area |
| | 19,378 | | 11.32% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 20.9 | 50 | 0.0200 | 0.04 | | **Sheet Flow, AB** |
| | | | | | Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 1.7 | 298 | 0.0330 | 2.92 | | **Shallow Concentrated Flow, BC** |
| | | | | | Unpaved Kv= 16.1 fps |
| 0.7 | 136 | 0.0440 | 3.38 | | **Shallow Concentrated Flow, CD** |
| | | | | | Unpaved Kv= 16.1 fps |
| 0.2 | 48 | 0.0437 | 4.24 | | **Shallow Concentrated Flow, DE** |
| | | | | | Paved Kv= 20.3 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, EF** |
| | | | | | Paved Kv= 20.3 fps |
| 2.6 | 550 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, FG** |
| | | | | | Paved Kv= 20.3 fps |
| 26.1 | 1,089 | Total | | | |

## Summary for Subcatchment 173S: TO CB 10

Runoff = 0.37 cfs @ 12.09 hrs, Volume= 0.026 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,534 | 98 | IMPERVIOUS |
| | 3,452 | 74 | >75% Grass cover, Good, HSG C |
| | 6,986 | 86 | Weighted Average |
| | 3,452 | | 49.41% Pervious Area |
| | 3,534 | | 50.59% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR55 MIN** |

## Summary for Subcatchment 176S: TO CB 11

Runoff = 0.12 cfs @ 12.08 hrs, Volume= 0.010 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,635 | 98 | IMPERVIOUS |
| | 1,635 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 181S: TO CB 12

Runoff = 0.62 cfs @ 12.09 hrs, Volume= 0.045 af, Depth= 2.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 6,607 | 98 | IMPERVIOUS |
| | 3,879 | 74 | >75% Grass cover, Good, HSG C |
| | 10,486 | 89 | Weighted Average |
| | 3,879 | | 36.99% Pervious Area |
| | 6,607 | | 63.01% Impervious Area |

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

## Summary for Subcatchment 184S: TO CB 13

Runoff = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af, Depth= 2.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,082 | 98 | IMPERVIOUS |
| | 1,497 | 74 | >75% Grass cover, Good, HSG C |
| | 4,579 | 90 | Weighted Average |
| | 1,497 | | 32.69% Pervious Area |
| | 3,082 | | 67.31% Impervious Area |

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

## Summary for Subcatchment 193S: EXIST TO WETLANDS

Runoff = 7.58 cfs @ 12.31 hrs, Volume= 0.867 af, Depth= 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 321,168 | 70 | Woods, Good, HSG C |
| * | 8,364 | 98 | ROOF, HSG C |
| * | 436 | 98 | CONCRETE, HSG C |
| | 9,975 | 96 | Gravel surface, HSG C |
| | 44,126 | 74 | >75% Grass cover, Good, HSG C |
| * | 10,759 | 98 | PAVEMENT, HSG C |
| | 44,910 | 65 | Brush, Good, HSG C |
| | 439,738 | 72 | Weighted Average |
| | 420,179 | | 95.55% Pervious Area |
| | 19,559 | | 4.45% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 17.8 | 50 | 0.0300 | 0.05 | | **Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 2.5 | 524 | 0.0458 | 3.45 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 20.3 | 574 | Total | | | |

## Summary for Subcatchment 194S: PROP TO WETS

Runoff = 4.14 cfs @ 12.17 hrs, Volume= 0.373 af, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 62,378 | 70 | Woods, Good, HSG C |
| | 111,644 | 74 | >75% Grass cover, Good, HSG C |
| * | 1,394 | 98 | WALLS, HSG C |
| | 479 | 96 | Gravel surface, HSG B |
| * | 3,703 | 98 | PAVEMENT |
| | 179,598 | 73 | Weighted Average |
| | 174,501 | | 97.16% Pervious Area |
| | 5,097 | | 2.84% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.0 | 50 | 0.0200 | 0.10 | | **Sheet Flow, AB** Grass: Dense n= 0.240 P2= 3.37" |
| 0.5 | 68 | 0.0200 | 2.28 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 0.1 | 24 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 2.6 | 532 | 0.0450 | 3.42 | | **Shallow Concentrated Flow, DE** Unpaved Kv= 16.1 fps |
| 11.2 | 674 | Total | | | |

## Summary for Subcatchment 195S: roof unit2

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 196S: roof unit3

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 200S: roof unit8

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 201S: roof uniT9

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 203S: roof uniT10

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 205S: roof uniT11

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 206S: TO DCB 9

Runoff = 0.98 cfs @ 12.14 hrs, Volume= 0.080 af, Depth= 2.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 11,762 | 98 | pavement |
| | 7,805 | 74 | >75% Grass cover, Good, HSG C |
| | 19,567 | 88 | Weighted Average |
| | 7,805 | | 39.89% Pervious Area |
| | 11,762 | | 60.11% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.0 | 50 | 0.0200 | 0.10 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37" |
| 0.1 | 11 | 0.0200 | 2.28 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 1.6 | 333 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, DE** Paved Kv= 20.3 fps |
| 9.7 | 401 | Total | | | |

## Summary for Subcatchment 207S: roof unit4

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 208S: roof uniT12

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 218S: roof uniT13

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 220S: roof unit5

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 221S: roof uniT14

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 223S: roof unit6

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 224S: roof unit1

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 225S: roof unit7

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 226S: roof uniT15

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 227S: roof uniT16

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 228S: roof uniT17

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 229S: roof uniT18

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 234S: roof uniT19

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 235S: roof uniT20

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 236S: roof uniT21

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 237S: roof uniT22

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 238S: roof uniT23

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 239S: roof uniT24

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 002 Rainfall=3.36"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

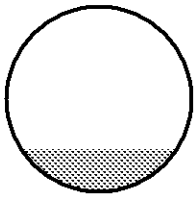
## Summary for Reach 118R: CB 2 TO DMH 1

Inflow Area = 0.192 ac, 53.87% Impervious, Inflow Depth = 2.06" for cornell 002 event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.033 af
Outflow = 0.46 cfs @ 12.09 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.31 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.14 fps, Avg. Travel Time= 0.2 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.87 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0118 '/'
Inlet Invert= 95.91', Outlet Invert= 95.78'



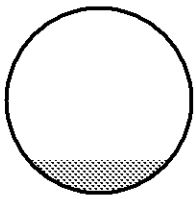
## Summary for Reach 150R: CB 3 TO DMH 1

Inflow Area = 0.100 ac, 72.55% Impervious, Inflow Depth = 2.41" for cornell 002 event
Inflow = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af
Outflow = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.85 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.95 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.87 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0118 '/'
Inlet Invert= 95.91', Outlet Invert= 95.78'



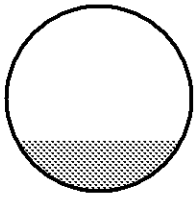
## Summary for Reach 151R: DMH 1 TO DMH 2

Inflow Area = 0.293 ac, 60.28% Impervious, Inflow Depth = 2.18" for cornell 002 event
Inflow = 0.73 cfs @ 12.09 hrs, Volume= 0.053 af
Outflow = 0.73 cfs @ 12.10 hrs, Volume= 0.053 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.11 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.36 fps, Avg. Travel Time= 1.7 min

Peak Storage= 24 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.37 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 138.0' Slope= 0.0151 '/'
Inlet Invert= 95.68', Outlet Invert= 93.60'



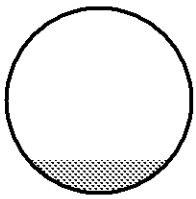
## Summary for Reach 157R: CB 5 TO DMH 3

Inflow Area = 0.102 ac, 68.97% Impervious, Inflow Depth = 2.41" for cornell 002 event
Inflow = 0.28 cfs @ 12.09 hrs, Volume= 0.021 af
Outflow = 0.28 cfs @ 12.09 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.94 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.98 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.02 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0127 '/'
Inlet Invert= 90.86', Outlet Invert= 90.72'



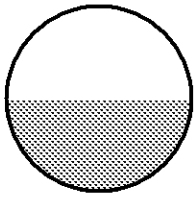
## Summary for Reach 158R: DMH 3 TO HYDRO2

Inflow Area = 0.626 ac, 58.96% Impervious, Inflow Depth = 2.17" for cornell 002 event
Inflow = 1.36 cfs @ 12.11 hrs, Volume= 0.113 af
Outflow = 1.36 cfs @ 12.11 hrs, Volume= 0.113 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.54 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.22 fps, Avg. Travel Time= 0.5 min

Peak Storage= 15 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.49'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.79 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 39.0' Slope= 0.0062 '/'
Inlet Invert= 90.39', Outlet Invert= 90.15'



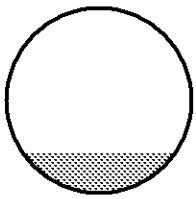
## Summary for Reach 160R: CB 4 TO DMH 3

Inflow Area = 0.232 ac, 52.88% Impervious, Inflow Depth = 2.06" for cornell 002 event
Inflow = 0.44 cfs @ 12.18 hrs, Volume= 0.040 af
Outflow = 0.44 cfs @ 12.18 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.35 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.23 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.02 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0127 '/'
Inlet Invert= 90.86', Outlet Invert= 90.72'



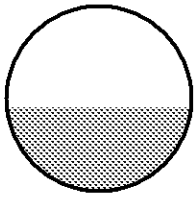
## Summary for Reach 164R: HYDRO2 BASIN 3

Inflow Area = 0.626 ac, 58.96% Impervious, Inflow Depth = 2.17" for cornell 002 event
Inflow = 1.36 cfs @ 12.11 hrs, Volume= 0.113 af
Outflow = 1.36 cfs @ 12.12 hrs, Volume= 0.113 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.96 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.36 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.25 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 6.0' Slope= 0.0083 '/'
Inlet Invert= 90.05', Outlet Invert= 90.00'



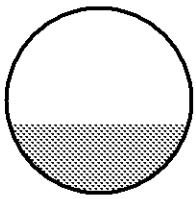
## Summary for Reach 168R: DCB 8 TO DMH 4

Inflow Area = 3.931 ac, 11.32% Impervious, Inflow Depth = 1.20" for cornell 002 event
Inflow = 3.20 cfs @ 12.39 hrs, Volume= 0.394 af
Outflow = 3.20 cfs @ 12.39 hrs, Volume= 0.394 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.39 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.32 fps, Avg. Travel Time= 0.1 min

Peak Storage= 7 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.56'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.97 cfs

18.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0109 '/'
Inlet Invert= 79.77', Outlet Invert= 79.65'



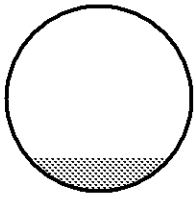
## Summary for Reach 169R: CB 1 TO HYDRO 1

Inflow Area = 0.067 ac, 80.64% Impervious, Inflow Depth = 2.60" for cornell 002 event
Inflow = 0.19 cfs @ 12.09 hrs, Volume= 0.014 af
Outflow = 0.19 cfs @ 12.09 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 1.89 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.63 fps, Avg. Travel Time= 0.6 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 24.0' Slope= 0.0050 '/'
Inlet Invert= 102.27', Outlet Invert= 102.15'



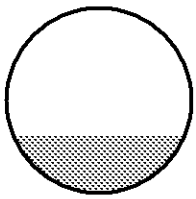
## Summary for Reach 171R: DCB 9 TO DMH 4

Inflow Area = 0.449 ac, 60.11% Impervious, Inflow Depth = 2.14" for cornell 002 event
Inflow = 0.98 cfs @ 12.14 hrs, Volume= 0.080 af
Outflow = 0.98 cfs @ 12.14 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.69 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.67 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.66 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 7.0' Slope= 0.0171 '/'
Inlet Invert= 80.27', Outlet Invert= 80.15'



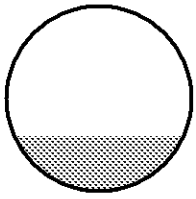
## Summary for Reach 172R: DMH 4 HYDRO3

Inflow Area = 4.380 ac, 16.32% Impervious, Inflow Depth = 1.30" for cornell 002 event
Inflow = 3.67 cfs @ 12.36 hrs, Volume= 0.474 af
Outflow = 3.67 cfs @ 12.37 hrs, Volume= 0.474 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.66 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.79 fps, Avg. Travel Time= 0.5 min

Peak Storage= 39 cf @ 12.37 hrs
Average Depth at Peak Storage= 0.60'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 18.93 cfs

24.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 50.0' Slope= 0.0070 '/'
Inlet Invert= 79.05', Outlet Invert= 78.70'



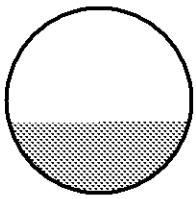
## Summary for Reach 173R: CB 6 TO HYDRO 4

Inflow Area = 0.354 ac, 42.77% Impervious, Inflow Depth = 1.82" for cornell 002 event
Inflow = 0.75 cfs @ 12.09 hrs, Volume= 0.054 af
Outflow = 0.75 cfs @ 12.09 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.67 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.96 fps, Avg. Travel Time= 0.8 min

Peak Storage= 13 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.38 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 45.0' Slope= 0.0044 '/'
Inlet Invert= 97.50', Outlet Invert= 97.30'



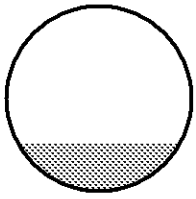
## Summary for Reach 174R: HYDRO 4 TO CHAMBERS 2

Inflow Area = 0.354 ac, 42.77% Impervious, Inflow Depth = 1.82" for cornell 002 event
Inflow = 0.75 cfs @ 12.09 hrs, Volume= 0.054 af
Outflow = 0.75 cfs @ 12.09 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.58 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.63 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.04 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0200 '/'
Inlet Invert= 97.30', Outlet Invert= 97.20'



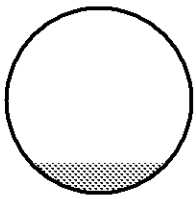
## Summary for Reach 175R: CB 10 TO DMH 7

Inflow Area = 0.160 ac, 50.59% Impervious, Inflow Depth = 1.97" for cornell 002 event
Inflow = 0.37 cfs @ 12.09 hrs, Volume= 0.026 af
Outflow = 0.37 cfs @ 12.09 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.38 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.53 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.32 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 14.0' Slope= 0.0314 '/'
Inlet Invert= 84.79', Outlet Invert= 84.35'



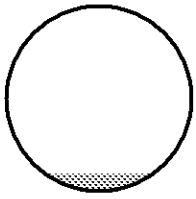
## Summary for Reach 178R: CB 11 TO DMH 7

Inflow Area = 0.038 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.12 cfs @ 12.08 hrs, Volume= 0.010 af
Outflow = 0.12 cfs @ 12.09 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.15 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.06 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.32 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 14.0' Slope= 0.0314 '/'
Inlet Invert= 84.79', Outlet Invert= 84.35'



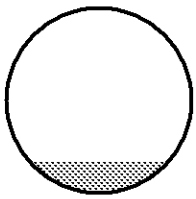
## Summary for Reach 179R: DMH 7 TO DMH 6

Inflow Area = 0.198 ac, 59.96% Impervious, Inflow Depth = 2.19" for cornell 002 event
Inflow = 0.49 cfs @ 12.09 hrs, Volume= 0.036 af
Outflow = 0.49 cfs @ 12.09 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.18 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.59 fps, Avg. Travel Time= 1.0 min

Peak Storage= 9 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.13 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 93.0' Slope= 0.0400 '/'
Inlet Invert= 84.25', Outlet Invert= 80.53'



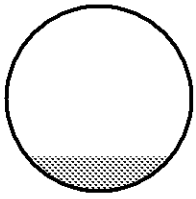
## Summary for Reach 181R: HYDRO 1 TO CHAMB 1

Inflow Area = 0.067 ac, 80.64% Impervious, Inflow Depth = 2.60" for cornell 002 event
Inflow = 0.19 cfs @ 12.09 hrs, Volume= 0.014 af
Outflow = 0.19 cfs @ 12.09 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 1.82 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.60 fps, Avg. Travel Time= 0.3 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.40 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0045 '/'
Inlet Invert= 102.05', Outlet Invert= 102.00'



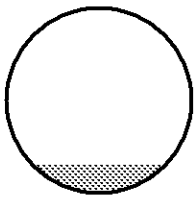
## Summary for Reach 182R: HYDRO 3 TO CHAMBERS 3

Inflow Area = 4.578 ac, 18.21% Impervious, Inflow Depth = 1.34" for cornell 002 event
Inflow = 3.85 cfs @ 12.36 hrs, Volume= 0.511 af
Outflow = 3.85 cfs @ 12.36 hrs, Volume= 0.511 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 11.69 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.04 fps, Avg. Travel Time= 0.0 min

Peak Storage= 2 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 67.87 cfs

24.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0900 '/'
Inlet Invert= 78.95', Outlet Invert= 78.50'



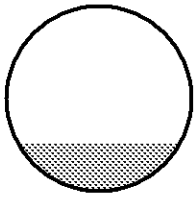
## Summary for Reach 183R: CB 12 TO DMH 5

Inflow Area = 0.241 ac, 63.01% Impervious, Inflow Depth = 2.23" for cornell 002 event
Inflow = 0.62 cfs @ 12.09 hrs, Volume= 0.045 af
Outflow = 0.62 cfs @ 12.09 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.76 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.28 fps, Avg. Travel Time= 0.2 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.11 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 12.0' Slope= 0.0133 '/'
Inlet Invert= 79.05', Outlet Invert= 78.89'



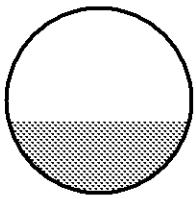
## Summary for Reach 184R: HYDRO5 BASIN 4

Inflow Area = 0.346 ac, 64.31% Impervious, Inflow Depth = 2.26" for cornell 002 event
Inflow = 0.90 cfs @ 12.09 hrs, Volume= 0.065 af
Outflow = 0.90 cfs @ 12.09 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.13 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.06 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.76 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0060 '/'
Inlet Invert= 78.53', Outlet Invert= 78.50'



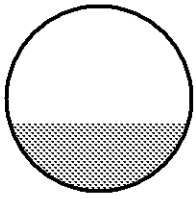
## Summary for Reach 185R: DMH 6 TO HYDRO 3

Inflow Area = 0.198 ac, 59.96% Impervious, Inflow Depth = 2.19" for cornell 002 event
Inflow = 0.49 cfs @ 12.09 hrs, Volume= 0.036 af
Outflow = 0.49 cfs @ 12.10 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 1.84 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.56 fps, Avg. Travel Time= 1.1 min

Peak Storage= 9 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 1.68 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 36.0' Slope= 0.0022 '/'
Inlet Invert= 79.33', Outlet Invert= 79.25'



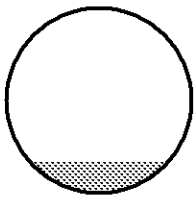
## Summary for Reach 186R: CB 13 TO DMH 5

Inflow Area = 0.105 ac, 67.31% Impervious, Inflow Depth = 2.32" for cornell 002 event
Inflow = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af
Outflow = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.08 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.04 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.30 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0145 '/'
Inlet Invert= 79.05', Outlet Invert= 78.89'



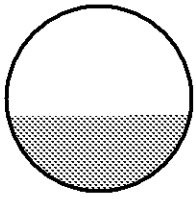
## Summary for Reach 187R: DMH 5 TO HYDRO 5

Inflow Area = 0.346 ac, 64.31% Impervious, Inflow Depth = 2.26" for cornell 002 event
Inflow = 0.90 cfs @ 12.09 hrs, Volume= 0.065 af
Outflow = 0.90 cfs @ 12.09 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.93 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.00 fps, Avg. Travel Time= 0.5 min

Peak Storage= 10 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 32.0' Slope= 0.0050 '/'
Inlet Invert= 78.79', Outlet Invert= 78.63'



## Summary for Reach 195R: POST TO WETS

Inflow Area = 9.719 ac, 16.34% Impervious, Inflow Depth = 1.01" for cornell 002 event
Inflow = 7.17 cfs @ 12.24 hrs, Volume= 0.815 af
Outflow = 7.17 cfs @ 12.24 hrs, Volume= 0.815 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

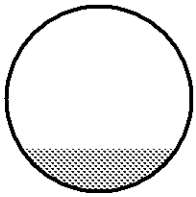
## Summary for Reach 245R: DMH 2 TO DMH 3

Inflow Area = 0.293 ac, 60.28% Impervious, Inflow Depth = 2.18" for cornell 002 event
Inflow = 0.73 cfs @ 12.10 hrs, Volume= 0.053 af
Outflow = 0.73 cfs @ 12.10 hrs, Volume= 0.053 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.17 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.71 fps, Avg. Travel Time= 1.0 min

Peak Storage= 15 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.06 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 104.0' Slope= 0.0289 '/'
Inlet Invert= 93.50', Outlet Invert= 90.49'



## Summary for Pond 1P: unit 4

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.52 hrs, Volume= 0.012 af, Atten= 93%, Lag= 85.9 min
Discarded = 0.01 cfs @ 13.52 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 97.24' @ 13.52 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 203.1 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 203.0 min ( 958.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 96.10' | 0.006 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.016 af Embedded = 0.014 af x 40.0% Voids |
| #2 | 96.60' | 0.016 af | **Cultec R-902HD** x 11 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 96.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.52 hrs HW=97.24' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 3P: unit7

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af, Atten= 93%, Lag= 79.2 min
Discarded = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 100.42' @ 13.41 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 195.2 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 195.0 min ( 950.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 99.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.41 hrs HW=100.42' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 14P: unit5

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af, Atten= 93%, Lag= 79.2 min
Discarded = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 104.52' @ 13.41 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 195.2 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 195.0 min ( 950.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 103.20' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 103.70' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |

6 Rows of 1 Chambers
Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf

0.018 af Total Available Storage

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 103.20' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.41 hrs HW=104.52' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 116P: CB 2

Inflow Area = 0.192 ac, 53.87% Impervious, Inflow Depth = 2.06" for cornell 002 event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.033 af
Outflow = 0.46 cfs @ 12.09 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min
Primary = 0.46 cfs @ 12.09 hrs, Volume= 0.033 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.21' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 95.91' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.45 cfs @ 12.09 hrs HW=96.20' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.45 cfs @ 1.84 fps)

## Summary for Pond 149P: CB 3

Inflow Area = 0.100 ac, 72.55% Impervious, Inflow Depth = 2.41" for cornell 002 event
Inflow = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af
Outflow = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.14' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 95.91' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.27 cfs @ 12.09 hrs HW=96.14' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.27 cfs @ 1.62 fps)

## Summary for Pond 156P: CB 5

Inflow Area = 0.102 ac, 68.97% Impervious, Inflow Depth = 2.41" for cornell 002 event
Inflow = 0.28 cfs @ 12.09 hrs, Volume= 0.021 af
Outflow = 0.28 cfs @ 12.09 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 12.09 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 91.12' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 90.86' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.28 cfs @ 12.09 hrs HW=91.12' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.28 cfs @ 1.73 fps)

## Summary for Pond 159P: CB 5

Inflow Area = 0.232 ac, 52.88% Impervious, Inflow Depth = 2.06" for cornell 002 event
Inflow = 0.44 cfs @ 12.18 hrs, Volume= 0.040 af
Outflow = 0.44 cfs @ 12.18 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min
Primary = 0.44 cfs @ 12.18 hrs, Volume= 0.040 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 91.19' @ 12.18 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 90.86' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.43 cfs @ 12.18 hrs HW=91.19' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.43 cfs @ 1.95 fps)

## Summary for Pond 167P: DCB 8

Inflow Area = 3.931 ac, 11.32% Impervious, Inflow Depth = 1.20" for cornell 002 event
Inflow = 3.20 cfs @ 12.39 hrs, Volume= 0.394 af
Outflow = 3.20 cfs @ 12.39 hrs, Volume= 0.394 af, Atten= 0%, Lag= 0.0 min
Primary = 3.20 cfs @ 12.39 hrs, Volume= 0.394 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 80.61' @ 12.39 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.77' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=3.19 cfs @ 12.39 hrs HW=80.61' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 3.19 cfs @ 3.13 fps)

## Summary for Pond 168P: CB 1

Inflow Area = 0.067 ac, 80.64% Impervious, Inflow Depth = 2.60" for cornell 002 event
Inflow = 0.19 cfs @ 12.09 hrs, Volume= 0.014 af
Outflow = 0.19 cfs @ 12.09 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min
Primary = 0.19 cfs @ 12.09 hrs, Volume= 0.014 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 102.48' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 102.27' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.19 cfs @ 12.09 hrs HW=102.48' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.19 cfs @ 1.56 fps)

## Summary for Pond 170P: DCB 9

Inflow Area = 0.449 ac, 60.11% Impervious, Inflow Depth = 2.14" for cornell 002 event
Inflow = 0.98 cfs @ 12.14 hrs, Volume= 0.080 af
Outflow = 0.98 cfs @ 12.14 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min
Primary = 0.98 cfs @ 12.14 hrs, Volume= 0.080 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 80.78' @ 12.14 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 80.27' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.97 cfs @ 12.14 hrs HW=80.78' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.97 cfs @ 2.42 fps)

## Summary for Pond 171P: CHAMBERS UNIT 1

Inflow Area = 0.112 ac, 88.52% Impervious, Inflow Depth = 2.81" for cornell 002 event
Inflow = 0.34 cfs @ 12.09 hrs, Volume= 0.026 af
Outflow = 0.03 cfs @ 13.14 hrs, Volume= 0.026 af, Atten= 92%, Lag= 63.0 min
Discarded = 0.03 cfs @ 13.14 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 99.95' @ 13.14 hrs Surf.Area= 0.023 ac Storage= 0.011 af

Plug-Flow detention time= 145.4 min calculated for 0.026 af (100% of inflow)
Center-of-Mass det. time= 145.2 min ( 920.6 - 775.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.030 af | **20.40'W x 49.50'L x 5.00'H Prismatoid**<br>0.116 af Overall - 0.042 af Embedded = 0.074 af x 40.0% Voids |
| #2 | 99.60' | 0.042 af | **Cultec R-902HD** x 28 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>4 Rows of 7 Chambers<br>Cap Storage= +2.8 cf x 2 x 4 rows = 22.1 cf |
| | | 0.072 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.03 cfs @ 13.14 hrs HW=99.95' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

## Summary for Pond 174P: CB 10

Inflow Area = 0.160 ac, 50.59% Impervious, Inflow Depth = 1.97" for cornell 002 event
Inflow = 0.37 cfs @ 12.09 hrs, Volume= 0.026 af
Outflow = 0.37 cfs @ 12.09 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min
Primary = 0.37 cfs @ 12.09 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 85.09' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 84.79' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.36 cfs @ 12.09 hrs HW=85.09' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.36 cfs @ 1.85 fps)

## Summary for Pond 175P: CHAMBERS UNIT 2

Inflow Area = 0.354 ac, 42.77% Impervious, Inflow Depth = 1.82" for cornell 002 event
Inflow = 0.75 cfs @ 12.09 hrs, Volume= 0.054 af
Outflow = 0.05 cfs @ 13.90 hrs, Volume= 0.054 af, Atten= 93%, Lag= 108.4 min
Discarded = 0.05 cfs @ 13.90 hrs, Volume= 0.054 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.42' @ 13.90 hrs Surf.Area= 0.046 ac Storage= 0.024 af

Plug-Flow detention time= 201.3 min calculated for 0.054 af (100% of inflow)
Center-of-Mass det. time= 201.1 min ( 1,029.0 - 827.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.056 af | **28.78'W x 69.33'L x 5.00'H Prismatoid**<br>0.229 af Overall - 0.090 af Embedded = 0.139 af x 40.0% Voids |
| #2 | 96.00' | 0.090 af | **Cultec R-902HD** x 60 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 10 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.146 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.05 cfs @ 13.90 hrs HW=96.42' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

## Summary for Pond 176P: CB 6

Inflow Area = 0.354 ac, 42.77% Impervious, Inflow Depth = 1.82" for cornell 002 event
Inflow = 0.75 cfs @ 12.09 hrs, Volume= 0.054 af
Outflow = 0.75 cfs @ 12.09 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Primary = 0.75 cfs @ 12.09 hrs, Volume= 0.054 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 97.94' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 97.50' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.73 cfs @ 12.09 hrs HW=97.93' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.73 cfs @ 2.24 fps)

## Summary for Pond 177P: CB 11

Inflow Area = 0.038 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.12 cfs @ 12.08 hrs, Volume= 0.010 af
Outflow = 0.12 cfs @ 12.08 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min
Primary = 0.12 cfs @ 12.08 hrs, Volume= 0.010 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 84.96' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 84.79' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.12 cfs @ 12.08 hrs HW=84.96' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.12 cfs @ 1.39 fps)

## Summary for Pond 178P: unit 1

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.52 hrs, Volume= 0.012 af, Atten= 93%, Lag= 85.9 min
Discarded = 0.01 cfs @ 13.52 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.64' @ 13.52 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 203.1 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 203.0 min ( 958.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.006 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.016 af Embedded = 0.014 af x 40.0% Voids |
| #2 | 96.00' | 0.016 af | **Cultec R-902HD** x 11 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.52 hrs HW=96.64' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 182P: CB 12

Inflow Area = 0.241 ac, 63.01% Impervious, Inflow Depth = 2.23" for cornell 002 event
Inflow = 0.62 cfs @ 12.09 hrs, Volume= 0.045 af
Outflow = 0.62 cfs @ 12.09 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min
Primary = 0.62 cfs @ 12.09 hrs, Volume= 0.045 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.45' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.05' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.61 cfs @ 12.09 hrs HW=79.44' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.61 cfs @ 2.13 fps)

## Summary for Pond 185P: CB 13

Inflow Area = 0.105 ac, 67.31% Impervious, Inflow Depth = 2.32" for cornell 002 event
Inflow = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af
Outflow = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.31' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.05' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.27 cfs @ 12.09 hrs HW=79.31' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.27 cfs @ 1.72 fps)

## Summary for Pond 190P: CHAMBERS UNIT 4

Inflow Area = 4.924 ac, 21.44% Impervious, Inflow Depth = 1.40" for cornell 002 event
Inflow = 4.19 cfs @ 12.34 hrs, Volume= 0.576 af
Outflow = 4.15 cfs @ 12.38 hrs, Volume= 0.526 af, Atten= 1%, Lag= 2.4 min
Discarded = 0.05 cfs @ 12.38 hrs, Volume= 0.084 af
Primary = 4.10 cfs @ 12.38 hrs, Volume= 0.442 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.26' @ 12.38 hrs Surf.Area= 0.039 ac Storage= 0.091 af

Plug-Flow detention time= 96.2 min calculated for 0.526 af (91% of inflow)
Center-of-Mass det. time= 52.7 min ( 907.6 - 854.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 76.00' | 0.045 af | **24.50'W x 69.00'L x 5.00'H Prismatoid**<br>0.194 af Overall - 0.082 af Embedded = 0.112 af x 40.0% Voids |
| #2 | 76.50' | 0.082 af | **Cultec R-902HD** x 55 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>5 Rows of 11 Chambers<br>Cap Storage= +2.8 cf x 2 x 5 rows = 27.6 cf |
| | | 0.127 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 76.00' | **1.020 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 78.40' | **24.0" Vert. Orifice/Grate** C= 0.600 |

**Discarded OutFlow** Max=0.05 cfs @ 12.38 hrs HW=79.26' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

**Primary OutFlow** Max=4.09 cfs @ 12.38 hrs HW=79.26' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 4.09 cfs @ 3.16 fps)

## Summary for Pond 193P: CHAMBERS UNIT 3

Inflow Area = 0.672 ac, 61.75% Impervious, Inflow Depth = 2.24" for cornell 002 event
Inflow = 1.50 cfs @ 12.11 hrs, Volume= 0.125 af
Outflow = 0.07 cfs @ 15.57 hrs, Volume= 0.105 af, Atten= 96%, Lag= 207.2 min
Discarded = 0.07 cfs @ 15.57 hrs, Volume= 0.105 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 88.90' @ 15.57 hrs Surf.Area= 0.057 ac Storage= 0.069 af

Plug-Flow detention time= 401.6 min calculated for 0.105 af (84% of inflow)
Center-of-Mass det. time= 334.2 min ( 1,143.3 - 809.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.10' | 0.066 af | **43.00'W x 57.30'L x 5.00'H Prismatoid**<br>0.283 af Overall - 0.117 af Embedded = 0.166 af x 40.0% Voids |
| #2 | 87.60' | 0.117 af | **Cultec R-902HD** x 78 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 13 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.183 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.10' | **1.020 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 90.00' | **8.0" Vert. Orifice/Grate** C= 0.600 |

**Discarded OutFlow** Max=0.07 cfs @ 15.57 hrs HW=88.90' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=87.10' (Free Discharge)
↑—**2=Orifice/Grate** ( Controls 0.00 cfs)

## Summary for Pond 197P: unit6

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af, Atten= 93%, Lag= 79.2 min
Discarded = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 100.42' @ 13.41 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 195.2 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 195.0 min ( 950.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 99.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.41 hrs HW=100.42' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 198P: unit8

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.03 hrs, Volume= 0.012 af, Atten= 92%, Lag= 57.0 min
Discarded = 0.01 cfs @ 13.03 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 95.11' @ 13.03 hrs Surf.Area= 0.009 ac Storage= 0.005 af

Plug-Flow detention time= 136.6 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 136.4 min ( 891.8 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 94.10' | 0.013 af | **8.50'W x 47.10'L x 4.50'H Prismatoid**<br>0.041 af Overall - 0.010 af Embedded = 0.032 af x 40.0% Voids |
| #2 | 94.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 94.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.03 hrs HW=95.11' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 202P: unit9

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af, Atten= 93%, Lag= 79.2 min
Discarded = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 91.92' @ 13.41 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 195.2 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 195.0 min ( 950.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 90.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 91.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 90.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.41 hrs HW=91.92' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 204P: unit10

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af, Atten= 93%, Lag= 79.2 min
Discarded = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 90.92' @ 13.41 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 195.2 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 195.0 min ( 950.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 89.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 90.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 89.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.41 hrs HW=90.92' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 206P: unit11

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af, Atten= 93%, Lag= 79.2 min
Discarded = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 94.12' @ 13.41 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 195.2 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 195.0 min ( 950.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 92.80' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 93.30' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 92.80' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.41 hrs HW=94.12' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 209P: unit12

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af, Atten= 93%, Lag= 79.2 min
Discarded = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 94.82' @ 13.41 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 195.2 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 195.0 min ( 950.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 93.50' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 94.00' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 93.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.41 hrs HW=94.82' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 219P: unit13

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af, Atten= 93%, Lag= 79.2 min
Discarded = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 93.12' @ 13.41 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 195.2 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 195.0 min ( 950.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 91.80' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 92.30' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 91.80' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.41 hrs HW=93.12' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 222P: unit14

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af, Atten= 93%, Lag= 79.2 min
Discarded = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 88.32' @ 13.41 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 195.2 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 195.0 min ( 950.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.00' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 87.50' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.41 hrs HW=88.32' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 230P: unit15

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af, Atten= 93%, Lag= 79.2 min
Discarded = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 88.32' @ 13.41 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 195.2 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 195.0 min ( 950.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.00' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 87.50' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.41 hrs HW=88.32' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 231P: unit16

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af, Atten= 93%, Lag= 79.2 min
Discarded = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 82.92' @ 13.41 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 195.2 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 195.0 min ( 950.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 82.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.41 hrs HW=82.92' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 232P: unit17

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af, Atten= 93%, Lag= 79.2 min
Discarded = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 80.12' @ 13.41 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 195.2 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 195.0 min ( 950.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 78.80' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 79.30' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 78.80' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.41 hrs HW=80.12' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 233P: unit18

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af, Atten= 93%, Lag= 79.2 min
Discarded = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 76.22' @ 13.41 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 195.2 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 195.0 min ( 950.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 74.90' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 75.40' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 74.90' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.41 hrs HW=76.22' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 240P: unit19

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af, Atten= 93%, Lag= 79.2 min
Discarded = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 77.62' @ 13.41 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 195.2 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 195.0 min ( 950.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 76.30' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 76.80' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 76.30' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.41 hrs HW=77.62' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 241P: unit20

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af, Atten= 93%, Lag= 79.2 min
Discarded = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 78.42' @ 13.41 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 195.2 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 195.0 min ( 950.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 77.10' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 77.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 77.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.41 hrs HW=78.42' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 242P: unit21

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af, Atten= 93%, Lag= 79.2 min
Discarded = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 81.42' @ 13.41 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 195.2 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 195.0 min ( 950.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 80.10' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 80.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 80.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.41 hrs HW=81.42' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 243P: unit22

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af, Atten= 93%, Lag= 79.2 min
Discarded = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 82.92' @ 13.41 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 195.2 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 195.0 min ( 950.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 82.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.41 hrs HW=82.92' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 244P: unit23

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af, Atten= 93%, Lag= 79.2 min
Discarded = 0.01 cfs @ 13.41 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 82.92' @ 13.41 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 195.2 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 195.0 min ( 950.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 82.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.41 hrs HW=82.92' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 245P: unit 1

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 3.13" for cornell 002 event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 13.52 hrs, Volume= 0.012 af, Atten= 93%, Lag= 85.9 min
Discarded = 0.01 cfs @ 13.52 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 99.14' @ 13.52 hrs Surf.Area= 0.007 ac Storage= 0.005 af

Plug-Flow detention time= 203.1 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 203.0 min ( 958.4 - 755.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 98.00' | 0.006 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.016 af Embedded = 0.014 af x 40.0% Voids |
| #2 | 98.50' | 0.016 af | **Cultec R-902HD** x 11 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 98.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.52 hrs HW=99.14' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 246P: unit 1

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.006 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.016 af Embedded = 0.014 af x 40.0% Voids |
| #2 | 96.00' | 0.016 af | **Cultec R-902HD** x 11 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
└**1=Exfiltration** ( Controls 0.00 cfs)

## Summary for Subcatchment 114S: TO CB 2

Runoff = 0.78 cfs @ 12.09 hrs, Volume= 0.057 af, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 4,511 | 98 | IMPERVIOUS |
| | 3,863 | 74 | >75% Grass cover, Good, HSG C |
| | 8,374 | 87 | Weighted Average |
| | 3,863 | | 46.13% Pervious Area |
| | 4,511 | | 53.87% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr55 min.** |

## Summary for Subcatchment 119S: TO CB 3

Runoff = 0.44 cfs @ 12.09 hrs, Volume= 0.033 af, Depth= 3.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,172 | 98 | IMPERVIOUS |
| | 1,200 | 74 | >75% Grass cover, Good, HSG C |
| | 4,372 | 91 | Weighted Average |
| | 1,200 | | 27.45% Pervious Area |
| | 3,172 | | 72.55% Impervious Area |

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

## Summary for Subcatchment 153S: TO CB 4

Runoff = 0.75 cfs @ 12.18 hrs, Volume= 0.068 af, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 5,335 | 98 | IMPERVIOUS |
| | 4,754 | 74 | >75% Grass cover, Good, HSG C |
| | 10,089 | 87 | Weighted Average |
| | 4,754 | | 47.12% Pervious Area |
| | 5,335 | | 52.88% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.0 | 50 | 0.0800 | 0.07 | | **Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 1.1 | 188 | 0.0320 | 2.88 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 0.2 | 47 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, DE** Paved Kv= 20.3 fps |
| 13.3 | 292 | Total | | | |

## Summary for Subcatchment 155S: TO CB 5

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.034 af, Depth= 3.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,072 | 98 | IMPERVIOUS |
| | 1,382 | 74 | >75% Grass cover, Good, HSG C |
| | 4,454 | 91 | Weighted Average |
| | 1,382 | | 31.03% Pervious Area |
| | 3,072 | | 68.97% Impervious Area |

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

## Summary for Subcatchment 166S: CB 6

Runoff = 1.33 cfs @ 12.09 hrs, Volume= 0.096 af, Depth= 3.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 8,834 | 74 | >75% Grass cover, Good, HSG C |
| * | 6,602 | 98 | PAVEMENT, HSG C |
| | 15,436 | 84 | Weighted Average |
| | 8,834 | | 57.23% Pervious Area |
| | 6,602 | | 42.77% Impervious Area |

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

## Summary for Subcatchment 167S: TO CB 1

Runoff = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af, Depth= 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,341 | 98 | IMPERVIOUS |
| | 562 | 74 | >75% Grass cover, Good, HSG C |
| | 2,903 | 93 | Weighted Average |
| | 562 | | 19.36% Pervious Area |
| | 2,341 | | 80.64% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.1 | 50 | 0.0600 | 0.16 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37" |
| 0.1 | 22 | 0.0600 | 3.94 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 1.1 | 185 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 6.3 | 257 | Total | | | |

## Summary for Subcatchment 169S: TO DCB 8

Runoff = 6.70 cfs @ 12.37 hrs, Volume= 0.797 af, Depth= 2.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 16,852 | 98 | pavement |
| * | 2,343 | 98 | EXIST HSE |
| | 97,544 | 74 | >75% Grass cover, Good, HSG C |
| | 54,320 | 70 | Woods, Good, HSG C |
| * | 183 | 98 | WALL |
| | 171,242 | 75 | Weighted Average |
| | 151,864 | | 88.68% Pervious Area |
| | 19,378 | | 11.32% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 20.9 | 50 | 0.0200 | 0.04 | | **Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 1.7 | 298 | 0.0330 | 2.92 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 0.7 | 136 | 0.0440 | 3.38 | | **Shallow Concentrated Flow, CD** Unpaved Kv= 16.1 fps |
| 0.2 | 48 | 0.0437 | 4.24 | | **Shallow Concentrated Flow, DE** Paved Kv= 20.3 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, EF** Paved Kv= 20.3 fps |
| 2.6 | 550 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, FG** Paved Kv= 20.3 fps |
| 26.1 | 1,089 | Total | | | |

## Summary for Subcatchment 173S: TO CB 10

Runoff = 0.63 cfs @ 12.09 hrs, Volume= 0.046 af, Depth= 3.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,534 | 98 | IMPERVIOUS |
| | 3,452 | 74 | >75% Grass cover, Good, HSG C |
| | 6,986 | 86 | Weighted Average |
| | 3,452 | | 49.41% Pervious Area |
| | 3,534 | | 50.59% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR55 MIN** |

## Summary for Subcatchment 176S: TO CB 11

Runoff = 0.18 cfs @ 12.08 hrs, Volume= 0.015 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,635 | 98 | IMPERVIOUS |
| | 1,635 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 181S: TO CB 12

Runoff = 1.02 cfs @ 12.09 hrs, Volume= 0.075 af, Depth= 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 6,607 | 98 | IMPERVIOUS |
| | 3,879 | 74 | >75% Grass cover, Good, HSG C |
| | 10,486 | 89 | Weighted Average |
| | 3,879 | | 36.99% Pervious Area |
| | 6,607 | | 63.01% Impervious Area |

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

## Summary for Subcatchment 184S: TO CB 13

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.034 af, Depth= 3.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,082 | 98 | IMPERVIOUS |
| | 1,497 | 74 | >75% Grass cover, Good, HSG C |
| | 4,579 | 90 | Weighted Average |
| | 1,497 | | 32.69% Pervious Area |
| | 3,082 | | 67.31% Impervious Area |

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

## Summary for Subcatchment 193S: EXIST TO WETLANDS

Runoff = 17.04 cfs @ 12.29 hrs, Volume= 1.836 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 321,168 | 70 | Woods, Good, HSG C |
| * | 8,364 | 98 | ROOF, HSG C |
| * | 436 | 98 | CONCRETE, HSG C |
| | 9,975 | 96 | Gravel surface, HSG C |
| | 44,126 | 74 | >75% Grass cover, Good, HSG C |
| * | 10,759 | 98 | PAVEMENT, HSG C |
| | 44,910 | 65 | Brush, Good, HSG C |
| | 439,738 | 72 | Weighted Average |
| | 420,179 | | 95.55% Pervious Area |
| | 19,559 | | 4.45% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 17.8 | 50 | 0.0300 | 0.05 | | **Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 2.5 | 524 | 0.0458 | 3.45 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 20.3 | 574 | Total | | | |

## Summary for Subcatchment 194S: PROP TO WETS

Runoff = 9.08 cfs @ 12.16 hrs, Volume= 0.778 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 62,378 | 70 | Woods, Good, HSG C |
| | 111,644 | 74 | >75% Grass cover, Good, HSG C |
| * | 1,394 | 98 | WALLS, HSG C |
| | 479 | 96 | Gravel surface, HSG B |
| * | 3,703 | 98 | PAVEMENT |
| | 179,598 | 73 | Weighted Average |
| | 174,501 | | 97.16% Pervious Area |
| | 5,097 | | 2.84% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.0 | 50 | 0.0200 | 0.10 | | **Sheet Flow, AB** Grass: Dense n= 0.240 P2= 3.37" |
| 0.5 | 68 | 0.0200 | 2.28 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 0.1 | 24 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 2.6 | 532 | 0.0450 | 3.42 | | **Shallow Concentrated Flow, DE** Unpaved Kv= 16.1 fps |
| 11.2 | 674 | Total | | | |

## Summary for Subcatchment 195S: roof unit2

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 196S: roof unit3

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 200S: roof unit8

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 201S: roof uniT9

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 203S: roof uniT10

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 205S: roof uniT11

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 206S: TO DCB 9

Runoff = 1.65 cfs @ 12.13 hrs, Volume= 0.137 af, Depth= 3.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 11,762 | 98 | pavement |
| | 7,805 | 74 | >75% Grass cover, Good, HSG C |
| | 19,567 | 88 | Weighted Average |
| | 7,805 | | 39.89% Pervious Area |
| | 11,762 | | 60.11% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.0 | 50 | 0.0200 | 0.10 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37" |
| 0.1 | 11 | 0.0200 | 2.28 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 1.6 | 333 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, DE** Paved Kv= 20.3 fps |
| 9.7 | 401 | Total | | | |

## Summary for Subcatchment 207S: roof unit4

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 208S: roof uniT12

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 218S: roof uniT13

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 220S: roof unit5

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 221S: roof uniT14

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 223S: roof unit6

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 224S: roof unit1

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 225S: roof unit7

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 226S: roof uniT15

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 227S: roof uniT16

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 228S: roof uniT17

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 229S: roof uniT18

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 234S: roof uniT19

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 235S: roof uniT20

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 236S: roof uniT21

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 237S: roof uniT22

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 238S: roof uniT23

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 239S: roof uniT24

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 010 Rainfall=4.98"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

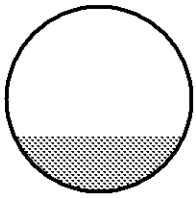
## Summary for Reach 118R: CB 2 TO DMH 1

Inflow Area = 0.192 ac, 53.87% Impervious, Inflow Depth = 3.55" for cornell 010 event
Inflow = 0.78 cfs @ 12.09 hrs, Volume= 0.057 af
Outflow = 0.78 cfs @ 12.09 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.85 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.29 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.87 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0118 '/'
Inlet Invert= 95.91', Outlet Invert= 95.78'



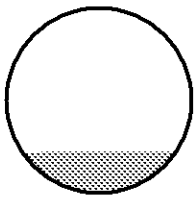
## Summary for Reach 150R: CB 3 TO DMH 1

Inflow Area = 0.100 ac, 72.55% Impervious, Inflow Depth = 3.96" for cornell 010 event
Inflow = 0.44 cfs @ 12.09 hrs, Volume= 0.033 af
Outflow = 0.44 cfs @ 12.09 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.28 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.87 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0118 '/'
Inlet Invert= 95.91', Outlet Invert= 95.78'



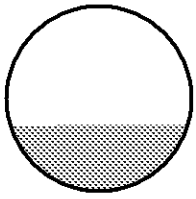
## Summary for Reach 151R: DMH 1 TO DMH 2

Inflow Area = 0.293 ac, 60.28% Impervious, Inflow Depth = 3.69" for cornell 010 event
Inflow = 1.22 cfs @ 12.09 hrs, Volume= 0.090 af
Outflow = 1.22 cfs @ 12.09 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.75 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.54 fps, Avg. Travel Time= 1.5 min

Peak Storage= 35 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.37 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 138.0' Slope= 0.0151 '/'
Inlet Invert= 95.68', Outlet Invert= 93.60'



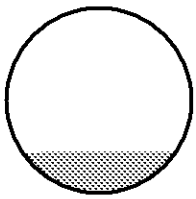
## Summary for Reach 157R: CB 5 TO DMH 3

Inflow Area = 0.102 ac, 68.97% Impervious, Inflow Depth = 3.96" for cornell 010 event
Inflow = 0.45 cfs @ 12.09 hrs, Volume= 0.034 af
Outflow = 0.45 cfs @ 12.09 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.38 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.11 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.02 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0127 '/'
Inlet Invert= 90.86', Outlet Invert= 90.72'



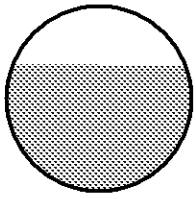
## Summary for Reach 158R: DMH 3 TO HYDRO2

Inflow Area = 0.626 ac, 58.96% Impervious, Inflow Depth = 3.68" for cornell 010 event
Inflow = 2.27 cfs @ 12.11 hrs, Volume= 0.192 af
Outflow = 2.27 cfs @ 12.11 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.96 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.39 fps, Avg. Travel Time= 0.5 min

Peak Storage= 22 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.68'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.79 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 39.0' Slope= 0.0062 '/'
Inlet Invert= 90.39', Outlet Invert= 90.15'



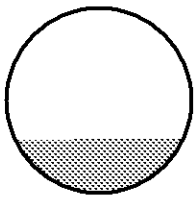
## Summary for Reach 160R: CB 4 TO DMH 3

Inflow Area = 0.232 ac, 52.88% Impervious, Inflow Depth = 3.55" for cornell 010 event
Inflow = 0.75 cfs @ 12.18 hrs, Volume= 0.068 af
Outflow = 0.75 cfs @ 12.18 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.90 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.39 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.02 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0127 '/'
Inlet Invert= 90.86', Outlet Invert= 90.72'



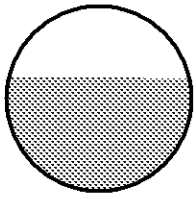
## Summary for Reach 164R: HYDRO2 BASIN 3

Inflow Area = 0.626 ac, 58.96% Impervious, Inflow Depth = 3.68" for cornell 010 event
Inflow = 2.27 cfs @ 12.11 hrs, Volume= 0.192 af
Outflow = 2.27 cfs @ 12.11 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.47 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.55 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.62'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.25 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 6.0' Slope= 0.0083 '/'
Inlet Invert= 90.05', Outlet Invert= 90.00'



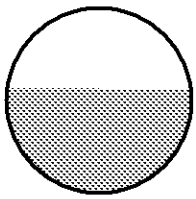
## Summary for Reach 168R: DCB 8 TO DMH 4

