Stormwater Management Report

Vessel Multi-Family Development
446 Hopmeadow Street
Simsbury, CT 06089

December 16, 2022
Revised: February 24, 2023
Revised: March 17, 2023
Revised: March 30, 2023

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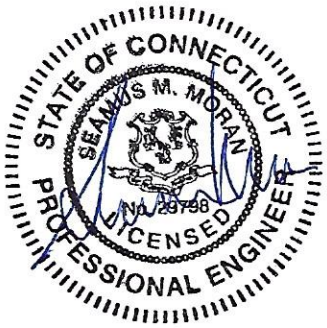

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1. INTRODUCTION

The project is located at 446 Hopmeadow Street (U.S. Route 202/CT Route 10) in Simsbury, Connecticut (hereinafter referred to as the "Site") and is identified as Lot N003C on Tax Assessor's Map G13, Block 142. The Site is located on the east side of Hopmeadow Street, approximately 200 feet north of the intersection of Hopmeadow Street and Powder Forest Drive. The Site is 1.96 acres with 149.9 linear feet of frontage along Hopmeadow Street and is currently developed as a single-family residence (see Figure 1 – Site Location Map). The Site is located in the High Density Residential 'R-15' Zoning District. Adjacent properties are located in the High Density Residential 'R-15' Zone, the Low Density Residential 'R-40' Zone, the Planned Area Development 'PAD' Zone, and the Designed Multiple Residence 'RD' Zone. The Site is not located within a FEMA Flood Hazard Zone (see Figure 2 – Firmette Map). Existing topography on site is moderate with contours ranging from elevation 102 along the southern property line, to elevation 84 along the northern property line. Per the geotechnical investigation performed by GEI Consultants, Inc., soils on site consist of silty clays and silty loams (Hydrologic Groups 'C' and 'D') below elevation 98, and sandy loams (Hydrologic Group 'A') above elevation 98. For information regarding the geotechnical investigation and soil classifications, refer to the Geotechnical Report.

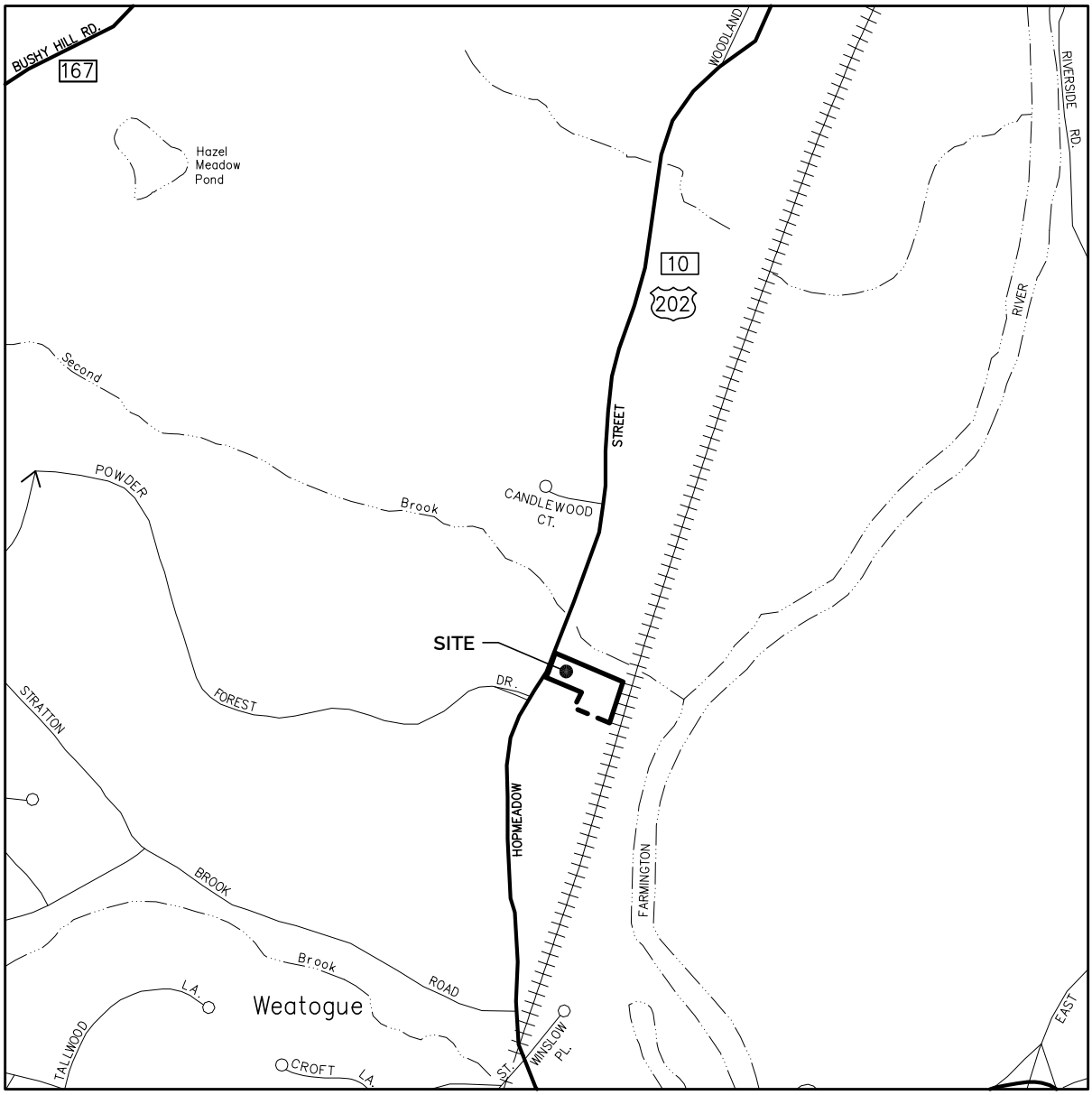
The proposed development consists of the construction of a new four-story 14,063 square-foot multi-family residential building, consisting of 77 one-bedroom units (575 square-feet) and 3 two-bedroom units (1,048 square-feet). Site improvements will include a new two-way access drive from Hopmeadow Street, a new 94 vehicle parking lot, new sanitary sewer, water, and electrical service connections, new landscaping improvements, and a new stormwater management system.

This report presents the basis of the project hydrologic and hydraulic analysis of the site, the design for the new site drainage systems, and Best Management Practices (BMPs) incorporated into the site design to manage and treat stormwater runoff in accordance with the 2004 CT DEEP Stormwater Quality Manual (SQM) and the Town of Simsbury Zoning Regulations.

2. PURPOSE OF REPORT

This report presents the basis of design for stormwater management including drainage and stormwater treatment. The report demonstrates that the development:

- Does not increase peak rates of runoff from watersheds encompassing the new buildings and parking areas.
- Does not degrade the quality of receiving groundwater, waterbodies, or watercourses.
- Complies with the 2004 CT DEEP SQM and the Town of Simsbury stormwater management standards.



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SCALE IN FEET

PROJECT NO. 2022-0013	SCALE: 1"=1,000'
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STORMWATER REPORT - SITE LOCATION MAP

VESSEL MULTI-FAMILY HOUSING

446 HOPMEADOW STREET, SIMSBURY, CT 06089

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National Flood Hazard Layer FIRMette

FEMA

72°49'2"W 41°51'32"N

FIGURE 2

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

1:6,000

72°48'24"W 41°51'6"N

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

Legend

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

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

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

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

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

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

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

N

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/22/2022 at 1:44 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

3. BASIS OF DESIGN

The layout, grading and drainage design for the project are shown on the Site Development Plans. The basis of the grading and drainage design is as follows:

1. Rainfall data is from the National Weather Service NOAA Atlas 14, Volume 10, Version 3.
2. Drainage systems are designed to meet or exceed the water quality and peak rate of runoff goals established in the 2004 CT DEEP SQM.
3. Stormwater treatment Best Management Practices (BMPs) are designed to remove pollutants, such as nutrients, solids, metals, pathogens, pesticides, and hydrocarbons from stormwater runoff and to reduce temperatures of runoff from paved surfaces during hot weather.
4. Pretreatment of runoff for the removal of sediments, oil and grease will be accomplished using deep sump catch basins and outlet hoods.
5. BMPs for this project include an underground infiltration system with isolator rows designed to infiltrate the runoff generated from the proposed parking lot, a bioretention basin designed to treat and infiltrate the runoff generated from the building rooftop, and an Infiltration Trench and a drywell/collection basin designed to capture and infiltrate off-site runoff entering the Site.

4. HYDROLOGIC AND HYDRAULIC METHODS

The methods described in Urban Hydrology for Small Watersheds, 2nd Edition, (Technical Release Number 55 [TR-55]) from the Natural Resources Conservation Service (formerly the Soil Conservation Service – [SCS], 1986) were used to calculate stormwater peak-flow generated from pre- and post-development conditions. These methods, which are incorporated into the HydroCAD computer software program, use well documented procedures to calculate stormwater runoff volume, peak-flow rate of discharge, hydrographs and storage volumes required for floodwater reservoirs in small watersheds. The method uses the SCS Runoff Curve Number method to estimate runoff volume, calculate times of concentration, produce tabular hydrographs, and estimate basin storage capacity. Output data from all computer analysis and design are provided in the Technical Appendix.

This report presents the basis of the hydrologic and hydraulic analysis and design of the stormwater management including drainage and stormwater treatment systems completed in accordance with the Connecticut Department of Transportation Drainage Manual (Drainage Manual). The report also presents a Stormwater Management Plan prepared in accordance, to the greatest extent practical, with the 2004 CT DEEP SQM. Times of concentration applicable to the pre- and post-development were developed using the NRCS-velocity method. A minimum time of concentration of 5 minutes was used for paved surfaces and 10 minutes for vegetated areas.

5. STORMWATER MANAGEMENT

The existing site is developed as a single-family residence and includes buildings, a paved driveway, walkways, and lawn and wooded areas. Site improvements will increase impervious areas, resulting in rate and volume increases of stormwater runoff from the Site. Hydrologic analyses of pre- and post-development conditions were completed to assess these increases and to design mitigation measures for water quality and to reduce post-development discharges.

5.1 Existing Condition Drainage Areas and Analysis Points

The existing drainage pattern for the site in the vicinity of the proposed improvements is characterized by one drainage area that drains to the north toward Second Brook and the associated wetland, as shown on Figure 3 – Pre-Development Drainage Area Map, and described as follows:

- **DA1**: Approximately 3.82 acres of land, currently developed as multiple single-family residences, and includes 2.26 acres of lawn, 1.15 acres of woods, 0.39 acres of impervious surfaces (rooftops, pavement), and 0.02 acres of gravel.
- **Drainage Analysis Point 1**: The drainage analysis point is the northern and eastern property lines of the subject Site.

5.2 Proposed Condition Drainage Areas

The proposed development results in the modification of the drainage areas along with changes in impervious coverage (building rooftop, pavement surfaces and concrete surfaces). These conditions are shown on Figure 4 – Post-Development Drainage Area Map. The existing Drainage Area, DA1, was subdivided into 5 drainage areas and described as follows:

- **DA1**: Approximately 1.37 acres of land, located mostly off-site, consisting of 0.64 acres of lawn, 0.59 acres of woods and 0.14 acres of impervious surfaces that drain to Stormwater Management Area C (Curtain Drain Infiltration Trench).
- **DA2**: For analysis purposes, the proposed condition DA2 was subdivided into 2 subareas.
    - **DA2A**: Approximately 0.32 acres of new building rooftop that is directed to Stormwater Management Area B (Bioretention Basin).
    - **DA2B**: Approximately 0.14 acres of land, located on-site, consisting of lawn, which drains to Stormwater Management Area B (Bioretention Basin),
- **DA3**: Approximately 0.29 acres of land, located mostly offsite and along Hopmeadow Street, consisting of 0.13 acres of lawn, 0.13 acres of woods, and 0.03 acres of impervious surfaces that drains to Stormwater Management Area D (drywell and basin).
- **DA4**: For analysis purposes, the proposed condition DA4 was subdivided into 4 subareas.

- **DA4A**: Approximately 0.21 acres of land consisting of 0.19 acres of new pavement and walkways, and 0.02 acres of landscaping, that is directed to Stormwater Management Area A1 (ADS Stormtech MC-3500).
- **DA4B**: Approximately 0.19 acres of land consisting of 0.16 acres of new pavement and walkways, and 0.03 acres of landscaping, that is directed to Stormwater Management Area A2 (ADS Stormtech MC-3500).
- **DA4C**: Approximately 0.64 acres of on-site and off-site land, consisting of 0.34 acres of impervious surfaces, and 0.21 acres of lawn and landscaping, and 0.09 acres of woods, that is directed to Stormwater Management Area A3 (ADS Stormtech MC-3500).
- **DA4D**: Approximately 0.30 acres of land consisting of 0.24 acres of new pavement and walkways, and 0.06 acres of landscaping, that is directed to Stormwater Management Area A4 (ADS Stormtech MC-3500).

- **DA5**: Approximately 0.37 acres of on-site land downgradient of the proposed improvements consisting of 0.29 acres of lawn, 0.07 acres of woods and 0.01 acres of impervious surfaces that drain to the subject Site's northern or eastern property lines.

Modeling results for the existing and proposed conditions drainage areas are provided in Figure 5 – Stormwater Runoff Summary, and the hydrologic and hydraulic modeling parameters are provided in the HydroCAD printouts (Technical Appendix).

5.3 Proposed Condition Stormwater Management BMPs

For the post-development conditions, the intent of the proposed stormwater management improvements is to route stormwater runoff from new impervious surfaces through the proposed stormwater BMPs to provide water quality treatment, peak rate reduction, and promote groundwater recharge through infiltration. Additionally, runoff generated off-site that crosses onto the Site will be captured and infiltrated. Four separate Stormwater Management Areas are included in the design and are described below:

- **Stormwater Management Area A:** ADS Stormtech MC-3500 Underground Infiltration/Detention System with Isolator Rows – Catch basins within the parking lot direct the runoff from the parking area (DA4A, DA4B, DA4C and DA4D) into four separate ADS Stormtech MC-3500 infiltration/detention systems (Stormwater Management Area A1, A2, A3, and A4), which will retain, attenuate and infiltrate stormwater runoff from the impervious areas and treat stormwater runoff through filtration using Isolator Rows that are sized to treat inflows exceeding the 100-year storm event and infiltrate through the 2-year storm event. The Isolator Rows are rows of chambers wrapped in filter fabric which allow for sediment settling as stormwater fills the chamber and flows through the filter fabric and into the other chambers. The retained water in these chambers is then infiltrated back into the ground. Overflow from the chambers is directed to an outlet pipe and riprap apron located to the north.

- **Stormwater Management Area B:** Bioretention Basin – The stormwater runoff generated from the proposed building rooftop (DA2A) and a portion of on-site lawn (DA2B) will be collected and discharged into the proposed Bioretention Basin which will retain, attenuate, and infiltrate stormwater runoff and treat stormwater runoff through plant filtration and infiltration. The Bioretention Basin is designed to infiltrate through the 1-year storm event. Overflow from the basin is directed to an outlet pipe with a flared end section and riprap apron located in the northeast corner of the Site. An overflow spillway is proposed to direct runoff away from the building in case of emergency. The Bioretention Basin plantings are native and have been selected by a Landscape Architect and are based on the Plant List found in the 2004 CT DEEP SQM.
- **Stormwater Management Area C:** Curtain Drain and Infiltration Trench – Off-site stormwater runoff generated from the properties to the south continue onto the Site. A portion of this runoff (DA1) is collected by a Curtain Drain Infiltration Trench and is designed to infiltrate stormwater runoff through the 2-year storm event. Overflow from the infiltration trench is directed to an outlet pipe and riprap apron located to the north.
- **Stormwater Management Area D:** Drywell and Collection Basin – Off-site stormwater runoff generated from the properties to the south (DA3) continue onto the Site. This runoff is collected by a shallow detention basin surrounding a 6'(dia.) x 4'(h) concrete drywell which is designed to infiltrate stormwater runoff. The detention basin also provides stormwater storage capacity for larger storm events. The Drywell and Collection Basin is designed to infiltrate through the 100-year storm event. An overflow spillway is proposed to direct runoff toward the on-site catchment system.

