ALLEN & MAJOR ASSOCIATES, INC.

SITE LOCUS: N.T.S.

225 FALLON ROAD

STONEHAM, MASSACHUSETTS

DRAINAGE REPORT

DATE PREPARED:
MAY 29, 2014

APPLICANT:
FAIRFIELD RESIDENTIAL COMPANY, LLC
C/O FF REALTY, LLC
405 COCHITUATE ROAD SUITE 301
FRAMINGHAM, MA 01701-4648

PREPARED BY:
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A&M PROJECT NO. : 1592-03

Section 1.0 Drainage Report

Section 2.0

Section 3.0

Section 4.0

Section 5.0

Section 6.0

Section 7.0

INTRODUCTION

The purpose of this drainage report is to provide an overview of the proposed stormwater management system for the proposed development of #225 Fallon Road, Stoneham, MA. The report will show by means of narrative, calculations and exhibits that there is no increase in peak rate of runoff from the site at each of the study points for all design storm events.

The project area consists of one parcel located on Fallon Road within Stoneham, MA. The parcel is identified as Lot A (Assessor's Lot ID 26-0-1, 14.97 acres). The parcel has an insignificant portion of land (<0.1 acres) located in Winchester, MA and no disturbance is proposed on the Winchester portion of this property.

The proposed site improvements include two 4-Story Residential Buildings containing 298 units, a 4-Story Parking Garage, onsite surface parking, associated site-work and utilities to service the buildings.

The stormwater management system incorporates structural and non-structural BMP's to provide stormwater quality treatment and conveyance. There are standard catch basins with deep sumps and hooded outlets and subsurface infiltration systems with isolator rows for pretreatment.

The primary mechanism to address the peak rate of runoff from the site is the construction of seven (7) subsurface infiltration systems, the result is a reduction in the rate of stormwater runoff.

• SITE LOCATION AND ACCESS

The site is located at #225 Fallon Road and is within both the Town of Stoneham and Town of Winchester, Massachusetts. The site is bounded by Fallon Road to the south, the Stoneham and Winchester Town line to the west, and Interstate 93 to the north and east. Direct access to the site is along the frontage of Fallon Road near the southwest corner of the site.

• EXISTING SITE CONDITIONS

The project area consists of wooded uplands, wooded wetland pockets, and ledge outcrops. A portion of the site was previously developed and consists of paved parking areas, landscaped grass areas, and an existing 65,609± SF building.

The high point is located near the center of the property, south of the existing building, with an elevation of 181.0±. The low point is located along the westerly property line of the site within the drainage channel, with an elevation of 141±.

A large portion of the stormwater runoff sheet flows from the high point to the wetland area at the southeasterly corner of the property. This wetland area then drains through an existing 24-inch RCP culvert that connects to a Town owned 48-inch RCP pipe network.

Additionally, runoff sheet flows from the southwesterly corner of the property are collected via swale and/or catch basin and drains into the same Town owned 48-inch RCP pipe network. The 48-inch pipe network collects a majority of the runoff generated by the site through a series of catch basins and discharges to a headwall located off the edge off the edge of the east parking lot to a drainage channel located partially on site and within the I-93 right-of-way.

This drainage channel starts at the southeast corner of the property and flows in a northwesterly direction, collecting additional runoff that sheet flows from the surrounding areas.

A record Stormwater Report has been prepared for this site and has been reviewed and approved by the Town of Stoneham Conservation Commission. The Stormwater Report was prepared for the proposed "Marble Ridge Apartments" by BSC Group, dated September 2011. The existing global watershed study used in that report has been duplicated for this report in order to avoid redundant review comments. A copy of that report may be furnished upon request.

- **EXISTING SOIL CONDITIONS**

The on-site soils were identified using the USDA Natural Resources Conservation Services (NRCS) Soil Survey for Middlesex County. The site includes four (4) soil types:

- 6A – Scarboro mucky fine sandy loam, 0 to 3 percent slopes (HSG-D)
- 105E – Rock outcrop – Hollis complex, 3 to 35 percent slopes (HSG-D)
- 631C – Charlton – Urban land complex, 3 to 15 percent slopes (HSG-B)
- 656 – Udorthents – Urban land complex (HSG-B)

A copy of the soil mapping is included in the Appendix of this report. For purposes of the analysis, all soils were assumed to be Hydrologic Soil Group "B" & "D".

- **FEMA FLOODPLAIN**

According to the official Flood Insurance Rate Map (FIRM) on file with the Town of Stoneham, the site is located within a FEMA *Zone X (unshaded). Zone X (unshaded)* is classified as an area of minimal flood hazard, usually depicted on FIRMs as above the 500-year floor level. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood. As the site is outside of the 100-year flood zone, it is not subject to the Town of Stoneham Flood Plain (Overlay) District Regulations.

- **DRAINAGE ANALYSIS METHODOLOGY**

The peak rate of runoff was determined using techniques and data found in the following:

1. Urban Hydrology for Small Watersheds – Technical Release 55 by the United States Department of Agriculture Soils Conservation Service, June 1986. Runoff curve numbers and 24-hour precipitation values were obtained from this reference.

2. HydroCAD© Stormwater Modeling System by HydroCAD Software Solutions LLC, version 10.0, 2013. The HydroCAD program was used to generate the runoff hydrographs for the watershed areas, to determine discharge/stage/storage characteristics for the detention basins, to perform drainage routing and to combine the results of the runoff hydrographs. HydroCAD uses the TR-20 methodology of the SCS Unit Hydrograph procedure (SCS-UH).

3. Soil Survey of Middlesex County Massachusetts by United States Department of Agriculture, NRCS. Soil types and boundaries were obtained from this reference.

PEAK RATE OF RUNOFF

The storm water runoff analysis of the existing and proposed conditions includes an estimate of the peak rate of runoff from various rainfall events. Peak runoff rates were developed using TR-55 Urban Hydrology for Small Watersheds, developed by the U.S. Department of Commerce, Engineering Division and the HydroCAD 10.0 computer program. Further, the analysis has been prepared in accordance with the MA DEP requirements and standard engineering practices. The peak rate of runoff has been estimated for each watershed during the 2, 10 and 100-year storm events.

The stormwater runoff model shows that the proposed site development reduces the rate of runoff during all storm events at the identified points of analysis. The following tables provide a summary of the estimated peak rate at each Study Point during each of the design storm events. The HydroCAD worksheets are included in Section 4 of this report.

The following Study Points were duplicated from the record stormwater report, identified previously, and identified as the critical points to be analyzed. As illustrated below the proposed stormwater systems improves the conditions at all three points by reducing the peak flows in the existing stormwater conveyance systems and reducing the peak elevations in the wetland area. Please refer to Watershed Plans (EWS & PWS Section 5) for Study Point locations.

STUDY POINT #1 (Flow rates to the existing 48" pipe)

	2-Year	10-Year	100-Year
Existing Runoff (CFS)	19.74	38.01	58.69
Developed Runoff (CFS)	19.69	37.44	58.36
% REDUCTION	**0.25%**	**1.50%**	**0.56%**

STUDY POINT #2 (Flow rates to the Existing Drainage Channel - Total Site)

	2-Year	10-Year	100-Year
Existing Runoff (CFS)	25.81	49.84	77.72
Developed Runoff (CFS)	22.89	46.44	76.28
% REDUCTION	**11.31%**	**6.82%**	**1.85%**

STUDY POINT #3 (Peak Wetland Elevations to the "E" Series Wetland)

	2-Year	10-Year	100-Year
Existing Peak Elevation (ft)	148.46	148.92	149.28
Developed Peak Elevation (ft)	148.36	148.70	149.06
REDUCTION (ft)	**0.10**	**0.22**	**0.22**

• MA DEP STORMWATER PERFORMANCE STANDARDS

The MA DEP Stormwater Management Policy was developed to improve water quality by implementing performance standards for stormwater management. The following section outlines how the proposed Stormwater Management System meets the standards set forth by the Policy.

BMP's implemented in the design include:

- Street Sweeping
- Deep Sump Catch Basins with hoods
- Infiltration Systems with Isolator Rows
- Specific maintenance schedule

Stormwater Best Management Practices have been incorporated into the design of the project to mitigate the anticipated pollutant loading. An Operations and Maintenance Plan has been developed for the project, which addresses the long term maintenance requirements of the proposed system.

Temporary erosion and sedimentation controls will be incorporated into the construction phase of the project. These temporary controls may include straw bale and/or silt fence barriers, inlet sediment traps, diversion channels, slope stabilization, and stabilized construction entrances.

The Massachusetts Department of Environmental Protection has established ten (10) Stormwater Management Standards. A project that meets or exceeds the standards is presumed to satisfy the regulatory requirements regarding stormwater management. The Standards are as follows:

1. *No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

2. *Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.*

3. *Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.*

4. *Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:*

    a. *Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;*
    b. *Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and*
    c. *Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.*

5. *For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.*

6. *Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A "storm water discharge" as defined in 314 CMR 3.04(2)(a)1 or (b) to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to a Zone I or Zone A are prohibited unless essential to the operation of a public water supply.*

7. *A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.*

8. *A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.*

9. *A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed.*

10. *All illicit discharges to the stormwater management system are prohibited.*

The following demonstrates that the proposed stormwater management system is in compliance with the performance standards as outlined in the MA DEP Stormwater Management Handbook.

- STANDARD #1: The proposed development will not introduce any new outfalls with direct discharge to a wetland area or waters of the Commonwealth of Massachusetts. All discharges will be treated for water quality and the runoff rates will not be increased over existing conditions.

- STANDARD #2: The proposed development has been designed so that the post-development peak discharge rates do not exceed the predevelopment peak discharge rates. A summary of the existing and proposed discharge rates are included within this document (See page 1-3).

- STANDARD #3: The existing annual recharge for the site has been approximated in the developed condition. The infiltration system is designed to meet this requirement. The proposed Recharge Volume is based on the Static Method per the MA DEP Stormwater Management Standards, Volume 3, Chapter 1. The project area is HSG "B" & "D" as discussed previously. See DEP calculations provided in Section 7.5:

  - **Recharge provided in Underground Infiltrating System (UIS) #1 = 1,390 ft^3 < 274 ft^3 required**
  - **Recharge provided in UIS #2 = 1,004 ft^3 < 246 ft^3 required**
  - **Recharge provided in UIS #3 = 1,413 ft^3 < 593 ft^3 required**
  - **Recharge provided in UIS #4 = 1,295 ft^3 < 258 ft^3 required**
  - **Recharge provided in UIS #5 = 3,172 ft^3 < 1,258 ft^3 required**
  - **Recharge provided in UIS #6 = 1,886 ft^3 < 1,280 ft^3 required**
  - **Recharge provided in UIS #7 = 852 ft^3 < 576 ft^3 required**

- STANDARD #4: The proposed stormwater management system has been designed so that for each drainage area the 80% TSS removal standard has been met. Standard #4 is met when structural stormwater best management practices are sized to capture and treat the required water quality volume and pretreatment is provided in accordance with the Massachusetts Stormwater Handbook. Standard #4 also requires that suitable source control measures are identified in the Long Term Pollution Prevention Plan identified in Section 6 of this report.

TSS Removal Calculations have been prepared for each proposed stormwater watershed, as they each have separate BMPs.

All impervious areas are directed to Underground Infiltration Systems. Pretreatment for the impervious areas includes Street Sweeping, Deep Sump Catch Basins and Isolator Rows.

BMP	TSS Removal Rate	Starting TSS Load	Amount Removed	Remaining Load
Underground Infliction Systems (UIS)	0.80	1.00	0.80	0.20

TOTAL TSS REMOVAL	0.80 or 80%

The water quality volume for the site development is captured and treated using infiltration Systems. Supporting calculations are provided in Section 7.

- **Water Quality Volume (WQv) provided in UIS #1 = 1,390 ft^3 < 1,362 ft^3 required**
- **WQv provided in UIS #2 = 1,004 ft^3 < 990 ft^3 required**
- **WQv provided in UIS #3 = 1,413 ft^3 < 1,384 ft^3 required**
- **WQv provided in UIS #4 = 1,295 ft^3 < 1,281 ft^3 required**
- **WQv provided in UIS #5 = 3,172 ft^3 < 3,149 ft^3 required**
- **WQv provided in UIS #6 = 1,886 ft^3 < 1,886 ft^3 required**
- **WQv provided in UIS #7 = 852 ft^3 < 823 ft^3 required**

➢ STANDARD #5: The site is not considered a land use with higher potential pollutant loads.

➢ STANDARD #6: The project site does not discharge within a Zone II or Interim Wellhead Protection Area or near a critical area. Critical Areas are Outstanding Resource Waters as designated in 314 CMR 4.00, Special Resource Waters as designated in 314 CMR 4.00, recharge areas for public water supplies as defined in 310 CMR 22.02, bathing beaches as defined in 105 CMR 445.000, cold-water fisheries as defined in 314 CMR 9.02 and 310 CMR 10.04, and shellfish growing areas as defined in 314 CMR 9.02 and 310 CMR 10.04.

➢ STANDARD #7: The proposed project is not considered a re-development project under the Stormwater Management Handbook guidelines.

➢ STANDARD #8: A plan to control construction-related impacts, including erosion, sedimentation and other pollutant sources during construction and land disturbance activities has been developed. A detailed Erosion and Sedimentation Control Plan is included in the Construction Drawings. A Pollution Prevention Plan is included in Section 6. The proponent will prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) prior to commencement of construction activities that will result in the disturbance of one acre of land or more.

- STANDARD #9: A Long-Term Operation and Maintenance (O&M) Plan has been developed for the proposed stormwater management system and is located in Section 6.

- STANDARD #10: There are no expected illicit discharges to the stormwater management system. The applicant has included an Illicit Discharge Compliance Statement in Section 7.

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.

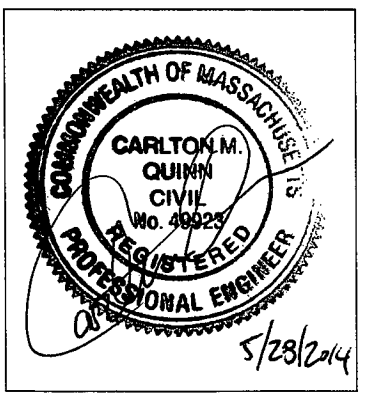
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the 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



5/28/2014
Signature and Date

Checklist

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

☒ New development

☐ Redevelopment

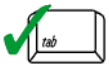
☐ Mix of New Development and Redevelopment

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.

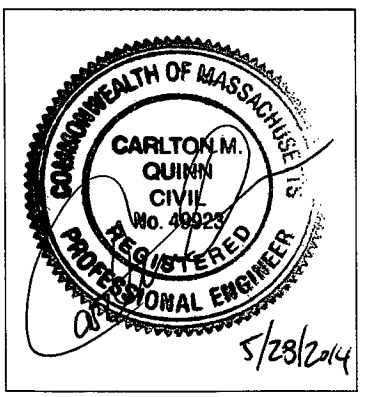
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the 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



5/28/2014
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:

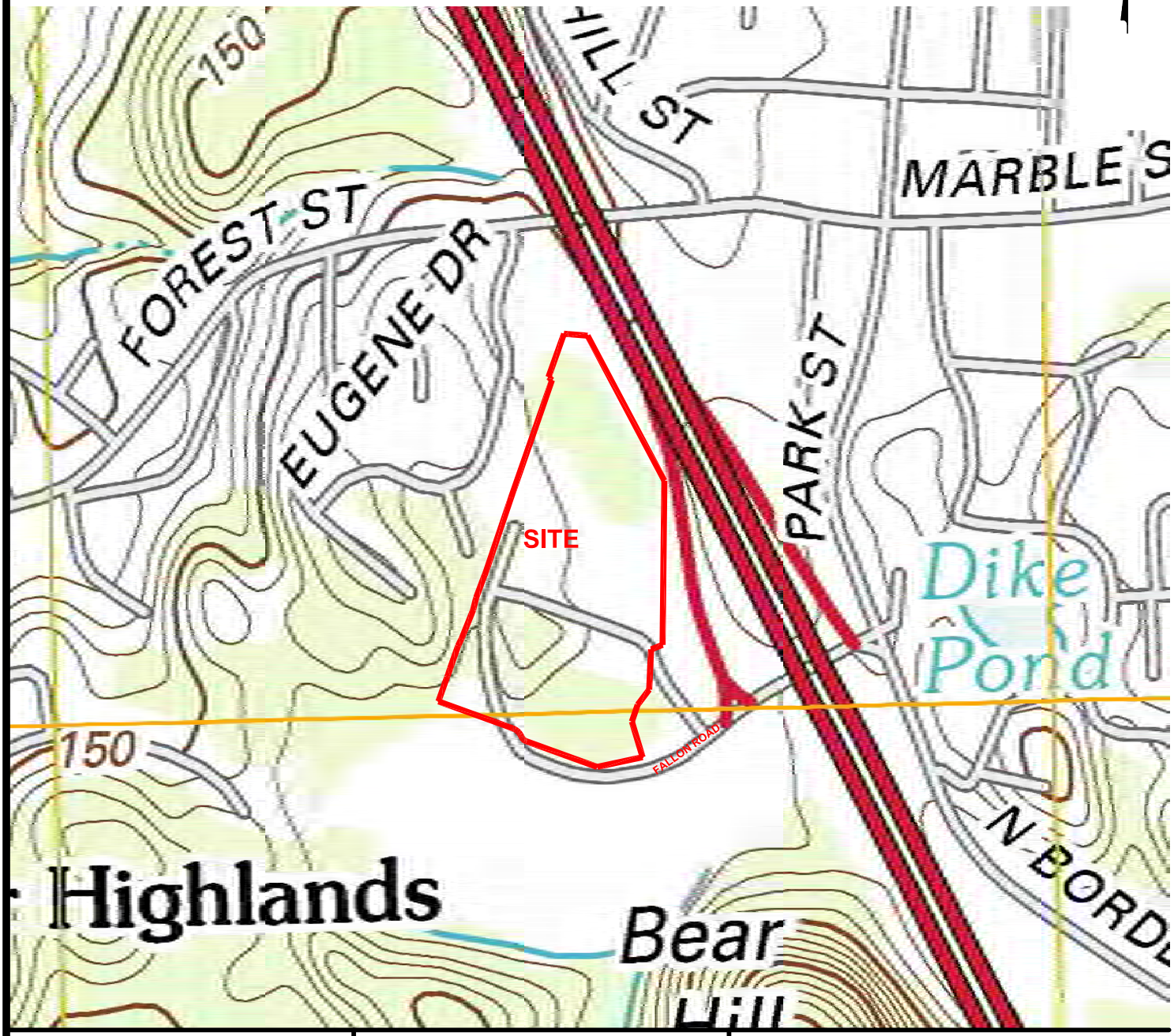
- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity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



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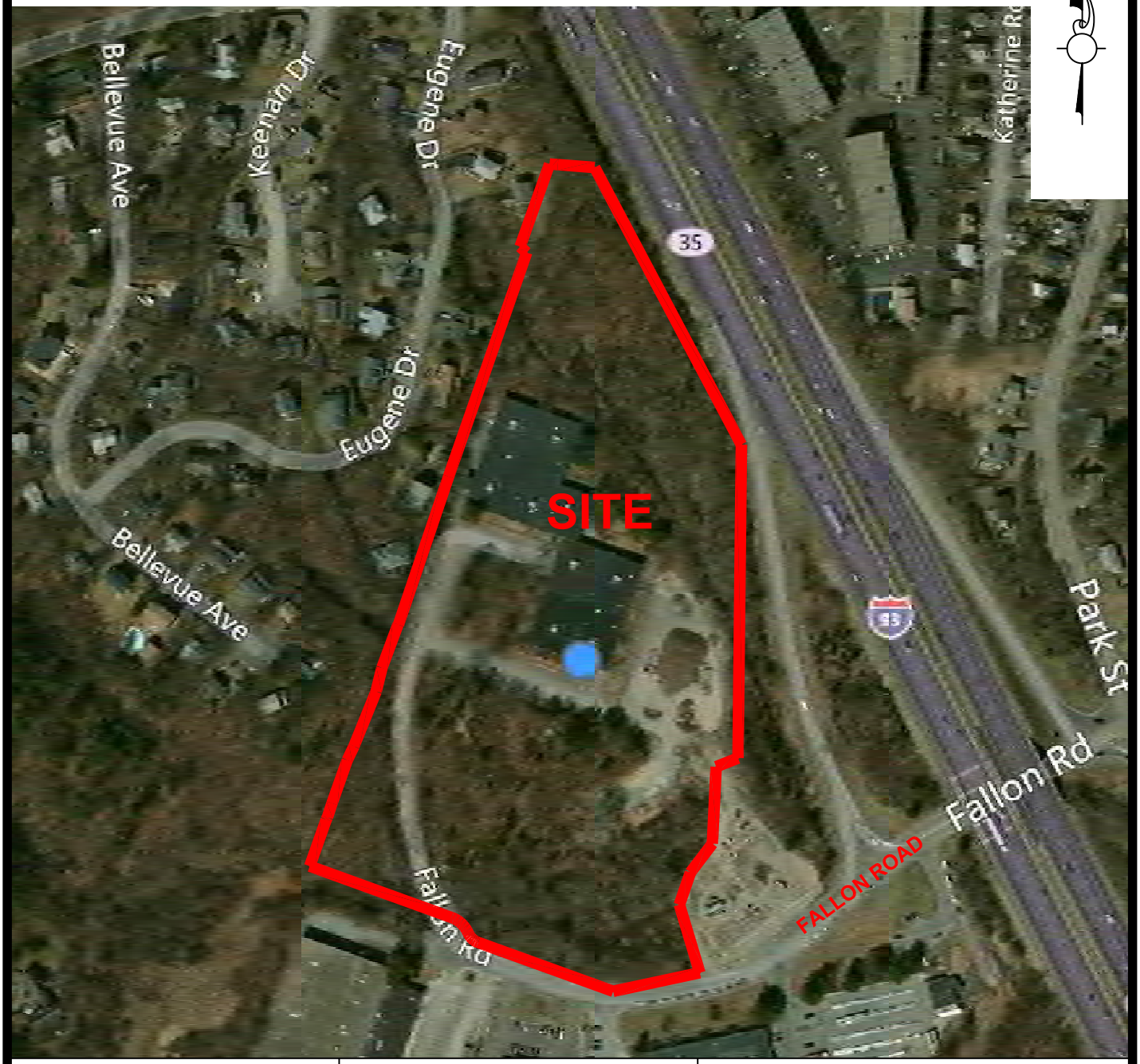
STONEHAM, MA 02180

USGS SITE LOCUS MAP

PROJECT NO.	1592-03	DATE:	05-27-2014
SCALE:	NTS	DWG. NAME:	EXHIBITS
DESIGNED BY:	BD	CHECKED BY:	RB

SHEET No.
EX-1



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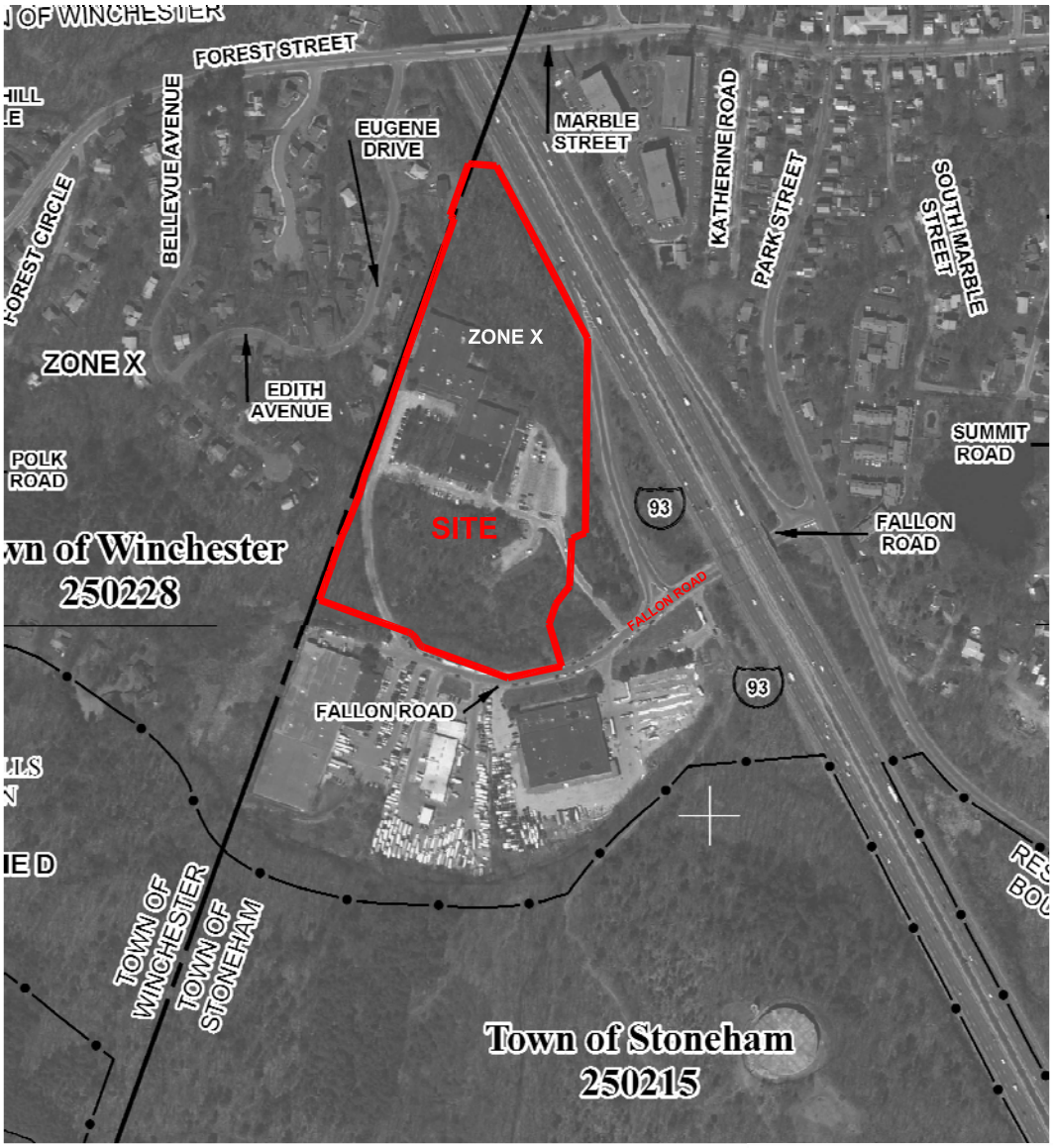
225 FALLON ROAD
STONEHAM, MA 02180

AERIAL PHOTO

PROJECT NO.	1592-03	DATE:	05-27-2014
SCALE:	NTS	DWG. NAME:	EXHIBITS
DESIGNED BY:	BD	CHECKED BY:	RB

SHEET No.
EX-2



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations

FEMA FLOOD INSURANCE RATE MAP
TOWN OF STONEHAM, MIDDLESEX COUNTY
MAP NUMBER 25017C0426E AND 25017C0428E
JUNE 4, 2010

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FEMA FIRM MAP

PROJECT NO.	1592-03	DATE:	05-27-2014
SCALE:	NTS	DWG. NAME:	EXHIBITS
DESIGNED BY:	BD	CHECKED BY:	RB

SHEET No.
EX-3

LEGEND

6A	SCARBORO MUCKY FINE SANDY LOAM, 0-3 % SLOPE
105E	ROCK OUTCROP - HOLLIS COMPLEX, 3-35 % SLOPE
631C	CHARLTON URBAN LAND - HOLLIS COMPLEX, 3-15% SLOPES, ROCKY
656	UDORTHENTS - URBAN LAND COMPLEX

WEBSOIL SURVEY: VERSION 8, JULY 23, 2010

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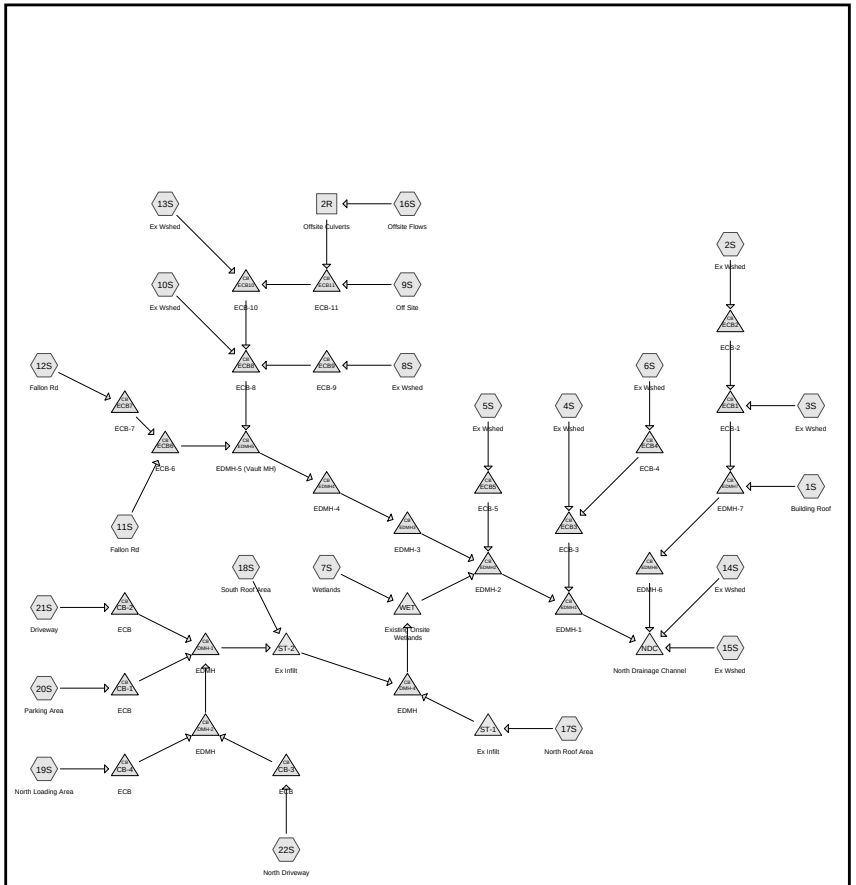
USDA SOILS MAP

PROJECT NO.	1592-03	DATE:	05-27-2014
SCALE:	NTS	DWG. NAME:	EXHIBITS
DESIGNED BY:	BD	CHECKED BY:	RB

SHEET No.
EX-4



Routing Diagram for 1592-03 Existing Conditions
Prepared by Allen & major Associates, Inc., Printed 5/30/2014
HydroCAD® 10.00 s/n 02881 © 2013 HydroCAD Software Solutions LLC

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Building Roof Runoff Area=1.510 ac 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=4.62 cfs 0.367 af

Subcatchment 2S: Ex Wshed Runoff Area=0.030 ac 33.33% Impervious Runoff Depth>1.79"
Tc=6.0 min CN=86 Runoff=0.06 cfs 0.004 af

Subcatchment 3S: Ex Wshed Runoff Area=0.550 ac 69.09% Impervious Runoff Depth>1.95"
Flow Length=175' Tc=6.0 min CN=88 Runoff=1.26 cfs 0.089 af

Subcatchment 4S: Ex Wshed Runoff Area=1.580 ac 68.35% Impervious Runoff Depth>2.21"
Flow Length=275' Tc=8.2 min CN=91 Runoff=3.74 cfs 0.291 af

Subcatchment 5S: Ex Wshed Runoff Area=0.270 ac 22.22% Impervious Runoff Depth>1.57"
Flow Length=245' Tc=6.5 min CN=83 Runoff=0.49 cfs 0.035 af

Subcatchment 6S: Ex Wshed Runoff Area=0.960 ac 70.83% Impervious Runoff Depth>1.87"
Tc=6.0 min CN=87 Runoff=2.10 cfs 0.149 af

Subcatchment 7S: Wetlands Runoff Area=3.130 ac 30.67% Impervious Runoff Depth>1.56"
Flow Length=215' Tc=13.0 min CN=83 Runoff=4.58 cfs 0.408 af

Subcatchment 8S: Ex Wshed Runoff Area=1.350 ac 51.11% Impervious Runoff Depth>1.71"
Flow Length=125' Tc=7.4 min CN=85 Runoff=2.59 cfs 0.193 af

Subcatchment 9S: Off Site Runoff Area=3.990 ac 13.78% Impervious Runoff Depth>0.95"
Flow Length=115' Tc=11.0 min CN=73 Runoff=3.49 cfs 0.315 af

Subcatchment 10S: Ex Wshed Runoff Area=0.080 ac 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.24 cfs 0.019 af

Subcatchment 11S: Fallon Rd Runoff Area=0.220 ac 68.18% Impervious Runoff Depth>1.79"
Tc=6.0 min CN=86 Runoff=0.46 cfs 0.033 af

Subcatchment 12S: Fallon Rd Runoff Area=0.130 ac 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.40 cfs 0.032 af

Subcatchment 13S: Ex Wshed Runoff Area=0.070 ac 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.21 cfs 0.017 af

Subcatchment 14S: Ex Wshed Runoff Area=4.460 ac 0.00% Impervious Runoff Depth>0.46"
Flow Length=110' Tc=18.2 min CN=62 Runoff=1.13 cfs 0.170 af

Subcatchment 15S: Ex Wshed Runoff Area=0.303 ac 20.46% Impervious Runoff Depth>0.75"
Tc=6.0 min CN=69 Runoff=0.23 cfs 0.019 af

Subcatchment 16S: Offsite Flows Runoff Area=2.250 ac 38.00% Impervious Runoff Depth>1.06"
Tc=6.0 min CN=75 Runoff=2.67 cfs 0.198 af

Subcatchment 17S: North Roof Area Runoff Area=0.283 ac 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.87 cfs 0.069 af

Subcatchment 18S: South Roof Area Runoff Area=0.115 ac 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.35 cfs 0.028 af

Subcatchment 19S: North Loading Area Runoff Area=0.200 ac 91.50% Impervious Runoff Depth>2.59"
Tc=6.0 min CN=95 Runoff=0.58 cfs 0.043 af

Subcatchment 20S: Parking Area Runoff Area=0.101 ac 90.10% Impervious Runoff Depth>2.49"
Tc=6.0 min CN=94 Runoff=0.28 cfs 0.021 af

Subcatchment 21S: Driveway Runoff Area=0.032 ac 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.10 cfs 0.008 af

Subcatchment 22S: North Driveway Runoff Area=0.050 ac 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.15 cfs 0.012 af

Reach 2R: Offsite Culverts Avg. Flow Depth=0.46' Max Vel=3.29 fps Inflow=2.67 cfs 0.198 af
15.0" Round Pipe x 2.00 n=0.013 L=95.0' S=0.0053 '/' Capacity=9.37 cfs Outflow=2.66 cfs 0.198 af

Pond CB-1: ECB Peak Elev=151.53' Inflow=0.28 cfs 0.021 af
12.0" Round Culvert n=0.012 L=13.6' S=0.0096 '/' Outflow=0.28 cfs 0.021 af

Pond CB-2: ECB Peak Elev=151.43' Inflow=0.10 cfs 0.008 af
12.0" Round Culvert n=0.012 L=25.9' S=0.0050 '/' Outflow=0.10 cfs 0.008 af

Pond CB-3: ECB Peak Elev=151.94' Inflow=0.15 cfs 0.012 af
12.0" Round Culvert n=0.012 L=36.4' S=0.0099 '/' Outflow=0.15 cfs 0.012 af

Pond CB-4: ECB Peak Elev=152.13' Inflow=0.58 cfs 0.043 af
12.0" Round Culvert n=0.012 L=17.9' S=0.0201 '/' Outflow=0.58 cfs 0.043 af

Pond DMH-1: EDMH Peak Elev=151.72' Inflow=1.11 cfs 0.084 af
12.0" Round Culvert n=0.012 L=3.5' S=0.0057 '/' Outflow=1.11 cfs 0.084 af

Pond DMH-2: EDMH Peak Elev=151.80' Inflow=0.73 cfs 0.055 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0050 '/' Outflow=0.73 cfs 0.055 af

Pond DMH-4: EDMH Peak Elev=150.16' Inflow=0.06 cfs 0.064 af
12.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/' Outflow=0.06 cfs 0.064 af

Pond ECB1: ECB-1 Peak Elev=151.57' Inflow=1.32 cfs 0.094 af
12.0" Round Culvert n=0.013 L=190.0' S=0.0105 '/' Outflow=1.32 cfs 0.094 af

Pond ECB10: ECB-10 Peak Elev=150.11' Inflow=6.07 cfs 0.531 af
15.0" Round Culvert n=0.013 L=22.0' S=0.0123 '/' Outflow=6.07 cfs 0.531 af

Pond ECB11: ECB-11 Peak Elev=150.17' Inflow=5.90 cfs 0.514 af
15.0" Round Culvert n=0.013 L=15.0' S=0.0000 '/' Outflow=5.90 cfs 0.514 af

Pond ECB2: ECB-2 Peak Elev=153.12' Inflow=0.06 cfs 0.004 af
12.0" Round Culvert n=0.013 L=190.0' S=0.0105 '/' Outflow=0.06 cfs 0.004 af

Pond ECB3: ECB-3 Peak Elev=148.63' Inflow=5.78 cfs 0.440 af
18.0" Round Culvert n=0.013 L=60.0' S=0.0000 '/' Outflow=5.78 cfs 0.440 af

Pond ECB4: ECB-4 Peak Elev=147.86' Inflow=2.10 cfs 0.149 af
15.0" Round Culvert n=0.013 L=17.0' S=0.0000 '/' Outflow=2.10 cfs 0.149 af

Pond ECB5: ECB-5 Peak Elev=147.77' Inflow=0.49 cfs 0.035 af
18.0" Round Culvert n=0.013 L=22.0' S=0.0091 '/' Outflow=0.49 cfs 0.035 af

Pond ECB6: ECB-6 Peak Elev=150.41' Inflow=0.86 cfs 0.064 af
12.0" Round Culvert n=0.013 L=33.0' S=0.0845 '/' Outflow=0.86 cfs 0.064 af

Pond ECB7: ECB-7 Peak Elev=150.59' Inflow=0.40 cfs 0.032 af
12.0" Round Culvert n=0.013 L=23.0' S=0.0096 '/' Outflow=0.40 cfs 0.032 af

Pond ECB8: ECB-8 Peak Elev=150.09' Inflow=8.80 cfs 0.743 af
18.0" Round Culvert n=0.013 L=102.0' S=0.0057 '/' Outflow=8.80 cfs 0.743 af

Pond ECB9: ECB-9 Peak Elev=149.17' Inflow=2.59 cfs 0.193 af
15.0" Round Culvert n=0.013 L=18.0' S=0.0022 '/' Outflow=2.59 cfs 0.193 af

Pond EDMH1: EDMH-1 Peak Elev=148.16' Inflow=19.74 cfs 1.755 af
48.0" Round Culvert n=0.013 L=213.0' S=0.0024 '/' Outflow=19.74 cfs 1.755 af

Pond EDMH2: EDMH-2 Peak Elev=148.04' Inflow=14.15 cfs 1.315 af
48.0" Round Culvert n=0.013 L=85.0' S=0.0016 '/' Outflow=14.15 cfs 1.315 af

Pond EDMH3: EDMH-3 Peak Elev=147.98' Inflow=9.59 cfs 0.807 af
48.0" Round Culvert n=0.013 L=177.0' S=0.0008 '/' Outflow=9.59 cfs 0.807 af

Pond EDMH4: EDMH-4 Peak Elev=148.06' Inflow=9.59 cfs 0.807 af
48.0" Round Culvert n=0.013 L=95.0' S=0.0025 '/' Outflow=9.59 cfs 0.807 af

Pond EDMH5: EDMH-5 (Vault MH) Peak Elev=148.45' Inflow=9.59 cfs 0.807 af
48.0" Round Culvert n=0.013 L=150.0' S=0.0032 '/' Outflow=9.59 cfs 0.807 af

Pond EDMH6: EDMH-6 Peak Elev=147.50' Inflow=5.93 cfs 0.461 af
18.0" Round Culvert n=0.013 L=6.0' S=0.0483 '/' Outflow=5.93 cfs 0.461 af

Pond EDMH7: EDMH-7 Peak Elev=150.07' Inflow=5.93 cfs 0.461 af
18.0" Round Culvert n=0.013 L=188.0' S=0.0148 '/' Outflow=5.93 cfs 0.461 af

Pond NDC: North Drainage Channel Inflow=25.81 cfs 2.404 af
Primary=25.81 cfs 2.404 af

Pond ST-1: Ex Infilt Peak Elev=152.13' Storage=2,140 cf Inflow=0.87 cfs 0.069 af
Outflow=0.03 cfs 0.030 af

Pond ST-2: Ex Infilt Peak Elev=152.13' Storage=4,497 cf Inflow=1.46 cfs 0.112 af
Outflow=0.03 cfs 0.034 af

Pond WET: Existing Onsite Wetlands Peak Elev=148.46' Storage=18 cf Inflow=4.63 cfs 0.472 af
24.0" Round Culvert n=0.013 L=72.0' S=0.0074 '/' Outflow=4.62 cfs 0.472 af

Total Runoff Area = 21.664 ac Runoff Volume = 2.521 af Average Runoff Depth = 1.40"
62.98% Pervious = 13.643 ac 37.02% Impervious = 8.021 ac

Summary for Subcatchment 1S: Building Roof

Runoff = 4.62 cfs @ 12.08 hrs, Volume= 0.367 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (ac)	CN	Description
1.370	98	Roofs, HSG B
0.140	98	Roofs, HSG D
1.510	98	Weighted Average
1.510		100.00% Impervious Area

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

Summary for Subcatchment 2S: Ex Wshed

Runoff = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af, Depth> 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
	0.020	80	>75% Grass cover, Good, HSG D
*	0.010	98	Paved parking & ledge, HSG D
	0.030	86	Weighted Average
	0.020		66.67% Pervious Area
	0.010		33.33% Impervious Area

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

Summary for Subcatchment 3S: Ex Wshed

Runoff = 1.26 cfs @ 12.09 hrs, Volume= 0.089 af, Depth> 1.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
	0.120	61	>75% Grass cover, Good, HSG B
*	0.230	98	Paved parking & ledge, HSG B
	0.050	80	>75% Grass cover, Good, HSG D
*	0.150	98	Paved parking & ledge, HSG D
	0.550	88	Weighted Average
	0.170		30.91% Pervious Area
	0.380		69.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0800	0.26		**Sheet Flow, Initial Overland Flow** Grass: Short n= 0.150 P2= 3.15"
0.5	125	0.0710	4.29		**Shallow Concentrated Flow, Overland Flow** Unpaved Kv= 16.1 fps
2.2					**Direct Entry, Minimum Tc**
6.0	175	Total			

Summary for Subcatchment 4S: Ex Wshed

Runoff = 3.74 cfs @ 12.11 hrs, Volume= 0.291 af, Depth> 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
	0.050	61	>75% Grass cover, Good, HSG B
	0.020	58	Woods/grass comb., Good, HSG B
*	0.300	98	Paved parking & ledge, HSG B
*	0.200	80	>75% Grass cover, Good, HSG D (9)
*	0.210	79	Woods/grass comb., Good, HSG D (9)
*	0.760	98	Paved parking &l ledge, HSG D (9)
*	0.020	79	Woods/grass comb., Good, HSG D (40)
*	0.020	98	Paved parking & ledge, HSG D (40)
	1.580	91	Weighted Average
	0.500		31.65% Pervious Area
	1.080		68.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0760	0.11		**Sheet Flow, Initial Overland Flow (0-50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.3	105	0.1780	6.79		**Shallow Concentrated Flow, Overland Flow (50-155')** Unpaved Kv= 16.1 fps
0.6	120	0.0260	3.27		**Shallow Concentrated Flow, Overland Flow (155-275')** Paved Kv= 20.3 fps
8.2	275	Total			

Summary for Subcatchment 5S: Ex Wshed

Runoff = 0.49 cfs @ 12.10 hrs, Volume= 0.035 af, Depth> 1.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	0.160	79	Woods/grass comb., Good, HSG D (9)
*	0.020	98	Paved parking & ledge, HSG D (9)
*	0.050	79	Woods/grass comb., Good, HSG D (40)
*	0.040	98	Paved parking & ledge, HSG D (40)
	0.270	83	Weighted Average
	0.210		77.78% Pervious Area
	0.060		22.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.1340	0.14		**Sheet Flow, Initial Overland Flow (0-50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.7	195	0.0890	4.80		**Shallow Concentrated Flow, Overland Flow** Unpaved Kv= 16.1 fps
6.5	245	Total			

Summary for Subcatchment 6S: Ex Wshed

Runoff = 2.10 cfs @ 12.09 hrs, Volume= 0.149 af, Depth> 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (ac)	CN	Description
0.130	61	>75% Grass cover, Good, HSG B
0.140	58	Woods/grass comb., Good, HSG B
0.630	98	Paved parking, HSG B
0.010	79	Woods/grass comb., Good, HSG D
0.050	98	Paved parking, HSG D
0.960	87	Weighted Average
0.280		29.17% Pervious Area
0.680		70.83% Impervious Area

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

Summary for Subcatchment 7S: Wetlands

Runoff = 4.58 cfs @ 12.18 hrs, Volume= 0.408 af, Depth> 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	0.300	58	Woods/grass comb., Good, HSG B (259)
*	0.620	79	Woods/grass comb., Good, HSG D (9)
*	0.060	98	Paved parking & ledge, HSG D (9)
*	1.250	79	Woods/grass comb., Good, HSG D (40)
*	0.080	98	Paved parking & ledge, HSG D (40)
*	0.820	98	Wetlands, HSG D
	3.130	83	Weighted Average
	2.170		69.33% Pervious Area
	0.960		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	50	0.0260	0.07		**Sheet Flow, Initial Overland Flow (0-50')** Woods: Light underbrush n= 0.400 P2= 3.15"
1.8	165	0.0090	1.53		**Shallow Concentrated Flow, Overland Flow (50-215')** Unpaved Kv= 16.1 fps
13.0	215	Total			

Summary for Subcatchment 8S: Ex Wshed

Runoff = 2.59 cfs @ 12.11 hrs, Volume= 0.193 af, Depth> 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
	0.220	58	Woods/grass comb., Good, HSG B
*	0.060	98	Paved parking & wetlands, HSG B
	0.310	79	Woods/grass comb., Good, HSG D
*	0.630	98	Paved parking, wetlands & ledge, HSG D
	0.020	61	>75% Grass cover, Good, HSG B
	0.060	80	>75% Grass cover, Good, HSG D
	0.050	73	Brush, Good, HSG D
	1.350	85	Weighted Average
	0.660		48.89% Pervious Area
	0.690		51.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0756	0.11		**Sheet Flow, Initial Overland Flow (0 - 50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.1	75	0.3280	9.22		**Shallow Concentrated Flow, Overland Flow (50 - 125')** Unpaved Kv= 16.1 fps
7.4	125	Total			

Summary for Subcatchment 9S: Off Site

Runoff = 3.49 cfs @ 12.16 hrs, Volume= 0.315 af, Depth> 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
	1.060	58	Woods/grass comb., Good, HSG B
*	0.370	98	Paved parking & wetlands, HSG B
*	1.700	79	Woods/grass comb., Good, HSG D (9)
*	0.060	80	>75% Grass cover, Good, HSG D (9)
*	0.070	61	>75% Grass cover, Good, HSG B (259)
*	0.150	98	Paved parking & roofs
*	0.200	58	Woods/grass comb., Good, HSG B (259)
*	0.030	98	Paved parking & roofs
*	0.350	61	>75% Grass cover, Good, HSG B (265)
	3.990	73	Weighted Average
	3.440		86.22% Pervious Area
	0.550		13.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	50	0.0310	0.08		**Sheet Flow, Initial Overland Floow (0 - 50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.6	65	0.0110	1.69		**Shallow Concentrated Flow, Overland Flow (50-115')** Unpaved Kv= 16.1 fps
11.0	115	Total			

Summary for Subcatchment 10S: Ex Wshed

Runoff = 0.24 cfs @ 12.08 hrs, Volume= 0.019 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (ac)	CN	Description
0.080	98	Paved parking, HSG B
0.080		100.00% Impervious Area

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

Summary for Subcatchment 11S: Fallon Rd

Runoff = 0.46 cfs @ 12.09 hrs, Volume= 0.033 af, Depth> 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (ac)	CN	Description
0.020	61	>75% Grass cover, Good, HSG B
0.150	98	Paved parking, HSG B
0.050	58	Woods/grass comb., Good, HSG B
0.220	86	Weighted Average
0.070		31.82% Pervious Area
0.150		68.18% Impervious Area

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

Summary for Subcatchment 12S: Fallon Rd

Runoff = 0.40 cfs @ 12.08 hrs, Volume= 0.032 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (ac)	CN	Description
0.130	98	Paved parking, HSG B
0.130		100.00% Impervious Area

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

Summary for Subcatchment 13S: Ex Wshed

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG B
0.070		100.00% Impervious Area

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

Summary for Subcatchment 14S: Ex Wshed

Runoff = 1.13 cfs @ 12.35 hrs, Volume= 0.170 af, Depth> 0.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	4.460	62	
	4.460		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.9	50	0.0080	0.05		**Sheet Flow, Initial Overland Flow (0 - 50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.3	60	0.0317	2.87		**Shallow Concentrated Flow, Overland Flow (50 - 110')** Unpaved Kv= 16.1 fps
18.2	110	Total			

Summary for Subcatchment 15S: Ex Wshed

Runoff = 0.23 cfs @ 12.10 hrs, Volume= 0.019 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	0.062	98	Paved parking & roofs
	0.241	61	>75% Grass cover, Good, HSG B
	0.303	69	Weighted Average
	0.241		79.54% Pervious Area
	0.062		20.46% Impervious Area

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

Summary for Subcatchment 16S: Offsite Flows

Runoff = 2.67 cfs @ 12.10 hrs, Volume= 0.198 af, Depth> 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (ac)	CN	Description
2.250	75	1/4 acre lots, 38% imp, HSG B
1.395		62.00% Pervious Area
0.855		38.00% Impervious Area

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

Summary for Subcatchment 17S: North Roof Area

Runoff = 0.87 cfs @ 12.08 hrs, Volume= 0.069 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	0.283	98	Roofs
	0.283		100.00% Impervious Area

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

Summary for Subcatchment 18S: South Roof Area

Runoff = 0.35 cfs @ 12.08 hrs, Volume= 0.028 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	0.115	98	Roofs
	0.115		100.00% Impervious Area

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

Summary for Subcatchment 19S: North Loading Area

Runoff = 0.58 cfs @ 12.08 hrs, Volume= 0.043 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	0.183	98	Paved parking
	0.017	61	>75% Grass cover, Good, HSG B
	0.200	95	Weighted Average
	0.017		8.50% Pervious Area
	0.183		91.50% Impervious Area

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

Summary for Subcatchment 20S: Parking Area

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.021 af, Depth> 2.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	0.091	98	Paved parking & roofs
	0.010	61	>75% Grass cover, Good, HSG B
	0.101	94	Weighted Average
	0.010		9.90% Pervious Area
	0.091		90.10% Impervious Area

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

Summary for Subcatchment 21S: Driveway

Runoff = 0.10 cfs @ 12.08 hrs, Volume= 0.008 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	0.032	98	Paved
	0.032		100.00% Impervious Area

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

Summary for Subcatchment 22S: North Driveway

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	0.050	98	Paved driveway
	0.050		100.00% Impervious Area

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

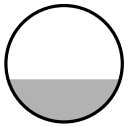
Summary for Reach 2R: Offsite Culverts

Inflow Area = 2.250 ac, 38.00% Impervious, Inflow Depth > 1.06" for 2 yr event
Inflow = 2.67 cfs @ 12.10 hrs, Volume= 0.198 af
Outflow = 2.66 cfs @ 12.11 hrs, Volume= 0.198 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.29 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 1.2 min

Peak Storage= 77 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.46'
Bank-Full Depth= 1.25' Flow Area= 2.5 sf, Capacity= 9.37 cfs

A factor of 2.00 has been applied to the storage and discharge capacity
15.0" Round Pipe
n= 0.013 Concrete pipe, straight & clean
Length= 95.0' Slope= 0.0053 '/'
Inlet Invert= 172.00', Outlet Invert= 171.50'



Summary for Pond CB-1: ECB

Inflow Area = 0.101 ac, 90.10% Impervious, Inflow Depth > 2.49" for 2 yr event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.021 af
Outflow = 0.28 cfs @ 12.08 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 12.08 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.53' @ 12.08 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.25'	**12.0" Round Culvert** L= 13.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.25' / 151.12' S= 0.0096 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.28 cfs @ 12.08 hrs HW=151.53' (Free Discharge)
1=Culvert (Barrel Controls 0.28 cfs @ 2.32 fps)

Summary for Pond CB-2: ECB

Inflow Area = 0.032 ac,100.00% Impervious, Inflow Depth > 2.92" for 2 yr event
Inflow = 0.10 cfs @ 12.08 hrs, Volume= 0.008 af
Outflow = 0.10 cfs @ 12.08 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min
Primary = 0.10 cfs @ 12.08 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.43' @ 12.08 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.25'	**12.0" Round Culvert** L= 25.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.25' / 151.12' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.10 cfs @ 12.08 hrs HW=151.43' (Free Discharge)
1=Culvert (Barrel Controls 0.10 cfs @ 1.57 fps)

Summary for Pond CB-3: ECB

Inflow Area = 0.050 ac,100.00% Impervious, Inflow Depth > 2.92" for 2 yr event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min
Primary = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 151.94' @ 12.08 hrs
Flood Elev= 154.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.75'	**12.0" Round Culvert** L= 36.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.75' / 151.39' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.15 cfs @ 12.08 hrs HW=151.94' (Free Discharge)
1=Culvert (Barrel Controls 0.15 cfs @ 2.21 fps)

Summary for Pond CB-4: ECB

Inflow Area = 0.200 ac, 91.50% Impervious, Inflow Depth > 2.59" for 2 yr event
Inflow = 0.58 cfs @ 12.08 hrs, Volume= 0.043 af
Outflow = 0.58 cfs @ 12.08 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min
Primary = 0.58 cfs @ 12.08 hrs, Volume= 0.043 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 152.13' @ 12.08 hrs
Flood Elev= 154.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.75'	**12.0" Round Culvert** L= 17.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.75' / 151.39' S= 0.0201 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.57 cfs @ 12.08 hrs HW=152.13' (Free Discharge)
1=Culvert (Inlet Controls 0.57 cfs @ 2.10 fps)

Summary for Pond DMH-1: EDMH

Inflow Area = 0.383 ac, 92.95% Impervious, Inflow Depth > 2.64" for 2 yr event
Inflow = 1.11 cfs @ 12.08 hrs, Volume= 0.084 af
Outflow = 1.11 cfs @ 12.08 hrs, Volume= 0.084 af, Atten= 0%, Lag= 0.0 min
Primary = 1.11 cfs @ 12.08 hrs, Volume= 0.084 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.72' @ 12.08 hrs
Flood Elev= 154.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.04'	**12.0" Round Culvert** L= 3.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.04' / 151.02' S= 0.0057 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.11 cfs @ 12.08 hrs HW=151.72' (Free Discharge)
1=Culvert (Barrel Controls 1.11 cfs @ 2.77 fps)

Summary for Pond DMH-2: EDMH

Inflow Area = 0.250 ac, 93.20% Impervious, Inflow Depth > 2.66" for 2 yr event
Inflow = 0.73 cfs @ 12.08 hrs, Volume= 0.055 af
Outflow = 0.73 cfs @ 12.08 hrs, Volume= 0.055 af, Atten= 0%, Lag= 0.0 min
Primary = 0.73 cfs @ 12.08 hrs, Volume= 0.055 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.80' @ 12.08 hrs
Flood Elev= 154.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.29'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.29' / 151.14' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.73 cfs @ 12.08 hrs HW=151.80' (Free Discharge)
1=Culvert (Barrel Controls 0.73 cfs @ 2.65 fps)

Summary for Pond DMH-4: EDMH

Inflow Area = 0.781 ac, 96.54% Impervious, Inflow Depth > 0.99" for 2 yr event
Inflow = 0.06 cfs @ 15.90 hrs, Volume= 0.064 af
Outflow = 0.06 cfs @ 15.90 hrs, Volume= 0.064 af, Atten= 0%, Lag= 0.0 min
Primary = 0.06 cfs @ 15.90 hrs, Volume= 0.064 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 150.16' @ 15.90 hrs
Flood Elev= 156.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	150.02'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 150.02' / 149.92' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.06 cfs @ 15.90 hrs HW=150.16' (Free Discharge)
1=Culvert (Barrel Controls 0.06 cfs @ 1.37 fps)

Summary for Pond ECB1: ECB-1

Inflow Area = 0.580 ac, 67.24% Impervious, Inflow Depth > 1.94" for 2 yr event
Inflow = 1.32 cfs @ 12.09 hrs, Volume= 0.094 af
Outflow = 1.32 cfs @ 12.09 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.0 min
Primary = 1.32 cfs @ 12.09 hrs, Volume= 0.094 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.57' @ 12.09 hrs
Flood Elev= 157.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.00'	**12.0" Round Culvert** L= 190.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 151.00' / 149.00' S= 0.0105 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=1.32 cfs @ 12.09 hrs HW=151.57' (Free Discharge)
1=Culvert (Barrel Controls 1.32 cfs @ 4.13 fps)