Inflow Area = 3.931 ac, 11.32% Impervious, Inflow Depth = 2.43" for cornell 010 event
Inflow = 6.70 cfs @ 12.37 hrs, Volume= 0.797 af
Outflow = 6.70 cfs @ 12.37 hrs, Volume= 0.797 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.51 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.72 fps, Avg. Travel Time= 0.1 min

Peak Storage= 11 cf @ 12.37 hrs
Average Depth at Peak Storage= 0.85'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.97 cfs

18.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0109 '/'
Inlet Invert= 79.77', Outlet Invert= 79.65'



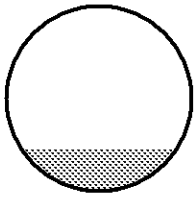
## Summary for Reach 169R: CB 1 TO HYDRO 1

Inflow Area = 0.067 ac, 80.64% Impervious, Inflow Depth = 4.18" for cornell 010 event
Inflow = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af
Outflow = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.16 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.71 fps, Avg. Travel Time= 0.6 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 24.0' Slope= 0.0050 '/'
Inlet Invert= 102.27', Outlet Invert= 102.15'



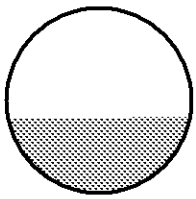
## Summary for Reach 171R: DCB 9 TO DMH 4

Inflow Area = 0.449 ac, 60.11% Impervious, Inflow Depth = 3.65" for cornell 010 event
Inflow = 1.65 cfs @ 12.13 hrs, Volume= 0.137 af
Outflow = 1.65 cfs @ 12.13 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.42 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.88 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.66 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 7.0' Slope= 0.0171 '/'
Inlet Invert= 80.27', Outlet Invert= 80.15'



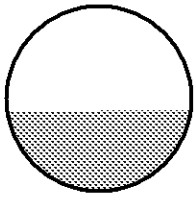
## Summary for Reach 172R: DMH 4 HYDRO3

Inflow Area = 4.380 ac, 16.32% Impervious, Inflow Depth = 2.56" for cornell 010 event
Inflow = 7.49 cfs @ 12.35 hrs, Volume= 0.934 af
Outflow = 7.49 cfs @ 12.35 hrs, Volume= 0.934 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.67 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.08 fps, Avg. Travel Time= 0.4 min

Peak Storage= 66 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.87'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 18.93 cfs

24.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 50.0' Slope= 0.0070 '/'
Inlet Invert= 79.05', Outlet Invert= 78.70'



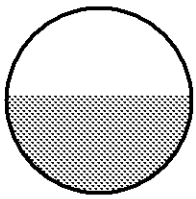
## Summary for Reach 173R: CB 6 TO HYDRO 4

Inflow Area = 0.354 ac, 42.77% Impervious, Inflow Depth = 3.25" for cornell 010 event
Inflow = 1.33 cfs @ 12.09 hrs, Volume= 0.096 af
Outflow = 1.33 cfs @ 12.09 hrs, Volume= 0.096 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.10 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.09 fps, Avg. Travel Time= 0.7 min

Peak Storage= 19 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.38 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 45.0' Slope= 0.0044 '/'
Inlet Invert= 97.50', Outlet Invert= 97.30'



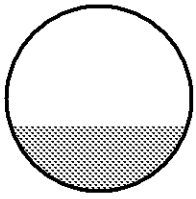
## Summary for Reach 174R: HYDRO 4 TO CHAMBERS 2

Inflow Area = 0.354 ac, 42.77% Impervious, Inflow Depth = 3.25" for cornell 010 event
Inflow = 1.33 cfs @ 12.09 hrs, Volume= 0.096 af
Outflow = 1.33 cfs @ 12.09 hrs, Volume= 0.096 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.40 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.85 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.04 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0200 '/'
Inlet Invert= 97.30', Outlet Invert= 97.20'



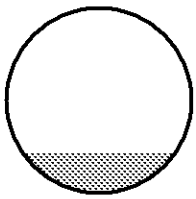
## Summary for Reach 175R: CB 10 TO DMH 7

Inflow Area = 0.160 ac, 50.59% Impervious, Inflow Depth = 3.45" for cornell 010 event
Inflow = 0.63 cfs @ 12.09 hrs, Volume= 0.046 af
Outflow = 0.63 cfs @ 12.09 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.14 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.73 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.32 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 14.0' Slope= 0.0314 '/'
Inlet Invert= 84.79', Outlet Invert= 84.35'



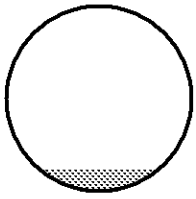
## Summary for Reach 178R: CB 11 TO DMH 7

Inflow Area = 0.038 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.18 cfs @ 12.08 hrs, Volume= 0.015 af
Outflow = 0.18 cfs @ 12.08 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.55 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.19 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.32 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 14.0' Slope= 0.0314 '/'
Inlet Invert= 84.79', Outlet Invert= 84.35'



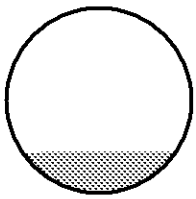
## Summary for Reach 179R: DMH 7 TO DMH 6

Inflow Area = 0.198 ac, 59.96% Impervious, Inflow Depth = 3.69" for cornell 010 event
Inflow = 0.81 cfs @ 12.09 hrs, Volume= 0.061 af
Outflow = 0.81 cfs @ 12.09 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.02 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.83 fps, Avg. Travel Time= 0.8 min

Peak Storage= 13 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.13 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 93.0' Slope= 0.0400 '/'
Inlet Invert= 84.25', Outlet Invert= 80.53'



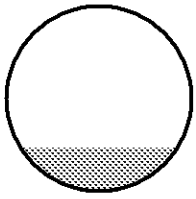
## Summary for Reach 181R: HYDRO 1 TO CHAMB 1

Inflow Area = 0.067 ac, 80.64% Impervious, Inflow Depth = 4.18" for cornell 010 event
Inflow = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af
Outflow = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.08 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.68 fps, Avg. Travel Time= 0.3 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.40 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0045 '/'
Inlet Invert= 102.05', Outlet Invert= 102.00'



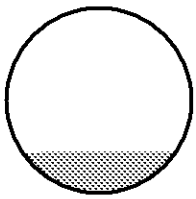
## Summary for Reach 182R: HYDRO 3 TO CHAMBERS 3

Inflow Area = 4.578 ac, 18.21% Impervious, Inflow Depth = 2.61" for cornell 010 event
Inflow = 7.80 cfs @ 12.34 hrs, Volume= 0.995 af
Outflow = 7.80 cfs @ 12.34 hrs, Volume= 0.995 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 14.38 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.77 fps, Avg. Travel Time= 0.0 min

Peak Storage= 3 cf @ 12.34 hrs
Average Depth at Peak Storage= 0.46'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 67.87 cfs

24.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0900 '/'
Inlet Invert= 78.95', Outlet Invert= 78.50'



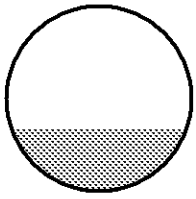
## Summary for Reach 183R: CB 12 TO DMH 5

Inflow Area = 0.241 ac, 63.01% Impervious, Inflow Depth = 3.75" for cornell 010 event
Inflow = 1.02 cfs @ 12.09 hrs, Volume= 0.075 af
Outflow = 1.02 cfs @ 12.09 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.34 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.44 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.11 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 12.0' Slope= 0.0133 '/'
Inlet Invert= 79.05', Outlet Invert= 78.89'



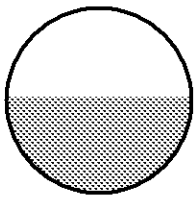
## Summary for Reach 184R: HYDRO5 BASIN 4

Inflow Area = 0.346 ac, 64.31% Impervious, Inflow Depth = 3.78" for cornell 010 event
Inflow = 1.47 cfs @ 12.09 hrs, Volume= 0.109 af
Outflow = 1.47 cfs @ 12.09 hrs, Volume= 0.109 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.57 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.20 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.76 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0060 '/'
Inlet Invert= 78.53', Outlet Invert= 78.50'



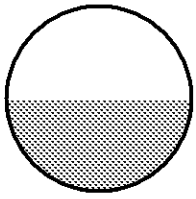
## Summary for Reach 185R: DMH 6 TO HYDRO 3

Inflow Area = 0.198 ac, 59.96% Impervious, Inflow Depth = 3.69" for cornell 010 event
Inflow = 0.81 cfs @ 12.09 hrs, Volume= 0.061 af
Outflow = 0.81 cfs @ 12.09 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.11 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.66 fps, Avg. Travel Time= 0.9 min

Peak Storage= 14 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.49'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 1.68 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 36.0' Slope= 0.0022 '/'
Inlet Invert= 79.33', Outlet Invert= 79.25'



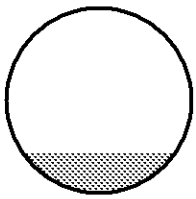
## Summary for Reach 186R: CB 13 TO DMH 5

Inflow Area = 0.105 ac, 67.31% Impervious, Inflow Depth = 3.86" for cornell 010 event
Inflow = 0.45 cfs @ 12.09 hrs, Volume= 0.034 af
Outflow = 0.45 cfs @ 12.09 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.55 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.17 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.30 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0145 '/'
Inlet Invert= 79.05', Outlet Invert= 78.89'



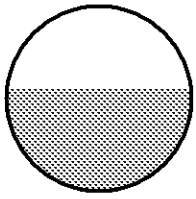
## Summary for Reach 187R: DMH 5 TO HYDRO 5

Inflow Area = 0.346 ac, 64.31% Impervious, Inflow Depth = 3.78" for cornell 010 event
Inflow = 1.47 cfs @ 12.09 hrs, Volume= 0.109 af
Outflow = 1.47 cfs @ 12.09 hrs, Volume= 0.109 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.33 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.13 fps, Avg. Travel Time= 0.5 min

Peak Storage= 14 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 32.0' Slope= 0.0050 '/'
Inlet Invert= 78.79', Outlet Invert= 78.63'



## Summary for Reach 195R: POST TO WETS

Inflow Area = 9.719 ac, 16.34% Impervious, Inflow Depth = 2.17" for cornell 010 event
Inflow = 16.25 cfs @ 12.18 hrs, Volume= 1.757 af
Outflow = 16.25 cfs @ 12.18 hrs, Volume= 1.757 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

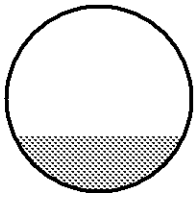
## Summary for Reach 245R: DMH 2 TO DMH 3

Inflow Area = 0.293 ac, 60.28% Impervious, Inflow Depth = 3.69" for cornell 010 event
Inflow = 1.22 cfs @ 12.09 hrs, Volume= 0.090 af
Outflow = 1.21 cfs @ 12.10 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.99 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.94 fps, Avg. Travel Time= 0.9 min

Peak Storage= 21 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.06 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 104.0' Slope= 0.0289 '/'
Inlet Invert= 93.50', Outlet Invert= 90.49'



## Summary for Pond 1P: unit 4

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 14.12 hrs, Volume= 0.018 af, Atten= 95%, Lag= 122.3 min
Discarded = 0.01 cfs @ 14.12 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 97.88' @ 14.12 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 324.5 min calculated for 0.018 af (97% of inflow)
Center-of-Mass det. time= 307.0 min ( 1,055.1 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 96.10' | 0.006 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.016 af Embedded = 0.014 af x 40.0% Voids |
| #2 | 96.60' | 0.016 af | **Cultec R-902HD** x 11 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 96.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.12 hrs HW=97.88' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 3P: unit7

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af, Atten= 95%, Lag= 112.3 min
Discarded = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 101.23' @ 13.96 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 306.0 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 302.4 min ( 1,050.5 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 99.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.96 hrs HW=101.23' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 14P: unit5

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af, Atten= 95%, Lag= 112.3 min
Discarded = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 105.33' @ 13.96 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 306.0 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 302.4 min ( 1,050.5 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 103.20' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 103.70' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |

6 Rows of 1 Chambers
Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf

0.018 af Total Available Storage

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 103.20' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.96 hrs HW=105.33' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 116P: CB 2

Inflow Area = 0.192 ac, 53.87% Impervious, Inflow Depth = 3.55" for cornell 010 event
Inflow = 0.78 cfs @ 12.09 hrs, Volume= 0.057 af
Outflow = 0.78 cfs @ 12.09 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min
Primary = 0.78 cfs @ 12.09 hrs, Volume= 0.057 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.30' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 95.91' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.77 cfs @ 12.09 hrs HW=96.30' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.77 cfs @ 2.12 fps)

## Summary for Pond 149P: CB 3

Inflow Area = 0.100 ac, 72.55% Impervious, Inflow Depth = 3.96" for cornell 010 event
Inflow = 0.44 cfs @ 12.09 hrs, Volume= 0.033 af
Outflow = 0.44 cfs @ 12.09 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min
Primary = 0.44 cfs @ 12.09 hrs, Volume= 0.033 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.20' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 95.91' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.44 cfs @ 12.09 hrs HW=96.20' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.44 cfs @ 1.83 fps)

## Summary for Pond 156P: CB 5

Inflow Area = 0.102 ac, 68.97% Impervious, Inflow Depth = 3.96" for cornell 010 event
Inflow = 0.45 cfs @ 12.09 hrs, Volume= 0.034 af
Outflow = 0.45 cfs @ 12.09 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
Primary = 0.45 cfs @ 12.09 hrs, Volume= 0.034 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 91.19' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 90.86' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.44 cfs @ 12.09 hrs HW=91.19' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.44 cfs @ 1.96 fps)

## Summary for Pond 159P: CB 5

Inflow Area = 0.232 ac, 52.88% Impervious, Inflow Depth = 3.55" for cornell 010 event
Inflow = 0.75 cfs @ 12.18 hrs, Volume= 0.068 af
Outflow = 0.75 cfs @ 12.18 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min
Primary = 0.75 cfs @ 12.18 hrs, Volume= 0.068 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 91.30' @ 12.18 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 90.86' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.74 cfs @ 12.18 hrs HW=91.30' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.74 cfs @ 2.25 fps)

## Summary for Pond 167P: DCB 8

Inflow Area = 3.931 ac, 11.32% Impervious, Inflow Depth = 2.43" for cornell 010 event
Inflow = 6.70 cfs @ 12.37 hrs, Volume= 0.797 af
Outflow = 6.70 cfs @ 12.37 hrs, Volume= 0.797 af, Atten= 0%, Lag= 0.0 min
Primary = 6.70 cfs @ 12.37 hrs, Volume= 0.797 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 81.13' @ 12.37 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.77' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=6.68 cfs @ 12.37 hrs HW=81.13' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 6.68 cfs @ 3.97 fps)

## Summary for Pond 168P: CB 1

Inflow Area = 0.067 ac, 80.64% Impervious, Inflow Depth = 4.18" for cornell 010 event
Inflow = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af
Outflow = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min
Primary = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 102.54' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 102.27' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.30 cfs @ 12.09 hrs HW=102.54' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.30 cfs @ 1.76 fps)

## Summary for Pond 170P: DCB 9

Inflow Area = 0.449 ac, 60.11% Impervious, Inflow Depth = 3.65" for cornell 010 event
Inflow = 1.65 cfs @ 12.13 hrs, Volume= 0.137 af
Outflow = 1.65 cfs @ 12.13 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min
Primary = 1.65 cfs @ 12.13 hrs, Volume= 0.137 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 80.96' @ 12.13 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 80.27' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.62 cfs @ 12.13 hrs HW=80.96' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 1.62 cfs @ 2.82 fps)

## Summary for Pond 171P: CHAMBERS UNIT 1

Inflow Area = 0.112 ac, 88.52% Impervious, Inflow Depth = 4.41" for cornell 010 event
Inflow = 0.52 cfs @ 12.09 hrs, Volume= 0.041 af
Outflow = 0.03 cfs @ 14.02 hrs, Volume= 0.041 af, Atten= 95%, Lag= 115.8 min
Discarded = 0.03 cfs @ 14.02 hrs, Volume= 0.041 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 100.44' @ 14.02 hrs Surf.Area= 0.023 ac Storage= 0.019 af

Plug-Flow detention time= 266.1 min calculated for 0.041 af (100% of inflow)
Center-of-Mass det. time= 266.0 min ( 1,031.6 - 765.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.030 af | **20.40'W x 49.50'L x 5.00'H Prismatoid**<br>0.116 af Overall - 0.042 af Embedded = 0.074 af x 40.0% Voids |
| #2 | 99.60' | 0.042 af | **Cultec R-902HD** x 28 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>4 Rows of 7 Chambers<br>Cap Storage= +2.8 cf x 2 x 4 rows = 22.1 cf |
| | | 0.072 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.03 cfs @ 14.02 hrs HW=100.44' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

## Summary for Pond 174P: CB 10

Inflow Area = 0.160 ac, 50.59% Impervious, Inflow Depth = 3.45" for cornell 010 event
Inflow = 0.63 cfs @ 12.09 hrs, Volume= 0.046 af
Outflow = 0.63 cfs @ 12.09 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min
Primary = 0.63 cfs @ 12.09 hrs, Volume= 0.046 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 85.19' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 84.79' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.62 cfs @ 12.09 hrs HW=85.19' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.62 cfs @ 2.15 fps)

## Summary for Pond 175P: CHAMBERS UNIT 2

Inflow Area = 0.354 ac, 42.77% Impervious, Inflow Depth = 3.25" for cornell 010 event
Inflow = 1.33 cfs @ 12.09 hrs, Volume= 0.096 af
Outflow = 0.06 cfs @ 15.35 hrs, Volume= 0.085 af, Atten= 96%, Lag= 195.3 min
Discarded = 0.06 cfs @ 15.35 hrs, Volume= 0.085 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 97.22' @ 15.35 hrs Surf.Area= 0.046 ac Storage= 0.053 af

Plug-Flow detention time= 393.8 min calculated for 0.085 af (88% of inflow)
Center-of-Mass det. time= 340.4 min ( 1,151.6 - 811.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.056 af | **28.78'W x 69.33'L x 5.00'H Prismatoid**<br>0.229 af Overall - 0.090 af Embedded = 0.139 af x 40.0% Voids |
| #2 | 96.00' | 0.090 af | **Cultec R-902HD** x 60 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 10 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.146 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.06 cfs @ 15.35 hrs HW=97.22' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

## Summary for Pond 176P: CB 6

Inflow Area = 0.354 ac, 42.77% Impervious, Inflow Depth = 3.25" for cornell 010 event
Inflow = 1.33 cfs @ 12.09 hrs, Volume= 0.096 af
Outflow = 1.33 cfs @ 12.09 hrs, Volume= 0.096 af, Atten= 0%, Lag= 0.0 min
Primary = 1.33 cfs @ 12.09 hrs, Volume= 0.096 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 98.11' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 97.50' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.31 cfs @ 12.09 hrs HW=98.10' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.31 cfs @ 2.64 fps)

## Summary for Pond 177P: CB 11

Inflow Area = 0.038 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.18 cfs @ 12.08 hrs, Volume= 0.015 af
Outflow = 0.18 cfs @ 12.08 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min
Primary = 0.18 cfs @ 12.08 hrs, Volume= 0.015 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 85.00' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 84.79' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.18 cfs @ 12.08 hrs HW=85.00' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.18 cfs @ 1.54 fps)

## Summary for Pond 178P: unit 1

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 14.12 hrs, Volume= 0.018 af, Atten= 95%, Lag= 122.3 min
Discarded = 0.01 cfs @ 14.12 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 97.28' @ 14.12 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 324.5 min calculated for 0.018 af (97% of inflow)
Center-of-Mass det. time= 307.0 min ( 1,055.1 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.006 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.016 af Embedded = 0.014 af x 40.0% Voids |
| #2 | 96.00' | 0.016 af | **Cultec R-902HD** x 11 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.12 hrs HW=97.28' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 182P: CB 12

Inflow Area = 0.241 ac, 63.01% Impervious, Inflow Depth = 3.75" for cornell 010 event
Inflow = 1.02 cfs @ 12.09 hrs, Volume= 0.075 af
Outflow = 1.02 cfs @ 12.09 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min
Primary = 1.02 cfs @ 12.09 hrs, Volume= 0.075 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.57' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.05' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.00 cfs @ 12.09 hrs HW=79.57' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.00 cfs @ 2.45 fps)

## Summary for Pond 185P: CB 13

Inflow Area = 0.105 ac, 67.31% Impervious, Inflow Depth = 3.86" for cornell 010 event
Inflow = 0.45 cfs @ 12.09 hrs, Volume= 0.034 af
Outflow = 0.45 cfs @ 12.09 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
Primary = 0.45 cfs @ 12.09 hrs, Volume= 0.034 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.38' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.05' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.45 cfs @ 12.09 hrs HW=79.38' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.45 cfs @ 1.96 fps)

## Summary for Pond 190P: CHAMBERS UNIT 4

Inflow Area = 4.924 ac, 21.44% Impervious, Inflow Depth = 2.69" for cornell 010 event
Inflow = 8.36 cfs @ 12.33 hrs, Volume= 1.104 af
Outflow = 8.31 cfs @ 12.36 hrs, Volume= 1.053 af, Atten= 1%, Lag= 1.7 min
Discarded = 0.06 cfs @ 12.36 hrs, Volume= 0.091 af
Primary = 8.26 cfs @ 12.36 hrs, Volume= 0.963 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.69' @ 12.36 hrs Surf.Area= 0.039 ac Storage= 0.102 af

Plug-Flow detention time= 56.5 min calculated for 1.053 af (95% of inflow)
Center-of-Mass det. time= 31.2 min ( 869.4 - 838.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 76.00' | 0.045 af | **24.50'W x 69.00'L x 5.00'H Prismatoid**<br>0.194 af Overall - 0.082 af Embedded = 0.112 af x 40.0% Voids |
| #2 | 76.50' | 0.082 af | **Cultec R-902HD** x 55 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>5 Rows of 11 Chambers<br>Cap Storage= +2.8 cf x 2 x 5 rows = 27.6 cf |
| | | 0.127 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 76.00' | **1.020 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 78.40' | **24.0" Vert. Orifice/Grate** C= 0.600 |

**Discarded OutFlow** Max=0.06 cfs @ 12.36 hrs HW=79.69' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

**Primary OutFlow** Max=8.25 cfs @ 12.36 hrs HW=79.69' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 8.25 cfs @ 3.86 fps)

## Summary for Pond 193P: CHAMBERS UNIT 3

Inflow Area = 0.672 ac, 61.75% Impervious, Inflow Depth = 3.75" for cornell 010 event
Inflow = 2.48 cfs @ 12.11 hrs, Volume= 0.210 af
Outflow = 0.15 cfs @ 14.23 hrs, Volume= 0.137 af, Atten= 94%, Lag= 127.3 min
Discarded = 0.07 cfs @ 14.23 hrs, Volume= 0.121 af
Primary = 0.08 cfs @ 14.23 hrs, Volume= 0.016 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 90.15' @ 14.23 hrs Surf.Area= 0.057 ac Storage= 0.123 af

Plug-Flow detention time= 388.7 min calculated for 0.137 af (65% of inflow)
Center-of-Mass det. time= 289.5 min ( 1,085.0 - 795.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.10' | 0.066 af | **43.00'W x 57.30'L x 5.00'H Prismatoid**<br>0.283 af Overall - 0.117 af Embedded = 0.166 af x 40.0% Voids |
| #2 | 87.60' | 0.117 af | **Cultec R-902HD** x 78 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 13 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.183 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.10' | **1.020 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 90.00' | **8.0" Vert. Orifice/Grate** C= 0.600 |

**Discarded OutFlow** Max=0.07 cfs @ 14.23 hrs HW=90.15' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

**Primary OutFlow** Max=0.08 cfs @ 14.23 hrs HW=90.15' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 1.33 fps)

## Summary for Pond 197P: unit6

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af, Atten= 95%, Lag= 112.3 min
Discarded = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 101.23' @ 13.96 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 306.0 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 302.4 min ( 1,050.5 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 99.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.96 hrs HW=101.23' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 198P: unit8

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.64 hrs, Volume= 0.018 af, Atten= 94%, Lag= 93.4 min
Discarded = 0.01 cfs @ 13.64 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 95.72' @ 13.64 hrs Surf.Area= 0.009 ac Storage= 0.008 af

Plug-Flow detention time= 228.4 min calculated for 0.018 af (100% of inflow)
Center-of-Mass det. time= 228.3 min ( 976.4 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 94.10' | 0.013 af | **8.50'W x 47.10'L x 4.50'H Prismatoid**<br>0.041 af Overall - 0.010 af Embedded = 0.032 af x 40.0% Voids |
| #2 | 94.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 94.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.64 hrs HW=95.72' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 202P: unit9

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af, Atten= 95%, Lag= 112.3 min
Discarded = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 92.73' @ 13.96 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 306.0 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 302.4 min ( 1,050.5 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 90.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 91.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 90.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.96 hrs HW=92.73' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 204P: unit10

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af, Atten= 95%, Lag= 112.3 min
Discarded = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 91.73' @ 13.96 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 306.0 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 302.4 min ( 1,050.5 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 89.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 90.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 89.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.96 hrs HW=91.73' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 206P: unit11

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af, Atten= 95%, Lag= 112.3 min
Discarded = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 94.93' @ 13.96 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 306.0 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 302.4 min ( 1,050.5 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 92.80' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 93.30' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 92.80' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.96 hrs HW=94.93' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 209P: unit12

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af, Atten= 95%, Lag= 112.3 min
Discarded = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 95.63' @ 13.96 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 306.0 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 302.4 min ( 1,050.5 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 93.50' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 94.00' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 93.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.96 hrs HW=95.63' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 219P: unit13

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af, Atten= 95%, Lag= 112.3 min
Discarded = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 93.93' @ 13.96 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 306.0 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 302.4 min ( 1,050.5 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 91.80' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 92.30' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 91.80' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.96 hrs HW=93.93' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 222P: unit14

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af, Atten= 95%, Lag= 112.3 min
Discarded = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 89.13' @ 13.96 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 306.0 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 302.4 min ( 1,050.5 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.00' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 87.50' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.96 hrs HW=89.13' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 230P: unit15

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af, Atten= 95%, Lag= 112.3 min
Discarded = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 89.13' @ 13.96 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 306.0 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 302.4 min ( 1,050.5 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.00' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 87.50' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.96 hrs HW=89.13' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 231P: unit16

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af, Atten= 95%, Lag= 112.3 min
Discarded = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 83.73' @ 13.96 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 306.0 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 302.4 min ( 1,050.5 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 82.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.96 hrs HW=83.73' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 232P: unit17

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af, Atten= 95%, Lag= 112.3 min
Discarded = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 80.93' @ 13.96 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 306.0 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 302.4 min ( 1,050.5 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 78.80' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 79.30' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 78.80' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.96 hrs HW=80.93' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 233P: unit18

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af, Atten= 95%, Lag= 112.3 min
Discarded = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 77.03' @ 13.96 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 306.0 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 302.4 min ( 1,050.5 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 74.90' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 75.40' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 74.90' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.96 hrs HW=77.03' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 240P: unit19

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af, Atten= 95%, Lag= 112.3 min
Discarded = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 78.43' @ 13.96 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 306.0 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 302.4 min ( 1,050.5 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 76.30' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 76.80' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 76.30' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.96 hrs HW=78.43' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 241P: unit20

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af, Atten= 95%, Lag= 112.3 min
Discarded = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.23' @ 13.96 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 306.0 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 302.4 min ( 1,050.5 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 77.10' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 77.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 77.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.96 hrs HW=79.23' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 242P: unit21

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af, Atten= 95%, Lag= 112.3 min
Discarded = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 82.23' @ 13.96 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 306.0 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 302.4 min ( 1,050.5 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 80.10' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 80.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 80.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.96 hrs HW=82.23' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 243P: unit22

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af, Atten= 95%, Lag= 112.3 min
Discarded = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 83.73' @ 13.96 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 306.0 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 302.4 min ( 1,050.5 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 82.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.96 hrs HW=83.73' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 244P: unit23

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af, Atten= 95%, Lag= 112.3 min
Discarded = 0.01 cfs @ 13.96 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 83.73' @ 13.96 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 306.0 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 302.4 min ( 1,050.5 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 82.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 13.96 hrs HW=83.73' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 245P: unit 1

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.74" for cornell 010 event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.01 cfs @ 14.12 hrs, Volume= 0.018 af, Atten= 95%, Lag= 122.3 min
Discarded = 0.01 cfs @ 14.12 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 99.78' @ 14.12 hrs Surf.Area= 0.007 ac Storage= 0.009 af

Plug-Flow detention time= 324.5 min calculated for 0.018 af (97% of inflow)
Center-of-Mass det. time= 307.0 min ( 1,055.1 - 748.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 98.00' | 0.006 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.016 af Embedded = 0.014 af x 40.0% Voids |
| #2 | 98.50' | 0.016 af | **Cultec R-902HD** x 11 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 98.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.12 hrs HW=99.78' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 246P: unit 1

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.006 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.016 af Embedded = 0.014 af x 40.0% Voids |
| #2 | 96.00' | 0.016 af | **Cultec R-902HD** x 11 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
└**1=Exfiltration** ( Controls 0.00 cfs)

## Summary for Subcatchment 114S: TO CB 2

Runoff = 1.03 cfs @ 12.09 hrs, Volume= 0.076 af, Depth= 4.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 4,511 | 98 | IMPERVIOUS |
| | 3,863 | 74 | >75% Grass cover, Good, HSG C |
| | 8,374 | 87 | Weighted Average |
| | 3,863 | | 46.13% Pervious Area |
| | 4,511 | | 53.87% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr55 min.** |

## Summary for Subcatchment 119S: TO CB 3

Runoff = 0.57 cfs @ 12.09 hrs, Volume= 0.043 af, Depth= 5.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,172 | 98 | IMPERVIOUS |
| | 1,200 | 74 | >75% Grass cover, Good, HSG C |
| | 4,372 | 91 | Weighted Average |
| | 1,200 | | 27.45% Pervious Area |
| | 3,172 | | 72.55% Impervious Area |

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

## Summary for Subcatchment 153S: TO CB 4

Runoff = 0.99 cfs @ 12.18 hrs, Volume= 0.092 af, Depth= 4.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 5,335 | 98 | IMPERVIOUS |
| | 4,754 | 74 | >75% Grass cover, Good, HSG C |
| | 10,089 | 87 | Weighted Average |
| | 4,754 | | 47.12% Pervious Area |
| | 5,335 | | 52.88% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.0 | 50 | 0.0800 | 0.07 | | **Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 1.1 | 188 | 0.0320 | 2.88 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 0.2 | 47 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, DE** Paved Kv= 20.3 fps |
| 13.3 | 292 | Total | | | |

## Summary for Subcatchment 155S: TO CB 5

Runoff = 0.58 cfs @ 12.09 hrs, Volume= 0.044 af, Depth= 5.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,072 | 98 | IMPERVIOUS |
| | 1,382 | 74 | >75% Grass cover, Good, HSG C |
| | 4,454 | 91 | Weighted Average |
| | 1,382 | | 31.03% Pervious Area |
| | 3,072 | | 68.97% Impervious Area |

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

## Summary for Subcatchment 166S: CB 6

Runoff = 1.79 cfs @ 12.09 hrs, Volume= 0.131 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 8,834 | 74 | >75% Grass cover, Good, HSG C |
| * | 6,602 | 98 | PAVEMENT, HSG C |
| | 15,436 | 84 | Weighted Average |
| | 8,834 | | 57.23% Pervious Area |
| | 6,602 | | 42.77% Impervious Area |

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

## Summary for Subcatchment 167S: TO CB 1

Runoff = 0.38 cfs @ 12.09 hrs, Volume= 0.030 af, Depth= 5.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,341 | 98 | IMPERVIOUS |
| | 562 | 74 | >75% Grass cover, Good, HSG C |
| | 2,903 | 93 | Weighted Average |
| | 562 | | 19.36% Pervious Area |
| | 2,341 | | 80.64% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.1 | 50 | 0.0600 | 0.16 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37" |
| 0.1 | 22 | 0.0600 | 3.94 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 1.1 | 185 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 6.3 | 257 | Total | | | |

## Summary for Subcatchment 169S: TO DCB 8

Runoff = 9.65 cfs @ 12.36 hrs, Volume= 1.142 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 16,852 | 98 | pavement |
| * | 2,343 | 98 | EXIST HSE |
| | 97,544 | 74 | >75% Grass cover, Good, HSG C |
| | 54,320 | 70 | Woods, Good, HSG C |
| * | 183 | 98 | WALL |
| | 171,242 | 75 | Weighted Average |
| | 151,864 | | 88.68% Pervious Area |
| | 19,378 | | 11.32% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 20.9 | 50 | 0.0200 | 0.04 | | **Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 1.7 | 298 | 0.0330 | 2.92 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 0.7 | 136 | 0.0440 | 3.38 | | **Shallow Concentrated Flow, CD** Unpaved Kv= 16.1 fps |
| 0.2 | 48 | 0.0437 | 4.24 | | **Shallow Concentrated Flow, DE** Paved Kv= 20.3 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, EF** Paved Kv= 20.3 fps |
| 2.6 | 550 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, FG** Paved Kv= 20.3 fps |
| 26.1 | 1,089 | Total | | | |

## Summary for Subcatchment 173S: TO CB 10

Runoff = 0.84 cfs @ 12.09 hrs, Volume= 0.062 af, Depth= 4.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,534 | 98 | IMPERVIOUS |
| | 3,452 | 74 | >75% Grass cover, Good, HSG C |
| | 6,986 | 86 | Weighted Average |
| | 3,452 | | 49.41% Pervious Area |
| | 3,534 | | 50.59% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR55 MIN** |

## Summary for Subcatchment 176S: TO CB 11

Runoff = 0.23 cfs @ 12.08 hrs, Volume= 0.019 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,635 | 98 | IMPERVIOUS |
| | 1,635 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 181S: TO CB 12

Runoff = 1.33 cfs @ 12.09 hrs, Volume= 0.100 af, Depth= 4.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 6,607 | 98 | IMPERVIOUS |
| | 3,879 | 74 | >75% Grass cover, Good, HSG C |
| | 10,486 | 89 | Weighted Average |
| | 3,879 | | 36.99% Pervious Area |
| | 6,607 | | 63.01% Impervious Area |

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

## Summary for Subcatchment 184S: TO CB 13

Runoff = 0.59 cfs @ 12.09 hrs, Volume= 0.044 af, Depth= 5.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,082 | 98 | IMPERVIOUS |
| | 1,497 | 74 | >75% Grass cover, Good, HSG C |
| | 4,579 | 90 | Weighted Average |
| | 1,497 | | 32.69% Pervious Area |
| | 3,082 | | 67.31% Impervious Area |

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

## Summary for Subcatchment 193S: EXIST TO WETLANDS

Runoff = 25.20 cfs @ 12.28 hrs, Volume= 2.684 af, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 321,168 | 70 | Woods, Good, HSG C |
| * | 8,364 | 98 | ROOF, HSG C |
| * | 436 | 98 | CONCRETE, HSG C |
| | 9,975 | 96 | Gravel surface, HSG C |
| | 44,126 | 74 | >75% Grass cover, Good, HSG C |
| * | 10,759 | 98 | PAVEMENT, HSG C |
| | 44,910 | 65 | Brush, Good, HSG C |
| | 439,738 | 72 | Weighted Average |
| | 420,179 | | 95.55% Pervious Area |
| | 19,559 | | 4.45% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 17.8 | 50 | 0.0300 | 0.05 | | **Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 2.5 | 524 | 0.0458 | 3.45 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 20.3 | 574 | Total | | | |

## Summary for Subcatchment 194S: PROP TO WETS

Runoff = 13.30 cfs @ 12.16 hrs, Volume= 1.130 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 62,378 | 70 | Woods, Good, HSG C |
| | 111,644 | 74 | >75% Grass cover, Good, HSG C |
| * | 1,394 | 98 | WALLS, HSG C |
| | 479 | 96 | Gravel surface, HSG B |
| * | 3,703 | 98 | PAVEMENT |
| | 179,598 | 73 | Weighted Average |
| | 174,501 | | 97.16% Pervious Area |
| | 5,097 | | 2.84% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.0 | 50 | 0.0200 | 0.10 | | **Sheet Flow, AB** Grass: Dense n= 0.240 P2= 3.37" |
| 0.5 | 68 | 0.0200 | 2.28 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 0.1 | 24 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 2.6 | 532 | 0.0450 | 3.42 | | **Shallow Concentrated Flow, DE** Unpaved Kv= 16.1 fps |
| 11.2 | 674 | Total | | | |

## Summary for Subcatchment 195S: roof unit2

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 196S: roof unit3

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 200S: roof unit8

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 201S: roof uniT9

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 203S: roof uniT10

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 205S: roof uniT11

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 206S: TO DCB 9

Runoff = 2.17 cfs @ 12.13 hrs, Volume= 0.182 af, Depth= 4.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 11,762 | 98 | pavement |
| | 7,805 | 74 | >75% Grass cover, Good, HSG C |
| | 19,567 | 88 | Weighted Average |
| | 7,805 | | 39.89% Pervious Area |
| | 11,762 | | 60.11% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.0 | 50 | 0.0200 | 0.10 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37" |
| 0.1 | 11 | 0.0200 | 2.28 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 1.6 | 333 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, DE** Paved Kv= 20.3 fps |
| 9.7 | 401 | Total | | | |

## Summary for Subcatchment 207S: roof unit4

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 208S: roof uniT12

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 218S: roof uniT13

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 220S: roof unit5

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 221S: roof uniT14

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 223S: roof unit6

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 224S: roof unit1

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 225S: roof unit7

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 226S: roof uniT15

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 227S: roof uniT16

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 228S: roof uniT17

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 229S: roof uniT18

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 234S: roof uniT19

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 235S: roof uniT20

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 236S: roof uniT21

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 237S: roof uniT22

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 238S: roof uniT23

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 239S: roof uniT24

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 025 Rainfall=6.24"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

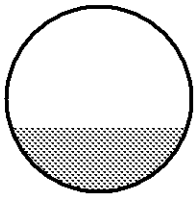
## Summary for Reach 118R: CB 2 TO DMH 1

Inflow Area = 0.192 ac, 53.87% Impervious, Inflow Depth = 4.75" for cornell 025 event
Inflow = 1.03 cfs @ 12.09 hrs, Volume= 0.076 af
Outflow = 1.03 cfs @ 12.09 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.16 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.38 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.87 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0118 '/'
Inlet Invert= 95.91', Outlet Invert= 95.78'



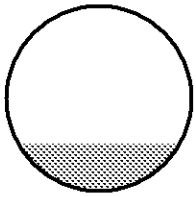
## Summary for Reach 150R: CB 3 TO DMH 1

Inflow Area = 0.100 ac, 72.55% Impervious, Inflow Depth = 5.19" for cornell 025 event
Inflow = 0.57 cfs @ 12.09 hrs, Volume= 0.043 af
Outflow = 0.57 cfs @ 12.09 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.53 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.15 fps, Avg. Travel Time= 0.2 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.87 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0118 '/'
Inlet Invert= 95.91', Outlet Invert= 95.78'



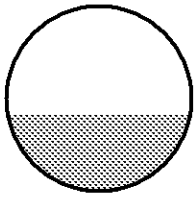
## Summary for Reach 151R: DMH 1 TO DMH 2

Inflow Area = 0.293 ac, 60.28% Impervious, Inflow Depth = 4.90" for cornell 025 event
Inflow = 1.60 cfs @ 12.09 hrs, Volume= 0.119 af
Outflow = 1.59 cfs @ 12.09 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.12 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.66 fps, Avg. Travel Time= 1.4 min

Peak Storage= 43 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.37 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 138.0' Slope= 0.0151 '/'
Inlet Invert= 95.68', Outlet Invert= 93.60'



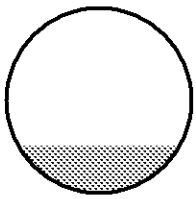
## Summary for Reach 157R: CB 5 TO DMH 3

Inflow Area = 0.102 ac, 68.97% Impervious, Inflow Depth = 5.19" for cornell 025 event
Inflow = 0.58 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.58 cfs @ 12.09 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.64 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.19 fps, Avg. Travel Time= 0.2 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.02 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0127 '/'
Inlet Invert= 90.86', Outlet Invert= 90.72'



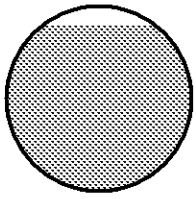
## Summary for Reach 158R: DMH 3 TO HYDRO2

Inflow Area = 0.626 ac, 58.96% Impervious, Inflow Depth = 4.89" for cornell 025 event
Inflow = 2.97 cfs @ 12.11 hrs, Volume= 0.255 af
Outflow = 2.97 cfs @ 12.11 hrs, Volume= 0.255 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.05 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.50 fps, Avg. Travel Time= 0.4 min

Peak Storage= 29 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.89'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.79 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 39.0' Slope= 0.0062 '/'
Inlet Invert= 90.39', Outlet Invert= 90.15'



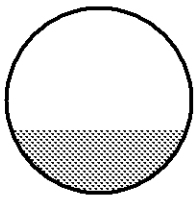
## Summary for Reach 160R: CB 4 TO DMH 3

Inflow Area = 0.232 ac, 52.88% Impervious, Inflow Depth = 4.75" for cornell 025 event
Inflow = 0.99 cfs @ 12.18 hrs, Volume= 0.092 af
Outflow = 0.99 cfs @ 12.18 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.22 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.49 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.02 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0127 '/'
Inlet Invert= 90.86', Outlet Invert= 90.72'



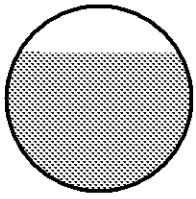
## Summary for Reach 164R: HYDRO2 BASIN 3

Inflow Area = 0.626 ac, 58.96% Impervious, Inflow Depth = 4.89" for cornell 025 event
Inflow = 2.97 cfs @ 12.11 hrs, Volume= 0.255 af
Outflow = 2.97 cfs @ 12.11 hrs, Volume= 0.255 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.69 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.67 fps, Avg. Travel Time= 0.1 min

Peak Storage= 4 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.75'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.25 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 6.0' Slope= 0.0083 '/'
Inlet Invert= 90.05', Outlet Invert= 90.00'



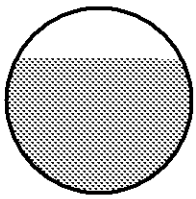
## Summary for Reach 168R: DCB 8 TO DMH 4

Inflow Area = 3.931 ac, 11.32% Impervious, Inflow Depth = 3.49" for cornell 025 event
Inflow = 9.65 cfs @ 12.36 hrs, Volume= 1.142 af
Outflow = 9.65 cfs @ 12.36 hrs, Volume= 1.142 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.95 fps, Avg. Travel Time= 0.1 min

Peak Storage= 15 cf @ 12.36 hrs
Average Depth at Peak Storage= 1.09'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.97 cfs

18.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0109 '/'
Inlet Invert= 79.77', Outlet Invert= 79.65'



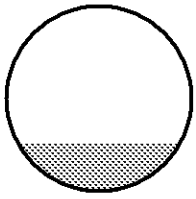
## Summary for Reach 169R: CB 1 TO HYDRO 1

Inflow Area = 0.067 ac, 80.64% Impervious, Inflow Depth = 5.42" for cornell 025 event
Inflow = 0.38 cfs @ 12.09 hrs, Volume= 0.030 af
Outflow = 0.38 cfs @ 12.09 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.31 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.76 fps, Avg. Travel Time= 0.5 min

Peak Storage= 4 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 24.0' Slope= 0.0050 '/'
Inlet Invert= 102.27', Outlet Invert= 102.15'



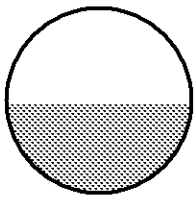
## Summary for Reach 171R: DCB 9 TO DMH 4

Inflow Area = 0.449 ac, 60.11% Impervious, Inflow Depth = 4.86" for cornell 025 event
Inflow = 2.17 cfs @ 12.13 hrs, Volume= 0.182 af
Outflow = 2.17 cfs @ 12.13 hrs, Volume= 0.182 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.82 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.02 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.66 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 7.0' Slope= 0.0171 '/'
Inlet Invert= 80.27', Outlet Invert= 80.15'



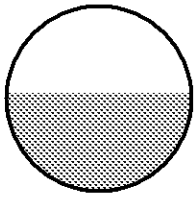
## Summary for Reach 172R: DMH 4 HYDRO3

Inflow Area = 4.380 ac, 16.32% Impervious, Inflow Depth = 3.63" for cornell 025 event
Inflow = 10.70 cfs @ 12.34 hrs, Volume= 1.324 af
Outflow = 10.70 cfs @ 12.35 hrs, Volume= 1.324 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.21 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.26 fps, Avg. Travel Time= 0.4 min

Peak Storage= 86 cf @ 12.35 hrs
Average Depth at Peak Storage= 1.08'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 18.93 cfs

24.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 50.0' Slope= 0.0070 '/'
Inlet Invert= 79.05', Outlet Invert= 78.70'



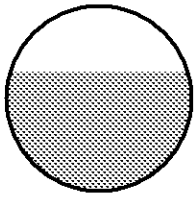
## Summary for Reach 173R: CB 6 TO HYDRO 4

Inflow Area = 0.354 ac, 42.77% Impervious, Inflow Depth = 4.42" for cornell 025 event
Inflow = 1.79 cfs @ 12.09 hrs, Volume= 0.131 af
Outflow = 1.79 cfs @ 12.09 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.32 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.17 fps, Avg. Travel Time= 0.6 min

Peak Storage= 24 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.65'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.38 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 45.0' Slope= 0.0044 '/'
Inlet Invert= 97.50', Outlet Invert= 97.30'



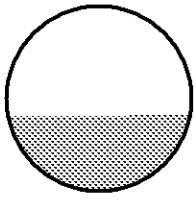
## Summary for Reach 174R: HYDRO 4 TO CHAMBERS 2

Inflow Area = 0.354 ac, 42.77% Impervious, Inflow Depth = 4.42" for cornell 025 event
Inflow = 1.79 cfs @ 12.09 hrs, Volume= 0.131 af
Outflow = 1.79 cfs @ 12.09 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.86 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.99 fps, Avg. Travel Time= 0.0 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.04 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0200 '/'
Inlet Invert= 97.30', Outlet Invert= 97.20'



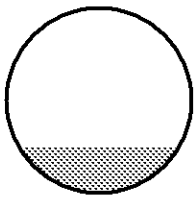
## Summary for Reach 175R: CB 10 TO DMH 7

Inflow Area = 0.160 ac, 50.59% Impervious, Inflow Depth = 4.64" for cornell 025 event
Inflow = 0.84 cfs @ 12.09 hrs, Volume= 0.062 af
Outflow = 0.84 cfs @ 12.09 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.59 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.85 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.32 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 14.0' Slope= 0.0314 '/'
Inlet Invert= 84.79', Outlet Invert= 84.35'



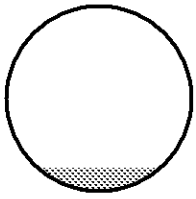
## Summary for Reach 178R: CB 11 TO DMH 7

Inflow Area = 0.038 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.23 cfs @ 12.08 hrs, Volume= 0.019 af
Outflow = 0.23 cfs @ 12.08 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.80 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.26 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.32 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 14.0' Slope= 0.0314 '/'
Inlet Invert= 84.79', Outlet Invert= 84.35'



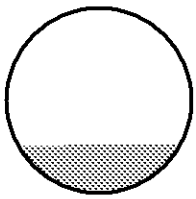
## Summary for Reach 179R: DMH 7 TO DMH 6

Inflow Area = 0.198 ac, 59.96% Impervious, Inflow Depth = 4.90" for cornell 025 event
Inflow = 1.07 cfs @ 12.09 hrs, Volume= 0.081 af
Outflow = 1.07 cfs @ 12.09 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.51 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.99 fps, Avg. Travel Time= 0.8 min

Peak Storage= 15 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.13 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 93.0' Slope= 0.0400 '/'
Inlet Invert= 84.25', Outlet Invert= 80.53'



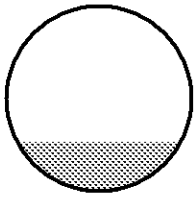
## Summary for Reach 181R: HYDRO 1 TO CHAMB 1

Inflow Area = 0.067 ac, 80.64% Impervious, Inflow Depth = 5.42" for cornell 025 event
Inflow = 0.38 cfs @ 12.09 hrs, Volume= 0.030 af
Outflow = 0.38 cfs @ 12.09 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.24 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 0.3 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.40 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0045 '/'
Inlet Invert= 102.05', Outlet Invert= 102.00'



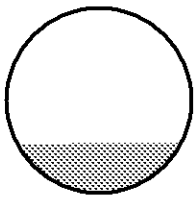
## Summary for Reach 182R: HYDRO 3 TO CHAMBERS 3

Inflow Area = 4.578 ac, 18.21% Impervious, Inflow Depth = 3.68" for cornell 025 event
Inflow = 11.10 cfs @ 12.34 hrs, Volume= 1.405 af
Outflow = 11.10 cfs @ 12.34 hrs, Volume= 1.405 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 15.92 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 5.24 fps, Avg. Travel Time= 0.0 min

Peak Storage= 3 cf @ 12.34 hrs
Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 67.87 cfs

24.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0900 '/'
Inlet Invert= 78.95', Outlet Invert= 78.50'



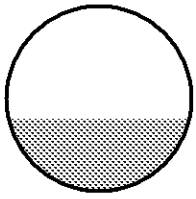
## Summary for Reach 183R: CB 12 TO DMH 5

Inflow Area = 0.241 ac, 63.01% Impervious, Inflow Depth = 4.97" for cornell 025 event
Inflow = 1.33 cfs @ 12.09 hrs, Volume= 0.100 af
Outflow = 1.33 cfs @ 12.09 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.67 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.55 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.11 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 12.0' Slope= 0.0133 '/'
Inlet Invert= 79.05', Outlet Invert= 78.89'



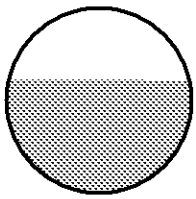
## Summary for Reach 184R: HYDRO5 BASIN 4

Inflow Area = 0.346 ac, 64.31% Impervious, Inflow Depth = 5.00" for cornell 025 event
Inflow = 1.92 cfs @ 12.09 hrs, Volume= 0.144 af
Outflow = 1.92 cfs @ 12.09 hrs, Volume= 0.144 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.79 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.29 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.61'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.76 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0060 '/'
Inlet Invert= 78.53', Outlet Invert= 78.50'



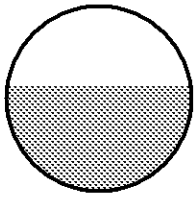
## Summary for Reach 185R: DMH 6 TO HYDRO 3