The Water Quality Volume & Water Quality Flow Calculations for Stormwater Management Areas A and B are included in the Technical Appendix. A summary of the stage and storage volume for Stormwater Management Areas A, B, C and D is included in Figure 6 – Stage-Storage Summaries.

PEAK RATE OF RUNOFF (CFS) SUMMARY

STORM FREQUENCY	ANALYSIS POINT - NORTHERN AND EASTERN PROPERTY LINE		
	EXISTING	PROPOSED	CHANGE
WQV	0.00	0.00	NO CHANGE
2-YEAR	0.48	0.35	-0.13
10-YEAR	3.06	1.37	-1.69
25-YEAR	5.31	2.73	-2.58
100-YEAR	9.33	8.10	-1.23

RUNOFF VOLUME (CF) SUMMARY

STORM FREQUENCY	ANALYSIS POINT - NORTHERN AND EASTERN PROPERTY LINE		
	EXISTING	PROPOSED	CHANGE
WQV	0	16	+16
2-YEAR	4,405	1,793	-2,612
10-YEAR	16,981	16,172	-809
25-YEAR	27,244	26,833	-411
100-YEAR	45,528	44,911	-617

REVISED: 3/17/2023
REVISED: 2/24/2023
REVISED: 3/30/2023

PROJECT NO. 2022-0013	SCALE: N.T.S.	STORMWATER REPORT - STORMWATER RUNOFF SUMMARY	H+H ENGINEERING ASSOCIATES
DRAWN BY: SMM	DATE: 12/16/2022		232 Greenmanville Avenue Suite 201 Mystic, CT 06355 860-980-8008 (O); 413-579-4488 (M) www.hh-engineers.com
CHECKED BY: SMM	DATE: 12/16/2022	VESSEL MULTI-FAMILY HOUSING 446 HOPMEADOW STREET, SIMSBURY, CT 06089 VESSEL RE HOLDINGS, LLC 46 WEST 55TH STREET, NEW YORK, NY 10019	
SHEET NUMBER: 1 OF 1			
DRAWING: FIGURE 5			

STORMWATER MANAGEMENT AREA 'A1'
ADS STORMTECH MC-3500 INFILTRATION SYSTEM

STORM FREQUENCY	WATER SURFACE ELEVATION (FT.)	STORAGE VOLUME (CF)
WQV	85.77	351
2-YEAR	87.63	1,981
10-YEAR	87.97	2,255
25-YEAR	88.41	2,587
100-YEAR	88.92	2,936

ADS STORMTECH MC-3500 INFILTRATION SYSTEM ELEVATIONS:
TOP OF STONE ELEV. = 90.50
TOP OF CHAMBER ELEV. = 89.50
BOTTOM OF CHAMBER ELEV. = 85.75
BOTTOM OF STONE ELEV. = 85.00

OUTLET CONTROL STRUCTURE ELEVATIONS:
TOP OF FRAME (MANHOLE COVER) ELEV. = 92.70
RECTANGULAR WEIR INV. ELEV. = 89.35
6" DIA. ORIFICE = 88.45
4" DIA. ORIFICE = 87.65
12" INV. OUT ELEV. = 85.80

EXFILTRATION RATE = 0.1 IN/HR

STORMWATER MANAGEMENT AREA 'A2'
ADS STORMTECH MC-3500 INFILTRATION SYSTEM

STORM FREQUENCY	WATER SURFACE ELEVATION (FT.)	STORAGE VOLUME (CF)
WQV	87.34	237
2-YEAR	89.03	1,645
10-YEAR	89.33	1,903
25-YEAR	89.69	2,193
100-YEAR	90.11	2,515

ADS STORMTECH MC-3500 INFILTRATION SYSTEM ELEVATIONS:
TOP OF STONE ELEV. = 92.30
TOP OF CHAMBER ELEV. = 91.30
BOTTOM OF CHAMBER ELEV. = 87.55
BOTTOM OF STONE ELEV. = 86.80

OUTLET CONTROL STRUCTURE ELEVATIONS:
TOP OF FRAME (MANHOLE COVER) ELEV. = 94.20
RECTANGULAR WEIR INV. ELEV. = 91.05
6" DIA. UPPER ORIFICE = 89.70
4" DIA. LOWER ORIFICE = 89.05
12" INV. OUT ELEV. = 87.60

EXFILTRATION RATE = 0.1 IN/HR

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STORMWATER REPORT -
STORMWATER TREATMENT PRACTICES
STAGE-STORAGE SUMMARIES

VESSEL MULTI-FAMILY HOUSING
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STORMWATER MANAGEMENT AREA 'A3'
ADS STORMTECH MC-3500 INFILTRATION SYSTEM

STORM FREQUENCY	WATER SURFACE ELEVATION (FT.)	STORAGE VOLUME (CF)
WQV	87.21	3
2-YEAR	89.05	1,924
10-YEAR	89.55	2,543
25-YEAR	90.31	3,449
100-YEAR	91.33	4,454

ADS STORMTECH MC-3500 INFILTRATION SYSTEM ELEVATIONS:
TOP OF STONE ELEV. = 92.70
TOP OF CHAMBER ELEV. = 91.70
BOTTOM OF CHAMBER ELEV. = 87.95
BOTTOM OF STONE ELEV. = 87.20

OUTLET CONTROL STRUCTURE ELEVATIONS:
TOP OF FRAME (MANHOLE COVER) ELEV. = 94.50
RECTANGULAR WEIR INV. ELEV. = 91.45
6" DIA. ORIFICE = 90.40
4" DIA. ORIFICE = 89.10
12" INV. OUT ELEV. = 88.00

EXFILTRATION RATE = 0.1 IN/HR

STORMWATER MANAGEMENT AREA 'A4'
ADS STORMTECH MC-3500 INFILTRATION SYSTEM

STORM FREQUENCY	WATER SURFACE ELEVATION (FT.)	STORAGE VOLUME (CF)
WQV	88.38	195
2-YEAR	90.54	2,199
10-YEAR	90.93	2,566
25-YEAR	91.52	3,072
100-YEAR	92.17	3,546

ADS STORMTECH MC-3500 INFILTRATION SYSTEM ELEVATIONS:
TOP OF STONE ELEV. = 93.50
TOP OF CHAMBER ELEV. = 92.50
BOTTOM OF CHAMBER ELEV. = 88.75
BOTTOM OF STONE ELEV. = 88.00

OUTLET CONTROL STRUCTURE ELEVATIONS:
TOP OF FRAME (MANHOLE COVER) ELEV. = 96.25
RECTANGULAR WEIR INV. ELEV. = 92.25
6" DIA. UPPER ORIFICE = 91.55
4" DIA. LOWER ORIFICE = 90.55
12" INV. OUT ELEV. = 88.80

EXFILTRATION RATE = 0.1 IN/HR

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PROJECT NO. 2022-0013	SCALE: N.T.S.
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STORMWATER REPORT -
STORMWATER TREATMENT PRACTICES
STAGE-STORAGE SUMMARIES

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STORMWATER MANAGEMENT AREA 'B'
BIORETENTION BASIN

STORM FREQUENCY	WATER SURFACE ELEVATION (FT.)	STORAGE VOLUME (CF)
WQV	91.56	744
2-YEAR	92.83	3,042
10-YEAR	93.16	3,782
25-YEAR	93.47	4,548
100-YEAR	93.71	5,172

BIORETENTION BASIN ELEVATIONS:
TOP OF BERM ELEV. = 94.80
TOP OF SPILLWAY ELEV. = 94.30
BOTTOM OF BASIN ELEV. = 91.00

OUTLET CONTROL STRUCTURE ELEVATIONS:
TOP OF FRAME (CB GRATE) ELEV. = 93.60
5" DIA. LOWER ORIFICE = 92.75
12" INV. OUT ELEV. = 89.00

EXFILTRATION RATE = 0.1 IN/HR

STORMWATER MANAGEMENT AREA 'C'
CURTAIN DRAIN INFILTRATION TRENCH

STORM FREQUENCY	WATER SURFACE ELEVATION (FT.)	STORAGE VOLUME (CF)
WQV	87.40	0
2-YEAR	87.53	51
10-YEAR	87.84	172
25-YEAR	88.60	465
100-YEAR	88.79	542

INFILTRATION TRENCH ELEVATIONS:
TOP OF TRENCH ELEV. (MIN.) = 96.0
BOTTOM OF TRENCH ELEV.=87.4

OUTLET CONTROL STRUCTURE ELEVATIONS:
TOP OF FRAME (MANHOLE COVER) ELEV. = 96.50
RECTANGULAR WEIR INV. ELEV. = 88.60
4" DIA. ORIFICE = 87.55
8" INV. OUT ELEV. = 87.20

EXFILTRATION RATE = 0.1 IN/HR

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STAGE-STORAGE SUMMARIES

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STORMWATER MANAGEMENT AREA 'D'
DRYWELL AND COLLECTION BASIN

STORM FREQUENCY	WATER SURFACE ELEVATION (FT.)	STORAGE VOLUME (CF)
WQV	91.60	0
2-YEAR	91.61	0
10-YEAR	95.58	169
25-YEAR	98.12	300
100-YEAR	98.87	562

DRYWELL ELEVATIONS:
TOP OF FRAME (CB GRATE) ELEV. = 97.50
BOTTOM OF DRYWELL ELEV. = 92.60
BOTTOM OF STONE ELEV. = 91.60

COLLECTION BASIN ELEVATIONS:
TOP OF BERM ELEV. = 100.10
TOP OF SPILLWAY ELEV. = 99.10
BOTTOM OF BASIN ELEV. = 97.50

EXFILTRATION RATE = 5.0 IN/HR

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DRAWING: FIGURE 6	

STORMWATER REPORT -
STORMWATER TREATMENT PRACTICES
STAGE-STORAGE SUMMARIES

VESSEL MULTI-FAMILY HOUSING
446 HOPMEADOW STREET, SIMSBURY, CT 06089
VESSEL RE HOLDINGS, LLC
46 WEST 55TH STREET, NEW YORK, NY 10019

H+H ENGINEERING ASSOCIATES
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5.4 Storm Drain System Outlet Locations

Stormwater Management Area A – Outflow from the ADS Stormtech MC-3500 systems is directed through an outlet control structure and 15" HDPE pipe with a riprap apron to a wooden area along the northern property line. Once beyond the property limits, the runoff will sheetflow overland an additional 55 feet to an off-site wetland.

Stormwater Management Area B – Overflow from the Bioretention Basin is directed through an outlet control structure and 12" HDPE pipe with a flared end section and riprap apron to a wooded area in the northeast corner of the Site. Once beyond the property limits, the runoff will sheetflow overland an additional 65 feet to an off-site wetland. Emergency overflow is directed through a riprap spillway located on the northern slope of the basin and directs flow to the parking lot.

Stormwater Management Area C – Overflow from the Infiltration Trench is directed through an outlet control structure and 8" HDPE pipe to the outlet system identified in Stormwater Management Area A.

Stormwater Management Area D – Emergency overflow from the drywell and collection basin is directed through a riprap spillway located on the eastern slope of the basin and directs flow toward Stormwater Management Area A.

6. SOURCE CONTROL AND POLLUTION PREVENTION MAINTENANCE AND OPERATION

Source control and pollution prevention practices for this project are intended to eliminate the generation of pollutants at their source, reduce the types and concentration of pollutants in stormwater runoff and to assure that the BMPs continue to function to remove oil and grease and TSS. The site property managers will be responsible for maintaining the stormwater management system and the goal of this section is to inform managers about system operations.

The following maintenance and operation measures are recommended for source control.

Parking Lots

The access drive and parking areas shall be swept once per year, preferably after the end of the winter sanding season.

Landscaping

Normal landscaping maintenance shall consist of pruning, mulching, planting, mowing lawns, raking leaves, etc. Use of fertilizers and pesticides will be controlled and limited to minimal amounts necessary for healthy landscape maintenance.

Trees will be fertilized no more than once in the spring with an organic fertilizer. Shrubs and lawn will be fertilized with an organic slow-release fertilizer each spring. Liming of lawn areas to control pH will also be done in the spring if soil testing indicates that it is necessary.

Pesticides will only be used as a control method when a problem has been clearly identified and other natural control methods are not successful. All pesticide applications shall be by licensed applicators, where necessary.

Trash Collection

Trash receptacles service the facility, and dumpsters exist on-site. The pickup of trash will occur on a regular basis and all trash will be disposed of legally off-site.

Outdoor Storage

There will be no outdoor storage of hazardous chemicals, fertilizer, pesticides, or herbicides anywhere on site.

Snow Removal & Storage

Snow shall be shoveled and plowed from sidewalk and parking areas as soon as practical during and after winter storms and deposited in snow storage areas on the site or removed.

Catch Basins and Manholes

A Connecticut-Licensed hauler shall pump the sumps of onsite catch basins and manholes and shall dispose of the sand legally. Road sand may be reused for winter sanding but may not be stored on-site. As part of the hauling contract, the hauler shall notify the property owner in writing where the material is being disposed.

For the first three years each catch basin and manhole shall be inspected every four months, with one inspection occurring during the month of April. Any debris occurring within one foot from the bottom of each sump shall be removed by Vacuum "Vactor" type of maintenance equipment. After the first three years the inspection schedule may be adjusted to meet actual operating conditions, however, one inspection shall always be conducted in April.

Stormtech underground infiltration systems and Isolator Rows

The Isolator Rows shall be cleaned at the end of construction once the contributing areas are fully stabilized. For the first year of operation following construction, the chamber rows shall be inspected once every 6 months.

After the first year of operation, the chambers shall be inspected a minimum of once per year. If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of the sediment. When the average depth of accumulation exceeds 3", a clean-out should be performed and properly disposed off-site. Clean-out should be accomplished using a Jetvac process.

A detailed maintenance logbook shall be kept on-site for the units by the property owner/manager. Information is to include, but not be limited to, the date of inspection, record of sediment depth, general observations, and date of cleaning performed.

Maintenance of all Stormtech systems should follow all manufacturers' recommendations.

Bioretention Basin

The Bioretention Basin shall be inspected every six months and/or after storm events of 2 inches of rainfall or greater. Inspections shall include the following:

- Inspect filter media standing water or other evidence of clogging.
- Check for sediment accumulation, trash, and debris.
- Check for blockages, structural integrity, and evidence of erosion at inlets, outlets, and overflow spillways.

Regular maintenance includes the following:

- Prune trees and shrubs as needed.
- Basin floor/side slopes shall be mowed 6" to 8" as needed. grass clippings, leaves and accumulated sediment and debris shall be removed during the summer; however, plant matter shall be left in place over winter months to insulate the soil and add organic matter to the soil. removal criteria shall include when plant matter is smothering or killing vegetation and aesthetics.
- Remove sediment greater than 1.0 inch deep in March-April in the filter media bed in a manner to minimize damage to vegetation.
- Inspect soil and repair eroded areas seasonally or as necessary.
- Remove any invasive species (including roots) that have become established within the basin and embankments.
- If there is an accumulation of organic debris or sediment on the floor of the basin, or if ponded water is regularly observed more than 48 hours after a rainfall event, the top 6" shall be removed and the exposed soil surface rototilled to a depth of 12". Sedimentation should be removed when it is visibly dry and readily separates from the basin floor to minimize smearing. After this work has been done, the bottom of the basin shall be restored to its original condition.
- No pesticides or non-organic fertilizers shall be used in areas draining to the bioretention basin.

Drywells and Collection Basins

The drywells shall be cleaned at the end of construction once the contributing areas are fully stabilized. For the first year of operation following construction, the drywells shall be inspected once every 6 months.

After the first year of operation, the drywells shall be inspected a minimum of once per year. If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of the sediment. When the average depth of accumulation exceeds 3", a clean-out should be performed and properly disposed off-site. Clean-out should be accomplished using a Jetvac process.

Collection Basins shall be routinely checked for sediment accumulation, trash, and debris. Basin shall be mowed to 4-6" as needed. Grass clippings, leaves and accumulated sediment and

debris shall be removed. Remove any invasive species (including roots) that have become established within the basin and embankments.

