DRAINAGE REPORT

ALLEN & MAJOR
ASSOCIATES, INC.

Mixed Used Building
281 Main Street
Reading, Massachusetts

APPLICANT:
281 Reading, LLC
281 Main Street
Reading, MA 01867

PREPARED BY:
Allen & Major Associates, Inc.
100 Commerce Way, Suite 5
Woburn, Massachusetts 01801
E.O.R. Carlton Quinn PE

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ISSUED:
November 24, 2025

REVISED:

A&M PROJECT NO.:
2398-08

TABLE OF CONTENTS

SECTION 1.0 -
DRAINAGE REPORT

Introduction

The purpose of this drainage report is to provide an overview of the proposed stormwater management system (SMS) for the new development located at 281 Main Street in Reading. The report will show by means of narrative, calculations and exhibits that the proposed stormwater management system will meet or exceed the Massachusetts Department of Environmental Protection (MassDEP) stormwater standards, and the town Stormwater Management Regulations.

The proposed site improvements include the demolishing of an existing building, clearing of existing vegetation and constructing one mixed-use building. Other improvements to the site include construction of surface parking, landscaping and underground utilities servicing the site. The project will be serviced by connecting existing utilities off Main Street.

The proposed SMS incorporates structural and non-structural Best Management Practices (BMPs) to provide stormwater peak flow mitigation, quality treatment, and conveyance.

The SMS includes catch basins, water quality units, drain manholes, roof drains, underground piping, underground infiltration chambers, and an Operation & Maintenance Plan.

Site Categorization for Stormwater Regulations

The proposed site improvements at 281 Main Steet are considered a new development under the DEP Stormwater Management Standards due to the net increase in impervious area. A new development project is required to meet all of Stormwater Management Standards listed within the MA DEP Stormwater Handbook.

Site Location and Access

The site consists of one lot with 157 feet of frontage on Main Street entirely within the town of Reading. The site is currently accessed by one curb cut on Main Street.

Existing Site Conditions

The site currently includes one two story building. The east portion of the site is wooded and abuts riverfront.

The surface drainage flows were analyzed at two Study Points. Study Point #1 summarizes off-site flows to the Municipal drainage on Main Street. Study Point #2 summarizes off site flows towards the riverfront at the east portion of the site.

Existing Soil Conditions

The on-site soils were identified using the USDA Natural Resources Conservation Services (NRCS) Soil Survey for Middlesex County. The site is primarily soil type 602 – Urban Land. These soil types are assumed to be A-type soils because of the landform (outwash terraces/plans) as well as the surrounding soil types. There are a copy of the stormwater test pits and boring logs taken at this site, provided in the appendix of this report.

A copy of the NRCS Custom Soil Resource Report is included in the appendix of this report.

FEMA Floodplain/Environmental Due Diligence

There are no portions of the site located within the FEMA Zone "AE" Special Flood Hazard Area Subject to Inundation by the 1% Annual Chance Flood (100-year floodplain). The official Flood Insurance Rate Map (FIRM) effective date June 4, 2010, community panel 312 of 656. Map number 25017C0313E. See section 3 of this report for a copy of the FEMA FIRM.

Environmentally Sensitive Zones

The Commonwealth of Massachusetts asserts control over numerous protected and regulated areas including: Areas of Critical Environmental Concern (ACEC); Outstanding Resource Waters (ORWs); Priority and Protected Habitat for rare and endangered species, and areas protected under the Wetlands Protection Act. The subject property is not located within any of these regulated areas.

Drainage Analysis Methodology

A peak rate of runoff will be 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 10.00-24. The HydroCAD program was used to generate runoff hydrographs for the watershed areas, to determine discharge/ stage/storage characteristics for the stormwater BMPs, 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.

Proposed Conditions – Peak Rate of Runoff

The stormwater 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 TR55 Urban Hydrology for Small Watersheds, developed by the U.S. Department of Commerce, Engineering Division and the HydroCAD computer program. Further, the analysis has been prepared in accordance with the MassDEP and the town requirements and standard engineering practices. The peak rate of runoff has been estimated for each watershed during the 2, 10, 25, and 100-year storm events.

The proposed stormwater management system for the site consists of catch basins, water quality units, drain manholes, roof drains, underground piping, area drains, underground infiltration chambers These systems have been designed in accordance with the MA DEP Stormwater Management Policy to recharge groundwater and reduce rate of runoff from the parcel.

The proposed Underground Infiltration System #1 (UIS#1) collects the vast majority of flows from the proposed development. The system has an emergency overflow pipe that connects to an existing drainage 12" RCP that outlets to the Riverfront.

The stormwater runoff model indicates 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, in Cubic Feet per Second (CFS) and total runoff volume, in cubic feet (CF) at each of the two Study Points for each of the design storm events. The HydroCAD worksheets are included in Section 4 and 5 of this report.

STUDY POINT #1				
	2-Year	10-Year	25-Year	100-Year
Existing Flow (CFS)	0.30	0.68	0.93	1.33
Proposed Flow (CFS)	0.02	0.08	0.12	0.19
Reduction %	**93.3%**	**88.2%**	**87.1%**	**85.7%**
Existing Volume (CF)	950	2,094	2,881	4,148
Proposed Volume (CF)	91	258	387	610
Reduction %	**90.4%**	**87.7%**	**86.6%**	**85.3%**

STUDY POINT #2				
	2-Year	10-Year	25-Year	100-Year
Existing Flow (CFS)	0.61	1.15	1.49	2.04
Proposed Flow (CFS)	0.07	0.91	1.38	2.00
Reduction %	**88.5%**	**20.9%**	**7.4%**	**2.0%**
Existing Volume (CF)	2,017	3,783	5,061	7,256
Proposed Volume (CF)	243	2,204	3,711	6,350
Reduction %	**88.0%**	**41.7%**	**26.7%**	**12.5%**

MASSDEP Stormwater Performance Standards

The MA DEP Stormwater Management Policy was developed to improve water quality by implementing performance standards for stormwater management. The intent is to implement the stormwater management standards through the review of Notice of Intent filings by the issuing authority (Conservation Commission or DEP). 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 –

- Deep Sump Catch Basins
- Subsurface Structures
- Water Quality Units

Stormwater Best Management Practices (BMP’s) 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, 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 enumerated below as well as descriptions and supporting calculations as to how the Project will comply with the Standards:

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

   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 rate will not be increased over existing conditions.

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.*

   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 is included within this document.

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.*

   The existing annual recharge for the site has been approximated in the proposed condition. There are proposed subsurface infiltration systems designed to meet this requirement. Stormwater runoff generated from the impervious areas of the proposed development are routed through these infiltration BMPs. The proposed Recharge Volume is based on the Static Method per the MA DEP Stormwater Management Standards, Volume 3, Chapter 1.

   See the appendix located at section 6 of this report for stormwater recharge calculations.

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

   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. The water quality volume for the site redevelopment is captured and treated using underground infiltration systems with isolator rows and water quality units.

The implemented BMPs have been designed to treat the contributing water quality volume. These water quality calculations can be seen within the appendix of this report.

The proposed stormwater management system has been designed to remove 80% of the average annual post-construction load for each treatment train. The TSS removal calculations can be seen within the appendix of this report.

The TSS removal efficiencies for the proprietary separator are based on the values assigned under the Technology Acceptance and Reciprocity Partnership (TARP) testing protocol. The TARP is a workgroup of the Environmental Council of States that was originally comprised of California, Illinois, Maryland, Massachusetts, New Jersey, New York, Pennsylvania and Virginia. TARP is recognized in the MA DEP Stormwater Management Handbook as a valid source for assigning TSS removal efficiencies for proprietary separators.

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.*

   The site is not considered a land use with higher potential pollutant loads.

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.

The project site does not discharge stormwater 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.

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.*

   The proposed project is not considered a re-development project under the Stormwater Management Handbook guidelines as there is an increase in the amount of impervious area.

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.*

   A plan to control construction-related impacts, including erosion, sedimentation and other pollutant sources during construction has been developed. A detailed Erosion and Sedimentation Control Plan is included in the Permit Drawings. 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.

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

   A Long-Term Operation & Maintenance (O&M) Plan has been developed for the proposed stormwater management system and is included within this document. See Section 2.0 of this report.

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

    See appendix for Illicit Discharge Statement

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.

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[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.

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

11/24/25

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 (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): Underground Infiltration Sytstem (Stormtech SC-800)

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 (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 (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.

SECTION 2.0 - OPERATION & MAINTENANCE PLAN

Introduction

In accordance with the standards set forth by the Stormwater Management Policy issued by the Massachusetts Department of Environmental Protection (MassDEP), Allen & Major Associates, Inc. has prepared the following Operations & Maintenance (O&M) Plan for the proposed development at 281 Main Street, Reading, MA.

The plan is broken down into three major sections. The first section describes construction-related erosion and sedimentation controls (Demolition & Construction Maintenance Plan). The second section describes the long-term pollution prevention measures (Long Term Pollution Prevention Plan). The third section is a post-construction operation and maintenance plan designed to address the long-term maintenance needs of the stormwater management system (Long-Term Maintenance Plan – Facilities Description).

Notification Procedures for Change of Responsibility for O&M

The Stormwater Management System (SMS) for this project is owned by 281 Reading, LLC (owner). The owner shall be legally responsible for the long-term operation and maintenance of this SMS as outlined in this Operation and Maintenance Plan.

The owner shall submit an annual summary report and the completed Operation & Maintenance Schedule & Checklist to the Conservation Commission (via email or print copy), highlighting inspection and maintenance activities including performances of BMPs. Should ownership of the SMS change, the owner will continue to be responsible until the succeeding owner shall notify the Commission that the succeeding owner has assumed such responsibility. Upon subsequent transfers, the responsibility shall continue to be that of transferring owner until the transferee owner notifies the Commission of its assumption of responsibility.

In the event the SMS will serve multiple lots/owners, such as the subdivision of the existing parcel or creation of lease areas, the owner(s) shall establish an association on other legally enforceable arrangements under which the association or a single party shall have legal responsibility for the operation and maintenance of the entire SMS. The legal instrument creating such responsibility shall be recorded with the Registry of Deeds and promptly following its recording, a copy thereof shall be furnished to the Commission.

Contact Information

Stormwater Management System Owner:	281 Reading, LLC 281 Main Street Reading, MA 01867 Phone: (781) 389-5989

Emergency Contact Information:

281 Reading, LLC (Owner/Operator)	Phone: (781) 389-5989
Allen & Major Associates, Inc. (Site Civil Engineer)	Phone: (781) 935-6889
Reading Department of Public Works	Phone: (781) 942-9092
Reading Conservation Commission	Phone: (781) 942-9016
Reading Fire Department (non-emergency line)	Phone: (781) 944-3131
MassDEP Emergency Response	Phone: (888) 304-1133
Clean Harbors Inc (24-Hour Line)	Phone: (800) 645-8265

Demolition & Construction Maintenance Plan

1. Call Digsafe: 1-888-344-7233
2. Contact the town at least three (3) days prior to start of demolition and/or construction activities.
3. Install Erosion Control measures as shown on the Plans prepared by A&M. The town shall review the installation of straw bales and silt fencing prior to the start of any site demolition work. Install Construction fencing if determined to be necessary at the commencement of construction.
4. Install construction entrances, straw bales, and silt fence at the locations shown on the Erosion Control Plan prepared by A&M.
5. Site access shall be achieved only from the designated construction entrances.
6. Cut and clear trees in construction areas only (within the limit of work; see plans).
7. Stockpiles of materials subject to erosion shall be stabilized with erosion control matting or temporary seeding whenever practicable, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased.
8. Install silt sacks and straw bales around each drain inlet prior to any demolition and or construction activities.

9. All erosion control measures shall be inspected weekly and after every rainfall event. Records of these inspections shall be kept on-site for review.
10. All erosion control measures shall be maintained, repaired, or replaced as required or at the direction of the owner's engineer or the town.
11. Sediment accumulation up-gradient of the straw bales, silt fence, and stone check dams greater than 6" in depth shall be removed and disposed of in accordance with all applicable regulations.
12. 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.
13. Install stone check dams on-site during construction as needed. Refer to the erosion control details. Temporary sediment basins combined with stone check damns shall be installed on-site during construction to control and collect runoff from upland areas of this site during demolition and construction activities.
14. The contractor shall comply with the Sedimentation and Erosion Control Notes as shown on the Site Development Plans and Specifications.
15. The stabilized construction entrances shall be inspected weekly and records of inspections kept. The entrances shall be maintained by adding additional clean, angular, durable stone to remove the soil from the construction vehicle's tires when exiting the site. If soil is still leaving the site via the construction vehicle tires, adjacent roadways shall be kept clean by street sweeping.
16. Dust pollution shall be controlled using on-site water trucks and/or an approved soil stabilization product.
17. During demolition and construction activities, Status Reports on compliance with this O&M Document shall be submitted weekly. The report shall document any deficiencies and corrective actions taken by the applicant.

Long-Term Pollution Prevention Plan

Standard #4 from the MassDEP Stormwater Management Handbook requires that a Long-Term Pollution Prevention Plan (LTPPP) be prepared and incorporated as part of the Operation and Maintenance Plan of the Stormwater Management System. The purpose of the LTPPP is to identify potential sources of pollution that may affect the quality of stormwater discharges, and to describe the implementation of practices to reduce the pollutants in stormwater discharges. The following items describe the source control and proper procedures of the LTPPP.

- <u>Housekeeping</u>
  The existing development has been designed to maintain a high level of water quality treatment for all stormwater discharge to the wetland areas. An Operation and Maintenance (O&M) plan has been prepared and is included in this section of the report. The owner (or its designee) is responsible for adherence to the O&M plan in a strict and complete manner.

- <u>Storing of Materials & Water Products</u>
  The trash and waste program for the site includes exterior dumpsters. There is a trash contractor used to pick up the waste material in the dumpsters. The stormwater drainage system has water quality inlets designed to capture trash and debris.

- <u>Vehicle Washing</u>
  Outdoor vehicle washing has the potential to result in high loads of nutrients, metals, and hydrocarbons during dry weather conditions, as the detergent-rich water used to wash the grime off the vehicle enters the stormwater drainage system. The existing development does not include any designated vehicle washing areas, nor is it expected that any vehicle washing will take place on-site.

- <u>Spill Prevention & Response</u>
  Sources of potential spill hazards include vehicle fluids, liquid fuels, pesticides, paints, solvents, and liquid cleaning products. The majority of the spill hazards would likely occur within the buildings and would not enter the stormwater drainage system. However, there are spill hazards from vehicle fluids or liquid fuels located outside of the buildings. These exterior spill hazards have the potential to enter the stormwater drainage system and are to be addressed as follows:

  1. Spill hazards of pesticides, paints, and solvents shall be remediated using the Manufacturers' recommended spill cleanup protocol.
  2. Vehicle fluids and liquid fuel spill shall be remediated according to the local and state regulations governing fuel spills.
  3. The owner shall have the following equipment and materials on hand to address a spill clean-up: brooms, dust pans, mops, rags, gloves, absorptive material, sand, sawdust, plastic and metal trash containers.
  4. All spills shall be cleaned up immediately after discovery.
  5. Spills of toxic or hazardous material shall be reported, regardless of size, to the Massachusetts Department of Environmental Protection at (888) 304-1333.

6. Should a spill occur, the pollution prevention plan will be adjusted to include measures to prevent another spill of a similar nature. A description of the spill, along with the causes and cleanup measures will be included in the updated pollution prevention plan.

- Maintenance of Lawns, Gardens, and Other Landscaped Areas
  It should be recognized that this is a general guideline towards achieving high quality and well-groomed landscaped areas. The grounds staff/landscape contractor must recognize the shortcomings of a general maintenance plan such as this, and modify and/or augment it based on weekly, monthly, and yearly observations. In order to assure the highest quality conditions, the staff must also recognize and appreciate the need to be aware of the constantly changing conditions of the landscaping and be able to respond to them on a proactive basis. No trees shall be planted over the drain lines or recharge area, and that only shallow rooted plants and shrubs will be allowed.

  - Fertilizer
    Maintenance practices should be aimed at reducing environmental, mechanical and pest stresses to promote healthy and vigorous growth. When necessary, pest outbreaks should be treated with the most sensitive control measure available. Synthetic chemical controls should be used only as a last resort to organic and biological control methods. Fertilizer, synthetic chemical controls and pest management applications (when necessary) shall be performed only by licensed applicators in accordance with the manufacturer's label instructions when environmental conditions are conducive to controlled product application.

    Only slow-release organic fertilizers should be used in the planting and mulch areas to limit the amount of nutrients that could enter downstream resource areas. Fertilization of the planting and mulch areas will be performed within manufacturers labeling instructions and shall not exceed an NPK ration of 1:1:1 (i.e. Triple 10 fertilizer mix), considered a low nitrogen mixture. Fertilizers approved for the use under this O&M Plan are as follows:

    Type: LESCO® 28-0-12 (Lawn Fertilizer)
    MERIT® 0.2 Plus Turf Fertilizer
    MOMENTUM™ Force Weed & Feed

  - Suggested Aeration Program
    In-season aeration of lawn areas is good cultural practice, and is recommended whenever feasible. It should be accomplished with a solid thin tine aeration method to reduce disruption to the use of the area. The

depth of solid tine aeration is similar to core type, but should be performed when the soil is somewhat drier for a greater overall effect.

Depending on the intensity of use, it can be expected that all landscaped lawn areas will need aeration to reduce compaction at least once per year. The first operation should occur in late May following the spring season. Methods of reducing compaction will vary based on the nature of the compaction. Compaction on newly established landscaped areas is generally limited to the top 2-3" and can be alleviated using hollow core or thin tine aeration methods.

The spring aeration should consist of two passes at opposite directions with 1/4" hollow core tines penetrating 3-5" into the soil profile. Aeration should occur when the soil is moist but not saturated. The soil cores should be shattered in place and dragged or swept back into the turf to control thatch. If desired the cores may also be removed and the area top-dressed with sand or sandy loam. If the area drains on average too slowly, the topdressing should contain a higher percentage of sand. If it is draining on average too quickly, the top dressing should contain a higher percentage of soil and organic matter.

- Landscape Maintenance Program Practices:
  - Lawn

    1. Mow a minimum of once a week in spring, to a height of 2” to 2 1/2” high. Mowing should be frequent enough so that no more than 1/3 of grass blade is removed at each mowing. The top growth supports the roots; the shorter the grass is cute, the less the roots will grow. Short cutting also dries out the soil and encourages weeds to germinate.
    2. Mow approximately once every two weeks from July 1st to August 15th depending on lawn growth.
    3. Mow on a ten-day cycle in fall, when growth is stimulated by cooler nights and increased moisture.
    4. Do not remove grass clippings after mowing.
    5. Keep mower blades sharp to prevent ragged cuts on grass leaves, which cause a brownish appearance and increase the chance for disease to enter a leaf.

  - Shrubs

    1. Mulch not more than 3” depth with shredded pine or fir bark.

2. Hand prune annually, immediately after blooming, to remove 1/3 of the above-ground biomass (older stems). Stem removals are to occur within 6″ of the ground to open up shrub and maintain two-year wood (the blooming wood).
3. Hand-prune evergreen shrubs only as needed to remove dead and damaged wood and to maintain the naturalistic form of the shrub. Never mechanically shear evergreen shrubs.

- Trees
  1. Provide aftercare of new tree plantings for the first three years.
  2. Do not fertilize trees, it artificially stimulates them (unless tree health warrants).
  3. Water once a week for the first year; twice a month for the second; once a month for the third year.
  4. Prune trees on a four-year cycle.
- Invasive Species
  1. Inform the Conservation Commission Agent prior to the removal of invasive species proposed either through hand work or through chemical removal.

- Storage and Use of Herbicides and Pesticides
  Integrated Pest Management is the combination of all methods (of pest control) which may prevent, reduce, suppress, eliminate, or repel an insect population. The main requirements necessary to support any pest population are food, shelter and water, and any upset of the balance of these will assist in controlling a pest population. Scientific pest management is the knowledgeable use of all pest control methods (sanitation, mechanical, chemical) to benefit mankind's health, welfare, comfort, property and food. A Pest Management Professional (PMP) should be retained who is licensed with the Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs, Department of Agricultural Resources.

  The site manager will be provided with approved bulletin before entering into or renewing an agreement to apply pesticides for the control of indoor household or structural pests, refer to 333 CMR 13.08.

  Before beginning each application, the applicator must post a Department approved notice on all of the entrances to the treated room or area. The applicator must leave such notices posted after the application. The notice will be posted at conspicuous point(s) of access to the area treated. The location and number of signs will be determined by the configuration of the area to be treated based on the applicator's best judgment. It is intended to give sufficient notice so that no one comes into an area being treated unaware that the applicator is working and pesticides are being applied. However, if the contracting entity does not want the signs posted, he/she may sign a Department approved waiver indicating this.

The applicator or employer will provide to any person upon their request the following information on previously conducted applications:

1. Name and phone number of pest control company;
2. Date and time of the application;
3. Name and license number of the applicator;
4. Target pests; and
5. Name and EPA Registration Number of pesticide products applied.

- Pet Waste Management
  The owner's landscape crew (or designee) shall remove any obvious pet waste that has been left behind by pet owners within the development. The pet waste shall be disposed of in accordance with local and state regulations.

- Operations and Management of Septic Systems
  There are no proposed septic systems within the limits of the project.

- Management of Deicing Chemicals and Snow
  Snow will be stockpiled on site until the accumulated snow becomes a hazard to the daily operations of the site. It will be the responsibility of the snow removal contractor to properly dispose of transported snow according to MassDEP, Bureau of Resource Protection – Snow Disposal Guideline #BRPG01-01, 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

  The owner's maintenance staff (or its designee) will be responsible for the clearing of the sidewalk and building entrances. The owner may be required to use a de-icing agent such as potassium chloride to maintain a safe walking surface. If used, the de-icing agent for the walkways and building entrances will be kept within the storage rooms located within the building. If used, de-icing agents will not be stored outside. The owner's maintenance staff will limit the application of sand.

Long-Term Maintenance Plan – Facilities Description

A maintenance log will be kept (i.e. report) summarizing inspections, maintenance, and any corrective actions taken. The log will include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean-out of any sediments or debris, the location where the sediment and debris was disposed after removal will be indicated. The log will be made accessible to department staff and a copy provided to the department upon request.

The following is a description of the Stormwater Management System for the project site.

Stormwater Collection System – On-Site:

The stormwater collection system is a series of inlets located at low points within the limits of the paved area. All of the proposed on-site catch basins incorporate a deep sump and hooded outlet. The catch basins are connected by a closed gravity pipe network that pass through proprietary separators prior to entering the underground detention chamber or porous pavement.

Other Maintenance Activity:

- Mosquito Control - Both above ground and underground stormwater BMPs have the potential to serve as mosquito breeding areas. Good design, proper operation and maintenance, and treatment with larvicides can minimize this potential. See the supplemental information for Mosquito Control in Stormwater Management Practices, and the Operation and Maintenance Plan Schedule for inspection schedule.
- Street Sweeping - Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader.

Inspection and Maintenance Frequency and Corrective Measures

In accordance with MA DEP Stormwater Handbook: Volume 2, Chapter 2; the previously described BMPs will be inspected and the identified deficiencies will be corrected. Clean-out must include the removal and legal disposal of any accumulated sediments, trash, and debris. In any and all cases, operations, inspections, and maintenance activities shall utilize best practical measures to avoid and minimize impacts to wetland resource areas outside the footprint of the SMS.

Supplemental Information

- Operation & Maintenance Plan Schedule
- Massachusetts Stormwater Handbook, Chapter 5, Miscellaneous Stormwater Topics, Mosquito Control in Stormwater Management Practices.
- Massachusetts Department of Environmental Protection Bureau of Water Resources Snow Disposal Guidance.
- Stormtech Isolator ROW O&M Manual
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OPERATION AND MAINTENANCE PLAN SCHEDULE **Date: 11/24/2025**

ALLEN & MAJOR ASSOCIATES, INC.

Project: Mixed Use Building
Project Address: 281 Main Street Reading, MA
Responsible for O&M Plan: 281 Reading, LLC
Address: 281 Main Street, Reading, MA 01867
Phone: (781) 389-5989

BMP CATEGORY	BMP OR MAINTENANCE ACTIVITY	SCHEDULE/ FREQUENCY	NOTES	ESTIMATED ANNUAL MAINTENANCE COST	INSPECTION PERFORMED	
					DATE:	BY:
STRUCTURAL PRETREATMENT BMPs	DEEP SUMP CATCH BASIN	Four times per year (quarterly).	Inspect and clean catch basin units whenever the depth of deposits is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the basin.	$1,000		
	PROPRIETARY SEPARATORS	In accordance with manufacturers requirements, but no less than twice a year following installation and once a year thereafter.	Remove sediment and other trapped pollutants at frequency or level specified by manufacturer.	$2,000		

All information within table is derived from Massachussetts Stormwater Handbook: Volume 2, Chapter 2

BMP CATEGORY	BMP OR MAINTENANCE ACTIVITY	SCHEDULE/ FREQUENCY	NOTES	ESTIMATED ANNUAL MAINTENANCE COST	INSPECTION PERFORMED	
					DATE:	BY:
	SUBSURFACE STRUCTURES	Inspect structure inlets at least twice a year. Remove debris that may clog the system as needed.	Because subsurface structures are installed underground, they are extremely difficult to maintain. Remove any debris that might clog the system.	$500		
	OUTLET STRUCTURES	Periodic cleaning of Outlet Control Structures as needed.	`	$500		

All information within table is derived from Massachussetts Stormwater Handbook: Volume 2, Chapter 2

BMP CATEGORY	BMP OR MAINTENANCE ACTIVITY	SCHEDULE/ FREQUENCY	NOTES	ESTIMATED ANNUAL MAINTENANCE COST	INSPECTION PERFORMED	
					DATE:	BY:
OTHER MAINTENANCE ACTIVITY	MOSQUITO CONTROL	Inspect BMPs as needed to ensure the system's drainage time is less than the maximum 72 hour period.	Massachusetts stormwater handbook requires all stormwater practices that are designed to drain do so within 72 hours to reduce the number of mosquitos that mature to adults since the aquatic stage of a mosquito is 7-10 days.	$100		
	SNOW STORAGE	Clear and remove snow to approved storage locations as necessary to ensure systems are working properly and are protected from meltwater pollutants.	Carefully select snow disposal sites before winter. Avoid dumping removed snow over catch basins, or in detention ponds, sediment forebays, rivers, wetlands, and flood plains. It is also prohibited to dump snow in the bioretention basins or gravel swales.	$500		
	STREET SWEEPING	Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably spring.	Sweep, power broom or vacuum paved areas. Submit information that confirms that all street sweepings have been completed in accordance with state and local requirements	$2,000		

All information within table is derived from Massachussetts Stormwater Handbook: Volume 2, Chapter 2

Chapter 5
Miscellaneous Stormwater Topics

Mosquito Control in Stormwater Management Practices

Both aboveground and underground stormwater BMPs have the potential to serve as mosquito breeding areas. Good design, proper operation and maintenance and treatment with larvicides can minimize this potential.

EPA recommends that stormwater treatment practices dewater within 3 days (72 hours) to reduce the number of mosquitoes that mature to adults, since the aquatic stage of many mosquito species is 7 to 10 days. Massachusetts has had a 72-hour dewatering rule in its Stormwater Management Standards since 1996. The 2008 technical specifications for BMPs set forth in Volume 2, Chapter 2 of the Massachusetts Stormwater Handbook also concur with this practice by requiring that all stormwater practices designed to drain do so within 72 hours.

Some stormwater practices are designed to include permanent wet pools. These practices – if maintained properly – can limit mosquito breeding by providing habitat for mosquito predators. Additional measures that can be taken to reduce mosquito populations include increasing water circulation, attracting mosquito predators by adding suitable habitat, and applying larvicides.

The Massachusetts State Reclamation and Mosquito Control Board (SRMCB), through the Massachusetts Mosquito Control Districts, can undertake further mosquito control actions specifically for the purpose of mosquito control pursuant to Massachusetts General Law Chapter 252. The Mosquito Control Board, http://www.mass.gov/agr/mosquito/, describes mosquito control methods and is in the process of developing guidance documents that describe Best Management Practices for mosquito control projects.

The SRMCB and Mosquito Control Districts are not responsible for operating and maintaining stormwater BMPs to reduce mosquito populations. The owners of property that construct the stormwater BMPs or municipalities that “accept” them through local subdivision approval are responsible for their maintenance.[1] The SRMCB is composed of officials from MassDEP, Department of Agricultural Resources, and Department of Conservation and Recreation. The nine (9) Mosquito Control Districts overseen by the SRMCB are located throughout Massachusetts, covering 176 municipalities.

Construction Period Best Management Practices for Mosquito Control

To minimize mosquito breeding during construction, it is essential that the following actions be taken to minimize the creation of standing pools by taking the following actions:

- ***Minimize Land Disturbance:*** Minimizing land disturbance reduces the likelihood of mosquito breeding by reducing silt in runoff that will cause construction period controls to clog and retain standing pools of water for more than 72 hours.
- ***Catch Basin inlets:*** Inspect and refresh filter fabric, hay bales, filter socks or stone dams on a regular basis to ensure that any stormwater ponded at the inlet drains within 8 hours after precipitation stops. Shorter periods may be necessary to avoid hydroplaning in roads

[1] MassDEP and MassHighway understand that the numerous stormwater BMPs along state highways pose a unique challenge. To address this challenge, the 2004 MassHighway Stormwater Handbook will provide additional information on appropriate operation and maintenance practices for mosquito control when the Handbook is revised to reflect the 2008 changes to the Stormwater Management Standards..

caused by water ponded at the catch basin inlet. Treat catch basin sumps with larvicides such as *Bacillus sphaericus* (*Bs*) using a licensed pesticide applicator.

- ***Check Dams:*** If temporary check dams are used during the construction period to lag peak rate of runoff or pond runoff for exfiltration, inspect and repair the check dams on a regular basis to ensure that any stormwater ponded behind the check dam drains within 72 hours.
- ***Design construction period sediment traps*** to dewater within 72 hours after precipitation. Because these traps are subject to high silt loads and tend to clog, treat them with the larvicide *Bs* after it rains from June through October, until the first frost occurs.
- ***Construction period open conveyances:*** When temporary manmade ditches are used for channelizing construction period runoff, inspect them on a regular basis to remove any accumulated sediment to restore flow capacity to the temporary ditch.
- ***Revegetating Disturbed Surfaces:*** Revegetating disturbed surfaces reduces sediment in runoff that will cause construction period controls to clog and retain standing pools of water for greater than 72 hours.
- ***Sediment fences/hay bale barriers:*** When inspections find standing pools of water beyond the 24-hour period after a storm, take action to restore barrier to its normal function.

Post-Construction Stormwater Treatment Practices

- Mosquito control begins with the environmentally sensitive site design. Environmentally sensitive site design that minimizes impervious surfaces reduces the amount of stormwater runoff. Disconnecting runoff using the LID Site Design credits outlined in the Massachusetts Stormwater Handbook reduces the amount of stormwater that must be conveyed to a treatment practice. Utilizing green roofs minimizes runoff from smaller storms. Storage media must be designed to dewater within 72 hours after precipitation.
- Mosquito control continues with the selection of structural stormwater BMPs that are unlikely to become breeding grounds for mosquitoes, such as:
    - ***Bioretention Areas/Rain Gardens/Sand Filter:*** These practices tend not to result in mosquito breeding. If any level spreaders, weirs or sediment forebays are used as part of the design, inspect them and correct them as necessary to prevent standing pools of water for more than 72 hours.
    - ***Infiltration Trenches:*** This practice tends not to result in mosquito breeding. If any level spreaders, weirs, or sediment forebays are used as part of the design, inspect them and correct them as necessary to prevent standing pools of water for more than 72 hours.
- Another mosquito control strategy is to select BMPs that can become habitats for mosquito predators, such as:
    - ***Constructed Stormwater Wetlands:*** Habitat features can be incorporated in constructed stormwater wetlands to attract dragonflies, amphibians, turtles, birds, bats, and other natural predators of mosquitoes.
    - ***Wet Basins:*** Wet basins can be designed to incorporate fish habitat features, such as deep pools. Introduce fish in consultation with Massachusetts Division of Fisheries and Wildlife. Vegetation within wet basins designed as fish habitat must be properly managed to ensure that vegetation does not overtake the habitat. Proper design to ensure that no low circulation or "dead" zones are created may reduce the potential for mosquito breeding. Introducing bubblers may increase water circulation in the wet basin.

Effective mosquito controls require proponents to design structural BMPs to prevent ponding and facilitate maintenance and, if necessary, the application of larvicides. Examples of such design practices include the following:

- ***Basins:*** Provide perimeter access around wet basins, extended dry detention basins and dry detention basins for both larviciding and routine maintenance. Control vegetation to ensure that access pathways stay open.
- ***BMPs without a permanent pool of water:*** All structural BMPs that do not rely on a permanent pool of water must drain and completely dewater within 72 hours after precipitation. This includes dry detention basins, extended dry detention basins, infiltration basins, and dry water quality swales. Use underdrains at extended dry detention basins to drain the small pools that form due to accumulation of silts. Wallace indicates that extended dry extended detention basins may breed more mosquitoes than wet basins. It is, therefore, imperative to design outlets from extended dry detention basins to completely dewater within the 72-hour period.
- ***Energy Dissipators and Flow Spreaders:*** Currier and Moeller, 2000 indicate that shallow recesses in energy dissipators and flow spreaders trap water where mosquitoes breed. Set the riprap in grout to reduce the shallow recesses and minimize mosquito breeding.
- ***Outlet control structures:*** Debris trapped in small orifices or on trash racks of outlet control structures such as multiple stage outlet risers may clog the orifices or the trash rack, causing a standing pool of water. Optimize the orifice size or trash rack mesh size to provide required peak rate attenuation/water quality detention/retention time while minimizing clogging.
- ***Rain Barrels and Cisterns:*** Seal lids to reduce the likelihood of mosquitoes laying eggs in standing water. Install mosquito netting over inlets. The cistern system should be designed to ensure that all collected water is drained into it within 72 hours.
- ***Subsurface Structures, Deep Sump Catch Basins, Oil Grit Separators, and Leaching Catch Basins:*** Seal all manhole covers to reduce likelihood of mosquitoes laying eggs in standing water. Install mosquito netting over the outlet (CALTRANS 2004).

The Operation and Maintenance Plan should provide for mosquito prevention and control.

- ***Check dams:*** Inspect permanent check dams on the schedule set forth in the O&M Plan. Inspect check dams 72 hours after storms for standing water ponding behind the dam. Take corrective action if standing water is found.
- ***Cisterns:*** Apply *Bs* larvicide in the cistern if any evidence of mosquitoes is found. The Operation and Maintenance Plan shall specify how often larvicides should be applied to waters in the cistern.
- ***Water quality swales:*** Remove and properly dispose of any accumulated sediment as scheduled in the Operation and Maintenance Plan.
- ***Larvicide Treatment:*** The Operation and Maintenance Plan must include measures to minimize mosquito breeding, including larviciding.
- The party identified in the Operation and Maintenance Plan as responsible for maintenance shall see that larvicides are applied as necessary to the following stormwater treatment practices: catch basins, oil/grit separators, wet basins, wet water quality swales, dry extended detention basins, infiltration basins, and constructed stormwater wetlands. The Operation and Maintenance Plan must ensure that all larvicides are applied by a licensed pesticide applicator and in compliance with all pesticide label requirements.
- The Operation and Maintenance Plan should identify the appropriate larvicide and the time and method of application. For example, *Bacillus sphaericus (Bs*), the preferred

larvicide for stormwater BMPs, should be hand-broadcast.[2] Alternatively, Altosid, a Methopren product, may be used. Because some practices are designed to dewater between storms, such as dry extended detention and infiltration basins, the Operation and Maintenance Plan should provide that larviciding must be conducted during or immediately after wet weather, when the detention or infiltration basin has a standing pool of water, unless a product is used that can withstand extended dry periods.

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[2] *Bacillus thuringienis israelensis* or *Bti* is usually applied by helicopter to wetlands and floodplains

Roads and Stormwater BMPs

In general, the stormwater BMPs used for land development projects can also be used for new roadways and roadway improvement projects. However, for improvement of existing roads, there are often constraints that limit the choice of BMP. These constraints derive from the linear configuration of the road, the limited area within the existing right-of-way, the structural and safety requirements attendant to good roadway design, and the long-term maintainability of the roadway drainage systems. The MassHighway Handbook provides strategies for dealing with the constraints associated with providing stormwater BMPs for roadway redevelopment projects.

Roadway design can minimize impacts caused by stormwater. Reducing roadway width reduces the total and peak volume of runoff. Designing a road with country drainage (no road shoulders or curbs) disconnects roadway runoff. Disconnection of roadway runoff is eligible for the Low Impact Site Design Credit provided the drainage is disconnected in accordance with specifications outlined in Volume 3.

Like other parties, municipalities that work within wetlands jurisdictional areas and adjacent buffer zones must design and implement structural stormwater best management practices in accordance with the Stormwater Management Standards and the Stormwater Management Handbook. In addition, in municipalities and areas where state agencies operate stormwater systems, the DPWs (or other town or state agencies) must meet the "good housekeeping" requirement of the municipality's or agency's MS4 permit.

MassHighway has taken stormwater management one step further by working with MassDEP to develop the MassHighway Storm Water Handbook for Highways and Bridges. The purpose of the MassHighway Handbook is to provide guidance for persons involved in the design, permitting, review and implementation of state highway projects, especially those involving existing roadways where physical constraints often limit the stormwater management options available. These constraints, like those common to redevelopment sites, may make it difficult to comply precisely with the requirements of the Stormwater Management Standards and the Massachusetts Stormwater Handbook.[3] In response to these constraints, MassDEP and MHD developed specific design, permitting, review and implementation practices that meet the unique challenges of providing environmental protection for existing state roads. The information in the MassHighway Handbook may also aid in the planning and design of projects to build new highways and to add lanes to existing highways, since they may face similar difficulties in meeting the requirements of the Stormwater Management Standards.

Although it is very useful, the MassHighway Handbook does not allow MassHighway projects to proceed without individual review and approval by the issuing authority when subject to the Wetlands Protection Act Regulations, 310 CMR 10.00, or the 401 Water Quality Certification Regulations, 314 CMR 9.00. For example, MassHighway must provide a Conservation Commission with a project-specific Operation and Maintenance Plan in accordance with Standard 9 that documents how the project's post-construction BMPs will be operated and maintained.[4]

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[3] The 2004 MassHighway Handbook outlines standardized methods for dealing with these constraints as they apply to highway redevelopment projects. MassDEP and MassHighway intend to work together to provide guidance for add a lane projects when the 2004 Handbook is revised to reflect the 2008 changes to the Stormwater Management Standards.

[4] The general permit for municipal separate storm sewer systems (the MS4 Permit) requires MassHighway to develop and implement procedures for the proper operation and maintenance of stormwater BMPs. To

Some municipalities have asked if the MassHighway Handbook governs municipal road projects. The answer is no.[5] The MassHighway Handbook was developed in response to the unique problems and challenges arising out of the management of the state highway system. Like other project proponents, cities and towns planning road or other projects in areas subject to jurisdiction under the Wetlands Protection Act must design and implement LID, non-structural and structural best management practices in accordance with the Stormwater Management Standards and the Massachusetts Stormwater Handbook.

avoid duplication of effort, MassHighway may be able rely on the same procedures to fulfill the operation and maintenance requirements of Standard 9 and the MS 4 Permit.

[5] Although the MassHighway Handbook does not govern municipal road projects, cities and towns may find some of the information presented in the Handbook useful.

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

Massachusetts Department of Environmental Protection
Bureau of Water Resources
Snow Disposal Guidance

Effective Date: December 23, 2019

Applicability: Applies to all federal, state, regional and local agencies, as well as to private businesses.

Supersedes: Bureau of Resource Protection (BRP) Snow Disposal Guideline No. BRPG97-1 issued December 12, 1997 and BRPG01-01 issued March 8, 2001; Bureau of Water Resources (BWR) snow disposal guidance issued December 21, 2015 and December 12, 2018.

Approved by: Kathleen Baskin, Assistant Commissioner, Bureau of Water Resources

PURPOSE: To provide guidelines to all government agencies and private businesses regarding snow disposal site selection, site preparation and maintenance, and emergency snow disposal options that are protective of wetlands, drinking water, and water bodies, and are acceptable to the Massachusetts Department of Environmental Protection (MassDEP), Bureau of Water Resources.

APPLICABILITY: These Guidelines are issued by MassDEP's Bureau of Water Resources on behalf of all Bureau Programs (including Drinking Water Supply, Wetlands and Waterways, Wastewater Management, and Watershed Planning and Permitting). They apply to all federal agencies, state agencies, state authorities, municipal agencies and private businesses disposing of snow in the Commonwealth of Massachusetts.

INTRODUCTION

Finding a place to dispose of collected snow poses a challenge to municipalities and businesses as they clear roads, parking lots, bridges, and sidewalks. While MassDEP is aware of the threats to public safety caused by snow, collected snow that is contaminated with road salt, sand, litter, and automotive pollutants such as oil also threatens public health and the environment.

As snow melts, road salt, sand, litter, and other pollutants are transported into surface water or through the soil where they may eventually reach the groundwater. Road salt and other pollutants can contaminate water supplies and are toxic to aquatic life at certain levels. Sand washed into waterbodies can create sand bars or fill in wetlands and ponds, impacting aquatic life, causing flooding, and affecting our use of these resources.

There are several steps that communities can take to minimize the impacts of snow disposal on public health and the environment. These steps will help communities avoid the costs of a contaminated water supply, degraded waterbodies, and flooding. Everything that occurs on the land has the potential to impact the Commonwealth's water resources. Given the authority of local government over the use of the land, municipal officials and staff have a critically important role to play in protecting our water resources.

The purpose of these guidelines is to help federal agencies, state agencies, state authorities, municipalities and businesses select, prepare, and maintain appropriate snow disposal sites before the snow begins to accumulate through the winter. Following these guidelines and obtaining the necessary approvals may also help municipalities in cases when seeking reimbursement for snow disposal costs from the Federal Emergency Management Agency is possible.

RECOMMENDED GUIDELINES

These snow disposal guidelines address: (1) site selection; (2) site preparation and maintenance; and (3) emergency snow disposal.

1. SITE SELECTION

The key to selecting effective snow disposal sites is to locate them adjacent to or on pervious surfaces in upland areas or upland locations on impervious surfaces away from water resources and drinking water wells. At these locations, the snow meltwater can filter into the soil, leaving behind sand and debris which can be removed in the spring. The following conditions should be followed:

- Within water supply Zone A and Zone II, avoid storage or disposal of snow and ice containing deicing chemicals that has been collected from streets located outside these zones. Municipalities may have a water supply protection land use control that prohibits the disposal of snow and ice containing deicing chemicals from outside the Zone A and Zone II, subject to the Massachusetts Drinking Water Regulations at 310 CMR 22.20C and 310 CMR 22.21(2).
- Avoid storage or disposal of snow or ice in Interim Wellhead Protection Areas (IWPA) of public water supply wells, and within 75 feet of a private well, where road salt may contaminate water supplies.
- Avoid dumping snow into any waterbody, including rivers, the ocean, reservoirs, ponds, or wetlands. In addition to water quality impacts and flooding, snow disposed of in open water can cause navigational hazards when it freezes into ice blocks.
- Avoid dumping snow on MassDEP-designated high and medium-yield aquifers where it may contaminate groundwater.
- Avoid dumping snow in sanitary landfills and gravel pits. Snow meltwater will create more contaminated leachate in landfills posing a greater risk to groundwater, and in gravel pits, there is little opportunity for pollutants to be filtered out of the meltwater because groundwater is close to the land surface.

- Avoid disposing of snow on top of storm drain catch basins or in stormwater drainage systems including detention basins, swales or ditches. Snow combined with sand and debris may block a stormwater drainage system, causing localized flooding. A high volume of sand, sediment, and litter released from melting snow also may be quickly transported through the system into surface water.

Recommended Site Selection Procedures

It is important that the municipal Department of Public Works or Highway Department, Conservation Commission, and Board of Health work together to select appropriate snow disposal sites. The following steps should be taken:

- Estimate how much snow disposal capacity may be needed for the season so that an adequate number of disposal sites can be selected and prepared.
- Identify sites that could potentially be used for snow disposal, such as municipal open space (e.g., parking lots or parks).
- Select sites located in upland locations that are not likely to impact sensitive environmental resources first.
- If more storage space is still needed, prioritize the sites with the least environmental impact (using the site selection criteria, and local or MassGIS maps as a guide).

Snow Disposal Mapping Assistance

MassDEP has an online mapping tool to assist in identifying possible locations to potentially dispose of snow. MassDEP encourages municipalities to use this tool to identify possible snow disposal options. The tool identifies wetland resource areas, public drinking water supplies and other sensitive locations where snow should not be disposed. The tool may be accessed through the Internet at the following web address:
https://maps.env.state.ma.us/dep/arcgis/js/templates/PSF/.

2. SITE PREPARATION AND MAINTENANCE

In addition to carefully selecting disposal sites before the winter begins, it is important to prepare and maintain these sites to maximize their effectiveness. The following maintenance measures should be undertaken for all snow disposal sites:

- A silt fence or equivalent barrier should be placed securely on the downgradient side of the snow disposal site.
- Wherever possible maintain a 50-foot vegetated buffer between the disposal site and adjacent waterbodies to filter pollutants from the meltwater.
- Clear debris from the site prior to using the site for snow disposal.
- Clear debris from the site and properly dispose of it at the end of the snow season, and no later than May 15.

3. SNOW DISPOSAL APPROVALS

Proper snow disposal may be undertaken through one of the following approval procedures:

- Routine snow disposal – Minimal, if any, administrative review is required in these cases when upland and pervious snow disposal locations or upland locations on impervious surfaces that have functioning and maintained stormwater management systems have been identified, mapped, and used for snow disposal following ordinary snowfalls. Use of upland and pervious snow disposal sites avoids wetland resource areas and allows snow meltwater to recharge groundwater and will help filter pollutants, sand, and other debris. This process will address the majority of snow removal efforts until an entity exhausts all available upland snow disposal sites. The location and mapping of snow disposal sites will help facilitate each entity's routine snow management efforts.

- Emergency Certifications – If an entity demonstrates that there is no remaining capacity at upland snow disposal locations, local conservation commissions may issue an Emergency Certification under the Massachusetts Wetlands Protection regulations to authorize snow disposal in buffer zones to wetlands, certain open water areas, and certain wetland resource areas (i.e. within flood plains). Emergency Certifications can only be issued at the request of a public agency or by order of a public agency for the protection of the health or safety of citizens, and are limited to those activities necessary to abate the emergency. See 310 CMR 10.06(1)-(4). Use the following guidelines in these emergency situations:

    - Dispose of snow in open water with adequate flow and mixing to prevent ice dams from forming.

    - Do not dispose of snow in salt marshes, vegetated wetlands, certified vernal pools, shellfish beds, mudflats, drinking water reservoirs and their tributaries, Zone IIs or IWPAs of public water supply wells, Outstanding Resource Waters, or Areas of Critical Environmental Concern.

    - Do not dispose of snow where trucks may cause shoreline damage or erosion.

    - Consult with the municipal Conservation Commission to ensure that snow disposal in open water complies with local ordinances and bylaws.

- Severe Weather Emergency Declarations – In the event of a large-scale severe weather event, MassDEP may issue a broader Emergency Declaration under the Wetlands Protection Act which allows federal agencies, state agencies, state authorities, municipalities, and businesses greater flexibility in snow disposal practices. Emergency Declarations typically authorize greater snow disposal options while protecting especially sensitive resources such as public drinking water supplies, vernal pools, land containing shellfish, FEMA designated floodways, coastal dunes, and salt marsh. In the event of severe winter storm emergencies, the snow disposal site maps created by municipalities will enable MassDEP and the Massachusetts Emergency Management Agency (MEMA) in helping communities identify appropriate snow disposal locations.

  If upland disposal sites have been exhausted, the Emergency Declaration issued by MassDEP allows for snow disposal near water bodies. In these situations, a buffer of at least 50 feet, preferably vegetated, should still be maintained between the site and the waterbody. Furthermore, it is essential that the other guidelines for preparing and maintaining snow disposal sites be followed to minimize the threat to adjacent waterbodies.

Under extraordinary conditions, when all land-based snow disposal options are exhausted, the Emergency Declaration issued by MassDEP may allow disposal of snow in certain waterbodies under certain conditions. ***A federal agency, state agency, state authority, municipality or business seeking to dispose of snow in a waterbody should take the following steps***:

- Call the emergency contact phone number [(888) 304-1133)] and notify the MEMA of the municipality's intent.
- MEMA will ask for some information about where the requested disposal will take place.
- MEMA will confirm that the disposal is consistent with MassDEP's Severe Weather Emergency Declaration and these guidelines and is therefore approved.

During declared statewide snow emergency events, MassDEP's website will also highlight the emergency contact phone number [(888) 304-1133)] for authorizations and inquiries. For further non-emergency information about this Guidance you may contact your MassDEP Regional Office Service Center:

Northeast Regional Office, Wilmington, 978-694-3246
Southeast Regional Office, Lakeville, 508-946-2714
Central Regional Office, Worcester, 508-792-7650
Western Regional Office, Springfield, 413-755-2114

StormTech®

Detention • Retention • Recharge

Subsurface Stormwater Management℠

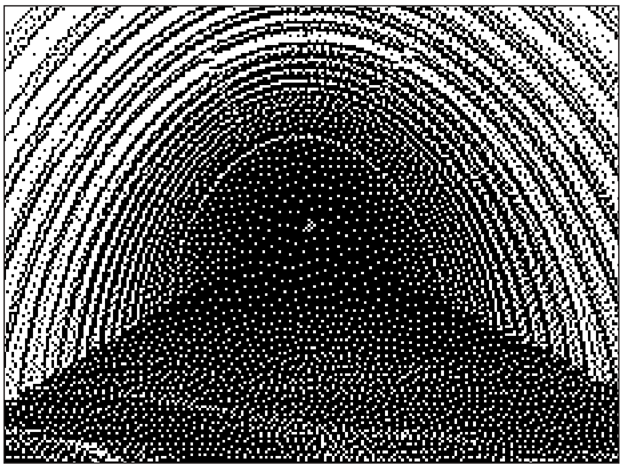
Isolator™ Row O&M Manual

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 side-walls 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.

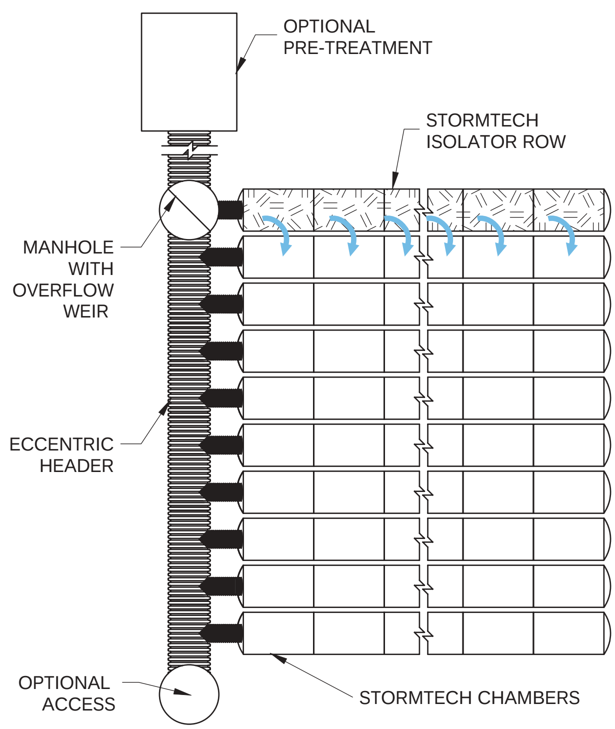
Two different fabrics are used for the Isolator Row. A woven geotextile fabric is placed between the stone and the Isolator Row chambers. The tough geotextile provides a media for storm water filtration and provides a durable surface for maintenance operations. It is also designed to prevent scour of 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.

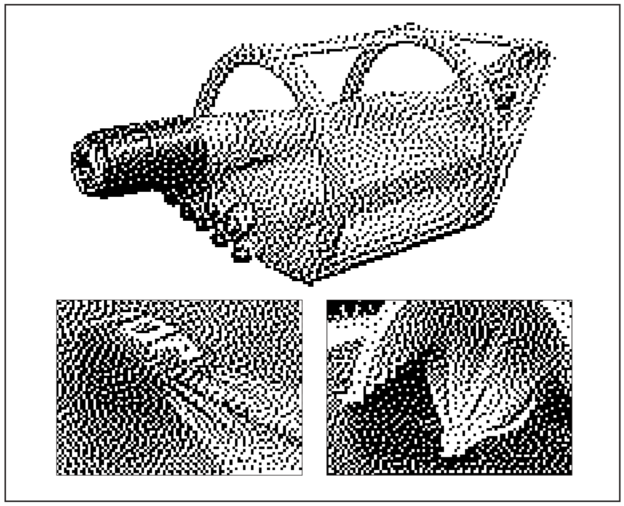
At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

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

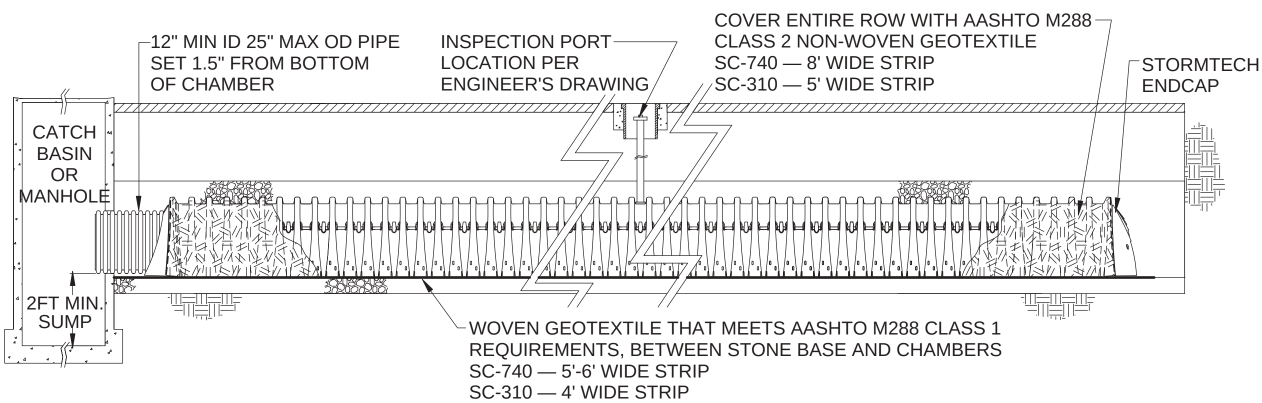
The Isolator Row was designed to reduce the cost of periodic maintenance. By "isolating" sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via 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.)

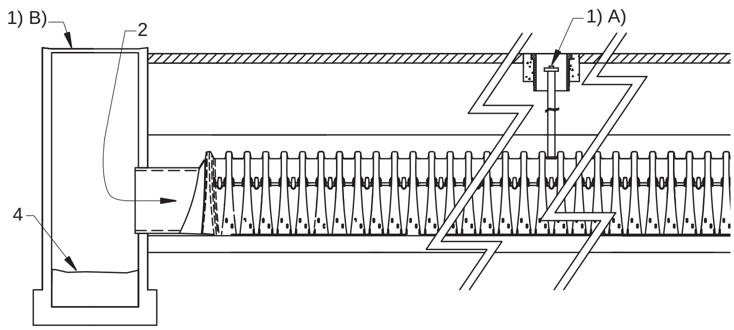
Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer 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

StormTech Isolator Row (not to scale)



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.

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: Fixed point to chamber bottom (1)	Stadia Rod Readings: Fixed point to top of sediment (2)	Sediment Depth (1) - (2)	Observations/Actions	Inspector
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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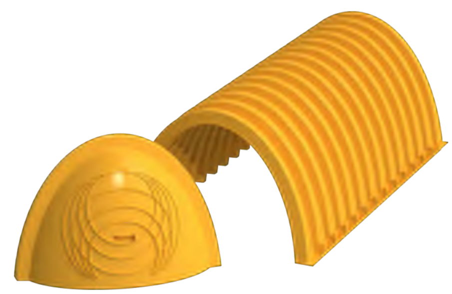
StormTech® SC-800 Chamber

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.



Nominal Chamber Specifications

(not to scale)

Size (L x W x H)
85.4” x 51” x 33”
2169 mm x 1295 mm x 838 mm

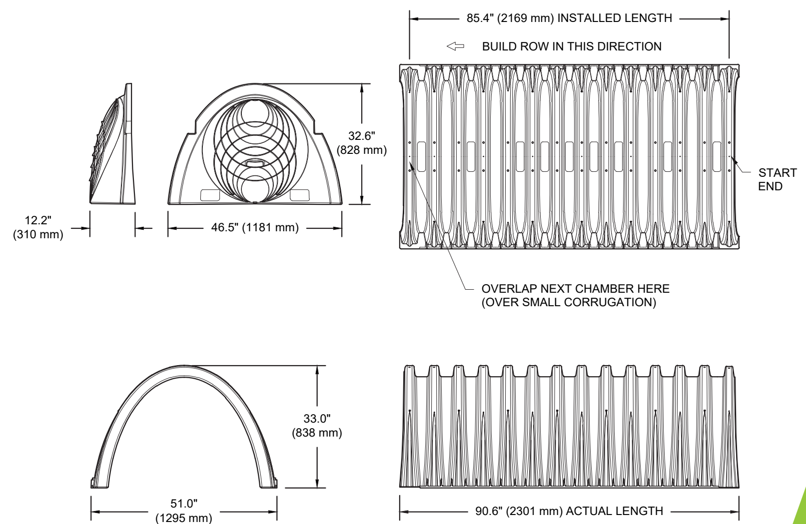
Chamber Storage
50.6 ft^3 (1.43 m^3)

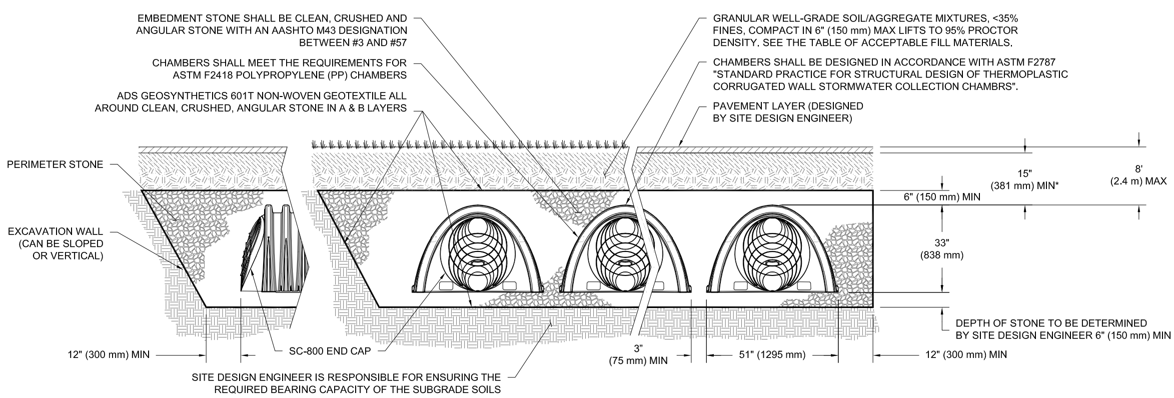
Min. Installed Storage*
78.4 ft^3 (2.22 m^3)

Weight
81.8 lbs (37.1 kg)

Shipping
30 chambers/pallet
60 end caps/pallet
12 pallets/truck

*Assumes 6” (150 mm) stone above and below chambers, 3” (75 mm) stone between chambers, and 40% stone porosity.





*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 21" (533 mm).

ADS StormTech™

StormTech SC-800 Specifications

Cumulative Storage Volumes Per Chamber

Assumes 40% Stone Porosity. Calculations are Based Upon a 6" (150 mm) Stone Base Under Chambers.

Depth of Water in System Inches (mm)		Cumulative Chamber Storage ft³ (m³)	Total System Cumulative Storage ft³ (m³)
45 (1143)	Stone Cover	50.62 (1.433)	78.41 (2.22)
44 (1118)		50.62 (1.433)	77.34 (2.19)
43 (1092)		50.62 (1.433)	76.28 (2.16)
42 (1067)		50.62 (1.433)	75.21 (2.13)
41 (1041)		50.62 (1.433)	74.14 (2.10)
40 (1016)		50.62 (1.433)	73.07 (2.07)
39 (991)		50.62 (1.433)	72.01 (2.04)
38 (965)		50.55 (1.431)	70.89 (2.01)
37 (940)		50.35 (1.426)	69.71 (1.97)
36 (914)		50.07 (1.418)	68.47 (1.94)
35 (889)		49.56 (1.403)	67.10 (1.90)
34 (864)		48.82 (1.382)	65.59 (1.86)
33 (838)		47.93 (1.357)	63.98 (1.81)
32 (813)		46.91 (1.328)	62.31 (1.76)
31 (787)		45.79 (1.297)	60.57 (1.72)
30 (762)		44.58 (1.262)	58.77 (1.66)
29 (737)		43.28 (1.226)	56.93 (1.61)
28 (711)		41.91 (1.187)	55.04 (1.56)
27 (686)		40.47 (1.146)	53.10 (1.50)
26 (660)		38.96 (1.103)	51.13 (1.45)
25 (635)		37.40 (1.059)	49.13 (1.39)
24 (610)		35.78 (1.013)	47.09 (1.33)
23 (584)		34.10 (0.966)	45.02 (1.27)
22 (559)		32.38 (0.917)	42.91 (1.22)
21 (533)		30.61 (0.867)	40.79 (1.15)
20 (508)		28.80 (0.816)	38.63 (1.09)
19 (483)		26.95 (0.763)	36.45 (1.03)
18 (457)		25.06 (0.710)	34.25 (0.97)
17 (432)		23.13 (0.655)	32.02 (0.91)
16 (406)		21.17 (0.599)	29.78 (0.84)
15 (381)		19.17 (0.543)	27.51 (0.78)
14 (356)		17.14 (0.485)	25.23 (0.71)
13 (330)		15.09 (0.427)	22.93 (0.65)
12 (305)		13.00 (0.368)	20.61 (0.58)
11 (279)		10.89 (0.308)	18.28 (0.52)
10 (254)		8.76 (0.248)	15.93 (0.45)
9 (229)		6.60 (0.187)	13.57 (0.38)
8 (203)		4.42 (0.125)	11.19 (0.32)
7 (178)		2.22 (0.063)	8.81 (0.25)
6 (152)	Stone Foundation	0 (0)	6.41 (0.18)
5 (127)		0 (0)	5.34 (0.15)
4 (102)		0 (0)	4.27 (0.12)
3 (76)		0 (0)	3.20 (0.09)
2 (51)		0 (0)	2.14 (0.06)
1 (25)		0 (0)	1.07 (0.03)

Note: Add 1.07 ft³ (0.03 m³) of storage for each additional inch (25 mm) of stone foundation.

Storage Volume Per Chamber ft³ (m³)

	Bare Chamber Storage ft³ (m³)	Chamber and Stone Foundation Depth in. (mm)		
		6 (150)	12 (300)	18 (450)
SC-800 Chamber	50.6 (1.43)	78.4 (2.22)	84.8 (2.4)	91.2 (2.58)

Note: Assumes 6" (150 mm) stone above chambers, 3" (75 mm) row spacing and 40% stone porosity.

Amount of Stone Per Chamber

English Tons (yds³)	Stone Foundation Depth		
	6"	12"	18"
SC-800	3.6 (2.6)	4.4 (3.2)	5.3 (3.8)
Metric Kilograms (m³)	**150 mm**	**300 mm**	**450 mm**
SC-800	3270 (2.0)	3990 (2.4)	4810 (2.9)

Note: Assumes 6" (150 mm) of stone above chambers and 3" (75 mm) stone between chambers.

Volume Excavation Per Chamber yd³ (m³)

	Stone Foundation Depth		
	6" (150 mm)	12" (300 mm)	18" (450 mm)
SC-800	5.3 (4.1)	5.9 (4.5)	6.5 (5.0)

Note: Assumes 3" (75 mm) of row separation and 15" (375 mm) of cover. The volume of excavation will vary as depth of cover increases.

ADS StormTech products, manufactured in accordance with ASTM F2418 or ASTMF2922, comply with all requirements in the Build America, Buy America (BABA) Act.

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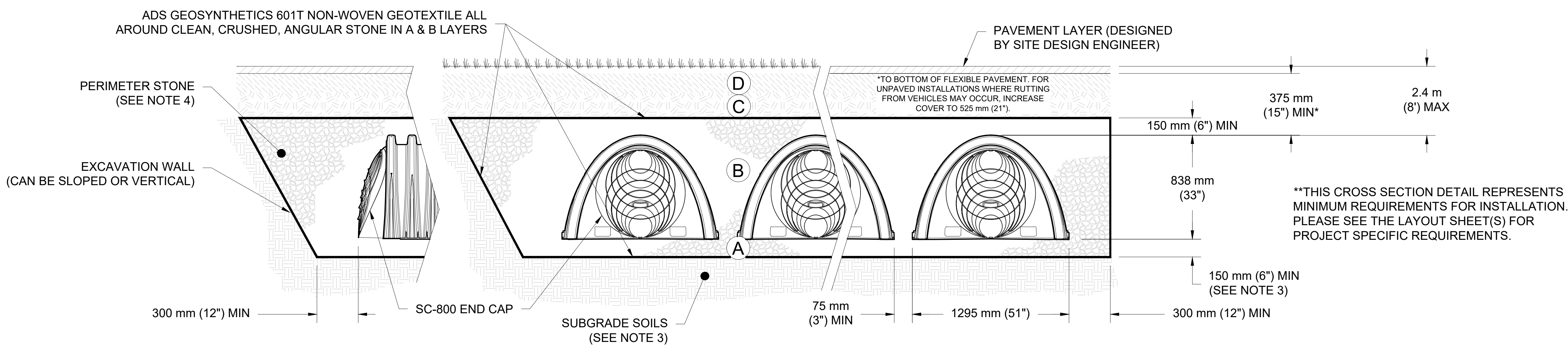
ACCEPTABLE FILL MATERIALS: STORMTECH SC-800 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 375 mm (15") ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 300 mm (12") OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 150 mm (6") MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 150 mm (6") (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
5. WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



**THIS CROSS SECTION DETAIL REPRESENTS MINIMUM REQUIREMENTS FOR INSTALLATION. PLEASE SEE THE LAYOUT SHEET(S) FOR PROJECT SPECIFIC REQUIREMENTS.

NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-800 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS. REFERENCE STORMTECH DESIGN MANUAL FOR BEARING CAPACITY GUIDANCE.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 50 mm (2").
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 700 LBS/FT/%. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

STANDARD CROSS SECTION
SC-800 CHAMBER

DATE: 0804/2025 | DRAWN: SMW | DRAWING #: 721-820_C | CHECKED: JLM

DATE | DRWN | CHKD | DESCRIPTIO

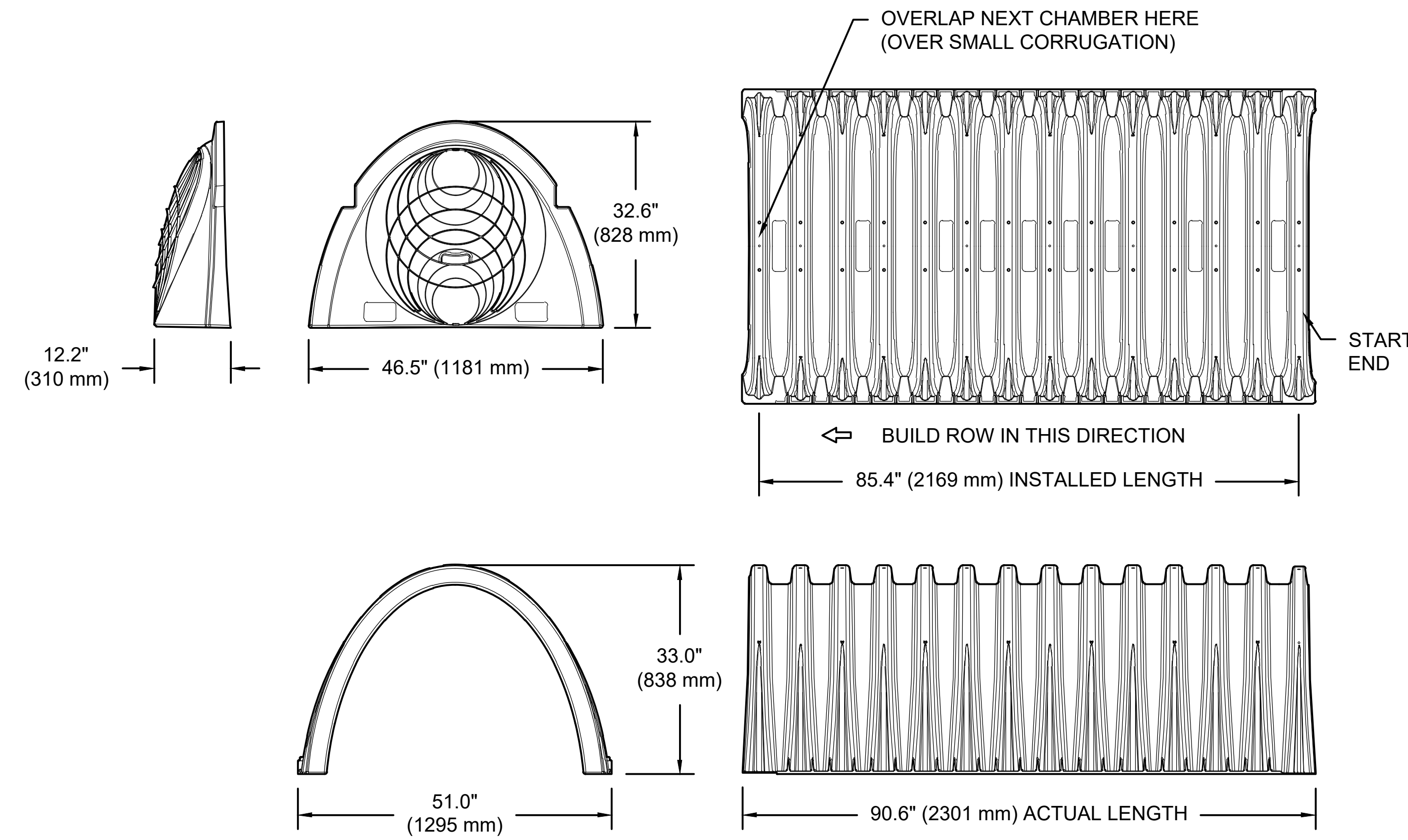
StormTech®
Chamber System

4640 TRUEMAN BLVD
HILLIARD, OH 43026

SHEET 1 OF 1

SC-800 TECHNICAL SPECIFICATION

NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 33.0" X 85.4"	(1295 mm X 838 mm X 2169 mm)
CHAMBER STORAGE	50.6 CUBIC FEET	(1.43 m³)
MINIMUM INSTALLED STORAGE*	78.4 CUBIC FEET	(2.22 m³)
WEIGHT	81.8 lbs.	(37.1 kg)

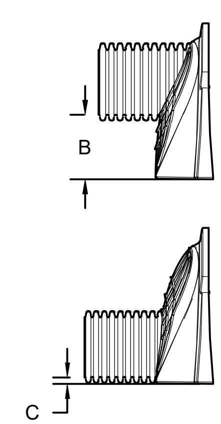
NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	46.5" X 32.6" X 10.5"	(1181 mm X 828 mm X 267 mm)
END CAP STORAGE	3.4 CUBIC FEET	(0.09 m³)
MINIMUM INSTALLED STORAGE**	14.7 CUBIC FEET	(0.42 m³)
WEIGHT	15.7 lbs.	(7.1 kg)

* ASSUMES 6" (150 mm) STONE ABOVE AND BELOW CHAMBER, 3" (75 mm) BETWEEN CHAMBERS
**ASSUMES 6" (150 mm) STONE ABOVE AND BELOW END CAPS, 3" (75 mm) BETWEEN ROWS, 12" (300 mm) BEYOND END CAPS

PRE-CORED HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "BPC"
PRE-CORED HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "TPC"

PART #	STUB	B	C
SC800EPE06TPC	6" (150 mm)	21.4" (544 mm)	---
SC800EPE06BPC		---	0.9" (23 mm)
SC800EPE08TPC	8" (200 mm)	19.2" (488 mm)	---
SC800EPE08BPC		---	1.0" (25 mm)
SC800EPE10TPC	10" (250 mm)	17.0" (432 mm)	---
SC800EPE10BPC		---	1.2" (30 mm)
SC800EPE12TPC	12" (300 mm)	14.4" (366 mm)	---
SC800EPE12BPC		---	1.6" (41 mm)
SC800EPE15TPC	15" (375 mm)	11.3" (287 mm)	---
SC800EPE15BPC		---	1.7" (43 mm)
SC800EPE18TPC	18" (450 mm)	8.0" (203 mm)	---
SC800EPE18BPC		---	2.0" (51 mm)
SC800ECEZ	24" (600 mm)	---	2.3" (58 mm)



NOTE: ALL DIMENSIONS ARE NOMINAL

TECHNICAL SPECIFICATIONS
SC-800 CHAMBER

DATE: 04/18/2025 DRAWN: SMW
DRAWING #: 721-810 CHECKED: JLM

DATE | DRWN | CHKD | DESCRIPTION

StormTech®
Chamber System

ADS
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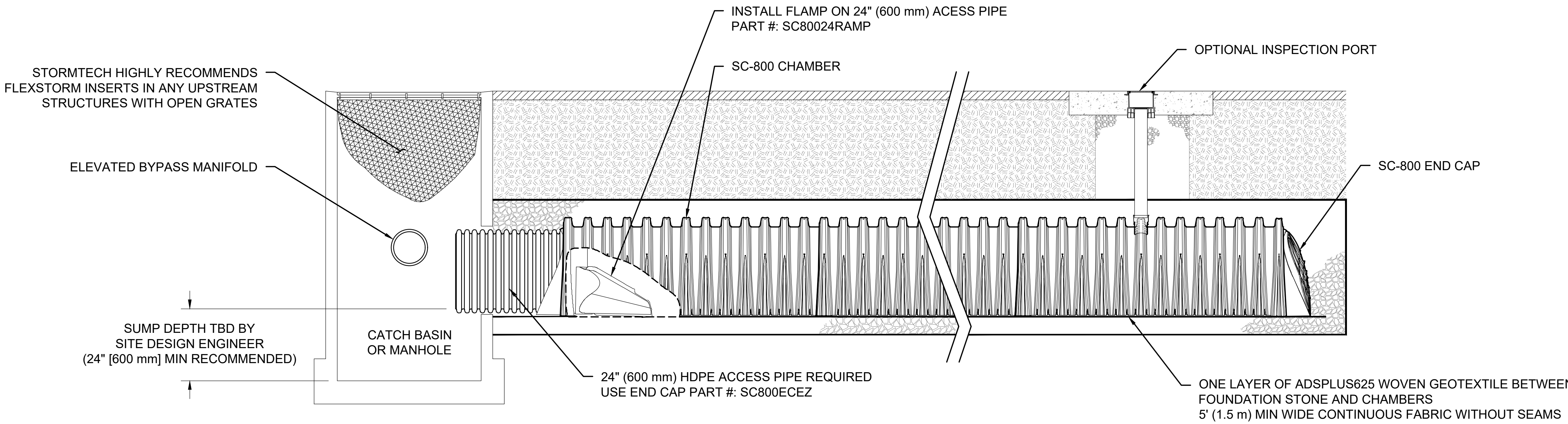
HILLIARD, OH 43026



SC-800 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

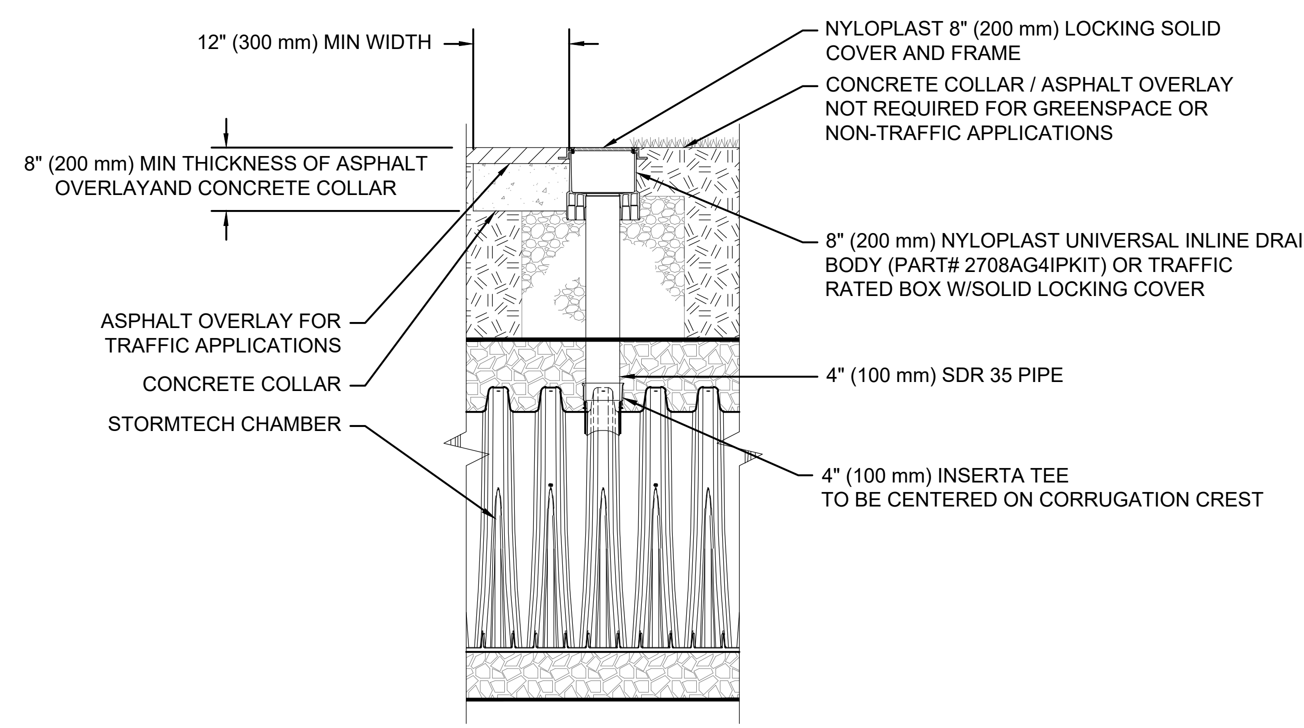
STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

4" PVC INSPECTION PORT DETAIL
(SC SERIES CHAMBER)
NTS

ISOLATOR ROW PLUS
SC-800 CHAMBER

DATE: 04/18/2025 DRAWN: SMW
DRAWING #: 721-830 CHECKED: JLM

DATE	DRWN	CHKD	DESCRIPTION

StormTech®
Chamber System

ADS
4640 TRUEMAN BLVD
HILLIARD, OH 43026

SHEET
1 OF 1

Isolator® Row Plus
O&M Manual

ADS StormTech™

The Isolator® Row Plus

Introduction

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row Plus is a technique to inexpensively enhance Total Suspended Solids (TSS), Total Phosphorus (TP), Total Petroluem Hydrocarbons (TPH) and Total Nitrogen (TN) removal with easy access for inspection and maintenance.

The Isolator Row Plus

The Isolator Row Plus is a row of StormTech chambers, either SC-160, SC-310, DC-780, SC-800, MC-3500, MC-4500 or MC-7200 models, are lined with filter fabric and connected to a closely located manhole for easy access. The fabric lined chambers provide for sediment settling and filtration as stormwater rises in the Isolator Row Plus and passes through the filter fabric. The open bottom chambers allow stormwater to flow vertically out of the chambers. Sediments are captured in the Isolator Row Plus protecting the adjacent stone and chambers storage areas from sediment accumulation.

ADS Isolator Row and Plus fabric are placed between the stone and the Isolator Row Plus chambers. The woven geotextile provides a media for stormwater filtration, a durable surface for maintenance, prevents scour of the underlying stone and remains intact during high pressure jetting.

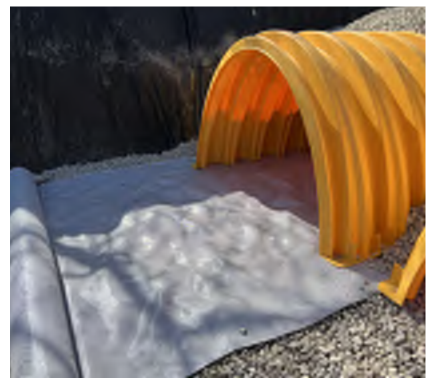
The Isolator Row Plus is designed to capture the "first flush" runoff and offers the versatility to be sized on a volume basis or a flow-rate basis. An upstream manhole provides access to the Isolator Row Plus and includes a high/low concept such that stormwater flow rates or volumes that exceed the capacity of the Isolator Row Plus bypass through a manifold to the other chambers. This is achieved with an elevated bypass manifold or a high-flow weir. This creates a differential between the Isolator Row Plus row of chambers and the manifold to the rest of the system, thus allowing for settlement time in the Isolator Row Plus. After Stormwater flows through the Isolator Row Plus and into the rest of the chamber system it is either exfiltrated into the soils below or passed at a controlled rate through an outlet manifold and outlet control structure.

The Isolator Row Plus Flamp™ is a flared end ramp apparatus attached to the inlet pipe on the inside of the chamber end cap. The FLAMP provides a smooth transition from pipe invert to fabric bottom. It is configured to improve chamber function performance by enhancing outflow of solid debris that would otherwise collect at the chamber's end, or more difficult to remove and require confined space entry into the chamber area. It also serves to improve the fluid and solid flow into the access pipe during maintenance and cleaning and to guide cleaning and inspection equipment back into the inlet pipe when complete.

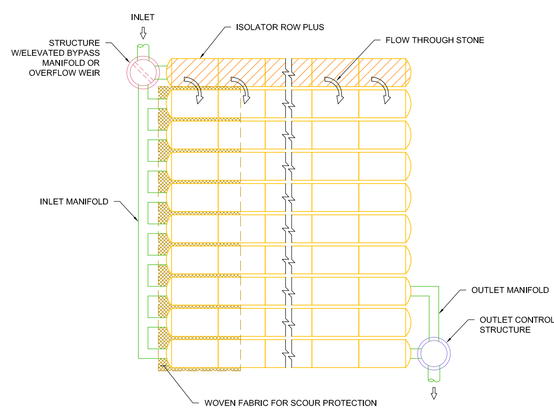
The Isolator Row Plus may be part of a treatment train system. The treatment train design and pretreatment device selection by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, StormTech recommend using the Isolator Row Plus to minimize maintenance requirements and maintenance costs.

Note: *See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row Plus.*

Looking down the Isolator Row Plus from the manhole opening, ADS Plus Fabric is shown between the chamber and stone base.



StormTech Isolator Row Plus with Overflow Structure (not to scale)



Isolator Row Plus Inspection/Maintenance

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 Plus 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.

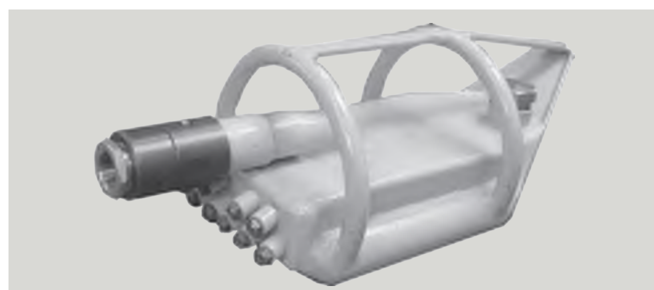
The Isolator Row Plus incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

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" (75 mm) throughout the length of the Isolator Row Plus, clean-out should be performed.

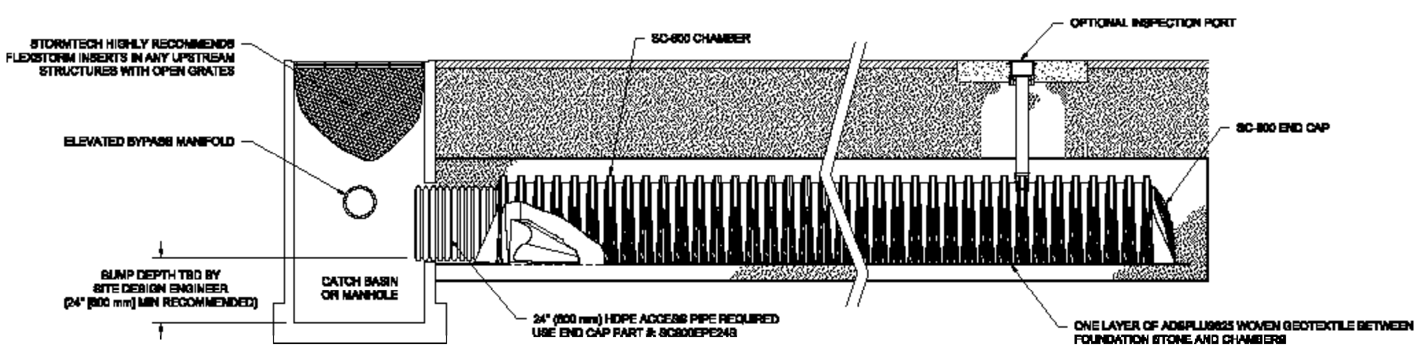
Maintenance

The Isolator Row Plus 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 entry.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row Plus 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. StormTech recommends a maximum nozzle pressure of 2000 psi be utilized during cleaning. JetVac reels can vary in length. For ease of maintenance, ADS recommends Isolator Row Plus lengths up to 200' (61 m). **The JetVac process shall only be performed on StormTech Isolator Row Plus that have ADS Plus Fabric (as specified by StormTech) over their angular base stone.**



StormTech Isolator Row Plus (*not to scale*)



Isolator Row Plus Step By Step Maintenance Procedures

Step 1

Inspect Isolator Row Plus 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 Row Plus

i. Remove cover from manhole at upstream end of Isolator Row Plus
ii. Using a flashlight, inspect down Isolator Row Plus 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.

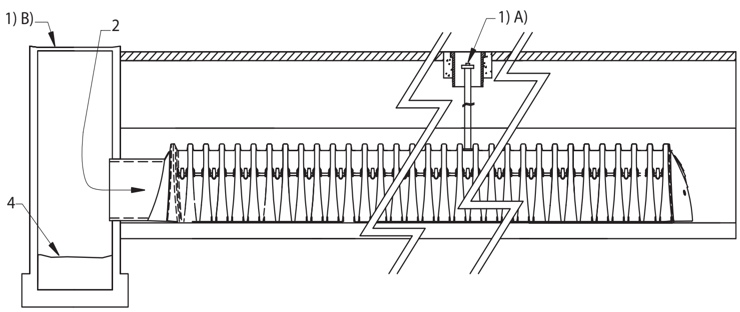
Step 2

Clean out Isolator Row Plus using the JetVac process.

A) A fixed floor 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		Sedi-ment Depth (1)–(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row Plus, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

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StormTech® Installation Guide
SC-310/DC-780/SC-800

StormTech
Installation Video

Required Materials and Equipment List

- Acceptable fill materials per Table 1
- ADS Plus and non-woven geotextile fabrics
- StormTech solid end caps and pre-cored end caps
- StormTech chambers
- StormTech manifolds and fittings

Important Notes:

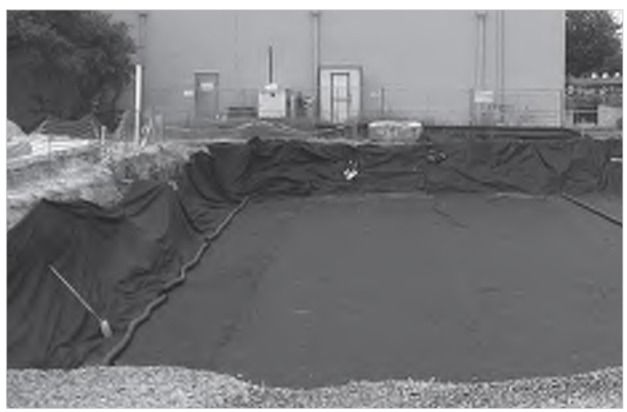
A. This installation guide provides the minimum requirements for proper installation of chambers. Non-adherence to this guide may result in damage to chambers during installation. Replacement of damaged chambers during or after backfilling is costly and very time consuming. It is recommended that all installers are familiar with this guide, and that the contractor inspects the chambers for distortion, damage and joint integrity as work progresses.

B. Use of a dozer to push embedment stone between the rows of chambers may cause damage to chambers and is not an acceptable backfill method. Any chambers damaged by using the "dump and push" method are not covered under the StormTech standard warranty.