Summary for Pond ECB10: ECB-10

Inflow Area = 6.310 ac, 23.38% Impervious, Inflow Depth > 1.01" for 2 yr event
Inflow = 6.07 cfs @ 12.13 hrs, Volume= 0.531 af
Outflow = 6.07 cfs @ 12.13 hrs, Volume= 0.531 af, Atten= 0%, Lag= 0.0 min
Primary = 6.07 cfs @ 12.13 hrs, Volume= 0.531 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 150.11' @ 12.13 hrs
Flood Elev= 152.06'

Device	Routing	Invert	Outlet Devices
#1	Primary	148.36'	**15.0" Round Culvert** L= 22.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 148.36' / 148.09' S= 0.0123 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=6.07 cfs @ 12.13 hrs HW=150.10' (Free Discharge)
1=Culvert (Barrel Controls 6.07 cfs @ 4.94 fps)

Summary for Pond ECB11: ECB-11

Inflow Area = 6.240 ac, 22.52% Impervious, Inflow Depth > 0.99" for 2 yr event
Inflow = 5.90 cfs @ 12.14 hrs, Volume= 0.514 af
Outflow = 5.90 cfs @ 12.14 hrs, Volume= 0.514 af, Atten= 0%, Lag= 0.0 min
Primary = 5.90 cfs @ 12.14 hrs, Volume= 0.514 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 150.17' @ 12.14 hrs
Flood Elev= 151.03'

Device	Routing	Invert	Outlet Devices
#1	Primary	148.36'	**15.0" Round Culvert** L= 15.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 148.36' / 148.36' S= 0.0000 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=5.89 cfs @ 12.14 hrs HW=150.16' (Free Discharge)
1=Culvert (Barrel Controls 5.89 cfs @ 4.80 fps)

Summary for Pond ECB2: ECB-2

Inflow Area = 0.030 ac, 33.33% Impervious, Inflow Depth > 1.79" for 2 yr event
Inflow = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af
Outflow = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min
Primary = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 153.12' @ 12.09 hrs
Flood Elev= 159.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	153.00'	**12.0" Round Culvert** L= 190.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 153.00' / 151.00' S= 0.0105 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.06 cfs @ 12.09 hrs HW=153.12' (Free Discharge)
1=Culvert (Barrel Controls 0.06 cfs @ 1.75 fps)

Summary for Pond ECB3: ECB-3

Inflow Area = 2.540 ac, 69.29% Impervious, Inflow Depth > 2.08" for 2 yr event
Inflow = 5.78 cfs @ 12.10 hrs, Volume= 0.440 af
Outflow = 5.78 cfs @ 12.10 hrs, Volume= 0.440 af, Atten= 0%, Lag= 0.0 min
Primary = 5.78 cfs @ 12.10 hrs, Volume= 0.440 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.63' @ 12.10 hrs
Flood Elev= 149.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.85'	**18.0" Round Culvert** L= 60.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.85' / 146.85' S= 0.0000 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=5.77 cfs @ 12.10 hrs HW=148.63' (Free Discharge)
1=Culvert (Barrel Controls 5.77 cfs @ 3.48 fps)

Summary for Pond ECB4: ECB-4

Inflow Area = 0.960 ac, 70.83% Impervious, Inflow Depth > 1.87" for 2 yr event
Inflow = 2.10 cfs @ 12.09 hrs, Volume= 0.149 af
Outflow = 2.10 cfs @ 12.09 hrs, Volume= 0.149 af, Atten= 0%, Lag= 0.0 min
Primary = 2.10 cfs @ 12.09 hrs, Volume= 0.149 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 147.86' @ 12.09 hrs
Flood Elev= 149.08'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.90'	**15.0" Round Culvert** L= 17.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.90' / 146.90' S= 0.0000 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=2.10 cfs @ 12.09 hrs HW=147.86' (Free Discharge)
1=Culvert (Barrel Controls 2.10 cfs @ 2.88 fps)

Summary for Pond ECB5: ECB-5

Inflow Area = 0.270 ac, 22.22% Impervious, Inflow Depth > 1.57" for 2 yr event
Inflow = 0.49 cfs @ 12.10 hrs, Volume= 0.035 af
Outflow = 0.49 cfs @ 12.10 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min
Primary = 0.49 cfs @ 12.10 hrs, Volume= 0.035 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 147.77' @ 12.10 hrs
Flood Elev= 150.64'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.44'	**18.0" Round Culvert** L= 22.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 147.44' / 147.24' S= 0.0091 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=0.49 cfs @ 12.10 hrs HW=147.77' (Free Discharge)
1=Culvert (Barrel Controls 0.49 cfs @ 2.53 fps)

Summary for Pond ECB6: ECB-6

Inflow Area = 0.350 ac, 80.00% Impervious, Inflow Depth > 2.21" for 2 yr event
Inflow = 0.86 cfs @ 12.09 hrs, Volume= 0.064 af
Outflow = 0.86 cfs @ 12.09 hrs, Volume= 0.064 af, Atten= 0%, Lag= 0.0 min
Primary = 0.86 cfs @ 12.09 hrs, Volume= 0.064 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 150.41' @ 12.09 hrs
Flood Elev= 151.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.99'	**12.0" Round Culvert** L= 33.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 149.99' / 147.20' S= 0.0845 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.86 cfs @ 12.09 hrs HW=150.41' (Free Discharge)
1=Culvert (Inlet Controls 0.86 cfs @ 2.75 fps)

Summary for Pond ECB7: ECB-7

Inflow Area = 0.130 ac,100.00% Impervious, Inflow Depth > 2.92" for 2 yr event
Inflow = 0.40 cfs @ 12.08 hrs, Volume= 0.032 af
Outflow = 0.40 cfs @ 12.08 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min
Primary = 0.40 cfs @ 12.08 hrs, Volume= 0.032 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 150.59' @ 12.08 hrs
Flood Elev= 151.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	150.26'	**12.0" Round Culvert** L= 23.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 150.26' / 150.04' S= 0.0096 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.40 cfs @ 12.08 hrs HW=150.59' (Free Discharge)
1=Culvert (Barrel Controls 0.40 cfs @ 2.67 fps)

Summary for Pond ECB8: ECB-8

Inflow Area = 7.740 ac, 29.01% Impervious, Inflow Depth > 1.15" for 2 yr event
Inflow = 8.80 cfs @ 12.12 hrs, Volume= 0.743 af
Outflow = 8.80 cfs @ 12.12 hrs, Volume= 0.743 af, Atten= 0%, Lag= 0.0 min
Primary = 8.80 cfs @ 12.12 hrs, Volume= 0.743 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 150.09' @ 12.12 hrs
Flood Elev= 152.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.99'	**18.0" Round Culvert** L= 102.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 147.99' / 147.41' S= 0.0057 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=8.79 cfs @ 12.12 hrs HW=150.09' (Free Discharge)
1=Culvert (Barrel Controls 8.79 cfs @ 4.98 fps)

Summary for Pond ECB9: ECB-9

Inflow Area = 1.350 ac, 51.11% Impervious, Inflow Depth > 1.71" for 2 yr event
Inflow = 2.59 cfs @ 12.11 hrs, Volume= 0.193 af
Outflow = 2.59 cfs @ 12.11 hrs, Volume= 0.193 af, Atten= 0%, Lag= 0.0 min
Primary = 2.59 cfs @ 12.11 hrs, Volume= 0.193 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.17' @ 12.11 hrs
Flood Elev= 151.03'

Device	Routing	Invert	Outlet Devices
#1	Primary	148.13'	**15.0" Round Culvert** L= 18.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 148.13' / 148.09' S= 0.0022 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=2.58 cfs @ 12.11 hrs HW=149.17' (Free Discharge)
1=Culvert (Barrel Controls 2.58 cfs @ 3.22 fps)

Summary for Pond EDMH1: EDMH-1

Inflow Area = 14.811 ac, 40.91% Impervious, Inflow Depth > 1.42" for 2 yr event
Inflow = 19.74 cfs @ 12.12 hrs, Volume= 1.755 af
Outflow = 19.74 cfs @ 12.12 hrs, Volume= 1.755 af, Atten= 0%, Lag= 0.0 min
Primary = 19.74 cfs @ 12.12 hrs, Volume= 1.755 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.16' @ 12.12 hrs
Flood Elev= 152.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.20'	**48.0" Round Culvert** L= 213.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.20' / 145.68' S= 0.0024 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf

Primary OutFlow Max=19.73 cfs @ 12.12 hrs HW=148.16' (Free Discharge)
1=Culvert (Barrel Controls 19.73 cfs @ 4.72 fps)

Summary for Pond EDMH2: EDMH-2

Inflow Area = 12.271 ac, 35.03% Impervious, Inflow Depth > 1.29" for 2 yr event
Inflow = 14.15 cfs @ 12.13 hrs, Volume= 1.315 af
Outflow = 14.15 cfs @ 12.13 hrs, Volume= 1.315 af, Atten= 0%, Lag= 0.0 min
Primary = 14.15 cfs @ 12.13 hrs, Volume= 1.315 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.04' @ 12.13 hrs
Flood Elev= 151.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.34'	**48.0" Round Culvert** L= 85.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.34' / 146.20' S= 0.0016 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=14.14 cfs @ 12.13 hrs HW=148.04' (Free Discharge)
1=Culvert (Barrel Controls 14.14 cfs @ 4.11 fps)

Summary for Pond EDMH3: EDMH-3

Inflow Area = 8.090 ac, 31.21% Impervious, Inflow Depth > 1.20" for 2 yr event
Inflow = 9.59 cfs @ 12.12 hrs, Volume= 0.807 af
Outflow = 9.59 cfs @ 12.12 hrs, Volume= 0.807 af, Atten= 0%, Lag= 0.0 min
Primary = 9.59 cfs @ 12.12 hrs, Volume= 0.807 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 147.98' @ 12.12 hrs
Flood Elev= 152.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.48'	**48.0" Round Culvert** L= 177.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.48' / 146.34' S= 0.0008 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=9.59 cfs @ 12.12 hrs HW=147.98' (Free Discharge)
1=Culvert (Barrel Controls 9.59 cfs @ 3.30 fps)

Summary for Pond EDMH4: EDMH-4

Inflow Area = 8.090 ac, 31.21% Impervious, Inflow Depth > 1.20" for 2 yr event
Inflow = 9.59 cfs @ 12.12 hrs, Volume= 0.807 af
Outflow = 9.59 cfs @ 12.12 hrs, Volume= 0.807 af, Atten= 0%, Lag= 0.0 min
Primary = 9.59 cfs @ 12.12 hrs, Volume= 0.807 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.06' @ 12.12 hrs
Flood Elev= 152.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.72'	**48.0" Round Culvert** L= 95.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.72' / 146.48' S= 0.0025 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=9.59 cfs @ 12.12 hrs HW=148.06' (Free Discharge)
1=Culvert (Barrel Controls 9.59 cfs @ 3.88 fps)

Summary for Pond EDMH5: EDMH-5 (Vault MH)

Inflow Area = 8.090 ac, 31.21% Impervious, Inflow Depth > 1.20" for 2 yr event
Inflow = 9.59 cfs @ 12.12 hrs, Volume= 0.807 af
Outflow = 9.59 cfs @ 12.12 hrs, Volume= 0.807 af, Atten= 0%, Lag= 0.0 min
Primary = 9.59 cfs @ 12.12 hrs, Volume= 0.807 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.45' @ 12.12 hrs
Flood Elev= 152.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.20'	**48.0" Round Culvert** L= 150.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 147.20' / 146.72' S= 0.0032 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=9.58 cfs @ 12.12 hrs HW=148.45' (Free Discharge)
1=Culvert (Barrel Controls 9.58 cfs @ 4.26 fps)

Summary for Pond EDMH6: EDMH-6

Inflow Area = 2.090 ac, 90.91% Impervious, Inflow Depth > 2.65" for 2 yr event
Inflow = 5.93 cfs @ 12.08 hrs, Volume= 0.461 af
Outflow = 5.93 cfs @ 12.08 hrs, Volume= 0.461 af, Atten= 0%, Lag= 0.0 min
Primary = 5.93 cfs @ 12.08 hrs, Volume= 0.461 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 147.50' @ 12.08 hrs
Flood Elev= 152.52'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.22'	**18.0" Round Culvert** L= 6.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.22' / 145.93' S= 0.0483 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=5.92 cfs @ 12.08 hrs HW=147.50' (Free Discharge)
1=Culvert (Barrel Controls 5.92 cfs @ 4.97 fps)

Summary for Pond EDMH7: EDMH-7

Inflow Area = 2.090 ac, 90.91% Impervious, Inflow Depth > 2.65" for 2 yr event
Inflow = 5.93 cfs @ 12.08 hrs, Volume= 0.461 af
Outflow = 5.93 cfs @ 12.08 hrs, Volume= 0.461 af, Atten= 0%, Lag= 0.0 min
Primary = 5.93 cfs @ 12.08 hrs, Volume= 0.461 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 150.07' @ 12.08 hrs
Flood Elev= 159.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.00'	**18.0" Round Culvert** L= 188.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 149.00' / 146.22' S= 0.0148 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=5.92 cfs @ 12.08 hrs HW=150.07' (Free Discharge)
1=Culvert (Inlet Controls 5.92 cfs @ 4.40 fps)

Summary for Pond NDC: North Drainage Channel

Inflow Area = 21.664 ac, 37.02% Impervious, Inflow Depth > 1.33" for 2 yr event
Inflow = 25.81 cfs @ 12.11 hrs, Volume= 2.404 af
Primary = 25.81 cfs @ 12.11 hrs, Volume= 2.404 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Pond ST-1: Ex Infilt

Inflow Area = 0.283 ac,100.00% Impervious, Inflow Depth > 2.92" for 2 yr event
Inflow = 0.87 cfs @ 12.08 hrs, Volume= 0.069 af
Outflow = 0.03 cfs @ 15.31 hrs, Volume= 0.030 af, Atten= 96%, Lag= 193.9 min
Primary = 0.03 cfs @ 15.31 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 152.13' @ 15.31 hrs Surf.Area= 1,471 sf Storage= 2,140 cf
Flood Elev= 153.67' Surf.Area= 1,471 sf Storage= 3,344 cf

Plug-Flow detention time= 436.7 min calculated for 0.030 af (44% of inflow)
Center-of-Mass det. time= 300.4 min (1,056.6 - 756.2)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	1,857 cf	**4.75'W x 7.20'L x 4.50'H Prismatoid** x 43 6,618 cf Overall - 1,975 cf Embedded = 4,642 cf x 40.0% Voids
#2	150.67'	1,975 cf	**ADS_StormTech SC-740** x 43 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		3,832 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	150.47'	**12.0" Round Culvert** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 150.47' / 150.02' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	150.67'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	152.22'	**3.0" Vert. Orifice/Grate X 2.00** C= 0.600
#4	Device 1	153.53'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.03 cfs @ 15.31 hrs HW=152.13' (Free Discharge)
└**1=Culvert** (Passes 0.03 cfs of 3.36 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 5.73 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond ST-2: Ex Infilt

Inflow Area = 0.498 ac, 94.58% Impervious, Inflow Depth > 2.70" for 2 yr event
Inflow = 1.46 cfs @ 12.08 hrs, Volume= 0.112 af
Outflow = 0.03 cfs @ 17.27 hrs, Volume= 0.034 af, Atten= 98%, Lag= 310.9 min
Primary = 0.03 cfs @ 17.27 hrs, Volume= 0.034 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 150.67' Surf.Area= 3,078 sf Storage= 825 cf
Peak Elev= 152.13' @ 17.27 hrs Surf.Area= 3,078 sf Storage= 4,497 cf (3,672 cf above start)
Flood Elev= 153.67' Surf.Area= 3,078 sf Storage= 7,027 cf (6,202 cf above start)

Plug-Flow detention time= 758.6 min calculated for 0.015 af (13% of inflow)
Center-of-Mass det. time= 258.4 min (1,029.9 - 771.5)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	43 cf	**4.75'W x 7.20'L x 4.50'H Prismatoid** 154 cf Overall - 46 cf Embedded = 107 cf x 40.0% Voids
#2	150.67'	46 cf	**ADS_StormTech SC-740 @ 7.20' L** Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.20'L = 46.5 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		89 cf	x 90.00 = 8,049 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	150.67'	**12.0" Round Culvert** L= 23.6' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 150.67' / 150.48' S= 0.0081 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	150.67'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	153.60'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	152.20'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.03 cfs @ 17.27 hrs HW=152.13' (Free Discharge)
└**1=Culvert** (Passes 0.03 cfs of 3.47 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 5.73 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond WET: Existing Onsite Wetlands

Inflow Area = 3.911 ac, 43.83% Impervious, Inflow Depth > 1.45" for 2 yr event
Inflow = 4.63 cfs @ 12.18 hrs, Volume= 0.472 af
Outflow = 4.62 cfs @ 12.19 hrs, Volume= 0.472 af, Atten= 0%, Lag= 0.4 min
Primary = 4.62 cfs @ 12.19 hrs, Volume= 0.472 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.46' @ 12.19 hrs Surf.Area= 201 sf Storage= 18 cf
Flood Elev= 150.00' Surf.Area= 46,149 sf Storage= 19,550 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (866.2 - 866.2)

Volume	Invert	Avail.Storage	Storage Description
#1	148.20'	19,550 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
148.20	0	0.0	0	0	0
149.00	1,834	347.0	489	489	9,583
150.00	46,149	1,378.0	19,061	19,550	151,112

Device	Routing	Invert	Outlet Devices
#1	Primary	147.47'	**24.0" Round Culvert** L= 72.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 147.47' / 146.94' S= 0.0074 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 3.14 sf

Primary OutFlow Max=4.62 cfs @ 12.19 hrs HW=148.46' (Free Discharge)
└**1=Culvert** (Barrel Controls 4.62 cfs @ 4.32 fps)

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Building Roof Runoff Area=1.510 ac 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=7.09 cfs 0.574 af

Subcatchment 2S: Ex Wshed Runoff Area=0.030 ac 33.33% Impervious Runoff Depth>3.28"
Tc=6.0 min CN=86 Runoff=0.11 cfs 0.008 af

Subcatchment 3S: Ex Wshed Runoff Area=0.550 ac 69.09% Impervious Runoff Depth>3.48"
Flow Length=175' Tc=6.0 min CN=88 Runoff=2.20 cfs 0.159 af

Subcatchment 4S: Ex Wshed Runoff Area=1.580 ac 68.35% Impervious Runoff Depth>3.78"
Flow Length=275' Tc=8.2 min CN=91 Runoff=6.26 cfs 0.498 af

Subcatchment 5S: Ex Wshed Runoff Area=0.270 ac 22.22% Impervious Runoff Depth>2.99"
Flow Length=245' Tc=6.5 min CN=83 Runoff=0.93 cfs 0.067 af

Subcatchment 6S: Ex Wshed Runoff Area=0.960 ac 70.83% Impervious Runoff Depth>3.38"
Tc=6.0 min CN=87 Runoff=3.74 cfs 0.270 af

Subcatchment 7S: Wetlands Runoff Area=3.130 ac 30.67% Impervious Runoff Depth>2.99"
Flow Length=215' Tc=13.0 min CN=83 Runoff=8.76 cfs 0.779 af

Subcatchment 8S: Ex Wshed Runoff Area=1.350 ac 51.11% Impervious Runoff Depth>3.18"
Flow Length=125' Tc=7.4 min CN=85 Runoff=4.76 cfs 0.358 af

Subcatchment 9S: Off Site Runoff Area=3.990 ac 13.78% Impervious Runoff Depth>2.12"
Flow Length=115' Tc=11.0 min CN=73 Runoff=8.32 cfs 0.705 af

Subcatchment 10S: Ex Wshed Runoff Area=0.080 ac 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=0.38 cfs 0.030 af

Subcatchment 11S: Fallon Rd Runoff Area=0.220 ac 68.18% Impervious Runoff Depth>3.28"
Tc=6.0 min CN=86 Runoff=0.84 cfs 0.060 af

Subcatchment 12S: Fallon Rd Runoff Area=0.130 ac 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=0.61 cfs 0.049 af

Subcatchment 13S: Ex Wshed Runoff Area=0.070 ac 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=0.33 cfs 0.027 af

Subcatchment 14S: Ex Wshed Runoff Area=4.460 ac 0.00% Impervious Runoff Depth>1.31"
Flow Length=110' Tc=18.2 min CN=62 Runoff=4.35 cfs 0.487 af

Subcatchment 15S: Ex Wshed Runoff Area=0.303 ac 20.46% Impervious Runoff Depth>1.81"
Tc=6.0 min CN=69 Runoff=0.63 cfs 0.046 af

Subcatchment 16S: Offsite Flows Runoff Area=2.250 ac 38.00% Impervious Runoff Depth>2.29"
Tc=6.0 min CN=75 Runoff=6.01 cfs 0.428 af

Subcatchment 17S: North Roof Area Runoff Area=0.283 ac 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=1.33 cfs 0.108 af

Subcatchment 18S: South Roof Area Runoff Area=0.115 ac 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=0.54 cfs 0.044 af

Subcatchment 19S: North Loading Area Runoff Area=0.200 ac 91.50% Impervious Runoff Depth>4.22"
Tc=6.0 min CN=95 Runoff=0.91 cfs 0.070 af

Subcatchment 20S: Parking Area Runoff Area=0.101 ac 90.10% Impervious Runoff Depth>4.11"
Tc=6.0 min CN=94 Runoff=0.45 cfs 0.035 af

Subcatchment 21S: Driveway Runoff Area=0.032 ac 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=0.15 cfs 0.012 af

Subcatchment 22S: North Driveway Runoff Area=0.050 ac 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=0.23 cfs 0.019 af

Reach 2R: Offsite Culverts Avg. Flow Depth=0.73' Max Vel=4.05 fps Inflow=6.01 cfs 0.428 af
15.0" Round Pipe x 2.00 n=0.013 L=95.0' S=0.0053 '/' Capacity=9.37 cfs Outflow=5.99 cfs 0.428 af

Pond CB-1: ECB Peak Elev=151.62' Inflow=0.45 cfs 0.035 af
12.0" Round Culvert n=0.012 L=13.6' S=0.0096 '/' Outflow=0.45 cfs 0.035 af

Pond CB-2: ECB Peak Elev=151.47' Inflow=0.15 cfs 0.012 af
12.0" Round Culvert n=0.012 L=25.9' S=0.0050 '/' Outflow=0.15 cfs 0.012 af

Pond CB-3: ECB Peak Elev=151.99' Inflow=0.23 cfs 0.019 af
12.0" Round Culvert n=0.012 L=36.4' S=0.0099 '/' Outflow=0.23 cfs 0.019 af

Pond CB-4: ECB Peak Elev=152.24' Inflow=0.91 cfs 0.070 af
12.0" Round Culvert n=0.012 L=17.9' S=0.0201 '/' Outflow=0.91 cfs 0.070 af

Pond DMH-1: EDMH Peak Elev=151.93' Inflow=1.75 cfs 0.136 af
12.0" Round Culvert n=0.012 L=3.5' S=0.0057 '/' Outflow=1.75 cfs 0.136 af

Pond DMH-2: EDMH Peak Elev=151.95' Inflow=1.15 cfs 0.089 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0050 '/' Outflow=1.15 cfs 0.089 af

Pond DMH-4: EDMH Peak Elev=150.46' Inflow=0.54 cfs 0.155 af
12.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/' Outflow=0.54 cfs 0.155 af

Pond ECB1: ECB-1 Peak Elev=151.80' Inflow=2.31 cfs 0.168 af
12.0" Round Culvert n=0.013 L=190.0' S=0.0105 '/' Outflow=2.31 cfs 0.168 af

Pond ECB10: ECB-10 Peak Elev=154.61' Inflow=14.01 cfs 1.160 af
15.0" Round Culvert n=0.013 L=22.0' S=0.0123 '/' Outflow=14.01 cfs 1.160 af

Pond ECB11: ECB-11 Peak Elev=152.62' Inflow=13.73 cfs 1.133 af
15.0" Round Culvert n=0.013 L=15.0' S=0.0000 '/' Outflow=13.73 cfs 1.133 af

Pond ECB2: ECB-2 Peak Elev=153.16' Inflow=0.11 cfs 0.008 af
12.0" Round Culvert n=0.013 L=190.0' S=0.0105 '/' Outflow=0.11 cfs 0.008 af

Pond ECB3: ECB-3 Peak Elev=149.61' Inflow=9.88 cfs 0.768 af
18.0" Round Culvert n=0.013 L=60.0' S=0.0000 '/' Outflow=9.88 cfs 0.768 af

Pond ECB4: ECB-4 Peak Elev=148.26' Inflow=3.74 cfs 0.270 af
15.0" Round Culvert n=0.013 L=17.0' S=0.0000 '/' Outflow=3.74 cfs 0.270 af

Pond ECB5: ECB-5 Peak Elev=147.91' Inflow=0.93 cfs 0.067 af
18.0" Round Culvert n=0.013 L=22.0' S=0.0091 '/' Outflow=0.93 cfs 0.067 af

Pond ECB6: ECB-6 Peak Elev=150.55' Inflow=1.45 cfs 0.109 af
12.0" Round Culvert n=0.013 L=33.0' S=0.0845 '/' Outflow=1.45 cfs 0.109 af

Pond ECB7: ECB-7 Peak Elev=150.67' Inflow=0.61 cfs 0.049 af
12.0" Round Culvert n=0.013 L=23.0' S=0.0096 '/' Outflow=0.61 cfs 0.049 af

Pond ECB8: ECB-8 Peak Elev=154.42' Inflow=19.01 cfs 1.548 af
18.0" Round Culvert n=0.013 L=102.0' S=0.0057 '/' Outflow=19.01 cfs 1.548 af

Pond ECB9: ECB-9 Peak Elev=149.74' Inflow=4.76 cfs 0.358 af
15.0" Round Culvert n=0.013 L=18.0' S=0.0022 '/' Outflow=4.76 cfs 0.358 af

Pond EDMH1: EDMH-1 Peak Elev=149.03' Inflow=38.01 cfs 3.427 af
48.0" Round Culvert n=0.013 L=213.0' S=0.0024 '/' Outflow=38.01 cfs 3.427 af

Pond EDMH2: EDMH-2 Peak Elev=148.81' Inflow=28.41 cfs 2.659 af
48.0" Round Culvert n=0.013 L=85.0' S=0.0016 '/' Outflow=28.41 cfs 2.659 af

Pond EDMH3: EDMH-3 Peak Elev=148.67' Inflow=20.35 cfs 1.657 af
48.0" Round Culvert n=0.013 L=177.0' S=0.0008 '/' Outflow=20.35 cfs 1.657 af

Pond EDMH4: EDMH-4 Peak Elev=148.72' Inflow=20.35 cfs 1.657 af
48.0" Round Culvert n=0.013 L=95.0' S=0.0025 '/' Outflow=20.35 cfs 1.657 af

Pond EDMH5: EDMH-5 (Vault MH) Peak Elev=149.06' Inflow=20.35 cfs 1.657 af
48.0" Round Culvert n=0.013 L=150.0' S=0.0032 '/' Outflow=20.35 cfs 1.657 af

Pond EDMH6: EDMH-6 Peak Elev=148.19' Inflow=9.40 cfs 0.741 af
18.0" Round Culvert n=0.013 L=6.0' S=0.0483 '/' Outflow=9.40 cfs 0.741 af

Pond EDMH7: EDMH-7 Peak Elev=150.53' Inflow=9.40 cfs 0.741 af
18.0" Round Culvert n=0.013 L=188.0' S=0.0148 '/' Outflow=9.40 cfs 0.741 af

Pond NDC: North Drainage Channel Inflow=49.84 cfs 4.701 af
Primary=49.84 cfs 4.701 af

Pond ST-1: Ex Infilt Peak Elev=152.65' Storage=2,668 cf Inflow=1.33 cfs 0.108 af
Outflow=0.30 cfs 0.063 af

Pond ST-2: Ex Infilt Peak Elev=152.63' Storage=5,561 cf Inflow=2.29 cfs 0.180 af
Outflow=0.25 cfs 0.092 af

Pond WET: Existing Onsite Wetlands Peak Elev=148.92' Storage=352 cf Inflow=8.92 cfs 0.934 af
24.0" Round Culvert n=0.013 L=72.0' S=0.0074 '/' Outflow=8.63 cfs 0.934 af

Total Runoff Area = 21.664 ac Runoff Volume = 4.833 af Average Runoff Depth = 2.68"
62.98% Pervious = 13.643 ac 37.02% Impervious = 8.021 ac

Summary for Subcatchment 1S: Building Roof

Runoff = 7.09 cfs @ 12.08 hrs, Volume= 0.574 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (ac)	CN	Description
1.370	98	Roofs, HSG B
0.140	98	Roofs, HSG D
1.510	98	Weighted Average
1.510		100.00% Impervious Area

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

Summary for Subcatchment 2S: Ex Wshed

Runoff = 0.11 cfs @ 12.09 hrs, Volume= 0.008 af, Depth> 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
	0.020	80	>75% Grass cover, Good, HSG D
*	0.010	98	Paved parking & ledge, HSG D
	0.030	86	Weighted Average
	0.020		66.67% Pervious Area
	0.010		33.33% Impervious Area

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

Summary for Subcatchment 3S: Ex Wshed

Runoff = 2.20 cfs @ 12.09 hrs, Volume= 0.159 af, Depth> 3.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
	0.120	61	>75% Grass cover, Good, HSG B
*	0.230	98	Paved parking & ledge, HSG B
	0.050	80	>75% Grass cover, Good, HSG D
*	0.150	98	Paved parking & ledge, HSG D
	0.550	88	Weighted Average
	0.170		30.91% Pervious Area
	0.380		69.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0800	0.26		**Sheet Flow, Initial Overland Flow** Grass: Short n= 0.150 P2= 3.15"
0.5	125	0.0710	4.29		**Shallow Concentrated Flow, Overland Flow** Unpaved Kv= 16.1 fps
2.2					**Direct Entry, Minimum Tc**
6.0	175	Total			

Summary for Subcatchment 4S: Ex Wshed

Runoff = 6.26 cfs @ 12.11 hrs, Volume= 0.498 af, Depth> 3.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
	0.050	61	>75% Grass cover, Good, HSG B
	0.020	58	Woods/grass comb., Good, HSG B
*	0.300	98	Paved parking & ledge, HSG B
*	0.200	80	>75% Grass cover, Good, HSG D (9)
*	0.210	79	Woods/grass comb., Good, HSG D (9)
*	0.760	98	Paved parking &l ledge, HSG D (9)
*	0.020	79	Woods/grass comb., Good, HSG D (40)
*	0.020	98	Paved parking & ledge, HSG D (40)
	1.580	91	Weighted Average
	0.500		31.65% Pervious Area
	1.080		68.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0760	0.11		**Sheet Flow, Initial Overland Flow (0-50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.3	105	0.1780	6.79		**Shallow Concentrated Flow, Overland Flow (50-155')** Unpaved Kv= 16.1 fps
0.6	120	0.0260	3.27		**Shallow Concentrated Flow, Overland Flow (155-275')** Paved Kv= 20.3 fps
8.2	275	Total			

Summary for Subcatchment 5S: Ex Wshed

Runoff = 0.93 cfs @ 12.09 hrs, Volume= 0.067 af, Depth> 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	0.160	79	Woods/grass comb., Good, HSG D (9)
*	0.020	98	Paved parking & ledge, HSG D (9)
*	0.050	79	Woods/grass comb., Good, HSG D (40)
*	0.040	98	Paved parking & ledge, HSG D (40)
	0.270	83	Weighted Average
	0.210		77.78% Pervious Area
	0.060		22.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.1340	0.14		**Sheet Flow, Initial Overland Flow (0-50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.7	195	0.0890	4.80		**Shallow Concentrated Flow, Overland Flow** Unpaved Kv= 16.1 fps
6.5	245	Total			

Summary for Subcatchment 6S: Ex Wshed

Runoff = 3.74 cfs @ 12.09 hrs, Volume= 0.270 af, Depth> 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (ac)	CN	Description
0.130	61	>75% Grass cover, Good, HSG B
0.140	58	Woods/grass comb., Good, HSG B
0.630	98	Paved parking, HSG B
0.010	79	Woods/grass comb., Good, HSG D
0.050	98	Paved parking, HSG D
0.960	87	Weighted Average
0.280		29.17% Pervious Area
0.680		70.83% Impervious Area

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

Summary for Subcatchment 7S: Wetlands

Runoff = 8.76 cfs @ 12.18 hrs, Volume= 0.779 af, Depth> 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	0.300	58	Woods/grass comb., Good, HSG B (259)
*	0.620	79	Woods/grass comb., Good, HSG D (9)
*	0.060	98	Paved parking & ledge, HSG D (9)
*	1.250	79	Woods/grass comb., Good, HSG D (40)
*	0.080	98	Paved parking & ledge, HSG D (40)
*	0.820	98	Wetlands, HSG D
	3.130	83	Weighted Average
	2.170		69.33% Pervious Area
	0.960		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	50	0.0260	0.07		**Sheet Flow, Initial Overland Flow (0-50')** Woods: Light underbrush n= 0.400 P2= 3.15"
1.8	165	0.0090	1.53		**Shallow Concentrated Flow, Overland Flow (50-215')** Unpaved Kv= 16.1 fps
13.0	215	Total			

Summary for Subcatchment 8S: Ex Wshed

Runoff = 4.76 cfs @ 12.11 hrs, Volume= 0.358 af, Depth> 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
	0.220	58	Woods/grass comb., Good, HSG B
*	0.060	98	Paved parking & wetlands, HSG B
	0.310	79	Woods/grass comb., Good, HSG D
*	0.630	98	Paved parking, wetlands & ledge, HSG D
	0.020	61	>75% Grass cover, Good, HSG B
	0.060	80	>75% Grass cover, Good, HSG D
	0.050	73	Brush, Good, HSG D
	1.350	85	Weighted Average
	0.660		48.89% Pervious Area
	0.690		51.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0756	0.11		**Sheet Flow, Initial Overland Flow (0 - 50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.1	75	0.3280	9.22		**Shallow Concentrated Flow, Overland Flow (50 - 125')** Unpaved Kv= 16.1 fps
7.4	125	Total			

Summary for Subcatchment 9S: Off Site

Runoff = 8.32 cfs @ 12.16 hrs, Volume= 0.705 af, Depth> 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
	1.060	58	Woods/grass comb., Good, HSG B
*	0.370	98	Paved parking & wetlands, HSG B
*	1.700	79	Woods/grass comb., Good, HSG D (9)
*	0.060	80	>75% Grass cover, Good, HSG D (9)
*	0.070	61	>75% Grass cover, Good, HSG B (259)
*	0.150	98	Paved parking & roofs
*	0.200	58	Woods/grass comb., Good, HSG B (259)
*	0.030	98	Paved parking & roofs
*	0.350	61	>75% Grass cover, Good, HSG B (265)
	3.990	73	Weighted Average
	3.440		86.22% Pervious Area
	0.550		13.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	50	0.0310	0.08		**Sheet Flow, Initial Overland Flow (0 - 50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.6	65	0.0110	1.69		**Shallow Concentrated Flow, Overland Flow (50-115')** Unpaved Kv= 16.1 fps
11.0	115	Total			

Summary for Subcatchment 10S: Ex Wshed

Runoff = 0.38 cfs @ 12.08 hrs, Volume= 0.030 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (ac)	CN	Description
0.080	98	Paved parking, HSG B
0.080		100.00% Impervious Area

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

Summary for Subcatchment 11S: Fallon Rd

Runoff = 0.84 cfs @ 12.09 hrs, Volume= 0.060 af, Depth> 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (ac)	CN	Description
0.020	61	>75% Grass cover, Good, HSG B
0.150	98	Paved parking, HSG B
0.050	58	Woods/grass comb., Good, HSG B
0.220	86	Weighted Average
0.070		31.82% Pervious Area
0.150		68.18% Impervious Area

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

Summary for Subcatchment 12S: Fallon Rd

Runoff = 0.61 cfs @ 12.08 hrs, Volume= 0.049 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (ac)	CN	Description
0.130	98	Paved parking, HSG B
0.130		100.00% Impervious Area

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

Summary for Subcatchment 13S: Ex Wshed

Runoff = 0.33 cfs @ 12.08 hrs, Volume= 0.027 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG B
0.070		100.00% Impervious Area

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

Summary for Subcatchment 14S: Ex Wshed

Runoff = 4.35 cfs @ 12.28 hrs, Volume= 0.487 af, Depth> 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	4.460	62	
	4.460		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.9	50	0.0080	0.05		**Sheet Flow, Initial Overland Flow (0 - 50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.3	60	0.0317	2.87		**Shallow Concentrated Flow, Overland Flow (50 - 110')** Unpaved Kv= 16.1 fps
18.2	110	Total			

Summary for Subcatchment 15S: Ex Wshed

Runoff = 0.63 cfs @ 12.09 hrs, Volume= 0.046 af, Depth> 1.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	0.062	98	Paved parking & roofs
	0.241	61	>75% Grass cover, Good, HSG B
	0.303	69	Weighted Average
	0.241		79.54% Pervious Area
	0.062		20.46% Impervious Area

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

Summary for Subcatchment 16S: Offsite Flows

Runoff = 6.01 cfs @ 12.09 hrs, Volume= 0.428 af, Depth> 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (ac)	CN	Description
2.250	75	1/4 acre lots, 38% imp, HSG B
1.395		62.00% Pervious Area
0.855		38.00% Impervious Area

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

Summary for Subcatchment 17S: North Roof Area

Runoff = 1.33 cfs @ 12.08 hrs, Volume= 0.108 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	0.283	98	Roofs
	0.283		100.00% Impervious Area

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

Summary for Subcatchment 18S: South Roof Area

Runoff = 0.54 cfs @ 12.08 hrs, Volume= 0.044 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	0.115	98	Roofs
	0.115		100.00% Impervious Area

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

Summary for Subcatchment 19S: North Loading Area

Runoff = 0.91 cfs @ 12.08 hrs, Volume= 0.070 af, Depth> 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	0.183	98	Paved parking
	0.017	61	>75% Grass cover, Good, HSG B
	0.200	95	Weighted Average
	0.017		8.50% Pervious Area
	0.183		91.50% Impervious Area

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

Summary for Subcatchment 20S: Parking Area

Runoff = 0.45 cfs @ 12.08 hrs, Volume= 0.035 af, Depth> 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	0.091	98	Paved parking & roofs
	0.010	61	>75% Grass cover, Good, HSG B
	0.101	94	Weighted Average
	0.010		9.90% Pervious Area
	0.091		90.10% Impervious Area

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

Summary for Subcatchment 21S: Driveway

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	0.032	98	Paved
	0.032		100.00% Impervious Area

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

Summary for Subcatchment 22S: North Driveway

Runoff = 0.23 cfs @ 12.08 hrs, Volume= 0.019 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	0.050	98	Paved driveway
	0.050		100.00% Impervious Area

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

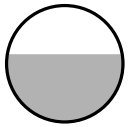
Summary for Reach 2R: Offsite Culverts

Inflow Area = 2.250 ac, 38.00% Impervious, Inflow Depth > 2.29" for 10 yr event
Inflow = 6.01 cfs @ 12.09 hrs, Volume= 0.428 af
Outflow = 5.99 cfs @ 12.10 hrs, Volume= 0.428 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.05 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.54 fps, Avg. Travel Time= 1.0 min

Peak Storage= 141 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.73'
Bank-Full Depth= 1.25' Flow Area= 2.5 sf, Capacity= 9.37 cfs

A factor of 2.00 has been applied to the storage and discharge capacity
15.0" Round Pipe
n= 0.013 Concrete pipe, straight & clean
Length= 95.0' Slope= 0.0053 '/'
Inlet Invert= 172.00', Outlet Invert= 171.50'



Summary for Pond CB-1: ECB

Inflow Area = 0.101 ac, 90.10% Impervious, Inflow Depth > 4.11" for 10 yr event
Inflow = 0.45 cfs @ 12.08 hrs, Volume= 0.035 af
Outflow = 0.45 cfs @ 12.08 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min
Primary = 0.45 cfs @ 12.08 hrs, Volume= 0.035 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.62' @ 12.08 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.25'	**12.0" Round Culvert** L= 13.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.25' / 151.12' S= 0.0096 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.45 cfs @ 12.08 hrs HW=151.62' (Free Discharge)
1=Culvert (Barrel Controls 0.45 cfs @ 2.57 fps)

Summary for Pond CB-2: ECB

Inflow Area = 0.032 ac,100.00% Impervious, Inflow Depth > 4.56" for 10 yr event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min
Primary = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.47' @ 12.08 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.25'	**12.0" Round Culvert** L= 25.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.25' / 151.12' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.15 cfs @ 12.08 hrs HW=151.47' (Free Discharge)
1=Culvert (Barrel Controls 0.15 cfs @ 1.77 fps)

Summary for Pond CB-3: ECB

Inflow Area = 0.050 ac,100.00% Impervious, Inflow Depth > 4.56" for 10 yr 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= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 151.99' @ 12.08 hrs
Flood Elev= 154.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.75'	**12.0" Round Culvert** L= 36.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.75' / 151.39' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.23 cfs @ 12.08 hrs HW=151.99' (Free Discharge)
1=Culvert (Barrel Controls 0.23 cfs @ 2.46 fps)

Summary for Pond CB-4: ECB

Inflow Area = 0.200 ac, 91.50% Impervious, Inflow Depth > 4.22" for 10 yr event
Inflow = 0.91 cfs @ 12.08 hrs, Volume= 0.070 af
Outflow = 0.91 cfs @ 12.08 hrs, Volume= 0.070 af, Atten= 0%, Lag= 0.0 min
Primary = 0.91 cfs @ 12.08 hrs, Volume= 0.070 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 152.24' @ 12.08 hrs
Flood Elev= 154.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.75'	**12.0" Round Culvert** L= 17.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.75' / 151.39' S= 0.0201 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.91 cfs @ 12.08 hrs HW=152.24' (Free Discharge)
1=Culvert (Inlet Controls 0.91 cfs @ 2.38 fps)

Summary for Pond DMH-1: EDMH

Inflow Area = 0.383 ac, 92.95% Impervious, Inflow Depth > 4.26" for 10 yr event
Inflow = 1.75 cfs @ 12.08 hrs, Volume= 0.136 af
Outflow = 1.75 cfs @ 12.08 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min
Primary = 1.75 cfs @ 12.08 hrs, Volume= 0.136 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.93' @ 12.08 hrs
Flood Elev= 154.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.04'	**12.0" Round Culvert** L= 3.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.04' / 151.02' S= 0.0057 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.75 cfs @ 12.08 hrs HW=151.93' (Free Discharge)
1=Culvert (Barrel Controls 1.75 cfs @ 3.14 fps)

Summary for Pond DMH-2: EDMH

Inflow Area = 0.250 ac, 93.20% Impervious, Inflow Depth > 4.29" for 10 yr event
Inflow = 1.15 cfs @ 12.08 hrs, Volume= 0.089 af
Outflow = 1.15 cfs @ 12.08 hrs, Volume= 0.089 af, Atten= 0%, Lag= 0.0 min
Primary = 1.15 cfs @ 12.08 hrs, Volume= 0.089 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.95' @ 12.08 hrs
Flood Elev= 154.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.29'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.29' / 151.14' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.14 cfs @ 12.08 hrs HW=151.95' (Free Discharge)
1=Culvert (Barrel Controls 1.14 cfs @ 2.96 fps)

Summary for Pond DMH-4: EDMH

Inflow Area = 0.781 ac, 96.54% Impervious, Inflow Depth > 2.38" for 10 yr event
Inflow = 0.54 cfs @ 12.54 hrs, Volume= 0.155 af
Outflow = 0.54 cfs @ 12.54 hrs, Volume= 0.155 af, Atten= 0%, Lag= 0.0 min
Primary = 0.54 cfs @ 12.54 hrs, Volume= 0.155 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 150.46' @ 12.54 hrs
Flood Elev= 156.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	150.02'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 150.02' / 149.92' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.54 cfs @ 12.54 hrs HW=150.46' (Free Discharge)
1=Culvert (Barrel Controls 0.54 cfs @ 2.41 fps)

Summary for Pond ECB1: ECB-1

Inflow Area = 0.580 ac, 67.24% Impervious, Inflow Depth > 3.47" for 10 yr event
Inflow = 2.31 cfs @ 12.09 hrs, Volume= 0.168 af
Outflow = 2.31 cfs @ 12.09 hrs, Volume= 0.168 af, Atten= 0%, Lag= 0.0 min
Primary = 2.31 cfs @ 12.09 hrs, Volume= 0.168 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.80' @ 12.09 hrs
Flood Elev= 157.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.00'	**12.0" Round Culvert** L= 190.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 151.00' / 149.00' S= 0.0105 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=2.31 cfs @ 12.09 hrs HW=151.80' (Free Discharge)
1=Culvert (Barrel Controls 2.31 cfs @ 4.71 fps)

Summary for Pond ECB10: ECB-10

Inflow Area = 6.310 ac, 23.38% Impervious, Inflow Depth > 2.21" for 10 yr event
Inflow = 14.01 cfs @ 12.13 hrs, Volume= 1.160 af
Outflow = 14.01 cfs @ 12.13 hrs, Volume= 1.160 af, Atten= 0%, Lag= 0.0 min
Primary = 14.01 cfs @ 12.13 hrs, Volume= 1.160 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 154.61' @ 12.13 hrs
Flood Elev= 152.06'

Device	Routing	Invert	Outlet Devices
#1	Primary	148.36'	**15.0" Round Culvert** L= 22.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 148.36' / 148.09' S= 0.0123 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=14.00 cfs @ 12.13 hrs HW=154.60' (Free Discharge)
1=Culvert (Inlet Controls 14.00 cfs @ 11.41 fps)

Summary for Pond ECB11: ECB-11

Inflow Area = 6.240 ac, 22.52% Impervious, Inflow Depth > 2.18" for 10 yr event
Inflow = 13.73 cfs @ 12.13 hrs, Volume= 1.133 af
Outflow = 13.73 cfs @ 12.13 hrs, Volume= 1.133 af, Atten= 0%, Lag= 0.0 min
Primary = 13.73 cfs @ 12.13 hrs, Volume= 1.133 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 152.62' @ 12.13 hrs
Flood Elev= 151.03'

Device	Routing	Invert	Outlet Devices
#1	Primary	148.36'	**15.0" Round Culvert** L= 15.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 148.36' / 148.36' S= 0.0000 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=13.72 cfs @ 12.13 hrs HW=152.62' (Free Discharge)
└**1=Culvert** (Barrel Controls 13.72 cfs @ 11.18 fps)

Summary for Pond ECB2: ECB-2

Inflow Area = 0.030 ac, 33.33% Impervious, Inflow Depth > 3.28" for 10 yr event
Inflow = 0.11 cfs @ 12.09 hrs, Volume= 0.008 af
Outflow = 0.11 cfs @ 12.09 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min
Primary = 0.11 cfs @ 12.09 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 153.16' @ 12.09 hrs
Flood Elev= 159.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	153.00'	**12.0" Round Culvert** L= 190.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 153.00' / 151.00' S= 0.0105 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.11 cfs @ 12.09 hrs HW=153.16' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.11 cfs @ 2.07 fps)

Summary for Pond ECB3: ECB-3

Inflow Area = 2.540 ac, 69.29% Impervious, Inflow Depth > 3.63" for 10 yr event
Inflow = 9.88 cfs @ 12.10 hrs, Volume= 0.768 af
Outflow = 9.88 cfs @ 12.10 hrs, Volume= 0.768 af, Atten= 0%, Lag= 0.0 min
Primary = 9.88 cfs @ 12.10 hrs, Volume= 0.768 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.61' @ 12.10 hrs
Flood Elev= 149.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.85'	**18.0" Round Culvert** L= 60.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.85' / 146.85' S= 0.0000 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=9.87 cfs @ 12.10 hrs HW=149.61' (Free Discharge)
└**1=Culvert** (Barrel Controls 9.87 cfs @ 5.59 fps)

Summary for Pond ECB4: ECB-4

Inflow Area = 0.960 ac, 70.83% Impervious, Inflow Depth > 3.38" for 10 yr event
Inflow = 3.74 cfs @ 12.09 hrs, Volume= 0.270 af
Outflow = 3.74 cfs @ 12.09 hrs, Volume= 0.270 af, Atten= 0%, Lag= 0.0 min
Primary = 3.74 cfs @ 12.09 hrs, Volume= 0.270 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.26' @ 12.09 hrs
Flood Elev= 149.08'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.90'	**15.0" Round Culvert** L= 17.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.90' / 146.90' S= 0.0000 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=3.74 cfs @ 12.09 hrs HW=148.26' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.74 cfs @ 3.48 fps)

Summary for Pond ECB5: ECB-5

Inflow Area = 0.270 ac, 22.22% Impervious, Inflow Depth > 2.99" for 10 yr event
Inflow = 0.93 cfs @ 12.09 hrs, Volume= 0.067 af
Outflow = 0.93 cfs @ 12.09 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.0 min
Primary = 0.93 cfs @ 12.09 hrs, Volume= 0.067 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 147.91' @ 12.09 hrs
Flood Elev= 150.64'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.44'	**18.0" Round Culvert** L= 22.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 147.44' / 147.24' S= 0.0091 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=0.93 cfs @ 12.09 hrs HW=147.91' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.93 cfs @ 2.93 fps)

Summary for Pond ECB6: ECB-6

Inflow Area = 0.350 ac, 80.00% Impervious, Inflow Depth > 3.75" for 10 yr event
Inflow = 1.45 cfs @ 12.09 hrs, Volume= 0.109 af
Outflow = 1.45 cfs @ 12.09 hrs, Volume= 0.109 af, Atten= 0%, Lag= 0.0 min
Primary = 1.45 cfs @ 12.09 hrs, Volume= 0.109 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 150.55' @ 12.09 hrs
Flood Elev= 151.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.99'	**12.0" Round Culvert** L= 33.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 149.99' / 147.20' S= 0.0845 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=1.44 cfs @ 12.09 hrs HW=150.55' (Free Discharge)
1=Culvert (Inlet Controls 1.44 cfs @ 3.19 fps)

Summary for Pond ECB7: ECB-7

Inflow Area = 0.130 ac,100.00% Impervious, Inflow Depth > 4.56" for 10 yr event
Inflow = 0.61 cfs @ 12.08 hrs, Volume= 0.049 af
Outflow = 0.61 cfs @ 12.08 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min
Primary = 0.61 cfs @ 12.08 hrs, Volume= 0.049 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 150.67' @ 12.08 hrs
Flood Elev= 151.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	150.26'	**12.0" Round Culvert** L= 23.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 150.26' / 150.04' S= 0.0096 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.61 cfs @ 12.08 hrs HW=150.67' (Free Discharge)
1=Culvert (Barrel Controls 0.61 cfs @ 2.96 fps)

Summary for Pond ECB8: ECB-8

Inflow Area = 7.740 ac, 29.01% Impervious, Inflow Depth > 2.40" for 10 yr event
Inflow = 19.01 cfs @ 12.12 hrs, Volume= 1.548 af
Outflow = 19.01 cfs @ 12.12 hrs, Volume= 1.548 af, Atten= 0%, Lag= 0.0 min
Primary = 19.01 cfs @ 12.12 hrs, Volume= 1.548 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 154.42' @ 12.12 hrs
Flood Elev= 152.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.99'	**18.0" Round Culvert** L= 102.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 147.99' / 147.41' S= 0.0057 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=19.01 cfs @ 12.12 hrs HW=154.42' (Free Discharge)
1=Culvert (Barrel Controls 19.01 cfs @ 10.76 fps)

Summary for Pond ECB9: ECB-9

Inflow Area = 1.350 ac, 51.11% Impervious, Inflow Depth > 3.18" for 10 yr event
Inflow = 4.76 cfs @ 12.11 hrs, Volume= 0.358 af
Outflow = 4.76 cfs @ 12.11 hrs, Volume= 0.358 af, Atten= 0%, Lag= 0.0 min
Primary = 4.76 cfs @ 12.11 hrs, Volume= 0.358 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.74' @ 12.11 hrs
Flood Elev= 151.03'

Device	Routing	Invert	Outlet Devices
#1	Primary	148.13'	**15.0" Round Culvert** L= 18.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 148.13' / 148.09' S= 0.0022 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=4.76 cfs @ 12.11 hrs HW=149.74' (Free Discharge)
1=Culvert (Barrel Controls 4.76 cfs @ 3.91 fps)

Summary for Pond EDMH1: EDMH-1

Inflow Area = 14.811 ac, 40.91% Impervious, Inflow Depth > 2.78" for 10 yr event
Inflow = 38.01 cfs @ 12.12 hrs, Volume= 3.427 af
Outflow = 38.01 cfs @ 12.12 hrs, Volume= 3.427 af, Atten= 0%, Lag= 0.0 min
Primary = 38.01 cfs @ 12.12 hrs, Volume= 3.427 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.03' @ 12.12 hrs
Flood Elev= 152.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.20'	**48.0" Round Culvert** L= 213.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.20' / 145.68' S= 0.0024 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf

Primary OutFlow Max=38.00 cfs @ 12.12 hrs HW=149.03' (Free Discharge)
1=Culvert (Barrel Controls 38.00 cfs @ 5.62 fps)

Summary for Pond EDMH2: EDMH-2

Inflow Area = 12.271 ac, 35.03% Impervious, Inflow Depth > 2.60" for 10 yr event
Inflow = 28.41 cfs @ 12.13 hrs, Volume= 2.659 af
Outflow = 28.41 cfs @ 12.13 hrs, Volume= 2.659 af, Atten= 0%, Lag= 0.0 min
Primary = 28.41 cfs @ 12.13 hrs, Volume= 2.659 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.81' @ 12.13 hrs
Flood Elev= 151.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.34'	**48.0" Round Culvert** L= 85.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.34' / 146.20' S= 0.0016 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=28.40 cfs @ 12.13 hrs HW=148.81' (Free Discharge)
1=Culvert (Barrel Controls 28.40 cfs @ 5.00 fps)

Summary for Pond EDMH3: EDMH-3

Inflow Area = 8.090 ac, 31.21% Impervious, Inflow Depth > 2.46" for 10 yr event
Inflow = 20.35 cfs @ 12.12 hrs, Volume= 1.657 af
Outflow = 20.35 cfs @ 12.12 hrs, Volume= 1.657 af, Atten= 0%, Lag= 0.0 min
Primary = 20.35 cfs @ 12.12 hrs, Volume= 1.657 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.67' @ 12.12 hrs
Flood Elev= 152.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.48'	**48.0" Round Culvert** L= 177.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.48' / 146.34' S= 0.0008 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=20.32 cfs @ 12.12 hrs HW=148.67' (Free Discharge)
1=Culvert (Barrel Controls 20.32 cfs @ 4.17 fps)

Summary for Pond EDMH4: EDMH-4

Inflow Area = 8.090 ac, 31.21% Impervious, Inflow Depth > 2.46" for 10 yr event
Inflow = 20.35 cfs @ 12.12 hrs, Volume= 1.657 af
Outflow = 20.35 cfs @ 12.12 hrs, Volume= 1.657 af, Atten= 0%, Lag= 0.0 min
Primary = 20.35 cfs @ 12.12 hrs, Volume= 1.657 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.72' @ 12.12 hrs
Flood Elev= 152.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.72'	**48.0" Round Culvert** L= 95.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.72' / 146.48' S= 0.0025 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=20.32 cfs @ 12.12 hrs HW=148.71' (Free Discharge)
1=Culvert (Barrel Controls 20.32 cfs @ 4.74 fps)

Summary for Pond EDMH5: EDMH-5 (Vault MH)

Inflow Area = 8.090 ac, 31.21% Impervious, Inflow Depth > 2.46" for 10 yr event
Inflow = 20.35 cfs @ 12.12 hrs, Volume= 1.657 af
Outflow = 20.35 cfs @ 12.12 hrs, Volume= 1.657 af, Atten= 0%, Lag= 0.0 min
Primary = 20.35 cfs @ 12.12 hrs, Volume= 1.657 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.06' @ 12.12 hrs
Flood Elev= 152.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.20'	**48.0" Round Culvert** L= 150.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 147.20' / 146.72' S= 0.0032 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=20.32 cfs @ 12.12 hrs HW=149.06' (Free Discharge)
1=Culvert (Barrel Controls 20.32 cfs @ 5.20 fps)

Summary for Pond EDMH6: EDMH-6

Inflow Area = 2.090 ac, 90.91% Impervious, Inflow Depth > 4.26" for 10 yr event
Inflow = 9.40 cfs @ 12.08 hrs, Volume= 0.741 af
Outflow = 9.40 cfs @ 12.08 hrs, Volume= 0.741 af, Atten= 0%, Lag= 0.0 min
Primary = 9.40 cfs @ 12.08 hrs, Volume= 0.741 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 148.19' @ 12.08 hrs
Flood Elev= 152.52'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.22'	**18.0" Round Culvert** L= 6.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.22' / 145.93' S= 0.0483 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=9.38 cfs @ 12.08 hrs HW=148.19' (Free Discharge)
└**1=Culvert** (Inlet Controls 9.38 cfs @ 5.31 fps)

Summary for Pond EDMH7: EDMH-7

Inflow Area = 2.090 ac, 90.91% Impervious, Inflow Depth > 4.26" for 10 yr event
Inflow = 9.40 cfs @ 12.08 hrs, Volume= 0.741 af
Outflow = 9.40 cfs @ 12.08 hrs, Volume= 0.741 af, Atten= 0%, Lag= 0.0 min
Primary = 9.40 cfs @ 12.08 hrs, Volume= 0.741 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 150.53' @ 12.08 hrs
Flood Elev= 159.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.00'	**18.0" Round Culvert** L= 188.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 149.00' / 146.22' S= 0.0148 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=9.38 cfs @ 12.08 hrs HW=150.53' (Free Discharge)
└**1=Culvert** (Inlet Controls 9.38 cfs @ 5.31 fps)