Inflow Area = 0.198 ac, 59.96% Impervious, Inflow Depth = 4.90" for cornell 025 event
Inflow = 1.07 cfs @ 12.09 hrs, Volume= 0.081 af
Outflow = 1.07 cfs @ 12.09 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.26 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.72 fps, Avg. Travel Time= 0.8 min

Peak Storage= 17 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 1.68 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 36.0' Slope= 0.0022 '/'
Inlet Invert= 79.33', Outlet Invert= 79.25'



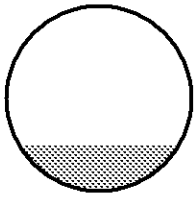
## Summary for Reach 186R: CB 13 TO DMH 5

Inflow Area = 0.105 ac, 67.31% Impervious, Inflow Depth = 5.08" for cornell 025 event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.59 cfs @ 12.09 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.83 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.25 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.30 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0145 '/'
Inlet Invert= 79.05', Outlet Invert= 78.89'



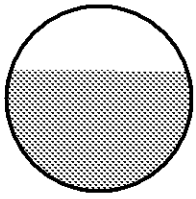
## Summary for Reach 187R: DMH 5 TO HYDRO 5

Inflow Area = 0.346 ac, 64.31% Impervious, Inflow Depth = 5.00" for cornell 025 event
Inflow = 1.92 cfs @ 12.09 hrs, Volume= 0.144 af
Outflow = 1.92 cfs @ 12.09 hrs, Volume= 0.144 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.53 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.21 fps, Avg. Travel Time= 0.4 min

Peak Storage= 17 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.65'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 32.0' Slope= 0.0050 '/'
Inlet Invert= 78.79', Outlet Invert= 78.63'



## Summary for Reach 195R: POST TO WETS

Inflow Area = 9.719 ac, 16.34% Impervious, Inflow Depth = 3.22" for cornell 025 event
Inflow = 23.44 cfs @ 12.17 hrs, Volume= 2.606 af
Outflow = 23.44 cfs @ 12.17 hrs, Volume= 2.606 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

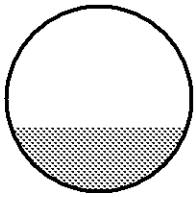
## Summary for Reach 245R: DMH 2 TO DMH 3

Inflow Area = 0.293 ac, 60.28% Impervious, Inflow Depth = 4.90" for cornell 025 event
Inflow = 1.59 cfs @ 12.09 hrs, Volume= 0.119 af
Outflow = 1.59 cfs @ 12.10 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.47 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.09 fps, Avg. Travel Time= 0.8 min

Peak Storage= 25 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.06 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 104.0' Slope= 0.0289 '/'
Inlet Invert= 93.50', Outlet Invert= 90.49'



## Summary for Pond 1P: unit 4

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.59 hrs, Volume= 0.020 af, Atten= 96%, Lag= 150.1 min
Discarded = 0.01 cfs @ 14.59 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 98.43' @ 14.59 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 363.2 min calculated for 0.020 af (87% of inflow)
Center-of-Mass det. time= 303.2 min ( 1,047.8 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 96.10' | 0.006 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.016 af Embedded = 0.014 af x 40.0% Voids |
| #2 | 96.60' | 0.016 af | **Cultec R-902HD** x 11 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 96.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.59 hrs HW=98.43' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 3P: unit7

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af, Atten= 95%, Lag= 129.8 min
Discarded = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 101.91' @ 14.25 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 350.5 min calculated for 0.021 af (90% of inflow)
Center-of-Mass det. time= 301.4 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 99.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.25 hrs HW=101.91' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 14P: unit5

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af, Atten= 95%, Lag= 129.8 min
Discarded = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 106.01' @ 14.25 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 350.5 min calculated for 0.021 af (90% of inflow)
Center-of-Mass det. time= 301.4 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 103.20' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 103.70' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |

6 Rows of 1 Chambers
Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf

0.018 af Total Available Storage

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 103.20' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.25 hrs HW=106.01' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 116P: CB 2

Inflow Area = 0.192 ac, 53.87% Impervious, Inflow Depth = 4.75" for cornell 025 event
Inflow = 1.03 cfs @ 12.09 hrs, Volume= 0.076 af
Outflow = 1.03 cfs @ 12.09 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min
Primary = 1.03 cfs @ 12.09 hrs, Volume= 0.076 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.36' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 95.91' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.01 cfs @ 12.09 hrs HW=96.36' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.01 cfs @ 2.28 fps)

## Summary for Pond 149P: CB 3

Inflow Area = 0.100 ac, 72.55% Impervious, Inflow Depth = 5.19" for cornell 025 event
Inflow = 0.57 cfs @ 12.09 hrs, Volume= 0.043 af
Outflow = 0.57 cfs @ 12.09 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min
Primary = 0.57 cfs @ 12.09 hrs, Volume= 0.043 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.24' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 95.91' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.56 cfs @ 12.09 hrs HW=96.24' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.56 cfs @ 1.96 fps)

## Summary for Pond 156P: CB 5

Inflow Area = 0.102 ac, 68.97% Impervious, Inflow Depth = 5.19" for cornell 025 event
Inflow = 0.58 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.58 cfs @ 12.09 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min
Primary = 0.58 cfs @ 12.09 hrs, Volume= 0.044 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 91.24' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 90.86' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.57 cfs @ 12.09 hrs HW=91.24' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.57 cfs @ 2.10 fps)

## Summary for Pond 159P: CB 5

Inflow Area = 0.232 ac, 52.88% Impervious, Inflow Depth = 4.75" for cornell 025 event
Inflow = 0.99 cfs @ 12.18 hrs, Volume= 0.092 af
Outflow = 0.99 cfs @ 12.18 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min
Primary = 0.99 cfs @ 12.18 hrs, Volume= 0.092 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 91.37' @ 12.18 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 90.86' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.98 cfs @ 12.18 hrs HW=91.37' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.98 cfs @ 2.43 fps)

## Summary for Pond 167P: DCB 8

Inflow Area = 3.931 ac, 11.32% Impervious, Inflow Depth = 3.49" for cornell 025 event
Inflow = 9.65 cfs @ 12.36 hrs, Volume= 1.142 af
Outflow = 9.65 cfs @ 12.36 hrs, Volume= 1.142 af, Atten= 0%, Lag= 0.0 min
Primary = 9.65 cfs @ 12.36 hrs, Volume= 1.142 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 81.81' @ 12.36 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.77' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=9.64 cfs @ 12.36 hrs HW=81.80' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 9.64 cfs @ 5.46 fps)

## Summary for Pond 168P: CB 1

Inflow Area = 0.067 ac, 80.64% Impervious, Inflow Depth = 5.42" for cornell 025 event
Inflow = 0.38 cfs @ 12.09 hrs, Volume= 0.030 af
Outflow = 0.38 cfs @ 12.09 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min
Primary = 0.38 cfs @ 12.09 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 102.58' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 102.27' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.38 cfs @ 12.09 hrs HW=102.57' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.38 cfs @ 1.88 fps)

## Summary for Pond 170P: DCB 9

Inflow Area = 0.449 ac, 60.11% Impervious, Inflow Depth = 4.86" for cornell 025 event
Inflow = 2.17 cfs @ 12.13 hrs, Volume= 0.182 af
Outflow = 2.17 cfs @ 12.13 hrs, Volume= 0.182 af, Atten= 0%, Lag= 0.0 min
Primary = 2.17 cfs @ 12.13 hrs, Volume= 0.182 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 81.10' @ 12.13 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 80.27' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=2.13 cfs @ 12.13 hrs HW=81.09' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 2.13 cfs @ 3.09 fps)

## Summary for Pond 171P: CHAMBERS UNIT 1

Inflow Area = 0.112 ac, 88.52% Impervious, Inflow Depth = 5.66" for cornell 025 event
Inflow = 0.66 cfs @ 12.09 hrs, Volume= 0.053 af
Outflow = 0.03 cfs @ 14.66 hrs, Volume= 0.050 af, Atten= 95%, Lag= 154.6 min
Discarded = 0.03 cfs @ 14.66 hrs, Volume= 0.050 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 100.89' @ 14.66 hrs Surf.Area= 0.023 ac Storage= 0.027 af

Plug-Flow detention time= 351.5 min calculated for 0.050 af (94% of inflow)
Center-of-Mass det. time= 316.9 min ( 1,077.5 - 760.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.030 af | **20.40'W x 49.50'L x 5.00'H Prismatoid**<br>0.116 af Overall - 0.042 af Embedded = 0.074 af x 40.0% Voids |
| #2 | 99.60' | 0.042 af | **Cultec R-902HD** x 28 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>4 Rows of 7 Chambers<br>Cap Storage= +2.8 cf x 2 x 4 rows = 22.1 cf |
| | | 0.072 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.03 cfs @ 14.66 hrs HW=100.89' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

## Summary for Pond 174P: CB 10

Inflow Area = 0.160 ac, 50.59% Impervious, Inflow Depth = 4.64" for cornell 025 event
Inflow = 0.84 cfs @ 12.09 hrs, Volume= 0.062 af
Outflow = 0.84 cfs @ 12.09 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min
Primary = 0.84 cfs @ 12.09 hrs, Volume= 0.062 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 85.26' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 84.79' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.83 cfs @ 12.09 hrs HW=85.25' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.83 cfs @ 2.32 fps)

## Summary for Pond 175P: CHAMBERS UNIT 2

Inflow Area = 0.354 ac, 42.77% Impervious, Inflow Depth = 4.42" for cornell 025 event
Inflow = 1.79 cfs @ 12.09 hrs, Volume= 0.131 af
Outflow = 0.06 cfs @ 15.90 hrs, Volume= 0.093 af, Atten= 97%, Lag= 228.4 min
Discarded = 0.06 cfs @ 15.90 hrs, Volume= 0.093 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 97.97' @ 15.90 hrs Surf.Area= 0.046 ac Storage= 0.078 af

Plug-Flow detention time= 422.2 min calculated for 0.093 af (71% of inflow)
Center-of-Mass det. time= 331.9 min ( 1,134.3 - 802.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.056 af | **28.78'W x 69.33'L x 5.00'H Prismatoid**<br>0.229 af Overall - 0.090 af Embedded = 0.139 af x 40.0% Voids |
| #2 | 96.00' | 0.090 af | **Cultec R-902HD** x 60 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 10 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.146 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.06 cfs @ 15.90 hrs HW=97.97' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

## Summary for Pond 176P: CB 6

Inflow Area = 0.354 ac, 42.77% Impervious, Inflow Depth = 4.42" for cornell 025 event
Inflow = 1.79 cfs @ 12.09 hrs, Volume= 0.131 af
Outflow = 1.79 cfs @ 12.09 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min
Primary = 1.79 cfs @ 12.09 hrs, Volume= 0.131 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 98.23' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 97.50' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.76 cfs @ 12.09 hrs HW=98.22' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.76 cfs @ 2.90 fps)

## Summary for Pond 177P: CB 11

Inflow Area = 0.038 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.23 cfs @ 12.08 hrs, Volume= 0.019 af
Outflow = 0.23 cfs @ 12.08 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min
Primary = 0.23 cfs @ 12.08 hrs, Volume= 0.019 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 85.02' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 84.79' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.23 cfs @ 12.08 hrs HW=85.02' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.23 cfs @ 1.64 fps)

## Summary for Pond 178P: unit 1

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.59 hrs, Volume= 0.020 af, Atten= 96%, Lag= 150.1 min
Discarded = 0.01 cfs @ 14.59 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 97.83' @ 14.59 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 363.2 min calculated for 0.020 af (87% of inflow)
Center-of-Mass det. time= 303.2 min ( 1,047.8 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.006 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.016 af Embedded = 0.014 af x 40.0% Voids |
| #2 | 96.00' | 0.016 af | **Cultec R-902HD** x 11 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.59 hrs HW=97.83' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 182P: CB 12

Inflow Area = 0.241 ac, 63.01% Impervious, Inflow Depth = 4.97" for cornell 025 event
Inflow = 1.33 cfs @ 12.09 hrs, Volume= 0.100 af
Outflow = 1.33 cfs @ 12.09 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min
Primary = 1.33 cfs @ 12.09 hrs, Volume= 0.100 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.66' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.05' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.31 cfs @ 12.09 hrs HW=79.65' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.31 cfs @ 2.65 fps)

## Summary for Pond 185P: CB 13

Inflow Area = 0.105 ac, 67.31% Impervious, Inflow Depth = 5.08" for cornell 025 event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.59 cfs @ 12.09 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min
Primary = 0.59 cfs @ 12.09 hrs, Volume= 0.044 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.44' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.05' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.58 cfs @ 12.09 hrs HW=79.43' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.58 cfs @ 2.11 fps)

## Summary for Pond 190P: CHAMBERS UNIT 4

Inflow Area = 4.924 ac, 21.44% Impervious, Inflow Depth = 3.78" for cornell 025 event
Inflow = 11.83 cfs @ 12.33 hrs, Volume= 1.549 af
Outflow = 11.77 cfs @ 12.35 hrs, Volume= 1.499 af, Atten= 0%, Lag= 1.6 min
Discarded = 0.06 cfs @ 12.35 hrs, Volume= 0.095 af
Primary = 11.71 cfs @ 12.35 hrs, Volume= 1.403 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 80.01' @ 12.35 hrs Surf.Area= 0.039 ac Storage= 0.110 af

Plug-Flow detention time= 43.7 min calculated for 1.499 af (97% of inflow)
Center-of-Mass det. time= 24.9 min ( 854.3 - 829.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 76.00' | 0.045 af | **24.50'W x 69.00'L x 5.00'H Prismatoid**<br>0.194 af Overall - 0.082 af Embedded = 0.112 af x 40.0% Voids |
| #2 | 76.50' | 0.082 af | **Cultec R-902HD** x 55 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>5 Rows of 11 Chambers<br>Cap Storage= +2.8 cf x 2 x 5 rows = 27.6 cf |
| | | 0.127 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 76.00' | **1.020 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 78.40' | **24.0" Vert. Orifice/Grate** C= 0.600 |

**Discarded OutFlow** Max=0.06 cfs @ 12.35 hrs HW=80.01' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

**Primary OutFlow** Max=11.70 cfs @ 12.35 hrs HW=80.01' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 11.70 cfs @ 4.32 fps)

## Summary for Pond 193P: CHAMBERS UNIT 3

Inflow Area = 0.672 ac, 61.75% Impervious, Inflow Depth = 4.97" for cornell 025 event
Inflow = 3.23 cfs @ 12.11 hrs, Volume= 0.278 af
Outflow = 0.71 cfs @ 12.58 hrs, Volume= 0.199 af, Atten= 78%, Lag= 28.4 min
Discarded = 0.07 cfs @ 12.58 hrs, Volume= 0.126 af
Primary = 0.63 cfs @ 12.58 hrs, Volume= 0.073 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 90.48' @ 12.58 hrs Surf.Area= 0.057 ac Storage= 0.135 af

Plug-Flow detention time= 293.0 min calculated for 0.199 af (71% of inflow)
Center-of-Mass det. time= 203.3 min ( 991.6 - 788.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.10' | 0.066 af | **43.00'W x 57.30'L x 5.00'H Prismatoid**<br>0.283 af Overall - 0.117 af Embedded = 0.166 af x 40.0% Voids |
| #2 | 87.60' | 0.117 af | **Cultec R-902HD** x 78 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 13 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.183 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.10' | **1.020 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 90.00' | **8.0" Vert. Orifice/Grate** C= 0.600 |

**Discarded OutFlow** Max=0.07 cfs @ 12.58 hrs HW=90.48' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

**Primary OutFlow** Max=0.63 cfs @ 12.58 hrs HW=90.48' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 0.63 cfs @ 2.35 fps)

## Summary for Pond 197P: unit6

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af, Atten= 95%, Lag= 129.8 min
Discarded = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 101.91' @ 14.25 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 350.5 min calculated for 0.021 af (90% of inflow)
Center-of-Mass det. time= 301.4 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 99.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.25 hrs HW=101.91' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 198P: unit8

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.02 cfs @ 13.94 hrs, Volume= 0.023 af, Atten= 95%, Lag= 111.5 min
Discarded = 0.02 cfs @ 13.94 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.25' @ 13.94 hrs Surf.Area= 0.009 ac Storage= 0.011 af

Plug-Flow detention time= 295.2 min calculated for 0.023 af (100% of inflow)
Center-of-Mass det. time= 294.7 min ( 1,039.3 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 94.10' | 0.013 af | **8.50'W x 47.10'L x 4.50'H Prismatoid**<br>0.041 af Overall - 0.010 af Embedded = 0.032 af x 40.0% Voids |
| #2 | 94.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 94.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 13.94 hrs HW=96.25' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 202P: unit9

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af, Atten= 95%, Lag= 129.8 min
Discarded = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 93.41' @ 14.25 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 350.5 min calculated for 0.021 af (90% of inflow)
Center-of-Mass det. time= 301.4 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 90.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 91.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 90.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.25 hrs HW=93.41' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 204P: unit10

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af, Atten= 95%, Lag= 129.8 min
Discarded = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 92.41' @ 14.25 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 350.5 min calculated for 0.021 af (90% of inflow)
Center-of-Mass det. time= 301.4 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 89.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 90.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 89.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.25 hrs HW=92.41' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 206P: unit11

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af, Atten= 95%, Lag= 129.8 min
Discarded = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 95.61' @ 14.25 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 350.5 min calculated for 0.021 af (90% of inflow)
Center-of-Mass det. time= 301.4 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 92.80' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 93.30' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 92.80' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.25 hrs HW=95.61' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 209P: unit12

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af, Atten= 95%, Lag= 129.8 min
Discarded = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.31' @ 14.25 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 350.5 min calculated for 0.021 af (90% of inflow)
Center-of-Mass det. time= 301.4 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 93.50' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 94.00' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 93.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.25 hrs HW=96.31' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 219P: unit13

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af, Atten= 95%, Lag= 129.8 min
Discarded = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 94.61' @ 14.25 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 350.5 min calculated for 0.021 af (90% of inflow)
Center-of-Mass det. time= 301.4 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 91.80' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 92.30' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 91.80' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.25 hrs HW=94.61' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 222P: unit14

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af, Atten= 95%, Lag= 129.8 min
Discarded = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 89.81' @ 14.25 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 350.5 min calculated for 0.021 af (90% of inflow)
Center-of-Mass det. time= 301.4 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.00' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 87.50' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.25 hrs HW=89.81' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 230P: unit15

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af, Atten= 95%, Lag= 129.8 min
Discarded = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 89.81' @ 14.25 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 350.5 min calculated for 0.021 af (90% of inflow)
Center-of-Mass det. time= 301.4 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.00' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 87.50' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.25 hrs HW=89.81' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 231P: unit16

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af, Atten= 95%, Lag= 129.8 min
Discarded = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 84.41' @ 14.25 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 350.5 min calculated for 0.021 af (90% of inflow)
Center-of-Mass det. time= 301.4 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 82.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.25 hrs HW=84.41' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 232P: unit17

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af, Atten= 95%, Lag= 129.8 min
Discarded = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 81.61' @ 14.25 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 350.5 min calculated for 0.021 af (90% of inflow)
Center-of-Mass det. time= 301.4 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 78.80' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 79.30' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 78.80' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.25 hrs HW=81.61' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 233P: unit18

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af, Atten= 95%, Lag= 129.8 min
Discarded = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 77.71' @ 14.25 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 350.5 min calculated for 0.021 af (90% of inflow)
Center-of-Mass det. time= 301.4 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 74.90' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 75.40' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 74.90' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.25 hrs HW=77.71' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 240P: unit19

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af, Atten= 95%, Lag= 129.8 min
Discarded = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.11' @ 14.25 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 350.5 min calculated for 0.021 af (90% of inflow)
Center-of-Mass det. time= 301.4 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 76.30' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 76.80' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 76.30' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.25 hrs HW=79.11' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 241P: unit20

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af, Atten= 95%, Lag= 129.8 min
Discarded = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.91' @ 14.25 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 350.5 min calculated for 0.021 af (90% of inflow)
Center-of-Mass det. time= 301.4 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 77.10' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 77.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 77.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.25 hrs HW=79.91' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 242P: unit21

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af, Atten= 95%, Lag= 129.8 min
Discarded = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 82.91' @ 14.25 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 350.5 min calculated for 0.021 af (90% of inflow)
Center-of-Mass det. time= 301.4 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 80.10' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 80.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 80.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.25 hrs HW=82.91' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 243P: unit22

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af, Atten= 95%, Lag= 129.8 min
Discarded = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 84.41' @ 14.25 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 350.5 min calculated for 0.021 af (90% of inflow)
Center-of-Mass det. time= 301.4 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 82.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.25 hrs HW=84.41' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 244P: unit23

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af, Atten= 95%, Lag= 129.8 min
Discarded = 0.01 cfs @ 14.25 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 84.41' @ 14.25 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 350.5 min calculated for 0.021 af (90% of inflow)
Center-of-Mass det. time= 301.4 min ( 1,046.0 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 82.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.25 hrs HW=84.41' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 245P: unit 1

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 6.00" for cornell 025 event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.01 cfs @ 14.59 hrs, Volume= 0.020 af, Atten= 96%, Lag= 150.1 min
Discarded = 0.01 cfs @ 14.59 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 100.33' @ 14.59 hrs Surf.Area= 0.007 ac Storage= 0.012 af

Plug-Flow detention time= 363.2 min calculated for 0.020 af (87% of inflow)
Center-of-Mass det. time= 303.2 min ( 1,047.8 - 744.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 98.00' | 0.006 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.016 af Embedded = 0.014 af x 40.0% Voids |
| #2 | 98.50' | 0.016 af | **Cultec R-902HD** x 11 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 98.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.01 cfs @ 14.59 hrs HW=100.33' (Free Discharge)
**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

## Summary for Pond 246P: unit 1

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.006 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.016 af Embedded = 0.014 af x 40.0% Voids |
| #2 | 96.00' | 0.016 af | **Cultec R-902HD** x 11 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
**1=Exfiltration** ( Controls 0.00 cfs)

## Summary for Subcatchment 114S: TO CB 2

Runoff = 1.53 cfs @ 12.09 hrs, Volume= 0.116 af, Depth= 7.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 4,511 | 98 | IMPERVIOUS |
| | 3,863 | 74 | >75% Grass cover, Good, HSG C |
| | 8,374 | 87 | Weighted Average |
| | 3,863 | | 46.13% Pervious Area |
| | 4,511 | | 53.87% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, tr55 min.** |

## Summary for Subcatchment 119S: TO CB 3

Runoff = 0.83 cfs @ 12.08 hrs, Volume= 0.065 af, Depth= 7.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,172 | 98 | IMPERVIOUS |
| | 1,200 | 74 | >75% Grass cover, Good, HSG C |
| | 4,372 | 91 | Weighted Average |
| | 1,200 | | 27.45% Pervious Area |
| | 3,172 | | 72.55% Impervious Area |

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

## Summary for Subcatchment 153S: TO CB 4

Runoff = 1.48 cfs @ 12.18 hrs, Volume= 0.140 af, Depth= 7.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 5,335 | 98 | IMPERVIOUS |
| | 4,754 | 74 | >75% Grass cover, Good, HSG C |
| | 10,089 | 87 | Weighted Average |
| | 4,754 | | 47.12% Pervious Area |
| | 5,335 | | 52.88% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.0 | 50 | 0.0800 | 0.07 | | **Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 1.1 | 188 | 0.0320 | 2.88 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 0.2 | 47 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, DE** Paved Kv= 20.3 fps |
| 13.3 | 292 | Total | | | |

## Summary for Subcatchment 155S: TO CB 5

Runoff = 0.85 cfs @ 12.08 hrs, Volume= 0.066 af, Depth= 7.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,072 | 98 | IMPERVIOUS |
| | 1,382 | 74 | >75% Grass cover, Good, HSG C |
| | 4,454 | 91 | Weighted Average |
| | 1,382 | | 31.03% Pervious Area |
| | 3,072 | | 68.97% Impervious Area |

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

## Summary for Subcatchment 166S: CB 6

Runoff = 2.72 cfs @ 12.09 hrs, Volume= 0.203 af, Depth= 6.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 8,834 | 74 | >75% Grass cover, Good, HSG C |
| * | 6,602 | 98 | PAVEMENT, HSG C |
| | 15,436 | 84 | Weighted Average |
| | 8,834 | | 57.23% Pervious Area |
| | 6,602 | | 42.77% Impervious Area |

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

## Summary for Subcatchment 167S: TO CB 1

Runoff = 0.55 cfs @ 12.09 hrs, Volume= 0.044 af, Depth= 7.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,341 | 98 | IMPERVIOUS |
| | 562 | 74 | >75% Grass cover, Good, HSG C |
| | 2,903 | 93 | Weighted Average |
| | 562 | | 19.36% Pervious Area |
| | 2,341 | | 80.64% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.1 | 50 | 0.0600 | 0.16 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37" |
| 0.1 | 22 | 0.0600 | 3.94 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 1.1 | 185 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 6.3 | 257 | Total | | | |

## Summary for Subcatchment 169S: TO DCB 8

Runoff = 15.89 cfs @ 12.36 hrs, Volume= 1.890 af, Depth= 5.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 16,852 | 98 | pavement |
| * | 2,343 | 98 | EXIST HSE |
| | 97,544 | 74 | >75% Grass cover, Good, HSG C |
| | 54,320 | 70 | Woods, Good, HSG C |
| * | 183 | 98 | WALL |
| | 171,242 | 75 | Weighted Average |
| | 151,864 | | 88.68% Pervious Area |
| | 19,378 | | 11.32% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 20.9 | 50 | 0.0200 | 0.04 | | **Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 1.7 | 298 | 0.0330 | 2.92 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 0.7 | 136 | 0.0440 | 3.38 | | **Shallow Concentrated Flow, CD** Unpaved Kv= 16.1 fps |
| 0.2 | 48 | 0.0437 | 4.24 | | **Shallow Concentrated Flow, DE** Paved Kv= 20.3 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, EF** Paved Kv= 20.3 fps |
| 2.6 | 550 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, FG** Paved Kv= 20.3 fps |
| 26.1 | 1,089 | Total | | | |

## Summary for Subcatchment 173S: TO CB 10

Runoff = 1.26 cfs @ 12.09 hrs, Volume= 0.095 af, Depth= 7.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,534 | 98 | IMPERVIOUS |
| | 3,452 | 74 | >75% Grass cover, Good, HSG C |
| | 6,986 | 86 | Weighted Average |
| | 3,452 | | 49.41% Pervious Area |
| | 3,534 | | 50.59% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR55 MIN** |

## Summary for Subcatchment 176S: TO CB 11

Runoff = 0.32 cfs @ 12.08 hrs, Volume= 0.027 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,635 | 98 | IMPERVIOUS |
| | 1,635 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 181S: TO CB 12

Runoff = 1.96 cfs @ 12.09 hrs, Volume= 0.150 af, Depth= 7.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 6,607 | 98 | IMPERVIOUS |
| | 3,879 | 74 | >75% Grass cover, Good, HSG C |
| | 10,486 | 89 | Weighted Average |
| | 3,879 | | 36.99% Pervious Area |
| | 6,607 | | 63.01% Impervious Area |

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

## Summary for Subcatchment 184S: TO CB 13

Runoff = 0.86 cfs @ 12.08 hrs, Volume= 0.067 af, Depth= 7.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 3,082 | 98 | IMPERVIOUS |
| | 1,497 | 74 | >75% Grass cover, Good, HSG C |
| | 4,579 | 90 | Weighted Average |
| | 1,497 | | 32.69% Pervious Area |
| | 3,082 | | 67.31% Impervious Area |

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

## Summary for Subcatchment 193S: EXIST TO WETLANDS

Runoff = 42.74 cfs @ 12.28 hrs, Volume= 4.545 af, Depth= 5.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 321,168 | 70 | Woods, Good, HSG C |
| * | 8,364 | 98 | ROOF, HSG C |
| * | 436 | 98 | CONCRETE, HSG C |
| | 9,975 | 96 | Gravel surface, HSG C |
| | 44,126 | 74 | >75% Grass cover, Good, HSG C |
| * | 10,759 | 98 | PAVEMENT, HSG C |
| | 44,910 | 65 | Brush, Good, HSG C |
| | 439,738 | 72 | Weighted Average |
| | 420,179 | | 95.55% Pervious Area |
| | 19,559 | | 4.45% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 17.8 | 50 | 0.0300 | 0.05 | | **Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.37" |
| 2.5 | 524 | 0.0458 | 3.45 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 20.3 | 574 | Total | | | |

## Summary for Subcatchment 194S: PROP TO WETS

Runoff = 22.29 cfs @ 12.16 hrs, Volume= 1.898 af, Depth= 5.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 62,378 | 70 | Woods, Good, HSG C |
| | 111,644 | 74 | >75% Grass cover, Good, HSG C |
| * | 1,394 | 98 | WALLS, HSG C |
| | 479 | 96 | Gravel surface, HSG B |
| * | 3,703 | 98 | PAVEMENT |
| | 179,598 | 73 | Weighted Average |
| | 174,501 | | 97.16% Pervious Area |
| | 5,097 | | 2.84% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.0 | 50 | 0.0200 | 0.10 | | **Sheet Flow, AB** Grass: Dense n= 0.240 P2= 3.37" |
| 0.5 | 68 | 0.0200 | 2.28 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 0.1 | 24 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 2.6 | 532 | 0.0450 | 3.42 | | **Shallow Concentrated Flow, DE** Unpaved Kv= 16.1 fps |
| 11.2 | 674 | Total | | | |

## Summary for Subcatchment 195S: roof unit2

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 196S: roof unit3

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 200S: roof unit8

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 201S: roof uniT9

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 203S: roof uniT10

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 205S: roof uniT11

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 206S: TO DCB 9

Runoff = 3.21 cfs @ 12.13 hrs, Volume= 0.275 af, Depth= 7.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 11,762 | 98 | pavement |
| | 7,805 | 74 | >75% Grass cover, Good, HSG C |
| | 19,567 | 88 | Weighted Average |
| | 7,805 | | 39.89% Pervious Area |
| | 11,762 | | 60.11% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.0 | 50 | 0.0200 | 0.10 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37" |
| 0.1 | 11 | 0.0200 | 2.28 | | **Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps |
| 0.0 | 7 | 0.0200 | 2.87 | | **Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps |
| 1.6 | 333 | 0.0300 | 3.52 | | **Shallow Concentrated Flow, DE** Paved Kv= 20.3 fps |
| 9.7 | 401 | Total | | | |

## Summary for Subcatchment 207S: roof unit4

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 208S: roof uniT12

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 218S: roof uniT13

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 220S: roof unit5

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 221S: roof uniT14

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 223S: roof unit6

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 224S: roof unit1

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 225S: roof unit7

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 226S: roof uniT15

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 227S: roof uniT16

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 228S: roof uniT17

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 229S: roof uniT18

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 234S: roof uniT19

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 235S: roof uniT20

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 236S: roof uniT21

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 237S: roof uniT22

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 238S: roof uniT23

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

## Summary for Subcatchment 239S: roof uniT24

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 8.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Type III 24-hr cornell 100 Rainfall=8.80"

| Area (sf) | CN | Description |
|---|---|---|
| 1,992 | 98 | Roofs, HSG A |
| 1,992 | | 100.00% Impervious Area |

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

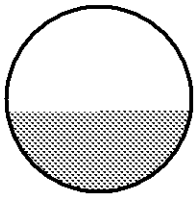
## Summary for Reach 118R: CB 2 TO DMH 1

Inflow Area = 0.192 ac, 53.87% Impervious, Inflow Depth = 7.23" for cornell 100 event
Inflow = 1.53 cfs @ 12.09 hrs, Volume= 0.116 af
Outflow = 1.53 cfs @ 12.09 hrs, Volume= 0.116 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.64 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.54 fps, Avg. Travel Time= 0.1 min

Peak Storage= 4 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.87 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0118 '/'
Inlet Invert= 95.91', Outlet Invert= 95.78'



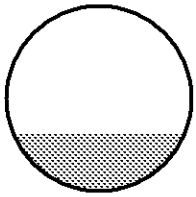
## Summary for Reach 150R: CB 3 TO DMH 1

Inflow Area = 0.100 ac, 72.55% Impervious, Inflow Depth = 7.72" for cornell 100 event
Inflow = 0.83 cfs @ 12.08 hrs, Volume= 0.065 af
Outflow = 0.83 cfs @ 12.09 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.92 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.28 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.87 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0118 '/'
Inlet Invert= 95.91', Outlet Invert= 95.78'



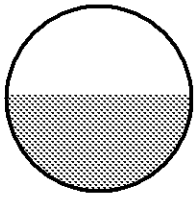
## Summary for Reach 151R: DMH 1 TO DMH 2

Inflow Area = 0.293 ac, 60.28% Impervious, Inflow Depth = 7.40" for cornell 100 event
Inflow = 2.36 cfs @ 12.09 hrs, Volume= 0.180 af
Outflow = 2.35 cfs @ 12.09 hrs, Volume= 0.180 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.66 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.87 fps, Avg. Travel Time= 1.2 min

Peak Storage= 57 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.37 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 138.0' Slope= 0.0151 '/'
Inlet Invert= 95.68', Outlet Invert= 93.60'



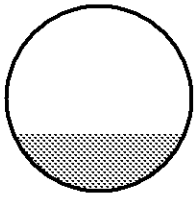
## Summary for Reach 157R: CB 5 TO DMH 3

Inflow Area = 0.102 ac, 68.97% Impervious, Inflow Depth = 7.72" for cornell 100 event
Inflow = 0.85 cfs @ 12.08 hrs, Volume= 0.066 af
Outflow = 0.85 cfs @ 12.09 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.05 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.02 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0127 '/'
Inlet Invert= 90.86', Outlet Invert= 90.72'



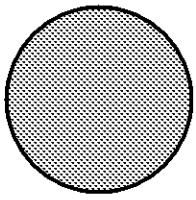
## Summary for Reach 158R: DMH 3 TO HYDRO2

Inflow Area = 0.626 ac, 58.96% Impervious, Inflow Depth = 7.39" for cornell 100 event
Inflow = 4.38 cfs @ 12.11 hrs, Volume= 0.386 af
Outflow = 2.79 cfs @ 12.04 hrs, Volume= 0.386 af, Atten= 36%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.04 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.67 fps, Avg. Travel Time= 0.4 min

Peak Storage= 31 cf @ 12.04 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.79 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 39.0' Slope= 0.0062 '/'
Inlet Invert= 90.39', Outlet Invert= 90.15'



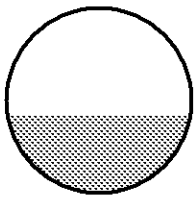
## Summary for Reach 160R: CB 4 TO DMH 3

Inflow Area = 0.232 ac, 52.88% Impervious, Inflow Depth = 7.23" for cornell 100 event
Inflow = 1.48 cfs @ 12.18 hrs, Volume= 0.140 af
Outflow = 1.48 cfs @ 12.18 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.71 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.66 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.02 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0127 '/'
Inlet Invert= 90.86', Outlet Invert= 90.72'



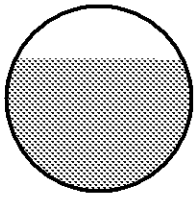
## Summary for Reach 164R: HYDRO2 BASIN 3

Inflow Area = 0.626 ac, 58.96% Impervious, Inflow Depth = 7.39" for cornell 100 event
Inflow = 2.79 cfs @ 12.04 hrs, Volume= 0.386 af
Outflow = 2.80 cfs @ 12.04 hrs, Volume= 0.386 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.66 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.88 fps, Avg. Travel Time= 0.1 min

Peak Storage= 4 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.71'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.25 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 6.0' Slope= 0.0083 '/'
Inlet Invert= 90.05', Outlet Invert= 90.00'



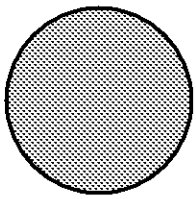
## Summary for Reach 168R: DCB 8 TO DMH 4

Inflow Area = 3.931 ac, 11.32% Impervious, Inflow Depth = 5.77" for cornell 100 event
Inflow = 15.89 cfs @ 12.36 hrs, Volume= 1.890 af
Outflow = 10.97 cfs @ 12.20 hrs, Volume= 1.890 af, Atten= 31%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.07 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.26 fps, Avg. Travel Time= 0.1 min

Peak Storage= 19 cf @ 12.20 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.97 cfs

18.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0109 '/'
Inlet Invert= 79.77', Outlet Invert= 79.65'



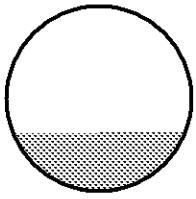
## Summary for Reach 169R: CB 1 TO HYDRO 1

Inflow Area = 0.067 ac, 80.64% Impervious, Inflow Depth = 7.96" for cornell 100 event
Inflow = 0.55 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.55 cfs @ 12.09 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.57 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 0.5 min

Peak Storage= 5 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 24.0' Slope= 0.0050 '/'
Inlet Invert= 102.27', Outlet Invert= 102.15'



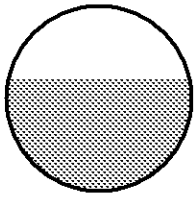
## Summary for Reach 171R: DCB 9 TO DMH 4

Inflow Area = 0.449 ac, 60.11% Impervious, Inflow Depth = 7.35" for cornell 100 event
Inflow = 3.21 cfs @ 12.13 hrs, Volume= 0.275 af
Outflow = 3.21 cfs @ 12.13 hrs, Volume= 0.275 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.39 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.26 fps, Avg. Travel Time= 0.1 min

Peak Storage= 4 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.61'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.66 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 7.0' Slope= 0.0171 '/'
Inlet Invert= 80.27', Outlet Invert= 80.15'



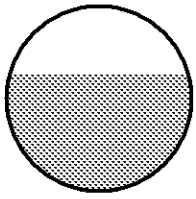
## Summary for Reach 172R: DMH 4 HYDRO3

Inflow Area = 4.380 ac, 16.32% Impervious, Inflow Depth = 5.93" for cornell 100 event
Inflow = 13.70 cfs @ 12.18 hrs, Volume= 2.165 af
Outflow = 13.73 cfs @ 12.19 hrs, Volume= 2.165 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.56 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.58 fps, Avg. Travel Time= 0.3 min

Peak Storage= 105 cf @ 12.19 hrs
Average Depth at Peak Storage= 1.26'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 18.93 cfs

24.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 50.0' Slope= 0.0070 '/'
Inlet Invert= 79.05', Outlet Invert= 78.70'



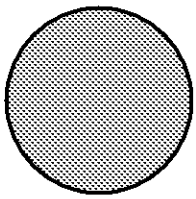
## Summary for Reach 173R: CB 6 TO HYDRO 4

Inflow Area = 0.354 ac, 42.77% Impervious, Inflow Depth = 6.87" for cornell 100 event
Inflow = 2.72 cfs @ 12.09 hrs, Volume= 0.203 af
Outflow = 2.54 cfs @ 12.14 hrs, Volume= 0.203 af, Atten= 7%, Lag= 3.5 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.44 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 0.6 min

Peak Storage= 36 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.38 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 45.0' Slope= 0.0044 '/'
Inlet Invert= 97.50', Outlet Invert= 97.30'



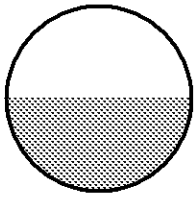
## Summary for Reach 174R: HYDRO 4 TO CHAMBERS 2

Inflow Area = 0.354 ac, 42.77% Impervious, Inflow Depth = 6.87" for cornell 100 event
Inflow = 2.54 cfs @ 12.14 hrs, Volume= 0.203 af
Outflow = 2.54 cfs @ 12.14 hrs, Volume= 0.203 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.39 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.21 fps, Avg. Travel Time= 0.0 min

Peak Storage= 2 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.04 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0200 '/'
Inlet Invert= 97.30', Outlet Invert= 97.20'



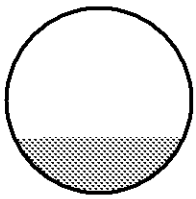
## Summary for Reach 175R: CB 10 TO DMH 7

Inflow Area = 0.160 ac, 50.59% Impervious, Inflow Depth = 7.11" for cornell 100 event
Inflow = 1.26 cfs @ 12.09 hrs, Volume= 0.095 af
Outflow = 1.26 cfs @ 12.09 hrs, Volume= 0.095 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.27 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.06 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.32 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 14.0' Slope= 0.0314 '/'
Inlet Invert= 84.79', Outlet Invert= 84.35'



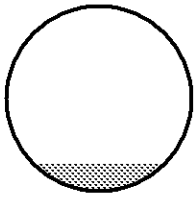
## Summary for Reach 178R: CB 11 TO DMH 7

Inflow Area = 0.038 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.32 cfs @ 12.08 hrs, Volume= 0.027 af
Outflow = 0.32 cfs @ 12.08 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.21 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.40 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.32 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 14.0' Slope= 0.0314 '/'
Inlet Invert= 84.79', Outlet Invert= 84.35'



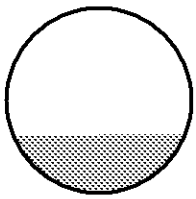
## Summary for Reach 179R: DMH 7 TO DMH 6

Inflow Area = 0.198 ac, 59.96% Impervious, Inflow Depth = 7.38" for cornell 100 event
Inflow = 1.58 cfs @ 12.09 hrs, Volume= 0.122 af
Outflow = 1.58 cfs @ 12.09 hrs, Volume= 0.122 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.29 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.27 fps, Avg. Travel Time= 0.7 min

Peak Storage= 20 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.13 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 93.0' Slope= 0.0400 '/'
Inlet Invert= 84.25', Outlet Invert= 80.53'



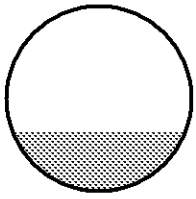
## Summary for Reach 181R: HYDRO 1 TO CHAMB 1

Inflow Area = 0.067 ac, 80.64% Impervious, Inflow Depth = 7.96" for cornell 100 event
Inflow = 0.55 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.55 cfs @ 12.09 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.48 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.82 fps, Avg. Travel Time= 0.2 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.40 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0045 '/'
Inlet Invert= 102.05', Outlet Invert= 102.00'



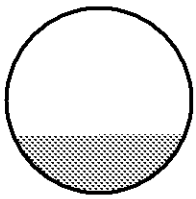
## Summary for Reach 182R: HYDRO 3 TO CHAMBERS 3

Inflow Area = 4.578 ac, 18.21% Impervious, Inflow Depth = 5.99" for cornell 100 event
Inflow = 14.90 cfs @ 12.18 hrs, Volume= 2.287 af
Outflow = 14.90 cfs @ 12.18 hrs, Volume= 2.287 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 17.28 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 6.08 fps, Avg. Travel Time= 0.0 min

Peak Storage= 4 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.64'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 67.87 cfs

24.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0900 '/'
Inlet Invert= 78.95', Outlet Invert= 78.50'



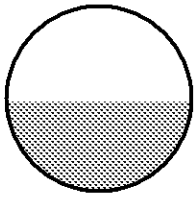
## Summary for Reach 183R: CB 12 TO DMH 5

Inflow Area = 0.241 ac, 63.01% Impervious, Inflow Depth = 7.47" for cornell 100 event
Inflow = 1.96 cfs @ 12.09 hrs, Volume= 0.150 af
Outflow = 1.96 cfs @ 12.09 hrs, Volume= 0.150 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.17 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.73 fps, Avg. Travel Time= 0.1 min

Peak Storage= 5 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.49'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.11 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 12.0' Slope= 0.0133 '/'
Inlet Invert= 79.05', Outlet Invert= 78.89'



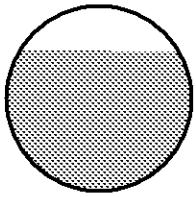
## Summary for Reach 184R: HYDRO5 BASIN 4

Inflow Area = 0.346 ac, 64.31% Impervious, Inflow Depth = 7.51" for cornell 100 event
Inflow = 2.54 cfs @ 12.10 hrs, Volume= 0.216 af
Outflow = 2.54 cfs @ 12.10 hrs, Volume= 0.216 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.98 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.44 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.76'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.76 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 5.0' Slope= 0.0060 '/'
Inlet Invert= 78.53', Outlet Invert= 78.50'



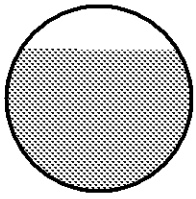
## Summary for Reach 185R: DMH 6 TO HYDRO 3

Inflow Area = 0.198 ac, 59.96% Impervious, Inflow Depth = 7.38" for cornell 100 event
Inflow = 1.58 cfs @ 12.09 hrs, Volume= 0.122 af
Outflow = 1.58 cfs @ 12.09 hrs, Volume= 0.122 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.43 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.81 fps, Avg. Travel Time= 0.7 min

Peak Storage= 23 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.77'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 1.68 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 36.0' Slope= 0.0022 '/'
Inlet Invert= 79.33', Outlet Invert= 79.25'



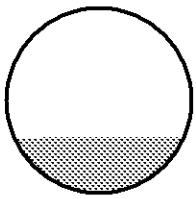
## Summary for Reach 186R: CB 13 TO DMH 5

Inflow Area = 0.105 ac, 67.31% Impervious, Inflow Depth = 7.59" for cornell 100 event
Inflow = 0.86 cfs @ 12.08 hrs, Volume= 0.067 af
Outflow = 0.86 cfs @ 12.09 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.27 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.40 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.30 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 11.0' Slope= 0.0145 '/'
Inlet Invert= 79.05', Outlet Invert= 78.89'



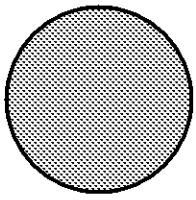
## Summary for Reach 187R: DMH 5 TO HYDRO 5

Inflow Area = 0.346 ac, 64.31% Impervious, Inflow Depth = 7.51" for cornell 100 event
Inflow = 2.82 cfs @ 12.09 hrs, Volume= 0.216 af
Outflow = 2.54 cfs @ 12.10 hrs, Volume= 0.216 af, Atten= 10%, Lag= 0.9 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.65 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 0.4 min

Peak Storage= 26 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 32.0' Slope= 0.0050 '/'
Inlet Invert= 78.79', Outlet Invert= 78.63'



## Summary for Reach 195R: POST TO WETS

Inflow Area = 9.719 ac, 16.34% Impervious, Inflow Depth = 5.49" for cornell 100 event
Inflow = 39.46 cfs @ 12.17 hrs, Volume= 4.445 af
Outflow = 39.46 cfs @ 12.17 hrs, Volume= 4.445 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

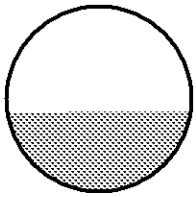
## Summary for Reach 245R: DMH 2 TO DMH 3

Inflow Area = 0.293 ac, 60.28% Impervious, Inflow Depth = 7.40" for cornell 100 event
Inflow = 2.35 cfs @ 12.09 hrs, Volume= 0.180 af
Outflow = 2.35 cfs @ 12.09 hrs, Volume= 0.180 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.20 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.35 fps, Avg. Travel Time= 0.7 min

Peak Storage= 34 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.43'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.06 cfs

12.0" Round Pipe
n= 0.013 Concrete sewer w/manholes & inlets
Length= 104.0' Slope= 0.0289 '/'
Inlet Invert= 93.50', Outlet Invert= 90.49'



## Summary for Pond 1P: unit 4

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 15.06 hrs, Volume= 0.025 af, Atten= 96%, Lag= 178.8 min
Discarded = 0.02 cfs @ 15.06 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 99.68' @ 15.06 hrs Surf.Area= 0.007 ac Storage= 0.019 af

Plug-Flow detention time= 388.7 min calculated for 0.025 af (75% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,041.0 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 96.10' | 0.006 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.016 af Embedded = 0.014 af x 40.0% Voids |
| #2 | 96.60' | 0.016 af | **Cultec R-902HD** x 11 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 96.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 15.06 hrs HW=99.68' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 3P: unit7

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af, Atten= 96%, Lag= 151.8 min
Discarded = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 103.58' @ 14.61 hrs Surf.Area= 0.007 ac Storage= 0.018 af

Plug-Flow detention time= 379.1 min calculated for 0.026 af (80% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 99.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.61 hrs HW=103.58' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 14P: unit5

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af, Atten= 96%, Lag= 151.8 min
Discarded = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 107.68' @ 14.61 hrs Surf.Area= 0.007 ac Storage= 0.018 af

Plug-Flow detention time= 379.1 min calculated for 0.026 af (80% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 103.20' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 103.70' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |

6 Rows of 1 Chambers
Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf

0.018 af Total Available Storage

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 103.20' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.61 hrs HW=107.68' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 116P: CB 2

Inflow Area = 0.192 ac, 53.87% Impervious, Inflow Depth = 7.23" for cornell 100 event
Inflow = 1.53 cfs @ 12.09 hrs, Volume= 0.116 af
Outflow = 1.53 cfs @ 12.09 hrs, Volume= 0.116 af, Atten= 0%, Lag= 0.0 min
Primary = 1.53 cfs @ 12.09 hrs, Volume= 0.116 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.47' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 95.91' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.51 cfs @ 12.09 hrs HW=96.47' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.51 cfs @ 2.54 fps)

## Summary for Pond 149P: CB 3

Inflow Area = 0.100 ac, 72.55% Impervious, Inflow Depth = 7.72" for cornell 100 event
Inflow = 0.83 cfs @ 12.08 hrs, Volume= 0.065 af
Outflow = 0.83 cfs @ 12.08 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.0 min
Primary = 0.83 cfs @ 12.08 hrs, Volume= 0.065 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.31' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 95.91' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.82 cfs @ 12.08 hrs HW=96.31' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.82 cfs @ 2.16 fps)

## Summary for Pond 156P: CB 5

Inflow Area = 0.102 ac, 68.97% Impervious, Inflow Depth = 7.72" for cornell 100 event
Inflow = 0.85 cfs @ 12.08 hrs, Volume= 0.066 af
Outflow = 0.85 cfs @ 12.08 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min
Primary = 0.85 cfs @ 12.08 hrs, Volume= 0.066 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs

Peak Elev= 91.33' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 90.86' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.84 cfs @ 12.08 hrs HW=91.33' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.84 cfs @ 2.33 fps)

## Summary for Pond 159P: CB 5

Inflow Area = 0.232 ac, 52.88% Impervious, Inflow Depth = 7.23" for cornell 100 event
Inflow = 1.48 cfs @ 12.18 hrs, Volume= 0.140 af
Outflow = 1.48 cfs @ 12.18 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min
Primary = 1.48 cfs @ 12.18 hrs, Volume= 0.140 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 91.51' @ 12.18 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 90.86' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.46 cfs @ 12.18 hrs HW=91.50' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.46 cfs @ 2.73 fps)