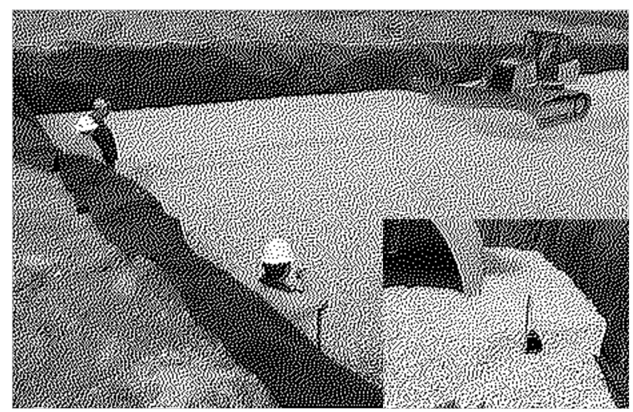
C. Care should be taken in the handling of chambers and end caps. Avoid dropping, prying or excessive force on chambers during removal from pallet and initial placement.

Requirements for System Installation

Excavate bed and prepare subgrade per engineer's plans.



Place non-woven geotextile over prepared soils and up excavation walls. Install underdrains if required.



Place clean, crushed, angular stone foundation 6" (150 mm) min. Compact to achieve a flat surface.

Manifold, Scour Fabric and Chamber Assembly

Install manifolds and lay out ADS Plus Fabric at inlet rows. Place ADS Plus Fabric at each inlet end cap parallel to the row (min. 12.5 ft (3.8 m)). Place a continuous piece entire length of Isolator® Plus Row(s).

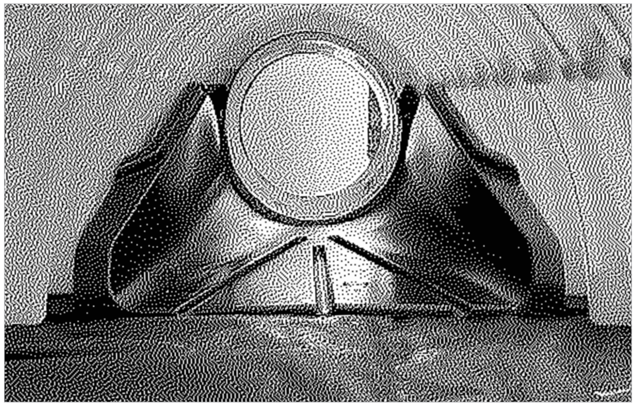
Align the first chamber and end cap of each row with inlet pipes. Contractor may choose to postpone stone placement around end chambers and leave ends of rows open for easy inspection of chambers during the backfill process.

Continue installing chambers by overlapping chamber end corrugations. Chamber joints are labeled "Lower Joint – Overlap Here" and "Build this direction – Upper Joint" Be sure that the chamber placement does not exceed the reach of the construction equipment used to place the stone. Maintain minimum 3" (75 mm) spacing between rows for SC-310 and SC-800, and 6" (150 mm) spacing for DC-780.

Attaching the End Caps

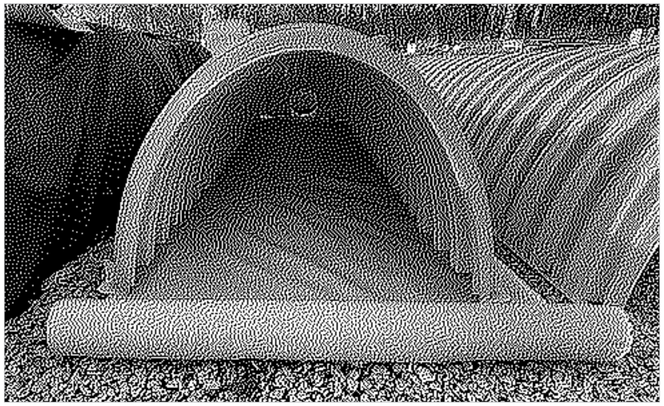
Lift the end of the chamber a few inches off the ground. With the curved face of the end cap facing outward, place the end cap into the chamber's end corrugation.

Prefabricated End Caps



24" (600 mm) inlets are the maximum size that can fit into a DC-780 or SC-800 end cap and must be prefabricated with a 24" (600 mm) pipe stub. SC-310 chambers with a 12" (300 mm) inlet pipe must use a prefabricated end cap with a 12" (300 mm) pipe stub. When used on an Isolator Row Plus, these end caps will contain a welded FLAMP (flared end ramp) that will lay on top of the ADS Plus fabric (shown above)

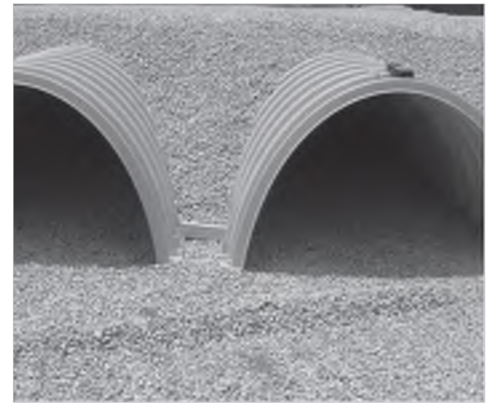
Isolator Row Plus



Place a continuous layer of ADS Plus fabric between the foundation stone and the Isolator Row Plus chambers, making sure the fabric lays flat and extends the entire width of the chamber feet.

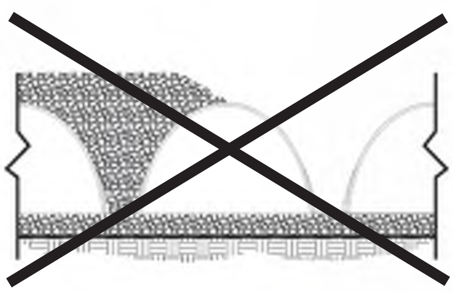
Initial Anchoring of Chambers – Embedment Stone

Initial embedment shall be spotted along the center line of the chamber evenly anchoring the lower portion of the chamber. This is best accomplished with a stone conveyor or excavator reaching along the row.

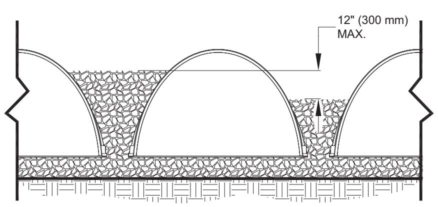


No equipment shall be operated on the bed at this stage of the installation. Excavators must be located off the bed. Dump trucks shall not dump stone directly on to the bed. Dozers or loaders are not allowed on the bed at this time.

Backfill of Chambers – Embedment Stone

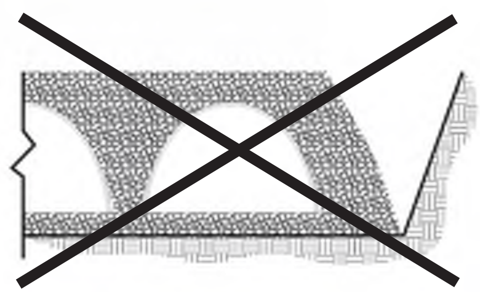


Uneven Backfill

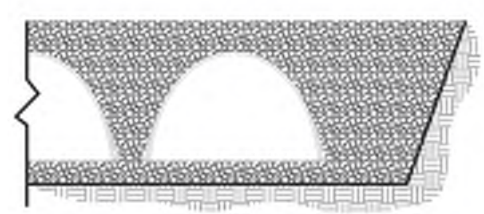


Even Backfill

Backfill chambers evenly. Stone column height should never differ by more than 12” (300 mm) between adjacent chamber rows or between chamber rows and perimeter.



Perimeter Not Backfilled



Perimeter Fully Backfilled

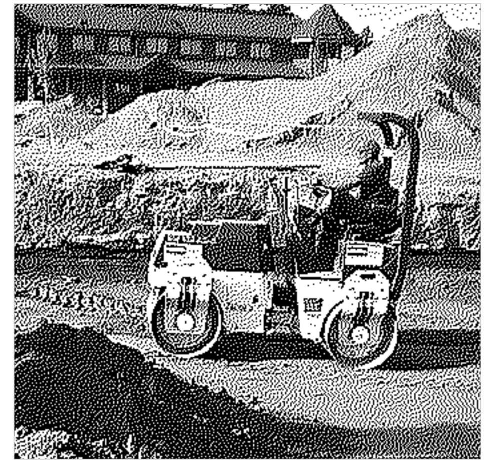
Perimeter stone must be brought up evenly with chamber rows. Perimeter must be fully backfilled, with stone extended horizontally to the excavation wall.

Backfill - Embedment Stone & Cover Stone

Continue evenly backfilling between rows and around perimeter until embedment stone reaches tops of chambers. Perimeter stone must extend horizontally to the excavation wall for both straight or sloped sidewalls. **Only after chambers have been backfilled to top of chamber and with a minimum 6” (150 mm) of cover stone on top of chambers can small dozers be used over the chambers for backfilling remaining cover stone.**

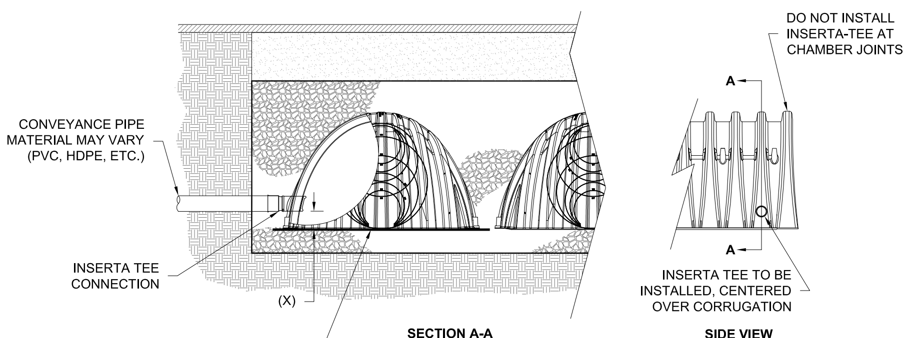
Small dozers and skid loaders may be used to finish grading stone backfill in accordance with ground pressure limits in Table 2. They must push material parallel to rows only. Never push perpendicular to rows. StormTech recommends that the contractor inspect chambers before placing final backfill. Any chambers damaged by construction shall be removed and replaced.

Final Backfill of Chambers – Fill Material



Install non-woven geotextile over stone. Geotextile must overlap 24” (600 mm) min. where edges meet. Compact each lift of backfill as specified in the site design engineer’s drawings. Roller travel parallel with rows.

Inserta Tee Detail



NOTES:
- PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.
- CONTACT ADS ENGINEERING SERVICES IF INSERTA TEE INLET MUST BE RAISED AS NOT ALL INVERTS ARE POSSIBLE.

CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6” (150 mm)	4” (100 mm)
SC-800	10” (250 mm)	4” (100 mm)
DC-780	10” (250 mm)	4” (100 mm)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

StormTech Isolator Row Plus Detail

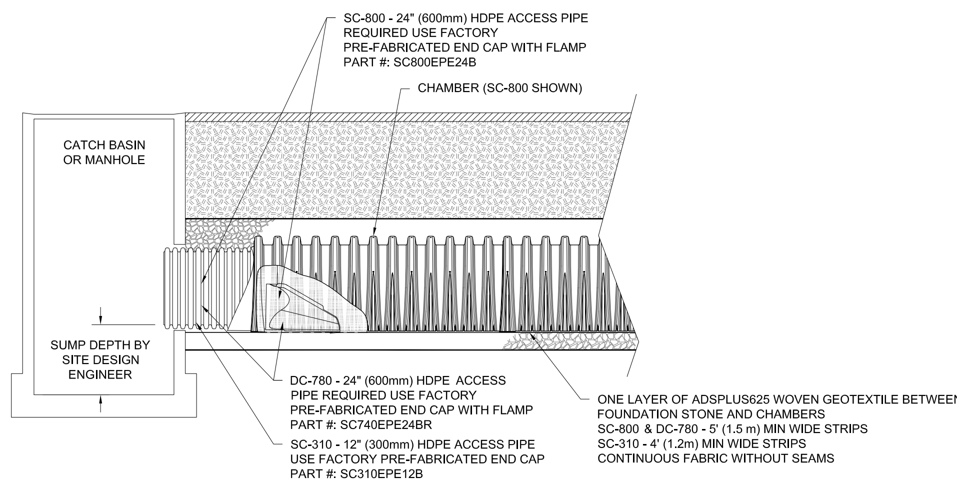


Table 1- Acceptable Fill Materials

Material Location	Description	AASHTO M43 Designation[1]	Compaction/Density Requirement
(D) **Final Fill:** Fill Material for layer 'D' starts from the top of the 'C' layer to the bottom of flexible pavement or unpaved finished grade above. Note that the pavement subbase may be part of the 'D' layer.	Any soil/rock materials, native soils or per engineer's plans. Check plans for pavement subgrade requirements.	N/A	Prepare per site design engineer's plans. Paved installations may have stringent material and preparation requirements.
(C) **Initial Fill:** Fill Material for layer 'C' starts from the top of the embedment stone ('B' layer) to 18" (450 mm) above the top of the chamber. Note that pavement subbase may be part of the 'C' layer.	Granular well-graded soil/aggregate mixtures, <35% fines or processed aggregate. Most pavement subbase materials can be used in lieu of this layer.	AASHTO M45 A-1, A-2-4, A-3 or AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	Begin compaction after min. 12" (300 mm) of material over the chambers is reached. Compact additional layers in 6" (150 mm) max. lifts to a min. 95% Proctor density for well-graded material and 95% relative density for processed aggregate materials. Roller gross vehicle weight not to exceed 12,000 lbs (53 kN). Dynamic force not to exceed 20,000 lbs (89 kN)
(B) **Embedment Stone:** Embedment Stone surrounding chambers from the foundation stone to the 'C' layer above.	Clean, crushed, angular stone or Recycled Concrete[4]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	No compaction required.
(A) **Foundation Stone:** Foundation Stone below the chambers from the subgrade up to the foot (bottom) of the chamber.	Clean, crushed, angular stone or Recycled Concrete[4]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	Place and compact in 6" (6") lifts using two full coverages with a vibratory compactor. [2,3]

Please Note:
1. The listed AASHTO designations are for gradations only. The stone must also be clean, crushed, angular. For example, a specification for #4 stone would state: "clean, crushed, angular no. 4 (AASHTO M43) stone".
2. StormTech compaction requirements are met for 'A' location materials when placed and compacted in 6" (150 mm) (max) lifts using two full coverages with a vibratory compactor.
3. Where infiltration surfaces may be comprised by compaction, for standard installations and standard design load conditions, a flat surface may be achieved by raking or dragging without compaction equipment. For special load designs, contact StormTech for compaction requirements.
4. Where recycled concrete aggregate is used in layers 'A' or 'B' the material should also meet the acceptable criteria outlined in ADS Technical Note 6.20 "Recycled Concrete Structural Backfill".

Figure 1- Inspection Port Detail

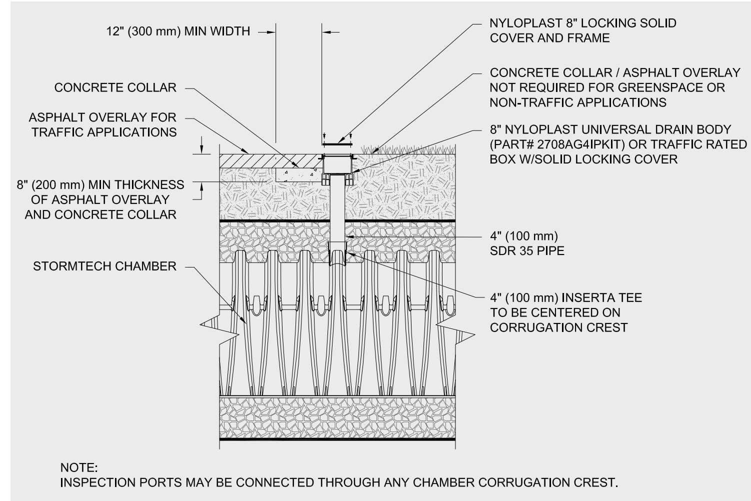
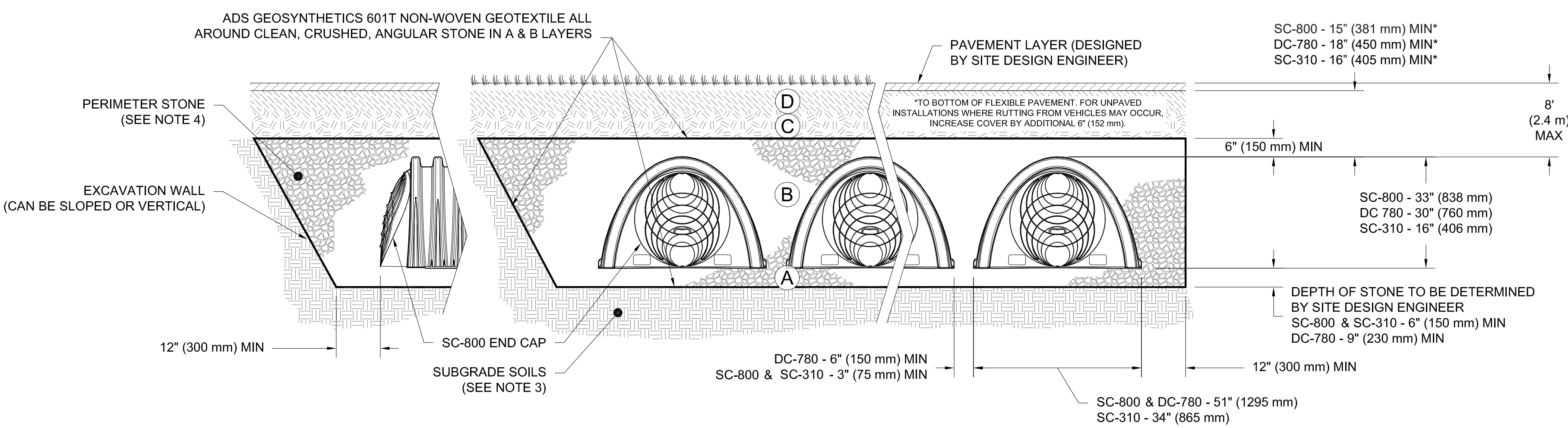


Figure 2 - Fill Material Locations



Notes:

1. 36" (900 mm) of stabilized cover materials over the chambers is recommended during the construction phase if general construction activities, such as full dump truck travel and dumping, are to occur over the bed.
2. During paving operations, dump truck axle loads on 18" (450 mm) of cover may be necessary. Precautions should be taken to avoid rutting of the road base layer, to ensure that compaction requirements have been met, and that a minimum of 18" (450 mm) of cover exists over the chambers. Contact StormTech for additional guidance on allowable axle loads during paving.
3. Ground pressure for track dozers is the vehicle operating weight divided by total ground contact area for both tracks. Excavators will exert higher ground pressures based on loaded bucket weight and boom extension.
4. Mini-excavators (< 8,000lbs/3,628 kg) can be used with at least 12" (300 mm) of stone over the chambers and are limited by the maximum ground pressures in Table 2 based on a full bucket at maximum boom extension.
5. Storage of materials such as construction materials, equipment, spoils, etc. should not be located over the StormTech system. The use of equipment over the StormTech system not covered in Table 2 (ex. soil mixing equipment, cranes, etc) is limited. Please contact StormTech for more information.
6. Allowable track loads based on vehicle travel only. Excavators shall not operate on chamber beds until the total backfill reaches 3 feet (900 mm) over the entire bed.

Table 2 - Maximum Allowable Construction Vehicle Loads[6]

Material Location	Fill Depth over Chambers in. (mm)	Maximum Allowable Wheel Loads		Maximum Allowable Track Loads[6]		Maximum Allowable Roller Loads
		Max Axle Load for Trucks lbs (kN)	Max Wheel Load for Loaders lbs (kN)	Track Width in. (mm)	Max Ground Pressure psf (kPa)	Max Drum Weight or Dynamic Force lbs (kN)
Ⓓ Final Fill Material	36" (900) Compacted	32,000 (142)	16,000 (71)	12" (305) 18" (457) 24" (610) 30" (762) 36" (914)	3880 (186) 2640 (126) 2040 (97) 1690 (81) 1470 (70)	38,000 (169)
Ⓒ Initial Fill Material	24" (600) Compacted	32,000 (142)	16,000 (71)	12" (305) 18" (457) 24" (610) 30" (762) 36" (914)	2690 (128) 1880 (90) 1490 (71) 1280 (61) 1150 (55)	20,000 (89)
	24" (600) Loose/ Dumped	32,000 (142)	16,000 (71)	12" (305) 18" (457) 24" (610) 30" (762) 36" (914)	2390 (114) 1700 (81) 1370 (65) 1190 (57) 1080 (51)	20,000 (89) Roller gross vehicle weight not toexceed 12,000 lbs. (53 kN)
	18" (450)	32,000 (142)	16,000 (71)	12" (305) 18" (457) 24" (610) 30" (762) 36" (914)	2110 (101) 1510 (72) 1250 (59) 1100 (52) 1020 (48)	20,000 (89) Roller gross vehicle weight not to exceed 12,000 lbs. (53 kN)
Ⓑ Embedment Stone	12" (300)	16,000 (71)	NOT ALLOWED	12" (305) 18" (457) 24" (610) 30" (762) 36" (914)	1540 (74) 1190 (57) 1010 (48) 910 (43) 840 (40)	20,000 (89) Roller gross vehicle weight not to exceed 12,000 lbs. (53 kN)
	6" (150)	8,000 (35)	NOT ALLOWED	12" (305) 18" (457) 24" (610) 30" (762) 36" (914)	1070 (51) 900 (43) 800 (38) 760 (36) 720 (34)	NOT ALLOWED

Table 3 - Placement Methods and Descriptions

Material Location	Placement Methods/ Restrictions	Wheel Load Restrictions	Track Load Restrictions	Roller Load Restrictions
		See Table 2 for Maximum Construction Loads		
Ⓓ Final Fill Material	A variety of placement methods may be used. All construction loads must not exceed the maximum limits in Table 2.	36" (900 mm) minimum cover required for dump trucks to dump over chambers.	Dozers to push parallel to rows until 36" (900mm) compacted cover is reached.[4]	Roller travel parallel to rows only until 36" (900 mm) compacted cover is reached.
Ⓒ Initial Fill Material	Excavator positioned off bed recommended. Small excavator allowed over chambers. Small dozer allowed.	Asphalt can be dumped into paver when compacted pavement subbase reaches 18" (450 mm) above top of chambers.	Small LGP track dozers & skid loaders allowed to grade cover stone with at least 6" (150 mm) stone under tracks at all times. Equipment must push parallel to rows at all times.	Use dynamic force of roller only after compacted fill depth reaches 12" (300 mm) over chambers. Roller travel parallel to chamber rows only.
Ⓑ Embedment Stone	No equipment allowed on bare chambers. Use excavator or stone conveyor positioned off bed or on foundation stone to evenly fill around all chambers to at least the top of chambers.	No wheel loads allowed. Material must be placed outside the limits of the chamber bed.	No tracked equipment is allowed on chambers until a min. 6" (150 mm) cover stone is in place.	No rollers allowed.
Ⓐ Foundation Stone	No StormTech restrictions. Contractor responsible for any conditions or requirements by others relative to subgrade bearing capacity, dewatering or protection of subgrade.			

ADS StormTech

StormTech® Standard Limited Warranty

STANDARD LIMITED WARRANTY OF STORMTECH LLC ("STORMTECH"): PRODUCTS

(A) This Limited Warranty applies solely to the StormTech chambers and end plates manufactured by StormTech and sold to the original purchaser (the "Purchaser"). The chambers and end plates are collectively referred to as the "Products."

(B) The structural integrity of the Products, when installed strictly in accordance with StormTech's written installation instructions at the time of installation, are warranted to the Purchaser against defective materials and workmanship for one (1) year from the date of purchase. Should a defect appear in the Limited Warranty period, the Purchaser shall provide StormTech with written notice of the alleged defect at StormTech's corporate headquarters within ten (10) days of the discovery of the defect. The notice shall describe the alleged defect in reasonable detail. StormTech agrees to supply replacements for those Products determined by StormTech to be defective and covered by this Limited Warranty. The supply of replacement products is the sole remedy of the Purchaser for breaches of this Limited Warranty. StormTech's liability specifically excludes the cost of removal and/or installation of the Products.

(C) THIS LIMITED WARRANTY IS EXCLUSIVE. THERE ARE NO OTHER WARRANTIES WITH RESPECT TO THE PRODUCTS, INCLUDING NO IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

(D) This Limited Warranty only applies to the Products when the Products are installed in a single layer. UNDER NO CIRCUMSTANCES, SHALL THE PRODUCTS BE INSTALLED IN A MULTI-LAYER CONFIGURATION.

(E) No representative of StormTech has the authority to change this Limited Warranty in any manner or to extend this Limited Warranty. This Limited Warranty does not apply to any person other than to the Purchaser.

(F) Under no circumstances shall StormTech be liable to the Purchaser or to any third party for product liability claims; claims arising from the design, shipment, or installation of the Products, or the cost of other goods or services related to the purchase and installation of the Products. For this Limited Warranty to apply, the Products must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and StormTech's written installation instructions.

(G) THE LIMITED WARRANTY DOES NOT EXTEND TO INCIDENTAL, CONSEQUENTIAL, SPECIAL OR INDIRECT DAMAGES. STORMTECH SHALL NOT BE LIABLE FOR PENALTIES OR LIQUIDATED DAMAGES, INCLUDING LOSS OF PRODUCTION AND PROFITS; LABOR AND MATERIALS; OVERHEAD COSTS; OR OTHER LOSS OR EXPENSE INCURRED BY THE PURCHASER OR ANY THIRD PARTY. SPECIFICALLY EXCLUDED FROM LIMITED WARRANTY COVERAGE ARE DAMAGE TO THE PRODUCTS ARISING FROM ORDINARY WEAR AND TEAR; ALTERATION, ACCIDENT, MISUSE, ABUSE OR NEGLECT; THE PRODUCTS BEING SUBJECTED TO VEHICLE TRAFFIC OR OTHER CONDITIONS WHICH ARE NOT PERMITTED BY STORMTECH'S WRITTEN SPECIFICATIONS OR INSTALLATION INSTRUCTIONS; FAILURE TO MAINTAIN THE MINIMUM GROUND COVERS SET FORTH IN THE INSTALLATION INSTRUCTIONS; THE PLACEMENT OF IMPROPER MATERIALS INTO THE PRODUCTS; FAILURE OF THE PRODUCTS DUE TO IMPROPER SITING OR IMPROPER SIZING; OR ANY OTHER EVENT NOT CAUSED BY STORMTECH. A PRODUCT ALSO IS EXCLUDED FROM LIMITED WARRANTY COVERAGE IF SUCH PRODUCT IS USED IN A PROJECT OR SYSTEM IN WHICH ANY GEOTEXTILE PRODUCTS OTHER THAN THOSE PROVIDED BY ADVANCED DRAINAGE SYSTEMS ARE USED. THIS LIMITED WARRANTY REPRESENTS STORMTECH'S SOLE LIABILITY TO THE PURCHASER FOR CLAIMS RELATED TO THE PRODUCTS, WHETHER THE CLAIM IS BASED UPON CONTRACT, TORT, OR OTHER LEGAL THEORY.

adspipe.com
800-821-6710

Drainage Filtration Separation

ADS 0601T/O NONWOVEN GEOTEXTILE SPECIFICATION

Scope

This specification describes ADS 0601T/O nonwoven geotextile.

Filter Fabric Requirements

ADS 0601T/O is an orange nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. ADS 0601T/O is inert to biological degradation and resists naturally encountered chemicals, alkali and acids. ADS 0601T/O conforms to the physical property values listed below:

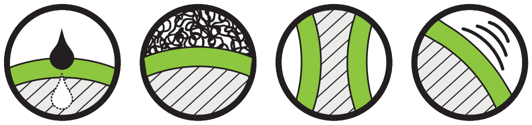
Filter Fabric Properties

Property	Test Method	Unit	Typical Value[1] MD	Typical Value[1] CD
Grab Tensile Strength	ASTM D4632	lbs (N)	175 (779)	175 (779)
Grab Tensile Elongation	ASTM D4632	%	75	75
Trapezoid Tear Strength	ASTM D4533	lbs (N)	85 (378)	85 (378)
CBR Puncture Strength	ASTM D6241	lbs (N)	480 (2136)	480 (2136)
Permittivity	ASTM D4491	sec^{-1}	1.5	1.5
Flow Rate	ASTM D4491	$gal/min/ft^2$ ($l/min/m^2$)	105 (4278)	105 (4278)
UV Resistance (at 500 hours)[1]	ASTM D4355	% strength retained	80	80

Physical Properties

Property	Test Method	Unit	Typical Value[2]
Weight	ASTM D5161	oz/yd^2 (g/m^2)	6.5 (220)
Thickness	ASTM D5199	mils (mm)	65 (1.7)
Roll Dimensions (W x L)	-	ft (m)	15 x 300 (4.5 x 91)
Roll Area	-	yd^2 (m^2)	500 (418)
Estimated Roll Weight	-	lb (kg)	220 (100)

1 Modified, Minimum Test Value
2 ASTM D4439 Standard Terminology for Geosynthetics: typical value, n-*for geosynthetics*, the mean value calculated from documented manufacturing quality control test results for a defined population obtained from one test method associated with on specific property.



ADS PLUS WOVEN GEOTEXTILE SPECIFICATION

For use with StormTech® Isolator® Row Plus

Scope

This specification describes ADS Plus woven geotextile.

ADS Plus woven geotextile fabrics are woven polypropylene materials offering optimum performance when used in stabilization applications. Produced from first quality raw materials, they provide the perfect balance of strength and separation in styles capable of functioning exceptionally well in a wide range of performance requirements.

Filter Fabric Properties

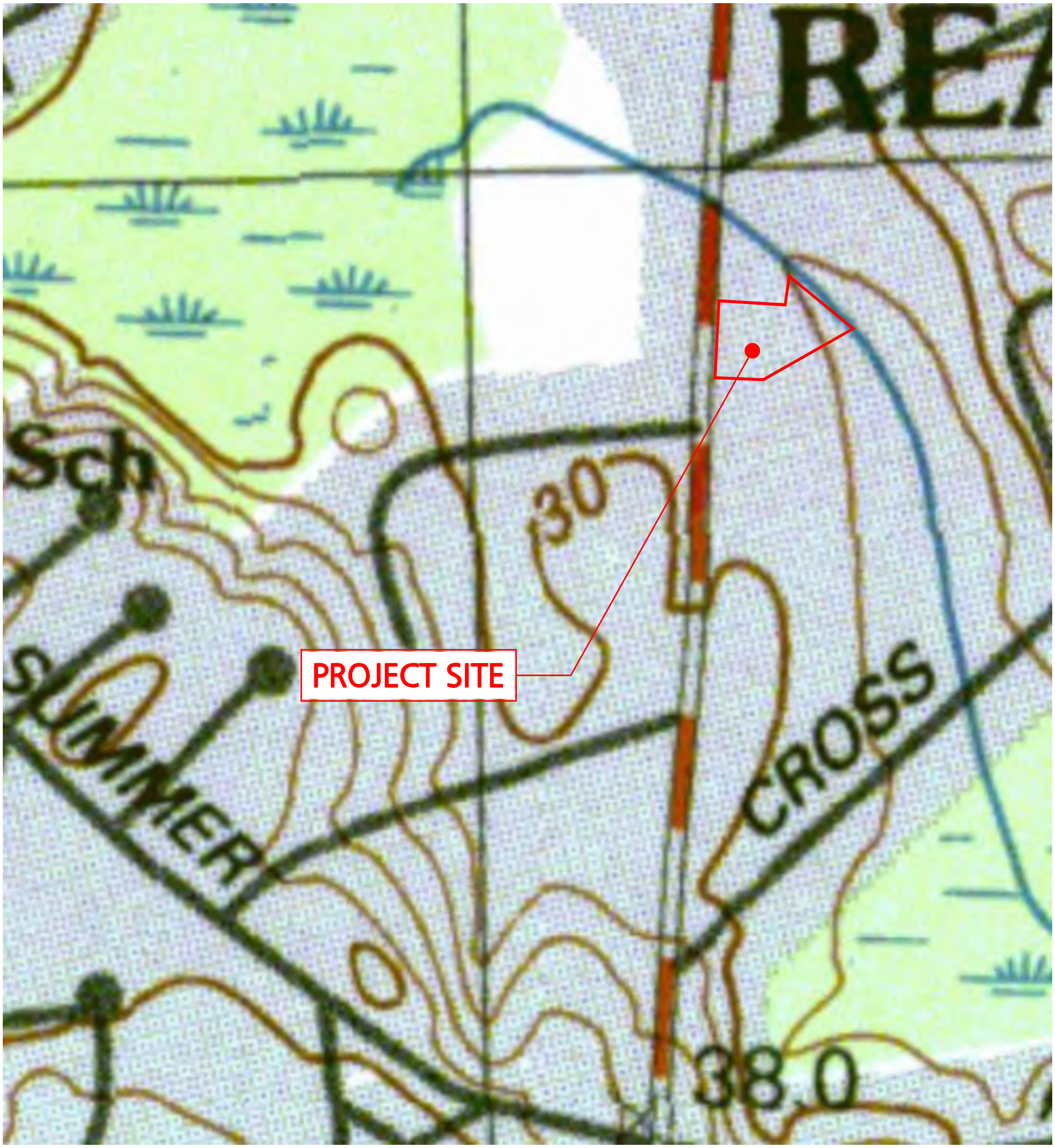
Property[1]	Test Method	Unit	M.A.R.V. (Minimum Average Roll Value)[2]
Weight	ASTM D5261	oz/yd^2 (g/m^2)	8.0 (271.25)
Grab Tensile Strength	ASTM D4632	lbs (kN)	325 (1.45)
Grab Elongation	ASTM D4632	%	15
Trapezoidal Tear Strength	ASTM D4533	lbs (kN)	125 (0.89)
CBR Puncture Resistance	ASTM D6241	lbs (kN)	1,124 (5.0)

1. The property values listed above are subject to change without notice.
2. Minimum Average Roll Values (MARV) is calculated as the average minus two standard deviations. Statistically, it yields approximately 97.5% degree of confidence that any samples taken from quality assurance testing will meet or exceed the values described above.

Dimensions

ADS Plus shall be delivered to the jobsite in roll form with each roll individually identified and nominally measuring 12.5’ (3.8 m) width x 360’ (110 m) length for Plus125 and 6.25’ (1.9 m) width x 360’ (110 m) length for Plus625.

SECTION 3.0 - EXHIBITS



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ALLEN & MAJOR ASSOCIATES, INC.

civil engineering land surveying
environmental consulting landscape architecture
www.allenmajor.com
100 COMMERCE WAY
P.O. BOX 2118
WOBURN MA 01888-0118
TEL: (781) 935-6889
FAX: (781) 935-2896
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

PROJECT:

281 MAIN STREET
READING, MA

USGS SITE LOCUS MAP

PROJECT NO.	2398-08	DATE:	11-24-2025
SCALE:	1"=300'	DWG. NAME:	EXHIBITS
DESIGNED BY:	MTB/BDP	CHECKED BY:	CMQ

SHEET No.

EX-1

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civil engineering land surveying
environmental consulting landscape architecture
www.allenmajor.com
100 COMMERCE WAY
P.O. BOX 2118
WOBURN MA 01888-0118
TEL: (781) 935-6889
FAX: (781) 935-2896
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PROJECT:

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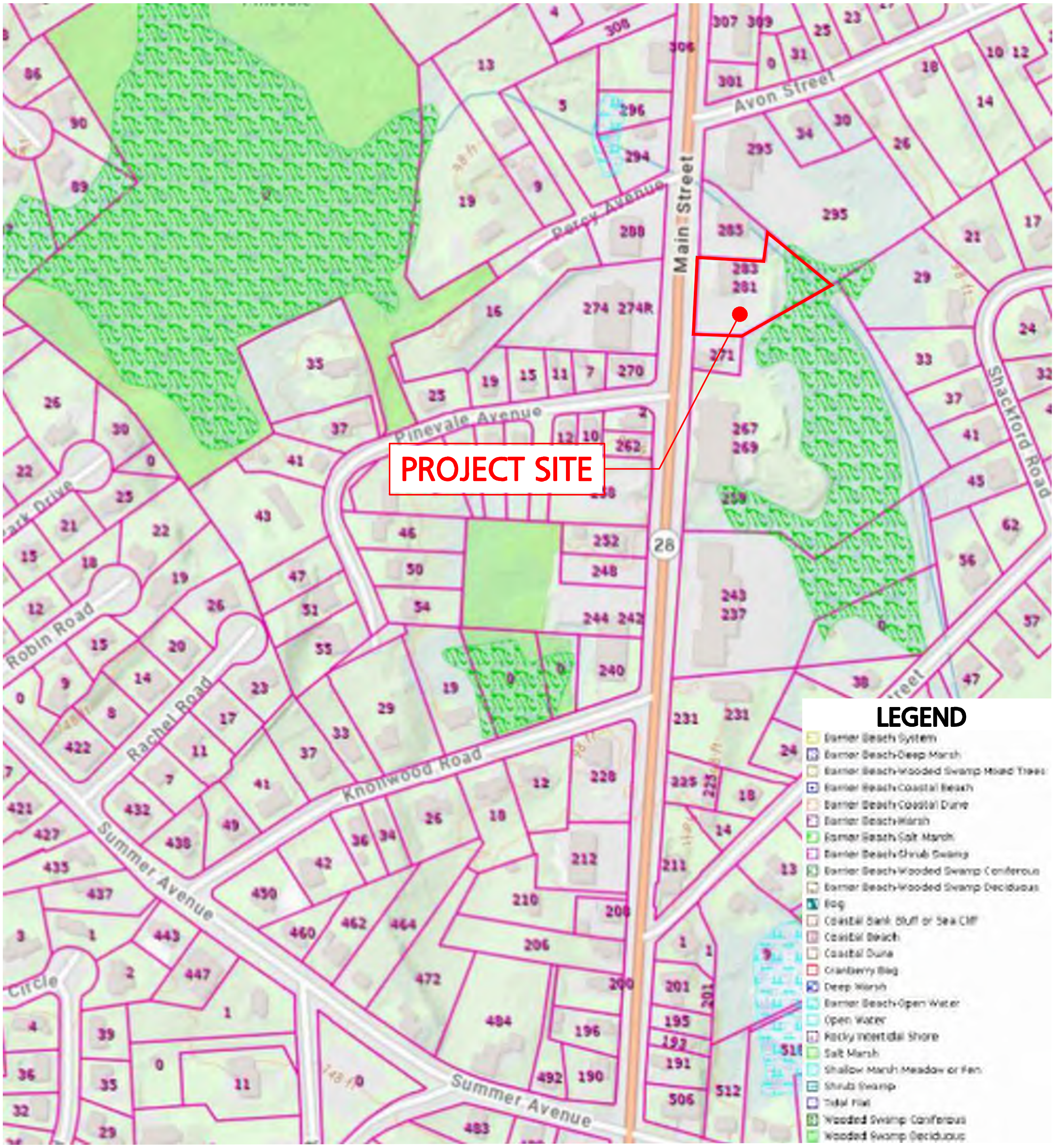
READING, MA

AERIAL PHOTO

PROJECT NO.	2398-08	DATE:	11-24-2025
SCALE:	1"=300'	DWG. NAME:	EXHIBITS
DESIGNED BY:	MTB/BDP	CHECKED BY:	CMQ

SHEET No.

EX-2



THERE ARE DEP WETLANDS ON THE EASTERN PORTION OF THE SITE

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www.allenmajor.com
100 COMMERCE WAY
P.O. BOX 2118
WOBURN MA 01888-0118
TEL: (781) 935-6889
FAX: (781) 935-2896
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

PROJECT:

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WETLANDS MAP

PROJECT NO.	2398-08	DATE:	11-24-2025
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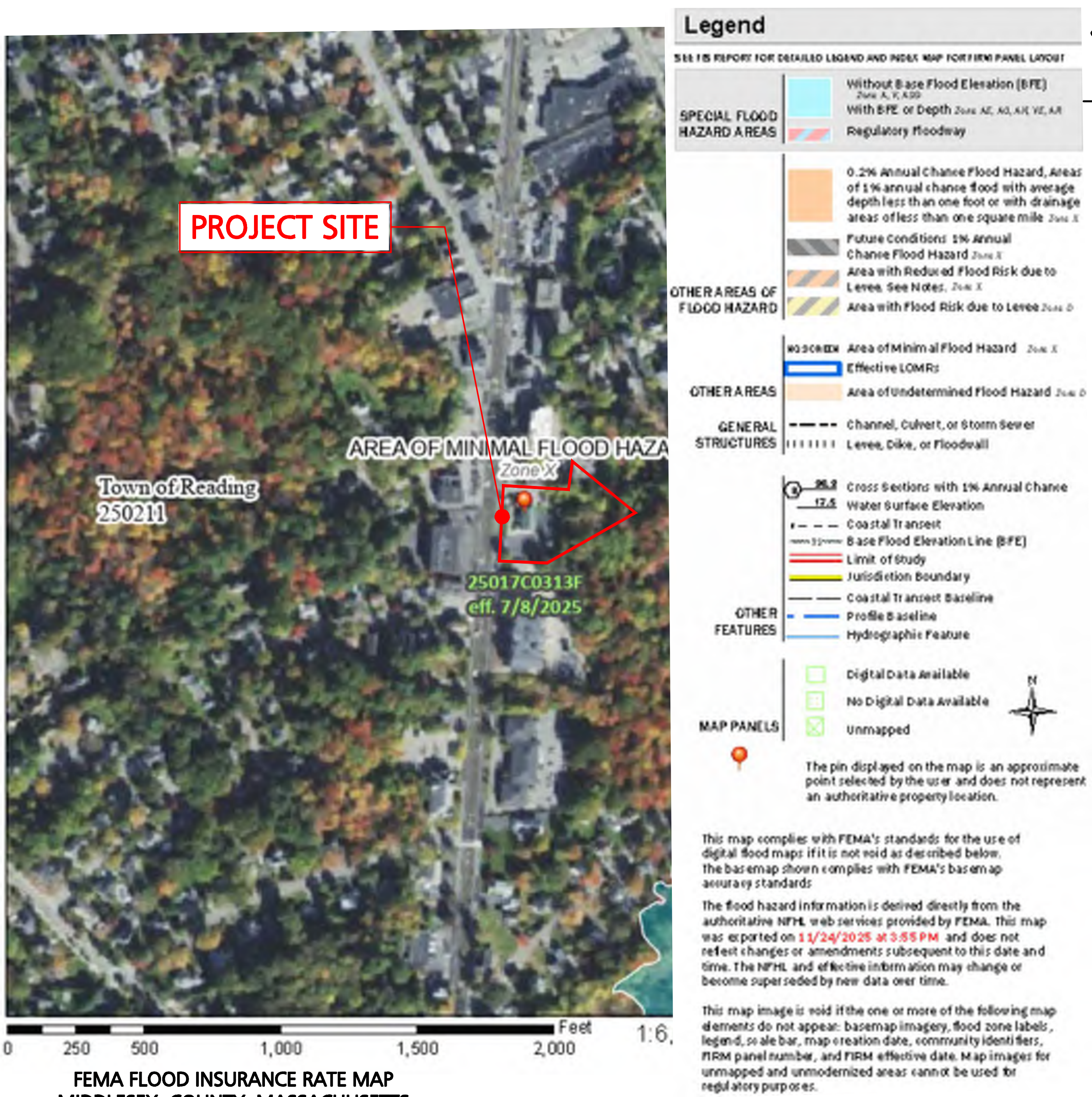
DESIGNED BY:	MTB/BDP	CHECKED BY:	CMQ

SHEET No.

EX-3



FEMA FLOOD INSURANCE RATE MAP
MIDDLESEX COUNTY, MASSACHUSETTS
MAP NUMBER 25017C0313F
EFFECTIVE DATE: JULY 8, 2025

SITE IS NOT LOCATED IN A FLOOD HAZARD ZONE

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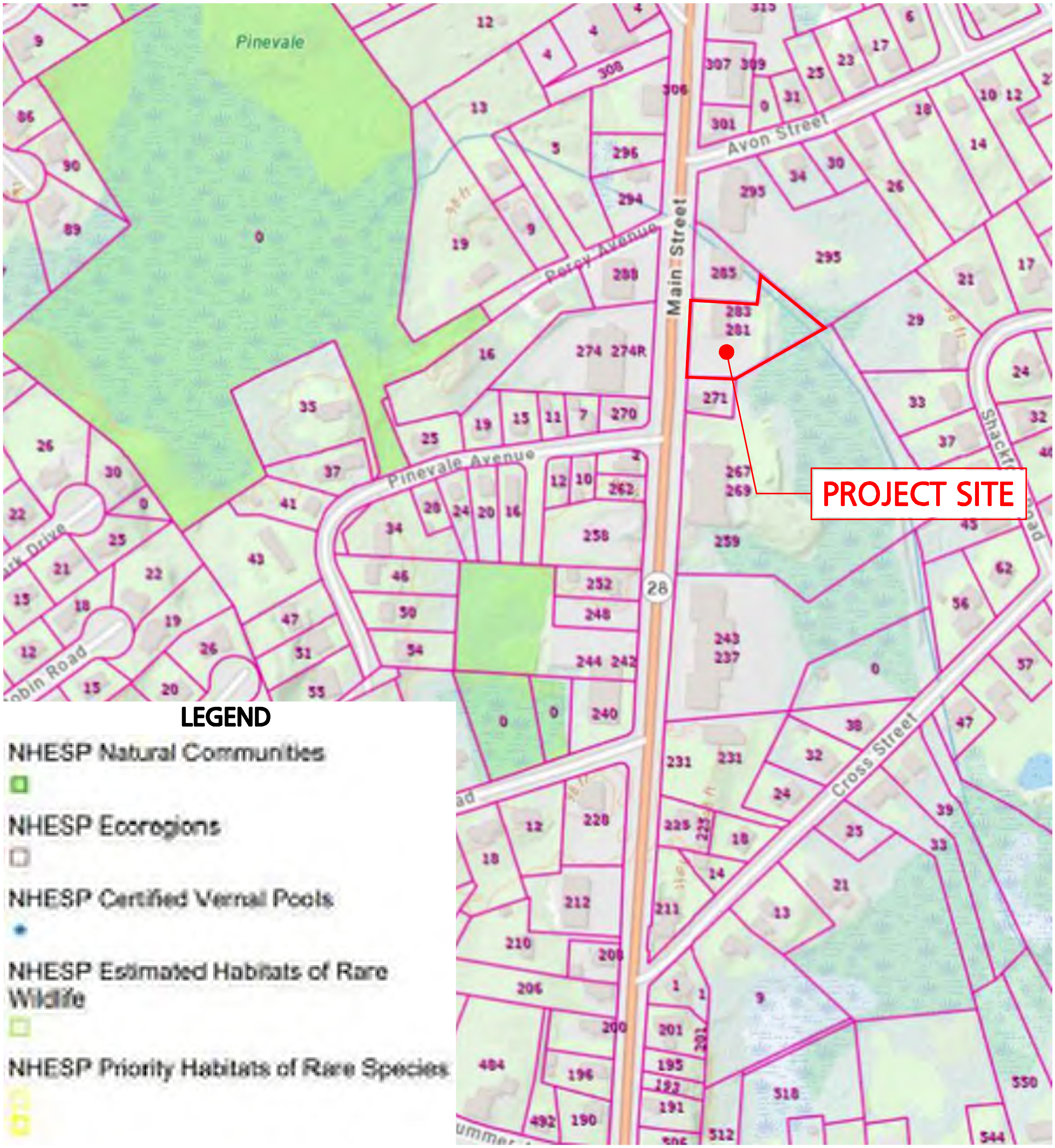
civil engineering land surveying
environmental consulting landscape architecture
www.allenmajor.com
100 COMMERCE WAY
P.O. BOX 2118
WOBURN MA 01888-0118
TEL: (781) 935-6889
FAX: (781) 935-2896
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

PROJECT:
281 MAIN STREET
READING, MA

FEMA FIRM MAP

PROJECT NO.	2398-08	DATE:	11-24-2025
SCALE:	NTS	DWG. NAME:	EXHIBITS
DESIGNED BY:	MTB/BDP	CHECKED BY:	CMQ

SHEET No.
EX-4



NO PRIORITY & ESTIMATED HABITATS LOCATED ON SITE

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100 COMMERCE WAY
P.O. BOX 2118
WOBURN MA 01888-0118
TEL: (781) 935-6889
FAX: (781) 935-2896

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PROJECT:

281 MAIN STREET
READING, MA

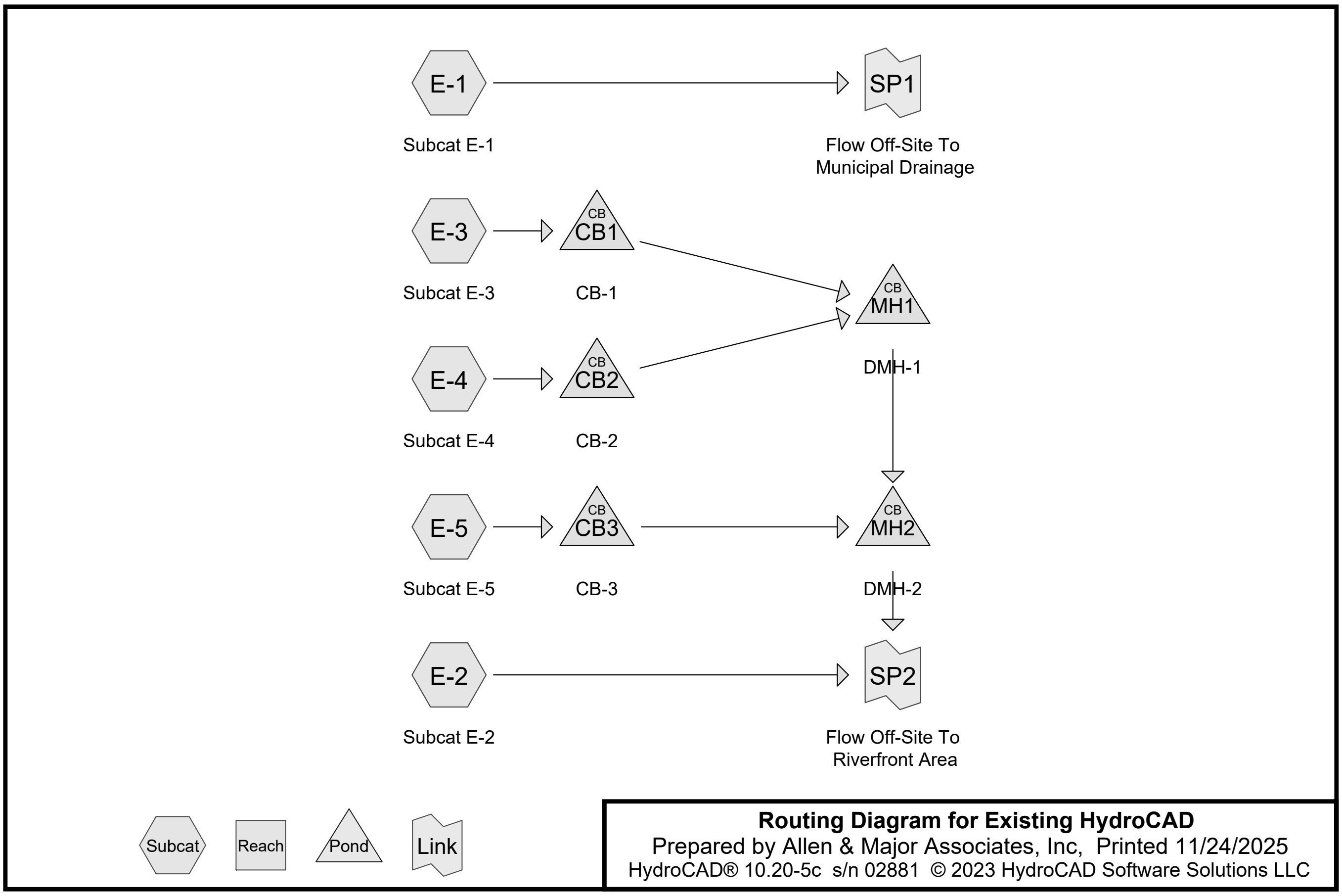
PRIORITY & ESTIMATED HABITATS

PROJECT NO.	2398-08	DATE:	11-24-2025
SCALE:	1"=300'	DWG. NAME:	EXHIBITS
DESIGNED BY:	MTB/BDP	CHECKED BY:	CMQ

SHEET No.

EX-5

SECTION 4.0 -
EXISTING DRAINAGE ANALYSIS



Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-year	Type III 24-hr		Default	24.00	1	3.31	2
2	10-year	Type III 24-hr		Default	24.00	1	5.21	2
3	25-year	Type III 24-hr		Default	24.00	1	6.40	2
4	100-year	Type III 24-hr		Default	24.00	1	8.23	2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
7,453	39	>75% Grass cover, Good, HSG A (E-1, E-2, E-3, E-4, E-5)
13,665	98	Paved parking, HSG A (E-1, E-2, E-3, E-4, E-5)
1,867	98	Roofs, HSG A (E-1, E-4, E-5)
10,569	30	Woods, Good, HSG A (E-2)
33,554	**63**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
33,554	HSG A	E-1, E-2, E-3, E-4, E-5
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
33,554		**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	CB1	89.02	88.43	58.9	0.0100	0.012	0.0	12.0	0.0	CB-1
2	CB2	89.17	88.38	24.5	0.0322	0.012	0.0	10.0	0.0	CB-2
3	CB3	89.15	89.05	9.6	0.0104	0.012	0.0	12.0	0.0	CB-3
4	MH1	88.28	87.95	32.6	0.0101	0.012	0.0	12.0	0.0	DMH-1
5	MH2	88.00	87.28	72.0	0.0100	0.012	0.0	12.0	0.0	DMH-2

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E-1: Subcat E-1
Runoff Area=9,274 sf 62.30% Impervious Runoff Depth=1.23"
Tc=6.0 min CN=76 Runoff=0.30 cfs 950 cf

Subcatchment E-2: Subcat E-2
Runoff Area=11,560 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=31 Runoff=0.00 cfs 0 cf

Subcatchment E-3: Subcat E-3
Runoff Area=4,210 sf 98.71% Impervious Runoff Depth=2.97"
Tc=6.0 min CN=97 Runoff=0.31 cfs 1,040 cf

Subcatchment E-4: Subcat E-4
Runoff Area=947 sf 92.30% Impervious Runoff Depth=2.55"
Tc=6.0 min CN=93 Runoff=0.06 cfs 201 cf

Subcatchment E-5: Subcat E-5
Runoff Area=7,564 sf 62.46% Impervious Runoff Depth=1.23"
Tc=6.0 min CN=76 Runoff=0.24 cfs 775 cf

Pond CB1: CB-1
Peak Elev=89.33' Inflow=0.31 cfs 1,040 cf
12.0" Round Culvert n=0.012 L=58.9' S=0.0100 '/' Outflow=0.31 cfs 1,040 cf

Pond CB2: CB-2
Peak Elev=89.31' Inflow=0.06 cfs 201 cf
10.0" Round Culvert n=0.012 L=24.5' S=0.0322 '/' Outflow=0.06 cfs 201 cf

Pond CB3: CB-3
Peak Elev=89.43' Inflow=0.24 cfs 775 cf
12.0" Round Culvert n=0.012 L=9.6' S=0.0104 '/' Outflow=0.24 cfs 775 cf

Pond MH1: DMH-1
Peak Elev=88.64' Inflow=0.37 cfs 1,242 cf
12.0" Round Culvert n=0.012 L=32.6' S=0.0101 '/' Outflow=0.37 cfs 1,242 cf

Pond MH2: DMH-2
Peak Elev=88.38' Inflow=0.61 cfs 2,017 cf
12.0" Round Culvert n=0.012 L=72.0' S=0.0100 '/' Outflow=0.61 cfs 2,017 cf

Link SP1: Flow Off-Site To Municipal Drainage
Inflow=0.30 cfs 950 cf
Primary=0.30 cfs 950 cf

Link SP2: Flow Off-Site To Riverfront Area

Inflow=0.61 cfs 2,017 cf
Primary=0.61 cfs 2,017 cf

Total Runoff Area = 33,554 sf Runoff Volume = 2,966 cf Average Runoff Depth = 1.06"
53.71% Pervious = 18,022 sf 46.29% Impervious = 15,531 sf

Summary for Subcatchment E-1: Subcat E-1

Runoff = 0.30 cfs @ 12.09 hrs, Volume= 950 cf, Depth= 1.23"
Routed to Link SP1 : Flow Off-Site To Municipal Drainage

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.31"

Area (sf)	CN	Description
3,496	39	>75% Grass cover, Good, HSG A
931	98	Roofs, HSG A
4,847	98	Paved parking, HSG A
9,274	76	Weighted Average
3,496		37.70% Pervious Area
5,778		62.30% Impervious Area

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

Summary for Subcatchment E-2: Subcat E-2

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Link SP2 : Flow Off-Site To Riverfront Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.31"

Area (sf)	CN	Description
10,569	30	Woods, Good, HSG A
990	39	>75% Grass cover, Good, HSG A
0	98	Paved parking, HSG A
11,560	31	Weighted Average
11,560		100.00% Pervious Area
0		0.00% Impervious Area

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

Summary for Subcatchment E-3: Subcat E-3

Runoff = 0.31 cfs @ 12.08 hrs, Volume= 1,040 cf, Depth= 2.97"
Routed to Pond CB1 : CB-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.31"

Area (sf)	CN	Description
54	39	>75% Grass cover, Good, HSG A
4,156	98	Paved parking, HSG A
4,210	97	Weighted Average
54		1.29% Pervious Area
4,156		98.71% Impervious Area

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

Summary for Subcatchment E-4: Subcat E-4

Runoff = 0.06 cfs @ 12.09 hrs, Volume= 201 cf, Depth= 2.55"
Routed to Pond CB2 : CB-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.31"

Area (sf)	CN	Description
73	39	>75% Grass cover, Good, HSG A
248	98	Roofs, HSG A
626	98	Paved parking, HSG A
947	93	Weighted Average
73		7.70% Pervious Area
874		92.30% Impervious Area

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

Summary for Subcatchment E-5: Subcat E-5

Runoff = 0.24 cfs @ 12.09 hrs, Volume= 775 cf, Depth= 1.23"
Routed to Pond CB3 : CB-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.31"

Area (sf)	CN	Description
4,037	98	Paved parking, HSG A
2,840	39	>75% Grass cover, Good, HSG A
688	98	Roofs, HSG A
7,564	76	Weighted Average
2,840		37.54% Pervious Area
4,724		62.46% Impervious Area

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

Summary for Pond CB1: CB-1

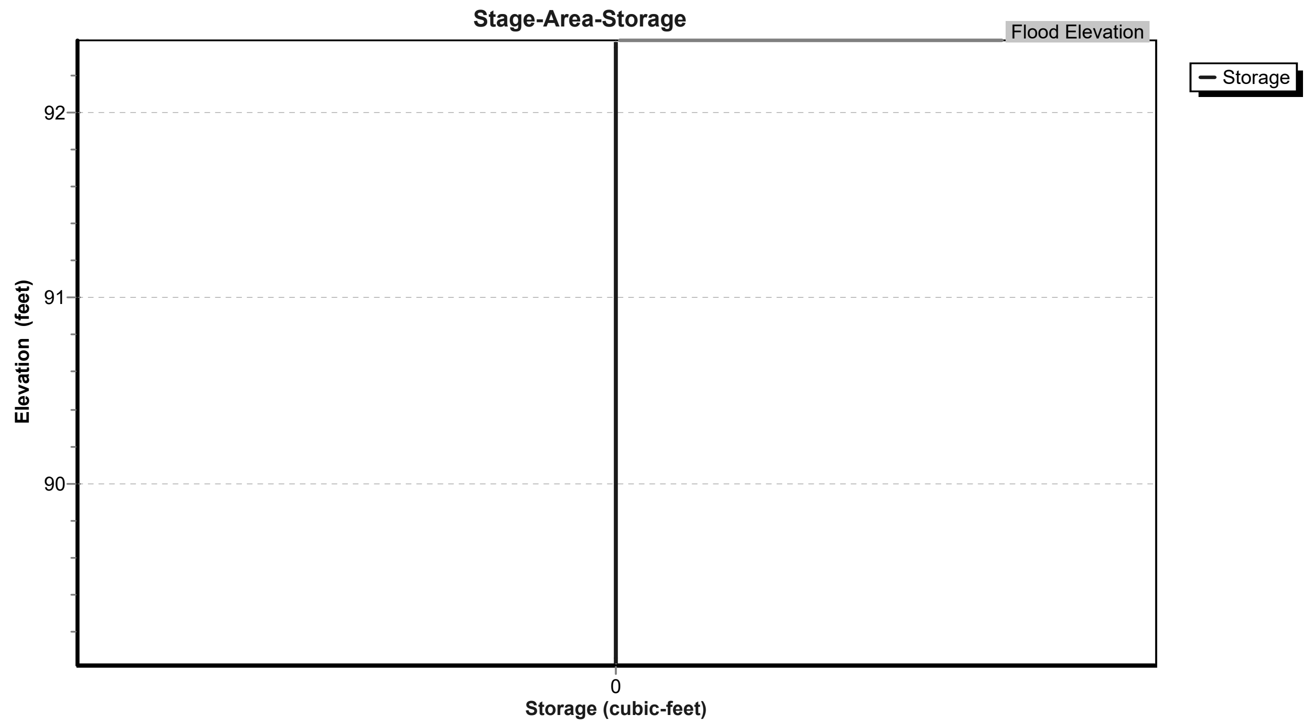
Inflow Area = 4,210 sf, 98.71% Impervious, Inflow Depth = 2.97" for 2-year event
Inflow = 0.31 cfs @ 12.08 hrs, Volume= 1,040 cf
Outflow = 0.31 cfs @ 12.08 hrs, Volume= 1,040 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.31 cfs @ 12.08 hrs, Volume= 1,040 cf
Routed to Pond MH1 : DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 89.33' @ 12.08 hrs
Flood Elev= 92.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.02'	**12.0" Round 12" HDPE (Estimated Invert)** L= 58.9' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.02' / 88.43' S= 0.0100 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.31 cfs @ 12.08 hrs HW=89.33' TW=88.64' (Dynamic Tailwater)
1=12" HDPE (Estimated Invert) (Inlet Controls 0.31 cfs @ 1.49 fps)

Pond CB1: CB-1



Stage-Area-Storage for Pond CB1: CB-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.02	**0**	89.37	0	89.72	0	90.07	0	90.42	0
89.03	0	89.38	0	89.73	0	90.08	0	90.43	0
89.04	0	89.39	0	89.74	0	90.09	0	90.44	0
89.05	0	89.40	0	89.75	0	90.10	0	90.45	0
89.06	0	89.41	0	89.76	0	90.11	0	90.46	0
89.07	0	89.42	0	89.77	0	90.12	0	90.47	0
89.08	0	89.43	0	89.78	0	90.13	0	90.48	0
89.09	0	89.44	0	89.79	0	90.14	0	90.49	0
89.10	0	89.45	0	89.80	0	90.15	0	90.50	0
89.11	0	89.46	0	89.81	0	90.16	0	90.51	0
89.12	0	89.47	0	89.82	0	90.17	0	90.52	0
89.13	0	89.48	0	89.83	0	90.18	0	90.53	0
89.14	0	89.49	0	89.84	0	90.19	0	90.54	0
89.15	0	89.50	0	89.85	0	90.20	0	90.55	0
89.16	0	89.51	0	89.86	0	90.21	0	90.56	0
89.17	0	89.52	0	89.87	0	90.22	0	90.57	0
89.18	0	89.53	0	89.88	0	90.23	0	90.58	0
89.19	0	89.54	0	89.89	0	90.24	0	90.59	0
89.20	0	89.55	0	89.90	0	90.25	0	90.60	0
89.21	0	89.56	0	89.91	0	90.26	0	90.61	0
89.22	0	89.57	0	89.92	0	90.27	0	90.62	0
89.23	0	89.58	0	89.93	0	90.28	0	90.63	0
89.24	0	89.59	0	89.94	0	90.29	0	90.64	0
89.25	0	89.60	0	89.95	0	90.30	0	90.65	0
89.26	0	89.61	0	89.96	0	90.31	0	90.66	0
89.27	0	89.62	0	89.97	0	90.32	0	90.67	0
89.28	0	89.63	0	89.98	0	90.33	0	90.68	0
89.29	0	89.64	0	89.99	0	90.34	0	90.69	0
89.30	0	89.65	0	90.00	0	90.35	0	90.70	0
89.31	0	89.66	0	90.01	0	90.36	0	90.71	0
89.32	0	89.67	0	90.02	0	90.37	0	90.72	0
89.33	0	89.68	0	90.03	0	90.38	0	90.73	0
89.34	0	89.69	0	90.04	0	90.39	0	90.74	0
89.35	0	89.70	0	90.05	0	90.40	0	90.75	0
89.36	0	89.71	0	90.06	0	90.41	0	90.76	0

Stage-Area-Storage for Pond CB1: CB-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.77	0	91.12	0	91.47	0	91.82	0	92.17	0
90.78	0	91.13	0	91.48	0	91.83	0	92.18	0
90.79	0	91.14	0	91.49	0	91.84	0	92.19	0
90.80	0	91.15	0	91.50	0	91.85	0	92.20	0
90.81	0	91.16	0	91.51	0	91.86	0	92.21	0
90.82	0	91.17	0	91.52	0	91.87	0	92.22	0
90.83	0	91.18	0	91.53	0	91.88	0	92.23	0
90.84	0	91.19	0	91.54	0	91.89	0	92.24	0
90.85	0	91.20	0	91.55	0	91.90	0	92.25	0
90.86	0	91.21	0	91.56	0	91.91	0	92.26	0
90.87	0	91.22	0	91.57	0	91.92	0	92.27	0
90.88	0	91.23	0	91.58	0	91.93	0	92.28	0
90.89	0	91.24	0	91.59	0	91.94	0	92.29	0
90.90	0	91.25	0	91.60	0	91.95	0	92.30	0
90.91	0	91.26	0	91.61	0	91.96	0	92.31	0
90.92	0	91.27	0	91.62	0	91.97	0	92.32	0
90.93	0	91.28	0	91.63	0	91.98	0	92.33	0
90.94	0	91.29	0	91.64	0	91.99	0	92.34	0
90.95	0	91.30	0	91.65	0	92.00	0	92.35	0
90.96	0	91.31	0	91.66	0	92.01	0	92.36	0
90.97	0	91.32	0	91.67	0	92.02	0	92.37	0
90.98	0	91.33	0	91.68	0	92.03	0	92.38	0
90.99	0	91.34	0	91.69	0	92.04	0	92.39	0
91.00	0	91.35	0	91.70	0	92.05	0		
91.01	0	91.36	0	91.71	0	92.06	0		
91.02	0	91.37	0	91.72	0	92.07	0		
91.03	0	91.38	0	91.73	0	92.08	0		
91.04	0	91.39	0	91.74	0	92.09	0		
91.05	0	91.40	0	91.75	0	92.10	0		
91.06	0	91.41	0	91.76	0	92.11	0		
91.07	0	91.42	0	91.77	0	92.12	0		
91.08	0	91.43	0	91.78	0	92.13	0		
91.09	0	91.44	0	91.79	0	92.14	0		
91.10	0	91.45	0	91.80	0	92.15	0		
91.11	0	91.46	0	91.81	0	92.16	0		

Summary for Pond CB2: CB-2

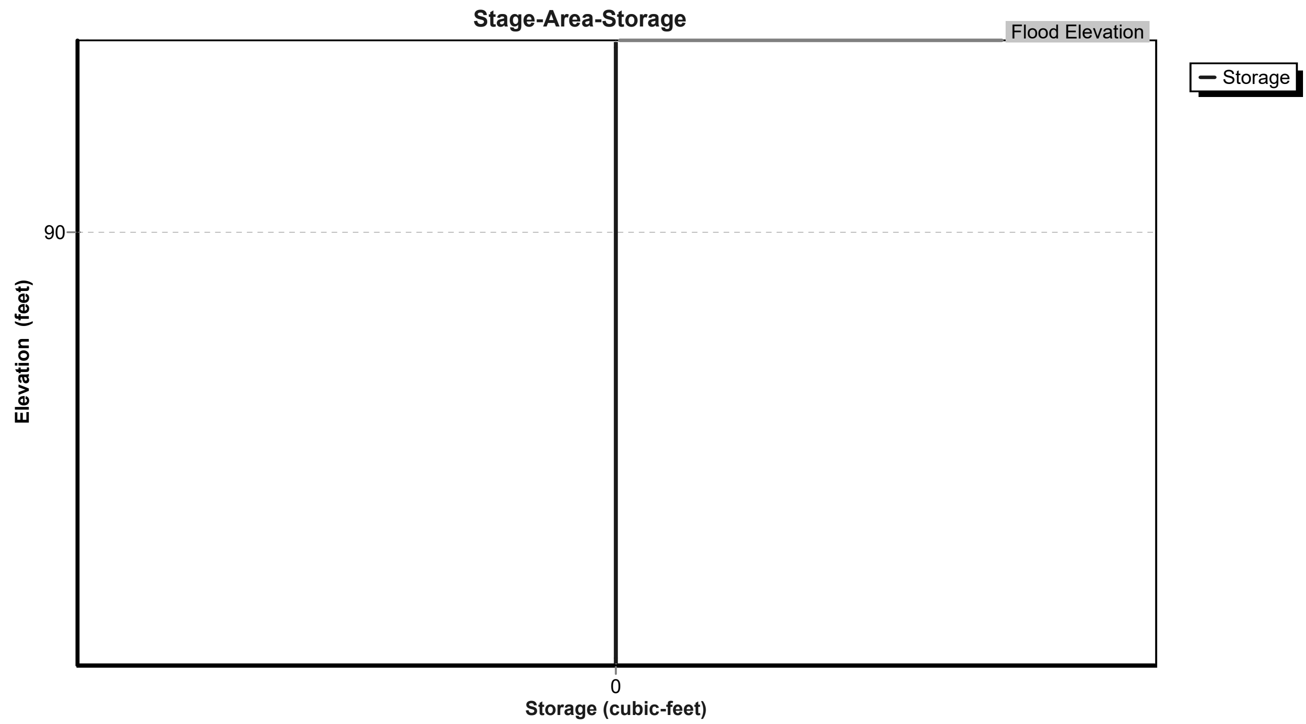
Inflow Area = 947 sf, 92.30% Impervious, Inflow Depth = 2.55" for 2-year event
Inflow = 0.06 cfs @ 12.09 hrs, Volume= 201 cf
Outflow = 0.06 cfs @ 12.09 hrs, Volume= 201 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.06 cfs @ 12.09 hrs, Volume= 201 cf
Routed to Pond MH1 : DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 89.31' @ 12.09 hrs
Flood Elev= 90.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.17'	**10.0" Round 10" HDPE** L= 24.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.17' / 88.38' S= 0.0322 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=0.06 cfs @ 12.09 hrs HW=89.31' TW=88.64' (Dynamic Tailwater)
1=10" HDPE (Inlet Controls 0.06 cfs @ 1.01 fps)

Pond CB2: CB-2



Stage-Area-Storage for Pond CB2: CB-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.17	**0**	89.52	0	89.87	0	90.22	0
89.18	0	89.53	0	89.88	0	90.23	0
89.19	0	89.54	0	89.89	0	90.24	0
89.20	0	89.55	0	89.90	0	90.25	0
89.21	0	89.56	0	89.91	0	90.26	0
89.22	0	89.57	0	89.92	0	90.27	0
89.23	0	89.58	0	89.93	0	90.28	0
89.24	0	89.59	0	89.94	0	90.29	0
89.25	0	89.60	0	89.95	0	90.30	0
89.26	0	89.61	0	89.96	0	90.31	0
89.27	0	89.62	0	89.97	0	90.32	0
89.28	0	89.63	0	89.98	0	90.33	0
89.29	0	89.64	0	89.99	0	90.34	0
89.30	0	89.65	0	90.00	0	90.35	0
89.31	0	89.66	0	90.01	0	90.36	0
89.32	0	89.67	0	90.02	0	90.37	0
89.33	0	89.68	0	90.03	0		
89.34	0	89.69	0	90.04	0		
89.35	0	89.70	0	90.05	0		
89.36	0	89.71	0	90.06	0		
89.37	0	89.72	0	90.07	0		
89.38	0	89.73	0	90.08	0		
89.39	0	89.74	0	90.09	0		
89.40	0	89.75	0	90.10	0		
89.41	0	89.76	0	90.11	0		
89.42	0	89.77	0	90.12	0		
89.43	0	89.78	0	90.13	0		
89.44	0	89.79	0	90.14	0		
89.45	0	89.80	0	90.15	0		
89.46	0	89.81	0	90.16	0		
89.47	0	89.82	0	90.17	0		
89.48	0	89.83	0	90.18	0		
89.49	0	89.84	0	90.19	0		
89.50	0	89.85	0	90.20	0		
89.51	0	89.86	0	90.21	0		

Summary for Pond CB3: CB-3

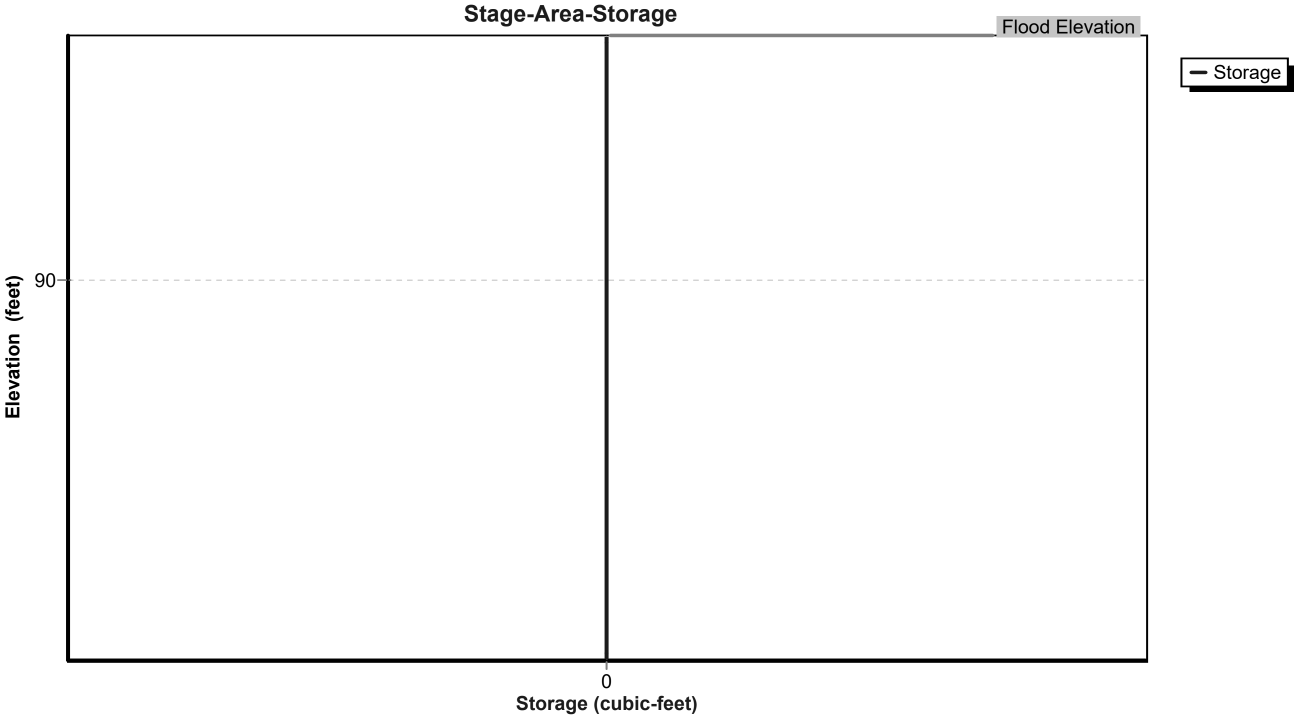
Inflow Area = 7,564 sf, 62.46% Impervious, Inflow Depth = 1.23" for 2-year event
Inflow = 0.24 cfs @ 12.09 hrs, Volume= 775 cf
Outflow = 0.24 cfs @ 12.09 hrs, Volume= 775 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.24 cfs @ 12.09 hrs, Volume= 775 cf
Routed to Pond MH2 : DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 89.43' @ 12.09 hrs
Flood Elev= 90.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.15'	**12.0" Round 12" HDPE Assumed Size and Slope** L= 9.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.15' / 89.05' S= 0.0104 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.24 cfs @ 12.09 hrs HW=89.43' TW=88.37' (Dynamic Tailwater)
└─**1=12" HDPE Assumed Size and Slope** (Barrel Controls 0.24 cfs @ 2.07 fps)

Pond CB3: CB-3



Stage-Area-Storage for Pond CB3: CB-3

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.15	**0**	89.50	0	89.85	0	90.20	0	90.55	0
89.16	0	89.51	0	89.86	0	90.21	0		
89.17	0	89.52	0	89.87	0	90.22	0		
89.18	0	89.53	0	89.88	0	90.23	0		
89.19	0	89.54	0	89.89	0	90.24	0		
89.20	0	89.55	0	89.90	0	90.25	0		
89.21	0	89.56	0	89.91	0	90.26	0		
89.22	0	89.57	0	89.92	0	90.27	0		
89.23	0	89.58	0	89.93	0	90.28	0		
89.24	0	89.59	0	89.94	0	90.29	0		
89.25	0	89.60	0	89.95	0	90.30	0		
89.26	0	89.61	0	89.96	0	90.31	0		
89.27	0	89.62	0	89.97	0	90.32	0		
89.28	0	89.63	0	89.98	0	90.33	0		
89.29	0	89.64	0	89.99	0	90.34	0		
89.30	0	89.65	0	90.00	0	90.35	0		
89.31	0	89.66	0	90.01	0	90.36	0		
89.32	0	89.67	0	90.02	0	90.37	0		
89.33	0	89.68	0	90.03	0	90.38	0		
89.34	0	89.69	0	90.04	0	90.39	0		
89.35	0	89.70	0	90.05	0	90.40	0		
89.36	0	89.71	0	90.06	0	90.41	0		
89.37	0	89.72	0	90.07	0	90.42	0		
89.38	0	89.73	0	90.08	0	90.43	0		
89.39	0	89.74	0	90.09	0	90.44	0		
89.40	0	89.75	0	90.10	0	90.45	0		
89.41	0	89.76	0	90.11	0	90.46	0		
89.42	0	89.77	0	90.12	0	90.47	0		
89.43	0	89.78	0	90.13	0	90.48	0		
89.44	0	89.79	0	90.14	0	90.49	0		
89.45	0	89.80	0	90.15	0	90.50	0		
89.46	0	89.81	0	90.16	0	90.51	0		
89.47	0	89.82	0	90.17	0	90.52	0		
89.48	0	89.83	0	90.18	0	90.53	0		
89.49	0	89.84	0	90.19	0	90.54	0		

Summary for Pond MH1: DMH-1

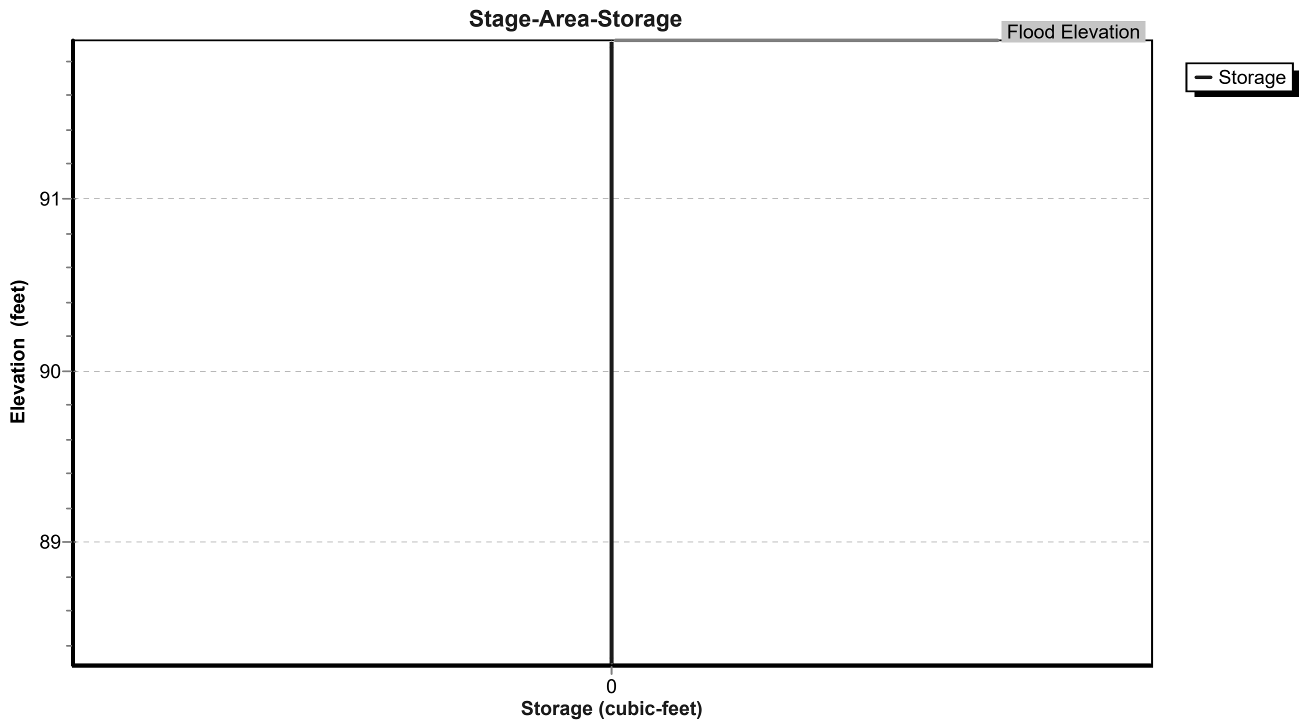
Inflow Area = 5,156 sf, 97.53% Impervious, Inflow Depth = 2.89" for 2-year event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 1,242 cf
Outflow = 0.37 cfs @ 12.08 hrs, Volume= 1,242 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.37 cfs @ 12.08 hrs, Volume= 1,242 cf
Routed to Pond MH2 : DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 88.64' @ 12.09 hrs
Flood Elev= 91.93'

Device	Routing	Invert	Outlet Devices
#1	Primary	88.28'	**12.0" Round 12" HDPE (Estimated Slope)** L= 32.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 88.28' / 87.95' S= 0.0101 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.37 cfs @ 12.08 hrs HW=88.64' TW=88.37' (Dynamic Tailwater)
└─**1=12" HDPE (Estimated Slope)** (Outlet Controls 0.37 cfs @ 2.18 fps)

Pond MH1: DMH-1



Stage-Area-Storage for Pond MH1: DMH-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
88.28	**0**	88.63	0	88.98	0	89.33	0	89.68	0
88.29	0	88.64	0	88.99	0	89.34	0	89.69	0
88.30	0	88.65	0	89.00	0	89.35	0	89.70	0
88.31	0	88.66	0	89.01	0	89.36	0	89.71	0
88.32	0	88.67	0	89.02	0	89.37	0	89.72	0
88.33	0	88.68	0	89.03	0	89.38	0	89.73	0
88.34	0	88.69	0	89.04	0	89.39	0	89.74	0
88.35	0	88.70	0	89.05	0	89.40	0	89.75	0
88.36	0	88.71	0	89.06	0	89.41	0	89.76	0
88.37	0	88.72	0	89.07	0	89.42	0	89.77	0
88.38	0	88.73	0	89.08	0	89.43	0	89.78	0
88.39	0	88.74	0	89.09	0	89.44	0	89.79	0
88.40	0	88.75	0	89.10	0	89.45	0	89.80	0
88.41	0	88.76	0	89.11	0	89.46	0	89.81	0
88.42	0	88.77	0	89.12	0	89.47	0	89.82	0
88.43	0	88.78	0	89.13	0	89.48	0	89.83	0
88.44	0	88.79	0	89.14	0	89.49	0	89.84	0
88.45	0	88.80	0	89.15	0	89.50	0	89.85	0
88.46	0	88.81	0	89.16	0	89.51	0	89.86	0
88.47	0	88.82	0	89.17	0	89.52	0	89.87	0
88.48	0	88.83	0	89.18	0	89.53	0	89.88	0
88.49	0	88.84	0	89.19	0	89.54	0	89.89	0
88.50	0	88.85	0	89.20	0	89.55	0	89.90	0
88.51	0	88.86	0	89.21	0	89.56	0	89.91	0
88.52	0	88.87	0	89.22	0	89.57	0	89.92	0
88.53	0	88.88	0	89.23	0	89.58	0	89.93	0
88.54	0	88.89	0	89.24	0	89.59	0	89.94	0
88.55	0	88.90	0	89.25	0	89.60	0	89.95	0
88.56	0	88.91	0	89.26	0	89.61	0	89.96	0
88.57	0	88.92	0	89.27	0	89.62	0	89.97	0
88.58	0	88.93	0	89.28	0	89.63	0	89.98	0
88.59	0	88.94	0	89.29	0	89.64	0	89.99	0
88.60	0	88.95	0	89.30	0	89.65	0	90.00	0
88.61	0	88.96	0	89.31	0	89.66	0	90.01	0
88.62	0	88.97	0	89.32	0	89.67	0	90.02	0

Stage-Area-Storage for Pond MH1: DMH-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0
90.10	0	90.45	0	90.80	0	91.15	0	91.50	0
90.11	0	90.46	0	90.81	0	91.16	0	91.51	0
90.12	0	90.47	0	90.82	0	91.17	0	91.52	0
90.13	0	90.48	0	90.83	0	91.18	0	91.53	0
90.14	0	90.49	0	90.84	0	91.19	0	91.54	0
90.15	0	90.50	0	90.85	0	91.20	0	91.55	0
90.16	0	90.51	0	90.86	0	91.21	0	91.56	0
90.17	0	90.52	0	90.87	0	91.22	0	91.57	0
90.18	0	90.53	0	90.88	0	91.23	0	91.58	0
90.19	0	90.54	0	90.89	0	91.24	0	91.59	0
90.20	0	90.55	0	90.90	0	91.25	0	91.60	0
90.21	0	90.56	0	90.91	0	91.26	0	91.61	0
90.22	0	90.57	0	90.92	0	91.27	0	91.62	0
90.23	0	90.58	0	90.93	0	91.28	0	91.63	0
90.24	0	90.59	0	90.94	0	91.29	0	91.64	0
90.25	0	90.60	0	90.95	0	91.30	0	91.65	0
90.26	0	90.61	0	90.96	0	91.31	0	91.66	0
90.27	0	90.62	0	90.97	0	91.32	0	91.67	0
90.28	0	90.63	0	90.98	0	91.33	0	91.68	0
90.29	0	90.64	0	90.99	0	91.34	0	91.69	0
90.30	0	90.65	0	91.00	0	91.35	0	91.70	0
90.31	0	90.66	0	91.01	0	91.36	0	91.71	0
90.32	0	90.67	0	91.02	0	91.37	0	91.72	0
90.33	0	90.68	0	91.03	0	91.38	0	91.73	0
90.34	0	90.69	0	91.04	0	91.39	0	91.74	0
90.35	0	90.70	0	91.05	0	91.40	0	91.75	0
90.36	0	90.71	0	91.06	0	91.41	0	91.76	0
90.37	0	90.72	0	91.07	0	91.42	0	91.77	0

Stage-Area-Storage for Pond MH1: DMH-1 (continued)

Elevation (feet)	Storage (cubic-feet)
91.78	0
91.79	0
91.80	0
91.81	0
91.82	0
91.83	0
91.84	0
91.85	0
91.86	0
91.87	0
91.88	0
91.89	0
91.90	0
91.91	0
91.92	0
91.93	0