Summary for Pond NDC: North Drainage Channel

Inflow Area = 21.664 ac, 37.02% Impervious, Inflow Depth > 2.60" for 10 yr event
Inflow = 49.84 cfs @ 12.11 hrs, Volume= 4.701 af
Primary = 49.84 cfs @ 12.11 hrs, Volume= 4.701 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Pond ST-1: Ex Infilt

Inflow Area = 0.283 ac,100.00% Impervious, Inflow Depth > 4.56" for 10 yr event
Inflow = 1.33 cfs @ 12.08 hrs, Volume= 0.108 af
Outflow = 0.30 cfs @ 12.48 hrs, Volume= 0.063 af, Atten= 77%, Lag= 23.7 min
Primary = 0.30 cfs @ 12.48 hrs, Volume= 0.063 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 152.65' @ 12.48 hrs Surf.Area= 1,471 sf Storage= 2,668 cf
Flood Elev= 153.67' Surf.Area= 1,471 sf Storage= 3,344 cf

Plug-Flow detention time= 289.7 min calculated for 0.063 af (59% of inflow)
Center-of-Mass det. time= 177.8 min (926.0 - 748.2)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	1,857 cf	**4.75'W x 7.20'L x 4.50'H Prismatoid** x 43 6,618 cf Overall - 1,975 cf Embedded = 4,642 cf x 40.0% Voids
#2	150.67'	1,975 cf	**ADS_StormTech SC-740** x 43 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		3,832 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	150.47'	**12.0" Round Culvert** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 150.47' / 150.02' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	150.67'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	152.22'	**3.0" Vert. Orifice/Grate X 2.00** C= 0.600
#4	Device 1	153.53'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.30 cfs @ 12.48 hrs HW=152.65' (Free Discharge)
└**1=Culvert** (Passes 0.30 cfs of 4.08 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 6.71 fps)
  └**3=Orifice/Grate** (Orifice Controls 0.26 cfs @ 2.68 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond ST-2: Ex Infilt

Inflow Area = 0.498 ac, 94.58% Impervious, Inflow Depth > 4.33" for 10 yr event
Inflow = 2.29 cfs @ 12.08 hrs, Volume= 0.180 af
Outflow = 0.25 cfs @ 12.74 hrs, Volume= 0.092 af, Atten= 89%, Lag= 39.3 min
Primary = 0.25 cfs @ 12.74 hrs, Volume= 0.092 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 150.67' Surf.Area= 3,078 sf Storage= 825 cf
Peak Elev= 152.63' @ 12.74 hrs Surf.Area= 3,078 sf Storage= 5,561 cf (4,736 cf above start)
Flood Elev= 153.67' Surf.Area= 3,078 sf Storage= 7,027 cf (6,202 cf above start)

Plug-Flow detention time= 363.9 min calculated for 0.073 af (41% of inflow)
Center-of-Mass det. time= 161.6 min (922.8 - 761.2)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	43 cf	**4.75'W x 7.20'L x 4.50'H Prismatoid** 154 cf Overall - 46 cf Embedded = 107 cf x 40.0% Voids
#2	150.67'	46 cf	**ADS_StormTech SC-740 @ 7.20' L** Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.20'L = 46.5 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		89 cf	x 90.00 = 8,049 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	150.67'	**12.0" Round Culvert** L= 23.6' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 150.67' / 150.48' S= 0.0081 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	150.67'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	153.60'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	152.20'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.25 cfs @ 12.74 hrs HW=152.63' (Free Discharge)
└**1=Culvert** (Passes 0.25 cfs of 4.57 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 6.67 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Orifice Controls 0.22 cfs @ 2.47 fps)

Summary for Pond WET: Existing Onsite Wetlands

Inflow Area = 3.911 ac, 43.83% Impervious, Inflow Depth > 2.87" for 10 yr event
Inflow = 8.92 cfs @ 12.18 hrs, Volume= 0.934 af
Outflow = 8.63 cfs @ 12.22 hrs, Volume= 0.934 af, Atten= 3%, Lag= 2.1 min
Primary = 8.63 cfs @ 12.22 hrs, Volume= 0.934 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.92' @ 12.22 hrs Surf.Area= 1,474 sf Storage= 352 cf
Flood Elev= 150.00' Surf.Area= 46,149 sf Storage= 19,550 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.1 min (837.5 - 837.3)

Volume	Invert	Avail.Storage	Storage Description
#1	148.20'	19,550 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
148.20	0	0.0	0	0	0
149.00	1,834	347.0	489	489	9,583
150.00	46,149	1,378.0	19,061	19,550	151,112

Device	Routing	Invert	Outlet Devices
#1	Primary	147.47'	**24.0" Round Culvert** L= 72.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 147.47' / 146.94' S= 0.0074 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 3.14 sf

Primary OutFlow Max=8.62 cfs @ 12.22 hrs HW=148.92' (Free Discharge)
└**1=Culvert** (Barrel Controls 8.62 cfs @ 4.95 fps)

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Building Roof Runoff Area=1.510 ac 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=9.77 cfs 0.800 af

Subcatchment 2S: Ex Wshed Runoff Area=0.030 ac 33.33% Impervious Runoff Depth>4.98"
Tc=6.0 min CN=86 Runoff=0.17 cfs 0.012 af

Subcatchment 3S: Ex Wshed Runoff Area=0.550 ac 69.09% Impervious Runoff Depth>5.20"
Flow Length=175' Tc=6.0 min CN=88 Runoff=3.22 cfs 0.238 af

Subcatchment 4S: Ex Wshed Runoff Area=1.580 ac 68.35% Impervious Runoff Depth>5.54"
Flow Length=275' Tc=8.2 min CN=91 Runoff=8.97 cfs 0.729 af

Subcatchment 5S: Ex Wshed Runoff Area=0.270 ac 22.22% Impervious Runoff Depth>4.65"
Flow Length=245' Tc=6.5 min CN=83 Runoff=1.42 cfs 0.105 af

Subcatchment 6S: Ex Wshed Runoff Area=0.960 ac 70.83% Impervious Runoff Depth>5.09"
Tc=6.0 min CN=87 Runoff=5.54 cfs 0.407 af

Subcatchment 7S: Wetlands Runoff Area=3.130 ac 30.67% Impervious Runoff Depth>4.64"
Flow Length=215' Tc=13.0 min CN=83 Runoff=13.46 cfs 1.210 af

Subcatchment 8S: Ex Wshed Runoff Area=1.350 ac 51.11% Impervious Runoff Depth>4.87"
Flow Length=125' Tc=7.4 min CN=85 Runoff=7.17 cfs 0.547 af

Subcatchment 9S: Off Site Runoff Area=3.990 ac 13.78% Impervious Runoff Depth>3.58"
Flow Length=115' Tc=11.0 min CN=73 Runoff=14.23 cfs 1.192 af

Subcatchment 10S: Ex Wshed Runoff Area=0.080 ac 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=0.52 cfs 0.042 af

Subcatchment 11S: Fallon Rd Runoff Area=0.220 ac 68.18% Impervious Runoff Depth>4.98"
Tc=6.0 min CN=86 Runoff=1.25 cfs 0.091 af

Subcatchment 12S: Fallon Rd Runoff Area=0.130 ac 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=0.84 cfs 0.069 af

Subcatchment 13S: Ex Wshed Runoff Area=0.070 ac 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=0.45 cfs 0.037 af

Subcatchment 14S: Ex Wshed Runoff Area=4.460 ac 0.00% Impervious Runoff Depth>2.50"
Flow Length=110' Tc=18.2 min CN=62 Runoff=8.90 cfs 0.929 af

Subcatchment 15S: Ex Wshed Runoff Area=0.303 ac 20.46% Impervious Runoff Depth>3.18"
Tc=6.0 min CN=69 Runoff=1.13 cfs 0.080 af

Subcatchment 16S: Offsite Flows Runoff Area=2.250 ac 38.00% Impervious Runoff Depth>3.79"
Tc=6.0 min CN=75 Runoff=10.02 cfs 0.712 af

Subcatchment 17S: North Roof Area Runoff Area=0.283 ac 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=1.83 cfs 0.150 af

Subcatchment 18S: South Roof Area Runoff Area=0.115 ac 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=0.74 cfs 0.061 af

Subcatchment 19S: North Loading Area Runoff Area=0.200 ac 91.50% Impervious Runoff Depth>6.00"
Tc=6.0 min CN=95 Runoff=1.27 cfs 0.100 af

Subcatchment 20S: Parking Area Runoff Area=0.101 ac 90.10% Impervious Runoff Depth>5.89"
Tc=6.0 min CN=94 Runoff=0.64 cfs 0.050 af

Subcatchment 21S: Driveway Runoff Area=0.032 ac 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=0.21 cfs 0.017 af

Subcatchment 22S: North Driveway Runoff Area=0.050 ac 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=0.32 cfs 0.026 af

Reach 2R: Offsite Culverts Avg. Flow Depth=1.12' Max Vel=4.35 fps Inflow=10.02 cfs 0.712 af
15.0" Round Pipe x 2.00 n=0.013 L=95.0' S=0.0053 '/' Capacity=9.37 cfs Outflow=9.96 cfs 0.711 af

Pond CB-1: ECB Peak Elev=151.70' Inflow=0.64 cfs 0.050 af
12.0" Round Culvert n=0.012 L=13.6' S=0.0096 '/' Outflow=0.64 cfs 0.050 af

Pond CB-2: ECB Peak Elev=151.51' Inflow=0.21 cfs 0.017 af
12.0" Round Culvert n=0.012 L=25.9' S=0.0050 '/' Outflow=0.21 cfs 0.017 af

Pond CB-3: ECB Peak Elev=152.03' Inflow=0.32 cfs 0.026 af
12.0" Round Culvert n=0.012 L=36.4' S=0.0099 '/' Outflow=0.32 cfs 0.026 af

Pond CB-4: ECB Peak Elev=152.34' Inflow=1.27 cfs 0.100 af
12.0" Round Culvert n=0.012 L=17.9' S=0.0201 '/' Outflow=1.27 cfs 0.100 af

Pond DMH-1: EDMH Peak Elev=152.15' Inflow=2.44 cfs 0.193 af
12.0" Round Culvert n=0.012 L=3.5' S=0.0057 '/' Outflow=2.44 cfs 0.193 af

Pond DMH-2: EDMH Peak Elev=152.10' Inflow=1.60 cfs 0.127 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0050 '/' Outflow=1.60 cfs 0.127 af

Pond DMH-4: EDMH Peak Elev=150.74' Inflow=1.30 cfs 0.266 af
12.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/' Outflow=1.30 cfs 0.266 af

Pond ECB1: ECB-1 Peak Elev=152.07' Inflow=3.39 cfs 0.251 af
12.0" Round Culvert n=0.013 L=190.0' S=0.0105 '/' Outflow=3.39 cfs 0.251 af

Pond ECB10: ECB-10 Peak Elev=165.10' Inflow=23.72 cfs 1.940 af
15.0" Round Culvert n=0.013 L=22.0' S=0.0123 '/' Outflow=23.72 cfs 1.940 af

Pond ECB11: ECB-11 Peak Elev=158.96' Inflow=23.32 cfs 1.903 af
15.0" Round Culvert n=0.013 L=15.0' S=0.0000 '/' Outflow=23.32 cfs 1.903 af

Pond ECB2: ECB-2 Peak Elev=153.20' Inflow=0.17 cfs 0.012 af
12.0" Round Culvert n=0.013 L=190.0' S=0.0105 '/' Outflow=0.17 cfs 0.012 af

Pond ECB3: ECB-3 Peak Elev=151.00' Inflow=14.33 cfs 1.136 af
18.0" Round Culvert n=0.013 L=60.0' S=0.0000 '/' Outflow=14.33 cfs 1.136 af

Pond ECB4: ECB-4 Peak Elev=148.75' Inflow=5.54 cfs 0.407 af
15.0" Round Culvert n=0.013 L=17.0' S=0.0000 '/' Outflow=5.54 cfs 0.407 af

Pond ECB5: ECB-5 Peak Elev=148.04' Inflow=1.42 cfs 0.105 af
18.0" Round Culvert n=0.013 L=22.0' S=0.0091 '/' Outflow=1.42 cfs 0.105 af

Pond ECB6: ECB-6 Peak Elev=150.69' Inflow=2.09 cfs 0.160 af
12.0" Round Culvert n=0.013 L=33.0' S=0.0845 '/' Outflow=2.09 cfs 0.160 af

Pond ECB7: ECB-7 Peak Elev=150.75' Inflow=0.84 cfs 0.069 af
12.0" Round Culvert n=0.013 L=23.0' S=0.0096 '/' Outflow=0.84 cfs 0.069 af

Pond ECB8: ECB-8 Peak Elev=163.76' Inflow=31.21 cfs 2.530 af
18.0" Round Culvert n=0.013 L=102.0' S=0.0057 '/' Outflow=31.21 cfs 2.530 af

Pond ECB9: ECB-9 Peak Elev=150.36' Inflow=7.17 cfs 0.547 af
15.0" Round Culvert n=0.013 L=18.0' S=0.0022 '/' Outflow=7.17 cfs 0.547 af

Pond EDMH1: EDMH-1 Peak Elev=149.90' Inflow=58.69 cfs 5.408 af
48.0" Round Culvert n=0.013 L=213.0' S=0.0024 '/' Outflow=58.69 cfs 5.408 af

Pond EDMH2: EDMH-2 Peak Elev=149.53' Inflow=44.66 cfs 4.271 af
48.0" Round Culvert n=0.013 L=85.0' S=0.0016 '/' Outflow=44.66 cfs 4.271 af

Pond EDMH3: EDMH-3 Peak Elev=149.33' Inflow=33.14 cfs 2.690 af
48.0" Round Culvert n=0.013 L=177.0' S=0.0008 '/' Outflow=33.14 cfs 2.690 af

Pond EDMH4: EDMH-4 Peak Elev=149.34' Inflow=33.14 cfs 2.690 af
48.0" Round Culvert n=0.013 L=95.0' S=0.0025 '/' Outflow=33.14 cfs 2.690 af

Pond EDMH5: EDMH-5 (Vault MH) Peak Elev=149.64' Inflow=33.14 cfs 2.690 af
48.0" Round Culvert n=0.013 L=150.0' S=0.0032 '/' Outflow=33.14 cfs 2.690 af

Pond EDMH6: EDMH-6 Peak Elev=149.36' Inflow=13.17 cfs 1.051 af
18.0" Round Culvert n=0.013 L=6.0' S=0.0483 '/' Outflow=13.17 cfs 1.051 af

Pond EDMH7: EDMH-7 Peak Elev=151.72' Inflow=13.17 cfs 1.051 af
18.0" Round Culvert n=0.013 L=188.0' S=0.0148 '/' Outflow=13.17 cfs 1.051 af

Pond NDC: North Drainage Channel Inflow=77.72 cfs 7.468 af
Primary=77.72 cfs 7.468 af

Pond ST-1: Ex Infilt Peak Elev=153.57' Storage=3,287 cf Inflow=1.83 cfs 0.150 af
Outflow=0.69 cfs 0.102 af

Pond ST-2: Ex Infilt Peak Elev=153.66' Storage=7,021 cf Inflow=3.18 cfs 0.254 af
Outflow=0.75 cfs 0.164 af

Pond WET: Existing Onsite Wetlands Peak Elev=149.28' Storage=1,813 cf Inflow=14.37 cfs 1.477 af
24.0" Round Culvert n=0.013 L=72.0' S=0.0074 '/' Outflow=12.12 cfs 1.477 af

Total Runoff Area = 21.664 ac Runoff Volume = 7.606 af Average Runoff Depth = 4.21"
62.98% Pervious = 13.643 ac 37.02% Impervious = 8.021 ac

Summary for Subcatchment 1S: Building Roof

Runoff = 9.77 cfs @ 12.08 hrs, Volume= 0.800 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (ac)	CN	Description
1.370	98	Roofs, HSG B
0.140	98	Roofs, HSG D
1.510	98	Weighted Average
1.510		100.00% Impervious Area

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

Summary for Subcatchment 2S: Ex Wshed

Runoff = 0.17 cfs @ 12.09 hrs, Volume= 0.012 af, Depth> 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
	0.020	80	>75% Grass cover, Good, HSG D
*	0.010	98	Paved parking & ledge, HSG D
	0.030	86	Weighted Average
	0.020		66.67% Pervious Area
	0.010		33.33% Impervious Area

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

Summary for Subcatchment 3S: Ex Wshed

Runoff = 3.22 cfs @ 12.08 hrs, Volume= 0.238 af, Depth> 5.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
	0.120	61	>75% Grass cover, Good, HSG B
*	0.230	98	Paved parking & ledge, HSG B
	0.050	80	>75% Grass cover, Good, HSG D
*	0.150	98	Paved parking & ledge, HSG D
	0.550	88	Weighted Average
	0.170		30.91% Pervious Area
	0.380		69.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0800	0.26		**Sheet Flow, Initial Overland Flow** Grass: Short n= 0.150 P2= 3.15"
0.5	125	0.0710	4.29		**Shallow Concentrated Flow, Overland Flow** Unpaved Kv= 16.1 fps
2.2					**Direct Entry, Minimum Tc**
6.0	175	Total			

Summary for Subcatchment 4S: Ex Wshed

Runoff = 8.97 cfs @ 12.11 hrs, Volume= 0.729 af, Depth> 5.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
	0.050	61	>75% Grass cover, Good, HSG B
	0.020	58	Woods/grass comb., Good, HSG B
*	0.300	98	Paved parking & ledge, HSG B
*	0.200	80	>75% Grass cover, Good, HSG D (9)
*	0.210	79	Woods/grass comb., Good, HSG D (9)
*	0.760	98	Paved parking &l ledge, HSG D (9)
*	0.020	79	Woods/grass comb., Good, HSG D (40)
*	0.020	98	Paved parking & ledge, HSG D (40)
	1.580	91	Weighted Average
	0.500		31.65% Pervious Area
	1.080		68.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0760	0.11		**Sheet Flow, Initial Overland Flow (0-50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.3	105	0.1780	6.79		**Shallow Concentrated Flow, Overland Flow (50-155')** Unpaved Kv= 16.1 fps
0.6	120	0.0260	3.27		**Shallow Concentrated Flow, Overland Flow (155-275')** Paved Kv= 20.3 fps
8.2	275	Total			

Summary for Subcatchment 5S: Ex Wshed

Runoff = 1.42 cfs @ 12.09 hrs, Volume= 0.105 af, Depth> 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	0.160	79	Woods/grass comb., Good, HSG D (9)
*	0.020	98	Paved parking & ledge, HSG D (9)
*	0.050	79	Woods/grass comb., Good, HSG D (40)
*	0.040	98	Paved parking & ledge, HSG D (40)
	0.270	83	Weighted Average
	0.210		77.78% Pervious Area
	0.060		22.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.1340	0.14		**Sheet Flow, Initial Overland Flow (0-50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.7	195	0.0890	4.80		**Shallow Concentrated Flow, Overland Flow** Unpaved Kv= 16.1 fps
6.5	245	Total			

Summary for Subcatchment 6S: Ex Wshed

Runoff = 5.54 cfs @ 12.09 hrs, Volume= 0.407 af, Depth> 5.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (ac)	CN	Description
0.130	61	>75% Grass cover, Good, HSG B
0.140	58	Woods/grass comb., Good, HSG B
0.630	98	Paved parking, HSG B
0.010	79	Woods/grass comb., Good, HSG D
0.050	98	Paved parking, HSG D
0.960	87	Weighted Average
0.280		29.17% Pervious Area
0.680		70.83% Impervious Area

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

Summary for Subcatchment 7S: Wetlands

Runoff = 13.46 cfs @ 12.18 hrs, Volume= 1.210 af, Depth> 4.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	0.300	58	Woods/grass comb., Good, HSG B (259)
*	0.620	79	Woods/grass comb., Good, HSG D (9)
*	0.060	98	Paved parking & ledge, HSG D (9)
*	1.250	79	Woods/grass comb., Good, HSG D (40)
*	0.080	98	Paved parking & ledge, HSG D (40)
*	0.820	98	Wetlands, HSG D
	3.130	83	Weighted Average
	2.170		69.33% Pervious Area
	0.960		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	50	0.0260	0.07		**Sheet Flow, Initial Overland Flow (0-50')** Woods: Light underbrush n= 0.400 P2= 3.15"
1.8	165	0.0090	1.53		**Shallow Concentrated Flow, Overland Flow (50-215')** Unpaved Kv= 16.1 fps
13.0	215	Total			

Summary for Subcatchment 8S: Ex Wshed

Runoff = 7.17 cfs @ 12.10 hrs, Volume= 0.547 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
	0.220	58	Woods/grass comb., Good, HSG B
*	0.060	98	Paved parking & wetlands, HSG B
	0.310	79	Woods/grass comb., Good, HSG D
*	0.630	98	Paved parking, wetlands & ledge, HSG D
	0.020	61	>75% Grass cover, Good, HSG B
	0.060	80	>75% Grass cover, Good, HSG D
	0.050	73	Brush, Good, HSG D
	1.350	85	Weighted Average
	0.660		48.89% Pervious Area
	0.690		51.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0756	0.11		**Sheet Flow, Initial Overland Flow (0 - 50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.1	75	0.3280	9.22		**Shallow Concentrated Flow, Overland Flow (50 - 125')** Unpaved Kv= 16.1 fps
7.4	125	Total			

Summary for Subcatchment 9S: Off Site

Runoff = 14.23 cfs @ 12.16 hrs, Volume= 1.192 af, Depth> 3.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
	1.060	58	Woods/grass comb., Good, HSG B
*	0.370	98	Paved parking & wetlands, HSG B
*	1.700	79	Woods/grass comb., Good, HSG D (9)
*	0.060	80	>75% Grass cover, Good, HSG D (9)
*	0.070	61	>75% Grass cover, Good, HSG B (259)
*	0.150	98	Paved parking & roofs
*	0.200	58	Woods/grass comb., Good, HSG B (259)
*	0.030	98	Paved parking & roofs
*	0.350	61	>75% Grass cover, Good, HSG B (265)
	3.990	73	Weighted Average
	3.440		86.22% Pervious Area
	0.550		13.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	50	0.0310	0.08		**Sheet Flow, Initial Overland Floow (0 - 50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.6	65	0.0110	1.69		**Shallow Concentrated Flow, Overland Flow (50-115')** Unpaved Kv= 16.1 fps
11.0	115	Total			

Summary for Subcatchment 10S: Ex Wshed

Runoff = 0.52 cfs @ 12.08 hrs, Volume= 0.042 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (ac)	CN	Description
0.080	98	Paved parking, HSG B
0.080		100.00% Impervious Area

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

Summary for Subcatchment 11S: Fallon Rd

Runoff = 1.25 cfs @ 12.09 hrs, Volume= 0.091 af, Depth> 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (ac)	CN	Description
0.020	61	>75% Grass cover, Good, HSG B
0.150	98	Paved parking, HSG B
0.050	58	Woods/grass comb., Good, HSG B
0.220	86	Weighted Average
0.070		31.82% Pervious Area
0.150		68.18% Impervious Area

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

Summary for Subcatchment 12S: Fallon Rd

Runoff = 0.84 cfs @ 12.08 hrs, Volume= 0.069 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (ac)	CN	Description
0.130	98	Paved parking, HSG B
0.130		100.00% Impervious Area

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

Summary for Subcatchment 13S: Ex Wshed

Runoff = 0.45 cfs @ 12.08 hrs, Volume= 0.037 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG B
0.070		100.00% Impervious Area

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

Summary for Subcatchment 14S: Ex Wshed

Runoff = 8.90 cfs @ 12.27 hrs, Volume= 0.929 af, Depth> 2.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	4.460	62	
	4.460		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.9	50	0.0080	0.05		**Sheet Flow, Initial Overland Flow (0 - 50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.3	60	0.0317	2.87		**Shallow Concentrated Flow, Overland Flow (50 - 110')** Unpaved Kv= 16.1 fps
18.2	110	Total			

Summary for Subcatchment 15S: Ex Wshed

Runoff = 1.13 cfs @ 12.09 hrs, Volume= 0.080 af, Depth> 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	0.062	98	Paved parking & roofs
	0.241	61	>75% Grass cover, Good, HSG B
	0.303	69	Weighted Average
	0.241		79.54% Pervious Area
	0.062		20.46% Impervious Area

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

Summary for Subcatchment 16S: Offsite Flows

Runoff = 10.02 cfs @ 12.09 hrs, Volume= 0.712 af, Depth> 3.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (ac)	CN	Description
2.250	75	1/4 acre lots, 38% imp, HSG B
1.395		62.00% Pervious Area
0.855		38.00% Impervious Area

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

Summary for Subcatchment 17S: North Roof Area

Runoff = 1.83 cfs @ 12.08 hrs, Volume= 0.150 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	0.283	98	Roofs
	0.283		100.00% Impervious Area

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

Summary for Subcatchment 18S: South Roof Area

Runoff = 0.74 cfs @ 12.08 hrs, Volume= 0.061 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	0.115	98	Roofs
	0.115		100.00% Impervious Area

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

Summary for Subcatchment 19S: North Loading Area

Runoff = 1.27 cfs @ 12.08 hrs, Volume= 0.100 af, Depth> 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	0.183	98	Paved parking
	0.017	61	>75% Grass cover, Good, HSG B
	0.200	95	Weighted Average
	0.017		8.50% Pervious Area
	0.183		91.50% Impervious Area

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

Summary for Subcatchment 20S: Parking Area

Runoff = 0.64 cfs @ 12.08 hrs, Volume= 0.050 af, Depth> 5.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	0.091	98	Paved parking & roofs
	0.010	61	>75% Grass cover, Good, HSG B
	0.101	94	Weighted Average
	0.010		9.90% Pervious Area
	0.091		90.10% Impervious Area

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

Summary for Subcatchment 21S: Driveway

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	0.032	98	Paved
	0.032		100.00% Impervious Area

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

Summary for Subcatchment 22S: North Driveway

Runoff = 0.32 cfs @ 12.08 hrs, Volume= 0.026 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	0.050	98	Paved driveway
	0.050		100.00% Impervious Area

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

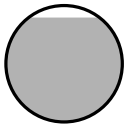
Summary for Reach 2R: Offsite Culverts

Inflow Area = 2.250 ac, 38.00% Impervious, Inflow Depth > 3.79" for 100 yr event
Inflow = 10.02 cfs @ 12.09 hrs, Volume= 0.712 af
Outflow = 9.96 cfs @ 12.10 hrs, Volume= 0.711 af, Atten= 1%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.35 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.72 fps, Avg. Travel Time= 0.9 min

Peak Storage= 220 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.12'
Bank-Full Depth= 1.25' Flow Area= 2.5 sf, Capacity= 9.37 cfs

A factor of 2.00 has been applied to the storage and discharge capacity
15.0" Round Pipe
n= 0.013 Concrete pipe, straight & clean
Length= 95.0' Slope= 0.0053 '/'
Inlet Invert= 172.00', Outlet Invert= 171.50'



Summary for Pond CB-1: ECB

Inflow Area = 0.101 ac, 90.10% Impervious, Inflow Depth > 5.89" for 100 yr event
Inflow = 0.64 cfs @ 12.08 hrs, Volume= 0.050 af
Outflow = 0.64 cfs @ 12.08 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 12.08 hrs, Volume= 0.050 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.70' @ 12.08 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.25'	**12.0" Round Culvert** L= 13.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.25' / 151.12' S= 0.0096 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.64 cfs @ 12.08 hrs HW=151.70' (Free Discharge)
1=Culvert (Barrel Controls 0.64 cfs @ 2.76 fps)

Summary for Pond CB-2: ECB

Inflow Area = 0.032 ac,100.00% Impervious, Inflow Depth > 6.36" for 100 yr event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min
Primary = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.51' @ 12.08 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.25'	**12.0" Round Culvert** L= 25.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.25' / 151.12' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.21 cfs @ 12.08 hrs HW=151.51' (Free Discharge)
1=Culvert (Barrel Controls 0.21 cfs @ 1.92 fps)

Summary for Pond CB-3: ECB

Inflow Area = 0.050 ac,100.00% Impervious, Inflow Depth > 6.36" for 100 yr event
Inflow = 0.32 cfs @ 12.08 hrs, Volume= 0.026 af
Outflow = 0.32 cfs @ 12.08 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min
Primary = 0.32 cfs @ 12.08 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 152.03' @ 12.08 hrs
Flood Elev= 154.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.75'	**12.0" Round Culvert** L= 36.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.75' / 151.39' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.32 cfs @ 12.08 hrs HW=152.03' (Free Discharge)
1=Culvert (Barrel Controls 0.32 cfs @ 2.66 fps)

Summary for Pond CB-4: ECB

Inflow Area = 0.200 ac, 91.50% Impervious, Inflow Depth > 6.00" for 100 yr event
Inflow = 1.27 cfs @ 12.08 hrs, Volume= 0.100 af
Outflow = 1.27 cfs @ 12.08 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min
Primary = 1.27 cfs @ 12.08 hrs, Volume= 0.100 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 152.34' @ 12.08 hrs
Flood Elev= 154.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.75'	**12.0" Round Culvert** L= 17.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.75' / 151.39' S= 0.0201 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.27 cfs @ 12.08 hrs HW=152.34' (Free Discharge)
1=Culvert (Inlet Controls 1.27 cfs @ 2.62 fps)

Summary for Pond DMH-1: EDMH

Inflow Area = 0.383 ac, 92.95% Impervious, Inflow Depth > 6.05" for 100 yr event
Inflow = 2.44 cfs @ 12.08 hrs, Volume= 0.193 af
Outflow = 2.44 cfs @ 12.08 hrs, Volume= 0.193 af, Atten= 0%, Lag= 0.0 min
Primary = 2.44 cfs @ 12.08 hrs, Volume= 0.193 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 152.15' @ 12.08 hrs
Flood Elev= 154.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.04'	**12.0" Round Culvert** L= 3.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.04' / 151.02' S= 0.0057 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.44 cfs @ 12.08 hrs HW=152.15' (Free Discharge)
1=Culvert (Barrel Controls 2.44 cfs @ 3.49 fps)

Summary for Pond DMH-2: EDMH

Inflow Area = 0.250 ac, 93.20% Impervious, Inflow Depth > 6.07" for 100 yr event
Inflow = 1.60 cfs @ 12.08 hrs, Volume= 0.127 af
Outflow = 1.60 cfs @ 12.08 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.0 min
Primary = 1.60 cfs @ 12.08 hrs, Volume= 0.127 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 152.10' @ 12.08 hrs
Flood Elev= 154.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.29'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.29' / 151.14' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.59 cfs @ 12.08 hrs HW=152.10' (Free Discharge)
1=Culvert (Barrel Controls 1.59 cfs @ 3.21 fps)

Summary for Pond DMH-4: EDMH

Inflow Area = 0.781 ac, 96.54% Impervious, Inflow Depth > 4.09" for 100 yr event
Inflow = 1.30 cfs @ 12.47 hrs, Volume= 0.266 af
Outflow = 1.30 cfs @ 12.47 hrs, Volume= 0.266 af, Atten= 0%, Lag= 0.0 min
Primary = 1.30 cfs @ 12.47 hrs, Volume= 0.266 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 150.74' @ 12.47 hrs
Flood Elev= 156.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	150.02'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 150.02' / 149.92' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.30 cfs @ 12.47 hrs HW=150.74' (Free Discharge)
1=Culvert (Barrel Controls 1.30 cfs @ 3.00 fps)

Summary for Pond ECB1: ECB-1

Inflow Area = 0.580 ac, 67.24% Impervious, Inflow Depth > 5.19" for 100 yr event
Inflow = 3.39 cfs @ 12.08 hrs, Volume= 0.251 af
Outflow = 3.39 cfs @ 12.08 hrs, Volume= 0.251 af, Atten= 0%, Lag= 0.0 min
Primary = 3.39 cfs @ 12.08 hrs, Volume= 0.251 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 152.07' @ 12.08 hrs
Flood Elev= 157.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.00'	**12.0" Round Culvert** L= 190.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 151.00' / 149.00' S= 0.0105 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=3.39 cfs @ 12.08 hrs HW=152.07' (Free Discharge)
1=Culvert (Barrel Controls 3.39 cfs @ 5.02 fps)

Summary for Pond ECB10: ECB-10

Inflow Area = 6.310 ac, 23.38% Impervious, Inflow Depth > 3.69" for 100 yr event
Inflow = 23.72 cfs @ 12.13 hrs, Volume= 1.940 af
Outflow = 23.72 cfs @ 12.13 hrs, Volume= 1.940 af, Atten= 0%, Lag= 0.0 min
Primary = 23.72 cfs @ 12.13 hrs, Volume= 1.940 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 165.10' @ 12.13 hrs
Flood Elev= 152.06'

Device	Routing	Invert	Outlet Devices
#1	Primary	148.36'	**15.0" Round Culvert** L= 22.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 148.36' / 148.09' S= 0.0123 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=23.70 cfs @ 12.13 hrs HW=165.07' (Free Discharge)
1=Culvert (Inlet Controls 23.70 cfs @ 19.31 fps)

Summary for Pond ECB11: ECB-11

Inflow Area = 6.240 ac, 22.52% Impervious, Inflow Depth > 3.66" for 100 yr event
Inflow = 23.32 cfs @ 12.13 hrs, Volume= 1.903 af
Outflow = 23.32 cfs @ 12.13 hrs, Volume= 1.903 af, Atten= 0%, Lag= 0.0 min
Primary = 23.32 cfs @ 12.13 hrs, Volume= 1.903 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 158.96' @ 12.13 hrs
Flood Elev= 151.03'

Device	Routing	Invert	Outlet Devices
#1	Primary	148.36'	**15.0" Round Culvert** L= 15.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 148.36' / 148.36' S= 0.0000 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=23.30 cfs @ 12.13 hrs HW=158.93' (Free Discharge)
1=Culvert (Inlet Controls 23.30 cfs @ 18.98 fps)

Summary for Pond ECB2: ECB-2

Inflow Area = 0.030 ac, 33.33% Impervious, Inflow Depth > 4.98" for 100 yr event
Inflow = 0.17 cfs @ 12.09 hrs, Volume= 0.012 af
Outflow = 0.17 cfs @ 12.09 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min
Primary = 0.17 cfs @ 12.09 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 153.20' @ 12.09 hrs
Flood Elev= 159.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	153.00'	**12.0" Round Culvert** L= 190.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 153.00' / 151.00' S= 0.0105 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.17 cfs @ 12.09 hrs HW=153.20' (Free Discharge)
1=Culvert (Barrel Controls 0.17 cfs @ 2.34 fps)

Summary for Pond ECB3: ECB-3

Inflow Area = 2.540 ac, 69.29% Impervious, Inflow Depth > 5.37" for 100 yr event
Inflow = 14.33 cfs @ 12.10 hrs, Volume= 1.136 af
Outflow = 14.33 cfs @ 12.10 hrs, Volume= 1.136 af, Atten= 0%, Lag= 0.0 min
Primary = 14.33 cfs @ 12.10 hrs, Volume= 1.136 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.00' @ 12.10 hrs
Flood Elev= 149.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.85'	**18.0" Round Culvert** L= 60.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.85' / 146.85' S= 0.0000 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=14.32 cfs @ 12.10 hrs HW=151.00' (Free Discharge)
1=Culvert (Barrel Controls 14.32 cfs @ 8.11 fps)

Summary for Pond ECB4: ECB-4

Inflow Area = 0.960 ac, 70.83% Impervious, Inflow Depth > 5.09" for 100 yr event
Inflow = 5.54 cfs @ 12.09 hrs, Volume= 0.407 af
Outflow = 5.54 cfs @ 12.09 hrs, Volume= 0.407 af, Atten= 0%, Lag= 0.0 min
Primary = 5.54 cfs @ 12.09 hrs, Volume= 0.407 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.75' @ 12.09 hrs
Flood Elev= 149.08'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.90'	**15.0" Round Culvert** L= 17.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.90' / 146.90' S= 0.0000 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=5.53 cfs @ 12.09 hrs HW=148.75' (Free Discharge)
1=Culvert (Barrel Controls 5.53 cfs @ 4.50 fps)

Summary for Pond ECB5: ECB-5

Inflow Area = 0.270 ac, 22.22% Impervious, Inflow Depth > 4.65" for 100 yr event
Inflow = 1.42 cfs @ 12.09 hrs, Volume= 0.105 af
Outflow = 1.42 cfs @ 12.09 hrs, Volume= 0.105 af, Atten= 0%, Lag= 0.0 min
Primary = 1.42 cfs @ 12.09 hrs, Volume= 0.105 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.04' @ 12.09 hrs
Flood Elev= 150.64'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.44'	**18.0" Round Culvert** L= 22.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 147.44' / 147.24' S= 0.0091 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=1.42 cfs @ 12.09 hrs HW=148.04' (Free Discharge)
1=Culvert (Barrel Controls 1.42 cfs @ 3.22 fps)

Summary for Pond ECB6: ECB-6

Inflow Area = 0.350 ac, 80.00% Impervious, Inflow Depth > 5.49" for 100 yr event
Inflow = 2.09 cfs @ 12.08 hrs, Volume= 0.160 af
Outflow = 2.09 cfs @ 12.08 hrs, Volume= 0.160 af, Atten= 0%, Lag= 0.0 min
Primary = 2.09 cfs @ 12.08 hrs, Volume= 0.160 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 150.69' @ 12.08 hrs
Flood Elev= 151.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.99'	**12.0" Round Culvert** L= 33.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 149.99' / 147.20' S= 0.0845 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=2.09 cfs @ 12.08 hrs HW=150.69' (Free Discharge)
1=Culvert (Inlet Controls 2.09 cfs @ 3.56 fps)

Summary for Pond ECB7: ECB-7

Inflow Area = 0.130 ac,100.00% Impervious, Inflow Depth > 6.36" for 100 yr event
Inflow = 0.84 cfs @ 12.08 hrs, Volume= 0.069 af
Outflow = 0.84 cfs @ 12.08 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.0 min
Primary = 0.84 cfs @ 12.08 hrs, Volume= 0.069 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 150.75' @ 12.08 hrs
Flood Elev= 151.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	150.26'	**12.0" Round Culvert** L= 23.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 150.26' / 150.04' S= 0.0096 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.84 cfs @ 12.08 hrs HW=150.75' (Free Discharge)
1=Culvert (Barrel Controls 0.84 cfs @ 3.20 fps)

Summary for Pond ECB8: ECB-8

Inflow Area = 7.740 ac, 29.01% Impervious, Inflow Depth > 3.92" for 100 yr event
Inflow = 31.21 cfs @ 12.12 hrs, Volume= 2.530 af
Outflow = 31.21 cfs @ 12.12 hrs, Volume= 2.530 af, Atten= 0%, Lag= 0.0 min
Primary = 31.21 cfs @ 12.12 hrs, Volume= 2.530 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 163.76' @ 12.12 hrs
Flood Elev= 152.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.99'	**18.0" Round Culvert** L= 102.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 147.99' / 147.41' S= 0.0057 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=31.19 cfs @ 12.12 hrs HW=163.74' (Free Discharge)
1=Culvert (Barrel Controls 31.19 cfs @ 17.65 fps)

Summary for Pond ECB9: ECB-9

Inflow Area = 1.350 ac, 51.11% Impervious, Inflow Depth > 4.87" for 100 yr event
Inflow = 7.17 cfs @ 12.10 hrs, Volume= 0.547 af
Outflow = 7.17 cfs @ 12.10 hrs, Volume= 0.547 af, Atten= 0%, Lag= 0.0 min
Primary = 7.17 cfs @ 12.10 hrs, Volume= 0.547 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 150.36' @ 12.10 hrs
Flood Elev= 151.03'

Device	Routing	Invert	Outlet Devices
#1	Primary	148.13'	**15.0" Round Culvert** L= 18.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 148.13' / 148.09' S= 0.0022 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=7.16 cfs @ 12.10 hrs HW=150.35' (Free Discharge)
1=Culvert (Barrel Controls 7.16 cfs @ 5.83 fps)

Summary for Pond EDMH1: EDMH-1

Inflow Area = 14.811 ac, 40.91% Impervious, Inflow Depth > 4.38" for 100 yr event
Inflow = 58.69 cfs @ 12.12 hrs, Volume= 5.408 af
Outflow = 58.69 cfs @ 12.12 hrs, Volume= 5.408 af, Atten= 0%, Lag= 0.0 min
Primary = 58.69 cfs @ 12.12 hrs, Volume= 5.408 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.90' @ 12.12 hrs
Flood Elev= 152.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.20'	**48.0" Round Culvert** L= 213.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.20' / 145.68' S= 0.0024 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf

Primary OutFlow Max=58.63 cfs @ 12.12 hrs HW=149.90' (Free Discharge)
1=Culvert (Barrel Controls 58.63 cfs @ 6.30 fps)

Summary for Pond EDMH2: EDMH-2

Inflow Area = 12.271 ac, 35.03% Impervious, Inflow Depth > 4.18" for 100 yr event
Inflow = 44.66 cfs @ 12.12 hrs, Volume= 4.271 af
Outflow = 44.66 cfs @ 12.12 hrs, Volume= 4.271 af, Atten= 0%, Lag= 0.0 min
Primary = 44.66 cfs @ 12.12 hrs, Volume= 4.271 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.53' @ 12.12 hrs
Flood Elev= 151.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.34'	**48.0" Round Culvert** L= 85.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.34' / 146.20' S= 0.0016 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=44.62 cfs @ 12.12 hrs HW=149.53' (Free Discharge)
1=Culvert (Barrel Controls 44.62 cfs @ 5.69 fps)

Summary for Pond EDMH3: EDMH-3

Inflow Area = 8.090 ac, 31.21% Impervious, Inflow Depth > 3.99" for 100 yr event
Inflow = 33.14 cfs @ 12.12 hrs, Volume= 2.690 af
Outflow = 33.14 cfs @ 12.12 hrs, Volume= 2.690 af, Atten= 0%, Lag= 0.0 min
Primary = 33.14 cfs @ 12.12 hrs, Volume= 2.690 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.33' @ 12.12 hrs
Flood Elev= 152.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.48'	**48.0" Round Culvert** L= 177.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.48' / 146.34' S= 0.0008 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=33.10 cfs @ 12.12 hrs HW=149.33' (Free Discharge)
1=Culvert (Barrel Controls 33.10 cfs @ 4.85 fps)

Summary for Pond EDMH4: EDMH-4

Inflow Area = 8.090 ac, 31.21% Impervious, Inflow Depth > 3.99" for 100 yr event
Inflow = 33.14 cfs @ 12.12 hrs, Volume= 2.690 af
Outflow = 33.14 cfs @ 12.12 hrs, Volume= 2.690 af, Atten= 0%, Lag= 0.0 min
Primary = 33.14 cfs @ 12.12 hrs, Volume= 2.690 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.34' @ 12.12 hrs
Flood Elev= 152.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.72'	**48.0" Round Culvert** L= 95.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.72' / 146.48' S= 0.0025 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=33.10 cfs @ 12.12 hrs HW=149.34' (Free Discharge)
1=Culvert (Barrel Controls 33.10 cfs @ 5.40 fps)

Summary for Pond EDMH5: EDMH-5 (Vault MH)

Inflow Area = 8.090 ac, 31.21% Impervious, Inflow Depth > 3.99" for 100 yr event
Inflow = 33.14 cfs @ 12.12 hrs, Volume= 2.690 af
Outflow = 33.14 cfs @ 12.12 hrs, Volume= 2.690 af, Atten= 0%, Lag= 0.0 min
Primary = 33.14 cfs @ 12.12 hrs, Volume= 2.690 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.64' @ 12.12 hrs
Flood Elev= 152.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.20'	**48.0" Round Culvert** L= 150.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 147.20' / 146.72' S= 0.0032 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=33.10 cfs @ 12.12 hrs HW=149.64' (Free Discharge)
1=Culvert (Barrel Controls 33.10 cfs @ 5.92 fps)

Summary for Pond EDMH6: EDMH-6

Inflow Area = 2.090 ac, 90.91% Impervious, Inflow Depth > 6.03" for 100 yr event
Inflow = 13.17 cfs @ 12.08 hrs, Volume= 1.051 af
Outflow = 13.17 cfs @ 12.08 hrs, Volume= 1.051 af, Atten= 0%, Lag= 0.0 min
Primary = 13.17 cfs @ 12.08 hrs, Volume= 1.051 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 149.36' @ 12.08 hrs
Flood Elev= 152.52'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.22'	**18.0" Round Culvert** L= 6.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.22' / 145.93' S= 0.0483 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=13.14 cfs @ 12.08 hrs HW=149.36' (Free Discharge)
1=Culvert (Inlet Controls 13.14 cfs @ 7.44 fps)

Summary for Pond EDMH7: EDMH-7

Inflow Area = 2.090 ac, 90.91% Impervious, Inflow Depth > 6.03" for 100 yr event
Inflow = 13.17 cfs @ 12.08 hrs, Volume= 1.051 af
Outflow = 13.17 cfs @ 12.08 hrs, Volume= 1.051 af, Atten= 0%, Lag= 0.0 min
Primary = 13.17 cfs @ 12.08 hrs, Volume= 1.051 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.72' @ 12.08 hrs
Flood Elev= 159.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.00'	**18.0" Round Culvert** L= 188.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 149.00' / 146.22' S= 0.0148 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=13.14 cfs @ 12.08 hrs HW=151.70' (Free Discharge)
1=Culvert (Barrel Controls 13.14 cfs @ 7.44 fps)

Summary for Pond NDC: North Drainage Channel

Inflow Area = 21.664 ac, 37.02% Impervious, Inflow Depth > 4.14" for 100 yr event
Inflow = 77.72 cfs @ 12.11 hrs, Volume= 7.468 af
Primary = 77.72 cfs @ 12.11 hrs, Volume= 7.468 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Pond ST-1: Ex Infilt

Inflow Area = 0.283 ac,100.00% Impervious, Inflow Depth > 6.36" for 100 yr event
Inflow = 1.83 cfs @ 12.08 hrs, Volume= 0.150 af
Outflow = 0.69 cfs @ 12.31 hrs, Volume= 0.102 af, Atten= 62%, Lag= 13.9 min
Primary = 0.69 cfs @ 12.31 hrs, Volume= 0.102 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 153.57' @ 12.31 hrs Surf.Area= 1,471 sf Storage= 3,287 cf
Flood Elev= 153.67' Surf.Area= 1,471 sf Storage= 3,344 cf

Plug-Flow detention time= 226.2 min calculated for 0.102 af (68% of inflow)
Center-of-Mass det. time= 128.0 min (871.2 - 743.2)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	1,857 cf	**4.75'W x 7.20'L x 4.50'H Prismatoid** x 43 6,618 cf Overall - 1,975 cf Embedded = 4,642 cf x 40.0% Voids
#2	150.67'	1,975 cf	**ADS_StormTech SC-740** x 43 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		3,832 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	150.47'	**12.0" Round Culvert** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 150.47' / 150.02' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	150.67'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	152.22'	**3.0" Vert. Orifice/Grate X 2.00** C= 0.600
#4	Device 1	153.53'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.68 cfs @ 12.31 hrs HW=153.57' (Free Discharge)
└**1=Culvert** (Passes 0.68 cfs of 5.09 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 8.14 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.52 cfs @ 5.33 fps)
  └**4=Sharp-Crested Rectangular Weir** (Weir Controls 0.11 cfs @ 0.67 fps)

Summary for Pond ST-2: Ex Infilt

Inflow Area = 0.498 ac, 94.58% Impervious, Inflow Depth > 6.12" for 100 yr event
Inflow = 3.18 cfs @ 12.08 hrs, Volume= 0.254 af
Outflow = 0.75 cfs @ 12.47 hrs, Volume= 0.164 af, Atten= 77%, Lag= 23.2 min
Primary = 0.75 cfs @ 12.47 hrs, Volume= 0.164 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 150.67' Surf.Area= 3,078 sf Storage= 825 cf
Peak Elev= 153.66' @ 12.47 hrs Surf.Area= 3,078 sf Storage= 7,021 cf (6,196 cf above start)
Flood Elev= 153.67' Surf.Area= 3,078 sf Storage= 7,027 cf (6,202 cf above start)

Plug-Flow detention time= 277.4 min calculated for 0.145 af (57% of inflow)
Center-of-Mass det. time= 133.2 min (887.7 - 754.5)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	43 cf	**4.75'W x 7.20'L x 4.50'H Prismatoid** 154 cf Overall - 46 cf Embedded = 107 cf x 40.0% Voids
#2	150.67'	46 cf	**ADS_StormTech SC-740 @ 7.20' L** Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.20'L = 46.5 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		89 cf	x 90.00 = 8,049 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	150.67'	**12.0" Round Culvert** L= 23.6' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 150.67' / 150.48' S= 0.0081 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	150.67'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	153.60'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	152.20'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.74 cfs @ 12.47 hrs HW=153.66' (Free Discharge)
└**1=Culvert** (Passes 0.74 cfs of 5.97 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 8.27 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Weir Controls 0.21 cfs @ 0.83 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.48 cfs @ 5.49 fps)

Summary for Pond WET: Existing Onsite Wetlands

Inflow Area = 3.911 ac, 43.83% Impervious, Inflow Depth > 4.53" for 100 yr event
Inflow = 14.37 cfs @ 12.18 hrs, Volume= 1.477 af
Outflow = 12.12 cfs @ 12.27 hrs, Volume= 1.477 af, Atten= 16%, Lag= 5.4 min
Primary = 12.12 cfs @ 12.27 hrs, Volume= 1.477 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.28' @ 12.27 hrs Surf.Area= 8,339 sf Storage= 1,813 cf
Flood Elev= 150.00' Surf.Area= 46,149 sf Storage= 19,550 cf

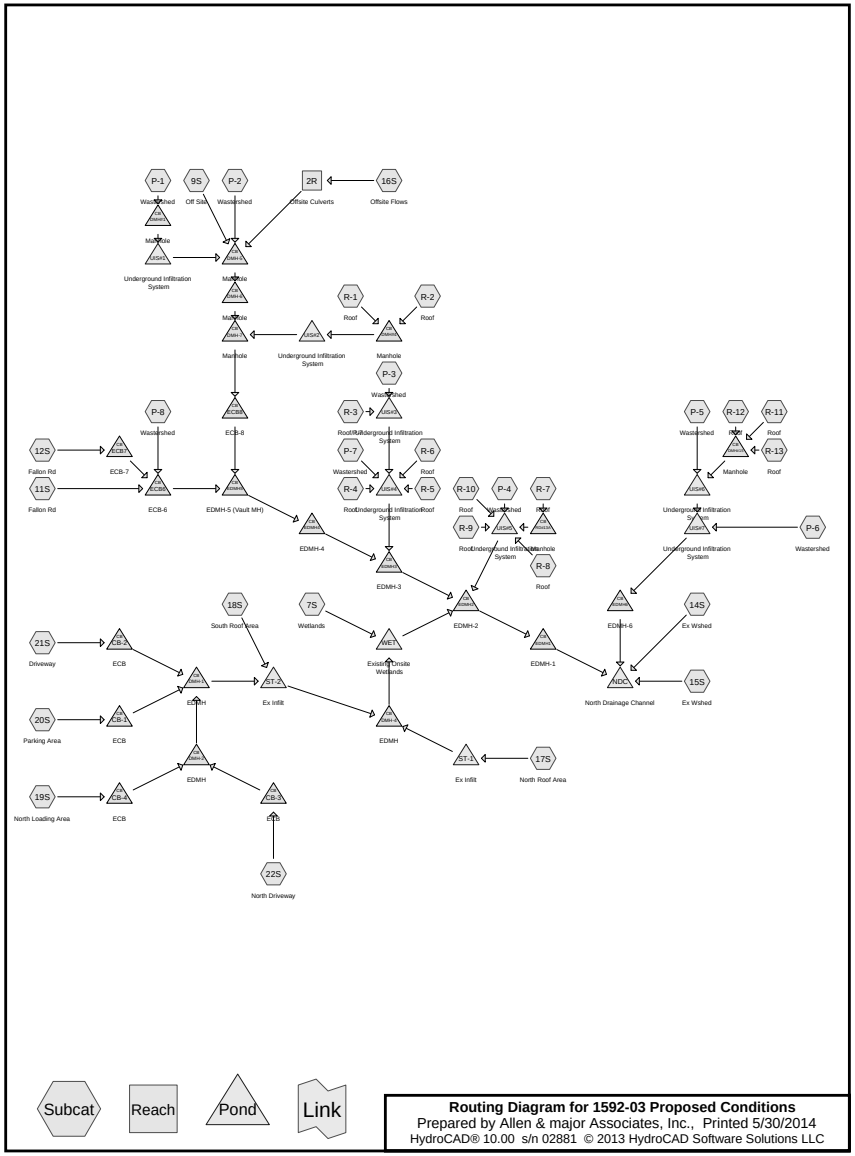
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.5 min (821.5 - 821.0)

Volume	Invert	Avail.Storage	Storage Description
#1	148.20'	19,550 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
148.20	0	0.0	0	0	0
149.00	1,834	347.0	489	489	9,583
150.00	46,149	1,378.0	19,061	19,550	151,112

Device	Routing	Invert	Outlet Devices
#1	Primary	147.47'	**24.0" Round Culvert** L= 72.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 147.47' / 146.94' S= 0.0074 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 3.14 sf

Primary OutFlow Max=12.12 cfs @ 12.27 hrs HW=149.28' (Free Discharge)
└**1=Culvert** (Barrel Controls 12.12 cfs @ 5.33 fps)



Routing Diagram for 1592-03 Proposed Conditions
Prepared by Allen & major Associates, Inc., Printed 5/30/2014
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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 7S: Wetlands Runoff Area=2.060 ac 61.17% Impervious Runoff Depth>1.95"
Flow Length=215' Tc=13.0 min CN=88 Runoff=3.76 cfs 0.334 af

Subcatchment 9S: Off Site Runoff Area=2.980 ac 12.42% Impervious Runoff Depth>0.90"
Flow Length=115' Tc=11.0 min CN=72 Runoff=2.43 cfs 0.223 af

Subcatchment 11S: Fallon Rd Runoff Area=0.330 ac 0.00% Impervious Runoff Depth>1.79"
Tc=6.0 min CN=86 Runoff=0.69 cfs 0.049 af

Subcatchment 12S: Fallon Rd Runoff Area=0.190 ac 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.58 cfs 0.046 af

Subcatchment 14S: Ex Wshed Runoff Area=3.870 ac 0.00% Impervious Runoff Depth>0.46"
Flow Length=110' Tc=18.2 min CN=62 Runoff=0.98 cfs 0.147 af

Subcatchment 15S: Ex Wshed Runoff Area=0.303 ac 20.46% Impervious Runoff Depth>0.75"
Tc=6.0 min CN=69 Runoff=0.23 cfs 0.019 af

Subcatchment 16S: Offsite Flows Runoff Area=2.250 ac 38.00% Impervious Runoff Depth>1.06"
Tc=6.0 min CN=75 Runoff=2.67 cfs 0.198 af

Subcatchment 17S: North Roof Area Runoff Area=0.283 ac 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.87 cfs 0.069 af

Subcatchment 18S: South Roof Area Runoff Area=0.115 ac 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.35 cfs 0.028 af

Subcatchment 19S: North Loading Area Runoff Area=0.200 ac 91.50% Impervious Runoff Depth>2.59"
Tc=6.0 min CN=95 Runoff=0.58 cfs 0.043 af

Subcatchment 20S: Parking Area Runoff Area=0.101 ac 90.10% Impervious Runoff Depth>2.49"
Tc=6.0 min CN=94 Runoff=0.28 cfs 0.021 af

Subcatchment 21S: Driveway Runoff Area=0.032 ac 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.10 cfs 0.008 af

Subcatchment 22S: North Driveway Runoff Area=0.050 ac 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.15 cfs 0.012 af

Subcatchment P-1: Wastershed Runoff Area=59,568 sf 54.87% Impervious Runoff Depth>2.03"
Flow Length=95' Slope=0.0200 '/' Tc=10.4 min CN=89 Runoff=2.80 cfs 0.232 af

Subcatchment P-2: Wastershed Runoff Area=9,628 sf 0.00% Impervious Runoff Depth>1.36"
Tc=6.0 min CN=80 Runoff=0.35 cfs 0.025 af

Subcatchment P-3: Wastershed Runoff Area=29,385 sf 79.78% Impervious Runoff Depth>2.30"
Tc=6.0 min CN=92 Runoff=1.78 cfs 0.129 af

Subcatchment P-4: Wastershed Runoff Area=52,078 sf 54.62% Impervious Runoff Depth>1.71"
Tc=6.0 min CN=85 Runoff=2.41 cfs 0.171 af

Subcatchment P-5: Wastershed Runoff Area=42,817 sf 51.43% Impervious Runoff Depth>1.43"
Tc=6.0 min CN=81 Runoff=1.64 cfs 0.117 af

Subcatchment P-6: Wastershed Runoff Area=34,048 sf 58.04% Impervious Runoff Depth>1.50"
Tc=6.0 min CN=82 Runoff=1.37 cfs 0.097 af

Subcatchment P-7: Wastershed Runoff Area=16,693 sf 60.91% Impervious Runoff Depth>2.21"
Tc=6.0 min CN=91 Runoff=0.98 cfs 0.071 af