## Summary for Pond 167P: DCB 8

Inflow Area = 3.931 ac, 11.32% Impervious, Inflow Depth = 5.77" for cornell 100 event
Inflow = 15.89 cfs @ 12.36 hrs, Volume= 1.890 af
Outflow = 15.89 cfs @ 12.36 hrs, Volume= 1.890 af, Atten= 0%, Lag= 0.0 min
Primary = 15.89 cfs @ 12.36 hrs, Volume= 1.890 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 84.01' @ 12.36 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.77' | **18.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=15.88 cfs @ 12.36 hrs HW=84.00' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 15.88 cfs @ 8.98 fps)

## Summary for Pond 168P: CB 1

Inflow Area = 0.067 ac, 80.64% Impervious, Inflow Depth = 7.96" for cornell 100 event
Inflow = 0.55 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.55 cfs @ 12.09 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min
Primary = 0.55 cfs @ 12.09 hrs, Volume= 0.044 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 102.64' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 102.27' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.54 cfs @ 12.09 hrs HW=102.64' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.54 cfs @ 2.07 fps)

## Summary for Pond 170P: DCB 9

Inflow Area = 0.449 ac, 60.11% Impervious, Inflow Depth = 7.35" for cornell 100 event
Inflow = 3.21 cfs @ 12.13 hrs, Volume= 0.275 af
Outflow = 3.21 cfs @ 12.13 hrs, Volume= 0.275 af, Atten= 0%, Lag= 0.0 min
Primary = 3.21 cfs @ 12.13 hrs, Volume= 0.275 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 81.49' @ 12.13 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 80.27' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=3.16 cfs @ 12.13 hrs HW=81.47' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 3.16 cfs @ 4.03 fps)

## Summary for Pond 171P: CHAMBERS UNIT 1

Inflow Area = 0.112 ac, 88.52% Impervious, Inflow Depth = 8.20" for cornell 100 event
Inflow = 0.94 cfs @ 12.09 hrs, Volume= 0.077 af
Outflow = 0.03 cfs @ 15.46 hrs, Volume= 0.057 af, Atten= 96%, Lag= 202.4 min
Discarded = 0.03 cfs @ 15.46 hrs, Volume= 0.057 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 101.90' @ 15.46 hrs Surf.Area= 0.023 ac Storage= 0.044 af

Plug-Flow detention time= 389.6 min calculated for 0.057 af (74% of inflow)
Center-of-Mass det. time= 302.1 min ( 1,055.8 - 753.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.030 af | **20.40'W x 49.50'L x 5.00'H Prismatoid**<br>0.116 af Overall - 0.042 af Embedded = 0.074 af x 40.0% Voids |
| #2 | 99.60' | 0.042 af | **Cultec R-902HD** x 28 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>4 Rows of 7 Chambers<br>Cap Storage= +2.8 cf x 2 x 4 rows = 22.1 cf |
| | | 0.072 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.03 cfs @ 15.46 hrs HW=101.90' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

## Summary for Pond 174P: CB 10

Inflow Area = 0.160 ac, 50.59% Impervious, Inflow Depth = 7.11" for cornell 100 event
Inflow = 1.26 cfs @ 12.09 hrs, Volume= 0.095 af
Outflow = 1.26 cfs @ 12.09 hrs, Volume= 0.095 af, Atten= 0%, Lag= 0.0 min
Primary = 1.26 cfs @ 12.09 hrs, Volume= 0.095 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 85.38' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 84.79' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.25 cfs @ 12.09 hrs HW=85.38' (Free Discharge)
**1=Orifice/Grate** (Orifice Controls 1.25 cfs @ 2.61 fps)

## Summary for Pond 175P: CHAMBERS UNIT 2

Inflow Area = 0.354 ac, 42.77% Impervious, Inflow Depth = 6.87" for cornell 100 event
Inflow = 2.54 cfs @ 12.14 hrs, Volume= 0.203 af
Outflow = 0.07 cfs @ 16.84 hrs, Volume= 0.110 af, Atten= 97%, Lag= 281.8 min
Discarded = 0.07 cfs @ 16.84 hrs, Volume= 0.110 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 99.85' @ 16.84 hrs Surf.Area= 0.046 ac Storage= 0.134 af

Plug-Flow detention time= 430.7 min calculated for 0.110 af (54% of inflow)
Center-of-Mass det. time= 321.8 min ( 1,112.1 - 790.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.056 af | **28.78'W x 69.33'L x 5.00'H Prismatoid**<br>0.229 af Overall - 0.090 af Embedded = 0.139 af x 40.0% Voids |
| #2 | 96.00' | 0.090 af | **Cultec R-902HD** x 60 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 10 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.146 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.07 cfs @ 16.84 hrs HW=99.85' (Free Discharge)
**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

## Summary for Pond 176P: CB 6

Inflow Area = 0.354 ac, 42.77% Impervious, Inflow Depth = 6.87" for cornell 100 event
Inflow = 2.72 cfs @ 12.09 hrs, Volume= 0.203 af
Outflow = 2.72 cfs @ 12.09 hrs, Volume= 0.203 af, Atten= 0%, Lag= 0.0 min
Primary = 2.72 cfs @ 12.09 hrs, Volume= 0.203 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 98.52' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 97.50' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=2.68 cfs @ 12.09 hrs HW=98.50' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 2.68 cfs @ 3.42 fps)

## Summary for Pond 177P: CB 11

Inflow Area = 0.038 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.32 cfs @ 12.08 hrs, Volume= 0.027 af
Outflow = 0.32 cfs @ 12.08 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min
Primary = 0.32 cfs @ 12.08 hrs, Volume= 0.027 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 85.07' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 84.79' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.32 cfs @ 12.08 hrs HW=85.07' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.32 cfs @ 1.79 fps)

## Summary for Pond 178P: unit 1

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 15.06 hrs, Volume= 0.025 af, Atten= 96%, Lag= 178.8 min
Discarded = 0.02 cfs @ 15.06 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 99.08' @ 15.06 hrs Surf.Area= 0.007 ac Storage= 0.019 af

Plug-Flow detention time= 388.7 min calculated for 0.025 af (75% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,041.0 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.006 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.016 af Embedded = 0.014 af x 40.0% Voids |
| #2 | 96.00' | 0.016 af | **Cultec R-902HD** x 11 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 15.06 hrs HW=99.08' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 182P: CB 12

Inflow Area = 0.241 ac, 63.01% Impervious, Inflow Depth = 7.47" for cornell 100 event
Inflow = 1.96 cfs @ 12.09 hrs, Volume= 0.150 af
Outflow = 1.96 cfs @ 12.09 hrs, Volume= 0.150 af, Atten= 0%, Lag= 0.0 min
Primary = 1.96 cfs @ 12.09 hrs, Volume= 0.150 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.82' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.05' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=1.93 cfs @ 12.09 hrs HW=79.82' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.93 cfs @ 2.98 fps)

## Summary for Pond 185P: CB 13

Inflow Area = 0.105 ac, 67.31% Impervious, Inflow Depth = 7.59" for cornell 100 event
Inflow = 0.86 cfs @ 12.08 hrs, Volume= 0.067 af
Outflow = 0.86 cfs @ 12.08 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.0 min
Primary = 0.86 cfs @ 12.08 hrs, Volume= 0.067 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.52' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 79.05' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=0.85 cfs @ 12.08 hrs HW=79.52' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.85 cfs @ 2.34 fps)

## Summary for Pond 190P: CHAMBERS UNIT 4

Inflow Area = 4.924 ac, 21.44% Impervious, Inflow Depth = 6.10" for cornell 100 event
Inflow = 17.23 cfs @ 12.16 hrs, Volume= 2.503 af
Outflow = 16.71 cfs @ 12.19 hrs, Volume= 2.452 af, Atten= 3%, Lag= 1.9 min
Discarded = 0.06 cfs @ 12.19 hrs, Volume= 0.102 af
Primary = 16.65 cfs @ 12.19 hrs, Volume= 2.350 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 80.61' @ 12.19 hrs Surf.Area= 0.039 ac Storage= 0.121 af

Plug-Flow detention time= 30.8 min calculated for 2.452 af (98% of inflow)
Center-of-Mass det. time= 18.5 min ( 836.6 - 818.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 76.00' | 0.045 af | **24.50'W x 69.00'L x 5.00'H Prismatoid**<br>0.194 af Overall - 0.082 af Embedded = 0.112 af x 40.0% Voids |
| #2 | 76.50' | 0.082 af | **Cultec R-902HD** x 55 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>5 Rows of 11 Chambers<br>Cap Storage= +2.8 cf x 2 x 5 rows = 27.6 cf |
| | | 0.127 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 76.00' | **1.020 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 78.40' | **24.0" Vert. Orifice/Grate** C= 0.600 |

**Discarded OutFlow** Max=0.06 cfs @ 12.19 hrs HW=80.60' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

**Primary OutFlow** Max=16.58 cfs @ 12.19 hrs HW=80.60' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 16.58 cfs @ 5.28 fps)

## Summary for Pond 193P: CHAMBERS UNIT 3

Inflow Area = 0.672 ac, 61.75% Impervious, Inflow Depth = 7.47" for cornell 100 event
Inflow = 3.18 cfs @ 12.08 hrs, Volume= 0.418 af
Outflow = 2.10 cfs @ 12.51 hrs, Volume= 0.332 af, Atten= 34%, Lag= 25.8 min
Discarded = 0.08 cfs @ 12.51 hrs, Volume= 0.135 af
Primary = 2.02 cfs @ 12.51 hrs, Volume= 0.197 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 91.78' @ 12.51 hrs Surf.Area= 0.057 ac Storage= 0.176 af

Plug-Flow detention time= 204.6 min calculated for 0.331 af (79% of inflow)
Center-of-Mass det. time= 128.6 min ( 907.5 - 778.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.10' | 0.066 af | **43.00'W x 57.30'L x 5.00'H Prismatoid**<br>0.283 af Overall - 0.117 af Embedded = 0.166 af x 40.0% Voids |
| #2 | 87.60' | 0.117 af | **Cultec R-902HD** x 78 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 13 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.183 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.10' | **1.020 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 90.00' | **8.0" Vert. Orifice/Grate** C= 0.600 |

**Discarded OutFlow** Max=0.08 cfs @ 12.51 hrs HW=91.77' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

**Primary OutFlow** Max=2.01 cfs @ 12.51 hrs HW=91.77' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 2.01 cfs @ 5.77 fps)

## Summary for Pond 197P: unit6

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af, Atten= 96%, Lag= 151.8 min
Discarded = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 103.58' @ 14.61 hrs Surf.Area= 0.007 ac Storage= 0.018 af

Plug-Flow detention time= 379.1 min calculated for 0.026 af (80% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 99.10' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 99.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 99.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.61 hrs HW=103.58' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 198P: unit8

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.45 hrs, Volume= 0.028 af, Atten= 95%, Lag= 142.0 min
Discarded = 0.02 cfs @ 14.45 hrs, Volume= 0.028 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 97.43' @ 14.45 hrs Surf.Area= 0.009 ac Storage= 0.017 af

Plug-Flow detention time= 358.8 min calculated for 0.028 af (87% of inflow)
Center-of-Mass det. time= 298.8 min ( 1,038.8 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 94.10' | 0.013 af | **8.50'W x 47.10'L x 4.50'H Prismatoid**<br>0.041 af Overall - 0.010 af Embedded = 0.032 af x 40.0% Voids |
| #2 | 94.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 94.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.45 hrs HW=97.43' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 202P: unit9

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af, Atten= 96%, Lag= 151.8 min
Discarded = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 95.08' @ 14.61 hrs Surf.Area= 0.007 ac Storage= 0.018 af

Plug-Flow detention time= 379.1 min calculated for 0.026 af (80% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 90.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 91.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 90.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.61 hrs HW=95.08' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 204P: unit10

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af, Atten= 96%, Lag= 151.8 min
Discarded = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 94.08' @ 14.61 hrs Surf.Area= 0.007 ac Storage= 0.018 af

Plug-Flow detention time= 379.1 min calculated for 0.026 af (80% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 89.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 90.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 89.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.61 hrs HW=94.08' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 206P: unit11

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af, Atten= 96%, Lag= 151.8 min
Discarded = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 97.28' @ 14.61 hrs Surf.Area= 0.007 ac Storage= 0.018 af

Plug-Flow detention time= 379.1 min calculated for 0.026 af (80% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 92.80' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 93.30' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 92.80' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.61 hrs HW=97.28' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 209P: unit12

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af, Atten= 96%, Lag= 151.8 min
Discarded = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 97.98' @ 14.61 hrs Surf.Area= 0.007 ac Storage= 0.018 af

Plug-Flow detention time= 379.1 min calculated for 0.026 af (80% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 93.50' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 94.00' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 93.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.61 hrs HW=97.98' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 219P: unit13

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af, Atten= 96%, Lag= 151.8 min
Discarded = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 96.28' @ 14.61 hrs Surf.Area= 0.007 ac Storage= 0.018 af

Plug-Flow detention time= 379.1 min calculated for 0.026 af (80% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 91.80' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 92.30' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 91.80' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.61 hrs HW=96.28' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 222P: unit14

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af, Atten= 96%, Lag= 151.8 min
Discarded = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 91.48' @ 14.61 hrs Surf.Area= 0.007 ac Storage= 0.018 af

Plug-Flow detention time= 379.1 min calculated for 0.026 af (80% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.00' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 87.50' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.61 hrs HW=91.48' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 230P: unit15

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af, Atten= 96%, Lag= 151.8 min
Discarded = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 91.48' @ 14.61 hrs Surf.Area= 0.007 ac Storage= 0.018 af

Plug-Flow detention time= 379.1 min calculated for 0.026 af (80% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 87.00' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 87.50' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 87.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.61 hrs HW=91.48' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 231P: unit16

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af, Atten= 96%, Lag= 151.8 min
Discarded = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 86.08' @ 14.61 hrs Surf.Area= 0.007 ac Storage= 0.018 af

Plug-Flow detention time= 379.1 min calculated for 0.026 af (80% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 82.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.61 hrs HW=86.08' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 232P: unit17

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af, Atten= 96%, Lag= 151.8 min
Discarded = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 83.28' @ 14.61 hrs Surf.Area= 0.007 ac Storage= 0.018 af

Plug-Flow detention time= 379.1 min calculated for 0.026 af (80% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 78.80' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 79.30' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 78.80' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.61 hrs HW=83.28' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 233P: unit18

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af, Atten= 96%, Lag= 151.8 min
Discarded = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 79.38' @ 14.61 hrs Surf.Area= 0.007 ac Storage= 0.018 af

Plug-Flow detention time= 379.1 min calculated for 0.026 af (80% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 74.90' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 75.40' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 74.90' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.61 hrs HW=79.38' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 240P: unit19

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af, Atten= 96%, Lag= 151.8 min
Discarded = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 80.78' @ 14.61 hrs Surf.Area= 0.007 ac Storage= 0.018 af

Plug-Flow detention time= 379.1 min calculated for 0.026 af (80% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 76.30' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 76.80' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 76.30' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.61 hrs HW=80.78' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 241P: unit20

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af, Atten= 96%, Lag= 151.8 min
Discarded = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 81.58' @ 14.61 hrs Surf.Area= 0.007 ac Storage= 0.018 af

Plug-Flow detention time= 379.1 min calculated for 0.026 af (80% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 77.10' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 77.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 77.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.61 hrs HW=81.58' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 242P: unit21

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af, Atten= 96%, Lag= 151.8 min
Discarded = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 84.58' @ 14.61 hrs Surf.Area= 0.007 ac Storage= 0.018 af

Plug-Flow detention time= 379.1 min calculated for 0.026 af (80% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 80.10' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 80.60' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 80.10' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.61 hrs HW=84.58' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 243P: unit22

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af, Atten= 96%, Lag= 151.8 min
Discarded = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 86.08' @ 14.61 hrs Surf.Area= 0.007 ac Storage= 0.018 af

Plug-Flow detention time= 379.1 min calculated for 0.026 af (80% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 82.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.61 hrs HW=86.08' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 244P: unit23

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af, Atten= 96%, Lag= 151.8 min
Discarded = 0.02 cfs @ 14.61 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 86.08' @ 14.61 hrs Surf.Area= 0.007 ac Storage= 0.018 af

Plug-Flow detention time= 379.1 min calculated for 0.026 af (80% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,040.9 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.60' | 0.008 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.010 af Embedded = 0.021 af x 40.0% Voids |
| #2 | 82.10' | 0.010 af | **Cultec R-902HD** x 6 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>6 Rows of 1 Chambers<br>Cap Storage= +2.8 cf x 2 x 6 rows = 33.1 cf |
| | | 0.018 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.60' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 14.61 hrs HW=86.08' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 245P: unit 1

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.56" for cornell 100 event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 15.06 hrs, Volume= 0.025 af, Atten= 96%, Lag= 178.8 min
Discarded = 0.02 cfs @ 15.06 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.04 hrs
Peak Elev= 101.58' @ 15.06 hrs Surf.Area= 0.007 ac Storage= 0.019 af

Plug-Flow detention time= 388.7 min calculated for 0.025 af (75% of inflow)
Center-of-Mass det. time= 300.9 min ( 1,041.0 - 740.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 98.00' | 0.006 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.016 af Embedded = 0.014 af x 40.0% Voids |
| #2 | 98.50' | 0.016 af | **Cultec R-902HD** x 11 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 98.00' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.02 cfs @ 15.06 hrs HW=101.58' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

## Summary for Pond 246P: unit 1

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 95.50' | 0.006 af | **7.10'W x 42.00'L x 4.50'H Prismatoid**<br>0.031 af Overall - 0.016 af Embedded = 0.014 af x 40.0% Voids |
| #2 | 96.00' | 0.016 af | **Cultec R-902HD** x 11 Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap<br>Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf |
| | | 0.022 af | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 95.50' | **1.020 in/hr Exfiltration over Wetted area** |

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
└**1=Exfiltration** ( Controls 0.00 cfs)

# Groundwater Recharge and Water Quality Calculations

The Cottages at Old Oaken Bucket
Scituate, Massachusetts

**Groundwater Recharge**
*Stormwater Management Standard #3*

The prescribed stormwater runoff volume to be recharged to groundwater has been determined using the existing site ( pre-development ) soil conditions from the U.S. Natural Resources Conservation Service NRCS, ( formerly SCS ) County Web Soils Survey.

Soil Hydrologic group, "C"
Required Infiltration Capacity = 0.25"
Watershed Area= 11.53 Acres total for the watershed analyzed
Existing Impervious Area = 0.45 Acres
Proposed impervious area = 2.55 Acres
Net impervious area = 2.10

Required Infiltration Volume= (0.25"/12"/ft) x (2.10 Acres)
= 0.044 acf required
24 x 0.022 acf =0.528 acf provided in all chambers for the roofs of units

Chambers Unit 1=0.072 acf
Chambers Unit 2=0.146 acf

Total provided=0.746 acf without outlets

Drawdown calculations

chambers for roofs of units= (0.25"/12"/ft) x (1,992 sf)=41.5 cf

Drawdown = 41.5 cf / (1.02 in/hr x 298.2 sf x 1/12) = 1.7 hr per unit

To chamber unit 1= (0.25"/12"/ft) x (0.10 ac) x 43,560sf/ac=90.8 cf

Drawdown = 90.8 cf/(1.02 in/hr x 1,009.8 sf x 1/12) = 1.1 hr

To chamber unit 2= (0.25"/12"/ft) x (0.16 ac} x 43,560 sf/ac)=145.2 cf

Drawdown = 145.2 cf/(1.02in/hr x 1,991.9 sf x 1/12) = 0.9 hr

To chamber unit 3= (0.25"/12"/ft) x (0.42 ac) x 43,560 sf/ac=381.2 cf

Drawdown = 381.2 cf /(1.02 in/hr x 2,463.9 sf x 1/12) = 1.9 hr

To chamber unit 4= (0.25"/12"/ft) x (1.06 acs) x 43,560 sf/ac=962 cf

Drawdown = 962 cf /(1.02 in/hr x 1,849.7 sf x 1/12) = 6.2 hr

**Water Quality**
*Stormwater Management Standard - General*

"Containment and treatment of the first inch (first flush) of runoff during a rainfall event is a reasonably effective practice for controlling contaminants in stormwater."

**See Calculations from storm treatment unit provider**

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
| Location: | 279-281 | Date: | 12/12/2022 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M/ | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
chamber 1

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.09 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | STANDARD | |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 49.50 | Ft | |
| WIDTH OF APPLICATION= | 20.4 | Ft | |
| CONSTANT HEAD BOUNDARY= | 134 | Ft | |
| PLOTTING AXIS= | 90 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**91 CF DESIGN FLOW / 1 / 1 DAY**
**1,010 SF**

**= 0.09** CF/DAY/SF

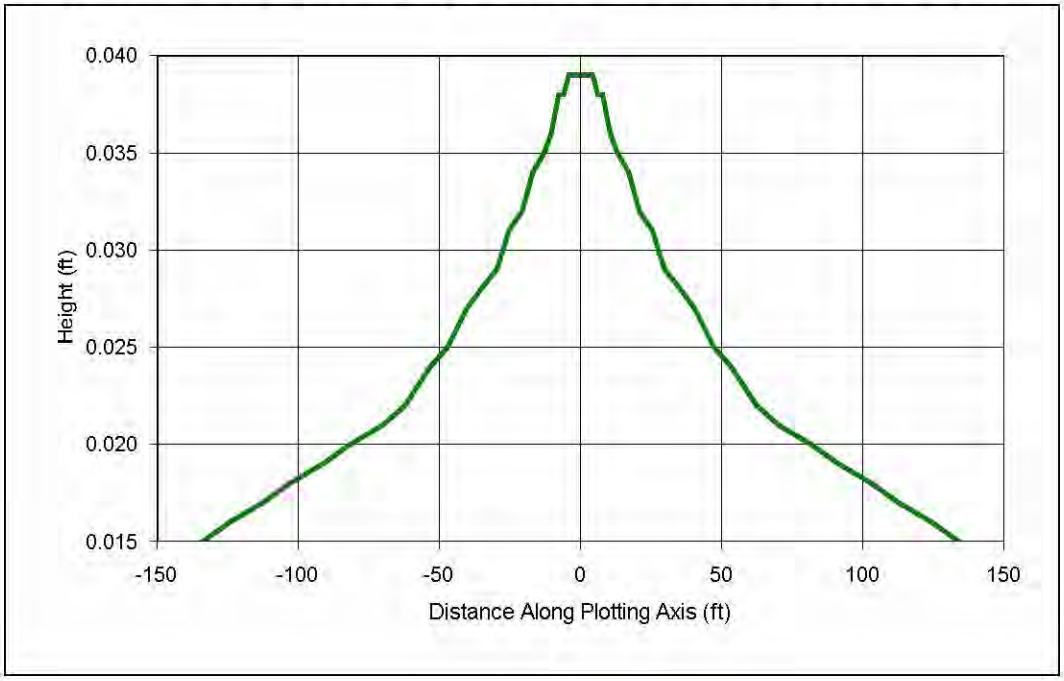
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES cham1

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:55:35 PM

INPUT PARAMETERS

Application rate: 0.09 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 49.5 ft
Width of application area: 20.4 ft
No constant head boundary used
Plotting axis from Y-Axis: 90 degrees
Edge of recharge area:
positive X: 10.2 ft
positive Y: 0 ft
Total volume applied: 2181.168 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -134 | 0 | -134 | 0.02 |
| -112.7 | 0 | -113 | 0.02 |
| -91.4 | 0 | -91 | 0.02 |
| -70.1 | 0 | -70 | 0.02 |
| -53.3 | 0 | -53 | 0.02 |
| -40.3 | 0 | -40 | 0.03 |
| -29.7 | 0 | -30 | 0.03 |
| -20.8 | 0 | -21 | 0.03 |
| -13 | 0 | -13 | 0.04 |
| -7.8 | 0 | -8 | 0.04 |
| -4.2 | 0 | -4 | 0.04 |
| 0 | 0 | 0 | 0.04 |
| 4.2 | 0 | 4 | 0.04 |
| 7.8 | 0 | 8 | 0.04 |
| 13 | 0 | 13 | 0.04 |
| 20.8 | 0 | 21 | 0.03 |
| 29.7 | 0 | 30 | 0.03 |
| 40.3 | 0 | 40 | 0.03 |
| 53.3 | 0 | 53 | 0.02 |
| 70.1 | 0 | 70 | 0.02 |
| 91.4 | 0 | 91 | 0.02 |
| 112.7 | 0 | 113 | 0.02 |
| 134 | 0 | 134 | 0.02 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

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| STREET: | OLD OAKEN BUCKET RD., SCITUATE M/ | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
chamber 2

| | | |
|---|---|---|
| APPLICATION RATE= | 0.07 | CF/DAY/SF |
| DURATION= | 24 | HOURS |
| FILLABLE POROSITY= | 0.2 | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY |
| LENGTH OF APPLICATION= | 69.33 | Ft |
| WIDTH OF APPLICATION= | 28.8 | Ft |
| CONSTANT HEAD BOUNDARY= | 66 | Ft |
| PLOTTING AXIS= | 0 | DEGREES |
| SATURATED THICKNESS= | 48 | FT **max. on-site** |

APPLICATION RATE=

**146** **CF** **DESIGN FLOW** **/** **1** **/** **1** **DAY**
**1,997** **SF**

= **0.07** CF/DAY/SF

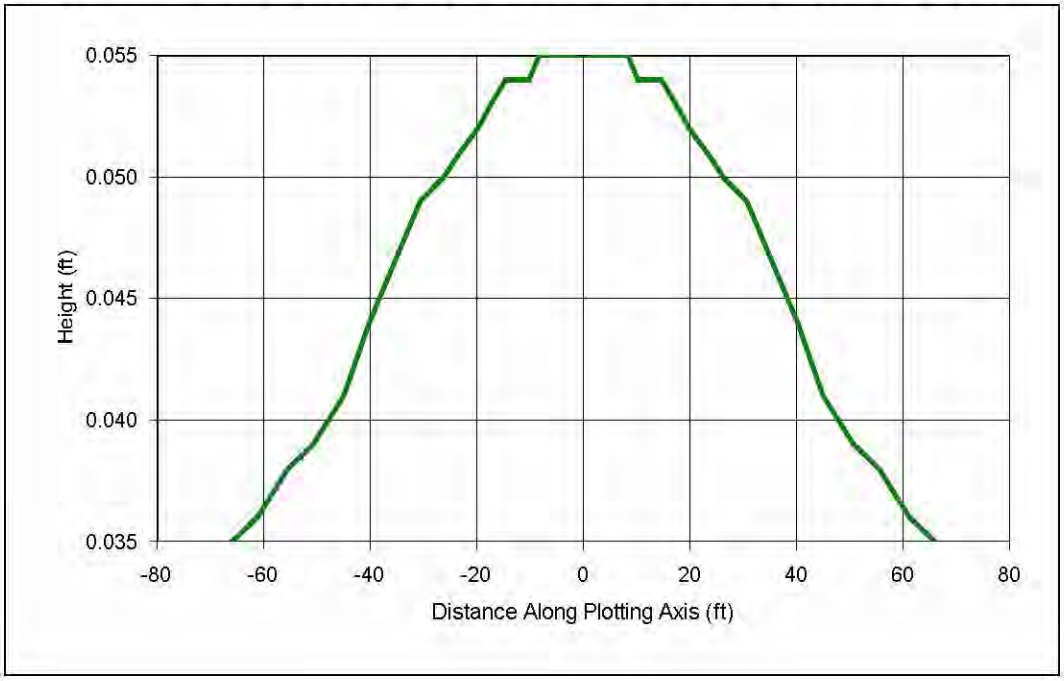
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES cham2

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:57:40 PM

INPUT PARAMETERS

Application rate: 0.07 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 69.33 ft
Width of application area: 28.8 ft
No constant head boundary used
Plotting axis from Y-Axis: 0 degrees
Edge of recharge area:
positive X: 0 ft
positive Y: 34.7 ft
Total volume applied: 3354.463 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| 0 | -66 | -66 | 0.04 |
| 0 | -55.5 | -56 | 0.04 |
| 0 | -45 | -45 | 0.04 |
| 0 | -34.5 | -35 | 0.05 |
| 0 | -26.3 | -26 | 0.05 |
| 0 | -19.9 | -20 | 0.05 |
| 0 | -14.6 | -15 | 0.05 |
| 0 | -10.2 | -10 | 0.05 |
| 0 | -6.4 | -6 | 0.06 |
| 0 | -3.8 | -4 | 0.06 |
| 0 | -2.1 | -2 | 0.06 |
| 0 | 0 | 0 | 0.06 |
| 0 | 2.1 | 2 | 0.06 |
| 0 | 3.8 | 4 | 0.06 |
| 0 | 6.4 | 6 | 0.06 |
| 0 | 10.2 | 10 | 0.05 |
| 0 | 14.6 | 15 | 0.05 |
| 0 | 19.9 | 20 | 0.05 |
| 0 | 26.3 | 26 | 0.05 |
| 0 | 34.5 | 35 | 0.05 |
| 0 | 45 | 45 | 0.04 |
| 0 | 55.5 | 56 | 0.04 |
| 0 | 66 | 66 | 0.04 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

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|---|---|---|---|
| Location: | 279-281 | Date: | 12/12/2022 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M/ | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
chamber 3

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.16 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | STANDARD | |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 57.30 | Ft | |
| WIDTH OF APPLICATION= | 43 | Ft | |
| CONSTANT HEAD BOUNDARY= | 62 | Ft | |
| PLOTTING AXIS= | 45 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**382** **CF** **DESIGN FLOW** / **1** / **1** **DAY**
**2,464** **SF**

= **0.16** CF/DAY/SF

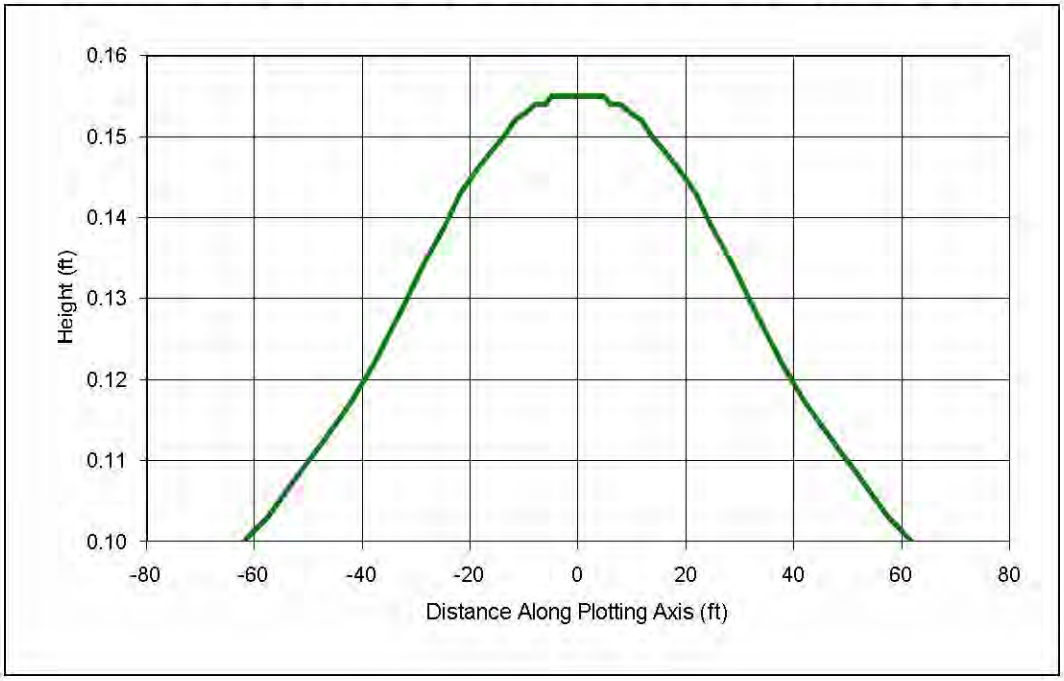
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES cham3

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:59:52 PM

INPUT PARAMETERS

Application rate: 0.16 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 57.3 ft
Width of application area: 43 ft
No constant head boundary used
Plotting axis from Y-Axis: 45 degrees
Edge of recharge area:
positive X: 21.5 ft
positive Y: 21.5 ft
Total volume applied: 9461.376 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -43.8 | -43.8 | -62 | 0.1 |
| -36.9 | -36.9 | -52 | 0.11 |
| -29.9 | -29.9 | -42 | 0.12 |
| -22.9 | -22.9 | -32 | 0.13 |
| -17.4 | -17.4 | -25 | 0.14 |
| -13.2 | -13.2 | -19 | 0.15 |
| -9.7 | -9.7 | -14 | 0.15 |
| -6.8 | -6.8 | -10 | 0.15 |
| -4.2 | -4.2 | -6 | 0.15 |
| -2.5 | -2.5 | -4 | 0.16 |
| -1.4 | -1.4 | -2 | 0.16 |
| 0 | 0 | 0 | 0.16 |
| 1.4 | 1.4 | 2 | 0.16 |
| 2.5 | 2.5 | 4 | 0.16 |
| 4.2 | 4.2 | 6 | 0.15 |
| 6.8 | 6.8 | 10 | 0.15 |
| 9.7 | 9.7 | 14 | 0.15 |
| 13.2 | 13.2 | 19 | 0.15 |
| 17.4 | 17.4 | 25 | 0.14 |
| 22.9 | 22.9 | 32 | 0.13 |
| 29.9 | 29.9 | 42 | 0.12 |
| 36.9 | 36.9 | 52 | 0.11 |
| 43.8 | 43.8 | 62 | 0.1 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

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|---|---|---|---|
| Location: | 279-281 | Date: | 12/12/2022 |
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| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
chamber 4

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.52 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | STANDARD | |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 75.50 | Ft | |
| WIDTH OF APPLICATION= | 24.5 | Ft | |
| CONSTANT HEAD BOUNDARY= | 61 | Ft | |
| PLOTTING AXIS= | 45 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**962** **CF** **DESIGN FLOW** **/** **1** **/** **1** **DAY**
**1,850** **SF**

= **0.52** CF/DAY/SF

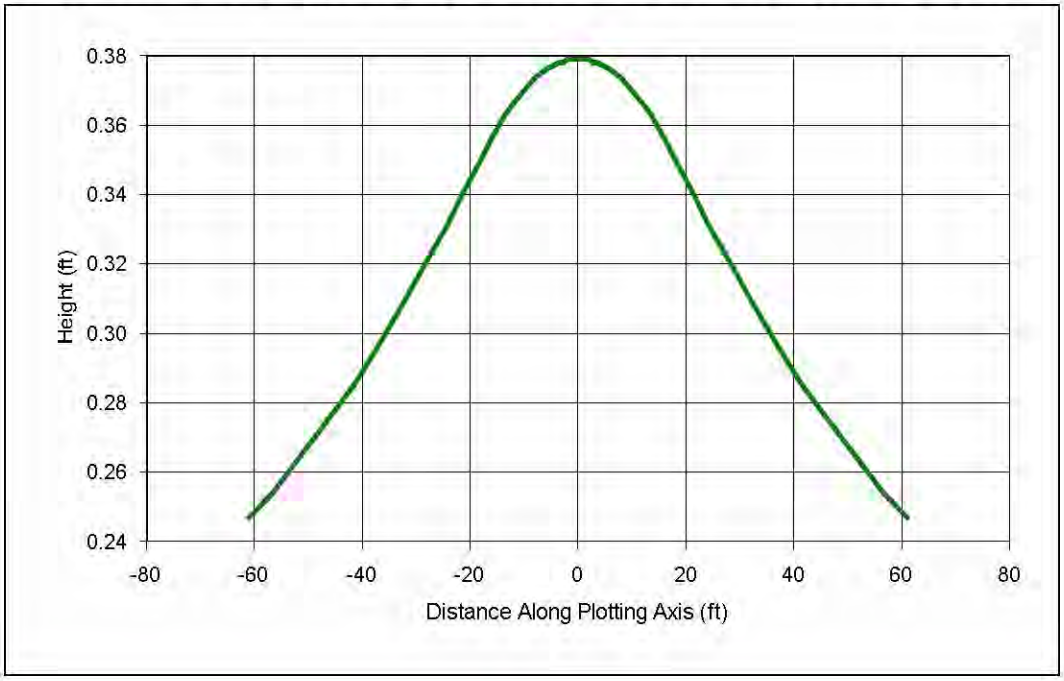
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES cham4

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 10:02:03 PM

INPUT PARAMETERS

Application rate: 0.52 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 75.6 ft
Width of application area: 24.5 ft
No constant head boundary used
Plotting axis from Y-Axis: 45 degrees
Edge of recharge area:
positive X: 12.2 ft
positive Y: 12.3 ft
Total volume applied: 23115.46 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -43.1 | -43.1 | -61 | 0.25 |
| -36.3 | -36.3 | -51 | 0.26 |
| -29.4 | -29.4 | -42 | 0.28 |
| -22.6 | -22.6 | -32 | 0.31 |
| -17.2 | -17.2 | -24 | 0.33 |
| -13 | -13 | -18 | 0.35 |
| -9.6 | -9.6 | -14 | 0.36 |
| -6.7 | -6.7 | -9 | 0.37 |
| -4.2 | -4.2 | -6 | 0.38 |
| -2.5 | -2.5 | -4 | 0.38 |
| -1.4 | -1.4 | -2 | 0.38 |
| 0 | 0 | 0 | 0.38 |
| 1.4 | 1.4 | 2 | 0.38 |
| 2.5 | 2.5 | 4 | 0.38 |
| 4.2 | 4.2 | 6 | 0.38 |
| 6.7 | 6.7 | 9 | 0.37 |
| 9.6 | 9.6 | 14 | 0.36 |
| 13 | 13 | 18 | 0.35 |
| 17.2 | 17.2 | 24 | 0.33 |
| 22.6 | 22.6 | 32 | 0.31 |
| 29.4 | 29.4 | 42 | 0.28 |
| 36.3 | 36.3 | 51 | 0.26 |
| 43.1 | 43.1 | 61 | 0.25 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

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|---|---|---|---|
| Location: | 279-281 | Date: | 12/12/2022 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M/ | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
septic

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.12 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | STANDARD | |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 62.00 | Ft | |
| WIDTH OF APPLICATION= | 141.5 | Ft | |
| CONSTANT HEAD BOUNDARY= | 136 | Ft | |
| PLOTTING AXIS= | 45 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**1,059** **CF** **DESIGN FLOW** / **1** / **1** **DAY**
**8,773** **SF**

= **0.12** CF/DAY/SF

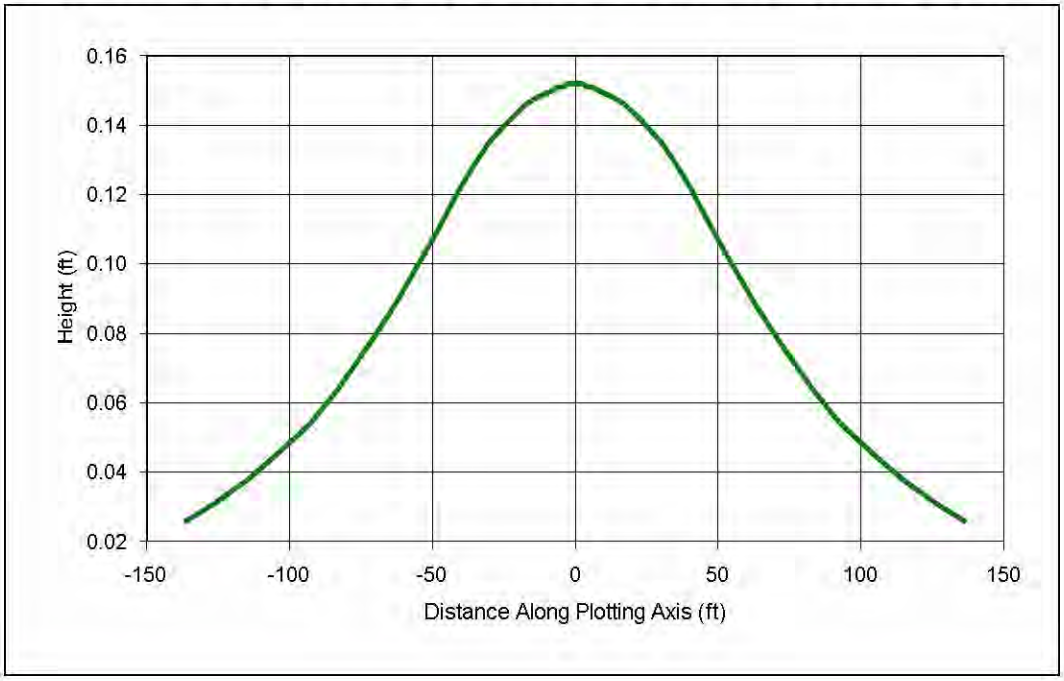
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGE SEPTIC SYSTEM

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:02:36 PM

INPUT PARAMETERS

Application rate: 0.12 c.ft/year/sq. ft
Duration of application: 1 years
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/year
Initial saturated thickness: 48 ft
Length of application area: 62 ft
Width of application area: 141.5 ft
No constant head boundary used
Plotting axis from Y-Axis: 45 degrees
Edge of recharge area:
positive X: 31 ft
positive Y: 31 ft
Total volume applied: 1052.76 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -96.2 | -96.2 | -136 | 0.03 |
| -80.9 | -80.9 | -114 | 0.04 |
| -65.6 | -65.6 | -93 | 0.05 |
| -50.3 | -50.3 | -71 | 0.08 |
| -38.3 | -38.3 | -54 | 0.1 |
| -28.9 | -28.9 | -41 | 0.12 |
| -21.3 | -21.3 | -30 | 0.14 |
| -14.9 | -14.9 | -21 | 0.14 |
| -9.3 | -9.3 | -13 | 0.15 |
| -5.6 | -5.6 | -8 | 0.15 |
| -3 | -3 | -4 | 0.15 |
| 0 | 0 | 0 | 0.15 |
| 3 | 3 | 4 | 0.15 |
| 5.6 | 5.6 | 8 | 0.15 |
| 9.3 | 9.3 | 13 | 0.15 |
| 14.9 | 14.9 | 21 | 0.14 |
| 21.3 | 21.3 | 30 | 0.14 |
| 28.9 | 28.9 | 41 | 0.12 |
| 38.3 | 38.3 | 54 | 0.1 |
| 50.3 | 50.3 | 71 | 0.08 |
| 65.6 | 65.6 | 93 | 0.05 |
| 80.9 | 80.9 | 114 | 0.04 |
| 96.2 | 96.2 | 136 | 0.03 |

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**KINGSTON, MA**

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| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 1

| | | |
|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF |
| DURATION= | 24 | HOURS |
| FILLABLE POROSITY= | 0.2 | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY |
| LENGTH OF APPLICATION= | 42.00 | Ft |
| WIDTH OF APPLICATION= | 7.1 | Ft |
| CONSTANT HEAD BOUNDARY= | 62 | Ft |
| PLOTTING AXIS= | 0 | DEGREES |
| SATURATED THICKNESS= | 48 | FT **max. on-site** |

APPLICATION RATE=

**42 CF DESIGN FLOW / 1 / 1 DAY**
**298 SF**

**= 0.14** CF/DAY/SF

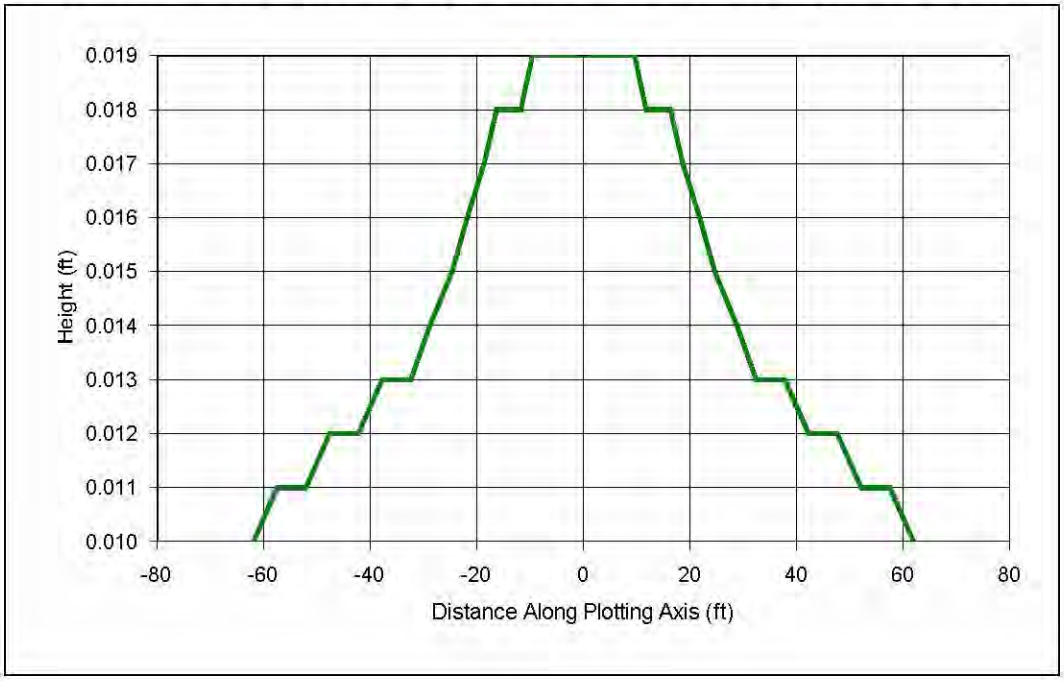
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U1

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:16:08 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 7.1 ft
No constant head boundary used
Plotting axis from Y-Axis: 0 degrees
Edge of recharge area:
positive X: 0 ft
positive Y: 21 ft
Total volume applied: 1001.952 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| 0 | -62 | -62 | 0.01 |
| 0 | -52.1 | -52 | 0.01 |
| 0 | -42.3 | -42 | 0.01 |
| 0 | -32.4 | -32 | 0.01 |
| 0 | -24.7 | -25 | 0.02 |
| 0 | -18.7 | -19 | 0.02 |
| 0 | -13.8 | -14 | 0.02 |
| 0 | -9.6 | -10 | 0.02 |
| 0 | -6 | -6 | 0.02 |
| 0 | -3.6 | -4 | 0.02 |
| 0 | -2 | -2 | 0.02 |
| 0 | 0 | 0 | 0.02 |
| 0 | 2 | 2 | 0.02 |
| 0 | 3.6 | 4 | 0.02 |
| 0 | 6 | 6 | 0.02 |
| 0 | 9.6 | 10 | 0.02 |
| 0 | 13.8 | 14 | 0.02 |
| 0 | 18.7 | 19 | 0.02 |
| 0 | 24.7 | 25 | 0.02 |
| 0 | 32.4 | 32 | 0.01 |
| 0 | 42.3 | 42 | 0.01 |
| 0 | 52.1 | 52 | 0.01 |
| 0 | 62 | 62 | 0.01 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
| Location: | 279-281 | Date: | 12/12/2022 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M/ | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 2

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | STANDARD | |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 87 | Ft | |
| PLOTTING AXIS= | 0 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**42 CF DESIGN FLOW / 1 / 1 DAY**
**298 SF**

**= 0.14** CF/DAY/SF

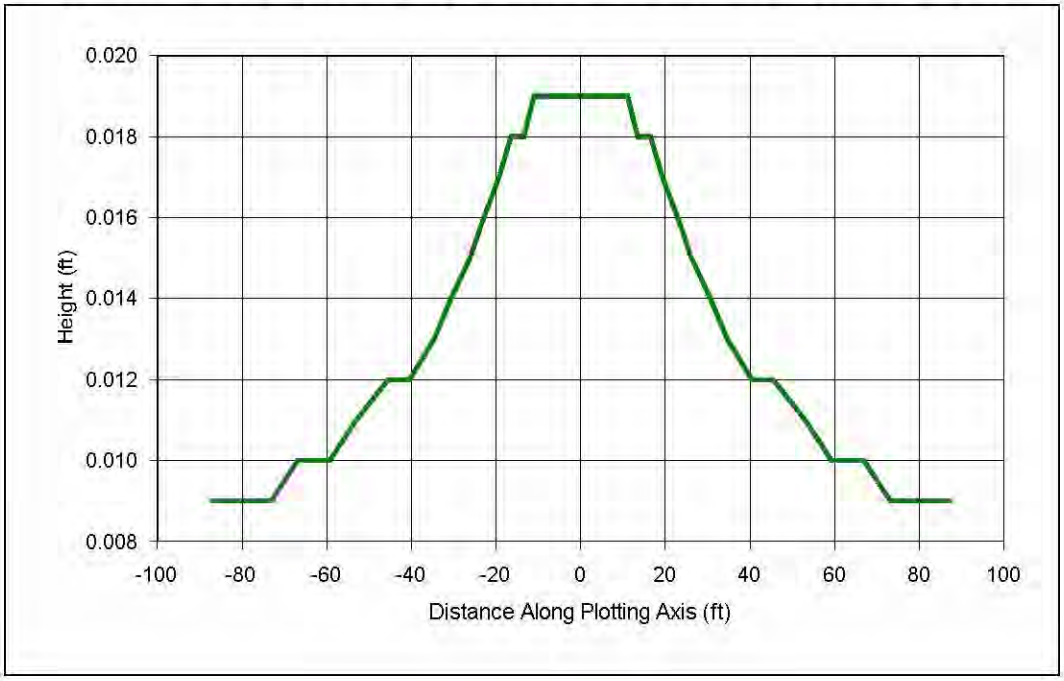
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U2

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 11:09:04 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 7.1 ft
No constant head boundary used
Plotting axis from Y-Axis: 0 degrees
Edge of recharge area:
positive X: 0 ft
positive Y: 21 ft
Total volume applied: 1001.952 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| 0 | -87 | -87 | 0.01 |
| 0 | -73.2 | -73 | 0.01 |
| 0 | -59.3 | -59 | 0.01 |
| 0 | -45.5 | -45 | 0.01 |
| 0 | -34.6 | -35 | 0.01 |
| 0 | -26.2 | -26 | 0.02 |
| 0 | -19.3 | -19 | 0.02 |
| 0 | -13.5 | -13 | 0.02 |
| 0 | -8.4 | -8 | 0.02 |
| 0 | -5 | -5 | 0.02 |
| 0 | -2.7 | -3 | 0.02 |
| 0 | 0 | 0 | 0.02 |
| 0 | 2.7 | 3 | 0.02 |
| 0 | 5 | 5 | 0.02 |
| 0 | 8.4 | 8 | 0.02 |
| 0 | 13.5 | 13 | 0.02 |
| 0 | 19.3 | 19 | 0.02 |
| 0 | 26.2 | 26 | 0.02 |
| 0 | 34.6 | 35 | 0.01 |
| 0 | 45.5 | 45 | 0.01 |
| 0 | 59.3 | 59 | 0.01 |
| 0 | 73.2 | 73 | 0.01 |
| 0 | 87 | 87 | 0.01 |

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**KINGSTON, MA**

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|---|---|---|---|
| Location: | 279-281 | Date: | 12/12/2022 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M/ | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 4