Summary for Pond MH2: DMH-2

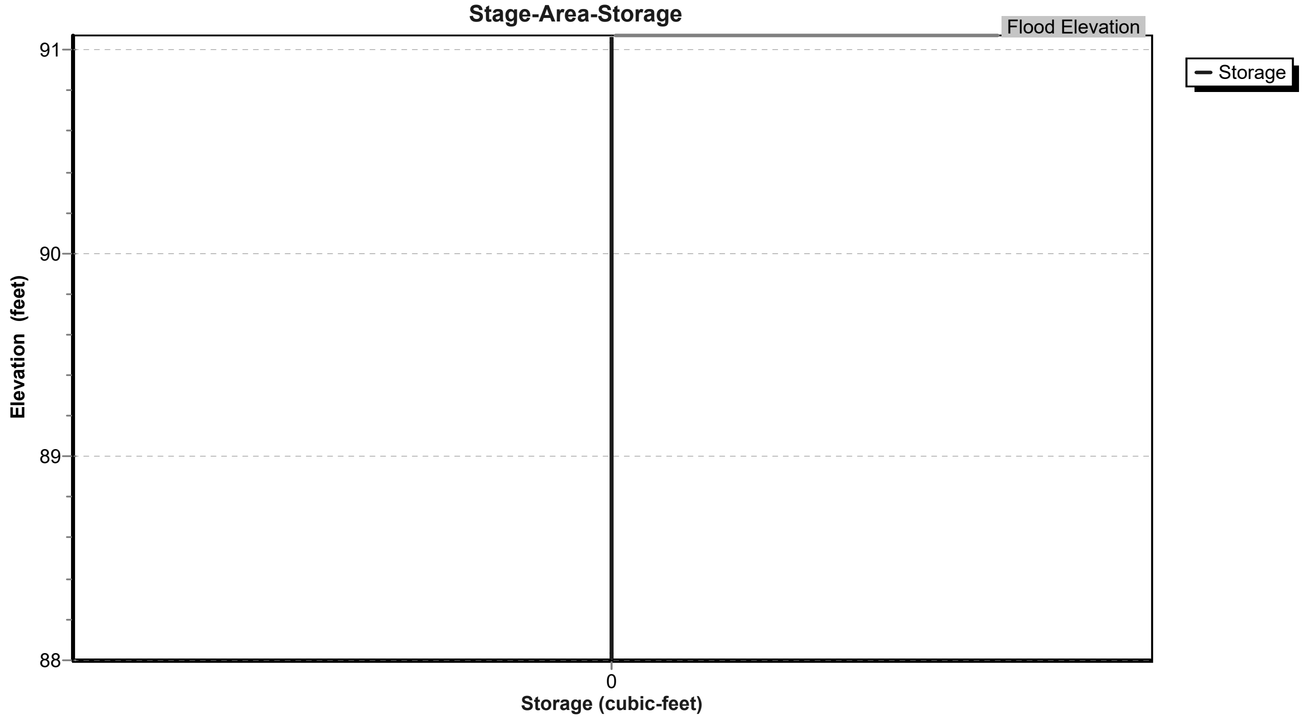
Inflow Area = 12,720 sf, 76.68% Impervious, Inflow Depth = 1.90" for 2-year event
Inflow = 0.61 cfs @ 12.09 hrs, Volume= 2,017 cf
Outflow = 0.61 cfs @ 12.09 hrs, Volume= 2,017 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.61 cfs @ 12.09 hrs, Volume= 2,017 cf
Routed to Link SP2 : Flow Off-Site To Riverfront Area

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 88.38' @ 12.09 hrs
Flood Elev= 91.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round 12" RCP (Estimated Slope)** L= 72.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 88.00' / 87.28' S= 0.0100 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.61 cfs @ 12.09 hrs HW=88.38' TW=0.00' (Dynamic Tailwater)
└─**1=12" RCP (Estimated Slope)** (Barrel Controls 0.61 cfs @ 3.36 fps)

Pond MH2: DMH-2



Stage-Area-Storage for Pond MH2: DMH-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
88.00	**0**	88.35	0	88.70	0	89.05	0	89.40	0
88.01	0	88.36	0	88.71	0	89.06	0	89.41	0
88.02	0	88.37	0	88.72	0	89.07	0	89.42	0
88.03	0	88.38	0	88.73	0	89.08	0	89.43	0
88.04	0	88.39	0	88.74	0	89.09	0	89.44	0
88.05	0	88.40	0	88.75	0	89.10	0	89.45	0
88.06	0	88.41	0	88.76	0	89.11	0	89.46	0
88.07	0	88.42	0	88.77	0	89.12	0	89.47	0
88.08	0	88.43	0	88.78	0	89.13	0	89.48	0
88.09	0	88.44	0	88.79	0	89.14	0	89.49	0
88.10	0	88.45	0	88.80	0	89.15	0	89.50	0
88.11	0	88.46	0	88.81	0	89.16	0	89.51	0
88.12	0	88.47	0	88.82	0	89.17	0	89.52	0
88.13	0	88.48	0	88.83	0	89.18	0	89.53	0
88.14	0	88.49	0	88.84	0	89.19	0	89.54	0
88.15	0	88.50	0	88.85	0	89.20	0	89.55	0
88.16	0	88.51	0	88.86	0	89.21	0	89.56	0
88.17	0	88.52	0	88.87	0	89.22	0	89.57	0
88.18	0	88.53	0	88.88	0	89.23	0	89.58	0
88.19	0	88.54	0	88.89	0	89.24	0	89.59	0
88.20	0	88.55	0	88.90	0	89.25	0	89.60	0
88.21	0	88.56	0	88.91	0	89.26	0	89.61	0
88.22	0	88.57	0	88.92	0	89.27	0	89.62	0
88.23	0	88.58	0	88.93	0	89.28	0	89.63	0
88.24	0	88.59	0	88.94	0	89.29	0	89.64	0
88.25	0	88.60	0	88.95	0	89.30	0	89.65	0
88.26	0	88.61	0	88.96	0	89.31	0	89.66	0
88.27	0	88.62	0	88.97	0	89.32	0	89.67	0
88.28	0	88.63	0	88.98	0	89.33	0	89.68	0
88.29	0	88.64	0	88.99	0	89.34	0	89.69	0
88.30	0	88.65	0	89.00	0	89.35	0	89.70	0
88.31	0	88.66	0	89.01	0	89.36	0	89.71	0
88.32	0	88.67	0	89.02	0	89.37	0	89.72	0
88.33	0	88.68	0	89.03	0	89.38	0	89.73	0
88.34	0	88.69	0	89.04	0	89.39	0	89.74	0

Stage-Area-Storage for Pond MH2: DMH-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.75	0	90.10	0	90.45	0	90.80	0
89.76	0	90.11	0	90.46	0	90.81	0
89.77	0	90.12	0	90.47	0	90.82	0
89.78	0	90.13	0	90.48	0	90.83	0
89.79	0	90.14	0	90.49	0	90.84	0
89.80	0	90.15	0	90.50	0	90.85	0
89.81	0	90.16	0	90.51	0	90.86	0
89.82	0	90.17	0	90.52	0	90.87	0
89.83	0	90.18	0	90.53	0	90.88	0
89.84	0	90.19	0	90.54	0	90.89	0
89.85	0	90.20	0	90.55	0	90.90	0
89.86	0	90.21	0	90.56	0	90.91	0
89.87	0	90.22	0	90.57	0	90.92	0
89.88	0	90.23	0	90.58	0	90.93	0
89.89	0	90.24	0	90.59	0	90.94	0
89.90	0	90.25	0	90.60	0	90.95	0
89.91	0	90.26	0	90.61	0	90.96	0
89.92	0	90.27	0	90.62	0	90.97	0
89.93	0	90.28	0	90.63	0	90.98	0
89.94	0	90.29	0	90.64	0	90.99	0
89.95	0	90.30	0	90.65	0	91.00	0
89.96	0	90.31	0	90.66	0	91.01	0
89.97	0	90.32	0	90.67	0	91.02	0
89.98	0	90.33	0	90.68	0	91.03	0
89.99	0	90.34	0	90.69	0	91.04	0
90.00	0	90.35	0	90.70	0	91.05	0
90.01	0	90.36	0	90.71	0	91.06	0
90.02	0	90.37	0	90.72	0	91.07	0
90.03	0	90.38	0	90.73	0		
90.04	0	90.39	0	90.74	0		
90.05	0	90.40	0	90.75	0		
90.06	0	90.41	0	90.76	0		
90.07	0	90.42	0	90.77	0		
90.08	0	90.43	0	90.78	0		
90.09	0	90.44	0	90.79	0		

Summary for Link SP1: Flow Off-Site To Municipal Drainage

Inflow Area = 9,274 sf, 62.30% Impervious, Inflow Depth = 1.23" for 2-year event
Inflow = 0.30 cfs @ 12.09 hrs, Volume= 950 cf
Primary = 0.30 cfs @ 12.09 hrs, Volume= 950 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Link SP2: Flow Off-Site To Riverfront Area

Inflow Area =	24,280 sf, 40.17% Impervious,	Inflow Depth = 1.00"	for 2-year event
Inflow =	0.61 cfs @ 12.09 hrs, Volume=	2,017 cf	
Primary =	0.61 cfs @ 12.09 hrs, Volume=	2,017 cf, Atten= 0%, Lag= 0.0 min	

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

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E-1: Subcat E-1	Runoff Area=9,274 sf 62.30% Impervious Runoff Depth=2.71" Tc=6.0 min CN=76 Runoff=0.68 cfs 2,094 cf
Subcatchment E-2: Subcat E-2	Runoff Area=11,560 sf 0.00% Impervious Runoff Depth=0.02" Tc=6.0 min CN=31 Runoff=0.00 cfs 24 cf
Subcatchment E-3: Subcat E-3	Runoff Area=4,210 sf 98.71% Impervious Runoff Depth=4.86" Tc=6.0 min CN=97 Runoff=0.49 cfs 1,704 cf
Subcatchment E-4: Subcat E-4	Runoff Area=947 sf 92.30% Impervious Runoff Depth=4.40" Tc=6.0 min CN=93 Runoff=0.11 cfs 347 cf
Subcatchment E-5: Subcat E-5	Runoff Area=7,564 sf 62.46% Impervious Runoff Depth=2.71" Tc=6.0 min CN=76 Runoff=0.55 cfs 1,708 cf
Pond CB1: CB-1	Peak Elev=89.42' Inflow=0.49 cfs 1,704 cf 12.0" Round Culvert n=0.012 L=58.9' S=0.0100 '/' Outflow=0.49 cfs 1,704 cf
Pond CB2: CB-2	Peak Elev=89.36' Inflow=0.11 cfs 347 cf 10.0" Round Culvert n=0.012 L=24.5' S=0.0322 '/' Outflow=0.11 cfs 347 cf
Pond CB3: CB-3	Peak Elev=89.59' Inflow=0.55 cfs 1,708 cf 12.0" Round Culvert n=0.012 L=9.6' S=0.0104 '/' Outflow=0.55 cfs 1,708 cf
Pond MH1: DMH-1	Peak Elev=88.77' Inflow=0.59 cfs 2,051 cf 12.0" Round Culvert n=0.012 L=32.6' S=0.0101 '/' Outflow=0.59 cfs 2,051 cf
Pond MH2: DMH-2	Peak Elev=88.53' Inflow=1.15 cfs 3,759 cf 12.0" Round Culvert n=0.012 L=72.0' S=0.0100 '/' Outflow=1.15 cfs 3,759 cf
Link SP1: Flow Off-Site To Municipal Drainage	Inflow=0.68 cfs 2,094 cf Primary=0.68 cfs 2,094 cf

Link SP2: Flow Off-Site To Riverfront Area

Inflow=1.15 cfs 3,783 cf
Primary=1.15 cfs 3,783 cf

Total Runoff Area = 33,554 sf Runoff Volume = 5,877 cf Average Runoff Depth = 2.10"
53.71% Pervious = 18,022 sf 46.29% Impervious = 15,531 sf

Summary for Subcatchment E-1: Subcat E-1

Runoff = 0.68 cfs @ 12.09 hrs, Volume= 2,094 cf, Depth= 2.71"
Routed to Link SP1 : Flow Off-Site To Municipal Drainage

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.21"

Area (sf)	CN	Description
3,496	39	>75% Grass cover, Good, HSG A
931	98	Roofs, HSG A
4,847	98	Paved parking, HSG A
9,274	76	Weighted Average
3,496		37.70% Pervious Area
5,778		62.30% Impervious Area

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

Summary for Subcatchment E-2: Subcat E-2

Runoff = 0.00 cfs @ 21.26 hrs, Volume= 24 cf, Depth= 0.02"
Routed to Link SP2 : Flow Off-Site To Riverfront Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.21"

Area (sf)	CN	Description
10,569	30	Woods, Good, HSG A
990	39	>75% Grass cover, Good, HSG A
0	98	Paved parking, HSG A
11,560	31	Weighted Average
11,560		100.00% Pervious Area
0		0.00% Impervious Area

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

Summary for Subcatchment E-3: Subcat E-3

Runoff = 0.49 cfs @ 12.08 hrs, Volume= 1,704 cf, Depth= 4.86"
Routed to Pond CB1 : CB-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.21"

Area (sf)	CN	Description
54	39	>75% Grass cover, Good, HSG A
4,156	98	Paved parking, HSG A
4,210	97	Weighted Average
54		1.29% Pervious Area
4,156		98.71% Impervious Area

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

Summary for Subcatchment E-4: Subcat E-4

Runoff = 0.11 cfs @ 12.08 hrs, Volume= 347 cf, Depth= 4.40"
Routed to Pond CB2 : CB-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.21"

Area (sf)	CN	Description
73	39	>75% Grass cover, Good, HSG A
248	98	Roofs, HSG A
626	98	Paved parking, HSG A
947	93	Weighted Average
73		7.70% Pervious Area
874		92.30% Impervious Area

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

Summary for Subcatchment E-5: Subcat E-5

Runoff = 0.55 cfs @ 12.09 hrs, Volume= 1,708 cf, Depth= 2.71"
Routed to Pond CB3 : CB-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.21"

Area (sf)	CN	Description
4,037	98	Paved parking, HSG A
2,840	39	>75% Grass cover, Good, HSG A
688	98	Roofs, HSG A
7,564	76	Weighted Average
2,840		37.54% Pervious Area
4,724		62.46% Impervious Area

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

Summary for Pond CB1: CB-1

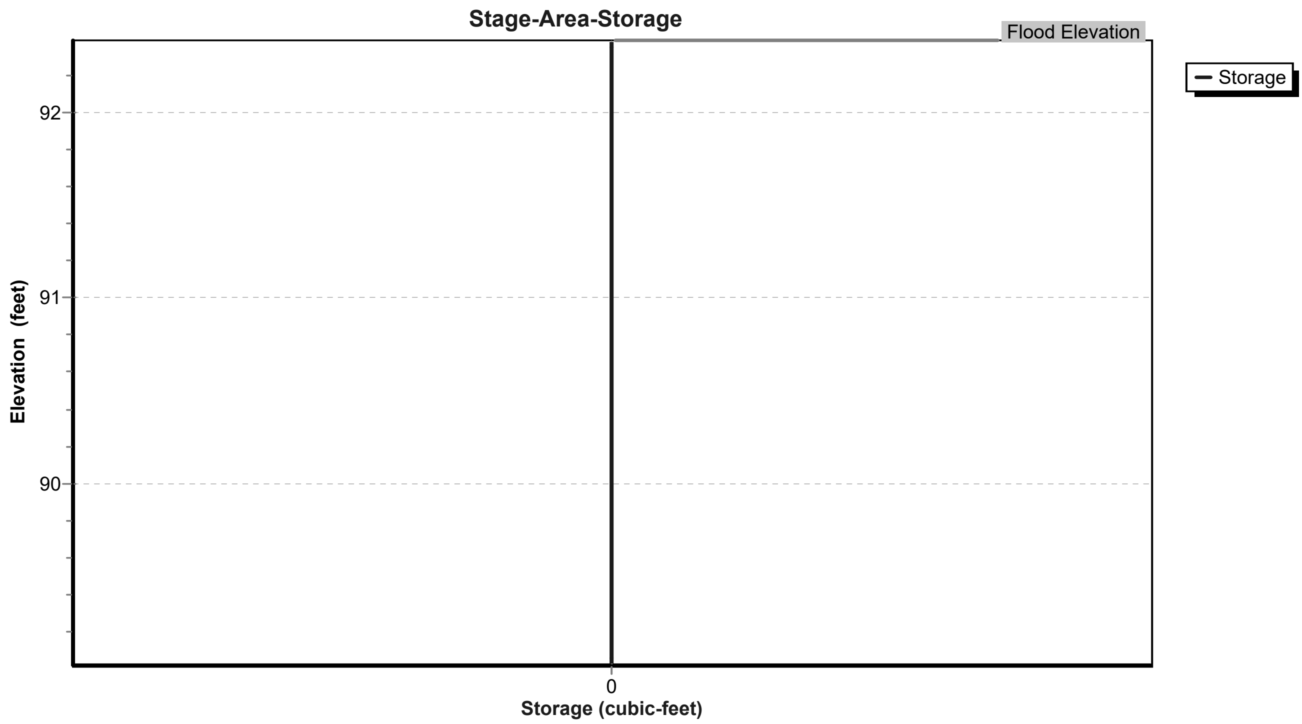
Inflow Area = 4,210 sf, 98.71% Impervious, Inflow Depth = 4.86" for 10-year event
Inflow = 0.49 cfs @ 12.08 hrs, Volume= 1,704 cf
Outflow = 0.49 cfs @ 12.08 hrs, Volume= 1,704 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.49 cfs @ 12.08 hrs, Volume= 1,704 cf
Routed to Pond MH1 : DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 89.42' @ 12.08 hrs
Flood Elev= 92.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.02'	**12.0" Round 12" HDPE (Estimated Invert)** L= 58.9' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.02' / 88.43' S= 0.0100 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.49 cfs @ 12.08 hrs HW=89.42' TW=88.77' (Dynamic Tailwater)
└─**1=12" HDPE (Estimated Invert)** (Inlet Controls 0.49 cfs @ 1.69 fps)

Pond CB1: CB-1



Stage-Area-Storage for Pond CB1: CB-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.02	**0**	89.37	0	89.72	0	90.07	0	90.42	0
89.03	0	89.38	0	89.73	0	90.08	0	90.43	0
89.04	0	89.39	0	89.74	0	90.09	0	90.44	0
89.05	0	89.40	0	89.75	0	90.10	0	90.45	0
89.06	0	89.41	0	89.76	0	90.11	0	90.46	0
89.07	0	89.42	0	89.77	0	90.12	0	90.47	0
89.08	0	89.43	0	89.78	0	90.13	0	90.48	0
89.09	0	89.44	0	89.79	0	90.14	0	90.49	0
89.10	0	89.45	0	89.80	0	90.15	0	90.50	0
89.11	0	89.46	0	89.81	0	90.16	0	90.51	0
89.12	0	89.47	0	89.82	0	90.17	0	90.52	0
89.13	0	89.48	0	89.83	0	90.18	0	90.53	0
89.14	0	89.49	0	89.84	0	90.19	0	90.54	0
89.15	0	89.50	0	89.85	0	90.20	0	90.55	0
89.16	0	89.51	0	89.86	0	90.21	0	90.56	0
89.17	0	89.52	0	89.87	0	90.22	0	90.57	0
89.18	0	89.53	0	89.88	0	90.23	0	90.58	0
89.19	0	89.54	0	89.89	0	90.24	0	90.59	0
89.20	0	89.55	0	89.90	0	90.25	0	90.60	0
89.21	0	89.56	0	89.91	0	90.26	0	90.61	0
89.22	0	89.57	0	89.92	0	90.27	0	90.62	0
89.23	0	89.58	0	89.93	0	90.28	0	90.63	0
89.24	0	89.59	0	89.94	0	90.29	0	90.64	0
89.25	0	89.60	0	89.95	0	90.30	0	90.65	0
89.26	0	89.61	0	89.96	0	90.31	0	90.66	0
89.27	0	89.62	0	89.97	0	90.32	0	90.67	0
89.28	0	89.63	0	89.98	0	90.33	0	90.68	0
89.29	0	89.64	0	89.99	0	90.34	0	90.69	0
89.30	0	89.65	0	90.00	0	90.35	0	90.70	0
89.31	0	89.66	0	90.01	0	90.36	0	90.71	0
89.32	0	89.67	0	90.02	0	90.37	0	90.72	0
89.33	0	89.68	0	90.03	0	90.38	0	90.73	0
89.34	0	89.69	0	90.04	0	90.39	0	90.74	0
89.35	0	89.70	0	90.05	0	90.40	0	90.75	0
89.36	0	89.71	0	90.06	0	90.41	0	90.76	0

Stage-Area-Storage for Pond CB1: CB-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.77	0	91.12	0	91.47	0	91.82	0	92.17	0
90.78	0	91.13	0	91.48	0	91.83	0	92.18	0
90.79	0	91.14	0	91.49	0	91.84	0	92.19	0
90.80	0	91.15	0	91.50	0	91.85	0	92.20	0
90.81	0	91.16	0	91.51	0	91.86	0	92.21	0
90.82	0	91.17	0	91.52	0	91.87	0	92.22	0
90.83	0	91.18	0	91.53	0	91.88	0	92.23	0
90.84	0	91.19	0	91.54	0	91.89	0	92.24	0
90.85	0	91.20	0	91.55	0	91.90	0	92.25	0
90.86	0	91.21	0	91.56	0	91.91	0	92.26	0
90.87	0	91.22	0	91.57	0	91.92	0	92.27	0
90.88	0	91.23	0	91.58	0	91.93	0	92.28	0
90.89	0	91.24	0	91.59	0	91.94	0	92.29	0
90.90	0	91.25	0	91.60	0	91.95	0	92.30	0
90.91	0	91.26	0	91.61	0	91.96	0	92.31	0
90.92	0	91.27	0	91.62	0	91.97	0	92.32	0
90.93	0	91.28	0	91.63	0	91.98	0	92.33	0
90.94	0	91.29	0	91.64	0	91.99	0	92.34	0
90.95	0	91.30	0	91.65	0	92.00	0	92.35	0
90.96	0	91.31	0	91.66	0	92.01	0	92.36	0
90.97	0	91.32	0	91.67	0	92.02	0	92.37	0
90.98	0	91.33	0	91.68	0	92.03	0	92.38	0
90.99	0	91.34	0	91.69	0	92.04	0	92.39	0
91.00	0	91.35	0	91.70	0	92.05	0		
91.01	0	91.36	0	91.71	0	92.06	0		
91.02	0	91.37	0	91.72	0	92.07	0		
91.03	0	91.38	0	91.73	0	92.08	0		
91.04	0	91.39	0	91.74	0	92.09	0		
91.05	0	91.40	0	91.75	0	92.10	0		
91.06	0	91.41	0	91.76	0	92.11	0		
91.07	0	91.42	0	91.77	0	92.12	0		
91.08	0	91.43	0	91.78	0	92.13	0		
91.09	0	91.44	0	91.79	0	92.14	0		
91.10	0	91.45	0	91.80	0	92.15	0		
91.11	0	91.46	0	91.81	0	92.16	0		

Summary for Pond CB2: CB-2

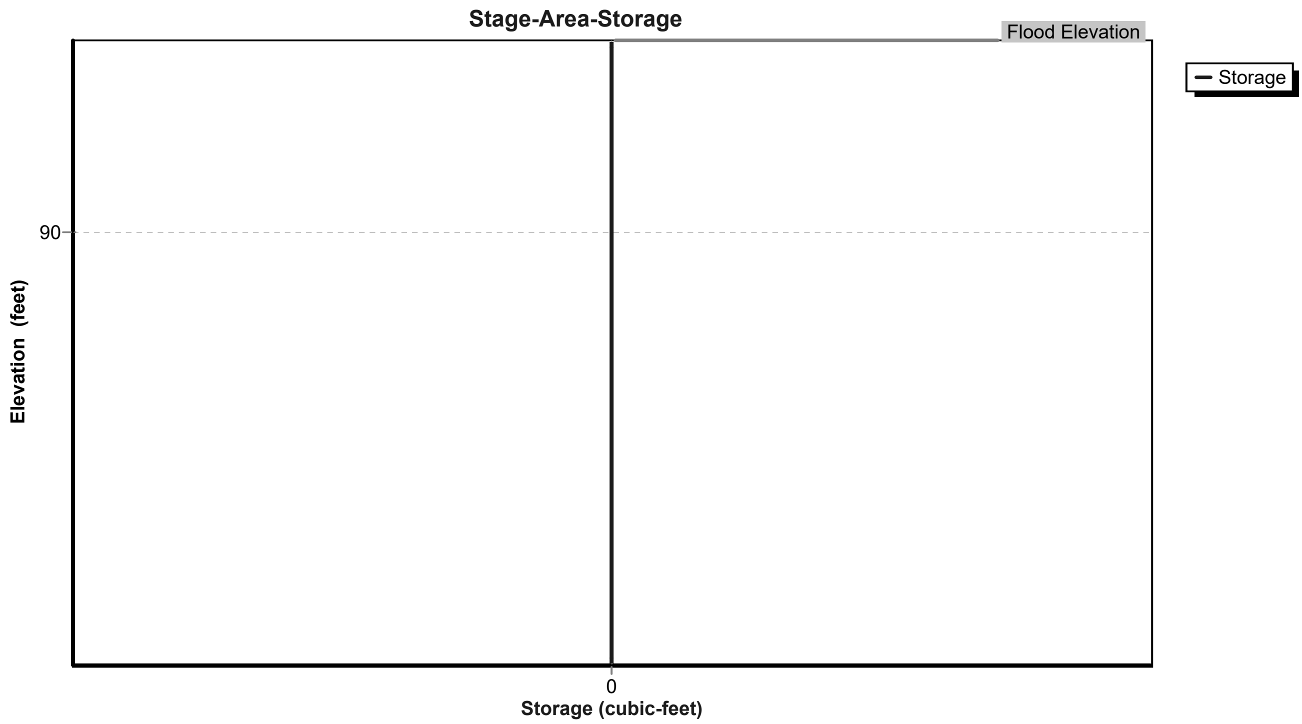
Inflow Area = 947 sf, 92.30% Impervious, Inflow Depth = 4.40" for 10-year event
Inflow = 0.11 cfs @ 12.08 hrs, Volume= 347 cf
Outflow = 0.11 cfs @ 12.08 hrs, Volume= 347 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.11 cfs @ 12.08 hrs, Volume= 347 cf
Routed to Pond MH1 : DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 89.36' @ 12.08 hrs
Flood Elev= 90.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.17'	**10.0" Round 10" HDPE** L= 24.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.17' / 88.38' S= 0.0322 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=0.10 cfs @ 12.08 hrs HW=89.36' TW=88.77' (Dynamic Tailwater)
1=10" HDPE (Inlet Controls 0.10 cfs @ 1.16 fps)

Pond CB2: CB-2



Stage-Area-Storage for Pond CB2: CB-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.17	**0**	89.52	0	89.87	0	90.22	0
89.18	0	89.53	0	89.88	0	90.23	0
89.19	0	89.54	0	89.89	0	90.24	0
89.20	0	89.55	0	89.90	0	90.25	0
89.21	0	89.56	0	89.91	0	90.26	0
89.22	0	89.57	0	89.92	0	90.27	0
89.23	0	89.58	0	89.93	0	90.28	0
89.24	0	89.59	0	89.94	0	90.29	0
89.25	0	89.60	0	89.95	0	90.30	0
89.26	0	89.61	0	89.96	0	90.31	0
89.27	0	89.62	0	89.97	0	90.32	0
89.28	0	89.63	0	89.98	0	90.33	0
89.29	0	89.64	0	89.99	0	90.34	0
89.30	0	89.65	0	90.00	0	90.35	0
89.31	0	89.66	0	90.01	0	90.36	0
89.32	0	89.67	0	90.02	0	90.37	0
89.33	0	89.68	0	90.03	0		
89.34	0	89.69	0	90.04	0		
89.35	0	89.70	0	90.05	0		
89.36	0	89.71	0	90.06	0		
89.37	0	89.72	0	90.07	0		
89.38	0	89.73	0	90.08	0		
89.39	0	89.74	0	90.09	0		
89.40	0	89.75	0	90.10	0		
89.41	0	89.76	0	90.11	0		
89.42	0	89.77	0	90.12	0		
89.43	0	89.78	0	90.13	0		
89.44	0	89.79	0	90.14	0		
89.45	0	89.80	0	90.15	0		
89.46	0	89.81	0	90.16	0		
89.47	0	89.82	0	90.17	0		
89.48	0	89.83	0	90.18	0		
89.49	0	89.84	0	90.19	0		
89.50	0	89.85	0	90.20	0		
89.51	0	89.86	0	90.21	0		

Summary for Pond CB3: CB-3

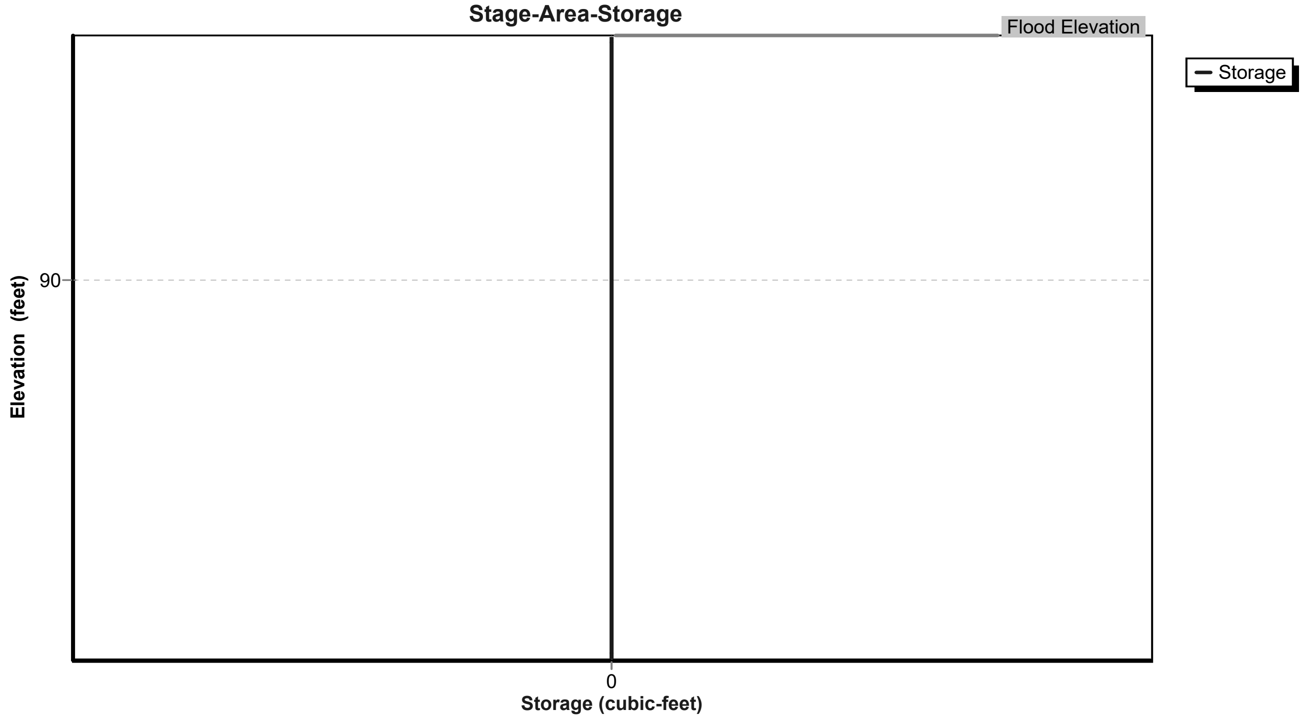
Inflow Area = 7,564 sf, 62.46% Impervious, Inflow Depth = 2.71" for 10-year event
Inflow = 0.55 cfs @ 12.09 hrs, Volume= 1,708 cf
Outflow = 0.55 cfs @ 12.09 hrs, Volume= 1,708 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.55 cfs @ 12.09 hrs, Volume= 1,708 cf
Routed to Pond MH2 : DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 89.59' @ 12.09 hrs
Flood Elev= 90.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.15'	**12.0" Round 12" HDPE Assumed Size and Slope** L= 9.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.15' / 89.05' S= 0.0104 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.55 cfs @ 12.09 hrs HW=89.59' TW=88.53' (Dynamic Tailwater)
└—**1=12" HDPE Assumed Size and Slope** (Barrel Controls 0.55 cfs @ 2.43 fps)

Pond CB3: CB-3



Stage-Area-Storage for Pond CB3: CB-3

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.15	**0**	89.50	0	89.85	0	90.20	0	90.55	0
89.16	0	89.51	0	89.86	0	90.21	0		
89.17	0	89.52	0	89.87	0	90.22	0		
89.18	0	89.53	0	89.88	0	90.23	0		
89.19	0	89.54	0	89.89	0	90.24	0		
89.20	0	89.55	0	89.90	0	90.25	0		
89.21	0	89.56	0	89.91	0	90.26	0		
89.22	0	89.57	0	89.92	0	90.27	0		
89.23	0	89.58	0	89.93	0	90.28	0		
89.24	0	89.59	0	89.94	0	90.29	0		
89.25	0	89.60	0	89.95	0	90.30	0		
89.26	0	89.61	0	89.96	0	90.31	0		
89.27	0	89.62	0	89.97	0	90.32	0		
89.28	0	89.63	0	89.98	0	90.33	0		
89.29	0	89.64	0	89.99	0	90.34	0		
89.30	0	89.65	0	90.00	0	90.35	0		
89.31	0	89.66	0	90.01	0	90.36	0		
89.32	0	89.67	0	90.02	0	90.37	0		
89.33	0	89.68	0	90.03	0	90.38	0		
89.34	0	89.69	0	90.04	0	90.39	0		
89.35	0	89.70	0	90.05	0	90.40	0		
89.36	0	89.71	0	90.06	0	90.41	0		
89.37	0	89.72	0	90.07	0	90.42	0		
89.38	0	89.73	0	90.08	0	90.43	0		
89.39	0	89.74	0	90.09	0	90.44	0		
89.40	0	89.75	0	90.10	0	90.45	0		
89.41	0	89.76	0	90.11	0	90.46	0		
89.42	0	89.77	0	90.12	0	90.47	0		
89.43	0	89.78	0	90.13	0	90.48	0		
89.44	0	89.79	0	90.14	0	90.49	0		
89.45	0	89.80	0	90.15	0	90.50	0		
89.46	0	89.81	0	90.16	0	90.51	0		
89.47	0	89.82	0	90.17	0	90.52	0		
89.48	0	89.83	0	90.18	0	90.53	0		
89.49	0	89.84	0	90.19	0	90.54	0		

Summary for Pond MH1: DMH-1

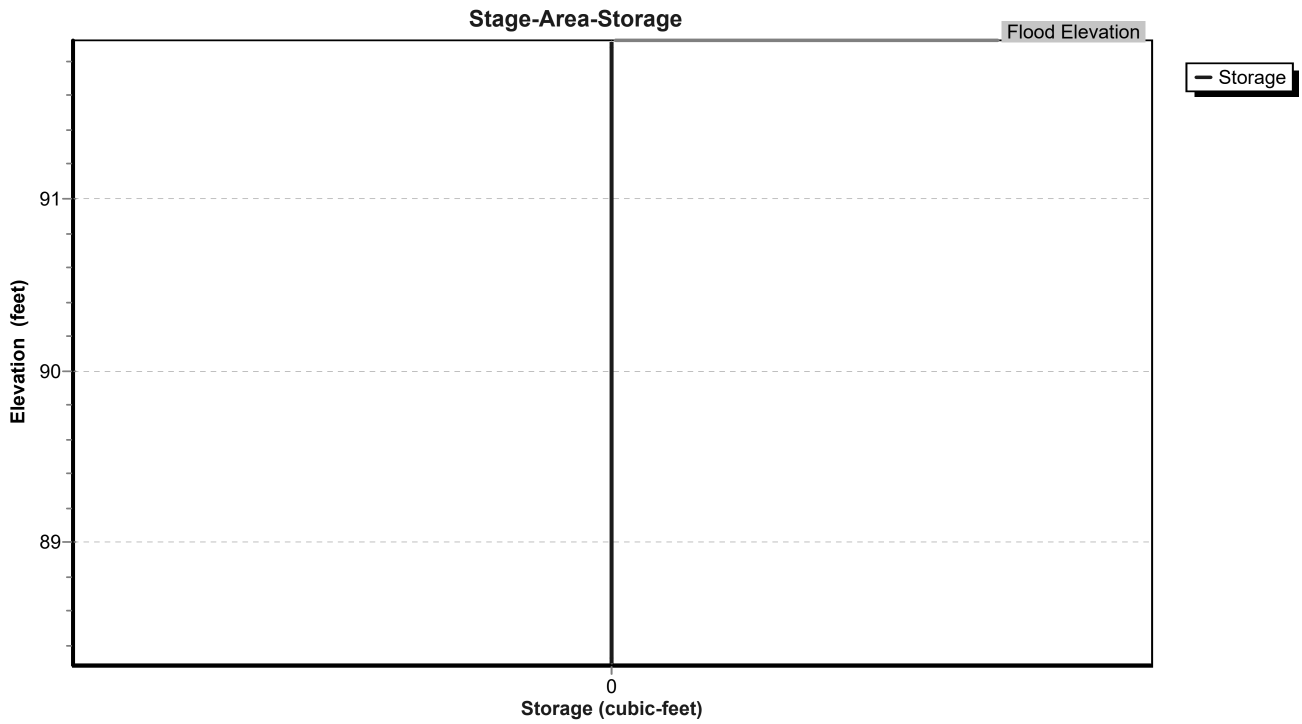
Inflow Area = 5,156 sf, 97.53% Impervious, Inflow Depth = 4.77" for 10-year event
Inflow = 0.59 cfs @ 12.08 hrs, Volume= 2,051 cf
Outflow = 0.59 cfs @ 12.08 hrs, Volume= 2,051 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.59 cfs @ 12.08 hrs, Volume= 2,051 cf
Routed to Pond MH2 : DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 88.77' @ 12.08 hrs
Flood Elev= 91.93'

Device	Routing	Invert	Outlet Devices
#1	Primary	88.28'	**12.0" Round 12" HDPE (Estimated Slope)** L= 32.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 88.28' / 87.95' S= 0.0101 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.59 cfs @ 12.08 hrs HW=88.77' TW=88.53' (Dynamic Tailwater)
└─**1=12" HDPE (Estimated Slope)** (Outlet Controls 0.59 cfs @ 2.25 fps)

Pond MH1: DMH-1



Stage-Area-Storage for Pond MH1: DMH-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
88.28	**0**	88.63	0	88.98	0	89.33	0	89.68	0
88.29	0	88.64	0	88.99	0	89.34	0	89.69	0
88.30	0	88.65	0	89.00	0	89.35	0	89.70	0
88.31	0	88.66	0	89.01	0	89.36	0	89.71	0
88.32	0	88.67	0	89.02	0	89.37	0	89.72	0
88.33	0	88.68	0	89.03	0	89.38	0	89.73	0
88.34	0	88.69	0	89.04	0	89.39	0	89.74	0
88.35	0	88.70	0	89.05	0	89.40	0	89.75	0
88.36	0	88.71	0	89.06	0	89.41	0	89.76	0
88.37	0	88.72	0	89.07	0	89.42	0	89.77	0
88.38	0	88.73	0	89.08	0	89.43	0	89.78	0
88.39	0	88.74	0	89.09	0	89.44	0	89.79	0
88.40	0	88.75	0	89.10	0	89.45	0	89.80	0
88.41	0	88.76	0	89.11	0	89.46	0	89.81	0
88.42	0	88.77	0	89.12	0	89.47	0	89.82	0
88.43	0	88.78	0	89.13	0	89.48	0	89.83	0
88.44	0	88.79	0	89.14	0	89.49	0	89.84	0
88.45	0	88.80	0	89.15	0	89.50	0	89.85	0
88.46	0	88.81	0	89.16	0	89.51	0	89.86	0
88.47	0	88.82	0	89.17	0	89.52	0	89.87	0
88.48	0	88.83	0	89.18	0	89.53	0	89.88	0
88.49	0	88.84	0	89.19	0	89.54	0	89.89	0
88.50	0	88.85	0	89.20	0	89.55	0	89.90	0
88.51	0	88.86	0	89.21	0	89.56	0	89.91	0
88.52	0	88.87	0	89.22	0	89.57	0	89.92	0
88.53	0	88.88	0	89.23	0	89.58	0	89.93	0
88.54	0	88.89	0	89.24	0	89.59	0	89.94	0
88.55	0	88.90	0	89.25	0	89.60	0	89.95	0
88.56	0	88.91	0	89.26	0	89.61	0	89.96	0
88.57	0	88.92	0	89.27	0	89.62	0	89.97	0
88.58	0	88.93	0	89.28	0	89.63	0	89.98	0
88.59	0	88.94	0	89.29	0	89.64	0	89.99	0
88.60	0	88.95	0	89.30	0	89.65	0	90.00	0
88.61	0	88.96	0	89.31	0	89.66	0	90.01	0
88.62	0	88.97	0	89.32	0	89.67	0	90.02	0

Stage-Area-Storage for Pond MH1: DMH-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0
90.10	0	90.45	0	90.80	0	91.15	0	91.50	0
90.11	0	90.46	0	90.81	0	91.16	0	91.51	0
90.12	0	90.47	0	90.82	0	91.17	0	91.52	0
90.13	0	90.48	0	90.83	0	91.18	0	91.53	0
90.14	0	90.49	0	90.84	0	91.19	0	91.54	0
90.15	0	90.50	0	90.85	0	91.20	0	91.55	0
90.16	0	90.51	0	90.86	0	91.21	0	91.56	0
90.17	0	90.52	0	90.87	0	91.22	0	91.57	0
90.18	0	90.53	0	90.88	0	91.23	0	91.58	0
90.19	0	90.54	0	90.89	0	91.24	0	91.59	0
90.20	0	90.55	0	90.90	0	91.25	0	91.60	0
90.21	0	90.56	0	90.91	0	91.26	0	91.61	0
90.22	0	90.57	0	90.92	0	91.27	0	91.62	0
90.23	0	90.58	0	90.93	0	91.28	0	91.63	0
90.24	0	90.59	0	90.94	0	91.29	0	91.64	0
90.25	0	90.60	0	90.95	0	91.30	0	91.65	0
90.26	0	90.61	0	90.96	0	91.31	0	91.66	0
90.27	0	90.62	0	90.97	0	91.32	0	91.67	0
90.28	0	90.63	0	90.98	0	91.33	0	91.68	0
90.29	0	90.64	0	90.99	0	91.34	0	91.69	0
90.30	0	90.65	0	91.00	0	91.35	0	91.70	0
90.31	0	90.66	0	91.01	0	91.36	0	91.71	0
90.32	0	90.67	0	91.02	0	91.37	0	91.72	0
90.33	0	90.68	0	91.03	0	91.38	0	91.73	0
90.34	0	90.69	0	91.04	0	91.39	0	91.74	0
90.35	0	90.70	0	91.05	0	91.40	0	91.75	0
90.36	0	90.71	0	91.06	0	91.41	0	91.76	0
90.37	0	90.72	0	91.07	0	91.42	0	91.77	0

Stage-Area-Storage for Pond MH1: DMH-1 (continued)

Elevation (feet)	Storage (cubic-feet)
91.78	0
91.79	0
91.80	0
91.81	0
91.82	0
91.83	0
91.84	0
91.85	0
91.86	0
91.87	0
91.88	0
91.89	0
91.90	0
91.91	0
91.92	0
91.93	0

Summary for Pond MH2: DMH-2

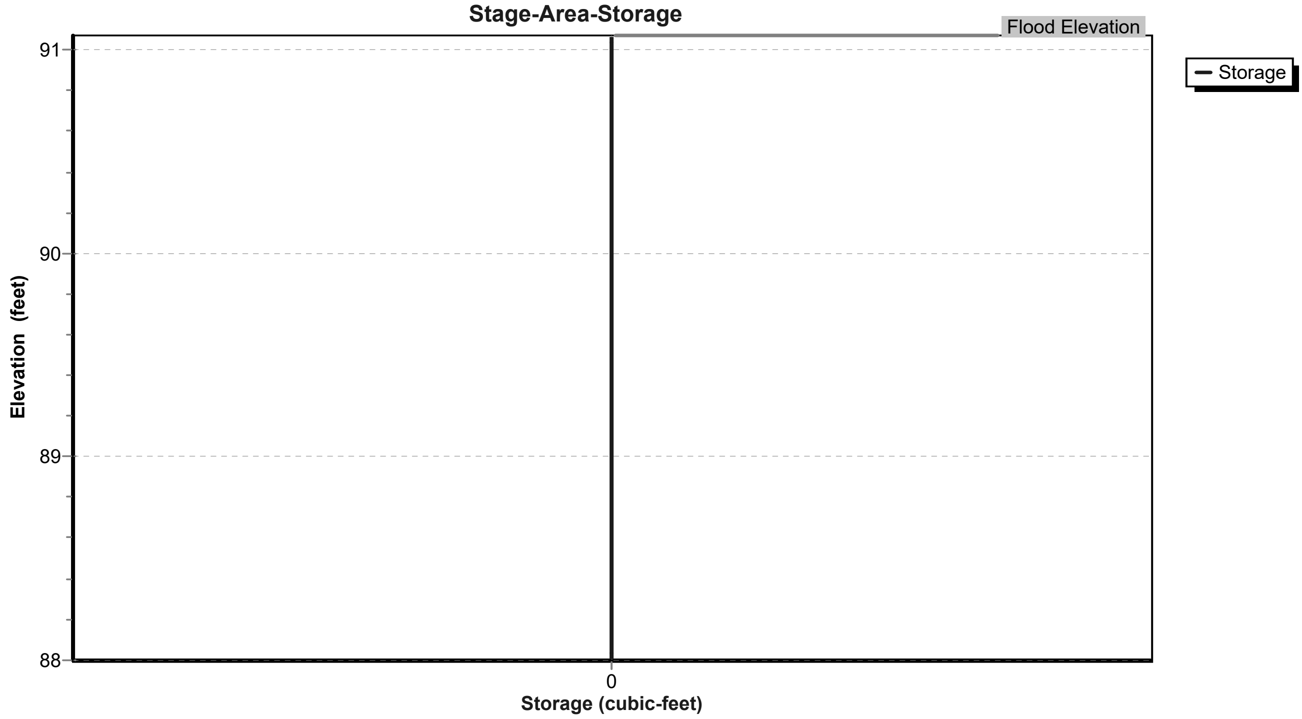
Inflow Area = 12,720 sf, 76.68% Impervious, Inflow Depth = 3.55" for 10-year event
Inflow = 1.15 cfs @ 12.09 hrs, Volume= 3,759 cf
Outflow = 1.15 cfs @ 12.09 hrs, Volume= 3,759 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.15 cfs @ 12.09 hrs, Volume= 3,759 cf
Routed to Link SP2 : Flow Off-Site To Riverfront Area

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 88.53' @ 12.09 hrs
Flood Elev= 91.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round 12" RCP (Estimated Slope)** L= 72.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 88.00' / 87.28' S= 0.0100 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.14 cfs @ 12.09 hrs HW=88.53' TW=0.00' (Dynamic Tailwater)
└─**1=12" RCP (Estimated Slope)** (Barrel Controls 1.14 cfs @ 3.92 fps)

Pond MH2: DMH-2



Stage-Area-Storage for Pond MH2: DMH-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
88.00	**0**	88.35	0	88.70	0	89.05	0	89.40	0
88.01	0	88.36	0	88.71	0	89.06	0	89.41	0
88.02	0	88.37	0	88.72	0	89.07	0	89.42	0
88.03	0	88.38	0	88.73	0	89.08	0	89.43	0
88.04	0	88.39	0	88.74	0	89.09	0	89.44	0
88.05	0	88.40	0	88.75	0	89.10	0	89.45	0
88.06	0	88.41	0	88.76	0	89.11	0	89.46	0
88.07	0	88.42	0	88.77	0	89.12	0	89.47	0
88.08	0	88.43	0	88.78	0	89.13	0	89.48	0
88.09	0	88.44	0	88.79	0	89.14	0	89.49	0
88.10	0	88.45	0	88.80	0	89.15	0	89.50	0
88.11	0	88.46	0	88.81	0	89.16	0	89.51	0
88.12	0	88.47	0	88.82	0	89.17	0	89.52	0
88.13	0	88.48	0	88.83	0	89.18	0	89.53	0
88.14	0	88.49	0	88.84	0	89.19	0	89.54	0
88.15	0	88.50	0	88.85	0	89.20	0	89.55	0
88.16	0	88.51	0	88.86	0	89.21	0	89.56	0
88.17	0	88.52	0	88.87	0	89.22	0	89.57	0
88.18	0	88.53	0	88.88	0	89.23	0	89.58	0
88.19	0	88.54	0	88.89	0	89.24	0	89.59	0
88.20	0	88.55	0	88.90	0	89.25	0	89.60	0
88.21	0	88.56	0	88.91	0	89.26	0	89.61	0
88.22	0	88.57	0	88.92	0	89.27	0	89.62	0
88.23	0	88.58	0	88.93	0	89.28	0	89.63	0
88.24	0	88.59	0	88.94	0	89.29	0	89.64	0
88.25	0	88.60	0	88.95	0	89.30	0	89.65	0
88.26	0	88.61	0	88.96	0	89.31	0	89.66	0
88.27	0	88.62	0	88.97	0	89.32	0	89.67	0
88.28	0	88.63	0	88.98	0	89.33	0	89.68	0
88.29	0	88.64	0	88.99	0	89.34	0	89.69	0
88.30	0	88.65	0	89.00	0	89.35	0	89.70	0
88.31	0	88.66	0	89.01	0	89.36	0	89.71	0
88.32	0	88.67	0	89.02	0	89.37	0	89.72	0
88.33	0	88.68	0	89.03	0	89.38	0	89.73	0
88.34	0	88.69	0	89.04	0	89.39	0	89.74	0

Stage-Area-Storage for Pond MH2: DMH-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.75	0	90.10	0	90.45	0	90.80	0
89.76	0	90.11	0	90.46	0	90.81	0
89.77	0	90.12	0	90.47	0	90.82	0
89.78	0	90.13	0	90.48	0	90.83	0
89.79	0	90.14	0	90.49	0	90.84	0
89.80	0	90.15	0	90.50	0	90.85	0
89.81	0	90.16	0	90.51	0	90.86	0
89.82	0	90.17	0	90.52	0	90.87	0
89.83	0	90.18	0	90.53	0	90.88	0
89.84	0	90.19	0	90.54	0	90.89	0
89.85	0	90.20	0	90.55	0	90.90	0
89.86	0	90.21	0	90.56	0	90.91	0
89.87	0	90.22	0	90.57	0	90.92	0
89.88	0	90.23	0	90.58	0	90.93	0
89.89	0	90.24	0	90.59	0	90.94	0
89.90	0	90.25	0	90.60	0	90.95	0
89.91	0	90.26	0	90.61	0	90.96	0
89.92	0	90.27	0	90.62	0	90.97	0
89.93	0	90.28	0	90.63	0	90.98	0
89.94	0	90.29	0	90.64	0	90.99	0
89.95	0	90.30	0	90.65	0	91.00	0
89.96	0	90.31	0	90.66	0	91.01	0
89.97	0	90.32	0	90.67	0	91.02	0
89.98	0	90.33	0	90.68	0	91.03	0
89.99	0	90.34	0	90.69	0	91.04	0
90.00	0	90.35	0	90.70	0	91.05	0
90.01	0	90.36	0	90.71	0	91.06	0
90.02	0	90.37	0	90.72	0	91.07	0
90.03	0	90.38	0	90.73	0		
90.04	0	90.39	0	90.74	0		
90.05	0	90.40	0	90.75	0		
90.06	0	90.41	0	90.76	0		
90.07	0	90.42	0	90.77	0		
90.08	0	90.43	0	90.78	0		
90.09	0	90.44	0	90.79	0		

Summary for Link SP1: Flow Off-Site To Municipal Drainage

Inflow Area = 9,274 sf, 62.30% Impervious, Inflow Depth = 2.71" for 10-year event
Inflow = 0.68 cfs @ 12.09 hrs, Volume= 2,094 cf
Primary = 0.68 cfs @ 12.09 hrs, Volume= 2,094 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Link SP2: Flow Off-Site To Riverfront Area

Inflow Area =	24,280 sf, 40.17% Impervious, Inflow Depth = 1.87"	for 10-year event
Inflow =	1.15 cfs @ 12.09 hrs, Volume=	3,783 cf
Primary =	1.15 cfs @ 12.09 hrs, Volume=	3,783 cf, Atten= 0%, Lag= 0.0 min

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

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E-1: Subcat E-1 Runoff Area=9,274 sf 62.30% Impervious Runoff Depth=3.73"
Tc=6.0 min CN=76 Runoff=0.93 cfs 2,881 cf

Subcatchment E-2: Subcat E-2 Runoff Area=11,560 sf 0.00% Impervious Runoff Depth=0.16"
Tc=6.0 min CN=31 Runoff=0.01 cfs 151 cf

Subcatchment E-3: Subcat E-3 Runoff Area=4,210 sf 98.71% Impervious Runoff Depth=6.04"
Tc=6.0 min CN=97 Runoff=0.60 cfs 2,120 cf

Subcatchment E-4: Subcat E-4 Runoff Area=947 sf 92.30% Impervious Runoff Depth=5.58"
Tc=6.0 min CN=93 Runoff=0.13 cfs 440 cf

Subcatchment E-5: Subcat E-5 Runoff Area=7,564 sf 62.46% Impervious Runoff Depth=3.73"
Tc=6.0 min CN=76 Runoff=0.76 cfs 2,350 cf

Pond CB1: CB-1 Peak Elev=89.46' Inflow=0.60 cfs 2,120 cf
12.0" Round Culvert n=0.012 L=58.9' S=0.0100 '/' Outflow=0.60 cfs 2,120 cf

Pond CB2: CB-2 Peak Elev=89.38' Inflow=0.13 cfs 440 cf
10.0" Round Culvert n=0.012 L=24.5' S=0.0322 '/' Outflow=0.13 cfs 440 cf

Pond CB3: CB-3 Peak Elev=89.68' Inflow=0.76 cfs 2,350 cf
12.0" Round Culvert n=0.012 L=9.6' S=0.0104 '/' Outflow=0.76 cfs 2,350 cf

Pond MH1: DMH-1 Peak Elev=88.85' Inflow=0.74 cfs 2,560 cf
12.0" Round Culvert n=0.012 L=32.6' S=0.0101 '/' Outflow=0.74 cfs 2,560 cf

Pond MH2: DMH-2 Peak Elev=88.62' Inflow=1.49 cfs 4,910 cf
12.0" Round Culvert n=0.012 L=72.0' S=0.0100 '/' Outflow=1.49 cfs 4,910 cf

Link SP1: Flow Off-Site To Municipal Drainage Inflow=0.93 cfs 2,881 cf
Primary=0.93 cfs 2,881 cf

Link SP2: Flow Off-Site To Riverfront Area Inflow=1.49 cfs 5,061 cf
Primary=1.49 cfs 5,061 cf

Total Runoff Area = 33,554 sf Runoff Volume = 7,942 cf Average Runoff Depth = 2.84"
53.71% Pervious = 18,022 sf 46.29% Impervious = 15,531 sf

Summary for Subcatchment E-1: Subcat E-1

Runoff = 0.93 cfs @ 12.09 hrs, Volume= 2,881 cf, Depth= 3.73"
Routed to Link SP1 : Flow Off-Site To Municipal Drainage

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.40"

Area (sf)	CN	Description
3,496	39	>75% Grass cover, Good, HSG A
931	98	Roofs, HSG A
4,847	98	Paved parking, HSG A
9,274	76	Weighted Average
3,496		37.70% Pervious Area
5,778		62.30% Impervious Area

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

Summary for Subcatchment E-2: Subcat E-2

Runoff = 0.01 cfs @ 14.70 hrs, Volume= 151 cf, Depth= 0.16"
Routed to Link SP2 : Flow Off-Site To Riverfront Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.40"

Area (sf)	CN	Description
10,569	30	Woods, Good, HSG A
990	39	>75% Grass cover, Good, HSG A
0	98	Paved parking, HSG A
11,560	31	Weighted Average
11,560		100.00% Pervious Area
0		0.00% Impervious Area

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

Summary for Subcatchment E-3: Subcat E-3

Runoff = 0.60 cfs @ 12.08 hrs, Volume= 2,120 cf, Depth= 6.04"
Routed to Pond CB1 : CB-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.40"

Area (sf)	CN	Description
54	39	>75% Grass cover, Good, HSG A
4,156	98	Paved parking, HSG A
4,210	97	Weighted Average
54		1.29% Pervious Area
4,156		98.71% Impervious Area

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

Summary for Subcatchment E-4: Subcat E-4

Runoff = 0.13 cfs @ 12.08 hrs, Volume= 440 cf, Depth= 5.58"
Routed to Pond CB2 : CB-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.40"

Area (sf)	CN	Description
73	39	>75% Grass cover, Good, HSG A
248	98	Roofs, HSG A
626	98	Paved parking, HSG A
947	93	Weighted Average
73		7.70% Pervious Area
874		92.30% Impervious Area

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

Summary for Subcatchment E-5: Subcat E-5

Runoff = 0.76 cfs @ 12.09 hrs, Volume= 2,350 cf, Depth= 3.73"
Routed to Pond CB3 : CB-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.40"

Area (sf)	CN	Description
4,037	98	Paved parking, HSG A
2,840	39	>75% Grass cover, Good, HSG A
688	98	Roofs, HSG A
7,564	76	Weighted Average
2,840		37.54% Pervious Area
4,724		62.46% Impervious Area

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

Summary for Pond CB1: CB-1

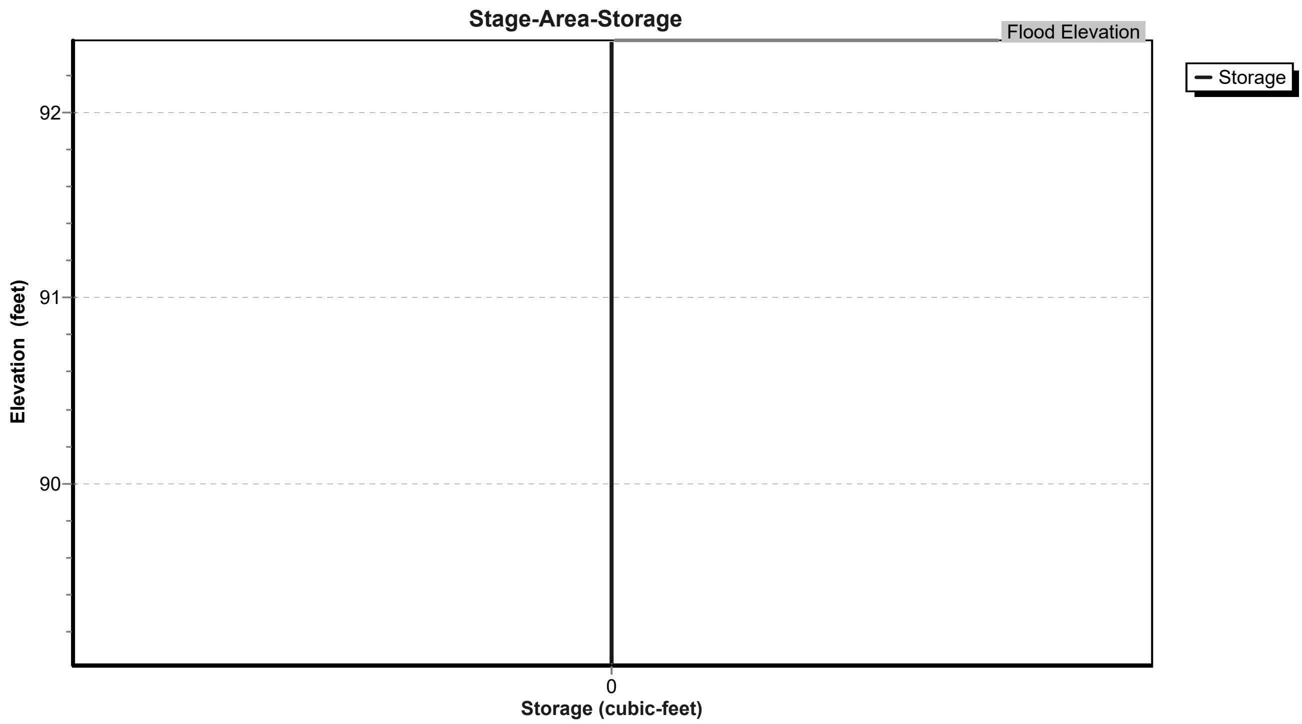
Inflow Area = 4,210 sf, 98.71% Impervious, Inflow Depth = 6.04" for 25-year event
Inflow = 0.60 cfs @ 12.08 hrs, Volume= 2,120 cf
Outflow = 0.60 cfs @ 12.08 hrs, Volume= 2,120 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.60 cfs @ 12.08 hrs, Volume= 2,120 cf
Routed to Pond MH1 : DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 89.46' @ 12.08 hrs
Flood Elev= 92.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.02'	**12.0" Round 12" HDPE (Estimated Invert)** L= 58.9' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.02' / 88.43' S= 0.0100 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.60 cfs @ 12.08 hrs HW=89.46' TW=88.85' (Dynamic Tailwater)
└─**1=12" HDPE (Estimated Invert)** (Inlet Controls 0.60 cfs @ 1.79 fps)

Pond CB1: CB-1



Stage-Area-Storage for Pond CB1: CB-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.02	**0**	89.37	0	89.72	0	90.07	0	90.42	0
89.03	0	89.38	0	89.73	0	90.08	0	90.43	0
89.04	0	89.39	0	89.74	0	90.09	0	90.44	0
89.05	0	89.40	0	89.75	0	90.10	0	90.45	0
89.06	0	89.41	0	89.76	0	90.11	0	90.46	0
89.07	0	89.42	0	89.77	0	90.12	0	90.47	0
89.08	0	89.43	0	89.78	0	90.13	0	90.48	0
89.09	0	89.44	0	89.79	0	90.14	0	90.49	0
89.10	0	89.45	0	89.80	0	90.15	0	90.50	0
89.11	0	89.46	0	89.81	0	90.16	0	90.51	0
89.12	0	89.47	0	89.82	0	90.17	0	90.52	0
89.13	0	89.48	0	89.83	0	90.18	0	90.53	0
89.14	0	89.49	0	89.84	0	90.19	0	90.54	0
89.15	0	89.50	0	89.85	0	90.20	0	90.55	0
89.16	0	89.51	0	89.86	0	90.21	0	90.56	0
89.17	0	89.52	0	89.87	0	90.22	0	90.57	0
89.18	0	89.53	0	89.88	0	90.23	0	90.58	0
89.19	0	89.54	0	89.89	0	90.24	0	90.59	0
89.20	0	89.55	0	89.90	0	90.25	0	90.60	0
89.21	0	89.56	0	89.91	0	90.26	0	90.61	0
89.22	0	89.57	0	89.92	0	90.27	0	90.62	0
89.23	0	89.58	0	89.93	0	90.28	0	90.63	0
89.24	0	89.59	0	89.94	0	90.29	0	90.64	0
89.25	0	89.60	0	89.95	0	90.30	0	90.65	0
89.26	0	89.61	0	89.96	0	90.31	0	90.66	0
89.27	0	89.62	0	89.97	0	90.32	0	90.67	0
89.28	0	89.63	0	89.98	0	90.33	0	90.68	0
89.29	0	89.64	0	89.99	0	90.34	0	90.69	0
89.30	0	89.65	0	90.00	0	90.35	0	90.70	0
89.31	0	89.66	0	90.01	0	90.36	0	90.71	0
89.32	0	89.67	0	90.02	0	90.37	0	90.72	0
89.33	0	89.68	0	90.03	0	90.38	0	90.73	0
89.34	0	89.69	0	90.04	0	90.39	0	90.74	0
89.35	0	89.70	0	90.05	0	90.40	0	90.75	0
89.36	0	89.71	0	90.06	0	90.41	0	90.76	0

Stage-Area-Storage for Pond CB1: CB-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.77	0	91.12	0	91.47	0	91.82	0	92.17	0
90.78	0	91.13	0	91.48	0	91.83	0	92.18	0
90.79	0	91.14	0	91.49	0	91.84	0	92.19	0
90.80	0	91.15	0	91.50	0	91.85	0	92.20	0
90.81	0	91.16	0	91.51	0	91.86	0	92.21	0
90.82	0	91.17	0	91.52	0	91.87	0	92.22	0
90.83	0	91.18	0	91.53	0	91.88	0	92.23	0
90.84	0	91.19	0	91.54	0	91.89	0	92.24	0
90.85	0	91.20	0	91.55	0	91.90	0	92.25	0
90.86	0	91.21	0	91.56	0	91.91	0	92.26	0
90.87	0	91.22	0	91.57	0	91.92	0	92.27	0
90.88	0	91.23	0	91.58	0	91.93	0	92.28	0
90.89	0	91.24	0	91.59	0	91.94	0	92.29	0
90.90	0	91.25	0	91.60	0	91.95	0	92.30	0
90.91	0	91.26	0	91.61	0	91.96	0	92.31	0
90.92	0	91.27	0	91.62	0	91.97	0	92.32	0
90.93	0	91.28	0	91.63	0	91.98	0	92.33	0
90.94	0	91.29	0	91.64	0	91.99	0	92.34	0
90.95	0	91.30	0	91.65	0	92.00	0	92.35	0
90.96	0	91.31	0	91.66	0	92.01	0	92.36	0
90.97	0	91.32	0	91.67	0	92.02	0	92.37	0
90.98	0	91.33	0	91.68	0	92.03	0	92.38	0
90.99	0	91.34	0	91.69	0	92.04	0	92.39	0
91.00	0	91.35	0	91.70	0	92.05	0		
91.01	0	91.36	0	91.71	0	92.06	0		
91.02	0	91.37	0	91.72	0	92.07	0		
91.03	0	91.38	0	91.73	0	92.08	0		
91.04	0	91.39	0	91.74	0	92.09	0		
91.05	0	91.40	0	91.75	0	92.10	0		
91.06	0	91.41	0	91.76	0	92.11	0		
91.07	0	91.42	0	91.77	0	92.12	0		
91.08	0	91.43	0	91.78	0	92.13	0		
91.09	0	91.44	0	91.79	0	92.14	0		
91.10	0	91.45	0	91.80	0	92.15	0		
91.11	0	91.46	0	91.81	0	92.16	0		

Summary for Pond CB2: CB-2

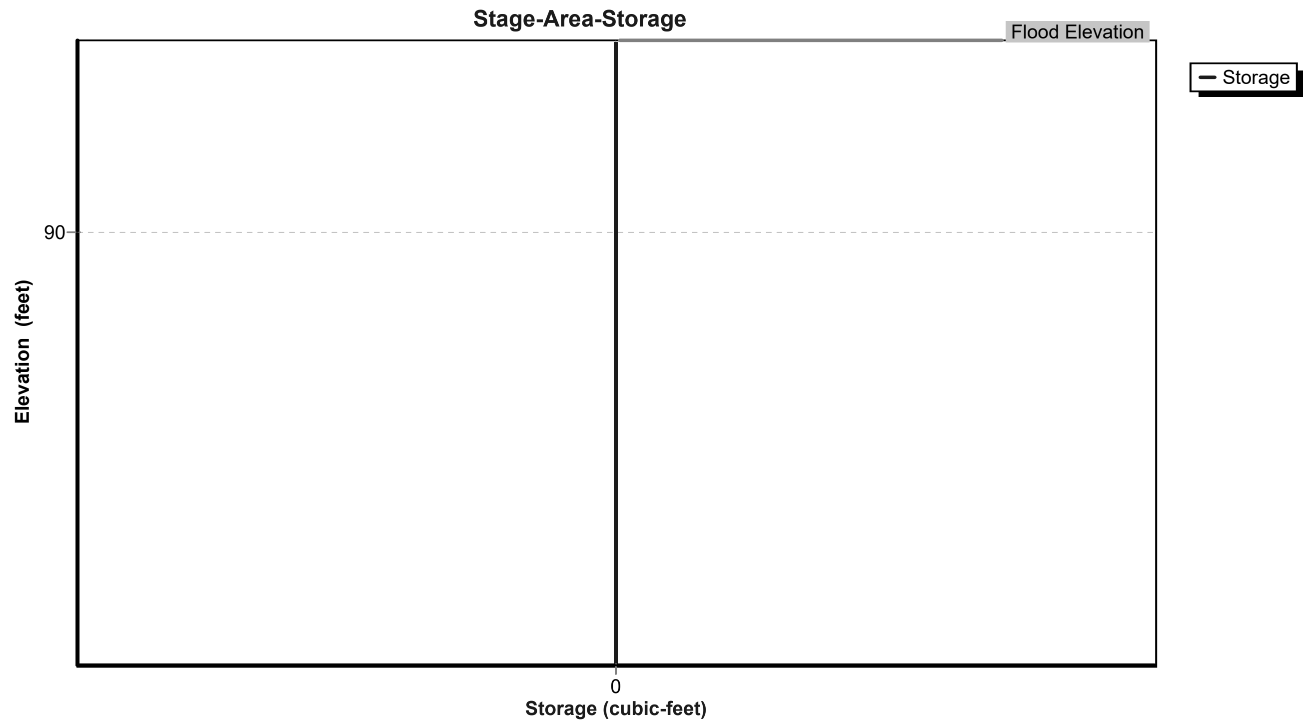
Inflow Area = 947 sf, 92.30% Impervious, Inflow Depth = 5.58" for 25-year event
Inflow = 0.13 cfs @ 12.08 hrs, Volume= 440 cf
Outflow = 0.13 cfs @ 12.08 hrs, Volume= 440 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.13 cfs @ 12.08 hrs, Volume= 440 cf
Routed to Pond MH1 : DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 89.38' @ 12.08 hrs
Flood Elev= 90.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.17'	**10.0" Round 10" HDPE** L= 24.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.17' / 88.38' S= 0.0322 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=0.13 cfs @ 12.08 hrs HW=89.38' TW=88.85' (Dynamic Tailwater)
└─**1=10" HDPE** (Inlet Controls 0.13 cfs @ 1.23 fps)

Pond CB2: CB-2



Stage-Area-Storage for Pond CB2: CB-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.17	**0**	89.52	0	89.87	0	90.22	0
89.18	0	89.53	0	89.88	0	90.23	0
89.19	0	89.54	0	89.89	0	90.24	0
89.20	0	89.55	0	89.90	0	90.25	0
89.21	0	89.56	0	89.91	0	90.26	0
89.22	0	89.57	0	89.92	0	90.27	0
89.23	0	89.58	0	89.93	0	90.28	0
89.24	0	89.59	0	89.94	0	90.29	0
89.25	0	89.60	0	89.95	0	90.30	0
89.26	0	89.61	0	89.96	0	90.31	0
89.27	0	89.62	0	89.97	0	90.32	0
89.28	0	89.63	0	89.98	0	90.33	0
89.29	0	89.64	0	89.99	0	90.34	0
89.30	0	89.65	0	90.00	0	90.35	0
89.31	0	89.66	0	90.01	0	90.36	0
89.32	0	89.67	0	90.02	0	90.37	0
89.33	0	89.68	0	90.03	0		
89.34	0	89.69	0	90.04	0		
89.35	0	89.70	0	90.05	0		
89.36	0	89.71	0	90.06	0		
89.37	0	89.72	0	90.07	0		
89.38	0	89.73	0	90.08	0		
89.39	0	89.74	0	90.09	0		
89.40	0	89.75	0	90.10	0		
89.41	0	89.76	0	90.11	0		
89.42	0	89.77	0	90.12	0		
89.43	0	89.78	0	90.13	0		
89.44	0	89.79	0	90.14	0		
89.45	0	89.80	0	90.15	0		
89.46	0	89.81	0	90.16	0		
89.47	0	89.82	0	90.17	0		
89.48	0	89.83	0	90.18	0		
89.49	0	89.84	0	90.19	0		
89.50	0	89.85	0	90.20	0		
89.51	0	89.86	0	90.21	0		

Summary for Pond CB3: CB-3

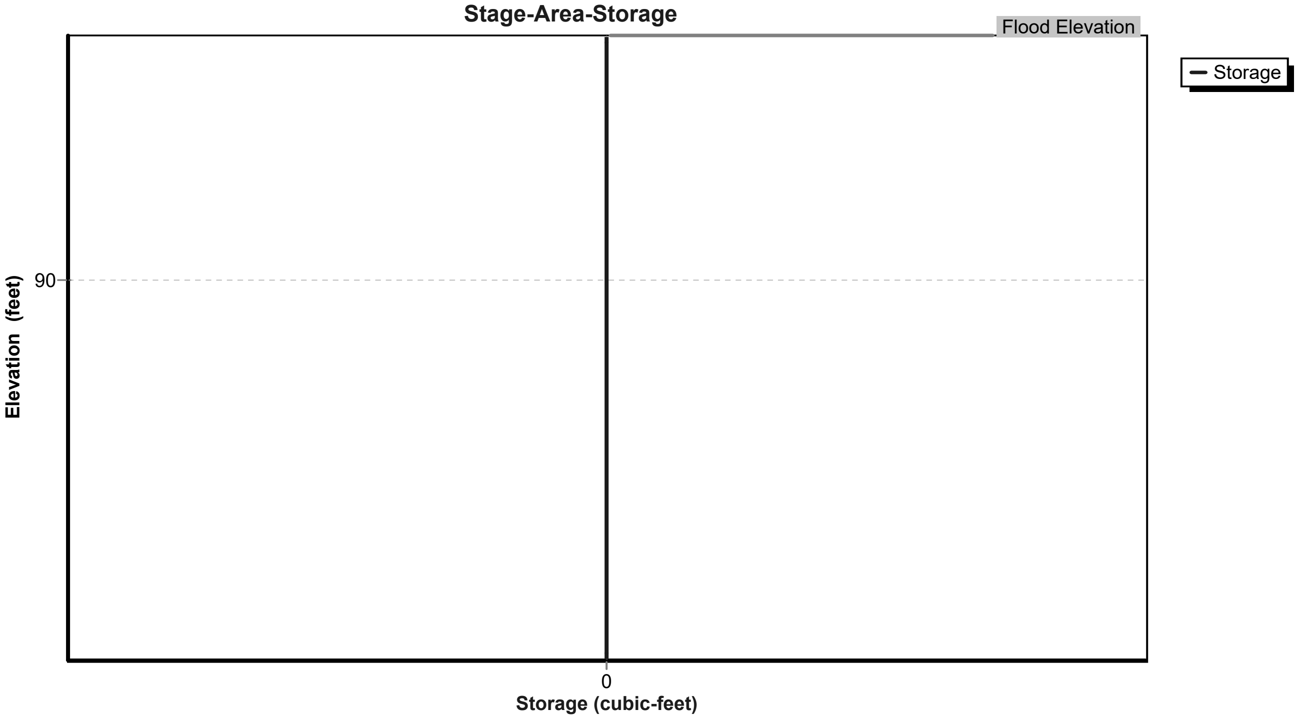
Inflow Area = 7,564 sf, 62.46% Impervious, Inflow Depth = 3.73" for 25-year event
Inflow = 0.76 cfs @ 12.09 hrs, Volume= 2,350 cf
Outflow = 0.76 cfs @ 12.09 hrs, Volume= 2,350 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.76 cfs @ 12.09 hrs, Volume= 2,350 cf
Routed to Pond MH2 : DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 89.68' @ 12.09 hrs
Flood Elev= 90.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.15'	**12.0" Round 12" HDPE Assumed Size and Slope** L= 9.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.15' / 89.05' S= 0.0104 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.76 cfs @ 12.09 hrs HW=89.68' TW=88.62' (Dynamic Tailwater)
└─**1=12" HDPE Assumed Size and Slope** (Barrel Controls 0.76 cfs @ 2.60 fps)

Pond CB3: CB-3



Stage-Area-Storage for Pond CB3: CB-3

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.15	**0**	89.50	0	89.85	0	90.20	0	90.55	0
89.16	0	89.51	0	89.86	0	90.21	0		
89.17	0	89.52	0	89.87	0	90.22	0		
89.18	0	89.53	0	89.88	0	90.23	0		
89.19	0	89.54	0	89.89	0	90.24	0		
89.20	0	89.55	0	89.90	0	90.25	0		
89.21	0	89.56	0	89.91	0	90.26	0		
89.22	0	89.57	0	89.92	0	90.27	0		
89.23	0	89.58	0	89.93	0	90.28	0		
89.24	0	89.59	0	89.94	0	90.29	0		
89.25	0	89.60	0	89.95	0	90.30	0		
89.26	0	89.61	0	89.96	0	90.31	0		
89.27	0	89.62	0	89.97	0	90.32	0		
89.28	0	89.63	0	89.98	0	90.33	0		
89.29	0	89.64	0	89.99	0	90.34	0		
89.30	0	89.65	0	90.00	0	90.35	0		
89.31	0	89.66	0	90.01	0	90.36	0		
89.32	0	89.67	0	90.02	0	90.37	0		
89.33	0	89.68	0	90.03	0	90.38	0		
89.34	0	89.69	0	90.04	0	90.39	0		
89.35	0	89.70	0	90.05	0	90.40	0		
89.36	0	89.71	0	90.06	0	90.41	0		
89.37	0	89.72	0	90.07	0	90.42	0		
89.38	0	89.73	0	90.08	0	90.43	0		
89.39	0	89.74	0	90.09	0	90.44	0		
89.40	0	89.75	0	90.10	0	90.45	0		
89.41	0	89.76	0	90.11	0	90.46	0		
89.42	0	89.77	0	90.12	0	90.47	0		
89.43	0	89.78	0	90.13	0	90.48	0		
89.44	0	89.79	0	90.14	0	90.49	0		
89.45	0	89.80	0	90.15	0	90.50	0		
89.46	0	89.81	0	90.16	0	90.51	0		
89.47	0	89.82	0	90.17	0	90.52	0		
89.48	0	89.83	0	90.18	0	90.53	0		
89.49	0	89.84	0	90.19	0	90.54	0		

Summary for Pond MH1: DMH-1

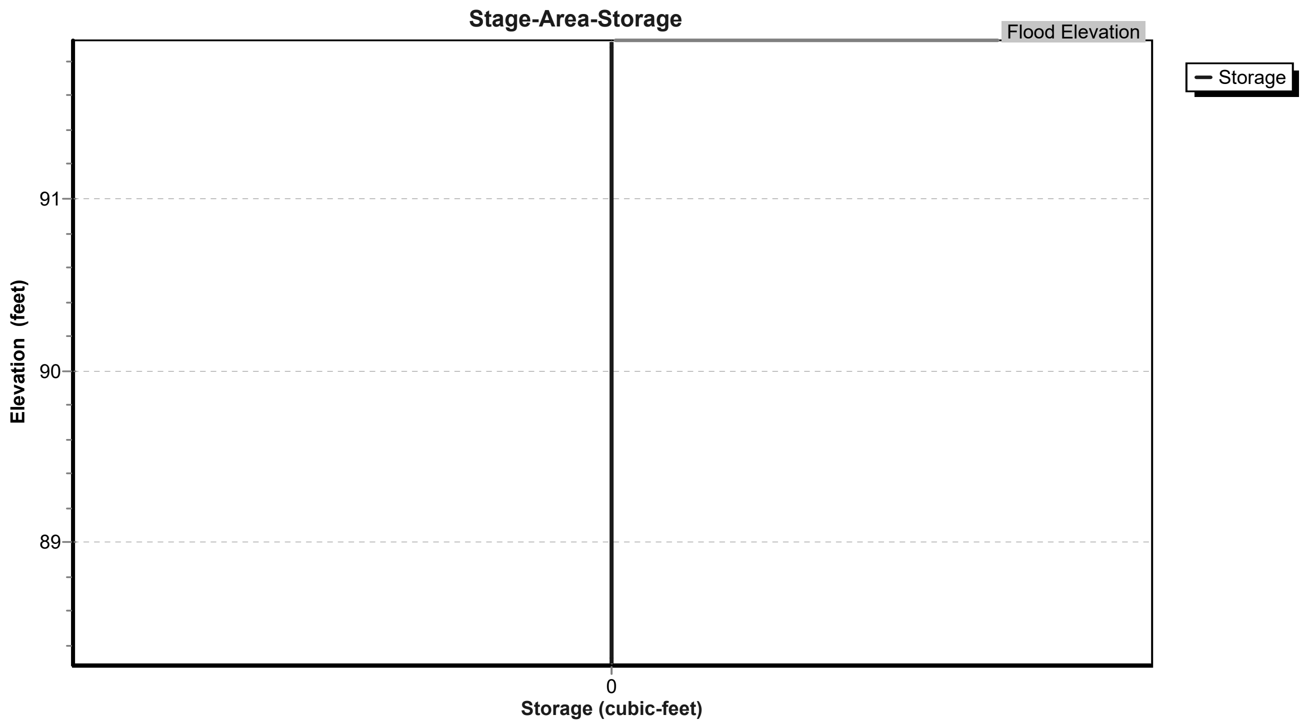
Inflow Area = 5,156 sf, 97.53% Impervious, Inflow Depth = 5.96" for 25-year event
Inflow = 0.74 cfs @ 12.08 hrs, Volume= 2,560 cf
Outflow = 0.74 cfs @ 12.08 hrs, Volume= 2,560 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.74 cfs @ 12.08 hrs, Volume= 2,560 cf
Routed to Pond MH2 : DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 88.85' @ 12.08 hrs
Flood Elev= 91.93'

Device	Routing	Invert	Outlet Devices
#1	Primary	88.28'	**12.0" Round 12" HDPE (Estimated Slope)** L= 32.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 88.28' / 87.95' S= 0.0101 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.73 cfs @ 12.08 hrs HW=88.85' TW=88.62' (Dynamic Tailwater)
└─**1=12" HDPE (Estimated Slope)** (Outlet Controls 0.73 cfs @ 2.27 fps)

Pond MH1: DMH-1



Stage-Area-Storage for Pond MH1: DMH-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
88.28	**0**	88.63	0	88.98	0	89.33	0	89.68	0
88.29	0	88.64	0	88.99	0	89.34	0	89.69	0
88.30	0	88.65	0	89.00	0	89.35	0	89.70	0
88.31	0	88.66	0	89.01	0	89.36	0	89.71	0
88.32	0	88.67	0	89.02	0	89.37	0	89.72	0
88.33	0	88.68	0	89.03	0	89.38	0	89.73	0
88.34	0	88.69	0	89.04	0	89.39	0	89.74	0
88.35	0	88.70	0	89.05	0	89.40	0	89.75	0
88.36	0	88.71	0	89.06	0	89.41	0	89.76	0
88.37	0	88.72	0	89.07	0	89.42	0	89.77	0
88.38	0	88.73	0	89.08	0	89.43	0	89.78	0
88.39	0	88.74	0	89.09	0	89.44	0	89.79	0
88.40	0	88.75	0	89.10	0	89.45	0	89.80	0
88.41	0	88.76	0	89.11	0	89.46	0	89.81	0
88.42	0	88.77	0	89.12	0	89.47	0	89.82	0
88.43	0	88.78	0	89.13	0	89.48	0	89.83	0
88.44	0	88.79	0	89.14	0	89.49	0	89.84	0
88.45	0	88.80	0	89.15	0	89.50	0	89.85	0
88.46	0	88.81	0	89.16	0	89.51	0	89.86	0
88.47	0	88.82	0	89.17	0	89.52	0	89.87	0
88.48	0	88.83	0	89.18	0	89.53	0	89.88	0
88.49	0	88.84	0	89.19	0	89.54	0	89.89	0
88.50	0	88.85	0	89.20	0	89.55	0	89.90	0
88.51	0	88.86	0	89.21	0	89.56	0	89.91	0
88.52	0	88.87	0	89.22	0	89.57	0	89.92	0
88.53	0	88.88	0	89.23	0	89.58	0	89.93	0
88.54	0	88.89	0	89.24	0	89.59	0	89.94	0
88.55	0	88.90	0	89.25	0	89.60	0	89.95	0
88.56	0	88.91	0	89.26	0	89.61	0	89.96	0
88.57	0	88.92	0	89.27	0	89.62	0	89.97	0
88.58	0	88.93	0	89.28	0	89.63	0	89.98	0
88.59	0	88.94	0	89.29	0	89.64	0	89.99	0
88.60	0	88.95	0	89.30	0	89.65	0	90.00	0
88.61	0	88.96	0	89.31	0	89.66	0	90.01	0
88.62	0	88.97	0	89.32	0	89.67	0	90.02	0

Stage-Area-Storage for Pond MH1: DMH-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0
90.10	0	90.45	0	90.80	0	91.15	0	91.50	0
90.11	0	90.46	0	90.81	0	91.16	0	91.51	0
90.12	0	90.47	0	90.82	0	91.17	0	91.52	0
90.13	0	90.48	0	90.83	0	91.18	0	91.53	0
90.14	0	90.49	0	90.84	0	91.19	0	91.54	0
90.15	0	90.50	0	90.85	0	91.20	0	91.55	0
90.16	0	90.51	0	90.86	0	91.21	0	91.56	0
90.17	0	90.52	0	90.87	0	91.22	0	91.57	0
90.18	0	90.53	0	90.88	0	91.23	0	91.58	0
90.19	0	90.54	0	90.89	0	91.24	0	91.59	0
90.20	0	90.55	0	90.90	0	91.25	0	91.60	0
90.21	0	90.56	0	90.91	0	91.26	0	91.61	0
90.22	0	90.57	0	90.92	0	91.27	0	91.62	0
90.23	0	90.58	0	90.93	0	91.28	0	91.63	0
90.24	0	90.59	0	90.94	0	91.29	0	91.64	0
90.25	0	90.60	0	90.95	0	91.30	0	91.65	0
90.26	0	90.61	0	90.96	0	91.31	0	91.66	0
90.27	0	90.62	0	90.97	0	91.32	0	91.67	0
90.28	0	90.63	0	90.98	0	91.33	0	91.68	0
90.29	0	90.64	0	90.99	0	91.34	0	91.69	0
90.30	0	90.65	0	91.00	0	91.35	0	91.70	0
90.31	0	90.66	0	91.01	0	91.36	0	91.71	0
90.32	0	90.67	0	91.02	0	91.37	0	91.72	0
90.33	0	90.68	0	91.03	0	91.38	0	91.73	0
90.34	0	90.69	0	91.04	0	91.39	0	91.74	0
90.35	0	90.70	0	91.05	0	91.40	0	91.75	0
90.36	0	90.71	0	91.06	0	91.41	0	91.76	0
90.37	0	90.72	0	91.07	0	91.42	0	91.77	0

Stage-Area-Storage for Pond MH1: DMH-1 (continued)

Elevation (feet)	Storage (cubic-feet)
91.78	0
91.79	0
91.80	0
91.81	0
91.82	0
91.83	0
91.84	0
91.85	0
91.86	0
91.87	0
91.88	0
91.89	0
91.90	0
91.91	0
91.92	0
91.93	0

Summary for Pond MH2: DMH-2

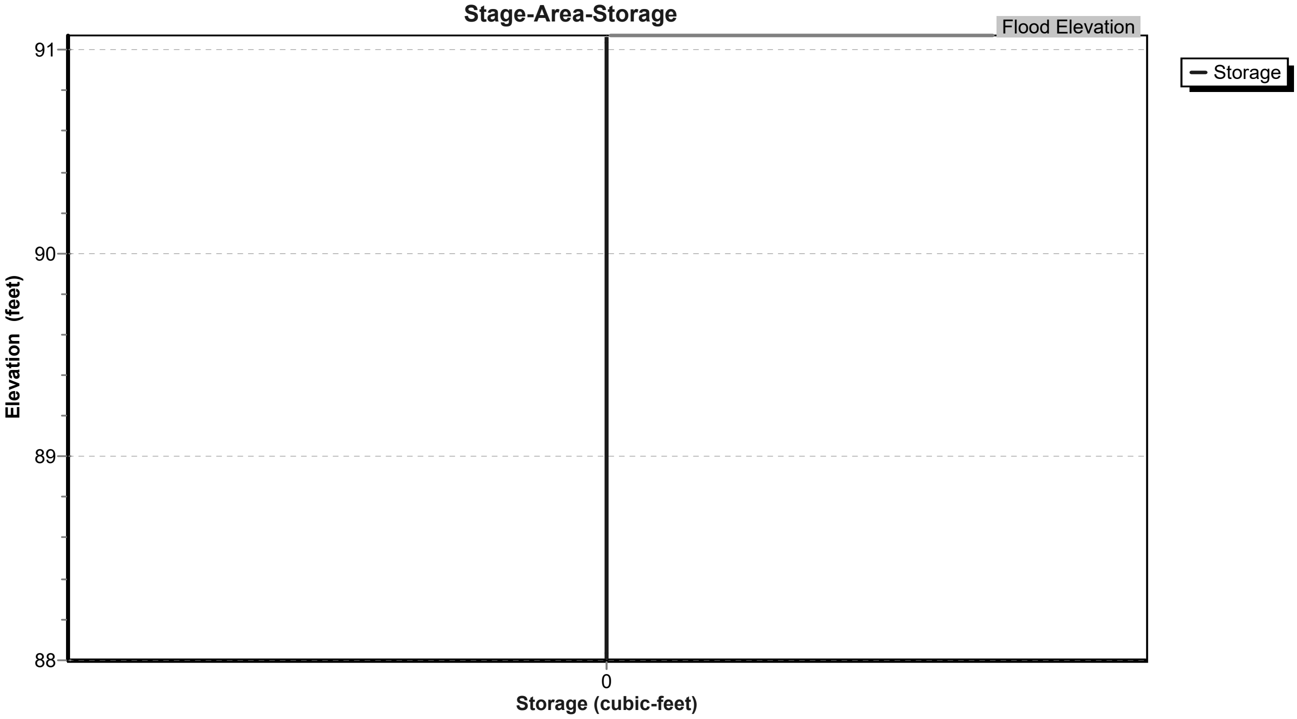
Inflow Area = 12,720 sf, 76.68% Impervious, Inflow Depth = 4.63" for 25-year event
Inflow = 1.49 cfs @ 12.09 hrs, Volume= 4,910 cf
Outflow = 1.49 cfs @ 12.09 hrs, Volume= 4,910 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.49 cfs @ 12.09 hrs, Volume= 4,910 cf
Routed to Link SP2 : Flow Off-Site To Riverfront Area

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 88.62' @ 12.09 hrs
Flood Elev= 91.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round 12" RCP (Estimated Slope)** L= 72.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 88.00' / 87.28' S= 0.0100 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.49 cfs @ 12.09 hrs HW=88.62' TW=0.00' (Dynamic Tailwater)
└─**1=12" RCP (Estimated Slope)** (Barrel Controls 1.49 cfs @ 4.16 fps)