Subcatchment P-8: Wastershed Runoff Area=17,253 sf 17.77% Impervious Runoff Depth>0.80"
Tc=6.0 min CN=70 Runoff=0.33 cfs 0.026 af

Subcatchment R-1: Roof Runoff Area=17,511 sf 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=1.23 cfs 0.098 af

Subcatchment R-10: Roof Runoff Area=5,737 sf 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.40 cfs 0.032 af

Subcatchment R-11: Roof Runoff Area=5,371 sf 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.38 cfs 0.030 af

Subcatchment R-12: Roof Runoff Area=5,353 sf 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.38 cfs 0.030 af

Subcatchment R-13: Roof Runoff Area=12,032 sf 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.84 cfs 0.067 af

Subcatchment R-2: Roof Runoff Area=6,250 sf 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.44 cfs 0.035 af

Subcatchment R-3: Roof/P-7 Runoff Area=9,775 sf 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.69 cfs 0.055 af

Subcatchment R-4: Roof Runoff Area=10,473 sf 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.73 cfs 0.058 af

Subcatchment R-5: Roof Runoff Area=3,816 sf 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.27 cfs 0.021 af

Subcatchment R-6: Roof Runoff Area=6,293 sf 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.44 cfs 0.035 af

Subcatchment R-7: Roof Runoff Area=31,465 sf 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=2.21 cfs 0.175 af

Subcatchment R-8: Roof Runoff Area=4,369 sf 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.31 cfs 0.024 af

Subcatchment R-9: Roof Runoff Area=5,551 sf 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.39 cfs 0.031 af

Reach 2R: Offsite Culverts Avg. Flow Depth=0.46' Max Vel=3.29 fps Inflow=2.67 cfs 0.198 af
15.0" Round Pipe x 2.00 n=0.013 L=95.0' S=0.0053 '/' Capacity=9.37 cfs Outflow=2.66 cfs 0.198 af

Pond CB-1: ECB Peak Elev=151.53' Inflow=0.28 cfs 0.021 af
12.0" Round Culvert n=0.012 L=13.6' S=0.0096 '/' Outflow=0.28 cfs 0.021 af

Pond CB-2: ECB Peak Elev=151.43' Inflow=0.10 cfs 0.008 af
12.0" Round Culvert n=0.012 L=25.9' S=0.0050 '/' Outflow=0.10 cfs 0.008 af

Pond CB-3: ECB Peak Elev=151.94' Inflow=0.15 cfs 0.012 af
12.0" Round Culvert n=0.012 L=36.4' S=0.0099 '/' Outflow=0.15 cfs 0.012 af

Pond CB-4: ECB Peak Elev=152.13' Inflow=0.58 cfs 0.043 af
12.0" Round Culvert n=0.012 L=17.9' S=0.0201 '/' Outflow=0.58 cfs 0.043 af

Pond DMH#1: Manhole Peak Elev=153.36' Inflow=2.80 cfs 0.232 af
15.0" Round Culvert n=0.011 L=145.0' S=0.0100 '/' Outflow=2.80 cfs 0.232 af

Pond DMH#15: Manhole Peak Elev=153.45' Inflow=1.60 cfs 0.127 af
12.0" Round Culvert n=0.011 L=27.0' S=0.0100 '/' Outflow=1.60 cfs 0.127 af

Pond DMH#4: Manhole Peak Elev=152.90' Inflow=1.67 cfs 0.133 af
12.0" Round Culvert n=0.011 L=12.0' S=0.0100 '/' Outflow=1.67 cfs 0.133 af

Pond DMH-1: EDMH Peak Elev=151.72' Inflow=1.11 cfs 0.084 af
12.0" Round Culvert n=0.012 L=3.5' S=0.0057 '/' Outflow=1.11 cfs 0.084 af

Pond DMH-2: EDMH Peak Elev=151.80' Inflow=0.73 cfs 0.055 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0050 '/' Outflow=0.73 cfs 0.055 af

Pond DMH-4: EDMH Peak Elev=150.16' Inflow=0.06 cfs 0.064 af
12.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/' Outflow=0.06 cfs 0.064 af

Pond DMH-5: Manhole Peak Elev=152.35' Inflow=7.89 cfs 0.645 af
18.0" Round Culvert n=0.011 L=84.0' S=0.0100 '/' Outflow=7.89 cfs 0.645 af

Pond DMH-6: Manhole Peak Elev=151.41' Inflow=7.89 cfs 0.645 af
18.0" Round Culvert n=0.011 L=114.0' S=0.0100 '/' Outflow=7.89 cfs 0.645 af

Pond DMH-7: Manhole Peak Elev=150.51' Inflow=9.32 cfs 0.750 af
18.0" Round Culvert n=0.011 L=40.0' S=0.0100 '/' Outflow=9.32 cfs 0.750 af

Pond ECB6: ECB-6 Peak Elev=148.23' Inflow=1.60 cfs 0.122 af
12.0" Round Culvert n=0.013 L=33.0' S=0.0100 '/' Outflow=1.60 cfs 0.122 af

Pond ECB7: ECB-7 Peak Elev=149.64' Inflow=0.58 cfs 0.046 af
12.0" Round Culvert n=0.013 L=23.0' S=0.0726 '/' Outflow=0.58 cfs 0.046 af

Pond ECB8: ECB-8 Peak Elev=150.23' Inflow=9.32 cfs 0.750 af
18.0" Round Culvert n=0.013 L=102.0' S=0.0057 '/' Outflow=9.32 cfs 0.750 af

Pond EDMH1: EDMH-1 Peak Elev=148.15' Inflow=19.69 cfs 1.909 af
48.0" Round Culvert n=0.013 L=213.0' S=0.0024 '/' Outflow=19.69 cfs 1.909 af

Pond EDMH2: EDMH-2 Peak Elev=148.36' Inflow=19.69 cfs 1.909 af
48.0" Round Culvert n=0.013 L=85.0' S=0.0016 '/' Outflow=19.69 cfs 1.909 af

Pond EDMH3: EDMH-3 Peak Elev=148.38' Inflow=15.38 cfs 1.178 af
48.0" Round Culvert n=0.013 L=177.0' S=0.0008 '/' Outflow=15.38 cfs 1.178 af

Pond EDMH4: EDMH-4 Peak Elev=148.14' Inflow=10.74 cfs 0.872 af
48.0" Round Culvert n=0.013 L=95.0' S=0.0025 '/' Outflow=10.74 cfs 0.872 af

Pond EDMH5: EDMH-5 (Vault MH) Peak Elev=148.53' Inflow=10.74 cfs 0.872 af
48.0" Round Culvert n=0.013 L=150.0' S=0.0032 '/' Outflow=10.74 cfs 0.872 af

Pond EDMH6: EDMH-6 Peak Elev=147.04' Inflow=3.00 cfs 0.276 af
18.0" Round Culvert n=0.013 L=6.0' S=0.0483 '/' Outflow=3.00 cfs 0.276 af

Pond NDC: North Drainage Channel Inflow=22.89 cfs 2.351 af
Primary=22.89 cfs 2.351 af

Pond RD#13A: Manhole Peak Elev=154.84' Inflow=2.21 cfs 0.175 af
12.0" Round Culvert n=0.011 L=130.0' S=0.0100 '/' Outflow=2.21 cfs 0.175 af

Pond ST-1: Ex Infilt Peak Elev=152.13' Storage=2,140 cf Inflow=0.87 cfs 0.069 af
Outflow=0.03 cfs 0.030 af

Pond ST-2: Ex Infilt Peak Elev=152.13' Storage=4,497 cf Inflow=1.46 cfs 0.112 af
Outflow=0.03 cfs 0.034 af

Pond UIS#1: Underground Infiltration System Peak Elev=152.68' Storage=1,602 cf Inflow=2.80 cfs 0.232 af
Outflow=2.78 cfs 0.199 af

Pond UIS#2: Underground Infiltration System Peak Elev=153.58' Storage=1,976 cf Inflow=1.67 cfs 0.133 af
Outflow=1.44 cfs 0.105 af

Pond UIS#3: Underground Infiltration System Peak Elev=151.55' Storage=1,606 cf Inflow=2.47 cfs 0.184 af
Outflow=2.42 cfs 0.151 af

Pond UIS#4: Underground Infiltration System Peak Elev=151.39' Storage=1,603 cf Inflow=4.82 cfs 0.337 af
Outflow=4.78 cfs 0.307 af

Pond UIS#5: Underground Infiltration System Peak Elev=153.74' Storage=9,623 cf Inflow=5.71 cfs 0.433 af
Outflow=1.22 cfs 0.332 af

Pond UIS#6: Underground Infiltration System Peak Elev=153.22' Storage=3,154 cf Inflow=3.23 cfs 0.244 af
Outflow=2.24 cfs 0.199 af

Pond UIS#7: Underground Infiltration System Peak Elev=151.80' Storage=1,697 cf Inflow=3.36 cfs 0.297 af
Outflow=3.00 cfs 0.276 af

Pond WET: Existing Onsite Wetlands Peak Elev=148.36' Storage=4 cf Inflow=3.81 cfs 0.399 af
24.0" Round Culvert n=0.013 L=72.0' S=0.0074 '/' Outflow=3.81 cfs 0.399 af

Total Runoff Area = 21.613 ac Runoff Volume = 2.757 af Average Runoff Depth = 1.53"
55.85% Pervious = 12.071 ac 44.15% Impervious = 9.542 ac

Summary for Subcatchment 7S: Wetlands

Runoff = 3.76 cfs @ 12.18 hrs, Volume= 0.334 af, Depth> 1.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (ac)	CN	Description
0.230	58	Woods/grass comb., Good, HSG B
0.570	79	Woods/grass comb., Good, HSG D
1.260	98	Water Surface, HSG D
2.060	88	Weighted Average
0.800		38.83% Pervious Area
1.260		61.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	50	0.0260	0.07		**Sheet Flow, Initial Overland Flow (0-50')** Woods: Light underbrush n= 0.400 P2= 3.15"
1.8	165	0.0090	1.53		**Shallow Concentrated Flow, Overland Flow (50-215')** Unpaved Kv= 16.1 fps
13.0	215	Total			

Summary for Subcatchment 9S: Off Site

Runoff = 2.43 cfs @ 12.17 hrs, Volume= 0.223 af, Depth> 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
	1.060	58	Woods/grass comb., Good, HSG B
*	0.370	98	Paved parking & wetlands, HSG B
*	1.140	79	Woods/grass comb., Good, HSG D (9)
*	0.060	80	>75% Grass cover, Good, HSG D (9)
*	0.350	61	>75% Grass cover, Good, HSG B (265)
	2.980	72	Weighted Average
	2.610		87.58% Pervious Area
	0.370		12.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	50	0.0310	0.08		**Sheet Flow, Initial Overland Floow (0 - 50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.6	65	0.0110	1.69		**Shallow Concentrated Flow, Overland Flow (50-115')** Unpaved Kv= 16.1 fps
11.0	115	Total			

Summary for Subcatchment 11S: Fallon Rd

Runoff = 0.69 cfs @ 12.09 hrs, Volume= 0.049 af, Depth> 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	0.330	86	
	0.330		100.00% Pervious Area

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

Summary for Subcatchment 12S: Fallon Rd

Runoff = 0.58 cfs @ 12.08 hrs, Volume= 0.046 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (ac)	CN	Description
0.190	98	Paved parking, HSG B
0.190		100.00% Impervious Area

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

Summary for Subcatchment 14S: Ex Wshed

Runoff = 0.98 cfs @ 12.35 hrs, Volume= 0.147 af, Depth> 0.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	3.870	62	
	3.870		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.9	50	0.0080	0.05		**Sheet Flow, Initial Overland Flow (0 - 50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.3	60	0.0317	2.87		**Shallow Concentrated Flow, Overland Flow (50 - 110')** Unpaved Kv= 16.1 fps
18.2	110	Total			

Summary for Subcatchment 15S: Ex Wshed

Runoff = 0.23 cfs @ 12.10 hrs, Volume= 0.019 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	0.062	98	Paved parking & roofs
	0.241	61	>75% Grass cover, Good, HSG B
	0.303	69	Weighted Average
	0.241		79.54% Pervious Area
	0.062		20.46% Impervious Area

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

Summary for Subcatchment 16S: Offsite Flows

Runoff = 2.67 cfs @ 12.10 hrs, Volume= 0.198 af, Depth> 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (ac)	CN	Description
2.250	75	1/4 acre lots, 38% imp, HSG B
1.395		62.00% Pervious Area
0.855		38.00% Impervious Area

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

Summary for Subcatchment 17S: North Roof Area

Runoff = 0.87 cfs @ 12.08 hrs, Volume= 0.069 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	0.283	98	Roofs
	0.283		100.00% Impervious Area

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

Summary for Subcatchment 18S: South Roof Area

Runoff = 0.35 cfs @ 12.08 hrs, Volume= 0.028 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	0.115	98	Roofs
	0.115		100.00% Impervious Area

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

Summary for Subcatchment 19S: North Loading Area

Runoff = 0.58 cfs @ 12.08 hrs, Volume= 0.043 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	0.183	98	Paved parking
	0.017	61	>75% Grass cover, Good, HSG B
	0.200	95	Weighted Average
	0.017		8.50% Pervious Area
	0.183		91.50% Impervious Area

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

Summary for Subcatchment 20S: Parking Area

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.021 af, Depth> 2.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	0.091	98	Paved parking & roofs
	0.010	61	>75% Grass cover, Good, HSG B
	0.101	94	Weighted Average
	0.010		9.90% Pervious Area
	0.091		90.10% Impervious Area

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

Summary for Subcatchment 21S: Driveway

Runoff = 0.10 cfs @ 12.08 hrs, Volume= 0.008 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	0.032	98	Paved
	0.032		100.00% Impervious Area

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

Summary for Subcatchment 22S: North Driveway

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

	Area (ac)	CN	Description
*	0.050	98	Paved driveway
	0.050		100.00% Impervious Area

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

Summary for Subcatchment P-1: Wastershed

Runoff = 2.80 cfs @ 12.14 hrs, Volume= 0.232 af, Depth> 2.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
3,002	61	>75% Grass cover, Good, HSG B
23,880	80	>75% Grass cover, Good, HSG D
72	98	Paved parking, HSG B
32,614	98	Paved parking, HSG D
59,568	89	Weighted Average
26,882		45.13% Pervious Area
32,686		54.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	50	0.0200	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.32"
0.8	45	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.4	95	Total			

Summary for Subcatchment P-2: Wastershed

Runoff = 0.35 cfs @ 12.09 hrs, Volume= 0.025 af, Depth> 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
9,628	80	>75% Grass cover, Good, HSG D
0	98	Paved parking, HSG B
0	98	Paved parking, HSG D
9,628	80	Weighted Average
9,628		100.00% Pervious Area

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

Summary for Subcatchment P-3: Wastershed

Runoff = 1.78 cfs @ 12.09 hrs, Volume= 0.129 af, Depth> 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
3,067	61	>75% Grass cover, Good, HSG B
2,875	80	>75% Grass cover, Good, HSG D
15,168	98	Paved parking, HSG B
8,275	98	Paved parking, HSG D
29,385	92	Weighted Average
5,942		20.22% Pervious Area
23,443		79.78% Impervious Area

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

Summary for Subcatchment P-4: Wastershed

Runoff = 2.41 cfs @ 12.09 hrs, Volume= 0.171 af, Depth> 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
14,596	61	>75% Grass cover, Good, HSG B
9,036	80	>75% Grass cover, Good, HSG D
16,384	98	Paved parking, HSG B
12,062	98	Paved parking, HSG D
52,078	85	Weighted Average
23,632		45.38% Pervious Area
28,446		54.62% Impervious Area

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

Summary for Subcatchment P-5: Wastershed

Runoff = 1.64 cfs @ 12.09 hrs, Volume= 0.117 af, Depth> 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
19,669	61	>75% Grass cover, Good, HSG B
1,127	80	>75% Grass cover, Good, HSG D
21,732	98	Paved parking, HSG B
289	98	Paved parking, HSG D
42,817	81	Weighted Average
20,796		48.57% Pervious Area
22,021		51.43% Impervious Area

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

Summary for Subcatchment P-6: Wastershed

Runoff = 1.37 cfs @ 12.09 hrs, Volume= 0.097 af, Depth> 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
14,286	61	>75% Grass cover, Good, HSG B
0	80	>75% Grass cover, Good, HSG D
19,762	98	Paved parking, HSG B
0	98	Paved parking, HSG D
34,048	82	Weighted Average
14,286		41.96% Pervious Area
19,762		58.04% Impervious Area

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

Summary for Subcatchment P-7: Wastershed

Runoff = 0.98 cfs @ 12.09 hrs, Volume= 0.071 af, Depth> 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
6,525	80	>75% Grass cover, Good, HSG D
0	98	Paved parking, HSG B
10,168	98	Paved parking, HSG D
16,693	91	Weighted Average
6,525		39.09% Pervious Area
10,168		60.91% Impervious Area

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

Summary for Subcatchment P-8: Wastershed

Runoff = 0.33 cfs @ 12.10 hrs, Volume= 0.026 af, Depth> 0.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
12,066	61	>75% Grass cover, Good, HSG B
2,121	80	>75% Grass cover, Good, HSG D
3,066	98	Paved parking, HSG B
0	98	Paved parking, HSG D
17,253	70	Weighted Average
14,187		82.23% Pervious Area
3,066		17.77% Impervious Area

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

Summary for Subcatchment R-1: Roof

Runoff = 1.23 cfs @ 12.08 hrs, Volume= 0.098 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
318	98	Paved parking, HSG B
17,193	98	Paved parking, HSG D
17,511	98	Weighted Average
17,511		100.00% Impervious Area

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

Summary for Subcatchment R-10: Roof

Runoff = 0.40 cfs @ 12.08 hrs, Volume= 0.032 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
5,737	98	Roofs, HSG B
0	98	Roofs, HSG D
5,737	98	Weighted Average
5,737		100.00% Impervious Area

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

Summary for Subcatchment R-11: Roof

Runoff = 0.38 cfs @ 12.08 hrs, Volume= 0.030 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
5,371	98	Roofs, HSG B
0	98	Roofs, HSG D
5,371	98	Weighted Average
5,371		100.00% Impervious Area

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

Summary for Subcatchment R-12: Roof

Runoff = 0.38 cfs @ 12.08 hrs, Volume= 0.030 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
5,353	98	Roofs, HSG B
0	98	Roofs, HSG D
5,353	98	Weighted Average
5,353		100.00% Impervious Area

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

Summary for Subcatchment R-13: Roof

Runoff = 0.84 cfs @ 12.08 hrs, Volume= 0.067 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
11,051	98	Roofs, HSG B
981	98	Roofs, HSG D
12,032	98	Weighted Average
12,032		100.00% Impervious Area

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

Summary for Subcatchment R-2: Roof

Runoff = 0.44 cfs @ 12.08 hrs, Volume= 0.035 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
1,991	98	Paved parking, HSG B
4,259	98	Paved parking, HSG D
6,250	98	Weighted Average
6,250		100.00% Impervious Area

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

Summary for Subcatchment R-3: Roof/P-7

Runoff = 0.69 cfs @ 12.08 hrs, Volume= 0.055 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
9,775	98	Paved parking, HSG D
9,775		100.00% Impervious Area

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

Summary for Subcatchment R-4: Roof

Runoff = 0.73 cfs @ 12.08 hrs, Volume= 0.058 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
10,473	98	Roofs, HSG D
10,473	98	Weighted Average
10,473		100.00% Impervious Area

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

Summary for Subcatchment R-5: Roof

Runoff = 0.27 cfs @ 12.08 hrs, Volume= 0.021 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
3,816	98	Roofs, HSG D
3,816	98	Weighted Average
3,816		100.00% Impervious Area

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

Summary for Subcatchment R-6: Roof

Runoff = 0.44 cfs @ 12.08 hrs, Volume= 0.035 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
86	98	Roofs, HSG B
6,207	98	Roofs, HSG D
6,293	98	Weighted Average
6,293		100.00% Impervious Area

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

Summary for Subcatchment R-7: Roof

Runoff = 2.21 cfs @ 12.08 hrs, Volume= 0.175 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
1,114	98	Roofs, HSG B
30,351	98	Roofs, HSG D
31,465	98	Weighted Average
31,465		100.00% Impervious Area

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

Summary for Subcatchment R-8: Roof

Runoff = 0.31 cfs @ 12.08 hrs, Volume= 0.024 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
3,286	98	Roofs, HSG B
1,083	98	Roofs, HSG D
4,369	98	Weighted Average
4,369		100.00% Impervious Area

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

Summary for Subcatchment R-9: Roof

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.031 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.15"

Area (sf)	CN	Description
4,954	98	Roofs, HSG B
597	98	Roofs, HSG D
5,551	98	Weighted Average
5,551		100.00% Impervious Area

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

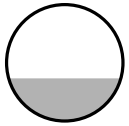
Summary for Reach 2R: Offsite Culverts

Inflow Area = 2.250 ac, 38.00% Impervious, Inflow Depth > 1.06" for 2 yr event
Inflow = 2.67 cfs @ 12.10 hrs, Volume= 0.198 af
Outflow = 2.66 cfs @ 12.11 hrs, Volume= 0.198 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.29 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 1.2 min

Peak Storage= 77 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.46'
Bank-Full Depth= 1.25' Flow Area= 2.5 sf, Capacity= 9.37 cfs

A factor of 2.00 has been applied to the storage and discharge capacity
15.0" Round Pipe
n= 0.013 Concrete pipe, straight & clean
Length= 95.0' Slope= 0.0053 '/'
Inlet Invert= 172.00', Outlet Invert= 171.50'



Summary for Pond CB-1: ECB

Inflow Area = 0.101 ac, 90.10% Impervious, Inflow Depth > 2.49" for 2 yr event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.021 af
Outflow = 0.28 cfs @ 12.08 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 12.08 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.53' @ 12.08 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.25'	**12.0" Round Culvert** L= 13.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.25' / 151.12' S= 0.0096 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.28 cfs @ 12.08 hrs HW=151.53' (Free Discharge)
1=Culvert (Barrel Controls 0.28 cfs @ 2.32 fps)

Summary for Pond CB-2: ECB

Inflow Area = 0.032 ac,100.00% Impervious, Inflow Depth > 2.92" for 2 yr event
Inflow = 0.10 cfs @ 12.08 hrs, Volume= 0.008 af
Outflow = 0.10 cfs @ 12.08 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min
Primary = 0.10 cfs @ 12.08 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.43' @ 12.08 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.25'	**12.0" Round Culvert** L= 25.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.25' / 151.12' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.10 cfs @ 12.08 hrs HW=151.43' (Free Discharge)
1=Culvert (Barrel Controls 0.10 cfs @ 1.57 fps)

Summary for Pond CB-3: ECB

Inflow Area = 0.050 ac,100.00% Impervious, Inflow Depth > 2.92" for 2 yr event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min
Primary = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 151.94' @ 12.08 hrs
Flood Elev= 154.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.75'	**12.0" Round Culvert** L= 36.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.75' / 151.39' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.15 cfs @ 12.08 hrs HW=151.94' (Free Discharge)
1=Culvert (Barrel Controls 0.15 cfs @ 2.21 fps)

Summary for Pond CB-4: ECB

Inflow Area = 0.200 ac, 91.50% Impervious, Inflow Depth > 2.59" for 2 yr event
Inflow = 0.58 cfs @ 12.08 hrs, Volume= 0.043 af
Outflow = 0.58 cfs @ 12.08 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min
Primary = 0.58 cfs @ 12.08 hrs, Volume= 0.043 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 152.13' @ 12.08 hrs
Flood Elev= 154.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.75'	**12.0" Round Culvert** L= 17.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.75' / 151.39' S= 0.0201 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.57 cfs @ 12.08 hrs HW=152.13' (Free Discharge)
1=Culvert (Inlet Controls 0.57 cfs @ 2.10 fps)

Summary for Pond DMH#1: Manhole

Inflow Area = 1.367 ac, 54.87% Impervious, Inflow Depth > 2.03" for 2 yr event
Inflow = 2.80 cfs @ 12.14 hrs, Volume= 0.232 af
Outflow = 2.80 cfs @ 12.14 hrs, Volume= 0.232 af, Atten= 0%, Lag= 0.0 min
Primary = 2.80 cfs @ 12.14 hrs, Volume= 0.232 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 153.36' @ 12.14 hrs
Flood Elev= 156.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	152.51'	**15.0" Round Culvert** L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.51' / 151.06' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.80 cfs @ 12.14 hrs HW=153.36' (Free Discharge)
1=Culvert (Inlet Controls 2.80 cfs @ 3.14 fps)

Summary for Pond DMH#15: Manhole

Inflow Area = 0.522 ac,100.00% Impervious, Inflow Depth > 2.92" for 2 yr event
Inflow = 1.60 cfs @ 12.08 hrs, Volume= 0.127 af
Outflow = 1.60 cfs @ 12.08 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.0 min
Primary = 1.60 cfs @ 12.08 hrs, Volume= 0.127 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 153.45' @ 12.08 hrs
Flood Elev= 159.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	152.74'	**12.0" Round Culvert** L= 27.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.74' / 152.47' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.59 cfs @ 12.08 hrs HW=153.45' (Free Discharge)
1=Culvert (Barrel Controls 1.59 cfs @ 3.73 fps)

Summary for Pond DMH#4: Manhole

Inflow Area = 0.545 ac,100.00% Impervious, Inflow Depth > 2.92" for 2 yr event
Inflow = 1.67 cfs @ 12.08 hrs, Volume= 0.133 af
Outflow = 1.67 cfs @ 12.08 hrs, Volume= 0.133 af, Atten= 0%, Lag= 0.0 min
Primary = 1.67 cfs @ 12.08 hrs, Volume= 0.133 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 152.90' @ 12.08 hrs
Flood Elev= 158.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	152.11'	**12.0" Round Culvert** L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.11' / 151.99' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.66 cfs @ 12.08 hrs HW=152.90' (Free Discharge)
1=Culvert (Barrel Controls 1.66 cfs @ 3.43 fps)

Summary for Pond DMH-1: EDMH

Inflow Area = 0.383 ac, 92.95% Impervious, Inflow Depth > 2.64" for 2 yr event
Inflow = 1.11 cfs @ 12.08 hrs, Volume= 0.084 af
Outflow = 1.11 cfs @ 12.08 hrs, Volume= 0.084 af, Atten= 0%, Lag= 0.0 min
Primary = 1.11 cfs @ 12.08 hrs, Volume= 0.084 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.72' @ 12.08 hrs
Flood Elev= 154.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.04'	**12.0" Round Culvert** L= 3.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.04' / 151.02' S= 0.0057 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.11 cfs @ 12.08 hrs HW=151.72' (Free Discharge)
1=Culvert (Barrel Controls 1.11 cfs @ 2.77 fps)

Summary for Pond DMH-2: EDMH

Inflow Area = 0.250 ac, 93.20% Impervious, Inflow Depth > 2.66" for 2 yr event
Inflow = 0.73 cfs @ 12.08 hrs, Volume= 0.055 af
Outflow = 0.73 cfs @ 12.08 hrs, Volume= 0.055 af, Atten= 0%, Lag= 0.0 min
Primary = 0.73 cfs @ 12.08 hrs, Volume= 0.055 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.80' @ 12.08 hrs
Flood Elev= 154.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.29'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.29' / 151.14' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.73 cfs @ 12.08 hrs HW=151.80' (Free Discharge)
1=Culvert (Barrel Controls 0.73 cfs @ 2.65 fps)

Summary for Pond DMH-4: EDMH

Inflow Area = 0.781 ac, 96.54% Impervious, Inflow Depth > 0.99" for 2 yr event
Inflow = 0.06 cfs @ 15.90 hrs, Volume= 0.064 af
Outflow = 0.06 cfs @ 15.90 hrs, Volume= 0.064 af, Atten= 0%, Lag= 0.0 min
Primary = 0.06 cfs @ 15.90 hrs, Volume= 0.064 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 150.16' @ 15.90 hrs
Flood Elev= 156.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	150.02'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 150.02' / 149.92' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.06 cfs @ 15.90 hrs HW=150.16' (Free Discharge)
1=Culvert (Barrel Controls 0.06 cfs @ 1.37 fps)

Summary for Pond DMH-5: Manhole

Inflow Area = 6.819 ac, 28.97% Impervious, Inflow Depth > 1.14" for 2 yr event
Inflow = 7.89 cfs @ 12.14 hrs, Volume= 0.645 af
Outflow = 7.89 cfs @ 12.14 hrs, Volume= 0.645 af, Atten= 0%, Lag= 0.0 min
Primary = 7.89 cfs @ 12.14 hrs, Volume= 0.645 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 152.35' @ 12.14 hrs
Flood Elev= 160.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	150.74'	**18.0" Round Culvert** L= 84.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 150.74' / 149.90' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=7.89 cfs @ 12.14 hrs HW=152.35' (Free Discharge)
1=Culvert (Inlet Controls 7.89 cfs @ 4.46 fps)

Summary for Pond DMH-6: Manhole

Inflow Area = 6.819 ac, 28.97% Impervious, Inflow Depth > 1.14" for 2 yr event
Inflow = 7.89 cfs @ 12.14 hrs, Volume= 0.645 af
Outflow = 7.89 cfs @ 12.14 hrs, Volume= 0.645 af, Atten= 0%, Lag= 0.0 min
Primary = 7.89 cfs @ 12.14 hrs, Volume= 0.645 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.41' @ 12.14 hrs
Flood Elev= 158.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.80'	**18.0" Round Culvert** L= 114.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 149.80' / 148.66' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=7.89 cfs @ 12.14 hrs HW=151.41' (Free Discharge)
1=Culvert (Inlet Controls 7.89 cfs @ 4.46 fps)

Summary for Pond DMH-7: Manhole

Inflow Area = 7.364 ac, 34.23% Impervious, Inflow Depth > 1.22" for 2 yr event
Inflow = 9.32 cfs @ 12.14 hrs, Volume= 0.750 af
Outflow = 9.32 cfs @ 12.14 hrs, Volume= 0.750 af, Atten= 0%, Lag= 0.0 min
Primary = 9.32 cfs @ 12.14 hrs, Volume= 0.750 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 150.51' @ 12.14 hrs
Flood Elev= 158.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	148.56'	**18.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 148.56' / 148.16' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=9.31 cfs @ 12.14 hrs HW=150.51' (Free Discharge)
1=Culvert (Inlet Controls 9.31 cfs @ 5.27 fps)

Summary for Pond ECB6: ECB-6

Inflow Area = 0.916 ac, 28.42% Impervious, Inflow Depth > 1.59" for 2 yr event
Inflow = 1.60 cfs @ 12.09 hrs, Volume= 0.122 af
Outflow = 1.60 cfs @ 12.09 hrs, Volume= 0.122 af, Atten= 0%, Lag= 0.0 min
Primary = 1.60 cfs @ 12.09 hrs, Volume= 0.122 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.23' @ 12.09 hrs
Flood Elev= 151.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.53'	**12.0" Round Culvert** L= 33.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 147.53' / 147.20' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=1.60 cfs @ 12.09 hrs HW=148.23' (Free Discharge)
1=Culvert (Barrel Controls 1.60 cfs @ 3.84 fps)

Summary for Pond ECB7: ECB-7

Inflow Area = 0.190 ac,100.00% Impervious, Inflow Depth > 2.92" for 2 yr event
Inflow = 0.58 cfs @ 12.08 hrs, Volume= 0.046 af
Outflow = 0.58 cfs @ 12.08 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min
Primary = 0.58 cfs @ 12.08 hrs, Volume= 0.046 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.64' @ 12.08 hrs
Flood Elev= 151.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.30'	**12.0" Round RCP_Round 12"** L= 23.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 149.30' / 147.63' S= 0.0726 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.58 cfs @ 12.08 hrs HW=149.64' (Free Discharge)
1=RCP_Round 12" (Inlet Controls 0.58 cfs @ 2.48 fps)

Summary for Pond ECB8: ECB-8

Inflow Area = 7.364 ac, 34.23% Impervious, Inflow Depth > 1.22" for 2 yr event
Inflow = 9.32 cfs @ 12.14 hrs, Volume= 0.750 af
Outflow = 9.32 cfs @ 12.14 hrs, Volume= 0.750 af, Atten= 0%, Lag= 0.0 min
Primary = 9.32 cfs @ 12.14 hrs, Volume= 0.750 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 150.23' @ 12.14 hrs
Flood Elev= 152.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.99'	**18.0" Round Culvert** L= 102.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 147.99' / 147.41' S= 0.0057 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=9.31 cfs @ 12.14 hrs HW=150.23' (Free Discharge)
1=Culvert (Barrel Controls 9.31 cfs @ 5.27 fps)

Summary for Pond EDMH1: EDMH-1

Inflow Area = 15.153 ac, 52.78% Impervious, Inflow Depth > 1.51" for 2 yr event
Inflow = 19.69 cfs @ 12.13 hrs, Volume= 1.909 af
Outflow = 19.69 cfs @ 12.13 hrs, Volume= 1.909 af, Atten= 0%, Lag= 0.0 min
Primary = 19.69 cfs @ 12.13 hrs, Volume= 1.909 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 148.15' @ 12.13 hrs
Flood Elev= 152.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.20'	**48.0" Round Culvert** L= 213.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.20' / 145.68' S= 0.0024 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf

Primary OutFlow Max=19.68 cfs @ 12.13 hrs HW=148.15' (Free Discharge)
1=Culvert (Barrel Controls 19.68 cfs @ 4.72 fps)

Summary for Pond EDMH2: EDMH-2

Inflow Area = 15.153 ac, 52.78% Impervious, Inflow Depth > 1.51" for 2 yr event
Inflow = 19.69 cfs @ 12.13 hrs, Volume= 1.909 af
Outflow = 19.69 cfs @ 12.13 hrs, Volume= 1.909 af, Atten= 0%, Lag= 0.0 min
Primary = 19.69 cfs @ 12.13 hrs, Volume= 1.909 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.36' @ 12.13 hrs
Flood Elev= 151.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.34'	**48.0" Round Culvert** L= 85.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.34' / 146.20' S= 0.0016 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=19.68 cfs @ 12.13 hrs HW=148.36' (Free Discharge)
1=Culvert (Barrel Controls 19.68 cfs @ 4.51 fps)

Summary for Pond EDMH3: EDMH-3

Inflow Area = 10.035 ac, 42.35% Impervious, Inflow Depth > 1.41" for 2 yr event
Inflow = 15.38 cfs @ 12.12 hrs, Volume= 1.178 af
Outflow = 15.38 cfs @ 12.12 hrs, Volume= 1.178 af, Atten= 0%, Lag= 0.0 min
Primary = 15.38 cfs @ 12.12 hrs, Volume= 1.178 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.38' @ 12.12 hrs
Flood Elev= 152.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.48'	**48.0" Round Culvert** L= 177.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.48' / 146.34' S= 0.0008 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=15.37 cfs @ 12.12 hrs HW=148.38' (Free Discharge)
1=Culvert (Barrel Controls 15.37 cfs @ 3.82 fps)

Summary for Pond EDMH4: EDMH-4

Inflow Area = 8.280 ac, 33.59% Impervious, Inflow Depth > 1.26" for 2 yr event
Inflow = 10.74 cfs @ 12.13 hrs, Volume= 0.872 af
Outflow = 10.74 cfs @ 12.13 hrs, Volume= 0.872 af, Atten= 0%, Lag= 0.0 min
Primary = 10.74 cfs @ 12.13 hrs, Volume= 0.872 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.14' @ 12.13 hrs
Flood Elev= 152.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.72'	**48.0" Round Culvert** L= 95.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.72' / 146.48' S= 0.0025 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=10.73 cfs @ 12.13 hrs HW=148.14' (Free Discharge)
1=Culvert (Barrel Controls 10.73 cfs @ 4.00 fps)

Summary for Pond EDMH5: EDMH-5 (Vault MH)

Inflow Area = 8.280 ac, 33.59% Impervious, Inflow Depth > 1.26" for 2 yr event
Inflow = 10.74 cfs @ 12.13 hrs, Volume= 0.872 af
Outflow = 10.74 cfs @ 12.13 hrs, Volume= 0.872 af, Atten= 0%, Lag= 0.0 min
Primary = 10.74 cfs @ 12.13 hrs, Volume= 0.872 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.53' @ 12.13 hrs
Flood Elev= 152.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.20'	**48.0" Round Culvert** L= 150.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 147.20' / 146.72' S= 0.0032 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=10.73 cfs @ 12.13 hrs HW=148.53' (Free Discharge)
1=Culvert (Barrel Controls 10.73 cfs @ 4.39 fps)

Summary for Pond EDMH6: EDMH-6

Inflow Area = 2.287 ac, 64.78% Impervious, Inflow Depth > 1.45" for 2 yr event
Inflow = 3.00 cfs @ 12.20 hrs, Volume= 0.276 af
Outflow = 3.00 cfs @ 12.20 hrs, Volume= 0.276 af, Atten= 0%, Lag= 0.0 min
Primary = 3.00 cfs @ 12.20 hrs, Volume= 0.276 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 147.04' @ 12.20 hrs
Flood Elev= 152.52'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.22'	**18.0" Round Culvert** L= 6.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.22' / 145.93' S= 0.0483 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=3.00 cfs @ 12.20 hrs HW=147.04' (Free Discharge)
1=Culvert (Barrel Controls 3.00 cfs @ 4.42 fps)

Summary for Pond NDC: North Drainage Channel

Inflow Area = 21.613 ac, 44.15% Impervious, Inflow Depth > 1.31" for 2 yr event
Inflow = 22.89 cfs @ 12.14 hrs, Volume= 2.351 af
Primary = 22.89 cfs @ 12.14 hrs, Volume= 2.351 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Pond RD#13A: Manhole

Inflow Area = 0.722 ac,100.00% Impervious, Inflow Depth > 2.92" for 2 yr event
Inflow = 2.21 cfs @ 12.08 hrs, Volume= 0.175 af
Outflow = 2.21 cfs @ 12.08 hrs, Volume= 0.175 af, Atten= 0%, Lag= 0.0 min
Primary = 2.21 cfs @ 12.08 hrs, Volume= 0.175 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 154.84' @ 12.08 hrs
Flood Elev= 158.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	**12.0" Round Culvert** L= 130.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.00' / 152.70' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.20 cfs @ 12.08 hrs HW=154.84' (Free Discharge)
1=Culvert (Inlet Controls 2.20 cfs @ 3.12 fps)

Summary for Pond ST-1: Ex Infilt

Inflow Area = 0.283 ac,100.00% Impervious, Inflow Depth > 2.92" for 2 yr event
Inflow = 0.87 cfs @ 12.08 hrs, Volume= 0.069 af
Outflow = 0.03 cfs @ 15.31 hrs, Volume= 0.030 af, Atten= 96%, Lag= 193.9 min
Primary = 0.03 cfs @ 15.31 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 152.13' @ 15.31 hrs Surf.Area= 1,471 sf Storage= 2,140 cf
Flood Elev= 153.67' Surf.Area= 1,471 sf Storage= 3,344 cf

Plug-Flow detention time= 436.7 min calculated for 0.030 af (44% of inflow)
Center-of-Mass det. time= 300.4 min (1,056.6 - 756.2)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	1,857 cf	**4.75'W x 7.20'L x 4.50'H Prismatoid** x 43 6,618 cf Overall - 1,975 cf Embedded = 4,642 cf x 40.0% Voids
#2	150.67'	1,975 cf	**ADS_StormTech SC-740** x 43 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		3,832 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	150.47'	**12.0" Round Culvert** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 150.47' / 150.02' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	150.67'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	152.22'	**3.0" Vert. Orifice/Grate X 2.00** C= 0.600
#4	Device 1	153.53'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.03 cfs @ 15.31 hrs HW=152.13' (Free Discharge)
└**1=Culvert** (Passes 0.03 cfs of 3.36 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 5.73 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond ST-2: Ex Infilt

Inflow Area = 0.498 ac, 94.58% Impervious, Inflow Depth > 2.70" for 2 yr event
Inflow = 1.46 cfs @ 12.08 hrs, Volume= 0.112 af
Outflow = 0.03 cfs @ 17.27 hrs, Volume= 0.034 af, Atten= 98%, Lag= 310.9 min
Primary = 0.03 cfs @ 17.27 hrs, Volume= 0.034 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 150.67' Surf.Area= 3,078 sf Storage= 825 cf
Peak Elev= 152.13' @ 17.27 hrs Surf.Area= 3,078 sf Storage= 4,497 cf (3,672 cf above start)
Flood Elev= 153.67' Surf.Area= 3,078 sf Storage= 7,027 cf (6,202 cf above start)

Plug-Flow detention time= 758.6 min calculated for 0.015 af (13% of inflow)
Center-of-Mass det. time= 258.4 min (1,029.9 - 771.5)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	43 cf	**4.75'W x 7.20'L x 4.50'H Prismatoid** 154 cf Overall - 46 cf Embedded = 107 cf x 40.0% Voids
#2	150.67'	46 cf	**ADS_StormTech SC-740 @ 7.20' L** Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.20'L = 46.5 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		89 cf	x 90.00 = 8,049 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	150.67'	**12.0" Round Culvert** L= 23.6' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 150.67' / 150.48' S= 0.0081 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	150.67'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	153.60'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	152.20'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.03 cfs @ 17.27 hrs HW=152.13' (Free Discharge)
└**1=Culvert** (Passes 0.03 cfs of 3.47 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 5.73 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond UIS#1: Underground Infiltration System

Inflow Area = 1.367 ac, 54.87% Impervious, Inflow Depth > 2.03" for 2 yr event
Inflow = 2.80 cfs @ 12.14 hrs, Volume= 0.232 af
Outflow = 2.78 cfs @ 12.16 hrs, Volume= 0.199 af, Atten= 1%, Lag= 0.9 min
Primary = 2.78 cfs @ 12.16 hrs, Volume= 0.199 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 152.68' @ 12.16 hrs Surf.Area= 1,350 sf Storage= 1,602 cf

Plug-Flow detention time= 90.5 min calculated for 0.199 af (86% of inflow)
Center-of-Mass det. time= 30.1 min (844.7 - 814.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	150.56'	952 cf	**18.17'W x 73.64'L x 2.33'H Field A** 3,121 cf Overall - 742 cf Embedded = 2,380 cf x 40.0% Voids
#2A	151.06'	742 cf	**ADS_StormTech SC-310** x 50 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 5 rows
#3	151.06'	101 cf	**4.00'D x 8.04'H Vertical Cone/Cylinder**
		1,795 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	151.06'	**15.0" Round Culvert**
			L= 18.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 151.06' / 150.88' S= 0.0100 '/' Cc= 0.900
			n= 0.011 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	152.30'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=2.77 cfs @ 12.16 hrs HW=152.68' (Free Discharge)
↑**1=Culvert** (Passes 2.77 cfs of 5.64 cfs potential flow)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 2.77 cfs @ 1.80 fps)

Summary for Pond UIS#2: Underground Infiltration System

Inflow Area = 0.545 ac,100.00% Impervious, Inflow Depth > 2.92" for 2 yr event
Inflow = 1.67 cfs @ 12.08 hrs, Volume= 0.133 af
Outflow = 1.44 cfs @ 12.13 hrs, Volume= 0.105 af, Atten= 14%, Lag= 2.8 min
Primary = 1.44 cfs @ 12.13 hrs, Volume= 0.105 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 153.58' @ 12.13 hrs Surf.Area= 1,726 sf Storage= 1,976 cf

Plug-Flow detention time= 162.5 min calculated for 0.105 af (79% of inflow)
Center-of-Mass det. time= 84.4 min (840.6 - 756.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	151.55'	1,226 cf	**18.17'W x 95.00'L x 2.33'H Field A**
			4,027 cf Overall - 963 cf Embedded = 3,064 cf x 40.0% Voids
#2A	152.05'	963 cf	**ADS_StormTech SC-310** x 65 Inside #1
			Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
			Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
			Row Length Adjustment= +0.44' x 2.07 sf x 5 rows
		2,188 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	152.05'	**12.0" Round Culvert**
			L= 5.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 152.05' / 152.00' S= 0.0100 '/' Cc= 0.900
			n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	152.55'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 1.00 1.00 1.50
			Width (feet) 0.00 1.00 4.00 4.00

Primary OutFlow Max=1.44 cfs @ 12.13 hrs HW=153.58' (Free Discharge)
↑**1=Culvert** (Passes 1.44 cfs of 3.77 cfs potential flow)
↑**2=Custom Weir/Orifice** (Weir Controls 1.44 cfs @ 2.38 fps)

Summary for Pond UIS#3: Underground Infiltration System

Inflow Area = 0.899 ac, 84.83% Impervious, Inflow Depth > 2.45" for 2 yr event
Inflow = 2.47 cfs @ 12.09 hrs, Volume= 0.184 af
Outflow = 2.42 cfs @ 12.10 hrs, Volume= 0.151 af, Atten= 2%, Lag= 0.9 min
Primary = 2.42 cfs @ 12.10 hrs, Volume= 0.151 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 151.55' @ 12.10 hrs Surf.Area= 1,350 sf Storage= 1,606 cf

Plug-Flow detention time= 116.6 min calculated for 0.151 af (82% of inflow)
Center-of-Mass det. time= 46.2 min (831.6 - 785.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	149.42'	952 cf	**18.17'W x 73.64'L x 2.33'H Field A**
			3,121 cf Overall - 742 cf Embedded = 2,380 cf x 40.0% Voids
#2A	149.92'	742 cf	**ADS_StormTech SC-310** x 50 Inside #1
			Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
			Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
			Row Length Adjustment= +0.44' x 2.07 sf x 5 rows
#3	149.92'	122 cf	**4.00'D x 9.68'H Vertical Cone/Cylinder**
		1,815 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	149.92'	**15.0" Round Culvert**
			L= 16.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 149.92' / 149.76' S= 0.0100 '/' Cc= 0.900
			n= 0.011 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	151.20'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=2.42 cfs @ 12.10 hrs HW=151.55' (Free Discharge)
↑**1=Culvert** (Passes 2.42 cfs of 5.60 cfs potential flow)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 2.42 cfs @ 1.72 fps)

Summary for Pond UIS#4: Underground Infiltration System

Inflow Area = 1.755 ac, 83.69% Impervious, Inflow Depth > 2.30" for 2 yr event
Inflow = 4.82 cfs @ 12.09 hrs, Volume= 0.337 af
Outflow = 4.78 cfs @ 12.10 hrs, Volume= 0.307 af, Atten= 1%, Lag= 0.6 min
Primary = 4.78 cfs @ 12.10 hrs, Volume= 0.307 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 151.39' @ 12.10 hrs Surf.Area= 1,350 sf Storage= 1,603 cf

Plug-Flow detention time= 72.2 min calculated for 0.307 af (91% of inflow)
Center-of-Mass det. time= 28.1 min (827.8 - 799.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	149.26'	952 cf	**18.17'W x 73.64'L x 2.33'H Field A** 3,121 cf Overall - 742 cf Embedded = 2,380 cf x 40.0% Voids
#2A	149.76'	742 cf	**ADS_StormTech SC-310** x 50 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 5 rows
#3	149.76'	125 cf	**4.00'D x 9.94'H Vertical Cone/Cylinder**
		1,818 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	149.76'	**18.0" Round Culvert** L= 7.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 149.76' / 149.69' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.77 sf
#2	Device 1	150.85'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=4.75 cfs @ 12.10 hrs HW=151.39' (Free Discharge)
└─**1=Culvert** (Passes 4.75 cfs of 6.80 cfs potential flow)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 4.75 cfs @ 2.22 fps)

Summary for Pond UIS#5: Underground Infiltration System

Inflow Area = 2.277 ac, 76.18% Impervious, Inflow Depth > 2.28" for 2 yr event
Inflow = 5.71 cfs @ 12.09 hrs, Volume= 0.433 af
Outflow = 1.22 cfs @ 12.51 hrs, Volume= 0.332 af, Atten= 79%, Lag= 25.2 min
Primary = 1.22 cfs @ 12.51 hrs, Volume= 0.332 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 153.74' @ 12.51 hrs Surf.Area= 7,911 sf Storage= 9,623 cf

Plug-Flow detention time= 200.6 min calculated for 0.332 af (77% of inflow)
Center-of-Mass det. time= 116.3 min (900.0 - 783.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	151.96'	3,871 cf	**30.00'W x 144.84'L x 3.50'H Field A** 15,208 cf Overall - 5,530 cf Embedded = 9,678 cf x 40.0% Voids
#2A	152.46'	5,530 cf	**ADS_StormTech SC-740** x 120 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 6 rows
#3B	151.96'	2,421 cf	**20.50'W x 130.60'L x 3.50'H Field B** 9,370 cf Overall - 3,319 cf Embedded = 6,051 cf x 40.0% Voids
#4B	152.46'	3,319 cf	**ADS_StormTech SC-740** x 72 Inside #3 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 4 rows
#5C	151.96'	837 cf	**11.00'W x 80.76'L x 3.50'H Field C** 3,109 cf Overall - 1,016 cf Embedded = 2,093 cf x 40.0% Voids
#6C	152.46'	1,016 cf	**ADS_StormTech SC-740** x 22 Inside #5 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 2 rows
		16,994 cf	Total Available Storage

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

Device	Routing	Invert	Outlet Devices
#1	Primary	152.46'	**15.0" Round Culvert** L= 171.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.46' / 149.04' S= 0.0200 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	152.75'	**7.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	153.70'	**11.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	155.46'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=1.22 cfs @ 12.51 hrs HW=153.74' (Free Discharge)
└─**1=Culvert** (Passes 1.22 cfs of 4.79 cfs potential flow)
├─**2=Orifice/Grate** (Orifice Controls 1.22 cfs @ 3.97 fps)
├─**3=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.69 fps)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond UIS#6: Underground Infiltration System

Inflow Area = 1.505 ac, 68.29% Impervious, Inflow Depth > 1.94" for 2 yr event
Inflow = 3.23 cfs @ 12.09 hrs, Volume= 0.244 af
Outflow = 2.24 cfs @ 12.17 hrs, Volume= 0.199 af, Atten= 31%, Lag= 4.9 min
Primary = 2.24 cfs @ 12.17 hrs, Volume= 0.199 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 153.22' @ 12.17 hrs Surf.Area= 3,557 sf Storage= 3,154 cf

Plug-Flow detention time= 130.7 min calculated for 0.199 af (82% of inflow)
Center-of-Mass det. time= 56.2 min (852.3 - 796.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	151.78'	2,491 cf	**34.83'W x 102.12'L x 2.33'H Field A** 8,300 cf Overall - 2,073 cf Embedded = 6,227 cf x 40.0% Voids
#2A	152.28'	2,073 cf	**ADS_StormTech RC-310** x 140 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 10 rows
		4,564 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	152.47'	**15.0" Round Culvert** L= 144.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.47' / 150.99' S= 0.0103 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	152.70'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=2.24 cfs @ 12.17 hrs HW=153.22' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.24 cfs @ 2.94 fps)
└**2=Broad-Crested Rectangular Weir** (Passes 2.24 cfs of 4.46 cfs potential flow)

Summary for Pond UIS#7: Underground Infiltration System

Inflow Area = 2.287 ac, 64.78% Impervious, Inflow Depth > 1.56" for 2 yr event
Inflow = 3.36 cfs @ 12.13 hrs, Volume= 0.297 af
Outflow = 3.00 cfs @ 12.20 hrs, Volume= 0.276 af, Atten= 11%, Lag= 4.5 min
Primary = 3.00 cfs @ 12.20 hrs, Volume= 0.276 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 151.80' @ 12.20 hrs Surf.Area= 2,126 sf Storage= 1,697 cf

Plug-Flow detention time= 51.2 min calculated for 0.276 af (93% of inflow)
Center-of-Mass det. time= 15.9 min (863.0 - 847.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	150.49'	1,499 cf	**18.17'W x 116.36'L x 2.33'H Field A** 4,932 cf Overall - 1,184 cf Embedded = 3,748 cf x 40.0% Voids
#2A	150.99'	1,184 cf	**ADS_StormTech RC-310** x 80 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 5 rows
#3	150.99'	92 cf	**4.00'D x 7.31'H Vertical Cone/Cylinder**
		2,775 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	150.99'	**18.0" Round Culvert** L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 150.99' / 150.47' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.77 sf
#2	Device 1	151.25'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=3.00 cfs @ 12.20 hrs HW=151.80' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.00 cfs @ 3.07 fps)
└**2=Broad-Crested Rectangular Weir** (Passes 3.00 cfs of 5.00 cfs potential flow)

Summary for Pond WET: Existing Onsite Wetlands

Inflow Area = 2.841 ac, 70.89% Impervious, Inflow Depth > 1.68" for 2 yr event
Inflow = 3.81 cfs @ 12.18 hrs, Volume= 0.399 af
Outflow = 3.81 cfs @ 12.18 hrs, Volume= 0.399 af, Atten= 0%, Lag= 0.1 min
Primary = 3.81 cfs @ 12.18 hrs, Volume= 0.399 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.36' @ 12.18 hrs Surf.Area= 74 sf Storage= 4 cf
Flood Elev= 150.00' Surf.Area= 46,149 sf Storage= 19,550 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (856.4 - 856.4)

Volume	Invert	Avail.Storage	Storage Description
#1	148.20'	19,550 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
148.20	0	0.0	0	0	0
149.00	1,834	347.0	489	489	9,583
150.00	46,149	1,378.0	19,061	19,550	151,112

Device	Routing	Invert	Outlet Devices
#1	Primary	147.47'	**24.0" Round Culvert** L= 72.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 147.47' / 146.94' S= 0.0074 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 3.14 sf

Primary OutFlow Max=3.81 cfs @ 12.18 hrs HW=148.36' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.81 cfs @ 4.14 fps)

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 7S: Wetlands Runoff Area=2.060 ac 61.17% Impervious Runoff Depth>3.47"
Flow Length=215' Tc=13.0 min CN=88 Runoff=6.60 cfs 0.596 af

Subcatchment 9S: Off Site Runoff Area=2.980 ac 12.42% Impervious Runoff Depth>2.04"
Flow Length=115' Tc=11.0 min CN=72 Runoff=5.96 cfs 0.507 af

Subcatchment 11S: Fallon Rd Runoff Area=0.330 ac 0.00% Impervious Runoff Depth>3.28"
Tc=6.0 min CN=86 Runoff=1.25 cfs 0.090 af

Subcatchment 12S: Fallon Rd Runoff Area=0.190 ac 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=0.89 cfs 0.072 af

Subcatchment 14S: Ex Wshed Runoff Area=3.870 ac 0.00% Impervious Runoff Depth>1.31"
Flow Length=110' Tc=18.2 min CN=62 Runoff=3.78 cfs 0.422 af

Subcatchment 15S: Ex Wshed Runoff Area=0.303 ac 20.46% Impervious Runoff Depth>1.81"
Tc=6.0 min CN=69 Runoff=0.63 cfs 0.046 af

Subcatchment 16S: Offsite Flows Runoff Area=2.250 ac 38.00% Impervious Runoff Depth>2.29"
Tc=6.0 min CN=75 Runoff=6.01 cfs 0.428 af

Subcatchment 17S: North Roof Area Runoff Area=0.283 ac 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=1.33 cfs 0.108 af

Subcatchment 18S: South Roof Area Runoff Area=0.115 ac 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=0.54 cfs 0.044 af

Subcatchment 19S: North Loading Area Runoff Area=0.200 ac 91.50% Impervious Runoff Depth>4.22"
Tc=6.0 min CN=95 Runoff=0.91 cfs 0.070 af

Subcatchment 20S: Parking Area Runoff Area=0.101 ac 90.10% Impervious Runoff Depth>4.11"
Tc=6.0 min CN=94 Runoff=0.45 cfs 0.035 af

Subcatchment 21S: Driveway Runoff Area=0.032 ac 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=0.15 cfs 0.012 af

Subcatchment 22S: North Driveway Runoff Area=0.050 ac 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=0.23 cfs 0.019 af

Subcatchment P-1: Wastershed Runoff Area=59,568 sf 54.87% Impervious Runoff Depth>3.57"
Flow Length=95' Slope=0.0200 '/' Tc=10.4 min CN=89 Runoff=4.84 cfs 0.407 af

Subcatchment P-2: Wastershed Runoff Area=9,628 sf 0.00% Impervious Runoff Depth>2.72"
Tc=6.0 min CN=80 Runoff=0.70 cfs 0.050 af

Subcatchment P-3: Wastershed Runoff Area=29,385 sf 79.78% Impervious Runoff Depth>3.89"
Tc=6.0 min CN=92 Runoff=2.93 cfs 0.219 af

Subcatchment P-4: Wastershed Runoff Area=52,078 sf 54.62% Impervious Runoff Depth>3.18"
Tc=6.0 min CN=85 Runoff=4.43 cfs 0.317 af

Subcatchment P-5: Wastershed Runoff Area=42,817 sf 51.43% Impervious Runoff Depth>2.81"
Tc=6.0 min CN=81 Runoff=3.24 cfs 0.230 af

Subcatchment P-6: Wastershed Runoff Area=34,048 sf 58.04% Impervious Runoff Depth>2.90"
Tc=6.0 min CN=82 Runoff=2.65 cfs 0.189 af

Subcatchment P-7: Wastershed Runoff Area=16,693 sf 60.91% Impervious Runoff Depth>3.78"
Tc=6.0 min CN=91 Runoff=1.63 cfs 0.121 af

Subcatchment P-8: Wastershed Runoff Area=17,253 sf 17.77% Impervious Runoff Depth>1.89"
Tc=6.0 min CN=70 Runoff=0.86 cfs 0.062 af