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | STANDARD | |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 53 | Ft | |
| PLOTTING AXIS= | 10 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**42 CF DESIGN FLOW / 1 / 1 DAY**
**298 SF**

**= 0.14** CF/DAY/SF

HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)


COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U4

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:20:17 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 7.1 ft
No constant head boundary used
Plotting axis from Y-Axis: 0 degrees
Edge of recharge area:
positive X: 0 ft
positive Y: 21 ft
Total volume applied: 1001.952 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| 0 | -53 | -53 | 0.01 |
| 0 | -44.6 | -45 | 0.01 |
| 0 | -36.1 | -36 | 0.01 |
| 0 | -27.7 | -28 | 0.01 |
| 0 | -21.1 | -21 | 0.02 |
| 0 | -16 | -16 | 0.02 |
| 0 | -11.8 | -12 | 0.02 |
| 0 | -8.2 | -8 | 0.02 |
| 0 | -5.1 | -5 | 0.02 |
| 0 | -3.1 | -3 | 0.02 |
| 0 | -1.7 | -2 | 0.02 |
| 0 | 0 | 0 | 0.02 |
| 0 | 1.7 | 2 | 0.02 |
| 0 | 3.1 | 3 | 0.02 |
| 0 | 5.1 | 5 | 0.02 |
| 0 | 8.2 | 8 | 0.02 |
| 0 | 11.8 | 12 | 0.02 |
| 0 | 16 | 16 | 0.02 |
| 0 | 21.1 | 21 | 0.02 |
| 0 | 27.7 | 28 | 0.01 |
| 0 | 36.1 | 36 | 0.01 |
| 0 | 44.6 | 45 | 0.01 |
| 0 | 53 | 53 | 0.01 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
| Location: | 279-281 | Date: | 12/12/2022 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M/ | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 5

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | STANDARD | |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 168 | Ft | |
| PLOTTING AXIS= | 45 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**42** **CF** **DESIGN FLOW** **/** **1** **/** **1** **DAY**
**298** **SF**

= **0.14** CF/DAY/SF

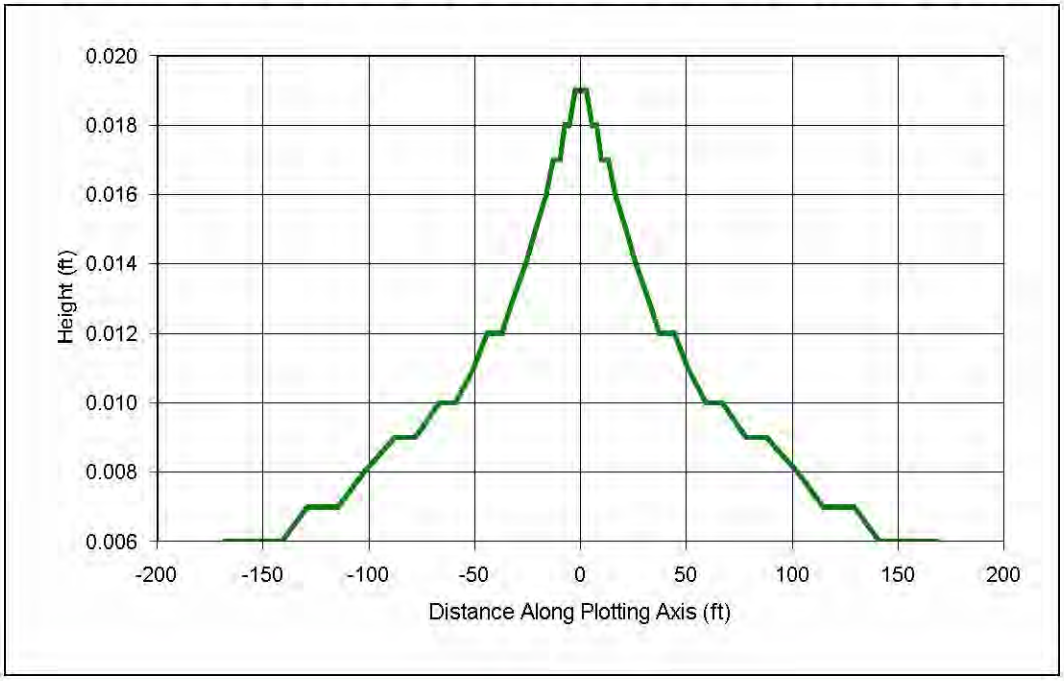
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U5

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:23:57 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 7.1 ft
No constant head boundary used
Plotting axis from Y-Axis: 45 degrees
Edge of recharge area:
positive X: 3.6 ft
positive Y: 3.6 ft
Total volume applied: 1001.952 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -118.8 | -118.8 | -168 | 0.01 |
| -99.9 | -99.9 | -141 | 0.01 |
| -81 | -81 | -115 | 0.01 |
| -62.1 | -62.1 | -88 | 0.01 |
| -47.3 | -47.3 | -67 | 0.01 |
| -35.8 | -35.8 | -51 | 0.01 |
| -26.3 | -26.3 | -37 | 0.01 |
| -18.4 | -18.4 | -26 | 0.01 |
| -11.5 | -11.5 | -16 | 0.02 |
| -6.9 | -6.9 | -10 | 0.02 |
| -3.7 | -3.7 | -5 | 0.02 |
| 0 | 0 | 0 | 0.02 |
| 3.7 | 3.7 | 5 | 0.02 |
| 6.9 | 6.9 | 10 | 0.02 |
| 11.5 | 11.5 | 16 | 0.02 |
| 18.4 | 18.4 | 26 | 0.01 |
| 26.3 | 26.3 | 37 | 0.01 |
| 35.8 | 35.8 | 51 | 0.01 |
| 47.3 | 47.3 | 67 | 0.01 |
| 62.1 | 62.1 | 88 | 0.01 |
| 81 | 81 | 115 | 0.01 |
| 99.9 | 99.9 | 141 | 0.01 |
| 118.8 | 118.8 | 168 | 0.01 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
| Location: | 279-281 | Date: | 12/12/2022 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M/ | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 6 and 7

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | STANDARD | |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 14.2 | Ft | |
| CONSTANT HEAD BOUNDARY= | 148 | Ft | |
| PLOTTING AXIS= | 85 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**83** **CF** **DESIGN FLOW** / $\frac{\textbf{1}}{\textbf{596}}$ **SF** / $\frac{\textbf{1}}{\ }$ **DAY**

= **0.14** CF/DAY/SF

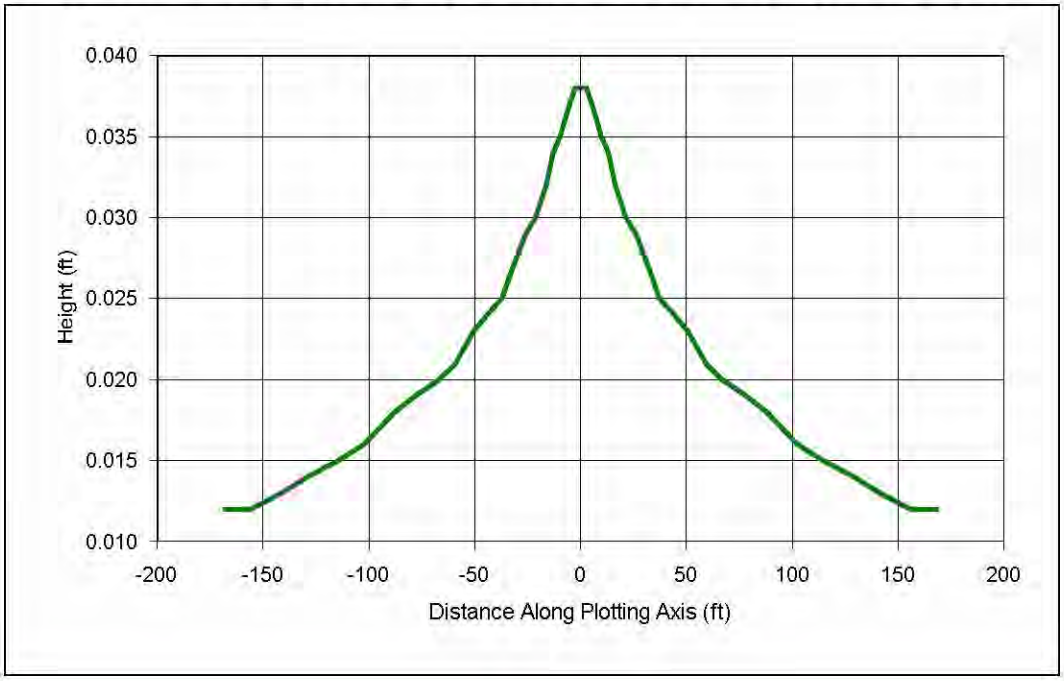
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U6 and 7

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:26:15 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 14.2 ft
No constant head boundary used
Plotting axis from Y-Axis: 45 degrees
Edge of recharge area:
positive X: 7.1 ft
positive Y: 7.1 ft
Total volume applied: 2003.904 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -118.8 | -118.8 | -168 | 0.01 |
| -99.9 | -99.9 | -141 | 0.01 |
| -81 | -81 | -115 | 0.02 |
| -62.1 | -62.1 | -88 | 0.02 |
| -47.3 | -47.3 | -67 | 0.02 |
| -35.8 | -35.8 | -51 | 0.02 |
| -26.3 | -26.3 | -37 | 0.02 |
| -18.4 | -18.4 | -26 | 0.03 |
| -11.5 | -11.5 | -16 | 0.03 |
| -6.9 | -6.9 | -10 | 0.04 |
| -3.7 | -3.7 | -5 | 0.04 |
| 0 | 0 | 0 | 0.04 |
| 3.7 | 3.7 | 5 | 0.04 |
| 6.9 | 6.9 | 10 | 0.04 |
| 11.5 | 11.5 | 16 | 0.03 |
| 18.4 | 18.4 | 26 | 0.03 |
| 26.3 | 26.3 | 37 | 0.02 |
| 35.8 | 35.8 | 51 | 0.02 |
| 47.3 | 47.3 | 67 | 0.02 |
| 62.1 | 62.1 | 88 | 0.02 |
| 81 | 81 | 115 | 0.02 |
| 99.9 | 99.9 | 141 | 0.01 |
| 118.8 | 118.8 | 168 | 0.01 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

| | | | |
|---|---|---|---|
| Location: | 279-281 | Date: | 12/12/2022 |
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| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 8

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | STANDARD | |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 79 | Ft | |
| PLOTTING AXIS= | 5 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**42 CF DESIGN FLOW / 1 / 1 DAY**
**298 SF**

**= 0.14** CF/DAY/SF

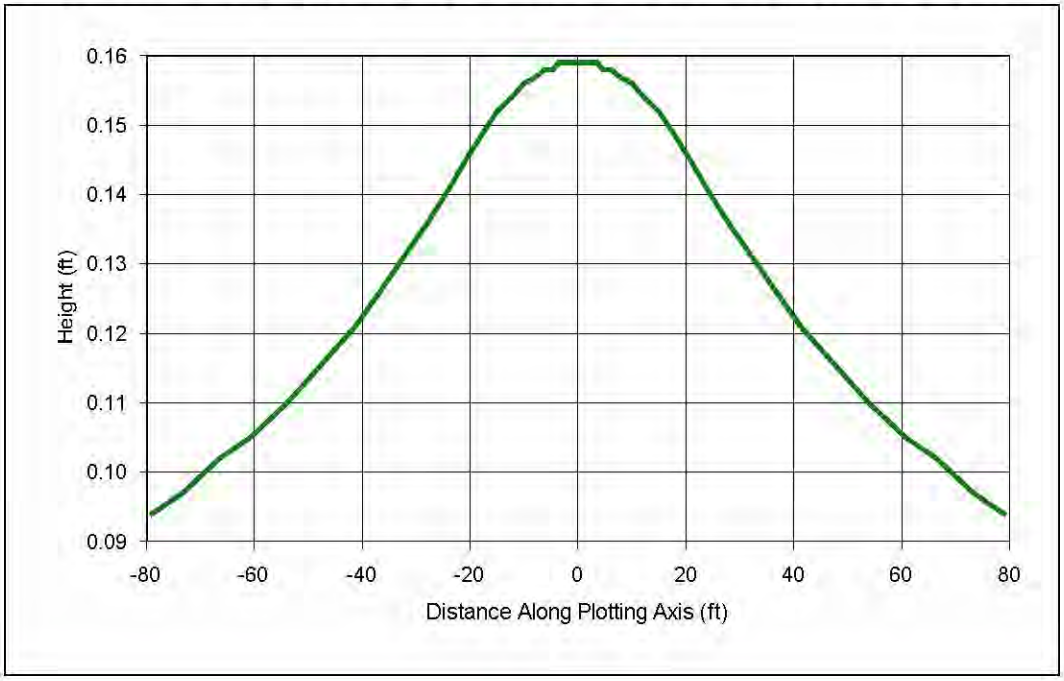
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U8

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:28:05 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 5 degrees
Edge of recharge area:
positive X: 1.8 ft
positive Y: 21 ft
Total volume applied: 10019.52 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -6.9 | -78.7 | -79 | 0.09 |
| -5.8 | -66.2 | -66 | 0.1 |
| -4.7 | -53.7 | -54 | 0.11 |
| -3.6 | -41.2 | -41 | 0.12 |
| -2.7 | -31.3 | -31 | 0.13 |
| -2.1 | -23.7 | -24 | 0.14 |
| -1.5 | -17.5 | -18 | 0.15 |
| -1.1 | -12.2 | -12 | 0.15 |
| -0.7 | -7.6 | -8 | 0.16 |
| -0.4 | -4.6 | -5 | 0.16 |
| -0.2 | -2.5 | -2 | 0.16 |
| 0 | 0 | 0 | 0.16 |
| 0.2 | 2.5 | 2 | 0.16 |
| 0.4 | 4.6 | 5 | 0.16 |
| 0.7 | 7.6 | 8 | 0.16 |
| 1.1 | 12.2 | 12 | 0.15 |
| 1.5 | 17.5 | 18 | 0.15 |
| 2.1 | 23.7 | 24 | 0.14 |
| 2.7 | 31.3 | 31 | 0.13 |
| 3.6 | 41.2 | 41 | 0.12 |
| 4.7 | 53.7 | 54 | 0.11 |
| 5.8 | 66.2 | 66 | 0.1 |
| 6.9 | 78.7 | 79 | 0.09 |

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**KINGSTON, MA**

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| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 9

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | STANDARD | |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 127 | Ft | |
| PLOTTING AXIS= | 45 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**42** **CF** **DESIGN FLOW** / **1** / **1** **DAY**
**298** **SF**

= **0.14** CF/DAY/SF

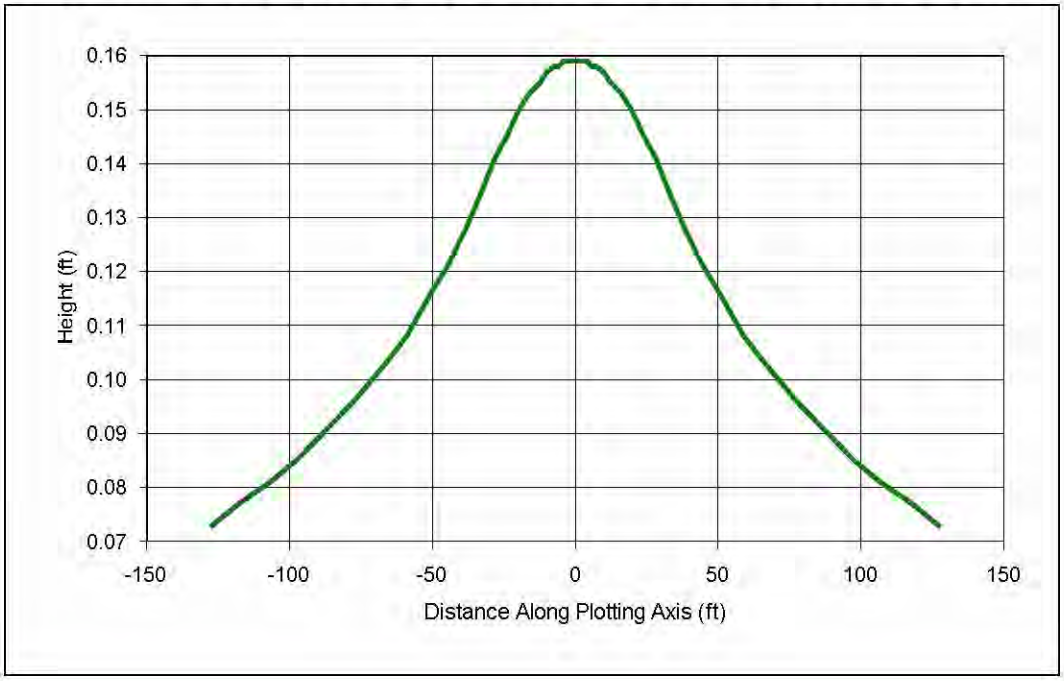
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U9

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:31:29 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 45 degrees
Edge of recharge area:
positive X: 21 ft
positive Y: 21 ft
Total volume applied: 10019.52 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -89.8 | -89.8 | -127 | 0.07 |
| -75.5 | -75.5 | -107 | 0.08 |
| -61.2 | -61.2 | -87 | 0.09 |
| -47 | -47 | -66 | 0.1 |
| -35.7 | -35.7 | -51 | 0.12 |
| -27 | -27 | -38 | 0.13 |
| -19.9 | -19.9 | -28 | 0.14 |
| -13.9 | -13.9 | -20 | 0.15 |
| -8.7 | -8.7 | -12 | 0.16 |
| -5.2 | -5.2 | -7 | 0.16 |
| -2.8 | -2.8 | -4 | 0.16 |
| 0 | 0 | 0 | 0.16 |
| 2.8 | 2.8 | 4 | 0.16 |
| 5.2 | 5.2 | 7 | 0.16 |
| 8.7 | 8.7 | 12 | 0.16 |
| 13.9 | 13.9 | 20 | 0.15 |
| 19.9 | 19.9 | 28 | 0.14 |
| 27 | 27 | 38 | 0.13 |
| 35.7 | 35.7 | 51 | 0.12 |
| 47 | 47 | 66 | 0.1 |
| 61.2 | 61.2 | 87 | 0.09 |
| 75.5 | 75.5 | 107 | 0.08 |
| 89.8 | 89.8 | 127 | 0.07 |

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| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 10

| | | |
|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF |
| DURATION= | 24 | HOURS |
| FILLABLE POROSITY= | 0.2 | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY |
| LENGTH OF APPLICATION= | 42.00 | Ft |
| WIDTH OF APPLICATION= | 7.1 | Ft |
| CONSTANT HEAD BOUNDARY= | 296 | Ft |
| PLOTTING AXIS= | 90 | DEGREES |
| SATURATED THICKNESS= | 48 | FT **max. on-site** |

APPLICATION RATE=

**42 CF DESIGN FLOW / 1 / 1 DAY**
**298 SF**

**= 0.14** CF/DAY/SF

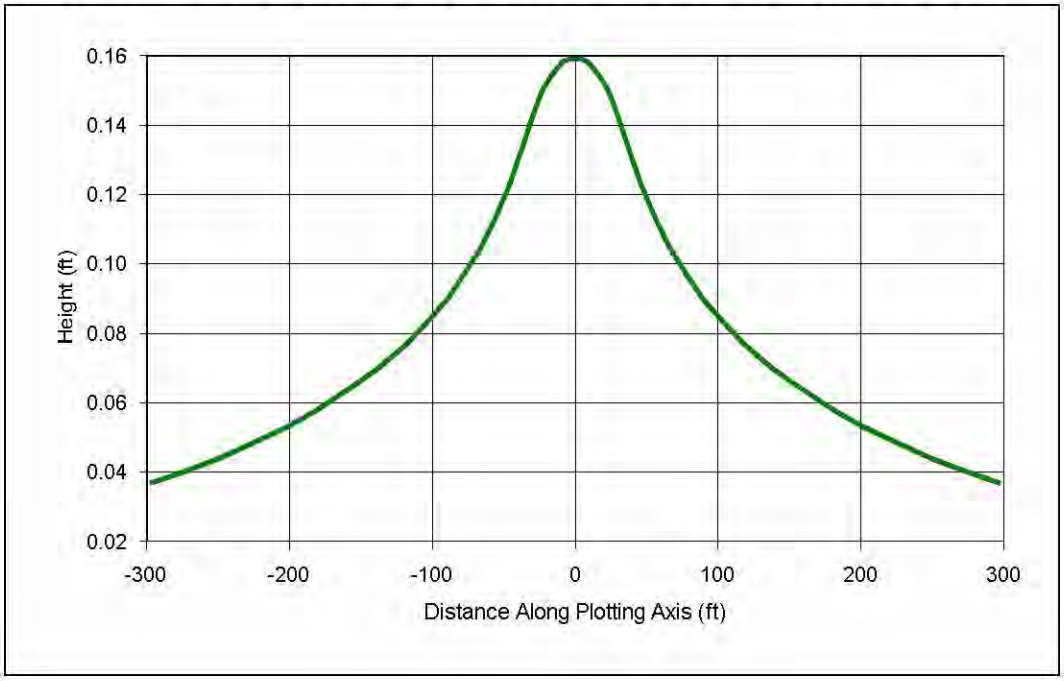
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U10

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:32:52 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 90 degrees
Edge of recharge area:
positive X: 35.5 ft
positive Y: 0 ft
Total volume applied: 10019.52 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -296 | 0 | -296 | 0.04 |
| -248.9 | 0 | -249 | 0.04 |
| -201.8 | 0 | -202 | 0.05 |
| -154.8 | 0 | -155 | 0.06 |
| -117.8 | 0 | -118 | 0.08 |
| -89.1 | 0 | -89 | 0.09 |
| -65.7 | 0 | -66 | 0.1 |
| -45.9 | 0 | -46 | 0.12 |
| -28.7 | 0 | -29 | 0.14 |
| -17.2 | 0 | -17 | 0.15 |
| -9.3 | 0 | -9 | 0.16 |
| 0 | 0 | 0 | 0.16 |
| 9.3 | 0 | 9 | 0.16 |
| 17.2 | 0 | 17 | 0.15 |
| 28.7 | 0 | 29 | 0.14 |
| 45.9 | 0 | 46 | 0.12 |
| 65.7 | 0 | 66 | 0.1 |
| 89.1 | 0 | 89 | 0.09 |
| 117.8 | 0 | 118 | 0.08 |
| 154.8 | 0 | 155 | 0.06 |
| 201.8 | 0 | 202 | 0.05 |
| 248.9 | 0 | 249 | 0.04 |
| 296 | 0 | 296 | 0.04 |

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| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 11

| | | |
|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF |
| DURATION= | 24 | HOURS |
| FILLABLE POROSITY= | 0.2 | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY |
| LENGTH OF APPLICATION= | 42.00 | Ft |
| WIDTH OF APPLICATION= | 7.1 | Ft |
| CONSTANT HEAD BOUNDARY= | 68 | Ft |
| PLOTTING AXIS= | 0 | DEGREES |
| SATURATED THICKNESS= | 48 | FT **max. on-site** |

APPLICATION RATE=

**42 CF DESIGN FLOW / 1 / 1 DAY**
**298 SF**

**= 0.14** CF/DAY/SF

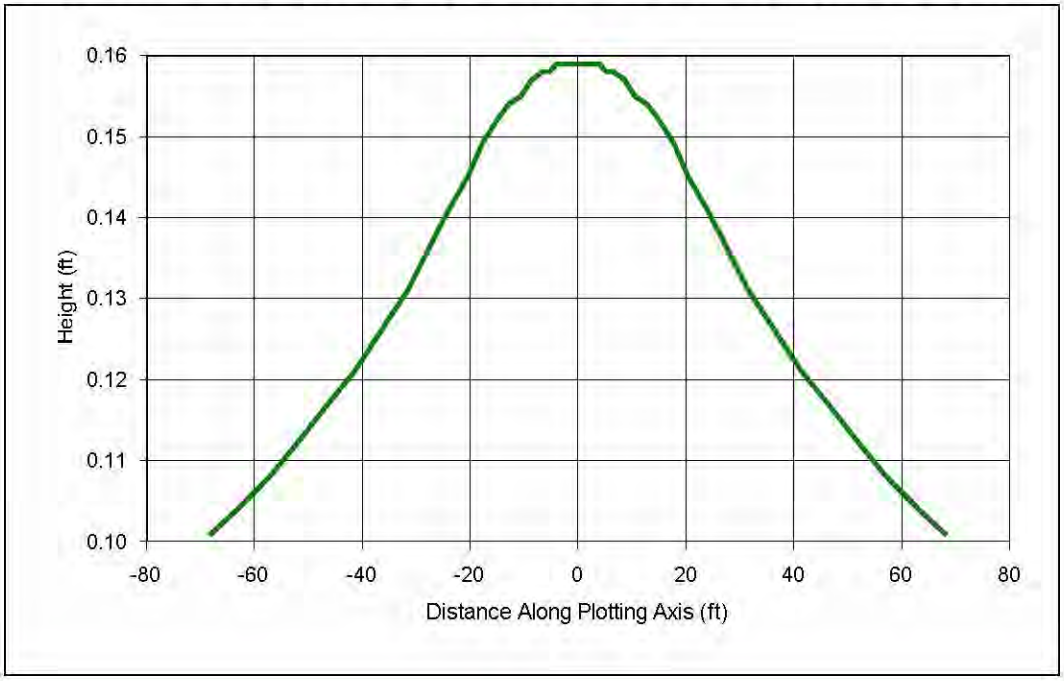
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U11

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:34:04 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 0 degrees
Edge of recharge area:
positive X: 0 ft
positive Y: 21 ft
Total volume applied: 10019.52 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| 0 | -68 | -68 | 0.1 |
| 0 | -57.2 | -57 | 0.11 |
| 0 | -46.4 | -46 | 0.12 |
| 0 | -35.6 | -36 | 0.13 |
| 0 | -27.1 | -27 | 0.14 |
| 0 | -20.5 | -20 | 0.14 |
| 0 | -15.1 | -15 | 0.15 |
| 0 | -10.5 | -11 | 0.16 |
| 0 | -6.6 | -7 | 0.16 |
| 0 | -3.9 | -4 | 0.16 |
| 0 | -2.1 | -2 | 0.16 |
| 0 | 0 | 0 | 0.16 |
| 0 | 2.1 | 2 | 0.16 |
| 0 | 3.9 | 4 | 0.16 |
| 0 | 6.6 | 7 | 0.16 |
| 0 | 10.5 | 11 | 0.16 |
| 0 | 15.1 | 15 | 0.15 |
| 0 | 20.5 | 20 | 0.14 |
| 0 | 27.1 | 27 | 0.14 |
| 0 | 35.6 | 36 | 0.13 |
| 0 | 46.4 | 46 | 0.12 |
| 0 | 57.2 | 57 | 0.11 |
| 0 | 68 | 68 | 0.1 |

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| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 12

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | STANDARD | |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 67 | Ft | |
| PLOTTING AXIS= | 90 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**42** **CF** **DESIGN FLOW** **/** **1** **/** **1** **DAY**
**298** **SF**

= **0.14** CF/DAY/SF

HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)


COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U12

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:35:23 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 90 degrees
Edge of recharge area:
positive X: 35.5 ft
positive Y: 0 ft
Total volume applied: 10019.52 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -67 | 0 | -67 | 0.1 |
| -56.3 | 0 | -56 | 0.11 |
| -45.7 | 0 | -46 | 0.12 |
| -35 | 0 | -35 | 0.14 |
| -26.7 | 0 | -27 | 0.15 |
| -20.2 | 0 | -20 | 0.15 |
| -14.9 | 0 | -15 | 0.16 |
| -10.4 | 0 | -10 | 0.16 |
| -6.5 | 0 | -6 | 0.16 |
| -3.9 | 0 | -4 | 0.16 |
| -2.1 | 0 | -2 | 0.16 |
| 0 | 0 | 0 | 0.16 |
| 2.1 | 0 | 2 | 0.16 |
| 3.9 | 0 | 4 | 0.16 |
| 6.5 | 0 | 6 | 0.16 |
| 10.4 | 0 | 10 | 0.16 |
| 14.9 | 0 | 15 | 0.16 |
| 20.2 | 0 | 20 | 0.15 |
| 26.7 | 0 | 27 | 0.15 |
| 35 | 0 | 35 | 0.14 |
| 45.7 | 0 | 46 | 0.12 |
| 56.3 | 0 | 56 | 0.11 |
| 67 | 0 | 67 | 0.1 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

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| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 13

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | STANDARD | |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 62 | Ft | |
| PLOTTING AXIS= | 90 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**42 CF DESIGN FLOW / 1 / 1 DAY**
**298 SF**

**= 0.14** CF/DAY/SF

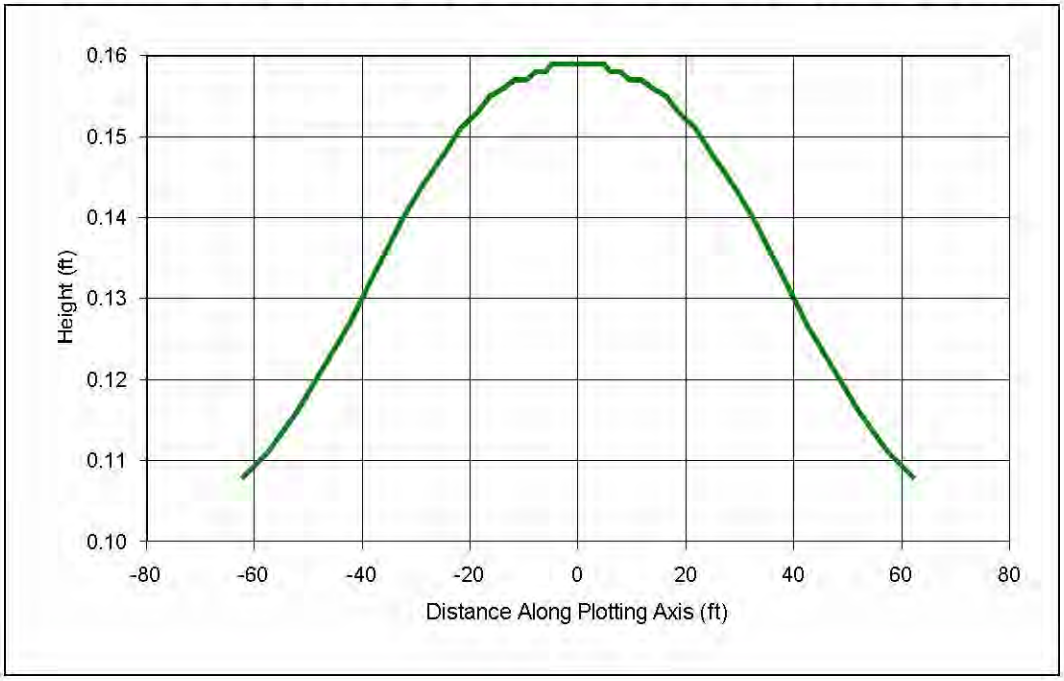
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U13

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:37:44 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 90 degrees
Edge of recharge area:
positive X: 35.5 ft
positive Y: 0 ft
Total volume applied: 10019.52 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -62 | 0 | -62 | 0.11 |
| -52.1 | 0 | -52 | 0.12 |
| -42.3 | 0 | -42 | 0.13 |
| -32.4 | 0 | -32 | 0.14 |
| -24.7 | 0 | -25 | 0.15 |
| -18.7 | 0 | -19 | 0.15 |
| -13.8 | 0 | -14 | 0.16 |
| -9.6 | 0 | -10 | 0.16 |
| -6 | 0 | -6 | 0.16 |
| -3.6 | 0 | -4 | 0.16 |
| -2 | 0 | -2 | 0.16 |
| 0 | 0 | 0 | 0.16 |
| 2 | 0 | 2 | 0.16 |
| 3.6 | 0 | 4 | 0.16 |
| 6 | 0 | 6 | 0.16 |
| 9.6 | 0 | 10 | 0.16 |
| 13.8 | 0 | 14 | 0.16 |
| 18.7 | 0 | 19 | 0.15 |
| 24.7 | 0 | 25 | 0.15 |
| 32.4 | 0 | 32 | 0.14 |
| 42.3 | 0 | 42 | 0.13 |
| 52.1 | 0 | 52 | 0.12 |
| 62 | 0 | 62 | 0.11 |

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| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 14

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | STANDARD | |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 62 | Ft | |
| PLOTTING AXIS= | 90 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**42** **CF** **DESIGN FLOW** **/** **1** **/** **1** **DAY**
**298** **SF**

= **0.14** CF/DAY/SF

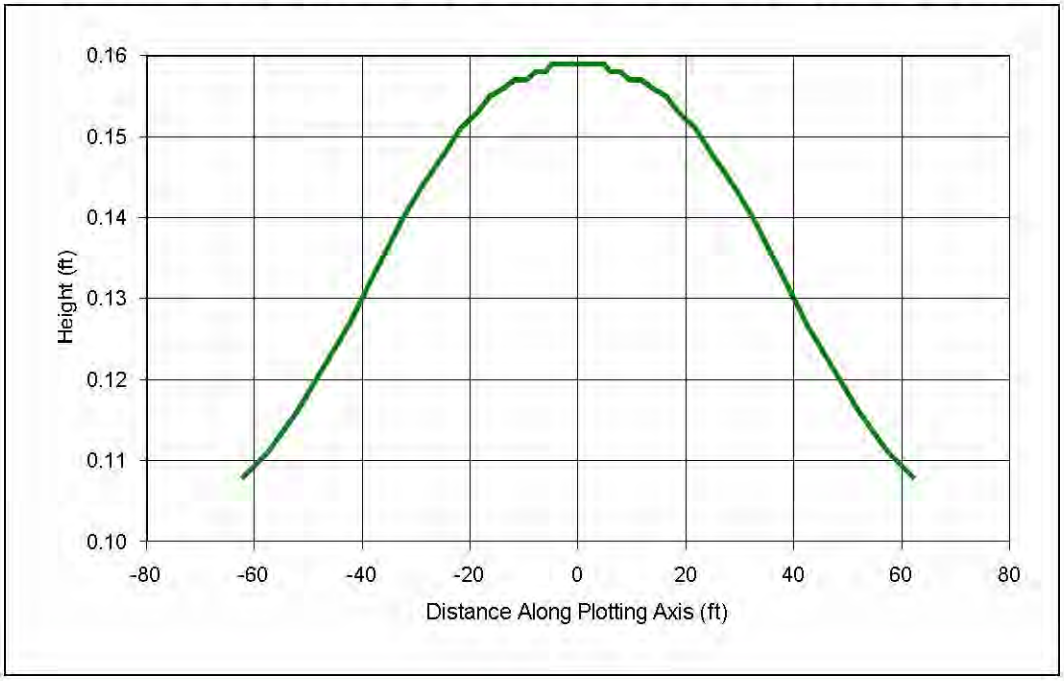
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U15

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:41:43 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 90 degrees
Edge of recharge area:
positive X: 35.5 ft
positive Y: 0 ft
Total volume applied: 10019.52 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -62 | 0 | -62 | 0.11 |
| -52.1 | 0 | -52 | 0.12 |
| -42.3 | 0 | -42 | 0.13 |
| -32.4 | 0 | -32 | 0.14 |
| -24.7 | 0 | -25 | 0.15 |
| -18.7 | 0 | -19 | 0.15 |
| -13.8 | 0 | -14 | 0.16 |
| -9.6 | 0 | -10 | 0.16 |
| -6 | 0 | -6 | 0.16 |
| -3.6 | 0 | -4 | 0.16 |
| -2 | 0 | -2 | 0.16 |
| 0 | 0 | 0 | 0.16 |
| 2 | 0 | 2 | 0.16 |
| 3.6 | 0 | 4 | 0.16 |
| 6 | 0 | 6 | 0.16 |
| 9.6 | 0 | 10 | 0.16 |
| 13.8 | 0 | 14 | 0.16 |
| 18.7 | 0 | 19 | 0.15 |
| 24.7 | 0 | 25 | 0.15 |
| 32.4 | 0 | 32 | 0.14 |
| 42.3 | 0 | 42 | 0.13 |
| 52.1 | 0 | 52 | 0.12 |
| 62 | 0 | 62 | 0.11 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
**167R SUMMER ST.**
**KINGSTON, MA**

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|---|---|---|---|
| Location: | 279-281 | Date: | 12/12/2022 |
| STREET: | OLD OAKEN BUCKET RD., SCITUATE M/ | Revised: | |
| Project No.: | 1908.00 | Computed By: | AAE |
| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 15

| | | |
|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF |
| DURATION= | 24 | HOURS |
| FILLABLE POROSITY= | 0.2 | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY |
| LENGTH OF APPLICATION= | 42.00 | Ft |
| WIDTH OF APPLICATION= | 7.1 | Ft |
| CONSTANT HEAD BOUNDARY= | 68 | Ft |
| PLOTTING AXIS= | 80 | DEGREES |
| SATURATED THICKNESS= | 48 | FT **max. on-site** |

APPLICATION RATE=

**42** **CF** **DESIGN FLOW** / **1** / **1** **DAY**
**298** **SF**

= **0.14** CF/DAY/SF

HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)


COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U15

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:43:58 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 80 degrees
Edge of recharge area:
positive X: 35.5 ft
positive Y: 6.3 ft
Total volume applied: 10019.52 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -67 | -11.8 | -68 | 0.1 |
| -56.3 | -9.9 | -57 | 0.11 |
| -45.7 | -8.1 | -46 | 0.12 |
| -35 | -6.2 | -36 | 0.14 |
| -26.6 | -4.7 | -27 | 0.15 |
| -20.2 | -3.6 | -20 | 0.15 |
| -14.9 | -2.6 | -15 | 0.16 |
| -10.4 | -1.8 | -11 | 0.16 |
| -6.5 | -1.1 | -7 | 0.16 |
| -3.9 | -0.7 | -4 | 0.16 |
| -2.1 | -0.4 | -2 | 0.16 |
| 0 | 0 | 0 | 0.16 |
| 2.1 | 0.4 | 2 | 0.16 |
| 3.9 | 0.7 | 4 | 0.16 |
| 6.5 | 1.1 | 7 | 0.16 |
| 10.4 | 1.8 | 11 | 0.16 |
| 14.9 | 2.6 | 15 | 0.16 |
| 20.2 | 3.6 | 20 | 0.15 |
| 26.6 | 4.7 | 27 | 0.15 |
| 35 | 6.2 | 36 | 0.14 |
| 45.7 | 8.1 | 46 | 0.12 |
| 56.3 | 9.9 | 57 | 0.11 |
| 67 | 11.8 | 68 | 0.1 |

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| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 16 and 17

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | STANDARD | |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 84.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 68 | Ft | |
| PLOTTING AXIS= | 80 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**83** **CF** **DESIGN FLOW** / **1** / **1** **DAY**
**596** **SF**

= **0.14** CF/DAY/SF

HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)


COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U16and17

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:45:36 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 84 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 80 degrees
Edge of recharge area:
positive X: 35.5 ft
positive Y: 6.3 ft
Total volume applied: 20039.04 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -67 | -11.8 | -68 | 0.2 |
| -56.3 | -9.9 | -57 | 0.22 |
| -45.7 | -8.1 | -46 | 0.24 |
| -35 | -6.2 | -36 | 0.26 |
| -26.6 | -4.7 | -27 | 0.27 |
| -20.2 | -3.6 | -20 | 0.28 |
| -14.9 | -2.6 | -15 | 0.28 |
| -10.4 | -1.8 | -11 | 0.29 |
| -6.5 | -1.1 | -7 | 0.29 |
| -3.9 | -0.7 | -4 | 0.29 |
| -2.1 | -0.4 | -2 | 0.29 |
| 0 | 0 | 0 | 0.29 |
| 2.1 | 0.4 | 2 | 0.29 |
| 3.9 | 0.7 | 4 | 0.29 |
| 6.5 | 1.1 | 7 | 0.29 |
| 10.4 | 1.8 | 11 | 0.29 |
| 14.9 | 2.6 | 15 | 0.28 |
| 20.2 | 3.6 | 20 | 0.28 |
| 26.6 | 4.7 | 27 | 0.27 |
| 35 | 6.2 | 36 | 0.26 |
| 45.7 | 8.1 | 46 | 0.24 |
| 56.3 | 9.9 | 57 | 0.22 |
| 67 | 11.8 | 68 | 0.2 |

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| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 18

| | | |
|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF |
| DURATION= | 24 | HOURS |
| FILLABLE POROSITY= | 0.2 | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY |
| LENGTH OF APPLICATION= | 42.00 | Ft |
| WIDTH OF APPLICATION= | 7.1 | Ft |
| CONSTANT HEAD BOUNDARY= | 94 | Ft |
| PLOTTING AXIS= | 80 | DEGREES |
| SATURATED THICKNESS= | 48 | FT **max. on-site** |

APPLICATION RATE=

**42** **CF** **DESIGN FLOW** **/** **1** **/** **1** **DAY**
**298** **SF**

= **0.14** CF/DAY/SF

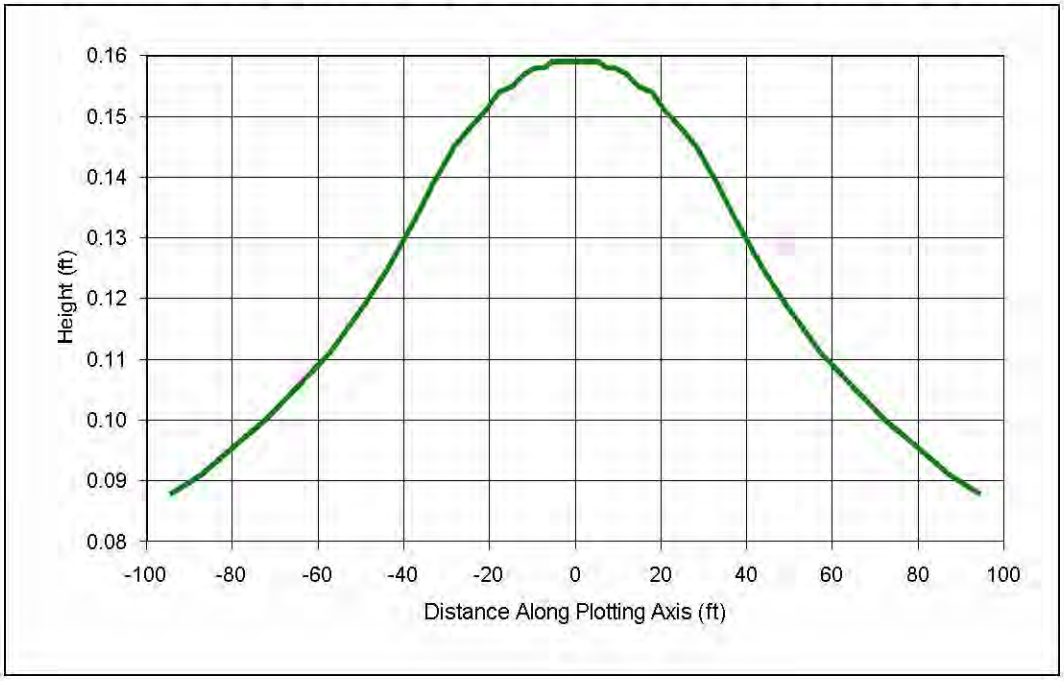
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U18

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:47:06 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 80 degrees
Edge of recharge area:
positive X: 35.5 ft
positive Y: 6.3 ft
Total volume applied: 10019.52 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -92.6 | -16.3 | -94 | 0.09 |
| -77.9 | -13.7 | -79 | 0.1 |
| -63.1 | -11.1 | -64 | 0.11 |
| -48.4 | -8.5 | -49 | 0.12 |
| -36.8 | -6.5 | -37 | 0.13 |
| -27.9 | -4.9 | -28 | 0.14 |
| -20.5 | -3.6 | -21 | 0.15 |
| -14.3 | -2.5 | -15 | 0.16 |
| -9 | -1.6 | -9 | 0.16 |
| -5.4 | -0.9 | -5 | 0.16 |
| -2.9 | -0.5 | -3 | 0.16 |
| 0 | 0 | 0 | 0.16 |
| 2.9 | 0.5 | 3 | 0.16 |
| 5.4 | 0.9 | 5 | 0.16 |
| 9 | 1.6 | 9 | 0.16 |
| 14.3 | 2.5 | 15 | 0.16 |
| 20.5 | 3.6 | 21 | 0.15 |
| 27.9 | 4.9 | 28 | 0.14 |
| 36.8 | 6.5 | 37 | 0.13 |
| 48.4 | 8.5 | 49 | 0.12 |
| 63.1 | 11.1 | 64 | 0.11 |
| 77.9 | 13.7 | 79 | 0.1 |
| 92.6 | 16.3 | 94 | 0.09 |

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| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 19

| | | |
|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF |
| DURATION= | 24 | HOURS |
| FILLABLE POROSITY= | 0.2 | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY |
| LENGTH OF APPLICATION= | 42.00 | Ft |
| WIDTH OF APPLICATION= | 7.1 | Ft |
| CONSTANT HEAD BOUNDARY= | 53 | Ft |
| PLOTTING AXIS= | 5 | DEGREES |
| SATURATED THICKNESS= | 48 | FT **max. on-site** |

APPLICATION RATE=

**42** **CF** **DESIGN FLOW** / **1** / **1** **DAY**
**298** **SF**

= **0.14** CF/DAY/SF

HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)


COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U19

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:48:31 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 5 degrees
Edge of recharge area:
positive X: 1.8 ft
positive Y: 21 ft
Total volume applied: 10019.52 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -4.6 | -52.8 | -53 | 0.11 |
| -3.9 | -44.4 | -45 | 0.12 |
| -3.1 | -36 | -36 | 0.13 |
| -2.4 | -27.6 | -28 | 0.14 |
| -1.8 | -21 | -21 | 0.14 |
| -1.4 | -15.9 | -16 | 0.15 |
| -1 | -11.7 | -12 | 0.16 |
| -0.7 | -8.2 | -8 | 0.16 |
| -0.4 | -5.1 | -5 | 0.16 |
| -0.3 | -3.1 | -3 | 0.16 |
| -0.1 | -1.7 | -2 | 0.16 |
| 0 | 0 | 0 | 0.16 |
| 0.1 | 1.7 | 2 | 0.16 |
| 0.3 | 3.1 | 3 | 0.16 |
| 0.4 | 5.1 | 5 | 0.16 |
| 0.7 | 8.2 | 8 | 0.16 |
| 1 | 11.7 | 12 | 0.16 |
| 1.4 | 15.9 | 16 | 0.15 |
| 1.8 | 21 | 21 | 0.14 |
| 2.4 | 27.6 | 28 | 0.14 |
| 3.1 | 36 | 36 | 0.13 |
| 3.9 | 44.4 | 45 | 0.12 |
| 4.6 | 52.8 | 53 | 0.11 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
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| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 20

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | STANDARD | |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 52 | Ft | |
| PLOTTING AXIS= | 45 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**42** **CF** **DESIGN FLOW** **/** **1** **/** **1** **DAY**
**298** **SF**

= **0.14** CF/DAY/SF

HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)


COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U20

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:49:58 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 45 degrees
Edge of recharge area:
positive X: 21 ft
positive Y: 21 ft
Total volume applied: 10019.52 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -36.8 | -36.8 | -52 | 0.11 |
| -30.9 | -30.9 | -44 | 0.12 |
| -25.1 | -25.1 | -35 | 0.13 |
| -19.2 | -19.2 | -27 | 0.14 |
| -14.6 | -14.6 | -21 | 0.15 |
| -11.1 | -11.1 | -16 | 0.15 |
| -8.2 | -8.2 | -12 | 0.16 |
| -5.7 | -5.7 | -8 | 0.16 |
| -3.6 | -3.6 | -5 | 0.16 |
| -2.1 | -2.1 | -3 | 0.16 |
| -1.2 | -1.2 | -2 | 0.16 |
| 0 | 0 | 0 | 0.16 |
| 1.2 | 1.2 | 2 | 0.16 |
| 2.1 | 2.1 | 3 | 0.16 |
| 3.6 | 3.6 | 5 | 0.16 |
| 5.7 | 5.7 | 8 | 0.16 |
| 8.2 | 8.2 | 12 | 0.16 |
| 11.1 | 11.1 | 16 | 0.15 |
| 14.6 | 14.6 | 21 | 0.15 |
| 19.2 | 19.2 | 27 | 0.14 |
| 25.1 | 25.1 | 35 | 0.13 |
| 30.9 | 30.9 | 44 | 0.12 |
| 36.8 | 36.8 | 52 | 0.11 |

**SOUTH SHORE SURVEY CONSULTANTS INC.**
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| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 21

| | | | |
|---|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF | |
| DURATION= | 24 | HOURS | |
| FILLABLE POROSITY= | 0.2 | STANDARD | |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY | |
| LENGTH OF APPLICATION= | 42.00 | Ft | |
| WIDTH OF APPLICATION= | 7.1 | Ft | |
| CONSTANT HEAD BOUNDARY= | 58 | Ft | |
| PLOTTING AXIS= | 5 | DEGREES | |
| SATURATED THICKNESS= | 48 | FT | **max. on-site** |

APPLICATION RATE=

**42** **CF** **DESIGN FLOW** **/** **1** **/** **1** **DAY**
**298** **SF**

= **0.14** CF/DAY/SF

HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)


COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U21

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:51:27 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 71 ft
No constant head boundary used
Plotting axis from Y-Axis: 5 degrees
Edge of recharge area:
positive X: 1.8 ft
positive Y: 21 ft
Total volume applied: 10019.52 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -5.1 | -57.8 | -58 | 0.11 |
| -4.3 | -48.6 | -49 | 0.12 |
| -3.4 | -39.4 | -40 | 0.12 |
| -2.6 | -30.2 | -30 | 0.13 |
| -2 | -23 | -23 | 0.14 |
| -1.5 | -17.4 | -17 | 0.15 |
| -1.1 | -12.8 | -13 | 0.15 |
| -0.8 | -9 | -9 | 0.16 |
| -0.5 | -5.6 | -6 | 0.16 |
| -0.3 | -3.4 | -3 | 0.16 |
| -0.2 | -1.8 | -2 | 0.16 |
| 0 | 0 | 0 | 0.16 |
| 0.2 | 1.8 | 2 | 0.16 |
| 0.3 | 3.4 | 3 | 0.16 |
| 0.5 | 5.6 | 6 | 0.16 |
| 0.8 | 9 | 9 | 0.16 |
| 1.1 | 12.8 | 13 | 0.15 |
| 1.5 | 17.4 | 17 | 0.15 |
| 2 | 23 | 23 | 0.14 |
| 2.6 | 30.2 | 30 | 0.13 |
| 3.4 | 39.4 | 40 | 0.12 |
| 4.3 | 48.6 | 49 | 0.12 |
| 5.1 | 57.8 | 58 | 0.11 |

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| | | Checked By: | |

## MOUNDING CALCULATION INPUTS

CALCULATIONS BASED ON HANTUSH METHOD
UNIT 22 and 23

| | | |
|---|---|---|
| APPLICATION RATE= | 0.14 | CF/DAY/SF |
| DURATION= | 24 | HOURS |
| FILLABLE POROSITY= | 0.2 | STANDARD |
| HYDRAULIC CONDUCTIVITY= | 30 | FT/DAY |
| LENGTH OF APPLICATION= | 42.00 | Ft |
| WIDTH OF APPLICATION= | 14.2 | Ft |
| CONSTANT HEAD BOUNDARY= | 60 | Ft |
| PLOTTING AXIS= | 45 | DEGREES |
| SATURATED THICKNESS= | 48 | FT **max. on-site** |

APPLICATION RATE=

**83** **CF** **DESIGN FLOW** / **1** / **1** **DAY**
**596** **SF**

= **0.14** CF/DAY/SF

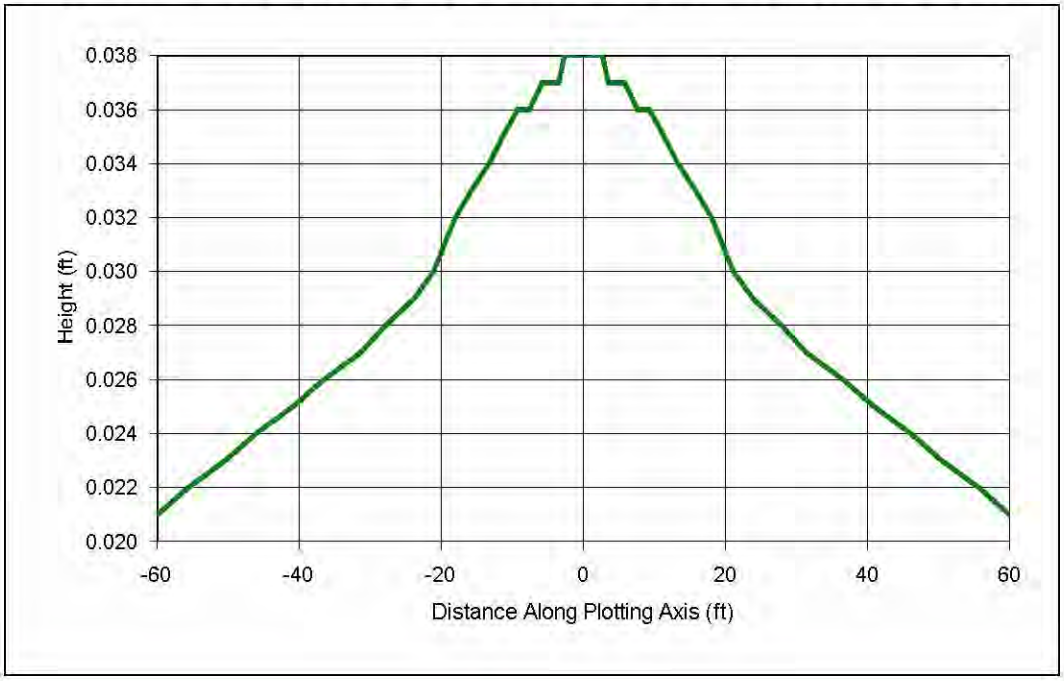
HYDRAULIC CONDUCTIVITY= **30** **FROM "RANGES OF HYDRAULIC CONDUCTIVITY-UNCONSOLIDATED MATERIALS"**

ELEVATION OF BEDROCK= **50** **FROM "MASSGIS"**

DEPTH OF WATER= **2** **max. on-site**

SATURATED THICKNESS= **48**

## Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)




COMPANY: SOUTH SHORE SURVEY CONS.