Pond MH2: DMH-2



Stage-Area-Storage for Pond MH2: DMH-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
88.00	**0**	88.35	0	88.70	0	89.05	0	89.40	0
88.01	0	88.36	0	88.71	0	89.06	0	89.41	0
88.02	0	88.37	0	88.72	0	89.07	0	89.42	0
88.03	0	88.38	0	88.73	0	89.08	0	89.43	0
88.04	0	88.39	0	88.74	0	89.09	0	89.44	0
88.05	0	88.40	0	88.75	0	89.10	0	89.45	0
88.06	0	88.41	0	88.76	0	89.11	0	89.46	0
88.07	0	88.42	0	88.77	0	89.12	0	89.47	0
88.08	0	88.43	0	88.78	0	89.13	0	89.48	0
88.09	0	88.44	0	88.79	0	89.14	0	89.49	0
88.10	0	88.45	0	88.80	0	89.15	0	89.50	0
88.11	0	88.46	0	88.81	0	89.16	0	89.51	0
88.12	0	88.47	0	88.82	0	89.17	0	89.52	0
88.13	0	88.48	0	88.83	0	89.18	0	89.53	0
88.14	0	88.49	0	88.84	0	89.19	0	89.54	0
88.15	0	88.50	0	88.85	0	89.20	0	89.55	0
88.16	0	88.51	0	88.86	0	89.21	0	89.56	0
88.17	0	88.52	0	88.87	0	89.22	0	89.57	0
88.18	0	88.53	0	88.88	0	89.23	0	89.58	0
88.19	0	88.54	0	88.89	0	89.24	0	89.59	0
88.20	0	88.55	0	88.90	0	89.25	0	89.60	0
88.21	0	88.56	0	88.91	0	89.26	0	89.61	0
88.22	0	88.57	0	88.92	0	89.27	0	89.62	0
88.23	0	88.58	0	88.93	0	89.28	0	89.63	0
88.24	0	88.59	0	88.94	0	89.29	0	89.64	0
88.25	0	88.60	0	88.95	0	89.30	0	89.65	0
88.26	0	88.61	0	88.96	0	89.31	0	89.66	0
88.27	0	88.62	0	88.97	0	89.32	0	89.67	0
88.28	0	88.63	0	88.98	0	89.33	0	89.68	0
88.29	0	88.64	0	88.99	0	89.34	0	89.69	0
88.30	0	88.65	0	89.00	0	89.35	0	89.70	0
88.31	0	88.66	0	89.01	0	89.36	0	89.71	0
88.32	0	88.67	0	89.02	0	89.37	0	89.72	0
88.33	0	88.68	0	89.03	0	89.38	0	89.73	0
88.34	0	88.69	0	89.04	0	89.39	0	89.74	0

Stage-Area-Storage for Pond MH2: DMH-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.75	0	90.10	0	90.45	0	90.80	0
89.76	0	90.11	0	90.46	0	90.81	0
89.77	0	90.12	0	90.47	0	90.82	0
89.78	0	90.13	0	90.48	0	90.83	0
89.79	0	90.14	0	90.49	0	90.84	0
89.80	0	90.15	0	90.50	0	90.85	0
89.81	0	90.16	0	90.51	0	90.86	0
89.82	0	90.17	0	90.52	0	90.87	0
89.83	0	90.18	0	90.53	0	90.88	0
89.84	0	90.19	0	90.54	0	90.89	0
89.85	0	90.20	0	90.55	0	90.90	0
89.86	0	90.21	0	90.56	0	90.91	0
89.87	0	90.22	0	90.57	0	90.92	0
89.88	0	90.23	0	90.58	0	90.93	0
89.89	0	90.24	0	90.59	0	90.94	0
89.90	0	90.25	0	90.60	0	90.95	0
89.91	0	90.26	0	90.61	0	90.96	0
89.92	0	90.27	0	90.62	0	90.97	0
89.93	0	90.28	0	90.63	0	90.98	0
89.94	0	90.29	0	90.64	0	90.99	0
89.95	0	90.30	0	90.65	0	91.00	0
89.96	0	90.31	0	90.66	0	91.01	0
89.97	0	90.32	0	90.67	0	91.02	0
89.98	0	90.33	0	90.68	0	91.03	0
89.99	0	90.34	0	90.69	0	91.04	0
90.00	0	90.35	0	90.70	0	91.05	0
90.01	0	90.36	0	90.71	0	91.06	0
90.02	0	90.37	0	90.72	0	91.07	0
90.03	0	90.38	0	90.73	0		
90.04	0	90.39	0	90.74	0		
90.05	0	90.40	0	90.75	0		
90.06	0	90.41	0	90.76	0		
90.07	0	90.42	0	90.77	0		
90.08	0	90.43	0	90.78	0		
90.09	0	90.44	0	90.79	0		

Summary for Link SP1: Flow Off-Site To Municipal Drainage

Inflow Area = 9,274 sf, 62.30% Impervious, Inflow Depth = 3.73" for 25-year event
Inflow = 0.93 cfs @ 12.09 hrs, Volume= 2,881 cf
Primary = 0.93 cfs @ 12.09 hrs, Volume= 2,881 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Link SP2: Flow Off-Site To Riverfront Area

Inflow Area = 24,280 sf, 40.17% Impervious, Inflow Depth = 2.50" for 25-year event
Inflow = 1.49 cfs @ 12.09 hrs, Volume= 5,061 cf
Primary = 1.49 cfs @ 12.09 hrs, Volume= 5,061 cf, Atten= 0%, Lag= 0.0 min

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

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E-1: Subcat E-1 Runoff Area=9,274 sf 62.30% Impervious Runoff Depth=5.37"
Tc=6.0 min CN=76 Runoff=1.33 cfs 4,148 cf

Subcatchment E-2: Subcat E-2 Runoff Area=11,560 sf 0.00% Impervious Runoff Depth=0.55"
Tc=6.0 min CN=31 Runoff=0.05 cfs 528 cf

Subcatchment E-3: Subcat E-3 Runoff Area=4,210 sf 98.71% Impervious Runoff Depth=7.87"
Tc=6.0 min CN=97 Runoff=0.78 cfs 2,761 cf

Subcatchment E-4: Subcat E-4 Runoff Area=947 sf 92.30% Impervious Runoff Depth=7.39"
Tc=6.0 min CN=93 Runoff=0.17 cfs 583 cf

Subcatchment E-5: Subcat E-5 Runoff Area=7,564 sf 62.46% Impervious Runoff Depth=5.37"
Tc=6.0 min CN=76 Runoff=1.09 cfs 3,383 cf

Pond CB1: CB-1 Peak Elev=89.53' Inflow=0.78 cfs 2,761 cf
12.0" Round Culvert n=0.012 L=58.9' S=0.0100 '/' Outflow=0.78 cfs 2,761 cf

Pond CB2: CB-2 Peak Elev=89.41' Inflow=0.17 cfs 583 cf
10.0" Round Culvert n=0.012 L=24.5' S=0.0322 '/' Outflow=0.17 cfs 583 cf

Pond CB3: CB-3 Peak Elev=89.81' Inflow=1.09 cfs 3,383 cf
12.0" Round Culvert n=0.012 L=9.6' S=0.0104 '/' Outflow=1.09 cfs 3,383 cf

Pond MH1: DMH-1 Peak Elev=88.98' Inflow=0.95 cfs 3,344 cf
12.0" Round Culvert n=0.012 L=32.6' S=0.0101 '/' Outflow=0.95 cfs 3,344 cf

Pond MH2: DMH-2 Peak Elev=88.75' Inflow=2.04 cfs 6,727 cf
12.0" Round Culvert n=0.012 L=72.0' S=0.0100 '/' Outflow=2.04 cfs 6,727 cf

Link SP1: Flow Off-Site To Municipal Drainage Inflow=1.33 cfs 4,148 cf
Primary=1.33 cfs 4,148 cf

Link SP2: Flow Off-Site To Riverfront Area

Inflow=2.04 cfs 7,256 cf
Primary=2.04 cfs 7,256 cf

Total Runoff Area = 33,554 sf Runoff Volume = 11,404 cf Average Runoff Depth = 4.08"
53.71% Pervious = 18,022 sf 46.29% Impervious = 15,531 sf

Summary for Subcatchment E-1: Subcat E-1

Runoff = 1.33 cfs @ 12.09 hrs, Volume= 4,148 cf, Depth= 5.37"
Routed to Link SP1 : Flow Off-Site To Municipal Drainage

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.23"

Area (sf)	CN	Description
3,496	39	>75% Grass cover, Good, HSG A
931	98	Roofs, HSG A
4,847	98	Paved parking, HSG A
9,274	76	Weighted Average
3,496		37.70% Pervious Area
5,778		62.30% Impervious Area

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

Summary for Subcatchment E-2: Subcat E-2

Runoff = 0.05 cfs @ 12.37 hrs, Volume= 528 cf, Depth= 0.55"
Routed to Link SP2 : Flow Off-Site To Riverfront Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.23"

Area (sf)	CN	Description
10,569	30	Woods, Good, HSG A
990	39	>75% Grass cover, Good, HSG A
0	98	Paved parking, HSG A
11,560	31	Weighted Average
11,560		100.00% Pervious Area
0		0.00% Impervious Area

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

Summary for Subcatchment E-3: Subcat E-3

Runoff = 0.78 cfs @ 12.08 hrs, Volume= 2,761 cf, Depth= 7.87"
Routed to Pond CB1 : CB-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.23"

Area (sf)	CN	Description
54	39	>75% Grass cover, Good, HSG A
4,156	98	Paved parking, HSG A
4,210	97	Weighted Average
54		1.29% Pervious Area
4,156		98.71% Impervious Area

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

Summary for Subcatchment E-4: Subcat E-4

Runoff = 0.17 cfs @ 12.08 hrs, Volume= 583 cf, Depth= 7.39"
Routed to Pond CB2 : CB-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.23"

Area (sf)	CN	Description
73	39	>75% Grass cover, Good, HSG A
248	98	Roofs, HSG A
626	98	Paved parking, HSG A
947	93	Weighted Average
73		7.70% Pervious Area
874		92.30% Impervious Area

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

Summary for Subcatchment E-5: Subcat E-5

Runoff = 1.09 cfs @ 12.09 hrs, Volume= 3,383 cf, Depth= 5.37"
Routed to Pond CB3 : CB-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.23"

Area (sf)	CN	Description
4,037	98	Paved parking, HSG A
2,840	39	>75% Grass cover, Good, HSG A
688	98	Roofs, HSG A
7,564	76	Weighted Average
2,840		37.54% Pervious Area
4,724		62.46% Impervious Area

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

Summary for Pond CB1: CB-1

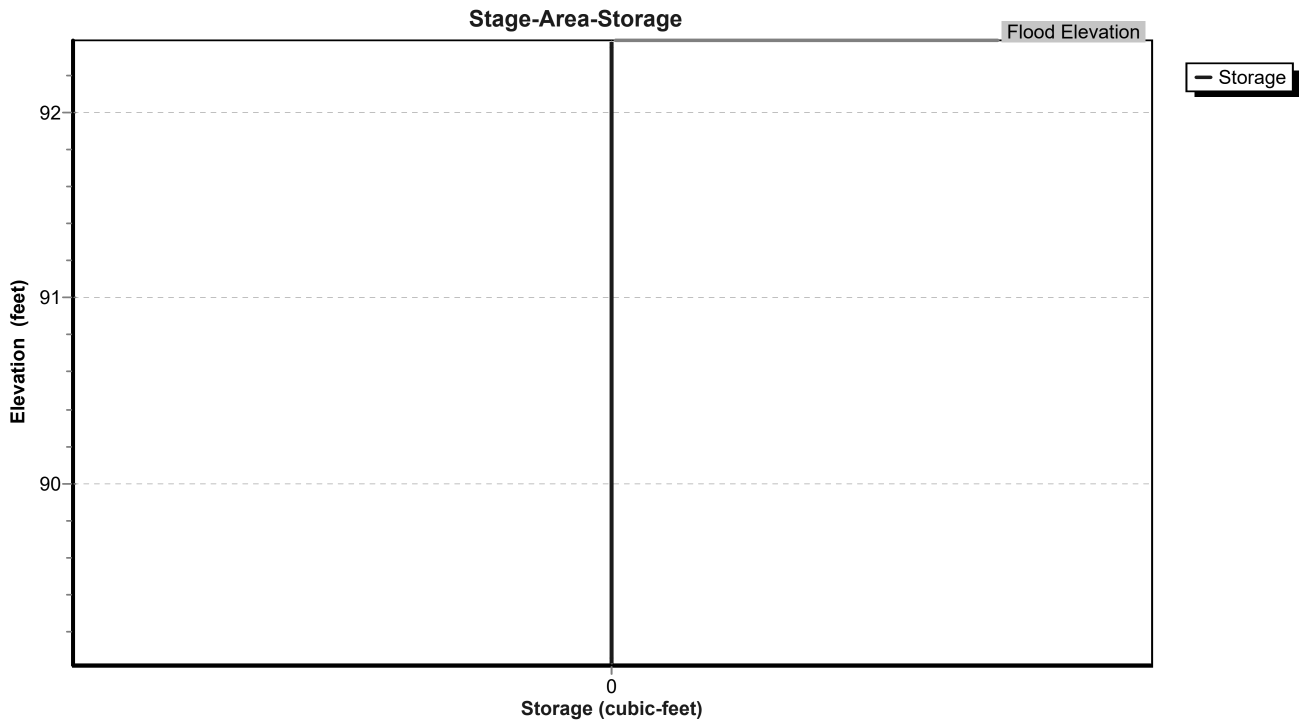
Inflow Area = 4,210 sf, 98.71% Impervious, Inflow Depth = 7.87" for 100-year event
Inflow = 0.78 cfs @ 12.08 hrs, Volume= 2,761 cf
Outflow = 0.78 cfs @ 12.08 hrs, Volume= 2,761 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.78 cfs @ 12.08 hrs, Volume= 2,761 cf
Routed to Pond MH1 : DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 89.53' @ 12.08 hrs
Flood Elev= 92.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.02'	**12.0" Round 12" HDPE (Estimated Invert)** L= 58.9' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.02' / 88.43' S= 0.0100 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.78 cfs @ 12.08 hrs HW=89.53' TW=88.98' (Dynamic Tailwater)
└─**1=12" HDPE (Estimated Invert)** (Inlet Controls 0.78 cfs @ 1.92 fps)

Pond CB1: CB-1



Stage-Area-Storage for Pond CB1: CB-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.02	**0**	89.37	0	89.72	0	90.07	0	90.42	0
89.03	0	89.38	0	89.73	0	90.08	0	90.43	0
89.04	0	89.39	0	89.74	0	90.09	0	90.44	0
89.05	0	89.40	0	89.75	0	90.10	0	90.45	0
89.06	0	89.41	0	89.76	0	90.11	0	90.46	0
89.07	0	89.42	0	89.77	0	90.12	0	90.47	0
89.08	0	89.43	0	89.78	0	90.13	0	90.48	0
89.09	0	89.44	0	89.79	0	90.14	0	90.49	0
89.10	0	89.45	0	89.80	0	90.15	0	90.50	0
89.11	0	89.46	0	89.81	0	90.16	0	90.51	0
89.12	0	89.47	0	89.82	0	90.17	0	90.52	0
89.13	0	89.48	0	89.83	0	90.18	0	90.53	0
89.14	0	89.49	0	89.84	0	90.19	0	90.54	0
89.15	0	89.50	0	89.85	0	90.20	0	90.55	0
89.16	0	89.51	0	89.86	0	90.21	0	90.56	0
89.17	0	89.52	0	89.87	0	90.22	0	90.57	0
89.18	0	89.53	0	89.88	0	90.23	0	90.58	0
89.19	0	89.54	0	89.89	0	90.24	0	90.59	0
89.20	0	89.55	0	89.90	0	90.25	0	90.60	0
89.21	0	89.56	0	89.91	0	90.26	0	90.61	0
89.22	0	89.57	0	89.92	0	90.27	0	90.62	0
89.23	0	89.58	0	89.93	0	90.28	0	90.63	0
89.24	0	89.59	0	89.94	0	90.29	0	90.64	0
89.25	0	89.60	0	89.95	0	90.30	0	90.65	0
89.26	0	89.61	0	89.96	0	90.31	0	90.66	0
89.27	0	89.62	0	89.97	0	90.32	0	90.67	0
89.28	0	89.63	0	89.98	0	90.33	0	90.68	0
89.29	0	89.64	0	89.99	0	90.34	0	90.69	0
89.30	0	89.65	0	90.00	0	90.35	0	90.70	0
89.31	0	89.66	0	90.01	0	90.36	0	90.71	0
89.32	0	89.67	0	90.02	0	90.37	0	90.72	0
89.33	0	89.68	0	90.03	0	90.38	0	90.73	0
89.34	0	89.69	0	90.04	0	90.39	0	90.74	0
89.35	0	89.70	0	90.05	0	90.40	0	90.75	0
89.36	0	89.71	0	90.06	0	90.41	0	90.76	0

Stage-Area-Storage for Pond CB1: CB-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.77	0	91.12	0	91.47	0	91.82	0	92.17	0
90.78	0	91.13	0	91.48	0	91.83	0	92.18	0
90.79	0	91.14	0	91.49	0	91.84	0	92.19	0
90.80	0	91.15	0	91.50	0	91.85	0	92.20	0
90.81	0	91.16	0	91.51	0	91.86	0	92.21	0
90.82	0	91.17	0	91.52	0	91.87	0	92.22	0
90.83	0	91.18	0	91.53	0	91.88	0	92.23	0
90.84	0	91.19	0	91.54	0	91.89	0	92.24	0
90.85	0	91.20	0	91.55	0	91.90	0	92.25	0
90.86	0	91.21	0	91.56	0	91.91	0	92.26	0
90.87	0	91.22	0	91.57	0	91.92	0	92.27	0
90.88	0	91.23	0	91.58	0	91.93	0	92.28	0
90.89	0	91.24	0	91.59	0	91.94	0	92.29	0
90.90	0	91.25	0	91.60	0	91.95	0	92.30	0
90.91	0	91.26	0	91.61	0	91.96	0	92.31	0
90.92	0	91.27	0	91.62	0	91.97	0	92.32	0
90.93	0	91.28	0	91.63	0	91.98	0	92.33	0
90.94	0	91.29	0	91.64	0	91.99	0	92.34	0
90.95	0	91.30	0	91.65	0	92.00	0	92.35	0
90.96	0	91.31	0	91.66	0	92.01	0	92.36	0
90.97	0	91.32	0	91.67	0	92.02	0	92.37	0
90.98	0	91.33	0	91.68	0	92.03	0	92.38	0
90.99	0	91.34	0	91.69	0	92.04	0	92.39	0
91.00	0	91.35	0	91.70	0	92.05	0		
91.01	0	91.36	0	91.71	0	92.06	0		
91.02	0	91.37	0	91.72	0	92.07	0		
91.03	0	91.38	0	91.73	0	92.08	0		
91.04	0	91.39	0	91.74	0	92.09	0		
91.05	0	91.40	0	91.75	0	92.10	0		
91.06	0	91.41	0	91.76	0	92.11	0		
91.07	0	91.42	0	91.77	0	92.12	0		
91.08	0	91.43	0	91.78	0	92.13	0		
91.09	0	91.44	0	91.79	0	92.14	0		
91.10	0	91.45	0	91.80	0	92.15	0		
91.11	0	91.46	0	91.81	0	92.16	0		

Summary for Pond CB2: CB-2

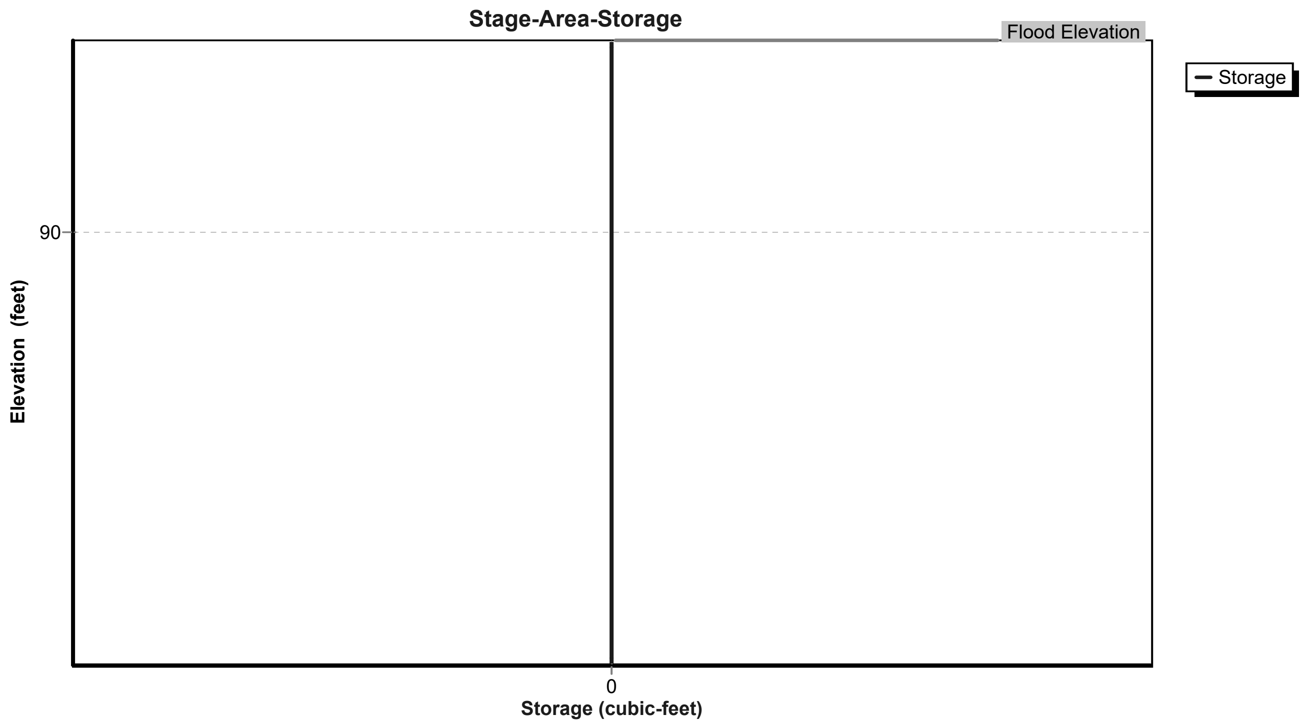
Inflow Area = 947 sf, 92.30% Impervious, Inflow Depth = 7.39" for 100-year event
Inflow = 0.17 cfs @ 12.08 hrs, Volume= 583 cf
Outflow = 0.17 cfs @ 12.08 hrs, Volume= 583 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.17 cfs @ 12.08 hrs, Volume= 583 cf
Routed to Pond MH1 : DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 89.41' @ 12.08 hrs
Flood Elev= 90.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.17'	**10.0" Round 10" HDPE** L= 24.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.17' / 88.38' S= 0.0322 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=0.17 cfs @ 12.08 hrs HW=89.41' TW=88.98' (Dynamic Tailwater)
↑—**1=10" HDPE** (Inlet Controls 0.17 cfs @ 1.32 fps)

Pond CB2: CB-2



Stage-Area-Storage for Pond CB2: CB-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.17	**0**	89.52	0	89.87	0	90.22	0
89.18	0	89.53	0	89.88	0	90.23	0
89.19	0	89.54	0	89.89	0	90.24	0
89.20	0	89.55	0	89.90	0	90.25	0
89.21	0	89.56	0	89.91	0	90.26	0
89.22	0	89.57	0	89.92	0	90.27	0
89.23	0	89.58	0	89.93	0	90.28	0
89.24	0	89.59	0	89.94	0	90.29	0
89.25	0	89.60	0	89.95	0	90.30	0
89.26	0	89.61	0	89.96	0	90.31	0
89.27	0	89.62	0	89.97	0	90.32	0
89.28	0	89.63	0	89.98	0	90.33	0
89.29	0	89.64	0	89.99	0	90.34	0
89.30	0	89.65	0	90.00	0	90.35	0
89.31	0	89.66	0	90.01	0	90.36	0
89.32	0	89.67	0	90.02	0	90.37	0
89.33	0	89.68	0	90.03	0		
89.34	0	89.69	0	90.04	0		
89.35	0	89.70	0	90.05	0		
89.36	0	89.71	0	90.06	0		
89.37	0	89.72	0	90.07	0		
89.38	0	89.73	0	90.08	0		
89.39	0	89.74	0	90.09	0		
89.40	0	89.75	0	90.10	0		
89.41	0	89.76	0	90.11	0		
89.42	0	89.77	0	90.12	0		
89.43	0	89.78	0	90.13	0		
89.44	0	89.79	0	90.14	0		
89.45	0	89.80	0	90.15	0		
89.46	0	89.81	0	90.16	0		
89.47	0	89.82	0	90.17	0		
89.48	0	89.83	0	90.18	0		
89.49	0	89.84	0	90.19	0		
89.50	0	89.85	0	90.20	0		
89.51	0	89.86	0	90.21	0		

Summary for Pond CB3: CB-3

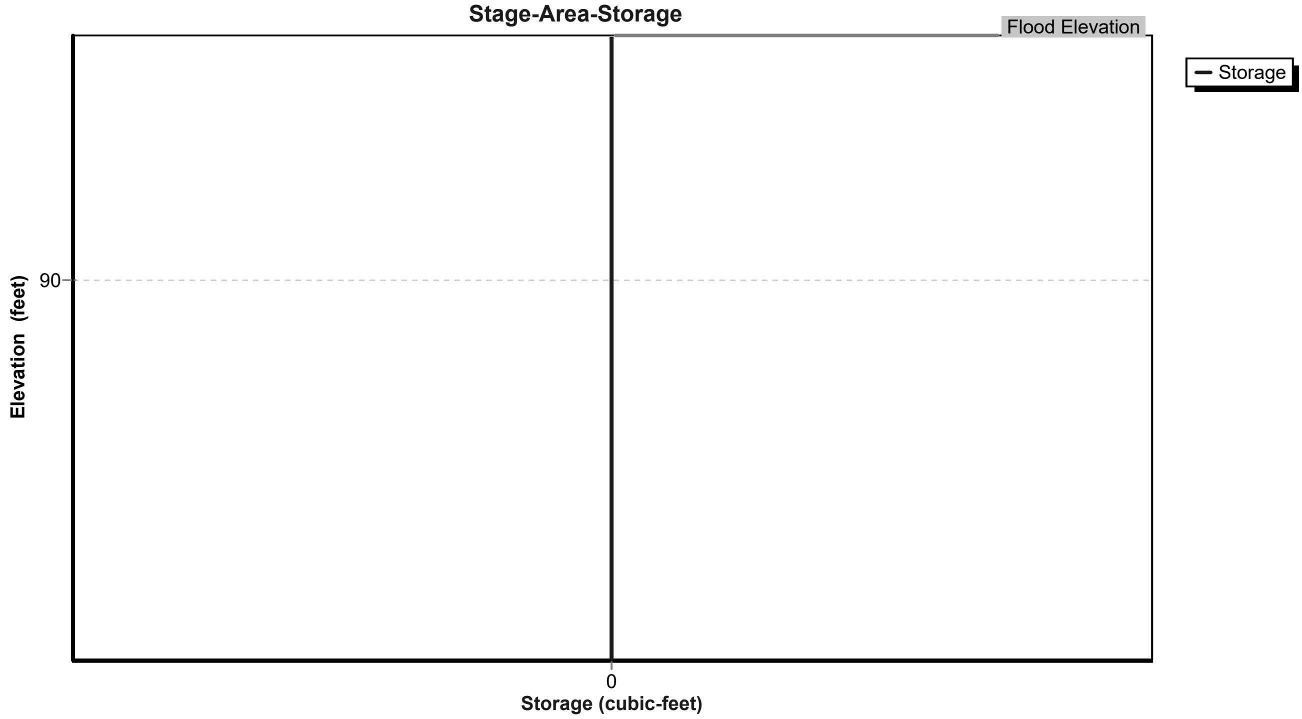
Inflow Area = 7,564 sf, 62.46% Impervious, Inflow Depth = 5.37" for 100-year event
Inflow = 1.09 cfs @ 12.09 hrs, Volume= 3,383 cf
Outflow = 1.09 cfs @ 12.09 hrs, Volume= 3,383 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.09 cfs @ 12.09 hrs, Volume= 3,383 cf
Routed to Pond MH2 : DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 89.81' @ 12.09 hrs
Flood Elev= 90.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.15'	**12.0" Round 12" HDPE Assumed Size and Slope** L= 9.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.15' / 89.05' S= 0.0104 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.08 cfs @ 12.09 hrs HW=89.81' TW=88.75' (Dynamic Tailwater)
└─**1=12" HDPE Assumed Size and Slope** (Barrel Controls 1.08 cfs @ 2.81 fps)

Pond CB3: CB-3



Stage-Area-Storage for Pond CB3: CB-3

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.15	**0**	89.50	0	89.85	0	90.20	0	90.55	0
89.16	0	89.51	0	89.86	0	90.21	0		
89.17	0	89.52	0	89.87	0	90.22	0		
89.18	0	89.53	0	89.88	0	90.23	0		
89.19	0	89.54	0	89.89	0	90.24	0		
89.20	0	89.55	0	89.90	0	90.25	0		
89.21	0	89.56	0	89.91	0	90.26	0		
89.22	0	89.57	0	89.92	0	90.27	0		
89.23	0	89.58	0	89.93	0	90.28	0		
89.24	0	89.59	0	89.94	0	90.29	0		
89.25	0	89.60	0	89.95	0	90.30	0		
89.26	0	89.61	0	89.96	0	90.31	0		
89.27	0	89.62	0	89.97	0	90.32	0		
89.28	0	89.63	0	89.98	0	90.33	0		
89.29	0	89.64	0	89.99	0	90.34	0		
89.30	0	89.65	0	90.00	0	90.35	0		
89.31	0	89.66	0	90.01	0	90.36	0		
89.32	0	89.67	0	90.02	0	90.37	0		
89.33	0	89.68	0	90.03	0	90.38	0		
89.34	0	89.69	0	90.04	0	90.39	0		
89.35	0	89.70	0	90.05	0	90.40	0		
89.36	0	89.71	0	90.06	0	90.41	0		
89.37	0	89.72	0	90.07	0	90.42	0		
89.38	0	89.73	0	90.08	0	90.43	0		
89.39	0	89.74	0	90.09	0	90.44	0		
89.40	0	89.75	0	90.10	0	90.45	0		
89.41	0	89.76	0	90.11	0	90.46	0		
89.42	0	89.77	0	90.12	0	90.47	0		
89.43	0	89.78	0	90.13	0	90.48	0		
89.44	0	89.79	0	90.14	0	90.49	0		
89.45	0	89.80	0	90.15	0	90.50	0		
89.46	0	89.81	0	90.16	0	90.51	0		
89.47	0	89.82	0	90.17	0	90.52	0		
89.48	0	89.83	0	90.18	0	90.53	0		
89.49	0	89.84	0	90.19	0	90.54	0		

Summary for Pond MH1: DMH-1

Inflow Area = 5,156 sf, 97.53% Impervious, Inflow Depth = 7.78" for 100-year event
Inflow = 0.95 cfs @ 12.08 hrs, Volume= 3,344 cf
Outflow = 0.95 cfs @ 12.08 hrs, Volume= 3,344 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.95 cfs @ 12.08 hrs, Volume= 3,344 cf
Routed to Pond MH2 : DMH-2

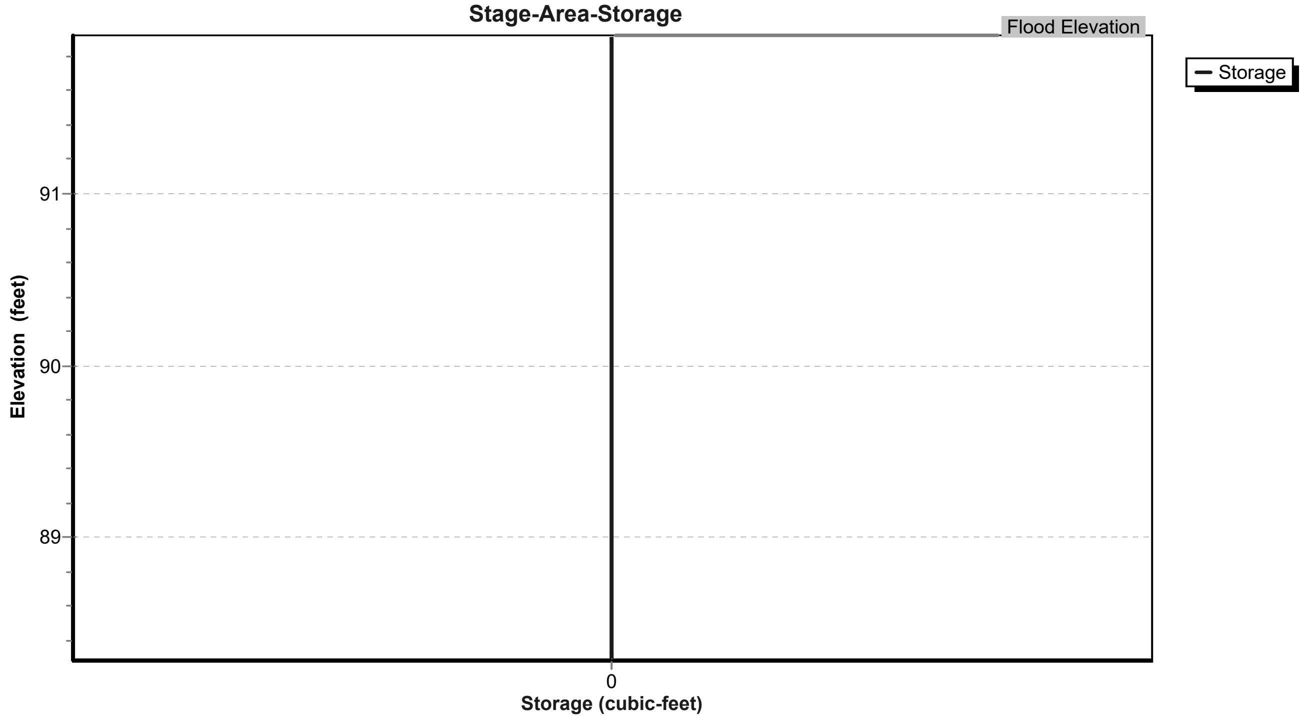
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 88.98' @ 12.08 hrs
Flood Elev= 91.93'

Device	Routing	Invert	Outlet Devices
#1	Primary	88.28'	**12.0" Round 12" HDPE (Estimated Slope)** L= 32.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 88.28' / 87.95' S= 0.0101 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.95 cfs @ 12.08 hrs HW=88.98' TW=88.75' (Dynamic Tailwater)
└─**1=12" HDPE (Estimated Slope)** (Outlet Controls 0.95 cfs @ 2.29 fps)

Pond MH1: DMH-1

Stage-Area-Storage



Stage-Area-Storage for Pond MH1: DMH-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
88.28	**0**	88.63	0	88.98	0	89.33	0	89.68	0
88.29	0	88.64	0	88.99	0	89.34	0	89.69	0
88.30	0	88.65	0	89.00	0	89.35	0	89.70	0
88.31	0	88.66	0	89.01	0	89.36	0	89.71	0
88.32	0	88.67	0	89.02	0	89.37	0	89.72	0
88.33	0	88.68	0	89.03	0	89.38	0	89.73	0
88.34	0	88.69	0	89.04	0	89.39	0	89.74	0
88.35	0	88.70	0	89.05	0	89.40	0	89.75	0
88.36	0	88.71	0	89.06	0	89.41	0	89.76	0
88.37	0	88.72	0	89.07	0	89.42	0	89.77	0
88.38	0	88.73	0	89.08	0	89.43	0	89.78	0
88.39	0	88.74	0	89.09	0	89.44	0	89.79	0
88.40	0	88.75	0	89.10	0	89.45	0	89.80	0
88.41	0	88.76	0	89.11	0	89.46	0	89.81	0
88.42	0	88.77	0	89.12	0	89.47	0	89.82	0
88.43	0	88.78	0	89.13	0	89.48	0	89.83	0
88.44	0	88.79	0	89.14	0	89.49	0	89.84	0
88.45	0	88.80	0	89.15	0	89.50	0	89.85	0
88.46	0	88.81	0	89.16	0	89.51	0	89.86	0
88.47	0	88.82	0	89.17	0	89.52	0	89.87	0
88.48	0	88.83	0	89.18	0	89.53	0	89.88	0
88.49	0	88.84	0	89.19	0	89.54	0	89.89	0
88.50	0	88.85	0	89.20	0	89.55	0	89.90	0
88.51	0	88.86	0	89.21	0	89.56	0	89.91	0
88.52	0	88.87	0	89.22	0	89.57	0	89.92	0
88.53	0	88.88	0	89.23	0	89.58	0	89.93	0
88.54	0	88.89	0	89.24	0	89.59	0	89.94	0
88.55	0	88.90	0	89.25	0	89.60	0	89.95	0
88.56	0	88.91	0	89.26	0	89.61	0	89.96	0
88.57	0	88.92	0	89.27	0	89.62	0	89.97	0
88.58	0	88.93	0	89.28	0	89.63	0	89.98	0
88.59	0	88.94	0	89.29	0	89.64	0	89.99	0
88.60	0	88.95	0	89.30	0	89.65	0	90.00	0
88.61	0	88.96	0	89.31	0	89.66	0	90.01	0
88.62	0	88.97	0	89.32	0	89.67	0	90.02	0

Stage-Area-Storage for Pond MH1: DMH-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0
90.10	0	90.45	0	90.80	0	91.15	0	91.50	0
90.11	0	90.46	0	90.81	0	91.16	0	91.51	0
90.12	0	90.47	0	90.82	0	91.17	0	91.52	0
90.13	0	90.48	0	90.83	0	91.18	0	91.53	0
90.14	0	90.49	0	90.84	0	91.19	0	91.54	0
90.15	0	90.50	0	90.85	0	91.20	0	91.55	0
90.16	0	90.51	0	90.86	0	91.21	0	91.56	0
90.17	0	90.52	0	90.87	0	91.22	0	91.57	0
90.18	0	90.53	0	90.88	0	91.23	0	91.58	0
90.19	0	90.54	0	90.89	0	91.24	0	91.59	0
90.20	0	90.55	0	90.90	0	91.25	0	91.60	0
90.21	0	90.56	0	90.91	0	91.26	0	91.61	0
90.22	0	90.57	0	90.92	0	91.27	0	91.62	0
90.23	0	90.58	0	90.93	0	91.28	0	91.63	0
90.24	0	90.59	0	90.94	0	91.29	0	91.64	0
90.25	0	90.60	0	90.95	0	91.30	0	91.65	0
90.26	0	90.61	0	90.96	0	91.31	0	91.66	0
90.27	0	90.62	0	90.97	0	91.32	0	91.67	0
90.28	0	90.63	0	90.98	0	91.33	0	91.68	0
90.29	0	90.64	0	90.99	0	91.34	0	91.69	0
90.30	0	90.65	0	91.00	0	91.35	0	91.70	0
90.31	0	90.66	0	91.01	0	91.36	0	91.71	0
90.32	0	90.67	0	91.02	0	91.37	0	91.72	0
90.33	0	90.68	0	91.03	0	91.38	0	91.73	0
90.34	0	90.69	0	91.04	0	91.39	0	91.74	0
90.35	0	90.70	0	91.05	0	91.40	0	91.75	0
90.36	0	90.71	0	91.06	0	91.41	0	91.76	0
90.37	0	90.72	0	91.07	0	91.42	0	91.77	0

Stage-Area-Storage for Pond MH1: DMH-1 (continued)

Elevation (feet)	Storage (cubic-feet)
91.78	0
91.79	0
91.80	0
91.81	0
91.82	0
91.83	0
91.84	0
91.85	0
91.86	0
91.87	0
91.88	0
91.89	0
91.90	0
91.91	0
91.92	0
91.93	0

Summary for Pond MH2: DMH-2

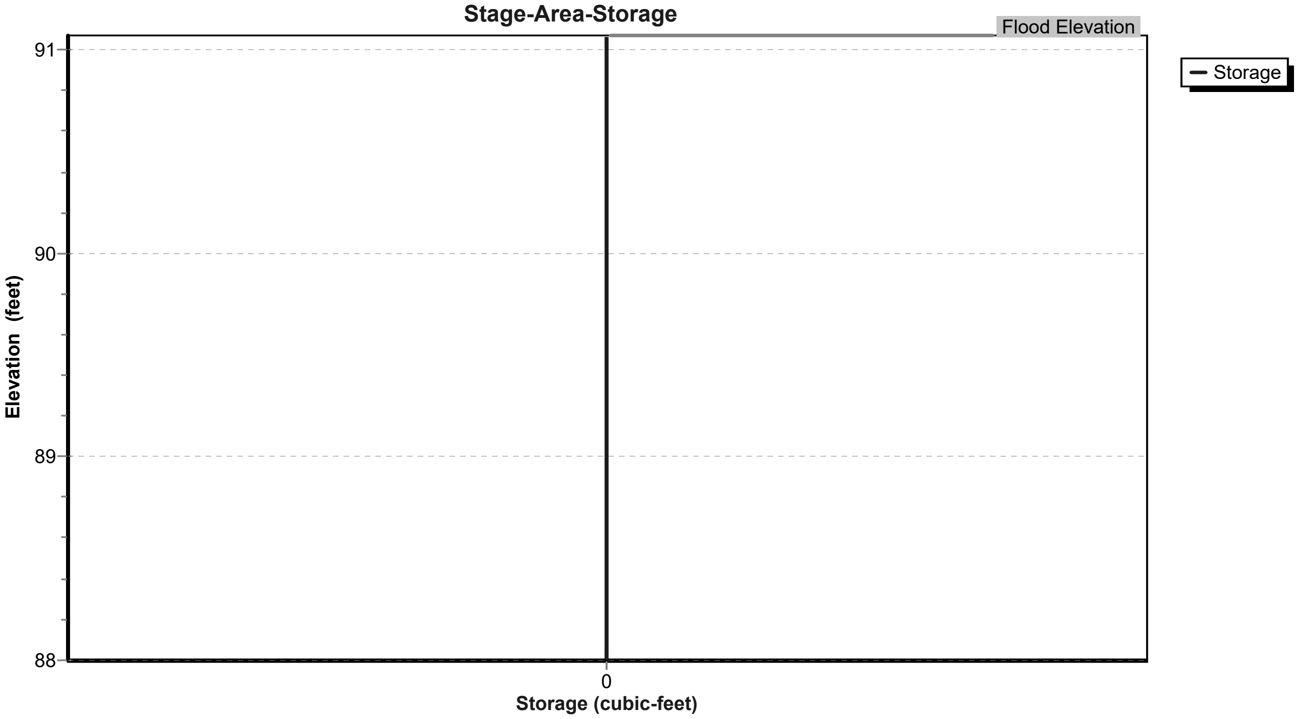
Inflow Area = 12,720 sf, 76.68% Impervious, Inflow Depth = 6.35" for 100-year event
Inflow = 2.04 cfs @ 12.09 hrs, Volume= 6,727 cf
Outflow = 2.04 cfs @ 12.09 hrs, Volume= 6,727 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.04 cfs @ 12.09 hrs, Volume= 6,727 cf
Routed to Link SP2 : Flow Off-Site To Riverfront Area

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 88.75' @ 12.09 hrs
Flood Elev= 91.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round 12" RCP (Estimated Slope)** L= 72.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 88.00' / 87.28' S= 0.0100 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.03 cfs @ 12.09 hrs HW=88.75' TW=0.00' (Dynamic Tailwater)
1=12" RCP (Estimated Slope) (Barrel Controls 2.03 cfs @ 4.45 fps)

Pond MH2: DMH-2



Stage-Area-Storage for Pond MH2: DMH-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
88.00	**0**	88.35	0	88.70	0	89.05	0	89.40	0
88.01	0	88.36	0	88.71	0	89.06	0	89.41	0
88.02	0	88.37	0	88.72	0	89.07	0	89.42	0
88.03	0	88.38	0	88.73	0	89.08	0	89.43	0
88.04	0	88.39	0	88.74	0	89.09	0	89.44	0
88.05	0	88.40	0	88.75	0	89.10	0	89.45	0
88.06	0	88.41	0	88.76	0	89.11	0	89.46	0
88.07	0	88.42	0	88.77	0	89.12	0	89.47	0
88.08	0	88.43	0	88.78	0	89.13	0	89.48	0
88.09	0	88.44	0	88.79	0	89.14	0	89.49	0
88.10	0	88.45	0	88.80	0	89.15	0	89.50	0
88.11	0	88.46	0	88.81	0	89.16	0	89.51	0
88.12	0	88.47	0	88.82	0	89.17	0	89.52	0
88.13	0	88.48	0	88.83	0	89.18	0	89.53	0
88.14	0	88.49	0	88.84	0	89.19	0	89.54	0
88.15	0	88.50	0	88.85	0	89.20	0	89.55	0
88.16	0	88.51	0	88.86	0	89.21	0	89.56	0
88.17	0	88.52	0	88.87	0	89.22	0	89.57	0
88.18	0	88.53	0	88.88	0	89.23	0	89.58	0
88.19	0	88.54	0	88.89	0	89.24	0	89.59	0
88.20	0	88.55	0	88.90	0	89.25	0	89.60	0
88.21	0	88.56	0	88.91	0	89.26	0	89.61	0
88.22	0	88.57	0	88.92	0	89.27	0	89.62	0
88.23	0	88.58	0	88.93	0	89.28	0	89.63	0
88.24	0	88.59	0	88.94	0	89.29	0	89.64	0
88.25	0	88.60	0	88.95	0	89.30	0	89.65	0
88.26	0	88.61	0	88.96	0	89.31	0	89.66	0
88.27	0	88.62	0	88.97	0	89.32	0	89.67	0
88.28	0	88.63	0	88.98	0	89.33	0	89.68	0
88.29	0	88.64	0	88.99	0	89.34	0	89.69	0
88.30	0	88.65	0	89.00	0	89.35	0	89.70	0
88.31	0	88.66	0	89.01	0	89.36	0	89.71	0
88.32	0	88.67	0	89.02	0	89.37	0	89.72	0
88.33	0	88.68	0	89.03	0	89.38	0	89.73	0
88.34	0	88.69	0	89.04	0	89.39	0	89.74	0

Stage-Area-Storage for Pond MH2: DMH-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.75	0	90.10	0	90.45	0	90.80	0
89.76	0	90.11	0	90.46	0	90.81	0
89.77	0	90.12	0	90.47	0	90.82	0
89.78	0	90.13	0	90.48	0	90.83	0
89.79	0	90.14	0	90.49	0	90.84	0
89.80	0	90.15	0	90.50	0	90.85	0
89.81	0	90.16	0	90.51	0	90.86	0
89.82	0	90.17	0	90.52	0	90.87	0
89.83	0	90.18	0	90.53	0	90.88	0
89.84	0	90.19	0	90.54	0	90.89	0
89.85	0	90.20	0	90.55	0	90.90	0
89.86	0	90.21	0	90.56	0	90.91	0
89.87	0	90.22	0	90.57	0	90.92	0
89.88	0	90.23	0	90.58	0	90.93	0
89.89	0	90.24	0	90.59	0	90.94	0
89.90	0	90.25	0	90.60	0	90.95	0
89.91	0	90.26	0	90.61	0	90.96	0
89.92	0	90.27	0	90.62	0	90.97	0
89.93	0	90.28	0	90.63	0	90.98	0
89.94	0	90.29	0	90.64	0	90.99	0
89.95	0	90.30	0	90.65	0	91.00	0
89.96	0	90.31	0	90.66	0	91.01	0
89.97	0	90.32	0	90.67	0	91.02	0
89.98	0	90.33	0	90.68	0	91.03	0
89.99	0	90.34	0	90.69	0	91.04	0
90.00	0	90.35	0	90.70	0	91.05	0
90.01	0	90.36	0	90.71	0	91.06	0
90.02	0	90.37	0	90.72	0	91.07	0
90.03	0	90.38	0	90.73	0		
90.04	0	90.39	0	90.74	0		
90.05	0	90.40	0	90.75	0		
90.06	0	90.41	0	90.76	0		
90.07	0	90.42	0	90.77	0		
90.08	0	90.43	0	90.78	0		
90.09	0	90.44	0	90.79	0		

Summary for Link SP1: Flow Off-Site To Municipal Drainage

Inflow Area = 9,274 sf, 62.30% Impervious, Inflow Depth = 5.37" for 100-year event
Inflow = 1.33 cfs @ 12.09 hrs, Volume= 4,148 cf
Primary = 1.33 cfs @ 12.09 hrs, Volume= 4,148 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Link SP2: Flow Off-Site To Riverfront Area

Inflow Area = 24,280 sf, 40.17% Impervious, Inflow Depth = 3.59" for 100-year event
Inflow = 2.04 cfs @ 12.09 hrs, Volume= 7,256 cf
Primary = 2.04 cfs @ 12.09 hrs, Volume= 7,256 cf, Atten= 0%, Lag= 0.0 min

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

Events for Subcatchment E-1: Subcat E-1

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-year	3.31	0.30	950	1.23
10-year	5.21	0.68	2,094	2.71
25-year	6.40	0.93	2,881	3.73
100-year	**8.23**	**1.33**	**4,148**	**5.37**

Events for Subcatchment E-2: Subcat E-2

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-year	3.31	0.00	0	0.00
10-year	5.21	0.00	24	0.02
25-year	6.40	0.01	151	0.16
100-year	**8.23**	**0.05**	**528**	**0.55**

Events for Subcatchment E-3: Subcat E-3

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-year	3.31	0.31	1,040	2.97
10-year	5.21	0.49	1,704	4.86
25-year	6.40	0.60	2,120	6.04
100-year	**8.23**	**0.78**	**2,761**	**7.87**

Events for Subcatchment E-4: Subcat E-4

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-year	3.31	0.06	201	2.55
10-year	5.21	0.11	347	4.40
25-year	6.40	0.13	440	5.58
100-year	**8.23**	**0.17**	**583**	**7.39**

Events for Subcatchment E-5: Subcat E-5

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-year	3.31	0.24	775	1.23
10-year	5.21	0.55	1,708	2.71
25-year	6.40	0.76	2,350	3.73
100-year	**8.23**	**1.09**	**3,383**	**5.37**

Events for Pond CB1: CB-1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2-year	0.31	0.31	89.33	**0**
10-year	0.49	0.49	89.42	0
25-year	0.60	0.60	89.46	0
100-year	**0.78**	**0.78**	**89.53**	0

Events for Pond CB2: CB-2

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2-year	0.06	0.06	89.31	**0**
10-year	0.11	0.11	89.36	0
25-year	0.13	0.13	89.38	0
100-year	**0.17**	**0.17**	**89.41**	0

Events for Pond CB3: CB-3

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2-year	0.24	0.24	89.43	**0**
10-year	0.55	0.55	89.59	0
25-year	0.76	0.76	89.68	0
100-year	**1.09**	**1.09**	**89.81**	0

Events for Pond MH1: DMH-1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2-year	0.37	0.37	88.64	**0**
10-year	0.59	0.59	88.77	0
25-year	0.74	0.74	88.85	0
100-year	**0.95**	**0.95**	**88.98**	0

Events for Pond MH2: DMH-2

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2-year	0.61	0.61	88.38	**0**
10-year	1.15	1.15	88.53	0
25-year	1.49	1.49	88.62	0
100-year	**2.04**	**2.04**	**88.75**	0

Events for Link SP1: Flow Off-Site To Municipal Drainage

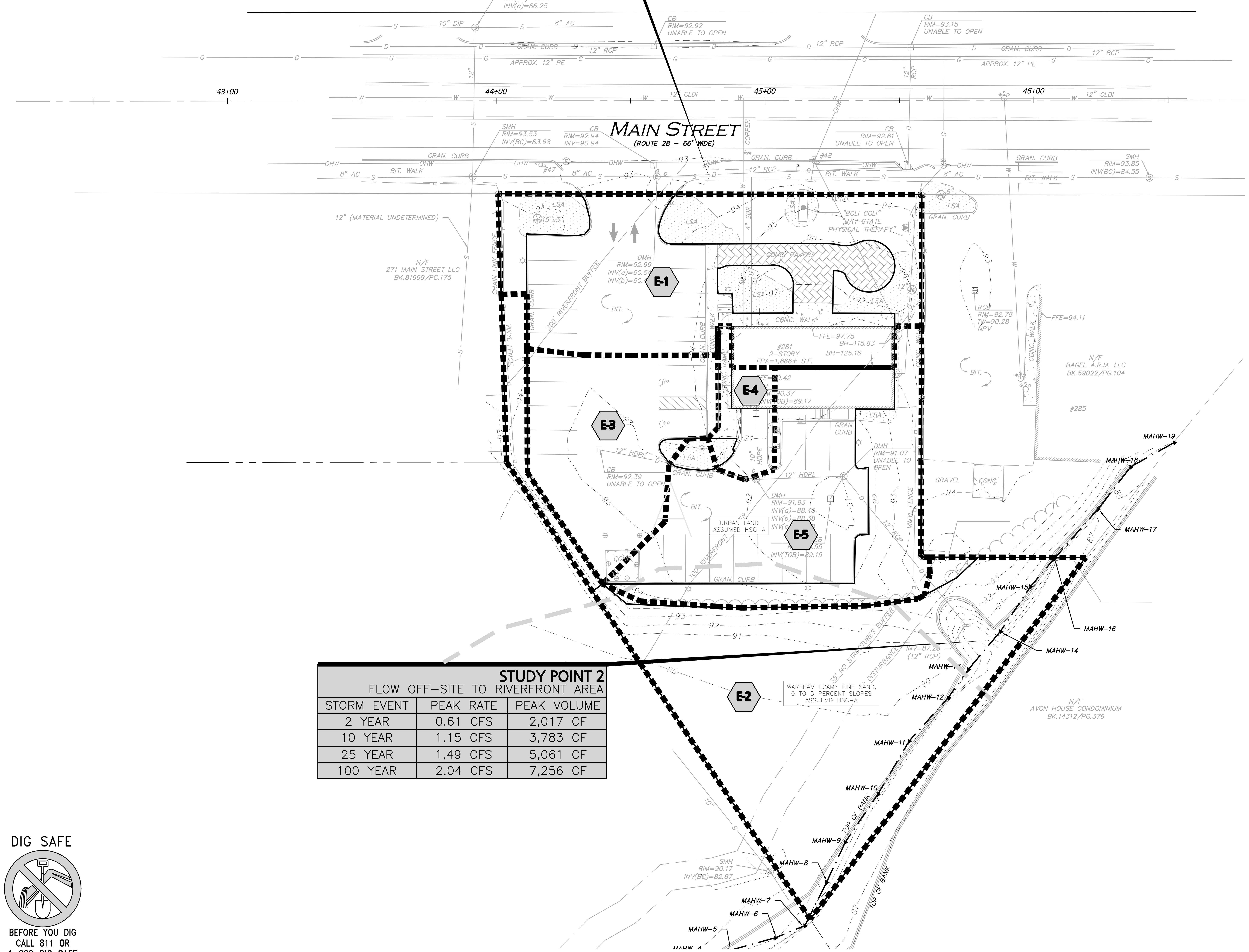
Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-year	0.30	0.30	**0.00**
10-year	0.68	0.68	0.00
25-year	0.93	0.93	0.00
100-year	**1.33**	**1.33**	0.00

Events for Link SP2: Flow Off-Site To Riverfront Area

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-year	0.61	0.61	**0.00**
10-year	1.15	1.15	0.00
25-year	1.49	1.49	0.00
100-year	**2.04**	**2.04**	0.00

STUDY POINT 1
FLOW OFF-SITE TO MUNICIPAL DRAINAGE

STORM EVENT	PEAK RATE	PEAK VOLUME
2 YEAR	0.30 CFS	950 CF
10 YEAR	0.68 CFS	2,094 CF
25 YEAR	0.93 CFS	2,881 CF
100 YEAR	1.33 CFS	4,148 CF



STUDY POINT 2
FLOW OFF-SITE TO RIVERFRONT AREA

STORM EVENT	PEAK RATE	PEAK VOLUME
2 YEAR	0.61 CFS	2,017 CF
10 YEAR	1.15 CFS	3,783 CF
25 YEAR	1.49 CFS	5,061 CF
100 YEAR	2.04 CFS	7,256 CF

LEGEND

- EXISTING WATERSHED
- SCS SOILS BOUNDARY
- Tc FLOW PATH (A — B)
- SUBCATCHMENT LABEL (E-1)
- SUBCATCHMENT BOUNDARY
- FLOW DIRECTION

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

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PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION

APPLICANT\OWNER:
281 READING, LLC
281 MAIN STREET
READING, MA 01867

PROJECT:
MIXED-USE RETAIL AND RESIDENTIAL DEVELOPMENT
281 MAIN STREET
READING, MA

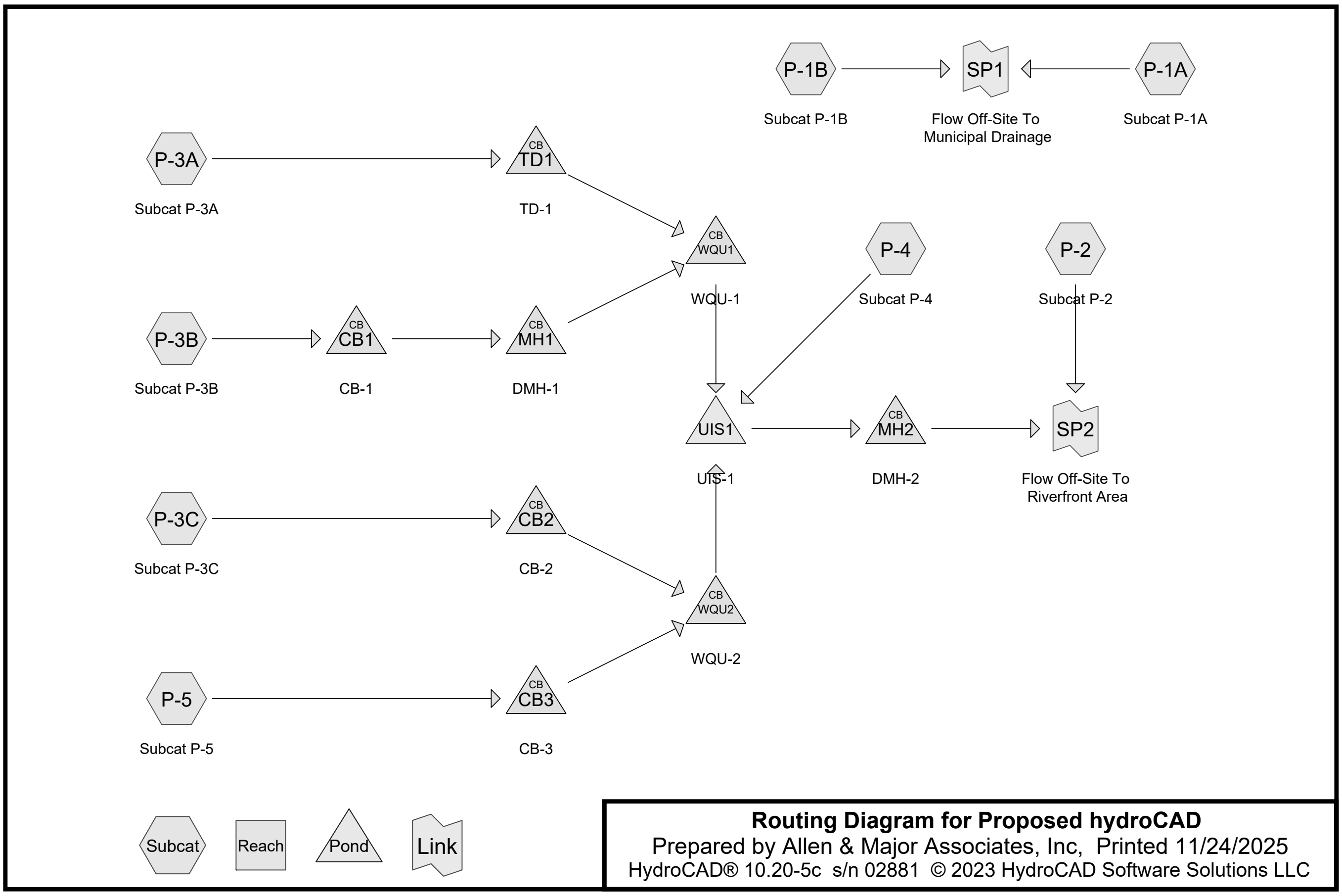
PROJECT NO.	2389-08	DATE:	2025-11-24
SCALE:	1" = 20'	DWG. NAME:	C-2389-08
DESIGNED BY: DMR/MB/BDP		CHECKED BY:	CMQ

PREPARED BY:
ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ♦ land surveying
environmental consulting ♦ landscape architecture
www.allenmajor.com
100 COMMERCE WAY, SUITE 5
WOBURN MA 01801
TEL: (781) 935-6889
FAX: (781) 935-2896
WOBURN, MA ♦ LAKEVILLE, MA ♦ MANCHESTER, NH

DRAWING TITLE: EXISTING WATERSHED PLAN

SHEET No. EWS

SECTION 5.0 -
PROPOSED DRAINAGE ANALYSIS



Routing Diagram for Proposed hydroCAD
Prepared by Allen & Major Associates, Inc, Printed 11/24/2025
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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.31	2
2	10-Year	Type III 24-hr		Default	24.00	1	5.21	2
3	25-Year	Type III 24-hr		Default	24.00	1	6.40	2
4	100-Year	Type III 24-hr		Default	24.00	1	8.23	2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
3,354	39	>75% Grass cover, Good, HSG A (P-1A, P-1B, P-2, P-3C)
8,834	98	Paved parking, HSG A (P-1A, P-3A, P-3B, P-3C, P-5)
10,797	98	Roofs, HSG A (P-4)
10,569	30	Woods, Good, HSG A (P-2)
33,554	**71**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
33,554	HSG A	P-1A, P-1B, P-2, P-3A, P-3B, P-3C, P-4, P-5
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
33,554		**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	CB1	90.40	89.95	44.8	0.0100	0.012	0.0	12.0	0.0	CB-1
2	CB2	90.10	89.75	52.5	0.0067	0.012	0.0	12.0	0.0	CB-2
3	CB3	90.70	89.75	99.7	0.0095	0.012	0.0	12.0	0.0	CB-3
4	MH1	89.85	89.75	9.7	0.0103	0.012	0.0	12.0	0.0	DMH-1
5	MH2	88.00	87.28	72.0	0.0100	0.012	0.0	12.0	0.0	DMH-2
6	TD1	89.90	89.75	15.3	0.0098	0.012	0.0	12.0	0.0	TD-1
7	UIS1	89.70	88.10	66.7	0.0240	0.012	0.0	12.0	0.0	UIS-1
8	WQU1	89.75	89.70	5.1	0.0098	0.012	0.0	24.0	0.0	WQU-1
9	WQU2	89.75	89.70	4.8	0.0104	0.012	0.0	24.0	0.0	WQU-2

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P-1A: Subcat P-1A — Runoff Area=1,674 sf 44.88% Impervious Runoff Depth=0.65"
Tc=6.0 min CN=65 Runoff=0.02 cfs 91 cf

Subcatchment P-1B: Subcat P-1B — Runoff Area=385 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=39 Runoff=0.00 cfs 0 cf

Subcatchment P-2: Subcat P-2 — Runoff Area=12,526 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=31 Runoff=0.00 cfs 0 cf

Subcatchment P-3A: Subcat P-3A — Runoff Area=1,955 sf 100.00% Impervious Runoff Depth=3.08"
Tc=6.0 min CN=98 Runoff=0.14 cfs 501 cf

Subcatchment P-3B: Subcat P-3B — Runoff Area=2,266 sf 100.00% Impervious Runoff Depth=3.08"
Tc=6.0 min CN=98 Runoff=0.17 cfs 581 cf

Subcatchment P-3C: Subcat P-3C — Runoff Area=3,072 sf 97.08% Impervious Runoff Depth=2.86"
Tc=6.0 min CN=96 Runoff=0.22 cfs 731 cf

Subcatchment P-4: Subcat P-4 — Runoff Area=10,797 sf 100.00% Impervious Runoff Depth=3.08"
Tc=6.0 min CN=98 Runoff=0.80 cfs 2,769 cf

Subcatchment P-5: Subcat P-5 — Runoff Area=880 sf 100.00% Impervious Runoff Depth=3.08"
Tc=6.0 min CN=98 Runoff=0.06 cfs 226 cf

Pond CB1: CB-1 — Peak Elev=90.94' Inflow=0.17 cfs 581 cf
12.0" Round Culvert n=0.012 L=44.8' S=0.0100 '/' Outflow=0.17 cfs 581 cf

Pond CB2: CB-2 — Peak Elev=90.94' Inflow=0.22 cfs 731 cf
12.0" Round Culvert n=0.012 L=52.5' S=0.0067 '/' Outflow=0.22 cfs 731 cf

Pond CB3: CB-3 — Peak Elev=90.95' Inflow=0.06 cfs 226 cf
12.0" Round Culvert n=0.012 L=99.7' S=0.0095 '/' Outflow=0.06 cfs 226 cf

Pond MH1: DMH-1 Peak Elev=90.94' Inflow=0.17 cfs 581 cf
12.0" Round Culvert n=0.012 L=9.7' S=0.0103 '/' Outflow=0.17 cfs 580 cf

Pond MH2: DMH-2 Peak Elev=88.13' Inflow=0.07 cfs 243 cf
12.0" Round Culvert n=0.012 L=72.0' S=0.0100 '/' Outflow=0.07 cfs 243 cf

Pond TD1: TD-1 Peak Elev=90.94' Inflow=0.14 cfs 501 cf
12.0" Round Culvert n=0.012 L=15.3' S=0.0098 '/' Outflow=0.14 cfs 500 cf

Pond UIS1: UIS-1 Peak Elev=90.94' Storage=1,825 cf Inflow=1.39 cfs 4,802 cf
Discarded=0.09 cfs 4,559 cf Primary=0.07 cfs 243 cf Outflow=0.16 cfs 4,802 cf

Pond WQU1: WQU-1 Peak Elev=90.94' Inflow=0.31 cfs 1,081 cf
24.0" Round Culvert n=0.012 L=5.1' S=0.0098 '/' Outflow=0.31 cfs 1,078 cf

Pond WQU2: WQU-2 Peak Elev=90.94' Inflow=0.28 cfs 957 cf
24.0" Round Culvert n=0.012 L=4.8' S=0.0104 '/' Outflow=0.28 cfs 955 cf

Link SP1: Flow Off-Site To Municipal Drainage Inflow=0.02 cfs 91 cf
Primary=0.02 cfs 91 cf

Link SP2: Flow Off-Site To Riverfront Area Inflow=0.07 cfs 243 cf
Primary=0.07 cfs 243 cf

Total Runoff Area = 33,554 sf Runoff Volume = 4,899 cf Average Runoff Depth = 1.75"
41.49% Pervious = 13,923 sf 58.51% Impervious = 19,631 sf

Summary for Subcatchment P-1A: Subcat P-1A

Runoff = 0.02 cfs @ 12.11 hrs, Volume= 91 cf, Depth= 0.65"
Routed to Link SP1 : Flow Off-Site To Municipal Drainage

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.31"

Area (sf)	CN	Description
751	98	Paved parking, HSG A
923	39	>75% Grass cover, Good, HSG A
1,674	65	Weighted Average
923		55.12% Pervious Area
751		44.88% Impervious Area

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

Summary for Subcatchment P-1B: Subcat P-1B

Runoff = 0.00 cfs @ 24.01 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Link SP1 : Flow Off-Site To Municipal Drainage

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.31"

Area (sf)	CN	Description
385	39	>75% Grass cover, Good, HSG A
385		100.00% Pervious Area

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

Summary for Subcatchment P-2: Subcat P-2

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Link SP2 : Flow Off-Site To Riverfront Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.31"

Area (sf)	CN	Description
10,569	30	Woods, Good, HSG A
1,956	39	>75% Grass cover, Good, HSG A
12,526	31	Weighted Average
12,526		100.00% Pervious Area

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

Summary for Subcatchment P-3A: Subcat P-3A

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 501 cf, Depth= 3.08"
Routed to Pond TD1 : TD-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.31"

Area (sf)	CN	Description
1,955	98	Paved parking, HSG A
1,955		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-3B: Subcat P-3B

Runoff = 0.17 cfs @ 12.08 hrs, Volume= 581 cf, Depth= 3.08"
Routed to Pond CB1 : CB-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.31"

Area (sf)	CN	Description
2,266	98	Paved parking, HSG A
2,266		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-3C: Subcat P-3C

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 731 cf, Depth= 2.86"
Routed to Pond CB2 : CB-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.31"

Area (sf)	CN	Description
90	39	>75% Grass cover, Good, HSG A
2,982	98	Paved parking, HSG A
3,072	96	Weighted Average
90		2.92% Pervious Area
2,982		97.08% Impervious Area

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

Summary for Subcatchment P-4: Subcat P-4

Runoff = 0.80 cfs @ 12.08 hrs, Volume= 2,769 cf, Depth= 3.08"
Routed to Pond UIS1 : UIS-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.31"

Area (sf)	CN	Description
10,797	98	Roofs, HSG A
10,797		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-5: Subcat P-5

Runoff = 0.06 cfs @ 12.08 hrs, Volume= 226 cf, Depth= 3.08"
Routed to Pond CB3 : CB-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.31"

Area (sf)	CN	Description
880	98	Paved parking, HSG A
880		100.00% Impervious Area

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

Summary for Pond CB1: CB-1

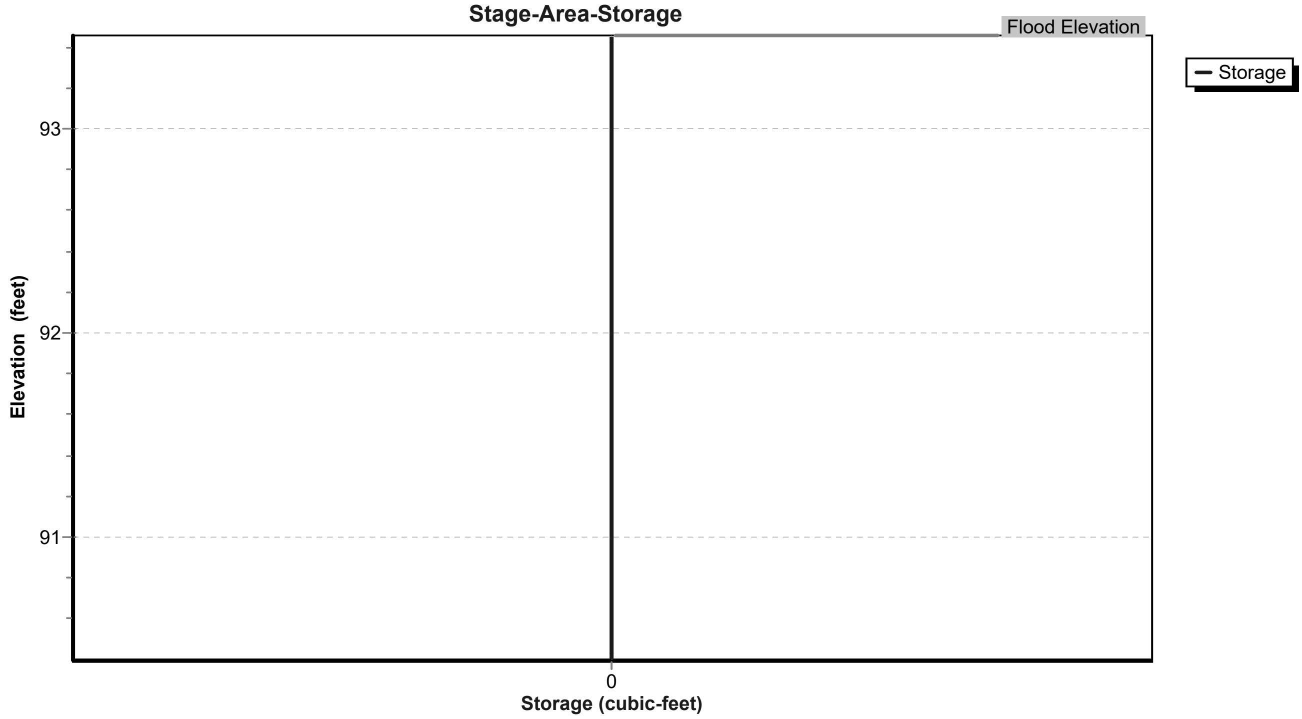
Inflow Area = 2,266 sf,100.00% Impervious, Inflow Depth = 3.08" for 2-Year event
Inflow = 0.17 cfs @ 12.08 hrs, Volume= 581 cf
Outflow = 0.17 cfs @ 12.08 hrs, Volume= 581 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.17 cfs @ 12.08 hrs, Volume= 581 cf
Routed to Pond MH1 : DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 90.94' @ 12.71 hrs
Flood Elev= 93.46'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.40'	**12.0" Round 12" HDPE** L= 44.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.40' / 89.95' S= 0.0100 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.17 cfs @ 12.08 hrs HW=90.62' TW=90.25' (Dynamic Tailwater)
1=12" HDPE (Inlet Controls 0.17 cfs @ 1.27 fps)

Pond CB1: CB-1



Stage-Area-Storage for Pond CB1: CB-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.40	**0**	90.75	0	91.10	0	91.45	0	91.80	0
90.41	0	90.76	0	91.11	0	91.46	0	91.81	0
90.42	0	90.77	0	91.12	0	91.47	0	91.82	0
90.43	0	90.78	0	91.13	0	91.48	0	91.83	0
90.44	0	90.79	0	91.14	0	91.49	0	91.84	0
90.45	0	90.80	0	91.15	0	91.50	0	91.85	0
90.46	0	90.81	0	91.16	0	91.51	0	91.86	0
90.47	0	90.82	0	91.17	0	91.52	0	91.87	0
90.48	0	90.83	0	91.18	0	91.53	0	91.88	0
90.49	0	90.84	0	91.19	0	91.54	0	91.89	0
90.50	0	90.85	0	91.20	0	91.55	0	91.90	0
90.51	0	90.86	0	91.21	0	91.56	0	91.91	0
90.52	0	90.87	0	91.22	0	91.57	0	91.92	0
90.53	0	90.88	0	91.23	0	91.58	0	91.93	0
90.54	0	90.89	0	91.24	0	91.59	0	91.94	0
90.55	0	90.90	0	91.25	0	91.60	0	91.95	0
90.56	0	90.91	0	91.26	0	91.61	0	91.96	0
90.57	0	90.92	0	91.27	0	91.62	0	91.97	0
90.58	0	90.93	0	91.28	0	91.63	0	91.98	0
90.59	0	90.94	0	91.29	0	91.64	0	91.99	0
90.60	0	90.95	0	91.30	0	91.65	0	92.00	0
90.61	0	90.96	0	91.31	0	91.66	0	92.01	0
90.62	0	90.97	0	91.32	0	91.67	0	92.02	0
90.63	0	90.98	0	91.33	0	91.68	0	92.03	0
90.64	0	90.99	0	91.34	0	91.69	0	92.04	0
90.65	0	91.00	0	91.35	0	91.70	0	92.05	0
90.66	0	91.01	0	91.36	0	91.71	0	92.06	0
90.67	0	91.02	0	91.37	0	91.72	0	92.07	0
90.68	0	91.03	0	91.38	0	91.73	0	92.08	0
90.69	0	91.04	0	91.39	0	91.74	0	92.09	0
90.70	0	91.05	0	91.40	0	91.75	0	92.10	0
90.71	0	91.06	0	91.41	0	91.76	0	92.11	0
90.72	0	91.07	0	91.42	0	91.77	0	92.12	0
90.73	0	91.08	0	91.43	0	91.78	0	92.13	0
90.74	0	91.09	0	91.44	0	91.79	0	92.14	0

Stage-Area-Storage for Pond CB1: CB-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
92.15	0	92.50	0	92.85	0	93.20	0
92.16	0	92.51	0	92.86	0	93.21	0
92.17	0	92.52	0	92.87	0	93.22	0
92.18	0	92.53	0	92.88	0	93.23	0
92.19	0	92.54	0	92.89	0	93.24	0
92.20	0	92.55	0	92.90	0	93.25	0
92.21	0	92.56	0	92.91	0	93.26	0
92.22	0	92.57	0	92.92	0	93.27	0
92.23	0	92.58	0	92.93	0	93.28	0
92.24	0	92.59	0	92.94	0	93.29	0
92.25	0	92.60	0	92.95	0	93.30	0
92.26	0	92.61	0	92.96	0	93.31	0
92.27	0	92.62	0	92.97	0	93.32	0
92.28	0	92.63	0	92.98	0	93.33	0
92.29	0	92.64	0	92.99	0	93.34	0
92.30	0	92.65	0	93.00	0	93.35	0
92.31	0	92.66	0	93.01	0	93.36	0
92.32	0	92.67	0	93.02	0	93.37	0
92.33	0	92.68	0	93.03	0	93.38	0
92.34	0	92.69	0	93.04	0	93.39	0
92.35	0	92.70	0	93.05	0	93.40	0
92.36	0	92.71	0	93.06	0	93.41	0
92.37	0	92.72	0	93.07	0	93.42	0
92.38	0	92.73	0	93.08	0	93.43	0
92.39	0	92.74	0	93.09	0	93.44	0
92.40	0	92.75	0	93.10	0	93.45	0
92.41	0	92.76	0	93.11	0	93.46	0
92.42	0	92.77	0	93.12	0		
92.43	0	92.78	0	93.13	0		
92.44	0	92.79	0	93.14	0		
92.45	0	92.80	0	93.15	0		
92.46	0	92.81	0	93.16	0		
92.47	0	92.82	0	93.17	0		
92.48	0	92.83	0	93.18	0		
92.49	0	92.84	0	93.19	0		

Summary for Pond CB2: CB-2

Inflow Area = 3,072 sf, 97.08% Impervious, Inflow Depth = 2.86" for 2-Year event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 731 cf
Outflow = 0.22 cfs @ 12.08 hrs, Volume= 731 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.22 cfs @ 12.08 hrs, Volume= 731 cf
Routed to Pond WQU2 : WQU-2

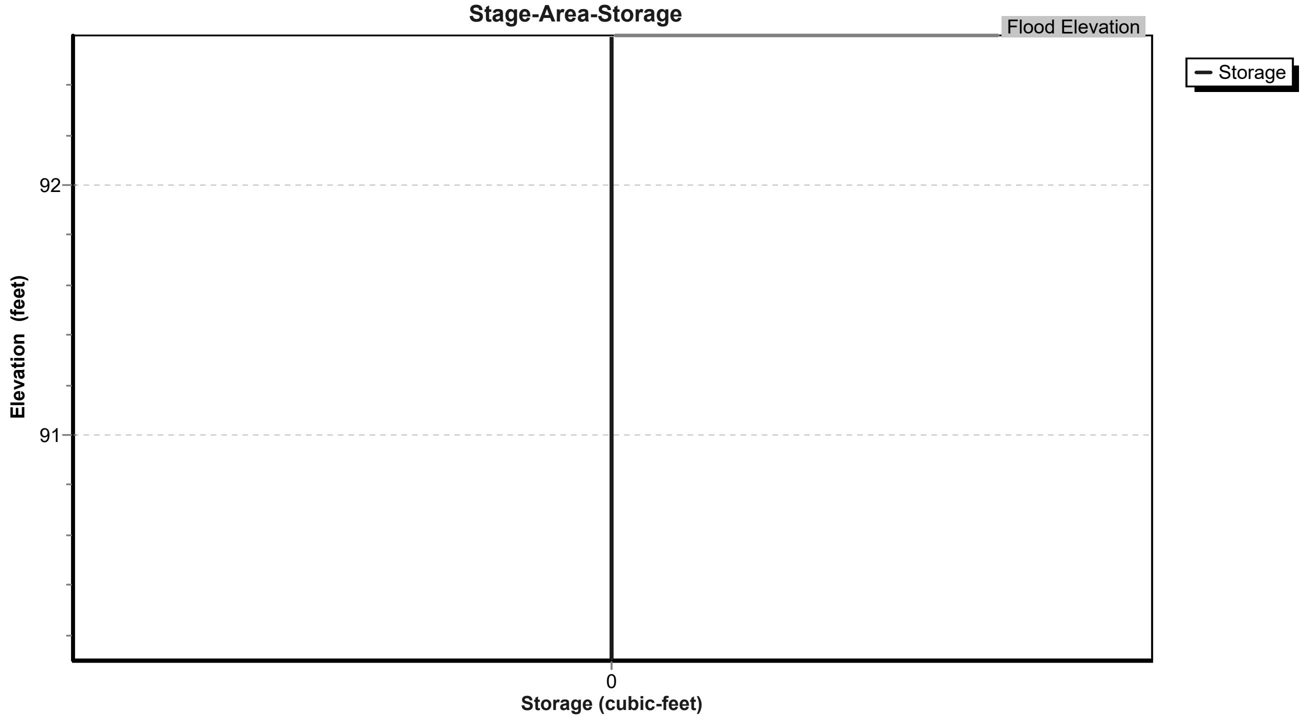
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 90.94' @ 12.70 hrs
Flood Elev= 92.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.10'	**12.0" Round 12" HDPE** L= 52.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.10' / 89.75' S= 0.0067 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.22 cfs @ 12.08 hrs HW=90.41' TW=90.22' (Dynamic Tailwater)
└─**1=12" HDPE** (Outlet Controls 0.22 cfs @ 1.58 fps)

Pond CB2: CB-2

Stage-Area-Storage



Stage-Area-Storage for Pond CB2: CB-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.10	**0**	90.45	0	90.80	0	91.15	0	91.50	0
90.11	0	90.46	0	90.81	0	91.16	0	91.51	0
90.12	0	90.47	0	90.82	0	91.17	0	91.52	0
90.13	0	90.48	0	90.83	0	91.18	0	91.53	0
90.14	0	90.49	0	90.84	0	91.19	0	91.54	0
90.15	0	90.50	0	90.85	0	91.20	0	91.55	0
90.16	0	90.51	0	90.86	0	91.21	0	91.56	0
90.17	0	90.52	0	90.87	0	91.22	0	91.57	0
90.18	0	90.53	0	90.88	0	91.23	0	91.58	0
90.19	0	90.54	0	90.89	0	91.24	0	91.59	0
90.20	0	90.55	0	90.90	0	91.25	0	91.60	0
90.21	0	90.56	0	90.91	0	91.26	0	91.61	0
90.22	0	90.57	0	90.92	0	91.27	0	91.62	0
90.23	0	90.58	0	90.93	0	91.28	0	91.63	0
90.24	0	90.59	0	90.94	0	91.29	0	91.64	0
90.25	0	90.60	0	90.95	0	91.30	0	91.65	0
90.26	0	90.61	0	90.96	0	91.31	0	91.66	0
90.27	0	90.62	0	90.97	0	91.32	0	91.67	0
90.28	0	90.63	0	90.98	0	91.33	0	91.68	0
90.29	0	90.64	0	90.99	0	91.34	0	91.69	0
90.30	0	90.65	0	91.00	0	91.35	0	91.70	0
90.31	0	90.66	0	91.01	0	91.36	0	91.71	0
90.32	0	90.67	0	91.02	0	91.37	0	91.72	0
90.33	0	90.68	0	91.03	0	91.38	0	91.73	0
90.34	0	90.69	0	91.04	0	91.39	0	91.74	0
90.35	0	90.70	0	91.05	0	91.40	0	91.75	0
90.36	0	90.71	0	91.06	0	91.41	0	91.76	0
90.37	0	90.72	0	91.07	0	91.42	0	91.77	0
90.38	0	90.73	0	91.08	0	91.43	0	91.78	0
90.39	0	90.74	0	91.09	0	91.44	0	91.79	0
90.40	0	90.75	0	91.10	0	91.45	0	91.80	0
90.41	0	90.76	0	91.11	0	91.46	0	91.81	0
90.42	0	90.77	0	91.12	0	91.47	0	91.82	0
90.43	0	90.78	0	91.13	0	91.48	0	91.83	0
90.44	0	90.79	0	91.14	0	91.49	0	91.84	0

Stage-Area-Storage for Pond CB2: CB-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.85	0	92.20	0	92.55	0
91.86	0	92.21	0	92.56	0
91.87	0	92.22	0	92.57	0
91.88	0	92.23	0	92.58	0
91.89	0	92.24	0	92.59	0
91.90	0	92.25	0	92.60	0
91.91	0	92.26	0		
91.92	0	92.27	0		
91.93	0	92.28	0		
91.94	0	92.29	0		
91.95	0	92.30	0		
91.96	0	92.31	0		
91.97	0	92.32	0		
91.98	0	92.33	0		
91.99	0	92.34	0		
92.00	0	92.35	0		
92.01	0	92.36	0		
92.02	0	92.37	0		
92.03	0	92.38	0		
92.04	0	92.39	0		
92.05	0	92.40	0		
92.06	0	92.41	0		
92.07	0	92.42	0		
92.08	0	92.43	0		
92.09	0	92.44	0		
92.10	0	92.45	0		
92.11	0	92.46	0		
92.12	0	92.47	0		
92.13	0	92.48	0		
92.14	0	92.49	0		
92.15	0	92.50	0		
92.16	0	92.51	0		
92.17	0	92.52	0		
92.18	0	92.53	0		
92.19	0	92.54	0		

Summary for Pond CB3: CB-3

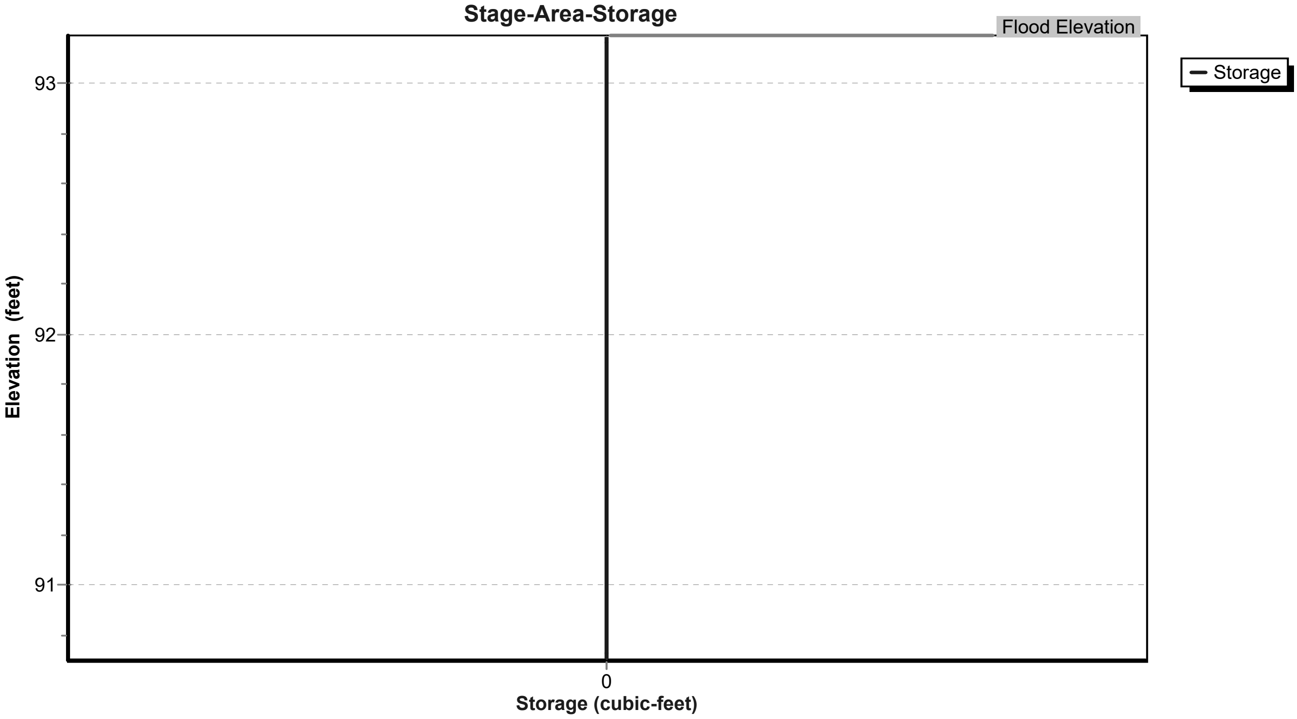
```
Inflow Area =          880 sf,100.00% Impervious,  Inflow Depth =   3.08"    for  2-Year event
Inflow      =        0.06 cfs @   12.08 hrs,  Volume=            226 cf
Outflow     =        0.06 cfs @   12.08 hrs,  Volume=            226 cf,  Atten= 0%,  Lag= 0.0 min
Primary     =        0.06 cfs @   12.08 hrs,  Volume=            226 cf
   Routed to Pond WQU2 : WQU-2
```