Subcatchment R-1: Roof Runoff Area=17,511 sf 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=1.89 cfs 0.153 af

Subcatchment R-10: Roof Runoff Area=5,737 sf 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=0.62 cfs 0.050 af

Subcatchment R-11: Roof Runoff Area=5,371 sf 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=0.58 cfs 0.047 af

Subcatchment R-12: Roof Runoff Area=5,353 sf 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=0.58 cfs 0.047 af

Subcatchment R-13: Roof Runoff Area=12,032 sf 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=1.30 cfs 0.105 af

Subcatchment R-2: Roof Runoff Area=6,250 sf 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=0.67 cfs 0.055 af

Subcatchment R-3: Roof/P-7 Runoff Area=9,775 sf 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=1.05 cfs 0.085 af

Subcatchment R-4: Roof Runoff Area=10,473 sf 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=1.13 cfs 0.091 af

Subcatchment R-5: Roof Runoff Area=3,816 sf 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=0.41 cfs 0.033 af

Subcatchment R-6: Roof Runoff Area=6,293 sf 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=0.68 cfs 0.055 af

Subcatchment R-7: Roof Runoff Area=31,465 sf 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=3.39 cfs 0.274 af

Subcatchment R-8: Roof Runoff Area=4,369 sf 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=0.47 cfs 0.038 af

Subcatchment R-9: Roof Runoff Area=5,551 sf 100.00% Impervious Runoff Depth>4.56"
Tc=6.0 min CN=98 Runoff=0.60 cfs 0.048 af

Reach 2R: Offsite Culverts Avg. Flow Depth=0.73' Max Vel=4.05 fps Inflow=6.01 cfs 0.428 af
15.0" Round Pipe x 2.00 n=0.013 L=95.0' S=0.0053 '/' Capacity=9.37 cfs Outflow=5.99 cfs 0.428 af

Pond CB-1: ECB Peak Elev=151.62' Inflow=0.45 cfs 0.035 af
12.0" Round Culvert n=0.012 L=13.6' S=0.0096 '/' Outflow=0.45 cfs 0.035 af

Pond CB-2: ECB Peak Elev=151.47' Inflow=0.15 cfs 0.012 af
12.0" Round Culvert n=0.012 L=25.9' S=0.0050 '/' Outflow=0.15 cfs 0.012 af

Pond CB-3: ECB Peak Elev=151.99' Inflow=0.23 cfs 0.019 af
12.0" Round Culvert n=0.012 L=36.4' S=0.0099 '/' Outflow=0.23 cfs 0.019 af

Pond CB-4: ECB Peak Elev=152.24' Inflow=0.91 cfs 0.070 af
12.0" Round Culvert n=0.012 L=17.9' S=0.0201 '/' Outflow=0.91 cfs 0.070 af

Pond DMH#1: Manhole Peak Elev=153.80' Inflow=4.84 cfs 0.407 af
15.0" Round Culvert n=0.011 L=145.0' S=0.0100 '/' Outflow=4.84 cfs 0.407 af

Pond DMH#15: Manhole Peak Elev=153.70' Inflow=2.45 cfs 0.199 af
12.0" Round Culvert n=0.011 L=27.0' S=0.0100 '/' Outflow=2.45 cfs 0.199 af

Pond DMH#4: Manhole Peak Elev=153.17' Inflow=2.56 cfs 0.207 af
12.0" Round Culvert n=0.011 L=12.0' S=0.0100 '/' Outflow=2.56 cfs 0.207 af

Pond DMH-1: EDMH Peak Elev=151.93' Inflow=1.75 cfs 0.136 af
12.0" Round Culvert n=0.012 L=3.5' S=0.0057 '/' Outflow=1.75 cfs 0.136 af

Pond DMH-2: EDMH Peak Elev=151.95' Inflow=1.15 cfs 0.089 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0050 '/' Outflow=1.15 cfs 0.089 af

Pond DMH-4: EDMH Peak Elev=150.46' Inflow=0.54 cfs 0.155 af
12.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/' Outflow=0.54 cfs 0.155 af

Pond DMH-5: Manhole Peak Elev=155.37' Inflow=16.76 cfs 1.360 af
18.0" Round Culvert n=0.011 L=84.0' S=0.0100 '/' Outflow=16.76 cfs 1.360 af

Pond DMH-6: Manhole Peak Elev=154.43' Inflow=16.76 cfs 1.360 af
18.0" Round Culvert n=0.011 L=114.0' S=0.0100 '/' Outflow=16.76 cfs 1.360 af

Pond DMH-7: Manhole Peak Elev=154.38' Inflow=19.15 cfs 1.538 af
18.0" Round Culvert n=0.011 L=40.0' S=0.0100 '/' Outflow=19.15 cfs 1.538 af

Pond ECB6: ECB-6 Peak Elev=148.61' Inflow=3.00 cfs 0.225 af
12.0" Round Culvert n=0.013 L=33.0' S=0.0100 '/' Outflow=3.00 cfs 0.225 af

Pond ECB7: ECB-7 Peak Elev=149.73' Inflow=0.89 cfs 0.072 af
12.0" Round Culvert n=0.013 L=23.0' S=0.0726 '/' Outflow=0.89 cfs 0.072 af

Pond ECB8: ECB-8 Peak Elev=154.50' Inflow=19.15 cfs 1.538 af
18.0" Round Culvert n=0.013 L=102.0' S=0.0057 '/' Outflow=19.15 cfs 1.538 af

Pond EDMH1: EDMH-1 Peak Elev=149.00' Inflow=37.44 cfs 3.677 af
48.0" Round Culvert n=0.013 L=213.0' S=0.0024 '/' Outflow=37.44 cfs 3.677 af

Pond EDMH2: EDMH-2 Peak Elev=149.22' Inflow=37.44 cfs 3.677 af
48.0" Round Culvert n=0.013 L=85.0' S=0.0016 '/' Outflow=37.44 cfs 3.677 af

Pond EDMH3: EDMH-3 Peak Elev=149.15' Inflow=29.50 cfs 2.305 af
48.0" Round Culvert n=0.013 L=177.0' S=0.0008 '/' Outflow=29.50 cfs 2.305 af

Pond EDMH4: EDMH-4 Peak Elev=148.80' Inflow=21.91 cfs 1.763 af
48.0" Round Culvert n=0.013 L=95.0' S=0.0025 '/' Outflow=21.91 cfs 1.763 af

Pond EDMH5: EDMH-5 (Vault MH) Peak Elev=149.14' Inflow=21.91 cfs 1.763 af
48.0" Round Culvert n=0.013 L=150.0' S=0.0032 '/' Outflow=21.91 cfs 1.763 af

Pond EDMH6: EDMH-6 Peak Elev=147.56' Inflow=6.36 cfs 0.551 af
18.0" Round Culvert n=0.013 L=6.0' S=0.0483 '/' Outflow=6.36 cfs 0.551 af

Pond NDC: North Drainage Channel Inflow=46.44 cfs 4.696 af
Primary=46.44 cfs 4.696 af

Pond RD#13A: Manhole Peak Elev=155.30' Inflow=3.39 cfs 0.274 af
12.0" Round Culvert n=0.011 L=130.0' S=0.0100 '/' Outflow=3.39 cfs 0.274 af

Pond ST-1: Ex Infilt Peak Elev=152.65' Storage=2,668 cf Inflow=1.33 cfs 0.108 af
Outflow=0.30 cfs 0.063 af

Pond ST-2: Ex Infilt Peak Elev=152.63' Storage=5,561 cf Inflow=2.29 cfs 0.180 af
Outflow=0.25 cfs 0.092 af

Pond UIS#1: Underground Infiltration System Peak Elev=152.84' Storage=1,687 cf Inflow=4.84 cfs 0.407 af
Outflow=4.81 cfs 0.375 af

Pond UIS#2: Underground Infiltration System Peak Elev=153.71' Storage=2,066 cf Inflow=2.56 cfs 0.207 af
Outflow=2.48 cfs 0.178 af

Pond UIS#3: Underground Infiltration System Peak Elev=151.68' Storage=1,675 cf Inflow=3.98 cfs 0.304 af
Outflow=3.94 cfs 0.271 af

Pond UIS#4: Underground Infiltration System Peak Elev=151.57' Storage=1,702 cf Inflow=7.77 cfs 0.572 af
Outflow=7.68 cfs 0.542 af

Pond UIS#5: Underground Infiltration Peak Elev=154.47' Storage=13,524 cf Inflow=9.50 cfs 0.728 af
Outflow=3.53 cfs 0.621 af

Pond UIS#6: Underground Infiltration System Peak Elev=153.65' Storage=3,907 cf Inflow=5.69 cfs 0.428 af
Outflow=4.45 cfs 0.383 af

Pond UIS#7: Underground Infiltration System Peak Elev=152.31' Storage=2,263 cf Inflow=6.77 cfs 0.572 af
Outflow=6.36 cfs 0.551 af

Pond WET: Existing Onsite Wetlands Peak Elev=148.70' Storage=123 cf Inflow=6.75 cfs 0.751 af
24.0" Round Culvert n=0.013 L=72.0' S=0.0074 '/' Outflow=6.67 cfs 0.751 af

Total Runoff Area = 21.613 ac Runoff Volume = 5.125 af Average Runoff Depth = 2.85"
55.85% Pervious = 12.071 ac 44.15% Impervious = 9.542 ac

Summary for Subcatchment 7S: Wetlands

Runoff = 6.60 cfs @ 12.18 hrs, Volume= 0.596 af, Depth> 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (ac)	CN	Description
0.230	58	Woods/grass comb., Good, HSG B
0.570	79	Woods/grass comb., Good, HSG D
1.260	98	Water Surface, HSG D
2.060	88	Weighted Average
0.800		38.83% Pervious Area
1.260		61.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	50	0.0260	0.07		**Sheet Flow, Initial Overland Flow (0-50')** Woods: Light underbrush n= 0.400 P2= 3.15"
1.8	165	0.0090	1.53		**Shallow Concentrated Flow, Overland Flow (50-215')** Unpaved Kv= 16.1 fps
13.0	215	Total			

Summary for Subcatchment 9S: Off Site

Runoff = 5.96 cfs @ 12.16 hrs, Volume= 0.507 af, Depth> 2.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
	1.060	58	Woods/grass comb., Good, HSG B
*	0.370	98	Paved parking & wetlands, HSG B
*	1.140	79	Woods/grass comb., Good, HSG D (9)
*	0.060	80	>75% Grass cover, Good, HSG D (9)
*	0.350	61	>75% Grass cover, Good, HSG B (265)
	2.980	72	Weighted Average
	2.610		87.58% Pervious Area
	0.370		12.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	50	0.0310	0.08		**Sheet Flow, Initial Overland Floow (0 - 50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.6	65	0.0110	1.69		**Shallow Concentrated Flow, Overland Flow (50-115')** Unpaved Kv= 16.1 fps
11.0	115	Total			

Summary for Subcatchment 11S: Fallon Rd

Runoff = 1.25 cfs @ 12.09 hrs, Volume= 0.090 af, Depth> 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	0.330	86	
	0.330		100.00% Pervious Area

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

Summary for Subcatchment 12S: Fallon Rd

Runoff = 0.89 cfs @ 12.08 hrs, Volume= 0.072 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (ac)	CN	Description
0.190	98	Paved parking, HSG B
0.190		100.00% Impervious Area

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

Summary for Subcatchment 14S: Ex Wshed

Runoff = 3.78 cfs @ 12.28 hrs, Volume= 0.422 af, Depth> 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	3.870	62	
	3.870		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.9	50	0.0080	0.05		**Sheet Flow, Initial Overland Flow (0 - 50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.3	60	0.0317	2.87		**Shallow Concentrated Flow, Overland Flow (50 - 110')** Unpaved Kv= 16.1 fps
18.2	110	Total			

Summary for Subcatchment 15S: Ex Wshed

Runoff = 0.63 cfs @ 12.09 hrs, Volume= 0.046 af, Depth> 1.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	0.062	98	Paved parking & roofs
	0.241	61	>75% Grass cover, Good, HSG B
	0.303	69	Weighted Average
	0.241		79.54% Pervious Area
	0.062		20.46% Impervious Area

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

Summary for Subcatchment 16S: Offsite Flows

Runoff = 6.01 cfs @ 12.09 hrs, Volume= 0.428 af, Depth> 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (ac)	CN	Description
2.250	75	1/4 acre lots, 38% imp, HSG B
1.395		62.00% Pervious Area
0.855		38.00% Impervious Area

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

Summary for Subcatchment 17S: North Roof Area

Runoff = 1.33 cfs @ 12.08 hrs, Volume= 0.108 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	0.283	98	Roofs
	0.283		100.00% Impervious Area

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

Summary for Subcatchment 18S: South Roof Area

Runoff = 0.54 cfs @ 12.08 hrs, Volume= 0.044 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	0.115	98	Roofs
	0.115		100.00% Impervious Area

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

Summary for Subcatchment 19S: North Loading Area

Runoff = 0.91 cfs @ 12.08 hrs, Volume= 0.070 af, Depth> 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	0.183	98	Paved parking
	0.017	61	>75% Grass cover, Good, HSG B
	0.200	95	Weighted Average
	0.017		8.50% Pervious Area
	0.183		91.50% Impervious Area

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

Summary for Subcatchment 20S: Parking Area

Runoff = 0.45 cfs @ 12.08 hrs, Volume= 0.035 af, Depth> 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	0.091	98	Paved parking & roofs
	0.010	61	>75% Grass cover, Good, HSG B
	0.101	94	Weighted Average
	0.010		9.90% Pervious Area
	0.091		90.10% Impervious Area

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

Summary for Subcatchment 21S: Driveway

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	0.032	98	Paved
	0.032		100.00% Impervious Area

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

Summary for Subcatchment 22S: North Driveway

Runoff = 0.23 cfs @ 12.08 hrs, Volume= 0.019 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

	Area (ac)	CN	Description
*	0.050	98	Paved driveway
	0.050		100.00% Impervious Area

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

Summary for Subcatchment P-1: Wastershed

Runoff = 4.84 cfs @ 12.14 hrs, Volume= 0.407 af, Depth> 3.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
3,002	61	>75% Grass cover, Good, HSG B
23,880	80	>75% Grass cover, Good, HSG D
72	98	Paved parking, HSG B
32,614	98	Paved parking, HSG D
59,568	89	Weighted Average
26,882		45.13% Pervious Area
32,686		54.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	50	0.0200	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.32"
0.8	45	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.4	95	Total			

Summary for Subcatchment P-2: Wastershed

Runoff = 0.70 cfs @ 12.09 hrs, Volume= 0.050 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
9,628	80	>75% Grass cover, Good, HSG D
0	98	Paved parking, HSG B
0	98	Paved parking, HSG D
9,628	80	Weighted Average
9,628		100.00% Pervious Area

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

Summary for Subcatchment P-3: Wastershed

Runoff = 2.93 cfs @ 12.08 hrs, Volume= 0.219 af, Depth> 3.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
3,067	61	>75% Grass cover, Good, HSG B
2,875	80	>75% Grass cover, Good, HSG D
15,168	98	Paved parking, HSG B
8,275	98	Paved parking, HSG D
29,385	92	Weighted Average
5,942		20.22% Pervious Area
23,443		79.78% Impervious Area

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

Summary for Subcatchment P-4: Wastershed

Runoff = 4.43 cfs @ 12.09 hrs, Volume= 0.317 af, Depth> 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
14,596	61	>75% Grass cover, Good, HSG B
9,036	80	>75% Grass cover, Good, HSG D
16,384	98	Paved parking, HSG B
12,062	98	Paved parking, HSG D
52,078	85	Weighted Average
23,632		45.38% Pervious Area
28,446		54.62% Impervious Area

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

Summary for Subcatchment P-5: Wastershed

Runoff = 3.24 cfs @ 12.09 hrs, Volume= 0.230 af, Depth> 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
19,669	61	>75% Grass cover, Good, HSG B
1,127	80	>75% Grass cover, Good, HSG D
21,732	98	Paved parking, HSG B
289	98	Paved parking, HSG D
42,817	81	Weighted Average
20,796		48.57% Pervious Area
22,021		51.43% Impervious Area

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

Summary for Subcatchment P-6: Wastershed

Runoff = 2.65 cfs @ 12.09 hrs, Volume= 0.189 af, Depth> 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
14,286	61	>75% Grass cover, Good, HSG B
0	80	>75% Grass cover, Good, HSG D
19,762	98	Paved parking, HSG B
0	98	Paved parking, HSG D
34,048	82	Weighted Average
14,286		41.96% Pervious Area
19,762		58.04% Impervious Area

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

Summary for Subcatchment P-7: Wastershed

Runoff = 1.63 cfs @ 12.08 hrs, Volume= 0.121 af, Depth> 3.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
6,525	80	>75% Grass cover, Good, HSG D
0	98	Paved parking, HSG B
10,168	98	Paved parking, HSG D
16,693	91	Weighted Average
6,525		39.09% Pervious Area
10,168		60.91% Impervious Area

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

Summary for Subcatchment P-8: Wastershed

Runoff = 0.86 cfs @ 12.09 hrs, Volume= 0.062 af, Depth> 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
12,066	61	>75% Grass cover, Good, HSG B
2,121	80	>75% Grass cover, Good, HSG D
3,066	98	Paved parking, HSG B
0	98	Paved parking, HSG D
17,253	70	Weighted Average
14,187		82.23% Pervious Area
3,066		17.77% Impervious Area

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

Summary for Subcatchment R-1: Roof

Runoff = 1.89 cfs @ 12.08 hrs, Volume= 0.153 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
318	98	Paved parking, HSG B
17,193	98	Paved parking, HSG D
17,511	98	Weighted Average
17,511		100.00% Impervious Area

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

Summary for Subcatchment R-10: Roof

Runoff = 0.62 cfs @ 12.08 hrs, Volume= 0.050 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
5,737	98	Roofs, HSG B
0	98	Roofs, HSG D
5,737	98	Weighted Average
5,737		100.00% Impervious Area

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

Summary for Subcatchment R-11: Roof

Runoff = 0.58 cfs @ 12.08 hrs, Volume= 0.047 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
5,371	98	Roofs, HSG B
0	98	Roofs, HSG D
5,371	98	Weighted Average
5,371		100.00% Impervious Area

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

Summary for Subcatchment R-12: Roof

Runoff = 0.58 cfs @ 12.08 hrs, Volume= 0.047 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
5,353	98	Roofs, HSG B
0	98	Roofs, HSG D
5,353	98	Weighted Average
5,353		100.00% Impervious Area

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

Summary for Subcatchment R-13: Roof

Runoff = 1.30 cfs @ 12.08 hrs, Volume= 0.105 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
11,051	98	Roofs, HSG B
981	98	Roofs, HSG D
12,032	98	Weighted Average
12,032		100.00% Impervious Area

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

Summary for Subcatchment R-2: Roof

Runoff = 0.67 cfs @ 12.08 hrs, Volume= 0.055 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
1,991	98	Paved parking, HSG B
4,259	98	Paved parking, HSG D
6,250	98	Weighted Average
6,250		100.00% Impervious Area

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

Summary for Subcatchment R-3: Roof/P-7

Runoff = 1.05 cfs @ 12.08 hrs, Volume= 0.085 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
9,775	98	Paved parking, HSG D
9,775		100.00% Impervious Area

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

Summary for Subcatchment R-4: Roof

Runoff = 1.13 cfs @ 12.08 hrs, Volume= 0.091 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
10,473	98	Roofs, HSG D
10,473	98	Weighted Average
10,473		100.00% Impervious Area

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

Summary for Subcatchment R-5: Roof

Runoff = 0.41 cfs @ 12.08 hrs, Volume= 0.033 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
3,816	98	Roofs, HSG D
3,816	98	Weighted Average
3,816		100.00% Impervious Area

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

Summary for Subcatchment R-6: Roof

Runoff = 0.68 cfs @ 12.08 hrs, Volume= 0.055 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
86	98	Roofs, HSG B
6,207	98	Roofs, HSG D
6,293	98	Weighted Average
6,293		100.00% Impervious Area

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

Summary for Subcatchment R-7: Roof

Runoff = 3.39 cfs @ 12.08 hrs, Volume= 0.274 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
1,114	98	Roofs, HSG B
30,351	98	Roofs, HSG D
31,465	98	Weighted Average
31,465		100.00% Impervious Area

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

Summary for Subcatchment R-8: Roof

Runoff = 0.47 cfs @ 12.08 hrs, Volume= 0.038 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
3,286	98	Roofs, HSG B
1,083	98	Roofs, HSG D
4,369	98	Weighted Average
4,369		100.00% Impervious Area

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

Summary for Subcatchment R-9: Roof

Runoff = 0.60 cfs @ 12.08 hrs, Volume= 0.048 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
4,954	98	Roofs, HSG B
597	98	Roofs, HSG D
5,551	98	Weighted Average
5,551		100.00% Impervious Area

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

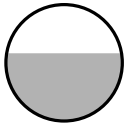
Summary for Reach 2R: Offsite Culverts

Inflow Area = 2.250 ac, 38.00% Impervious, Inflow Depth > 2.29" for 10 yr event
Inflow = 6.01 cfs @ 12.09 hrs, Volume= 0.428 af
Outflow = 5.99 cfs @ 12.10 hrs, Volume= 0.428 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.05 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.54 fps, Avg. Travel Time= 1.0 min

Peak Storage= 141 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.73'
Bank-Full Depth= 1.25' Flow Area= 2.5 sf, Capacity= 9.37 cfs

A factor of 2.00 has been applied to the storage and discharge capacity
15.0" Round Pipe
n= 0.013 Concrete pipe, straight & clean
Length= 95.0' Slope= 0.0053 '/'
Inlet Invert= 172.00', Outlet Invert= 171.50'



Summary for Pond CB-1: ECB

Inflow Area = 0.101 ac, 90.10% Impervious, Inflow Depth > 4.11" for 10 yr event
Inflow = 0.45 cfs @ 12.08 hrs, Volume= 0.035 af
Outflow = 0.45 cfs @ 12.08 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min
Primary = 0.45 cfs @ 12.08 hrs, Volume= 0.035 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.62' @ 12.08 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.25'	**12.0" Round Culvert** L= 13.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.25' / 151.12' S= 0.0096 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.45 cfs @ 12.08 hrs HW=151.62' (Free Discharge)
1=Culvert (Barrel Controls 0.45 cfs @ 2.57 fps)

Summary for Pond CB-2: ECB

Inflow Area = 0.032 ac,100.00% Impervious, Inflow Depth > 4.56" for 10 yr event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min
Primary = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.47' @ 12.08 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.25'	**12.0" Round Culvert** L= 25.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.25' / 151.12' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.15 cfs @ 12.08 hrs HW=151.47' (Free Discharge)
1=Culvert (Barrel Controls 0.15 cfs @ 1.77 fps)

Summary for Pond CB-3: ECB

Inflow Area = 0.050 ac,100.00% Impervious, Inflow Depth > 4.56" for 10 yr 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= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 151.99' @ 12.08 hrs
Flood Elev= 154.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.75'	**12.0" Round Culvert** L= 36.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.75' / 151.39' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.23 cfs @ 12.08 hrs HW=151.99' (Free Discharge)
1=Culvert (Barrel Controls 0.23 cfs @ 2.46 fps)

Summary for Pond CB-4: ECB

Inflow Area = 0.200 ac, 91.50% Impervious, Inflow Depth > 4.22" for 10 yr event
Inflow = 0.91 cfs @ 12.08 hrs, Volume= 0.070 af
Outflow = 0.91 cfs @ 12.08 hrs, Volume= 0.070 af, Atten= 0%, Lag= 0.0 min
Primary = 0.91 cfs @ 12.08 hrs, Volume= 0.070 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 152.24' @ 12.08 hrs
Flood Elev= 154.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.75'	**12.0" Round Culvert** L= 17.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.75' / 151.39' S= 0.0201 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.91 cfs @ 12.08 hrs HW=152.24' (Free Discharge)
1=Culvert (Inlet Controls 0.91 cfs @ 2.38 fps)

Summary for Pond DMH#1: Manhole

Inflow Area = 1.367 ac, 54.87% Impervious, Inflow Depth > 3.57" for 10 yr event
Inflow = 4.84 cfs @ 12.14 hrs, Volume= 0.407 af
Outflow = 4.84 cfs @ 12.14 hrs, Volume= 0.407 af, Atten= 0%, Lag= 0.0 min
Primary = 4.84 cfs @ 12.14 hrs, Volume= 0.407 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 153.80' @ 12.14 hrs
Flood Elev= 156.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	152.51'	**15.0" Round Culvert** L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.51' / 151.06' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.83 cfs @ 12.14 hrs HW=153.80' (Free Discharge)
1=Culvert (Inlet Controls 4.83 cfs @ 3.94 fps)

Summary for Pond DMH#15: Manhole

Inflow Area = 0.522 ac,100.00% Impervious, Inflow Depth > 4.56" for 10 yr event
Inflow = 2.45 cfs @ 12.08 hrs, Volume= 0.199 af
Outflow = 2.45 cfs @ 12.08 hrs, Volume= 0.199 af, Atten= 0%, Lag= 0.0 min
Primary = 2.45 cfs @ 12.08 hrs, Volume= 0.199 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 153.70' @ 12.08 hrs
Flood Elev= 159.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	152.74'	**12.0" Round Culvert** L= 27.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.74' / 152.47' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.45 cfs @ 12.08 hrs HW=153.69' (Free Discharge)
1=Culvert (Barrel Controls 2.45 cfs @ 4.07 fps)

Summary for Pond DMH#4: Manhole

Inflow Area = 0.545 ac,100.00% Impervious, Inflow Depth > 4.56" for 10 yr event
Inflow = 2.56 cfs @ 12.08 hrs, Volume= 0.207 af
Outflow = 2.56 cfs @ 12.08 hrs, Volume= 0.207 af, Atten= 0%, Lag= 0.0 min
Primary = 2.56 cfs @ 12.08 hrs, Volume= 0.207 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 153.17' @ 12.08 hrs
Flood Elev= 158.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	152.11'	**12.0" Round Culvert** L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.11' / 151.99' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.56 cfs @ 12.08 hrs HW=153.17' (Free Discharge)
1=Culvert (Barrel Controls 2.56 cfs @ 3.81 fps)

Summary for Pond DMH-1: EDMH

Inflow Area = 0.383 ac, 92.95% Impervious, Inflow Depth > 4.26" for 10 yr event
Inflow = 1.75 cfs @ 12.08 hrs, Volume= 0.136 af
Outflow = 1.75 cfs @ 12.08 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min
Primary = 1.75 cfs @ 12.08 hrs, Volume= 0.136 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.93' @ 12.08 hrs
Flood Elev= 154.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.04'	**12.0" Round Culvert** L= 3.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.04' / 151.02' S= 0.0057 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.75 cfs @ 12.08 hrs HW=151.93' (Free Discharge)
1=Culvert (Barrel Controls 1.75 cfs @ 3.14 fps)

Summary for Pond DMH-2: EDMH

Inflow Area = 0.250 ac, 93.20% Impervious, Inflow Depth > 4.29" for 10 yr event
Inflow = 1.15 cfs @ 12.08 hrs, Volume= 0.089 af
Outflow = 1.15 cfs @ 12.08 hrs, Volume= 0.089 af, Atten= 0%, Lag= 0.0 min
Primary = 1.15 cfs @ 12.08 hrs, Volume= 0.089 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.95' @ 12.08 hrs
Flood Elev= 154.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.29'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.29' / 151.14' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.14 cfs @ 12.08 hrs HW=151.95' (Free Discharge)
1=Culvert (Barrel Controls 1.14 cfs @ 2.96 fps)

Summary for Pond DMH-4: EDMH

Inflow Area = 0.781 ac, 96.54% Impervious, Inflow Depth > 2.38" for 10 yr event
Inflow = 0.54 cfs @ 12.54 hrs, Volume= 0.155 af
Outflow = 0.54 cfs @ 12.54 hrs, Volume= 0.155 af, Atten= 0%, Lag= 0.0 min
Primary = 0.54 cfs @ 12.54 hrs, Volume= 0.155 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 150.46' @ 12.54 hrs
Flood Elev= 156.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	150.02'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 150.02' / 149.92' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.54 cfs @ 12.54 hrs HW=150.46' (Free Discharge)
1=Culvert (Barrel Controls 0.54 cfs @ 2.41 fps)

Summary for Pond DMH-5: Manhole

Inflow Area = 6.819 ac, 28.97% Impervious, Inflow Depth > 2.39" for 10 yr event
Inflow = 16.76 cfs @ 12.13 hrs, Volume= 1.360 af
Outflow = 16.76 cfs @ 12.13 hrs, Volume= 1.360 af, Atten= 0%, Lag= 0.0 min
Primary = 16.76 cfs @ 12.13 hrs, Volume= 1.360 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 155.37' @ 12.13 hrs
Flood Elev= 160.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	150.74'	**18.0" Round Culvert** L= 84.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 150.74' / 149.90' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=16.76 cfs @ 12.13 hrs HW=155.37' (Free Discharge)
1=Culvert (Inlet Controls 16.76 cfs @ 9.49 fps)

Summary for Pond DMH-6: Manhole

Inflow Area = 6.819 ac, 28.97% Impervious, Inflow Depth > 2.39" for 10 yr event
Inflow = 16.76 cfs @ 12.13 hrs, Volume= 1.360 af
Outflow = 16.76 cfs @ 12.13 hrs, Volume= 1.360 af, Atten= 0%, Lag= 0.0 min
Primary = 16.76 cfs @ 12.13 hrs, Volume= 1.360 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 154.43' @ 12.13 hrs
Flood Elev= 158.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.80'	**18.0" Round Culvert** L= 114.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 149.80' / 148.66' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=16.76 cfs @ 12.13 hrs HW=154.43' (Free Discharge)
1=Culvert (Inlet Controls 16.76 cfs @ 9.49 fps)

Summary for Pond DMH-7: Manhole

Inflow Area = 7.364 ac, 34.23% Impervious, Inflow Depth > 2.51" for 10 yr event
Inflow = 19.15 cfs @ 12.13 hrs, Volume= 1.538 af
Outflow = 19.15 cfs @ 12.13 hrs, Volume= 1.538 af, Atten= 0%, Lag= 0.0 min
Primary = 19.15 cfs @ 12.13 hrs, Volume= 1.538 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 154.38' @ 12.13 hrs
Flood Elev= 158.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	148.56'	**18.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 148.56' / 148.16' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=19.13 cfs @ 12.13 hrs HW=154.36' (Free Discharge)
1=Culvert (Inlet Controls 19.13 cfs @ 10.82 fps)

Summary for Pond ECB6: ECB-6

Inflow Area = 0.916 ac, 28.42% Impervious, Inflow Depth > 2.94" for 10 yr event
Inflow = 3.00 cfs @ 12.09 hrs, Volume= 0.225 af
Outflow = 3.00 cfs @ 12.09 hrs, Volume= 0.225 af, Atten= 0%, Lag= 0.0 min
Primary = 3.00 cfs @ 12.09 hrs, Volume= 0.225 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.61' @ 12.09 hrs
Flood Elev= 151.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.53'	**12.0" Round Culvert** L= 33.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 147.53' / 147.20' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=3.00 cfs @ 12.09 hrs HW=148.61' (Free Discharge)
1=Culvert (Barrel Controls 3.00 cfs @ 4.40 fps)

Summary for Pond ECB7: ECB-7

Inflow Area = 0.190 ac,100.00% Impervious, Inflow Depth > 4.56" for 10 yr event
Inflow = 0.89 cfs @ 12.08 hrs, Volume= 0.072 af
Outflow = 0.89 cfs @ 12.08 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min
Primary = 0.89 cfs @ 12.08 hrs, Volume= 0.072 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.73' @ 12.08 hrs
Flood Elev= 151.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.30'	**12.0" Round RCP_Round 12"** L= 23.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 149.30' / 147.63' S= 0.0726 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.89 cfs @ 12.08 hrs HW=149.73' (Free Discharge)
1=RCP_Round 12" (Inlet Controls 0.89 cfs @ 2.78 fps)

Summary for Pond ECB8: ECB-8

Inflow Area = 7.364 ac, 34.23% Impervious, Inflow Depth > 2.51" for 10 yr event
Inflow = 19.15 cfs @ 12.13 hrs, Volume= 1.538 af
Outflow = 19.15 cfs @ 12.13 hrs, Volume= 1.538 af, Atten= 0%, Lag= 0.0 min
Primary = 19.15 cfs @ 12.13 hrs, Volume= 1.538 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 154.50' @ 12.13 hrs
Flood Elev= 152.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.99'	**18.0" Round Culvert** L= 102.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 147.99' / 147.41' S= 0.0057 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=19.13 cfs @ 12.13 hrs HW=154.49' (Free Discharge)
1=Culvert (Barrel Controls 19.13 cfs @ 10.82 fps)

Summary for Pond EDMH1: EDMH-1

Inflow Area = 15.153 ac, 52.78% Impervious, Inflow Depth > 2.91" for 10 yr event
Inflow = 37.44 cfs @ 12.12 hrs, Volume= 3.677 af
Outflow = 37.44 cfs @ 12.12 hrs, Volume= 3.677 af, Atten= 0%, Lag= 0.0 min
Primary = 37.44 cfs @ 12.12 hrs, Volume= 3.677 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 149.00' @ 12.12 hrs
Flood Elev= 152.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.20'	**48.0" Round Culvert** L= 213.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.20' / 145.68' S= 0.0024 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf

Primary OutFlow Max=37.40 cfs @ 12.12 hrs HW=149.00' (Free Discharge)
1=Culvert (Barrel Controls 37.40 cfs @ 5.59 fps)

Summary for Pond EDMH2: EDMH-2

Inflow Area = 15.153 ac, 52.78% Impervious, Inflow Depth > 2.91" for 10 yr event
Inflow = 37.44 cfs @ 12.12 hrs, Volume= 3.677 af
Outflow = 37.44 cfs @ 12.12 hrs, Volume= 3.677 af, Atten= 0%, Lag= 0.0 min
Primary = 37.44 cfs @ 12.12 hrs, Volume= 3.677 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.22' @ 12.12 hrs
Flood Elev= 151.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.34'	**48.0" Round Culvert** L= 85.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.34' / 146.20' S= 0.0016 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=37.40 cfs @ 12.12 hrs HW=149.22' (Free Discharge)
1=Culvert (Barrel Controls 37.40 cfs @ 5.41 fps)

Summary for Pond EDMH3: EDMH-3

Inflow Area = 10.035 ac, 42.35% Impervious, Inflow Depth > 2.76" for 10 yr event
Inflow = 29.50 cfs @ 12.11 hrs, Volume= 2.305 af
Outflow = 29.50 cfs @ 12.11 hrs, Volume= 2.305 af, Atten= 0%, Lag= 0.0 min
Primary = 29.50 cfs @ 12.11 hrs, Volume= 2.305 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.15' @ 12.11 hrs
Flood Elev= 152.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.48'	**48.0" Round Culvert** L= 177.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.48' / 146.34' S= 0.0008 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=29.46 cfs @ 12.11 hrs HW=149.15' (Free Discharge)
1=Culvert (Barrel Controls 29.46 cfs @ 4.68 fps)

Summary for Pond EDMH4: EDMH-4

Inflow Area = 8.280 ac, 33.59% Impervious, Inflow Depth > 2.56" for 10 yr event
Inflow = 21.91 cfs @ 12.12 hrs, Volume= 1.763 af
Outflow = 21.91 cfs @ 12.12 hrs, Volume= 1.763 af, Atten= 0%, Lag= 0.0 min
Primary = 21.91 cfs @ 12.12 hrs, Volume= 1.763 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.80' @ 12.12 hrs
Flood Elev= 152.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.72'	**48.0" Round Culvert** L= 95.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.72' / 146.48' S= 0.0025 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=21.90 cfs @ 12.12 hrs HW=148.80' (Free Discharge)
1=Culvert (Barrel Controls 21.90 cfs @ 4.83 fps)

Summary for Pond EDMH5: EDMH-5 (Vault MH)

Inflow Area = 8.280 ac, 33.59% Impervious, Inflow Depth > 2.56" for 10 yr event
Inflow = 21.91 cfs @ 12.12 hrs, Volume= 1.763 af
Outflow = 21.91 cfs @ 12.12 hrs, Volume= 1.763 af, Atten= 0%, Lag= 0.0 min
Primary = 21.91 cfs @ 12.12 hrs, Volume= 1.763 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.14' @ 12.12 hrs
Flood Elev= 152.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.20'	**48.0" Round Culvert** L= 150.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 147.20' / 146.72' S= 0.0032 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=21.90 cfs @ 12.12 hrs HW=149.14' (Free Discharge)
1=Culvert (Barrel Controls 21.90 cfs @ 5.31 fps)

Summary for Pond EDMH6: EDMH-6

Inflow Area = 2.287 ac, 64.78% Impervious, Inflow Depth > 2.89" for 10 yr event
Inflow = 6.36 cfs @ 12.16 hrs, Volume= 0.551 af
Outflow = 6.36 cfs @ 12.16 hrs, Volume= 0.551 af, Atten= 0%, Lag= 0.0 min
Primary = 6.36 cfs @ 12.16 hrs, Volume= 0.551 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 147.56' @ 12.16 hrs
Flood Elev= 152.52'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.22'	**18.0" Round Culvert** L= 6.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.22' / 145.93' S= 0.0483 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=6.35 cfs @ 12.16 hrs HW=147.56' (Free Discharge)
└**1=Culvert** (Barrel Controls 6.35 cfs @ 5.04 fps)

Summary for Pond NDC: North Drainage Channel

Inflow Area = 21.613 ac, 44.15% Impervious, Inflow Depth > 2.61" for 10 yr event
Inflow = 46.44 cfs @ 12.13 hrs, Volume= 4.696 af
Primary = 46.44 cfs @ 12.13 hrs, Volume= 4.696 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Pond RD#13A: Manhole

Inflow Area = 0.722 ac,100.00% Impervious, Inflow Depth > 4.56" for 10 yr event
Inflow = 3.39 cfs @ 12.08 hrs, Volume= 0.274 af
Outflow = 3.39 cfs @ 12.08 hrs, Volume= 0.274 af, Atten= 0%, Lag= 0.0 min
Primary = 3.39 cfs @ 12.08 hrs, Volume= 0.274 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 155.30' @ 12.08 hrs
Flood Elev= 158.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	**12.0" Round Culvert** L= 130.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.00' / 152.70' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.39 cfs @ 12.08 hrs HW=155.30' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.39 cfs @ 4.31 fps)

Summary for Pond ST-1: Ex Infilt

Inflow Area = 0.283 ac,100.00% Impervious, Inflow Depth > 4.56" for 10 yr event
Inflow = 1.33 cfs @ 12.08 hrs, Volume= 0.108 af
Outflow = 0.30 cfs @ 12.48 hrs, Volume= 0.063 af, Atten= 77%, Lag= 23.7 min
Primary = 0.30 cfs @ 12.48 hrs, Volume= 0.063 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 152.65' @ 12.48 hrs Surf.Area= 1,471 sf Storage= 2,668 cf
Flood Elev= 153.67' Surf.Area= 1,471 sf Storage= 3,344 cf

Plug-Flow detention time= 289.7 min calculated for 0.063 af (59% of inflow)
Center-of-Mass det. time= 177.8 min (926.0 - 748.2)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	1,857 cf	**4.75'W x 7.20'L x 4.50'H Prismatoid** x 43 6,618 cf Overall - 1,975 cf Embedded = 4,642 cf x 40.0% Voids
#2	150.67'	1,975 cf	**ADS_StormTech SC-740** x 43 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		3,832 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	150.47'	**12.0" Round Culvert** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 150.47' / 150.02' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	150.67'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	152.22'	**3.0" Vert. Orifice/Grate X 2.00** C= 0.600
#4	Device 1	153.53'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.30 cfs @ 12.48 hrs HW=152.65' (Free Discharge)
└**1=Culvert** (Passes 0.30 cfs of 4.08 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 6.71 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.26 cfs @ 2.68 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond ST-2: Ex Infilt

Inflow Area = 0.498 ac, 94.58% Impervious, Inflow Depth > 4.33" for 10 yr event
Inflow = 2.29 cfs @ 12.08 hrs, Volume= 0.180 af
Outflow = 0.25 cfs @ 12.74 hrs, Volume= 0.092 af, Atten= 89%, Lag= 39.3 min
Primary = 0.25 cfs @ 12.74 hrs, Volume= 0.092 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 150.67' Surf.Area= 3,078 sf Storage= 825 cf
Peak Elev= 152.63' @ 12.74 hrs Surf.Area= 3,078 sf Storage= 5,561 cf (4,736 cf above start)
Flood Elev= 153.67' Surf.Area= 3,078 sf Storage= 7,027 cf (6,202 cf above start)

Plug-Flow detention time= 363.9 min calculated for 0.073 af (41% of inflow)
Center-of-Mass det. time= 161.6 min (922.8 - 761.2)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	43 cf	**4.75'W x 7.20'L x 4.50'H Prismatoid** 154 cf Overall - 46 cf Embedded = 107 cf x 40.0% Voids
#2	150.67'	46 cf	**ADS_StormTech SC-740 @ 7.20' L** Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.20'L = 46.5 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		89 cf	x 90.00 = 8,049 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	150.67'	**12.0" Round Culvert** L= 23.6' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 150.67' / 150.48' S= 0.0081 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	150.67'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	153.60'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	152.20'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.25 cfs @ 12.74 hrs HW=152.63' (Free Discharge)
└**1=Culvert** (Passes 0.25 cfs of 4.57 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 6.67 fps)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Orifice Controls 0.22 cfs @ 2.47 fps)

Summary for Pond UIS#1: Underground Infiltration System

Inflow Area = 1.367 ac, 54.87% Impervious, Inflow Depth > 3.57" for 10 yr event
Inflow = 4.84 cfs @ 12.14 hrs, Volume= 0.407 af
Outflow = 4.81 cfs @ 12.15 hrs, Volume= 0.375 af, Atten= 1%, Lag= 0.6 min
Primary = 4.81 cfs @ 12.15 hrs, Volume= 0.375 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 152.84' @ 12.15 hrs Surf.Area= 1,350 sf Storage= 1,687 cf

Plug-Flow detention time= 63.5 min calculated for 0.375 af (92% of inflow)
Center-of-Mass det. time= 23.3 min (822.1 - 798.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	150.56'	952 cf	**18.17'W x 73.64'L x 2.33'H Field A** 3,121 cf Overall - 742 cf Embedded = 2,380 cf x 40.0% Voids
#2A	151.06'	742 cf	**ADS_StormTech SC-310** x 50 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 5 rows
#3	151.06'	101 cf	**4.00'D x 8.04'H Vertical Cone/Cylinder**
		1,795 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	151.06'	**15.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.06' / 150.88' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	152.30'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=4.79 cfs @ 12.15 hrs HW=152.84' (Free Discharge)
└**1=Culvert** (Passes 4.79 cfs of 6.18 cfs potential flow)
  └**2=Broad-Crested Rectangular Weir** (Weir Controls 4.79 cfs @ 2.22 fps)

Summary for Pond UIS#2: Underground Infiltration System

Inflow Area = 0.545 ac,100.00% Impervious, Inflow Depth > 4.56" for 10 yr event
Inflow = 2.56 cfs @ 12.08 hrs, Volume= 0.207 af
Outflow = 2.48 cfs @ 12.10 hrs, Volume= 0.178 af, Atten= 3%, Lag= 1.3 min
Primary = 2.48 cfs @ 12.10 hrs, Volume= 0.178 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 153.71' @ 12.10 hrs Surf.Area= 1,726 sf Storage= 2,066 cf

Plug-Flow detention time= 129.9 min calculated for 0.178 af (86% of inflow)
Center-of-Mass det. time= 68.4 min (816.5 - 748.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	151.55'	1,226 cf	**18.17'W x 95.00'L x 2.33'H Field A** 4,027 cf Overall - 963 cf Embedded = 3,064 cf x 40.0% Voids
#2A	152.05'	963 cf	**ADS_StormTech SC-310** x 65 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 5 rows
		2,188 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	152.05'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.05' / 152.00' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	152.55'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 1.00 1.50 Width (feet) 0.00 1.00 4.00 4.00

Primary OutFlow Max=2.47 cfs @ 12.10 hrs HW=153.71' (Free Discharge)
└**1=Culvert** (Passes 2.47 cfs of 4.06 cfs potential flow)
  └**2=Custom Weir/Orifice** (Weir Controls 2.47 cfs @ 2.20 fps)

Summary for Pond UIS#3: Underground Infiltration System

Inflow Area = 0.899 ac, 84.83% Impervious, Inflow Depth > 4.06" for 10 yr event
Inflow = 3.98 cfs @ 12.08 hrs, Volume= 0.304 af
Outflow = 3.94 cfs @ 12.10 hrs, Volume= 0.271 af, Atten= 1%, Lag= 0.7 min
Primary = 3.94 cfs @ 12.10 hrs, Volume= 0.271 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 151.68' @ 12.10 hrs Surf.Area= 1,350 sf Storage= 1,675 cf

Plug-Flow detention time= 87.8 min calculated for 0.271 af (89% of inflow)
Center-of-Mass det. time= 36.7 min (810.2 - 773.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	149.42'	952 cf	**18.17'W x 73.64'L x 2.33'H Field A** 3,121 cf Overall - 742 cf Embedded = 2,380 cf x 40.0% Voids
#2A	149.92'	742 cf	**ADS_StormTech SC-310** x 50 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 5 rows
#3	149.92'	122 cf	**4.00'D x 9.68'H Vertical Cone/Cylinder**
		1,815 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	149.92'	**15.0" Round Culvert** L= 16.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 149.92' / 149.76' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	151.20'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=3.92 cfs @ 12.10 hrs HW=151.68' (Free Discharge)
└**1=Culvert** (Passes 3.92 cfs of 6.05 cfs potential flow)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 3.92 cfs @ 2.06 fps)

Summary for Pond UIS#4: Underground Infiltration System

Inflow Area = 1.755 ac, 83.69% Impervious, Inflow Depth > 3.91" for 10 yr event
Inflow = 7.77 cfs @ 12.09 hrs, Volume= 0.572 af
Outflow = 7.68 cfs @ 12.10 hrs, Volume= 0.542 af, Atten= 1%, Lag= 0.7 min
Primary = 7.68 cfs @ 12.10 hrs, Volume= 0.542 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 151.57' @ 12.10 hrs Surf.Area= 1,350 sf Storage= 1,702 cf

Plug-Flow detention time= 50.2 min calculated for 0.541 af (95% of inflow)
Center-of-Mass det. time= 21.2 min (807.1 - 785.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	149.26'	952 cf	**18.17'W x 73.64'L x 2.33'H Field A** 3,121 cf Overall - 742 cf Embedded = 2,380 cf x 40.0% Voids
#2A	149.76'	742 cf	**ADS_StormTech SC-310** x 50 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 5 rows
#3	149.76'	125 cf	**4.00'D x 9.94'H Vertical Cone/Cylinder**
		1,818 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	149.76'	**18.0" Round Culvert** L= 7.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 149.76' / 149.69' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.77 sf
#2	Device 1	150.85'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=7.76 cfs @ 12.10 hrs HW=151.57' (Free Discharge)
└**1=Culvert** (Barrel Controls 7.76 cfs @ 4.62 fps)
└**2=Broad-Crested Rectangular Weir** (Passes 7.76 cfs of 7.79 cfs potential flow)

Summary for Pond UIS#5: Underground Infiltration System

Inflow Area = 2.277 ac, 76.18% Impervious, Inflow Depth > 3.84" for 10 yr event
Inflow = 9.50 cfs @ 12.08 hrs, Volume= 0.728 af
Outflow = 3.53 cfs @ 12.33 hrs, Volume= 0.621 af, Atten= 63%, Lag= 14.9 min
Primary = 3.53 cfs @ 12.33 hrs, Volume= 0.621 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 154.47' @ 12.33 hrs Surf.Area= 7,911 sf Storage= 13,524 cf

Plug-Flow detention time= 159.4 min calculated for 0.621 af (85% of inflow)
Center-of-Mass det. time= 95.6 min (870.0 - 774.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	151.96'	3,871 cf	**30.00'W x 144.84'L x 3.50'H Field A** 15,208 cf Overall - 5,530 cf Embedded = 9,678 cf x 40.0% Voids
#2A	152.46'	5,530 cf	**ADS_StormTech SC-740** x 120 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 6 rows
#3B	151.96'	2,421 cf	**20.50'W x 130.60'L x 3.50'H Field B** 9,370 cf Overall - 3,319 cf Embedded = 6,051 cf x 40.0% Voids
#4B	152.46'	3,319 cf	**ADS_StormTech SC-740** x 72 Inside #3 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 4 rows
#5C	151.96'	837 cf	**11.00'W x 80.76'L x 3.50'H Field C** 3,109 cf Overall - 1,016 cf Embedded = 2,093 cf x 40.0% Voids
#6C	152.46'	1,016 cf	**ADS_StormTech SC-740** x 22 Inside #5 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 2 rows
		16,994 cf	Total Available Storage

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

Device	Routing	Invert	Outlet Devices
#1	Primary	152.46'	**15.0" Round Culvert** L= 171.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.46' / 149.04' S= 0.0200 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	152.75'	**7.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	153.70'	**11.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	155.46'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=3.53 cfs @ 12.33 hrs HW=154.47' (Free Discharge)
└**1=Culvert** (Passes 3.53 cfs of 6.96 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.75 cfs @ 5.72 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.78 cfs @ 2.99 fps)
  └**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond UIS#6: Underground Infiltration System

Inflow Area = 1.505 ac, 68.29% Impervious, Inflow Depth > 3.41" for 10 yr event
Inflow = 5.69 cfs @ 12.09 hrs, Volume= 0.428 af
Outflow = 4.45 cfs @ 12.15 hrs, Volume= 0.383 af, Atten= 22%, Lag= 3.8 min
Primary = 4.45 cfs @ 12.15 hrs, Volume= 0.383 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 153.65' @ 12.15 hrs Surf.Area= 3,557 sf Storage= 3,907 cf

Plug-Flow detention time= 93.4 min calculated for 0.383 af (89% of inflow)
Center-of-Mass det. time= 42.4 min (829.2 - 786.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	151.78'	2,491 cf	**34.83'W x 102.12'L x 2.33'H Field A** 8,300 cf Overall - 2,073 cf Embedded = 6,227 cf x 40.0% Voids
#2A	152.28'	2,073 cf	**ADS_StormTech RC-310** x 140 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 10 rows
		4,564 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	152.47'	**15.0" Round Culvert** L= 144.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.47' / 150.99' S= 0.0103 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	152.70'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=4.45 cfs @ 12.15 hrs HW=153.65' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.45 cfs @ 3.70 fps)
  └**2=Broad-Crested Rectangular Weir** (Passes 4.45 cfs of 12.31 cfs potential flow)

Summary for Pond UIS#7: Underground Infiltration System

Inflow Area = 2.287 ac, 64.78% Impervious, Inflow Depth > 3.00" for 10 yr event
Inflow = 6.77 cfs @ 12.12 hrs, Volume= 0.572 af
Outflow = 6.36 cfs @ 12.16 hrs, Volume= 0.551 af, Atten= 6%, Lag= 2.6 min
Primary = 6.36 cfs @ 12.16 hrs, Volume= 0.551 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 152.31' @ 12.16 hrs Surf.Area= 2,126 sf Storage= 2,263 cf

Plug-Flow detention time= 32.1 min calculated for 0.551 af (96% of inflow)
Center-of-Mass det. time= 11.7 min (837.0 - 825.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	150.49'	1,499 cf	**18.17'W x 116.36'L x 2.33'H Field A** 4,932 cf Overall - 1,184 cf Embedded = 3,748 cf x 40.0% Voids
#2A	150.99'	1,184 cf	**ADS_StormTech RC-310** x 80 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 5 rows
#3	150.99'	92 cf	**4.00'D x 7.31'H Vertical Cone/Cylinder**
		2,775 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	150.99'	**18.0" Round Culvert** L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 150.99' / 150.47' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.77 sf
#2	Device 1	151.25'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=6.35 cfs @ 12.16 hrs HW=152.31' (Free Discharge)
└**1=Culvert** (Barrel Controls 6.35 cfs @ 5.15 fps)
└**2=Broad-Crested Rectangular Weir** (Passes 6.35 cfs of 14.41 cfs potential flow)

Summary for Pond WET: Existing Onsite Wetlands

Inflow Area = 2.841 ac, 70.89% Impervious, Inflow Depth > 3.17" for 10 yr event
Inflow = 6.75 cfs @ 12.18 hrs, Volume= 0.751 af
Outflow = 6.67 cfs @ 12.20 hrs, Volume= 0.751 af, Atten= 1%, Lag= 1.2 min
Primary = 6.67 cfs @ 12.20 hrs, Volume= 0.751 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.70' @ 12.20 hrs Surf.Area= 730 sf Storage= 123 cf
Flood Elev= 150.00' Surf.Area= 46,149 sf Storage= 19,550 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (829.2 - 829.1)

Volume	Invert	Avail.Storage	Storage Description
#1	148.20'	19,550 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
148.20	0	0.0	0	0	0
149.00	1,834	347.0	489	489	9,583
150.00	46,149	1,378.0	19,061	19,550	151,112

Device	Routing	Invert	Outlet Devices
#1	Primary	147.47'	**24.0" Round Culvert** L= 72.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 147.47' / 146.94' S= 0.0074 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 3.14 sf

Primary OutFlow Max=6.67 cfs @ 12.20 hrs HW=148.70' (Free Discharge)
└**1=Culvert** (Barrel Controls 6.67 cfs @ 4.69 fps)

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 7S: Wetlands Runoff Area=2.060 ac 61.17% Impervious Runoff Depth>5.19"
Flow Length=215' Tc=13.0 min CN=88 Runoff=9.69 cfs 0.892 af

Subcatchment 9S: Off Site Runoff Area=2.980 ac 12.42% Impervious Runoff Depth>3.48"
Flow Length=115' Tc=11.0 min CN=72 Runoff=10.32 cfs 0.865 af

Subcatchment 11S: Fallon Rd Runoff Area=0.330 ac 0.00% Impervious Runoff Depth>4.98"
Tc=6.0 min CN=86 Runoff=1.87 cfs 0.137 af

Subcatchment 12S: Fallon Rd Runoff Area=0.190 ac 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=1.23 cfs 0.101 af

Subcatchment 14S: Ex Wshed Runoff Area=3.870 ac 0.00% Impervious Runoff Depth>2.50"
Flow Length=110' Tc=18.2 min CN=62 Runoff=7.73 cfs 0.806 af

Subcatchment 15S: Ex Wshed Runoff Area=0.303 ac 20.46% Impervious Runoff Depth>3.18"
Tc=6.0 min CN=69 Runoff=1.13 cfs 0.080 af

Subcatchment 16S: Offsite Flows Runoff Area=2.250 ac 38.00% Impervious Runoff Depth>3.79"
Tc=6.0 min CN=75 Runoff=10.02 cfs 0.712 af

Subcatchment 17S: North Roof Area Runoff Area=0.283 ac 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=1.83 cfs 0.150 af

Subcatchment 18S: South Roof Area Runoff Area=0.115 ac 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=0.74 cfs 0.061 af

Subcatchment 19S: North Loading Area Runoff Area=0.200 ac 91.50% Impervious Runoff Depth>6.00"
Tc=6.0 min CN=95 Runoff=1.27 cfs 0.100 af

Subcatchment 20S: Parking Area Runoff Area=0.101 ac 90.10% Impervious Runoff Depth>5.89"
Tc=6.0 min CN=94 Runoff=0.64 cfs 0.050 af

Subcatchment 21S: Driveway Runoff Area=0.032 ac 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=0.21 cfs 0.017 af

Subcatchment 22S: North Driveway Runoff Area=0.050 ac 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=0.32 cfs 0.026 af

Subcatchment P-1: Wastershed Runoff Area=59,568 sf 54.87% Impervious Runoff Depth>5.31"
Flow Length=95' Slope=0.0200 '/' Tc=10.4 min CN=89 Runoff=7.04 cfs 0.605 af

Subcatchment P-2: Wastershed Runoff Area=9,628 sf 0.00% Impervious Runoff Depth>4.32"
Tc=6.0 min CN=80 Runoff=1.11 cfs 0.080 af

Subcatchment P-3: Wastershed Runoff Area=29,385 sf 79.78% Impervious Runoff Depth>5.66"
Tc=6.0 min CN=92 Runoff=4.17 cfs 0.318 af

Subcatchment P-4: Wastershed Runoff Area=52,078 sf 54.62% Impervious Runoff Depth>4.87"
Tc=6.0 min CN=85 Runoff=6.66 cfs 0.485 af

Subcatchment P-5: Wastershed Runoff Area=42,817 sf 51.43% Impervious Runoff Depth>4.43"
Tc=6.0 min CN=81 Runoff=5.06 cfs 0.363 af

Subcatchment P-6: Wastershed Runoff Area=34,048 sf 58.04% Impervious Runoff Depth>4.54"
Tc=6.0 min CN=82 Runoff=4.11 cfs 0.296 af

Subcatchment P-7: Wastershed Runoff Area=16,693 sf 60.91% Impervious Runoff Depth>5.54"
Tc=6.0 min CN=91 Runoff=2.34 cfs 0.177 af

Subcatchment P-8: Wastershed Runoff Area=17,253 sf 17.77% Impervious Runoff Depth>3.28"
Tc=6.0 min CN=70 Runoff=1.52 cfs 0.108 af

Subcatchment R-1: Roof Runoff Area=17,511 sf 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=2.60 cfs 0.213 af