A detailed maintenance logbook shall be kept on-site for the units by the property owner/manager. information is to include, but not be limited to, the date of inspection, record of sediment depth, general observations, and date of cleaning performed.

7. CONCLUSION

The new stormwater management improvements were designed in accordance with the 2004 CT DEEP SQM and Simsbury regulations. BMPs were incorporated in the site design that attenuate post-development runoff rates, treat in excess of the WQV/WQF and infiltrate in excess of the WQV and GRV from the development. Overall, the stormwater management system provides quantitative and qualitative improvements for the site.

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STAMP

REV.	DESCRIPTION OF REVISION	DATE	APPR
2	REVISIONS PER ENGINEERING REVIEW COMMENTS	3/30/2023	SMM
1	SOIL GROUP REVISIONS	3/17/2023	SMM

PRE-DEVELOPMENT DRAINAGE AREA MAP

VESSEL MULTI-FAMILY HOUSING
PROPERTY ADDRESS
446 HOPMEADOW STREET, SIMSBURY, CT 06089
PREPARED FOR:
VESSEL RE HOLDINGS, LLC
46 WEST 55TH STREET, NEW YORK, NY 10019

N W E S

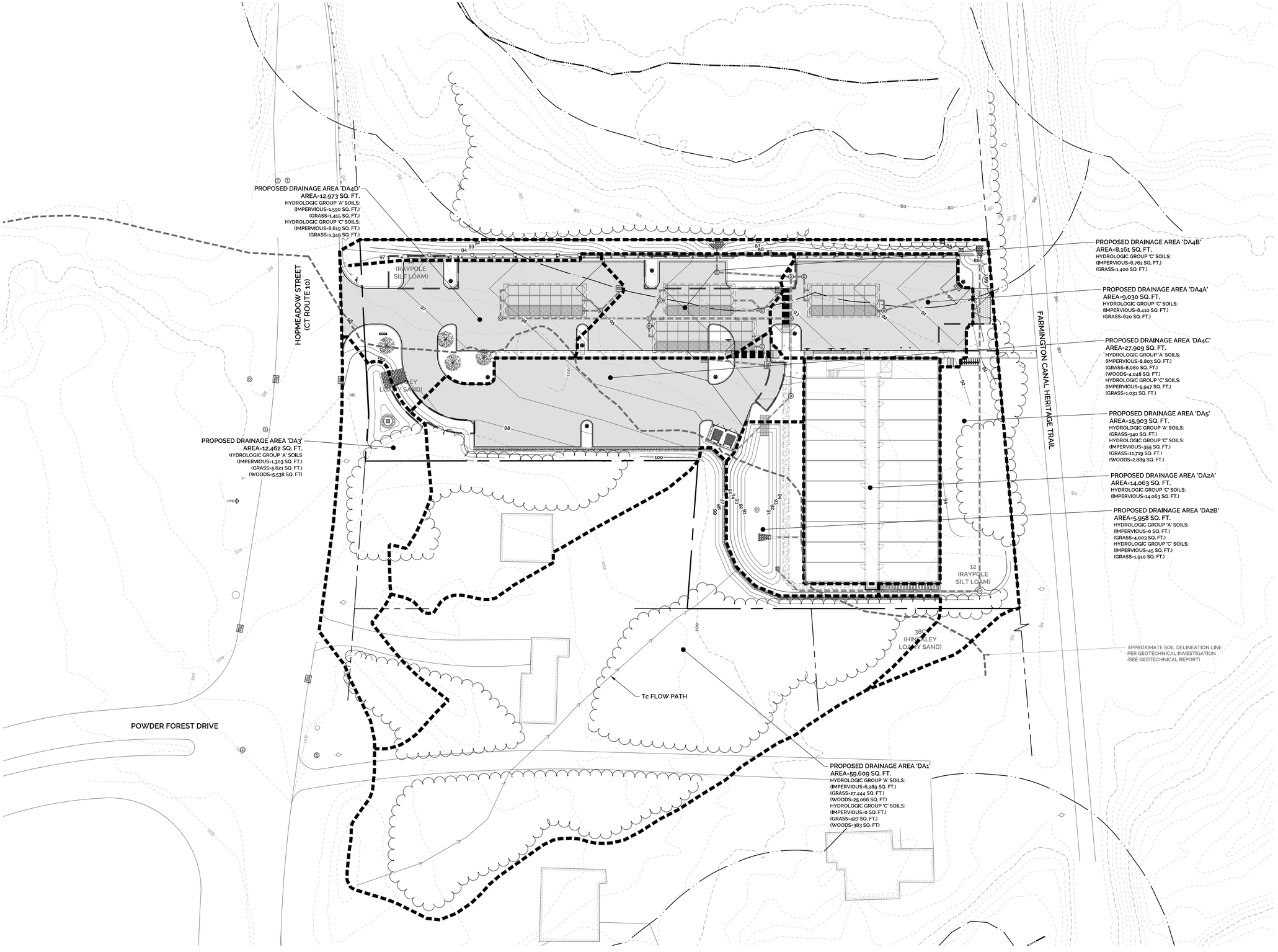
30 15 0 30
SCALE IN FEET

PROJECT NO.	SCALE:
2022-0013	1" = 30'
DRAWN BY: SMM	DATE: 12/16/2022
CHECKED BY: SMM	DATE: 12/16/2022

DRAWING
FIGURE 3

SHEET NUMBER: 1 OF 1

Z:\SHARED\HH ENGINEERING ASSOCIATES\PROJECTS\2022\2022-0013 - VESSEL - 446 HOPMEADOW ST, SIMSBURY\DWGS\DRAINAGE\EXISTING DRAINAGE REDUCED WS.DWG Tab: DA MAP - EXISTING Saved: 3/30/2023 3:51 PM Plotted: 3/30/2023 10:28 PM



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STAMP

REV.	DESCRIPTION OF REVISION	DATE	APPR
3	REVISIONS PER ENGINEERING REVIEW COMMENTS	3/30/2023	SMM
2	SOIL GROUP AND DRAINAGE AREA REVISIONS	3/17/2023	SMM
1	REVISIONS PER REVIEW COMMENTS	2/24/2023	SMM

POST-DEVELOPMENT DRAINAGE AREA MAP

VESSEL MULTI-FAMILY HOUSING
PROPERTY ADDRESS
446 HOPMEADOW STREET, SIMSBURY, CT 06089
PREPARED FOR:
VESSEL RE HOLDINGS, LLC
46 WEST 55TH STREET, NEW YORK, NY 10019

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30 15 0 30
SCALE IN FEET

PROJECT NO. 2022-0013	SCALE: 1" = 30'
DRAWN BY: SMM	DATE: 12/16/2022
CHECKED BY: SMM	DATE: 12/16/2022

DRAWING
FIGURE 4

SHEET NUMBER: 1 OF 1

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Technical Appendices
for
Stormwater Management Report

Vessel Multi-Family Development
446 Hopmeadow Street
Simsbury, CT 06089

December 16, 2022
Revised: February 24, 2023
Revised: March 17, 2023
Revised: March 30, 2023

Prepared for:
Vessel Technologies, Inc.
46 West 55th Street
New York, NY 10019

Prepared by:
H+H Engineering Associates, LLC
232 Greenmanville Avenue
Suite 201
Mystic, CT 06355

H+H ENGINEERING ASSOCIATES

Appendix A – Water Quality Volume and Water Quality Flow Calculations

WQV & WQF CALCULATIONS - STORMWATER MANAGEMENT AREA 'A1'

Project:	446 Hopmeadow Street, Simsbury	**Calculated By**	**Date**
Client:	Vessel Technologies, Inc.	SMM	12/14/2022
			Revised 2/24/2023
			Revised 3/17/2023
			Revised 3/30/2023

Water Quality Volume (WQV)

0.21	ac	A = Area draining to the practice
0.19	ac	A_I = Impervious area draining to the practice
0.90	decimal	I = Percent impervious area draining to the practice, in decimal form
0.86	unitless	R_V = Runoff coefficient = 0.05 + (0.9 x I)
0.18	ac-in	WQV = 1" x R_V x A
659	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1.00	inches	P = amount of rainfall.
0.86	inches	Q = Water Quality Depth. Q=WQV/A
99	unitless	CN = unit peak discharge curve number. $CN=1000/(10+5P+10Q-10^{*}[Q^2+1.25^{*}Q^{*}P]^{0.5})$
0.1	inches	S = potential maximum retention. S = (1000/CN) - 10
0.025	inches	Ia = initial abstraction. Ia=0.2S
5.0	minutes	T_c = Time of Concentration
650.0	cfs/mi^2/in	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
0.184	cfs	WQF = qu x WQV. Conversion: to convert "cfs/mi^2/in * ac-in" to "cfs" multiply by 1mi^2/640ac

Designer Notes:

Stormwater Management Area 'A1'

ADS Stormtech SC-3500 Infiltration System

ADS Stormtech SC-740 Isolator Row Sizing:

(1) Isolator row with 6 units is provided

Treated flow rate = 0.40 CFS / unit X 6 units = 2.40 CFS

Treated flow rate > WQF

(Inflow rate from 100-year storm event = 1.79 CFS)

qu obtained from exhibit 4-III for NRCS type III rainfall distribution

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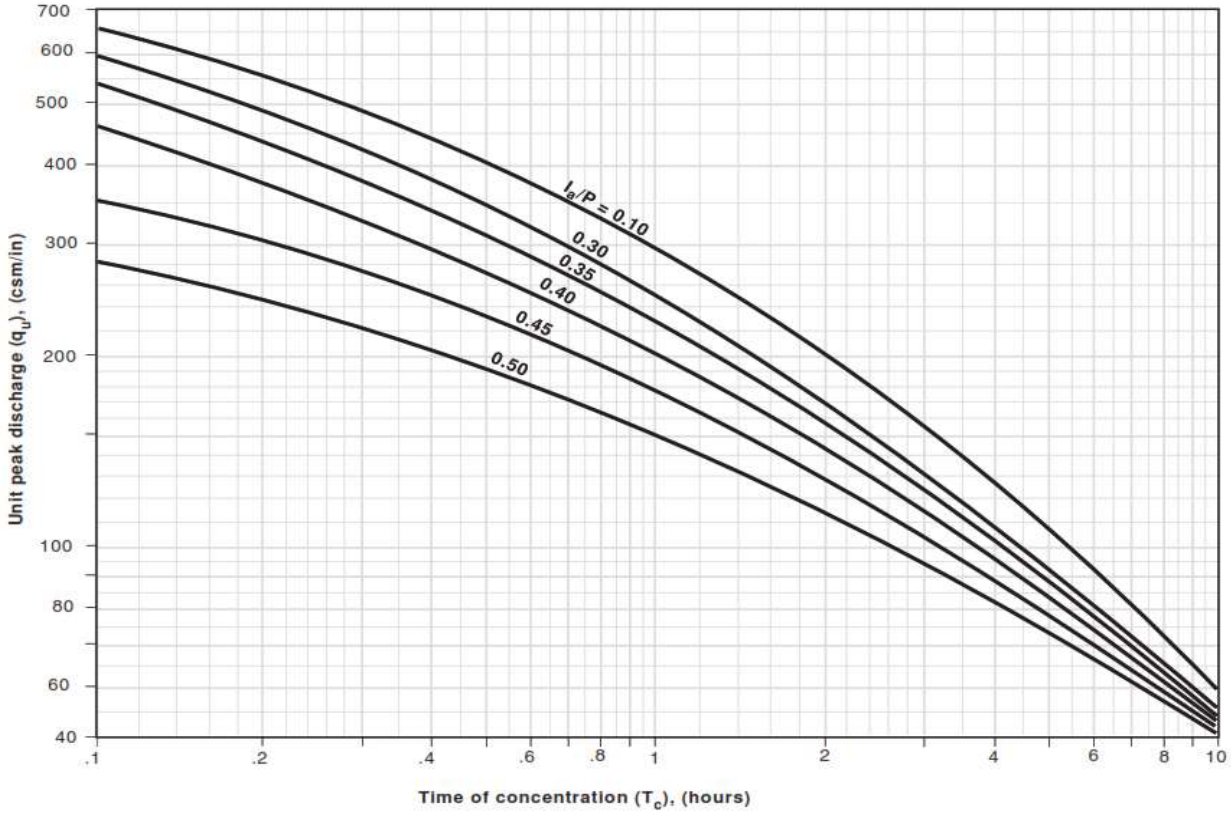
Exhibit 4-III Unit peal discharge (q_u) for NRCS (SCS) type III rainfall distribution



WQV & WQF CALCULATIONS - STORMWATER MANAGEMENT AREA 'A2'

Project:	446 Hopmeadow Street, Simsbury	**Calculated By**	**Date**
Client:	Vessel Technologies, Inc.	SMM	12/14/2022
			Revised 2/24/2023
			Revised 3/17/2023
			Revised 3/30/2023

Water Quality Volume (WQV)

0.19 ac	A = Area draining to the practice
0.16 ac	A_I = Impervious area draining to the practice
0.84 decimal	I = Percent impervious area draining to the practice, in decimal form
0.81 unitless	R_V = Runoff coefficient = 0.05 + (0.9 x I)
0.15 ac-in	WQV = 1" x R_V x A
557 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1.00 inches	P = amount of rainfall.
0.81 inches	Q = Water Quality Depth. Q=WQV/A
98 unitless	CN = unit peak discharge curve number. $CN=1000/(10+5P+10Q-10^{*}[Q^2+1.25^{*}Q^{*}P]^{0.5})$
0.2 inches	S = potential maximum retention. S = (1000/CN) - 10
0.037 inches	Ia = initial abstraction. Ia=0.2S
5.0 minutes	T_c = Time of Concentration
650.0 cfs/mi^2/in	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
0.156 cfs	WQF = qu x WQV. Conversion: to convert "cfs/mi^2/in * ac-in" to "cfs" multiply by 1mi^2/640ac

Designer Notes:

Stormwater Management Area 'A2'

ADS Stormtech SC-3500 Infiltration System

ADS Stormtech SC-740 Isolator Row Sizing:

(1) Isolator row with 6 units is provided

Treated flow rate = 0.40 CFS / unit X 6 units = 2.40 CFS

Treated flow rate > WQF

(Inflow rate from 100-year storm event = 1.61 CFS)

qu obtained from exhibit 4-III for NRCS type III rainfall distribution

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WQV & WQF CALCULATIONS - STORMWATER MANAGEMENT AREA 'A3'

Project:	446 Hopmeadow Street, Simsbury	**Calculated By**	**Date**
Client:	Vessel Technologies, Inc.	SMM	12/14/2022
			Revised 2/24/2023
			Revised 3/17/2023
			Revised 3/30/2023

Water Quality Volume (WQV)

0.64	ac	A = Area draining to the practice
0.34	ac	A_I = Impervious area draining to the practice
0.53	decimal	I = Percent impervious area draining to the practice, in decimal form
0.53	unitless	R_V = Runoff coefficient = 0.05 + (0.9 x I)
0.34	ac-in	WQV = 1" x R_V x A
1,227	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1.00	inches	P = amount of rainfall.
0.53	inches	Q = Water Quality Depth. Q=WQV/A
94	unitless	CN = unit peak discharge curve number. $CN=1000/(10+5P+10Q-10^{*}[Q^2+1.25^{*}Q^{*}P]^{0.5})$
0.6	inches	S = potential maximum retention. S = (1000/CN) - 10
0.118	inches	Ia = initial abstraction. Ia=0.2S
5.0	minutes	T_c = Time of Concentration
650.0	cfs/mi^2/in	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
0.343	cfs	WQF = qu x WQV. Conversion: to convert "cfs/mi^2/in * ac-in" to "cfs" multiply by 1mi^2/640ac

Designer Notes:

Stormwater Management Area 'A3'

ADS Stormtech SC-3500 Infiltration System

ADS Stormtech SC-740 Isolator Row Sizing:

(1) Isolator row with 9 units is provided

Treated flow rate = 0.40 CFS / unit X 9 units = 3.60 CFS

Treated flow rate > WQF

(Inflow rate from 100-year storm event = 3.25 CFS)

qu obtained from exhibit 4-III for NRCS type III rainfall distribution

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WQV & WQF CALCULATIONS - STORMWATER MANAGEMENT AREA 'A4'

Project:	446 Hopmeadow Street, Simsbury	**Calculated By**	**Date**
Client:	Vessel Technologies, Inc.	SMM	12/14/2022
			Revised 2/24/2023
			Revised 3/17/2023
			Revised 3/30/2023

Water Quality Volume (WQV)

0.30	ac	A = Area draining to the practice
0.24	ac	A_I = Impervious area draining to the practice
0.80	decimal	I = Percent impervious area draining to the practice, in decimal form
0.77	unitless	R_V = Runoff coefficient = 0.05 + (0.9 x I)
0.23	ac-in	WQV = 1" x R_V x A
839	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1.00	inches	P = amount of rainfall.
0.77	inches	Q = Water Quality Depth. Q=WQV/A
98	unitless	CN = unit peak discharge curve number. $CN=1000/(10+5P+10Q-10^{*}[Q^{2}+1.25^{*}Q^{*}P]^{0.5})$
0.2	inches	S = potential maximum retention. S = (1000/CN) - 10
0.046	inches	Ia = initial abstraction. Ia=0.2S
5.0	minutes	T_c = Time of Concentration
650.0	cfs/mi^2/in	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
0.235	cfs	WQF = qu x WQV. Conversion: to convert "cfs/mi^2/in * ac-in" to "cfs" multiply by 1mi^2/640ac

Designer Notes:

Stormwater Management Area 'A4'

ADS Stormtech SC-3500 Infiltration System

ADS Stormtech SC-740 Isolator Row Sizing:

(1) Isolator row with 7 units is provided

Treated flow rate = 0.40 CFS / unit X 7 units = 2.80 CFS

Treated flow rate > WQF

(Inflow rate from 100-year storm event = 2.08 CFS)

qu obtained from exhibit 4-III for NRCS type III rainfall distribution

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WQV & WQF CALCULATIONS - STORMWATER MANAGEMENT AREA 'B'

Project:	446 Hopmeadow Street, Simsbury	**Calculated By**	**Date**
Client:	Vessel Technologies, Inc.	SMM	12/14/2022
			Revised 2/24/2023
			Revised 3/17/2023
			Revised 3/30/2023

Water Quality Volume (WQV)

0.46	ac	A = Area draining to the practice
0.32	ac	A_I = Impervious area draining to the practice
0.71	decimal	I = Percent impervious area draining to the practice, in decimal form
0.69	unitless	R_V = Runoff coefficient = 0.05 + (0.9 x I)
0.31	ac-in	WQV = 1" x R_V x A
1,138	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1.00	inches	P = amount of rainfall.
0.69	inches	Q = Water Quality Depth. Q=WQV/A
97	unitless	CN = unit peak discharge curve number. $CN=1000/(10+5P+10Q-10^{*}[Q^2+1.25^{*}Q^{*}P]^{0.5})$
0.3	inches	S = potential maximum retention. S = (1000/CN) - 10
0.066	inches	Ia = initial abstraction. Ia=0.2S
	minutes	T_c = Time of Concentration
	$cfs/mi^2/in$	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
0.000	cfs	WQF = qu x WQV. Conversion: to convert "$cfs/mi^2/in$ * ac-in" to "cfs" multiply by $1mi^2/640ac$

Designer Notes:

Stormwater Management Area 'B'

Bioretention Basin

Treated volume (volume stored prior to discharging) = 2,870 CF

Contributing WQV = 1,138 CF

Treated volume = 252% of Water Quality Volume

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Appendix B – Riprap Apron Design

Outlet Protection Design Outlet EW-1

Reference: Connecticut Department of Transportation Drainage Manual, Dated October 2000

A. Apron width at culvert end (W_1) = 3 Sp where Sp = outlet pipe diameter

B. Apron length (La) = $\frac{1.8\ (Q-5)}{(Sp)^{3/2}}$ + 10

C. Apron width at downstream end (W) = 3Sp + 0.7La where La = apron length

Type A Riprap Apron (Tailwater Condition) : TW<0.5 dia of outlet

Peak Q(25yr)= 1.78 cfs PIPE DIA= 1.25 ft

A. W_1= 3(Sp) = ft 4 ft

B. La = $\frac{1.8\ (Q-5)}{(Sp)^{1.5}}$ + 10 = ft 6 ft

C. W_2 = 3(Sp) + 0.7(La) = ft 8 ft

Table 11.11 Allowable Outlet Velocities for Type A and B Riprap Aprons

Outlet Velocity - mps (fps)	Riprap Specification
0-2.44 (0-8)	Modified
2.44-3.05 (8-10)	Intermediate
3.05-4.27 (10-14)	Standard

V(25yr)= 4.8 fps Therfore; Use Modified Riprap

Outlet Protection Design Outlet FES-1

Reference: Connecticut Department of Transportation Drainage Manual, Dated October 2000

A. Apron width at culvert end (W_1) = 3 Sp where Sp = outlet pipe diameter

B. Apron length (La) = $\frac{1.8\ (Q-5)}{(Sp)^{3/2}}$ + 10

C. Apron width at downstream end (W) = 3Sp + 0.7La where La = apron length

Type A Riprap Apron (Tailwater Condition) : TW<0.5 dia of outlet

Peak Q(25yr)= 0.47 cfs PIPE DIA= 1 ft

A. W_1= 3(Sp) = ft 3 ft

B. La = $\frac{1.8\ (Q-5)}{(Sp)^{1.5}}$ + 10 = ft **Use 5' min.** 2 ft

C. W_2 = 3(Sp) + 0.7(La) = ft 5 ft

Table 11.11 Allowable Outlet Velocities for Type A and B Riprap Aprons

Outlet Velocity - mps (fps)	Riprap Specification
0-2.44 (0-8)	Modified
2.44-3.05 (8-10)	Intermediate
3.05-4.27 (10-14)	Standard

V(25yr)= 2.7 fps Therfore; Use Modified Riprap

Outlet Protection Design Outlet FES-2

Reference: Connecticut Department of Transportation Drainage Manual, Dated October 2000

A. Apron width at culvert end (W_1) = 3 Sp where Sp = outlet pipe diameter

B. Apron length (La) = $\frac{1.8\,(Q-5)}{(Sp)^{3/2}} + 10$

C. Apron width at downstream end (W) = 3Sp + 0.7La where La = apron length

Type A Riprap Apron (Tailwater Condition) : TW<0.5 dia of outlet

Peak Q(25yr)= 2.16 cfs PIPE DIA= 1 ft

A. W_1= 3(Sp) = ft 3 ft

B. La = $\frac{1.8\,(Q-5)}{(Sp)^{1.5}} + 10$ = ft 5 ft

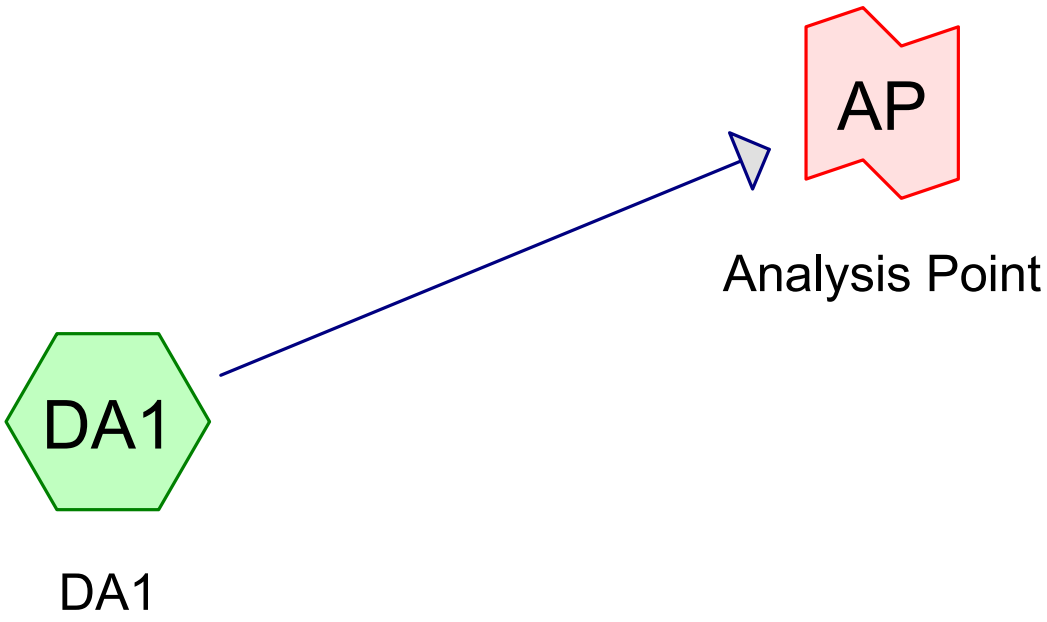
C. W_2 = 3(Sp) + 0.7(La) = ft 7 ft

Table 11.11 Allowable Outlet Velocities for Type A and B Riprap Aprons

Outlet Velocity - mps (fps)	Riprap Specification
0-2.44 (0-8)	Modified
2.44-3.05 (8-10)	Intermediate
3.05-4.27 (10-14)	Standard

V(25yr)= 5.05 fps Therfore; Use Modified Riprap

Appendix C – Pre-Development HydroCAD Report



Subcat Reach Pond Link

Routing Diagram for pre development
Prepared by HH Engineering Assoc, Printed 3/30/2023

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	WQV	Type III 24-hr		Default	24.00	1	1.00	2
2	2-Year	Type III 24-hr		Default	24.00	1	3.32	2
3	10-Year	Type III 24-hr		Default	24.00	1	5.35	2
4	25-Year	Type III 24-hr		Default	24.00	1	6.61	2
5	100-Year	Type III 24-hr		Default	24.00	1	8.56	2

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
623	76	Gravel roads, HSG A (DA1)
61	89	Gravel roads, HSG C (DA1)
51,183	39	Pasture/grassland/range, Good, HSG A (DA1)
47,091	74	Pasture/grassland/range, Good, HSG C (DA1)
7,684	98	Paved parking, HSG A (DA1)
4,264	98	Paved parking, HSG C (DA1)
4,055	98	Roofs, HSG A (DA1)
883	98	Roofs, HSG C (DA1)
36,606	30	Woods, Good, HSG A (DA1)
13,617	70	Woods, Good, HSG C (DA1)
166,067	**56**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
100,151	HSG A	DA1
0	HSG B	
65,916	HSG C	DA1
0	HSG D	
0	Other	
166,067		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
623	0	61	0	0	684	Gravel roads
51,183	0	47,091	0	0	98,274	Pasture/grassland/range, Good
7,684	0	4,264	0	0	11,948	Paved parking
4,055	0	883	0	0	4,938	Roofs
36,606	0	13,617	0	0	50,223	Woods, Good
100,151	**0**	**65,916**	**0**	**0**	**166,067**	**TOTAL AREA**

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

Subcatchment DA1: DA1 Runoff Area=166,067 sf 10.17% Impervious Runoff Depth=0.00"
Flow Length=673' Tc=21.5 min CN=56 Runoff=0.00 cfs 0 cf

Link AP: Analysis Point Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Total Runoff Area = 166,067 sf Runoff Volume = 0 cf Average Runoff Depth = 0.00"
89.83% Pervious = 149,181 sf 10.17% Impervious = 16,886 sf

Summary for Subcatchment DA1: DA1

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Link AP : Analysis Point

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 WQV Rainfall=1.00"

Area (sf)	CN	Description
7,684	98	Paved parking, HSG A
4,264	98	Paved parking, HSG C
4,055	98	Roofs, HSG A
883	98	Roofs, HSG C
623	76	Gravel roads, HSG A
61	89	Gravel roads, HSG C
51,183	39	Pasture/grassland/range, Good, HSG A
47,091	74	Pasture/grassland/range, Good, HSG C
36,606	30	Woods, Good, HSG A
13,617	70	Woods, Good, HSG C
166,067	56	Weighted Average
149,181		89.83% Pervious Area
16,886		10.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
1.9	119	0.0450	1.06		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
1.7	147	0.0441	1.47		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
2.3	189	0.0750	1.37		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
21.5	673	Total			

Summary for Link AP: Analysis Point

Inflow Area = 166,067 sf, 10.17% Impervious, Inflow Depth = 0.00" for WQV event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

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

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

Subcatchment DA1: DA1 Runoff Area=166,067 sf 10.17% Impervious Runoff Depth=0.32"
Flow Length=673' Tc=21.5 min CN=56 Runoff=0.48 cfs 4,405 cf

Link AP: Analysis Point Inflow=0.48 cfs 4,405 cf
Primary=0.48 cfs 4,405 cf

Total Runoff Area = 166,067 sf Runoff Volume = 4,405 cf Average Runoff Depth = 0.32"
89.83% Pervious = 149,181 sf 10.17% Impervious = 16,886 sf

Summary for Subcatchment DA1: DA1

Runoff = 0.48 cfs @ 12.52 hrs, Volume= 4,405 cf, Depth= 0.32"
Routed to Link AP : Analysis Point

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=3.32"

Area (sf)	CN	Description
7,684	98	Paved parking, HSG A
4,264	98	Paved parking, HSG C
4,055	98	Roofs, HSG A
883	98	Roofs, HSG C
623	76	Gravel roads, HSG A
61	89	Gravel roads, HSG C
51,183	39	Pasture/grassland/range, Good, HSG A
47,091	74	Pasture/grassland/range, Good, HSG C
36,606	30	Woods, Good, HSG A
13,617	70	Woods, Good, HSG C
166,067	56	Weighted Average
149,181		89.83% Pervious Area
16,886		10.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
1.9	119	0.0450	1.06		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
1.7	147	0.0441	1.47		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
2.3	189	0.0750	1.37		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
21.5	673	Total			

Summary for Link AP: Analysis Point

Inflow Area = 166,067 sf, 10.17% Impervious, Inflow Depth = 0.32" for 2-Year event
Inflow = 0.48 cfs @ 12.52 hrs, Volume= 4,405 cf
Primary = 0.48 cfs @ 12.52 hrs, Volume= 4,405 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
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1: DA1 Runoff Area=166,067 sf 10.17% Impervious Runoff Depth=1.23"
Flow Length=673' Tc=21.5 min CN=56 Runoff=3.06 cfs 16,981 cf

Link AP: Analysis Point Inflow=3.06 cfs 16,981 cf
Primary=3.06 cfs 16,981 cf

Total Runoff Area = 166,067 sf Runoff Volume = 16,981 cf Average Runoff Depth = 1.23"
89.83% Pervious = 149,181 sf 10.17% Impervious = 16,886 sf

Summary for Subcatchment DA1: DA1

Runoff = 3.06 cfs @ 12.35 hrs, Volume= 16,981 cf, Depth= 1.23"
Routed to Link AP : Analysis Point

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=5.35"

Area (sf)	CN	Description
7,684	98	Paved parking, HSG A
4,264	98	Paved parking, HSG C
4,055	98	Roofs, HSG A
883	98	Roofs, HSG C
623	76	Gravel roads, HSG A
61	89	Gravel roads, HSG C
51,183	39	Pasture/grassland/range, Good, HSG A
47,091	74	Pasture/grassland/range, Good, HSG C
36,606	30	Woods, Good, HSG A
13,617	70	Woods, Good, HSG C
166,067	56	Weighted Average
149,181		89.83% Pervious Area
16,886		10.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
1.9	119	0.0450	1.06		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
1.7	147	0.0441	1.47		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
2.3	189	0.0750	1.37		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
21.5	673	Total			

Summary for Link AP: Analysis Point

Inflow Area = 166,067 sf, 10.17% Impervious, Inflow Depth = 1.23" for 10-Year event
Inflow = 3.06 cfs @ 12.35 hrs, Volume= 16,981 cf
Primary = 3.06 cfs @ 12.35 hrs, Volume= 16,981 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
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1: DA1 Runoff Area=166,067 sf 10.17% Impervious Runoff Depth=1.97"
Flow Length=673' Tc=21.5 min CN=56 Runoff=5.31 cfs 27,244 cf