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 90.95' @ 12.69 hrs
Flood Elev= 93.19'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.70'	**12.0" Round 12" HDPE** L= 99.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.70' / 89.75' S= 0.0095 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.06 cfs @ 12.08 hrs HW=90.84' TW=90.22' (Dynamic Tailwater)
└─**1=12" HDPE** (Outlet Controls 0.06 cfs @ 1.50 fps)

Pond CB3: CB-3



Stage-Area-Storage for Pond CB3: CB-3

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.70	**0**	91.05	0	91.40	0	91.75	0	92.10	0
90.71	0	91.06	0	91.41	0	91.76	0	92.11	0
90.72	0	91.07	0	91.42	0	91.77	0	92.12	0
90.73	0	91.08	0	91.43	0	91.78	0	92.13	0
90.74	0	91.09	0	91.44	0	91.79	0	92.14	0
90.75	0	91.10	0	91.45	0	91.80	0	92.15	0
90.76	0	91.11	0	91.46	0	91.81	0	92.16	0
90.77	0	91.12	0	91.47	0	91.82	0	92.17	0
90.78	0	91.13	0	91.48	0	91.83	0	92.18	0
90.79	0	91.14	0	91.49	0	91.84	0	92.19	0
90.80	0	91.15	0	91.50	0	91.85	0	92.20	0
90.81	0	91.16	0	91.51	0	91.86	0	92.21	0
90.82	0	91.17	0	91.52	0	91.87	0	92.22	0
90.83	0	91.18	0	91.53	0	91.88	0	92.23	0
90.84	0	91.19	0	91.54	0	91.89	0	92.24	0
90.85	0	91.20	0	91.55	0	91.90	0	92.25	0
90.86	0	91.21	0	91.56	0	91.91	0	92.26	0
90.87	0	91.22	0	91.57	0	91.92	0	92.27	0
90.88	0	91.23	0	91.58	0	91.93	0	92.28	0
90.89	0	91.24	0	91.59	0	91.94	0	92.29	0
90.90	0	91.25	0	91.60	0	91.95	0	92.30	0
90.91	0	91.26	0	91.61	0	91.96	0	92.31	0
90.92	0	91.27	0	91.62	0	91.97	0	92.32	0
90.93	0	91.28	0	91.63	0	91.98	0	92.33	0
90.94	0	91.29	0	91.64	0	91.99	0	92.34	0
90.95	0	91.30	0	91.65	0	92.00	0	92.35	0
90.96	0	91.31	0	91.66	0	92.01	0	92.36	0
90.97	0	91.32	0	91.67	0	92.02	0	92.37	0
90.98	0	91.33	0	91.68	0	92.03	0	92.38	0
90.99	0	91.34	0	91.69	0	92.04	0	92.39	0
91.00	0	91.35	0	91.70	0	92.05	0	92.40	0
91.01	0	91.36	0	91.71	0	92.06	0	92.41	0
91.02	0	91.37	0	91.72	0	92.07	0	92.42	0
91.03	0	91.38	0	91.73	0	92.08	0	92.43	0
91.04	0	91.39	0	91.74	0	92.09	0	92.44	0

Stage-Area-Storage for Pond CB3: CB-3 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
92.45	0	92.80	0	93.15	0
92.46	0	92.81	0	93.16	0
92.47	0	92.82	0	93.17	0
92.48	0	92.83	0	93.18	0
92.49	0	92.84	0	93.19	0
92.50	0	92.85	0		
92.51	0	92.86	0		
92.52	0	92.87	0		
92.53	0	92.88	0		
92.54	0	92.89	0		
92.55	0	92.90	0		
92.56	0	92.91	0		
92.57	0	92.92	0		
92.58	0	92.93	0		
92.59	0	92.94	0		
92.60	0	92.95	0		
92.61	0	92.96	0		
92.62	0	92.97	0		
92.63	0	92.98	0		
92.64	0	92.99	0		
92.65	0	93.00	0		
92.66	0	93.01	0		
92.67	0	93.02	0		
92.68	0	93.03	0		
92.69	0	93.04	0		
92.70	0	93.05	0		
92.71	0	93.06	0		
92.72	0	93.07	0		
92.73	0	93.08	0		
92.74	0	93.09	0		
92.75	0	93.10	0		
92.76	0	93.11	0		
92.77	0	93.12	0		
92.78	0	93.13	0		
92.79	0	93.14	0		

Summary for Pond MH1: DMH-1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=551)
[80] Warning: Exceeded Pond CB1 by 0.40' @ 13.37 hrs (0.64 cfs 182 cf)

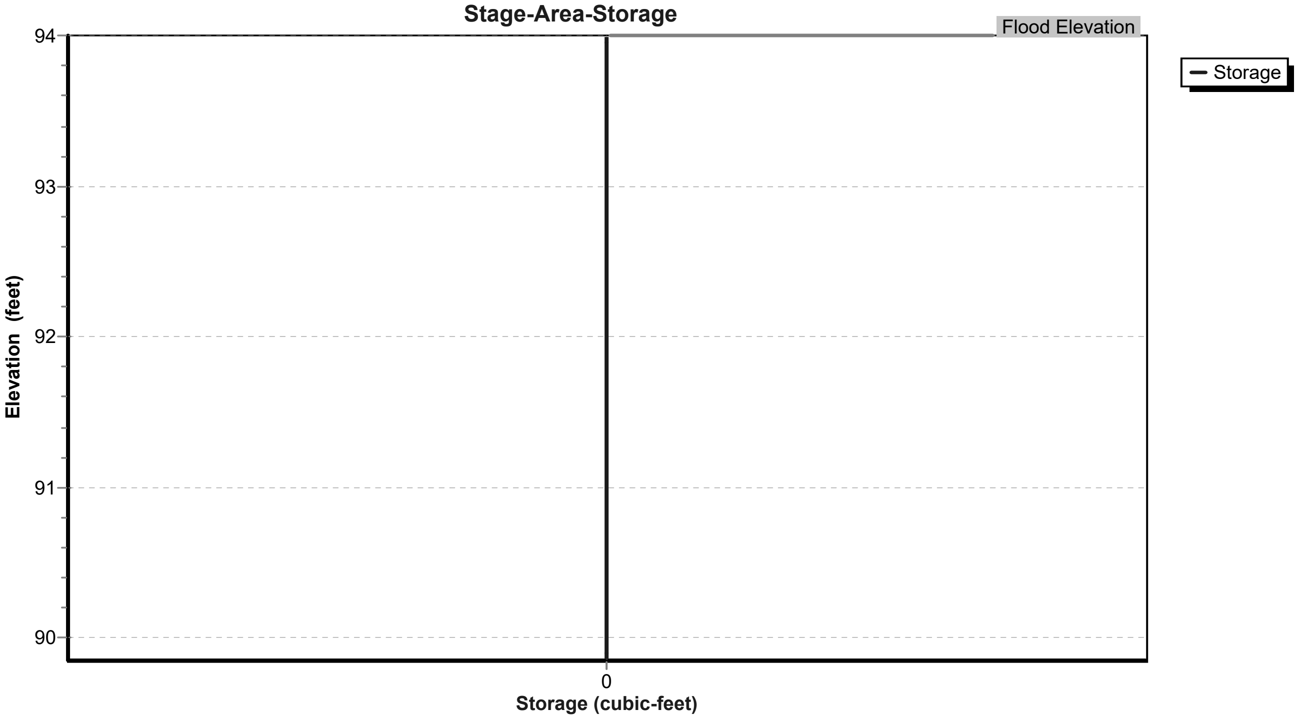
Inflow Area = 2,266 sf,100.00% Impervious, Inflow Depth = 3.08" for 2-Year event
Inflow = 0.17 cfs @ 12.08 hrs, Volume= 581 cf
Outflow = 0.17 cfs @ 12.08 hrs, Volume= 580 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.17 cfs @ 12.08 hrs, Volume= 580 cf
Routed to Pond WQU1 : WQU-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 90.94' @ 12.70 hrs
Flood Elev= 94.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.85'	**12.0" Round 12" HDPE** L= 9.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.85' / 89.75' S= 0.0103 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.17 cfs @ 12.08 hrs HW=90.25' TW=90.22' (Dynamic Tailwater)
1=12" HDPE (Outlet Controls 0.17 cfs @ 0.86 fps)

Pond MH1: DMH-1



Stage-Area-Storage for Pond MH1: DMH-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.85	**0**	90.20	0	90.55	0	90.90	0	91.25	0
89.86	0	90.21	0	90.56	0	90.91	0	91.26	0
89.87	0	90.22	0	90.57	0	90.92	0	91.27	0
89.88	0	90.23	0	90.58	0	90.93	0	91.28	0
89.89	0	90.24	0	90.59	0	90.94	0	91.29	0
89.90	0	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0
90.10	0	90.45	0	90.80	0	91.15	0	91.50	0
90.11	0	90.46	0	90.81	0	91.16	0	91.51	0
90.12	0	90.47	0	90.82	0	91.17	0	91.52	0
90.13	0	90.48	0	90.83	0	91.18	0	91.53	0
90.14	0	90.49	0	90.84	0	91.19	0	91.54	0
90.15	0	90.50	0	90.85	0	91.20	0	91.55	0
90.16	0	90.51	0	90.86	0	91.21	0	91.56	0
90.17	0	90.52	0	90.87	0	91.22	0	91.57	0
90.18	0	90.53	0	90.88	0	91.23	0	91.58	0
90.19	0	90.54	0	90.89	0	91.24	0	91.59	0

Stage-Area-Storage for Pond MH1: DMH-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.60	0	91.95	0	92.30	0	92.65	0	93.00	0
91.61	0	91.96	0	92.31	0	92.66	0	93.01	0
91.62	0	91.97	0	92.32	0	92.67	0	93.02	0
91.63	0	91.98	0	92.33	0	92.68	0	93.03	0
91.64	0	91.99	0	92.34	0	92.69	0	93.04	0
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0
91.85	0	92.20	0	92.55	0	92.90	0	93.25	0
91.86	0	92.21	0	92.56	0	92.91	0	93.26	0
91.87	0	92.22	0	92.57	0	92.92	0	93.27	0
91.88	0	92.23	0	92.58	0	92.93	0	93.28	0
91.89	0	92.24	0	92.59	0	92.94	0	93.29	0
91.90	0	92.25	0	92.60	0	92.95	0	93.30	0
91.91	0	92.26	0	92.61	0	92.96	0	93.31	0
91.92	0	92.27	0	92.62	0	92.97	0	93.32	0
91.93	0	92.28	0	92.63	0	92.98	0	93.33	0
91.94	0	92.29	0	92.64	0	92.99	0	93.34	0

Stage-Area-Storage for Pond MH1: DMH-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
93.35	0	93.70	0
93.36	0	93.71	0
93.37	0	93.72	0
93.38	0	93.73	0
93.39	0	93.74	0
93.40	0	93.75	0
93.41	0	93.76	0
93.42	0	93.77	0
93.43	0	93.78	0
93.44	0	93.79	0
93.45	0	93.80	0
93.46	0	93.81	0
93.47	0	93.82	0
93.48	0	93.83	0
93.49	0	93.84	0
93.50	0	93.85	0
93.51	0	93.86	0
93.52	0	93.87	0
93.53	0	93.88	0
93.54	0	93.89	0
93.55	0	93.90	0
93.56	0	93.91	0
93.57	0	93.92	0
93.58	0	93.93	0
93.59	0	93.94	0
93.60	0	93.95	0
93.61	0	93.96	0
93.62	0	93.97	0
93.63	0	93.98	0
93.64	0	93.99	0
93.65	0	94.00	0
93.66	0		
93.67	0		
93.68	0		
93.69	0		

Summary for Pond MH2: DMH-2

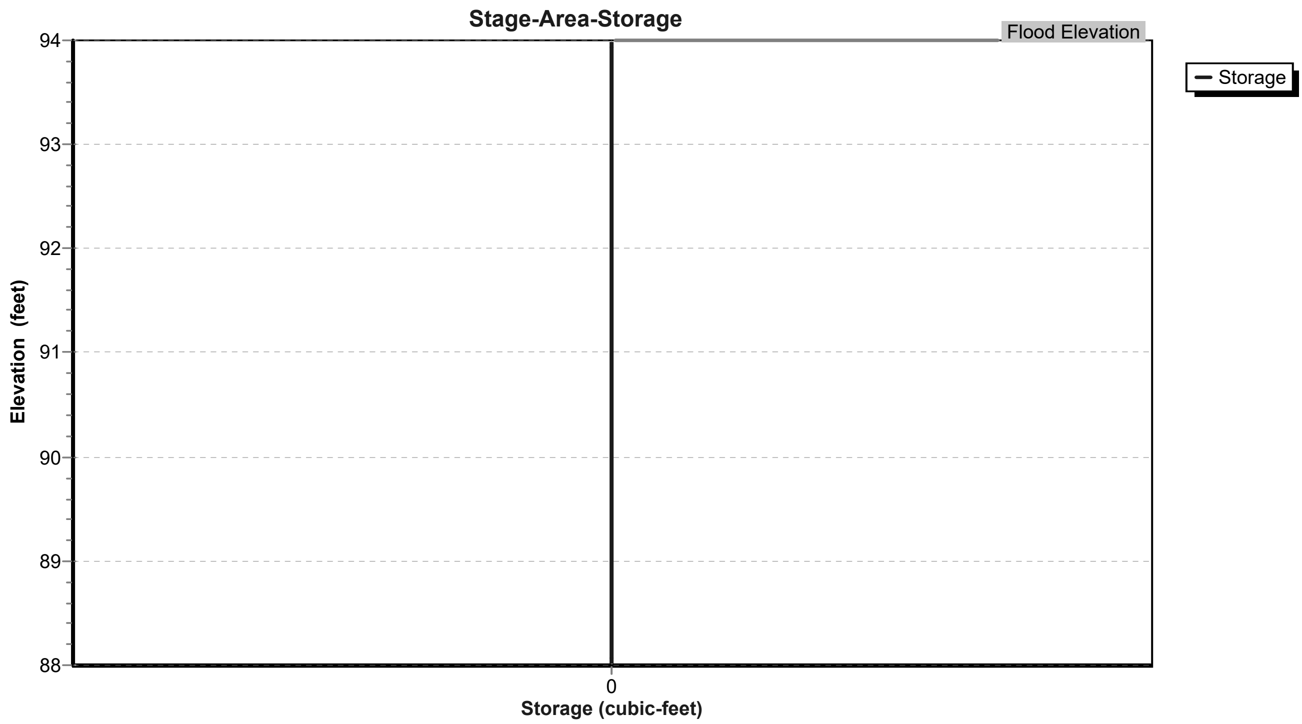
Inflow Area = 18,969 sf, 99.53% Impervious, Inflow Depth = 0.15" for 2-Year event
Inflow = 0.07 cfs @ 12.70 hrs, Volume= 243 cf
Outflow = 0.07 cfs @ 12.70 hrs, Volume= 243 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.07 cfs @ 12.70 hrs, Volume= 243 cf
Routed to Link SP2 : Flow Off-Site To Riverfront Area

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 88.13' @ 12.70 hrs
Flood Elev= 94.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round 12" RCP (Estimated Slope)** L= 72.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 88.00' / 87.28' S= 0.0100 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.07 cfs @ 12.70 hrs HW=88.13' TW=0.00' (Dynamic Tailwater)
└─**1=12" RCP (Estimated Slope)** (Barrel Controls 0.07 cfs @ 1.87 fps)

Pond MH2: DMH-2



Stage-Area-Storage for Pond MH2: DMH-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
88.00	**0**	88.35	0	88.70	0	89.05	0	89.40	0
88.01	0	88.36	0	88.71	0	89.06	0	89.41	0
88.02	0	88.37	0	88.72	0	89.07	0	89.42	0
88.03	0	88.38	0	88.73	0	89.08	0	89.43	0
88.04	0	88.39	0	88.74	0	89.09	0	89.44	0
88.05	0	88.40	0	88.75	0	89.10	0	89.45	0
88.06	0	88.41	0	88.76	0	89.11	0	89.46	0
88.07	0	88.42	0	88.77	0	89.12	0	89.47	0
88.08	0	88.43	0	88.78	0	89.13	0	89.48	0
88.09	0	88.44	0	88.79	0	89.14	0	89.49	0
88.10	0	88.45	0	88.80	0	89.15	0	89.50	0
88.11	0	88.46	0	88.81	0	89.16	0	89.51	0
88.12	0	88.47	0	88.82	0	89.17	0	89.52	0
88.13	0	88.48	0	88.83	0	89.18	0	89.53	0
88.14	0	88.49	0	88.84	0	89.19	0	89.54	0
88.15	0	88.50	0	88.85	0	89.20	0	89.55	0
88.16	0	88.51	0	88.86	0	89.21	0	89.56	0
88.17	0	88.52	0	88.87	0	89.22	0	89.57	0
88.18	0	88.53	0	88.88	0	89.23	0	89.58	0
88.19	0	88.54	0	88.89	0	89.24	0	89.59	0
88.20	0	88.55	0	88.90	0	89.25	0	89.60	0
88.21	0	88.56	0	88.91	0	89.26	0	89.61	0
88.22	0	88.57	0	88.92	0	89.27	0	89.62	0
88.23	0	88.58	0	88.93	0	89.28	0	89.63	0
88.24	0	88.59	0	88.94	0	89.29	0	89.64	0
88.25	0	88.60	0	88.95	0	89.30	0	89.65	0
88.26	0	88.61	0	88.96	0	89.31	0	89.66	0
88.27	0	88.62	0	88.97	0	89.32	0	89.67	0
88.28	0	88.63	0	88.98	0	89.33	0	89.68	0
88.29	0	88.64	0	88.99	0	89.34	0	89.69	0
88.30	0	88.65	0	89.00	0	89.35	0	89.70	0
88.31	0	88.66	0	89.01	0	89.36	0	89.71	0
88.32	0	88.67	0	89.02	0	89.37	0	89.72	0
88.33	0	88.68	0	89.03	0	89.38	0	89.73	0
88.34	0	88.69	0	89.04	0	89.39	0	89.74	0

Stage-Area-Storage for Pond MH2: DMH-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.75	0	90.10	0	90.45	0	90.80	0	91.15	0
89.76	0	90.11	0	90.46	0	90.81	0	91.16	0
89.77	0	90.12	0	90.47	0	90.82	0	91.17	0
89.78	0	90.13	0	90.48	0	90.83	0	91.18	0
89.79	0	90.14	0	90.49	0	90.84	0	91.19	0
89.80	0	90.15	0	90.50	0	90.85	0	91.20	0
89.81	0	90.16	0	90.51	0	90.86	0	91.21	0
89.82	0	90.17	0	90.52	0	90.87	0	91.22	0
89.83	0	90.18	0	90.53	0	90.88	0	91.23	0
89.84	0	90.19	0	90.54	0	90.89	0	91.24	0
89.85	0	90.20	0	90.55	0	90.90	0	91.25	0
89.86	0	90.21	0	90.56	0	90.91	0	91.26	0
89.87	0	90.22	0	90.57	0	90.92	0	91.27	0
89.88	0	90.23	0	90.58	0	90.93	0	91.28	0
89.89	0	90.24	0	90.59	0	90.94	0	91.29	0
89.90	0	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0

Stage-Area-Storage for Pond MH2: DMH-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.50	0	91.85	0	92.20	0	92.55	0	92.90	0
91.51	0	91.86	0	92.21	0	92.56	0	92.91	0
91.52	0	91.87	0	92.22	0	92.57	0	92.92	0
91.53	0	91.88	0	92.23	0	92.58	0	92.93	0
91.54	0	91.89	0	92.24	0	92.59	0	92.94	0
91.55	0	91.90	0	92.25	0	92.60	0	92.95	0
91.56	0	91.91	0	92.26	0	92.61	0	92.96	0
91.57	0	91.92	0	92.27	0	92.62	0	92.97	0
91.58	0	91.93	0	92.28	0	92.63	0	92.98	0
91.59	0	91.94	0	92.29	0	92.64	0	92.99	0
91.60	0	91.95	0	92.30	0	92.65	0	93.00	0
91.61	0	91.96	0	92.31	0	92.66	0	93.01	0
91.62	0	91.97	0	92.32	0	92.67	0	93.02	0
91.63	0	91.98	0	92.33	0	92.68	0	93.03	0
91.64	0	91.99	0	92.34	0	92.69	0	93.04	0
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0

Stage-Area-Storage for Pond MH2: DMH-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
93.25	0	93.60	0	93.95	0
93.26	0	93.61	0	93.96	0
93.27	0	93.62	0	93.97	0
93.28	0	93.63	0	93.98	0
93.29	0	93.64	0	93.99	0
93.30	0	93.65	0	94.00	0
93.31	0	93.66	0		
93.32	0	93.67	0		
93.33	0	93.68	0		
93.34	0	93.69	0		
93.35	0	93.70	0		
93.36	0	93.71	0		
93.37	0	93.72	0		
93.38	0	93.73	0		
93.39	0	93.74	0		
93.40	0	93.75	0		
93.41	0	93.76	0		
93.42	0	93.77	0		
93.43	0	93.78	0		
93.44	0	93.79	0		
93.45	0	93.80	0		
93.46	0	93.81	0		
93.47	0	93.82	0		
93.48	0	93.83	0		
93.49	0	93.84	0		
93.50	0	93.85	0		
93.51	0	93.86	0		
93.52	0	93.87	0		
93.53	0	93.88	0		
93.54	0	93.89	0		
93.55	0	93.90	0		
93.56	0	93.91	0		
93.57	0	93.92	0		
93.58	0	93.93	0		
93.59	0	93.94	0		

Summary for Pond TD1: TD-1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=541)

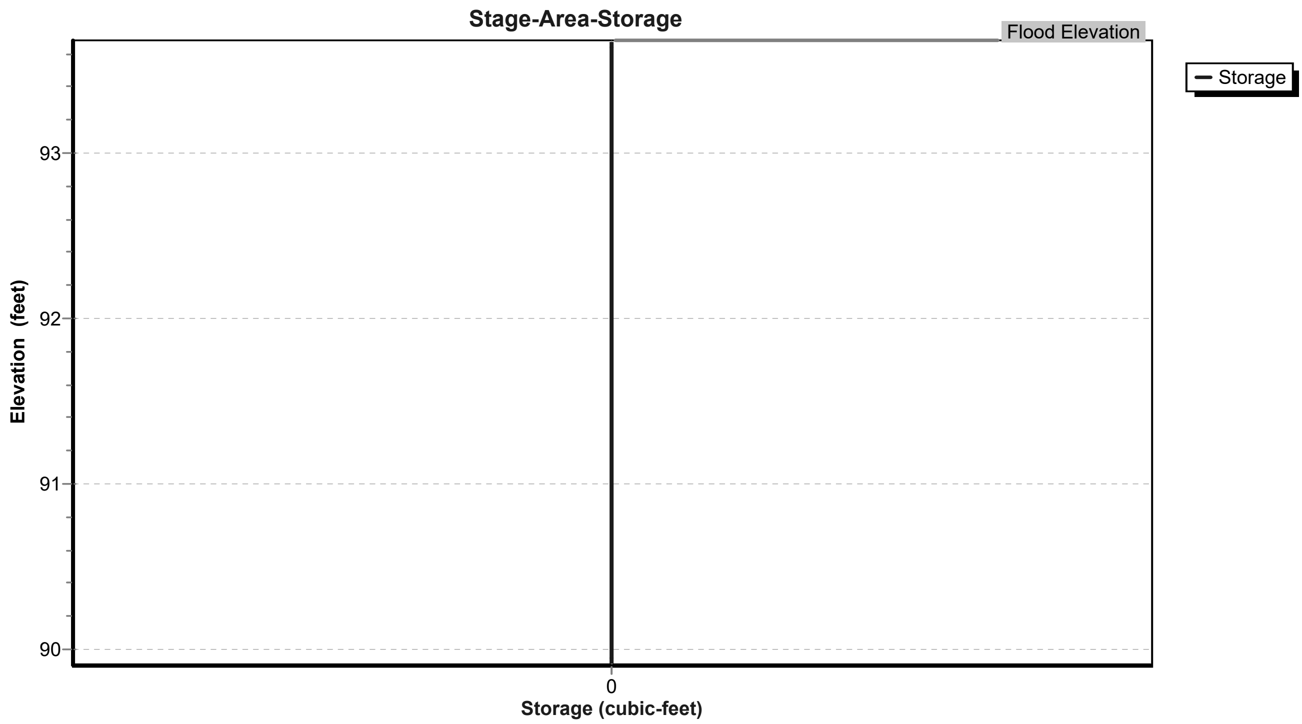
Inflow Area = 1,955 sf,100.00% Impervious, Inflow Depth = 3.08" for 2-Year event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 501 cf
Outflow = 0.14 cfs @ 12.08 hrs, Volume= 500 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.14 cfs @ 12.08 hrs, Volume= 500 cf
Routed to Pond WQU1 : WQU-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 90.94' @ 12.70 hrs
Flood Elev= 93.68'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.90'	**12.0" Round 12" HDPE** L= 15.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.90' / 89.75' S= 0.0098 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.14 cfs @ 12.08 hrs HW=90.25' TW=90.22' (Dynamic Tailwater)
└─**1=12" HDPE** (Outlet Controls 0.14 cfs @ 0.88 fps)

Pond TD1: TD-1



Stage-Area-Storage for Pond TD1: TD-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.90	**0**	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0
90.10	0	90.45	0	90.80	0	91.15	0	91.50	0
90.11	0	90.46	0	90.81	0	91.16	0	91.51	0
90.12	0	90.47	0	90.82	0	91.17	0	91.52	0
90.13	0	90.48	0	90.83	0	91.18	0	91.53	0
90.14	0	90.49	0	90.84	0	91.19	0	91.54	0
90.15	0	90.50	0	90.85	0	91.20	0	91.55	0
90.16	0	90.51	0	90.86	0	91.21	0	91.56	0
90.17	0	90.52	0	90.87	0	91.22	0	91.57	0
90.18	0	90.53	0	90.88	0	91.23	0	91.58	0
90.19	0	90.54	0	90.89	0	91.24	0	91.59	0
90.20	0	90.55	0	90.90	0	91.25	0	91.60	0
90.21	0	90.56	0	90.91	0	91.26	0	91.61	0
90.22	0	90.57	0	90.92	0	91.27	0	91.62	0
90.23	0	90.58	0	90.93	0	91.28	0	91.63	0
90.24	0	90.59	0	90.94	0	91.29	0	91.64	0

Stage-Area-Storage for Pond TD1: TD-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0
91.85	0	92.20	0	92.55	0	92.90	0	93.25	0
91.86	0	92.21	0	92.56	0	92.91	0	93.26	0
91.87	0	92.22	0	92.57	0	92.92	0	93.27	0
91.88	0	92.23	0	92.58	0	92.93	0	93.28	0
91.89	0	92.24	0	92.59	0	92.94	0	93.29	0
91.90	0	92.25	0	92.60	0	92.95	0	93.30	0
91.91	0	92.26	0	92.61	0	92.96	0	93.31	0
91.92	0	92.27	0	92.62	0	92.97	0	93.32	0
91.93	0	92.28	0	92.63	0	92.98	0	93.33	0
91.94	0	92.29	0	92.64	0	92.99	0	93.34	0
91.95	0	92.30	0	92.65	0	93.00	0	93.35	0
91.96	0	92.31	0	92.66	0	93.01	0	93.36	0
91.97	0	92.32	0	92.67	0	93.02	0	93.37	0
91.98	0	92.33	0	92.68	0	93.03	0	93.38	0
91.99	0	92.34	0	92.69	0	93.04	0	93.39	0

Stage-Area-Storage for Pond TD1: TD-1 (continued)

Elevation (feet)	Storage (cubic-feet)
93.40	0
93.41	0
93.42	0
93.43	0
93.44	0
93.45	0
93.46	0
93.47	0
93.48	0
93.49	0
93.50	0
93.51	0
93.52	0
93.53	0
93.54	0
93.55	0
93.56	0
93.57	0
93.58	0
93.59	0
93.60	0
93.61	0
93.62	0
93.63	0
93.64	0
93.65	0
93.66	0
93.67	0
93.68	0

Summary for Pond UIS1: UIS-1

[58] Hint: Peaked 0.14' above defined flood level
[80] Warning: Exceeded Pond WQU1 by 1.11' @ 13.83 hrs (4.08 cfs 8,563 cf)
[80] Warning: Exceeded Pond WQU2 by 0.17' @ 20.09 hrs (0.14 cfs 7,222 cf)

Inflow Area = 18,969 sf, 99.53% Impervious, Inflow Depth = 3.04" for 2-Year event
Inflow = 1.39 cfs @ 12.08 hrs, Volume= 4,802 cf
Outflow = 0.16 cfs @ 12.70 hrs, Volume= 4,802 cf, Atten= 89%, Lag= 36.8 min
Discarded = 0.09 cfs @ 11.25 hrs, Volume= 4,559 cf
Primary = 0.07 cfs @ 12.70 hrs, Volume= 243 cf
Routed to Pond MH2 : DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 90.94' @ 12.70 hrs Surf.Area= 1,550 sf Storage= 1,825 cf
Flood Elev= 90.80' Surf.Area= 1,550 sf Storage= 1,658 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 147.4 min (905.6 - 758.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	89.20'	1,501 cf	**25.25'W x 61.37'L x 3.75'H Field A** 5,811 cf Overall - 2,058 cf Embedded = 3,753 cf x 40.0% Voids
#2A	89.70'	2,058 cf	**ADS_StormTech SC-800 +Cap** x 40 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 40 Chambers in 5 Rows Cap Storage= 3.4 cf x 2 x 5 rows = 34.2 cf
		3,559 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	89.70'	**12.0" Round Culvert** L= 66.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.70' / 88.10' S= 0.0240 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	92.50'	**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
#3	Device 1	90.80'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	89.20'	**2.410 in/hr Exfiltration Loamy Sand over Surface area**

Discarded OutFlow Max=0.09 cfs @ 11.25 hrs HW=89.24' (Free Discharge)
└4=**Exfiltration Loamy Sand** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.07 cfs @ 12.70 hrs HW=90.94' TW=88.13' (Dynamic Tailwater)
└1=**Culvert** (Passes 0.07 cfs of 2.58 cfs potential flow)
  ├2=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
  └3=**Orifice/Grate** (Orifice Controls 0.07 cfs @ 1.30 fps)

Pond UIS1: UIS-1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-800 +Cap (ADS StormTech® SC-800 with cap volume)
Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf
Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap
Cap Storage= 3.4 cf x 2 x 5 rows = 34.2 cf

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

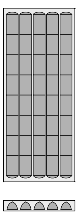
8 Chambers/Row x 7.12' Long +0.88' Cap Length x 2 = 58.70' Row Length +16.0" End Stone x 2 = 61.37' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
6.0" Stone Base + 33.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

40 Chambers x 50.6 cf + 3.4 cf Cap Volume x 2 x 5 Rows = 2,057.9 cf Chamber Storage

5,810.7 cf Field - 2,057.9 cf Chambers = 3,752.8 cf Stone x 40.0% Voids = 1,501.1 cf Stone Storage

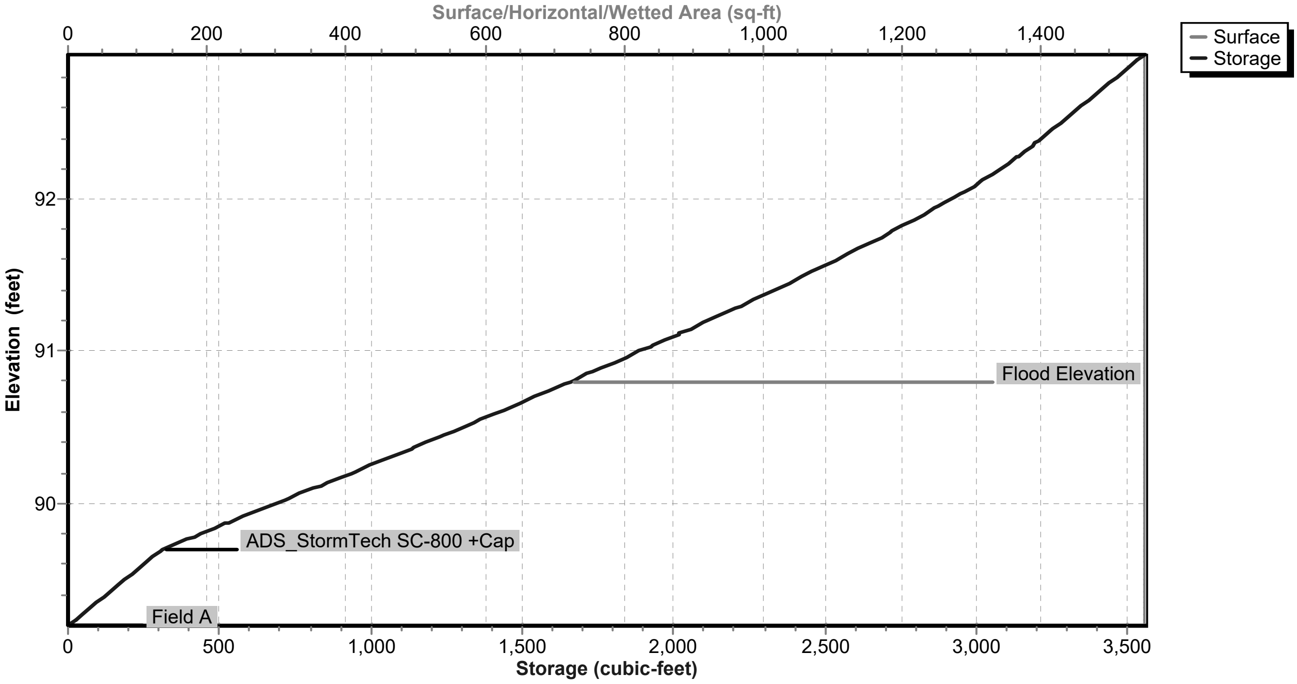
Chamber Storage + Stone Storage = 3,559.0 cf = 0.082 af
Overall Storage Efficiency = 61.2%
Overall System Size = 61.37' x 25.25' x 3.75'

40 Chambers
215.2 cy Field
139.0 cy Stone



Pond UIS1: UIS-1

Stage-Area-Storage



Stage-Area-Storage for Pond UIS1: UIS-1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
89.20	**1,550**	0	89.55	1,550	217	89.90	1,550	563
89.21	1,550	6	89.56	1,550	223	89.91	1,550	576
89.22	1,550	12	89.57	1,550	229	89.92	1,550	588
89.23	1,550	19	89.58	1,550	236	89.93	1,550	601
89.24	1,550	25	89.59	1,550	242	89.94	1,550	613
89.25	1,550	31	89.60	1,550	248	89.95	1,550	626
89.26	1,550	37	89.61	1,550	254	89.96	1,550	638
89.27	1,550	43	89.62	1,550	260	89.97	1,550	651
89.28	1,550	50	89.63	1,550	267	89.98	1,550	663
89.29	1,550	56	89.64	1,550	273	89.99	1,550	676
89.30	1,550	62	89.65	1,550	279	90.00	1,550	689
89.31	1,550	68	89.66	1,550	285	90.01	1,550	701
89.32	1,550	74	89.67	1,550	291	90.02	1,550	714
89.33	1,550	81	89.68	1,550	298	90.03	1,550	726
89.34	1,550	87	89.69	1,550	304	90.04	1,550	738
89.35	1,550	93	89.70	1,550	310	90.05	1,550	751
89.36	1,550	99	89.71	1,550	323	90.06	1,550	763
89.37	1,550	105	89.72	1,550	335	90.07	1,550	776
89.38	1,550	112	89.73	1,550	348	90.08	1,550	788
89.39	1,550	118	89.74	1,550	361	90.09	1,550	801
89.40	1,550	124	89.75	1,550	373	90.10	1,550	813
89.41	1,550	130	89.76	1,550	386	90.11	1,550	826
89.42	1,550	136	89.77	1,550	399	90.12	1,550	838
89.43	1,550	143	89.78	1,550	411	90.13	1,550	850
89.44	1,550	149	89.79	1,550	424	90.14	1,550	863
89.45	1,550	155	89.80	1,550	437	90.15	1,550	875
89.46	1,550	161	89.81	1,550	449	90.16	1,550	888
89.47	1,550	167	89.82	1,550	462	90.17	1,550	900
89.48	1,550	174	89.83	1,550	475	90.18	1,550	912
89.49	1,550	180	89.84	1,550	487	90.19	1,550	925
89.50	1,550	186	89.85	1,550	500	90.20	1,550	937
89.51	1,550	192	89.86	1,550	513	90.21	1,550	949
89.52	1,550	198	89.87	1,550	525	90.22	1,550	962
89.53	1,550	205	89.88	1,550	538	90.23	1,550	974
89.54	1,550	211	89.89	1,550	550	90.24	1,550	986

Stage-Area-Storage for Pond UIS1: UIS-1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
90.25	1,550	999	90.60	1,550	1,422	90.95	1,550	1,832
90.26	1,550	1,011	90.61	1,550	1,434	90.96	1,550	1,843
90.27	1,550	1,023	90.62	1,550	1,446	90.97	1,550	1,854
90.28	1,550	1,035	90.63	1,550	1,458	90.98	1,550	1,866
90.29	1,550	1,048	90.64	1,550	1,470	90.99	1,550	1,877
90.30	1,550	1,060	90.65	1,550	1,482	91.00	1,550	1,889
90.31	1,550	1,072	90.66	1,550	1,494	91.01	1,550	1,900
90.32	1,550	1,084	90.67	1,550	1,506	91.02	1,550	1,911
90.33	1,550	1,097	90.68	1,550	1,517	91.03	1,550	1,923
90.34	1,550	1,109	90.69	1,550	1,529	91.04	1,550	1,934
90.35	1,550	1,121	90.70	1,550	1,541	91.05	1,550	1,945
90.36	1,550	1,133	90.71	1,550	1,553	91.06	1,550	1,956
90.37	1,550	1,145	90.72	1,550	1,565	91.07	1,550	1,968
90.38	1,550	1,158	90.73	1,550	1,576	91.08	1,550	1,979
90.39	1,550	1,170	90.74	1,550	1,588	91.09	1,550	1,990
90.40	1,550	1,182	90.75	1,550	1,600	91.10	1,550	2,001
90.41	1,550	1,194	90.76	1,550	1,612	91.11	1,550	2,013
90.42	1,550	1,206	90.77	1,550	1,623	91.12	1,550	2,024
90.43	1,550	1,218	90.78	1,550	1,635	91.13	1,550	2,035
90.44	1,550	1,230	90.79	1,550	1,647	91.14	1,550	2,046
90.45	1,550	1,242	90.80	1,550	1,658	91.15	1,550	2,057
90.46	1,550	1,255	90.81	1,550	1,670	91.16	1,550	2,068
90.47	1,550	1,267	90.82	1,550	1,682	91.17	1,550	2,079
90.48	1,550	1,279	90.83	1,550	1,693	91.18	1,550	2,090
90.49	1,550	1,291	90.84	1,550	1,705	91.19	1,550	2,101
90.50	1,550	1,303	90.85	1,550	1,716	91.20	1,550	2,112
90.51	1,550	1,315	90.86	1,550	1,728	91.21	1,550	2,123
90.52	1,550	1,327	90.87	1,550	1,740	91.22	1,550	2,134
90.53	1,550	1,339	90.88	1,550	1,751	91.23	1,550	2,145
90.54	1,550	1,351	90.89	1,550	1,763	91.24	1,550	2,156
90.55	1,550	1,363	90.90	1,550	1,774	91.25	1,550	2,167
90.56	1,550	1,375	90.91	1,550	1,786	91.26	1,550	2,178
90.57	1,550	1,387	90.92	1,550	1,797	91.27	1,550	2,189
90.58	1,550	1,399	90.93	1,550	1,809	91.28	1,550	2,200
90.59	1,550	1,411	90.94	1,550	1,820	91.29	1,550	2,211

Stage-Area-Storage for Pond UIS1: UIS-1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.30	1,550	2,222	91.65	1,550	2,587	92.00	1,550	2,918
91.31	1,550	2,233	91.66	1,550	2,597	92.01	1,550	2,927
91.32	1,550	2,243	91.67	1,550	2,607	92.02	1,550	2,935
91.33	1,550	2,254	91.68	1,550	2,617	92.03	1,550	2,944
91.34	1,550	2,265	91.69	1,550	2,627	92.04	1,550	2,952
91.35	1,550	2,276	91.70	1,550	2,637	92.05	1,550	2,961
91.36	1,550	2,286	91.71	1,550	2,647	92.06	1,550	2,969
91.37	1,550	2,297	91.72	1,550	2,657	92.07	1,550	2,978
91.38	1,550	2,308	91.73	1,550	2,666	92.08	1,550	2,986
91.39	1,550	2,318	91.74	1,550	2,676	92.09	1,550	2,994
91.40	1,550	2,329	91.75	1,550	2,686	92.10	1,550	3,002
91.41	1,550	2,340	91.76	1,550	2,696	92.11	1,550	3,011
91.42	1,550	2,350	91.77	1,550	2,705	92.12	1,550	3,019
91.43	1,550	2,361	91.78	1,550	2,715	92.13	1,550	3,027
91.44	1,550	2,371	91.79	1,550	2,725	92.14	1,550	3,034
91.45	1,550	2,382	91.80	1,550	2,734	92.15	1,550	3,042
91.46	1,550	2,392	91.81	1,550	2,744	92.16	1,550	3,050
91.47	1,550	2,403	91.82	1,550	2,753	92.17	1,550	3,058
91.48	1,550	2,413	91.83	1,550	2,763	92.18	1,550	3,065
91.49	1,550	2,424	91.84	1,550	2,772	92.19	1,550	3,073
91.50	1,550	2,434	91.85	1,550	2,782	92.20	1,550	3,080
91.51	1,550	2,445	91.86	1,550	2,791	92.21	1,550	3,087
91.52	1,550	2,455	91.87	1,550	2,800	92.22	1,550	3,095
91.53	1,550	2,465	91.88	1,550	2,810	92.23	1,550	3,102
91.54	1,550	2,476	91.89	1,550	2,819	92.24	1,550	3,109
91.55	1,550	2,486	91.90	1,550	2,828	92.25	1,550	3,116
91.56	1,550	2,496	91.91	1,550	2,837	92.26	1,550	3,123
91.57	1,550	2,506	91.92	1,550	2,846	92.27	1,550	3,130
91.58	1,550	2,517	91.93	1,550	2,855	92.28	1,550	3,137
91.59	1,550	2,527	91.94	1,550	2,864	92.29	1,550	3,144
91.60	1,550	2,537	91.95	1,550	2,873	92.30	1,550	3,151
91.61	1,550	2,547	91.96	1,550	2,882	92.31	1,550	3,158
91.62	1,550	2,557	91.97	1,550	2,891	92.32	1,550	3,164
91.63	1,550	2,567	91.98	1,550	2,900	92.33	1,550	3,171
91.64	1,550	2,577	91.99	1,550	2,909	92.34	1,550	3,178

Stage-Area-Storage for Pond UIS1: UIS-1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
92.35	1,550	3,185	92.70	1,550	3,404
92.36	1,550	3,191	92.71	1,550	3,410
92.37	1,550	3,198	92.72	1,550	3,416
92.38	1,550	3,204	92.73	1,550	3,423
92.39	1,550	3,211	92.74	1,550	3,429
92.40	1,550	3,217	92.75	1,550	3,435
92.41	1,550	3,224	92.76	1,550	3,441
92.42	1,550	3,230	92.77	1,550	3,447
92.43	1,550	3,237	92.78	1,550	3,454
92.44	1,550	3,243	92.79	1,550	3,460
92.45	1,550	3,249	92.80	1,550	3,466
92.46	1,550	3,255	92.81	1,550	3,472
92.47	1,550	3,261	92.82	1,550	3,478
92.48	1,550	3,268	92.83	1,550	3,485
92.49	1,550	3,274	92.84	1,550	3,491
92.50	1,550	3,280	92.85	1,550	3,497
92.51	1,550	3,286	92.86	1,550	3,503
92.52	1,550	3,292	92.87	1,550	3,509
92.53	1,550	3,299	92.88	1,550	3,516
92.54	1,550	3,305	92.89	1,550	3,522
92.55	1,550	3,311	92.90	1,550	3,528
92.56	1,550	3,317	92.91	1,550	3,534
92.57	1,550	3,323	92.92	1,550	3,540
92.58	1,550	3,330	92.93	1,550	3,547
92.59	1,550	3,336	92.94	1,550	3,553
92.60	1,550	3,342	92.95	1,550	**3,559**
92.61	1,550	3,348			
92.62	1,550	3,354			
92.63	1,550	3,361			
92.64	1,550	3,367			
92.65	1,550	3,373			
92.66	1,550	3,379			
92.67	1,550	3,385			
92.68	1,550	3,392			
92.69	1,550	3,398			

Summary for Pond WQU1: WQU-1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=11)
[80] Warning: Exceeded Pond MH1 by 0.68' @ 16.67 hrs (1.14 cfs 3,265 cf)
[80] Warning: Exceeded Pond TD1 by 0.94' @ 14.07 hrs (1.97 cfs 4,529 cf)

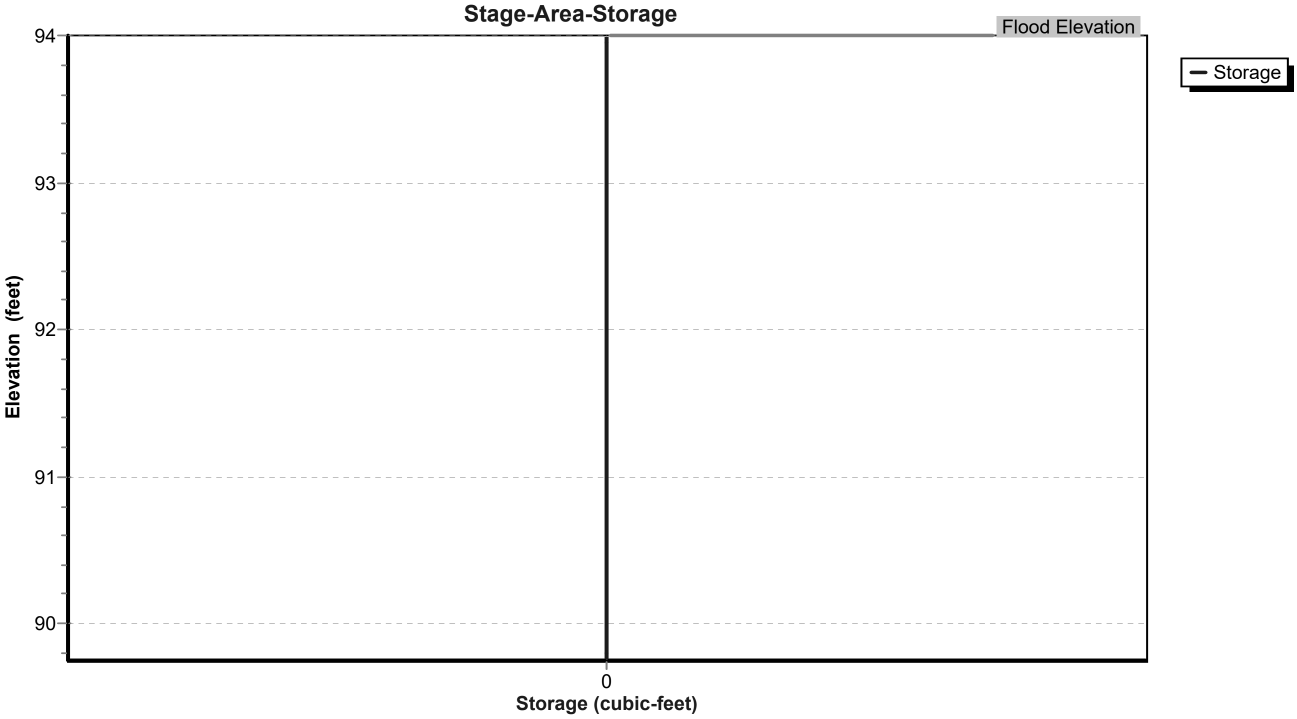
Inflow Area = 4,221 sf,100.00% Impervious, Inflow Depth = 3.07" for 2-Year event
Inflow = 0.31 cfs @ 12.08 hrs, Volume= 1,081 cf
Outflow = 0.31 cfs @ 12.08 hrs, Volume= 1,078 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.31 cfs @ 12.08 hrs, Volume= 1,078 cf
Routed to Pond UIS1 : UIS-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 90.94' @ 12.70 hrs
Flood Elev= 94.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.75'	**24.0" Round 24" HDPE** L= 5.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.75' / 89.70' S= 0.0098 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.31 cfs @ 12.08 hrs HW=90.22' TW=90.20' (Dynamic Tailwater)
1=24" HDPE (Outlet Controls 0.31 cfs @ 0.84 fps)

Pond WQU1: WQU-1



Stage-Area-Storage for Pond WQU1: WQU-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.75	**0**	90.10	0	90.45	0	90.80	0	91.15	0
89.76	0	90.11	0	90.46	0	90.81	0	91.16	0
89.77	0	90.12	0	90.47	0	90.82	0	91.17	0
89.78	0	90.13	0	90.48	0	90.83	0	91.18	0
89.79	0	90.14	0	90.49	0	90.84	0	91.19	0
89.80	0	90.15	0	90.50	0	90.85	0	91.20	0
89.81	0	90.16	0	90.51	0	90.86	0	91.21	0
89.82	0	90.17	0	90.52	0	90.87	0	91.22	0
89.83	0	90.18	0	90.53	0	90.88	0	91.23	0
89.84	0	90.19	0	90.54	0	90.89	0	91.24	0
89.85	0	90.20	0	90.55	0	90.90	0	91.25	0
89.86	0	90.21	0	90.56	0	90.91	0	91.26	0
89.87	0	90.22	0	90.57	0	90.92	0	91.27	0
89.88	0	90.23	0	90.58	0	90.93	0	91.28	0
89.89	0	90.24	0	90.59	0	90.94	0	91.29	0
89.90	0	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0

Stage-Area-Storage for Pond WQU1: WQU-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.50	0	91.85	0	92.20	0	92.55	0	92.90	0
91.51	0	91.86	0	92.21	0	92.56	0	92.91	0
91.52	0	91.87	0	92.22	0	92.57	0	92.92	0
91.53	0	91.88	0	92.23	0	92.58	0	92.93	0
91.54	0	91.89	0	92.24	0	92.59	0	92.94	0
91.55	0	91.90	0	92.25	0	92.60	0	92.95	0
91.56	0	91.91	0	92.26	0	92.61	0	92.96	0
91.57	0	91.92	0	92.27	0	92.62	0	92.97	0
91.58	0	91.93	0	92.28	0	92.63	0	92.98	0
91.59	0	91.94	0	92.29	0	92.64	0	92.99	0
91.60	0	91.95	0	92.30	0	92.65	0	93.00	0
91.61	0	91.96	0	92.31	0	92.66	0	93.01	0
91.62	0	91.97	0	92.32	0	92.67	0	93.02	0
91.63	0	91.98	0	92.33	0	92.68	0	93.03	0
91.64	0	91.99	0	92.34	0	92.69	0	93.04	0
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0

Stage-Area-Storage for Pond WQU1: WQU-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
93.25	0	93.60	0	93.95	0
93.26	0	93.61	0	93.96	0
93.27	0	93.62	0	93.97	0
93.28	0	93.63	0	93.98	0
93.29	0	93.64	0	93.99	0
93.30	0	93.65	0	94.00	0
93.31	0	93.66	0		
93.32	0	93.67	0		
93.33	0	93.68	0		
93.34	0	93.69	0		
93.35	0	93.70	0		
93.36	0	93.71	0		
93.37	0	93.72	0		
93.38	0	93.73	0		
93.39	0	93.74	0		
93.40	0	93.75	0		
93.41	0	93.76	0		
93.42	0	93.77	0		
93.43	0	93.78	0		
93.44	0	93.79	0		
93.45	0	93.80	0		
93.46	0	93.81	0		
93.47	0	93.82	0		
93.48	0	93.83	0		
93.49	0	93.84	0		
93.50	0	93.85	0		
93.51	0	93.86	0		
93.52	0	93.87	0		
93.53	0	93.88	0		
93.54	0	93.89	0		
93.55	0	93.90	0		
93.56	0	93.91	0		
93.57	0	93.92	0		
93.58	0	93.93	0		
93.59	0	93.94	0		

Summary for Pond WQU2: WQU-2

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=496)

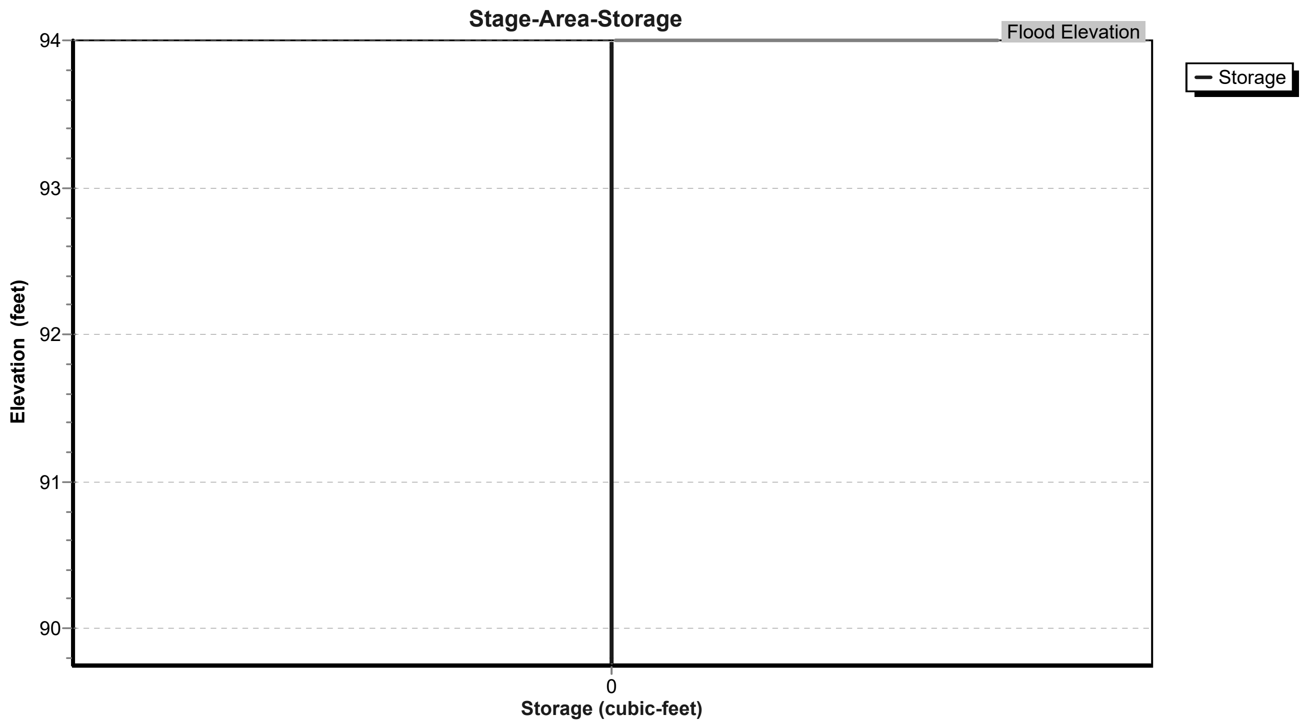
Inflow Area = 3,952 sf, 97.73% Impervious, Inflow Depth = 2.91" for 2-Year event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 957 cf
Outflow = 0.28 cfs @ 12.08 hrs, Volume= 955 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 12.08 hrs, Volume= 955 cf
Routed to Pond UIS1 : UIS-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 90.94' @ 12.70 hrs
Flood Elev= 94.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.75'	**24.0" Round 24" HDPE** L= 4.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.75' / 89.70' S= 0.0104 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.28 cfs @ 12.08 hrs HW=90.22' TW=90.20' (Dynamic Tailwater)
└─**1=24" HDPE** (Outlet Controls 0.28 cfs @ 0.77 fps)

Pond WQU2: WQU-2



Stage-Area-Storage for Pond WQU2: WQU-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.75	**0**	90.10	0	90.45	0	90.80	0	91.15	0
89.76	0	90.11	0	90.46	0	90.81	0	91.16	0
89.77	0	90.12	0	90.47	0	90.82	0	91.17	0
89.78	0	90.13	0	90.48	0	90.83	0	91.18	0
89.79	0	90.14	0	90.49	0	90.84	0	91.19	0
89.80	0	90.15	0	90.50	0	90.85	0	91.20	0
89.81	0	90.16	0	90.51	0	90.86	0	91.21	0
89.82	0	90.17	0	90.52	0	90.87	0	91.22	0
89.83	0	90.18	0	90.53	0	90.88	0	91.23	0
89.84	0	90.19	0	90.54	0	90.89	0	91.24	0
89.85	0	90.20	0	90.55	0	90.90	0	91.25	0
89.86	0	90.21	0	90.56	0	90.91	0	91.26	0
89.87	0	90.22	0	90.57	0	90.92	0	91.27	0
89.88	0	90.23	0	90.58	0	90.93	0	91.28	0
89.89	0	90.24	0	90.59	0	90.94	0	91.29	0
89.90	0	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0

Stage-Area-Storage for Pond WQU2: WQU-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.50	0	91.85	0	92.20	0	92.55	0	92.90	0
91.51	0	91.86	0	92.21	0	92.56	0	92.91	0
91.52	0	91.87	0	92.22	0	92.57	0	92.92	0
91.53	0	91.88	0	92.23	0	92.58	0	92.93	0
91.54	0	91.89	0	92.24	0	92.59	0	92.94	0
91.55	0	91.90	0	92.25	0	92.60	0	92.95	0
91.56	0	91.91	0	92.26	0	92.61	0	92.96	0
91.57	0	91.92	0	92.27	0	92.62	0	92.97	0
91.58	0	91.93	0	92.28	0	92.63	0	92.98	0
91.59	0	91.94	0	92.29	0	92.64	0	92.99	0
91.60	0	91.95	0	92.30	0	92.65	0	93.00	0
91.61	0	91.96	0	92.31	0	92.66	0	93.01	0
91.62	0	91.97	0	92.32	0	92.67	0	93.02	0
91.63	0	91.98	0	92.33	0	92.68	0	93.03	0
91.64	0	91.99	0	92.34	0	92.69	0	93.04	0
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0

Stage-Area-Storage for Pond WQU2: WQU-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
93.25	0	93.60	0	93.95	0
93.26	0	93.61	0	93.96	0
93.27	0	93.62	0	93.97	0
93.28	0	93.63	0	93.98	0
93.29	0	93.64	0	93.99	0
93.30	0	93.65	0	94.00	0
93.31	0	93.66	0		
93.32	0	93.67	0		
93.33	0	93.68	0		
93.34	0	93.69	0		
93.35	0	93.70	0		
93.36	0	93.71	0		
93.37	0	93.72	0		
93.38	0	93.73	0		
93.39	0	93.74	0		
93.40	0	93.75	0		
93.41	0	93.76	0		
93.42	0	93.77	0		
93.43	0	93.78	0		
93.44	0	93.79	0		
93.45	0	93.80	0		
93.46	0	93.81	0		
93.47	0	93.82	0		
93.48	0	93.83	0		
93.49	0	93.84	0		
93.50	0	93.85	0		
93.51	0	93.86	0		
93.52	0	93.87	0		
93.53	0	93.88	0		
93.54	0	93.89	0		
93.55	0	93.90	0		
93.56	0	93.91	0		
93.57	0	93.92	0		
93.58	0	93.93	0		
93.59	0	93.94	0		

Summary for Link SP1: Flow Off-Site To Municipal Drainage

Inflow Area = 2,059 sf, 36.49% Impervious, Inflow Depth = 0.53" for 2-Year event
Inflow = 0.02 cfs @ 12.11 hrs, Volume= 91 cf
Primary = 0.02 cfs @ 12.11 hrs, Volume= 91 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Link SP2: Flow Off-Site To Riverfront Area

Inflow Area = 31,495 sf, 59.94% Impervious, Inflow Depth = 0.09" for 2-Year event
Inflow = 0.07 cfs @ 12.70 hrs, Volume= 243 cf
Primary = 0.07 cfs @ 12.70 hrs, Volume= 243 cf, Atten= 0%, Lag= 0.0 min

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

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P-1A: Subcat P-1A Runoff Area=1,674 sf 44.88% Impervious Runoff Depth=1.79"
Tc=6.0 min CN=65 Runoff=0.08 cfs 250 cf

Subcatchment P-1B: Subcat P-1B Runoff Area=385 sf 0.00% Impervious Runoff Depth=0.24"
Tc=6.0 min CN=39 Runoff=0.00 cfs 8 cf

Subcatchment P-2: Subcat P-2 Runoff Area=12,526 sf 0.00% Impervious Runoff Depth=0.02"
Tc=6.0 min CN=31 Runoff=0.00 cfs 26 cf

Subcatchment P-3A: Subcat P-3A Runoff Area=1,955 sf 100.00% Impervious Runoff Depth=4.97"
Tc=6.0 min CN=98 Runoff=0.23 cfs 810 cf

Subcatchment P-3B: Subcat P-3B Runoff Area=2,266 sf 100.00% Impervious Runoff Depth=4.97"
Tc=6.0 min CN=98 Runoff=0.27 cfs 939 cf

Subcatchment P-3C: Subcat P-3C Runoff Area=3,072 sf 97.08% Impervious Runoff Depth=4.74"
Tc=6.0 min CN=96 Runoff=0.35 cfs 1,214 cf

Subcatchment P-4: Subcat P-4 Runoff Area=10,797 sf 100.00% Impervious Runoff Depth=4.97"
Tc=6.0 min CN=98 Runoff=1.26 cfs 4,474 cf

Subcatchment P-5: Subcat P-5 Runoff Area=880 sf 100.00% Impervious Runoff Depth=4.97"
Tc=6.0 min CN=98 Runoff=0.10 cfs 365 cf

Pond CB1: CB-1 Peak Elev=91.42' Inflow=0.27 cfs 939 cf
12.0" Round Culvert n=0.012 L=44.8' S=0.0100 '/' Outflow=0.27 cfs 939 cf

Pond CB2: CB-2 Peak Elev=91.42' Inflow=0.35 cfs 1,214 cf
12.0" Round Culvert n=0.012 L=52.5' S=0.0067 '/' Outflow=0.35 cfs 1,214 cf

Pond CB3: CB-3 Peak Elev=91.42' Inflow=0.10 cfs 365 cf
12.0" Round Culvert n=0.012 L=99.7' S=0.0095 '/' Outflow=0.10 cfs 365 cf

Pond MH1: DMH-1 Peak Elev=91.42' Inflow=0.27 cfs 939 cf
12.0" Round Culvert n=0.012 L=9.7' S=0.0103 '/' Outflow=0.27 cfs 938 cf

Pond MH2: DMH-2 Peak Elev=88.47' Inflow=0.91 cfs 2,178 cf
12.0" Round Culvert n=0.012 L=72.0' S=0.0100 '/' Outflow=0.91 cfs 2,178 cf

Pond TD1: TD-1 Peak Elev=91.42' Inflow=0.23 cfs 810 cf
12.0" Round Culvert n=0.012 L=15.3' S=0.0098 '/' Outflow=0.23 cfs 810 cf

Pond UIS1: UIS-1 Peak Elev=91.42' Storage=2,349 cf Inflow=2.22 cfs 7,795 cf
Discarded=0.09 cfs 5,617 cf Primary=0.91 cfs 2,178 cf Outflow=0.99 cfs 7,795 cf

Pond WQU1: WQU-1 Peak Elev=91.42' Inflow=0.49 cfs 1,747 cf
24.0" Round Culvert n=0.012 L=5.1' S=0.0098 '/' Outflow=0.49 cfs 1,744 cf

Pond WQU2: WQU-2 Peak Elev=91.42' Inflow=0.46 cfs 1,578 cf
24.0" Round Culvert n=0.012 L=4.8' S=0.0104 '/' Outflow=0.46 cfs 1,576 cf

Link SP1: Flow Off-Site To Municipal Drainage Inflow=0.08 cfs 258 cf
Primary=0.08 cfs 258 cf

Link SP2: Flow Off-Site To Riverfront Area Inflow=0.91 cfs 2,204 cf
Primary=0.91 cfs 2,204 cf

Total Runoff Area = 33,554 sf Runoff Volume = 8,086 cf Average Runoff Depth = 2.89"
41.49% Pervious = 13,923 sf 58.51% Impervious = 19,631 sf

Summary for Subcatchment P-1A: Subcat P-1A

Runoff = 0.08 cfs @ 12.09 hrs, Volume= 250 cf, Depth= 1.79"
Routed to Link SP1 : Flow Off-Site To Municipal Drainage

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
751	98	Paved parking, HSG A
923	39	>75% Grass cover, Good, HSG A
1,674	65	Weighted Average
923		55.12% Pervious Area
751		44.88% Impervious Area

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

Summary for Subcatchment P-1B: Subcat P-1B

Runoff = 0.00 cfs @ 12.44 hrs, Volume= 8 cf, Depth= 0.24"
Routed to Link SP1 : Flow Off-Site To Municipal Drainage

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
385	39	>75% Grass cover, Good, HSG A
385		100.00% Pervious Area

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

Summary for Subcatchment P-2: Subcat P-2

Runoff = 0.00 cfs @ 21.26 hrs, Volume= 26 cf, Depth= 0.02"
Routed to Link SP2 : Flow Off-Site To Riverfront Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
10,569	30	Woods, Good, HSG A
1,956	39	>75% Grass cover, Good, HSG A
12,526	31	Weighted Average
12,526		100.00% Pervious Area

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

Summary for Subcatchment P-3A: Subcat P-3A

Runoff = 0.23 cfs @ 12.08 hrs, Volume= 810 cf, Depth= 4.97"
Routed to Pond TD1 : TD-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
1,955	98	Paved parking, HSG A
1,955		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-3B: Subcat P-3B

Runoff = 0.27 cfs @ 12.08 hrs, Volume= 939 cf, Depth= 4.97"
Routed to Pond CB1 : CB-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
2,266	98	Paved parking, HSG A
2,266		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-3C: Subcat P-3C

Runoff = 0.35 cfs @ 12.08 hrs, Volume= 1,214 cf, Depth= 4.74"
Routed to Pond CB2 : CB-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
90	39	>75% Grass cover, Good, HSG A
2,982	98	Paved parking, HSG A
3,072	96	Weighted Average
90		2.92% Pervious Area
2,982		97.08% Impervious Area

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

Summary for Subcatchment P-4: Subcat P-4

Runoff = 1.26 cfs @ 12.08 hrs, Volume= 4,474 cf, Depth= 4.97"
Routed to Pond UIS1 : UIS-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
10,797	98	Roofs, HSG A
10,797		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-5: Subcat P-5

Runoff = 0.10 cfs @ 12.08 hrs, Volume= 365 cf, Depth= 4.97"
Routed to Pond CB3 : CB-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
880	98	Paved parking, HSG A
880		100.00% Impervious Area

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

Summary for Pond CB1: CB-1

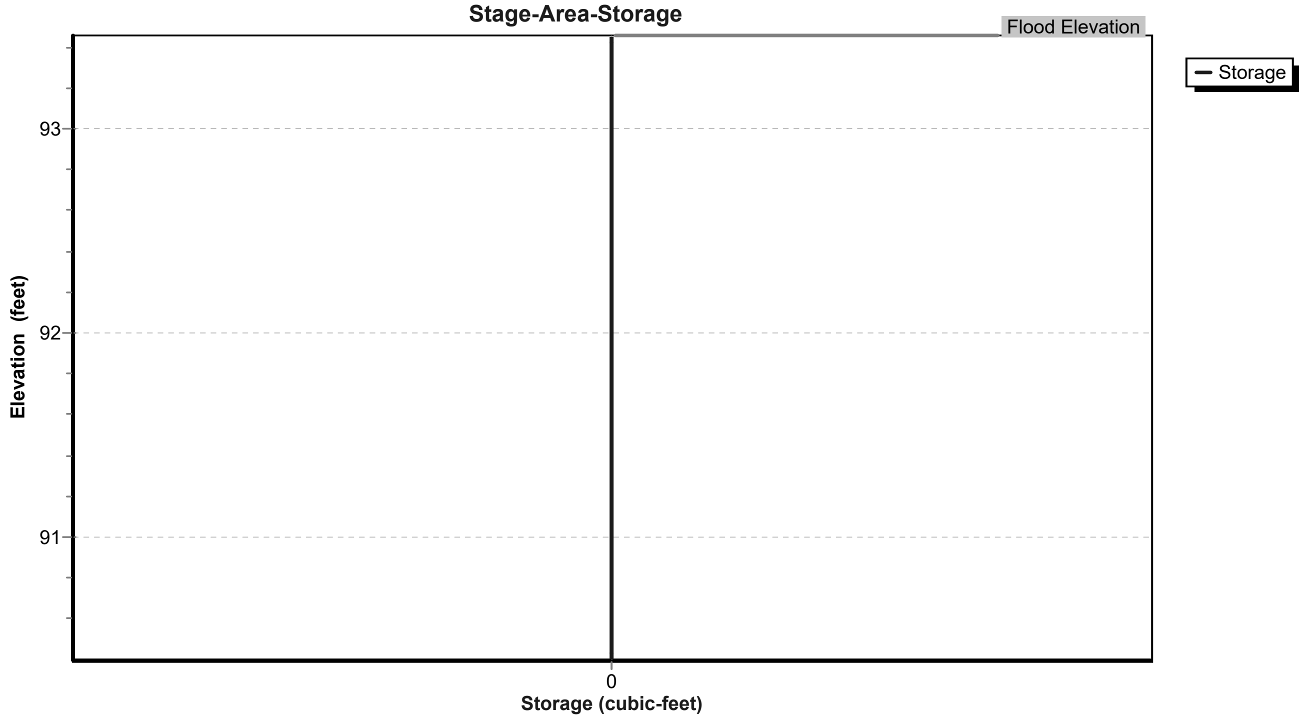
Inflow Area = 2,266 sf,100.00% Impervious, Inflow Depth = 4.97" for 10-Year event
Inflow = 0.27 cfs @ 12.08 hrs, Volume= 939 cf
Outflow = 0.27 cfs @ 12.08 hrs, Volume= 939 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.27 cfs @ 12.08 hrs, Volume= 939 cf
Routed to Pond MH1 : DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.42' @ 12.26 hrs
Flood Elev= 93.46'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.40'	**12.0" Round 12" HDPE** L= 44.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.40' / 89.95' S= 0.0100 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=90.96' TW=90.99' (Dynamic Tailwater)
└─**1=12" HDPE** (Controls 0.00 cfs)

Pond CB1: CB-1



Stage-Area-Storage for Pond CB1: CB-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.40	**0**	90.75	0	91.10	0	91.45	0	91.80	0
90.41	0	90.76	0	91.11	0	91.46	0	91.81	0
90.42	0	90.77	0	91.12	0	91.47	0	91.82	0
90.43	0	90.78	0	91.13	0	91.48	0	91.83	0
90.44	0	90.79	0	91.14	0	91.49	0	91.84	0
90.45	0	90.80	0	91.15	0	91.50	0	91.85	0
90.46	0	90.81	0	91.16	0	91.51	0	91.86	0
90.47	0	90.82	0	91.17	0	91.52	0	91.87	0
90.48	0	90.83	0	91.18	0	91.53	0	91.88	0
90.49	0	90.84	0	91.19	0	91.54	0	91.89	0
90.50	0	90.85	0	91.20	0	91.55	0	91.90	0
90.51	0	90.86	0	91.21	0	91.56	0	91.91	0
90.52	0	90.87	0	91.22	0	91.57	0	91.92	0
90.53	0	90.88	0	91.23	0	91.58	0	91.93	0
90.54	0	90.89	0	91.24	0	91.59	0	91.94	0
90.55	0	90.90	0	91.25	0	91.60	0	91.95	0
90.56	0	90.91	0	91.26	0	91.61	0	91.96	0
90.57	0	90.92	0	91.27	0	91.62	0	91.97	0
90.58	0	90.93	0	91.28	0	91.63	0	91.98	0
90.59	0	90.94	0	91.29	0	91.64	0	91.99	0
90.60	0	90.95	0	91.30	0	91.65	0	92.00	0
90.61	0	90.96	0	91.31	0	91.66	0	92.01	0
90.62	0	90.97	0	91.32	0	91.67	0	92.02	0
90.63	0	90.98	0	91.33	0	91.68	0	92.03	0
90.64	0	90.99	0	91.34	0	91.69	0	92.04	0
90.65	0	91.00	0	91.35	0	91.70	0	92.05	0
90.66	0	91.01	0	91.36	0	91.71	0	92.06	0
90.67	0	91.02	0	91.37	0	91.72	0	92.07	0
90.68	0	91.03	0	91.38	0	91.73	0	92.08	0
90.69	0	91.04	0	91.39	0	91.74	0	92.09	0
90.70	0	91.05	0	91.40	0	91.75	0	92.10	0
90.71	0	91.06	0	91.41	0	91.76	0	92.11	0
90.72	0	91.07	0	91.42	0	91.77	0	92.12	0
90.73	0	91.08	0	91.43	0	91.78	0	92.13	0
90.74	0	91.09	0	91.44	0	91.79	0	92.14	0

Stage-Area-Storage for Pond CB1: CB-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
92.15	0	92.50	0	92.85	0	93.20	0
92.16	0	92.51	0	92.86	0	93.21	0
92.17	0	92.52	0	92.87	0	93.22	0
92.18	0	92.53	0	92.88	0	93.23	0
92.19	0	92.54	0	92.89	0	93.24	0
92.20	0	92.55	0	92.90	0	93.25	0
92.21	0	92.56	0	92.91	0	93.26	0
92.22	0	92.57	0	92.92	0	93.27	0
92.23	0	92.58	0	92.93	0	93.28	0
92.24	0	92.59	0	92.94	0	93.29	0
92.25	0	92.60	0	92.95	0	93.30	0
92.26	0	92.61	0	92.96	0	93.31	0
92.27	0	92.62	0	92.97	0	93.32	0
92.28	0	92.63	0	92.98	0	93.33	0
92.29	0	92.64	0	92.99	0	93.34	0
92.30	0	92.65	0	93.00	0	93.35	0
92.31	0	92.66	0	93.01	0	93.36	0
92.32	0	92.67	0	93.02	0	93.37	0
92.33	0	92.68	0	93.03	0	93.38	0
92.34	0	92.69	0	93.04	0	93.39	0
92.35	0	92.70	0	93.05	0	93.40	0
92.36	0	92.71	0	93.06	0	93.41	0
92.37	0	92.72	0	93.07	0	93.42	0
92.38	0	92.73	0	93.08	0	93.43	0
92.39	0	92.74	0	93.09	0	93.44	0
92.40	0	92.75	0	93.10	0	93.45	0
92.41	0	92.76	0	93.11	0	93.46	0
92.42	0	92.77	0	93.12	0		
92.43	0	92.78	0	93.13	0		
92.44	0	92.79	0	93.14	0		
92.45	0	92.80	0	93.15	0		
92.46	0	92.81	0	93.16	0		
92.47	0	92.82	0	93.17	0		
92.48	0	92.83	0	93.18	0		
92.49	0	92.84	0	93.19	0		

Summary for Pond CB2: CB-2

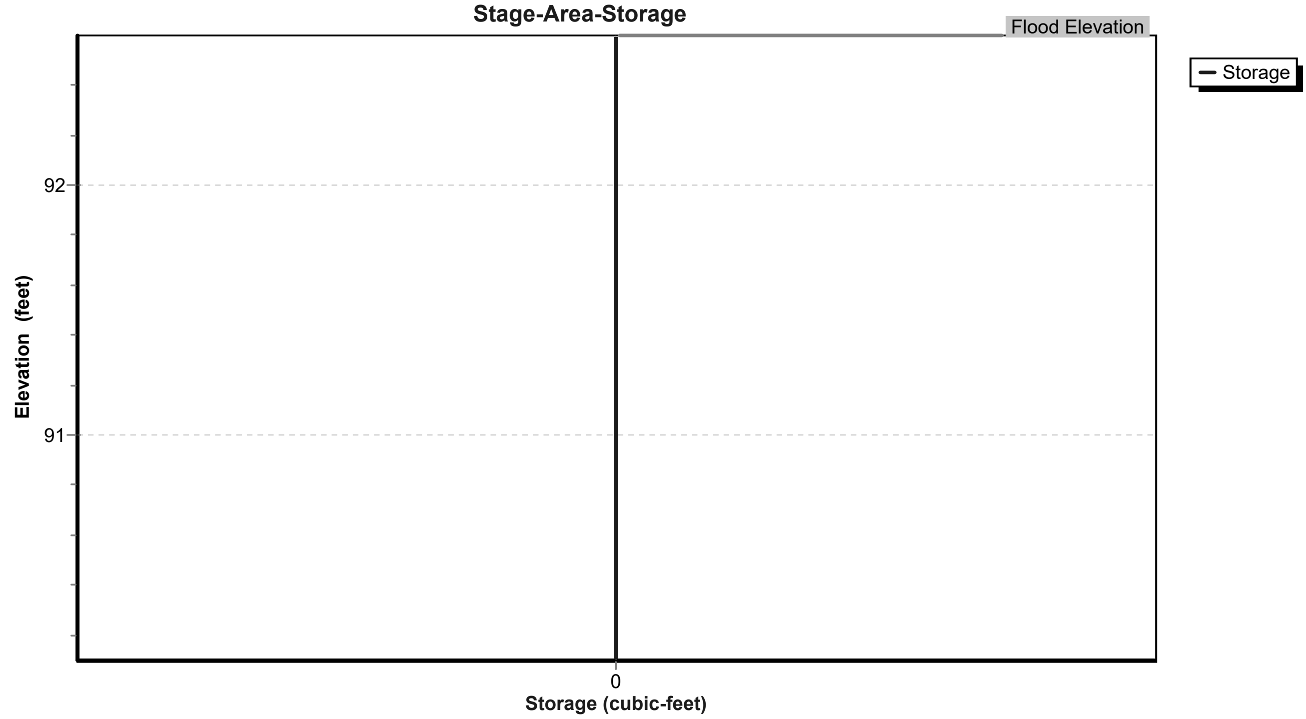
Inflow Area = 3,072 sf, 97.08% Impervious, Inflow Depth = 4.74" for 10-Year event
Inflow = 0.35 cfs @ 12.08 hrs, Volume= 1,214 cf
Outflow = 0.35 cfs @ 12.08 hrs, Volume= 1,214 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 12.08 hrs, Volume= 1,214 cf
Routed to Pond WQU2 : WQU-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.42' @ 12.25 hrs
Flood Elev= 92.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.10'	**12.0" Round 12" HDPE** L= 52.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.10' / 89.75' S= 0.0067 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.35 cfs @ 12.08 hrs HW=91.00' TW=90.98' (Dynamic Tailwater)
└─**1=12" HDPE** (Outlet Controls 0.35 cfs @ 0.63 fps)

Pond CB2: CB-2



Stage-Area-Storage for Pond CB2: CB-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.10	**0**	90.45	0	90.80	0	91.15	0	91.50	0
90.11	0	90.46	0	90.81	0	91.16	0	91.51	0
90.12	0	90.47	0	90.82	0	91.17	0	91.52	0
90.13	0	90.48	0	90.83	0	91.18	0	91.53	0
90.14	0	90.49	0	90.84	0	91.19	0	91.54	0
90.15	0	90.50	0	90.85	0	91.20	0	91.55	0
90.16	0	90.51	0	90.86	0	91.21	0	91.56	0
90.17	0	90.52	0	90.87	0	91.22	0	91.57	0
90.18	0	90.53	0	90.88	0	91.23	0	91.58	0
90.19	0	90.54	0	90.89	0	91.24	0	91.59	0
90.20	0	90.55	0	90.90	0	91.25	0	91.60	0
90.21	0	90.56	0	90.91	0	91.26	0	91.61	0
90.22	0	90.57	0	90.92	0	91.27	0	91.62	0
90.23	0	90.58	0	90.93	0	91.28	0	91.63	0
90.24	0	90.59	0	90.94	0	91.29	0	91.64	0
90.25	0	90.60	0	90.95	0	91.30	0	91.65	0
90.26	0	90.61	0	90.96	0	91.31	0	91.66	0
90.27	0	90.62	0	90.97	0	91.32	0	91.67	0
90.28	0	90.63	0	90.98	0	91.33	0	91.68	0
90.29	0	90.64	0	90.99	0	91.34	0	91.69	0
90.30	0	90.65	0	91.00	0	91.35	0	91.70	0
90.31	0	90.66	0	91.01	0	91.36	0	91.71	0
90.32	0	90.67	0	91.02	0	91.37	0	91.72	0
90.33	0	90.68	0	91.03	0	91.38	0	91.73	0
90.34	0	90.69	0	91.04	0	91.39	0	91.74	0
90.35	0	90.70	0	91.05	0	91.40	0	91.75	0
90.36	0	90.71	0	91.06	0	91.41	0	91.76	0
90.37	0	90.72	0	91.07	0	91.42	0	91.77	0
90.38	0	90.73	0	91.08	0	91.43	0	91.78	0
90.39	0	90.74	0	91.09	0	91.44	0	91.79	0
90.40	0	90.75	0	91.10	0	91.45	0	91.80	0
90.41	0	90.76	0	91.11	0	91.46	0	91.81	0
90.42	0	90.77	0	91.12	0	91.47	0	91.82	0
90.43	0	90.78	0	91.13	0	91.48	0	91.83	0
90.44	0	90.79	0	91.14	0	91.49	0	91.84	0

Stage-Area-Storage for Pond CB2: CB-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.85	0	92.20	0	92.55	0
91.86	0	92.21	0	92.56	0
91.87	0	92.22	0	92.57	0
91.88	0	92.23	0	92.58	0
91.89	0	92.24	0	92.59	0
91.90	0	92.25	0	92.60	0
91.91	0	92.26	0		
91.92	0	92.27	0		
91.93	0	92.28	0		
91.94	0	92.29	0		
91.95	0	92.30	0		
91.96	0	92.31	0		
91.97	0	92.32	0		
91.98	0	92.33	0		
91.99	0	92.34	0		
92.00	0	92.35	0		
92.01	0	92.36	0		
92.02	0	92.37	0		
92.03	0	92.38	0		
92.04	0	92.39	0		
92.05	0	92.40	0		
92.06	0	92.41	0		
92.07	0	92.42	0		
92.08	0	92.43	0		
92.09	0	92.44	0		
92.10	0	92.45	0		
92.11	0	92.46	0		
92.12	0	92.47	0		
92.13	0	92.48	0		
92.14	0	92.49	0		
92.15	0	92.50	0		
92.16	0	92.51	0		
92.17	0	92.52	0		
92.18	0	92.53	0		
92.19	0	92.54	0		

Summary for Pond CB3: CB-3

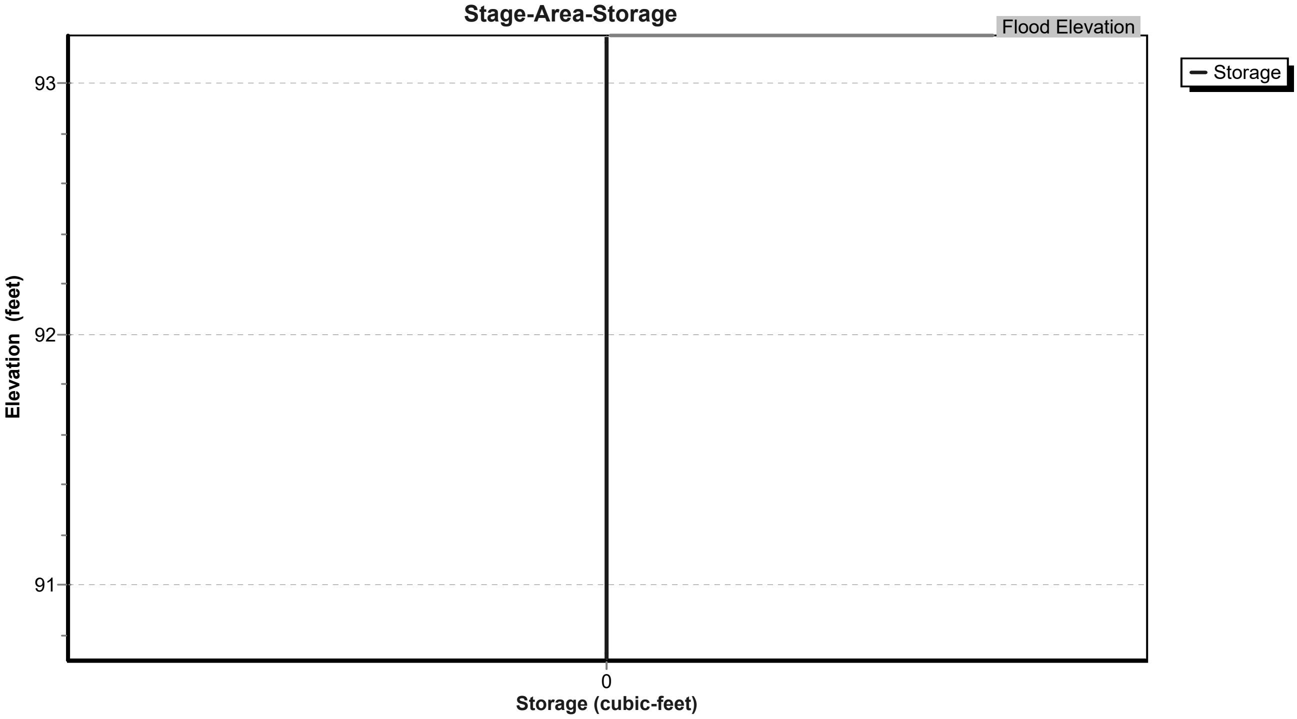
Inflow Area = 880 sf,100.00% Impervious, Inflow Depth = 4.97" for 10-Year event
Inflow = 0.10 cfs @ 12.08 hrs, Volume= 365 cf
Outflow = 0.10 cfs @ 12.08 hrs, Volume= 365 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.10 cfs @ 12.08 hrs, Volume= 365 cf
Routed to Pond WQU2 : WQU-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.42' @ 12.25 hrs
Flood Elev= 93.19'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.70'	**12.0" Round 12" HDPE** L= 99.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.70' / 89.75' S= 0.0095 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.10 cfs @ 12.08 hrs HW=91.03' TW=90.98' (Dynamic Tailwater)
1=12" HDPE (Outlet Controls 0.10 cfs @ 0.68 fps)

Pond CB3: CB-3



Stage-Area-Storage for Pond CB3: CB-3

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.70	**0**	91.05	0	91.40	0	91.75	0	92.10	0
90.71	0	91.06	0	91.41	0	91.76	0	92.11	0
90.72	0	91.07	0	91.42	0	91.77	0	92.12	0
90.73	0	91.08	0	91.43	0	91.78	0	92.13	0
90.74	0	91.09	0	91.44	0	91.79	0	92.14	0
90.75	0	91.10	0	91.45	0	91.80	0	92.15	0
90.76	0	91.11	0	91.46	0	91.81	0	92.16	0
90.77	0	91.12	0	91.47	0	91.82	0	92.17	0
90.78	0	91.13	0	91.48	0	91.83	0	92.18	0
90.79	0	91.14	0	91.49	0	91.84	0	92.19	0
90.80	0	91.15	0	91.50	0	91.85	0	92.20	0
90.81	0	91.16	0	91.51	0	91.86	0	92.21	0
90.82	0	91.17	0	91.52	0	91.87	0	92.22	0
90.83	0	91.18	0	91.53	0	91.88	0	92.23	0
90.84	0	91.19	0	91.54	0	91.89	0	92.24	0
90.85	0	91.20	0	91.55	0	91.90	0	92.25	0
90.86	0	91.21	0	91.56	0	91.91	0	92.26	0
90.87	0	91.22	0	91.57	0	91.92	0	92.27	0
90.88	0	91.23	0	91.58	0	91.93	0	92.28	0
90.89	0	91.24	0	91.59	0	91.94	0	92.29	0
90.90	0	91.25	0	91.60	0	91.95	0	92.30	0
90.91	0	91.26	0	91.61	0	91.96	0	92.31	0
90.92	0	91.27	0	91.62	0	91.97	0	92.32	0
90.93	0	91.28	0	91.63	0	91.98	0	92.33	0
90.94	0	91.29	0	91.64	0	91.99	0	92.34	0
90.95	0	91.30	0	91.65	0	92.00	0	92.35	0
90.96	0	91.31	0	91.66	0	92.01	0	92.36	0
90.97	0	91.32	0	91.67	0	92.02	0	92.37	0
90.98	0	91.33	0	91.68	0	92.03	0	92.38	0
90.99	0	91.34	0	91.69	0	92.04	0	92.39	0
91.00	0	91.35	0	91.70	0	92.05	0	92.40	0
91.01	0	91.36	0	91.71	0	92.06	0	92.41	0
91.02	0	91.37	0	91.72	0	92.07	0	92.42	0
91.03	0	91.38	0	91.73	0	92.08	0	92.43	0
91.04	0	91.39	0	91.74	0	92.09	0	92.44	0