PROJECT: THE COTTAGES U22

ANALYST: ANTHONY ESPOSITO

DATE: 12/11/2022 TIME: 9:53:00 PM

INPUT PARAMETERS

Application rate: 0.14 c.ft/hour/sq. ft
Duration of application: 24 hours
Fillable porosity: 0.2
Hydraulic conductivity: 30 ft/hour
Initial saturated thickness: 48 ft
Length of application area: 42 ft
Width of application area: 14.2 ft
No constant head boundary used
Plotting axis from Y-Axis: 45 degrees
Edge of recharge area:
positive X: 7.1 ft
positive Y: 7.1 ft
Total volume applied: 2003.904 c.ft

MODEL RESULTS

| X (ft) | Y (ft) | Plot Axis (ft) | Mound Height (ft) |
|---|---|---|---|
| -42.4 | -42.4 | -60 | 0.02 |
| -35.7 | -35.7 | -50 | 0.02 |
| -28.9 | -28.9 | -41 | 0.02 |
| -22.2 | -22.2 | -31 | 0.03 |
| -16.9 | -16.9 | -24 | 0.03 |
| -12.8 | -12.8 | -18 | 0.03 |
| -9.4 | -9.4 | -13 | 0.03 |
| -6.6 | -6.6 | -9 | 0.04 |
| -4.1 | -4.1 | -6 | 0.04 |
| -2.5 | -2.5 | -3 | 0.04 |
| -1.3 | -1.3 | -2 | 0.04 |
| 0 | 0 | 0 | 0.04 |
| 1.3 | 1.3 | 2 | 0.04 |
| 2.5 | 2.5 | 3 | 0.04 |
| 4.1 | 4.1 | 6 | 0.04 |
| 6.6 | 6.6 | 9 | 0.04 |
| 9.4 | 9.4 | 13 | 0.03 |
| 12.8 | 12.8 | 18 | 0.03 |
| 16.9 | 16.9 | 24 | 0.03 |
| 22.2 | 22.2 | 31 | 0.03 |
| 28.9 | 28.9 | 41 | 0.02 |
| 35.7 | 35.7 | 50 | 0.02 |
| 42.4 | 42.4 | 60 | 0.02 |

**Calculation of Required Water Quality Flow for Sizing of Stormwater Treatment System**

12/12/2022

Based on Massachusetts DEP document:
"Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing Flow Based Manufactured Proprietary Stormwater Treatment Practices"

Stormwater Standard No. 4 requires that the full WQV be captured and treated to remove 80% of the average annual post-construction TSS load.
Since manufactured proprietary separators are sized using discharge rates and not volume, MassDEP is requiring this standard method be used to convert the required WQV to a discharge rate (WQF) to be treated.

Project Site:
Project Location:

Runoff Depth, Q: **1** " (0.5" or 1")

**Table 1.**

| Structure Name | Imp. Area (acres) | A (miles$^2$) | $t_c$ (min.) | $t_c$ (hrs.) |
|---|---|---|---|---|
| **HYDRO 1** | **0.05** | 0.000078 | **6.3** | 0.105 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Because only runoff from impervious surfaces is used in calculation of WQV, area is considered 100% impervious
Therefore, CN = 98

Enter Ia/P Ratio for CN=98:
Ia/P = **0.034** (0.058 for Q=0.5" / 0.034 for Q=1")

Enter unit peak discharge, qu (csm/in) for Type III rainfall distribution, Ia/P, and tc:
From Figure 2 (Q=0.5") or Figure 4 (Q=1")

**Table 2.**

| Structure Name | tc (hours) | qu (csm/in) |
|---|---|---|
| **HYDRO 1** | **0.105** | **774** |
| | | |
| | | |
| | | |
| | | |

WQF in cfs = (qu)(A)(Q), where:

WQF = water quality flow (cfs)
$q_u$ = unit peak discharge (csm/in) From Table 2 above
A = drainage area (mi$^2$)
Q = runoff depth (watershed inches) Based on Area Type, from above

**Table 3.**

| Structure Name | $q_u$ (csm/in) | A (miles$^2$) | Q (in) | WQF (cfs) | Peak Flow (cfs) | Proposed Device[1] |
|---|---|---|---|---|---|---|
| **HYDRO 1** | 774 | 0.000078 | 1 | **0.06** | | **FD-3HC** |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

[1]Proposed Device is sized so that the required site WQF is less than the treatment flow at which the device achieves at least 80% TSS removal, as documented by enclosed test data.

**Calculation of Required Water Quality Flow for Sizing of Stormwater Treatment System**

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Since manufactured proprietary separators are sized using discharge rates and not volume, MassDEP is requiring this standard method be used to convert the required WQV to a discharge rate (WQF) to be treated.

Project Site:
Project Location:

Runoff Depth, Q: **1** " (0.5" or 1")

**Table 1.**

| Structure Name | Imp. Area (acres) | A (miles$^2$) | $t_c$ (min.) | $t_c$ (hrs.) |
|---|---|---|---|---|
| **HYDRO 2** | **0.37** | 0.000578 | **13.3** | 0.222 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Because only runoff from impervious surfaces is used in calculation of WQV, area is considered 100% impervious
Therefore, CN = 98

Enter Ia/P Ratio for CN=98:
Ia/P = **0.034** (0.058 for Q=0.5" / 0.034 for Q=1")

Enter unit peak discharge, qu (csm/in) for Type III rainfall distribution, Ia/P, and tc:
From Figure 2 (Q=0.5") or Figure 4 (Q=1")

**Table 2.**

| Structure Name | tc (hours) | qu (csm/in) |
|---|---|---|
| **HYDRO 2** | **0.222** | **654** |
| | | |
| | | |
| | | |
| | | |

WQF in cfs = (qu)(A)(Q), where:

WQF = water quality flow (cfs)
$q_u$ = unit peak discharge (csm/in) From Table 2 above
A = drainage area (mi$^2$)
Q = runoff depth (watershed inches) Based on Area Type, from above

**Table 3.**

| Structure Name | $q_u$ (csm/in) | A (miles$^2$) | Q (in) | WQF (cfs) | Peak Flow (cfs) | Proposed Device[1] |
|---|---|---|---|---|---|---|
| **HYDRO 2** | 654 | 0.000578 | 1 | **0.38** | | **FD-3HC** |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

[1]Proposed Device is sized so that the required site WQF is less than the treatment flow at which the device achieves at least 80% TSS removal, as documented by enclosed test data.

**Calculation of Required Water Quality Flow for Sizing of Stormwater Treatment System**

12/12/2022

Based on Massachusetts DEP document:
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Since manufactured proprietary separators are sized using discharge rates and not volume, MassDEP is requiring this standard method be used to convert the required WQV to a discharge rate (WQF) to be treated.

Project Site:
Project Location:

Runoff Depth, Q: **1** " (0.5" or 1")

**Table 1.**

| Structure Name | Imp. Area (acres) | A (miles$^2$) | $t_c$ (min.) | $t_c$ (hrs.) |
|---|---|---|---|---|
| **HYDRO 3** | **0.84** | 0.001313 | **26.1** | 0.435 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Because only runoff from impervious surfaces is used in calculation of WQV, area is considered 100% impervious
Therefore, CN = 98

Enter Ia/P Ratio for CN=98:
Ia/P = **0.034** (0.058 for Q=0.5" / 0.034 for Q=1")

Enter unit peak discharge, qu (csm/in) for Type III rainfall distribution, Ia/P, and tc:
From Figure 2 (Q=0.5") or Figure 4 (Q=1")

**Table 2.**

| Structure Name | tc (hours) | qu (csm/in) |
|---|---|---|
| **HYDRO 3** | **0.435** | **528** |
| | | |
| | | |
| | | |
| | | |

WQF in cfs = (qu)(A)(Q), where:

WQF = water quality flow (cfs)
$q_u$ = unit peak discharge (csm/in) — From Table 2 above
A = drainage area (mi$^2$)
Q = runoff depth (watershed inches) — Based on Area Type, from above

**Table 3.**

| Structure Name | $q_u$ (csm/in) | A (miles$^2$) | Q (in) | WQF (cfs) | Peak Flow (cfs) | Proposed Device[1] |
|---|---|---|---|---|---|---|
| **HYDRO 3** | 528 | 0.001313 | 1 | **0.69** | | **FD-3HC** |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

[1]Proposed Device is sized so that the required site WQF is less than the treatment flow at which the device achieves at least 80% TSS removal, as documented by enclosed test data.

**Calculation of Required Water Quality Flow for Sizing of Stormwater Treatment System**

12/12/2022

Based on Massachusetts DEP document:
"Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing Flow Based Manufactured Proprietary Stormwater Treatment Practices"

Stormwater Standard No. 4 requires that the full WQV be captured and treated to remove 80% of the average annual post-construction TSS load.
Since manufactured proprietary separators are sized using discharge rates and not volume, MassDEP is requiring this standard method be used to convert the required WQV to a discharge rate (WQF) to be treated.

Project Site:
Project Location:

Runoff Depth, Q: **1** " (0.5" or 1")

**Table 1.**

| Structure Name | Imp. Area (acres) | A (miles$^2$) | $t_c$ (min.) | $t_c$ (hrs.) |
|---|---|---|---|---|
| **HYDRO 4** | **0.16** | 0.000250 | **6.0** | 0.100 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Because only runoff from impervious surfaces is used in calculation of WQV, area is considered 100% impervious
Therefore, CN = 98

Enter Ia/P Ratio for CN=98:
Ia/P = **0.034** (0.058 for Q=0.5" / 0.034 for Q=1")

Enter unit peak discharge, qu (csm/in) for Type III rainfall distribution, Ia/P, and tc:
From Figure 2 (Q=0.5") or Figure 4 (Q=1")

**Table 2.**

| Structure Name | tc (hours) | qu (csm/in) |
|---|---|---|
| **HYDRO 4** | **0.100** | **774** |
| | | |
| | | |
| | | |
| | | |

WQF in cfs = (qu)(A)(Q), where:

WQF = water quality flow (cfs)
$q_u$ = unit peak discharge (csm/in) From Table 2 above
A = drainage area (mi$^2$)
Q = runoff depth (watershed inches) Based on Area Type, from above

**Table 3.**

| Structure Name | $q_u$ (csm/in) | A (miles$^2$) | Q (in) | WQF (cfs) | Peak Flow (cfs) | Proposed Device[1] |
|---|---|---|---|---|---|---|
| **HYDRO 4** | 774 | 0.000250 | 1 | **0.19** | | **FD-3HC** |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

[1]Proposed Device is sized so that the required site WQF is less than the treatment flow at which the device achieves at least 80% TSS removal, as documented by enclosed test data.

**Calculation of Required Water Quality Flow for Sizing of Stormwater Treatment System**

12/12/2022

Based on Massachusetts DEP document:
"Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing Flow Based Manufactured Proprietary Stormwater Treatment Practices"

Stormwater Standard No. 4 requires that the full WQV be captured and treated to remove 80% of the average annual post-construction TSS load.
Since manufactured proprietary separators are sized using discharge rates and not volume, MassDEP is requiring this standard method be used to convert the required WQV to a discharge rate (WQF) to be treated.

Project Site:
Project Location:

Runoff Depth, Q: **1** " (0.5" or 1")

**Table 1.**

| Structure Name | Imp. Area (acres) | A (miles$^2$) | $t_c$ (min.) | $t_c$ (hrs.) |
|---|---|---|---|---|
| **HYDRO 5** | **0.23** | 0.000359 | **6.0** | 0.100 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Because only runoff from impervious surfaces is used in calculation of WQV, area is considered 100% impervious
Therefore, CN = 98

Enter Ia/P Ratio for CN=98:
Ia/P = **0.034** (0.058 for Q=0.5" / 0.034 for Q=1")

Enter unit peak discharge, qu (csm/in) for Type III rainfall distribution, Ia/P, and tc:
From Figure 2 (Q=0.5") or Figure 4 (Q=1")

**Table 2.**

| Structure Name | tc (hours) | qu (csm/in) |
|---|---|---|
| **HYDRO 5** | **0.100** | **774** |
| | | |
| | | |
| | | |
| | | |

WQF in cfs = (qu)(A)(Q), where:

WQF = water quality flow (cfs)
$q_u$ = unit peak discharge (csm/in) — From Table 2 above
A = drainage area (mi$^2$)
Q = runoff depth (watershed inches) — Based on Area Type, from above

**Table 3.**

| Structure Name | $q_u$ (csm/in) | A (miles$^2$) | Q (in) | WQF (cfs) | Peak Flow (cfs) | Proposed Device[1] |
|---|---|---|---|---|---|---|
| **HYDRO 5** | 774 | 0.000359 | 1 | **0.28** | | **FD-3HC** |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

[1]Proposed Device is sized so that the required site WQF is less than the treatment flow at which the device achieves at least 80% TSS removal, as documented by enclosed test data.

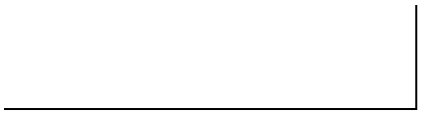
**Figure 4: for First 1-inch Runoff, Table of qu values for Ia/P Curve = 0.034, listed by tc, Distribution**

| Tc (Hours) | qu (csm/in) |
|---|---|
| 0.01 | 835 |
| 0.03 | 835 |
| 0.05 | 831 |
| 0.067 | 814 |
| 0.083 | 795 |
| 0.1 | 774 |
| 0.116 | 755 |
| 0.133 | 736 |
| 0.15 | 717 |
| 0.167 | 700 |
| 0.183 | 685 |
| 0.2 | 669 |
| 0.217 | 654 |
| 0.233 | 641 |
| 0.25 | 628 |
| 0.3 | 593 |
| 0.333 | 572 |
| 0.35 | 563 |
| 0.4 | 536 |
| 0.416 | 528 |
| 0.5 | 491 |
| 0.583 | 460 |
| 0.6 | 454 |
| 0.667 | 433 |
| 0.7 | 424 |
| 0.8 | 398 |
| 0.9 | 376 |
| 1 | 356 |
| 1.1 | 339 |
| 1.2 | 323 |
| 1.3 | 309 |
| 1.4 | 296 |
| 1.5 | 285 |
| 1.6 | 274 |
| 1.7 | 264 |
| 1.8 | 255 |
| 1.9 | 247 |
| 2 | 239 |
| 2.1 | 232 |
| 2.2 | 225 |
| 2.3 | 219 |
| 2.4 | 213 |
| 2.5 | 207 |
| 2.6 | 202 |

| Tc (Hours) | qu (csm/in) |
|---|---|
| 2.7 | 197 |
| 2.8 | 192 |
| 2.9 | 187 |
| 3 | 183 |
| 3.1 | 179 |
| 3.2 | 175 |
| 3.3 | 171 |
| 3.4 | 168 |
| 3.5 | 164 |
| 3.6 | 161 |
| 3.7 | 158 |
| 3.8 | 155 |
| 3.9 | 152 |
| 4 | 149 |
| 4.1 | 146 |
| 4.2 | 144 |
| 4.3 | 141 |
| 4.4 | 139 |
| 4.5 | 137 |
| 4.6 | 134 |
| 4.7 | 132 |
| 4.8 | 130 |
| 4.9 | 128 |
| 5 | 126 |
| 5.1 | 124 |
| 5.2 | 122 |
| 5.3 | 120 |
| 5.4 | 119 |
| 5.5 | 117 |
| 5.6 | 115 |
| 5.7 | 114 |
| 5.8 | 112 |
| 5.9 | 111 |
| 6 | 109 |
| 6.1 | 108 |
| 6.2 | 106 |
| 6.3 | 105 |
| 6.4 | 104 |
| 6.5 | 102 |
| 6.6 | 101 |
| 6.7 | 100 |
| 6.8 | 99 |
| 6.9 | 98 |
| 7 | 96 |

| Tc (Hours) | qu (csm/in) |
|---|---|
| 7.1 | 95 |
| 7.2 | 94 |
| 7.3 | 93 |
| 7.4 | 92 |
| 7.5 | 91 |
| 7.6 | 90 |
| 7.7 | 89 |
| 7.8 | 88 |
| 7.9 | 87 |
| 8 | 86 |
| 8.1 | 85 |
| 8.2 | 84 |
| 8.3 | 84 |
| 8.4 | 83 |
| 8.5 | 82 |
| 8.6 | 81 |
| 8.7 | 80 |
| 8.8 | 79 |
| 8.9 | 79 |
| 9 | 78 |
| 9.1 | 77 |
| 9.2 | 76 |
| 9.3 | 76 |
| 9.4 | 75 |
| 9.5 | 74 |
| 9.6 | 74 |
| 9.7 | 73 |
| 9.8 | 72 |
| 9.9 | 72 |
| 10 | 71 |

, for Type III Storm



INSTRUCTIONS:

*Non-automated: Mar. 4, 2008*

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: CHAMBER 1

**TSS Removal Calculation Worksheet**

| A<br>BMP[1] | B<br>TSS Removal Rate[1] | C<br>Starting TSS Load* | D<br>Amount Removed (B*C) | E<br>Remaining Load (C-D) |
|---|---|---|---|---|
| DEEP SUMP CBS | 0.25 | 1.00 | 0.25 | 0.75 |
| PROPRIETARY UNIT | 0.80 | 0.75 | 0.60 | 0.15 |
| INFIL. SYSTEM | 0.80 | 0.15 | 0.12 | 0.03 |
| | | | | |
| | | | | |

**Total TSS Removal =** 0.97

**Separate Form Needs to be Completed for Each Outlet or BMP Train**

Project: THE COTTAGES
Prepared By: ESPOSITO
Date: 12/12/22

*Equals remaining load from previous BMP (E) which enters the BMP

*Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed*
*1. From MassDEP Stormwater Handbook Vol. 1*

INSTRUCTIONS:

*Non-automated: Mar. 4, 2008*

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: CHAMBER 2

**TSS Removal Calculation Worksheet**

| A<br>BMP[1] | B<br>TSS Removal Rate[1] | C<br>Starting TSS Load* | D<br>Amount Removed (B*C) | E<br>Remaining Load (C-D) |
|---|---|---|---|---|
| DEEP SUMP CBS | 0.25 | 1.00 | 0.25 | 0.75 |
| PROPRIETARY UNIT | 0.80 | 0.75 | 0.60 | 0.15 |
| INFIL. SYSTEM | 0.80 | 0.15 | 0.12 | 0.03 |
| | | | | |
| | | | | |

**Total TSS Removal =** 0.97

**Separate Form Needs to be Completed for Each Outlet or BMP Train**

Project: THE COTTAGES
Prepared By: ESPOSITO
Date: 12/12/22

*Equals remaining load from previous BMP (E) which enters the BMP

*Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed*
*1. From MassDEP Stormwater Handbook Vol. 1*

INSTRUCTIONS:

*Non-automated: Mar. 4, 2008*

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: CHAMBER 3

**TSS Removal Calculation Worksheet**

| A<br>BMP[1] | B<br>TSS Removal Rate[1] | C<br>Starting TSS Load* | D<br>Amount Removed (B*C) | E<br>Remaining Load (C-D) |
|---|---|---|---|---|
| DEEP SUMP CBS | 0.25 | 1.00 | 0.25 | 0.75 |
| PROPRIETARY UNIT | 0.80 | 0.75 | 0.60 | 0.15 |
| INFIL. SYSTEM | 0.80 | 0.15 | 0.12 | 0.03 |
| | | | | |
| | | | | |

**Total TSS Removal =** 0.97

**Separate Form Needs to be Completed for Each Outlet or BMP Train**

Project: THE COTTAGES
Prepared By: ESPOSITO
Date: 12/12/22

*Equals remaining load from previous BMP (E) which enters the BMP

*Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed*
*1. From MassDEP Stormwater Handbook Vol. 1*

INSTRUCTIONS:

*Non-automated: Mar. 4, 2008*

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: CHAMBER 4

**TSS Removal Calculation Worksheet**

| A<br>BMP[1] | B<br>TSS Removal Rate[1] | C<br>Starting TSS Load* | D<br>Amount Removed (B*C) | E<br>Remaining Load (C-D) |
|---|---|---|---|---|
| DEEP SUMP CBS | 0.25 | 1.00 | 0.25 | 0.75 |
| PROPRIETARY UNIT | 0.80 | 0.75 | 0.60 | 0.15 |
| INFIL. SYSTEM | 0.80 | 0.15 | 0.12 | 0.03 |
| | | | | |
| | | | | |

**Total TSS Removal =** 0.97

**Separate Form Needs to be Completed for Each Outlet or BMP Train**

Project: THE COTTAGES
Prepared By: ESPOSITO
Date: 12/12/22

*Equals remaining load from previous BMP (E) which enters the BMP

*Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed*
*1. From MassDEP Stormwater Handbook Vol. 1*

# *Construction Phase Pollution Prevention and Erosion and Sedimentation Plan*

For:

## *The Cottages at Old Oaken Bucket*

279-281 Old Oaken Bucket Rd.
Scituate, MA

Submitted to:

## *Town of Scituate Zoning Board of Appeals*

Dated: December 12, 2022

Prepared By
Anthony Esposito, P.E.
South Shore Survey Consultants, Inc.
167R Summer Street
Kingston, MA 02364

# TABLE OF CONTENTS

# Construction Phase Pollution Prevention & Erosion and Sedimentation Control Plan

Erosion and Sedimentation will be controlled at the site by utilizing Structural Practices, Stabilization Practices, and Dust Control. These practices correspond with the approved plans entitled "The Cottages at Old Oaken Bucket, A Comprehensive Permit Plan of Land in Scituate MA", prepared by South Shore Survey Consultants, Inc., hereinafter referred to as the Site Plan.

Responsible Party/Property Owner/Developer contact information:

Lovendale, LLC
s/o Salt Meadow Development
107 East St.
Duxbury, MA 02332
(781) 727-2195

Town of Scituate Contact Information:

Department of Public Works
Kevin Cafferty, Director of Public Works
Scituate Town Hall
600 Chief Justice Cushing Way
Scituate, MA 02066
Phone: (781) 545-8732

## Narrative:

### Project Description:

The applicant, Lovendale , LLC, proposes to build 24 units for residential dwellings.

### Site Description:

The subject property is located 279-281 Old Oaken Bucket Rd. in Scituate, MA. The site contains three abandoned dwellings.

### Soils:

Soils information was obtained from the USDA Natural Resources Conservation Service's (NRCS) Web Soil Survey mapping Site soils are classified as SCS Hydrologic Soil Groups: Canton fine sandy loam, 0 to 8 percent slopes, very stony, (421B- SCS Hydrologic Soil Group B) and Newfields fine sandy loam, 3 to 8 percent slopes, extremely stony, (427B - SCS Hydrologic Soil Group B) . Refer to the Soil Survey Map for a delineation of the boundaries of the soils with respect to the study area.

## Erosion and Sedimentation Control Practices:

## Structural Practices:

1) **Straw Wattle Barrier Controls** – Straw wattle barriers may be used in lieu of haybale and silt fence barrier controls and placed along downward slopes at the limit of work locations. This control will be installed prior to major soil disturbance on the site. The selected barrier control shall be installed as shown on the approved subdivision plans and the manufacturers recommendations.

   Filtermitt Design/Installation Requirements *
   * (included on Inspection/Evaluation Checklist)

   a) Filtermitt should be placed lengthwise on the contour, with the ends of adjacent sock tightly abutting one another and overlapping on the ground surface (not one over another) per manufacturer instructions.

   b) The barrier should be placed on natural ground and staked on either side or through the barrier per manufacturer requirements.

   c) Filtermitt should be removed when they have served their usefulness, but not before the upslope areas have been permanently stabilized.

   Filtermitt Inspection/Maintenance *

   a) Straw wattle barriers should be inspected immediately after each runoff-producing rainfall and at least daily during prolonged rainfall.

   b) Close attention should be paid to the repair of damaged barriers, undercutting beneath the barrier, and flow around the ends of the barrier.

   c) Necessary repairs to barriers or replacement of bales should be completed promptly.

   d) Sediment deposits should be checked after each runoff-producing rainfall. They must be removed when the level of deposition reaches approximately one-half the height of the barrier.

   e) Any sediment deposits remaining in place after the barrier is no longer required should be dressed to conform to the existing grade, prepared and seeded.

2) **Inlet Protection** – Inlet Protection will be utilized around the catch basin grates. The inlet protection will allow the storm drain inlets to be used before final stabilization. This structural practice will allow early use of the drainage system if the detention basin is already stabilized. Siltsack or equivalent will be utilized for the inlet

protection. Siltsack is manufactured by ACF Environmental. Regular flow siltsack will be utilized, and if it does not allow enough storm water flow, hi-flow siltsack will be utilized.

Silt Sack (or equivalent) Inlet Protection Inspection/Maintenance Requirements *

a) All trapping devices and the structures they protect should be inspected after every rain storm and repairs made as necessary.

b) Sediment should be removed from the trapping devices after the sediment has reached a maximum depth of one-half the depth of the trap.

c) Oil build-up should be removed by using a small portable pump and disposed of in accordance with all applicable local, state, and federal regulations.

d) Sediment should be disposed of in a suitable area and protected from erosion by either structural or vegetative means. Sediment removed shall be disposed of in accordance with all applicable local, state, and federal regulations.

e) The silt sack must be replaced if it is ripped or torn in any way.

f) Temporary traps should be removed and the area repaired as soon as the contributing drainage area to the inlet has been completely stabilized.

## Stabilization Practices:

Stabilization measures shall be implemented as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased, with the following exceptions.

- Where the initiation of stabilization measures by the 14th day after construction activity temporary or permanently cease is precluded by snow cover, stabilization measures shall be initiated as soon as practicable.

- Where construction activity will resume on a portion of the site within 21 days from when activities ceased, (e.g. the total time period that construction activity is temporarily ceased is less than 21 days) then stabilization measures do not have to be initiated on that portion of the site by the 14th day after construction activity temporarily ceased.

- A temporary sedimentation basin shall be provided prior to the road drainage system being installed and sized per the approved plans.

1) **Temporary Seeding** – Temporary seeding will allow a short-term vegetative cover on disturbed site areas that may be in danger of erosion. Temporary seeding will be done at stock piles and disturbed portions of the site where construction activity will

temporarily cease for at least 21 days. The temporary seedings will stabilize cleared and unvegetated areas that will not be brought into final grade for several weeks or months.

Temporary Seeding Planting Procedures *

a) Planting should preferably be done between April 1st and June 30th, and September 1st through September 31st. If planting is done in the months of July and August, irrigation may be required. If planting is done between October 1st and March 31st, mulching should be applied immediately after planting. If seeding is done during the summer months, irrigation of some sort will probably be necessary.

b) Before seeding, install structural practice controls. Utilize Amoco supergro or equivalent.

c) The seedbed should be firm with a fairly fine surface. Perform all cultural operations across or at right angles to the slope. A minimum of 2 to 4-inches of tilled topsoil is required. The topsoil must have a sandy loam to silt loam texture with 15% to 20% organic content.

d) Apply uniformly 2 tons of ground limestone per acre (100 lbs. Per 1,000 sq.ft.) or according to soil test. Apply uniformly organic or non-nitrogen fertilizers at the rate of 400 lbs. per acre (14 lbs. per 1,000 sq.ft.) or as indicated by soil test. Forty percent of the nitrogen should be in organic form. Work in lime and fertilizer to a depth of 4-inches using any suitable equipment.

e) Select the appropriate seed species for temporary cover from the following table.

| Species | Seeding Rate (lbs/1,000 sq.ft.) | Seeding Rate (lbs/acre) | Recommended Seeding Dates | Seed Cover required |
|---|---|---|---|---|
| Annual Ryegrass | 1 | 40 | April 1st to June 1st<br>August 15th to Sept. 15th | ¼ inch |
| Foxtail Millet | 0.7 | 30 | May 1st to June 30th | ½ to ¾ inch |
| Oats | 2 | 80 | April 1st to July 1st<br>August 15th to Sept. 15th | 1 to 1-½ inch |
| Winter Rye | 3 | 120 | August 15th to Oct. 15th | 1 to 1-½ inch |

Apply the seed uniformly by hydroseeding, broadcasting, or by hand.

f) Use an effective mulch, such as clean grain straw; tacked and/or tied with netting to protect seedbed and encourage plant growth.

Temporary Seeding Inspection/Maintenance *

a) Inspect within 6 weeks of planting to see if stands are adequate. Check for damage within 24 hours of the end to a heavy rainfall, defined as a 2-year storm

event (i.e., 3.2 inches of rainfall within a twenty-four hour period). Stands should be uniform and dense. Fertilize, reseed, and mulch damaged and sparse areas immediately. Tack or tie down mulch as necessary.

b) Seeds should be supplied with adequate moisture. Furnish water as needed, especially in abnormally hot or dry weather. Water application rates should be controlled to prevent runoff.

2) **Geotextiles** - Geotextiles such as jute netting will be used in combination with other practices such as mulching to stabilize slopes. The following geotextile materials or equivalent are to be utilized for structural and nonstructural controls as shown in the following table.

| Practice | Manufacturer | Product | Remarks |
|---|---|---|---|
| Construction Entrance | Amoco | Woven polypropylene 2002 or equivalent | 0.300 mm opening |
| Outlet Protection | Amoco | Nonwoven polypropylene 4551 or equivalent | 0.150 mm opening |
| Erosion Control (slope stability) | Amoco | Supergro or equivalent | Erosion control revegetation mix, open polypropylene fiber on degradable polypropylene net scrim |

Amoco may be reached at (800) 445-7732

Geotextile Installation

a) Netting and matting require firm, continuous contact between the materials and the soil. If there is no contact, the material will not hold the soil and erosion will occur underneath the material.

Geotextile Inspection/Maintenance *

a) In the field, regular inspections should be made to check for cracks, tears, or breaches in the fabric. The appropriate repairs should be made.

3) **Mulching and Netting** – Mulching will provide immediate protection to exposed soils during the period of short construction delays, or over winter months through the application of plant residues, or other suitable materials, to exposed soil areas. In areas, which have been seeded either for temporary or permanent cover, mulching should immediately follow seeding. On steep slopes, mulch must be supplemented with netting. The preferred mulching material is straw.

Mulch (Hay or Straw) Materials and Installation

a) Straw has been found to be one of the most effective organic mulch materials. The specifications for straw are described below, but other material may be appropriate. The straw should be air-dried; free of undesirable seeds & coarse materials. The application rate per 1,000 sq.ft. is 90-100 lbs. (2-3 bales) and the

application rate per acre is 2 tons (100-120 bales). The application should cover about 90% of the surface. The use of straw mulch is appropriate where mulch is maintained for more than three months. Straw mulch is subject to wind blowing unless anchored, is the most commonly used mulching material, and has the best microenvironment for germinating seeds.

Mulch Maintenance *

a) Inspect after rainstorms to check for movement of mulch or erosion. If washout, breakage, or erosion occurs, repair surface, reseed, remulch, and install new netting.

b) Straw or grass mulches that blow or wash away should be repaired promptly.

c) If plastic netting is used to anchor mulch, care should be taken during initial mowings to keep the mower height high. Otherwise, the netting can wrap up on the mower blade shafts. After a period of time, the netting degrades and becomes less of a problem.

d) Continue inspections until vegetation is well established.

4) **Land Grading** – Grading on fill slopes, cut slopes, and stockpile areas will be done with full siltation controls in place.

Land Grading Design/Installation Requirements

a) Areas to be graded should be cleared and grubbed of all timber, logs, brush, rubbish, and vegetated matter that will interfere with the grading operation. Topsoil should be stripped and stockpiled for use on critical disturbed areas for establishment of vegetation. Cut slopes to be topsoiled should be thoroughly scarified to a minimum depth of 3-inches prior to placement of topsoil.

b) Fill materials should be generally free of brush, rubbish, rocks, and stumps. Frozen materials or soft and easily compressible materials should not be used in fills intended to support buildings, parking lots, roads, conduits, or other structures.

c) Earth fill intended to support structural measures should be compacted to a minimum of 90 percent of Standard Proctor Test density with proper moisture control, or as otherwise specified by the engineer responsible for the design. Compaction of other fills should be to the density required to control sloughing, erosion or excessive moisture content. Maximum thickness of fill layers prior to compaction should not exceed 9 inches.

d) The uppermost one foot of fill slopes should be compacted to at least 85 percent of the maximum unit weight (based on the modified AASHTO compaction test). This is usually accomplished by running heavy equipment over the fill.

e) Fill should consist of material from borrow areas and excess cut will be stockpiled in areas shown on the Site Plans. All disturbed areas should be free draining, left with a neat and finished appearance, and should be protected from erosion.

Land Grading Stabilization Inspection/Maintenance *

a) All slopes should be checked periodically to see that vegetation is in good condition. Any rills or damage from erosion and animal burrowing should be repaired immediately to avoid further damage.

b) If seeps develop on the slopes, the area should be evaluated to determine if the seep will cause an unstable condition. Subsurface drains or a gravel mulch may be required to solve seep problems. However, no seeps are anticipated.

c) Areas requiring revegetation should be repaired immediately. Slopes should be limed and fertilized as necessary to keep vegetation healthy. Control undesirable vegetation such as weeds and woody growth to avoid bank stability problems in the future.

5) **Topsoiling *** – Topsoiling will help establish vegetation on all disturbed areas throughout the site during the seeding process. The soil texture of the topsoil to be used will be a sandy loam to a silt loam texture with 15% to 20% organic content.

Topsoiling Placement

a) Topsoil should not be placed while in a frozen or muddy condition, when the subgrade is excessively wet, or when conditions exist that may otherwise be detrimental to proper grading or proposed seeding.

b) Do not place topsoil on slopes steeper than 2:1, as it will tend to erode. Any proposed grass slope steeper than 2.5:1 shall be provided with erosion control blankets.

c) If topsoil and subsoil are not properly bonded, water will not infiltrate the soil profile evenly and it will be difficult to establish vegetation. The best method is to actually work the topsoil into the layer below for a depth of at least 6 inches.

6) **Preserving Natural Vegetation** – The trees to be saved will be clearly flagged or marked with a bright colored ribbon. Snow fencing will be set at the drip/spread line of the trees and shrubs to be protected. Machinery will be kept away from tree roots.

7) **Permanent Seeding** – Permanent Seeding should be done immediately after the final design grades are achieved. Native species of plants should be used to establish perennial vegetative cover on disturbed areas. The revegetation should be done early enough in the fall so that a good cover is established before cold weather comes and

growth stops until the spring. A good cover is defined as vegetation covering 75 percent or more of the ground surface.

Permanent Seeding Seedbed Preparation

a) In fertile or coarse-textured subsoil, it is best to stockpile topsoil and respread it over the finished slope at a minimum 2 to 6-inch depth and roll it to provide a firm seedbed. The topsoil must have a sandy loam to silt loam texture with 15% to 20% organic content. If construction fill operations have left soil exposed with a loose, rough, or irregular surface, smooth with blade and roll.

b) Loosen the soil to a depth of 3-5 inches with suitable agricultural or construction equipment.

c) Areas not to receive topsoil shall be treated to firm the seedbed after incorporation of the lime and fertilizer so that it is depressed no more than ½ - 1 inch when stepped on with a shoe. Areas to receive topsoil shall not be firmed until after topsoiling and lime and fertilizer is applied and incorporated, at which time it shall be treated to firm the seedbed as described above.

Permanent Seeding Grass Selection/Application

a) Select an appropriate cool or warm season grass based on site conditions and seeding date. Apply the seed uniformly by hydroseeding, broadcasting, or by hand. Uniform seed distribution is essential. On steep slopes, hydroseeding may be the most effective seeding method. Surface roughening is particularly important when preparing slopes for hydroseeding.

b) Lime and fertilize. Organic fertilizer shall be utilized in areas within the 100 foot buffer zone to a wetland resource area.

c) Mulch the seedings with straw applied at the rate of ½ tons per acre. Anchor the mulch with erosion control netting or fabric on sloping areas. Amoco supergro or equivalent should be utilized.

Permanent Seeding Inspection/Maintenance *

a) Frequently inspect seeded areas for failure and make necessary repairs and reseed immediately. Conduct or follow-up survey after one year and replace failed plants where necessary.

b) If vegetative cover is inadequate to prevent rill erosion, overseed and fertilize in accordance with soil test results.

c) If a stand has less than 40% cover, reevaluate choice of plant materials and quantities of lime and fertilizer. Re-establish the stand following seedbed preparation and seeding recommendations, omitting lime and fertilizer in the

absence of soil test results. If the season prevents resowing, mulch or jute netting is an effective temporary cover.

d) Seeded areas should be fertilized during the second growing season. Lime and fertilize thereafter at periodic intervals, as needed. Organic fertilizer shall be utilized in areas within the 100 foot buffer zone to a wetland resource area.

## Dust Control *:

Dust control will be utilized throughout the entire construction process of the site. For example, keeping disturbed surfaces moist during windy periods will be an effective control measure, especially for construction haul roads. The use of dust control will prevent the movement of soil to offsite areas. However, care must be taken to not create runoff from excessive use of water to control dust. The following are methods of Dust Control that may be used on-site:

- Vegetative Cover – The most practical method for disturbed areas not subject to traffic.
- Calcium Chloride – Calcium chloride may be applied by mechanical spreader as loose, dry granules or flakes at a rate that keeps the surface moist but not so high as to cause water pollution or plant damage.
- Sprinkling – The site may be sprinkled until the surface is wet. Sprinkling will be effective for dust control on haul roads and other traffic routes.
- Stone – Stone will be used to stabilize construction roads; will also be effective for dust control.

## Non-Stormwater Discharges:

During construction activities at the site, some water from the site will be suitable for discharge to the drainage system or temporary sediment basin areas.

The construction de-watering and all non-stormwater discharges will be directed into a sediment dirt bag (or equivalent inlet protection) or a sediment basin. Sediment material removed shall be disposed of in accordance with all applicable local, state, and federal regulations.

The developer and site general contractor will comply with the E.P.A.'s Final General Permit for Construction De-watering Discharges, (N.P.D.E.S., Section 402 and 40 C.F.R. 122.26(b)(14)(x).

## Soil Stockpiling *:

Topsoil and subsoil from the roadway grading will be stockpiled in locations temporarily in the private lots.

Stockpile Material Construction Procedure

1) Topsoil and subsoil that are stripped will be stockpiled for later distribution on disturbed areas.

2) The stockpiles shall be located beyond 100 lf of the wetlands.
3) Seed the stockpiles with a temporary erosion control mix if the stockpile is to remain undisturbed for more than 30 days. The stockpiles must be stable and the side slopes should not exceed 2:1.

4) Filtermitt or equal erosion control measures should be placed surrounding each stockpile.

5) As needed, the stockpiled topsoil and subsoil are redistributed throughout the site.

## Anticipated Construction Schedule:

To prevent excessive erosion and silting, the following construction sequence coupled with other widely accepted principals for reducing erosion and sedimentation shall be implemented in the development of the site.

1. Obtain all plan approvals and other applicable permits.
2. Flag the work limits and mark trees and buffer areas for protection.
3. Install straw wattle barriers at locations indicated on the construction drawings and construct stabilized construction entrance.
4. Clear and grub all areas associated with the construction area.
5. Commense initial grading of the roads.
6. Construct the roadway stormwater system as soon as practicable after the proposed locations have been cleared.
7. Direct runoff to temporary sediment settling areas. No stormwater shall be allowed to discharge to the subsurface infiltration system until all tributary areas are fully stabilized.
8. Rough grade the building areas. Excavate crushed stone and subsoil from cut and fill areas and stockpile. Consideration should be given to locating stockpiles on the uphill side of disturbed areas, where possible, to act as temporary diversions.
9. After the site is stabilized, remove all temporary measures and install permanent vegetation on disturbed areas. Adequate growth for stabilization is defined as vegetation covering 75% or more of the ground surface.
10. Estimated time before final stabilization is 4 years of completed construction.

## Inspection/Maintenance:

Operator personnel must inspect the construction site at least once every 7 calendar days and within 24 hours of a storm event of 2-inch or greater. The applicant shall be responsible to secure the services of a licensed engineer or similar professional (inspector) on an on-going basis throughout all phases of the project. Refer to the Inspection/Maintenance Requirements presented earlier in the "Structural and Stabilization Practices." The inspector should review the erosion and sediment controls with respect to the following:

- Whether or not the measure was installed/performed correctly.
- Whether or not there has been damage to the measure since it was installed or performed.
- What should be done to correct any problems with the measure.

The inspector should complete the Stormwater Management Construction Phase BMP Inspection Schedule and Evaluation Checklist, as attached, for documenting the findings and should request the required maintenance or repair for the pollution prevention measures when the inspector finds that it is necessary for the measure to be effective. The inspector should notify the appropriate person to make the changes and submit copies of the form to the Brockton Planning Board upon request.

It is essential that the inspector document the inspection of the pollution prevention measures. These records will be used to request maintenance and repair and to prove that the inspection and maintenance were performed. The forms list each of the measures to be inspected on the site, the inspector's name, the date of the inspection, the condition of the measure/area inspected, maintenance or repair performed and any changes which should be made to the Pollution Prevention & Erosion and Sedimentation Control Plan to control or eliminate unforeseen pollution of storm water.

**Property Location: The Cottages Old Oaken Bucket Rd. Scituate, MA** **Date:**

**Stormwater Management – Construction Period and Long Term Pollution Prevention Plan**
**Best Management Practices – Inspection Schedule and Evaluation Checklist**

## Long Term Practices

| Best Management Practice | Inspection Frequency (1) | Date Inspected | Inspector | Minimum Maintenance and Key Items to Check (1) | Cleaning/Repair Needed: ☐yes ☐no (List Items) | Date of Cleaning/ Repair | Performed by |
|---|---|---|---|---|---|---|---|
| Catch Basins | | | | Sediment level, accumulation of oil, accumulation of floating debris. | | | |
| Chamber Beds | | | | Carryover of sediment level, oil, or floating debris. | | | |
| Proprietary Treatment units | | | | Sediment level, accumulation of oil, accumulation of floating debris. | | | |
| | | | | | | | |
| | | | | | | | |

**(1) Refer to the Massachusetts Stormwater Management, Volume Two: MA Stormwater Handbook (Feb. 2008) for recommendations regarding frequency for inspection and maintenance of specific BMP's.**

# *Post-Construction Phase Best Management Practices Operation and Maintenance Plan & Long-Term Pollution Prevention Plan*

For:

## *The Cottages at Old Oaken Bucket*

279-281 Old Oaken Bucket Rd.
Scituate, MA

Submitted to:

## *Town of Scituate Zoning Board of Appeals*

Dated: January 4, 2022

Prepared By
Anthony Esposito, P.E.
South Shore Survey Consultants, Inc.
167R Summer Street
Kingston, MA 02364

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# Post-Construction Best Management Practices (BMPs) Operation and Maintenance Plan

Responsible Party/Property Owner/Developer contact information:

Lovendale, LLC
s/o Salt Meadow Development
107 East St.
Duxbury, MA 02332
(781) 727-2195

Town of Scituate Contact Information:

Department of Public Works
Kevin Cafferty, Director of Public Works
Scituate Town Hall
600 Chief Justice Cushing Way
Scituate, MA 02066
Phone: (781) 545-8732

Best Management Practices (BMPs) of the Commonwealth of Massachusetts Department of Environmental Protection's (DEP's) Stormwater Management Policy (SMP) have been implemented and utilized for the project. The following information provided is to be used as a guideline for monitoring and maintaining the performance of the drainage facilities and to ensure that the quality of water runoff meets the standards set forth by the SMP. The structural Best Management Practices (BMPs) shall be inspected during rainfall conditions during the first year of operation to verify functionality.

BMPs included in the design consist of the use of:

- Deep Sump Catch Basins
- Proprietary Treatment units
- Infiltration chambers

## Operation:

Once the site has been permanently stabilized and the stormwater facilities are online, the operation of the stormwater management system will function as intended. Stormwater runoff from the paved areas are directed into the infiltration chambers where it will recharge the groundwater table. The beds have been designed to convey peak flows for the 2-year, 10-year and the 100-year storm event.

## Maintenance:

1. **Roadway Maintenance** – Vacuum sweepers shall sweep paved areas periodically during dry weather to remove excess sediments to reduce the amount of sediments that the drainage system shall have to remove from the runoff. The sweeping should be conducted on a semiannual basis before April 30th and after November 15th.

   Salt used for de-icing on the pavement during winter months shall be limited as much as possible as this will reduce the need for removal and treatment. Sand containing the minimum amount of calcium chloride (or approved equivalent) needed for handling may be applied as part of the routine winter maintenance activities. Estimated annual budget $1000.

2. **Catch Basins** - Catch basin grates shall be inspected twice per year, in the spring following snow-melt and in the fall following leaf drop and following heavy rainfalls, defined as a storm event exceeding two inch of rainfall within a twenty-four hour period to verify that the inlet openings are not clogged by debris. Debris shall be removed from the grates and disposed of properly. Deep sump and hooded catch basins shall be inspected quarterly to check oil build-up and outlet obstructions and cleaned of all accumulated sediments as warranted by inspections. Oil build-up shall be removed by using a small portable pump and disposed of properly. Material shall be removed from catch basins and disposed of in accordance with all applicable local, state, and federal regulations. Estimated annual budget $800.

3. **Subsurface Infiltration galleys** – The subsurface infiltration galleys for the subdivision shall be checked for siltation accumulation on a quarterly basis through the lawn grate inspection ports. Additional inspections should be scheduled during the first few months after construction to make sure that no debris or silt has accumulated during construction. Silt, sand and sediment, if significant accumulation occurs, shall be removed by vacuum annually. Material removed from the bed shall be disposed of in accordance with all applicable local, state, and federal regulations.

   Any slope erosion within the facilities shall be stabilized and repaired as soon as practical. The galley bed shall be inspected annually for debris, sediment and structural integrity. The inspections shall be conducted by a licensed engineer or qualified professional (inspector). Estimated annual budget $1000.

4. **Pre-treatment units, (i.e. Hydro International)** - The pre-treatment units shall be checked on a semiannual basis and following heavy rainfalls, defined as a storm event exceeding one inch of rainfall within a twenty-four hour period to verify that the inlet openings are not clogged by debris. Debris shall be removed and disposed of properly. Treatment chambers shall be inspected and cleaned semi-annually of all accumulated sediments. Any oily liquid shall be removed prior to the removal of any sediment removal activities in order to minimize the re-suspension or re-mixing of oil and water. Oil build-up shall be removed by using a small portable pump, absorbent pillows or other measures and disposed of properly. Accumulated sediment 18 inches in depth or greater shall be removed. Sediment shall be removed from the unit using a vacuum truck. Material shall be removed from the pre-

treatment unit and disposed of in accordance with all applicable local, state, and federal regulations. Estimated annual budget $800.

## Maintenance Responsibilities:

All post construction maintenance activities will be documented and kept on file. Annual inspection reports in the form of an Evaluation Checklist and a cover letter **shall be kept on file to be provided to local Town officials when requested**

## Long-Term Pollution Prevention Plan

## Good Housekeeping:

To develop and implement an operation and maintenance program with the goal of preventing or reducing pollutant runoff by keeping potential pollutants from coming into contact with stormwater or being transported off site without treatment, the following efforts will be made:

- Property Management awareness and training on how to incorporate pollution prevention techniques into maintenance operations.
- Follow appropriate best management practices (BMPs) by proper maintenance and inspection procedures.