Link AP: Analysis Point Inflow=5.31 cfs 27,244 cf
Primary=5.31 cfs 27,244 cf

Total Runoff Area = 166,067 sf Runoff Volume = 27,244 cf Average Runoff Depth = 1.97"
89.83% Pervious = 149,181 sf 10.17% Impervious = 16,886 sf

Summary for Subcatchment DA1: DA1

Runoff = 5.31 cfs @ 12.33 hrs, Volume= 27,244 cf, Depth= 1.97"
Routed to Link AP : Analysis Point

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=6.61"

Area (sf)	CN	Description
7,684	98	Paved parking, HSG A
4,264	98	Paved parking, HSG C
4,055	98	Roofs, HSG A
883	98	Roofs, HSG C
623	76	Gravel roads, HSG A
61	89	Gravel roads, HSG C
51,183	39	Pasture/grassland/range, Good, HSG A
47,091	74	Pasture/grassland/range, Good, HSG C
36,606	30	Woods, Good, HSG A
13,617	70	Woods, Good, HSG C
166,067	56	Weighted Average
149,181		89.83% Pervious Area
16,886		10.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
1.9	119	0.0450	1.06		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
1.7	147	0.0441	1.47		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
2.3	189	0.0750	1.37		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
21.5	673	Total			

Summary for Link AP: Analysis Point

Inflow Area = 166,067 sf, 10.17% Impervious, Inflow Depth = 1.97" for 25-Year event
Inflow = 5.31 cfs @ 12.33 hrs, Volume= 27,244 cf
Primary = 5.31 cfs @ 12.33 hrs, Volume= 27,244 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
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1: DA1 Runoff Area=166,067 sf 10.17% Impervious Runoff Depth=3.29"
Flow Length=673' Tc=21.5 min CN=56 Runoff=9.33 cfs 45,528 cf

Link AP: Analysis Point Inflow=9.33 cfs 45,528 cf
Primary=9.33 cfs 45,528 cf

Total Runoff Area = 166,067 sf Runoff Volume = 45,528 cf Average Runoff Depth = 3.29"
89.83% Pervious = 149,181 sf 10.17% Impervious = 16,886 sf

Summary for Subcatchment DA1: DA1

Runoff = 9.33 cfs @ 12.31 hrs, Volume= 45,528 cf, Depth= 3.29"
Routed to Link AP : Analysis Point

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=8.56"

Area (sf)	CN	Description
7,684	98	Paved parking, HSG A
4,264	98	Paved parking, HSG C
4,055	98	Roofs, HSG A
883	98	Roofs, HSG C
623	76	Gravel roads, HSG A
61	89	Gravel roads, HSG C
51,183	39	Pasture/grassland/range, Good, HSG A
47,091	74	Pasture/grassland/range, Good, HSG C
36,606	30	Woods, Good, HSG A
13,617	70	Woods, Good, HSG C
166,067	56	Weighted Average
149,181		89.83% Pervious Area
16,886		10.17% Impervious Area

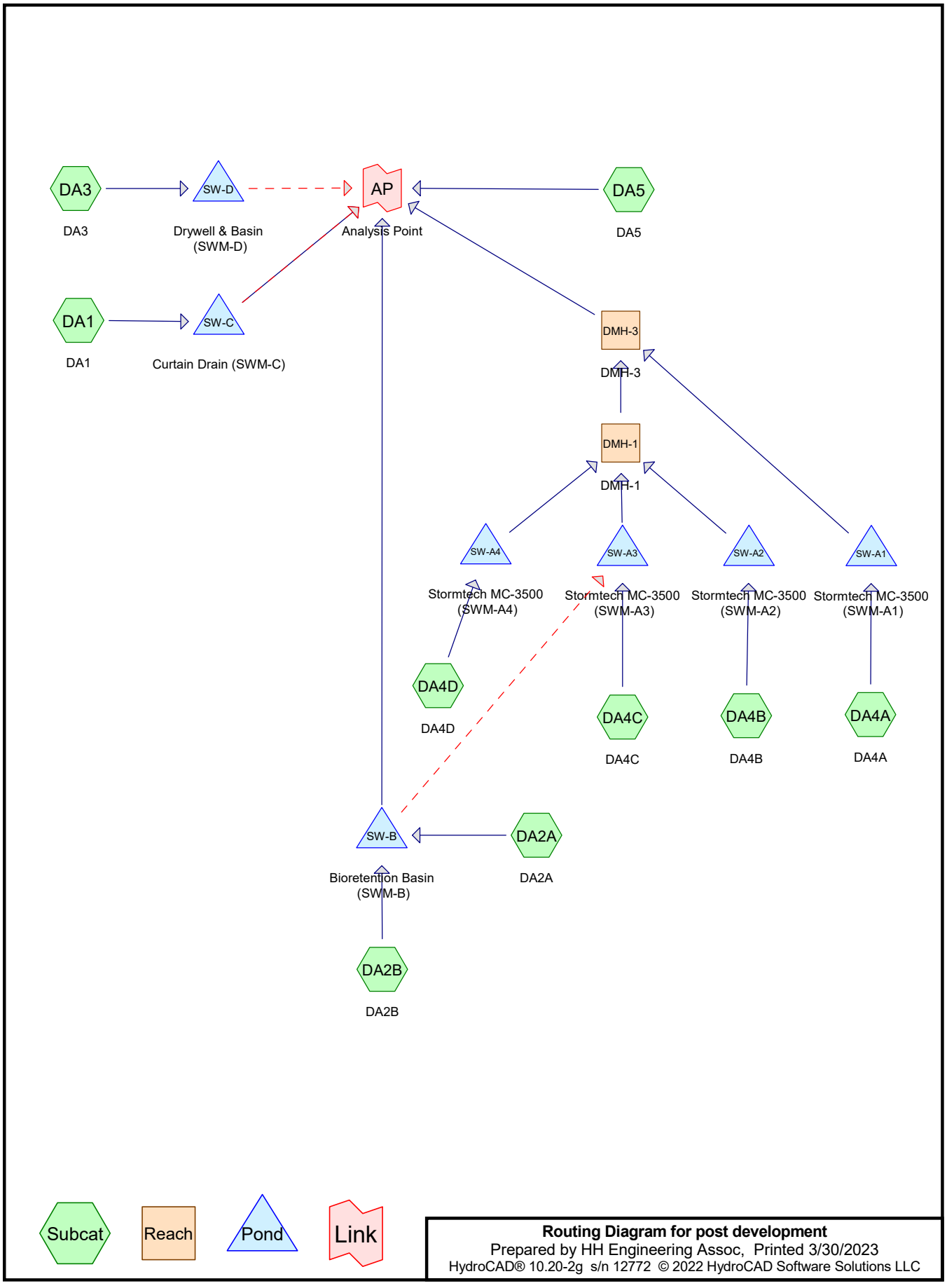
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
1.9	119	0.0450	1.06		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
1.7	147	0.0441	1.47		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
2.3	189	0.0750	1.37		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
21.5	673	Total			

Summary for Link AP: Analysis Point

Inflow Area = 166,067 sf, 10.17% Impervious, Inflow Depth = 3.29" for 100-Year event
Inflow = 9.33 cfs @ 12.31 hrs, Volume= 45,528 cf
Primary = 9.33 cfs @ 12.31 hrs, Volume= 45,528 cf, Atten= 0%, Lag= 0.0 min

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

Appendix D – Post-Development HydroCAD Report



Routing Diagram for post development
Prepared by HH Engineering Assoc, Printed 3/30/2023

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	WQV	Type III 24-hr		Default	24.00	1	1.00	2
2	2-Year	Type III 24-hr		Default	24.00	1	3.32	2
3	10-Year	Type III 24-hr		Default	24.00	1	5.35	2
4	25-Year	Type III 24-hr		Default	24.00	1	6.61	2
5	100-Year	Type III 24-hr		Default	24.00	1	8.56	2

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
47,503	39	>75% Grass cover, Good, HSG A (DA1, DA2B, DA3, DA4C, DA4D, DA5)
18,456	74	>75% Grass cover, Good, HSG C (DA1, DA2B, DA4A, DA4B, DA4C, DA4D, DA5)
17,985	98	Paved parking, HSG A (DA1, DA3, DA4C, DA4D)
30,137	98	Paved parking, HSG C (DA2B, DA4A, DA4B, DA4C, DA4D, DA5)
14,063	98	Roofs, HSG C (DA2A)
34,652	30	Woods, Good, HSG A (DA1, DA3, DA4C)
3,272	70	Woods, Good, HSG C (DA1, DA5)
166,068	**64**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
100,140	HSG A	DA1, DA2B, DA3, DA4C, DA4D, DA5
0	HSG B	
65,928	HSG C	DA1, DA2A, DA2B, DA4A, DA4B, DA4C, DA4D, DA5
0	HSG D	
0	Other	
166,068		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Su Nu
47,503	0	18,456	0	0	65,959	>75% Grass cover, Good	
17,985	0	30,137	0	0	48,122	Paved parking	
0	0	14,063	0	0	14,063	Roofs	
34,652	0	3,272	0	0	37,924	Woods, Good	
100,140	**0**	**65,928**	**0**	**0**	**166,068**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	SW-A1	85.80	85.70	6.0	0.0167	0.012	0.0	12.0	0.0
2	SW-A2	87.60	87.50	9.0	0.0111	0.012	0.0	12.0	0.0
3	SW-A3	88.00	87.90	2.0	0.0500	0.012	0.0	12.0	0.0
4	SW-A4	88.80	86.90	98.0	0.0194	0.012	0.0	12.0	0.0
5	SW-B	89.00	87.00	370.0	0.0054	0.010	0.0	12.0	0.0
6	SW-C	87.20	85.45	108.0	0.0162	0.010	0.0	8.0	0.0

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

Subcatchment DA1: DA1 Runoff Area=59,609 sf 10.55% Impervious Runoff Depth=0.00"
Flow Length=337' Tc=17.4 min CN=42 Runoff=0.00 cfs 0 cf

Subcatchment DA2A: DA2A Runoff Area=14,063 sf 100.00% Impervious Runoff Depth=0.79"
Tc=5.0 min CN=98 Runoff=0.30 cfs 927 cf

Subcatchment DA2B: DA2B Runoff Area=5,958 sf 0.76% Impervious Runoff Depth=0.00"
Tc=10.0 min CN=51 Runoff=0.00 cfs 0 cf

Subcatchment DA3: DA3 Runoff Area=12,462 sf 10.46% Impervious Runoff Depth=0.00"
Tc=10.0 min CN=41 Runoff=0.00 cfs 0 cf

Subcatchment DA4A: DA4A Runoff Area=9,030 sf 93.13% Impervious Runoff Depth=0.63"
Tc=5.0 min CN=96 Runoff=0.16 cfs 474 cf

Subcatchment DA4B: DA4B Runoff Area=8,161 sf 82.85% Impervious Runoff Depth=0.50"
Tc=5.0 min CN=94 Runoff=0.11 cfs 343 cf

Subcatchment DA4C: DA4C Runoff Area=27,909 sf 52.85% Impervious Runoff Depth=0.00"
Tc=10.0 min CN=70 Runoff=0.00 cfs 11 cf

Subcatchment DA4D: DA4D Runoff Area=12,973 sf 78.69% Impervious Runoff Depth=0.28"
Tc=10.0 min CN=89 Runoff=0.08 cfs 308 cf

Subcatchment DA5: DA5 Runoff Area=15,903 sf 2.23% Impervious Runoff Depth=0.01"
Tc=10.0 min CN=72 Runoff=0.00 cfs 16 cf

Reach DMH-1: DMH-1 Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Reach DMH-3: DMH-3 Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond SW-A1: Stormtech MC-3500 (SWM-A1) Peak Elev=85.77' Storage=351 cf Inflow=0.16 cfs 474 cf
Discarded=0.00 cfs 474 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 474 cf

Pond SW-A2: Stormtech MC-3500 (SWM-A2) Peak Elev=87.34' Storage=237 cf Inflow=0.11 cfs 343 cf
Discarded=0.00 cfs 343 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 343 cf

Pond SW-A3: Stormtech MC-3500 (SWM-A3) Peak Elev=87.21' Storage=3 cf Inflow=0.00 cfs 11 cf
Discarded=0.00 cfs 11 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 11 cf

Pond SW-A4: Stormtech MC-3500 (SWM-A4) Peak Elev=88.38' Storage=195 cf Inflow=0.08 cfs 308 cf
Discarded=0.00 cfs 308 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 308 cf

Pond SW-B: Bioretention Basin (SWM-B) Peak Elev=91.56' Storage=744 cf Inflow=0.30 cfs 927 cf
Discarded=0.00 cfs 733 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 733 cf

Pond SW-C: Curtain Drain (SWM-C) Peak Elev=87.40' Storage=0 cf Inflow=0.00 cfs 0 cf
Discarded=0.00 cfs 0 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=91.60' Storage=0 cf Inflow=0.00 cfs 0 cf
Discarded=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Link AP: Analysis Point Inflow=0.00 cfs 16 cf
Primary=0.00 cfs 16 cf

Total Runoff Area = 166,068 sf Runoff Volume = 2,078 cf Average Runoff Depth = 0.15"
62.55% Pervious = 103,883 sf 37.45% Impervious = 62,185 sf

Summary for Subcatchment DA1: DA1

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Pond SW-C : Curtain Drain (SWM-C)

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 WQV Rainfall=1.00"

Area (sf)	CN	Description
6,289	98	Paved parking, HSG A
27,444	39	>75% Grass cover, Good, HSG A
427	74	>75% Grass cover, Good, HSG C
25,066	30	Woods, Good, HSG A
383	70	Woods, Good, HSG C
59,609	42	Weighted Average
53,320		89.45% Pervious Area
6,289		10.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, Sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
1.7	99	0.0394	0.99		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	20	0.3400	4.08		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
17.4	337	Total			

Summary for Subcatchment DA2A: DA2A

Runoff = 0.30 cfs @ 12.07 hrs, Volume= 927 cf, Depth= 0.79"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

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 WQV Rainfall=1.00"

Area (sf)	CN	Description
14,063	98	Roofs, HSG C
14,063		100.00% Impervious Area

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

Summary for Subcatchment DA2B: DA2B

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

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 WQV Rainfall=1.00"

Area (sf)	CN	Description
45	98	Paved parking, HSG C
4,003	39	>75% Grass cover, Good, HSG A
1,910	74	>75% Grass cover, Good, HSG C
5,958	51	Weighted Average
5,913		99.24% Pervious Area
45		0.76% Impervious Area

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

Summary for Subcatchment DA3: DA3

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Pond SW-D : Drywell & Basin (SWM-D)

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 WQV Rainfall=1.00"

Area (sf)	CN	Description
1,303	98	Paved parking, HSG A
5,621	39	>75% Grass cover, Good, HSG A
5,538	30	Woods, Good, HSG A
12,462	41	Weighted Average
11,159		89.54% Pervious Area
1,303		10.46% Impervious Area

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

Summary for Subcatchment DA4A: DA4A

Runoff = 0.16 cfs @ 12.07 hrs, Volume= 474 cf, Depth= 0.63"
Routed to Pond SW-A1 : Stormtech MC-3500 (SWM-A1)

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 WQV Rainfall=1.00"

Area (sf)	CN	Description
8,410	98	Paved parking, HSG C
620	74	>75% Grass cover, Good, HSG C
9,030	96	Weighted Average
620		6.87% Pervious Area
8,410		93.13% Impervious Area

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

Summary for Subcatchment DA4B: DA4B

Runoff = 0.11 cfs @ 12.08 hrs, Volume= 343 cf, Depth= 0.50"
Routed to Pond SW-A2 : Stormtech MC-3500 (SWM-A2)

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 WQV Rainfall=1.00"

Area (sf)	CN	Description
6,761	98	Paved parking, HSG C
1,400	74	>75% Grass cover, Good, HSG C
8,161	94	Weighted Average
1,400		17.15% Pervious Area
6,761		82.85% Impervious Area