Stage-Area-Storage for Pond CB3: CB-3 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
92.45	0	92.80	0	93.15	0
92.46	0	92.81	0	93.16	0
92.47	0	92.82	0	93.17	0
92.48	0	92.83	0	93.18	0
92.49	0	92.84	0	93.19	0
92.50	0	92.85	0		
92.51	0	92.86	0		
92.52	0	92.87	0		
92.53	0	92.88	0		
92.54	0	92.89	0		
92.55	0	92.90	0		
92.56	0	92.91	0		
92.57	0	92.92	0		
92.58	0	92.93	0		
92.59	0	92.94	0		
92.60	0	92.95	0		
92.61	0	92.96	0		
92.62	0	92.97	0		
92.63	0	92.98	0		
92.64	0	92.99	0		
92.65	0	93.00	0		
92.66	0	93.01	0		
92.67	0	93.02	0		
92.68	0	93.03	0		
92.69	0	93.04	0		
92.70	0	93.05	0		
92.71	0	93.06	0		
92.72	0	93.07	0		
92.73	0	93.08	0		
92.74	0	93.09	0		
92.75	0	93.10	0		
92.76	0	93.11	0		
92.77	0	93.12	0		
92.78	0	93.13	0		
92.79	0	93.14	0		

Summary for Pond MH1: DMH-1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=484)
[80] Warning: Exceeded Pond CB1 by 0.40' @ 14.97 hrs (0.64 cfs 242 cf)

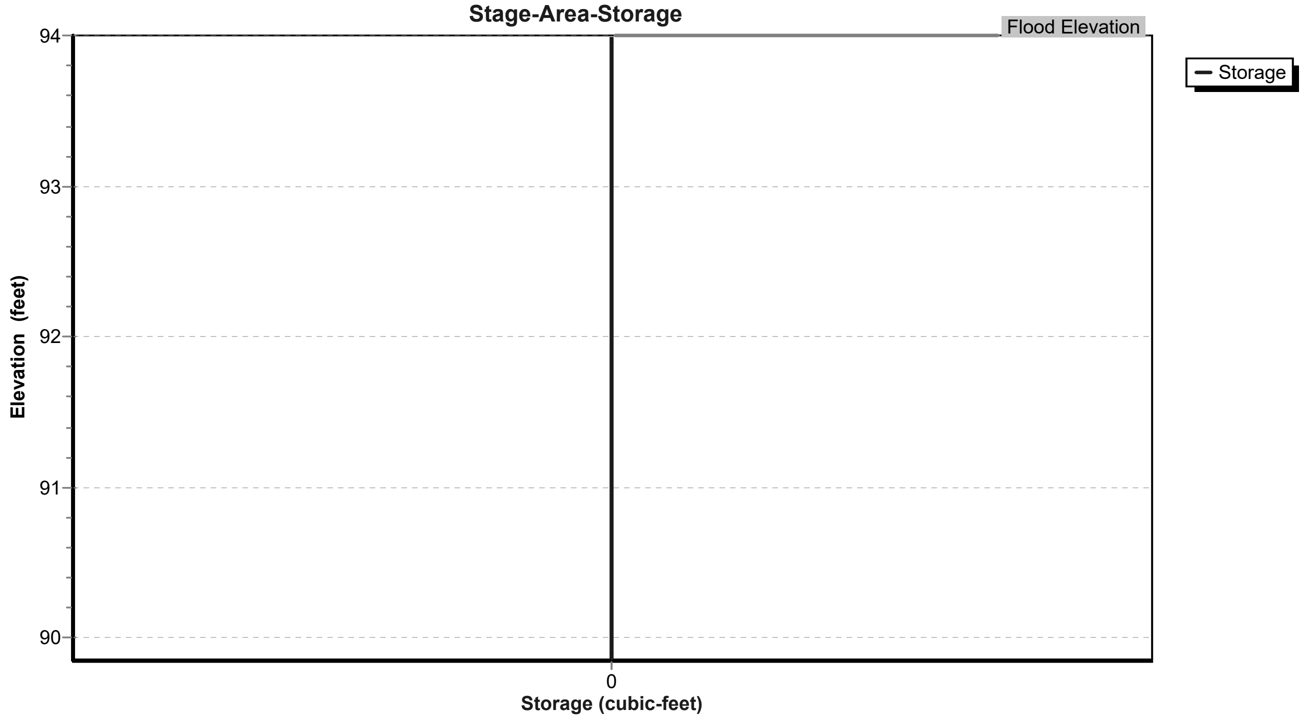
Inflow Area = 2,266 sf,100.00% Impervious, Inflow Depth = 4.97" for 10-Year event
Inflow = 0.27 cfs @ 12.08 hrs, Volume= 939 cf
Outflow = 0.27 cfs @ 12.08 hrs, Volume= 938 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.27 cfs @ 12.08 hrs, Volume= 938 cf
Routed to Pond WQU1 : WQU-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.42' @ 12.25 hrs
Flood Elev= 94.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.85'	**12.0" Round 12" HDPE** L= 9.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.85' / 89.75' S= 0.0103 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.26 cfs @ 12.08 hrs HW=90.99' TW=90.98' (Dynamic Tailwater)
└**1=12" HDPE** (Inlet Controls 0.26 cfs @ 0.34 fps)

Pond MH1: DMH-1



Stage-Area-Storage for Pond MH1: DMH-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.85	**0**	90.20	0	90.55	0	90.90	0	91.25	0
89.86	0	90.21	0	90.56	0	90.91	0	91.26	0
89.87	0	90.22	0	90.57	0	90.92	0	91.27	0
89.88	0	90.23	0	90.58	0	90.93	0	91.28	0
89.89	0	90.24	0	90.59	0	90.94	0	91.29	0
89.90	0	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0
90.10	0	90.45	0	90.80	0	91.15	0	91.50	0
90.11	0	90.46	0	90.81	0	91.16	0	91.51	0
90.12	0	90.47	0	90.82	0	91.17	0	91.52	0
90.13	0	90.48	0	90.83	0	91.18	0	91.53	0
90.14	0	90.49	0	90.84	0	91.19	0	91.54	0
90.15	0	90.50	0	90.85	0	91.20	0	91.55	0
90.16	0	90.51	0	90.86	0	91.21	0	91.56	0
90.17	0	90.52	0	90.87	0	91.22	0	91.57	0
90.18	0	90.53	0	90.88	0	91.23	0	91.58	0
90.19	0	90.54	0	90.89	0	91.24	0	91.59	0

Stage-Area-Storage for Pond MH1: DMH-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.60	0	91.95	0	92.30	0	92.65	0	93.00	0
91.61	0	91.96	0	92.31	0	92.66	0	93.01	0
91.62	0	91.97	0	92.32	0	92.67	0	93.02	0
91.63	0	91.98	0	92.33	0	92.68	0	93.03	0
91.64	0	91.99	0	92.34	0	92.69	0	93.04	0
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0
91.85	0	92.20	0	92.55	0	92.90	0	93.25	0
91.86	0	92.21	0	92.56	0	92.91	0	93.26	0
91.87	0	92.22	0	92.57	0	92.92	0	93.27	0
91.88	0	92.23	0	92.58	0	92.93	0	93.28	0
91.89	0	92.24	0	92.59	0	92.94	0	93.29	0
91.90	0	92.25	0	92.60	0	92.95	0	93.30	0
91.91	0	92.26	0	92.61	0	92.96	0	93.31	0
91.92	0	92.27	0	92.62	0	92.97	0	93.32	0
91.93	0	92.28	0	92.63	0	92.98	0	93.33	0
91.94	0	92.29	0	92.64	0	92.99	0	93.34	0

Stage-Area-Storage for Pond MH1: DMH-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
93.35	0	93.70	0
93.36	0	93.71	0
93.37	0	93.72	0
93.38	0	93.73	0
93.39	0	93.74	0
93.40	0	93.75	0
93.41	0	93.76	0
93.42	0	93.77	0
93.43	0	93.78	0
93.44	0	93.79	0
93.45	0	93.80	0
93.46	0	93.81	0
93.47	0	93.82	0
93.48	0	93.83	0
93.49	0	93.84	0
93.50	0	93.85	0
93.51	0	93.86	0
93.52	0	93.87	0
93.53	0	93.88	0
93.54	0	93.89	0
93.55	0	93.90	0
93.56	0	93.91	0
93.57	0	93.92	0
93.58	0	93.93	0
93.59	0	93.94	0
93.60	0	93.95	0
93.61	0	93.96	0
93.62	0	93.97	0
93.63	0	93.98	0
93.64	0	93.99	0
93.65	0	94.00	0
93.66	0		
93.67	0		
93.68	0		
93.69	0		

Summary for Pond MH2: DMH-2

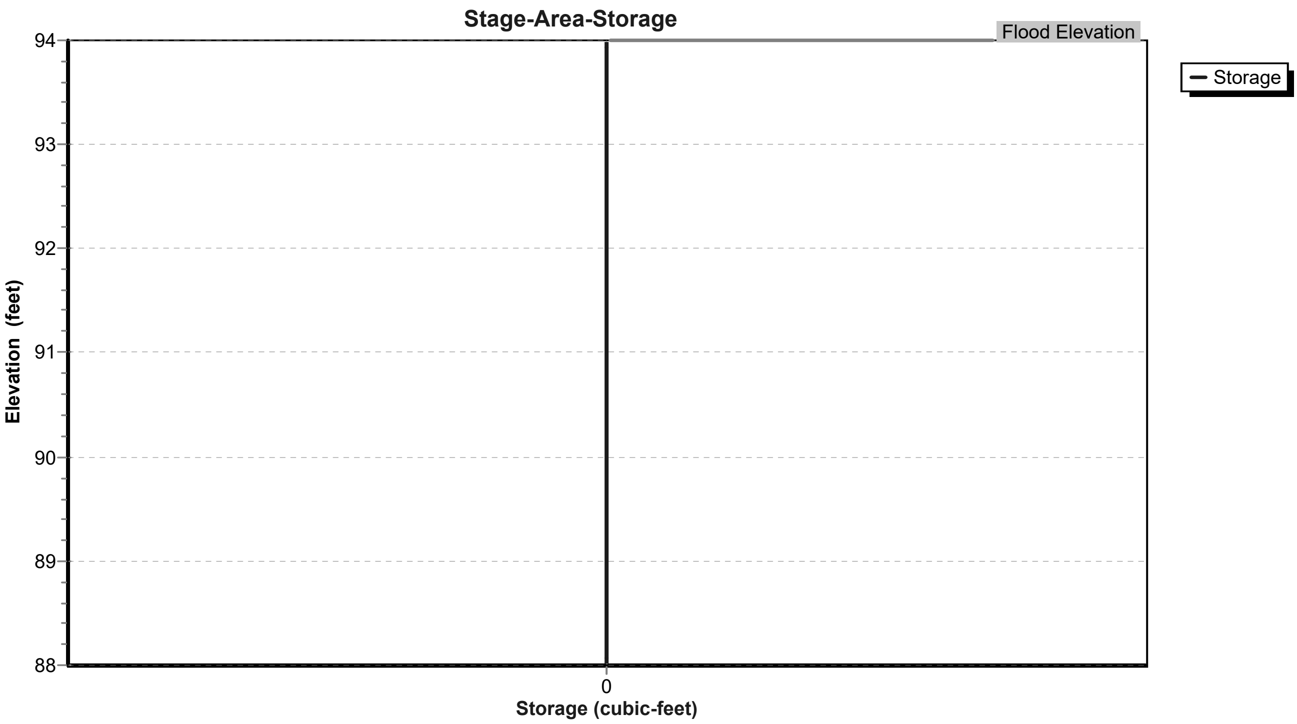
Inflow Area = 18,969 sf, 99.53% Impervious, Inflow Depth = 1.38" for 10-Year event
Inflow = 0.91 cfs @ 12.26 hrs, Volume= 2,178 cf
Outflow = 0.91 cfs @ 12.26 hrs, Volume= 2,178 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.91 cfs @ 12.26 hrs, Volume= 2,178 cf
Routed to Link SP2 : Flow Off-Site To Riverfront Area

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 88.47' @ 12.26 hrs
Flood Elev= 94.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round 12" RCP (Estimated Slope)** L= 72.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 88.00' / 87.28' S= 0.0100 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.91 cfs @ 12.26 hrs HW=88.47' TW=0.00' (Dynamic Tailwater)
1=12" RCP (Estimated Slope) (Barrel Controls 0.91 cfs @ 3.71 fps)

Pond MH2: DMH-2



Stage-Area-Storage for Pond MH2: DMH-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
88.00	**0**	88.35	0	88.70	0	89.05	0	89.40	0
88.01	0	88.36	0	88.71	0	89.06	0	89.41	0
88.02	0	88.37	0	88.72	0	89.07	0	89.42	0
88.03	0	88.38	0	88.73	0	89.08	0	89.43	0
88.04	0	88.39	0	88.74	0	89.09	0	89.44	0
88.05	0	88.40	0	88.75	0	89.10	0	89.45	0
88.06	0	88.41	0	88.76	0	89.11	0	89.46	0
88.07	0	88.42	0	88.77	0	89.12	0	89.47	0
88.08	0	88.43	0	88.78	0	89.13	0	89.48	0
88.09	0	88.44	0	88.79	0	89.14	0	89.49	0
88.10	0	88.45	0	88.80	0	89.15	0	89.50	0
88.11	0	88.46	0	88.81	0	89.16	0	89.51	0
88.12	0	88.47	0	88.82	0	89.17	0	89.52	0
88.13	0	88.48	0	88.83	0	89.18	0	89.53	0
88.14	0	88.49	0	88.84	0	89.19	0	89.54	0
88.15	0	88.50	0	88.85	0	89.20	0	89.55	0
88.16	0	88.51	0	88.86	0	89.21	0	89.56	0
88.17	0	88.52	0	88.87	0	89.22	0	89.57	0
88.18	0	88.53	0	88.88	0	89.23	0	89.58	0
88.19	0	88.54	0	88.89	0	89.24	0	89.59	0
88.20	0	88.55	0	88.90	0	89.25	0	89.60	0
88.21	0	88.56	0	88.91	0	89.26	0	89.61	0
88.22	0	88.57	0	88.92	0	89.27	0	89.62	0
88.23	0	88.58	0	88.93	0	89.28	0	89.63	0
88.24	0	88.59	0	88.94	0	89.29	0	89.64	0
88.25	0	88.60	0	88.95	0	89.30	0	89.65	0
88.26	0	88.61	0	88.96	0	89.31	0	89.66	0
88.27	0	88.62	0	88.97	0	89.32	0	89.67	0
88.28	0	88.63	0	88.98	0	89.33	0	89.68	0
88.29	0	88.64	0	88.99	0	89.34	0	89.69	0
88.30	0	88.65	0	89.00	0	89.35	0	89.70	0
88.31	0	88.66	0	89.01	0	89.36	0	89.71	0
88.32	0	88.67	0	89.02	0	89.37	0	89.72	0
88.33	0	88.68	0	89.03	0	89.38	0	89.73	0
88.34	0	88.69	0	89.04	0	89.39	0	89.74	0

Stage-Area-Storage for Pond MH2: DMH-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.75	0	90.10	0	90.45	0	90.80	0	91.15	0
89.76	0	90.11	0	90.46	0	90.81	0	91.16	0
89.77	0	90.12	0	90.47	0	90.82	0	91.17	0
89.78	0	90.13	0	90.48	0	90.83	0	91.18	0
89.79	0	90.14	0	90.49	0	90.84	0	91.19	0
89.80	0	90.15	0	90.50	0	90.85	0	91.20	0
89.81	0	90.16	0	90.51	0	90.86	0	91.21	0
89.82	0	90.17	0	90.52	0	90.87	0	91.22	0
89.83	0	90.18	0	90.53	0	90.88	0	91.23	0
89.84	0	90.19	0	90.54	0	90.89	0	91.24	0
89.85	0	90.20	0	90.55	0	90.90	0	91.25	0
89.86	0	90.21	0	90.56	0	90.91	0	91.26	0
89.87	0	90.22	0	90.57	0	90.92	0	91.27	0
89.88	0	90.23	0	90.58	0	90.93	0	91.28	0
89.89	0	90.24	0	90.59	0	90.94	0	91.29	0
89.90	0	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0

Stage-Area-Storage for Pond MH2: DMH-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.50	0	91.85	0	92.20	0	92.55	0	92.90	0
91.51	0	91.86	0	92.21	0	92.56	0	92.91	0
91.52	0	91.87	0	92.22	0	92.57	0	92.92	0
91.53	0	91.88	0	92.23	0	92.58	0	92.93	0
91.54	0	91.89	0	92.24	0	92.59	0	92.94	0
91.55	0	91.90	0	92.25	0	92.60	0	92.95	0
91.56	0	91.91	0	92.26	0	92.61	0	92.96	0
91.57	0	91.92	0	92.27	0	92.62	0	92.97	0
91.58	0	91.93	0	92.28	0	92.63	0	92.98	0
91.59	0	91.94	0	92.29	0	92.64	0	92.99	0
91.60	0	91.95	0	92.30	0	92.65	0	93.00	0
91.61	0	91.96	0	92.31	0	92.66	0	93.01	0
91.62	0	91.97	0	92.32	0	92.67	0	93.02	0
91.63	0	91.98	0	92.33	0	92.68	0	93.03	0
91.64	0	91.99	0	92.34	0	92.69	0	93.04	0
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0

Stage-Area-Storage for Pond MH2: DMH-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
93.25	0	93.60	0	93.95	0
93.26	0	93.61	0	93.96	0
93.27	0	93.62	0	93.97	0
93.28	0	93.63	0	93.98	0
93.29	0	93.64	0	93.99	0
93.30	0	93.65	0	94.00	0
93.31	0	93.66	0		
93.32	0	93.67	0		
93.33	0	93.68	0		
93.34	0	93.69	0		
93.35	0	93.70	0		
93.36	0	93.71	0		
93.37	0	93.72	0		
93.38	0	93.73	0		
93.39	0	93.74	0		
93.40	0	93.75	0		
93.41	0	93.76	0		
93.42	0	93.77	0		
93.43	0	93.78	0		
93.44	0	93.79	0		
93.45	0	93.80	0		
93.46	0	93.81	0		
93.47	0	93.82	0		
93.48	0	93.83	0		
93.49	0	93.84	0		
93.50	0	93.85	0		
93.51	0	93.86	0		
93.52	0	93.87	0		
93.53	0	93.88	0		
93.54	0	93.89	0		
93.55	0	93.90	0		
93.56	0	93.91	0		
93.57	0	93.92	0		
93.58	0	93.93	0		
93.59	0	93.94	0		

Summary for Pond TD1: TD-1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=501)

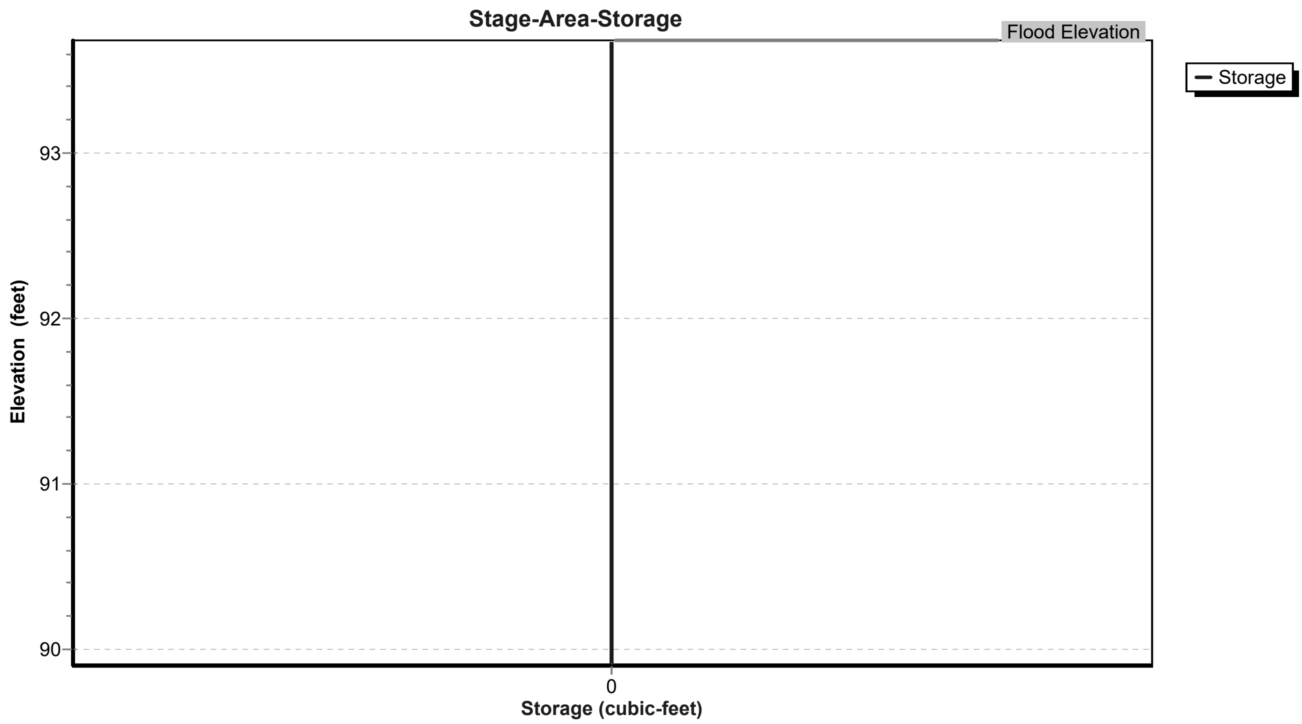
Inflow Area = 1,955 sf,100.00% Impervious, Inflow Depth = 4.97" for 10-Year event
Inflow = 0.23 cfs @ 12.08 hrs, Volume= 810 cf
Outflow = 0.23 cfs @ 12.08 hrs, Volume= 810 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.23 cfs @ 12.08 hrs, Volume= 810 cf
Routed to Pond WQU1 : WQU-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.42' @ 12.25 hrs
Flood Elev= 93.68'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.90'	**12.0" Round 12" HDPE** L= 15.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.90' / 89.75' S= 0.0098 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.23 cfs @ 12.08 hrs HW=90.99' TW=90.98' (Dynamic Tailwater)
└─**1=12" HDPE** (Inlet Controls 0.23 cfs @ 0.29 fps)

Pond TD1: TD-1



Stage-Area-Storage for Pond TD1: TD-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.90	**0**	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0
90.10	0	90.45	0	90.80	0	91.15	0	91.50	0
90.11	0	90.46	0	90.81	0	91.16	0	91.51	0
90.12	0	90.47	0	90.82	0	91.17	0	91.52	0
90.13	0	90.48	0	90.83	0	91.18	0	91.53	0
90.14	0	90.49	0	90.84	0	91.19	0	91.54	0
90.15	0	90.50	0	90.85	0	91.20	0	91.55	0
90.16	0	90.51	0	90.86	0	91.21	0	91.56	0
90.17	0	90.52	0	90.87	0	91.22	0	91.57	0
90.18	0	90.53	0	90.88	0	91.23	0	91.58	0
90.19	0	90.54	0	90.89	0	91.24	0	91.59	0
90.20	0	90.55	0	90.90	0	91.25	0	91.60	0
90.21	0	90.56	0	90.91	0	91.26	0	91.61	0
90.22	0	90.57	0	90.92	0	91.27	0	91.62	0
90.23	0	90.58	0	90.93	0	91.28	0	91.63	0
90.24	0	90.59	0	90.94	0	91.29	0	91.64	0

Stage-Area-Storage for Pond TD1: TD-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0
91.85	0	92.20	0	92.55	0	92.90	0	93.25	0
91.86	0	92.21	0	92.56	0	92.91	0	93.26	0
91.87	0	92.22	0	92.57	0	92.92	0	93.27	0
91.88	0	92.23	0	92.58	0	92.93	0	93.28	0
91.89	0	92.24	0	92.59	0	92.94	0	93.29	0
91.90	0	92.25	0	92.60	0	92.95	0	93.30	0
91.91	0	92.26	0	92.61	0	92.96	0	93.31	0
91.92	0	92.27	0	92.62	0	92.97	0	93.32	0
91.93	0	92.28	0	92.63	0	92.98	0	93.33	0
91.94	0	92.29	0	92.64	0	92.99	0	93.34	0
91.95	0	92.30	0	92.65	0	93.00	0	93.35	0
91.96	0	92.31	0	92.66	0	93.01	0	93.36	0
91.97	0	92.32	0	92.67	0	93.02	0	93.37	0
91.98	0	92.33	0	92.68	0	93.03	0	93.38	0
91.99	0	92.34	0	92.69	0	93.04	0	93.39	0

Stage-Area-Storage for Pond TD1: TD-1 (continued)

Elevation (feet)	Storage (cubic-feet)
93.40	0
93.41	0
93.42	0
93.43	0
93.44	0
93.45	0
93.46	0
93.47	0
93.48	0
93.49	0
93.50	0
93.51	0
93.52	0
93.53	0
93.54	0
93.55	0
93.56	0
93.57	0
93.58	0
93.59	0
93.60	0
93.61	0
93.62	0
93.63	0
93.64	0
93.65	0
93.66	0
93.67	0
93.68	0

Summary for Pond UIS1: UIS-1

[58] Hint: Peaked 0.62' above defined flood level
[80] Warning: Exceeded Pond WQU1 by 1.17' @ 13.95 hrs (4.48 cfs 13,549 cf)
[80] Warning: Exceeded Pond WQU2 by 1.20' @ 13.62 hrs (4.63 cfs 22,865 cf)

Inflow Area = 18,969 sf, 99.53% Impervious, Inflow Depth = 4.93" for 10-Year event
Inflow = 2.22 cfs @ 12.08 hrs, Volume= 7,795 cf
Outflow = 0.99 cfs @ 12.26 hrs, Volume= 7,795 cf, Atten= 55%, Lag= 10.3 min
Discarded = 0.09 cfs @ 10.02 hrs, Volume= 5,617 cf
Primary = 0.91 cfs @ 12.26 hrs, Volume= 2,178 cf
Routed to Pond MH2 : DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.42' @ 12.26 hrs Surf.Area= 1,550 sf Storage= 2,349 cf
Flood Elev= 90.80' Surf.Area= 1,550 sf Storage= 1,658 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 122.0 min (871.3 - 749.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	89.20'	1,501 cf	**25.25'W x 61.37'L x 3.75'H Field A** 5,811 cf Overall - 2,058 cf Embedded = 3,753 cf x 40.0% Voids
#2A	89.70'	2,058 cf	**ADS_StormTech SC-800 +Cap** x 40 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 40 Chambers in 5 Rows Cap Storage= 3.4 cf x 2 x 5 rows = 34.2 cf
		3,559 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	89.70'	**12.0" Round Culvert** L= 66.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.70' / 88.10' S= 0.0240 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	92.50'	**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
#3	Device 1	90.80'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	89.20'	**2.410 in/hr Exfiltration Loamy Sand over Surface area**

Discarded OutFlow Max=0.09 cfs @ 10.02 hrs HW=89.24' (Free Discharge)
└─**4=Exfiltration Loamy Sand** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.91 cfs @ 12.26 hrs HW=91.42' TW=88.47' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.91 cfs of 3.30 cfs potential flow)
  ├─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 0.91 cfs @ 2.68 fps)

Pond UIS1: UIS-1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-800 +Cap (ADS StormTech® SC-800 with cap volume)
Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf
Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap
Cap Storage= 3.4 cf x 2 x 5 rows = 34.2 cf

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

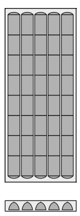
8 Chambers/Row x 7.12' Long +0.88' Cap Length x 2 = 58.70' Row Length +16.0" End Stone x 2 = 61.37' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
6.0" Stone Base + 33.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

40 Chambers x 50.6 cf + 3.4 cf Cap Volume x 2 x 5 Rows = 2,057.9 cf Chamber Storage

5,810.7 cf Field - 2,057.9 cf Chambers = 3,752.8 cf Stone x 40.0% Voids = 1,501.1 cf Stone Storage

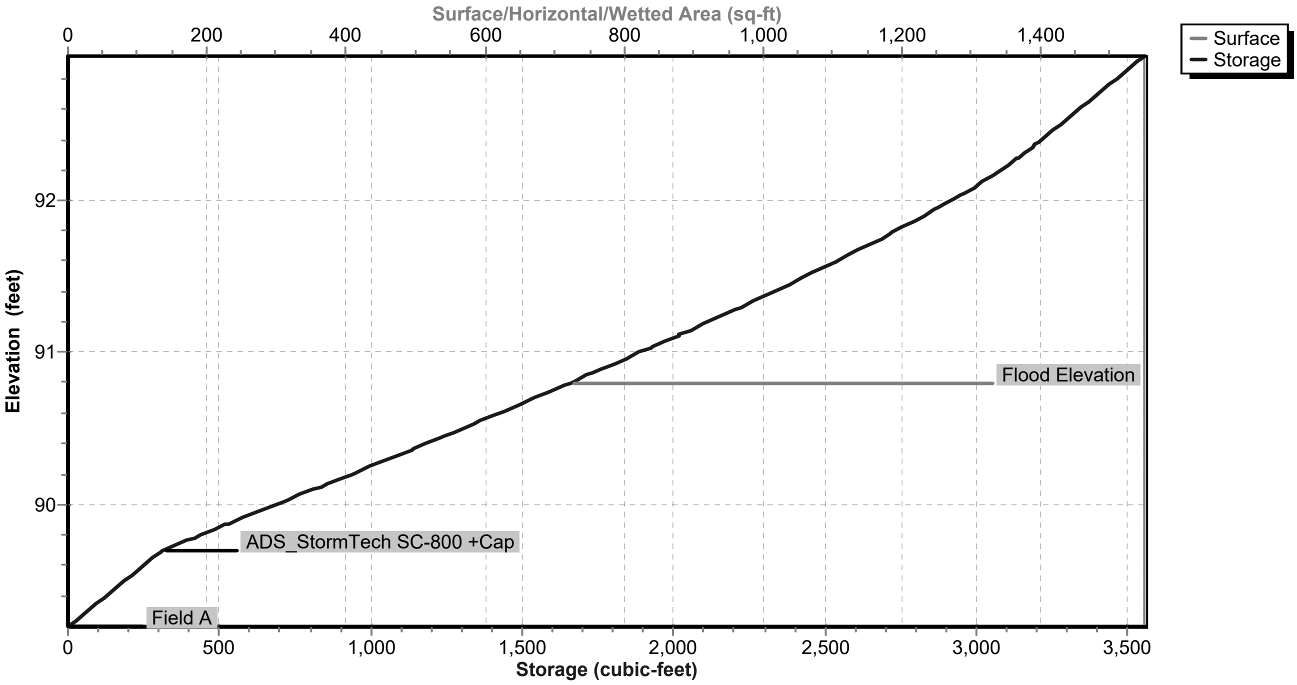
Chamber Storage + Stone Storage = 3,559.0 cf = 0.082 af
Overall Storage Efficiency = 61.2%
Overall System Size = 61.37' x 25.25' x 3.75'

40 Chambers
215.2 cy Field
139.0 cy Stone



Pond UIS1: UIS-1

Stage-Area-Storage



Stage-Area-Storage for Pond UIS1: UIS-1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
89.20	**1,550**	0	89.55	1,550	217	89.90	1,550	563
89.21	1,550	6	89.56	1,550	223	89.91	1,550	576
89.22	1,550	12	89.57	1,550	229	89.92	1,550	588
89.23	1,550	19	89.58	1,550	236	89.93	1,550	601
89.24	1,550	25	89.59	1,550	242	89.94	1,550	613
89.25	1,550	31	89.60	1,550	248	89.95	1,550	626
89.26	1,550	37	89.61	1,550	254	89.96	1,550	638
89.27	1,550	43	89.62	1,550	260	89.97	1,550	651
89.28	1,550	50	89.63	1,550	267	89.98	1,550	663
89.29	1,550	56	89.64	1,550	273	89.99	1,550	676
89.30	1,550	62	89.65	1,550	279	90.00	1,550	689
89.31	1,550	68	89.66	1,550	285	90.01	1,550	701
89.32	1,550	74	89.67	1,550	291	90.02	1,550	714
89.33	1,550	81	89.68	1,550	298	90.03	1,550	726
89.34	1,550	87	89.69	1,550	304	90.04	1,550	738
89.35	1,550	93	89.70	1,550	310	90.05	1,550	751
89.36	1,550	99	89.71	1,550	323	90.06	1,550	763
89.37	1,550	105	89.72	1,550	335	90.07	1,550	776
89.38	1,550	112	89.73	1,550	348	90.08	1,550	788
89.39	1,550	118	89.74	1,550	361	90.09	1,550	801
89.40	1,550	124	89.75	1,550	373	90.10	1,550	813
89.41	1,550	130	89.76	1,550	386	90.11	1,550	826
89.42	1,550	136	89.77	1,550	399	90.12	1,550	838
89.43	1,550	143	89.78	1,550	411	90.13	1,550	850
89.44	1,550	149	89.79	1,550	424	90.14	1,550	863
89.45	1,550	155	89.80	1,550	437	90.15	1,550	875
89.46	1,550	161	89.81	1,550	449	90.16	1,550	888
89.47	1,550	167	89.82	1,550	462	90.17	1,550	900
89.48	1,550	174	89.83	1,550	475	90.18	1,550	912
89.49	1,550	180	89.84	1,550	487	90.19	1,550	925
89.50	1,550	186	89.85	1,550	500	90.20	1,550	937
89.51	1,550	192	89.86	1,550	513	90.21	1,550	949
89.52	1,550	198	89.87	1,550	525	90.22	1,550	962
89.53	1,550	205	89.88	1,550	538	90.23	1,550	974
89.54	1,550	211	89.89	1,550	550	90.24	1,550	986

Stage-Area-Storage for Pond UIS1: UIS-1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
90.25	1,550	999	90.60	1,550	1,422	90.95	1,550	1,832
90.26	1,550	1,011	90.61	1,550	1,434	90.96	1,550	1,843
90.27	1,550	1,023	90.62	1,550	1,446	90.97	1,550	1,854
90.28	1,550	1,035	90.63	1,550	1,458	90.98	1,550	1,866
90.29	1,550	1,048	90.64	1,550	1,470	90.99	1,550	1,877
90.30	1,550	1,060	90.65	1,550	1,482	91.00	1,550	1,889
90.31	1,550	1,072	90.66	1,550	1,494	91.01	1,550	1,900
90.32	1,550	1,084	90.67	1,550	1,506	91.02	1,550	1,911
90.33	1,550	1,097	90.68	1,550	1,517	91.03	1,550	1,923
90.34	1,550	1,109	90.69	1,550	1,529	91.04	1,550	1,934
90.35	1,550	1,121	90.70	1,550	1,541	91.05	1,550	1,945
90.36	1,550	1,133	90.71	1,550	1,553	91.06	1,550	1,956
90.37	1,550	1,145	90.72	1,550	1,565	91.07	1,550	1,968
90.38	1,550	1,158	90.73	1,550	1,576	91.08	1,550	1,979
90.39	1,550	1,170	90.74	1,550	1,588	91.09	1,550	1,990
90.40	1,550	1,182	90.75	1,550	1,600	91.10	1,550	2,001
90.41	1,550	1,194	90.76	1,550	1,612	91.11	1,550	2,013
90.42	1,550	1,206	90.77	1,550	1,623	91.12	1,550	2,024
90.43	1,550	1,218	90.78	1,550	1,635	91.13	1,550	2,035
90.44	1,550	1,230	90.79	1,550	1,647	91.14	1,550	2,046
90.45	1,550	1,242	90.80	1,550	1,658	91.15	1,550	2,057
90.46	1,550	1,255	90.81	1,550	1,670	91.16	1,550	2,068
90.47	1,550	1,267	90.82	1,550	1,682	91.17	1,550	2,079
90.48	1,550	1,279	90.83	1,550	1,693	91.18	1,550	2,090
90.49	1,550	1,291	90.84	1,550	1,705	91.19	1,550	2,101
90.50	1,550	1,303	90.85	1,550	1,716	91.20	1,550	2,112
90.51	1,550	1,315	90.86	1,550	1,728	91.21	1,550	2,123
90.52	1,550	1,327	90.87	1,550	1,740	91.22	1,550	2,134
90.53	1,550	1,339	90.88	1,550	1,751	91.23	1,550	2,145
90.54	1,550	1,351	90.89	1,550	1,763	91.24	1,550	2,156
90.55	1,550	1,363	90.90	1,550	1,774	91.25	1,550	2,167
90.56	1,550	1,375	90.91	1,550	1,786	91.26	1,550	2,178
90.57	1,550	1,387	90.92	1,550	1,797	91.27	1,550	2,189
90.58	1,550	1,399	90.93	1,550	1,809	91.28	1,550	2,200
90.59	1,550	1,411	90.94	1,550	1,820	91.29	1,550	2,211

Stage-Area-Storage for Pond UIS1: UIS-1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.30	1,550	2,222	91.65	1,550	2,587	92.00	1,550	2,918
91.31	1,550	2,233	91.66	1,550	2,597	92.01	1,550	2,927
91.32	1,550	2,243	91.67	1,550	2,607	92.02	1,550	2,935
91.33	1,550	2,254	91.68	1,550	2,617	92.03	1,550	2,944
91.34	1,550	2,265	91.69	1,550	2,627	92.04	1,550	2,952
91.35	1,550	2,276	91.70	1,550	2,637	92.05	1,550	2,961
91.36	1,550	2,286	91.71	1,550	2,647	92.06	1,550	2,969
91.37	1,550	2,297	91.72	1,550	2,657	92.07	1,550	2,978
91.38	1,550	2,308	91.73	1,550	2,666	92.08	1,550	2,986
91.39	1,550	2,318	91.74	1,550	2,676	92.09	1,550	2,994
91.40	1,550	2,329	91.75	1,550	2,686	92.10	1,550	3,002
91.41	1,550	2,340	91.76	1,550	2,696	92.11	1,550	3,011
91.42	1,550	2,350	91.77	1,550	2,705	92.12	1,550	3,019
91.43	1,550	2,361	91.78	1,550	2,715	92.13	1,550	3,027
91.44	1,550	2,371	91.79	1,550	2,725	92.14	1,550	3,034
91.45	1,550	2,382	91.80	1,550	2,734	92.15	1,550	3,042
91.46	1,550	2,392	91.81	1,550	2,744	92.16	1,550	3,050
91.47	1,550	2,403	91.82	1,550	2,753	92.17	1,550	3,058
91.48	1,550	2,413	91.83	1,550	2,763	92.18	1,550	3,065
91.49	1,550	2,424	91.84	1,550	2,772	92.19	1,550	3,073
91.50	1,550	2,434	91.85	1,550	2,782	92.20	1,550	3,080
91.51	1,550	2,445	91.86	1,550	2,791	92.21	1,550	3,087
91.52	1,550	2,455	91.87	1,550	2,800	92.22	1,550	3,095
91.53	1,550	2,465	91.88	1,550	2,810	92.23	1,550	3,102
91.54	1,550	2,476	91.89	1,550	2,819	92.24	1,550	3,109
91.55	1,550	2,486	91.90	1,550	2,828	92.25	1,550	3,116
91.56	1,550	2,496	91.91	1,550	2,837	92.26	1,550	3,123
91.57	1,550	2,506	91.92	1,550	2,846	92.27	1,550	3,130
91.58	1,550	2,517	91.93	1,550	2,855	92.28	1,550	3,137
91.59	1,550	2,527	91.94	1,550	2,864	92.29	1,550	3,144
91.60	1,550	2,537	91.95	1,550	2,873	92.30	1,550	3,151
91.61	1,550	2,547	91.96	1,550	2,882	92.31	1,550	3,158
91.62	1,550	2,557	91.97	1,550	2,891	92.32	1,550	3,164
91.63	1,550	2,567	91.98	1,550	2,900	92.33	1,550	3,171
91.64	1,550	2,577	91.99	1,550	2,909	92.34	1,550	3,178

Stage-Area-Storage for Pond UIS1: UIS-1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
92.35	1,550	3,185	92.70	1,550	3,404
92.36	1,550	3,191	92.71	1,550	3,410
92.37	1,550	3,198	92.72	1,550	3,416
92.38	1,550	3,204	92.73	1,550	3,423
92.39	1,550	3,211	92.74	1,550	3,429
92.40	1,550	3,217	92.75	1,550	3,435
92.41	1,550	3,224	92.76	1,550	3,441
92.42	1,550	3,230	92.77	1,550	3,447
92.43	1,550	3,237	92.78	1,550	3,454
92.44	1,550	3,243	92.79	1,550	3,460
92.45	1,550	3,249	92.80	1,550	3,466
92.46	1,550	3,255	92.81	1,550	3,472
92.47	1,550	3,261	92.82	1,550	3,478
92.48	1,550	3,268	92.83	1,550	3,485
92.49	1,550	3,274	92.84	1,550	3,491
92.50	1,550	3,280	92.85	1,550	3,497
92.51	1,550	3,286	92.86	1,550	3,503
92.52	1,550	3,292	92.87	1,550	3,509
92.53	1,550	3,299	92.88	1,550	3,516
92.54	1,550	3,305	92.89	1,550	3,522
92.55	1,550	3,311	92.90	1,550	3,528
92.56	1,550	3,317	92.91	1,550	3,534
92.57	1,550	3,323	92.92	1,550	3,540
92.58	1,550	3,330	92.93	1,550	3,547
92.59	1,550	3,336	92.94	1,550	3,553
92.60	1,550	3,342	92.95	1,550	**3,559**
92.61	1,550	3,348			
92.62	1,550	3,354			
92.63	1,550	3,361			
92.64	1,550	3,367			
92.65	1,550	3,373			
92.66	1,550	3,379			
92.67	1,550	3,385			
92.68	1,550	3,392			
92.69	1,550	3,398			

Summary for Pond WQU1: WQU-1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=222)
[80] Warning: Exceeded Pond MH1 by 0.99' @ 15.42 hrs (2.05 cfs 5,420 cf)
[80] Warning: Exceeded Pond TD1 by 0.98' @ 14.86 hrs (2.07 cfs 7,995 cf)

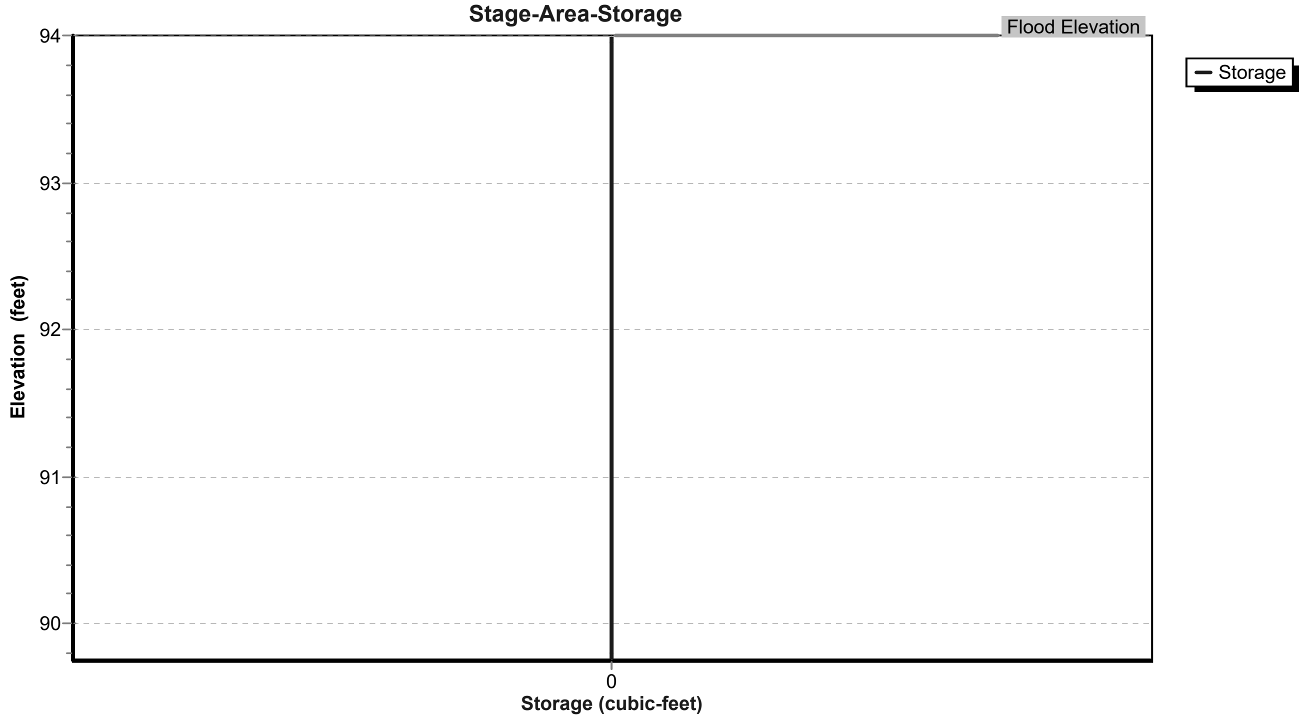
Inflow Area = 4,221 sf,100.00% Impervious, Inflow Depth = 4.97" for 10-Year event
Inflow = 0.49 cfs @ 12.08 hrs, Volume= 1,747 cf
Outflow = 0.49 cfs @ 12.08 hrs, Volume= 1,744 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.49 cfs @ 12.08 hrs, Volume= 1,744 cf
Routed to Pond UIS1 : UIS-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.42' @ 12.26 hrs
Flood Elev= 94.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.75'	**24.0" Round 24" HDPE** L= 5.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.75' / 89.70' S= 0.0098 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.49 cfs @ 12.08 hrs HW=90.98' TW=90.98' (Dynamic Tailwater)
1=24" HDPE (Inlet Controls 0.49 cfs @ 0.24 fps)

Pond WQU1: WQU-1



Stage-Area-Storage for Pond WQU1: WQU-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.75	**0**	90.10	0	90.45	0	90.80	0	91.15	0
89.76	0	90.11	0	90.46	0	90.81	0	91.16	0
89.77	0	90.12	0	90.47	0	90.82	0	91.17	0
89.78	0	90.13	0	90.48	0	90.83	0	91.18	0
89.79	0	90.14	0	90.49	0	90.84	0	91.19	0
89.80	0	90.15	0	90.50	0	90.85	0	91.20	0
89.81	0	90.16	0	90.51	0	90.86	0	91.21	0
89.82	0	90.17	0	90.52	0	90.87	0	91.22	0
89.83	0	90.18	0	90.53	0	90.88	0	91.23	0
89.84	0	90.19	0	90.54	0	90.89	0	91.24	0
89.85	0	90.20	0	90.55	0	90.90	0	91.25	0
89.86	0	90.21	0	90.56	0	90.91	0	91.26	0
89.87	0	90.22	0	90.57	0	90.92	0	91.27	0
89.88	0	90.23	0	90.58	0	90.93	0	91.28	0
89.89	0	90.24	0	90.59	0	90.94	0	91.29	0
89.90	0	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0

Stage-Area-Storage for Pond WQU1: WQU-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.50	0	91.85	0	92.20	0	92.55	0	92.90	0
91.51	0	91.86	0	92.21	0	92.56	0	92.91	0
91.52	0	91.87	0	92.22	0	92.57	0	92.92	0
91.53	0	91.88	0	92.23	0	92.58	0	92.93	0
91.54	0	91.89	0	92.24	0	92.59	0	92.94	0
91.55	0	91.90	0	92.25	0	92.60	0	92.95	0
91.56	0	91.91	0	92.26	0	92.61	0	92.96	0
91.57	0	91.92	0	92.27	0	92.62	0	92.97	0
91.58	0	91.93	0	92.28	0	92.63	0	92.98	0
91.59	0	91.94	0	92.29	0	92.64	0	92.99	0
91.60	0	91.95	0	92.30	0	92.65	0	93.00	0
91.61	0	91.96	0	92.31	0	92.66	0	93.01	0
91.62	0	91.97	0	92.32	0	92.67	0	93.02	0
91.63	0	91.98	0	92.33	0	92.68	0	93.03	0
91.64	0	91.99	0	92.34	0	92.69	0	93.04	0
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0

Stage-Area-Storage for Pond WQU1: WQU-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
93.25	0	93.60	0	93.95	0
93.26	0	93.61	0	93.96	0
93.27	0	93.62	0	93.97	0
93.28	0	93.63	0	93.98	0
93.29	0	93.64	0	93.99	0
93.30	0	93.65	0	94.00	0
93.31	0	93.66	0		
93.32	0	93.67	0		
93.33	0	93.68	0		
93.34	0	93.69	0		
93.35	0	93.70	0		
93.36	0	93.71	0		
93.37	0	93.72	0		
93.38	0	93.73	0		
93.39	0	93.74	0		
93.40	0	93.75	0		
93.41	0	93.76	0		
93.42	0	93.77	0		
93.43	0	93.78	0		
93.44	0	93.79	0		
93.45	0	93.80	0		
93.46	0	93.81	0		
93.47	0	93.82	0		
93.48	0	93.83	0		
93.49	0	93.84	0		
93.50	0	93.85	0		
93.51	0	93.86	0		
93.52	0	93.87	0		
93.53	0	93.88	0		
93.54	0	93.89	0		
93.55	0	93.90	0		
93.56	0	93.91	0		
93.57	0	93.92	0		
93.58	0	93.93	0		
93.59	0	93.94	0		

Summary for Pond WQU2: WQU-2

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=538)

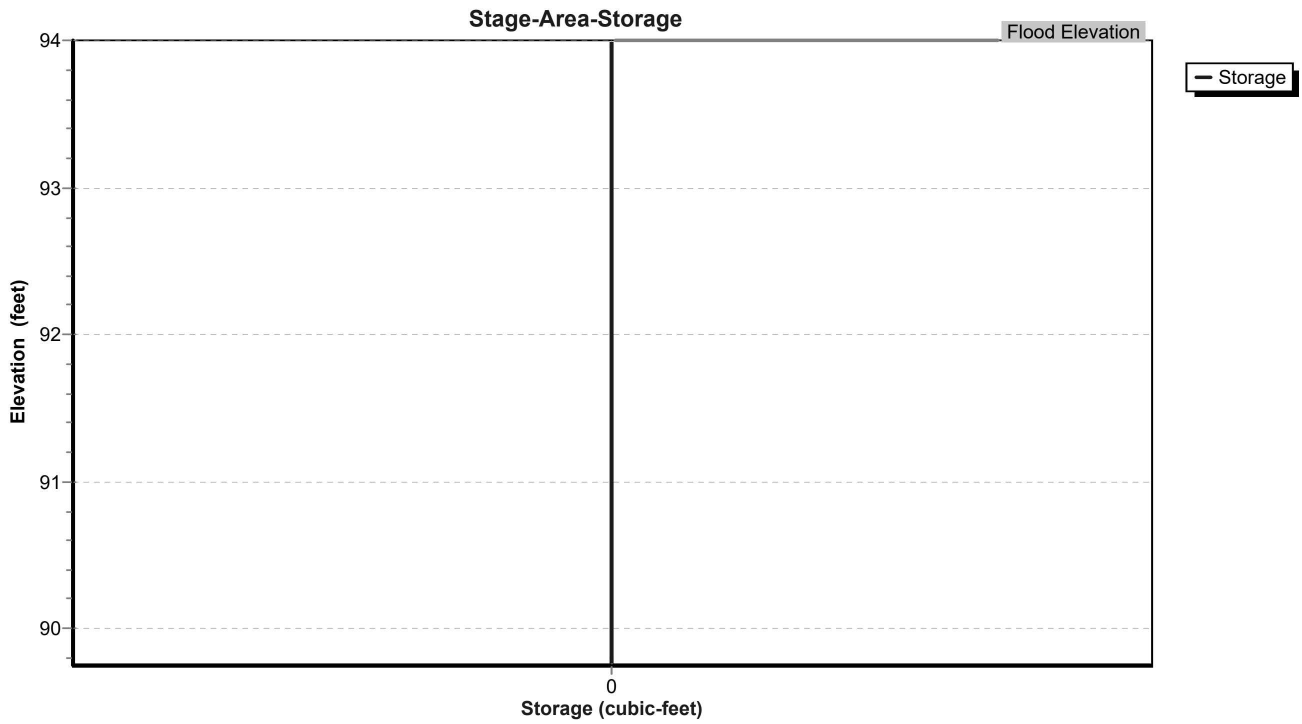
Inflow Area = 3,952 sf, 97.73% Impervious, Inflow Depth = 4.79" for 10-Year event
Inflow = 0.46 cfs @ 12.08 hrs, Volume= 1,578 cf
Outflow = 0.46 cfs @ 12.08 hrs, Volume= 1,576 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.46 cfs @ 12.08 hrs, Volume= 1,576 cf
Routed to Pond UIS1 : UIS-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.42' @ 12.26 hrs
Flood Elev= 94.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.75'	**24.0" Round 24" HDPE** L= 4.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.75' / 89.70' S= 0.0104 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.46 cfs @ 12.08 hrs HW=90.98' TW=90.98' (Dynamic Tailwater)
1=24" HDPE (Inlet Controls 0.46 cfs @ 0.23 fps)

Pond WQU2: WQU-2



Stage-Area-Storage for Pond WQU2: WQU-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.75	**0**	90.10	0	90.45	0	90.80	0	91.15	0
89.76	0	90.11	0	90.46	0	90.81	0	91.16	0
89.77	0	90.12	0	90.47	0	90.82	0	91.17	0
89.78	0	90.13	0	90.48	0	90.83	0	91.18	0
89.79	0	90.14	0	90.49	0	90.84	0	91.19	0
89.80	0	90.15	0	90.50	0	90.85	0	91.20	0
89.81	0	90.16	0	90.51	0	90.86	0	91.21	0
89.82	0	90.17	0	90.52	0	90.87	0	91.22	0
89.83	0	90.18	0	90.53	0	90.88	0	91.23	0
89.84	0	90.19	0	90.54	0	90.89	0	91.24	0
89.85	0	90.20	0	90.55	0	90.90	0	91.25	0
89.86	0	90.21	0	90.56	0	90.91	0	91.26	0
89.87	0	90.22	0	90.57	0	90.92	0	91.27	0
89.88	0	90.23	0	90.58	0	90.93	0	91.28	0
89.89	0	90.24	0	90.59	0	90.94	0	91.29	0
89.90	0	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0

Stage-Area-Storage for Pond WQU2: WQU-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.50	0	91.85	0	92.20	0	92.55	0	92.90	0
91.51	0	91.86	0	92.21	0	92.56	0	92.91	0
91.52	0	91.87	0	92.22	0	92.57	0	92.92	0
91.53	0	91.88	0	92.23	0	92.58	0	92.93	0
91.54	0	91.89	0	92.24	0	92.59	0	92.94	0
91.55	0	91.90	0	92.25	0	92.60	0	92.95	0
91.56	0	91.91	0	92.26	0	92.61	0	92.96	0
91.57	0	91.92	0	92.27	0	92.62	0	92.97	0
91.58	0	91.93	0	92.28	0	92.63	0	92.98	0
91.59	0	91.94	0	92.29	0	92.64	0	92.99	0
91.60	0	91.95	0	92.30	0	92.65	0	93.00	0
91.61	0	91.96	0	92.31	0	92.66	0	93.01	0
91.62	0	91.97	0	92.32	0	92.67	0	93.02	0
91.63	0	91.98	0	92.33	0	92.68	0	93.03	0
91.64	0	91.99	0	92.34	0	92.69	0	93.04	0
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0

Stage-Area-Storage for Pond WQU2: WQU-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
93.25	0	93.60	0	93.95	0
93.26	0	93.61	0	93.96	0
93.27	0	93.62	0	93.97	0
93.28	0	93.63	0	93.98	0
93.29	0	93.64	0	93.99	0
93.30	0	93.65	0	94.00	0
93.31	0	93.66	0		
93.32	0	93.67	0		
93.33	0	93.68	0		
93.34	0	93.69	0		
93.35	0	93.70	0		
93.36	0	93.71	0		
93.37	0	93.72	0		
93.38	0	93.73	0		
93.39	0	93.74	0		
93.40	0	93.75	0		
93.41	0	93.76	0		
93.42	0	93.77	0		
93.43	0	93.78	0		
93.44	0	93.79	0		
93.45	0	93.80	0		
93.46	0	93.81	0		
93.47	0	93.82	0		
93.48	0	93.83	0		
93.49	0	93.84	0		
93.50	0	93.85	0		
93.51	0	93.86	0		
93.52	0	93.87	0		
93.53	0	93.88	0		
93.54	0	93.89	0		
93.55	0	93.90	0		
93.56	0	93.91	0		
93.57	0	93.92	0		
93.58	0	93.93	0		
93.59	0	93.94	0		

Summary for Link SP1: Flow Off-Site To Municipal Drainage

Inflow Area = 2,059 sf, 36.49% Impervious, Inflow Depth = 1.51" for 10-Year event
Inflow = 0.08 cfs @ 12.09 hrs, Volume= 258 cf
Primary = 0.08 cfs @ 12.09 hrs, Volume= 258 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Link SP2: Flow Off-Site To Riverfront Area

Inflow Area = 31,495 sf, 59.94% Impervious, Inflow Depth = 0.84" for 10-Year event
Inflow = 0.91 cfs @ 12.26 hrs, Volume= 2,204 cf
Primary = 0.91 cfs @ 12.26 hrs, Volume= 2,204 cf, Atten= 0%, Lag= 0.0 min

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

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P-1A: Subcat P-1A Runoff Area=1,674 sf 44.88% Impervious Runoff Depth=2.65"
Tc=6.0 min CN=65 Runoff=0.12 cfs 369 cf

Subcatchment P-1B: Subcat P-1B Runoff Area=385 sf 0.00% Impervious Runoff Depth=0.57"
Tc=6.0 min CN=39 Runoff=0.00 cfs 18 cf

Subcatchment P-2: Subcat P-2 Runoff Area=12,526 sf 0.00% Impervious Runoff Depth=0.16"
Tc=6.0 min CN=31 Runoff=0.01 cfs 164 cf

Subcatchment P-3A: Subcat P-3A Runoff Area=1,955 sf 100.00% Impervious Runoff Depth=6.16"
Tc=6.0 min CN=98 Runoff=0.28 cfs 1,004 cf

Subcatchment P-3B: Subcat P-3B Runoff Area=2,266 sf 100.00% Impervious Runoff Depth=6.16"
Tc=6.0 min CN=98 Runoff=0.33 cfs 1,163 cf

Subcatchment P-3C: Subcat P-3C Runoff Area=3,072 sf 97.08% Impervious Runoff Depth=5.93"
Tc=6.0 min CN=96 Runoff=0.44 cfs 1,517 cf

Subcatchment P-4: Subcat P-4 Runoff Area=10,797 sf 100.00% Impervious Runoff Depth=6.16"
Tc=6.0 min CN=98 Runoff=1.56 cfs 5,544 cf

Subcatchment P-5: Subcat P-5 Runoff Area=880 sf 100.00% Impervious Runoff Depth=6.16"
Tc=6.0 min CN=98 Runoff=0.13 cfs 452 cf

Pond CB1: CB-1 Peak Elev=91.81' Inflow=0.33 cfs 1,163 cf
12.0" Round Culvert n=0.012 L=44.8' S=0.0100 '/' Outflow=0.33 cfs 1,163 cf

Pond CB2: CB-2 Peak Elev=91.81' Inflow=0.44 cfs 1,517 cf
12.0" Round Culvert n=0.012 L=52.5' S=0.0067 '/' Outflow=0.44 cfs 1,517 cf

Pond CB3: CB-3 Peak Elev=91.80' Inflow=0.13 cfs 452 cf
12.0" Round Culvert n=0.012 L=99.7' S=0.0095 '/' Outflow=0.13 cfs 452 cf

Pond MH1: DMH-1 Peak Elev=91.81' Inflow=0.33 cfs 1,163 cf
12.0" Round Culvert n=0.012 L=9.7' S=0.0103 '/' Outflow=0.33 cfs 1,162 cf

Pond MH2: DMH-2 Peak Elev=88.59' Inflow=1.38 cfs 3,548 cf
12.0" Round Culvert n=0.012 L=72.0' S=0.0100 '/' Outflow=1.38 cfs 3,548 cf

Pond TD1: TD-1 Peak Elev=91.81' Inflow=0.28 cfs 1,004 cf
12.0" Round Culvert n=0.012 L=15.3' S=0.0098 '/' Outflow=0.28 cfs 1,003 cf

Pond UIS1: UIS-1 Peak Elev=91.80' Storage=2,737 cf Inflow=2.73 cfs 9,674 cf
Discarded=0.09 cfs 6,126 cf Primary=1.38 cfs 3,548 cf Outflow=1.46 cfs 9,674 cf

Pond WQU1: WQU-1 Peak Elev=91.80' Inflow=0.61 cfs 2,166 cf
24.0" Round Culvert n=0.012 L=5.1' S=0.0098 '/' Outflow=0.61 cfs 2,164 cf

Pond WQU2: WQU-2 Peak Elev=91.80' Inflow=0.56 cfs 1,969 cf
24.0" Round Culvert n=0.012 L=4.8' S=0.0104 '/' Outflow=0.56 cfs 1,966 cf

Link SP1: Flow Off-Site To Municipal Drainage Inflow=0.12 cfs 387 cf
Primary=0.12 cfs 387 cf

Link SP2: Flow Off-Site To Riverfront Area Inflow=1.38 cfs 3,711 cf
Primary=1.38 cfs 3,711 cf

Total Runoff Area = 33,554 sf Runoff Volume = 10,230 cf Average Runoff Depth = 3.66"
41.49% Pervious = 13,923 sf 58.51% Impervious = 19,631 sf

Summary for Subcatchment P-1A: Subcat P-1A

Runoff = 0.12 cfs @ 12.09 hrs, Volume= 369 cf, Depth= 2.65"
Routed to Link SP1 : Flow Off-Site To Municipal Drainage

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.40"

Area (sf)	CN	Description
751	98	Paved parking, HSG A
923	39	>75% Grass cover, Good, HSG A
1,674	65	Weighted Average
923		55.12% Pervious Area
751		44.88% Impervious Area

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

Summary for Subcatchment P-1B: Subcat P-1B

Runoff = 0.00 cfs @ 12.30 hrs, Volume= 18 cf, Depth= 0.57"
Routed to Link SP1 : Flow Off-Site To Municipal Drainage

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.40"

Area (sf)	CN	Description
385	39	>75% Grass cover, Good, HSG A
385		100.00% Pervious Area

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

Summary for Subcatchment P-2: Subcat P-2

Runoff = 0.01 cfs @ 14.70 hrs, Volume= 164 cf, Depth= 0.16"
Routed to Link SP2 : Flow Off-Site To Riverfront Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.40"

Area (sf)	CN	Description
10,569	30	Woods, Good, HSG A
1,956	39	>75% Grass cover, Good, HSG A
12,526	31	Weighted Average
12,526		100.00% Pervious Area

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

Summary for Subcatchment P-3A: Subcat P-3A

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 1,004 cf, Depth= 6.16"
Routed to Pond TD1 : TD-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.40"

Area (sf)	CN	Description
1,955	98	Paved parking, HSG A
1,955		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-3B: Subcat P-3B

Runoff = 0.33 cfs @ 12.08 hrs, Volume= 1,163 cf, Depth= 6.16"
Routed to Pond CB1 : CB-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.40"

Area (sf)	CN	Description
2,266	98	Paved parking, HSG A
2,266		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-3C: Subcat P-3C

Runoff = 0.44 cfs @ 12.08 hrs, Volume= 1,517 cf, Depth= 5.93"
Routed to Pond CB2 : CB-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.40"

Area (sf)	CN	Description
90	39	>75% Grass cover, Good, HSG A
2,982	98	Paved parking, HSG A
3,072	96	Weighted Average
90		2.92% Pervious Area
2,982		97.08% Impervious Area

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

Summary for Subcatchment P-4: Subcat P-4

Runoff = 1.56 cfs @ 12.08 hrs, Volume= 5,544 cf, Depth= 6.16"
Routed to Pond UIS1 : UIS-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.40"

Area (sf)	CN	Description
10,797	98	Roofs, HSG A
10,797		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-5: Subcat P-5

Runoff = 0.13 cfs @ 12.08 hrs, Volume= 452 cf, Depth= 6.16"
Routed to Pond CB3 : CB-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.40"

Area (sf)	CN	Description
880	98	Paved parking, HSG A
880		100.00% Impervious Area

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

Summary for Pond CB1: CB-1

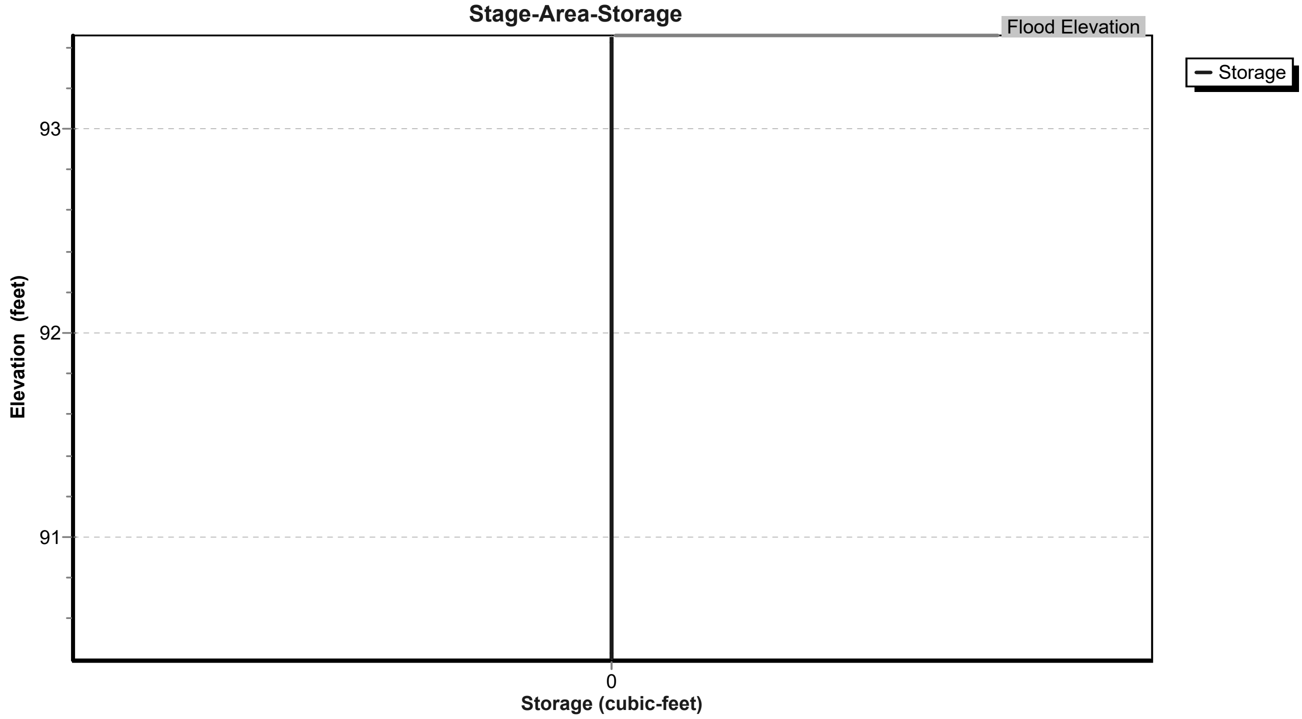
Inflow Area = 2,266 sf,100.00% Impervious, Inflow Depth = 6.16" for 25-Year event
Inflow = 0.33 cfs @ 12.08 hrs, Volume= 1,163 cf
Outflow = 0.33 cfs @ 12.08 hrs, Volume= 1,163 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.33 cfs @ 12.08 hrs, Volume= 1,163 cf
Routed to Pond MH1 : DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.81' @ 12.21 hrs
Flood Elev= 93.46'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.40'	**12.0" Round 12" HDPE** L= 44.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.40' / 89.95' S= 0.0100 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=91.42' TW=91.46' (Dynamic Tailwater)
└─**1=12" HDPE** (Controls 0.00 cfs)

Pond CB1: CB-1



Stage-Area-Storage for Pond CB1: CB-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.40	**0**	90.75	0	91.10	0	91.45	0	91.80	0
90.41	0	90.76	0	91.11	0	91.46	0	91.81	0
90.42	0	90.77	0	91.12	0	91.47	0	91.82	0
90.43	0	90.78	0	91.13	0	91.48	0	91.83	0
90.44	0	90.79	0	91.14	0	91.49	0	91.84	0
90.45	0	90.80	0	91.15	0	91.50	0	91.85	0
90.46	0	90.81	0	91.16	0	91.51	0	91.86	0
90.47	0	90.82	0	91.17	0	91.52	0	91.87	0
90.48	0	90.83	0	91.18	0	91.53	0	91.88	0
90.49	0	90.84	0	91.19	0	91.54	0	91.89	0
90.50	0	90.85	0	91.20	0	91.55	0	91.90	0
90.51	0	90.86	0	91.21	0	91.56	0	91.91	0
90.52	0	90.87	0	91.22	0	91.57	0	91.92	0
90.53	0	90.88	0	91.23	0	91.58	0	91.93	0
90.54	0	90.89	0	91.24	0	91.59	0	91.94	0
90.55	0	90.90	0	91.25	0	91.60	0	91.95	0
90.56	0	90.91	0	91.26	0	91.61	0	91.96	0
90.57	0	90.92	0	91.27	0	91.62	0	91.97	0
90.58	0	90.93	0	91.28	0	91.63	0	91.98	0
90.59	0	90.94	0	91.29	0	91.64	0	91.99	0
90.60	0	90.95	0	91.30	0	91.65	0	92.00	0
90.61	0	90.96	0	91.31	0	91.66	0	92.01	0
90.62	0	90.97	0	91.32	0	91.67	0	92.02	0
90.63	0	90.98	0	91.33	0	91.68	0	92.03	0
90.64	0	90.99	0	91.34	0	91.69	0	92.04	0
90.65	0	91.00	0	91.35	0	91.70	0	92.05	0
90.66	0	91.01	0	91.36	0	91.71	0	92.06	0
90.67	0	91.02	0	91.37	0	91.72	0	92.07	0
90.68	0	91.03	0	91.38	0	91.73	0	92.08	0
90.69	0	91.04	0	91.39	0	91.74	0	92.09	0
90.70	0	91.05	0	91.40	0	91.75	0	92.10	0
90.71	0	91.06	0	91.41	0	91.76	0	92.11	0
90.72	0	91.07	0	91.42	0	91.77	0	92.12	0
90.73	0	91.08	0	91.43	0	91.78	0	92.13	0
90.74	0	91.09	0	91.44	0	91.79	0	92.14	0

Stage-Area-Storage for Pond CB1: CB-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
92.15	0	92.50	0	92.85	0	93.20	0
92.16	0	92.51	0	92.86	0	93.21	0
92.17	0	92.52	0	92.87	0	93.22	0
92.18	0	92.53	0	92.88	0	93.23	0
92.19	0	92.54	0	92.89	0	93.24	0
92.20	0	92.55	0	92.90	0	93.25	0
92.21	0	92.56	0	92.91	0	93.26	0
92.22	0	92.57	0	92.92	0	93.27	0
92.23	0	92.58	0	92.93	0	93.28	0
92.24	0	92.59	0	92.94	0	93.29	0
92.25	0	92.60	0	92.95	0	93.30	0
92.26	0	92.61	0	92.96	0	93.31	0
92.27	0	92.62	0	92.97	0	93.32	0
92.28	0	92.63	0	92.98	0	93.33	0
92.29	0	92.64	0	92.99	0	93.34	0
92.30	0	92.65	0	93.00	0	93.35	0
92.31	0	92.66	0	93.01	0	93.36	0
92.32	0	92.67	0	93.02	0	93.37	0
92.33	0	92.68	0	93.03	0	93.38	0
92.34	0	92.69	0	93.04	0	93.39	0
92.35	0	92.70	0	93.05	0	93.40	0
92.36	0	92.71	0	93.06	0	93.41	0
92.37	0	92.72	0	93.07	0	93.42	0
92.38	0	92.73	0	93.08	0	93.43	0
92.39	0	92.74	0	93.09	0	93.44	0
92.40	0	92.75	0	93.10	0	93.45	0
92.41	0	92.76	0	93.11	0	93.46	0
92.42	0	92.77	0	93.12	0		
92.43	0	92.78	0	93.13	0		
92.44	0	92.79	0	93.14	0		
92.45	0	92.80	0	93.15	0		
92.46	0	92.81	0	93.16	0		
92.47	0	92.82	0	93.17	0		
92.48	0	92.83	0	93.18	0		
92.49	0	92.84	0	93.19	0		

Summary for Pond CB2: CB-2

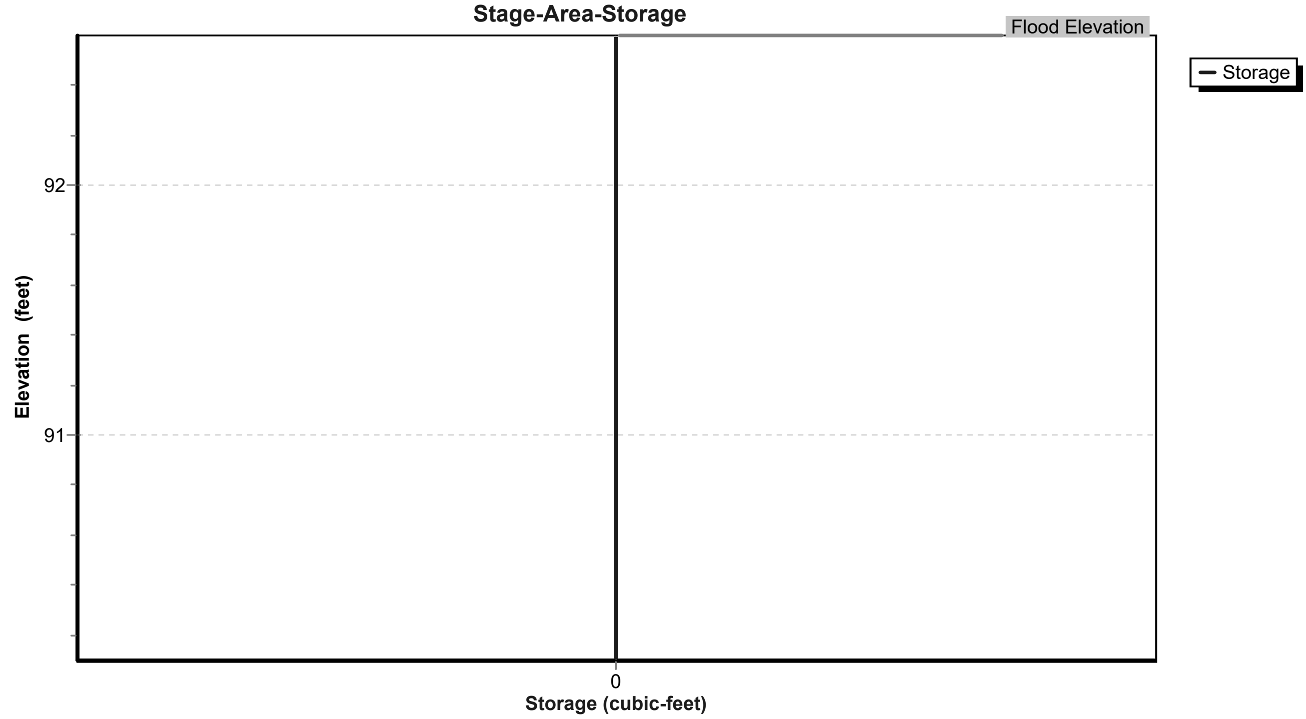
Inflow Area = 3,072 sf, 97.08% Impervious, Inflow Depth = 5.93" for 25-Year event
Inflow = 0.44 cfs @ 12.08 hrs, Volume= 1,517 cf
Outflow = 0.44 cfs @ 12.08 hrs, Volume= 1,517 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.44 cfs @ 12.08 hrs, Volume= 1,517 cf
Routed to Pond WQU2 : WQU-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.81' @ 12.20 hrs
Flood Elev= 92.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.10'	**12.0" Round 12" HDPE** L= 52.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.10' / 89.75' S= 0.0067 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.44 cfs @ 12.08 hrs HW=91.48' TW=91.45' (Dynamic Tailwater)
└─**1=12" HDPE** (Inlet Controls 0.44 cfs @ 0.56 fps)

Pond CB2: CB-2



Stage-Area-Storage for Pond CB2: CB-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.10	**0**	90.45	0	90.80	0	91.15	0	91.50	0
90.11	0	90.46	0	90.81	0	91.16	0	91.51	0
90.12	0	90.47	0	90.82	0	91.17	0	91.52	0
90.13	0	90.48	0	90.83	0	91.18	0	91.53	0
90.14	0	90.49	0	90.84	0	91.19	0	91.54	0
90.15	0	90.50	0	90.85	0	91.20	0	91.55	0
90.16	0	90.51	0	90.86	0	91.21	0	91.56	0
90.17	0	90.52	0	90.87	0	91.22	0	91.57	0
90.18	0	90.53	0	90.88	0	91.23	0	91.58	0
90.19	0	90.54	0	90.89	0	91.24	0	91.59	0
90.20	0	90.55	0	90.90	0	91.25	0	91.60	0
90.21	0	90.56	0	90.91	0	91.26	0	91.61	0
90.22	0	90.57	0	90.92	0	91.27	0	91.62	0
90.23	0	90.58	0	90.93	0	91.28	0	91.63	0
90.24	0	90.59	0	90.94	0	91.29	0	91.64	0
90.25	0	90.60	0	90.95	0	91.30	0	91.65	0
90.26	0	90.61	0	90.96	0	91.31	0	91.66	0
90.27	0	90.62	0	90.97	0	91.32	0	91.67	0
90.28	0	90.63	0	90.98	0	91.33	0	91.68	0
90.29	0	90.64	0	90.99	0	91.34	0	91.69	0
90.30	0	90.65	0	91.00	0	91.35	0	91.70	0
90.31	0	90.66	0	91.01	0	91.36	0	91.71	0
90.32	0	90.67	0	91.02	0	91.37	0	91.72	0
90.33	0	90.68	0	91.03	0	91.38	0	91.73	0
90.34	0	90.69	0	91.04	0	91.39	0	91.74	0
90.35	0	90.70	0	91.05	0	91.40	0	91.75	0
90.36	0	90.71	0	91.06	0	91.41	0	91.76	0
90.37	0	90.72	0	91.07	0	91.42	0	91.77	0
90.38	0	90.73	0	91.08	0	91.43	0	91.78	0
90.39	0	90.74	0	91.09	0	91.44	0	91.79	0
90.40	0	90.75	0	91.10	0	91.45	0	91.80	0
90.41	0	90.76	0	91.11	0	91.46	0	91.81	0
90.42	0	90.77	0	91.12	0	91.47	0	91.82	0
90.43	0	90.78	0	91.13	0	91.48	0	91.83	0
90.44	0	90.79	0	91.14	0	91.49	0	91.84	0

Stage-Area-Storage for Pond CB2: CB-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.85	0	92.20	0	92.55	0
91.86	0	92.21	0	92.56	0
91.87	0	92.22	0	92.57	0
91.88	0	92.23	0	92.58	0
91.89	0	92.24	0	92.59	0
91.90	0	92.25	0	92.60	0
91.91	0	92.26	0		
91.92	0	92.27	0		
91.93	0	92.28	0		
91.94	0	92.29	0		
91.95	0	92.30	0		
91.96	0	92.31	0		
91.97	0	92.32	0		
91.98	0	92.33	0		
91.99	0	92.34	0		
92.00	0	92.35	0		
92.01	0	92.36	0		
92.02	0	92.37	0		
92.03	0	92.38	0		
92.04	0	92.39	0		
92.05	0	92.40	0		
92.06	0	92.41	0		
92.07	0	92.42	0		
92.08	0	92.43	0		
92.09	0	92.44	0		
92.10	0	92.45	0		
92.11	0	92.46	0		
92.12	0	92.47	0		
92.13	0	92.48	0		
92.14	0	92.49	0		
92.15	0	92.50	0		
92.16	0	92.51	0		
92.17	0	92.52	0		
92.18	0	92.53	0		
92.19	0	92.54	0		

Summary for Pond CB3: CB-3

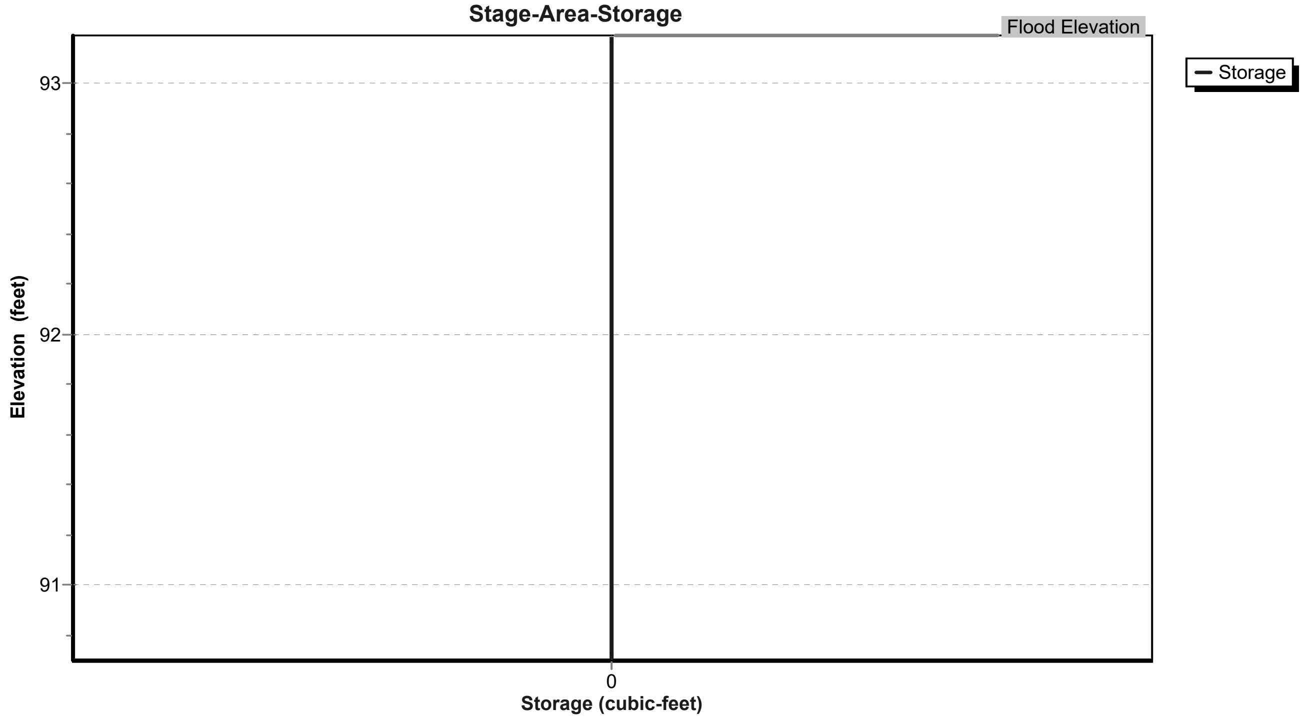
Inflow Area = 880 sf,100.00% Impervious, Inflow Depth = 6.16" for 25-Year event
Inflow = 0.13 cfs @ 12.08 hrs, Volume= 452 cf
Outflow = 0.13 cfs @ 12.08 hrs, Volume= 452 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.13 cfs @ 12.08 hrs, Volume= 452 cf
Routed to Pond WQU2 : WQU-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.80' @ 12.21 hrs
Flood Elev= 93.19'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.70'	**12.0" Round 12" HDPE** L= 99.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.70' / 89.75' S= 0.0095 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.13 cfs @ 12.08 hrs HW=91.46' TW=91.45' (Dynamic Tailwater)
1=12" HDPE (Outlet Controls 0.13 cfs @ 0.28 fps)

Pond CB3: CB-3



Stage-Area-Storage for Pond CB3: CB-3

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.70	**0**	91.05	0	91.40	0	91.75	0	92.10	0
90.71	0	91.06	0	91.41	0	91.76	0	92.11	0
90.72	0	91.07	0	91.42	0	91.77	0	92.12	0
90.73	0	91.08	0	91.43	0	91.78	0	92.13	0
90.74	0	91.09	0	91.44	0	91.79	0	92.14	0
90.75	0	91.10	0	91.45	0	91.80	0	92.15	0
90.76	0	91.11	0	91.46	0	91.81	0	92.16	0
90.77	0	91.12	0	91.47	0	91.82	0	92.17	0
90.78	0	91.13	0	91.48	0	91.83	0	92.18	0
90.79	0	91.14	0	91.49	0	91.84	0	92.19	0
90.80	0	91.15	0	91.50	0	91.85	0	92.20	0
90.81	0	91.16	0	91.51	0	91.86	0	92.21	0
90.82	0	91.17	0	91.52	0	91.87	0	92.22	0
90.83	0	91.18	0	91.53	0	91.88	0	92.23	0
90.84	0	91.19	0	91.54	0	91.89	0	92.24	0
90.85	0	91.20	0	91.55	0	91.90	0	92.25	0
90.86	0	91.21	0	91.56	0	91.91	0	92.26	0
90.87	0	91.22	0	91.57	0	91.92	0	92.27	0
90.88	0	91.23	0	91.58	0	91.93	0	92.28	0
90.89	0	91.24	0	91.59	0	91.94	0	92.29	0
90.90	0	91.25	0	91.60	0	91.95	0	92.30	0
90.91	0	91.26	0	91.61	0	91.96	0	92.31	0
90.92	0	91.27	0	91.62	0	91.97	0	92.32	0
90.93	0	91.28	0	91.63	0	91.98	0	92.33	0
90.94	0	91.29	0	91.64	0	91.99	0	92.34	0
90.95	0	91.30	0	91.65	0	92.00	0	92.35	0
90.96	0	91.31	0	91.66	0	92.01	0	92.36	0
90.97	0	91.32	0	91.67	0	92.02	0	92.37	0
90.98	0	91.33	0	91.68	0	92.03	0	92.38	0
90.99	0	91.34	0	91.69	0	92.04	0	92.39	0
91.00	0	91.35	0	91.70	0	92.05	0	92.40	0
91.01	0	91.36	0	91.71	0	92.06	0	92.41	0
91.02	0	91.37	0	91.72	0	92.07	0	92.42	0
91.03	0	91.38	0	91.73	0	92.08	0	92.43	0
91.04	0	91.39	0	91.74	0	92.09	0	92.44	0

Stage-Area-Storage for Pond CB3: CB-3 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
92.45	0	92.80	0	93.15	0
92.46	0	92.81	0	93.16	0
92.47	0	92.82	0	93.17	0
92.48	0	92.83	0	93.18	0
92.49	0	92.84	0	93.19	0
92.50	0	92.85	0		
92.51	0	92.86	0		
92.52	0	92.87	0		
92.53	0	92.88	0		
92.54	0	92.89	0		
92.55	0	92.90	0		
92.56	0	92.91	0		
92.57	0	92.92	0		
92.58	0	92.93	0		
92.59	0	92.94	0		
92.60	0	92.95	0		
92.61	0	92.96	0		
92.62	0	92.97	0		
92.63	0	92.98	0		
92.64	0	92.99	0		
92.65	0	93.00	0		
92.66	0	93.01	0		
92.67	0	93.02	0		
92.68	0	93.03	0		
92.69	0	93.04	0		
92.70	0	93.05	0		
92.71	0	93.06	0		
92.72	0	93.07	0		
92.73	0	93.08	0		
92.74	0	93.09	0		
92.75	0	93.10	0		
92.76	0	93.11	0		
92.77	0	93.12	0		
92.78	0	93.13	0		
92.79	0	93.14	0		

Summary for Pond MH1: DMH-1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=435)
[80] Warning: Exceeded Pond CB1 by 0.36' @ 16.24 hrs (0.49 cfs 425 cf)