## Storage and Disposal of Household Waste and Toxics:

This management measure involves educating the general public on the management considerations for hazardous materials. Failure to properly store hazardous materials dramatically increases the probability that they will end up in local waterways. Many people have hazardous chemicals stored throughout their homes, especially in garages and storage sheds. Practices such as covering hazardous materials or even storing them properly, can have dramatic impacts. Property owners are encouraged to contract with a hazardous waste collection company as required for removal of the waste.

MADEP has prepared several materials for property owners on how to properly use and dispose of household hazardous materials:

**http://www.mass.gov/dep/recycle/reduce/househol.htm**

For consumer questions on household hazardous waste call the following number:

**DEP Household Hazardous Waste Hotline 800-343-3420**

The following is a list of management considerations for hazardous materials as outlined by the EPA:

- Ensuring sufficient aisle space to provide access for inspections and to improve the ease of material transport;
- Storing materials well away from high-traffic areas to reduce the likelihood of accidents that might cause spills or damage to drums, bags, or containers.

- Stacking containers in accordance with the manufacturers' directions to avoid damaging the container or the product itself;
- Storing containers on pallets or equivalent structures. This facilitates inspection for leaks and prevents the containers from coming into contact with wet floors, which can cause corrosion. This consideration also reduces the incidence of damage by pests.

The following is a list of commonly used hazardous materials used in the household:

Batteries – automotive and rechargeable
.....nickel cadmium batteries
.....(no alkaline batteries)
Gasoline
Oil-based paints
Fluorescent light bulbs and lamps
Pool chemicals
Propane tanks
Lawn chemicals,
fertilizers and weed killers
Turpentine
Bug sprays
Antifreeze
Paint thinners, strippers, varnishes and
..stains
Arts and crafts chemicals
Charcoal lighter fluid

Disinfectant
Drain clog dissolvers
Driveway sealer
Flea dips, sprays and collars
Houseplant insecticides
Metal polishes
Mothballs
Motor oil and filters
Muriatic acid (concrete cleaner)
Nail polishes and nail polish
removers
Oven cleaner
Household pest and rat poisons
Rug and upholstery cleaners
Shoe polish
Windshield wiper fluid

## Landscape Maintenance:

This management measure seeks to control the storm water impacts of landscaping and lawn care practices through education and outreach on methods that reduce nutrient loadings and the amount of storm water runoff generated from lawns. Nutrient loads generated by fertilizer use on suburban lawns can be significant, and recent research has shown that lawns produce more surface runoff than previously thought.

Using proper landscaping techniques can effectively increase the value of a property while benefiting the environment. These practices can benefit the environment by reducing water use; decreasing energy use (because less water pumping and treatment is required); minimizing runoff of storm and irrigation water that transports soils, fertilizers, and pesticides; and creating additional habitat for plants and wildlife. The following lawn and landscaping management practices will be encouraged:

- Mow lawns at the highest recommended height.
- Minimize lawn size and maintain existing native vegetation.
- Raise public awareness for promoting the water efficient maintenance practices by informing users of water efficient irrigation techniques and other innovative approaches to water conservation.

- Abide by water restrictions and other conservation measures implemented by the Town of Duxbury.
- Water only when necessary.

## Integrated Pest Management (IPM):

This management measure seeks to limit the adverse impacts of insecticides and herbicides by providing information on alternative pest control techniques other than chemicals or explaining how to determine the correct dosages needed to manage pests.

The presence of pesticides in stormwater runoff has a direct impact on the health of aquatic organisms and can present a threat to humans through contamination of drinking water supplies. The pesticides of greatest concern are insecticides, such as diazinon and chloropyrifos, which even at very low levels can be harmful to aquatic life. The major source of pesticides to urban steams is home application of products designed to kill insects and weeds in the lawn and garden. The following IPM practices will be encouraged:

- Lawn care and landscaping management programs including appropriate pesticide use management as part of program.
- Raise public awareness by referring homeowners to "A Homeowner's Guide to Environmentally Sound Lawncare, Maintaining a Healthy Lawn the IPM Way", Massachusetts Department of Food and Agriculture, Pesticide Bureau or link **http://www.mass.gov/dep/water/resources/nonpoint.htm#megaman**>

## Proper Management of Deicing Chemicals and Snow:

The following deicing chemicals and snow storage practices will be encouraged:

- Select effective snow disposal sites adjacent to or on pervious surfaces in upland areas away from water resources and wells. At these locations, the snow meltwater can filter in to the soil, leaving behind sand and debris, which can be removed in the springtime.
- No roadway deicing materials shall be stockpiled on site unless all storage areas are protected from exposure to rain, snow, snowmelt and runoff.
- Avoid dumping snow into any on-site or off-site waterbody, including wetlands, cranberry bogs, detention/infiltration basins, and grassed swales/channels.
- Avoid disposing of snow on top of storm drain catch basins.

# Commonwealth of Massachusetts
## Scituate, Massachusetts
## ***Soil Suitability Assessment for On-Site Septic System***

Performed By: Anthony Esposito, South Shore Survey Consultants Inc.

Witnessed By: Peter Falabella,, Scituate Board of Health

| Location, Address, or Lot # | Owner's Name, Address, and Telephone # |
|---|---|
| 279 Old Oaken Bucket Rd.<br>Scituate, MA<br>Assessors # 41-1-3 | US Bank National Assc. Trust<br>s/o Lovendale LLC<br>107 East St.<br>Duxbury, MA 02332 |

New Construction **X** Repair

Office Review

Published Soil Survey Available: No ☐ Yes ☒

Year Published 2019 Publication Scale 1:12,000 Soil Map Unit 427B

Drainage Class B Soil Limitations High Water Table

Surficial Geologic Report Available: No ☐ Yes ☒

Year Published 2019 Publication Scale 1:12,000

Geologic Material (Map Unit) eiolian deposists

Landform outwash plain

Flood Insurance Rate Map:

Above 500 year flood boundary No ☐ Yes ☒

Within 500 year flood boundary No ☒ Yes ☐

Within 100 year flood boundary No ☒ Yes ☐

Wetland Area:

National Wetland Inventory Map (map unit) N/A

Wetlands Conservancy Program Map (map unit) N/A

Current Water Resource Conditions (USGS): Month December 2019

Range: Above Normal ☒ Normal ☐ Below Normal ☐

Other References Reviewed: None

# *On-Site Review*

Deep Hole Number T.P 1 Date 12-13-2019 Time: 9 AM Weather: sunny 40s

Location (identify on site plan) north of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-12” | A | SL | 10yr3/3 | - | |
| 12-26” | B | LS | 10yr5/6 | mottles@ 24” 7.5y6/4 | |
| 45”-96” | C | SL | 2.5y5/2 | | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >96”

Depth to Groundwater: Standing Water in the Hole: 90” Weeping from Pit Face: 44”

Estimated Seasonal High Ground Water? 24”

# *On-Site Review*

Deep Hole Number T.P 2 Date 12-13-2019 Time: 9 AM Weather: sunny 40s

Location (identify on site plan) north of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-10” | A | SL | 10yr3/3 | - | |
| 10-22” | B | LS | 10yr5/6 | | |
| 22”-94” | C | SL | 2.5y5/2 | mottles@ 40” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >94”

Depth to Groundwater: Standing Water in the Hole: 79” Weeping from Pit Face: 49”

Estimated Seasonal High Ground Water? 40”

# *On-Site Review*

Deep Hole Number T.P 3 Date 12-13-2019 Time: 10 AM Weather: sunny 40s

Location (identify on site plan) north of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-11” | A | SL | 10yr3/3 | - | |
| 11-28” | B | LS | 10yr5/6 | mottles@ 27” 7.5y6/4 | |
| 28”-95” | C | SL | 2.5y5/2 | | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >95”

Depth to Groundwater: Standing Water in the Hole: 61” Weeping from Pit Face: 61”

Estimated Seasonal High Ground Water? 27”

# ***On-Site Review***

Deep Hole Number T.P 4 Date 12-13-2019 Time: 10 AM Weather: sunny 40s

Location (identify on site plan) north of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-12” | A | SL | 10yr3/3 | - | |
| 12-24” | B | LS | 10yr5/6 | | |
| 24”-85” | C | SL | 2.5y5/2 | mottles@ 30” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >85”

Depth to Groundwater: Standing Water in the Hole: 82” Weeping from Pit Face: 48”

Estimated Seasonal High Ground Water? 30”

# *On-Site Review*

Deep Hole Number T.P 5 Date 12-13-2019 Time: 11AM Weather: sunny 40s

Location (identify on site plan) west of gravel drive at entrance

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-12” | A | SL | 10yr3/3 | - | |
| 12-26” | B | LS | 10yr5/6 | | |
| 24”-84” | C | SL | 2.5y5/2 | mottles@ 36” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >84”

Depth to Groundwater: Standing Water in the Hole: 58” Weeping from Pit Face: 48”

Estimated Seasonal High Ground Water? 36”

# ***On-Site Review***

Deep Hole Number T.P 6 Date 12-13-2019 Time: 11 AM Weather: sunny 40s

Location (identify on site plan) east of gravel drive at entrance

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-11” | A | SL | 10yr3/3 | - | |
| 11-20” | B | LS | 10yr5/6 | | |
| 20”-77” | C | SL | 2.5y5/2 | mottles@ 33” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >77”

Depth to Groundwater: Standing Water in the Hole: 54” Weeping from Pit Face: 54”

Estimated Seasonal High Ground Water? 33”

# ***On-Site Review***

Deep Hole Number T.P 10 Date 1-6-2020 Time: 9 AM Weather: cloudy 30s

Location (identify on site plan) east of gravel drive at 200 lf from entrance

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-16” | A | SL | 10yr3/3 | - | |
| 16-35” | B | LS | 10yr5/6 | | |
| 35”-84” | C | SL | 2.5y5/2 | mottles@ 35” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >84”

Depth to Groundwater: Standing Water in the Hole: 70” Weeping from Pit Face: 39”

Estimated Seasonal High Ground Water? 35”

# ***On-Site Review***

Deep Hole Number T.P 11 Date 1-6-2020 Time: 9 AM Weather: cloudy 30s

Location (identify on site plan) west of gravel drive at 200 lf from entrance

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-7” | A | SL | 10yr3/3 | - | |
| 7-25” | B | LS | 10yr5/6 | | |
| 25”-80” | C | SL | 2.5y5/2 | mottles@ 38” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >80”

Depth to Groundwater: Standing Water in the Hole: 78” Weeping from Pit Face: 38”

Estimated Seasonal High Ground Water? 38”

# ***On-Site Review***

Deep Hole Number T.P 13 Date 1-6-2020 Time: 10 AM Weather: cloudy 30s

Location (identify on site plan) east of gravel drive at 200 lf from entrance

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-12” | A | SL | 10yr3/3 | - | |
| 12-26” | B | LS | 10yr5/6 | | |
| 26”-80” | C | SL | 2.5y5/2 | mottles@ 26” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >80”

Depth to Groundwater: Standing Water in the Hole: 70” Weeping from Pit Face: 26”

Estimated Seasonal High Ground Water? 26”

# ***On-Site Review***

Deep Hole Number T.P 20 Date 1-6-2020 Time: 11 AM Weather: cloudy 30s

Location (identify on site plan) south of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-7” | A | SL | 10yr3/3 | - | |
| 7-22” | B | LS | 10yr5/6 | | |
| 22”-84” | C | SL | 2.5y5/2 | mottles@ 31” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >84”

Depth to Groundwater: Standing Water in the Hole: 52” Weeping from Pit Face: 31”

Estimated Seasonal High Ground Water? 31”

# ***On-Site Review***

Deep Hole Number T.P 21 Date 1-6-2020 Time: 12 PM Weather: cloudy 30s

Location (identify on site plan) south of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-6” | A | SL | 10yr3/3 | - | |
| 6-22” | B | LS | 10yr5/6 | | |
| 22”-84” | C | SL | 2.5y5/2 | mottles@ 33” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >84”

Depth to Groundwater: Standing Water in the Hole: 52” Weeping from Pit Face: 41”

Estimated Seasonal High Ground Water? 80”

# ***On-Site Review***

Deep Hole Number T.P 22 Date 1-8-2020 Time: 9 AM Weather: rainy 30s

Location (identify on site plan) south of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-9” | A | SL | 10yr3/3 | - | |
| 9-24” | B | LS | 10yr5/6 | | |
| 24”-72” | C | SL | 2.5y5/2 | mottles@ 26” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >72”

Depth to Groundwater: Standing Water in the Hole: 60” Weeping from Pit Face: 26”

Estimated Seasonal High Ground Water? 26”

# ***On-Site Review***

Deep Hole Number T.P 24 Date 1-8-2020 Time: 10 AM Weather: rainy 30s

Location (identify on site plan) south of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-10” | A | SL | 10yr3/3 | - | |
| 10-28” | B | LS | 10yr5/6 | mottles@ 22” 7.5y6/4 | |
| 28”-88” | C | SL | 2.5y5/2 | | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >88”

Depth to Groundwater: Standing Water in the Hole: 63” Weeping from Pit Face: 22”

Estimated Seasonal High Ground Water? 22”

# ***On-Site Review***

Deep Hole Number T.P 25 Date 1-8-2020 Time: 10:30 AM Weather: rainy 30s

Location (identify on site plan) south of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

Open Water Body 200+ feet — Drainage way >25 feet

Possible Wet Area 50+ feet — Property Line >10 feet

Drinking Water Well 100+ feet — Other N/A feet

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-10” | A | SL | 10yr3/3 | - | |
| 10-25” | B | LS | 10yr5/6 | mottles@ 25” 7.5y6/4 | |
| 25”-98” | C | SL | 2.5y5/2 | | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >98”

Depth to Groundwater: Standing Water in the Hole: 96” Weeping from Pit Face: 32”

Estimated Seasonal High Ground Water? 32”

# ***On-Site Review***

Deep Hole Number T.P 26 Date 1-8-2020 Time: 11 AM Weather: rainy 30s

Location (identify on site plan) south of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-10” | A | SL | 10yr3/3 | - | |
| 10-24” | B | LS | 10yr5/6 | mottles@ 24” 7.5y6/4 | |
| 24”-82” | C | SL | 2.5y5/2 | | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >82”

Depth to Groundwater: Standing Water in the Hole: 73” Weeping from Pit Face: 24”

Estimated Seasonal High Ground Water? 24”

# ***On-Site Review***

Deep Hole Number T.P 1DW Date 2-19-2020 Time: 9 AM Weather: sunny 30s

Location (identify on site plan) 120' south of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-10" | A | SL | 10yr3/3 | - | |
| 10-22" | B | LS | 10yr5/6 | | |
| 22"-120" | C | SL | 2.5y5/2 | mottles@ 25" 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >120"

Depth to Groundwater: Standing Water in the Hole: none Weeping from Pit Face: 30"

Estimated Seasonal High Ground Water? 25"

# ***On-Site Review***

Deep Hole Number T.P 2DW Date 2-19-2020 Time: 10 AM Weather: sunny 30s

Location (identify on site plan) 120' south of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

## DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-8" | A | SL | 10yr3/3 | - | |
| 8-19" | B | LS | 10yr5/6 | | |
| 19"-120" | C | SL | 2.5y5/2 | mottles@ 37" 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >120"

Depth to Groundwater: Standing Water in the Hole: none Weeping from Pit Face: 41"

Estimated Seasonal High Ground Water? 37"

# ***On-Site Review***

Deep Hole Number T.P 3NDW Date 2-19-2020 Time: 11 AM Weather: sunny 30s

Location (identify on site plan) 120' south of onsite U pole

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-11" | A | SL | 10yr3/3 | - | |
| 11-28" | B | LS | 10yr5/6 | | |
| 28"-120" | C | SL | 2.5y5/2 | mottles@ 31" 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >120"

Depth to Groundwater: Standing Water in the Hole: 114" Weeping from Pit Face: 60"

Estimated Seasonal High Ground Water? 31"

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA

# ***Determination for Seasonal High Water Table***

Method Used:

☐ Depth to bottom of deep hole (assumed seasonal high groundwater)_____inches

☐ Depth observed standing in observation hole_____inches

☐ Depth weeping from side of observation hole _____inches

X Depth to soil mottle see soil logs_____inches

Index Well Number Reading Date_____ Index Well Level
Adjustment Factor_____ Adjusted Groundwater Level _____

Depth of Naturally Occurring Pervious Material

Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?_____yes_____

If not, what is the depth of naturally occurring pervious material?_____

Certification

I certify that on June 1999 I have passed the soil evaluator examination approved by the Department of Environmental Protection and that the above analysis was performed by me consistent with the required training, expertise, and experience described in 310 CMR 15.017.

Signature *Anthony Esposito* Date 2/21/2020

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 12-13-2019 | Time: 9:53 AM, 10:17 AM |

| Observation Hole # | T.P. 2 | T.P. 3 |
|---|---|---|
| Depth of Perc. | 24+18” | 33+18” |
| Start Pre-Soak | 9:53 | 10:17 |
| End Pre-Soak | 10:08 | 10:32 |
| Time at 12” | 10:08 | 10:32 |
| Time at 9” | 10:41 | 10:57 |
| Time at 6” | 11:20 | 11:38 |
| Time (9” - 6”) | 39 | 41 |
| Rate (Minutes/Inch) | 13 min/in | 14 min/in |

Site Passed **X** Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 12-13-2019 | Time: 10:32 AM, 11:47 AM |

| Observation Hole # | T.P. 4 | T.P. 5 |
|---|---|---|
| Depth of Perc. | 30+18” | 24+18” |
| Start Pre-Soak | 10:32 | 11:47 |
| End Pre-Soak | 10:47 | 12:08 |
| Time at 12” | 10:47 | 12:08 |
| Time at 9” | 11:45 | 12:45 |
| Time at 6” | 1:09 | 1:34 |
| Time (9” - 6”) | 84 | 49 |
| Rate (Minutes/Inch) | 28 min/in | 17 min/in |

Site Passed **X** Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 1-6-2020 | Time: 11:11 AM, 12:33 PM |

| Observation Hole # | T.P. 13 | T.P. 20 |
|---|---|---|
| Depth of Perc. | 24+18" | 24+18" |
| Start Pre-Soak | 11:11 | 12:33 |
| End Pre-Soak | 11:26 | 12:48 |
| Time at 12" | 11:26 | 12:48 |
| Time at 9" | 11:32 | 1:56 |
| Time at 6" | 1:01 | 3:45 |
| Time (9" - 6") | 89 | 109 |
| Rate (Minutes/Inch) | 30 min/in | 37 min/in |

Site Passed **X** Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 2-19-2020 | Time: 10:02 AM, 9:16 AM |

| Observation Hole # | T.P. 1DW | T.P. 2DW |
|---|---|---|
| Depth of Perc. | 26+18" | 36+18" |
| Start Pre-Soak | 10:02 | 9:16 |
| End Pre-Soak | 10:17 | 9:31 |
| Time at 12" | 10:17 | 9:31 |
| Time at 9" | 11:31 | 11:00 |
| Time at 6" | 1:12 | 1:40 |
| Time (9" - 6") | 101 | 160 |
| Rate (Minutes/Inch) | 34 min/in | 54 min/in |

Site Passed **X** Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 2-19-2020 | Time: 10:02 AM, 9:16 AM |

| Observation Hole # | T.P. 3NDW | |
|---|---|---|
| Depth of Perc. | 25+18" | |
| Start Pre-Soak | 11:12 | |
| End Pre-Soak | 11:27 | |
| Time at 12" | 11:27 | |
| Time at 9" | 12:48 | |
| Time at 6" | 3:48 | |
| Time (9" - 6") | 120 | |
| Rate (Minutes/Inch) | 60 min/in | |

Site Passed **X** Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

# Commonwealth of Massachusetts
## Scituate, Massachusetts
## *Soil Suitability Assessment for On-Site Septic System*

Performed By: Anthony Esposito, South Shore Survey Consultants Inc.

Witnessed By: Peter Falabella,, Scituate Board of Health

| Location, Address, or Lot # | Owner's Name, Address, and Telephone # |
|---|---|
| 279 Old Oaken Bucket Rd.<br>Scituate, MA<br>Assessors # 41-1-3 | US Bank National Assc. Trust<br>s/o Lovendale LLC<br>107 East St.<br>Duxbury, MA 02332 |

New Construction **X** Repair

Office Review

Published Soil Survey Available: No ☐ Yes ☒

Year Published 2019 Publication Scale 1:12,000 Soil Map Unit 427B

Drainage Class B Soil Limitations High Water Table

Surficial Geologic Report Available: No ☐ Yes ☒

Year Published 2019 Publication Scale 1:12,000

Geologic Material (Map Unit) eiolian deposists

Landform outwash plain

Flood Insurance Rate Map:

Above 500 year flood boundary No ☐ Yes ☒

Within 500 year flood boundary No ☒ Yes ☐

Within 100 year flood boundary No ☒ Yes ☐

Wetland Area:

National Wetland Inventory Map (map unit) N/A

Wetlands Conservancy Program Map (map unit) N/A

Current Water Resource Conditions (USGS): Month August 2020

Range: Above Normal ☐ Normal ☐ Below Normal ☒

Other References Reviewed: None

# ***On-Site Review***

Deep Hole Number T.P 1-2 Date 8-26-20 Time: 9 AM Weather: sunny 80s

Location (identify on site plan) rear yard

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-8” | A | SL | 10yr4/4 | - | |
| 8-27” | B | LS | 10yr5/4 | mottles@ 36” 7.5y6/4 | |
| 27”-120” | C | SL | 2.5y6/3 | | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >120”

Depth to Groundwater: Standing Water in the Hole: none Weeping from Pit Face: none

Estimated Seasonal High Ground Water? 36”

# ***On-Site Review***

Deep Hole Number T.P 2-2 Date 8-26-20 Time: 9:20 AM Weather: sunny 80s

Location (identify on site plan) rear yard

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ____

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-22” | A | SL | 10yr4/4 | - | |
| 22-41” | B | LS | 10yr5/4 | mottles@ 41” 7.5y6/4 | |
| 27”-142” | C | SL | 2.5y6/3 | | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >142”

Depth to Groundwater: Standing Water in the Hole: 131” Weeping from Pit Face: 131”

Estimated Seasonal High Ground Water? 41”

# *On-Site Review*

Deep Hole Number T.P 3-2 Date 8-26-20 Time: 9 :30AM Weather: sunny 80s

Location (identify on site plan) rear yard

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ____

Distances from:

Open Water Body 200+ feet
Possible Wet Area 50+ feet
Drinking Water Well 100+ feet
Drainage way >25 feet
Property Line >10 feet
Other N/A feet

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-8” | A | SL | 10yr4/4 | - | |
| 8-23” | B | LS | 10yr5/4 | mottles@ 23” 7.5y6/4 | |
| 23”-122” | C | SL | 2.5y6/3 | | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >122”

Depth to Groundwater: Standing Water in the Hole: none Weeping from Pit Face: none
Estimated Seasonal High Ground Water? 23”

# ***On-Site Review***

Deep Hole Number T.P 4-2 Date 8-26-20 Time: 9 :40AM Weather: sunny 80s

Location (identify on site plan) rear yard

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ____

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-8” | A | SL | 10yr4/4 | - | |
| 8-24” | B | LS | 10yr5/4 | | |
| 24”-133” | C | SL | 2.5y6/3 | mottles@ 35” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >133”

Depth to Groundwater: Standing Water in the Hole: 130” Weeping from Pit Face: 130”

Estimated Seasonal High Ground Water? 35”

# ***On-Site Review***

Deep Hole Number T.P 5-2 Date 8-26-20 Time: 9 :50AM Weather: sunny 80s

Location (identify on site plan) rear yard

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-10” | A | SL | 10yr4/4 | - | |
| 10-35” | B | LS | 10yr5/4 | | |
| 35”-96” | C | SL | 2.5y6/3 | mottles@ 35” 7.5y6/4 | loose, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >96”

Depth to Groundwater: Standing Water in the Hole: 96” Weeping from Pit Face: 96”

Estimated Seasonal High Ground Water? 35”

# ***On-Site Review***

Deep Hole Number T.P 6-2 Date 8-26-20 Time: 10AM Weather: sunny 80s

Location (identify on site plan) rear yard

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-10” | A | SL | 10yr4/4 | - | |
| 10-26” | B | LS | 10yr5/4 | | |
| 26”-160” | C | SL | 2.5y6/3 | mottles@ 44” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >160”

Depth to Groundwater: Standing Water in the Hole: 152” Weeping from Pit Face: 151”

Estimated Seasonal High Ground Water? 44”

# *On-Site Review*

Deep Hole Number T.P 7 Date 8-26-20 Time: 10:15AM Weather: sunny 80s

Location (identify on site plan) rear yard

Land Use vacant Slope (%) 5% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-7” | A | SL | 10yr4/4 | - | |
| 7-23” | B | LS | 10yr5/4 | | |
| 23”-111” | C | SL | 2.5y6/3 | mottles@ 25” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >111”

Depth to Groundwater: Standing Water in the Hole: none Weeping from Pit Face: none

Estimated Seasonal High Ground Water? 25”

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA

# ***Determination for Seasonal High Water Table***

Method Used:

☐ Depth to bottom of deep hole (assumed seasonal high groundwater)_____inches

☐ Depth observed standing in observation hole_____inches

☐ Depth weeping from side of observation hole _____inches

X Depth to soil mottle see soil logs_____inches

Index Well Number Reading Date_____ Index Well Level
Adjustment Factor_____ Adjusted Groundwater Level _____

Depth of Naturally Occurring Pervious Material

Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?_____yes_____

If not, what is the depth of naturally occurring pervious material?_____

Certification

I certify that on June 1999 I have passed the soil evaluator examination approved by the Department of Environmental Protection and that the above analysis was performed by me consistent with the required training, expertise, and experience described in 310 CMR 15.017.

Signature *Anthony Esposito* Date 8/26/2020

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 8/26/2020 | Time: 9:31 AM, 10:02AM |

| Observation Hole # | T.P. 1 | T.P. 2 |
|---|---|---|
| Depth of Perc. | 42+18” | 41+18” |
| Start Pre-Soak | 9:31 | 10:02 |
| End Pre-Soak | 9:46 | 10:17 |
| Time at 12” | 9:46 | 10:17 |
| Time at 9” | 10:02 | 10:39 |
| Time at 6” | 10:23 | 11:11 |
| Time (9” - 6”) | 21 | 32 |
| Rate (Minutes/Inch) | 7 min/in | 11 min/in |

Site Passed **X** Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 8/26/2020 | Time: 10:22 AM |

| Observation Hole # | T.P. 3 | T.P. 4 |
|---|---|---|
| Depth of Perc. | 30+18" | no |
| Start Pre-Soak | 10:22 | |
| End Pre-Soak | 10:37 | perc |
| Time at 12" | 10:37 | |
| Time at 9" | 10:50 | test |
| Time at 6" | 11:05 | |
| Time (9" - 6") | 15 | |
| Rate (Minutes/Inch) | 5 min/in | |

Site Passed **X** Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 8-26-2020 | Time: 11:11 AM, 12:33 PM |

| Observation Hole # | T.P. 5 | T.P. 6 |
|---|---|---|
| Depth of Perc. | 39+18” | 22+18” |
| Start Pre-Soak | 11:46 | 12:16 |
| End Pre-Soak | 12:01 | 12:31 |
| Time at 12” | 12:01 | 12:31 |
| Time at 9” | 12:36 | 12:43 |
| Time at 6” | 1:03 | 1:03 |
| Time (9” - 6”) | 27 | 109 |
| Rate (Minutes/Inch) | 9 min/in | 7 min/in |

Site Passed **X** Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 8-26-2020 | Time: 11:43 AM |

| | | |
|---|---|---|
| Observation Hole # | T.P. 7 | |
| Depth of Perc. | 23+18" | |
| Start Pre-Soak | 11:43 | |
| End Pre-Soak | 1:58 | |
| Time at 12" | 1:58 | |
| Time at 9" | 2:10 | |
| Time at 6" | 2:23 | |
| Time (9" - 6") | 13 | |
| Rate (Minutes/Inch) | 5 min/in | |

Site Passed **X** Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

# Commonwealth of Massachusetts
## Scituate, Massachusetts
## *Soil Suitability Assessment for On-Site Septic System*

Performed By: Anthony Esposito, South Shore Survey Consultants Inc.

Witnessed By: Peter Falabella,, Scituate Board of Health

| Location, Address, or Lot # | Owner's Name, Address, and Telephone # |
|---|---|
| 279 Old Oaken Bucket Rd.<br>Scituate, MA<br>Assessors # 41-1-3 | US Bank National Assc. Trust<br>s/o Lovendale LLC<br>107 East St.<br>Duxbury, MA 02332 |

New Construction **X** Repair

Office Review

Published Soil Survey Available: No ☐ Yes ☒

Year Published 2019 Publication Scale 1:12,000 Soil Map Unit 427B

Drainage Class B Soil Limitations High Water Table

Surficial Geologic Report Available: No ☐ Yes ☒

Year Published 2019 Publication Scale 1:12,000

Geologic Material (Map Unit) eiolian deposists

Landform outwash plain

Flood Insurance Rate Map:

Above 500 year flood boundary No ☐ Yes ☒

Within 500 year flood boundary No ☒ Yes ☐

Within 100 year flood boundary No ☒ Yes ☐

Wetland Area:

National Wetland Inventory Map (map unit) N/A

Wetlands Conservancy Program Map (map unit) N/A

Current Water Resource Conditions (USGS): Month February 2021

Range: Above Normal ☐ Normal ☒ Below Normal ☐

Other References Reviewed: None

# *On-Site Review*

Deep Hole Number T.P 1-3 Date 2-1-21 Time: 9 AM Weather: snow 20s

Location (identify on site plan) upland island

Land Use vacant Slope (%) 3% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-12” | A | SL | 10yr3/2 | - | |
| 12-36” | B | LS | 10yr5/6 | mottles@ 36” 7.5y6/4 | |
| 36”-120” | C | SL | 2.5y6/3 | | Loose and wet, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >120”

Depth to Groundwater: Standing Water in the Hole: 108” Weeping from Pit Face: 36”

Estimated Seasonal High Ground Water? 36”

# *On-Site Review*

Deep Hole Number T.P 2-3 Date 2-1-2021 Time: 9:20 AM Weather: snow 20s

Location (identify on site plan) upland island

Land Use vacant Slope (%) 3% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ____

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-10” | A | SL | 10yr3/2 | - | |
| 10-26” | B | LS | 10yr5/6 | | |
| 26”-40” | C1 | GS | 2.5y4/3 | mottles@ 36” 7.5y6/4 | firm, 40% stones 50% gravel |
| 40-120” | C2 | SL | 2.5y3/2 | | |

Parent Material (geologic) eiolian deposists Depth to Bedrock >120”

Depth to Groundwater: Standing Water in the Hole: 76” Weeping from Pit Face: 40”

Estimated Seasonal High Ground Water? 36”

# *On-Site Review*

Deep Hole Number T.P 3-3 Date 2-1-2021 Time: 9:40 AM Weather: snow 20s

Location (identify on site plan) upland island

Land Use vacant Slope (%) 3% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ____

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-15” | A | SL | 10yr3/2 | - | |
| 15-36” | B | LS | 10yr5/6 | | |
| 36”-120” | C1 | LS | 2.5y4/3 | mottles@ 36” 7.5y6/4 | loose, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >120”

Depth to Groundwater: Standing Water in the Hole: 90” Weeping from Pit Face: 81”
Estimated Seasonal High Ground Water? 36”

# ***On-Site Review***

Deep Hole Number T.P 4-3 Date 2-1-21 Time: 9 :40AM Weather: sunny 30s

Location (identify on site plan) upland island

Land Use vacant Slope (%) 3% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ____

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-18” | A | SL | 10yr3/2 | - | |
| 18-24” | B | LS | 10yr5/4 | | |
| 24”-108” | C | SL | 2.5y6/3 | mottles@ 22” 7.5y6/4 | loose, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >108”

Depth to Groundwater: Standing Water in the Hole: 94” Weeping from Pit Face: 24”

Estimated Seasonal High Ground Water? 22”

# ***On-Site Review***

Deep Hole Number T.P 5-3 Date 2-1-21 Time: 9 :40AM Weather: snow 20s

Location (identify on site plan) upland island

Land Use vacant Slope (%) 3% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-10” | A | SL | 10yr3/2 | - | |
| 10-24” | B | LS | 10yr5/4 | | |
| 24”-112” | C | SL | 2.5y6/3 | mottles@ 24” 7.5y6/4 | loose 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >108”

Depth to Groundwater: Standing Water in the Hole: 100” Weeping from Pit Face: 24”

Estimated Seasonal High Ground Water? 22”

# ***On-Site Review***

Deep Hole Number T.P 6-3 Date 2-1-21 Time: 10AM Weather: snow 20s

Location (identify on site plan) upland island

Land Use vacant Slope (%) 3% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-9” | A | SL | 10yr4/4 | - | |
| 9-18” | B | LS | 10yr5/4 | | |
| 18”-110” | C | SL | 2.5y6/3 | mottles@ 18” 7.5y6/4 | firm, 40% stones 50% gravel |

Parent Material (geologic) eiolian deposists Depth to Bedrock >110”

Depth to Groundwater: Standing Water in the Hole: 70” Weeping from Pit Face: 104”

Estimated Seasonal High Ground Water? 18”

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA

# ***Determination for Seasonal High Water Table***

Method Used:

☐ Depth to bottom of deep hole (assumed seasonal high groundwater)_____inches

☐ Depth observed standing in observation hole_____inches

☐ Depth weeping from side of observation hole _____inches

X Depth to soil mottle see soil logs_____inches

Index Well Number Reading Date_____ Index Well Level
Adjustment Factor_____ Adjusted Groundwater Level _____

Depth of Naturally Occurring Pervious Material

Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?_____yes_____

If not, what is the depth of naturally occurring pervious material?_____

Certification

I certify that on June 1999 I have passed the soil evaluator examination approved by the Department of Environmental Protection and that the above analysis was performed by me consistent with the required training, expertise, and experience described in 310 CMR 15.017.

Signature *Anthony Esposito* Date 2/1/2021

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 2/1/2021 | Time: 9:31 AM, 10:02AM |

| Observation Hole # | T.P. 1-3 | T.P. 2-3 |
|---|---|---|
| Depth of Perc. | 24+18” | 36+18” |
| Start Pre-Soak | 10:28 | 10:02 |
| End Pre-Soak | 10:43 | 10:17 |
| Time at 12” | 10:43 | 10:17 |
| Time at 9” | 11:34 | 10:39 |
| Time at 6” | 12:50 | 11:11 |
| Time (9” - 6”) | 76 | 32 |
| Rate (Minutes/Inch) | 26 min/in | 11 min/in |

Site Passed **X** Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 8/26/2020 | Time: 10:22 AM |

| Observation Hole # | T.P. 3-3 | T.P. 4-3 |
|---|---|---|
| Depth of Perc. | 30+18" | no |
| Start Pre-Soak | 10:22 | |
| End Pre-Soak | 10:37 | perc |
| Time at 12" | 10:37 | |
| Time at 9" | 10:50 | test |
| Time at 6" | 11:05 | |
| Time (9" - 6") | 15 | |
| Rate (Minutes/Inch) | 5 min/in | |

Site Passed **X** Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 8-26-2020 | Time: 11:11 AM, 12:33 PM |

| Observation Hole # | T.P. 5-3 | T.P. 6-3 |
|---|---|---|
| Depth of Perc. | 39+18" | 22+18" |
| Start Pre-Soak | 11:46 | 12:16 |
| End Pre-Soak | 12:01 | 12:31 |
| Time at 12" | 12:01 | 12:31 |
| Time at 9" | 12:36 | 12:43 |
| Time at 6" | 1:03 | 1:03 |
| Time (9" - 6") | 27 | 109 |
| Rate (Minutes/Inch) | 9 min/in | 7 min/in |

Site Passed **X** Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

# Commonwealth of Massachusetts
## Scituate, Massachusetts
## ***Soil Suitability Assessment for On-Site Septic System***

Performed By: Anthony Esposito, South Shore Survey Consultants Inc.

Witnessed By: Joshua Green Merrill Associates

| Location, Address, or Lot # | Owner's Name, Address, and Telephone # |
|---|---|
| 279 Old Oaken Bucket Rd.<br>Scituate, MA<br>Assessors # 41-1-3 | US Bank National Assc. Trust<br>s/o Lovendale LLC<br>107 East St.<br>Duxbury, MA 02332 |

New Construction **X** Repair

Office Review

Published Soil Survey Available: No ☐ Yes ☒

Year Published 2019 Publication Scale 1:12,000 Soil Map Unit 427B

Drainage Class B Soil Limitations High Water Table

Surficial Geologic Report Available: No ☐ Yes ☒

Year Published 2019 Publication Scale 1:12,000

Geologic Material (Map Unit) eiolian deposists

Landform outwash plain

Flood Insurance Rate Map:

Above 500 year flood boundary No ☐ Yes ☒

Within 500 year flood boundary No ☒ Yes ☐

Within 100 year flood boundary No ☒ Yes ☐

Wetland Area:

National Wetland Inventory Map (map unit) N/A

Wetlands Conservancy Program Map (map unit) N/A

Current Water Resource Conditions (USGS): Month October 2022

Range: Above Normal ☐ Normal ☒ Below Normal ☐

Other References Reviewed: None

# ***On-Site Review***

Deep Hole Number T.P unit 4 Date 10-6-22 Time: 9 AM Weather: sunny 60s

Location (identify on site plan) dwelling 4

Land Use vacant Slope (%) 3% Surface Stones <1%

Vegetation oaks and maples

Landform outwash plain

Position on Landscape (see septic plan) ___

Distances from:

| | | | |
|---|---|---|---|
| Open Water Body | 200+ feet | Drainage way | >25 feet |
| Possible Wet Area | 50+ feet | Property Line | >10 feet |
| Drinking Water Well | 100+ feet | Other | N/A feet |

# DEEP OBSERVATION HOLE LOG

| Depth from Surface (Inches) | Soil Horizon | Soil Texture (U.S.D.A.) | Soil Color (Munsell) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
|---|---|---|---|---|---|
| 0-9” | A | SL | 10yr3/2 | - | |
| 9-35” | B | SL | 10yr5/6 | | |
| 35”-90” | C | SL | 2.5y6/3 | mottles@ 48” 7.5y5/8 | firm |

Parent Material (geologic) eiolian deposists Depth to Bedrock >90”

Depth to Groundwater: Standing Water in the Hole: none Weeping from Pit Face: none

Estimated Seasonal High Ground Water? 48”

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA

# ***Determination for Seasonal High Water Table***

Method Used:

☐ Depth to bottom of deep hole (assumed seasonal high groundwater)_____inches

☐ Depth observed standing in observation hole_____inches

☐ Depth weeping from side of observation hole _____inches

X Depth to soil mottle 48_____inches

Index Well Number Reading Date_____ Index Well Level
Adjustment Factor_____ Adjusted Groundwater Level _____

Depth of Naturally Occurring Pervious Material

Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?_____yes_____

If not, what is the depth of naturally occurring pervious material?_____

Certification

I certify that on June 1999 I have passed the soil evaluator examination approved by the Department of Environmental Protection and that the above analysis was performed by me consistent with the required training, expertise, and experience described in 310 CMR 15.017.

Signature *Anthony Esposito* Date 10/6/2022

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 2/1/2021 | Time: 9:31 AM, 10:02AM |

| Observation Hole # | T.P. 1-3 | T.P. 2-3 |
|---|---|---|
| Depth of Perc. | 24+18" | 36+18" |
| Start Pre-Soak | 10:28 | 10:02 |
| End Pre-Soak | 10:43 | 10:17 |
| Time at 12" | 10:43 | 10:17 |
| Time at 9" | 11:34 | 10:39 |
| Time at 6" | 12:50 | 11:11 |
| Time (9" - 6") | 76 | 32 |
| Rate (Minutes/Inch) | 26 min/in | 11 min/in |

Site Passed **X** Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 8/26/2020 | Time: 10:22 AM |

| Observation Hole # | T.P. 3-3 | T.P. 4-3 |
|---|---|---|
| Depth of Perc. | 30+18" | no |
| Start Pre-Soak | 10:22 | |
| End Pre-Soak | 10:37 | perc |
| Time at 12" | 10:37 | |
| Time at 9" | 10:50 | test |
| Time at 6" | 11:05 | |
| Time (9" - 6") | 15 | |
| Rate (Minutes/Inch) | 5 min/in | |

Site Passed **X** Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Location, Address, or Lot #** 279 Old Oaken Bucket Rd. Scituate, MA.

# Commonwealth of Massachusetts
## Scituate, Massachusetts

## *Percolation Test

Date: 8-26-2020 Time: 11:11 AM, 12:33 PM

| Observation Hole # | T.P. 5-3 | T.P. 6-3 |
|---|---|---|
| Depth of Perc. | 39+18" | 22+18" |
| Start Pre-Soak | 11:46 | 12:16 |
| End Pre-Soak | 12:01 | 12:31 |
| Time at 12" | 12:01 | 12:31 |
| Time at 9" | 12:36 | 12:43 |
| Time at 6" | 1:03 | 1:03 |
| Time (9" - 6") | 27 | 109 |
| Rate (Minutes/Inch) | 9 min/in | 7 min/in |

Site Passed **X** Site Failed

Performed By: Anthony Esposito, SE688, P.E.

Witnessed By Peter Falabella, Scituate Board of Health

Comments:

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey — nesoil.com (Source) | 421B (Soil Map Unit) | Canton fine sandy loam, 0-8% slopes, stony (Soil Series)

   Morraines, hills, ridges
   Landform

   Shallow to restrictive layer, shallow to groundwater
   Soil Limitations

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

3. Surficial Geological Report — 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) | Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map — Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No — If yes, MassGIS Wetland Data Layer: _____ Wetland Type

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.)
   USGS 420316070433501 MA-D4W 79R DUXBURY, MA

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Ch.A. 1 (Hole #) | 10/07/2022 (Date) | 11:50 (Time) | Sunny, 65F (Weather) | (Latitude) | (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) | Trees/low-lying brush (Vegetation) | Some boulders present (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: Refer to site plan "Chamber Area 1" at north area of locus, near existing driveway

2. Soil Parent Material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist | Till plains (Landform) | Backslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way n/a feet | Wetlands ~165 feet | Property Line ~20 feet | Drinking Water Well n/a feet | Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth to Weeping in Hole _____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-12 | A | Loamy sand | 10YR3/2 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 12-44 | B | Sandy loam | 10YR5/6 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 44-108 | C | Loamy sand | 2.5Y6/3 | 59 | Cnc :2.5YR3/6<br>Dpl: | | 15% | 15% | massive | very friable | gravel/cobbles present |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole #Ch.A. 1 | Obs. Hole #_____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 59 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_f]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_f$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

   ☒ Yes ☐ No

   b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 12 inches Lower boundary: 108 inches

   c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

| | |
|---|---|
| Signature of Soil Evaluator | 10/12/2022<br>Date |
| Christopher McEntee, SE14021<br>Typed or Printed Name of Soil Evaluator / License # | 06/30/2025<br>Expiration Date of License |
| Joshua Green, SE14374<br>Name of Approving Authority Witness | Town of Scituate<br>Approving Authority |

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

See site plan for test hole location at proposed drainage area "Chamber Area 1"

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey — nesoil.com (Source); 427B (Soil Map Unit); Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

Morraines, till plains, hills
Landform

Shallow to restrictive layer, shallow to groundwater
Soil Limitations

Coarse-loamy eolian deposits over sandy and supraglacial meltout till
Soil Parent material

3. Surficial Geological Report — 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source); Thin till (Map Unit)

Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
Description of Geologic Map Unit:

4. Flood Rate Insurance Map — Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No — If yes, MassGIS Wetland Data Layer: ____ (Wetland Type)

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.) USGS 420316070433501 MA-D4W 79R DUXBURY, MA

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Ch.A. 3-1 (Hole #) | 10/06/2022 (Date) | 10:30 (Time) | Sunny, 65F (Weather) | _____ (Latitude) | _____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) | Trees/low-lying brush (Vegetation) | None (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: Wooded/vegetated area approx. 115 feet east of BVW, refer to site plan "Chamber Area 3" south end of system

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till | Till plains (Landform) | Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way ~350 feet | Wetlands ~115 feet | Property Line ~35 feet | Drinking Water Well n/a feet | Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 115 inches Depth to Weeping in Hole _____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-10 | A | Sandy loam | 10YR3/2 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 10-28 | B | Sandy loam | 10YR4/4 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 28-132 | C | Sandy loam | 5Y2/2 | 30 | Cnc :2.5YR3/6<br>Dpl: | | | 5-10% | massive | friable | pockets of firm silt loam |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

| 1. Method Used (Choose one): | Obs. Hole # Ch.A. 3-1 | Obs. Hole # _____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 30 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

   ☒ Yes ☐ No

   b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 10 inches Lower boundary: 132 inches

   c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

| | |
|---|---|
| Signature of Soil Evaluator | 10/12/2022<br>Date |
| Christopher McEntee, SE14021<br>Typed or Printed Name of Soil Evaluator / License # | 06/30/2025<br>Expiration Date of License |
| Joshua Green, SE14374<br>Name of Approving Authority Witness | Town of Scituate<br>Approving Authority |

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

"Ch. A. 3-1" test hole was performed at proposed location for "Chamber Area 3" as shown on site plan.

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey — nesoil.com (Source); 427B (Soil Map Unit); Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

   Morraines, till plains, hills
   Landform

   Shallow to restrictive layer, shallow to groundwater
   Soil Limitations

   Coarse-loamy eolian deposits over sandy and supraglacial meltout till
   Soil Parent material

3. Surficial Geological Report — 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source); Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map — Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No — If yes, MassGIS Wetland Data Layer: ____ (Wetland Type)

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.) USGS 420316070433501 MA-D4W 79R DUXBURY, MA

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Ch.A. 4-1 (Hole #) | 10/06/2022 (Date) | 12:20 (Time) | Sunny, 65F (Weather) | _____ (Latitude) | _____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) | Trees/low-lying brush (Vegetation) | None (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: Wooded/vegetated area approx. 110 feet NE of BVW, refer to site plan "Chamber Area 4" north end of system

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till | Till plains (Landform) | Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way ~220 feet | Wetlands ~110 feet | Property Line ~140 feet | Drinking Water Well n/a feet | Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth to Weeping in Hole _____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-14 | A | Sandy loam | 10YR2/1 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 14-30 | B | Sandy loam | 10YR4/3 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 30-124 | C | Sandy loam | 10YR5/1 | 43 | Cnc :2.5YR3/6<br>Dpl: | | | 10-15% | massive | friable | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

| 1. Method Used (Choose one): | Obs. Hole #Ch.A. 4-1 | Obs. Hole #_____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 43 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

   ☒ Yes ☐ No

   b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 14 inches Lower boundary: 124 inches

   c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature of Soil Evaluator

10/12/2022
Date

Christopher McEntee, SE14021
Typed or Printed Name of Soil Evaluator / License #

06/30/2025
Expiration Date of License

Joshua Green, SE14374
Name of Approving Authority Witness

Town of Scituate
Approving Authority

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

See site plan for proposed "Chamber Area 4"
i.e. "Ch.A.4-1"

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey nesoil.com (Source) 427B (Soil Map Unit) Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

Morraines, till plains, hills
Landform

Shallow to restrictive layer, shallow to groundwater
Soil Limitations

Coarse-loamy eolian deposits over sandy and supraglacial meltout till
Soil Parent material

3. Surficial Geological Report 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) Thin till (Map Unit)

Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: (Wetland Type)

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.) USGS 420316070433501 MA-D4W 79R DUXBURY, MA

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Ch.A. 4-2 (Hole #) | 10/06/2022 (Date) | 12:35 (Time) | Sunny, 65F (Weather) | _____ (Latitude) | _____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) | Trees/low-lying brush (Vegetation) | None (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: Wooded/vegetated area approx. 80 feet NE of BVW, refer to site plan "Chamber Area 4" south end of system

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till | Till plains (Landform) | Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way ~240 feet | Wetlands ~80 feet | Property Line ~110 feet | Drinking Water Well n/a feet | Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth to Weeping in Hole _____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-6 | A | Sandy loam | 10YR2/1 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 6-36 | B | Sandy loam | 10YR4/3 | 32 | Cnc :2.5YR3/6<br>Dpl: | | | | massive | friable | |
| 36-126 | C | Sandy loam | 10YR5/1 | | Cnc :<br>Dpl: | | | 10-15% | massive | friable | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

| 1. Method Used (Choose one): | Obs. Hole # Ch.A. 4-2 | Obs. Hole # _____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 32 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

   ☒ Yes ☐ No

   b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 6 inches Lower boundary: 126 inches

   c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

| | |
|---|---|
| Signature of Soil Evaluator | 10/12/2022<br>Date |
| Christopher McEntee, SE14021<br>Typed or Printed Name of Soil Evaluator / License # | 06/30/2025<br>Expiration Date of License |
| Joshua Green, SE14374<br>Name of Approving Authority Witness | Town of Scituate<br>Approving Authority |

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

See site plan for proposed location of "Chamber Area 4"

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey — nesoil.com (Source) | 427B (Soil Map Unit) | Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

   Morraines, till plains, hills
   Landform

   Shallow to restrictive layer, shallow to groundwater
   Soil Limitations

   Coarse-loamy eolian deposits over sandy and supraglacial meltout till
   Soil Parent material

3. Surficial Geological Report — 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) | Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map — Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No — If yes, MassGIS Wetland Data Layer: _____ (Wetland Type)

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.)
   USGS 420316070433501 MA-D4W 79R DUXBURY, MA

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Septic 3 (Hole #) | 10/06/2022 (Date) | 11:15 (Time) | Sunny, 65F (Weather) | _____ (Latitude) | _____ (Longitude)

1. Land Use: Overgrown driveway (e.g., woodland, agricultural field, vacant lot, etc.) | tall grass, low-lying brush (Vegetation) | None (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: Area near NW corner of existing 2-story home #279, refer to site plan

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till | Till plains (Landform) | Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way ~235 feet | Wetlands ~130 feet | Property Line ~150 feet | Drinking Water Well n/a feet | Other _____ feet

4. Unsuitable Materials Present: ☒ Yes ☐ No If Yes: ☒ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 66 inches Depth to Weeping in Hole _____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-18 | FILL | N/A | N/A | | Cnc :<br>Dpl: | | | | N/A | N/A | |
| 18-22 | A | Sandy loam | 10YR2/1 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 22-40 | B | Sandy loam | 10YR4/3 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 40-130 | C | Sandy loam | 10YR5/1 | 43 | Cnc :2.5YR3/6<br>Dpl: | | | 10-15% | massive | friable | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # Septic 3 | Obs. Hole # _____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 43 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number  _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

   ☒ Yes ☐ No

   b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 22 inches Lower boundary: 130 inches

   c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

| | |
|---|---|
| Signature of Soil Evaluator | 10/12/2022<br>Date |
| Christopher McEntee, SE14021<br>Typed or Printed Name of Soil Evaluator / License # | 06/30/2025<br>Expiration Date of License |
| Joshua Green, SE14374<br>Name of Approving Authority Witness | Town of Scituate<br>Approving Authority |

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

See site plan. "Septic 3" test hole performed at NW corner area of existing 2-story home at #279 Old Cotton Bucket Road.