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

Summary for Subcatchment DA4C: DA4C

Runoff = 0.00 cfs @ 21.39 hrs, Volume= 11 cf, Depth= 0.00"
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

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 WQV Rainfall=1.00"

Area (sf)	CN	Description
8,803	98	Paved parking, HSG A
5,947	98	Paved parking, HSG C
8,080	39	>75% Grass cover, Good, HSG A
1,031	74	>75% Grass cover, Good, HSG C
4,048	30	Woods, Good, HSG A
27,909	70	Weighted Average
13,159		47.15% Pervious Area
14,750		52.85% Impervious Area

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

Summary for Subcatchment DA4D: DA4D

Runoff = 0.08 cfs @ 12.15 hrs, Volume= 308 cf, Depth= 0.28"
Routed to Pond SW-A4 : Stormtech MC-3500 (SWM-A4)

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 WQV Rainfall=1.00"

Area (sf)	CN	Description
1,590	98	Paved parking, HSG A
8,619	98	Paved parking, HSG C
1,415	39	>75% Grass cover, Good, HSG A
1,349	74	>75% Grass cover, Good, HSG C
12,973	89	Weighted Average
2,764		21.31% Pervious Area
10,209		78.69% Impervious Area

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

Summary for Subcatchment DA5: DA5

Runoff = 0.00 cfs @ 15.57 hrs, Volume= 16 cf, Depth= 0.01"
Routed to Link AP : Analysis Point

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 WQV Rainfall=1.00"

Area (sf)	CN	Description
940	39	>75% Grass cover, Good, HSG A
355	98	Paved parking, HSG C
11,719	74	>75% Grass cover, Good, HSG C
2,889	70	Woods, Good, HSG C
15,903	72	Weighted Average
15,548		97.77% Pervious Area
355		2.23% Impervious Area

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

Summary for Reach DMH-1: DMH-1

Inflow Area = 49,043 sf, 64.68% Impervious, Inflow Depth = 0.00" for WQV event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach DMH-3: DMH-3

Inflow Area = 58,073 sf, 69.10% Impervious, Inflow Depth = 0.00" for WQV event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Inflow Area = 9,030 sf, 93.13% Impervious, Inflow Depth = 0.63" for WQV event
Inflow = 0.16 cfs @ 12.07 hrs, Volume= 474 cf
Outflow = 0.00 cfs @ 11.06 hrs, Volume= 474 cf, Atten= 98%, Lag= 0.0 min
Discarded = 0.00 cfs @ 11.06 hrs, Volume= 474 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 85.77' @ 19.60 hrs Surf.Area= 1,108 sf Storage= 351 cf

Plug-Flow detention time= 1,323.2 min calculated for 474 cf (100% of inflow)
Center-of-Mass det. time= 1,323.2 min (2,136.4 - 813.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	85.00'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	85.75'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	85.80'	**12.0" Round Outlet Pipe** L= 6.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 85.80' / 85.70' S= 0.0167 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	87.65'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	88.45'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	89.35'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	85.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 11.06 hrs HW=85.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=85.00' (Free Discharge)
└**1=Outlet Pipe** (Controls 0.00 cfs)
  ├**2=Low Flow Orifice** (Controls 0.00 cfs)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A1: Stormtech MC-3500 (SWM-A1) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

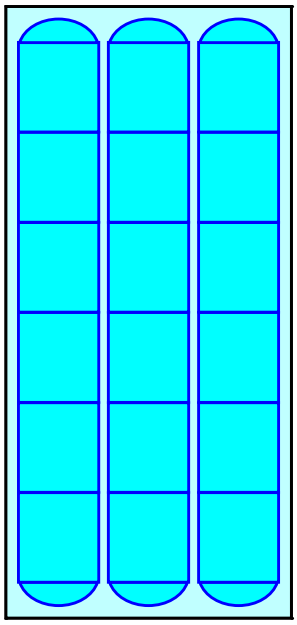
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

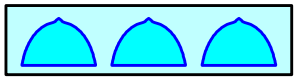
18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone





Stage-Area-Storage for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
85.00	**1,108**	0
85.10	1,108	44
85.20	1,108	89
85.30	1,108	133
85.40	1,108	177
85.50	1,108	222
85.60	1,108	266
85.70	1,108	310
85.80	1,108	378
85.90	1,108	470
86.00	1,108	561
86.10	1,108	652
86.20	1,108	743
86.30	1,108	833
86.40	1,108	922
86.50	1,108	1,012
86.60	1,108	1,101
86.70	1,108	1,189
86.80	1,108	1,277
86.90	1,108	1,364
87.00	1,108	1,451
87.10	1,108	1,537
87.20	1,108	1,623
87.30	1,108	1,708
87.40	1,108	1,792
87.50	1,108	1,875
87.60	1,108	1,958
87.70	1,108	2,039
87.80	1,108	2,120
87.90	1,108	2,200
88.00	1,108	2,279
88.10	1,108	2,356
88.20	1,108	2,432
88.30	1,108	2,507
88.40	1,108	2,581
88.50	1,108	2,653
88.60	1,108	2,724
88.70	1,108	2,792
88.80	1,108	2,859
88.90	1,108	2,923
89.00	1,108	2,984
89.10	1,108	3,042
89.20	1,108	3,094
89.30	1,108	3,144
89.40	1,108	3,191
89.50	1,108	3,236
89.60	1,108	3,281
89.70	1,108	3,325
89.80	1,108	3,369
89.90	1,108	3,414
90.00	1,108	3,458
90.10	1,108	3,502
90.20	1,108	3,547
90.30	1,108	3,591
90.40	1,108	3,635
90.50	1,108	**3,680**

Summary for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Inflow Area = 8,161 sf, 82.85% Impervious, Inflow Depth = 0.50" for WQV event
Inflow = 0.11 cfs @ 12.08 hrs, Volume= 343 cf
Outflow = 0.00 cfs @ 11.72 hrs, Volume= 343 cf, Atten= 98%, Lag= 0.0 min
Discarded = 0.00 cfs @ 11.72 hrs, Volume= 343 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 87.34' @ 17.89 hrs Surf.Area= 1,108 sf Storage= 237 cf

Plug-Flow detention time= 945.1 min calculated for 343 cf (100% of inflow)
Center-of-Mass det. time= 945.3 min (1,777.2 - 831.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	86.80'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	87.55'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	87.60'	**12.0" Round Outlet Pipe** L= 9.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 87.60' / 87.50' S= 0.0111 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	89.05'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	89.70'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.05'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	86.80'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 11.72 hrs HW=86.86' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=86.80' (Free Discharge)
└**1=Outlet Pipe** (Controls 0.00 cfs)
  ├**2=Low Flow Orifice** (Controls 0.00 cfs)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A2: Stormtech MC-3500 (SWM-A2) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

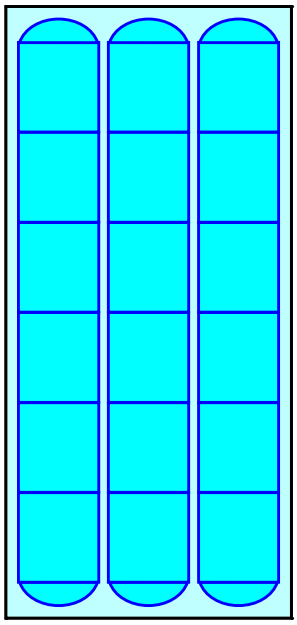
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

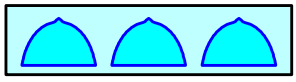
18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone





Stage-Area-Storage for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
86.80	**1,108**	0
86.90	1,108	44
87.00	1,108	89
87.10	1,108	133
87.20	1,108	177
87.30	1,108	222
87.40	1,108	266
87.50	1,108	310
87.60	1,108	378
87.70	1,108	470
87.80	1,108	561
87.90	1,108	652
88.00	1,108	743
88.10	1,108	833
88.20	1,108	922
88.30	1,108	1,012
88.40	1,108	1,101
88.50	1,108	1,189
88.60	1,108	1,277
88.70	1,108	1,364
88.80	1,108	1,451
88.90	1,108	1,537
89.00	1,108	1,623
89.10	1,108	1,708
89.20	1,108	1,792
89.30	1,108	1,875
89.40	1,108	1,958
89.50	1,108	2,039
89.60	1,108	2,120
89.70	1,108	2,200
89.80	1,108	2,279
89.90	1,108	2,356
90.00	1,108	2,432
90.10	1,108	2,507
90.20	1,108	2,581
90.30	1,108	2,653
90.40	1,108	2,724
90.50	1,108	2,792
90.60	1,108	2,859
90.70	1,108	2,923
90.80	1,108	2,984
90.90	1,108	3,042
91.00	1,108	3,094
91.10	1,108	3,144
91.20	1,108	3,191
91.30	1,108	3,236
91.40	1,108	3,281
91.50	1,108	3,325
91.60	1,108	3,369
91.70	1,108	3,414
91.80	1,108	3,458
91.90	1,108	3,502
92.00	1,108	3,547
92.10	1,108	3,591
92.20	1,108	3,635
92.30	1,108	**3,680**

Summary for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Inflow Area = 27,909 sf, 52.85% Impervious, Inflow Depth = 0.00" for WQV event
Inflow = 0.00 cfs @ 21.39 hrs, Volume= 11 cf
Outflow = 0.00 cfs @ 23.98 hrs, Volume= 11 cf, Atten= 9%, Lag= 155.7 min
Discarded = 0.00 cfs @ 23.98 hrs, Volume= 11 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 87.21' @ 23.98 hrs Surf.Area= 1,598 sf Storage= 3 cf

Plug-Flow detention time= 158.5 min calculated for 11 cf (100% of inflow)
Center-of-Mass det. time= 158.4 min (1,365.7 - 1,207.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	87.20'	2,292 cf	**22.75'W x 70.23'L x 5.50'H Field A** 8,788 cf Overall - 3,058 cf Embedded = 5,729 cf x 40.0% Voids
#2A	87.95'	3,058 cf	**ADS_StormTech MC-3500 d +Cap** x 27 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 27 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		5,350 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round Outlet Pipe** L= 2.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 87.90' S= 0.0500 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	89.10'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.40'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.45'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	87.20'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 23.98 hrs HW=87.21' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.20' (Free Discharge)
└**1=Outlet Pipe** (Controls 0.00 cfs)
  ├**2=Low Flow Orifice** (Controls 0.00 cfs)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A3: Stormtech MC-3500 (SWM-A3) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

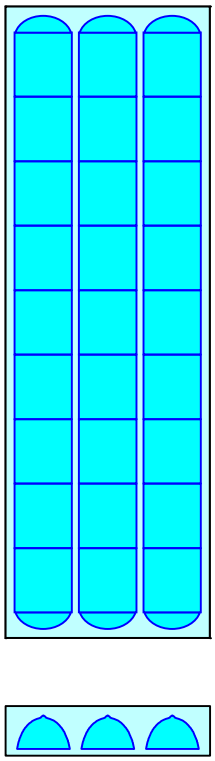
9 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 68.23' Row Length +12.0" End Stone x 2 = 70.23' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

27 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 3,058.1 cf Chamber Storage

8,787.5 cf Field - 3,058.1 cf Chambers = 5,729.4 cf Stone x 40.0% Voids = 2,291.8 cf Stone Storage

Chamber Storage + Stone Storage = 5,349.9 cf = 0.123 af
Overall Storage Efficiency = 60.9%
Overall System Size = 70.23' x 22.75' x 5.50'

27 Chambers
325.5 cy Field
212.2 cy Stone



Stage-Area-Storage for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.20	**1,598**	0
87.30	1,598	64
87.40	1,598	128
87.50	1,598	192
87.60	1,598	256
87.70	1,598	320
87.80	1,598	383
87.90	1,598	447
88.00	1,598	546
88.10	1,598	680
88.20	1,598	813
88.30	1,598	946
88.40	1,598	1,078
88.50	1,598	1,210
88.60	1,598	1,341
88.70	1,598	1,471
88.80	1,598	1,601
88.90	1,598	1,730
89.00	1,598	1,858
89.10	1,598	1,986
89.20	1,598	2,113
89.30	1,598	2,238
89.40	1,598	2,363
89.50	1,598	2,487
89.60	1,598	2,610
89.70	1,598	2,731
89.80	1,598	2,852
89.90	1,598	2,971
90.00	1,598	3,089
90.10	1,598	3,205
90.20	1,598	3,320
90.30	1,598	3,433
90.40	1,598	3,544
90.50	1,598	3,653
90.60	1,598	3,760
90.70	1,598	3,865
90.80	1,598	3,968
90.90	1,598	4,067
91.00	1,598	4,164
91.10	1,598	4,257
91.20	1,598	4,346
91.30	1,598	4,430
91.40	1,598	4,506
91.50	1,598	4,577
91.60	1,598	4,645
91.70	1,598	4,711
91.80	1,598	4,775
91.90	1,598	4,839
92.00	1,598	4,903
92.10	1,598	4,966
92.20	1,598	5,030
92.30	1,598	5,094
92.40	1,598	5,158
92.50	1,598	5,222
92.60	1,598	5,286
92.70	1,598	**5,350**

Summary for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Inflow Area = 12,973 sf, 78.69% Impervious, Inflow Depth = 0.28" for WQV event
Inflow = 0.08 cfs @ 12.15 hrs, Volume= 308 cf
Outflow = 0.00 cfs @ 12.08 hrs, Volume= 308 cf, Atten= 96%, Lag= 0.0 min
Discarded = 0.00 cfs @ 12.08 hrs, Volume= 308 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 88.38' @ 17.99 hrs Surf.Area= 1,271 sf Storage= 195 cf

Plug-Flow detention time= 720.9 min calculated for 308 cf (100% of inflow)
Center-of-Mass det. time= 720.8 min (1,594.5 - 873.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	88.00'	1,838 cf	**22.75'W x 55.89'L x 5.50'H Field A** 6,993 cf Overall - 2,398 cf Embedded = 4,595 cf x 40.0% Voids
#2A	88.75'	2,398 cf	**ADS_StormTech MC-3500 d +Cap** x 21 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 21 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		4,236 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.80'	**12.0" Round Outlet Pipe** L= 98.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 88.80' / 86.90' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	90.55'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.55'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.25'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	88.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 12.08 hrs HW=88.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=88.00' (Free Discharge)
└**1=Outlet Pipe** (Controls 0.00 cfs)
  ├**2=Low Flow Orifice** (Controls 0.00 cfs)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A4: Stormtech MC-3500 (SWM-A4) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

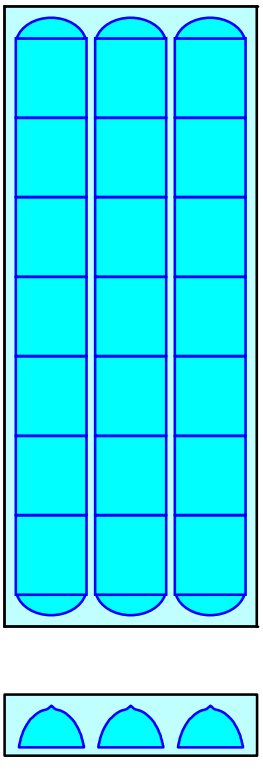
7 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 53.89' Row Length +12.0" End Stone x 2 = 55.89' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

21 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,398.4 cf Chamber Storage

6,993.2 cf Field - 2,398.4 cf Chambers = 4,594.8 cf Stone x 40.0% Voids = 1,837.9 cf Stone Storage

Chamber Storage + Stone Storage = 4,236.3 cf = 0.097 af
Overall Storage Efficiency = 60.6%
Overall System Size = 55.89' x 22.75' x 5.50'