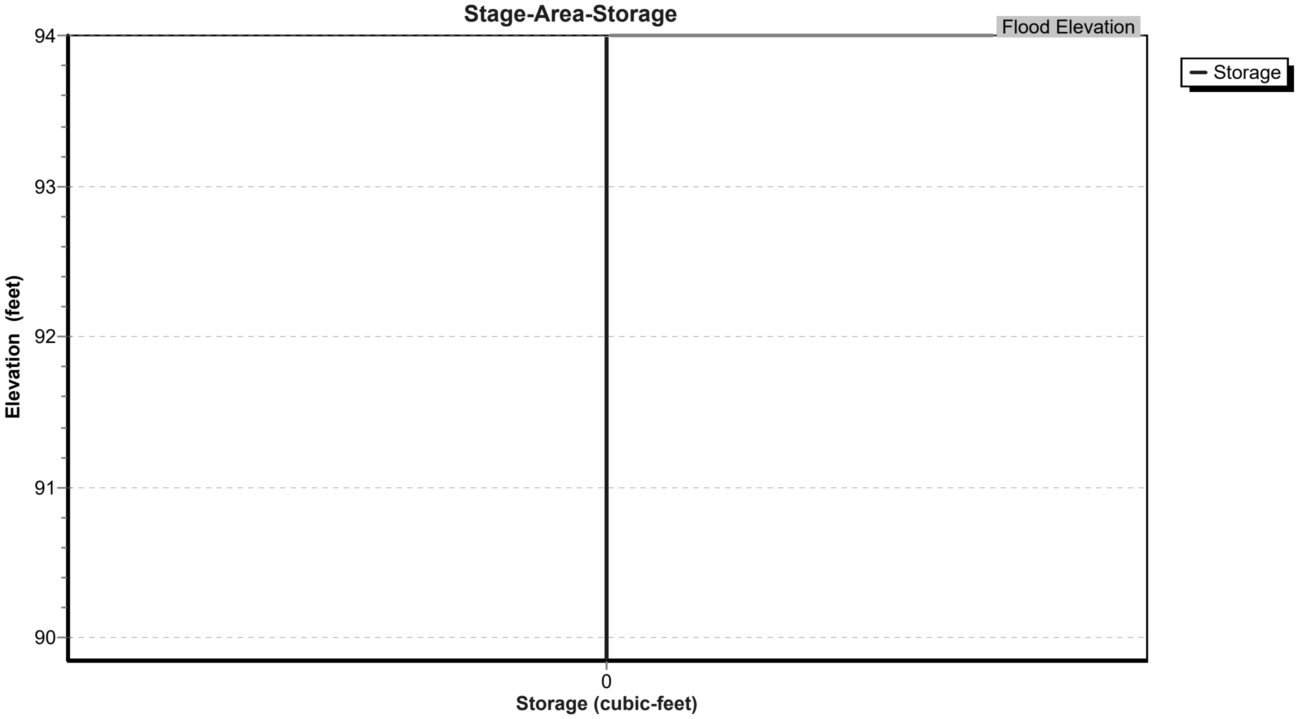
Inflow Area = 2,266 sf,100.00% Impervious, Inflow Depth = 6.16" for 25-Year event
Inflow = 0.33 cfs @ 12.08 hrs, Volume= 1,163 cf
Outflow = 0.33 cfs @ 12.08 hrs, Volume= 1,162 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.33 cfs @ 12.08 hrs, Volume= 1,162 cf
Routed to Pond WQU1 : WQU-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.81' @ 12.21 hrs
Flood Elev= 94.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.85'	**12.0" Round 12" HDPE** L= 9.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.85' / 89.75' S= 0.0103 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.33 cfs @ 12.08 hrs HW=91.46' TW=91.45' (Dynamic Tailwater)
└─**1=12" HDPE** (Inlet Controls 0.33 cfs @ 0.41 fps)

Pond MH1: DMH-1



Stage-Area-Storage for Pond MH1: DMH-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.85	**0**	90.20	0	90.55	0	90.90	0	91.25	0
89.86	0	90.21	0	90.56	0	90.91	0	91.26	0
89.87	0	90.22	0	90.57	0	90.92	0	91.27	0
89.88	0	90.23	0	90.58	0	90.93	0	91.28	0
89.89	0	90.24	0	90.59	0	90.94	0	91.29	0
89.90	0	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0
90.10	0	90.45	0	90.80	0	91.15	0	91.50	0
90.11	0	90.46	0	90.81	0	91.16	0	91.51	0
90.12	0	90.47	0	90.82	0	91.17	0	91.52	0
90.13	0	90.48	0	90.83	0	91.18	0	91.53	0
90.14	0	90.49	0	90.84	0	91.19	0	91.54	0
90.15	0	90.50	0	90.85	0	91.20	0	91.55	0
90.16	0	90.51	0	90.86	0	91.21	0	91.56	0
90.17	0	90.52	0	90.87	0	91.22	0	91.57	0
90.18	0	90.53	0	90.88	0	91.23	0	91.58	0
90.19	0	90.54	0	90.89	0	91.24	0	91.59	0

Stage-Area-Storage for Pond MH1: DMH-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.60	0	91.95	0	92.30	0	92.65	0	93.00	0
91.61	0	91.96	0	92.31	0	92.66	0	93.01	0
91.62	0	91.97	0	92.32	0	92.67	0	93.02	0
91.63	0	91.98	0	92.33	0	92.68	0	93.03	0
91.64	0	91.99	0	92.34	0	92.69	0	93.04	0
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0
91.85	0	92.20	0	92.55	0	92.90	0	93.25	0
91.86	0	92.21	0	92.56	0	92.91	0	93.26	0
91.87	0	92.22	0	92.57	0	92.92	0	93.27	0
91.88	0	92.23	0	92.58	0	92.93	0	93.28	0
91.89	0	92.24	0	92.59	0	92.94	0	93.29	0
91.90	0	92.25	0	92.60	0	92.95	0	93.30	0
91.91	0	92.26	0	92.61	0	92.96	0	93.31	0
91.92	0	92.27	0	92.62	0	92.97	0	93.32	0
91.93	0	92.28	0	92.63	0	92.98	0	93.33	0
91.94	0	92.29	0	92.64	0	92.99	0	93.34	0

Stage-Area-Storage for Pond MH1: DMH-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
93.35	0	93.70	0
93.36	0	93.71	0
93.37	0	93.72	0
93.38	0	93.73	0
93.39	0	93.74	0
93.40	0	93.75	0
93.41	0	93.76	0
93.42	0	93.77	0
93.43	0	93.78	0
93.44	0	93.79	0
93.45	0	93.80	0
93.46	0	93.81	0
93.47	0	93.82	0
93.48	0	93.83	0
93.49	0	93.84	0
93.50	0	93.85	0
93.51	0	93.86	0
93.52	0	93.87	0
93.53	0	93.88	0
93.54	0	93.89	0
93.55	0	93.90	0
93.56	0	93.91	0
93.57	0	93.92	0
93.58	0	93.93	0
93.59	0	93.94	0
93.60	0	93.95	0
93.61	0	93.96	0
93.62	0	93.97	0
93.63	0	93.98	0
93.64	0	93.99	0
93.65	0	94.00	0
93.66	0		
93.67	0		
93.68	0		
93.69	0		

Summary for Pond MH2: DMH-2

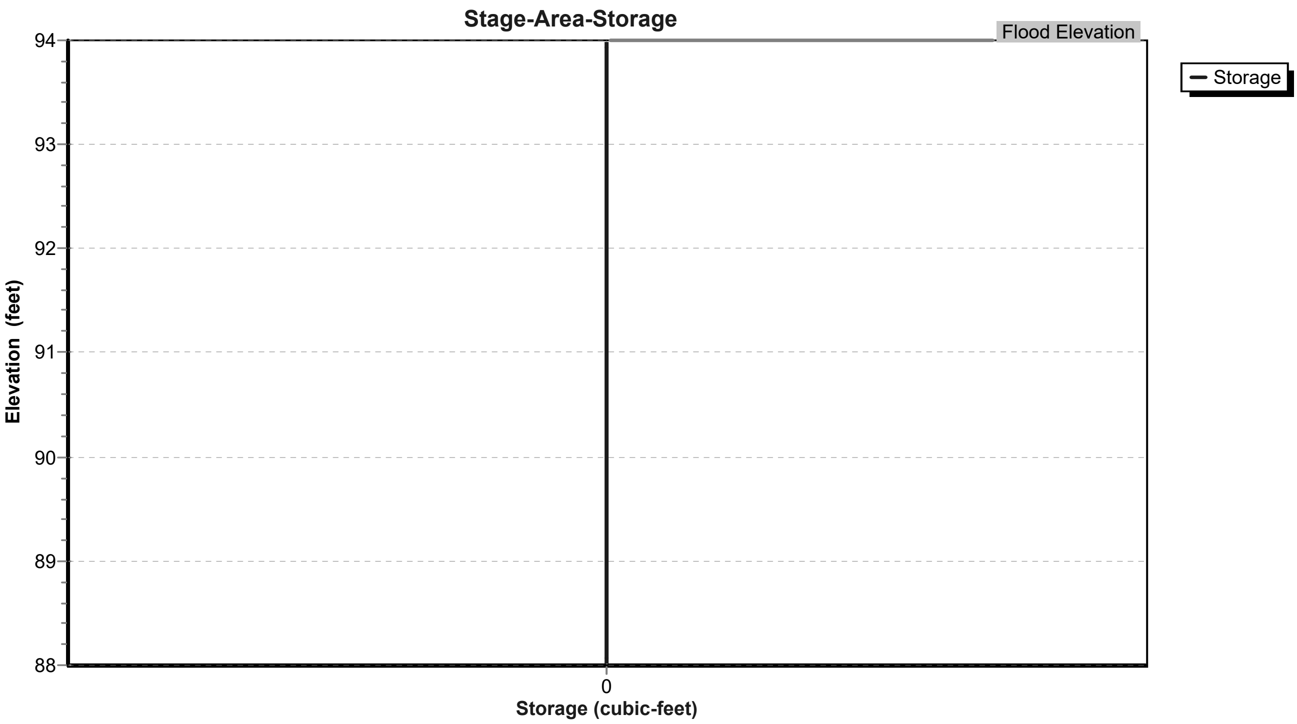
Inflow Area = 18,969 sf, 99.53% Impervious, Inflow Depth = 2.24" for 25-Year event
Inflow = 1.38 cfs @ 12.21 hrs, Volume= 3,548 cf
Outflow = 1.38 cfs @ 12.21 hrs, Volume= 3,548 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.38 cfs @ 12.21 hrs, Volume= 3,548 cf
Routed to Link SP2 : Flow Off-Site To Riverfront Area

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 88.59' @ 12.21 hrs
Flood Elev= 94.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round 12" RCP (Estimated Slope)** L= 72.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 88.00' / 87.28' S= 0.0100 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.37 cfs @ 12.21 hrs HW=88.59' TW=0.00' (Dynamic Tailwater)
└─**1=12" RCP (Estimated Slope)** (Barrel Controls 1.37 cfs @ 4.09 fps)

Pond MH2: DMH-2



Stage-Area-Storage for Pond MH2: DMH-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
88.00	**0**	88.35	0	88.70	0	89.05	0	89.40	0
88.01	0	88.36	0	88.71	0	89.06	0	89.41	0
88.02	0	88.37	0	88.72	0	89.07	0	89.42	0
88.03	0	88.38	0	88.73	0	89.08	0	89.43	0
88.04	0	88.39	0	88.74	0	89.09	0	89.44	0
88.05	0	88.40	0	88.75	0	89.10	0	89.45	0
88.06	0	88.41	0	88.76	0	89.11	0	89.46	0
88.07	0	88.42	0	88.77	0	89.12	0	89.47	0
88.08	0	88.43	0	88.78	0	89.13	0	89.48	0
88.09	0	88.44	0	88.79	0	89.14	0	89.49	0
88.10	0	88.45	0	88.80	0	89.15	0	89.50	0
88.11	0	88.46	0	88.81	0	89.16	0	89.51	0
88.12	0	88.47	0	88.82	0	89.17	0	89.52	0
88.13	0	88.48	0	88.83	0	89.18	0	89.53	0
88.14	0	88.49	0	88.84	0	89.19	0	89.54	0
88.15	0	88.50	0	88.85	0	89.20	0	89.55	0
88.16	0	88.51	0	88.86	0	89.21	0	89.56	0
88.17	0	88.52	0	88.87	0	89.22	0	89.57	0
88.18	0	88.53	0	88.88	0	89.23	0	89.58	0
88.19	0	88.54	0	88.89	0	89.24	0	89.59	0
88.20	0	88.55	0	88.90	0	89.25	0	89.60	0
88.21	0	88.56	0	88.91	0	89.26	0	89.61	0
88.22	0	88.57	0	88.92	0	89.27	0	89.62	0
88.23	0	88.58	0	88.93	0	89.28	0	89.63	0
88.24	0	88.59	0	88.94	0	89.29	0	89.64	0
88.25	0	88.60	0	88.95	0	89.30	0	89.65	0
88.26	0	88.61	0	88.96	0	89.31	0	89.66	0
88.27	0	88.62	0	88.97	0	89.32	0	89.67	0
88.28	0	88.63	0	88.98	0	89.33	0	89.68	0
88.29	0	88.64	0	88.99	0	89.34	0	89.69	0
88.30	0	88.65	0	89.00	0	89.35	0	89.70	0
88.31	0	88.66	0	89.01	0	89.36	0	89.71	0
88.32	0	88.67	0	89.02	0	89.37	0	89.72	0
88.33	0	88.68	0	89.03	0	89.38	0	89.73	0
88.34	0	88.69	0	89.04	0	89.39	0	89.74	0

Stage-Area-Storage for Pond MH2: DMH-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.75	0	90.10	0	90.45	0	90.80	0	91.15	0
89.76	0	90.11	0	90.46	0	90.81	0	91.16	0
89.77	0	90.12	0	90.47	0	90.82	0	91.17	0
89.78	0	90.13	0	90.48	0	90.83	0	91.18	0
89.79	0	90.14	0	90.49	0	90.84	0	91.19	0
89.80	0	90.15	0	90.50	0	90.85	0	91.20	0
89.81	0	90.16	0	90.51	0	90.86	0	91.21	0
89.82	0	90.17	0	90.52	0	90.87	0	91.22	0
89.83	0	90.18	0	90.53	0	90.88	0	91.23	0
89.84	0	90.19	0	90.54	0	90.89	0	91.24	0
89.85	0	90.20	0	90.55	0	90.90	0	91.25	0
89.86	0	90.21	0	90.56	0	90.91	0	91.26	0
89.87	0	90.22	0	90.57	0	90.92	0	91.27	0
89.88	0	90.23	0	90.58	0	90.93	0	91.28	0
89.89	0	90.24	0	90.59	0	90.94	0	91.29	0
89.90	0	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0

Stage-Area-Storage for Pond MH2: DMH-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.50	0	91.85	0	92.20	0	92.55	0	92.90	0
91.51	0	91.86	0	92.21	0	92.56	0	92.91	0
91.52	0	91.87	0	92.22	0	92.57	0	92.92	0
91.53	0	91.88	0	92.23	0	92.58	0	92.93	0
91.54	0	91.89	0	92.24	0	92.59	0	92.94	0
91.55	0	91.90	0	92.25	0	92.60	0	92.95	0
91.56	0	91.91	0	92.26	0	92.61	0	92.96	0
91.57	0	91.92	0	92.27	0	92.62	0	92.97	0
91.58	0	91.93	0	92.28	0	92.63	0	92.98	0
91.59	0	91.94	0	92.29	0	92.64	0	92.99	0
91.60	0	91.95	0	92.30	0	92.65	0	93.00	0
91.61	0	91.96	0	92.31	0	92.66	0	93.01	0
91.62	0	91.97	0	92.32	0	92.67	0	93.02	0
91.63	0	91.98	0	92.33	0	92.68	0	93.03	0
91.64	0	91.99	0	92.34	0	92.69	0	93.04	0
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0

Stage-Area-Storage for Pond MH2: DMH-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
93.25	0	93.60	0	93.95	0
93.26	0	93.61	0	93.96	0
93.27	0	93.62	0	93.97	0
93.28	0	93.63	0	93.98	0
93.29	0	93.64	0	93.99	0
93.30	0	93.65	0	94.00	0
93.31	0	93.66	0		
93.32	0	93.67	0		
93.33	0	93.68	0		
93.34	0	93.69	0		
93.35	0	93.70	0		
93.36	0	93.71	0		
93.37	0	93.72	0		
93.38	0	93.73	0		
93.39	0	93.74	0		
93.40	0	93.75	0		
93.41	0	93.76	0		
93.42	0	93.77	0		
93.43	0	93.78	0		
93.44	0	93.79	0		
93.45	0	93.80	0		
93.46	0	93.81	0		
93.47	0	93.82	0		
93.48	0	93.83	0		
93.49	0	93.84	0		
93.50	0	93.85	0		
93.51	0	93.86	0		
93.52	0	93.87	0		
93.53	0	93.88	0		
93.54	0	93.89	0		
93.55	0	93.90	0		
93.56	0	93.91	0		
93.57	0	93.92	0		
93.58	0	93.93	0		
93.59	0	93.94	0		

Summary for Pond TD1: TD-1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=483)

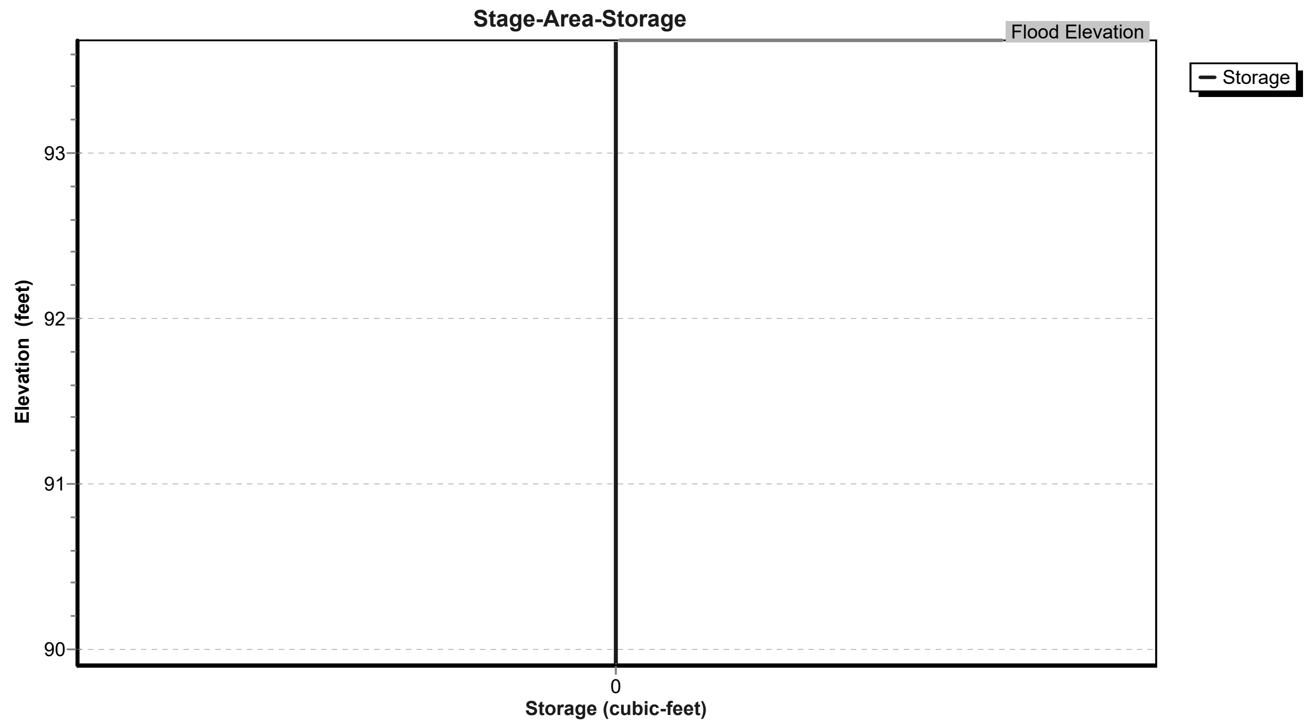
Inflow Area = 1,955 sf,100.00% Impervious, Inflow Depth = 6.16" for 25-Year event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 1,004 cf
Outflow = 0.28 cfs @ 12.08 hrs, Volume= 1,003 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 12.08 hrs, Volume= 1,003 cf
Routed to Pond WQU1 : WQU-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.81' @ 12.21 hrs
Flood Elev= 93.68'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.90'	**12.0" Round 12" HDPE** L= 15.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.90' / 89.75' S= 0.0098 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.28 cfs @ 12.08 hrs HW=91.46' TW=91.45' (Dynamic Tailwater)
└**1=12" HDPE** (Inlet Controls 0.28 cfs @ 0.36 fps)

Pond TD1: TD-1



Stage-Area-Storage for Pond TD1: TD-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.90	**0**	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0
90.10	0	90.45	0	90.80	0	91.15	0	91.50	0
90.11	0	90.46	0	90.81	0	91.16	0	91.51	0
90.12	0	90.47	0	90.82	0	91.17	0	91.52	0
90.13	0	90.48	0	90.83	0	91.18	0	91.53	0
90.14	0	90.49	0	90.84	0	91.19	0	91.54	0
90.15	0	90.50	0	90.85	0	91.20	0	91.55	0
90.16	0	90.51	0	90.86	0	91.21	0	91.56	0
90.17	0	90.52	0	90.87	0	91.22	0	91.57	0
90.18	0	90.53	0	90.88	0	91.23	0	91.58	0
90.19	0	90.54	0	90.89	0	91.24	0	91.59	0
90.20	0	90.55	0	90.90	0	91.25	0	91.60	0
90.21	0	90.56	0	90.91	0	91.26	0	91.61	0
90.22	0	90.57	0	90.92	0	91.27	0	91.62	0
90.23	0	90.58	0	90.93	0	91.28	0	91.63	0
90.24	0	90.59	0	90.94	0	91.29	0	91.64	0

Stage-Area-Storage for Pond TD1: TD-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0
91.85	0	92.20	0	92.55	0	92.90	0	93.25	0
91.86	0	92.21	0	92.56	0	92.91	0	93.26	0
91.87	0	92.22	0	92.57	0	92.92	0	93.27	0
91.88	0	92.23	0	92.58	0	92.93	0	93.28	0
91.89	0	92.24	0	92.59	0	92.94	0	93.29	0
91.90	0	92.25	0	92.60	0	92.95	0	93.30	0
91.91	0	92.26	0	92.61	0	92.96	0	93.31	0
91.92	0	92.27	0	92.62	0	92.97	0	93.32	0
91.93	0	92.28	0	92.63	0	92.98	0	93.33	0
91.94	0	92.29	0	92.64	0	92.99	0	93.34	0
91.95	0	92.30	0	92.65	0	93.00	0	93.35	0
91.96	0	92.31	0	92.66	0	93.01	0	93.36	0
91.97	0	92.32	0	92.67	0	93.02	0	93.37	0
91.98	0	92.33	0	92.68	0	93.03	0	93.38	0
91.99	0	92.34	0	92.69	0	93.04	0	93.39	0

Stage-Area-Storage for Pond TD1: TD-1 (continued)

Elevation (feet)	Storage (cubic-feet)
93.40	0
93.41	0
93.42	0
93.43	0
93.44	0
93.45	0
93.46	0
93.47	0
93.48	0
93.49	0
93.50	0
93.51	0
93.52	0
93.53	0
93.54	0
93.55	0
93.56	0
93.57	0
93.58	0
93.59	0
93.60	0
93.61	0
93.62	0
93.63	0
93.64	0
93.65	0
93.66	0
93.67	0
93.68	0

Summary for Pond UIS1: UIS-1

[58] Hint: Peaked 1.00' above defined flood level
[80] Warning: Exceeded Pond WQU1 by 1.07' @ 16.48 hrs (3.79 cfs 11,688 cf)
[80] Warning: Exceeded Pond WQU2 by 1.15' @ 15.02 hrs (4.32 cfs 16,635 cf)

Inflow Area = 18,969 sf, 99.53% Impervious, Inflow Depth = 6.12" for 25-Year event
Inflow = 2.73 cfs @ 12.08 hrs, Volume= 9,674 cf
Outflow = 1.46 cfs @ 12.21 hrs, Volume= 9,674 cf, Atten= 46%, Lag= 7.5 min
Discarded = 0.09 cfs @ 9.29 hrs, Volume= 6,126 cf
Primary = 1.38 cfs @ 12.21 hrs, Volume= 3,548 cf
Routed to Pond MH2 : DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.80' @ 12.21 hrs Surf.Area= 1,550 sf Storage= 2,737 cf
Flood Elev= 90.80' Surf.Area= 1,550 sf Storage= 1,658 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 113.0 min (859.0 - 746.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	89.20'	1,501 cf	**25.25'W x 61.37'L x 3.75'H Field A** 5,811 cf Overall - 2,058 cf Embedded = 3,753 cf x 40.0% Voids
#2A	89.70'	2,058 cf	**ADS_StormTech SC-800 +Cap** x 40 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 40 Chambers in 5 Rows Cap Storage= 3.4 cf x 2 x 5 rows = 34.2 cf
		3,559 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	89.70'	**12.0" Round Culvert** L= 66.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.70' / 88.10' S= 0.0240 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	92.50'	**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
#3	Device 1	90.80'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	89.20'	**2.410 in/hr Exfiltration Loamy Sand over Surface area**

Discarded OutFlow Max=0.09 cfs @ 9.29 hrs HW=89.24' (Free Discharge)
4=Exfiltration Loamy Sand (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=1.37 cfs @ 12.21 hrs HW=91.80' TW=88.59' (Dynamic Tailwater)
1=Culvert (Passes 1.37 cfs of 3.78 cfs potential flow)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
3=Orifice/Grate (Orifice Controls 1.37 cfs @ 3.94 fps)

Pond UIS1: UIS-1 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-800 +Cap (ADS StormTech®SC-800 with cap volume)
Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf
Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap
Cap Storage= 3.4 cf x 2 x 5 rows = 34.2 cf

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

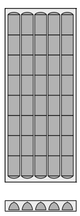
8 Chambers/Row x 7.12' Long +0.88' Cap Length x 2 = 58.70' Row Length +16.0" End Stone x 2 = 61.37' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
6.0" Stone Base + 33.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

40 Chambers x 50.6 cf + 3.4 cf Cap Volume x 2 x 5 Rows = 2,057.9 cf Chamber Storage

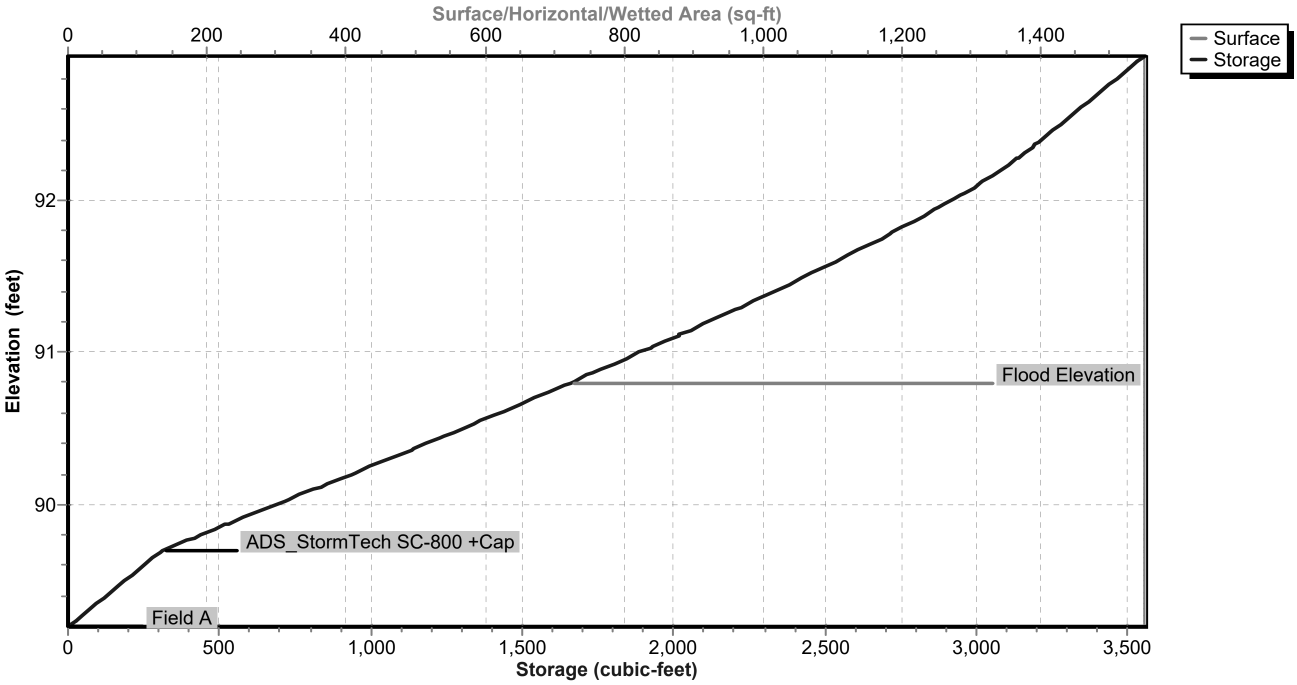
5,810.7 cf Field - 2,057.9 cf Chambers = 3,752.8 cf Stone x 40.0% Voids = 1,501.1 cf Stone Storage

Chamber Storage + Stone Storage = 3,559.0 cf = 0.082 af
Overall Storage Efficiency = 61.2%
Overall System Size = 61.37' x 25.25' x 3.75'

40 Chambers
215.2 cy Field
139.0 cy Stone



Pond UIS1: UIS-1



Stage-Area-Storage for Pond UIS1: UIS-1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
89.20	**1,550**	0	89.55	1,550	217	89.90	1,550	563
89.21	1,550	6	89.56	1,550	223	89.91	1,550	576
89.22	1,550	12	89.57	1,550	229	89.92	1,550	588
89.23	1,550	19	89.58	1,550	236	89.93	1,550	601
89.24	1,550	25	89.59	1,550	242	89.94	1,550	613
89.25	1,550	31	89.60	1,550	248	89.95	1,550	626
89.26	1,550	37	89.61	1,550	254	89.96	1,550	638
89.27	1,550	43	89.62	1,550	260	89.97	1,550	651
89.28	1,550	50	89.63	1,550	267	89.98	1,550	663
89.29	1,550	56	89.64	1,550	273	89.99	1,550	676
89.30	1,550	62	89.65	1,550	279	90.00	1,550	689
89.31	1,550	68	89.66	1,550	285	90.01	1,550	701
89.32	1,550	74	89.67	1,550	291	90.02	1,550	714
89.33	1,550	81	89.68	1,550	298	90.03	1,550	726
89.34	1,550	87	89.69	1,550	304	90.04	1,550	738
89.35	1,550	93	89.70	1,550	310	90.05	1,550	751
89.36	1,550	99	89.71	1,550	323	90.06	1,550	763
89.37	1,550	105	89.72	1,550	335	90.07	1,550	776
89.38	1,550	112	89.73	1,550	348	90.08	1,550	788
89.39	1,550	118	89.74	1,550	361	90.09	1,550	801
89.40	1,550	124	89.75	1,550	373	90.10	1,550	813
89.41	1,550	130	89.76	1,550	386	90.11	1,550	826
89.42	1,550	136	89.77	1,550	399	90.12	1,550	838
89.43	1,550	143	89.78	1,550	411	90.13	1,550	850
89.44	1,550	149	89.79	1,550	424	90.14	1,550	863
89.45	1,550	155	89.80	1,550	437	90.15	1,550	875
89.46	1,550	161	89.81	1,550	449	90.16	1,550	888
89.47	1,550	167	89.82	1,550	462	90.17	1,550	900
89.48	1,550	174	89.83	1,550	475	90.18	1,550	912
89.49	1,550	180	89.84	1,550	487	90.19	1,550	925
89.50	1,550	186	89.85	1,550	500	90.20	1,550	937
89.51	1,550	192	89.86	1,550	513	90.21	1,550	949
89.52	1,550	198	89.87	1,550	525	90.22	1,550	962
89.53	1,550	205	89.88	1,550	538	90.23	1,550	974
89.54	1,550	211	89.89	1,550	550	90.24	1,550	986

Stage-Area-Storage for Pond UIS1: UIS-1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
90.25	1,550	999	90.60	1,550	1,422	90.95	1,550	1,832
90.26	1,550	1,011	90.61	1,550	1,434	90.96	1,550	1,843
90.27	1,550	1,023	90.62	1,550	1,446	90.97	1,550	1,854
90.28	1,550	1,035	90.63	1,550	1,458	90.98	1,550	1,866
90.29	1,550	1,048	90.64	1,550	1,470	90.99	1,550	1,877
90.30	1,550	1,060	90.65	1,550	1,482	91.00	1,550	1,889
90.31	1,550	1,072	90.66	1,550	1,494	91.01	1,550	1,900
90.32	1,550	1,084	90.67	1,550	1,506	91.02	1,550	1,911
90.33	1,550	1,097	90.68	1,550	1,517	91.03	1,550	1,923
90.34	1,550	1,109	90.69	1,550	1,529	91.04	1,550	1,934
90.35	1,550	1,121	90.70	1,550	1,541	91.05	1,550	1,945
90.36	1,550	1,133	90.71	1,550	1,553	91.06	1,550	1,956
90.37	1,550	1,145	90.72	1,550	1,565	91.07	1,550	1,968
90.38	1,550	1,158	90.73	1,550	1,576	91.08	1,550	1,979
90.39	1,550	1,170	90.74	1,550	1,588	91.09	1,550	1,990
90.40	1,550	1,182	90.75	1,550	1,600	91.10	1,550	2,001
90.41	1,550	1,194	90.76	1,550	1,612	91.11	1,550	2,013
90.42	1,550	1,206	90.77	1,550	1,623	91.12	1,550	2,024
90.43	1,550	1,218	90.78	1,550	1,635	91.13	1,550	2,035
90.44	1,550	1,230	90.79	1,550	1,647	91.14	1,550	2,046
90.45	1,550	1,242	90.80	1,550	1,658	91.15	1,550	2,057
90.46	1,550	1,255	90.81	1,550	1,670	91.16	1,550	2,068
90.47	1,550	1,267	90.82	1,550	1,682	91.17	1,550	2,079
90.48	1,550	1,279	90.83	1,550	1,693	91.18	1,550	2,090
90.49	1,550	1,291	90.84	1,550	1,705	91.19	1,550	2,101
90.50	1,550	1,303	90.85	1,550	1,716	91.20	1,550	2,112
90.51	1,550	1,315	90.86	1,550	1,728	91.21	1,550	2,123
90.52	1,550	1,327	90.87	1,550	1,740	91.22	1,550	2,134
90.53	1,550	1,339	90.88	1,550	1,751	91.23	1,550	2,145
90.54	1,550	1,351	90.89	1,550	1,763	91.24	1,550	2,156
90.55	1,550	1,363	90.90	1,550	1,774	91.25	1,550	2,167
90.56	1,550	1,375	90.91	1,550	1,786	91.26	1,550	2,178
90.57	1,550	1,387	90.92	1,550	1,797	91.27	1,550	2,189
90.58	1,550	1,399	90.93	1,550	1,809	91.28	1,550	2,200
90.59	1,550	1,411	90.94	1,550	1,820	91.29	1,550	2,211

Stage-Area-Storage for Pond UIS1: UIS-1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.30	1,550	2,222	91.65	1,550	2,587	92.00	1,550	2,918
91.31	1,550	2,233	91.66	1,550	2,597	92.01	1,550	2,927
91.32	1,550	2,243	91.67	1,550	2,607	92.02	1,550	2,935
91.33	1,550	2,254	91.68	1,550	2,617	92.03	1,550	2,944
91.34	1,550	2,265	91.69	1,550	2,627	92.04	1,550	2,952
91.35	1,550	2,276	91.70	1,550	2,637	92.05	1,550	2,961
91.36	1,550	2,286	91.71	1,550	2,647	92.06	1,550	2,969
91.37	1,550	2,297	91.72	1,550	2,657	92.07	1,550	2,978
91.38	1,550	2,308	91.73	1,550	2,666	92.08	1,550	2,986
91.39	1,550	2,318	91.74	1,550	2,676	92.09	1,550	2,994
91.40	1,550	2,329	91.75	1,550	2,686	92.10	1,550	3,002
91.41	1,550	2,340	91.76	1,550	2,696	92.11	1,550	3,011
91.42	1,550	2,350	91.77	1,550	2,705	92.12	1,550	3,019
91.43	1,550	2,361	91.78	1,550	2,715	92.13	1,550	3,027
91.44	1,550	2,371	91.79	1,550	2,725	92.14	1,550	3,034
91.45	1,550	2,382	91.80	1,550	2,734	92.15	1,550	3,042
91.46	1,550	2,392	91.81	1,550	2,744	92.16	1,550	3,050
91.47	1,550	2,403	91.82	1,550	2,753	92.17	1,550	3,058
91.48	1,550	2,413	91.83	1,550	2,763	92.18	1,550	3,065
91.49	1,550	2,424	91.84	1,550	2,772	92.19	1,550	3,073
91.50	1,550	2,434	91.85	1,550	2,782	92.20	1,550	3,080
91.51	1,550	2,445	91.86	1,550	2,791	92.21	1,550	3,087
91.52	1,550	2,455	91.87	1,550	2,800	92.22	1,550	3,095
91.53	1,550	2,465	91.88	1,550	2,810	92.23	1,550	3,102
91.54	1,550	2,476	91.89	1,550	2,819	92.24	1,550	3,109
91.55	1,550	2,486	91.90	1,550	2,828	92.25	1,550	3,116
91.56	1,550	2,496	91.91	1,550	2,837	92.26	1,550	3,123
91.57	1,550	2,506	91.92	1,550	2,846	92.27	1,550	3,130
91.58	1,550	2,517	91.93	1,550	2,855	92.28	1,550	3,137
91.59	1,550	2,527	91.94	1,550	2,864	92.29	1,550	3,144
91.60	1,550	2,537	91.95	1,550	2,873	92.30	1,550	3,151
91.61	1,550	2,547	91.96	1,550	2,882	92.31	1,550	3,158
91.62	1,550	2,557	91.97	1,550	2,891	92.32	1,550	3,164
91.63	1,550	2,567	91.98	1,550	2,900	92.33	1,550	3,171
91.64	1,550	2,577	91.99	1,550	2,909	92.34	1,550	3,178

Stage-Area-Storage for Pond UIS1: UIS-1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
92.35	1,550	3,185	92.70	1,550	3,404
92.36	1,550	3,191	92.71	1,550	3,410
92.37	1,550	3,198	92.72	1,550	3,416
92.38	1,550	3,204	92.73	1,550	3,423
92.39	1,550	3,211	92.74	1,550	3,429
92.40	1,550	3,217	92.75	1,550	3,435
92.41	1,550	3,224	92.76	1,550	3,441
92.42	1,550	3,230	92.77	1,550	3,447
92.43	1,550	3,237	92.78	1,550	3,454
92.44	1,550	3,243	92.79	1,550	3,460
92.45	1,550	3,249	92.80	1,550	3,466
92.46	1,550	3,255	92.81	1,550	3,472
92.47	1,550	3,261	92.82	1,550	3,478
92.48	1,550	3,268	92.83	1,550	3,485
92.49	1,550	3,274	92.84	1,550	3,491
92.50	1,550	3,280	92.85	1,550	3,497
92.51	1,550	3,286	92.86	1,550	3,503
92.52	1,550	3,292	92.87	1,550	3,509
92.53	1,550	3,299	92.88	1,550	3,516
92.54	1,550	3,305	92.89	1,550	3,522
92.55	1,550	3,311	92.90	1,550	3,528
92.56	1,550	3,317	92.91	1,550	3,534
92.57	1,550	3,323	92.92	1,550	3,540
92.58	1,550	3,330	92.93	1,550	3,547
92.59	1,550	3,336	92.94	1,550	3,553
92.60	1,550	3,342	92.95	1,550	**3,559**
92.61	1,550	3,348			
92.62	1,550	3,354			
92.63	1,550	3,361			
92.64	1,550	3,367			
92.65	1,550	3,373			
92.66	1,550	3,379			
92.67	1,550	3,385			
92.68	1,550	3,392			
92.69	1,550	3,398			

Summary for Pond WQU1: WQU-1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=259)
[80] Warning: Exceeded Pond MH1 by 1.04' @ 15.16 hrs (2.19 cfs 7,133 cf)
[80] Warning: Exceeded Pond TD1 by 0.98' @ 15.41 hrs (2.08 cfs 11,851 cf)

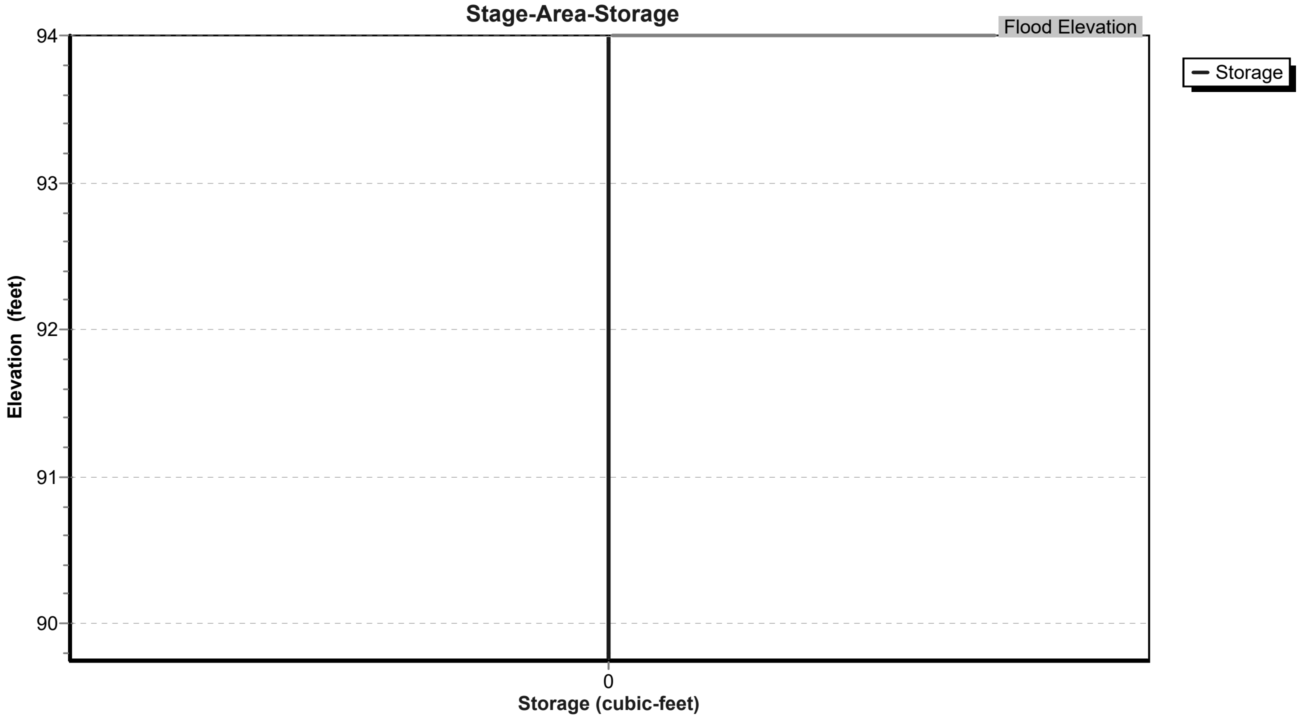
Inflow Area = 4,221 sf,100.00% Impervious, Inflow Depth = 6.16" for 25-Year event
Inflow = 0.61 cfs @ 12.08 hrs, Volume= 2,166 cf
Outflow = 0.61 cfs @ 12.08 hrs, Volume= 2,164 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.61 cfs @ 12.08 hrs, Volume= 2,164 cf
Routed to Pond UIS1 : UIS-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.80' @ 12.21 hrs
Flood Elev= 94.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.75'	**24.0" Round 24" HDPE** L= 5.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.75' / 89.70' S= 0.0098 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.61 cfs @ 12.08 hrs HW=91.45' TW=91.45' (Dynamic Tailwater)
1=24" HDPE (Inlet Controls 0.61 cfs @ 0.21 fps)

Pond WQU1: WQU-1



Stage-Area-Storage for Pond WQU1: WQU-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.75	**0**	90.10	0	90.45	0	90.80	0	91.15	0
89.76	0	90.11	0	90.46	0	90.81	0	91.16	0
89.77	0	90.12	0	90.47	0	90.82	0	91.17	0
89.78	0	90.13	0	90.48	0	90.83	0	91.18	0
89.79	0	90.14	0	90.49	0	90.84	0	91.19	0
89.80	0	90.15	0	90.50	0	90.85	0	91.20	0
89.81	0	90.16	0	90.51	0	90.86	0	91.21	0
89.82	0	90.17	0	90.52	0	90.87	0	91.22	0
89.83	0	90.18	0	90.53	0	90.88	0	91.23	0
89.84	0	90.19	0	90.54	0	90.89	0	91.24	0
89.85	0	90.20	0	90.55	0	90.90	0	91.25	0
89.86	0	90.21	0	90.56	0	90.91	0	91.26	0
89.87	0	90.22	0	90.57	0	90.92	0	91.27	0
89.88	0	90.23	0	90.58	0	90.93	0	91.28	0
89.89	0	90.24	0	90.59	0	90.94	0	91.29	0
89.90	0	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0

Stage-Area-Storage for Pond WQU1: WQU-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.50	0	91.85	0	92.20	0	92.55	0	92.90	0
91.51	0	91.86	0	92.21	0	92.56	0	92.91	0
91.52	0	91.87	0	92.22	0	92.57	0	92.92	0
91.53	0	91.88	0	92.23	0	92.58	0	92.93	0
91.54	0	91.89	0	92.24	0	92.59	0	92.94	0
91.55	0	91.90	0	92.25	0	92.60	0	92.95	0
91.56	0	91.91	0	92.26	0	92.61	0	92.96	0
91.57	0	91.92	0	92.27	0	92.62	0	92.97	0
91.58	0	91.93	0	92.28	0	92.63	0	92.98	0
91.59	0	91.94	0	92.29	0	92.64	0	92.99	0
91.60	0	91.95	0	92.30	0	92.65	0	93.00	0
91.61	0	91.96	0	92.31	0	92.66	0	93.01	0
91.62	0	91.97	0	92.32	0	92.67	0	93.02	0
91.63	0	91.98	0	92.33	0	92.68	0	93.03	0
91.64	0	91.99	0	92.34	0	92.69	0	93.04	0
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0

Stage-Area-Storage for Pond WQU1: WQU-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
93.25	0	93.60	0	93.95	0
93.26	0	93.61	0	93.96	0
93.27	0	93.62	0	93.97	0
93.28	0	93.63	0	93.98	0
93.29	0	93.64	0	93.99	0
93.30	0	93.65	0	94.00	0
93.31	0	93.66	0		
93.32	0	93.67	0		
93.33	0	93.68	0		
93.34	0	93.69	0		
93.35	0	93.70	0		
93.36	0	93.71	0		
93.37	0	93.72	0		
93.38	0	93.73	0		
93.39	0	93.74	0		
93.40	0	93.75	0		
93.41	0	93.76	0		
93.42	0	93.77	0		
93.43	0	93.78	0		
93.44	0	93.79	0		
93.45	0	93.80	0		
93.46	0	93.81	0		
93.47	0	93.82	0		
93.48	0	93.83	0		
93.49	0	93.84	0		
93.50	0	93.85	0		
93.51	0	93.86	0		
93.52	0	93.87	0		
93.53	0	93.88	0		
93.54	0	93.89	0		
93.55	0	93.90	0		
93.56	0	93.91	0		
93.57	0	93.92	0		
93.58	0	93.93	0		
93.59	0	93.94	0		

Summary for Pond WQU2: WQU-2

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=471)

Inflow Area =	3,952 sf, 97.73% Impervious,	Inflow Depth = 5.98"	for 25-Year event
Inflow =	0.56 cfs @ 12.08 hrs,	Volume=	1,969 cf
Outflow =	0.56 cfs @ 12.08 hrs,	Volume=	1,966 cf, Atten= 0%, Lag= 0.0 min
Primary =	0.56 cfs @ 12.08 hrs,	Volume=	1,966 cf

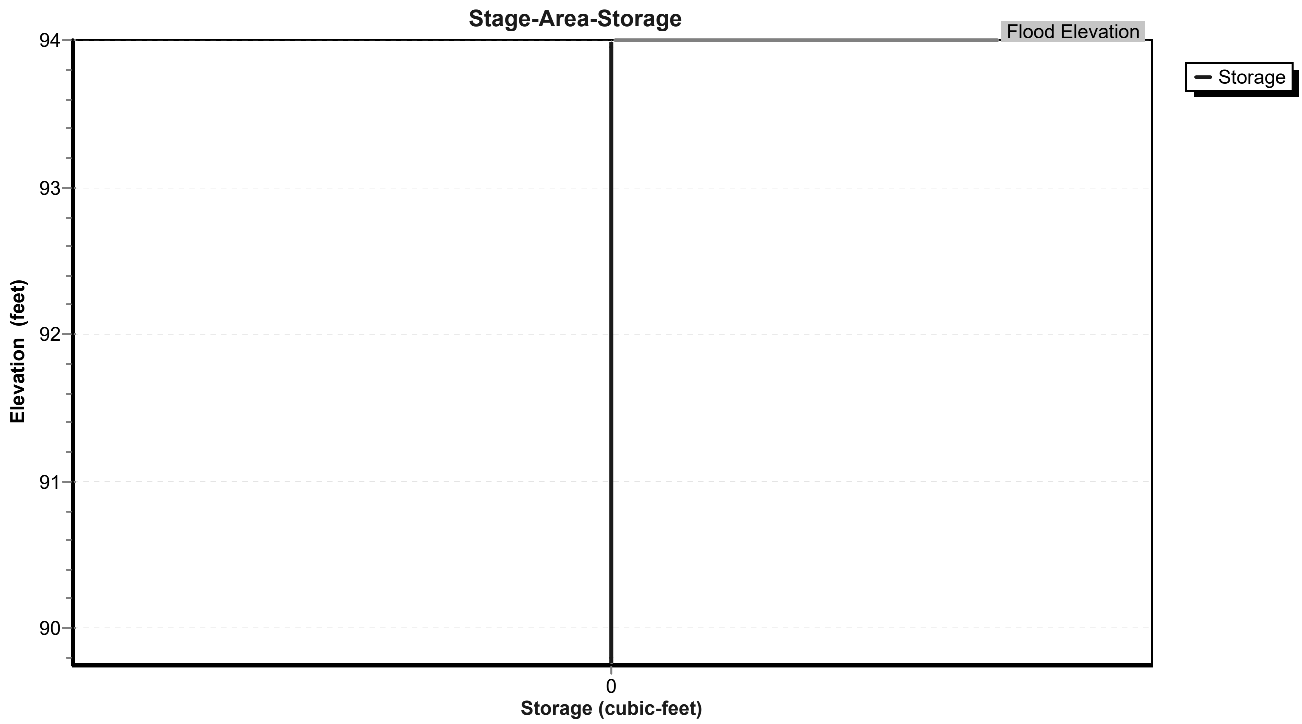
Routed to Pond UIS1 : UIS-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.80' @ 12.21 hrs
Flood Elev= 94.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.75'	**24.0" Round 24" HDPE** L= 4.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.75' / 89.70' S= 0.0104 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.56 cfs @ 12.08 hrs HW=91.45' TW=91.45' (Dynamic Tailwater)
└─**1=24" HDPE** (Inlet Controls 0.56 cfs @ 0.20 fps)

Pond WQU2: WQU-2



Stage-Area-Storage for Pond WQU2: WQU-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.75	**0**	90.10	0	90.45	0	90.80	0	91.15	0
89.76	0	90.11	0	90.46	0	90.81	0	91.16	0
89.77	0	90.12	0	90.47	0	90.82	0	91.17	0
89.78	0	90.13	0	90.48	0	90.83	0	91.18	0
89.79	0	90.14	0	90.49	0	90.84	0	91.19	0
89.80	0	90.15	0	90.50	0	90.85	0	91.20	0
89.81	0	90.16	0	90.51	0	90.86	0	91.21	0
89.82	0	90.17	0	90.52	0	90.87	0	91.22	0
89.83	0	90.18	0	90.53	0	90.88	0	91.23	0
89.84	0	90.19	0	90.54	0	90.89	0	91.24	0
89.85	0	90.20	0	90.55	0	90.90	0	91.25	0
89.86	0	90.21	0	90.56	0	90.91	0	91.26	0
89.87	0	90.22	0	90.57	0	90.92	0	91.27	0
89.88	0	90.23	0	90.58	0	90.93	0	91.28	0
89.89	0	90.24	0	90.59	0	90.94	0	91.29	0
89.90	0	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0

Stage-Area-Storage for Pond WQU2: WQU-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.50	0	91.85	0	92.20	0	92.55	0	92.90	0
91.51	0	91.86	0	92.21	0	92.56	0	92.91	0
91.52	0	91.87	0	92.22	0	92.57	0	92.92	0
91.53	0	91.88	0	92.23	0	92.58	0	92.93	0
91.54	0	91.89	0	92.24	0	92.59	0	92.94	0
91.55	0	91.90	0	92.25	0	92.60	0	92.95	0
91.56	0	91.91	0	92.26	0	92.61	0	92.96	0
91.57	0	91.92	0	92.27	0	92.62	0	92.97	0
91.58	0	91.93	0	92.28	0	92.63	0	92.98	0
91.59	0	91.94	0	92.29	0	92.64	0	92.99	0
91.60	0	91.95	0	92.30	0	92.65	0	93.00	0
91.61	0	91.96	0	92.31	0	92.66	0	93.01	0
91.62	0	91.97	0	92.32	0	92.67	0	93.02	0
91.63	0	91.98	0	92.33	0	92.68	0	93.03	0
91.64	0	91.99	0	92.34	0	92.69	0	93.04	0
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0

Stage-Area-Storage for Pond WQU2: WQU-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
93.25	0	93.60	0	93.95	0
93.26	0	93.61	0	93.96	0
93.27	0	93.62	0	93.97	0
93.28	0	93.63	0	93.98	0
93.29	0	93.64	0	93.99	0
93.30	0	93.65	0	94.00	0
93.31	0	93.66	0		
93.32	0	93.67	0		
93.33	0	93.68	0		
93.34	0	93.69	0		
93.35	0	93.70	0		
93.36	0	93.71	0		
93.37	0	93.72	0		
93.38	0	93.73	0		
93.39	0	93.74	0		
93.40	0	93.75	0		
93.41	0	93.76	0		
93.42	0	93.77	0		
93.43	0	93.78	0		
93.44	0	93.79	0		
93.45	0	93.80	0		
93.46	0	93.81	0		
93.47	0	93.82	0		
93.48	0	93.83	0		
93.49	0	93.84	0		
93.50	0	93.85	0		
93.51	0	93.86	0		
93.52	0	93.87	0		
93.53	0	93.88	0		
93.54	0	93.89	0		
93.55	0	93.90	0		
93.56	0	93.91	0		
93.57	0	93.92	0		
93.58	0	93.93	0		
93.59	0	93.94	0		

Summary for Link SP1: Flow Off-Site To Municipal Drainage

Inflow Area = 2,059 sf, 36.49% Impervious, Inflow Depth = 2.26" for 25-Year event
Inflow = 0.12 cfs @ 12.09 hrs, Volume= 387 cf
Primary = 0.12 cfs @ 12.09 hrs, Volume= 387 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Link SP2: Flow Off-Site To Riverfront Area

Inflow Area = 31,495 sf, 59.94% Impervious, Inflow Depth = 1.41" for 25-Year event
Inflow = 1.38 cfs @ 12.21 hrs, Volume= 3,711 cf
Primary = 1.38 cfs @ 12.21 hrs, Volume= 3,711 cf, Atten= 0%, Lag= 0.0 min

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

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P-1A: Subcat P-1A Runoff Area=1,674 sf 44.88% Impervious Runoff Depth=4.08"
Tc=6.0 min CN=65 Runoff=0.18 cfs 569 cf

Subcatchment P-1B: Subcat P-1B Runoff Area=385 sf 0.00% Impervious Runoff Depth=1.25"
Tc=6.0 min CN=39 Runoff=0.01 cfs 40 cf

Subcatchment P-2: Subcat P-2 Runoff Area=12,526 sf 0.00% Impervious Runoff Depth=0.55"
Tc=6.0 min CN=31 Runoff=0.06 cfs 572 cf

Subcatchment P-3A: Subcat P-3A Runoff Area=1,955 sf 100.00% Impervious Runoff Depth=7.99"
Tc=6.0 min CN=98 Runoff=0.36 cfs 1,302 cf

Subcatchment P-3B: Subcat P-3B Runoff Area=2,266 sf 100.00% Impervious Runoff Depth=7.99"
Tc=6.0 min CN=98 Runoff=0.42 cfs 1,509 cf

Subcatchment P-3C: Subcat P-3C Runoff Area=3,072 sf 97.08% Impervious Runoff Depth=7.75"
Tc=6.0 min CN=96 Runoff=0.57 cfs 1,984 cf

Subcatchment P-4: Subcat P-4 Runoff Area=10,797 sf 100.00% Impervious Runoff Depth=7.99"
Tc=6.0 min CN=98 Runoff=2.00 cfs 7,189 cf

Subcatchment P-5: Subcat P-5 Runoff Area=880 sf 100.00% Impervious Runoff Depth=7.99"
Tc=6.0 min CN=98 Runoff=0.16 cfs 586 cf

Pond CB1: CB-1 Peak Elev=92.51' Inflow=0.42 cfs 1,509 cf
12.0" Round Culvert n=0.012 L=44.8' S=0.0100 '/' Outflow=0.42 cfs 1,509 cf

Pond CB2: CB-2 Peak Elev=92.51' Inflow=0.57 cfs 1,984 cf
12.0" Round Culvert n=0.012 L=52.5' S=0.0067 '/' Outflow=0.57 cfs 1,984 cf

Pond CB3: CB-3 Peak Elev=92.50' Inflow=0.16 cfs 586 cf
12.0" Round Culvert n=0.012 L=99.7' S=0.0095 '/' Outflow=0.16 cfs 586 cf

Pond MH1: DMH-1 Peak Elev=92.50' Inflow=0.42 cfs 1,509 cf
12.0" Round Culvert n=0.012 L=9.7' S=0.0103 '/' Outflow=0.42 cfs 1,509 cf

Pond MH2: DMH-2 Peak Elev=88.73' Inflow=1.96 cfs 5,778 cf
12.0" Round Culvert n=0.012 L=72.0' S=0.0100 '/' Outflow=1.96 cfs 5,778 cf

Pond TD1: TD-1 Peak Elev=92.50' Inflow=0.36 cfs 1,302 cf
12.0" Round Culvert n=0.012 L=15.3' S=0.0098 '/' Outflow=0.36 cfs 1,301 cf

Pond UIS1: UIS-1 Peak Elev=92.49' Storage=3,277 cf Inflow=3.52 cfs 12,561 cf
Discarded=0.09 cfs 6,784 cf Primary=1.96 cfs 5,778 cf Outflow=2.05 cfs 12,562 cf

Pond WQU1: WQU-1 Peak Elev=92.50' Inflow=0.78 cfs 2,810 cf
24.0" Round Culvert n=0.012 L=5.1' S=0.0098 '/' Outflow=0.78 cfs 2,805 cf

Pond WQU2: WQU-2 Peak Elev=92.50' Inflow=0.73 cfs 2,570 cf
24.0" Round Culvert n=0.012 L=4.8' S=0.0104 '/' Outflow=0.73 cfs 2,567 cf

Link SP1: Flow Off-Site To Municipal Drainage Inflow=0.19 cfs 610 cf
Primary=0.19 cfs 610 cf

Link SP2: Flow Off-Site To Riverfront Area Inflow=2.00 cfs 6,350 cf
Primary=2.00 cfs 6,350 cf

Total Runoff Area = 33,554 sf Runoff Volume = 13,751 cf Average Runoff Depth = 4.92"
41.49% Pervious = 13,923 sf 58.51% Impervious = 19,631 sf

Summary for Subcatchment P-1A: Subcat P-1A

Runoff = 0.18 cfs @ 12.09 hrs, Volume= 569 cf, Depth= 4.08"
Routed to Link SP1 : Flow Off-Site To Municipal Drainage

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.23"

Area (sf)	CN	Description
751	98	Paved parking, HSG A
923	39	>75% Grass cover, Good, HSG A
1,674	65	Weighted Average
923		55.12% Pervious Area
751		44.88% Impervious Area

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

Summary for Subcatchment P-1B: Subcat P-1B

Runoff = 0.01 cfs @ 12.12 hrs, Volume= 40 cf, Depth= 1.25"
Routed to Link SP1 : Flow Off-Site To Municipal Drainage

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.23"

Area (sf)	CN	Description
385	39	>75% Grass cover, Good, HSG A
385		100.00% Pervious Area

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

Summary for Subcatchment P-2: Subcat P-2

Runoff = 0.06 cfs @ 12.37 hrs, Volume= 572 cf, Depth= 0.55"
Routed to Link SP2 : Flow Off-Site To Riverfront Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.23"

Area (sf)	CN	Description
10,569	30	Woods, Good, HSG A
1,956	39	>75% Grass cover, Good, HSG A
12,526	31	Weighted Average
12,526		100.00% Pervious Area

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

Summary for Subcatchment P-3A: Subcat P-3A

Runoff = 0.36 cfs @ 12.08 hrs, Volume= 1,302 cf, Depth= 7.99"
Routed to Pond TD1 : TD-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.23"

Area (sf)	CN	Description
1,955	98	Paved parking, HSG A
1,955		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-3B: Subcat P-3B

Runoff = 0.42 cfs @ 12.08 hrs, Volume= 1,509 cf, Depth= 7.99"
Routed to Pond CB1 : CB-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.23"

Area (sf)	CN	Description
2,266	98	Paved parking, HSG A
2,266		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-3C: Subcat P-3C

Runoff = 0.57 cfs @ 12.08 hrs, Volume= 1,984 cf, Depth= 7.75"
Routed to Pond CB2 : CB-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.23"

Area (sf)	CN	Description
90	39	>75% Grass cover, Good, HSG A
2,982	98	Paved parking, HSG A
3,072	96	Weighted Average
90		2.92% Pervious Area
2,982		97.08% Impervious Area

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

Summary for Subcatchment P-4: Subcat P-4

Runoff = 2.00 cfs @ 12.08 hrs, Volume= 7,189 cf, Depth= 7.99"
Routed to Pond UIS1 : UIS-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.23"

Area (sf)	CN	Description
10,797	98	Roofs, HSG A
10,797		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-5: Subcat P-5

Runoff = 0.16 cfs @ 12.08 hrs, Volume= 586 cf, Depth= 7.99"
Routed to Pond CB3 : CB-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.23"

Area (sf)	CN	Description
880	98	Paved parking, HSG A
880		100.00% Impervious Area

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

Summary for Pond CB1: CB-1

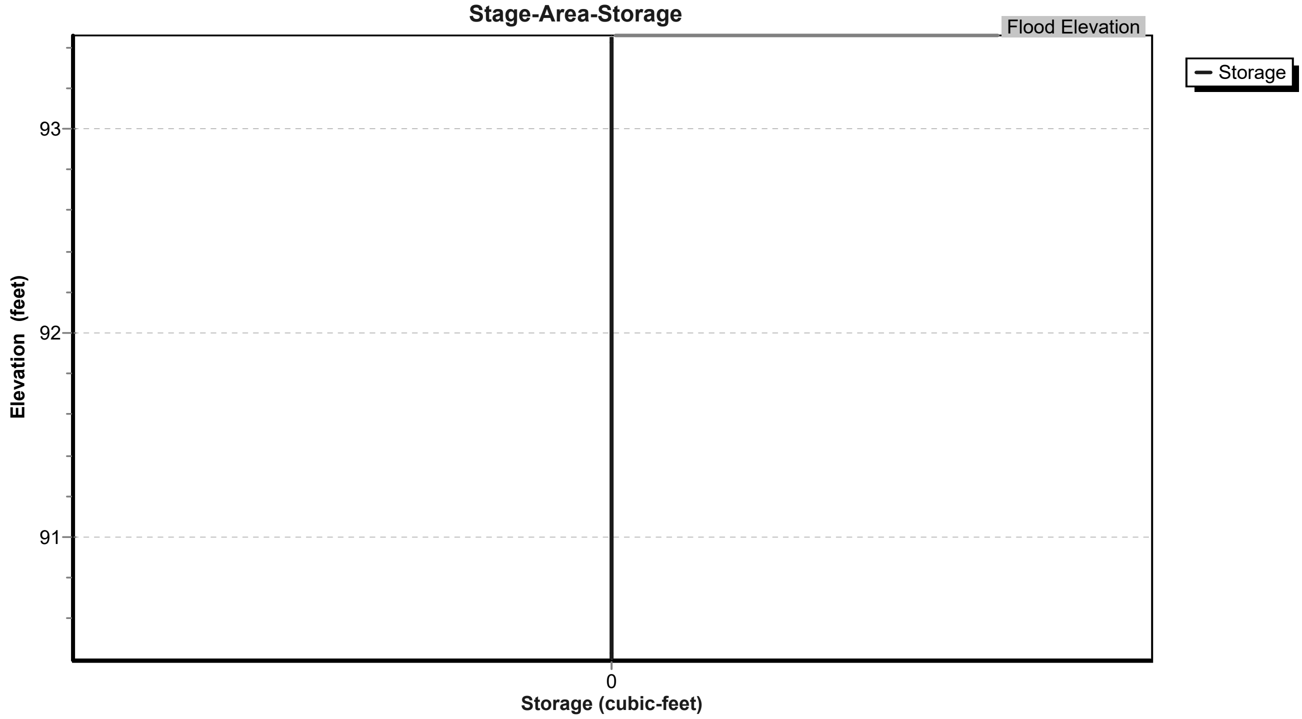
Inflow Area = 2,266 sf,100.00% Impervious, Inflow Depth = 7.99" for 100-Year event
Inflow = 0.42 cfs @ 12.08 hrs, Volume= 1,509 cf
Outflow = 0.42 cfs @ 12.08 hrs, Volume= 1,509 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.42 cfs @ 12.08 hrs, Volume= 1,509 cf
Routed to Pond MH1 : DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 92.51' @ 12.20 hrs
Flood Elev= 93.46'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.40'	**12.0" Round 12" HDPE** L= 44.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.40' / 89.95' S= 0.0100 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=91.96' TW=92.01' (Dynamic Tailwater)
└─**1=12" HDPE** (Controls 0.00 cfs)

Pond CB1: CB-1



Stage-Area-Storage for Pond CB1: CB-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.40	**0**	90.75	0	91.10	0	91.45	0	91.80	0
90.41	0	90.76	0	91.11	0	91.46	0	91.81	0
90.42	0	90.77	0	91.12	0	91.47	0	91.82	0
90.43	0	90.78	0	91.13	0	91.48	0	91.83	0
90.44	0	90.79	0	91.14	0	91.49	0	91.84	0
90.45	0	90.80	0	91.15	0	91.50	0	91.85	0
90.46	0	90.81	0	91.16	0	91.51	0	91.86	0
90.47	0	90.82	0	91.17	0	91.52	0	91.87	0
90.48	0	90.83	0	91.18	0	91.53	0	91.88	0
90.49	0	90.84	0	91.19	0	91.54	0	91.89	0
90.50	0	90.85	0	91.20	0	91.55	0	91.90	0
90.51	0	90.86	0	91.21	0	91.56	0	91.91	0
90.52	0	90.87	0	91.22	0	91.57	0	91.92	0
90.53	0	90.88	0	91.23	0	91.58	0	91.93	0
90.54	0	90.89	0	91.24	0	91.59	0	91.94	0
90.55	0	90.90	0	91.25	0	91.60	0	91.95	0
90.56	0	90.91	0	91.26	0	91.61	0	91.96	0
90.57	0	90.92	0	91.27	0	91.62	0	91.97	0
90.58	0	90.93	0	91.28	0	91.63	0	91.98	0
90.59	0	90.94	0	91.29	0	91.64	0	91.99	0
90.60	0	90.95	0	91.30	0	91.65	0	92.00	0
90.61	0	90.96	0	91.31	0	91.66	0	92.01	0
90.62	0	90.97	0	91.32	0	91.67	0	92.02	0
90.63	0	90.98	0	91.33	0	91.68	0	92.03	0
90.64	0	90.99	0	91.34	0	91.69	0	92.04	0
90.65	0	91.00	0	91.35	0	91.70	0	92.05	0
90.66	0	91.01	0	91.36	0	91.71	0	92.06	0
90.67	0	91.02	0	91.37	0	91.72	0	92.07	0
90.68	0	91.03	0	91.38	0	91.73	0	92.08	0
90.69	0	91.04	0	91.39	0	91.74	0	92.09	0
90.70	0	91.05	0	91.40	0	91.75	0	92.10	0
90.71	0	91.06	0	91.41	0	91.76	0	92.11	0
90.72	0	91.07	0	91.42	0	91.77	0	92.12	0
90.73	0	91.08	0	91.43	0	91.78	0	92.13	0
90.74	0	91.09	0	91.44	0	91.79	0	92.14	0

Stage-Area-Storage for Pond CB1: CB-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
92.15	0	92.50	0	92.85	0	93.20	0
92.16	0	92.51	0	92.86	0	93.21	0
92.17	0	92.52	0	92.87	0	93.22	0
92.18	0	92.53	0	92.88	0	93.23	0
92.19	0	92.54	0	92.89	0	93.24	0
92.20	0	92.55	0	92.90	0	93.25	0
92.21	0	92.56	0	92.91	0	93.26	0
92.22	0	92.57	0	92.92	0	93.27	0
92.23	0	92.58	0	92.93	0	93.28	0
92.24	0	92.59	0	92.94	0	93.29	0
92.25	0	92.60	0	92.95	0	93.30	0
92.26	0	92.61	0	92.96	0	93.31	0
92.27	0	92.62	0	92.97	0	93.32	0
92.28	0	92.63	0	92.98	0	93.33	0
92.29	0	92.64	0	92.99	0	93.34	0
92.30	0	92.65	0	93.00	0	93.35	0
92.31	0	92.66	0	93.01	0	93.36	0
92.32	0	92.67	0	93.02	0	93.37	0
92.33	0	92.68	0	93.03	0	93.38	0
92.34	0	92.69	0	93.04	0	93.39	0
92.35	0	92.70	0	93.05	0	93.40	0
92.36	0	92.71	0	93.06	0	93.41	0
92.37	0	92.72	0	93.07	0	93.42	0
92.38	0	92.73	0	93.08	0	93.43	0
92.39	0	92.74	0	93.09	0	93.44	0
92.40	0	92.75	0	93.10	0	93.45	0
92.41	0	92.76	0	93.11	0	93.46	0
92.42	0	92.77	0	93.12	0		
92.43	0	92.78	0	93.13	0		
92.44	0	92.79	0	93.14	0		
92.45	0	92.80	0	93.15	0		
92.46	0	92.81	0	93.16	0		
92.47	0	92.82	0	93.17	0		
92.48	0	92.83	0	93.18	0		
92.49	0	92.84	0	93.19	0		

Summary for Pond CB2: CB-2

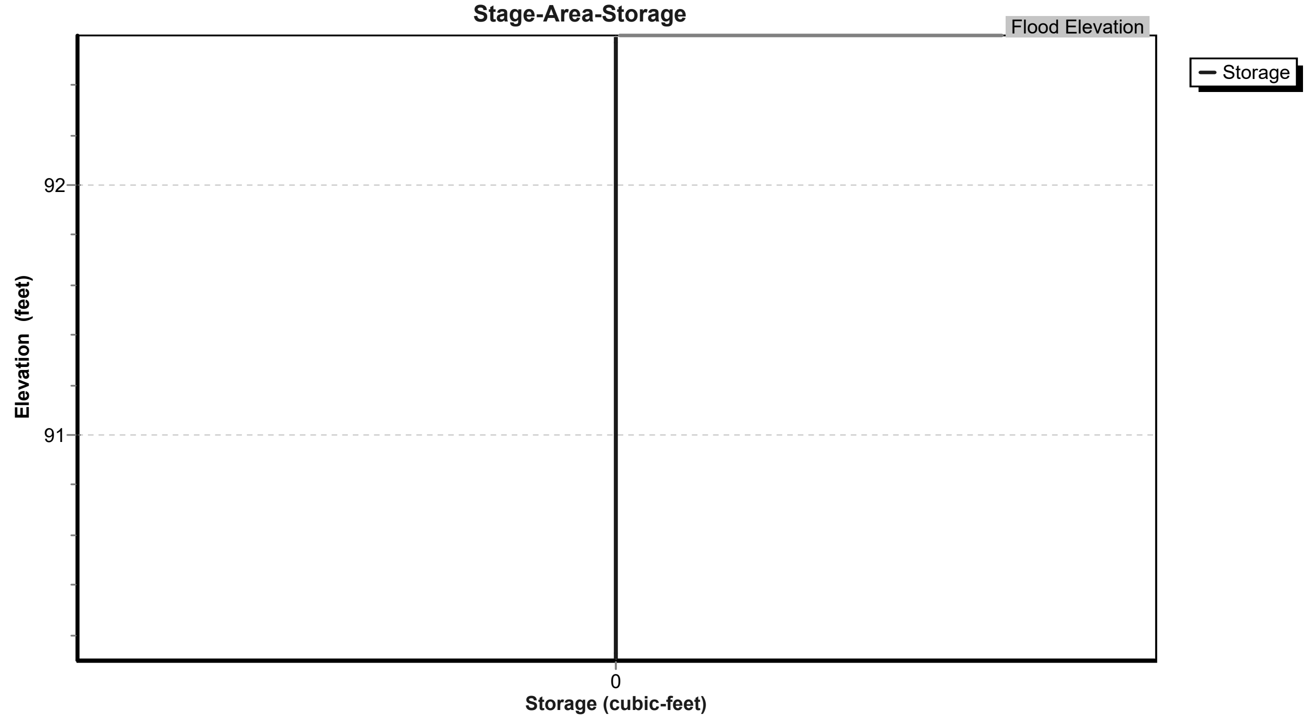
Inflow Area = 3,072 sf, 97.08% Impervious, Inflow Depth = 7.75" for 100-Year event
Inflow = 0.57 cfs @ 12.08 hrs, Volume= 1,984 cf
Outflow = 0.57 cfs @ 12.08 hrs, Volume= 1,984 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.57 cfs @ 12.08 hrs, Volume= 1,984 cf
Routed to Pond WQU2 : WQU-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 92.51' @ 12.19 hrs
Flood Elev= 92.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.10'	**12.0" Round 12" HDPE** L= 52.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.10' / 89.75' S= 0.0067 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.57 cfs @ 12.08 hrs HW=92.03' TW=91.99' (Dynamic Tailwater)
1=12" HDPE (Inlet Controls 0.57 cfs @ 0.72 fps)

Pond CB2: CB-2



Stage-Area-Storage for Pond CB2: CB-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.10	**0**	90.45	0	90.80	0	91.15	0	91.50	0
90.11	0	90.46	0	90.81	0	91.16	0	91.51	0
90.12	0	90.47	0	90.82	0	91.17	0	91.52	0
90.13	0	90.48	0	90.83	0	91.18	0	91.53	0
90.14	0	90.49	0	90.84	0	91.19	0	91.54	0
90.15	0	90.50	0	90.85	0	91.20	0	91.55	0
90.16	0	90.51	0	90.86	0	91.21	0	91.56	0
90.17	0	90.52	0	90.87	0	91.22	0	91.57	0
90.18	0	90.53	0	90.88	0	91.23	0	91.58	0
90.19	0	90.54	0	90.89	0	91.24	0	91.59	0
90.20	0	90.55	0	90.90	0	91.25	0	91.60	0
90.21	0	90.56	0	90.91	0	91.26	0	91.61	0
90.22	0	90.57	0	90.92	0	91.27	0	91.62	0
90.23	0	90.58	0	90.93	0	91.28	0	91.63	0
90.24	0	90.59	0	90.94	0	91.29	0	91.64	0
90.25	0	90.60	0	90.95	0	91.30	0	91.65	0
90.26	0	90.61	0	90.96	0	91.31	0	91.66	0
90.27	0	90.62	0	90.97	0	91.32	0	91.67	0
90.28	0	90.63	0	90.98	0	91.33	0	91.68	0
90.29	0	90.64	0	90.99	0	91.34	0	91.69	0
90.30	0	90.65	0	91.00	0	91.35	0	91.70	0
90.31	0	90.66	0	91.01	0	91.36	0	91.71	0
90.32	0	90.67	0	91.02	0	91.37	0	91.72	0
90.33	0	90.68	0	91.03	0	91.38	0	91.73	0
90.34	0	90.69	0	91.04	0	91.39	0	91.74	0
90.35	0	90.70	0	91.05	0	91.40	0	91.75	0
90.36	0	90.71	0	91.06	0	91.41	0	91.76	0
90.37	0	90.72	0	91.07	0	91.42	0	91.77	0
90.38	0	90.73	0	91.08	0	91.43	0	91.78	0
90.39	0	90.74	0	91.09	0	91.44	0	91.79	0
90.40	0	90.75	0	91.10	0	91.45	0	91.80	0
90.41	0	90.76	0	91.11	0	91.46	0	91.81	0
90.42	0	90.77	0	91.12	0	91.47	0	91.82	0
90.43	0	90.78	0	91.13	0	91.48	0	91.83	0
90.44	0	90.79	0	91.14	0	91.49	0	91.84	0

Stage-Area-Storage for Pond CB2: CB-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.85	0	92.20	0	92.55	0
91.86	0	92.21	0	92.56	0
91.87	0	92.22	0	92.57	0
91.88	0	92.23	0	92.58	0
91.89	0	92.24	0	92.59	0
91.90	0	92.25	0	92.60	0
91.91	0	92.26	0		
91.92	0	92.27	0		
91.93	0	92.28	0		
91.94	0	92.29	0		
91.95	0	92.30	0		
91.96	0	92.31	0		
91.97	0	92.32	0		
91.98	0	92.33	0		
91.99	0	92.34	0		
92.00	0	92.35	0		
92.01	0	92.36	0		
92.02	0	92.37	0		
92.03	0	92.38	0		
92.04	0	92.39	0		
92.05	0	92.40	0		
92.06	0	92.41	0		
92.07	0	92.42	0		
92.08	0	92.43	0		
92.09	0	92.44	0		
92.10	0	92.45	0		
92.11	0	92.46	0		
92.12	0	92.47	0		
92.13	0	92.48	0		
92.14	0	92.49	0		
92.15	0	92.50	0		
92.16	0	92.51	0		
92.17	0	92.52	0		
92.18	0	92.53	0		
92.19	0	92.54	0		

Summary for Pond CB3: CB-3

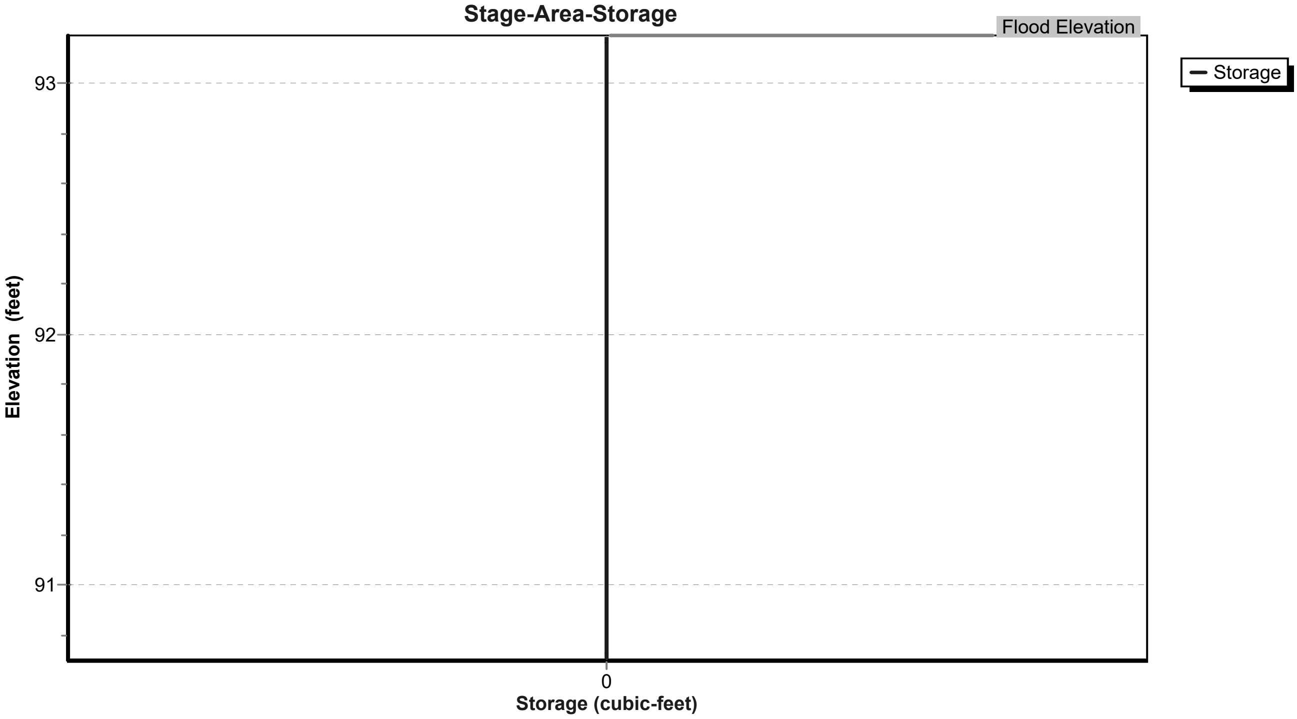
Inflow Area = 880 sf,100.00% Impervious, Inflow Depth = 7.99" for 100-Year event
Inflow = 0.16 cfs @ 12.08 hrs, Volume= 586 cf
Outflow = 0.16 cfs @ 12.08 hrs, Volume= 586 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.16 cfs @ 12.08 hrs, Volume= 586 cf
Routed to Pond WQU2 : WQU-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 92.50' @ 12.19 hrs
Flood Elev= 93.19'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.70'	**12.0" Round 12" HDPE** L= 99.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.70' / 89.75' S= 0.0095 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.16 cfs @ 12.08 hrs HW=91.99' TW=91.99' (Dynamic Tailwater)
└─**1=12" HDPE** (Inlet Controls 0.16 cfs @ 0.21 fps)

Pond CB3: CB-3



Stage-Area-Storage for Pond CB3: CB-3

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.70	**0**	91.05	0	91.40	0	91.75	0	92.10	0
90.71	0	91.06	0	91.41	0	91.76	0	92.11	0
90.72	0	91.07	0	91.42	0	91.77	0	92.12	0
90.73	0	91.08	0	91.43	0	91.78	0	92.13	0
90.74	0	91.09	0	91.44	0	91.79	0	92.14	0
90.75	0	91.10	0	91.45	0	91.80	0	92.15	0
90.76	0	91.11	0	91.46	0	91.81	0	92.16	0
90.77	0	91.12	0	91.47	0	91.82	0	92.17	0
90.78	0	91.13	0	91.48	0	91.83	0	92.18	0
90.79	0	91.14	0	91.49	0	91.84	0	92.19	0
90.80	0	91.15	0	91.50	0	91.85	0	92.20	0
90.81	0	91.16	0	91.51	0	91.86	0	92.21	0
90.82	0	91.17	0	91.52	0	91.87	0	92.22	0
90.83	0	91.18	0	91.53	0	91.88	0	92.23	0
90.84	0	91.19	0	91.54	0	91.89	0	92.24	0
90.85	0	91.20	0	91.55	0	91.90	0	92.25	0
90.86	0	91.21	0	91.56	0	91.91	0	92.26	0
90.87	0	91.22	0	91.57	0	91.92	0	92.27	0
90.88	0	91.23	0	91.58	0	91.93	0	92.28	0
90.89	0	91.24	0	91.59	0	91.94	0	92.29	0
90.90	0	91.25	0	91.60	0	91.95	0	92.30	0
90.91	0	91.26	0	91.61	0	91.96	0	92.31	0
90.92	0	91.27	0	91.62	0	91.97	0	92.32	0
90.93	0	91.28	0	91.63	0	91.98	0	92.33	0
90.94	0	91.29	0	91.64	0	91.99	0	92.34	0
90.95	0	91.30	0	91.65	0	92.00	0	92.35	0
90.96	0	91.31	0	91.66	0	92.01	0	92.36	0
90.97	0	91.32	0	91.67	0	92.02	0	92.37	0
90.98	0	91.33	0	91.68	0	92.03	0	92.38	0
90.99	0	91.34	0	91.69	0	92.04	0	92.39	0
91.00	0	91.35	0	91.70	0	92.05	0	92.40	0
91.01	0	91.36	0	91.71	0	92.06	0	92.41	0
91.02	0	91.37	0	91.72	0	92.07	0	92.42	0
91.03	0	91.38	0	91.73	0	92.08	0	92.43	0
91.04	0	91.39	0	91.74	0	92.09	0	92.44	0

Stage-Area-Storage for Pond CB3: CB-3 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
92.45	0	92.80	0	93.15	0
92.46	0	92.81	0	93.16	0
92.47	0	92.82	0	93.17	0
92.48	0	92.83	0	93.18	0
92.49	0	92.84	0	93.19	0
92.50	0	92.85	0		
92.51	0	92.86	0		
92.52	0	92.87	0		
92.53	0	92.88	0		
92.54	0	92.89	0		
92.55	0	92.90	0		
92.56	0	92.91	0		
92.57	0	92.92	0		
92.58	0	92.93	0		
92.59	0	92.94	0		
92.60	0	92.95	0		
92.61	0	92.96	0		
92.62	0	92.97	0		
92.63	0	92.98	0		
92.64	0	92.99	0		
92.65	0	93.00	0		
92.66	0	93.01	0		
92.67	0	93.02	0		
92.68	0	93.03	0		
92.69	0	93.04	0		
92.70	0	93.05	0		
92.71	0	93.06	0		
92.72	0	93.07	0		
92.73	0	93.08	0		
92.74	0	93.09	0		
92.75	0	93.10	0		
92.76	0	93.11	0		
92.77	0	93.12	0		
92.78	0	93.13	0		
92.79	0	93.14	0		

Summary for Pond MH1: DMH-1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=432)
[80] Warning: Exceeded Pond CB1 by 0.33' @ 17.70 hrs (0.41 cfs 730 cf)

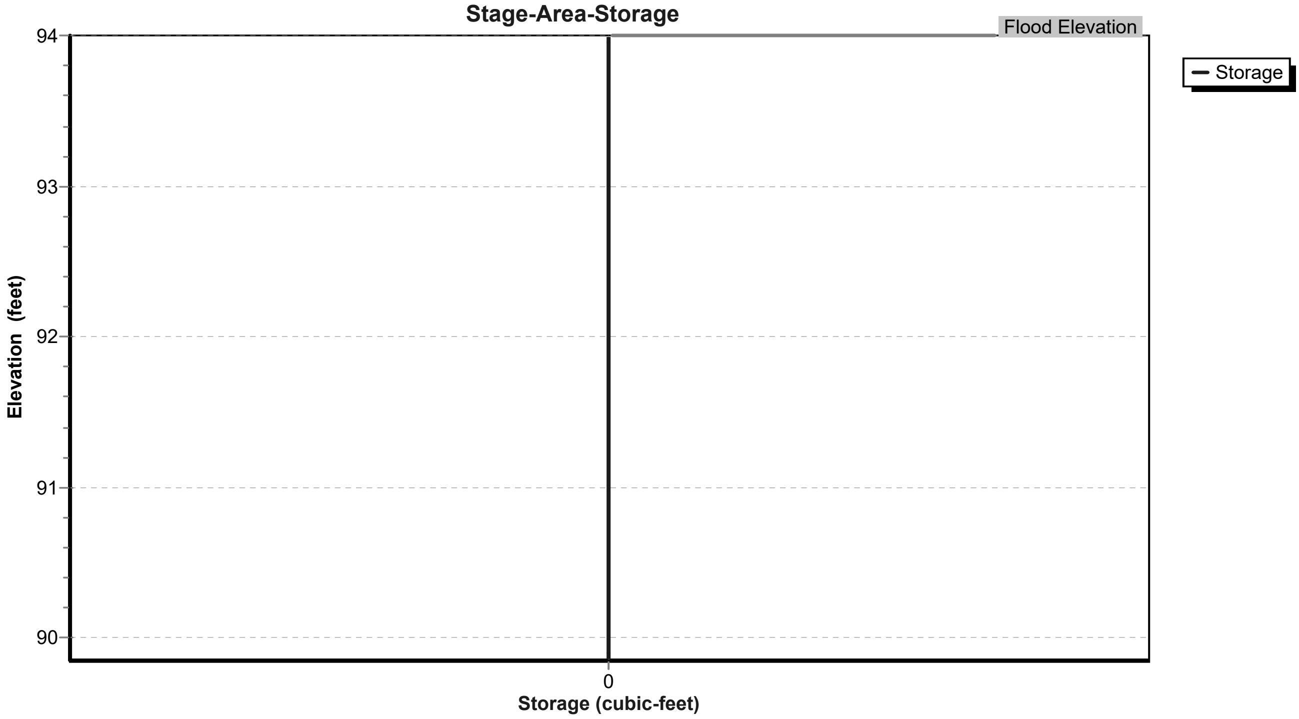
Inflow Area = 2,266 sf,100.00% Impervious, Inflow Depth = 7.99" for 100-Year event
Inflow = 0.42 cfs @ 12.08 hrs, Volume= 1,509 cf
Outflow = 0.42 cfs @ 12.08 hrs, Volume= 1,509 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.42 cfs @ 12.08 hrs, Volume= 1,509 cf
Routed to Pond WQU1 : WQU-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 92.50' @ 12.19 hrs
Flood Elev= 94.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.85'	**12.0" Round 12" HDPE** L= 9.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.85' / 89.75' S= 0.0103 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.42 cfs @ 12.08 hrs HW=92.01' TW=91.99' (Dynamic Tailwater)
1=12" HDPE (Inlet Controls 0.42 cfs @ 0.53 fps)