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey — nesoil.com (Source) | 421B (Soil Map Unit) | Canton fine sandy loam, 0-8% slopes, stony (Soil Series)

   Morraines, hills, ridges
   Landform

   Shallow to restrictive layer, shallow to groundwater
   Soil Limitations

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

3. Surficial Geological Report — 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) | Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map — Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No — If yes, MassGIS Wetland Data Layer: _____ Wetland Type

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.) USGS 420316070433501 MA-D4W 79R DUXBURY, MA

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit #1 (Hole #) | 10/07/2022 (Date) | 12:30 (Time) | Sunny, 65F (Weather) | _____ (Latitude) | _____ (Longitude)

1. Land Use: lawn (e.g., woodland, agricultural field, vacant lot, etc.) | Trees/low-lying brush (Vegetation) | Some boulders present (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: Refer to site plan "Unit 1" at north area of locus, west side yard of existing dwelling

2. Soil Parent Material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist | Till plains (Landform) | Backslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way n/a feet | Wetlands ~75 feet | Property Line ~50 feet | Drinking Water Well n/a feet | Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 96 inches Depth to Weeping in Hole _____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-10 | A | Sandy loam | 10YR3/2 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 10-19 | B | Sandy loam | 10YR5/3 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 19-110 | C | Sandy loam | 10YR6/2 | 32 | Cnc :2.5YR3/6<br>Dpl: | | 5% | 5% | massive | very friable | gravel/cobbles present |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole #Unit #1 | Obs. Hole #_____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 32 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

   ☒ Yes ☐ No

   b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 10 inches Lower boundary: 110 inches

   c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

| | |
|---|---|
| Signature of Soil Evaluator | 10/12/2022<br>Date |
| Christopher McEntee, SE14021<br>Typed or Printed Name of Soil Evaluator / License # | 06/30/2025<br>Expiration Date of License |
| Joshua Green, SE14374<br>Name of Approving Authority Witness | Town of Scituate<br>Approving Authority |

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

See site plan for test hole location at proposed drainage for unit #1

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey — nesoil.com (Source) | 427B (Soil Map Unit) | Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

   Morraines, till plains, hills
   Landform

   Shallow to restrictive layer, shallow to groundwater
   Soil Limitations

   Coarse-loamy eolian deposits over sandy and supraglacial meltout till
   Soil Parent material

3. Surficial Geological Report — 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) | Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map — Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No — If yes, MassGIS Wetland Data Layer: _____ (Wetland Type)

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.)
   USGS 420316070433501 MA-D4W 79R DUXBURY, MA

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit #10 (Hole #) | 10/06/2022 (Date) | 10:50 (Time) | Sunny, 65F (Weather) | (Latitude) | (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) | Trees/low-lying brush (Vegetation) | None (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: Wooded/vegetated area approx. 180 feet east of BVW, refer to site plan "Unit 10"

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till | Till plains (Landform) | Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way ~260 feet | Wetlands ~180 feet | Property Line ~75 feet | Drinking Water Well n/a feet | Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth to Weeping in Hole _____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-12 | A | Sandy loam | 10YR3/2 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 12-32 | B | Sandy loam | 10YR5/3 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 32-120 | C | Sandy loam | 10YR5/2 | 35 | Cnc :2.5YR3/6<br>Dpl: | | | 10-15% | massive | friable | stratified deposits of silt loam |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # Unit #10 | Obs. Hole # _____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 35 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

   ☒ Yes ☐ No

   b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 12 inches Lower boundary: 120 inches

   c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature of Soil Evaluator

10/12/2022
Date

Christopher McEntee, SE14021
Typed or Printed Name of Soil Evaluator / License #

06/30/2025
Expiration Date of License

Joshua Green, SE14374
Name of Approving Authority Witness

Town of Scituate
Approving Authority

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

See site plan. Test hole for "Unit #10" performed at proposed drainage location as shown on site plan – for Unit #10.

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey — nesoil.com (Source) — 427B (Soil Map Unit) — Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

   Morraines, till plains, hills
   Landform

   Shallow to restrictive layer, shallow to groundwater
   Soil Limitations

   Coarse-loamy eolian deposits over sandy and supraglacial meltout till
   Soil Parent material

3. Surficial Geological Report — 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) — Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit

4. Flood Rate Insurance Map — Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No — If yes, MassGIS Wetland Data Layer: _____ (Wetland Type)

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) — Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.)
   USGS 420316070433501 MA-D4W 79R DUXBURY, MA

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit #16 (Hole #) | 10/07/2022 (Date) | 10:00 (Time) | Sunny, 65F (Weather) | _____ (Latitude) | _____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) | Trees/low-lying brush (Vegetation) | Some boulders present (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: SE corner of locus, refer to site plan "Unit 16"

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till | Till plains (Landform) | Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way ~90 feet | Wetlands ~200 feet | Property Line ~20 feet | Drinking Water Well n/a feet | Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth to Weeping in Hole _____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-9 | A | Sandy loam | 10YR3/2 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 9-35 | B | Sandy loam | 10YR5/6 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 35-90 | C | Sandy loam | 2.5Y6/3 | 36 | Cnc :2.5YR3/6<br>Dpl: | | | 20-30% | massive | friable | very bouldery |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

| 1. Method Used (Choose one): | Obs. Hole #Unit #16 | Obs. Hole #_____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 36 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

   ☒ Yes ☐ No

   b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 9 inches Lower boundary: 90 inches

   c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

| | |
|---|---|
| Signature of Soil Evaluator | 10/12/2022<br>Date |
| Christopher McEntee, SE14021<br>Typed or Printed Name of Soil Evaluator / License # | 06/30/2025<br>Expiration Date of License |
| Joshua Green, SE14374<br>Name of Approving Authority Witness | Town of Scituate<br>Approving Authority |

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

See site plan for test hole location at proposed drainage for unit #16

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey — nesoil.com (Source) | 427B (Soil Map Unit) | Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

   Morraines, till plains, hills
   Landform

   Shallow to restrictive layer, shallow to groundwater
   Soil Limitations

   Coarse-loamy eolian deposits over sandy and supraglacial meltout till
   Soil Parent material

3. Surficial Geological Report — 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) | Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map — Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No — If yes, MassGIS Wetland Data Layer: ____ (Wetland Type)

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) — Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.)
   USGS 420316070433501 MA-D4W 79R DUXBURY, MA

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit #17 (Hole #) | 10/07/2022 (Date) | 10:30 (Time) | Sunny, 65F (Weather) | _____ (Latitude) | _____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) | Trees/low-lying brush (Vegetation) | Some boulders present (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: SE corner of locus, refer to site plan "Unit 17"

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till | Till plains (Landform) | Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way ~110 feet | Wetlands ~140 feet | Property Line ~30 feet | Drinking Water Well n/a feet | Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 98 inches Depth to Weeping in Hole _____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-7 | A | Sandy loam | 10YR3/2 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 7-36 | B | Sandy loam | 10YR5/6 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 36-108 | C | Loamy sand | 2.5Y6/3 | 38 | Cnc :2.5YR3/6<br>Dpl: | | | 20-30% | massive | very friable | bouldery |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # Unit #17 | Obs. Hole # _____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 38 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

   ☒ Yes ☐ No

   b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 7 inches Lower boundary: 108 inches

   c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

| | |
|---|---|
| Signature of Soil Evaluator | 10/12/2022<br>Date |
| Christopher McEntee, SE14021<br>Typed or Printed Name of Soil Evaluator / License # | 06/30/2025<br>Expiration Date of License |
| Joshua Green, SE14374<br>Name of Approving Authority Witness | Town of Scituate<br>Approving Authority |

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

See site plan for ~~test~~ hole location at proposed drainage for unit #17

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey — nesoil.com (Source) — 427B (Soil Map Unit) — Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

   Morraines, till plains, hills
   Landform

   Shallow to restrictive layer, shallow to groundwater
   Soil Limitations

   Coarse-loamy eolian deposits over sandy and supraglacial meltout till
   Soil Parent material

3. Surficial Geological Report — 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) — Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map — Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No — If yes, MassGIS Wetland Data Layer: _____ (Wetland Type)

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) — Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.)
   USGS 420316070433501 MA-D4W 79R DUXBURY, MA

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit #19 (Hole #) | 10/06/2022 (Date) | 13:00 (Time) | Sunny, 65F (Weather) | _____ (Latitude) | _____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) | Trees/low-lying brush (Vegetation) | None (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: Wooded/vegetated area approx. 80 feet NE of BVW, refer to site plan "Unit 19"

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till | Till plains (Landform) | Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way ~240 feet | Wetlands ~80 feet | Property Line ~110 feet | Drinking Water Well n/a feet | Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth to Weeping in Hole _____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-6 | A | Sandy loam | 10YR2/1 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 6-32 | B | Sandy loam | 10YR4/3 | 24 | Cnc :2.5YR3/6<br>Dpl: | | | | massive | friable | |
| 32-120 | C | Sandy loam | 10YR5/1 | | Cnc :<br>Dpl: | | | 10-15% | massive | friable | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # Unit #19 | Obs. Hole #_____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 24 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

   ☒ Yes ☐ No

   b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 6 inches Lower boundary: 120 inches

   c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

| | |
|---|---|
| Signature of Soil Evaluator | 10/12/2022<br>Date |
| Christopher McEntee, SE14021<br>Typed or Printed Name of Soil Evaluator / License # | 06/30/2025<br>Expiration Date of License |
| Joshua Green, SE14374<br>Name of Approving Authority Witness | Town of Scituate<br>Approving Authority |

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

See site plan for proposed drainage location for unit #19

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey — nesoil.com (Source) — 421B (Soil Map Unit) — Canton fine sandy loam, 0-8% slopes, stony (Soil Series)

Morraines, hills, ridges
Landform

Shallow to restrictive layer, shallow to groundwater
Soil Limitations

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

3. Surficial Geological Report — 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) — Thin till (Map Unit)

Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
Description of Geologic Map Unit:

4. Flood Rate Insurance Map — Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No — If yes, MassGIS Wetland Data Layer: ____ (Wetland Type)

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) — Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.) USGS 420316070433501 MA-D4W 79R DUXBURY, MA

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit #2 (Hole #) | 10/07/2022 (Date) | 12:10 (Time) | Sunny, 65F (Weather) | _____ (Latitude) | _____ (Longitude)

1. Land Use: lawn (e.g., woodland, agricultural field, vacant lot, etc.) | Trees/low-lying brush (Vegetation) | Some boulders present (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: Refer to site plan "Unit 2" at north area of locus, front yard of existing dwelling

2. Soil Parent Material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist | Till plains (Landform) | Backslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way n/a feet | Wetlands ~120 feet | Property Line ~35 feet | Drinking Water Well n/a feet | Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth to Weeping in Hole _____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-13 | A | Sandy loam | 10YR3/2 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 13-27 | B | Sandy loam | 10YR5/6 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 27-103 | C | Loamy sand | 2.5Y6/3 | 49 | Cnc :2.5YR3/6<br>Dpl: | | 15% | 15% | massive | very friable | gravel/cobbles present |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # Unit #2 | Obs. Hole # _____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 49 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

   ☒ Yes ☐ No

   b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 13 inches Lower boundary: 103 inches

   c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

| | |
|---|---|
| Signature of Soil Evaluator | 10/12/2022<br>Date |
| Christopher McEntee, SE14021<br>Typed or Printed Name of Soil Evaluator / License # | 06/30/2025<br>Expiration Date of License |
| Joshua Green, SE14374<br>Name of Approving Authority Witness | Town of Scituate<br>Approving Authority |

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

See site plan for test hole location at proposed drainage for unit #2

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey — nesoil.com (Source); 427B (Soil Map Unit); Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

   Morraines, till plains, hills
   Landform

   Shallow to restrictive layer, shallow to groundwater
   Soil Limitations

   Coarse-loamy eolian deposits over sandy and supraglacial meltout till
   Soil Parent material

3. Surficial Geological Report — 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source); Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map — Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No — If yes, MassGIS Wetland Data Layer: _____ (Wetland Type)

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.)
   USGS 420316070433501 MA-D4W 79R DUXBURY, MA

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit #20 (Hole #) | 10/06/2022 (Date) | 11:30 (Time) | Sunny, 65F (Weather) | _____ (Latitude) | _____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) | Trees/low-lying brush (Vegetation) | None (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: Wooded/vegetated area approx. 60 feet east of BVW, refer to site plan "Unit 20"

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till | Till plains (Landform) | Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way ~320 feet | Wetlands ~60 feet | Property Line ~110 feet | Drinking Water Well n/a feet | Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 45 inches Depth to Weeping in Hole _____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-12 | A | Sandy loam | 10YR3/2 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 12-22 | B | Sandy loam | 10YR5/3 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 22-112 | C | Sandy loam | 10YR6/2 | 32 | Cnc :2.5YR3/6<br>Dpl: | | | 10-15% | massive | friable | Hole caving in at 112" |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

| 1. Method Used (Choose one): | Obs. Hole # Unit #20 | Obs. Hole # _____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 32 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

☒ Yes ☐ No

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 12 inches Lower boundary: 112 inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

| | |
|---|---|
| Signature of Soil Evaluator | 10/12/2022<br>Date |
| Christopher McEntee, SE14021<br>Typed or Printed Name of Soil Evaluator / License # | 06/30/2025<br>Expiration Date of License |
| Joshua Green, SE14374<br>Name of Approving Authority Witness | Town of Scituate<br>Approving Authority |

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

"Unit #20" test hole performed at proposed drainage location for unit 20 as shown on site plan.

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey — nesoil.com (Source) | 427B (Soil Map Unit) | Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

   Morraines, till plains, hills
   Landform

   Shallow to restrictive layer, shallow to groundwater
   Soil Limitations

   Coarse-loamy eolian deposits over sandy and supraglacial meltout till
   Soil Parent material

3. Surficial Geological Report — 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) | Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map — Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No — If yes, MassGIS Wetland Data Layer: ____ (Wetland Type)

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) — Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.)
   USGS 420316070433501 MA-D4W 79R DUXBURY, MA

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit #8 (Hole #) | 10/07/2022 (Date) | 11:20 (Time) | Sunny, 65F (Weather) | _____ (Latitude) | _____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) | Trees/low-lying brush (Vegetation) | Some boulders present (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: Refer to site plan "Unit 8"

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till | Till plains (Landform) | Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way ~290 feet | Wetlands ~165 feet | Property Line ~30 feet | Drinking Water Well n/a feet | Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth to Weeping in Hole _____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-10 | A | Sandy loam | 10YR3/2 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 10-21 | B | Sandy loam | 10YR5/6 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 21-101 | C | Sandy loam | 2.5Y6/3 | 24 | Cnc :2.5YR3/6<br>Dpl: | | 15% | 15% | massive | friable | gravel/cobbles present |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # Unit #8 | Obs. Hole # _____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 24 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

☒ Yes ☐ No

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 10 inches Lower boundary: 101 inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

| | |
|---|---|
| Signature of Soil Evaluator | 10/12/2022<br>Date |
| Christopher McEntee, SE14021<br>Typed or Printed Name of Soil Evaluator / License # | 06/30/2025<br>Expiration Date of License |
| Joshua Green, SE14374<br>Name of Approving Authority Witness | Town of Scituate<br>Approving Authority |

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

See site plan for test hole location at proposed drainage for unit #8.

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

The Lovendale Company, LLC
Owner Name

#279-281 Old Oaken Bucket Road
Street Address

41-1-2-D
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey — nesoil.com (Source) | 427B (Soil Map Unit) | Newfields fine sandy loam, 3-8% slopes, stony (Soil Series)

   Morraines, till plains, hills (Landform) | Shallow to restrictive layer, shallow to groundwater (Soil Limitations)

   Coarse-loamy eolian deposits over sandy and supraglacial meltout till
   Soil Parent material

3. Surficial Geological Report — 2018 - Stone, Stone, DiGiacomo-Cohen (Year Published/Source) | Thin till (Map Unit)

   Non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts
   Description of Geologic Map Unit:

4. Flood Rate Insurance Map — Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No — If yes, MassGIS Wetland Data Layer: ____ (Wetland Type)

7. Current Water Resource Conditions (USGS): 10/06/2022 (Month/Day/ Year) — Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.) USGS 420316070433501 MA-D4W 79R DUXBURY, MA

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit #9 (Hole #) | 10/07/2022 (Date) | 11:00 (Time) | Sunny, 65F (Weather) | _____ (Latitude) | _____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) | Trees/low-lying brush (Vegetation) | Some boulders present (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5% (Slope (%))

Description of Location: Refer to site plan "Unit 9"

2. Soil Parent Material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial till | Till plains (Landform) | Footslope (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >500 feet | Drainage Way ~250 feet | Wetlands ~150 feet | Property Line ~20 feet | Drinking Water Well n/a feet | Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth to Weeping in Hole _____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-8 | A | Sandy loam | 10YR3/2 | | Cnc :<br>Dpl: | | | | granular | very friable | |
| 8-36 | B | Sandy loam | 10YR5/6 | | Cnc :<br>Dpl: | | | | massive | friable | |
| 36-86 | C | Sandy loam | 2.5Y6/3 | 30 | Cnc :2.5YR3/6<br>Dpl: | | 10% | 20-30% | massive | very friable | gravel/cobbles present |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |
| | | | | | Cnc :<br>Dpl: | | | | | | |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

| 1. Method Used (Choose one): | Obs. Hole # Unit #9 | Obs. Hole # _____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 30 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

☒ Yes ☐ No

| | | | | |
|---|---|---|---|---|
| b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? | Upper boundary: | 8 inches | Lower boundary: | 86 inches |
| c. If no, at what depth was impervious material observed? | Upper boundary: | _____ inches | Lower boundary: | _____ inches |

**Commonwealth of Massachusetts**
**City/Town of** Scituate

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

| | |
|---|---|
| Signature of Soil Evaluator | 10/12/2022<br>Date |
| Christopher McEntee, SE14021<br>Typed or Printed Name of Soil Evaluator / License # | 06/30/2025<br>Expiration Date of License |
| Joshua Green, SE14374<br>Name of Approving Authority Witness | Town of Scituate<br>Approving Authority |

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

See site plan for test pit location at proposed drainage for unit #9

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

Salt Meadow Development/ Miraglia Jon S + Barbara TRS
Owner Name

279/281 Old Oaken Bucket Road
Street Address

41-1-3-0/41-1-3-B
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey Web Soil Survey (Source) 427B-Newfields FSL (Soil Map Unit) Newfields Fine Sandy Loam (Soil Series)
Moraines, till plains, hills (Landform) Shallow to Groundwater, shallow to Restrictive layer (Soil Limitations)
Coarse-loamy eolian deposits over sandy and gravelly supraglacial meltout (Soil Parent material)

3. Surficial Geological Report 2018 - Stone, Stone, Diagiacomo (Year Published/Source) Thin till (Map Unit)
Non-sorted, non-stratified matrix of Sand, some silt and little clay containing Scattered pebble, cobble and boulder deposits (Description of Geologic Map Unit:)

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: _____ (Wetland Type)

7. Current Water Resource Conditions (USGS): 10/6/2022 (Month/Day/Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.) USGS ~~420130~~ 420316070433501 - MA-DHW 79R DUXBURY

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** SEPTIC-2 (Hole #) 10/6/22 (Date) 10:15AM (Time) Partly Cloudy (Weather) _____ (Latitude) _____ (Longitude)

1. Land Use: Residential (e.g., woodland, agricultural field, vacant lot, etc.) Shrubs (Vegetation) NONE (Surface Stones (e.g., cobbles, stones, boulders, etc.) 3-5% (Slope (%)

Description of Location: Rear of house, Below deck in a heavily vegetated area

2. Soil Parent Material: LOOSE TILL Morraine (Landform) Backslope (Position on Landscape (SU, SH, BS, FS, TS, Plain)

3. Distances from: Open Water Body >50 feet Drainage Way >50 feet Wetlands >50 feet

Property Line >10 feet Drinking Water Well >100 feet Other N/A feet

4. Unsuitable Materials Present: ☒ Yes ☐ No If Yes: ☒ Disturbed Soil/Fill Material D-12" ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth to Weeping in Hole _____ Depth Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA) | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-12 | FILL | — | — | — | Cnc: — Dpl: — | — | — | — | — | — | — |
| 12-28 | $A_o$ | SL | 10YR 2/1 | — | Cnc: — Dpl: — | — | — | — | GR | Friable | — |
| 28-44 | $B_w$ | SL | 10YR 5/6 | 40 | Cnc: 7.5YR 4/6 Dpl: — | 20% | 5% | 15% | M | Friable | — |
| 44-120 | C1 | LS | 2.5Y 6/3 | — | Cnc: — Dpl: — | — | 10% | 15% | M | Friable | — |
| 120-140 | C2 | SL | 2.5Y 6/3 | — | Cnc: — Dpl: — | — | 10% | 15% | M | Friable | — |
| | | | | | Cnc: Dpl: | | | | | | |

Additional Notes: PERC @ 55" - PRESOAK 10:21 - START 10:36AM - 9" 12:25PM - 6" 3:20PM

~59 min./inch

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # SEPTIC-2 | Obs. Hole #____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 40 inches | ____ inches |
| ☐ Depth to observed standing water in observation hole | ____ inches | ____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | ____ inches | ____ inches |

Index Well Number _____ Reading Date _____

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# ____ $S_c$ ____ $S_r$ ____ $OW_c$ ____ $OW_{max}$ ____ $OW_r$ ____ $S_h$ ____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

   ☒ Yes ☐ No

   b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 12 inches Lower boundary: >60 inches

   c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

| | |
|---|---|
| Signature of Soil Evaluator | Date: 10/6/2022 |
| Typed or Printed Name of Soil Evaluator / License #: Anna Wimmer - SE146615 | Expiration Date of License: 5/1/2025 |
| Name of Approving Authority Witness: Joshua Green - SE14374 | Approving Authority: Scituate Board of Health |

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

Salt Meadow Development/ Miraglia Jon S + Barbara TRS
Owner Name

279/281 Old Oaken Bucket Road
Street Address

41-1-3-D/41-1-3-B
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey Web Soil Survey
Source

427B - Newfields FSL
Soil Map Unit

Newfields Fine Sandy Loam
Soil Series

Moraines, till plains, Hills
Landform

Shallow to Groundwater, Shallow to Restrictive layer
Soil Limitations

Coarse-loamy eolian deposits over sandy and gravelly supraglacial meltout
Soil Parent material

3. Surficial Geological Report 2018 - Stone, Stone, Diagiacomo
Year Published/Source

Thin till
Map Unit

Description of Geologic Map Unit: Non-sorted, non-stratified matrix of Sand, some silt and little clay containing Scattered pebble, cobble and boulder deposits

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer:
Wetland Type

7. Current Water Resource Conditions (USGS): 10/6/2022
Month/Day/Year
Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed:
(Zone II, IWPA, Zone A, EEA Data Portal, etc.) USGS ~~420130~~ 420316070433501 - MA-DHW 79R DUXBURY

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Lit 3-2 (Hole #) 10/6/2022 (Date) 10:45 AM (Time) Partly Cloudy (Weather) _____ (Latitude) _____ (Longitude)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) | Understory, shrubs (Vegetation) | Some Cobbles (Surface Stones (e.g., cobbles, stones, boulders, etc.) | 0-3% (Slope (%))

Description of Location: Wooded area about 50' off a dirt road

2. Soil Parent Material: Thin/Loose Till | Moraine (Landform) | Backslope/plain (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body >50 feet | Drainage Way 250 feet | Wetlands >50 feet | Property Line >10 feet | Drinking Water Well >100 feet | Other N/A feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth to Weeping In Hole _____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-24 | Ap | FS | 10YR3/2 | — | Cnc: —<br>Dpl: — | — | — | — | GR | F | — |
| 24-36 | Bw | SL | 10YR5/4 | — | Cnc: —<br>Dpl: — | — | 5% | — | M | F | — |
| 36-67 | C1 | LS | 2.5Y6/4 | 4/0 | Cnc: 7.5YR5/4<br>Dpl: 2.5Y7/2 | 30% | — | 10% | M | F | — |
| 67-124 | C2 | SL | 2.5Y5/3 | — | Cnc: —<br>Dpl: — | — | — | 10% | M | F | — |
| | | | | | Cnc:<br>Dpl: | | | | | | |
| | | | | | Cnc:<br>Dpl: | | | | | | |

Additional Notes:

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # CH3 -2 | Obs. Hole # ____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 40 inches | ____ inches |
| ☐ Depth to observed standing water in observation hole | ____ inches | ____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | ____ inches | ____ inches |

Index Well Number _____ Reading Date _____

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# ____ $S_c$ ____ $S_r$ ____ $OW_c$ ____ $OW_{max}$ ____ $OW_r$ ____ $S_h$ ____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

   ☒ Yes ☐ No

   b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 0 inches Lower boundary: >48 inches

   c. If no, at what depth was impervious material observed? Upper boundary: ____ inches Lower boundary: ____ inches

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

| | |
|---|---|
| Signature of Soil Evaluator | Date: 10/6/2022 |
| Typed or Printed Name of Soil Evaluator / License #: Anna Wimmer - SE14615 | Expiration Date of License: 5/1/2025 |
| Name of Approving Authority Witness: Joshua Green - SE14374 | Approving Authority: Scituate Board of Health |

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

Salt Meadow Development/ Miraglia Jon S + Barbara TRS
Owner Name

279/281 Old Oaken Bucket Road
Street Address

41-1-3-0/41-1-3-B
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey Web Soil Survey (Source) 427B - Newfields FSL (Soil Map Unit) Newfields Fine Sandy Loam (Soil Series)
Moraines, till plains, Hills (Landform) Shallow to Groundwater, Shallow to Restrictive layer (Soil Limitations)
Coarse-loamy eolian deposits over sandy and gravelly supraglacial meltout (Soil Parent material)

3. Surficial Geological Report 2015 - Stone, Stone, Diagiacomo (Year Published/Source) Thin till (Map Unit)
Non-sorted, non-stratified matrix of Sand, some silt and little clay containing Scattered pebble, cobble and boulder deposits (Description of Geologic Map Unit:)

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: ____ (Wetland Type)

7. Current Water Resource Conditions (USGS): 10/6/2022 (Month/Day/Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.) USGS ~~420130~~ 420316070433501 - MA-DW 79R DUXBURY

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area*)

**Deep Observation Hole Number:** OH-3 3 (Hole #) 10/6/2022 (Date) 11:00 AM (Time) Partly Cloudy (Weather) ____ (Latitude) ____ (Longitude)

1. Land Use: woodland (e.g., woodland, agricultural field, vacant lot, etc.) | Vegetation: understory shrubs | Surface Stones (e.g., cobbles, stones, boulders, etc.): some cobbles | Slope (%): 0-3%

Description of Location: wooded area about 30' off a dirt road

2. Soil Parent Material: LOOSE TILL | Landform: MORAINE | Position on Landscape (SU, SH, BS, FS, TS, Plain): Back Slope / Plain

3. Distances from: Open Water Body >50 feet | Drainage Way >50 feet | Wetlands >50 feet | Property Line >10 feet | Drinking Water Well >100 feet | Other N/A feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth to Weeping in Hole ____ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-6 | $A_p$ | SL | 10YR 3/2 | — | Conc: — Dpl: — | — | 5 | — | GR M | F | — |
| 6-34 | $B_w$ | SL | 10YR 4/4 | 28 | Conc: 7.5YR 5/6 Dpl: 2.5Y 6/4 | 30% | — | — | M | F | — |
| 34-65 | C1 | GSL | 2.5Y 5/4 | — | Conc: — Dpl: — | — | — | — | M | F | — |
| 65-114 | C2 | LS | 2.5Y 5/4 | — | Conc: — Dpl: — | — | — | — | M | F | — |
| | | | | | Conc: Dpl: | | | | | | |
| | | | | | Conc: Dpl: | | | | | | |

Additional Notes:

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # CH-3-3 | Obs. Hole # ____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 28 inches | ____ inches |
| ☐ Depth to observed standing water in observation hole | ____ inches | ____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | ____ inches | ____ inches |

Index Well Number _____ Reading Date _____

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# ____ $S_c$ ____ $S_r$ ____ $OW_c$ ____ $OW_{max}$ ____ $OW_r$ ____ $S_h$ ____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

   ☒ Yes ☐ No

   b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 0 inches Lower boundary: 748 inches

   c. If no, at what depth was impervious material observed? Upper boundary: ____ inches Lower boundary: ____ inches

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

| | |
|---|---|
| A Wimmer<br>Signature of Soil Evaluator | 10/6/2022<br>Date |
| Anna Wimmer - SE146615<br>Typed or Printed Name of Soil Evaluator / License # | 5/1/2025<br>Expiration Date of License |
| Joshua Green - SE14374<br>Name of Approving Authority Witness | Scituate Board of Health<br>Approving Authority |

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

Salt Meadow Development/ Miraglia Jon S + Barbara TRS
Owner Name

279/281 Old Oaken Bucket Road
Street Address

41-1-3-0/41-1-3-B
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey Web Soil Survey (Source) 427B - Newfields FSL (Soil Map Unit) Newfields Fine Sandy Loam (Soil Series)
Moraines, till plains, Hills (Landform) Shallow to Groundwater, Shallow to Restrictive layer (Soil Limitations)
Coarse-loamy eolian deposits over sandy and gravelly supraglacial meltout (Soil Parent material)

3. Surficial Geological Report 2018 - Stone, Stone, Diagiacomo (Year Published/Source) Thin till (Map Unit)
Non-sorted, non-stratified matrix of Sand, some silt and little clay containing Scattered pebble, cobble and boulder deposits (Description of Geologic Map Unit:)

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: (Wetland Type)

7. Current Water Resource Conditions (USGS): 10/6/2022 (Month/Day/Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.) USGS ~~420130~~ 420316070433501 - MA-DHW 79R DUXBURY

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** Unit-22 (Hole #) 10/6/2022 (Date) 11:30 AM (Time) Partly Cloudy (Weather) _____ (Latitude) _____ (Longitude)

1. Land Use Woodland (e.g., woodland, agricultural field, vacant lot, etc.) understory, shrubs, logs (Vegetation) (Surface Stones (e.g., cobbles, stones, boulders, etc.) 0-3% (Slope (%)

Description of Location: Approx. 100-150' to the west of the house / 100' off Road

2. Soil Parent Material: Loose Till Moraines (Landform) Back Slope / Plain (Position on Landscape (SU, SH, BS, FS, TS, Plain)

3. Distances from: Open Water Body >150 feet; Drainage Way >50 feet; Wetlands >350 feet; Property Line >10 feet; Drinking Water Well >100 feet; Other N/A feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 12in Depth to Weeping in Hole N/A Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-12 | Ap | LS | 10YR 2/2 | — | Cnc: —<br>Dpl: — | — | — | — | M | F | — |
| 12-30 | Bw | LS | 10YR 5/6 | — | Cnc: —<br>Dpl: — | — | 5 | — | M | F | — |
| 30-70 | C1 | LS | 10YR 6/3 | 30 | Cnc: 7.5YR 4/4<br>Dpl: 2.5Y 7/2 | 30% | 10 | 5 | M | F | — |
| 70-128 | C2 | SL | 10YR 6/3 | — | Cnc: —<br>Dpl: — | — | 10 | 5 | M | F | — |
| | | | | | Cnc:<br>Dpl: | | | | | | |
| | | | | | Cnc:<br>Dpl: | | | | | | |

Additional Notes:

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # Unit 22 | Obs. Hole # ____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 36 inches | ____ inches |
| ☐ Depth to observed standing water in observation hole | ____ inches | ____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | ____ inches | ____ inches |

Index Well Number _____ Reading Date _____

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# ____ $S_c$ ____ $S_r$ ____ $OW_c$ ____ $OW_{max}$ ____ $OW_r$ ____ $S_h$ ____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

   ☒ Yes ☐ No

   b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 0 inches Lower boundary: >48 inches

   c. If no, at what depth was impervious material observed? Upper boundary: ____ inches Lower boundary: ____ inches

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

| | |
|---|---|
| Signature of Soil Evaluator | Date: 10/6/2022 |
| Typed or Printed Name of Soil Evaluator / License #: Anna Wimmer - SE146615 | Expiration Date of License: 5/1/2025 |
| Name of Approving Authority Witness: Joshua Green - SE14374 | Approving Authority: Scituate Board of Health |

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## A. Facility Information

Salt Meadow Development/ Miraglia Jon S + Barbara TRS
Owner Name

279/281 Old Oaken Bucket Road
Street Address

41-1-3-0/41-1-3-B
Map/Lot #

Scituate
City

MA
State

02066
Zip Code

## B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey Web Soil Survey (Source) 427B - Newfields FSL (Soil Map Unit) Newfields Fine Sandy Loam (Soil Series)
Moraines, till plains, hills (Landform) Shallow to Groundwater, Shallow to Restrictive layer (Soil Limitations)
Coarse-loamy eolian deposits over sandy and gravelly supraglacial meltout (Soil Parent material)

3. Surficial Geological Report 2018 - Stone, Stone, Diagiacomo (Year Published/Source) Thin till (Map Unit)
Non-sorted, non-stratified matrix of Sand, some silt and little clay containing Scattered pebble, cobble and boulder deposits (Description of Geologic Map Unit:)

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: _____ (Wetland Type)

7. Current Water Resource Conditions (USGS): 10/6/2022 (Month/Day/Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.) USGS ~~420130~~ 420316070433501 - MA-DW 79R DUXBURY

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area*)

**Deep Observation Hole Number:** UNIT-21 (Hole #) 10/6/2022 (Date) 11:50AM (Time) Partly Cloudy (Weather) _____ (Latitude) _____ (Longitude)

1. Land Use Woodland (e.g., woodland, agricultural field, vacant lot, etc.) understory, shrubs (Vegetation) some cobbles (Surface Stones (e.g., cobbles, stones, boulders, etc.) 3-5% (Slope (%)

Description of Location: Appox 150' west of house, 150' off Road

2. Soil Parent Material: Loose Till Moraines (Landform) Back Slope/plain (Position on Landscape (SU, SH, BS, FS, TS, Plain)

3. Distances from: Open Water Body >50 feet; Drainage Way >50 feet; Wetlands >50 feet; Property Line >10 feet; Drinking Water Well >100 feet; Other N/A feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 105 Depth to Weeping in Hole 112 Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features | | | Coarse Fragments % by Volume | | Soil Structure | Soil Consistence (Moist) | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Depth | Color | Percent | Gravel | Cobbles & Stones | | | |
| 0-16 | $A_p$ | SL | 7.5YR 2.5/3 | — | Cnc: —<br>Dpl: — | — | — | — | M | F | — |
| 16-48 | $B_w$ | LS | 10YR 5/6 | 4 | Cnc: —<br>Dpl: — | — | 10 | — | M | F | — |
| 48-120 | C | GLS | 2.5Y 6/4 | 48 | Cnc: 7.5YR 4/5<br>Dpl: 2.5Y 6/2 | 50% | — | 5 | M | F | — |
| | | | | | Cnc:<br>Dpl: | | | | | | |
| | | | | | Cnc:<br>Dpl: | | | | | | |
| | | | | | Cnc:<br>Dpl: | | | | | | |

Additional Notes:

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

1. Method Used (Choose one):

| | Obs. Hole # UNIT-21 | Obs. Hole #_____ |
|---|---|---|
| ☒ Depth to soil redoximorphic features | 48 inches | _____ inches |
| ☐ Depth to observed standing water in observation hole | _____ inches | _____ inches |
| ☐ Depth to adjusted seasonal high groundwater ($S_h$) (USGS methodology) | _____ inches | _____ inches |

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ $S_c$ _____ $S_r$ _____ $OW_c$ _____ $OW_{max}$ _____ $OW_r$ _____ $S_h$ _____

## E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

   ☒ Yes ☐ No

   b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 0 inches Lower boundary: >48 inches

   c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

Commonwealth of Massachusetts
City/Town of

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

| | |
|---|---|
| Signature of Soil Evaluator | Date: 10/6/2022 |
| Typed or Printed Name of Soil Evaluator / License #: Anna Wimmer - SE14615 | Expiration Date of License: 5/1/2025 |
| Name of Approving Authority Witness: Joshua Green - SE14374 | Approving Authority: Scituate Board of Health |

**Note:** In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

**Field Diagrams:** Use this area for field diagrams:

**Form 12 - PERCOLATION TEST**
**Location, Address, or Lot #** 279-281 Old Oaken Bucket Rd. Scituate, MA

# Commonwealth of Massachusetts
## Scituate, Massachusetts

| *Percolation Test | |
|---|---|
| Date: 10-6-2022 | Time: 12:24PM |

| Observation Hole # | T.P. septic 3 | |
|---|---|---|
| Depth of Perc. | 60+18” | |
| Start Pre-Soak | 12:24 | |
| End Pre-Soak | 12:39 | |
| Time at 12” | 12:39 | |
| Time at 9” | 1:37 | |
| Time at 6” | 3:25 | |
| Time (9” - 6”) | 108 | |
| Rate (Minutes/Inch) | 36 min/in | |

X Site Passed  Site Failed

# Stormwater Management Regulations Standard #10:

# Illicit Discharge Compliance Statement

An illicit discharge is any discharge to a municipal separate storm sewer system (MS4) that is not comprised entirely of stormwater, discharges from fire-fighting activities, and certain non-designated non-stormwater discharges.

To the best of my knowledge, no detectable illicit discharge exists on site. The Comprehensive Permit plans included with this report detail the storm sewers that convey stormwater on the site and demonstrate that these systems do not include the entry on and illicit discharge. An Operations and Maintenance Plan is also included along with the Long Term Pollution Prevention Plan that outlines measures to prevent future illicit discharges. As the Site Owner, I will be responsible for implementing the Long Term Pollution Prevention Plan.

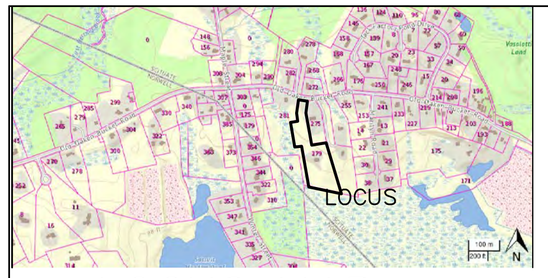
**Name:** _____

**Company:** Lovendale, LLC

**Title:** _____

**Signature:** _____

**Date:** _____




LOCUS MAP

NOT TO SCALE

*NOTE:
TOP OF INLAND BANK LOCATED
BY INSTRUMENT SURVEY BY
THIS FIRM
ON 11 JANUARY, 2020.

BENCHMARK
TOP OF DH FOUND
ELEV =110.65 NAVD 88

#269-271 OLD OAKEN BUCKET ROAD
OLD OAKEN BUCKET CONDOMINIUM
DEED(MASTER) BOOK/PAGE: 6148/75
ASSESSOR'S ID: 41-1-C-1, 41-1-C-2

#275 OLD OAKEN BUCKET ROAD
N/F JOHN S. & BARBARA A. MIRAGLIA
DEED BOOK/PAGE: 21490/123
ASSESSOR'S ID: 41-1-3-B
LAWN AND HOUSE

193S

#0 OLD OAKEN BUCKET ROAD
N/F JESSIE BRANDT
CERT#: 122647
ASSESSOR'S ID: 41-1-8-O

#297 OLD OAKEN BUCKET ROAD
N/F JESSIE BRANDT
CERT#: 122647
ASSESSOR'S ID: 41-1-9-O

#179 MAPLE ST
N/F WILLIAM J. & ELIZABETH S. O'REILLY
DEED BOOK/PAGE: 13686/334
ASSESSOR'S ID: 41-1-12-0

#354 WINTER ST
NORWELL
N/F JAMES A. COLE
DEED BOOK/PAGE: 3715/216
ASSESSOR'S ID: 50-24

LOT 8 WINTER ST
NORWELL
N/F TOWN OF NORWELL
CONSERVATION COMMISSION
DEED BOOK/PAGE: 27322/98
ASSESSOR'S ID: 50-117

#0 OLD OAKEN BUCKET ROAD
N/F POPE'S POND CRANBERRY CO.
DEED BOOK/PAGE: 10413/329
ASSESSOR'S ID: 47-1-4-C

LOT 5A

SEPTIC RESERVE AREA FOR 72 BEDROOMS

LAWN AND HOUSES

BRUSH

OLD OAKEN BUCKET ROAD

BUCKET RD.

TOP OF INLAND BANK

INTERMITTENT STREAM

BIT CONC. DRIVE

50' BUFFER

100' BUFFER

EXIST. GRAVEL DRIVE

GRAVEL DRIVE

EDGE OF PAVEMENT

EDGE OF GRAVEL

DRILLHOLE FOUND HELD FOR POSITION

DRILLHOLE FOUND

DRILLHOLE FOUND HELD FOR LINE

DRILLHOLE FOUND

ELEC. METER

2 STORY HOME #279 TO BE RAZED

CONC. PAD

DECK

SHED

LOG STRUCTURE

GUY WIRE

UTILITY POLE

UP

18" RCP

HEADWALL
18" INV. = 92.54

HEADWALL
18" INV. = 91.49

ZONE 2/ZAQUIFER PROTECTION DISTRICT

FLOOD PLAIN & WATER PROTECTION DIST

100' TO BVW

50' TO BVW

25' TO BVW

BVW

DETAIL (NOT TO SCALE)
0.18'
DH FND.

DETAIL (NOT TO SCALE)
0.78'
0.13'
DH FND.

LOCUS INFORMATION:

| | |
|---|---|
| ADDRESS: | #281 OLD OAKEN BUCKET ROAD |
| OWNER: | LOVENDALE LLC |
| DEED REFERENCE: | 51207/171 AND 12742/65 |
| PLAN REFERENCE: | PLAN BOOK 19, PAGE 119 |
| ASSESSOR'S I.D.: | 41-1-3-D AND 41-1-3-0 |
| TOTAL LAND AREA: | 11.21± ACRES (488,563.60± SQ. FT.) |
| TOTAL WETLAND AREA: | 2.48± ACRES (108,248.36± SQ. FT.) |
| TOTAL UPLAND AREA: | 8.73± ACRES (380,315.24± SQ. FT.) |
| BUILDING AREA: | 2,000± SQ. FT. |
| ZONING: | RESIDENCE R-1<br>WATER RESOURCE PROTECTION DISTRICT |
| FEMA FIRM ZONE: | ZONE "X", CP #250230117K, E.D. 7-6-21 |

LEGEND

| | |
|---|---|
| N\F | NOW OR FORMERLY |
| BK.\PG. | BOOK & PAGE |
| 100.0 | SPOT ELEVATION |
| "Ø" | UTILITY POLE |
| UP\LP | UTILITY POLE & LIGHT POLE |
| | HYDRANT |
| BVW | BORDERING VEGETATED WETLANDS |

GENERAL NOTES:

1. THE COORDINATE SYSTEM IS THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM MAINLAND ZONE DATUM NAD83. THE VERTICAL DATUM IS NAVD88.

2.WETLANDS WERE DELINEATED BY ECR ON 10-4-2019.

ADDITIONAL PLAN REFERENCES:

-PLAN BOOK 18 PAGE 170
-PLAN BOOK 25 PAGE 933

COMMONWEALTH OF MASSACHUSETTS
ANTHONY A. ESPOSITO
CIVIL
No. 39782
REGISTERED PROFESSIONAL ENGINEER

12/12/2022

SCALE: 1"=50'
0 25 50 75 100 125 FEET

REVISIONS:

| No. | DESCRIPTION | DATE |
|---|---|---|
| | | |
| | | |
| | | |

PROJECT TITLE:

**THE COTTAGES AT OLD OAKEN BUCKET AT #279-281 OLD OAKEN BUCKET ROAD SCITUATE, MA**

**PRE-DEVELOPMENT DRAINAGE PLAN**

PARCEL 41-1-3-D
PARCEL 41-1-3-0


PREPARED BY:

South Shore Survey Consultants, Inc.

REGISTERED LAND SURVEYORS & CIVIL ENGINEERS
167 R SUMMER STREET
KINGSTON, MA 02364
781-582-2185
mark@ssscinc.net

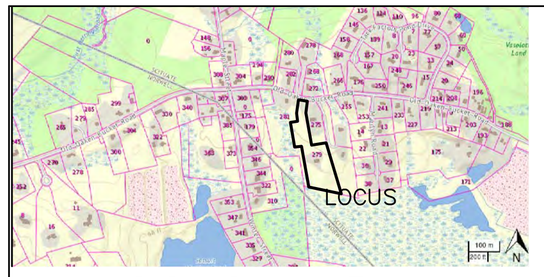

PREPARED FOR:

*LOVENDALE, LLC*
*107 EAST. ST.*
*DUXBURY, MA 02332*

SCALE: 1" = 50'
50 0 50 100

DATE: DECEMBER 12, 2022
COMP./DESIGN: A. ESPOSITO
CHECK: M. D. CASEY
DRAWN: A. ESPOSITO
FIELD: LJL/PS
APPROVED: M. D. CASEY
DWG.No. 1908 PRED
JOB No. 1908

SHEET 1 OF 2




LOCUS MAP
NOT TO SCALE

UTILITY LEGEND:

SEWER LINE — SVR —
DRAINAGE LINE
UNDERGROUND ELEC/TEL/CABLE — UE —
WATER LINE — W —
GAS LINE — GAS — GAS —
MANHOLE
CATCH BASIN
HYDRANT
WATER VALVE
TRANSFORMER

BENCHMARK
TOP OF DH FOUND
ELEV =110.65 NAVD 88

*NOTE:
TOP OF INLAND BANK LOCATED BY INSTRUMENT SURVEY BY THIS FIRM ON 11 JANUARY, 2020.

#269-271 OLD OAKEN BUCKET ROAD
OLD OAKEN BUCKET CONDOMINIUM
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N/F POPE'S POND CRANBERRY CO.
DEED BOOK/PAGE: 10413/329
ASSESSOR'S ID: 47-1-4-C

LOT 5A

TOP OF INLAND BANK
INTERMITTENT STREAM
BIT CONC. DRIVE
50' BUFFER
100' BUFFER
ZONE 2/AQUIFER PROTECTION DISTRICT
FLOOD PLAIN & WATERSHED PROTECTION DIST.

PROP. 6" FLEX. PVC RAINWATER LEADERS TO CHAMBER BEDS ARCHITECT TO FINALIZE NUMBER AND LOCATION OF DOWNSPOUTS FOR EACH DWELLING

PROP. CHAIN LINK FENCE

PROP. UNDERGROUND CHAMBERS FOR ROOF DRAINAGE (TYP.)

PROP. FILTERMITT SILTATION BARRIER

PROP. SMH 9
RIM=94.0
INV.IN=88.00
INV. OUT=85.24

PROP. STORMWATER TREATMENT UNIT HYDRO 3, PROP. HYDRANT (TYP.)

AIR RELEASE MH

PROP. SMH 11

PROP. CHAMBER AREA 1
3 ROWS OF 7 CHAMBERS WITH 2 FT OF STONE ALL AROUND

PROP. SMH 12
RIM=104.5
INV. IN=97.32
INV. OUT=97.22

PROP. SMH 13
RIM=102.1
INV.IN=97.61
INV. OUT=97.51

PROP. SMH 14
RIM=102.1
4" INV.IN=97.92
INV. OUT=97.82

PROP. CHAMBER AREA 2
6 ROWS OF 10 CHAMBERS WITH 2 FT OF STONE ALL AROUND
INV. IN=97.0

PROP. HYDRO 4
RIM=100.10
INV. IN=97.30
INV. OUT=97.20

PROP. CB 6
RIM=100.00
INV.OUT=97.50

PROP. WETLAND ALTERATION AREA 1,458 SF

PROP. WETLAND REPLICATION AREA 1,682 SF

PROP. RESERVE AREA ACCESS 18' WIDE

ACCESS TO RESERVE AREA

PROP. SEPTIC TANK (TYP.)

HYDRO 2
PROP. STORMWATER TREATMENT UNIT

PROP. CHAMBER AREA 3
11 ROWS OF 6 CHAMBERS WITH 2 FT OF STONE ALL AROUND AND A 8" ADS DROP CONNECTION FOR OUTLET

PROP. 6" PVC CLEANOUT & BACKFLOW PREVENTER FOR ALL RAINWATER LEADER CONNECTIONS TO STREET DRAINAGE CHAMBER BEDS.

PROP. CHAMBER AREA 4
5 ROWS OF 11 CHAMBERS WITH 2 FT OF STONE ALL AROUND

HYDRO 5
RIM=81.0
INV. IN=78.53
INV. OUT=78.50

HYDRO 3
RIM=83.0
24" INV. IN=78.60
12" INV. IN=79.25
24" INV. OUT=78.50

SEPTIC RESERVE AREA FOR 72 BEDROOMS

SEPTIC 1 ABAN. TP# SEPTIC 3

TP# SEPTIC 2

DCB- DOUBLE CATCH BASIN
CB- CATCH BASIN
DMH-DRAIN MANHOLE
HYRO- TSS TREATMENT UNIT

REFER TO PROFILE SHEETS FOR STRUCTURE ELEVATIONS NOT SHOWN HERE

DETAIL (NOT TO SCALE)
0.18'
DH FND.

DETAIL (NOT TO SCALE)
0.78'
0.13'
DH FND.

SCALE: 1" = 50'
50' 0 50' 80'

COMMONWEALTH OF MASSACHUSETTS
ANTHONY A. ESPOSITO
CIVIL
No. 39782
REGISTERED PROFESSIONAL ENGINEER

12/12/2022

REVISIONS:

| No. | DESCRIPTION | DATE |
|---|---|---|
| | | |
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PROJECT TITLE:

**THE COTTAGES AT OLD OAKEN BUCKET AT #279-281 OLD OAKEN BUCKET ROAD SCITUATE, MA**

**POST-DEVELOPMENT DRAINAGE PLAN**

PARCEL 41-1-3-D
PARCEL 41-1-3-0


PREPARED BY:
South Shore Survey Consultants, Inc.
REGISTERED LAND SURVEYORS & CIVIL ENGINEERS
167 R SUMMER STREET
KINGSTON, MA 02364
781-582-2185
mark@sscinc.net


PREPARED FOR:
*THE LOVENDALE COMPANY, LLC*
*114 ONION HILL ROAD*
*DUXBURY, MA 02332*

SCALE: 1" = 50'
50' 0 50' 80'

| | |
|---|---|
| DATE: | DECEMBER 12, 2022 |
| COMP./DESIGN: | A. ESPOSITO |
| CHECK: | M. D. CASEY |
| DRAWN: | A. ESPOSITO |
| FIELD: | LJL/PS |
| APPROVED: | M. D. CASEY |
| DWG.No. | 1908 POST |
| JOB No. | 1908 |

SHEET 2 OF 2