Subcatchment R-10: Roof Runoff Area=5,737 sf 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=0.85 cfs 0.070 af

Subcatchment R-11: Roof Runoff Area=5,371 sf 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=0.80 cfs 0.065 af

Subcatchment R-12: Roof Runoff Area=5,353 sf 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=0.80 cfs 0.065 af

Subcatchment R-13: Roof Runoff Area=12,032 sf 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=1.79 cfs 0.146 af

Subcatchment R-2: Roof Runoff Area=6,250 sf 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=0.93 cfs 0.076 af

Subcatchment R-3: Roof/P-7 Runoff Area=9,775 sf 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=1.45 cfs 0.119 af

Subcatchment R-4: Roof Runoff Area=10,473 sf 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=1.56 cfs 0.127 af

Subcatchment R-5: Roof Runoff Area=3,816 sf 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=0.57 cfs 0.046 af

Subcatchment R-6: Roof Runoff Area=6,293 sf 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=0.94 cfs 0.077 af

Subcatchment R-7: Roof Runoff Area=31,465 sf 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=4.68 cfs 0.383 af

Subcatchment R-8: Roof Runoff Area=4,369 sf 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=0.65 cfs 0.053 af

Subcatchment R-9: Roof Runoff Area=5,551 sf 100.00% Impervious Runoff Depth>6.36"
Tc=6.0 min CN=98 Runoff=0.82 cfs 0.068 af

Reach 2R: Offsite Culverts Avg. Flow Depth=1.12' Max Vel=4.35 fps Inflow=10.02 cfs 0.712 af
15.0" Round Pipe x 2.00 n=0.013 L=95.0' S=0.0053 '/' Capacity=9.37 cfs Outflow=9.96 cfs 0.711 af

Pond CB-1: ECB Peak Elev=151.70' Inflow=0.64 cfs 0.050 af
12.0" Round Culvert n=0.012 L=13.6' S=0.0096 '/' Outflow=0.64 cfs 0.050 af

Pond CB-2: ECB Peak Elev=151.51' Inflow=0.21 cfs 0.017 af
12.0" Round Culvert n=0.012 L=25.9' S=0.0050 '/' Outflow=0.21 cfs 0.017 af

Pond CB-3: ECB Peak Elev=152.03' Inflow=0.32 cfs 0.026 af
12.0" Round Culvert n=0.012 L=36.4' S=0.0099 '/' Outflow=0.32 cfs 0.026 af

Pond CB-4: ECB Peak Elev=152.34' Inflow=1.27 cfs 0.100 af
12.0" Round Culvert n=0.012 L=17.9' S=0.0201 '/' Outflow=1.27 cfs 0.100 af

Pond DMH#1: Manhole Peak Elev=154.56' Inflow=7.04 cfs 0.605 af
15.0" Round Culvert n=0.011 L=145.0' S=0.0100 '/' Outflow=7.04 cfs 0.605 af

Pond DMH#15: Manhole Peak Elev=154.05' Inflow=3.38 cfs 0.277 af
12.0" Round Culvert n=0.011 L=27.0' S=0.0100 '/' Outflow=3.38 cfs 0.277 af

Pond DMH#4: Manhole Peak Elev=153.55' Inflow=3.53 cfs 0.289 af
12.0" Round Culvert n=0.011 L=12.0' S=0.0100 '/' Outflow=3.53 cfs 0.289 af

Pond DMH-1: EDMH Peak Elev=152.15' Inflow=2.44 cfs 0.193 af
12.0" Round Culvert n=0.012 L=3.5' S=0.0057 '/' Outflow=2.44 cfs 0.193 af

Pond DMH-2: EDMH Peak Elev=152.10' Inflow=1.60 cfs 0.127 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0050 '/' Outflow=1.60 cfs 0.127 af

Pond DMH-4: EDMH Peak Elev=150.74' Inflow=1.30 cfs 0.266 af
12.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/' Outflow=1.30 cfs 0.266 af

Pond DMH-5: Manhole Peak Elev=161.94' Inflow=27.50 cfs 2.228 af
18.0" Round Culvert n=0.011 L=84.0' S=0.0100 '/' Outflow=27.50 cfs 2.228 af

Pond DMH-6: Manhole Peak Elev=161.42' Inflow=27.50 cfs 2.228 af
18.0" Round Culvert n=0.011 L=114.0' S=0.0100 '/' Outflow=27.50 cfs 2.228 af

Pond DMH-7: Manhole Peak Elev=162.45' Inflow=30.84 cfs 2.488 af
18.0" Round Culvert n=0.011 L=40.0' S=0.0100 '/' Outflow=30.84 cfs 2.488 af

Pond ECB6: ECB-6 Peak Elev=149.40' Inflow=4.62 cfs 0.346 af
12.0" Round Culvert n=0.013 L=33.0' S=0.0100 '/' Outflow=4.62 cfs 0.346 af

Pond ECB7: ECB-7 Peak Elev=149.81' Inflow=1.23 cfs 0.101 af
12.0" Round Culvert n=0.013 L=23.0' S=0.0726 '/' Outflow=1.23 cfs 0.101 af

Pond ECB8: ECB-8 Peak Elev=163.41' Inflow=30.84 cfs 2.488 af
18.0" Round Culvert n=0.013 L=102.0' S=0.0057 '/' Outflow=30.84 cfs 2.488 af

Pond EDMH1: EDMH-1 Peak Elev=149.89' Inflow=58.36 cfs 5.739 af
48.0" Round Culvert n=0.013 L=213.0' S=0.0024 '/' Outflow=58.36 cfs 5.739 af

Pond EDMH2: EDMH-2 Peak Elev=150.10' Inflow=58.36 cfs 5.739 af
48.0" Round Culvert n=0.013 L=85.0' S=0.0016 '/' Outflow=58.36 cfs 5.739 af

Pond EDMH3: EDMH-3 Peak Elev=149.90' Inflow=45.59 cfs 3.635 af
48.0" Round Culvert n=0.013 L=177.0' S=0.0008 '/' Outflow=45.59 cfs 3.635 af

Pond EDMH4: EDMH-4 Peak Elev=149.43' Inflow=35.13 cfs 2.834 af
48.0" Round Culvert n=0.013 L=95.0' S=0.0025 '/' Outflow=35.13 cfs 2.834 af

Pond EDMH5: EDMH-5 (Vault MH) Peak Elev=149.72' Inflow=35.13 cfs 2.834 af
48.0" Round Culvert n=0.013 L=150.0' S=0.0032 '/' Outflow=35.13 cfs 2.834 af

Pond EDMH6: EDMH-6 Peak Elev=148.87' Inflow=11.77 cfs 0.867 af
18.0" Round Culvert n=0.013 L=6.0' S=0.0483 '/' Outflow=11.77 cfs 0.867 af

Pond NDC: North Drainage Channel Inflow=76.28 cfs 7.493 af
Primary=76.28 cfs 7.493 af

Pond RD#13A: Manhole Peak Elev=156.13' Inflow=4.68 cfs 0.383 af
12.0" Round Culvert n=0.011 L=130.0' S=0.0100 '/' Outflow=4.68 cfs 0.383 af

Pond ST-1: Ex Infilt Peak Elev=153.57' Storage=3,287 cf Inflow=1.83 cfs 0.150 af
Outflow=0.69 cfs 0.102 af

Pond ST-2: Ex Infilt Peak Elev=153.66' Storage=7,021 cf Inflow=3.18 cfs 0.254 af
Outflow=0.75 cfs 0.164 af

Pond UIS#1: Underground Infiltration System Peak Elev=153.10' Storage=1,719 cf Inflow=7.04 cfs 0.605 af
Outflow=7.04 cfs 0.573 af

Pond UIS#2: Underground Infiltration System Peak Elev=153.80' Storage=2,130 cf Inflow=3.53 cfs 0.289 af
Outflow=3.46 cfs 0.259 af

Pond UIS#3: Underground Infiltration System Peak Elev=151.79' Storage=1,717 cf Inflow=5.62 cfs 0.437 af
Outflow=5.65 cfs 0.404 af

Pond UIS#4: Underground Infiltration Peak Elev=152.19' Storage=1,724 cf Inflow=11.05 cfs 0.831 af
Outflow=11.03 cfs 0.801 af

Pond UIS#5: Underground Infiltration Peak Elev=155.44' Storage=16,929 cf Inflow=13.66 cfs 1.058 af
Outflow=5.87 cfs 0.946 af

Pond UIS#6: Underground Infiltration System Peak Elev=155.03' Storage=4,564 cf Inflow=8.44 cfs 0.640 af
Outflow=8.25 cfs 0.594 af

Pond UIS#7: Underground Infiltration Peak Elev=153.64' Storage=2,717 cf Inflow=12.15 cfs 0.890 af
Outflow=11.77 cfs 0.867 af

Pond WET: Existing Onsite Wetlands Peak Elev=149.06' Storage=626 cf Inflow=10.60 cfs 1.158 af
24.0" Round Culvert n=0.013 L=72.0' S=0.0074 '/' Outflow=9.99 cfs 1.158 af

Total Runoff Area = 21.613 ac Runoff Volume = 7.935 af Average Runoff Depth = 4.41"
55.85% Pervious = 12.071 ac 44.15% Impervious = 9.542 ac

Summary for Subcatchment 7S: Wetlands

Runoff = 9.69 cfs @ 12.17 hrs, Volume= 0.892 af, Depth> 5.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (ac)	CN	Description
0.230	58	Woods/grass comb., Good, HSG B
0.570	79	Woods/grass comb., Good, HSG D
1.260	98	Water Surface, HSG D
2.060	88	Weighted Average
0.800		38.83% Pervious Area
1.260		61.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	50	0.0260	0.07		**Sheet Flow, Initial Overland Flow (0-50')** Woods: Light underbrush n= 0.400 P2= 3.15"
1.8	165	0.0090	1.53		**Shallow Concentrated Flow, Overland Flow (50-215')** Unpaved Kv= 16.1 fps
13.0	215	Total			

Summary for Subcatchment 9S: Off Site

Runoff = 10.32 cfs @ 12.16 hrs, Volume= 0.865 af, Depth> 3.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
	1.060	58	Woods/grass comb., Good, HSG B
*	0.370	98	Paved parking & wetlands, HSG B
*	1.140	79	Woods/grass comb., Good, HSG D (9)
*	0.060	80	>75% Grass cover, Good, HSG D (9)
*	0.350	61	>75% Grass cover, Good, HSG B (265)
	2.980	72	Weighted Average
	2.610		87.58% Pervious Area
	0.370		12.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	50	0.0310	0.08		**Sheet Flow, Initial Overland Floow (0 - 50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.6	65	0.0110	1.69		**Shallow Concentrated Flow, Overland Flow (50-115')** Unpaved Kv= 16.1 fps
11.0	115	Total			

Summary for Subcatchment 11S: Fallon Rd

Runoff = 1.87 cfs @ 12.09 hrs, Volume= 0.137 af, Depth> 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	0.330	86	
	0.330		100.00% Pervious Area

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

Summary for Subcatchment 12S: Fallon Rd

Runoff = 1.23 cfs @ 12.08 hrs, Volume= 0.101 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (ac)	CN	Description
0.190	98	Paved parking, HSG B
0.190		100.00% Impervious Area

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

Summary for Subcatchment 14S: Ex Wshed

Runoff = 7.73 cfs @ 12.27 hrs, Volume= 0.806 af, Depth> 2.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	3.870	62	
	3.870		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.9	50	0.0080	0.05		**Sheet Flow, Initial Overland Flow (0 - 50')** Woods: Light underbrush n= 0.400 P2= 3.15"
0.3	60	0.0317	2.87		**Shallow Concentrated Flow, Overland Flow (50 - 110')** Unpaved Kv= 16.1 fps
18.2	110	Total			

Summary for Subcatchment 15S: Ex Wshed

Runoff = 1.13 cfs @ 12.09 hrs, Volume= 0.080 af, Depth> 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	0.062	98	Paved parking & roofs
	0.241	61	>75% Grass cover, Good, HSG B
	0.303	69	Weighted Average
	0.241		79.54% Pervious Area
	0.062		20.46% Impervious Area

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

Summary for Subcatchment 16S: Offsite Flows

Runoff = 10.02 cfs @ 12.09 hrs, Volume= 0.712 af, Depth> 3.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (ac)	CN	Description
2.250	75	1/4 acre lots, 38% imp, HSG B
1.395		62.00% Pervious Area
0.855		38.00% Impervious Area

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

Summary for Subcatchment 17S: North Roof Area

Runoff = 1.83 cfs @ 12.08 hrs, Volume= 0.150 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	0.283	98	Roofs
	0.283		100.00% Impervious Area

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

Summary for Subcatchment 18S: South Roof Area

Runoff = 0.74 cfs @ 12.08 hrs, Volume= 0.061 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	0.115	98	Roofs
	0.115		100.00% Impervious Area

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

Summary for Subcatchment 19S: North Loading Area

Runoff = 1.27 cfs @ 12.08 hrs, Volume= 0.100 af, Depth> 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	0.183	98	Paved parking
	0.017	61	>75% Grass cover, Good, HSG B
	0.200	95	Weighted Average
	0.017		8.50% Pervious Area
	0.183		91.50% Impervious Area

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

Summary for Subcatchment 20S: Parking Area

Runoff = 0.64 cfs @ 12.08 hrs, Volume= 0.050 af, Depth> 5.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	0.091	98	Paved parking & roofs
	0.010	61	>75% Grass cover, Good, HSG B
	0.101	94	Weighted Average
	0.010		9.90% Pervious Area
	0.091		90.10% Impervious Area

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

Summary for Subcatchment 21S: Driveway

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	0.032	98	Paved
	0.032		100.00% Impervious Area

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

Summary for Subcatchment 22S: North Driveway

Runoff = 0.32 cfs @ 12.08 hrs, Volume= 0.026 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

	Area (ac)	CN	Description
*	0.050	98	Paved driveway
	0.050		100.00% Impervious Area

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

Summary for Subcatchment P-1: Wastershed

Runoff = 7.04 cfs @ 12.14 hrs, Volume= 0.605 af, Depth> 5.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
3,002	61	>75% Grass cover, Good, HSG B
23,880	80	>75% Grass cover, Good, HSG D
72	98	Paved parking, HSG B
32,614	98	Paved parking, HSG D
59,568	89	Weighted Average
26,882		45.13% Pervious Area
32,686		54.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	50	0.0200	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.32"
0.8	45	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.4	95	Total			

Summary for Subcatchment P-2: Wastershed

Runoff = 1.11 cfs @ 12.09 hrs, Volume= 0.080 af, Depth> 4.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
9,628	80	>75% Grass cover, Good, HSG D
0	98	Paved parking, HSG B
0	98	Paved parking, HSG D
9,628	80	Weighted Average
9,628		100.00% Pervious Area

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

Summary for Subcatchment P-3: Wastershed

Runoff = 4.17 cfs @ 12.08 hrs, Volume= 0.318 af, Depth> 5.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
3,067	61	>75% Grass cover, Good, HSG B
2,875	80	>75% Grass cover, Good, HSG D
15,168	98	Paved parking, HSG B
8,275	98	Paved parking, HSG D
29,385	92	Weighted Average
5,942		20.22% Pervious Area
23,443		79.78% Impervious Area

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

Summary for Subcatchment P-4: Wastershed

Runoff = 6.66 cfs @ 12.09 hrs, Volume= 0.485 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
14,596	61	>75% Grass cover, Good, HSG B
9,036	80	>75% Grass cover, Good, HSG D
16,384	98	Paved parking, HSG B
12,062	98	Paved parking, HSG D
52,078	85	Weighted Average
23,632		45.38% Pervious Area
28,446		54.62% Impervious Area

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

Summary for Subcatchment P-5: Wastershed

Runoff = 5.06 cfs @ 12.09 hrs, Volume= 0.363 af, Depth> 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
19,669	61	>75% Grass cover, Good, HSG B
1,127	80	>75% Grass cover, Good, HSG D
21,732	98	Paved parking, HSG B
289	98	Paved parking, HSG D
42,817	81	Weighted Average
20,796		48.57% Pervious Area
22,021		51.43% Impervious Area

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

Summary for Subcatchment P-6: Wastershed

Runoff = 4.11 cfs @ 12.09 hrs, Volume= 0.296 af, Depth> 4.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
14,286	61	>75% Grass cover, Good, HSG B
0	80	>75% Grass cover, Good, HSG D
19,762	98	Paved parking, HSG B
0	98	Paved parking, HSG D
34,048	82	Weighted Average
14,286		41.96% Pervious Area
19,762		58.04% Impervious Area

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

Summary for Subcatchment P-7: Wastershed

Runoff = 2.34 cfs @ 12.08 hrs, Volume= 0.177 af, Depth> 5.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
6,525	80	>75% Grass cover, Good, HSG D
0	98	Paved parking, HSG B
10,168	98	Paved parking, HSG D
16,693	91	Weighted Average
6,525		39.09% Pervious Area
10,168		60.91% Impervious Area

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

Summary for Subcatchment P-8: Wastershed

Runoff = 1.52 cfs @ 12.09 hrs, Volume= 0.108 af, Depth> 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
12,066	61	>75% Grass cover, Good, HSG B
2,121	80	>75% Grass cover, Good, HSG D
3,066	98	Paved parking, HSG B
0	98	Paved parking, HSG D
17,253	70	Weighted Average
14,187		82.23% Pervious Area
3,066		17.77% Impervious Area

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

Summary for Subcatchment R-1: Roof

Runoff = 2.60 cfs @ 12.08 hrs, Volume= 0.213 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
318	98	Paved parking, HSG B
17,193	98	Paved parking, HSG D
17,511	98	Weighted Average
17,511		100.00% Impervious Area

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

Summary for Subcatchment R-10: Roof

Runoff = 0.85 cfs @ 12.08 hrs, Volume= 0.070 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
5,737	98	Roofs, HSG B
0	98	Roofs, HSG D
5,737	98	Weighted Average
5,737		100.00% Impervious Area

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

Summary for Subcatchment R-11: Roof

Runoff = 0.80 cfs @ 12.08 hrs, Volume= 0.065 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
5,371	98	Roofs, HSG B
0	98	Roofs, HSG D
5,371	98	Weighted Average
5,371		100.00% Impervious Area

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

Summary for Subcatchment R-12: Roof

Runoff = 0.80 cfs @ 12.08 hrs, Volume= 0.065 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
5,353	98	Roofs, HSG B
0	98	Roofs, HSG D
5,353	98	Weighted Average
5,353		100.00% Impervious Area

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

Summary for Subcatchment R-13: Roof

Runoff = 1.79 cfs @ 12.08 hrs, Volume= 0.146 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
11,051	98	Roofs, HSG B
981	98	Roofs, HSG D
12,032	98	Weighted Average
12,032		100.00% Impervious Area

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

Summary for Subcatchment R-2: Roof

Runoff = 0.93 cfs @ 12.08 hrs, Volume= 0.076 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
1,991	98	Paved parking, HSG B
4,259	98	Paved parking, HSG D
6,250	98	Weighted Average
6,250		100.00% Impervious Area

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

Summary for Subcatchment R-3: Roof/P-7

Runoff = 1.45 cfs @ 12.08 hrs, Volume= 0.119 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
9,775	98	Paved parking, HSG D
9,775		100.00% Impervious Area

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

Summary for Subcatchment R-4: Roof

Runoff = 1.56 cfs @ 12.08 hrs, Volume= 0.127 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
10,473	98	Roofs, HSG D
10,473	98	Weighted Average
10,473		100.00% Impervious Area

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

Summary for Subcatchment R-5: Roof

Runoff = 0.57 cfs @ 12.08 hrs, Volume= 0.046 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
3,816	98	Roofs, HSG D
3,816	98	Weighted Average
3,816		100.00% Impervious Area

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

Summary for Subcatchment R-6: Roof

Runoff = 0.94 cfs @ 12.08 hrs, Volume= 0.077 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
86	98	Roofs, HSG B
6,207	98	Roofs, HSG D
6,293	98	Weighted Average
6,293		100.00% Impervious Area

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

Summary for Subcatchment R-7: Roof

Runoff = 4.68 cfs @ 12.08 hrs, Volume= 0.383 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
1,114	98	Roofs, HSG B
30,351	98	Roofs, HSG D
31,465	98	Weighted Average
31,465		100.00% Impervious Area

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

Summary for Subcatchment R-8: Roof

Runoff = 0.65 cfs @ 12.08 hrs, Volume= 0.053 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
3,286	98	Roofs, HSG B
1,083	98	Roofs, HSG D
4,369	98	Weighted Average
4,369		100.00% Impervious Area

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

Summary for Subcatchment R-9: Roof

Runoff = 0.82 cfs @ 12.08 hrs, Volume= 0.068 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=6.60"

Area (sf)	CN	Description
4,954	98	Roofs, HSG B
597	98	Roofs, HSG D
5,551	98	Weighted Average
5,551		100.00% Impervious Area

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

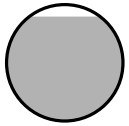
Summary for Reach 2R: Offsite Culverts

Inflow Area = 2.250 ac, 38.00% Impervious, Inflow Depth > 3.79" for 100 yr event
Inflow = 10.02 cfs @ 12.09 hrs, Volume= 0.712 af
Outflow = 9.96 cfs @ 12.10 hrs, Volume= 0.711 af, Atten= 1%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.35 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.72 fps, Avg. Travel Time= 0.9 min

Peak Storage= 220 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.12'
Bank-Full Depth= 1.25' Flow Area= 2.5 sf, Capacity= 9.37 cfs

A factor of 2.00 has been applied to the storage and discharge capacity
15.0" Round Pipe
n= 0.013 Concrete pipe, straight & clean
Length= 95.0' Slope= 0.0053 '/'
Inlet Invert= 172.00', Outlet Invert= 171.50'



Summary for Pond CB-1: ECB

Inflow Area = 0.101 ac, 90.10% Impervious, Inflow Depth > 5.89" for 100 yr event
Inflow = 0.64 cfs @ 12.08 hrs, Volume= 0.050 af
Outflow = 0.64 cfs @ 12.08 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 12.08 hrs, Volume= 0.050 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.70' @ 12.08 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.25'	**12.0" Round Culvert** L= 13.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.25' / 151.12' S= 0.0096 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.64 cfs @ 12.08 hrs HW=151.70' (Free Discharge)
1=Culvert (Barrel Controls 0.64 cfs @ 2.76 fps)

Summary for Pond CB-2: ECB

Inflow Area = 0.032 ac,100.00% Impervious, Inflow Depth > 6.36" for 100 yr event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min
Primary = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 151.51' @ 12.08 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.25'	**12.0" Round Culvert** L= 25.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.25' / 151.12' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.21 cfs @ 12.08 hrs HW=151.51' (Free Discharge)
1=Culvert (Barrel Controls 0.21 cfs @ 1.92 fps)

Summary for Pond CB-3: ECB

Inflow Area = 0.050 ac,100.00% Impervious, Inflow Depth > 6.36" for 100 yr event
Inflow = 0.32 cfs @ 12.08 hrs, Volume= 0.026 af
Outflow = 0.32 cfs @ 12.08 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min
Primary = 0.32 cfs @ 12.08 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 152.03' @ 12.08 hrs
Flood Elev= 154.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.75'	**12.0" Round Culvert** L= 36.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.75' / 151.39' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.32 cfs @ 12.08 hrs HW=152.03' (Free Discharge)
1=Culvert (Barrel Controls 0.32 cfs @ 2.66 fps)

Summary for Pond CB-4: ECB

Inflow Area = 0.200 ac, 91.50% Impervious, Inflow Depth > 6.00" for 100 yr event
Inflow = 1.27 cfs @ 12.08 hrs, Volume= 0.100 af
Outflow = 1.27 cfs @ 12.08 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min
Primary = 1.27 cfs @ 12.08 hrs, Volume= 0.100 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 152.34' @ 12.08 hrs
Flood Elev= 154.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.75'	**12.0" Round Culvert** L= 17.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.75' / 151.39' S= 0.0201 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.27 cfs @ 12.08 hrs HW=152.34' (Free Discharge)
1=Culvert (Inlet Controls 1.27 cfs @ 2.62 fps)

Summary for Pond DMH#1: Manhole

Inflow Area = 1.367 ac, 54.87% Impervious, Inflow Depth > 5.31" for 100 yr event
Inflow = 7.04 cfs @ 12.14 hrs, Volume= 0.605 af
Outflow = 7.04 cfs @ 12.14 hrs, Volume= 0.605 af, Atten= 0%, Lag= 0.0 min
Primary = 7.04 cfs @ 12.14 hrs, Volume= 0.605 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 154.56' @ 12.14 hrs
Flood Elev= 156.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	152.51'	**15.0" Round Culvert** L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.51' / 151.06' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=7.04 cfs @ 12.14 hrs HW=154.56' (Free Discharge)
1=Culvert (Inlet Controls 7.04 cfs @ 5.74 fps)

Summary for Pond DMH#15: Manhole

Inflow Area = 0.522 ac,100.00% Impervious, Inflow Depth > 6.36" for 100 yr event
Inflow = 3.38 cfs @ 12.08 hrs, Volume= 0.277 af
Outflow = 3.38 cfs @ 12.08 hrs, Volume= 0.277 af, Atten= 0%, Lag= 0.0 min
Primary = 3.38 cfs @ 12.08 hrs, Volume= 0.277 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 154.05' @ 12.08 hrs
Flood Elev= 159.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	152.74'	**12.0" Round Culvert** L= 27.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.74' / 152.47' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.39 cfs @ 12.08 hrs HW=154.04' (Free Discharge)
1=Culvert (Inlet Controls 3.39 cfs @ 4.31 fps)

Summary for Pond DMH#4: Manhole

Inflow Area = 0.545 ac,100.00% Impervious, Inflow Depth > 6.36" for 100 yr event
Inflow = 3.53 cfs @ 12.08 hrs, Volume= 0.289 af
Outflow = 3.53 cfs @ 12.08 hrs, Volume= 0.289 af, Atten= 0%, Lag= 0.0 min
Primary = 3.53 cfs @ 12.08 hrs, Volume= 0.289 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 153.55' @ 12.08 hrs
Flood Elev= 158.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	152.11'	**12.0" Round Culvert** L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.11' / 151.99' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.53 cfs @ 12.08 hrs HW=153.54' (Free Discharge)
1=Culvert (Barrel Controls 3.53 cfs @ 4.49 fps)

Summary for Pond DMH-1: EDMH

Inflow Area = 0.383 ac, 92.95% Impervious, Inflow Depth > 6.05" for 100 yr event
Inflow = 2.44 cfs @ 12.08 hrs, Volume= 0.193 af
Outflow = 2.44 cfs @ 12.08 hrs, Volume= 0.193 af, Atten= 0%, Lag= 0.0 min
Primary = 2.44 cfs @ 12.08 hrs, Volume= 0.193 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 152.15' @ 12.08 hrs
Flood Elev= 154.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.04'	**12.0" Round Culvert** L= 3.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.04' / 151.02' S= 0.0057 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.44 cfs @ 12.08 hrs HW=152.15' (Free Discharge)
1=Culvert (Barrel Controls 2.44 cfs @ 3.49 fps)

Summary for Pond DMH-2: EDMH

Inflow Area = 0.250 ac, 93.20% Impervious, Inflow Depth > 6.07" for 100 yr event
Inflow = 1.60 cfs @ 12.08 hrs, Volume= 0.127 af
Outflow = 1.60 cfs @ 12.08 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.0 min
Primary = 1.60 cfs @ 12.08 hrs, Volume= 0.127 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 152.10' @ 12.08 hrs
Flood Elev= 154.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.29'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.29' / 151.14' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.59 cfs @ 12.08 hrs HW=152.10' (Free Discharge)
1=Culvert (Barrel Controls 1.59 cfs @ 3.21 fps)

Summary for Pond DMH-4: EDMH

Inflow Area = 0.781 ac, 96.54% Impervious, Inflow Depth > 4.09" for 100 yr event
Inflow = 1.30 cfs @ 12.47 hrs, Volume= 0.266 af
Outflow = 1.30 cfs @ 12.47 hrs, Volume= 0.266 af, Atten= 0%, Lag= 0.0 min
Primary = 1.30 cfs @ 12.47 hrs, Volume= 0.266 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 150.74' @ 12.47 hrs
Flood Elev= 156.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	150.02'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 150.02' / 149.92' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.30 cfs @ 12.47 hrs HW=150.74' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.30 cfs @ 3.00 fps)

Summary for Pond DMH-5: Manhole

Inflow Area = 6.819 ac, 28.97% Impervious, Inflow Depth > 3.92" for 100 yr event
Inflow = 27.50 cfs @ 12.12 hrs, Volume= 2.228 af
Outflow = 27.50 cfs @ 12.12 hrs, Volume= 2.228 af, Atten= 0%, Lag= 0.0 min
Primary = 27.50 cfs @ 12.12 hrs, Volume= 2.228 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 161.94' @ 12.12 hrs
Flood Elev= 160.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	150.74'	**18.0" Round Culvert** L= 84.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 150.74' / 149.90' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=27.47 cfs @ 12.12 hrs HW=161.91' (Free Discharge)
└**1=Culvert** (Inlet Controls 27.47 cfs @ 15.54 fps)

Summary for Pond DMH-6: Manhole

Inflow Area = 6.819 ac, 28.97% Impervious, Inflow Depth > 3.92" for 100 yr event
Inflow = 27.50 cfs @ 12.12 hrs, Volume= 2.228 af
Outflow = 27.50 cfs @ 12.12 hrs, Volume= 2.228 af, Atten= 0%, Lag= 0.0 min
Primary = 27.50 cfs @ 12.12 hrs, Volume= 2.228 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 161.42' @ 12.12 hrs
Flood Elev= 158.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.80'	**18.0" Round Culvert** L= 114.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 149.80' / 148.66' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=27.47 cfs @ 12.12 hrs HW=161.39' (Free Discharge)
└**1=Culvert** (Barrel Controls 27.47 cfs @ 15.54 fps)

Summary for Pond DMH-7: Manhole

Inflow Area = 7.364 ac, 34.23% Impervious, Inflow Depth > 4.05" for 100 yr event
Inflow = 30.84 cfs @ 12.12 hrs, Volume= 2.488 af
Outflow = 30.84 cfs @ 12.12 hrs, Volume= 2.488 af, Atten= 0%, Lag= 0.0 min
Primary = 30.84 cfs @ 12.12 hrs, Volume= 2.488 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 162.45' @ 12.12 hrs
Flood Elev= 158.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	148.56'	**18.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 148.56' / 148.16' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=30.82 cfs @ 12.12 hrs HW=162.43' (Free Discharge)
└**1=Culvert** (Inlet Controls 30.82 cfs @ 17.44 fps)

Summary for Pond ECB6: ECB-6

Inflow Area = 0.916 ac, 28.42% Impervious, Inflow Depth > 4.53" for 100 yr event
Inflow = 4.62 cfs @ 12.09 hrs, Volume= 0.346 af
Outflow = 4.62 cfs @ 12.09 hrs, Volume= 0.346 af, Atten= 0%, Lag= 0.0 min
Primary = 4.62 cfs @ 12.09 hrs, Volume= 0.346 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.40' @ 12.09 hrs
Flood Elev= 151.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.53'	**12.0" Round Culvert** L= 33.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 147.53' / 147.20' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=4.62 cfs @ 12.09 hrs HW=149.40' (Free Discharge)
└**1=Culvert** (Barrel Controls 4.62 cfs @ 5.88 fps)

Summary for Pond ECB7: ECB-7

Inflow Area = 0.190 ac,100.00% Impervious, Inflow Depth > 6.36" for 100 yr event
Inflow = 1.23 cfs @ 12.08 hrs, Volume= 0.101 af
Outflow = 1.23 cfs @ 12.08 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min
Primary = 1.23 cfs @ 12.08 hrs, Volume= 0.101 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.81' @ 12.08 hrs
Flood Elev= 151.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.30'	**12.0" Round RCP_Round 12"** L= 23.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 149.30' / 147.63' S= 0.0726 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=1.23 cfs @ 12.08 hrs HW=149.81' (Free Discharge)
1=RCP_Round 12" (Inlet Controls 1.23 cfs @ 3.04 fps)

Summary for Pond ECB8: ECB-8

Inflow Area = 7.364 ac, 34.23% Impervious, Inflow Depth > 4.05" for 100 yr event
Inflow = 30.84 cfs @ 12.12 hrs, Volume= 2.488 af
Outflow = 30.84 cfs @ 12.12 hrs, Volume= 2.488 af, Atten= 0%, Lag= 0.0 min
Primary = 30.84 cfs @ 12.12 hrs, Volume= 2.488 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 163.41' @ 12.12 hrs
Flood Elev= 152.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.99'	**18.0" Round Culvert** L= 102.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 147.99' / 147.41' S= 0.0057 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=30.82 cfs @ 12.12 hrs HW=163.39' (Free Discharge)
1=Culvert (Barrel Controls 30.82 cfs @ 17.44 fps)

Summary for Pond EDMH1: EDMH-1

Inflow Area = 15.153 ac, 52.78% Impervious, Inflow Depth > 4.54" for 100 yr event
Inflow = 58.36 cfs @ 12.12 hrs, Volume= 5.739 af
Outflow = 58.36 cfs @ 12.12 hrs, Volume= 5.739 af, Atten= 0%, Lag= 0.0 min
Primary = 58.36 cfs @ 12.12 hrs, Volume= 5.739 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 149.89' @ 12.12 hrs
Flood Elev= 152.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.20'	**48.0" Round Culvert** L= 213.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.20' / 145.68' S= 0.0024 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf

Primary OutFlow Max=58.33 cfs @ 12.12 hrs HW=149.89' (Free Discharge)
1=Culvert (Barrel Controls 58.33 cfs @ 6.29 fps)

Summary for Pond EDMH2: EDMH-2

Inflow Area = 15.153 ac, 52.78% Impervious, Inflow Depth > 4.54" for 100 yr event
Inflow = 58.36 cfs @ 12.12 hrs, Volume= 5.739 af
Outflow = 58.36 cfs @ 12.12 hrs, Volume= 5.739 af, Atten= 0%, Lag= 0.0 min
Primary = 58.36 cfs @ 12.12 hrs, Volume= 5.739 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 150.10' @ 12.12 hrs
Flood Elev= 151.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.34'	**48.0" Round Culvert** L= 85.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.34' / 146.20' S= 0.0016 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=58.33 cfs @ 12.12 hrs HW=150.10' (Free Discharge)
1=Culvert (Barrel Controls 58.33 cfs @ 6.16 fps)

Summary for Pond EDMH3: EDMH-3

Inflow Area = 10.035 ac, 42.35% Impervious, Inflow Depth > 4.35" for 100 yr event
Inflow = 45.59 cfs @ 12.11 hrs, Volume= 3.635 af
Outflow = 45.59 cfs @ 12.11 hrs, Volume= 3.635 af, Atten= 0%, Lag= 0.0 min
Primary = 45.59 cfs @ 12.11 hrs, Volume= 3.635 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.90' @ 12.11 hrs
Flood Elev= 152.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.48'	**48.0" Round Culvert** L= 177.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.48' / 146.34' S= 0.0008 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=45.54 cfs @ 12.11 hrs HW=149.90' (Free Discharge)
└**1=Culvert** (Barrel Controls 45.54 cfs @ 5.36 fps)

Summary for Pond EDMH4: EDMH-4

Inflow Area = 8.280 ac, 33.59% Impervious, Inflow Depth > 4.11" for 100 yr event
Inflow = 35.13 cfs @ 12.12 hrs, Volume= 2.834 af
Outflow = 35.13 cfs @ 12.12 hrs, Volume= 2.834 af, Atten= 0%, Lag= 0.0 min
Primary = 35.13 cfs @ 12.12 hrs, Volume= 2.834 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.43' @ 12.12 hrs
Flood Elev= 152.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.72'	**48.0" Round Culvert** L= 95.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.72' / 146.48' S= 0.0025 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=35.09 cfs @ 12.12 hrs HW=149.43' (Free Discharge)
└**1=Culvert** (Barrel Controls 35.09 cfs @ 5.48 fps)

Summary for Pond EDMH5: EDMH-5 (Vault MH)

Inflow Area = 8.280 ac, 33.59% Impervious, Inflow Depth > 4.11" for 100 yr event
Inflow = 35.13 cfs @ 12.12 hrs, Volume= 2.834 af
Outflow = 35.13 cfs @ 12.12 hrs, Volume= 2.834 af, Atten= 0%, Lag= 0.0 min
Primary = 35.13 cfs @ 12.12 hrs, Volume= 2.834 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.72' @ 12.12 hrs
Flood Elev= 152.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.20'	**48.0" Round Culvert** L= 150.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 147.20' / 146.72' S= 0.0032 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=35.09 cfs @ 12.12 hrs HW=149.72' (Free Discharge)
└**1=Culvert** (Barrel Controls 35.09 cfs @ 6.01 fps)

Summary for Pond EDMH6: EDMH-6

Inflow Area = 2.287 ac, 64.78% Impervious, Inflow Depth > 4.55" for 100 yr event
Inflow = 11.77 cfs @ 12.12 hrs, Volume= 0.867 af
Outflow = 11.77 cfs @ 12.12 hrs, Volume= 0.867 af, Atten= 0%, Lag= 0.0 min
Primary = 11.77 cfs @ 12.12 hrs, Volume= 0.867 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 148.87' @ 12.12 hrs
Flood Elev= 152.52'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.22'	**18.0" Round Culvert** L= 6.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 146.22' / 145.93' S= 0.0483 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=11.40 cfs @ 12.12 hrs HW=148.76' (Free Discharge)
└**1=Culvert** (Inlet Controls 11.40 cfs @ 6.45 fps)

Summary for Pond NDC: North Drainage Channel

Inflow Area = 21.613 ac, 44.15% Impervious, Inflow Depth > 4.16" for 100 yr event
Inflow = 76.28 cfs @ 12.12 hrs, Volume= 7.493 af
Primary = 76.28 cfs @ 12.12 hrs, Volume= 7.493 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Pond RD#13A: Manhole

Inflow Area = 0.722 ac,100.00% Impervious, Inflow Depth > 6.36" for 100 yr event
Inflow = 4.68 cfs @ 12.08 hrs, Volume= 0.383 af
Outflow = 4.68 cfs @ 12.08 hrs, Volume= 0.383 af, Atten= 0%, Lag= 0.0 min
Primary = 4.68 cfs @ 12.08 hrs, Volume= 0.383 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 156.13' @ 12.08 hrs
Flood Elev= 158.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	**12.0" Round Culvert** L= 130.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.00' / 152.70' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.67 cfs @ 12.08 hrs HW=156.13' (Free Discharge)
└**1=Culvert** (Barrel Controls 4.67 cfs @ 5.94 fps)

Summary for Pond ST-1: Ex Infilt

Inflow Area = 0.283 ac,100.00% Impervious, Inflow Depth > 6.36" for 100 yr event
Inflow = 1.83 cfs @ 12.08 hrs, Volume= 0.150 af
Outflow = 0.69 cfs @ 12.31 hrs, Volume= 0.102 af, Atten= 62%, Lag= 13.9 min
Primary = 0.69 cfs @ 12.31 hrs, Volume= 0.102 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 153.57' @ 12.31 hrs Surf.Area= 1,471 sf Storage= 3,287 cf
Flood Elev= 153.67' Surf.Area= 1,471 sf Storage= 3,344 cf

Plug-Flow detention time= 226.2 min calculated for 0.102 af (68% of inflow)
Center-of-Mass det. time= 128.0 min (871.2 - 743.2)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	1,857 cf	**4.75'W x 7.20'L x 4.50'H Prismatoid** x 43 6,618 cf Overall - 1,975 cf Embedded = 4,642 cf x 40.0% Voids
#2	150.67'	1,975 cf	**ADS_StormTech SC-740** x 43 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		3,832 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	150.47'	**12.0" Round Culvert** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 150.47' / 150.02' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	150.67'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	152.22'	**3.0" Vert. Orifice/Grate X 2.00** C= 0.600
#4	Device 1	153.53'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.68 cfs @ 12.31 hrs HW=153.57' (Free Discharge)
└**1=Culvert** (Passes 0.68 cfs of 5.09 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 8.14 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.52 cfs @ 5.33 fps)
  └**4=Sharp-Crested Rectangular Weir** (Weir Controls 0.11 cfs @ 0.67 fps)

Summary for Pond ST-2: Ex Infilt

Inflow Area = 0.498 ac, 94.58% Impervious, Inflow Depth > 6.12" for 100 yr event
Inflow = 3.18 cfs @ 12.08 hrs, Volume= 0.254 af
Outflow = 0.75 cfs @ 12.47 hrs, Volume= 0.164 af, Atten= 77%, Lag= 23.2 min
Primary = 0.75 cfs @ 12.47 hrs, Volume= 0.164 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 150.67' Surf.Area= 3,078 sf Storage= 825 cf
Peak Elev= 153.66' @ 12.47 hrs Surf.Area= 3,078 sf Storage= 7,021 cf (6,196 cf above start)
Flood Elev= 153.67' Surf.Area= 3,078 sf Storage= 7,027 cf (6,202 cf above start)

Plug-Flow detention time= 277.4 min calculated for 0.145 af (57% of inflow)
Center-of-Mass det. time= 133.2 min (887.7 - 754.5)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	43 cf	**4.75'W x 7.20'L x 4.50'H Prismatoid** 154 cf Overall - 46 cf Embedded = 107 cf x 40.0% Voids
#2	150.67'	46 cf	**ADS_StormTech SC-740 @ 7.20' L** Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.20'L = 46.5 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		89 cf	x 90.00 = 8,049 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	150.67'	**12.0" Round Culvert** L= 23.6' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 150.67' / 150.48' S= 0.0081 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	150.67'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	153.60'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	152.20'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.74 cfs @ 12.47 hrs HW=153.66' (Free Discharge)
└**1=Culvert** (Passes 0.74 cfs of 5.97 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 8.27 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Weir Controls 0.21 cfs @ 0.83 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.48 cfs @ 5.49 fps)

Summary for Pond UIS#1: Underground Infiltration System

Inflow Area = 1.367 ac, 54.87% Impervious, Inflow Depth > 5.31" for 100 yr event
Inflow = 7.04 cfs @ 12.14 hrs, Volume= 0.605 af
Outflow = 7.04 cfs @ 12.14 hrs, Volume= 0.573 af, Atten= 0%, Lag= 0.1 min
Primary = 7.04 cfs @ 12.14 hrs, Volume= 0.573 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 153.10' @ 12.14 hrs Surf.Area= 1,350 sf Storage= 1,719 cf

Plug-Flow detention time= 48.9 min calculated for 0.573 af (95% of inflow)
Center-of-Mass det. time= 19.4 min (807.5 - 788.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	150.56'	952 cf	**18.17'W x 73.64'L x 2.33'H Field A** 3,121 cf Overall - 742 cf Embedded = 2,380 cf x 40.0% Voids
#2A	151.06'	742 cf	**ADS_StormTech SC-310** x 50 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 5 rows
#3	151.06'	101 cf	**4.00'D x 8.04'H Vertical Cone/Cylinder**
		1,795 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	151.06'	**15.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.06' / 150.88' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	152.30'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=7.04 cfs @ 12.14 hrs HW=153.10' (Free Discharge)
└**1=Culvert** (Inlet Controls 7.04 cfs @ 5.73 fps)
└**2=Broad-Crested Rectangular Weir** (Passes 7.04 cfs of 9.49 cfs potential flow)

Summary for Pond UIS#2: Underground Infiltration System

Inflow Area = 0.545 ac,100.00% Impervious, Inflow Depth > 6.36" for 100 yr event
Inflow = 3.53 cfs @ 12.08 hrs, Volume= 0.289 af
Outflow = 3.46 cfs @ 12.10 hrs, Volume= 0.259 af, Atten= 2%, Lag= 1.0 min
Primary = 3.46 cfs @ 12.10 hrs, Volume= 0.259 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 153.80' @ 12.10 hrs Surf.Area= 1,726 sf Storage= 2,130 cf

Plug-Flow detention time= 108.1 min calculated for 0.259 af (90% of inflow)
Center-of-Mass det. time= 57.6 min (800.8 - 743.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	151.55'	1,226 cf	**18.17'W x 95.00'L x 2.33'H Field A** 4,027 cf Overall - 963 cf Embedded = 3,064 cf x 40.0% Voids
#2A	152.05'	963 cf	**ADS_StormTech SC-310** x 65 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 5 rows
		2,188 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	152.05'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.05' / 152.00' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	152.55'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 1.00 1.50 Width (feet) 0.00 1.00 4.00 4.00

Primary OutFlow Max=3.45 cfs @ 12.10 hrs HW=153.80' (Free Discharge)
└**1=Culvert** (Passes 3.45 cfs of 4.22 cfs potential flow)
└**2=Custom Weir/Orifice** (Weir Controls 3.45 cfs @ 2.31 fps)

Summary for Pond UIS#3: Underground Infiltration System

Inflow Area = 0.899 ac, 84.83% Impervious, Inflow Depth > 5.83" for 100 yr event
Inflow = 5.62 cfs @ 12.08 hrs, Volume= 0.437 af
Outflow = 5.65 cfs @ 12.08 hrs, Volume= 0.404 af, Atten= 0%, Lag= 0.0 min
Primary = 5.65 cfs @ 12.08 hrs, Volume= 0.404 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 151.79' @ 12.08 hrs Surf.Area= 1,350 sf Storage= 1,717 cf

Plug-Flow detention time= 69.8 min calculated for 0.404 af (93% of inflow)
Center-of-Mass det. time= 30.6 min (796.0 - 765.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	149.42'	952 cf	**18.17'W x 73.64'L x 2.33'H Field A** 3,121 cf Overall - 742 cf Embedded = 2,380 cf x 40.0% Voids
#2A	149.92'	742 cf	**ADS_StormTech SC-310** x 50 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 5 rows
#3	149.92'	122 cf	**4.00'D x 9.68'H Vertical Cone/Cylinder**
		1,815 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	149.92'	**15.0" Round Culvert** L= 16.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 149.92' / 149.76' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	151.20'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=5.60 cfs @ 12.08 hrs HW=151.79' (Free Discharge)
└**1=Culvert** (Passes 5.60 cfs of 6.55 cfs potential flow)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 5.60 cfs @ 2.37 fps)

Summary for Pond UIS#4: Underground Infiltration System

Inflow Area = 1.755 ac, 83.69% Impervious, Inflow Depth > 5.69" for 100 yr event
Inflow = 11.05 cfs @ 12.08 hrs, Volume= 0.831 af
Outflow = 11.03 cfs @ 12.08 hrs, Volume= 0.801 af, Atten= 0%, Lag= 0.0 min
Primary = 11.03 cfs @ 12.08 hrs, Volume= 0.801 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 152.19' @ 12.08 hrs Surf.Area= 1,350 sf Storage= 1,724 cf

Plug-Flow detention time= 38.4 min calculated for 0.801 af (96% of inflow)
Center-of-Mass det. time= 17.2 min (793.4 - 776.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	149.26'	952 cf	**18.17'W x 73.64'L x 2.33'H Field A** 3,121 cf Overall - 742 cf Embedded = 2,380 cf x 40.0% Voids
#2A	149.76'	742 cf	**ADS_StormTech SC-310** x 50 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 5 rows
#3	149.76'	125 cf	**4.00'D x 9.94'H Vertical Cone/Cylinder**
		1,818 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	149.76'	**18.0" Round Culvert** L= 7.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 149.76' / 149.69' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.77 sf
#2	Device 1	150.85'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=11.00 cfs @ 12.08 hrs HW=152.18' (Free Discharge)
└**1=Culvert** (Inlet Controls 11.00 cfs @ 6.23 fps)
└**2=Broad-Crested Rectangular Weir** (Passes 11.00 cfs of 20.43 cfs potential flow)

Summary for Pond UIS#5: Underground Infiltration System

Inflow Area = 2.277 ac, 76.18% Impervious, Inflow Depth > 5.57" for 100 yr event
Inflow = 13.66 cfs @ 12.08 hrs, Volume= 1.058 af
Outflow = 5.87 cfs @ 12.28 hrs, Volume= 0.946 af, Atten= 57%, Lag= 11.4 min
Primary = 5.87 cfs @ 12.28 hrs, Volume= 0.946 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 155.44' @ 12.28 hrs Surf.Area= 7,911 sf Storage= 16,929 cf

Plug-Flow detention time= 133.3 min calculated for 0.946 af (89% of inflow)
Center-of-Mass det. time= 82.2 min (849.8 - 767.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	151.96'	3,871 cf	**30.00'W x 144.84'L x 3.50'H Field A** 15,208 cf Overall - 5,530 cf Embedded = 9,678 cf x 40.0% Voids
#2A	152.46'	5,530 cf	**ADS_StormTech SC-740** x 120 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 6 rows
#3B	151.96'	2,421 cf	**20.50'W x 130.60'L x 3.50'H Field B** 9,370 cf Overall - 3,319 cf Embedded = 6,051 cf x 40.0% Voids
#4B	152.46'	3,319 cf	**ADS_StormTech SC-740** x 72 Inside #3 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 4 rows
#5C	151.96'	837 cf	**11.00'W x 80.76'L x 3.50'H Field C** 3,109 cf Overall - 1,016 cf Embedded = 2,093 cf x 40.0% Voids
#6C	152.46'	1,016 cf	**ADS_StormTech SC-740** x 22 Inside #5 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 2 rows
		16,994 cf	Total Available Storage

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

Device	Routing	Invert	Outlet Devices
#1	Primary	152.46'	**15.0" Round Culvert** L= 171.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.46' / 149.04' S= 0.0200 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	152.75'	**7.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	153.70'	**11.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	155.46'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=5.87 cfs @ 12.28 hrs HW=155.44' (Free Discharge)
└**1=Culvert** (Passes 5.87 cfs of 9.07 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 2.28 cfs @ 7.42 fps)
├**3=Orifice/Grate** (Orifice Controls 3.60 cfs @ 5.45 fps)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond UIS#6: Underground Infiltration System

Inflow Area = 1.505 ac, 68.29% Impervious, Inflow Depth > 5.10" for 100 yr event
Inflow = 8.44 cfs @ 12.09 hrs, Volume= 0.640 af
Outflow = 8.25 cfs @ 12.11 hrs, Volume= 0.594 af, Atten= 2%, Lag= 1.7 min
Primary = 8.25 cfs @ 12.11 hrs, Volume= 0.594 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 155.03' @ 12.11 hrs Surf.Area= 3,557 sf Storage= 4,564 cf

Plug-Flow detention time= 72.6 min calculated for 0.594 af (93% of inflow)
Center-of-Mass det. time= 34.7 min (814.2 - 779.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	151.78'	2,491 cf	**34.83'W x 102.12'L x 2.33'H Field A** 8,300 cf Overall - 2,073 cf Embedded = 6,227 cf x 40.0% Voids
#2A	152.28'	2,073 cf	**ADS_StormTech RC-310** x 140 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 10 rows
		4,564 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	152.47'	**15.0" Round Culvert** L= 144.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.47' / 150.99' S= 0.0103 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	152.70'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=7.96 cfs @ 12.11 hrs HW=154.91' (Free Discharge)
└**1=Culvert** (Inlet Controls 7.96 cfs @ 6.49 fps)
└**2=Broad-Crested Rectangular Weir** (Passes 7.96 cfs of 43.60 cfs potential flow)

Summary for Pond UIS#7: Underground Infiltration System

Inflow Area = 2.287 ac, 64.78% Impervious, Inflow Depth > 4.67" for 100 yr event
Inflow = 12.15 cfs @ 12.11 hrs, Volume= 0.890 af
Outflow = 11.77 cfs @ 12.12 hrs, Volume= 0.867 af, Atten= 3%, Lag= 0.6 min
Primary = 11.77 cfs @ 12.12 hrs, Volume= 0.867 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 153.64' @ 12.12 hrs Surf.Area= 2,126 sf Storage= 2,717 cf

Plug-Flow detention time= 24.7 min calculated for 0.867 af (98% of inflow)
Center-of-Mass det. time= 10.2 min (821.2 - 811.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	150.49'	1,499 cf	**18.17'W x 116.36'L x 2.33'H Field A** 4,932 cf Overall - 1,184 cf Embedded = 3,748 cf x 40.0% Voids
#2A	150.99'	1,184 cf	**ADS_StormTech RC-310** x 80 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 5 rows
#3	150.99'	92 cf	**4.00'D x 7.31'H Vertical Cone/Cylinder**
		2,775 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	150.99'	**18.0" Round Culvert** L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 150.99' / 150.47' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 1.77 sf
#2	Device 1	151.25'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=11.40 cfs @ 12.12 hrs HW=153.53' (Free Discharge)
└**1=Culvert** (Inlet Controls 11.40 cfs @ 6.45 fps)
└**2=Broad-Crested Rectangular Weir** (Passes 11.40 cfs of 45.87 cfs potential flow)

Summary for Pond WET: Existing Onsite Wetlands

Inflow Area = 2.841 ac, 70.89% Impervious, Inflow Depth > 4.89" for 100 yr event
Inflow = 10.60 cfs @ 12.18 hrs, Volume= 1.158 af
Outflow = 9.99 cfs @ 12.22 hrs, Volume= 1.158 af, Atten= 6%, Lag= 2.8 min
Primary = 9.99 cfs @ 12.22 hrs, Volume= 1.158 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 149.06' @ 12.22 hrs Surf.Area= 2,815 sf Storage= 626 cf
Flood Elev= 150.00' Surf.Area= 46,149 sf Storage= 19,550 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.2 min (813.8 - 813.6)

Volume	Invert	Avail.Storage	Storage Description
#1	148.20'	19,550 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
148.20	0	0.0	0	0	0
149.00	1,834	347.0	489	489	9,583
150.00	46,149	1,378.0	19,061	19,550	151,112

Device	Routing	Invert	Outlet Devices
#1	Primary	147.47'	**24.0" Round Culvert** L= 72.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 147.47' / 146.94' S= 0.0074 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 3.14 sf

Primary OutFlow Max=9.98 cfs @ 12.22 hrs HW=149.06' (Free Discharge)
└**1=Culvert** (Barrel Controls 9.98 cfs @ 5.11 fps)

LEGEND:

- EX. PROPERTY LINE
- PRE-DEV. WATERSHED AREA
- SCS SOILS BOUNDARY
- WATERSHED NO. (1S)

NOTES:

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GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

N:\PROJECTS\1592-03\CIVIL\DRAWINGS\CURRENT\C-1592-03 - E-WATERSHED.DWG

FAIRFIELD RESIDENTIAL

THE RICHMOND COMPANY, INC.