21 Chambers
259.0 cy Field
170.2 cy Stone



Stage-Area-Storage for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
88.00	**1,271**	0
88.10	1,271	51
88.20	1,271	102
88.30	1,271	153
88.40	1,271	203
88.50	1,271	254
88.60	1,271	305
88.70	1,271	356
88.80	1,271	434
88.90	1,271	540
89.00	1,271	645
89.10	1,271	750
89.20	1,271	854
89.30	1,271	958
89.40	1,271	1,062
89.50	1,271	1,165
89.60	1,271	1,267
89.70	1,271	1,369
89.80	1,271	1,471
89.90	1,271	1,571
90.00	1,271	1,672
90.10	1,271	1,771
90.20	1,271	1,870
90.30	1,271	1,967
90.40	1,271	2,064
90.50	1,271	2,161
90.60	1,271	2,256
90.70	1,271	2,350
90.80	1,271	2,443
90.90	1,271	2,535
91.00	1,271	2,626
91.10	1,271	2,715
91.20	1,271	2,803
91.30	1,271	2,889
91.40	1,271	2,974
91.50	1,271	3,057
91.60	1,271	3,138
91.70	1,271	3,217
91.80	1,271	3,294
91.90	1,271	3,368
92.00	1,271	3,438
92.10	1,271	3,504
92.20	1,271	3,565
92.30	1,271	3,621
92.40	1,271	3,676
92.50	1,271	3,728
92.60	1,271	3,779
92.70	1,271	3,829
92.80	1,271	3,880
92.90	1,271	3,931
93.00	1,271	3,982
93.10	1,271	4,033
93.20	1,271	4,084
93.30	1,271	4,135
93.40	1,271	4,185
93.50	1,271	**4,236**

Summary for Pond SW-B: Bioretention Basin (SWM-B)

Inflow Area = 20,021 sf, 70.47% Impervious, Inflow Depth = 0.56" for WQV event
Inflow = 0.30 cfs @ 12.07 hrs, Volume= 927 cf
Outflow = 0.00 cfs @ 22.02 hrs, Volume= 733 cf, Atten= 99%, Lag= 596.9 min
Discarded = 0.00 cfs @ 22.02 hrs, Volume= 733 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 91.56' @ 22.02 hrs Surf.Area= 1,472 sf Storage= 744 cf

Plug-Flow detention time= 1,664.9 min calculated for 733 cf (79% of inflow)
Center-of-Mass det. time= 1,587.7 min (2,374.6 - 786.9)

Volume	Invert	Avail.Storage	Storage Description
#1	91.00'	8,443 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.00	1,189	0	0
92.00	1,696	1,443	1,443
93.00	2,249	1,973	3,415
94.00	2,844	2,547	5,962
94.80	3,359	2,481	8,443

Device	Routing	Invert	Outlet Devices
#1	Primary	89.00'	**12.0" Round Outlet Pipe** L= 370.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.00' / 87.00' S= 0.0054 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	92.75'	**5.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	93.60'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	94.30'	**6.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#5	Discarded	91.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 22.02 hrs HW=91.56' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.00 cfs of 3.77 cfs potential flow)
  ├**2=Low Flow Orifice** (Controls 0.00 cfs)
  └**3=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-B: Bioretention Basin (SWM-B)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.00	1,189	0
91.05	1,214	60
91.10	1,240	121
91.15	1,265	184
91.20	1,290	248
91.25	1,316	313
91.30	1,341	380
91.35	1,366	447
91.40	1,392	516
91.45	1,417	586
91.50	1,443	658
91.55	1,468	731
91.60	1,493	805
91.65	1,519	880
91.70	1,544	957
91.75	1,569	1,034
91.80	1,595	1,113
91.85	1,620	1,194
91.90	1,645	1,275
91.95	1,671	1,358
92.00	1,696	1,443
92.05	1,724	1,528
92.10	1,751	1,615
92.15	1,779	1,703
92.20	1,807	1,793
92.25	1,834	1,884
92.30	1,862	1,976
92.35	1,890	2,070
92.40	1,917	2,165
92.45	1,945	2,262
92.50	1,973	2,360
92.55	2,000	2,459
92.60	2,028	2,560
92.65	2,055	2,662
92.70	2,083	2,765
92.75	2,111	2,870
92.80	2,138	2,976
92.85	2,166	3,084
92.90	2,194	3,193
92.95	2,221	3,303
93.00	2,249	3,415
93.05	2,279	3,528
93.10	2,308	3,643
93.15	2,338	3,759
93.20	2,368	3,877
93.25	2,398	3,996
93.30	2,427	4,116
93.35	2,457	4,239
93.40	2,487	4,362
93.45	2,517	4,487
93.50	2,547	4,614
93.55	2,576	4,742
93.60	2,606	4,871
93.65	2,636	5,003
93.70	2,666	5,135
93.75	2,695	5,269
93.80	2,725	5,405
93.85	2,755	5,542
93.90	2,785	5,680
93.95	2,814	5,820
94.00	2,844	5,962
94.05	2,876	6,105
94.10	2,908	6,249
94.15	2,941	6,395
94.20	2,973	6,543
94.25	3,005	6,693
94.30	3,037	6,844
94.35	3,069	6,996
94.40	3,102	7,151
94.45	3,134	7,306
94.50	3,166	7,464
94.55	3,198	7,623
94.60	3,230	7,784
94.65	3,262	7,946
94.70	3,295	8,110
94.75	3,327	8,276
94.80	**3,359**	**8,443**

Summary for Pond SW-C: Curtain Drain (SWM-C)

Inflow Area = 59,609 sf, 10.55% Impervious, Inflow Depth = 0.00" for WQV event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 87.40' @ 0.00 hrs Surf.Area= 973 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	87.40'	3,540 cf	**2.50'W x 389.00'L x 9.10'H Prismatoid** 8,850 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	87.20'	**8.0" Round Outlet Pipe** L= 108.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 87.20' / 85.45' S= 0.0162 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Primary	87.55'	**4.0" Vert. Low flow orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	88.60'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	87.40'	**0.100 in/hr Exfiltration over Surface area**
#5	Secondary	96.00'	**200.0' 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

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.40' (Free Discharge)
└**4=Exfiltration** (Passes 0.00 cfs of 0.00 cfs potential flow)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.40' (Free Discharge)
├**1=Outlet Pipe** (Passes 0.00 cfs of 0.13 cfs potential flow)
│└**3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
└**2=Low flow orifice** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.40' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-C: Curtain Drain (SWM-C)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.40	**973**	0
87.50	973	39
87.60	973	78
87.70	973	117
87.80	973	156
87.90	973	195
88.00	973	233
88.10	973	272
88.20	973	311
88.30	973	350
88.40	973	389
88.50	973	428
88.60	973	467
88.70	973	506
88.80	973	545
88.90	973	584
89.00	973	622
89.10	973	661
89.20	973	700
89.30	973	739
89.40	973	778
89.50	973	817
89.60	973	856
89.70	973	895
89.80	973	934
89.90	973	973
90.00	973	1,011
90.10	973	1,050
90.20	973	1,089
90.30	973	1,128
90.40	973	1,167
90.50	973	1,206
90.60	973	1,245
90.70	973	1,284
90.80	973	1,323
90.90	973	1,362
91.00	973	1,400
91.10	973	1,439
91.20	973	1,478
91.30	973	1,517
91.40	973	1,556
91.50	973	1,595
91.60	973	1,634
91.70	973	1,673
91.80	973	1,712
91.90	973	1,751
92.00	973	1,789
92.10	973	1,828
92.20	973	1,867
92.30	973	1,906
92.40	973	1,945
92.50	973	1,984
92.60	973	2,023
92.70	973	2,062
92.80	973	2,101
92.90	973	2,140
93.00	973	2,178
93.10	973	2,217
93.20	973	2,256
93.30	973	2,295
93.40	973	2,334
93.50	973	2,373
93.60	973	2,412
93.70	973	2,451
93.80	973	2,490
93.90	973	2,529
94.00	973	2,567
94.10	973	2,606
94.20	973	2,645
94.30	973	2,684
94.40	973	2,723
94.50	973	2,762
94.60	973	2,801
94.70	973	2,840
94.80	973	2,879
94.90	973	2,918
95.00	973	2,956
95.10	973	2,995
95.20	973	3,034
95.30	973	3,073
95.40	973	3,112
95.50	973	3,151
95.60	973	3,190
95.70	973	3,229
95.80	973	3,268
95.90	973	3,307
96.00	973	3,345
96.10	973	3,384
96.20	973	3,423
96.30	973	3,462
96.40	973	3,501
96.50	973	**3,540**

Summary for Pond SW-D: Drywell & Basin (SWM-D)

Inflow Area = 12,462 sf, 10.46% Impervious, Inflow Depth = 0.00" for WQV event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 91.60' @ 0.00 hrs Surf.Area= 31 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	91.60'	1,595 cf	**Drywell & Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.60	31	0	0
92.60	44	38	38
93.60	44	44	82
94.60	44	44	126
95.60	44	44	170
96.60	44	44	214
97.49	4	21	235
97.50	29	0	235
98.00	145	44	279
99.00	560	353	631
100.00	1,135	848	1,479
100.10	1,187	116	1,595

Device	Routing	Invert	Outlet Devices
#1	Discarded	91.60'	**5.000 in/hr Exfiltration over Surface area**
#2	Secondary	99.10'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.60' (Free Discharge)
↑—**1=Exfiltration** (Passes 0.00 cfs of 0.00 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.60' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-D: Drywell & Basin (SWM-D)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.60	31	0
91.70	32	3
91.80	34	6
91.90	35	10
92.00	36	13
92.10	38	17
92.20	39	21
92.30	40	25
92.40	41	29
92.50	43	33
92.60	44	38
92.70	44	42
92.80	44	46
92.90	44	51
93.00	44	55
93.10	44	60
93.20	44	64
93.30	44	68
93.40	44	73
93.50	44	77
93.60	44	82
93.70	44	86
93.80	44	90
93.90	44	95
94.00	44	99
94.10	44	104
94.20	44	108
94.30	44	112
94.40	44	117
94.50	44	121
94.60	44	126
94.70	44	130
94.80	44	134
94.90	44	139
95.00	44	143
95.10	44	148
95.20	44	152
95.30	44	156
95.40	44	161
95.50	44	165
95.60	44	170
95.70	44	174
95.80	44	178
95.90	44	183
96.00	44	187
96.10	44	192
96.20	44	196
96.30	44	200
96.40	44	205
96.50	44	209
96.60	44	214
96.70	40	218
96.80	35	221
96.90	31	225
97.00	26	228
97.10	22	230
97.20	17	232
97.30	13	233
97.40	8	234
97.50	29	235
97.60	52	239
97.70	75	245
97.80	99	254
97.90	122	265
98.00	145	279
98.10	186	295
98.20	228	316
98.30	269	341
98.40	311	370
98.50	353	403
98.60	394	440
98.70	435	482
98.80	477	527
98.90	518	577
99.00	560	631
99.10	617	690
99.20	675	755
99.30	732	825
99.40	790	901
99.50	848	983
99.60	905	1,071
99.70	962	1,164
99.80	1,020	1,263
99.90	1,077	1,368
100.00	1,135	1,479
100.10	**1,187**	**1,595**

Summary for Link AP: Analysis Point

Inflow Area = 153,606 sf, 39.64% Impervious, Inflow Depth = 0.00" for WQV event
Inflow = 0.00 cfs @ 15.57 hrs, Volume= 16 cf
Primary = 0.00 cfs @ 15.57 hrs, Volume= 16 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
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1: DA1 Runoff Area=59,609 sf 10.55% Impervious Runoff Depth=0.02"
Flow Length=337' Tc=17.4 min CN=42 Runoff=0.00 cfs 108 cf

Subcatchment DA2A: DA2A Runoff Area=14,063 sf 100.00% Impervious Runoff Depth=3.09"
Tc=5.0 min CN=98 Runoff=1.08 cfs 3,618 cf

Subcatchment DA2B: DA2B Runoff Area=5,958 sf 0.76% Impervious Runoff Depth=0.18"
Tc=10.0 min CN=51 Runoff=0.01 cfs 88 cf

Subcatchment DA3: DA3 Runoff Area=12,462 sf 10.46% Impervious Runoff Depth=0.01"
Tc=10.0 min CN=41 Runoff=0.00 cfs 14 cf

Subcatchment DA4A: DA4A Runoff Area=9,030 sf 93.13% Impervious Runoff Depth=2.87"
Tc=5.0 min CN=96 Runoff=0.67 cfs 2,158 cf

Subcatchment DA4B: DA4B Runoff Area=8,161 sf 82.85% Impervious Runoff Depth=2.66"
Tc=5.0 min CN=94 Runoff=0.58 cfs 1,809 cf

Subcatchment DA4C: DA4C Runoff Area=27,909 sf 52.85% Impervious Runoff Depth=0.90"
Tc=10.0 min CN=70 Runoff=0.53 cfs 2,090 cf

Subcatchment DA4D: DA4D Runoff Area=12,973 sf 78.69% Impervious Runoff Depth=2.19"
Tc=10.0 min CN=89 Runoff=0.66 cfs 2,369 cf

Subcatchment DA5: DA5 Runoff Area=15,903 sf 2.23% Impervious Runoff Depth=1.00"
Tc=10.0 min CN=72 Runoff=0.35 cfs 1,332 cf

Reach DMH-1: DMH-1 Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Reach DMH-3: DMH-3 Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond SW-A1: Stormtech MC-3500 (SWM-A1) Peak Elev=87.63' Storage=1,981 cf Inflow=0.67 cfs 2,158 cf
Discarded=0.00 cfs 619 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 619 cf

Pond SW-A2: Stormtech MC-3500 (SWM-A2) Peak Elev=89.03' Storage=1,645 cf Inflow=0.58 cfs 1,809 cf
Discarded=0.00 cfs 606 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 606 cf

Pond SW-A3: Stormtech MC-3500 (SWM-A3) Peak Elev=89.05' Storage=1,924 cf Inflow=0.53 cfs 2,090 cf
Discarded=0.00 cfs 803 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 803 cf

Pond SW-A4: Stormtech MC-3500 (SWM-A4) Peak Elev=90.54' Storage=2,199 cf Inflow=0.66 cfs 2,369 cf
Discarded=0.00 cfs 676 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 676 cf

Pond SW-B: Bioretention Basin (SWM-B) Peak Elev=92.83' Storage=3,042 cf Inflow=1.08 cfs 3,706 cf
Discarded=0.00 cfs 1,112 cf Primary=0.02 cfs 460 cf Secondary=0.00 cfs 0 cf Outflow=0.02 cfs 1,572 cf

Pond SW-C: Curtain Drain (SWM-C) Peak Elev=87.53' Storage=51 cf Inflow=0.00 cfs 108 cf
Discarded=0.00 cfs 108 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 108 cf

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=91.61' Storage=0 cf Inflow=0.00 cfs 14 cf
Discarded=0.00 cfs 14 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 14 cf

Link AP: Analysis Point Inflow=0.35 cfs 1,792 cf
Primary=0.35 cfs 1,792 cf

Total Runoff Area = 166,068 sf Runoff Volume = 13,586 cf Average Runoff Depth = 0.98"
62.55% Pervious = 103,883 sf 37.45% Impervious = 62,185 sf

Summary for Subcatchment DA1: DA1

Runoff = 0.00 cfs @ 17.42 hrs, Volume= 108 cf, Depth= 0.02"
Routed to Pond SW-C : Curtain Drain (SWM-C)

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=3.32"

Area (sf)	CN	Description
6,289	98	Paved parking, HSG A
27,444	39	>75% Grass cover, Good, HSG A
427	74	>75% Grass cover, Good, HSG C
25,066	30	Woods, Good, HSG A
383	70	Woods, Good, HSG C
59,609	42	Weighted Average
53,320		89.45% Pervious Area
6,289		10.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, Sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
1.7	99	0.0394	0.99		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	20	0.3400	4.08		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
17.4	337	Total			

Summary for Subcatchment DA2A: DA2A

Runoff = 1.08 cfs @ 12.07 hrs, Volume= 3,618 cf, Depth= 3.09"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

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=3.32"

Area (sf)	CN	Description
14,063	98	Roofs, HSG C
14,063		100.00% Impervious Area

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

Summary for Subcatchment DA2B: DA2B

Runoff = 0.01 cfs @ 12.48 hrs, Volume= 88 cf, Depth= 0.18"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

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=3.32"