Pond MH1: DMH-1



Stage-Area-Storage for Pond MH1: DMH-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.85	**0**	90.20	0	90.55	0	90.90	0	91.25	0
89.86	0	90.21	0	90.56	0	90.91	0	91.26	0
89.87	0	90.22	0	90.57	0	90.92	0	91.27	0
89.88	0	90.23	0	90.58	0	90.93	0	91.28	0
89.89	0	90.24	0	90.59	0	90.94	0	91.29	0
89.90	0	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0
90.10	0	90.45	0	90.80	0	91.15	0	91.50	0
90.11	0	90.46	0	90.81	0	91.16	0	91.51	0
90.12	0	90.47	0	90.82	0	91.17	0	91.52	0
90.13	0	90.48	0	90.83	0	91.18	0	91.53	0
90.14	0	90.49	0	90.84	0	91.19	0	91.54	0
90.15	0	90.50	0	90.85	0	91.20	0	91.55	0
90.16	0	90.51	0	90.86	0	91.21	0	91.56	0
90.17	0	90.52	0	90.87	0	91.22	0	91.57	0
90.18	0	90.53	0	90.88	0	91.23	0	91.58	0
90.19	0	90.54	0	90.89	0	91.24	0	91.59	0

Stage-Area-Storage for Pond MH1: DMH-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.60	0	91.95	0	92.30	0	92.65	0	93.00	0
91.61	0	91.96	0	92.31	0	92.66	0	93.01	0
91.62	0	91.97	0	92.32	0	92.67	0	93.02	0
91.63	0	91.98	0	92.33	0	92.68	0	93.03	0
91.64	0	91.99	0	92.34	0	92.69	0	93.04	0
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0
91.85	0	92.20	0	92.55	0	92.90	0	93.25	0
91.86	0	92.21	0	92.56	0	92.91	0	93.26	0
91.87	0	92.22	0	92.57	0	92.92	0	93.27	0
91.88	0	92.23	0	92.58	0	92.93	0	93.28	0
91.89	0	92.24	0	92.59	0	92.94	0	93.29	0
91.90	0	92.25	0	92.60	0	92.95	0	93.30	0
91.91	0	92.26	0	92.61	0	92.96	0	93.31	0
91.92	0	92.27	0	92.62	0	92.97	0	93.32	0
91.93	0	92.28	0	92.63	0	92.98	0	93.33	0
91.94	0	92.29	0	92.64	0	92.99	0	93.34	0

Stage-Area-Storage for Pond MH1: DMH-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
93.35	0	93.70	0
93.36	0	93.71	0
93.37	0	93.72	0
93.38	0	93.73	0
93.39	0	93.74	0
93.40	0	93.75	0
93.41	0	93.76	0
93.42	0	93.77	0
93.43	0	93.78	0
93.44	0	93.79	0
93.45	0	93.80	0
93.46	0	93.81	0
93.47	0	93.82	0
93.48	0	93.83	0
93.49	0	93.84	0
93.50	0	93.85	0
93.51	0	93.86	0
93.52	0	93.87	0
93.53	0	93.88	0
93.54	0	93.89	0
93.55	0	93.90	0
93.56	0	93.91	0
93.57	0	93.92	0
93.58	0	93.93	0
93.59	0	93.94	0
93.60	0	93.95	0
93.61	0	93.96	0
93.62	0	93.97	0
93.63	0	93.98	0
93.64	0	93.99	0
93.65	0	94.00	0
93.66	0		
93.67	0		
93.68	0		
93.69	0		

Summary for Pond MH2: DMH-2

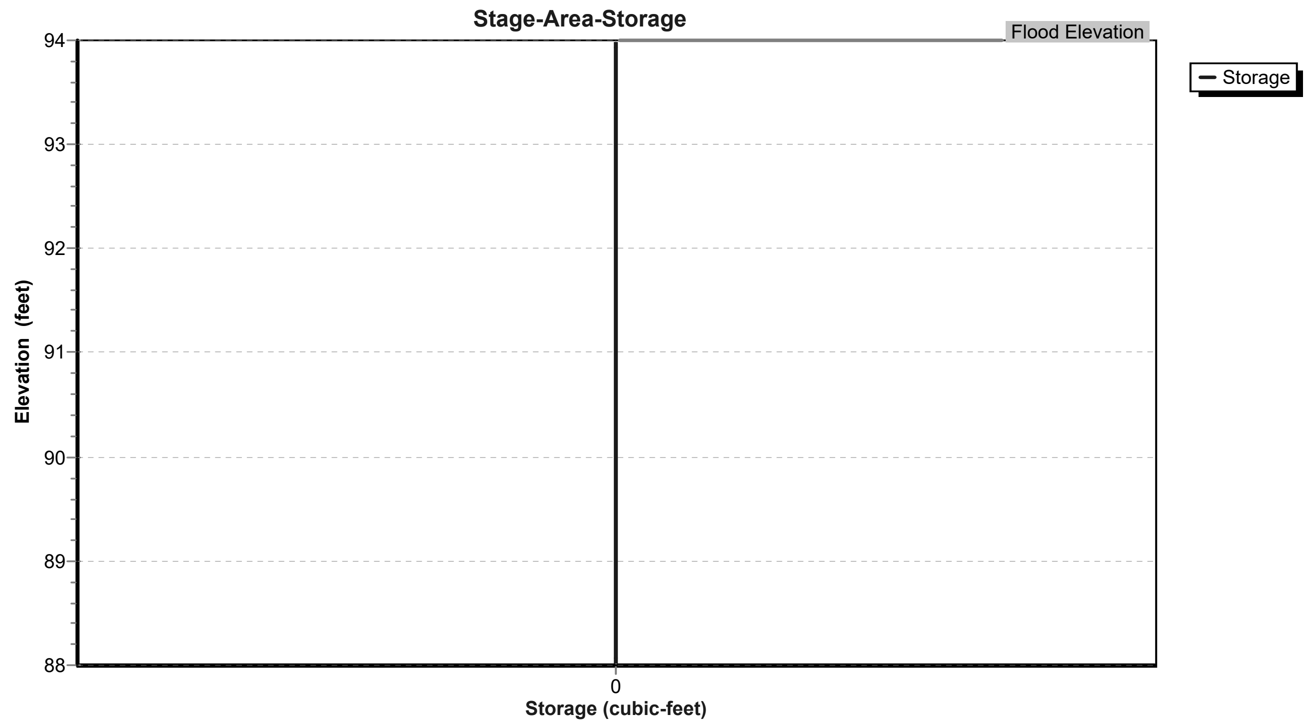
Inflow Area = 18,969 sf, 99.53% Impervious, Inflow Depth = 3.66" for 100-Year event
Inflow = 1.96 cfs @ 12.19 hrs, Volume= 5,778 cf
Outflow = 1.96 cfs @ 12.19 hrs, Volume= 5,778 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.96 cfs @ 12.19 hrs, Volume= 5,778 cf
Routed to Link SP2 : Flow Off-Site To Riverfront Area

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 88.73' @ 12.19 hrs
Flood Elev= 94.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round 12" RCP (Estimated Slope)** L= 72.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 88.00' / 87.28' S= 0.0100 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.96 cfs @ 12.19 hrs HW=88.73' TW=0.00' (Dynamic Tailwater)
└**1=12" RCP (Estimated Slope)** (Barrel Controls 1.96 cfs @ 4.42 fps)

Pond MH2: DMH-2



Stage-Area-Storage for Pond MH2: DMH-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
88.00	**0**	88.35	0	88.70	0	89.05	0	89.40	0
88.01	0	88.36	0	88.71	0	89.06	0	89.41	0
88.02	0	88.37	0	88.72	0	89.07	0	89.42	0
88.03	0	88.38	0	88.73	0	89.08	0	89.43	0
88.04	0	88.39	0	88.74	0	89.09	0	89.44	0
88.05	0	88.40	0	88.75	0	89.10	0	89.45	0
88.06	0	88.41	0	88.76	0	89.11	0	89.46	0
88.07	0	88.42	0	88.77	0	89.12	0	89.47	0
88.08	0	88.43	0	88.78	0	89.13	0	89.48	0
88.09	0	88.44	0	88.79	0	89.14	0	89.49	0
88.10	0	88.45	0	88.80	0	89.15	0	89.50	0
88.11	0	88.46	0	88.81	0	89.16	0	89.51	0
88.12	0	88.47	0	88.82	0	89.17	0	89.52	0
88.13	0	88.48	0	88.83	0	89.18	0	89.53	0
88.14	0	88.49	0	88.84	0	89.19	0	89.54	0
88.15	0	88.50	0	88.85	0	89.20	0	89.55	0
88.16	0	88.51	0	88.86	0	89.21	0	89.56	0
88.17	0	88.52	0	88.87	0	89.22	0	89.57	0
88.18	0	88.53	0	88.88	0	89.23	0	89.58	0
88.19	0	88.54	0	88.89	0	89.24	0	89.59	0
88.20	0	88.55	0	88.90	0	89.25	0	89.60	0
88.21	0	88.56	0	88.91	0	89.26	0	89.61	0
88.22	0	88.57	0	88.92	0	89.27	0	89.62	0
88.23	0	88.58	0	88.93	0	89.28	0	89.63	0
88.24	0	88.59	0	88.94	0	89.29	0	89.64	0
88.25	0	88.60	0	88.95	0	89.30	0	89.65	0
88.26	0	88.61	0	88.96	0	89.31	0	89.66	0
88.27	0	88.62	0	88.97	0	89.32	0	89.67	0
88.28	0	88.63	0	88.98	0	89.33	0	89.68	0
88.29	0	88.64	0	88.99	0	89.34	0	89.69	0
88.30	0	88.65	0	89.00	0	89.35	0	89.70	0
88.31	0	88.66	0	89.01	0	89.36	0	89.71	0
88.32	0	88.67	0	89.02	0	89.37	0	89.72	0
88.33	0	88.68	0	89.03	0	89.38	0	89.73	0
88.34	0	88.69	0	89.04	0	89.39	0	89.74	0

Stage-Area-Storage for Pond MH2: DMH-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.75	0	90.10	0	90.45	0	90.80	0	91.15	0
89.76	0	90.11	0	90.46	0	90.81	0	91.16	0
89.77	0	90.12	0	90.47	0	90.82	0	91.17	0
89.78	0	90.13	0	90.48	0	90.83	0	91.18	0
89.79	0	90.14	0	90.49	0	90.84	0	91.19	0
89.80	0	90.15	0	90.50	0	90.85	0	91.20	0
89.81	0	90.16	0	90.51	0	90.86	0	91.21	0
89.82	0	90.17	0	90.52	0	90.87	0	91.22	0
89.83	0	90.18	0	90.53	0	90.88	0	91.23	0
89.84	0	90.19	0	90.54	0	90.89	0	91.24	0
89.85	0	90.20	0	90.55	0	90.90	0	91.25	0
89.86	0	90.21	0	90.56	0	90.91	0	91.26	0
89.87	0	90.22	0	90.57	0	90.92	0	91.27	0
89.88	0	90.23	0	90.58	0	90.93	0	91.28	0
89.89	0	90.24	0	90.59	0	90.94	0	91.29	0
89.90	0	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0

Stage-Area-Storage for Pond MH2: DMH-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.50	0	91.85	0	92.20	0	92.55	0	92.90	0
91.51	0	91.86	0	92.21	0	92.56	0	92.91	0
91.52	0	91.87	0	92.22	0	92.57	0	92.92	0
91.53	0	91.88	0	92.23	0	92.58	0	92.93	0
91.54	0	91.89	0	92.24	0	92.59	0	92.94	0
91.55	0	91.90	0	92.25	0	92.60	0	92.95	0
91.56	0	91.91	0	92.26	0	92.61	0	92.96	0
91.57	0	91.92	0	92.27	0	92.62	0	92.97	0
91.58	0	91.93	0	92.28	0	92.63	0	92.98	0
91.59	0	91.94	0	92.29	0	92.64	0	92.99	0
91.60	0	91.95	0	92.30	0	92.65	0	93.00	0
91.61	0	91.96	0	92.31	0	92.66	0	93.01	0
91.62	0	91.97	0	92.32	0	92.67	0	93.02	0
91.63	0	91.98	0	92.33	0	92.68	0	93.03	0
91.64	0	91.99	0	92.34	0	92.69	0	93.04	0
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0

Stage-Area-Storage for Pond MH2: DMH-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
93.25	0	93.60	0	93.95	0
93.26	0	93.61	0	93.96	0
93.27	0	93.62	0	93.97	0
93.28	0	93.63	0	93.98	0
93.29	0	93.64	0	93.99	0
93.30	0	93.65	0	94.00	0
93.31	0	93.66	0		
93.32	0	93.67	0		
93.33	0	93.68	0		
93.34	0	93.69	0		
93.35	0	93.70	0		
93.36	0	93.71	0		
93.37	0	93.72	0		
93.38	0	93.73	0		
93.39	0	93.74	0		
93.40	0	93.75	0		
93.41	0	93.76	0		
93.42	0	93.77	0		
93.43	0	93.78	0		
93.44	0	93.79	0		
93.45	0	93.80	0		
93.46	0	93.81	0		
93.47	0	93.82	0		
93.48	0	93.83	0		
93.49	0	93.84	0		
93.50	0	93.85	0		
93.51	0	93.86	0		
93.52	0	93.87	0		
93.53	0	93.88	0		
93.54	0	93.89	0		
93.55	0	93.90	0		
93.56	0	93.91	0		
93.57	0	93.92	0		
93.58	0	93.93	0		
93.59	0	93.94	0		

Summary for Pond TD1: TD-1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=409)

Inflow Area =	1,955 sf,100.00% Impervious,	Inflow Depth = 7.99" for 100-Year event		
Inflow =	0.36 cfs @	12.08 hrs, Volume=	1,302 cf	
Outflow =	0.36 cfs @	12.08 hrs, Volume=	1,301 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.36 cfs @	12.08 hrs, Volume=	1,301 cf	

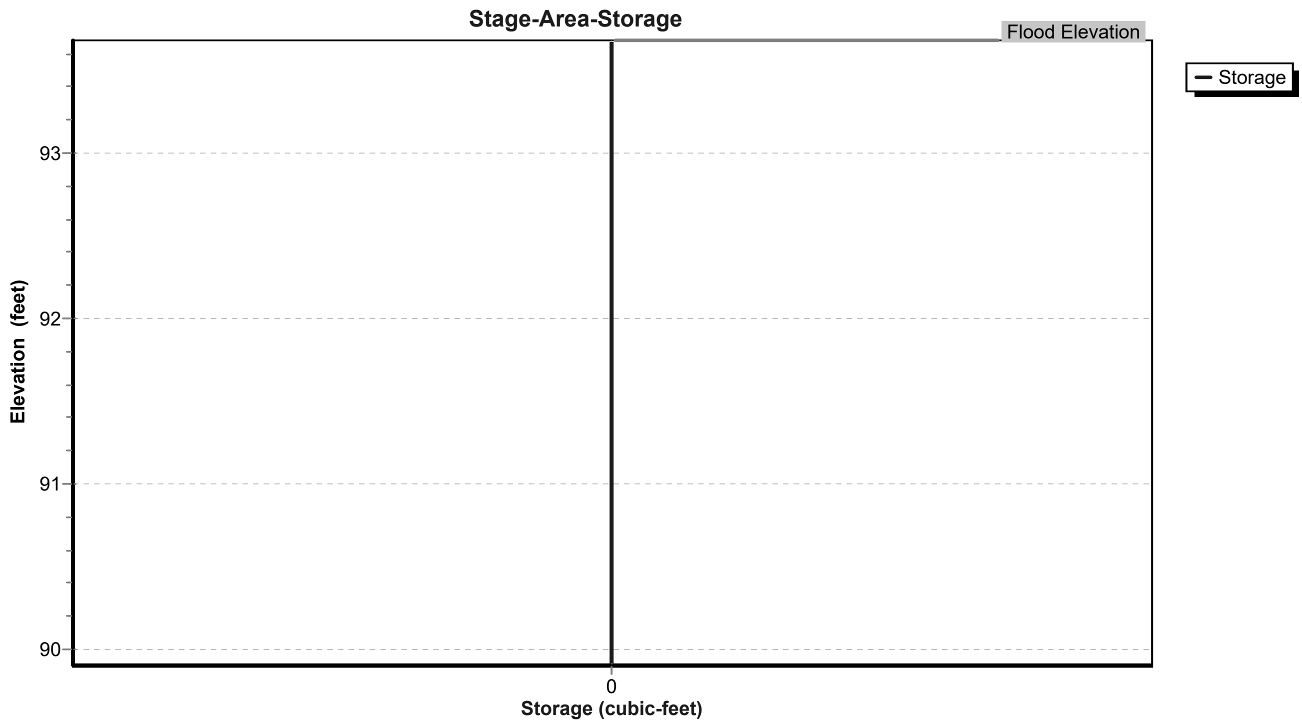
Routed to Pond WQU1 : WQU-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 92.50' @ 12.19 hrs
Flood Elev= 93.68'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.90'	**12.0" Round 12" HDPE** L= 15.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.90' / 89.75' S= 0.0098 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.36 cfs @ 12.08 hrs HW=92.01' TW=91.99' (Dynamic Tailwater)
└─**1=12" HDPE** (Inlet Controls 0.36 cfs @ 0.46 fps)

Pond TD1: TD-1



Stage-Area-Storage for Pond TD1: TD-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.90	**0**	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0
90.10	0	90.45	0	90.80	0	91.15	0	91.50	0
90.11	0	90.46	0	90.81	0	91.16	0	91.51	0
90.12	0	90.47	0	90.82	0	91.17	0	91.52	0
90.13	0	90.48	0	90.83	0	91.18	0	91.53	0
90.14	0	90.49	0	90.84	0	91.19	0	91.54	0
90.15	0	90.50	0	90.85	0	91.20	0	91.55	0
90.16	0	90.51	0	90.86	0	91.21	0	91.56	0
90.17	0	90.52	0	90.87	0	91.22	0	91.57	0
90.18	0	90.53	0	90.88	0	91.23	0	91.58	0
90.19	0	90.54	0	90.89	0	91.24	0	91.59	0
90.20	0	90.55	0	90.90	0	91.25	0	91.60	0
90.21	0	90.56	0	90.91	0	91.26	0	91.61	0
90.22	0	90.57	0	90.92	0	91.27	0	91.62	0
90.23	0	90.58	0	90.93	0	91.28	0	91.63	0
90.24	0	90.59	0	90.94	0	91.29	0	91.64	0

Stage-Area-Storage for Pond TD1: TD-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0
91.85	0	92.20	0	92.55	0	92.90	0	93.25	0
91.86	0	92.21	0	92.56	0	92.91	0	93.26	0
91.87	0	92.22	0	92.57	0	92.92	0	93.27	0
91.88	0	92.23	0	92.58	0	92.93	0	93.28	0
91.89	0	92.24	0	92.59	0	92.94	0	93.29	0
91.90	0	92.25	0	92.60	0	92.95	0	93.30	0
91.91	0	92.26	0	92.61	0	92.96	0	93.31	0
91.92	0	92.27	0	92.62	0	92.97	0	93.32	0
91.93	0	92.28	0	92.63	0	92.98	0	93.33	0
91.94	0	92.29	0	92.64	0	92.99	0	93.34	0
91.95	0	92.30	0	92.65	0	93.00	0	93.35	0
91.96	0	92.31	0	92.66	0	93.01	0	93.36	0
91.97	0	92.32	0	92.67	0	93.02	0	93.37	0
91.98	0	92.33	0	92.68	0	93.03	0	93.38	0
91.99	0	92.34	0	92.69	0	93.04	0	93.39	0

Stage-Area-Storage for Pond TD1: TD-1 (continued)

Elevation (feet)	Storage (cubic-feet)
93.40	0
93.41	0
93.42	0
93.43	0
93.44	0
93.45	0
93.46	0
93.47	0
93.48	0
93.49	0
93.50	0
93.51	0
93.52	0
93.53	0
93.54	0
93.55	0
93.56	0
93.57	0
93.58	0
93.59	0
93.60	0
93.61	0
93.62	0
93.63	0
93.64	0
93.65	0
93.66	0
93.67	0
93.68	0

Summary for Pond UIS1: UIS-1

[58] Hint: Peaked 1.69' above defined flood level
[80] Warning: Exceeded Pond WQU1 by 1.19' @ 14.92 hrs (4.60 cfs 13,909 cf)
[80] Warning: Exceeded Pond WQU2 by 1.18' @ 15.22 hrs (4.51 cfs 18,943 cf)

Inflow Area = 18,969 sf, 99.53% Impervious, Inflow Depth = 7.95" for 100-Year event
Inflow = 3.52 cfs @ 12.08 hrs, Volume= 12,561 cf
Outflow = 2.05 cfs @ 12.19 hrs, Volume= 12,562 cf, Atten= 42%, Lag= 6.5 min
Discarded = 0.09 cfs @ 8.57 hrs, Volume= 6,784 cf
Primary = 1.96 cfs @ 12.19 hrs, Volume= 5,778 cf
Routed to Pond MH2 : DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 92.49' @ 12.19 hrs Surf.Area= 1,550 sf Storage= 3,277 cf
Flood Elev= 90.80' Surf.Area= 1,550 sf Storage= 1,658 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 103.8 min (846.2 - 742.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	89.20'	1,501 cf	**25.25'W x 61.37'L x 3.75'H Field A** 5,811 cf Overall - 2,058 cf Embedded = 3,753 cf x 40.0% Voids
#2A	89.70'	2,058 cf	**ADS_StormTech SC-800 +Cap** x 40 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 40 Chambers in 5 Rows Cap Storage= 3.4 cf x 2 x 5 rows = 34.2 cf
		3,559 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	89.70'	**12.0" Round Culvert** L= 66.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.70' / 88.10' S= 0.0240 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	92.50'	**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
#3	Device 1	90.80'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	89.20'	**2.410 in/hr Exfiltration Loamy Sand over Surface area**

Discarded OutFlow Max=0.09 cfs @ 8.57 hrs HW=89.24' (Free Discharge)
└─**4=Exfiltration Loamy Sand** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=1.96 cfs @ 12.19 hrs HW=92.49' TW=88.73' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.96 cfs of 4.52 cfs potential flow)
  ├─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 1.96 cfs @ 5.62 fps)

Pond UIS1: UIS-1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-800 +Cap (ADS StormTech® SC-800 with cap volume)
Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf
Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap
Cap Storage= 3.4 cf x 2 x 5 rows = 34.2 cf

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

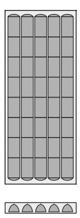
8 Chambers/Row x 7.12' Long +0.88' Cap Length x 2 = 58.70' Row Length +16.0" End Stone x 2 = 61.37' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
6.0" Stone Base + 33.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

40 Chambers x 50.6 cf + 3.4 cf Cap Volume x 2 x 5 Rows = 2,057.9 cf Chamber Storage

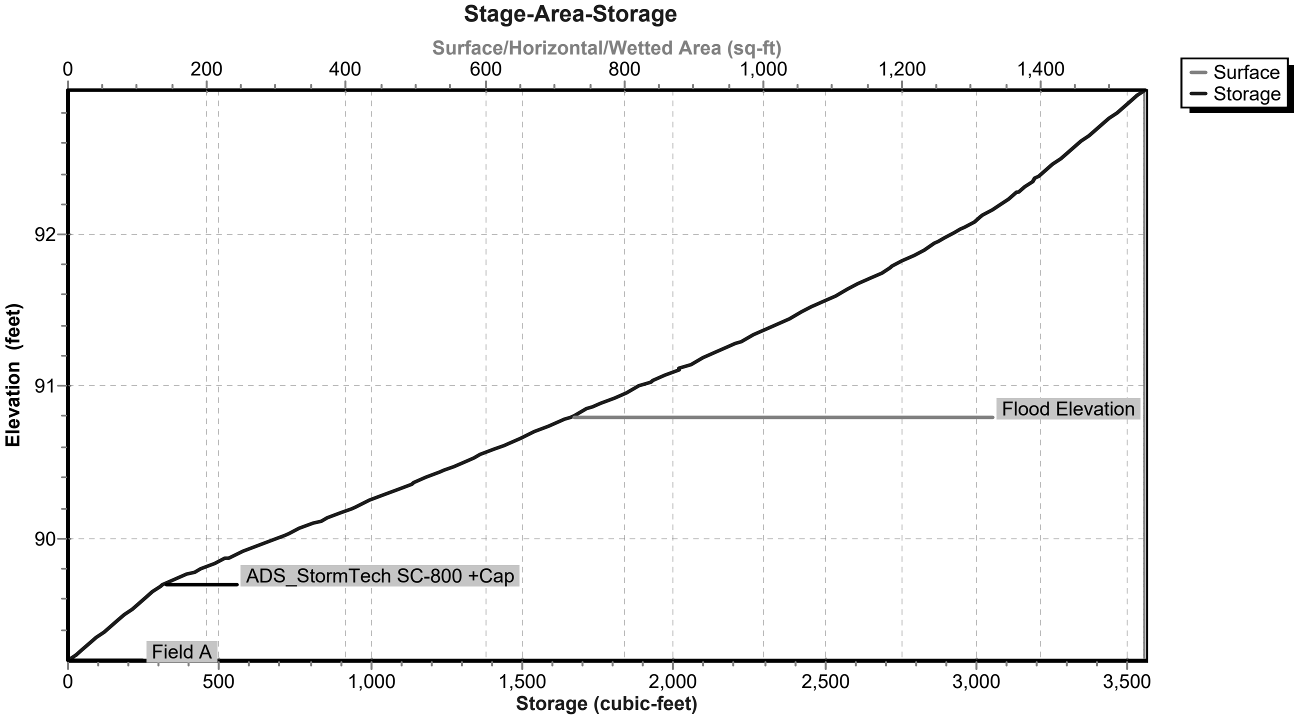
5,810.7 cf Field - 2,057.9 cf Chambers = 3,752.8 cf Stone x 40.0% Voids = 1,501.1 cf Stone Storage

Chamber Storage + Stone Storage = 3,559.0 cf = 0.082 af
Overall Storage Efficiency = 61.2%
Overall System Size = 61.37' x 25.25' x 3.75'

40 Chambers
215.2 cy Field
139.0 cy Stone



Pond UIS1: UIS-1



Stage-Area-Storage for Pond UIS1: UIS-1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
89.20	**1,550**	0	89.55	1,550	217	89.90	1,550	563
89.21	1,550	6	89.56	1,550	223	89.91	1,550	576
89.22	1,550	12	89.57	1,550	229	89.92	1,550	588
89.23	1,550	19	89.58	1,550	236	89.93	1,550	601
89.24	1,550	25	89.59	1,550	242	89.94	1,550	613
89.25	1,550	31	89.60	1,550	248	89.95	1,550	626
89.26	1,550	37	89.61	1,550	254	89.96	1,550	638
89.27	1,550	43	89.62	1,550	260	89.97	1,550	651
89.28	1,550	50	89.63	1,550	267	89.98	1,550	663
89.29	1,550	56	89.64	1,550	273	89.99	1,550	676
89.30	1,550	62	89.65	1,550	279	90.00	1,550	689
89.31	1,550	68	89.66	1,550	285	90.01	1,550	701
89.32	1,550	74	89.67	1,550	291	90.02	1,550	714
89.33	1,550	81	89.68	1,550	298	90.03	1,550	726
89.34	1,550	87	89.69	1,550	304	90.04	1,550	738
89.35	1,550	93	89.70	1,550	310	90.05	1,550	751
89.36	1,550	99	89.71	1,550	323	90.06	1,550	763
89.37	1,550	105	89.72	1,550	335	90.07	1,550	776
89.38	1,550	112	89.73	1,550	348	90.08	1,550	788
89.39	1,550	118	89.74	1,550	361	90.09	1,550	801
89.40	1,550	124	89.75	1,550	373	90.10	1,550	813
89.41	1,550	130	89.76	1,550	386	90.11	1,550	826
89.42	1,550	136	89.77	1,550	399	90.12	1,550	838
89.43	1,550	143	89.78	1,550	411	90.13	1,550	850
89.44	1,550	149	89.79	1,550	424	90.14	1,550	863
89.45	1,550	155	89.80	1,550	437	90.15	1,550	875
89.46	1,550	161	89.81	1,550	449	90.16	1,550	888
89.47	1,550	167	89.82	1,550	462	90.17	1,550	900
89.48	1,550	174	89.83	1,550	475	90.18	1,550	912
89.49	1,550	180	89.84	1,550	487	90.19	1,550	925
89.50	1,550	186	89.85	1,550	500	90.20	1,550	937
89.51	1,550	192	89.86	1,550	513	90.21	1,550	949
89.52	1,550	198	89.87	1,550	525	90.22	1,550	962
89.53	1,550	205	89.88	1,550	538	90.23	1,550	974
89.54	1,550	211	89.89	1,550	550	90.24	1,550	986

Stage-Area-Storage for Pond UIS1: UIS-1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
90.25	1,550	999	90.60	1,550	1,422	90.95	1,550	1,832
90.26	1,550	1,011	90.61	1,550	1,434	90.96	1,550	1,843
90.27	1,550	1,023	90.62	1,550	1,446	90.97	1,550	1,854
90.28	1,550	1,035	90.63	1,550	1,458	90.98	1,550	1,866
90.29	1,550	1,048	90.64	1,550	1,470	90.99	1,550	1,877
90.30	1,550	1,060	90.65	1,550	1,482	91.00	1,550	1,889
90.31	1,550	1,072	90.66	1,550	1,494	91.01	1,550	1,900
90.32	1,550	1,084	90.67	1,550	1,506	91.02	1,550	1,911
90.33	1,550	1,097	90.68	1,550	1,517	91.03	1,550	1,923
90.34	1,550	1,109	90.69	1,550	1,529	91.04	1,550	1,934
90.35	1,550	1,121	90.70	1,550	1,541	91.05	1,550	1,945
90.36	1,550	1,133	90.71	1,550	1,553	91.06	1,550	1,956
90.37	1,550	1,145	90.72	1,550	1,565	91.07	1,550	1,968
90.38	1,550	1,158	90.73	1,550	1,576	91.08	1,550	1,979
90.39	1,550	1,170	90.74	1,550	1,588	91.09	1,550	1,990
90.40	1,550	1,182	90.75	1,550	1,600	91.10	1,550	2,001
90.41	1,550	1,194	90.76	1,550	1,612	91.11	1,550	2,013
90.42	1,550	1,206	90.77	1,550	1,623	91.12	1,550	2,024
90.43	1,550	1,218	90.78	1,550	1,635	91.13	1,550	2,035
90.44	1,550	1,230	90.79	1,550	1,647	91.14	1,550	2,046
90.45	1,550	1,242	90.80	1,550	1,658	91.15	1,550	2,057
90.46	1,550	1,255	90.81	1,550	1,670	91.16	1,550	2,068
90.47	1,550	1,267	90.82	1,550	1,682	91.17	1,550	2,079
90.48	1,550	1,279	90.83	1,550	1,693	91.18	1,550	2,090
90.49	1,550	1,291	90.84	1,550	1,705	91.19	1,550	2,101
90.50	1,550	1,303	90.85	1,550	1,716	91.20	1,550	2,112
90.51	1,550	1,315	90.86	1,550	1,728	91.21	1,550	2,123
90.52	1,550	1,327	90.87	1,550	1,740	91.22	1,550	2,134
90.53	1,550	1,339	90.88	1,550	1,751	91.23	1,550	2,145
90.54	1,550	1,351	90.89	1,550	1,763	91.24	1,550	2,156
90.55	1,550	1,363	90.90	1,550	1,774	91.25	1,550	2,167
90.56	1,550	1,375	90.91	1,550	1,786	91.26	1,550	2,178
90.57	1,550	1,387	90.92	1,550	1,797	91.27	1,550	2,189
90.58	1,550	1,399	90.93	1,550	1,809	91.28	1,550	2,200
90.59	1,550	1,411	90.94	1,550	1,820	91.29	1,550	2,211

Stage-Area-Storage for Pond UIS1: UIS-1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.30	1,550	2,222	91.65	1,550	2,587	92.00	1,550	2,918
91.31	1,550	2,233	91.66	1,550	2,597	92.01	1,550	2,927
91.32	1,550	2,243	91.67	1,550	2,607	92.02	1,550	2,935
91.33	1,550	2,254	91.68	1,550	2,617	92.03	1,550	2,944
91.34	1,550	2,265	91.69	1,550	2,627	92.04	1,550	2,952
91.35	1,550	2,276	91.70	1,550	2,637	92.05	1,550	2,961
91.36	1,550	2,286	91.71	1,550	2,647	92.06	1,550	2,969
91.37	1,550	2,297	91.72	1,550	2,657	92.07	1,550	2,978
91.38	1,550	2,308	91.73	1,550	2,666	92.08	1,550	2,986
91.39	1,550	2,318	91.74	1,550	2,676	92.09	1,550	2,994
91.40	1,550	2,329	91.75	1,550	2,686	92.10	1,550	3,002
91.41	1,550	2,340	91.76	1,550	2,696	92.11	1,550	3,011
91.42	1,550	2,350	91.77	1,550	2,705	92.12	1,550	3,019
91.43	1,550	2,361	91.78	1,550	2,715	92.13	1,550	3,027
91.44	1,550	2,371	91.79	1,550	2,725	92.14	1,550	3,034
91.45	1,550	2,382	91.80	1,550	2,734	92.15	1,550	3,042
91.46	1,550	2,392	91.81	1,550	2,744	92.16	1,550	3,050
91.47	1,550	2,403	91.82	1,550	2,753	92.17	1,550	3,058
91.48	1,550	2,413	91.83	1,550	2,763	92.18	1,550	3,065
91.49	1,550	2,424	91.84	1,550	2,772	92.19	1,550	3,073
91.50	1,550	2,434	91.85	1,550	2,782	92.20	1,550	3,080
91.51	1,550	2,445	91.86	1,550	2,791	92.21	1,550	3,087
91.52	1,550	2,455	91.87	1,550	2,800	92.22	1,550	3,095
91.53	1,550	2,465	91.88	1,550	2,810	92.23	1,550	3,102
91.54	1,550	2,476	91.89	1,550	2,819	92.24	1,550	3,109
91.55	1,550	2,486	91.90	1,550	2,828	92.25	1,550	3,116
91.56	1,550	2,496	91.91	1,550	2,837	92.26	1,550	3,123
91.57	1,550	2,506	91.92	1,550	2,846	92.27	1,550	3,130
91.58	1,550	2,517	91.93	1,550	2,855	92.28	1,550	3,137
91.59	1,550	2,527	91.94	1,550	2,864	92.29	1,550	3,144
91.60	1,550	2,537	91.95	1,550	2,873	92.30	1,550	3,151
91.61	1,550	2,547	91.96	1,550	2,882	92.31	1,550	3,158
91.62	1,550	2,557	91.97	1,550	2,891	92.32	1,550	3,164
91.63	1,550	2,567	91.98	1,550	2,900	92.33	1,550	3,171
91.64	1,550	2,577	91.99	1,550	2,909	92.34	1,550	3,178

Stage-Area-Storage for Pond UIS1: UIS-1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
92.35	1,550	3,185	92.70	1,550	3,404
92.36	1,550	3,191	92.71	1,550	3,410
92.37	1,550	3,198	92.72	1,550	3,416
92.38	1,550	3,204	92.73	1,550	3,423
92.39	1,550	3,211	92.74	1,550	3,429
92.40	1,550	3,217	92.75	1,550	3,435
92.41	1,550	3,224	92.76	1,550	3,441
92.42	1,550	3,230	92.77	1,550	3,447
92.43	1,550	3,237	92.78	1,550	3,454
92.44	1,550	3,243	92.79	1,550	3,460
92.45	1,550	3,249	92.80	1,550	3,466
92.46	1,550	3,255	92.81	1,550	3,472
92.47	1,550	3,261	92.82	1,550	3,478
92.48	1,550	3,268	92.83	1,550	3,485
92.49	1,550	3,274	92.84	1,550	3,491
92.50	1,550	3,280	92.85	1,550	3,497
92.51	1,550	3,286	92.86	1,550	3,503
92.52	1,550	3,292	92.87	1,550	3,509
92.53	1,550	3,299	92.88	1,550	3,516
92.54	1,550	3,305	92.89	1,550	3,522
92.55	1,550	3,311	92.90	1,550	3,528
92.56	1,550	3,317	92.91	1,550	3,534
92.57	1,550	3,323	92.92	1,550	3,540
92.58	1,550	3,330	92.93	1,550	3,547
92.59	1,550	3,336	92.94	1,550	3,553
92.60	1,550	3,342	92.95	1,550	**3,559**
92.61	1,550	3,348			
92.62	1,550	3,354			
92.63	1,550	3,361			
92.64	1,550	3,367			
92.65	1,550	3,373			
92.66	1,550	3,379			
92.67	1,550	3,385			
92.68	1,550	3,392			
92.69	1,550	3,398			

Summary for Pond WQU1: WQU-1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=27)
[80] Warning: Exceeded Pond MH1 by 1.05' @ 15.89 hrs (2.20 cfs 13,566 cf)
[80] Warning: Exceeded Pond TD1 by 0.99' @ 16.03 hrs (2.09 cfs 11,027 cf)

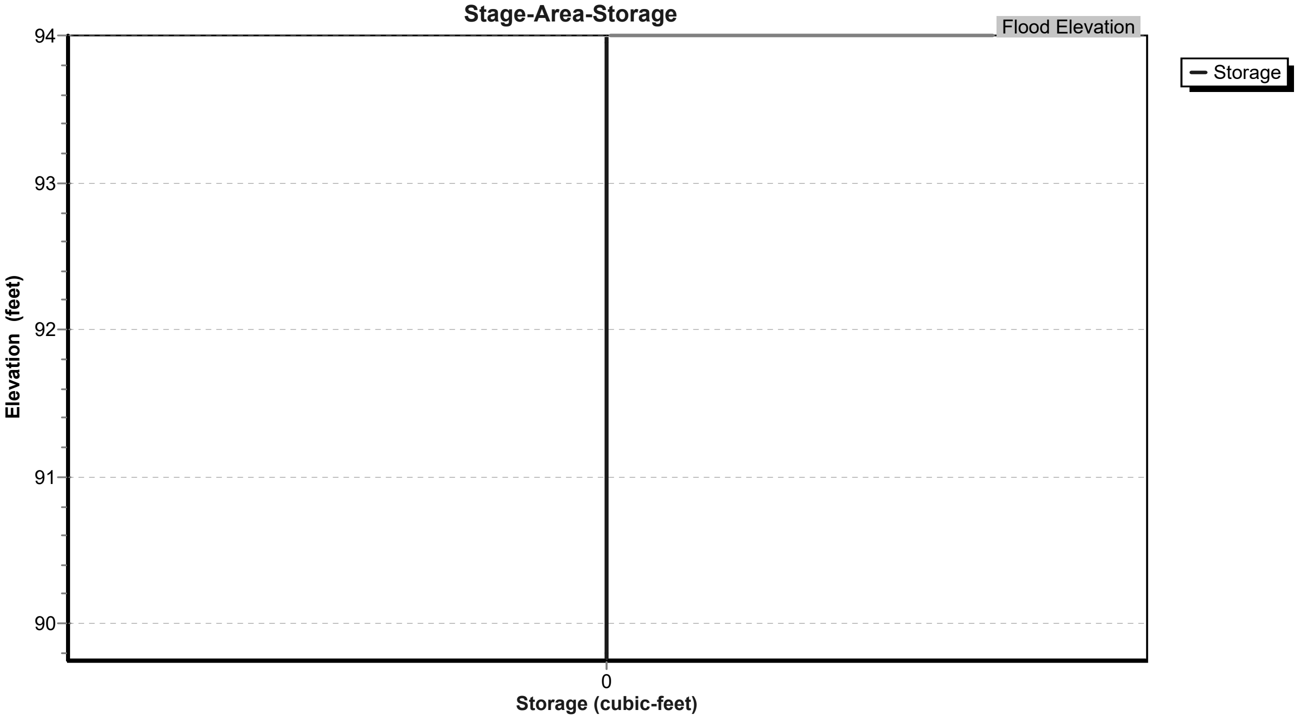
Inflow Area = 4,221 sf,100.00% Impervious, Inflow Depth = 7.99" for 100-Year event
Inflow = 0.78 cfs @ 12.08 hrs, Volume= 2,810 cf
Outflow = 0.78 cfs @ 12.08 hrs, Volume= 2,805 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.78 cfs @ 12.08 hrs, Volume= 2,805 cf
Routed to Pond UIS1 : UIS-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 92.50' @ 12.19 hrs
Flood Elev= 94.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.75'	**24.0" Round 24" HDPE** L= 5.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.75' / 89.70' S= 0.0098 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.78 cfs @ 12.08 hrs HW=91.99' TW=91.99' (Dynamic Tailwater)
└─**1=24" HDPE** (Inlet Controls 0.78 cfs @ 0.25 fps)

Pond WQU1: WQU-1



Stage-Area-Storage for Pond WQU1: WQU-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.75	**0**	90.10	0	90.45	0	90.80	0	91.15	0
89.76	0	90.11	0	90.46	0	90.81	0	91.16	0
89.77	0	90.12	0	90.47	0	90.82	0	91.17	0
89.78	0	90.13	0	90.48	0	90.83	0	91.18	0
89.79	0	90.14	0	90.49	0	90.84	0	91.19	0
89.80	0	90.15	0	90.50	0	90.85	0	91.20	0
89.81	0	90.16	0	90.51	0	90.86	0	91.21	0
89.82	0	90.17	0	90.52	0	90.87	0	91.22	0
89.83	0	90.18	0	90.53	0	90.88	0	91.23	0
89.84	0	90.19	0	90.54	0	90.89	0	91.24	0
89.85	0	90.20	0	90.55	0	90.90	0	91.25	0
89.86	0	90.21	0	90.56	0	90.91	0	91.26	0
89.87	0	90.22	0	90.57	0	90.92	0	91.27	0
89.88	0	90.23	0	90.58	0	90.93	0	91.28	0
89.89	0	90.24	0	90.59	0	90.94	0	91.29	0
89.90	0	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0

Stage-Area-Storage for Pond WQU1: WQU-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.50	0	91.85	0	92.20	0	92.55	0	92.90	0
91.51	0	91.86	0	92.21	0	92.56	0	92.91	0
91.52	0	91.87	0	92.22	0	92.57	0	92.92	0
91.53	0	91.88	0	92.23	0	92.58	0	92.93	0
91.54	0	91.89	0	92.24	0	92.59	0	92.94	0
91.55	0	91.90	0	92.25	0	92.60	0	92.95	0
91.56	0	91.91	0	92.26	0	92.61	0	92.96	0
91.57	0	91.92	0	92.27	0	92.62	0	92.97	0
91.58	0	91.93	0	92.28	0	92.63	0	92.98	0
91.59	0	91.94	0	92.29	0	92.64	0	92.99	0
91.60	0	91.95	0	92.30	0	92.65	0	93.00	0
91.61	0	91.96	0	92.31	0	92.66	0	93.01	0
91.62	0	91.97	0	92.32	0	92.67	0	93.02	0
91.63	0	91.98	0	92.33	0	92.68	0	93.03	0
91.64	0	91.99	0	92.34	0	92.69	0	93.04	0
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0

Stage-Area-Storage for Pond WQU1: WQU-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
93.25	0	93.60	0	93.95	0
93.26	0	93.61	0	93.96	0
93.27	0	93.62	0	93.97	0
93.28	0	93.63	0	93.98	0
93.29	0	93.64	0	93.99	0
93.30	0	93.65	0	94.00	0
93.31	0	93.66	0		
93.32	0	93.67	0		
93.33	0	93.68	0		
93.34	0	93.69	0		
93.35	0	93.70	0		
93.36	0	93.71	0		
93.37	0	93.72	0		
93.38	0	93.73	0		
93.39	0	93.74	0		
93.40	0	93.75	0		
93.41	0	93.76	0		
93.42	0	93.77	0		
93.43	0	93.78	0		
93.44	0	93.79	0		
93.45	0	93.80	0		
93.46	0	93.81	0		
93.47	0	93.82	0		
93.48	0	93.83	0		
93.49	0	93.84	0		
93.50	0	93.85	0		
93.51	0	93.86	0		
93.52	0	93.87	0		
93.53	0	93.88	0		
93.54	0	93.89	0		
93.55	0	93.90	0		
93.56	0	93.91	0		
93.57	0	93.92	0		
93.58	0	93.93	0		
93.59	0	93.94	0		

Summary for Pond WQU2: WQU-2

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=482)

Inflow Area =	3,952 sf,	97.73% Impervious,	Inflow Depth = 7.80"	for 100-Year event	
Inflow =	0.73 cfs @	12.08 hrs, Volume=	2,570 cf		
Outflow =	0.73 cfs @	12.08 hrs, Volume=	2,567 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.73 cfs @	12.08 hrs, Volume=	2,567 cf		

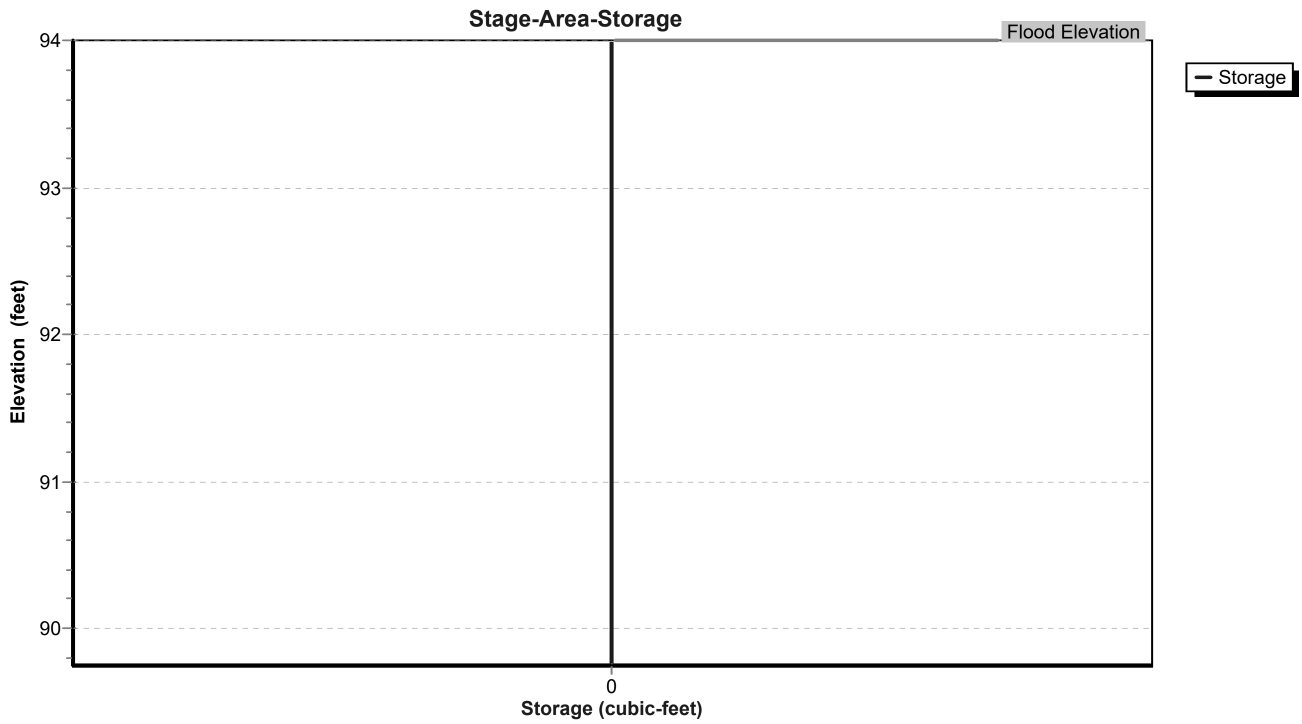
Routed to Pond UIS1 : UIS-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 92.50' @ 12.19 hrs
Flood Elev= 94.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.75'	**24.0" Round 24" HDPE** L= 4.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.75' / 89.70' S= 0.0104 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.73 cfs @ 12.08 hrs HW=91.99' TW=91.99' (Dynamic Tailwater)
└─**1=24" HDPE** (Inlet Controls 0.73 cfs @ 0.23 fps)

Pond WQU2: WQU-2



Stage-Area-Storage for Pond WQU2: WQU-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.75	**0**	90.10	0	90.45	0	90.80	0	91.15	0
89.76	0	90.11	0	90.46	0	90.81	0	91.16	0
89.77	0	90.12	0	90.47	0	90.82	0	91.17	0
89.78	0	90.13	0	90.48	0	90.83	0	91.18	0
89.79	0	90.14	0	90.49	0	90.84	0	91.19	0
89.80	0	90.15	0	90.50	0	90.85	0	91.20	0
89.81	0	90.16	0	90.51	0	90.86	0	91.21	0
89.82	0	90.17	0	90.52	0	90.87	0	91.22	0
89.83	0	90.18	0	90.53	0	90.88	0	91.23	0
89.84	0	90.19	0	90.54	0	90.89	0	91.24	0
89.85	0	90.20	0	90.55	0	90.90	0	91.25	0
89.86	0	90.21	0	90.56	0	90.91	0	91.26	0
89.87	0	90.22	0	90.57	0	90.92	0	91.27	0
89.88	0	90.23	0	90.58	0	90.93	0	91.28	0
89.89	0	90.24	0	90.59	0	90.94	0	91.29	0
89.90	0	90.25	0	90.60	0	90.95	0	91.30	0
89.91	0	90.26	0	90.61	0	90.96	0	91.31	0
89.92	0	90.27	0	90.62	0	90.97	0	91.32	0
89.93	0	90.28	0	90.63	0	90.98	0	91.33	0
89.94	0	90.29	0	90.64	0	90.99	0	91.34	0
89.95	0	90.30	0	90.65	0	91.00	0	91.35	0
89.96	0	90.31	0	90.66	0	91.01	0	91.36	0
89.97	0	90.32	0	90.67	0	91.02	0	91.37	0
89.98	0	90.33	0	90.68	0	91.03	0	91.38	0
89.99	0	90.34	0	90.69	0	91.04	0	91.39	0
90.00	0	90.35	0	90.70	0	91.05	0	91.40	0
90.01	0	90.36	0	90.71	0	91.06	0	91.41	0
90.02	0	90.37	0	90.72	0	91.07	0	91.42	0
90.03	0	90.38	0	90.73	0	91.08	0	91.43	0
90.04	0	90.39	0	90.74	0	91.09	0	91.44	0
90.05	0	90.40	0	90.75	0	91.10	0	91.45	0
90.06	0	90.41	0	90.76	0	91.11	0	91.46	0
90.07	0	90.42	0	90.77	0	91.12	0	91.47	0
90.08	0	90.43	0	90.78	0	91.13	0	91.48	0
90.09	0	90.44	0	90.79	0	91.14	0	91.49	0

Stage-Area-Storage for Pond WQU2: WQU-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.50	0	91.85	0	92.20	0	92.55	0	92.90	0
91.51	0	91.86	0	92.21	0	92.56	0	92.91	0
91.52	0	91.87	0	92.22	0	92.57	0	92.92	0
91.53	0	91.88	0	92.23	0	92.58	0	92.93	0
91.54	0	91.89	0	92.24	0	92.59	0	92.94	0
91.55	0	91.90	0	92.25	0	92.60	0	92.95	0
91.56	0	91.91	0	92.26	0	92.61	0	92.96	0
91.57	0	91.92	0	92.27	0	92.62	0	92.97	0
91.58	0	91.93	0	92.28	0	92.63	0	92.98	0
91.59	0	91.94	0	92.29	0	92.64	0	92.99	0
91.60	0	91.95	0	92.30	0	92.65	0	93.00	0
91.61	0	91.96	0	92.31	0	92.66	0	93.01	0
91.62	0	91.97	0	92.32	0	92.67	0	93.02	0
91.63	0	91.98	0	92.33	0	92.68	0	93.03	0
91.64	0	91.99	0	92.34	0	92.69	0	93.04	0
91.65	0	92.00	0	92.35	0	92.70	0	93.05	0
91.66	0	92.01	0	92.36	0	92.71	0	93.06	0
91.67	0	92.02	0	92.37	0	92.72	0	93.07	0
91.68	0	92.03	0	92.38	0	92.73	0	93.08	0
91.69	0	92.04	0	92.39	0	92.74	0	93.09	0
91.70	0	92.05	0	92.40	0	92.75	0	93.10	0
91.71	0	92.06	0	92.41	0	92.76	0	93.11	0
91.72	0	92.07	0	92.42	0	92.77	0	93.12	0
91.73	0	92.08	0	92.43	0	92.78	0	93.13	0
91.74	0	92.09	0	92.44	0	92.79	0	93.14	0
91.75	0	92.10	0	92.45	0	92.80	0	93.15	0
91.76	0	92.11	0	92.46	0	92.81	0	93.16	0
91.77	0	92.12	0	92.47	0	92.82	0	93.17	0
91.78	0	92.13	0	92.48	0	92.83	0	93.18	0
91.79	0	92.14	0	92.49	0	92.84	0	93.19	0
91.80	0	92.15	0	92.50	0	92.85	0	93.20	0
91.81	0	92.16	0	92.51	0	92.86	0	93.21	0
91.82	0	92.17	0	92.52	0	92.87	0	93.22	0
91.83	0	92.18	0	92.53	0	92.88	0	93.23	0
91.84	0	92.19	0	92.54	0	92.89	0	93.24	0

Stage-Area-Storage for Pond WQU2: WQU-2 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
93.25	0	93.60	0	93.95	0
93.26	0	93.61	0	93.96	0
93.27	0	93.62	0	93.97	0
93.28	0	93.63	0	93.98	0
93.29	0	93.64	0	93.99	0
93.30	0	93.65	0	94.00	0
93.31	0	93.66	0		
93.32	0	93.67	0		
93.33	0	93.68	0		
93.34	0	93.69	0		
93.35	0	93.70	0		
93.36	0	93.71	0		
93.37	0	93.72	0		
93.38	0	93.73	0		
93.39	0	93.74	0		
93.40	0	93.75	0		
93.41	0	93.76	0		
93.42	0	93.77	0		
93.43	0	93.78	0		
93.44	0	93.79	0		
93.45	0	93.80	0		
93.46	0	93.81	0		
93.47	0	93.82	0		
93.48	0	93.83	0		
93.49	0	93.84	0		
93.50	0	93.85	0		
93.51	0	93.86	0		
93.52	0	93.87	0		
93.53	0	93.88	0		
93.54	0	93.89	0		
93.55	0	93.90	0		
93.56	0	93.91	0		
93.57	0	93.92	0		
93.58	0	93.93	0		
93.59	0	93.94	0		

Summary for Link SP1: Flow Off-Site To Municipal Drainage

Inflow Area = 2,059 sf, 36.49% Impervious, Inflow Depth = 3.55" for 100-Year event
Inflow = 0.19 cfs @ 12.09 hrs, Volume= 610 cf
Primary = 0.19 cfs @ 12.09 hrs, Volume= 610 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Link SP2: Flow Off-Site To Riverfront Area

Inflow Area = 31,495 sf, 59.94% Impervious, Inflow Depth = 2.42" for 100-Year event
Inflow = 2.00 cfs @ 12.20 hrs, Volume= 6,350 cf
Primary = 2.00 cfs @ 12.20 hrs, Volume= 6,350 cf, Atten= 0%, Lag= 0.0 min

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

Events for Subcatchment P-1A: Subcat P-1A

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.31	0.02	91	0.65
10-Year	5.21	0.08	250	1.79
25-Year	6.40	0.12	369	2.65
100-Year	**8.23**	**0.18**	**569**	**4.08**

Events for Subcatchment P-1B: Subcat P-1B

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.31	0.00	0	0.00
10-Year	5.21	0.00	8	0.24
25-Year	6.40	0.00	18	0.57
100-Year	**8.23**	**0.01**	**40**	**1.25**

Events for Subcatchment P-2: Subcat P-2

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.31	0.00	0	0.00
10-Year	5.21	0.00	26	0.02
25-Year	6.40	0.01	164	0.16
100-Year	**8.23**	**0.06**	**572**	**0.55**

Events for Subcatchment P-3A: Subcat P-3A

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.31	0.14	501	3.08
10-Year	5.21	0.23	810	4.97
25-Year	6.40	0.28	1,004	6.16
100-Year	**8.23**	**0.36**	**1,302**	**7.99**

Events for Subcatchment P-3B: Subcat P-3B

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.31	0.17	581	3.08
10-Year	5.21	0.27	939	4.97
25-Year	6.40	0.33	1,163	6.16
100-Year	**8.23**	**0.42**	**1,509**	**7.99**

Events for Subcatchment P-3C: Subcat P-3C

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.31	0.22	731	2.86
10-Year	5.21	0.35	1,214	4.74
25-Year	6.40	0.44	1,517	5.93
100-Year	**8.23**	**0.57**	**1,984**	**7.75**

Events for Subcatchment P-4: Subcat P-4

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.31	0.80	2,769	3.08
10-Year	5.21	1.26	4,474	4.97
25-Year	6.40	1.56	5,544	6.16
100-Year	**8.23**	**2.00**	**7,189**	**7.99**

Events for Subcatchment P-5: Subcat P-5

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.31	0.06	226	3.08
10-Year	5.21	0.10	365	4.97
25-Year	6.40	0.13	452	6.16
100-Year	**8.23**	**0.16**	**586**	**7.99**

Events for Pond CB1: CB-1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	0.17	0.17	90.94	**0**
10-Year	0.27	0.27	91.42	0
25-Year	0.33	0.33	91.81	0
100-Year	**0.42**	**0.42**	**92.51**	0

Events for Pond CB2: CB-2

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	0.22	0.22	90.94	**0**
10-Year	0.35	0.35	91.42	0
25-Year	0.44	0.44	91.81	0
100-Year	**0.57**	**0.57**	**92.51**	0

Events for Pond CB3: CB-3

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	0.06	0.06	90.95	**0**
10-Year	0.10	0.10	91.42	0
25-Year	0.13	0.13	91.80	0
100-Year	**0.16**	**0.16**	**92.50**	0

Events for Pond MH1: DMH-1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	0.17	0.17	90.94	**0**
10-Year	0.27	0.27	91.42	0
25-Year	0.33	0.33	91.81	0
100-Year	**0.42**	**0.42**	**92.50**	0

Events for Pond MH2: DMH-2

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	0.07	0.07	88.13	**0**
10-Year	0.91	0.91	88.47	0
25-Year	1.38	1.38	88.59	0
100-Year	**1.96**	**1.96**	**88.73**	0

Events for Pond TD1: TD-1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	0.14	0.14	90.94	**0**
10-Year	0.23	0.23	91.42	0
25-Year	0.28	0.28	91.81	0
100-Year	**0.36**	**0.36**	**92.50**	0

Events for Pond UIS1: UIS-1

Event	Inflow (cfs)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	1.39	0.16	**0.09**	0.07	90.94	1,825
10-Year	2.22	0.99	0.09	0.91	91.42	2,349
25-Year	2.73	1.46	0.09	1.38	91.80	2,737
100-Year	**3.52**	**2.05**	0.09	**1.96**	**92.49**	**3,277**

Events for Pond WQU1: WQU-1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	0.31	0.31	90.94	**0**
10-Year	0.49	0.49	91.42	0
25-Year	0.61	0.61	91.80	0
100-Year	**0.78**	**0.78**	**92.50**	0

Events for Pond WQU2: WQU-2

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	0.28	0.28	90.94	**0**
10-Year	0.46	0.46	91.42	0
25-Year	0.56	0.56	91.80	0
100-Year	**0.73**	**0.73**	**92.50**	0

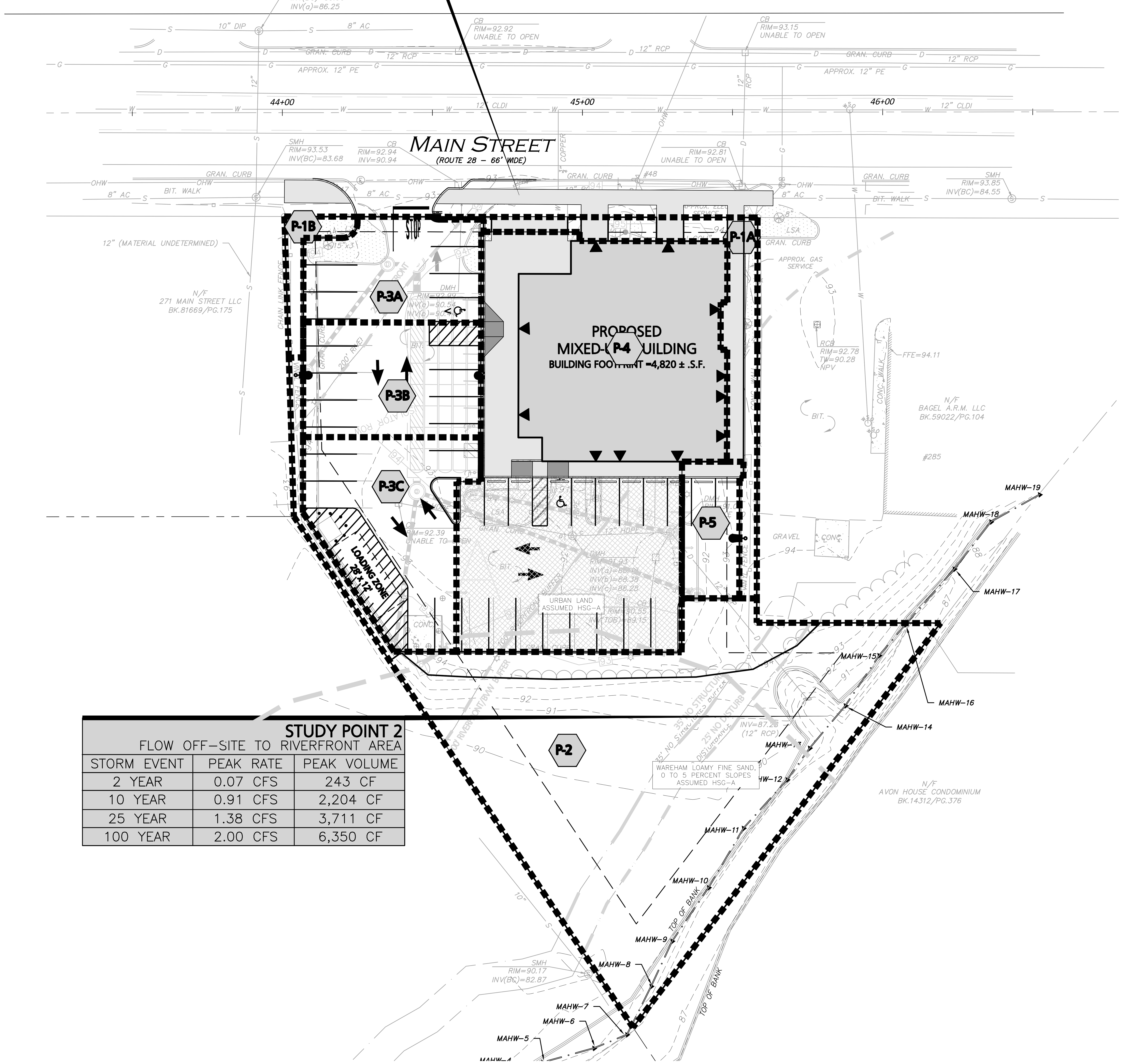
Events for Link SP1: Flow Off-Site To Municipal Drainage

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year	0.02	0.02	**0.00**
10-Year	0.08	0.08	0.00
25-Year	0.12	0.12	0.00
100-Year	**0.19**	**0.19**	0.00

Events for Link SP2: Flow Off-Site To Riverfront Area

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year	0.07	0.07	**0.00**
10-Year	0.91	0.91	0.00
25-Year	1.38	1.38	0.00
100-Year	**2.00**	**2.00**	0.00

STUDY POINT 1		
FLOW OFF–SITE TO MUNICIPAL DRAINAGE		
STORM EVENT	PEAK RATE	PEAK VOLUME
2 YEAR	0.02 CFS	91 CF
10 YEAR	0.08 CFS	258 CF
25 YEAR	0.12 CFS	387 CF
100 YEAR	0.19 CFS	610 CF



STUDY POINT 2		
FLOW OFF–SITE TO RIVERFRONT AREA		
STORM EVENT	PEAK RATE	PEAK VOLUME
2 YEAR	0.07 CFS	243 CF
10 YEAR	0.91 CFS	2,204 CF
25 YEAR	1.38 CFS	3,711 CF
100 YEAR	2.00 CFS	6,350 CF

LEGEND

- PROPOSED WATERSHED
- SCS SOILS BOUNDARY
- Tc FLOW PATH
- SUBCATCHMENT LABEL
- SUBCATCHMENT BOUNDARY
- FLOW DIRECTION

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

DIG SAFE

BEFORE YOU DIG
CALL 811 OR
1-888-DIG-SAFE
1-888-344-7233

N:\PROJECTS\2398-08\CIVIL\DRAWINGS\CURRENT\C-2398-08_WATERSHED-PROPOSED.DWG

PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION

APPLICANT\OWNER:

281 READING, LLC
281 MAIN STREET
READING, MA 01867

PROJECT:

MIXED-USE RETAIL AND RESIDENTIAL DEVELOPMENT
281 MAIN STREET
READING, MA

PROJECT NO.	2389-08	DATE:	2025-11-24
SCALE:	1" = 20'	DWG. NAME:	C-2389-08
DESIGNED BY: DMR/MB/BDP		CHECKED BY:	CMQ

PREPARED BY:

ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
100 COMMERCE WAY, SUITE 5
WOBURN MA 01801
TEL: (781) 935-6889
FAX: (781) 935-2896

WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

DRAWING TITLE:	SHEET No.
PROPOSED WATERSHED PLAN	PWS

SECTION 6.0 -
APPENDIX

NOAA Atlas 14, Volume 10, Version 3
Location name: Reading, Massachusetts, USA*
Latitude: 42.5154°, Longitude: -71.1033°
Elevation: 95 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.309 (0.238-0.390)	0.373 (0.287-0.471)	0.478 (0.367-0.605)	0.565 (0.431-0.720)	0.685 (0.508-0.915)	0.774 (0.564-1.06)	0.869 (0.618-1.24)	0.980 (0.658-1.42)	1.14 (0.741-1.72)	1.28 (0.813-1.97)
10-min	0.438 (0.338-0.552)	0.529 (0.407-0.667)	0.677 (0.520-0.857)	0.800 (0.611-1.02)	0.970 (0.720-1.30)	1.10 (0.799-1.50)	1.23 (0.875-1.75)	1.39 (0.932-2.01)	1.62 (1.05-2.44)	1.82 (1.15-2.79)
15-min	0.516 (0.397-0.650)	0.622 (0.479-0.785)	0.797 (0.612-1.01)	0.942 (0.719-1.20)	1.14 (0.847-1.52)	1.29 (0.940-1.76)	1.45 (1.03-2.06)	1.63 (1.10-2.37)	1.91 (1.24-2.87)	2.14 (1.35-3.28)
30-min	0.709 (0.546-0.893)	0.856 (0.659-1.08)	1.10 (0.842-1.39)	1.30 (0.990-1.65)	1.57 (1.17-2.10)	1.78 (1.30-2.43)	2.00 (1.42-2.84)	2.25 (1.51-3.27)	2.64 (1.71-3.96)	2.96 (1.87-4.54)
60-min	0.902 (0.695-1.14)	1.09 (0.839-1.38)	1.40 (1.07-1.77)	1.65 (1.26-2.10)	2.00 (1.49-2.68)	2.26 (1.65-3.10)	2.54 (1.81-3.63)	2.87 (1.93-4.17)	3.36 (2.18-5.06)	3.78 (2.39-5.79)
2-hr	1.17 (0.906-1.46)	1.42 (1.10-1.78)	1.84 (1.42-2.31)	2.18 (1.67-2.75)	2.65 (1.98-3.53)	3.00 (2.20-4.09)	3.38 (2.43-4.82)	3.84 (2.59-5.54)	4.57 (2.96-6.82)	5.20 (3.30-7.91)
3-hr	1.36 (1.06-1.69)	1.66 (1.29-2.07)	2.14 (1.66-2.68)	2.55 (1.96-3.21)	3.10 (2.33-4.12)	3.51 (2.60-4.78)	3.96 (2.86-5.64)	4.52 (3.05-6.49)	5.40 (3.51-8.02)	6.17 (3.92-9.34)
6-hr	1.75 (1.38-2.17)	2.14 (1.68-2.66)	2.78 (2.17-3.45)	3.30 (2.56-4.13)	4.03 (3.04-5.31)	4.56 (3.38-6.16)	5.14 (3.74-7.27)	5.87 (3.98-8.36)	7.02 (4.58-10.3)	8.02 (5.11-12.0)
12-hr	2.23 (1.76-2.74)	2.73 (2.15-3.36)	3.54 (2.78-4.37)	4.21 (3.29-5.23)	5.13 (3.90-6.72)	5.82 (4.34-7.80)	6.56 (4.78-9.18)	7.48 (5.09-10.6)	8.90 (5.83-13.0)	10.1 (6.48-15.1)
24-hr	2.67 (2.12-3.27)	3.31 (2.63-4.05)	4.35 (3.44-5.34)	5.21 (4.10-6.44)	6.40 (4.90-8.33)	7.28 (5.46-9.70)	8.23 (6.04-11.5)	9.44 (6.44-13.2)	11.3 (7.43-16.4)	13.0 (8.31-19.1)
2-day	3.03 (2.43-3.68)	3.83 (3.06-4.65)	5.14 (4.09-6.26)	6.22 (4.93-7.63)	7.71 (5.94-9.99)	8.80 (6.67-11.7)	10.0 (7.43-14.0)	11.6 (7.93-16.1)	14.1 (9.29-20.3)	16.4 (10.5-24.0)
3-day	3.32 (2.67-4.01)	4.18 (3.35-5.06)	5.58 (4.47-6.78)	6.75 (5.37-8.24)	8.36 (6.47-10.8)	9.52 (7.25-12.6)	10.8 (8.07-15.1)	12.5 (8.61-17.4)	15.3 (10.1-21.9)	17.8 (11.5-25.9)
4-day	3.59 (2.90-4.33)	4.48 (3.61-5.40)	5.93 (4.76-7.18)	7.13 (5.69-8.68)	8.79 (6.82-11.3)	9.99 (7.62-13.2)	11.3 (8.47-15.7)	13.1 (9.01-18.1)	16.0 (10.6-22.8)	18.5 (12.0-26.9)
7-day	4.36 (3.54-5.23)	5.28 (4.28-6.34)	6.79 (5.48-8.18)	8.04 (6.45-9.73)	9.76 (7.60-12.5)	11.0 (8.42-14.4)	12.4 (9.28-17.0)	14.2 (9.82-19.5)	17.1 (11.4-24.3)	19.7 (12.8-28.5)
10-day	5.06 (4.12-6.05)	6.01 (4.89-7.19)	7.56 (6.12-9.07)	8.84 (7.12-10.7)	10.6 (8.29-13.5)	11.9 (9.12-15.5)	13.3 (9.96-18.1)	15.2 (10.5-20.7)	18.0 (12.0-25.5)	20.6 (13.3-29.6)
20-day	7.04 (5.77-8.35)	8.08 (6.62-9.60)	9.79 (7.98-11.7)	11.2 (9.08-13.4)	13.2 (10.3-16.4)	14.6 (11.2-18.6)	16.2 (12.0-21.4)	17.9 (12.5-24.2)	20.5 (13.7-28.7)	22.7 (14.8-32.4)
30-day	8.69 (7.15-10.3)	9.80 (8.06-11.6)	11.6 (9.52-13.8)	13.1 (10.7-15.7)	15.2 (11.9-18.9)	16.8 (12.9-21.2)	18.4 (13.6-24.1)	20.2 (14.1-27.1)	22.6 (15.1-31.4)	24.5 (15.9-34.7)
45-day	10.8 (8.91-12.7)	12.0 (9.89-14.1)	13.9 (11.5-16.5)	15.5 (12.7-18.5)	17.8 (14.0-21.8)	19.5 (14.9-24.4)	21.2 (15.6-27.3)	22.9 (16.1-30.6)	25.1 (16.9-34.7)	26.7 (17.4-37.7)
60-day	12.6 (10.4-14.8)	13.8 (11.4-16.2)	15.9 (13.1-18.7)	17.6 (14.4-20.8)	19.9 (15.7-24.3)	21.7 (16.6-27.0)	23.5 (17.2-30.0)	25.1 (17.7-33.4)	27.2 (18.3-37.4)	28.6 (18.7-40.3)

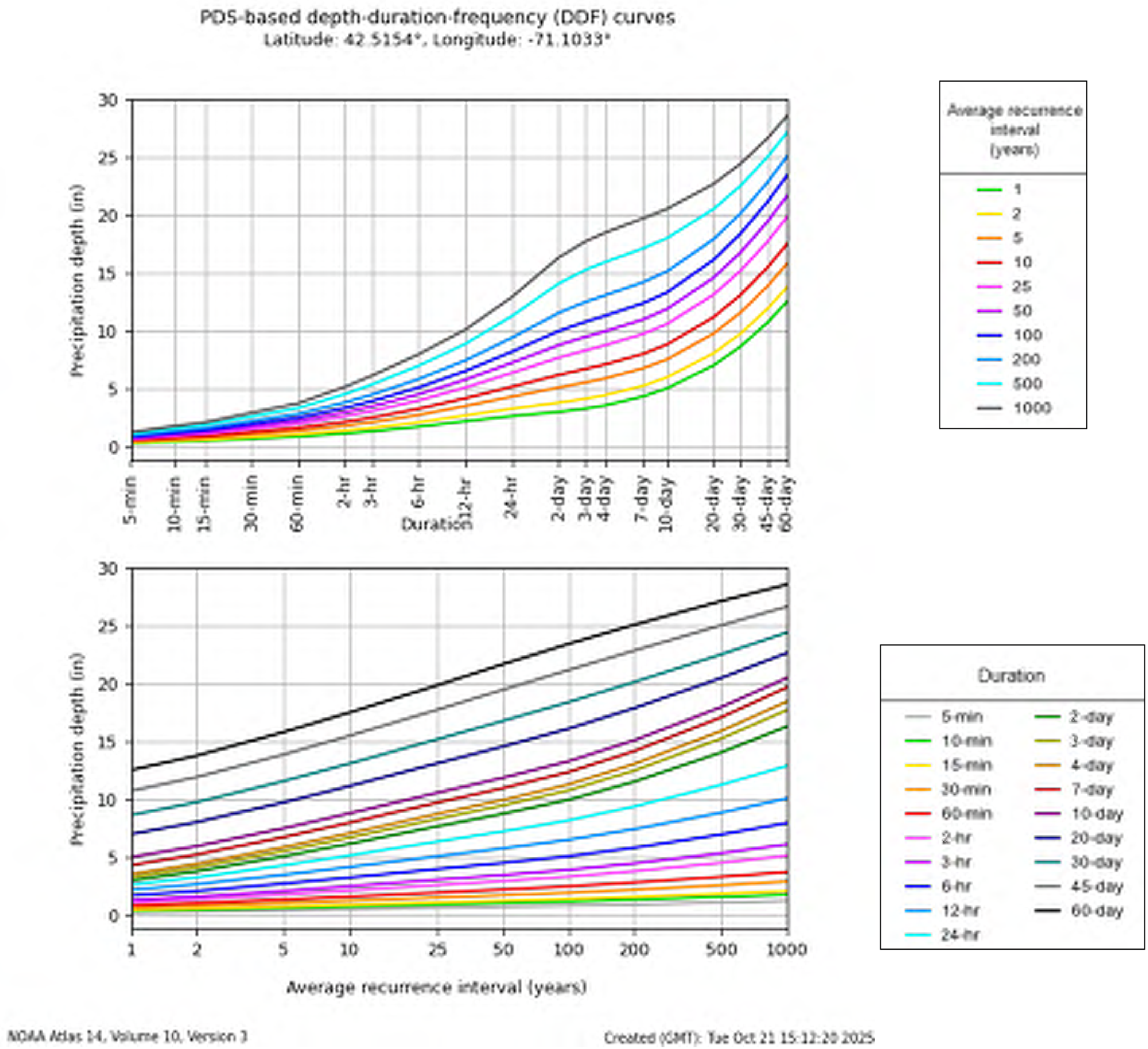
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical



[Back to Top](#)

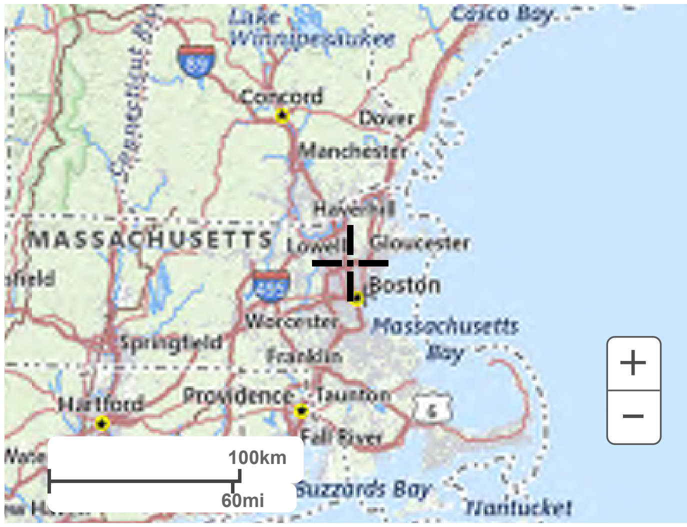
Maps & aerials

Small scale terrain

Large scale terrain

Large scale map

Large scale aerial



[Back to Top](#)

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1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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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.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for

Middlesex County, Massachusetts

October 21, 2025

Preface

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

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

Soil Map

Map Scale: 1:1,700 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 25, 50, 100, 150

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 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 25, Sep 5, 2025

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

Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
32B	Wareham loamy fine sand, 0 to 5 percent slopes	1.7	32.1%
305B	Paxton fine sandy loam, 3 to 8 percent slopes	1.0	19.4%
420B	Canton fine sandy loam, 3 to 8 percent slopes	1.2	22.0%
602	Urban land	1.4	26.5%
Totals for Area of Interest		**5.3**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

Middlesex County, Massachusetts

32B—Wareham loamy fine sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: vqnd
Elevation: 0 to 2,100 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Wareham

Setting

Landform: Terraces, depressions, deltas
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loose sandy glaciofluvial deposits

Typical profile

H1 - 0 to 10 inches: loamy fine sand
H2 - 10 to 24 inches: loamy sand
H3 - 24 to 34 inches: stratified sand to fine sand
H4 - 34 to 65 inches: stratified coarse sand to sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

Minor Components

Sudbury

Percent of map unit: 10 percent
Landform: Terraces, plains

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Scarboro

Percent of map unit: 5 percent
Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Deerfield

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

305B—Paxton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t2qp
Elevation: 0 to 1,570 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Paxton

Setting

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

Typical profile

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

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 18 to 39 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

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

Minor Components

Woodbridge

Percent of map unit: 9 percent
Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury

Percent of map unit: 6 percent
Landform: Ground moraines, drainageways, hills, depressions
Landform position (two-dimensional): Backslope, footslope, toeslope
Landform position (three-dimensional): Head slope, base slope, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Charlton

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

420B—Canton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w81b
Elevation: 0 to 1,180 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Canton

Setting

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

Typical profile

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

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands

Hydric soil rating: No

Minor Components

Scituate

Percent of map unit: 10 percent
Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Montauk

Percent of map unit: 5 percent
Landform: Ground moraines, moraines, drumlins, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Charlton

Percent of map unit: 4 percent
Landform: Ground moraines, hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Swansea

Percent of map unit: 1 percent
Landform: Swamps, marshes, kettles, bogs, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

602—Urban land

Map Unit Setting

National map unit symbol: 9950
Elevation: 0 to 3,000 feet
Mean annual precipitation: 32 to 50 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Excavated and filled land

Minor Components

Udorthents, wet substratum

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

Rock outcrop

Percent of map unit: 5 percent
Landform: Ledges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave

Udorthents, loamy

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

Soil Information for All Uses

Soil Properties and Qualities

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

Soil Qualities and Features

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

Hydrologic Soil Group

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

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

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

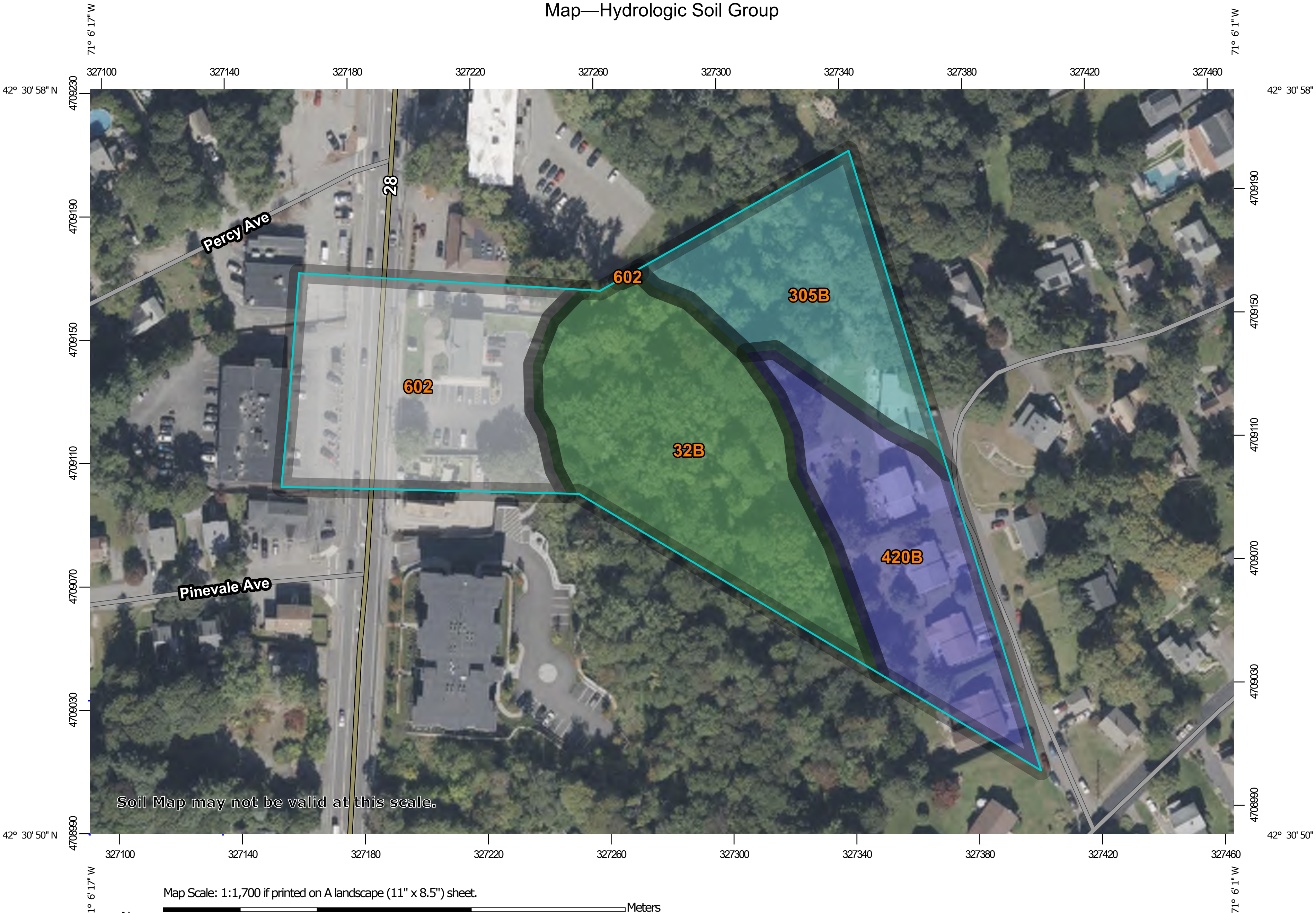
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

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

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

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

Custom Soil Resource Report
Map—Hydrologic Soil Group



Map Scale: 1:1,700 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 25, 50, 100, 150

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 Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 25, Sep 5, 2025

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

Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
32B	Wareham loamy fine sand, 0 to 5 percent slopes	A/D	1.7	32.1%
305B	Paxton fine sandy loam, 3 to 8 percent slopes	C	1.0	19.4%
420B	Canton fine sandy loam, 3 to 8 percent slopes	B	1.2	22.0%
602	Urban land		1.4	26.5%
Totals for Area of Interest			**5.3**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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Commonwealth of Massachusetts
City/Town of Reading

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

281 Reading, LLC
Owner Name

281 Main Sr
Street Address

Map/Lot #

Reading
City

MA
State

Zip Code

B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade

2. Soil Survey NRCS Online Map
   Source
   602
   Soil Map Unit
   Urban Land
   Soil Series

   Landform

   Soil Limitations

   Soil Parent material

3. Surficial Geological Report
   Year Published/Source
   Map Unit

   Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer:
   Wetland Type

7. Current Water Resource Conditions (USGS): 11/19/2025
   Month/Day/ Year
   Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed:
   (Zone II, IWPA, Zone A, EEA Data Portal, etc.)

Commonwealth of Massachusetts
City/Town of Reading

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 101 (Hole #) 11/19/2025 (Date) 9:00 am (Time) Summy 45d (Weather) ____ (Latitude) ____ (Longitude)

1. Land Use Lawn (e.g., woodland, agricultural field, vacant lot, etc.) Lawn (Vegetation) N/A (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 5% (Slope (%))

Description of Location: Landscaped island within a parking lot

2. Soil Parent Material: Loose sandy glaciofluvial deposits ____ (Landform) ____ (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body N/A feet Drainage Way 45 feet Wetlands N/A feet
Property Line 5 feet Drinking Water Well N/A feet Other N/A feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 96 Depth to Weeping in Hole 102 Depth to Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-66"	N/A	FILL			Cnc : Dpl:						
66-125"	C	Loamy Sand	7.5YR 3/3	84"	Cnc : Dpl: 10YR 3/1	100	25				
					Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:
Elevation at top of pit = 94.2 so ESHGWT is determined to be elevation 87.2'

Commonwealth of Massachusetts
City/Town of Reading

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Carlton Quinn, PE	11/20/25
Signature of Soil Evaluator	Date
MA PE #49923	6/30/26
Typed or Printed Name of Soil Evaluator / License #	Expiration Date of License
Name of Approving Authority Witness	Approving Authority

Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Field Diagrams: Use this area for field diagrams:

Allen & Major Associates, Inc.		Computation Sheet	
Title	*MA DEP Standard Calculations*	By	MTB/BDP
Project	Mixed Use Development	Chk'd	CMQ
Location	281 Main St, Reading, MA	Apprv'd	CMQ
Date	11/24/2025		
Revised			

Stormwater Recharge/Water Quality Volume Table

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*

A_{WQ} *= Required Water Quality Treatment Volume, expressed in ft^3*

D_{WQ} *= Water Quality Depth*

A_{IMP} *= Impervious Area (excluding non-metal roofs)*

Watershed	Area (Sq. Ft.)	Landscaped	Impervious Area (Square Feet) HSG A (F=.6)	Impervious Area (Square Feet) HSG B (F=.35)	Recharge Required: *F Avg. (Inches)*	Recharge Required: *Impervious Area (Feet)*	Recharge Required: *Rv (ft^3)*	Water Quality Volume Required: *D_{WQ} (Inch)*	Water Quality Volume Required: *A_{WQ}*
P-1A	1,042	496	546	0	0.60	546	27	1.0	46
P-1B	385	385	0	0	0.60	0	0	1.0	0
P-2	13,158	12,953	205	0	0.60	205	10	1.0	17
P-3A	1,955	0	1,955	0	0.60	1,955	98	1.0	163
P-3B	2,266	0	2,266	0	0.60	2,266	113	1.0	189
P-3C	3,072	90	2,982	0	0.60	2,982	149	1.0	249
P-4	10,797	0	10,797	0	0.60	10,797	540	1.0	900
P-5	880	0	880	0	0.60	880	44	1.0	73
Total	**33,555**	**13,924**	**19,631**	**0**		**19,631**	**982**		**1,636**

Stormwater Recharge Summary

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*

	Required (cf)	***Provided (cf)***	
ARv =	***982***	***1,658***	***UIS-1 (P-3A, P-3B, P-3C, P-4, P-5)***

Water Quality Volume

A_{WQ} *= Required Water Quality Treatment Volume, expressed in ft^3*

D_{WQ} *= Water Quality Depth*

A_{IMP} *= Impervious Area (excluding non-metal roofs)*

	Required (cf)	***Provided (cf)***	
A_{WQ} =	***1,636***	***1,658***	***UIS-1 (P-3A, P-3B, P-3C, P-4, P-5)***

Allen & Major Associates, Inc.		Computation Sheet	
Title	*MA DEP Standard Calculations*	By	MTB/BDP
Project	Mixed Use Development	Chk'd	CMQ
Location	281 Main St, Reading, MA	Apprv'd	CMQ
Date	11/24/2025		

Draindown Within 72 Hours

$\text{Time}_{drawdown}$=(Rv) (1/Design Infiltration Rate in inches per hour) (Conversion for inches to feet) (1/bottom area in feet)

UIS-1 (Loamy Sand)	
Infiltration Rate (in/Hr)=	2.41
Bottom Area (ft^2) =	1,549
Infiltration Volume (ft^3) =	1,658
$\text{Time}_{drawdown}$ (Hours)=	5.33

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (C*D)	E Remaining Load (D-E)
Deep Sump Catch Basins	0.25	1.00	0.25	0.75
Water Quality Unit	0.80	0.75	0.60	0.15
Sub-Surface Infiltration System w/ Outlet Control	0.80	0.15	0.12	0.03
		Total TSS Removal =	0.97	