ISSUED FOR DRAINAGE REPORT
MAY 28, 2014

PROFESSIONAL ENGINEER FOR ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION
1	05-29-14	SITE PLAN MODIFICATIONS

APPLICANT\OWNER:

FAIRFIELD RESIDENTIAL COMPANY, LLC
C/O FF REALTY, LLC
405 COCHITUATE ROAD, SUITE 301
FRAMINGHAM, MA 01701-4648

225 FALLON ROAD REALTY LLC
23 CONCORD STREET
WILMINGTON, MA 01887

PROJECT:

STONEHAM CROSSING
MULTI-FAMILY
RESIDENTIAL DEVELOPMENT
225 FALLON ROAD
STONEHAM, MA

PROJECT NO.	1592-03	DATE:	05-22-2014
SCALE:	1"=60'	DWG. NAME:	C-1592-03
DESIGNED BY:	SJL	CHECKED BY:	TJW

PREPARED BY:

ALLEN & MAJOR ASSOCIATES, INC.
civil & structural engineering ◆ land surveying
environmental consulting ◆ landscape architecture
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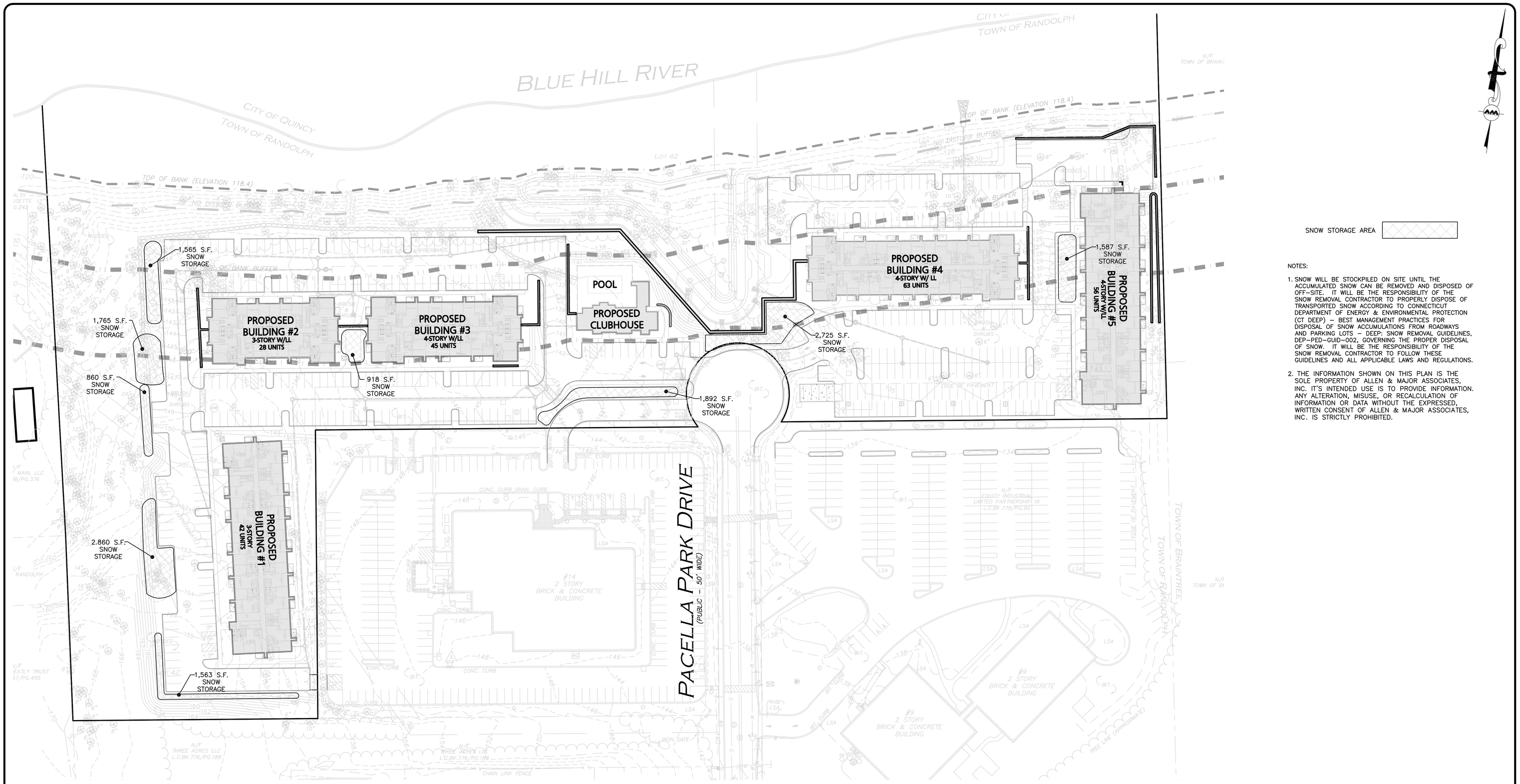
WOBURN MA 01888-0118
TEL: (781) 935-6889
FAX: (781) 935-2896
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

DRAWING TITLE: EXISTING WATERSHED PLAN

SHEET No. EWP



SNOW STORAGE AREA

NOTES:

1. SNOW WILL BE STOCKPILED ON SITE UNTIL THE ACCUMULATED SNOW CAN BE REMOVED AND DISPOSED OF OFF-SITE. IT WILL BE THE RESPONSIBILITY OF THE SNOW REMOVAL CONTRACTOR TO PROPERLY DISPOSE OF TRANSPORTED SNOW ACCORDING TO CONNECTICUT DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION (CT DEEP) – BEST MANAGEMENT PRACTICES FOR DISPOSAL OF SNOW ACCUMULATIONS FROM ROADWAYS AND PARKING LOTS – DEEP: SNOW REMOVAL GUIDELINES, DEP-PED-GUID-002, GOVERNING THE PROPER DISPOSAL OF SNOW. IT WILL BE THE RESPONSIBILITY OF THE SNOW REMOVAL CONTRACTOR TO FOLLOW THESE GUIDELINES AND ALL APPLICABLE LAWS AND REGULATIONS.

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1-888-344-7233

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

N:\PROJECTS\0324-32\CIVIL\DRAWINGS\CURRENT\0324-32 - SNOW STORAGE.DWG

PROGRESS PRINT

JUNE 2, 2014

PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION
A	06-02-2014	PROGRESS PRINT

APPLICANT\OWNER:

THE DOLBEN COMPANY, INC.
150 PRESIDENTIAL WAY, SUITE 220
WOBURN, MA 01801

PROJECT:

RESIDENCES AT GREAT POND
PACELLA PARK DRIVE
RANDOLPH, MA

PROJECT NO.	0324-32	DATE:	02/21/2014
SCALE:	1"=50'	DWG. NAME:	C324-32
DESIGNED BY:	KEA	CHECKED BY:	CMQ

PREPARED BY:

ALLEN & MAJOR ASSOCIATES, INC.
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environmental consulting ◆ landscape architecture
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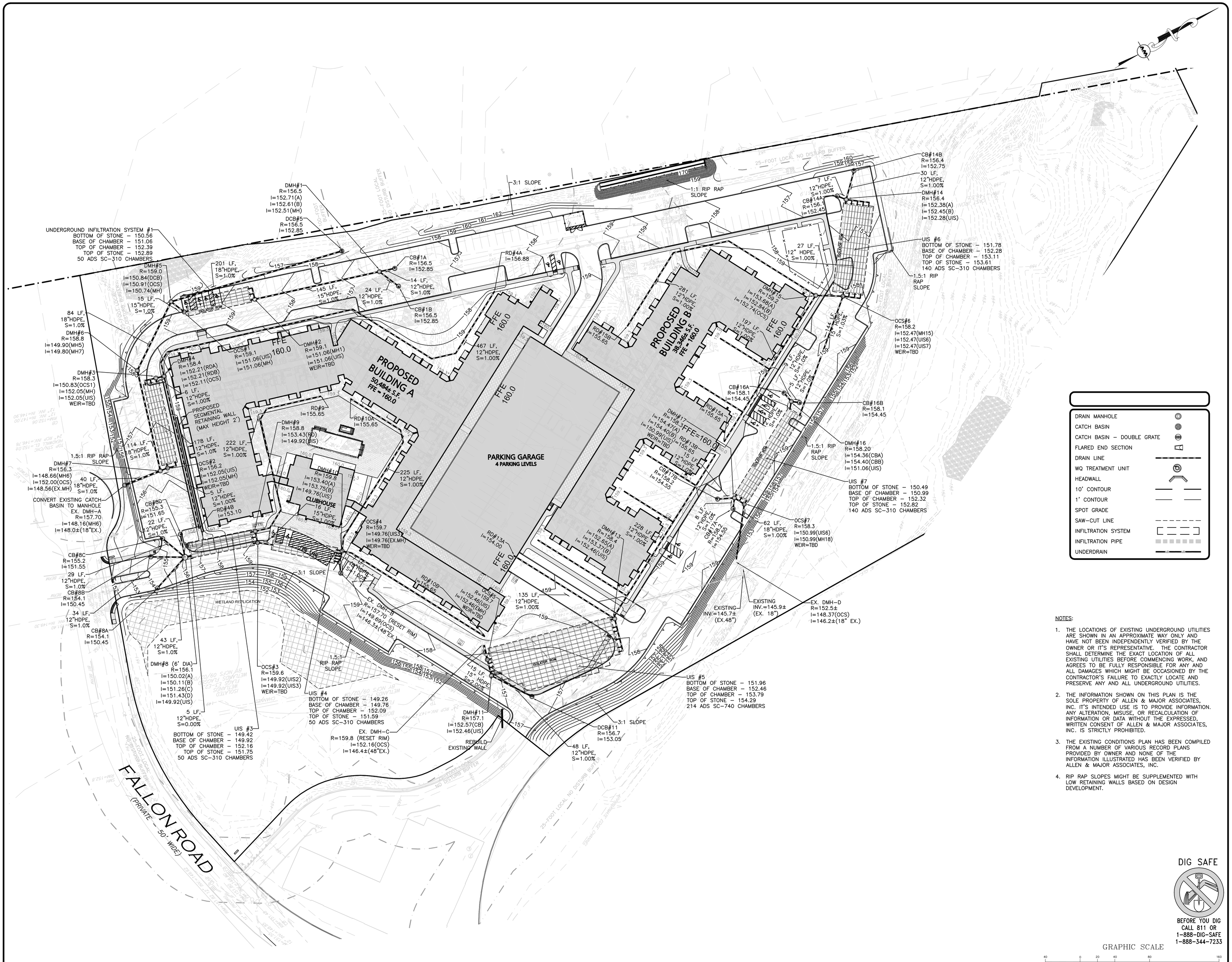
TEL: (781) 935-6889
FAX: (781) 935-2896
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

DRAWING TITLE: SNOW STORAGE PLAN

SHEET No. C-9



DRAIN MANHOLE
CATCH BASIN
CATCH BASIN – DOUBLE GRATE
FLARED END SECTION
DRAIN LINE
WQ TREATMENT UNIT
HEADWALL
10' CONTOUR
1' CONTOUR
SPOT GRADE
SAW-CUT LINE
INFILTRATION SYSTEM
INFILTRATION PIPE
UNDERDRAIN

NOTES:

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GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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FAIRFIELD RESIDENTIAL

THE RICHMOND COMPANY, INC.

ISSUED FOR DRAINAGE REPORT
MAY 29, 2014

PROFESSIONAL ENGINEER FOR ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION
1	05-29-14	SITE PLAN MODIFICATIONS

APPLICANT\OWNER:

FAIRFIELD RESIDENTIAL COMPANY, LLC
C/O FF REALTY, LLC
405 COCHITUATE ROAD, SUITE 301
FRAMINGHAM, MA 01701-4648

225 FALLON ROAD REALTY LLC
23 CONCORD STREET
WILMINGTON, MA 01887

PROJECT:

STONEHAM CROSSING
MULTI-FAMILY
RESIDENTIAL DEVELOPMENT
225 FALLON ROAD
STONEHAM, MA

PROJECT NO.	1592-03	DATE:	05-22-2014
SCALE:	1"=40'	DWG. NAME:	C-1592-03
DESIGNED BY:	SJL	CHECKED BY:	TJW

PREPARED BY:

ALLEN & MAJOR ASSOCIATES, INC.
civil & structural engineering ◆ land surveying
environmental consulting ◆ landscape architecture
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WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

DRAWING TITLE:

GRADING & DRAINAGE PLAN

SHEET No.

C-3

OPERATION AND MAINTENANCE PLAN

Allen & Major Associates, Inc. (A&M) has prepared the following Operation and Maintenance plan for the proposed stormwater management system at 225 Fallon Road, Stoneham, Massachusetts.

This plan is broken in to two major sections. The first section describes construction-related erosion and sedimentation controls. The second section is devoted to a post-development operation and maintenance plan. An operation and maintenance schedule has been included with this report.

The site contractor is responsible for the operation and maintenance of the stormwater management system during construction. The property owner (or the assignee) is responsible for the permanent maintenance of the stormwater management system.

Basic Information

Proponent: Fairfield Residential Company, LLC
Address: 405 Cochituate Road, Suite 301
City: Framingham, MA 01701

SECTION 1 CONSTRUCTION ACTIVITIES

1. Install the strawbales, silt fence and construction fencing as shown on the enclosed Erosion and Sediment Control Plan.

2. Site access shall be achieved only from the designated construction entrance.

3. All erosion control measures shall be inspected weekly and after all rainfall events, and shall be maintained, repaired or replaced as required or at the direction of the owner's engineer or the Town Engineer.

4. Sediment accumulation up-gradient of the strawbales and silt fence greater than 6" in depth shall be removed and disposed of in accordance with all applicable regulations.

5. If it appears that sediment is exiting the site, silt sacks shall be installed in all catch basins adjacent to the site. Sediment accumulation on all adjacent catch basin inlets shall be removed and the silt sack replaced if torn or damaged.

6. Silt control shall be installed prior to construction and shall be adequate to maintain sediment on site. Any modifications to silt controls shown on the approved plans as a result of actual field conditions or construction practices shall be installed in accordance with BMP (best management practices) per the E.P.A. 2008 "Construction General Permit" manual. Any such modifications shall be installed as approved by the engineer.

7. The contractor shall conduct inspections after each rainfall event in addition to weekly inspections & maintaining a log.

8. Areas of exposed soil undergoing construction that will not be covered and or finished graded within 7 days of exposure shall be anchored with temporary erosion control measures within 7 days of disturbance. Temporary erosion control measures shall include erosion control mesh, netting or mulch as directed by the owner's representative and shown on the design plans. If mulch is used, straw mulch shall be applied at the rate of 2 bales per 1,000 square feet. Application area shall be

sufficiently covered with mulch to avoid any visible soil exposure. Mulch shall be kept moist to avoid loss due to wind. Mulch and netting shall be applied in the base of all grassed waterways and in vegetative slopes which exceed 15% and disturbed areas within 100 feet of wetlands or streams.

9. If disturbed areas do not receive final seeding by September 15 of the construction year, then all disturbed areas shall be seeded with a winter cover crop at the rate of 3 lbs per 1,000 square feet. Winter seeding shall be covered with erosion control mesh (mulch and netting). Heavy grade mats shall be used in the base of all grassed waterways on vegetated slopes in excess of 15%, and any disturbed areas within 100 feet of wetlands or streams. Mulch and netting shall also be provided for additional winter protection.

10. Soil and fill stockpiles expected to remain in place for less than 90 days shall be covered with hay and mulch (at 100lbs/1,000 sf), or with an anchored tarp within 7 days or prior to any rainfall. Soil and fill stockpiles expected to remain in place for 90 days or more shall be seeded with winter rye (for fall seeding at 3lb/1,000 sf) or oats (for summer seeding at 2lb/1,000 sf) and then covered with hay mulch (at 100lb/1,000 sf) or an anchored tarp within 7 days or prior to any rainfall. Loam shall be stockpiled at locations designated by the owner and engineer.

11. All filter barriers, silt sacks, and erosion control berms shall be installed according to the erosion control plan. These shall be maintained during construction to remove sediment from runoff water. All the filter barriers and erosion control berms shall be inspected after any rainfall or runoff event, maintained and cleaned until all areas have at least 85-90% vigorous perennial cover of grasses.

12. Parking lot areas shall be periodically swept or washed to avoid tracking mud, dust or debris from the construction area.

13. A watering truck will be used to periodically sprinkle construction areas in order to keep the level of dust to a minimum (as required).

14. The contractor shall use extreme caution to avoid allowing sediments to enter the storm drain system during construction. Catch basin inlets shall also be protected during construction by the use of straw bale barriers around each inlet. Silt sacks shall be installed in all existing basins. Inlet protection may be removed only after finished areas are paved and the vegetated slopes are established with at least 85-90% of vigorous perennial growth.

15. Revegetation measures shall commence immediately upon the completion of construction.

16. Loam will be spread over disturbed areas and smoothed to a uniform surface per specifications. Loam shall be free of soil, clay lumps, stones and other objects over 1 inch in diameter, and without weeds, roots or other deleterious material.

17. Erosion control mesh shall be applied in accordance with the plans over all finished seeded areas as specified on the design plans.

18. All strawbale and filter fabric shall remain in place until seedings have become 85-90% established and then removed within 10 days.

19. At the owner's discretion additional erosion control measures may be required to maintain stability of earthworks and finished graded areas. The contractor, at his expense, will be responsible for providing and installing any additional measures as specified by the owner. This includes but is not limited to requests by MADEP and the municipality, as authorized by the owner.

20. Inspections and monitoring maintenance measures shall be applied as needed during the entire construction cycle. Weekly inspections shall be held through the duration of construction activity. Weekly inspection reports shall be maintained in the contractor's field office. In addition to the normal weekly inspections, the contractor shall perform an inspection of all erosion control measures after each rainfall or runoff event, and perform the necessary repairs.

21. If any evidence of sedimentation is observed in the inlets, the contractor shall, at his own expense, provide a plan to the engineer to remove any accumulated sediment in these areas. The contractor shall also immediately provide additional on site erosion and sedimentation control measures to prevent further degradation of the area.

22. Following the temporary or final seedings, the contractor shall inspect the work area bimonthly to ensure the areas have a minimum of 85-90% vegetated vigorous growth. Reseeding shall be carried out by the contractor with follow up inspections in the even of any failures until vegetation is adequately established.

23. The contractor shall comply with the General and Erosion Notes as shown on the Site Development Plans and Specifications.

SECTION 2 POST-DEVELOPMENT ACTIVITIES

1. Paved Areas – Paved areas should be swept as part of the routine site maintenance. Pavement sweeping is an excellent source control for sedimentation to the existing drainage system and is typically performed in the spring of each year following the snow melt.

2. Salt for de-icing on the paved areas during the winter months shall be limited to the minimum amount practicable. 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.

3. Catch Basins and Outlet Structure - Grates and deep sumps shall be inspected and cleaned four times per year for the first three years and then twice yearly thereafter. Catch basins and outlet structure shall be inspected following heavy rainfalls to verify that the inlet openings are not clogged by debris. Debris shall be removed from the grates and disposed of properly. Material removed from structures shall be disposed of in accordance with all applicable regulations.

4. The upper-stage, side slopes, embankment and emergency spillway should be mowed at least twice per year. Trash and debris should also be removed at this time.

5. All sediments removed from site drainage facilities shall be disposed of properly, and in accordance with applicable local and state regulations.

6. All vegetated areas on the site shall be stabilized and maintained to control erosion. Any disturbed areas shall be re-seeded as soon as practicable.

7. Work within any drainage structures shall be performed in accordance with the latest OSHA regulations, and only by individuals with appropriate OSHA certification.

8. Maintenance Responsibilities - All post-construction maintenance activities shall be documented and kept on file and made available to the proper town authorities upon request.

9. Stormtech Isolator Treatment Rows will be inspected and maintained according to the StormTech Inspection and Maintenance Manual, see appendix.

Guideline No. BRPG01-01 has outlined recommended guidelines for site selection; site preparation and maintenance; and emergency snow disposal for selecting effective snow disposal sites. It will be the snow removal contractor responsibility to follow these guidelines and all applicable laws and regulations. The snow removal contractor will be instructed to minimize the amount of deicing and abrasive agents used during snow storm events.

OPERATION & MAINTENANCE PLAN SCHEDULE

Project: North Shore Crossing
Address: 225 Fallon Road
Stoneham, MA

Party Responsible for O & M Plan: Fairfield Residential
Address: 405 Cochituate Rd
Framingham, MA
Phone: (508) 405-5424

Date: 5/29/2014

Structure or Task	Maintenance Activity	Schedule/Notes	Annual Maintenance Cost (% of construction cost)	Inspection Performed	
				Date:	By:
Street Sweeping	Sweep, power broom or vacuum paved areas.	Sweep paved areas as needed, but not less than four times annually.	$4,000		
		Submit information that confirms that all street sweepings have been disposed in accordance with state and local requirements			
Deep Sump Catch Basins(s)	Clam shell or vacuum sumps	Inspect at least annually. Clean when sediment is 6" deep, but never allow sediment to exceed 60% of sump volume.	$1,950		
		Submit information that			
Storm Water Management System					
Subsurface Infiltration Basin	Cleaning and removal of debris after major storm events Sediment cleanout.	Perform as necessary, but not less than four times annually as well as after every storm exceeding 1" of rainfall. Remove sediment when basin is thoroughly dry.	$1,000		
	Mowing and maintenance of upland vegetated areas.	At least monthly during the growing season.			
Outlet Control Structure(s)	Vacuum.	Periodic cleaning of Outlet Control Structures as needed.	$500		
Mosquito Control	CB management targeted larviciding treatment to CB's and all storm drains to control mosquitoes in their aquatic stages.	Surveillance is a non chemical inspection method that involves classification of mosquito breeding sites, larval presents, and survey.	Varies		
Snow Storage	Debris shall be cleared from the site and properly disposed of at the end of the snow season, but shall be cleared no later than May 15.	Avoid dumping snow removal over catch basins, in detention ponds, sediment forebays, rivers, wetlands, and flood plain. (See Site Plan for appropriate locations)	Varies		

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Isolator™ Row O&M Manual

StormTech® Chamber System for Stormwater Management

1.0 The Isolator™ Row

1.1 INTRODUCTION

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a patent pending technique to inexpensively enhance Total Suspended Solids (TSS) removal and provide easy access for inspection and maintenance.

Looking down the Isolator Row from the manhole opening, woven geotextile is shown between the chamber and stone base.

1.2 THE ISOLATOR™ ROW

The Isolator Row is a row of StormTech chambers, either SC-740 or SC-310 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for settling and filtration of sediment as storm water rises in the Isolator Row and ultimately passes through the filter fabric. The open bottom chambers and perforated sidewalls allow storm water to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the storage areas of the adjacent stone and chambers from sediment accumulation.

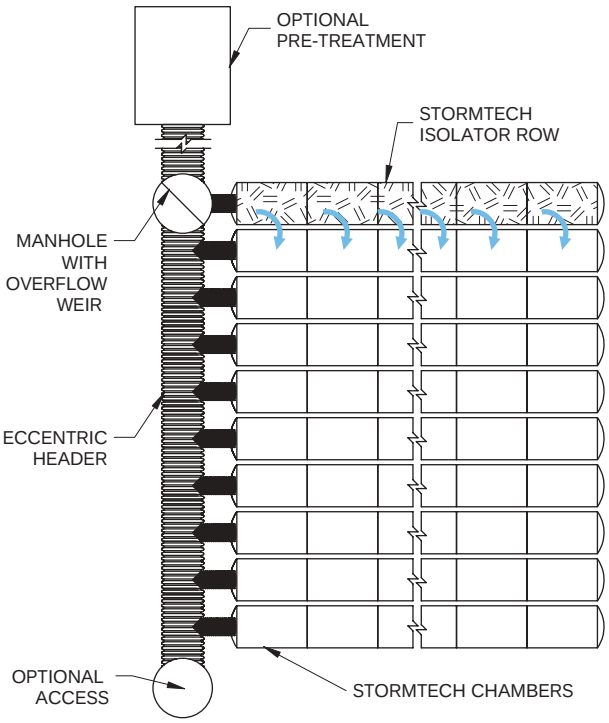
Two different fabrics are used for the Isolator Row. A woven geotextile fabric is placed between the stone and the Isolator Row chambers. The tough geotextile provides a media for storm water filtration and provides a durable surface for maintenance operations. It is also designed to prevent scour of the underlying stone and remain intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the perforations in the sidewall of the chamber.

The Isolator Row is typically designed to capture the "first flush" and offers the versatility to be sized on a volume basis or flow rate basis. An upstream manhole not only provides access to the Isolator Row but typically includes a high flow weir such that storm water flowrates or volumes that exceed the capacity of the Isolator Row overtop the over flow weir and discharge through a manifold to the other chambers.

The Isolator Row may also be part of a treatment train. By treating storm water prior to entry into the chamber system, the service life can be extended and pollutants such as hydrocarbons can be captured. Pre-treatment best management practices can be as simple as deep sump catch basins, oil-water separators or can be innovative storm water treatment devices. The design of the treatment train and selection of pretreatment devices by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, the Isolator Row is recommended by StormTech as an effective means to minimize maintenance requirements and maintenance costs.

Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.

StormTech Isolator Row with Overflow Spillway
(not to scale)



2.0 Isolator Row Inspection/Maintenance

2.1 INSPECTION

The frequency of Inspection and Maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

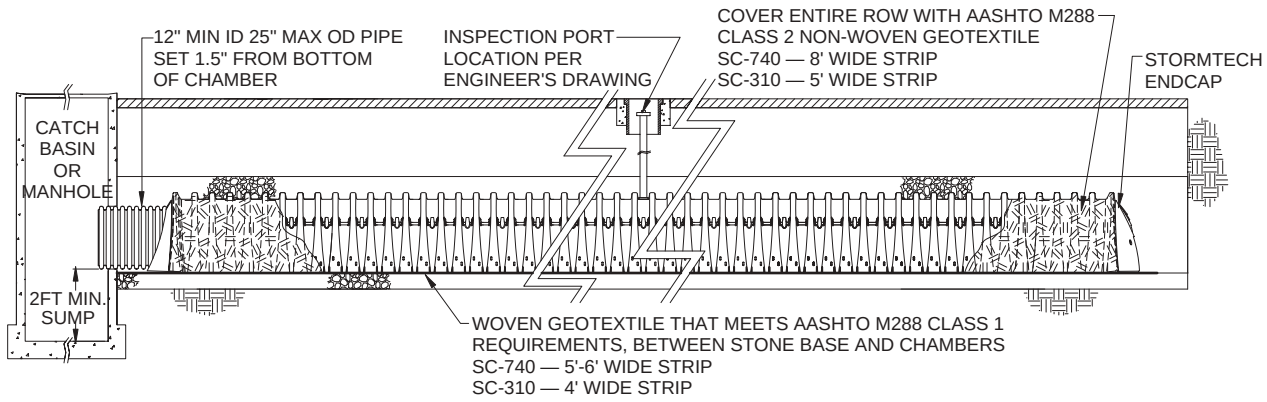
2.2 MAINTENANCE

The Isolator Row was designed to reduce the cost of periodic maintenance. By “isolating” sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Examples of culvert cleaning nozzles appropriate for Isolator Row maintenance. (These are not StormTech products.)

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45” are best. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

StormTech Isolator Row (not to scale)



3.0 Isolator Row Step By Step Maintenance Procedures

Step 1) Inspect Isolator Row for sediment

A) Inspection ports (if present)

i. Remove lid from floor box frame

ii. Remove cap from inspection riser

iii. Using a flashlight and stadia rod, measure depth of sediment and record results on maintenance log.

iv. If sediment is at, or above, 3 inch depth proceed to Step 2. If not proceed to step 3.

B) All Isolator Rows

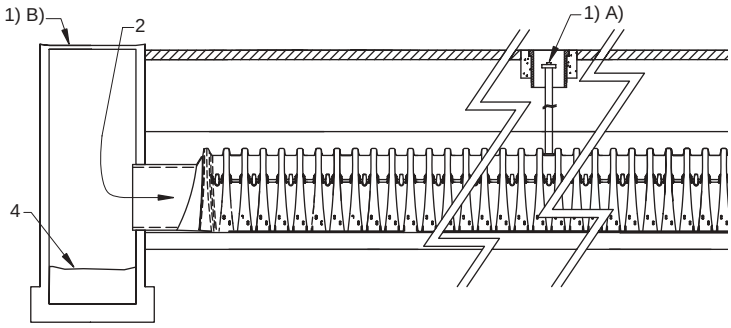
i. Remove cover from manhole at upstream end of Isolator Row

ii. Using a flashlight, inspect down Isolator Row through outlet pipe

1. Mirrors on poles or cameras may be used to avoid a confined space entry
2. Follow OSHA regulations for confined space entry if entering manhole

iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches) proceed to Step 2. If not proceed to Step 3.

StormTech Isolator Row (not to scale)



Step 2) Clean out Isolator Row using the JetVac process

A) A fixed culvert cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable

B) Apply multiple passes of JetVac until backflush water is clean

C) Vacuum manhole sump as required

Step 3) Replace all caps, lids and covers, record observations and actions

Step 4) Inspect & clean catch basins and manholes upstream of the StormTech system

Sample Maintenance Log

Date	Stadia Rod Readings		Sediment Depth (1) - (2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/01	6.3 ft.	none		New installation. Fixed point is CI frame at grade	djm
9/24/01		6.2	0.1 ft.	Some grit felt	sm
6/20/03		5.8	0.5 ft.	Mucky feel, debris visible in manhole and in Isolator row, maintenance due	rv
7/7/03	6.3 ft.		0	System jetted and vacuumed	djm

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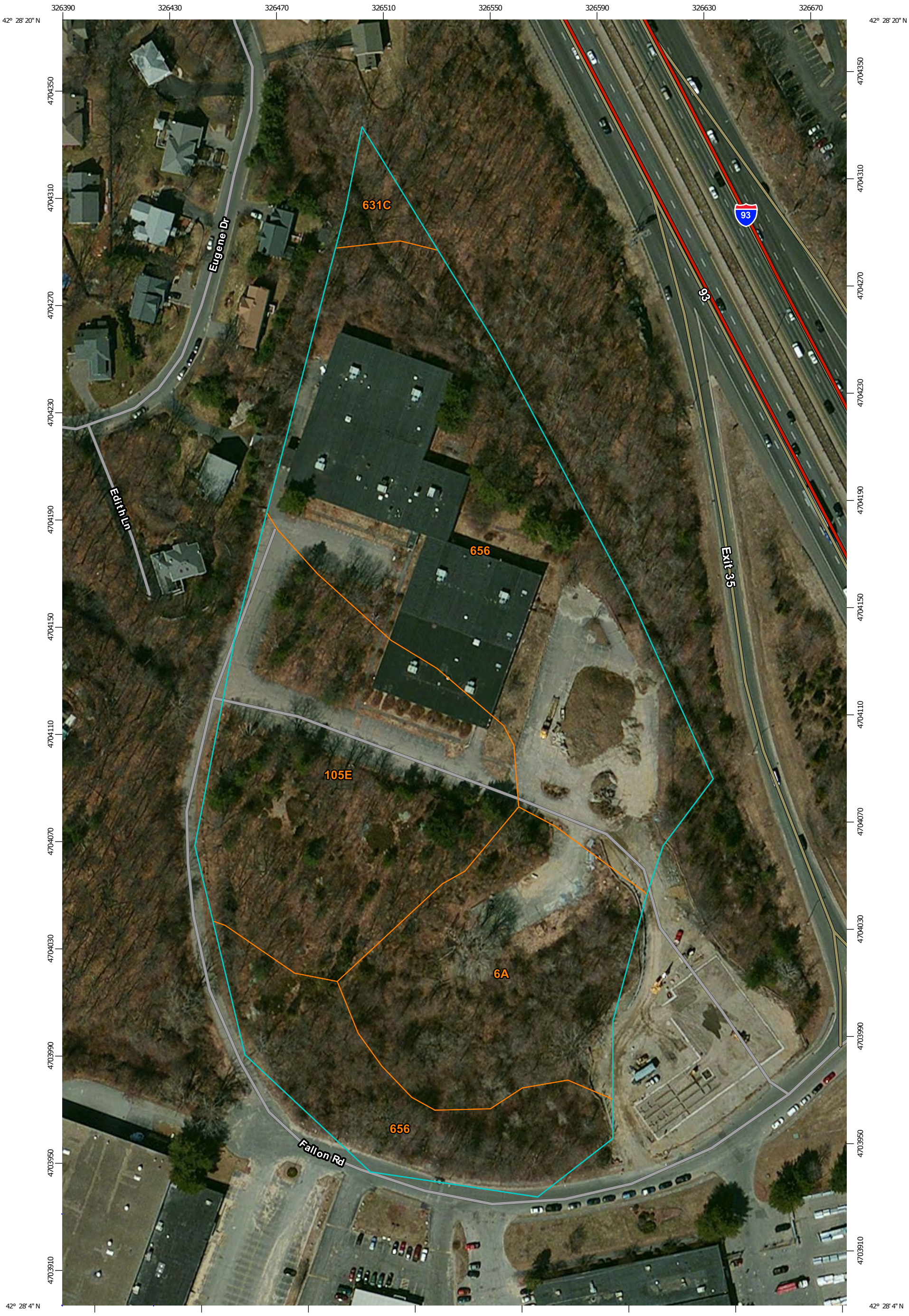
Soil Map—Middlesex County, Massachusetts
(225 Fallon Road)



71° 6' 42" W 326390 326430 326470 326510 326550 326590 326630 326670 71° 6' 30" W
42° 28' 20" N 4704350 4704310 4704270 4704230 4704190 4704150 4704110 4704070 4704030 4703990 4703950 4703910 42° 28' 4" N

Map Scale: 1:1,340 if printed on B portrait (11" x 17") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 12, Feb 26, 2010

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

Date(s) aerial images were photographed: Mar 30, 2011—May 1, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Middlesex County, Massachusetts (MA017)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
6A	Scarboro mucky fine sandy loam, 0 to 3 percent slopes	2.1	18.2%
105E	Rock outcrop-Hollis complex, 3 to 35 percent slopes	3.1	27.2%
631C	Charlton-Urban land-Hollis complex, 3 to 15 percent slopes, rocky	0.2	1.7%
656	Udorthents-Urban land complex	6.0	52.9%
Totals for Area of Interest		**11.4**	**100.0%**

GEOTECHNICAL ENGINEERING EVALUATION

THE HOME DEPOT
Stoneham, MA

February 6, 2006

Project No. 05.485.NH

PREPARED FOR:
The Richmond Company
7 Essex Green Drive, Ste 56
Peabody, MA 01960

PREPARED BY:
Miller Engineering & Testing, Inc.
100 Sheffield Road, P.O. Box 4776
Manchester, NH 03108

MILLER ENGINEERING & TESTING, INC.

GEOTECHNICAL / SOIL BORINGS / ENVIRONMENTAL / SOILS / CONCRETE / MASONRY / STEEL / ROOFING / ASPHALT INSPECTION

Mail all correspondence to:
100 SHEFFIELD RD. • P.O. BOX 4776 • MANCHESTER, NEW HAMPSHIRE 03108-4776 • TELEPHONE (603) 668-6016 • FAX (603) 668-8641

February 6, 2006

Mr. Dave Armanetti
THE RICHMOND COMPANY
7 Essex Green Drive, Ste 56
Peabody, MA 01960

RE: Geotechnical Engineering Evaluation
The Home Depot
Stoneham, Massachusetts
Project No. 05.485.NH

Dear Mr. Armanetti:

This report presents our geotechnical engineering evaluation and recommendations for the proposed Home Depot in Stoneham, Massachusetts. Results indicate the following:

- Subsurface conditions at the test boring and test pit locations appear to be favorable for the design and construction of conventional, shallow spread footing foundation systems to support the proposed building.

- The footings should be supported on an engineered fill constructed directly upon the naturally-occurring, inorganic soil materials and/or bedrock.

- Bedrock was encountered at shallow depths at several locations on the Site property. Blasting will be required to achieve the design elevations and grades; rock excavations of approximately 20 to 25 feet will be required to prepare the grades for the southern portion of the building footprint and adjacent parking areas.

We trust the contents of this report meet with your current needs and expectations. Should you have any questions regarding the contents of this report or if we can be of further assistance to you, please call the undersigned.

Very truly yours,

MILLER ENGINEERING & TESTING, INC.

Kenneth W. Milender
Staff Geotechnical Engineer

Joseph M. Sobol, P.E.
Vice President
Director of Geotechnical Services

KWM/JMS:pam

CORPORATE OFFICE: 100 SHEFFIELD RD. • P.O. BOX 4776 • MANCHESTER, NH 03108-4776 • TEL. (603) 668-6016 • FAX (603) 668-8641
130 EAST MAIN ST. • P.O. BOX 11 • NORTHBOROUGH, MASSACHUSETTS 01532 • TEL. (508) 393-2607 • FAX (508) 393-8490
474 DORCHESTER AVENUE • BOSTON, MASSACHUSETTS 02127 • TEL. (617) 269-8829 • FAX (617) 269-8837

TABLE OF CONTENTS

1.00 INTRODUCTION

This report presents the results of a geotechnical engineering evaluation completed for a proposed Home Depot in Stoneham, Massachusetts. This evaluation was completed in accordance with our proposal, dated November 29, 2005 (Ref. File 547-05), and consisted of:

1. Performing a subsurface exploration program through drilling a series of test borings and excavating test pits at building and other site locations established by the design team;
2. Reviewing soil and rock samples collected during the test boring program;
3. Analyzing appropriate foundation types consistent with the subsurface conditions encountered, and formulation of recommendations for allowable net bearing pressure;
4. Discussion of seismic considerations in accordance with the provisions of the Massachusetts State Building Code;
5. Determinations of the gradation specifications for borrow materials to be used as fill on the site, and the suitability of the on-site material for re-use in proposed fill areas;
6. Evaluating the subsurface conditions and performing geotechnical engineering analyses to develop recommendations for foundation, pavement, and site design and construction; and
7. Summarize the subsurface exploration program and engineering analyses and evaluation in the form of a geotechnical engineering report.

Presented herein are the descriptions of the proposed project, the subsurface conditions encountered, and the geotechnical implications on foundation design and construction. The contents of this report are subject to the limitations in Appendix A.

2.00 SITE AND PROJECT DESCRIPTION

The Site is located west of Interstate Route 93 at Interchange 35 in Stoneham, Massachusetts (Figure 1) at 225 Fallon Road. Access to the Site is directly from Fallon Road (Figure 2). The property has approximately 800 feet of frontage along Fallon Road. Properties directly abutting or located in close proximity to the Site consist of commercial businesses on Fallon Road, and undeveloped woodlands and residential areas to the west.

2.10 Existing Conditions

Existing topography at the Site is shown on Figure 2. The ground surface slopes upward toward the south, from the unnamed brook at elevations of approximately 145 feet above mean sea level

(MSL) to the high point of the Site property, which is at an elevation of 180 feet MSL in the undisturbed, wooded area in the southwestern section of the Site. The Site being proposed for development is currently a developed parcel with an existing office building (Figure 2) and several points of relevance:

- The existing building is a 1-story brick building of approximately 64,800 square feet that houses the offices of the A.W. Chesterton Company. The building has existing ground floor elevations of approximately 160 feet.

- The southern portion of the Site property is a bedrock knob that rises to an elevation of 180 feet MSL, approximately 20 to 25 feet higher than the existing building ground floor and parking lots. This area is overgrown with brush and small trees.

- A second bedrock knob exists within the south part of the Site, northwest of the intersection of the eastern site access roadway and Fallon Road. This low knob rises from elevations of approximately 150 to 154 feet MSL (Figure 2).

- A third bedrock knob is situated in the west-central portion of the Site. This knob reaches an elevation of 168 feet MSL approximately 8 feet above the surrounding ground surface.

- A small, unnamed stream flows along the east and north sides of the proposed Home Depot building footprint and parking lots.

- The existing facility is served by underground utilities that reach the building from both of the entrances on Fallon Road.

- The north side of the Site property is wooded and situated on the opposite side of the unnamed brook.

- A number of storm drainage lines exist below the eastern half of the Site property; all converge and discharge to the unnamed brook to the northeast side of the parking areas and existing building. The primary collector is a 48-inch reinforced concrete pipe within a drainage easement (Figure 2). This drainage line also receives stormwater from developed properties to the south of the Site. Examination of site plans provided by BSC Group indicates that this drainage line has an invert elevation of 145.68 feet MSL at its outfall to the brook.

2.20 Proposed Development

The proposed project consists of the construction of a Home Depot Warehouse and Retail Center with an attached Garden Center. A second building currently planned as a small office building is proposed for an area close to Fallon Road. Our understanding of the preliminary design of the facility includes the following components (Figure 2):

- A base building with 102,513 square feet of floor space;
- Entrance and exit vestibules (2,373 square feet);
- A garden center of 28,088 square feet;
- A canopy over the lumber loading area;
- Underground utility lines (natural gas, water, wastewater, electricity, telephone);
- The heavy truck route is proposed to the south and west of the proposed building footprint;
- A 3-bay loading dock located at the southwest corner area of the Site would serve as the shipping and receiving area;
- Retaining walls approximately 6 feet high located along the southeast and northeast edges of the proposed Home Depot parking lot;
- Stormwater would be conveyed from the parking areas, roofs, and other impervious surfaces to an on-site infiltration gallery;
- Paved lots would provide parking at the east side of the facility; and
- Access to the facility would be provided from Fallon Road.

Based on a review of the preliminary grading plan prepared by the BSC Group of Boston, Massachusetts, the proposed Home Depot ground floor slab would be set at an elevation of 158 feet MSL. In accordance with the 2005 Home Depot Design Criteria Manual, the maximum anticipated design loads on the foundation elements are:

- 102 kips for column loads, including a basic uniform (ground) snow load for Massachusetts Zone 2 of 30 psf (Massachusetts State Bnilding Code Section 1610.2);
- 5,000 pounds per linear foot for footings below load-bearing walls; and
- a uniform live load of 475 psf (maximum) on the slab-on-grade

3.00 SUBSURFACE EXPLORATION PROGRAM

A series of test pits and test borings were performed between January 4 and 10, 2006 in order to characterize the subsurface conditions at the Site. The subsurface exploration program was performed to:

- Characterize the nature and consistency of the soil units at the site and provide soil samples for visual classification;

- Perform Standard Penetration Tests (SPTs) to estimate the relative density of the in-place soil units;
- Estimate the engineering properties of the subgrade soils and provide the data needed for designing the thickness of the pavements and building foundation elements; and
- Determine the depths to competent soil and/or bedrock, and the depth of the groundwater table.

A geotechnical engineer inspected the test borings and test pits, classified the soil samples, and monitored the Standard Penetration Tests. The locations and elevations of the site explorations were not surveyed; approximate exploration locations are shown on Figure 2. The soil conditions encountered in the subsurface explorations are provided on the test boring logs in Appendix B and test pit logs in Appendix C.

3.10 Test Borings

Miller Engineering & Testing, Inc. used track-mounted CME Model 45 and truck-mounted Diedrich model D-50 drill rigs to advance thirty-three (33) test borings at locations below the proposed building footprint and paved parking areas (Figure 2). Borings (designated B-1 through B-34) were drilled with a 2¼-inch inside-diameter hollow-stem auger. Note that boring B-3 was not drilled due to concerns regarding the proximity to existing underground utilities. Plans called for the borings to be drilled to depths depending on their location with respect to the proposed facility layout (Table 1), the existing building, and the following schedule:

- Explorations were not performed inside the existing Chesterton building.
- Borings below building areas to 25 feet or drilling refusal.
- Borings beneath proposed parking areas were drilled to 10 feet or drilling refusal.

Soil samples were generally collected from the ground surface and at 5-foot intervals (or as directed by the geotechnical engineer) to the bottom of the borings. Soil samples were collected using a 1⅜-inch inside-diameter split-spoon sampler during Standard Penetration Tests (SPTs). The SPTs were performed with a 140-pound hammer dropping 30 inches, in general accordance with ASTM Designation D-1586. The number of blows required to drive the sampler between the 6- and 18-inch intervals (the "N value") was used to assess the relative density and elastic properties of the soil units.

Coring was performed in one test boring (B-6) to confirm that the refusal at that location was due to encountering bedrock and to provide samples of the bedrock for characterization.

3.20 Test Pits

Miller Engineering & Testing, Inc. excavated seven (7) test pits with a Komatsu model PC50 excavator at locations determined by BSC Group. These test pits (designated TP-1 through TP-8) were excavated at potential locations of proposed stormwater infiltration systems. Note that test pit TP-3 was not excavated due to time constraints. The test pits were excavated to bedrock or the maximum depth capability of the equipment. Test pit logs are attached as Appendix C.

4.00 SUBSURFACE CONDITIONS

Subsurface conditions at the Site were characterized by drilling test borings and excavating test pits through the unconsolidated overburden soil strata at selected locations within the proposed building footprint. Table 2 is a summary of the subsurface soil strata and the depth to suitable subgrade; Figure 2 illustrates the facility layout, approximate boring locations, and existing topography. Subsurface conditions below the existing building are not known.

4.10 Subsurface Soil Conditions

The proposed building footprint is situated in an area with complex geologic conditions that vary over short distances and depths. The subsurface soil strata at the Site consist of the following units:

1. Forest Mat/Topsoil/Subsoil/Bituminous Pavement
2. Fill
3. Peat
4. Varved Silt and Clay
5. Brown Sand
6. Gray Silty Sand
7. Glacial Till
8. Auger Refusal/Presumed Bedrock Surface

None of the test borings encountered all of these units, and the distribution of these strata can be shown through reference to Table 2 and Figure 2. The subgrade conditions below the existing

building were not defined during this investigation. General descriptions of the various strata encountered in the Site explorations follow.

4.1.1 Forest Mat/Topsoil/Subsoil/Pavement

Forest Mat and/or Topsoil was encountered in the site explorations that were not advanced through asphalt pavement (Table 2). The Forest Mat and/or Topsoil was a dark brown, very loose, organic silt and humus containing roots of decomposing vegetation. The thickness of the Forest Mat and/or Topsoil was generally less than about 4 inches.

Subsoil immediately below the Forest Mat and/or Topsoil consisted of yellow-brown, silty sand. The Subsoil layer was generally less than one (1) to two (2) feet thick (Appendix B). This subsoil material may be the thin layer of wind-blown sand and silt, called loess, commonly found above unconsolidated soils and shallow bedrock in New England.

Much of the Site is used as paved parking areas and roadways (Figure 2). The Site pavement consisted of approximately 4 inches of bituminous pavement (surface course) and approximately 1.5 to 2.5 feet of base course material. The base course consisted of a medium dense, brown, silty, fine-to-coarse sand and gravel.

4.1.2 Fill Materials

Approximately 2 to 4.5 feet of "Common" Fill Material was encountered below the pavement and other developed areas of the Site property, for example around the perimeter of the existing Chesterton building (Figure 2). The Common Fill Material consisted of a loose to dense, brown to gray, silty, fine-to-medium sand and gravel with no identifiable debris. This Fill Material was encountered beneath the Topsoil and/or pavement base course at depths ranging between 1 and 2 feet below the existing ground surface. Much of the Common Fill Material resembled the local Glacial Till soils, indicating that this fill material may have been on-site native material placed during historical grading operations at the Site.

The Fill Material in explorations performed in close proximity to the existing building footprint also encountered a layer of Rock Fill approximately 2 to 4.5 feet thick (Table 2). The Rock Fill consisted of brown, silty, fine-to-coarse sand with gray broken rock fragments up to 8 inches in

their longest dimension. This Rock Fill was encountered in borings B-6, B-7, B-13, B-22, B-27, B-28, and B-30, and test pits TP-4, TP-5, TP-6, and TP-8 (Figure 2). The Rock Fill was difficult for the drill rigs to penetrate, and might have been the cause of shallow drilling refusals at borings B-15 and B-32.

The subgrade conditions below the existing building were not defined during this investigation. However, based on the distribution of Fill Materials encountered in the Site test borings and test pits, Common Fill Materials and Rock Fill should be anticipated below the footprint of the entire existing Chesterton building

4.1.3 Peat

A 5 foot thick layer of Organic Peat was encountered in boring B-23 (Figure 2 and Table 2). The Peat was very soft/loose, dark brown, and contained both fibrous and fine-grained silty organics.

Peat was not encountered at any other Site explorations. However, deeper layers of Topsoil, 6 to 12 inches thick, were encountered buried beneath Fill Materials at several locations (in borings B-12, B-22, B-28, B-29, and test pits TP-5, TP-6, TP-7, and TP-8).

4.1.4 Varved Silt and Clay

A layer of gray, medium dense, Varved Silt and Clay, up to 2 feet thick, was encountered in B-23. At this location, the Varved Silt and Clay directly underlay the Peat.

4.1.5 Brown Sand

A layer of loose to medium dense, brown Sand (fine-to-coarse sand and gravel) was encountered in borings B-8, B-9, and B-33, and test pit TP-1. The brown Sand was 2 to 7.5 feet thick at the Site, and generally overlay the grey silty Sand or Glacial Till soils.

4.1.6 Gray Silty Sand

Grey silty Sand was encountered in Site explorations to the north, east, and south of the existing building and bedrock knobs (Figure 2). The silty Sand layer consisted of medium dense, fine to medium sand with up to approximately 20 percent silt content. The silty Sand unit generally was encountered below the Fill Materials and directly overlay Glacial Till or Bedrock (based on

drilling refusals). Where encountered, the grey silty Sand unit ranged between 1.5 and 9 feet thick (Table 2).

4.1.7 Glacial Till

Glacial Till was encountered in many of the explorations at the Site. The Till ranged from about 2 feet (in B-6 and TP-6) to more than 13.5 feet (in B-9). Several borings did not encounter till; Bedrock was encountered directly below the overlying soil strata. Beneath the proposed building footprint, the Glacial Till averaged about 5 feet thick. The Till consisted of a dense to very dense, grayish-brown, gravelly, silty, fine-to-coarse sand.

4.1.8 Drilling Refusal/Presumed Bedrock Surface

The test borings and test pits were generally advanced to "refusal", the depth at which the hollow-stem auger or excavator was not able to penetrate the deeper geologic units. The depth of exploration refusals ranged from 0.3 feet to greater than 15 feet (Table 2). It could not be determined whether the refusals were the result of encountering bedrock, large boulders, or very dense soil. Rock was cored in one test boring (B-6) in order to confirm that the refusal at this location was on bedrock.

4.20 Bedrock Conditions

Bedrock was exposed at ground surface in the knob south of the existing building (Figure 2), and was encountered in most of the site explorations (Table 2). The shallow bedrock conditions could influence the layout and design of the proposed Home Depot facility. Examination of the observed bedrock exposures, existing topography, and the existing building layout suggests that bedrock was blasted to create the existing grades of the south parking lot and south end of the building during the original development of this property.

4.2.1 Bedrock Surface

The elevations and configuration of the surface of the bedrock at the Site will affect the amount of rock that must be removed for the proposed development. Approximate elevations of the bedrock surface, based on the elevations of drilling refusal, are shown on Figure 2. The upper surface of the bedrock slopes downward toward the north and east, from high elevations of approximately 180 feet MSL at the soutb bedrock knob to less than 147 feet MSL at B-7 and

about 143 feet MSL at the eastern side of the Site property in B-28. In addition to the elevations of drilling refusal, outcrops of bedrock were observed in three areas (Figure 2):

- south knob (between B-17, B-11, and B-26)
- small knob between B-5, B-6, B-12, and B-13
- vicinity of borings B-22, B-23 and B-15

4.2.2 Bedrock Type

Bedrock was cored in one boring (B-6) in order to provide samples for characterizing the local rock conditions. Examination of this core indicated that bedrock at the Site is composed of igneous rocks. The core from B-6 consisted of hard, slightly weathered, medium-grained, moderately fractured Diorite. This rock was only slightly weathered; however, weathering was more severe in zones with closely spaced joints. The joints in the Diorite were very closely spaced with moderate to vertical dips. Joint faces were moderately severely weathered and did not contain gouge.

The south knob is formed by a mixture of the Diorite and Diabase dikes. The Diabase is a hard, slightly weathered, fine-grained, sound igneous rock.

4.30 Groundwater Conditions

Groundwater was encountered in 26 of the Site explorations (Table 2). Groundwater observations in the test borings and test pits were made upon completion of the borings after a brief stabilization period (Appendices B and C). Groundwater was encountered at depths between 0.5 and 10.5 feet below grade in the explorations, at elevations between approximately 158 feet MSL in B-6 and 142 feet MSL in B-30 and TP-5.

One observation well was installed in test pit TP-8. Water levels were measured in this well, and at three points on the unnamed brook, on January 27, 2006. Approximate water elevations are shown below.

Location	Approximate Elevation (feet MSL)
TP-8	154
Brook upstream	146.8
Site Culvert	146.0
Brook Downstream	145.4

Groundwater at the Site appears to flow from the higher elevations around the low bedrock knob near borings B-5, B-6, B-12, and B-14, and discharge to the local surface-water network. This network consists of wetlands on the southwesterly property boundary, wetlands north of Fallon Road (between B-24 and TP-2), and the unnamed brook east and north of the Site (Figure 2).

It could not be determined whether groundwater was present in the site bedrock knobs. Bedrock observation wells would be required to determine the presence and elevations of groundwater within the bedrock stratum.

Groundwater levels may fluctuate due to variations in temperature, precipitation, adjacent structures, and other environmental conditions not evident at the time measurements were made. Groundwater levels at other times, therefore, may be different from those recorded during this exploration program.

5.00 LABORATORY TESTING PROGRAM

A series of laboratory tests were performed in order to determine the gradation and corrosivity characteristics of selected samples of the on-site soils.

5.10 Gradation Testing

Three samples of soil were obtained from two (2) of the site borings for laboratory analysis of grain-size distribution, which was used to assess the suitability of the on-site soils for re-use as structural fills. The samples were collected from higher elevations on the Site that would require excavation to reach currently proposed grades, during Site earthwork. The laboratory report is attached as Appendix D.

Based on the proposed finished ground floor elevation of 158 feet MSL, only the Common Fill Materials encountered in borings drilled in the west-central portion of the Site are located in potential cut areas. The data from the three samples indicate the following:

- The Common Fill Material had a high fines (silt/clay) content; the three samples contained 17 to 20 percent fines.
- The shallower level of the Common Fill contained higher percentages of gravel (38 to 45 percent), and likely reflects the base course materials below the pavement. The amount of

gravel decreases with depth within the Common Fill (the 2.5-to-4.5 foot sample from B-4 contained only 5 percent gravel).

- The Common Fill Material at the site was well graded, containing a wide range of particle sizes.

Based on the grain size distribution testing, the Common Fill Material below the existing pavements would probably be acceptable for use as Clean Granular Fill, but would likely not be suitable for Select Granular Fill or Base Course.

5.20 Soil Corrosivity Testing

Two (2) samples were obtained from near assumed bottom of footing levels from the Site test borings for analysis of the corrosion potential of concrete foundation elements in contact with the Site soils. The analyses performed were: pH, specific conductance (the reciprocal of resistivity) soluble chloride, and soluble sulfate, and moisture content. Results are presented below and the laboratory report is attached in Appendix D.

SAMPLE (depths in ft)	pH	ELECTRICAL RESISTIVITY (ohm-cm)	SOLUBLE CHLORIDE (mg/kg dry)	SOLUBLE SULFATE (mg/kg dry)	MOISTURE CONTENT (%)
B-4 (4.0-6.0')	5.3	2,500	120	nd@54	10.0
B-21 (4.0-5.5')	5.7	23,256	nd@26	nd@52	10.4

As tested by AMRO Environmental Laboratories Corporation of Merrimack, New Hampshire.

Based on the laboratory testing, the Site soils are characterized as:

- Slightly acidic, which is typical for surficial soils in New England.
- The resistivity data and comparison to design charts developed, in part, by the U.S. National Institute for Standards and Technology, indicate that the soils exhibit a mild to moderate potential for corrosion of underground metallic elements.
- The chloride ion content of the soil below existing pavements is high (120 mg/kg), and is probably related to the use of roadway deicing salts. The chloride content of Site soils not exposed to road salts is much lower (not detected at a reporting limit of 26 mg/kg).
- Soluble sulfate was not present at the detection limits reported by the laboratory. The sulfate exposure of concrete foundation elements in the Site soils is considered to be negligible.

6.00 GEOTECHNICAL ENGINEERING EVALUATION

Analyses of the geotechnical aspects of foundation design, as well as, other issues related to facility construction and site development, were completed and form the basis for the geotechnical design recommendations in Section 8.00 of this report. The engineering evaluations for this project are based on the subsurface explorations and the current site design information.

Results of the subsurface exploration program indicate that the subsurface conditions at the Site are favorable for the design and the construction of conventional, shallow foundations for supporting the proposed buildings. The footings should be founded upon Rock Fill or compacted Clean Granular Fill material properly placed and compacted upon the undisturbed naturally occurring soils. Paved parking areas and roadways should be constructed, following proper preparation, on engineered fills placed upon the existing Common Fill Materials encountered at the Site. Subsurface conditions indicate that the south and west sides of the proposed building would be founded on bedrock, and the remainder of the Home Depot building would be founded upon the existing, undisturbed, native soils. The controlling geotechnical features on the proposed development of the Site are:

- Shallow bedrock. Bedrock was encountered at shallow elevations of approximately 145 to 180 feet MSL (Table 2) below the proposed building footprint. The shallow bedrock and proposed ground floor elevations indicate that blasting will be required to achieve design grades as follows:

  1. Approximately 20 to 25 feet of bedrock at the southern portion of the building footprint (the south end of the proposed building and the Garden Center);

  2. Approximately 10 feet of bedrock within the west-central side of the proposed building footprint; and

  3. Other areas below the existing building, for example in the vicinity of boring B-13, may also require blasting to achieve design grades.

  The uppermost one or two feet of the rock at the Site may be rippable with standard excavating equipment; however, excavation of the bedrock to the depths required by the proposed design will require blasting.

- Other Cuts and Fills. Proposed development of the Site into a Home Depot facility will require cutting and filling other portions of the Home Depot footprint:

  1. Approximately 2 feet will need to be cut from the area of the existing Chesterton building footprint in order to achieve design grades;

  2. Approximately 6 to 8 feet of fill will be required for the remainder of the building and parking areas; and

  3. The southeast bedrock knob (Figure 2) may need to be lowered to achieve the design grades of the accompanying parking area for the proposed office building.

- Demolition of Existing Facilities. Demolition of the existing structure and its foundation elements will be required. The subgrade conditions below the existing building were not defined during this investigation. However, based on the distribution of Rock Fill materials encountered in the Site test borings and test pits, Common Fill Materials and Rock Fill should be anticipated below the footprint of the entire existing Chesterton building. Note that no explorations could be performed within the existing building footprint without extensive disruptions to the facility and employees. The configuration of the bedrock surface and extent and thickness of Fill Materials within the existing building areas could not be determined without a more thorough review of records and/or plans of the existing building.

- Existing Fills and Pavements. The existing pavements and fill materials will require removal during preparation of the Site for the proposed development. The existing bituminous pavement could likely be re-claimed and re-used in the granular base course layer below floor slabs, or to create a Reclaimed Pavement Borrow Material for Base Course (MA Highway Department Standard Specifications for Highways and Bridges, Section M1.11.0) that could be used as the base course fill below new pavements.

- Reclamation of Existing Construction Materials. The existing building is constructed of concrete block walls with a brick veneer. Foundation elements, frost walls, and floor slabs are likely made of reinforced concrete. In addition, structural fill materials were probably used under the slabs-on-grade. The foundation systems and structural fills were not available for evaluation. It may be feasible to crush and mix select portions of these materials to form a suitable structural fill.

- Existing Stormwater Drainage Line. Under the current development plan for the Site, the existing 48-inch drain line below the parking lot will be overfilled with several feet of structural fill to achieve the design grades for the proposed parking lot. The integrity of this line under the new loading will require evaluation to ensure that the proposed development will not damage the drain.

7.00 DESIGN RECOMMENDATIONS

Based on the subsurface explorations and laboratory testing programs and our geotechnical evaluation, Miller Engineering & Testing, Inc. presents the following recommendations for the design of The Home Depot facility in Stoneham, Massachusetts.

7.10 Demolition of Existing Facilities

The demolition contractor should be required to remove all existing structures and their foundations, slab-on-grade elements, pavements, existing Fill Materials, and underground utilities (e.g., piping, catch basins and drains) from within the extent of the proposed site development in accordance with project specifications.

Demolition of the existing structure should be performed in such a manner so as to allow for efficient segregation of existing building components into those that could potentially be re-used and those that would not be suitable. The suitability of using the existing concrete components and Fill Materials should be evaluated prior to demolition. For example, the concrete could probably be crushed and blended with the existing Fill Material or blasted rock to form a suitable structural fill for use below proposed foundation elements, floor slabs, and paved areas. The masonry "cinder" blocks and bricks may not be suitable to manufacture structural fill.

Subgrade soils that are disturbed during demolition should be proofrolled as required to densify these materials in-place prior to constructing the engineered fills and/or foundations of the proposed buildings.

7.20 Subgrade Preparation

The first item of earthwork should consist of removing all unsuitable Fill Materials, Topsoil, and organic deposits from below the proposed building footprint and parking areas. The area of

removal of these materials should include the zone of stress influence of the structure and pavement areas, which is defined as that area within a 1H:1V slope projecting downward and outward from the bottom outside edges of the footings or pavements. Excavation should be continued to expose the naturally occurring, Glacial Till or silty sand soils or undisturbed bedrock.

Following excavation of unsuitable loose materials, the excavation base should then be proofrolled in order to densify any naturally occurring loose zones or those created during the excavation process. Proofrolling within the proposed building footprint should consist of a minimum of four (4) passes of a 5-ton vibratory roller, or equivalent effort. A 1,000-pound (minimum) vibratory plate compactor should be used for proofrolling in trenches. Should unstable areas in the subgrade develop, due to the presence of very moist soils, the vibratory proofrolling should be stopped and static methods should be employed.

In the event that localized wet, unstable areas develop in the subgrade, these areas should be overexcavated an additional 8 inches and the soil replaced with ¾-inch crushed stone completely wrapped in filter fabric, consisting of Mirafi 140N (or equivalent). The crushed stone and fabric should be keyed into the subgrade using the effort of four (4) passes of a vibratory drum roller.

In areas where fill is required below the foundation elements and floor slab, and up to within 12.0 inches below the bottom of the slab-on-grade, Select Granular Fill, conforming to the gradation specifications in Table 3, should be used. This material should be placed in 12-inch maximum loose lifts and be compacted to a minimum of 95 percent of the material's maximum dry density as determined by ASTM Method D-1557.

After filling to the bottom elevation of the Base Course below the slab-on-grade, final excavation to design grades should be accomplished using an excavator equipped with a smooth-edged bucket to avoid disturbance to the prepared subgrade. Formwork and concrete for footings should be placed with a minimum amount of trafficking directly on prepared subgrade areas.

The existing Fill Materials have a high silt content; silty soils are considered to have a moderate sensitivity to excess moisture and can be difficult to place and compact when the moisture

content is greater than two (2) percent above its optimum moisture value (as determined by ASTM Method D-1557). When excess moisture is present, the material is susceptible to destabilization from disturbance due to construction traffic. At all times during earthwork, it will be important that the site be positively graded within the limits of construction to prevent accumulation of surface runoff. Particular care must be taken to minimize traffic directly on the prepared subgrades for the footings, slabs, and roadways. Earthwork, where silty soils are concerned, is generally more difficult and costly during wet periods of the year (that is, from mid-September through May).

7.30 Rock Excavation

Blasting will be required to achieve final grades at some areas of the proposed building footprint. At locations where bedrock is encountered above design elevations during excavation, the rock should be overexcavated to allow for placement of a compacted Select Granular Fill cushion layer, which would reduce the potential for differential settlement. Excavations of rock under footings and slabs should include removal of all loose rock and materials to expose sound, undisturbed bedrock prior to placement of compacted structural fill. Overexcavation of bedrock should be performed to the following minimum levels:

- 12 inches below footings and slabs,
- 18 inches below pavements, and
- 12 inches below Site utilities (or as directed by the Project Civil Engineer)
- 12 inches below finished grades in landscaped areas (or as directed by the Landscape Architect).

Blasting should be controlled by methods employed by a licensed blaster acting in accordance with Local, State, and Federal regulations and codes. All blasting should be performed in accordance with Section 120 of the latest edition of the Massachusetts Highway Department "Standard Specifications for Highways and Bridges".

Pre-blast surveys of the existing buildings and any other structures within 500 feet of the blast area should be completed in order to record the pre-construction conditions of adjacent facilities. The blasting contractor should perform test blasting to ensure that proper elevations are achieved

with no excessive over-fragmentation or over-blasting of the bedrock. Prior to drilling and blasting operations, the blasting contractor should be informed of the need to remove loose, fragmented rock from beneath load-bearing areas. Blasting should be undertaken to minimize the amount of blasted rock greater than 18 inches in size. This will minimize the amount of blasted rock that would require additional processing prior to its use as Rock Fill.

Blast rock can be used as structural fill at the Site provided it meets the gradation requirements and is placed in accordance with the "Rock Fill Placement Guidelines" attached as Appendix E.

7.40 Placement of Rock Fill

Blast rock and/or processed boulders can be used as structural fill in deep fill areas. The eastern portion of the Site will require deeper fills, of up to 6 to 8 feet, to achieve the final design grades for the parking lot and finished ground floor slabs. Blasted rock used as structural fill should be prepared and placed in accordance with the "Rock Fill Placement Guidelines" attached as Appendix E.

7.50 Utilities

Proposed underground piping, such as utility and drainage lines, should be placed on an appropriate bedding material, or in accordance with manufacturer or project civil engineer specifications.

Existing underground utilities requiring relocation/removal and their backfills should be removed during the earthwork. Those underground utilities that will remain in place, e.g., the 48-inch storm drain line, should be evaluated to ensure that the line would be capable of supporting the load that would be imposed by additional structural fill.

7.60 Foundation Design

A shallow foundation system consisting of isolated spread footings (under columns) and a continuous, strip footing (below exterior load-bearing walls) is recommended to support the proposed structural loads. The foundation elements should be supported upon an engineered fill placed directly upon the bedrock or naturally occurring Glacial Till soils.

Footings that are supported directly upon compacted Select Granular Fill can be proportioned using a net allowable bearing pressure of 6,000 pounds per square foot (3 tons per square foot). This bearing pressure assumes that spread footings will be a minimum of 4.5 feet wide where placed at depths within 4 feet of the surface. Continuous footings should be at least 2.5 feet wide. If smaller width footings are to be used, the allowable net bearing pressure should be reduced in direct proportion to the reduction in footing width.

Footings designed in this manner should not experience total settlements greater than 1.0 inch. Differential settlements between adjacent footings should be less than 0.5 inch. This settlement is immediate, and most of the settlement will probably occur by the end of construction.

Exterior footings should be protected from cold temperatures using at least 4.0 feet of soil cover for frost considerations. Backfill material around foundation elements should consist of Clean Granular Fill conforming to the gradation specifications in Table 3. These materials should be placed in 12-inch maximum loose lifts and be compacted to a minimum of 95 percent of the material's maximum dry density as determined by ASTM Designation D-1557.

7.70 Floor Slab

Current design includes a reinforced concrete slab-on-grade for the building and Garden Center floors. Examination of the preliminary grading plans that were provided by BSC Group indicates that areas below the eastern portion of the building may require up to approximately 6 to 8 feet of structural fill to achieve the finished grade of the floor slab.

The floor slab should be constructed as a slab-on-grade underlain by at least 12 inches of Base Course material conforming to the gradation specification in Table 3. The Base Course material beneath the slab should be placed in one lift and compacted to a minimum of 95 percent of the maximum dry density, as determined by ASTM Method D-1557. A modulus of subgrade reaction (K_V) of 250 psi/inch should be used to proportion the floor slab.

7.80 Groundwater and Drainage Issues

The groundwater level was generally between elevations of 158 and 142 feet MSL at the time of the subsurface exploration program. A proposed finished floor elevation of 158 feet MSL would

require a design bottom-of-footing elevation of approximately 154 feet MSL. The groundwater level below the west side of the proposed building footprint may be higher than the elevation of the bottom of the footings. Control of groundwater inflows during construction in this area might be accomplished through pumping from open sumps.

At some locations of the building footprint that require rock cuts to achieve the design grades, groundwater might exist in the bedrock at elevations above the final design grades. An exterior footing drain is recommended along the perimeter of the proposed building. Should groundwater be encountered, underdrainage may be necessary beneath the building footprint. Bedrock observation wells would be needed to assess the underdrainage requirements prior to construction.

At this time, it does not appear that the Home Depot will require use of a vapor barrier, from a geotechnical standpoint, below the slabs-on-grade.

7.90 Soil Corrosivity

Testing of soil samples from the Site indicates that exposed, bare steel structures will be exposed to soils with a mild to moderate corrosion potential. Subsurface steel structures installed for the proposed construction should be designed with provisions to control the effects from corrosion. For example, bare steel structures should be designed with bituminous coatings to minimize the corrosion and extend the life of exposed elements.

Laboratory testing indicates that the concrete foundation elements will be exposed to a negligible amount of sulfate by the on-site soils. Special provisions to provide the concrete with sulfate resistance are considered unnecessary at this Site.

7.100 Seismic Design Criteria

The proposed building footprint and finished floor elevation indicate that the building would be founded on compacted structural fill constructed directly on Bedrock and/or dense Glacial Till soils. The structural fill, Glacial Till, and Bedrock are sufficiently dense so as to theoretically preclude seismically induced liquefaction under design seismic event conditions. Accordingly, design provisions for liquefaction potential are not necessary at this site.

The Massachusetts State Building Code (MSBC) requires all structures to be designed to withstand the forces generated by design earthquakes based on the soil and rock conditions and the earthquake potential. The Site soil and rock profile beneath the building footprint will consist of dense, compacted structural fill directly overlying dense Glacial Till and/or Bedrock. Based on the characteristics of the Glacial Till and Bedrock beneath the building footprint, the Site is a Seismic Soil Profile Type S_1, and is assigned a Seismic Site Coefficient of 1.0, as defined by the MSBC.

7.110 Use of Site Materials

Table 3 is a list of specifications for the categories of materials to be used in construction of structural fills at the site. A preliminary assessment of the suitability of using the unconsolidated soil materials at the site in the proposed construction is based on the grain-size distribution curves (Appendix D) and observations at the site. The suitability of these materials is summarized below.

- The Forest Mat, Topsoil, and Subsoil are suitable for re-use only in landscaped areas.
- The Fill Materials at the Site do not meet the gradation specifications for Clean Granular Fill, Select Granular Fill, or Base Course materials (Table 3). However, the Common Fill materials can be used below pavement subbase levels, below building areas to elevations within one (1) foot of proposed footings/slabs, and in landscape areas provided that moisture control of the material is achieved to allow for proper compaction.
- Blasted rock at the site could potentially be used as Rock Fill in accordance with the "Rock Fill Placement Guidelines" presented in Appendix E.
- Blasted rock could alternatively be crushed and processed on-site for use as Base Course below pavements and slabs-on-grade, Subbase Course below pavements, or as Select or Clean Granular Fills.

7.120 Pavements

Anticipated traffic patterns and loadings will require use of flexible pavements in roadways and paved parking areas. In accordance with the 2005 Home Depot Design Criteria Manual, the customer parking areas will require design and construction as standard-duty pavements: 3,500 daily automobile trips with a loading of 50,000 equivalent axle loads over a 10-year period. The trailer parking areas and access roadways will require design and construction as heavy–duty

pavements: 26 daily semi-trailer trips daily with a loading of 220,000 equivalent axle loads over a 10-year period.

AASHTO flexible pavement design procedures were used to determine the recommended pavement thicknesses to support the anticipated loadings. This analysis also considered subgrade strength, environmental effects, and serviceability requirements. The following pavement thicknesses should be used for supporting the anticipated traffic loadings.

Layer	Layer Description	Layer Thickness (inches)	
		Heavy-Duty Pavements	Standard-Duty Pavements
#1	Bituminous wearing course	1.5	1
#2	Bituminous binder course	2.5	2
#3 (base course)	MA Highway Dept. Section M1.03.1	8	6
#4 (subbase course)	MA Highway Dept Section M1.03.0	10	8
#5 (subgrade)	Clean Granular Fill	as necessary	as necessary

Pavements at the site should be constructed on a proofrolled, stabilized subgrade prepared in accordance with the recommendations in Section 8.2 of this report. Materials used in the base and subbase courses should meet the gradation specification in the latest edition of the Massachusetts Highway Department "Standard Specifications for Highways and Bridges ". Clean Granular Fill should meet the gradation criteria established in Table 3. All fill materials used below pavements should be placed in maximum 12-inch thick loose lifts. Each lift should be compacted to at least 95 percent of the material's maximum dry density as determined by ASTM Method D-1557.

In addition, the existing facility contains extensive areas of asphalt pavements. The base course material below the existing bituminous pavement is granular, and reclaiming the existing pavement materials and incorporating them into the base course (as Reclaimed Pavement Borrow Material for Base Course) of the proposed paved parking areas may be feasible. The following structure layer thicknesses are recommended as an alternative design for the pavement structures, should Reclaimed Pavement Borrow Material for Base Course be used at the Site.

Layer Number	Layer Description	Layer Thickness (inches)	
		Heavy-Duty Pavements	Standard-Duty Pavements
1	Bituminous wearing course	1.5	1
2	Bituminous binder course	2.5	2
3	Reclaimed Pavement Borrow Material for Base Course (MA Highway Dept. Section M1.11.0)	12	10
4	On-site Fill Material or Clean Granular Fill Subgrade	as necessary	as necessary

All pavement sections using Reclaimed Pavement Borrow Material for Base Course at the Site should be constructed on a proofrolled, stabilized subgrade prepared in accordance with the recommendations in subsection 8.2 of this report. Reclaimed Pavement Borrow Material for Base Course should meet the gradation criteria in Table 3 and should he placed in loose lifts not to exceed eight (8) inches. Each lift should be compacted to at least 95 percent of the material's maximum dry density as determined by ASTM Method D-1557.

7.130 Use of Existing Building Components

The existing building would be razed in order to clear the Site property for re-development into The Home Depot. The structure consists of brick and concrete block walls with reinforced concrete strip and column footings and frost walls. The feasibility of re-using the reinforced concrete of the existing foundation elements, frost walls, and truck pads should be evaluated.

At this time, it seems likely that the concrete would be suitable for use as structural fill beneath pavement and building areas. The reinforced concrete should be crushed on-site to produce structural fill materials that conform to the Select and/or Clean Granular Fill specifications (Table 3). Structural fill materials below existing foundation elements and floor slabs would probably be suitable for mixing with the crushed concrete. Re-claimed concrete used as structural fill should be free of brick, concrete block, and other deleterious materials (such as wood and structural steel). At the time of demolition and processing, samples of the re-claimed concrete material should be tested for conformance with the gradation specifications (Table 3), moisture-density relationships (ASTM Method D-1557), and abrasion resistance ("L. A. Abrasion", ASTM Method C 131); the proposed fill material should have an abrasion and impact loss of less than 50 percent.

7.140 Retaining and Foundation Walls

Site layout and design will require construction of retaining walls along the northeast and south sides of the parking areas and roadways. In addition to the retaining walls, the foundation walls of the loading docks will be backfilled with soil at different elevations on opposite sides. Lateral earth pressures will exert controls on the design of these walls.

7.140.1 Site Retaining Walls

The site retaining walls should be designed using "active" earth pressure conditions. Earth pressure diagrams for these walls can be developed based upon the use of an equivalent fluid weight, increasing linearly from the ground surface downward, of 45 pounds per cubic foot per foot of wall height.

Retaining walls are planned for areas of the Site where test borings were not drilled. Final design of the retaining walls should include a series of borings at the proposed wall locations.

Should Mechanically Stabilized Earth (MSE) or segmental retaining walls be utilized, these wall systems should be designed in accordance with the Manufacturers/Suppliers specifications. Retaining wall design calculations should be submitted to the Project Geotechnical Engineer for review prior to construction.

7.140.2 Loading Dock Walls

The foundation walls of the loading docks should be designed as retaining walls using "at rest" earth pressure conditions. Earth pressure diagrams for the foundation walls can be developed based upon the use of an equivalent fluid weight of 60 pounds per cubic foot per foot of wall height.

7.140.3 Additional Site/Foundation Retaining Wall Design Criteria

The equivalent fluid weights specified in this subsection assume that the existing subgrade soils allow for effective drainage to prevent hydrostatic pressure buildup behind retaining and/or loading dock walls. For design considerations, the moist unit weight of Select Granular Fill backfill material should be assumed to be 130 pounds per cubic foot.

In addition to differential earth pressures, any applicable surcharge pressures from floor loading, traffic, and other sources should be applied to the retaining walls and loading dock walls. Uniformly distributed surcharge pressures can be resolved into forces, per linear foot, which act at a depth of one-half of the wall height below the upper level grade on the wall. The surcharge force should be calculated using the following expression:

$$F_s = \frac{1}{2} * p * h; \text{ where}$$

F_s = surcharge force (pounds);
p = live and dead load pressure from surcharge (psf); and
h = height of wall (ft).

The wall designs should achieve wall stability factors of safety of 2.0 (for overturning), 1.5 (for sliding), and 1.5 for overall ("global") stability. A maximum bearing pressure of 3.0 tsf should be used for retaining wall stability analysis and footing design. A value of 0.55 should be used as the coefficient of friction between the concrete footing and the subgrade soils.

7.150 Additional Subsurface Explorations

Subsurface conditions could not be determined below the existing Chesterton building. Additional subsurface explorations should be performed after the existing building has been demolished and construction of the new facility begins.

Final design of the retaining walls will require additional subsurface data. We recommend additional test borings at the locations of the two proposed retaining walls.

8.00 FINAL DESIGN AND CONSTRUCTION MONITORING

It is recommended that Miller Engineering & Testing, Inc. be retained to provide engineering services during the site preparation and foundation construction phases of this project. This will become particularly important relative to the excavation of unsuitable materials and placement and compaction of engineered fills at the project site. This allows for design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction. The adequacy of fill compaction should be determined by field density testing as fill is placed and compacted.

Representative samples of all backfill materials should be submitted to Miller Engineering & Testing, Inc. for testing to establish their optimum water contents and maximum dry densities, and to compare their gradation characteristics with the requirements in Table 3. In this manner, compaction criteria can be developed which will provide the materials with adequate strength and minimal distortion.

Lastly, it is recommended that Miller Engineering & Testing, Inc. be retained to review final design plans and specifications. In the event that any changes in the nature, the design, or the location of the structure are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of the report modified or verified in writing by Miller Engineering & Testing, Inc.

TABLE 1
TEST BORING LOCATIONS
THE HOME DEPOT – Stoneham, MA
Project No. 05.485.NH

TEST BORING	LOCATION
B-1	Building Footprint
B-2	Building Footprint
B-4	Building Footprint
B-5	Building Footprint
B-6	Building Footprint
B-7	Parking Area
B-8	Parking Area
B-9	Building Footprint
B-10	Building Footprint
B-11	Building Footprint
B-12	Building Footprint
B-12A	Building Footprint
B-13	Building Footprint
B-14	Building Footprint
B-15	Parking Area
B-16	Parking Area
B-17	Parking Area
B-18	Building Footprint
B-19	Building Footprint
B-20	Building Footprint
B-21	Building Footprint
B-22	Building Footprint
B-23	Parking Area
B-24	Parking Area
B-25	Parking Area
B-26	Parking Area
B-27	Parking Area
B-28	Parking Area
B-29	Parking Area
B-30	Parking Area
B-31	Parking Area
B-32	Parking Area
B-33	Parking Area
B-34	Pylon Sign

TABLE 2
SUMMARY OF SUBSURFACE CONDITIONS
THE HOME DEPOT
Stoneham, MA

	EXPLORATION	ESTIMATED GROUND ELEVATION	EXPLORATION			APPROXIMATE SOIL STRATUM THICKNESS (feet)								UNSUITABLE SOILS THICKNESS (feet)	GROUNDWATER	
			TOTAL DEPTH	APPROXIMATE REFUSAL ELEVATION		TOPSOIL/ SUBSOIL	COMMON FILL	ROCK FILL	PEAT	VARVED SILT AND CLAY	GRAY SILTY SAND	BROWN SAND	GLACIAL TILL		DEPTH TO GROUNDWATER	APPROXIMATE GROUNDWATER ELEVATION
TEST BORINGS	B-1	155	8	147	R	1.5	0	0	0	0	2	0	4.5	1.5	6.0	149
	B-2	154	15.5	139	R	3	0	0	0	0	0	0	12.5	3	0.8	153
	B-4	162	15	147	R	0	4	0	0	0	0	0	11	4	7.0	155
	B-5	162	8	154	R	0	2	0	0	0	0	0	6	2	no groundwater	<154
	B-6	160	6.5	154	R	0	1.5	3	0	0	0	0	2	4.5	2.5	158
	B-7	158	11	<147		0.5	1	2.5	0	0	7	0	0	4	no groundwater	<147
	B-8	153	11	<142		0.5	0	0	0	0	3	7.5	0	0.5	5.0	148
	B-9	153	17.5	<136		2	0	0	0	0	0	2	13.5	2	0.5	153
	B-10	156	9.5	147	R	4	0	0	0	0	0	0	5.5	4	1.5	155
	B-11	177	0	177	R	0	0	0	0	0	0	0	0	0	no groundwater	<177
	B-12	160	6	154	R	1.5 *	4.5	0	0	0	0	0	0	6	5.0	155
	B-13	160	5	155	R	0.5	2.5	2	0	0	0	0	0	5	no groundwater	<155
	B-14	158	13.5	145	R	0	3	0	0	0	0	0	10.5	3	3.0	155
	B-15	160	5.5	155	R	0.5	5	0	0	0	0	0	0	5.5	no groundwater	<155
	B-16	152	7.5	145	R	0.5	3	0	0	0	0	0	4.5	3.5	6.0	146
	B-17	157	0	157	R	0	0	0	0	0	0	0	0	0	no groundwater	<157
	B-18	165	2	163	R	2	0	0	0	0	0	0	0	2	no groundwater	<163
	B-19	171	0.3	171	R	0.3	0	0	0	0	0	0	0	0.3	no groundwater	<171
	B-20	174	1.5	173	R	1.5	0	0	0	0	0	0	0	1.5	no groundwater	<173
	B-21	157	11	146	R	0.5	4	0	0	0	0	0	7	4.5	8.6	148
	B-22	159	6	153	R	2.5 *	1.5	2	0	0	0	0	0	6	no groundwater	<153
	B-23	155	15	140	R	0	4	0	5	2	0	0	4	11	6.5	149
	B-24	154	7	147	R	0.5	4	0	0	0	2.5	0	0	4.5	6.0	148
	B-25	159	5	154	R	1	0	0	0	0	0	0	4	1	4.5	155
	B-26	154	4.5	150	R	0	4.5	0	0	0	0	0	0	4.5	no groundwater	<150
	B-27	153	6	147	R	0	1.5	2	0	0	2.5	0	0	3.5	no groundwater	<147
	B-28	153	10.5	143	R	1 *	0.5	2	0	0	7	0	0	3.5	2.2	151
	B-29	153	6	147	R	1 *	3.5	0	0	0	1.5	0	0	4.5	2.3	151
	B-30	151	11	<140		0	0	2	0	0	9	0	0	2	8.6	142
	B-31	151	11	<140		0	3	0	0	0	8	0	0	3	5.0	146
	B-32	152	2.5	150	R	0	2.5	0	0	0	0	0	0	2.5	no groundwater	<150
	B-33	150	11	<139		0	0	0	0	0	7	4	0	0	5.3	145
	B-34	153	6.5	147	R	1	1.5	0	0	0	0	0	5	2.5	no groundwater	<147
TEST PITS	TP-1	152	8	<144		1	0	0	0	0	5	2	0	1	2.5	150
	TP-2	153	4	149	R	0.5	0	0	0	0	0	0	0	0.5	3.0	150
	TP-4	152	7.5	145	R	1	0	2	0	0	4.5	0	0	3	7.0	145
	TP-5	150	9	<141		1.5 *	0	2	0	0	5.5	0	0	3.5	8.5	142
	TP-6	153	9	144	R	1 *	0	4.5	0	0	1.5	0	2	5.5	8.5	145
	TP-7	153	3	150	R	1 *	0.5	0	0	0	1.5	0	0	1.5	2.5	151
	TP-8	159	11	148	R	1.5 *	1	4	0	0	2	0	2.5	6.5	10.5	149

NOTES:
Explorations B-3 and TP-3 were not performed.
"R" indicates "refusal" reached at the depths/elevations shown.
"*" indicates buried Topsoil layers encountered below Fill Materials (in B-12, B-22, B-28, B-29, TP-5, TP-6, TP-7, and TP-8).
"Unsuitable soils" is the sum of the Topsoil/Subsoil, Common Fill, Rock Fill, Peat, and Varved Silt and Clay layers.

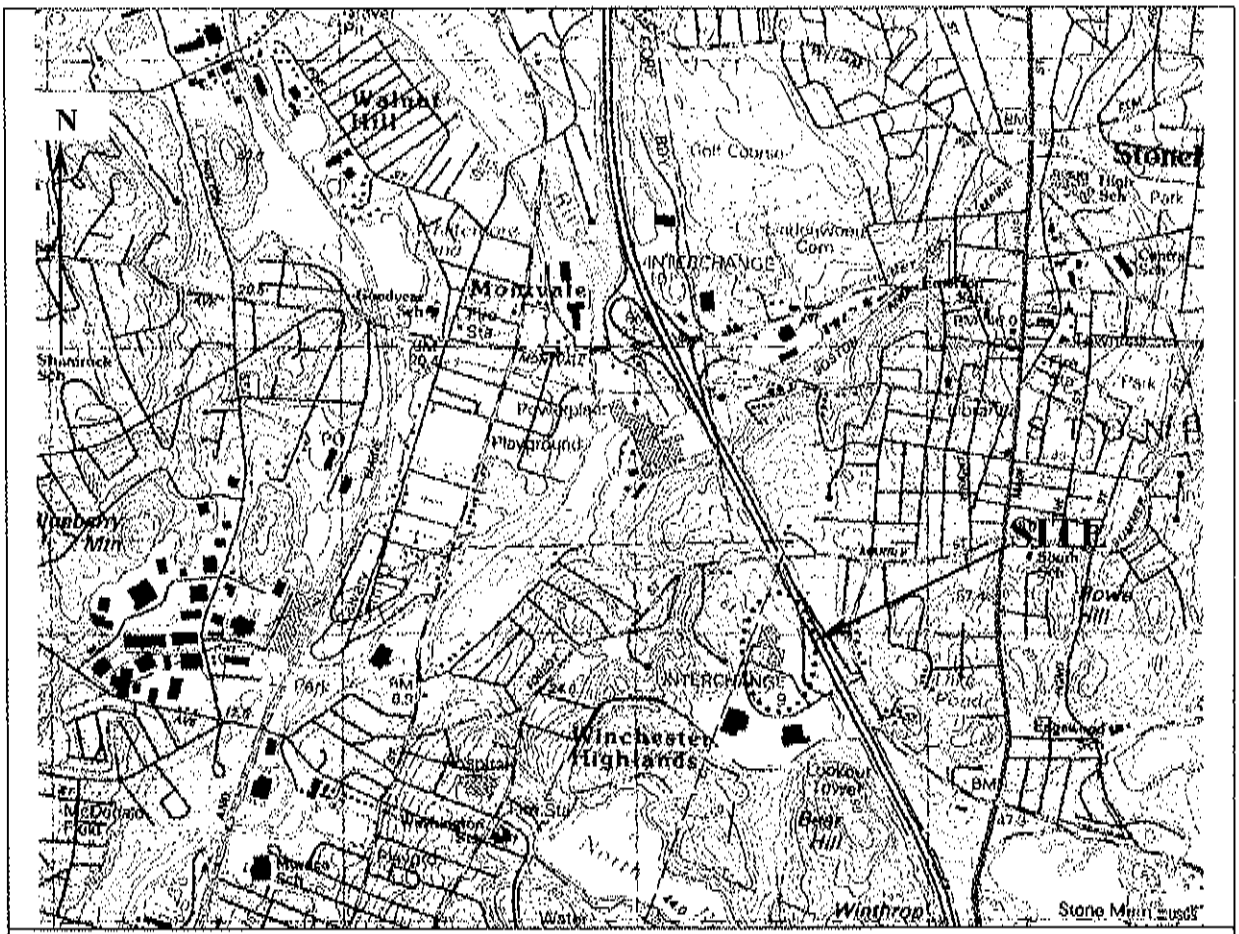
TABLE 3

GRADATION SPECIFICATIONS

THE HOME DEPOT
Stoneham, MA
Project No. 05.485.NH

SIEVE SIZE	PERCENT PASSING BY WEIGHT			
	CLEAN GRANULAR FILL	BASE COURSE	SELECT GRANULAR FILL	RECLAIMED PAVEMENT BORROW MATERIAL*
8"	100	100	100	100
3"	70 – 100	100	70 – 100	100
1½	-----	-----	-----	70 – 100
¾	-----	-----	-----	50 – 85
½"	40 – 100	40 – 80	40 – 90	-----
No. 4	25 – 100	30 – 70	25 – 80	30 – 60
No. 10	15 – 95	20 – 60	15 – 70	-----
No. 40	10 – 70	10 – 30	5 – 40	-----
No. 50	-----	-----	-----	8 - 24
No. 200	0 – 15	3 - 10	0 – 12	0 – 10

* Reclaimed Pavement Borrow Material for Base Course in accordance with Sections 403, 404, and M1.11.0 of the MA Highway Department "Standard Specifications for Highways and Bridges"



Source: A portion of the Boston North, Mass. and Lexington, Mass. 7½-minute topographic quadrangle maps obtained from www. terraserver-usa.com. Map date is 07/01/1991.

GEOTECHNICAL ENGINEERING EVALUATION	SITE LOCATION MAP
THE HOME DEPOT Stoneham, MA February, 2006 Miller Project No. 05.485.NH	FIGURE 1

LIMITATIONS

Explorations

1. The analyses, recommendations and designs submitted in this report are based in part upon the data obtained from subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

2. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and have been developed by interpretation of widely spaced explorations and samples; actual soil transitions are probably more gradual. For specific information, refer to the boring logs.

3. Water level readings have been made in the drill holes at times and under conditions stated on the boring logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, and other factors differing from the time measurements were made.

Review

4. It is recommended that this firm be retained to review final design plans and specifications. In the event that any changes in the nature, design, or location of the structures are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of the report modified or verified in writing by Miller Engineering & Testing, Inc.

Construction

5. It is recommended that this firm be retained to provide soils engineering services during the excavations and foundation construction phases of the work. This is to observe compliance with the design concepts, specifications, or recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.

Use of Report

6. This report has been prepared for the exclusive use of **The Richmond Company** for the proposed **Home Depot** located in **Stoneham, Massachusetts** in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

7. This soil and foundation engineering report has been prepared for this project by Miller Engineering & Testing, Inc. This report was completed for design purposes and may be limited in its scope to prepare an accurate bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to design considerations only.

F-1. Rainfall Data for Massachusetts from *Rainfall Frequency Atlas of the United States* (TP-40)

- Users of this Handbook should note that current MA DEP written guidance (see DEP Waterlines newsletter -- Fall 2000) requires the use of TP-40 Rainfall Data for calculations under the Wetlands Protection Regulations and the Stormwater Management Policy. More stringent design storms may be used under a local bylaw or ordinance. However, DEP will continue to require the use of TP-40 in any case it reviews under the Wetlands Protection Act and Stormwater Management Policy.

Adjusted Technical Paper 40 Design Storms for 24-hour Event by County

County Name	1-yr 24-hr	2-yr 24-hr	5-yr 24-hr	10-yr 24-hr	25-yr 24-hr	50-yr 24-hr	100-yr 24-hr
Barnstable	2.5	3.6	4.5	4.8	5.7	6.4	7.1
Berkshire	2.5	2.9	3.8	4.4	5.1	5.9	6.4
Bristol	2.5	3.4	4.3	4.8	5.6	6.3	7.0
Dukes	2.5	3.6	4.6	4.9	5.8	6.5	7.2
Essex	2.5	3.1	3.9	4.5	5.4	5.9	6.5
Franklin	2.5	2.9	3.8	4.3	5.1	5.8	6.2
Hampden	2.5	3.0	4.0	4.6	5.3	6.0	6.5
Hampshire	2.5	3.0	3.9	4.5	5.2	5.9	6.4
Middlesex	2.5	3.1	4.0	4.5	5.3	5.9	6.5
Nantucket	2.5	3.6	4.6	4.9	5.8	6.5	7.2
Norfolk	2.5	3.2	4.1	4.7	5.5	6.1	6.7
Plymouth	2.5	3.4	4.3	4.7	5.6	6.2	7.0
Suffolk	2.5	3.2	4.0	4.6	5.5	6.0	6.6
Worcester	2.5	3.0	4.0	4.5	5.3	5.9	6.5

Manning's Roughness Coefficients ("n")

Conduit	Manning's Coefficients
Closed Conduits	
Asbestos-Cement Pipe	0.011 to 0.015
Brick	0.013 to 0.017
Cast Iron Pipe	
Cement-lined and seal-coated	0.011 to 0.015
Concrete (Monolithic)	
Smooth forms	0.012 to 0.014
Rough forms	0.015 to 0.017
Concrete Pipe	0.011 to 0.015
Corrugated-Metal Pipe (1/2 - STUL 34470 2 1/2-inch corrgtn.)	
Plain	0.022 to 0.026
Paved invert	0.018 to 0.022
Spun asphalt-lined	0.011 to 0.015
Plastic Pipe (Smooth)	0.011 to 0.015
Vitrified Clay	
Pipes	0.011 to 0.015
Liner channels	0.013 to 0.017
Open Channels	
Lined Channels	
Asphalt	0.013 to 0.017
Brick	0.012 to 0.018
Concrete	0.011 to 0.020
Rubble or riprap	0.020 to 0.035
Vegetal	0.030 to 0.040
Excavated or Dredged	
Earth, straight and uniform	0.020 to 0.030
Earth, winding, fairly uniform	0.025 to 0.040
Rock	0.030 to 0.045
Unmaintained	0.050 to 0.140
Natural Channels (minor streams, top width at flood state < 100 feet)	
Fairly regular section	0.030 to 0.070
Irregular section with pools	0.040 to 0.100

Source: Design and Construction of Sanitary and Storm Sewers, American Society of Civil Engineers and the Water Pollution Control Federation, 1969.

Allen & Major Associates, Inc. Computation Sheet

Title	***MA DEP Standard Calculations***	By	CMQ
Project	*North Shore* Crossing	Chk'd	TJW
Date	May 29, 2014	Apprv'd	TJW

Stormwater Recharge

SHEET 1 OF 3

Rv = F * Impervious Area

Rv *= Required Recharge Volume, expressed in* ft^3 *, cubic yards or acre-feet*

F *= Target Depth Factor associated with each Hydraulic Soil Group*

Impervious Area *= pavement & rooftop area on site*

		Impervious Area (Feet)			***Recharge Required***		
W'SHED	Area (Feet)	Landscaped	HSG B (F=.35)	HSG D (F=.1)	***F Avg. (Inches)***	***Impervious Area (Feet)***	***Rv*** (ft^3)
P-1	59,568	26,882	72	32,614	0.101	32,686	274
P-2	9,268	9,268	0	0	0.000	0	0
P-3	29,385	5,942	15,168	8,275	0.262	23,443	511
P-4	52,078	23,632	16,384	12,062	0.244	28,446	578
P-5	42,817	20,796	21,732	289	0.347	22,021	636
P-6	34,048	14,286	19,762	0	0.350	19,762	576
P-7	16,693	6,525	0	10,168	0.100	10,168	85
P-8	17,253	17,253	0	0	0.000	0	0
R-1	17,511	0	318	17,193	0.105	17,511	153
R-2	6,250	0	1,991	4,259	0.180	6,250	94
R-3	9,775	0	0	9,775	0.100	9,775	81
R-4	10,473	0	0	10,473	0.100	10,473	87
R-5	3,816	0	0	3,816	0.100	3,816	32
R-6	6,293	0	86	6,207	0.103	6,293	54
R-7	31,465	0	1,114	30,351	0.109	31,465	285
R-8	4,369	0	3,286	1,083	0.288	4,369	105
R-9	5,551	0	4,954	597	0.323	5,551	149
R-10	5,737	0	5,737	0	0.350	5,737	167
R-11	5,371	0	5,371	0	0.350	5,371	157
R-12	5,353	0	5,353	0	0.350	5,353	156
R-13	12,032	0	11,051	981	0.330	12,032	330
Total	385,106	124,584	112,379	148,143		260,522	**4,512**

	Required (cf)	***Provided (cf)***	
Rv =	***274***	***1,390***	***Underground Infiltration System #1 (P-1)***
Rv =	***246***	***1,004***	***Underground Infiltration System #2 (R-1 & R-2)***
Rv =	***593***	***1,413***	***Underground Infiltration System #3 (P-3 & R-3)***
Rv =	***258***	***1,295***	***Underground Infiltration System #4 (P-7, R-4, R-5 & R-6)***
Rv =	***1,285***	***3,172***	***Underground Infiltration System #5 (P-4, R-7, R-8, R-9 & R-10)***
Rv =	***1,280***	***1,886***	***Underground Infiltration System #6 (P-5, R-11, R-12 & R-13)***
Rv =	***576***	***852***	***Underground Infiltration System #7 (P-6)***
Rv =	***4,512***	***11,012***	***Total***

Title	***MA DEP Standard Calculations***	By	CMQ
Project	*North Shore* Crossing	Chk'd	TJW
Date	May 29, 2014	Apprv'd	TJW

Draindown Within 72 Hours

SHEET 2 OF 3

$Time_{drawdown}$=(Rv) (1/Design Infiltration Rate in inches per hour) (Conversion for inches to feet) (1/bottom area in feet

Underground Infiltration System #1	
Infiltration Rate (in/Hr)=	0.17
Bottom Area (ft^2) =	1,352
Infiltration Volume (ft^3) =	1,390
$Time_{drawdown}$ (Hours)=	72.57

Underground Infiltration System #2	
Infiltration Rate (in/Hr)=	0.17
Bottom Area (ft^2) =	1,740
Infiltration Volume (ft^3) =	1,004
$Time_{drawdown}$ (Hours)=	40.73

Underground Infiltration System #3	
Infiltration Rate (in/Hr)=	0.17
Bottom Area (ft^2) =	1,352
Infiltration Volume (ft^3) =	1,413
$Time_{drawdown}$ (Hours)=	73.77

Underground Infiltration System #4	
	0.17
Bottom Area (ft^2) =	1,352
Infiltration Volume (ft^3) =	1,295
$Time_{drawdown}$ (Hours)=	67.61

Underground Infiltration System #5	
Infiltration Rate (in/Hr)=	0.17
Bottom Area (ft^2) =	7,086
Infiltration Volume (ft^3) =	3,172
$Time_{drawdown}$ (Hours)=	31.60

Underground Infiltration System #6	
Infiltration Rate (in/Hr)=	0.17
Bottom Area (ft^2) =	3,585
Infiltration Volume (ft^3) =	1,886
$Time_{drawdown}$ (Hours)=	37.14

Underground Infiltration System #7	
Infiltration Rate (in/Hr)=	0.17
Bottom Area (ft^2) =	2,128
Infiltration Volume (ft^3) =	852
$Time_{drawdown}$ (Hours)=	28.26

Allen & Major Associates, Inc. Computation Sheet

Title	***MA DEP Standard Calculations***	By	CMQ
Project	*North Shore* Crossing	Chk'd	TJW
Date	May 29, 2014	Apprv'd	TJW

Water Quality Volume

SHEET 3 OF 3

A_{WQ} = *Required Water Quality Treatment Volume, expressed in* ft^3

D_{WQ} = *Water Quality Depth*

A_{IMP} = *Impervious Area (excluding non-metqal roofs)*

				Water Quality Volume Required		
W'SHED	Area (Feet)	Landscaped	Impervious Area (Feet)	D_{WQ}	***Impervious Area (Feet)***	A_{WQ}
P-1	59,568	26,882	32,686	0.500	32,686	1,362
P-2	9,268	9,268	0	0.500	0	0
P-3	29,385	5,942	23,443	0.500	23,443	977
P-4	52,078	23,632	28,446	0.500	28,446	1,185
P-5	42,817	20,796	22,021	0.500	22,021	918
P-6	34,048	14,286	19,762	0.500	19,762	823
P-7	16,693	6,525	10,168	0.500	10,168	424
P-8	17,253	17,253	0	0.500	0	0
R-1	17,511	0	17,511	0.500	17,511	730
R-2	6,250	0	6,250	0.500	6,250	260
R-3	9,775	0	9,775	0.500	9,775	407
R-4	10,473	0	10,473	0.500	10,473	436
R-5	3,816	0	3,816	0.500	3,816	159
R-6	6,293	0	6,293	0.500	6,293	262
R-7	31,465	0	31,465	0.500	31,465	1,311
R-8	4,369	0	4,369	0.500	4,369	182
R-9	5,551	0	5,551	0.500	5,551	231
R-10	5,737	0	5,737	0.500	5,737	239
R-11	5,371	0	5,371	0.500	5,371	224
R-12	5,353	0	5,353	0.500	5,353	223
R-13	12,032	0	12,032	0.500	12,032	501
Total	385,106	124,584	260,522		260,522	**10,855**

	Required (cf)	***Provided (cf)***	
A_{WQ} =	***1,362***	***1,390***	***Underground Infiltration System #1 (P-1)***
A_{WQ} =	***990***	***1,004***	***Underground Infiltration System #2 (R-1 & R-2)***
A_{WQ} =	***1,384***	***1,413***	***Underground Infiltration System #3 (P-3 & R-3)***
A_{WQ} =	***1,281***	***1,295***	***Underground Infiltration System #4 (P-7, R-4, R-5 & R-6)***
A_{WQ} =	***3,149***	***3,172***	***Underground Infiltration System #5 (P-4, R-7, R-8, R-9 & R-10)***
A_{WQ} =	***1,866***	***1,886***	***Underground Infiltration System #6 (P-5, R-11, R-12 & R-13)***
A_{WQ} =	***823***	***852***	***Underground Infiltration System #7 (P-6)***
A_{WQ} =	***10,855***	***11,012***	***Total***

Allen & Major Associates, Inc. Computation Sheet

Title ***Pipe Sizing Table***
Project Stoneham Crossing
Date May 22, 2014
A&M Project Number: 1592-03

Minimum Slope: 0.01
Minimum Pipe Size: 8"
Rainfall Intensity (in/hr): 5.00 (10 year storm)
Manning's n: 0.011
Minimum Pipe Cover: 2.5'

By CMQ
Chk'd TJW
Apprv'd TJW

225 FALLON ROAD

Line						Req'd. Capac.	Pipe Size	Slope	Design Capacity		Drop	Invert Elevation		Rim Elev.	
From	To	Length	Area	wgt. *C*	*C* A	*Qd*	*D*	*s*	Q_{full}	V_{full}		Upper	Lower	Upper	Cover
Upper	Lower	(feet)	(acres)			(cfs)	(in)	(%)	(cfs)	(fps)	(feet)	(ft)	(ft)	(ft)	(ft)
CB1A	DMH1	14	0.498	0.71	0.355	1.77	12	1.00%	4.2	5.36	0.14	152.85	152.71	156.50	2.53
CB1B	DMH1	24	0.869	0.62	0.537	2.68	12	1.00%	4.2	5.36	0.24	152.85	152.61	156.50	2.53
DMH1	DMH2	145				4.46	15	1.00%	7.7	6.22	1.45	152.51	151.06	156.50	2.62
OCS1	DMH5	18	***(From HydroCAD 10-Year Storm)***			4.81	15	1.00%	7.7	6.22	0.18	151.06	150.88	159.10	6.66
RD4A	DMH4	467	0.268	0.90	0.241	1.20	12	1.00%	4.2	5.36	4.67	156.88	152.21	159.30	1.30
RD4B	DMH4	178	0.278	0.90	0.250	1.25	12	1.00%	4.2	5.36	1.78	153.99	152.21	159.30	4.19
DMH4	DMH3	6				2.45	12	1.00%	4.2	5.36	0.06	152.11	152.05	158.40	5.16
OCS2	DMH7	5	***(From HydroCAD10-Year Storm)***			2.48	12	1.00%	4.2	5.36	0.05	151.23	151.18	156.20	3.85
DCB5	DMH5	201	***(From HydroCAD 10-Year Storm)***			16.76	18	1.00%	12.4	7.03	2.01	152.85	150.84	156.50	2.03
DMH5	DMH6	84				21.57	18	1.00%	12.4	7.03	0.84	150.74	149.90	159.00	6.63
DMH6	DMH7	114				21.57	18	1.00%	12.4	7.03	1.14	149.80	148.66	158.80	7.38
DMH7	EDMHA	40				24.05	18	1.00%	12.4	7.03	0.40	148.56	148.16	156.30	6.12
CB8A	DMH8	43	0.044	0.90	0.039	0.20	12	1.00%	4.2	5.36	0.43	150.45	150.02	154.10	2.53
CB8B	DMH8	34	0.171	0.78	0.132	0.66	12	1.00%	4.2	5.36	0.34	150.45	150.11	154.10	2.53
CB8C	DMH8	29	0.157	0.90	0.141	0.71	12	1.00%	4.2	5.36	0.29	151.55	151.26	155.20	2.52
CB8D	DMH8	22	0.303	0.72	0.219	1.10	12	1.00%	4.2	5.36	0.22	151.65	151.43	155.30	2.53
RD-9	DMH9	222	0.695	0.78	0.543	2.72	12	1.00%	4.2	5.36	2.22	155.65	153.43	159.30	2.53
OCS3	UIS4	16	***(From HydroCAD 10-Year Storm)***			3.94	15	1.00%	7.7	6.22	0.16	149.92	149.76	156.20	4.91
RD-10A	DMH10	225	0.240	0.90	0.216	1.08	12	1.00%	4.2	5.36	2.25	155.65	153.40	159.30	2.53
RD-10B	DMH10	190	0.144	0.90	0.130	0.65	12	1.00%	4.2	5.36	1.90	155.65	153.75	160.00	3.22
OCS4	EX. MH-B	7	***(From HydroCAD 10-Year Storm)***			7.68	18	1.00%	12.4	7.03	0.07	149.76	149.69	159.70	8.32
DCB11	DMH11	48	1.196	0.65	0.778	3.89	12	1.00%	4.2	5.36	0.48	153.05	152.57	156.70	2.52
RD13A	DMH13	135	0.722	0.90	0.650	3.25	12	1.00%	4.2	5.36	1.35	154.00	152.65	159.30	4.18
RD13B	DMH13	228	0.359	0.90	0.323	1.62	12	1.00%	4.2	5.36	2.28	155.65	153.37	159.30	2.53
OCS5	EX. MH-C	15	***(From HydroCAD 10-Year Storm)***			3.53	15	2.00%	10.8	8.80	0.30	152.46	152.16	157.80	3.97
		3													
CB14A	UIS7	7	0.595	0.63	0.376	1.88	12	1.00%	4.2	5.36	0.07	152.45	152.38	156.10	2.53
CB14B	UIS7	30	0.388	0.63	0.246	1.23	12	1.00%	4.2	5.36	0.30	152.75	152.45	156.40	2.53
RD15A	DMH15	197	0.246	0.90	0.222	1.11	12	1.00%	4.2	5.36	1.97	155.65	153.68	159.30	2.53
RD15B	DMH15	281	0.276	0.90	0.249	1.24	12	1.00%	4.2	5.36	2.81	155.65	152.84	159.30	2.53
DMH15	OCS6	27				2.35	12	1.00%	4.2	5.36	0.27	152.74	152.47	159.20	5.33
OCS6	EX. MH-D	144	***(From HydroCAD 10-Year Storm)***			5.35	15	1.00%	7.7	6.22	1.44	152.47	151.03	158.20	4.35

Allen & Major Associates, Inc. Computation Sheet

Title ***Pipe Sizing Table***
Project Stoneham Crossing
Date May 22, 2014
A&M Project Number: 1592-03

Minimum Slope: 0.01
Minimum Pipe Size: 8"
Rainfall Intensity (in/hr): 5.00 (10 year storm)
Manning's n: 0.011
Minimum Pipe Cover: 2.5'

By CMQ
Chk'd TJW
Apprv'd TJW

225 FALLON ROAD

Line						Req'd. Capac.	Pipe Size	Slope	Design Capacity		Drop	Invert Elevation		Rim Elev.	
From Upper	To Lower	Length (feet)	Area (acres)	wgt. *C*	*C* A	*Qd* (cfs)	*D* (in)	*s* (%)	Q_{full} (cfs)	V_{full} (fps)	(feet)	Upper (ft)	Lower (ft)	Upper (ft)	Cover (ft)
CB16A	DMH16	9	0.284	0.58	0.164	0.82	12	1.00%	4.2	5.36	0.09	154.45	154.36	158.10	2.53
CB16B	DMH16	5	0.094	0.88	0.083	0.41	12	1.00%	4.2	5.36	0.05	154.45	154.40	158.10	2.53
DMH16	UIS7	7				1.23	12	1.00%	4.2	5.36	0.07	151.06	150.99	158.20	6.01
CB17A	DMH17	8	0.108	0.89	0.096	0.48	12	1.00%	4.2	5.36	0.08	154.55	154.47	158.20	2.52
CB17B	DMH17	15	0.296	0.61	0.181	0.90	12	1.00%	4.2	5.36	0.15	154.55	154.40	158.20	2.52
OCS7	EX. MH-C	62	***(From HydroCAD 10-Year Storm)***			7.63	18	1.00%	12.4	7.03	0.62	150.99	150.37	158.30	5.69

Illicit Discharge Compliance Statement

Responsibility:

The Owner is responsible for ultimate compliance with all provisions of the Massachusetts Stormwater Management Policy, the USEPA NPDES Construction General Permit and responsible for identifying and eliminating illicit discharges (as defined by the USEPA).

OWNER NAME: Fairfield Residential Company, LLC

ADDRESS: 405 Cochituate Road, Suite 301

Framingham, MA 01701

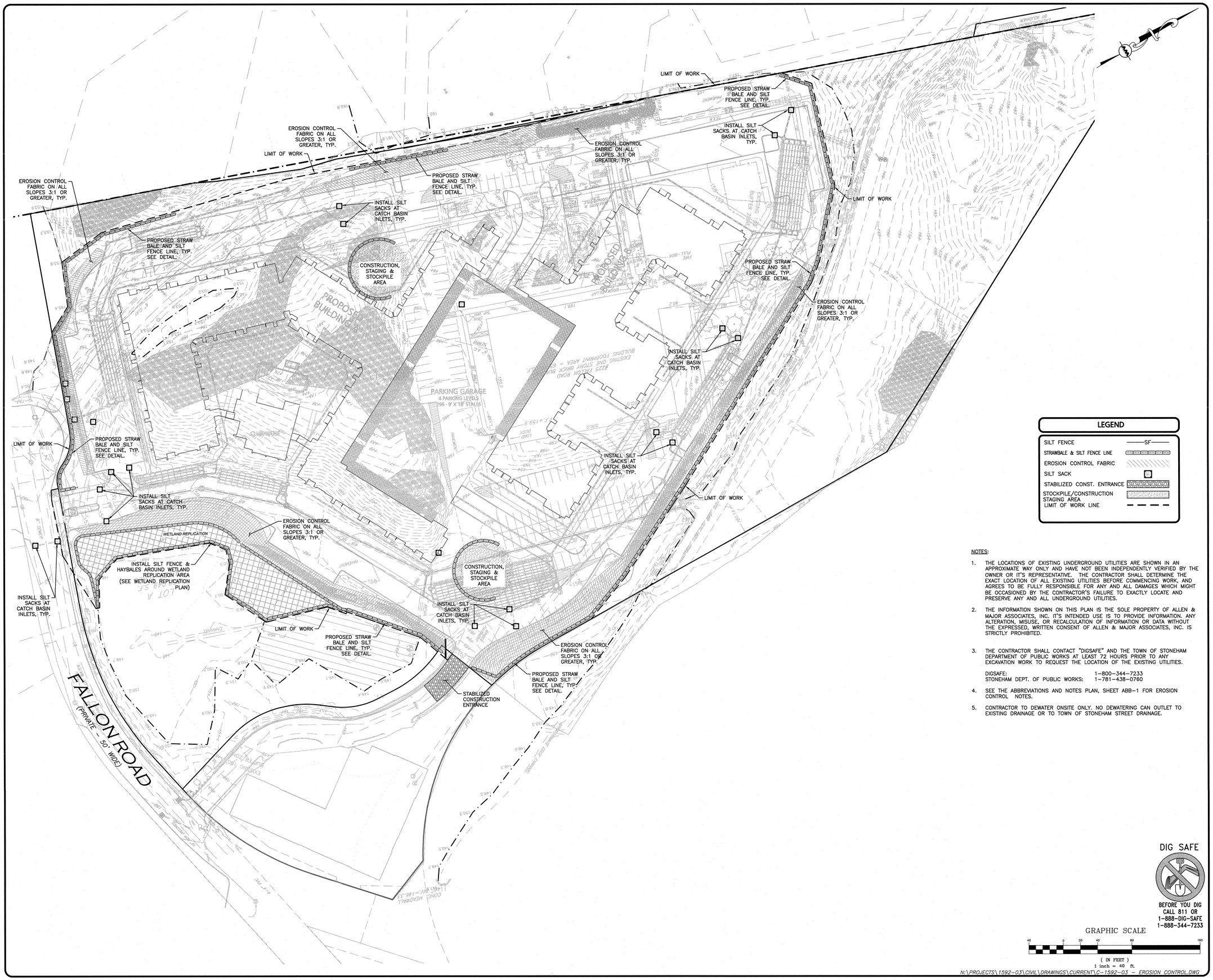
TEL. NUMBER: (508) 405-1918

Engineer's Compliance Statement:

To the best of my knowledge, the attached plans, computations and specifications meet the requirements of Standard 10 of the Massachusetts Stormwater Handbook regarding illicit discharges to the stormwater management system and that no detectable illicit discharges exist on the site. All documents and attachments were prepared under my direction and qualified personnel properly gathered and evaluated the information submitted, to the best of my knowledge.

Included with this statement are site plans, drawn to scale, that identify the location of systems for conveying stormwater on the site and show that these systems do not allow the entry of any illicit discharges into the stormwater management system. The plans also show any systems for conveying wastewater and/or groundwater on the site and show that there are no connections between the stormwater and wastewater systems.

For a redevelopment project (if applicable), all actions taken to identify and remove illicit discharges, including without limitation, visual screening, dye or smoke testing, and the removal of any sources of illicit discharges to the stormwater management system are documented and included with this statement.



LEGEND

SILT FENCE	SF
STRAWBALE & SILT FENCE LINE	
EROSION CONTROL FABRIC	
SILT SACK	
STABILIZED CONST. ENTRANCE	
STOCKPILE/CONSTRUCTION STAGING AREA	
LIMIT OF WORK LINE	

NOTES:

1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR IT'S REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
2. THE INFORMATION SHOWN ON THIS PLAN IS THE SOLE PROPERTY OF ALLEN & MAJOR ASSOCIATES, INC. IT'S INTENDED USE IS TO PROVIDE INFORMATION. ANY ALTERATION, MISUSE, OR RECALCULATION OF INFORMATION OR DATA WITHOUT THE EXPRESSED, WRITTEN CONSENT OF ALLEN & MAJOR ASSOCIATES, INC. IS STRICTLY PROHIBITED.
3. THE CONTRACTOR SHALL CONTACT "DIGSAFE" AND THE TOWN OF STONEHAM DEPARTMENT OF PUBLIC WORKS AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK TO REQUEST THE LOCATION OF THE EXISTING UTILITIES.

   DIGSAFE: 1-800-344-7233
   STONEHAM DEPT. OF PUBLIC WORKS: 1-781-438-0760
4. SEE THE ABBREVIATIONS AND NOTES PLAN, SHEET ABB-1 FOR EROSION CONTROL NOTES.
5. CONTRACTOR TO DEWATER ONSITE ONLY. NO DEWATERING CAN OUTLET TO EXISTING DRAINAGE OR TO TOWN OF STONEHAM STREET DRAINAGE.

DIG SAFE

BEFORE YOU DIG
CALL 811 OR
1-888-DIG-SAFE
1-888-344-7233

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

N:\PROJECTS\1592-03\CIVIL\DRAWINGS\CURRENT\C-1592-03 - EROSION CONTROL.DWG

FAIRFIELD RESIDENTIAL

THE RICHMOND COMPANY, INC.

COMMONWEALTH OF MASSACHUSETTS
TIMOTHY J. WILLIAMS
CIVIL
No. 43119
REGISTERED PROFESSIONAL ENGINEER
5/22/14

PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION

APPLICANT\OWNER:
FAIRFIELD RESIDENTIAL COMPANY, LLC
C/O FF REALTY, LLC
405 COCHITUATE ROAD, SUITE 301
FRAMINGHAM, MA 01701-4648

PROJECT:
STONEHAM CROSSING
MULTI-FAMILY
RESIDENTIAL DEVELOPMENT
225 FALLON ROAD
STONEHAM, MA

PROJECT NO.	1592-03	DATE:	05-22-2014
SCALE:	1"=40'	DWG. NAME:	C-1592-03
DESIGNED BY:	SJL	CHECKED BY:	TJW

PREPARED BY:

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environmental consulting ◆ landscape architecture
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DRAWING TITLE:
EROSION CONTROL PLAN

SHEET No.
C-5