Area (sf)	CN	Description
45	98	Paved parking, HSG C
4,003	39	>75% Grass cover, Good, HSG A
1,910	74	>75% Grass cover, Good, HSG C
5,958	51	Weighted Average
5,913		99.24% Pervious Area
45		0.76% Impervious Area

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

Summary for Subcatchment DA3: DA3

Runoff = 0.00 cfs @ 21.70 hrs, Volume= 14 cf, Depth= 0.01"
Routed to Pond SW-D : Drywell & Basin (SWM-D)

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=3.32"

Area (sf)	CN	Description
1,303	98	Paved parking, HSG A
5,621	39	>75% Grass cover, Good, HSG A
5,538	30	Woods, Good, HSG A
12,462	41	Weighted Average
11,159		89.54% Pervious Area
1,303		10.46% Impervious Area

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

Summary for Subcatchment DA4A: DA4A

Runoff = 0.67 cfs @ 12.07 hrs, Volume= 2,158 cf, Depth= 2.87"
Routed to Pond SW-A1 : Stormtech MC-3500 (SWM-A1)

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=3.32"

Area (sf)	CN	Description
8,410	98	Paved parking, HSG C
620	74	>75% Grass cover, Good, HSG C
9,030	96	Weighted Average
620		6.87% Pervious Area
8,410		93.13% Impervious Area

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

Summary for Subcatchment DA4B: DA4B

Runoff = 0.58 cfs @ 12.07 hrs, Volume= 1,809 cf, Depth= 2.66"
Routed to Pond SW-A2 : Stormtech MC-3500 (SWM-A2)

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=3.32"

Area (sf)	CN	Description
6,761	98	Paved parking, HSG C
1,400	74	>75% Grass cover, Good, HSG C
8,161	94	Weighted Average
1,400		17.15% Pervious Area
6,761		82.85% Impervious Area

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

Summary for Subcatchment DA4C: DA4C

Runoff = 0.53 cfs @ 12.15 hrs, Volume= 2,090 cf, Depth= 0.90"
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

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=3.32"

Area (sf)	CN	Description
8,803	98	Paved parking, HSG A
5,947	98	Paved parking, HSG C
8,080	39	>75% Grass cover, Good, HSG A
1,031	74	>75% Grass cover, Good, HSG C
4,048	30	Woods, Good, HSG A
27,909	70	Weighted Average
13,159		47.15% Pervious Area
14,750		52.85% Impervious Area

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

Summary for Subcatchment DA4D: DA4D

Runoff = 0.66 cfs @ 12.14 hrs, Volume= 2,369 cf, Depth= 2.19"
Routed to Pond SW-A4 : Stormtech MC-3500 (SWM-A4)

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=3.32"

Area (sf)	CN	Description
1,590	98	Paved parking, HSG A
8,619	98	Paved parking, HSG C
1,415	39	>75% Grass cover, Good, HSG A
1,349	74	>75% Grass cover, Good, HSG C
12,973	89	Weighted Average
2,764		21.31% Pervious Area
10,209		78.69% Impervious Area

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

Summary for Subcatchment DA5: DA5

Runoff = 0.35 cfs @ 12.15 hrs, Volume= 1,332 cf, Depth= 1.00"
Routed to Link AP : Analysis Point

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=3.32"

Area (sf)	CN	Description
940	39	>75% Grass cover, Good, HSG A
355	98	Paved parking, HSG C
11,719	74	>75% Grass cover, Good, HSG C
2,889	70	Woods, Good, HSG C
15,903	72	Weighted Average
15,548		97.77% Pervious Area
355		2.23% Impervious Area

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

Summary for Reach DMH-1: DMH-1

Inflow Area = 49,043 sf, 64.68% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach DMH-3: DMH-3

Inflow Area = 58,073 sf, 69.10% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Inflow Area = 9,030 sf, 93.13% Impervious, Inflow Depth = 2.87" for 2-Year event
Inflow = 0.67 cfs @ 12.07 hrs, Volume= 2,158 cf
Outflow = 0.00 cfs @ 6.33 hrs, Volume= 619 cf, Atten= 100%, Lag= 0.0 min
Discarded = 0.00 cfs @ 6.33 hrs, Volume= 619 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 87.63' @ 24.08 hrs Surf.Area= 1,108 sf Storage= 1,981 cf

Plug-Flow detention time= 1,704.6 min calculated for 619 cf (29% of inflow)
Center-of-Mass det. time= 1,537.1 min (2,309.2 - 772.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	85.00'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	85.75'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	85.80'	**12.0" Round Outlet Pipe** L= 6.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 85.80' / 85.70' S= 0.0167 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	87.65'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	88.45'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	89.35'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	85.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 6.33 hrs HW=85.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=85.00' (Free Discharge)
└**1=Outlet Pipe** (Controls 0.00 cfs)
  ├**2=Low Flow Orifice** (Controls 0.00 cfs)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A1: Stormtech MC-3500 (SWM-A1) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

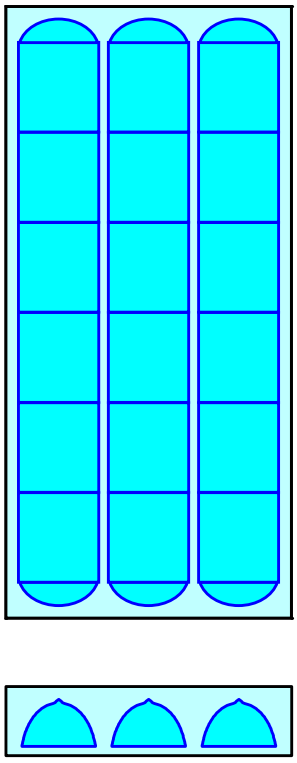
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone



Stage-Area-Storage for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
85.00	**1,108**	0
85.10	1,108	44
85.20	1,108	89
85.30	1,108	133
85.40	1,108	177
85.50	1,108	222
85.60	1,108	266
85.70	1,108	310
85.80	1,108	378
85.90	1,108	470
86.00	1,108	561
86.10	1,108	652
86.20	1,108	743
86.30	1,108	833
86.40	1,108	922
86.50	1,108	1,012
86.60	1,108	1,101
86.70	1,108	1,189
86.80	1,108	1,277
86.90	1,108	1,364
87.00	1,108	1,451
87.10	1,108	1,537
87.20	1,108	1,623
87.30	1,108	1,708
87.40	1,108	1,792
87.50	1,108	1,875
87.60	1,108	1,958
87.70	1,108	2,039
87.80	1,108	2,120
87.90	1,108	2,200
88.00	1,108	2,279
88.10	1,108	2,356
88.20	1,108	2,432
88.30	1,108	2,507
88.40	1,108	2,581
88.50	1,108	2,653
88.60	1,108	2,724
88.70	1,108	2,792
88.80	1,108	2,859
88.90	1,108	2,923
89.00	1,108	2,984
89.10	1,108	3,042
89.20	1,108	3,094
89.30	1,108	3,144
89.40	1,108	3,191
89.50	1,108	3,236
89.60	1,108	3,281
89.70	1,108	3,325
89.80	1,108	3,369
89.90	1,108	3,414
90.00	1,108	3,458
90.10	1,108	3,502
90.20	1,108	3,547
90.30	1,108	3,591
90.40	1,108	3,635
90.50	1,108	**3,680**

Summary for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Inflow Area = 8,161 sf, 82.85% Impervious, Inflow Depth = 2.66" for 2-Year event
Inflow = 0.58 cfs @ 12.07 hrs, Volume= 1,809 cf
Outflow = 0.00 cfs @ 7.62 hrs, Volume= 606 cf, Atten= 100%, Lag= 0.0 min
Discarded = 0.00 cfs @ 7.62 hrs, Volume= 606 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 89.03' @ 24.07 hrs Surf.Area= 1,108 sf Storage= 1,645 cf

Plug-Flow detention time= 1,706.1 min calculated for 606 cf (34% of inflow)
Center-of-Mass det. time= 1,565.1 min (2,350.1 - 785.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	86.80'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	87.55'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	87.60'	**12.0" Round Outlet Pipe** L= 9.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 87.60' / 87.50' S= 0.0111 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	89.05'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	89.70'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.05'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	86.80'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 7.62 hrs HW=86.86' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=86.80' (Free Discharge)
└**1=Outlet Pipe** (Controls 0.00 cfs)
  ├**2=Low Flow Orifice** (Controls 0.00 cfs)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A2: Stormtech MC-3500 (SWM-A2) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

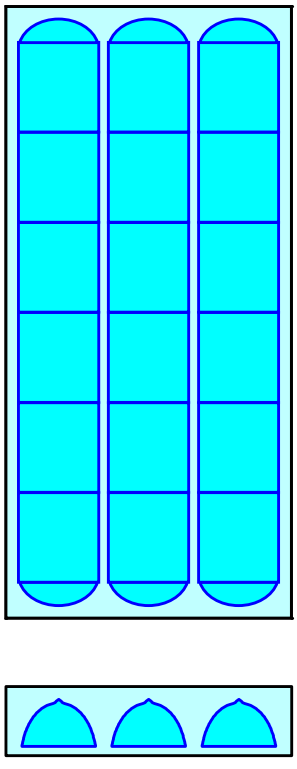
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone



Stage-Area-Storage for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
86.80	**1,108**	0
86.90	1,108	44
87.00	1,108	89
87.10	1,108	133
87.20	1,108	177
87.30	1,108	222
87.40	1,108	266
87.50	1,108	310
87.60	1,108	378
87.70	1,108	470
87.80	1,108	561
87.90	1,108	652
88.00	1,108	743
88.10	1,108	833
88.20	1,108	922
88.30	1,108	1,012
88.40	1,108	1,101
88.50	1,108	1,189
88.60	1,108	1,277
88.70	1,108	1,364
88.80	1,108	1,451
88.90	1,108	1,537
89.00	1,108	1,623
89.10	1,108	1,708
89.20	1,108	1,792
89.30	1,108	1,875
89.40	1,108	1,958
89.50	1,108	2,039
89.60	1,108	2,120
89.70	1,108	2,200
89.80	1,108	2,279
89.90	1,108	2,356
90.00	1,108	2,432
90.10	1,108	2,507
90.20	1,108	2,581
90.30	1,108	2,653
90.40	1,108	2,724
90.50	1,108	2,792
90.60	1,108	2,859
90.70	1,108	2,923
90.80	1,108	2,984
90.90	1,108	3,042
91.00	1,108	3,094
91.10	1,108	3,144
91.20	1,108	3,191
91.30	1,108	3,236
91.40	1,108	3,281
91.50	1,108	3,325
91.60	1,108	3,369
91.70	1,108	3,414
91.80	1,108	3,458
91.90	1,108	3,502
92.00	1,108	3,547
92.10	1,108	3,591
92.20	1,108	3,635
92.30	1,108	**3,680**

Summary for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Inflow Area = 27,909 sf, 52.85% Impervious, Inflow Depth = 0.90" for 2-Year event
Inflow = 0.53 cfs @ 12.15 hrs, Volume= 2,090 cf
Outflow = 0.00 cfs @ 11.84 hrs, Volume= 803 cf, Atten= 99%, Lag= 0.0 min
Discarded = 0.00 cfs @ 11.84 hrs, Volume= 803 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 89.05' @ 24.17 hrs Surf.Area= 1,598 sf Storage= 1,924 cf

Plug-Flow detention time= 1,779.4 min calculated for 803 cf (38% of inflow)
Center-of-Mass det. time= 1,634.4 min (2,511.2 - 876.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	87.20'	2,292 cf	**22.75'W x 70.23'L x 5.50'H Field A** 8,788 cf Overall - 3,058 cf Embedded = 5,729 cf x 40.0% Voids
#2A	87.95'	3,058 cf	**ADS_StormTech MC-3500 d +Cap** x 27 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 27 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		5,350 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round Outlet Pipe** L= 2.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 87.90' S= 0.0500 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	89.10'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.40'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.45'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	87.20'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 11.84 hrs HW=87.26' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.20' (Free Discharge)
└**1=Outlet Pipe** (Controls 0.00 cfs)
  ├**2=Low Flow Orifice** (Controls 0.00 cfs)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A3: Stormtech MC-3500 (SWM-A3) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

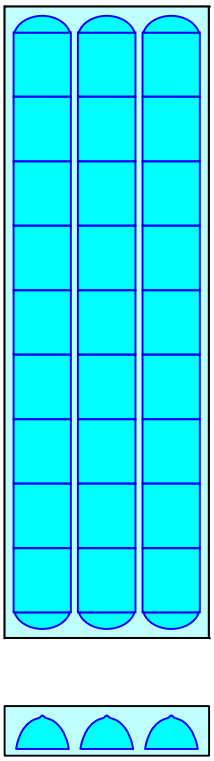
9 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 68.23' Row Length +12.0" End Stone x 2 = 70.23' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

27 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 3,058.1 cf Chamber Storage

8,787.5 cf Field - 3,058.1 cf Chambers = 5,729.4 cf Stone x 40.0% Voids = 2,291.8 cf Stone Storage

Chamber Storage + Stone Storage = 5,349.9 cf = 0.123 af
Overall Storage Efficiency = 60.9%
Overall System Size = 70.23' x 22.75' x 5.50'

27 Chambers
325.5 cy Field
212.2 cy Stone



Stage-Area-Storage for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.20	**1,598**	0
87.30	1,598	64
87.40	1,598	128
87.50	1,598	192
87.60	1,598	256
87.70	1,598	320
87.80	1,598	383
87.90	1,598	447
88.00	1,598	546
88.10	1,598	680
88.20	1,598	813
88.30	1,598	946
88.40	1,598	1,078
88.50	1,598	1,210
88.60	1,598	1,341
88.70	1,598	1,471
88.80	1,598	1,601
88.90	1,598	1,730
89.00	1,598	1,858
89.10	1,598	1,986
89.20	1,598	2,113
89.30	1,598	2,238
89.40	1,598	2,363
89.50	1,598	2,487
89.60	1,598	2,610
89.70	1,598	2,731
89.80	1,598	2,852
89.90	1,598	2,971
90.00	1,598	3,089
90.10	1,598	3,205
90.20	1,598	3,320
90.30	1,598	3,433
90.40	1,598	3,544
90.50	1,598	3,653
90.60	1,598	3,760
90.70	1,598	3,865
90.80	1,598	3,968
90.90	1,598	4,067
91.00	1,598	4,164
91.10	1,598	4,257
91.20	1,598	4,346
91.30	1,598	4,430
91.40	1,598	4,506
91.50	1,598	4,577
91.60	1,598	4,645
91.70	1,598	4,711
91.80	1,598	4,775
91.90	1,598	4,839
92.00	1,598	4,903
92.10	1,598	4,966
92.20	1,598	5,030
92.30	1,598	5,094
92.40	1,598	5,158
92.50	1,598	5,222
92.60	1,598	5,286
92.70	1,598	**5,350**

Summary for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Inflow Area = 12,973 sf, 78.69% Impervious, Inflow Depth = 2.19" for 2-Year event
Inflow = 0.66 cfs @ 12.14 hrs, Volume= 2,369 cf
Outflow = 0.00 cfs @ 9.04 hrs, Volume= 676 cf, Atten= 100%, Lag= 0.0 min
Discarded = 0.00 cfs @ 9.04 hrs, Volume= 676 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 90.54' @ 24.16 hrs Surf.Area= 1,271 sf Storage= 2,199 cf

Plug-Flow detention time= 1,730.2 min calculated for 676 cf (29% of inflow)
Center-of-Mass det. time= 1,593.0 min (2,406.3 - 813.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	88.00'	1,838 cf	**22.75'W x 55.89'L x 5.50'H Field A** 6,993 cf Overall - 2,398 cf Embedded = 4,595 cf x 40.0% Voids
#2A	88.75'	2,398 cf	**ADS_StormTech MC-3500 d +Cap** x 21 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 21 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		4,236 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.80'	**12.0" Round Outlet Pipe** L= 98.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 88.80' / 86.90' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	90.55'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.55'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.25'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	88.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 9.04 hrs HW=88.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=88.00' (Free Discharge)
└**1=Outlet Pipe** (Controls 0.00 cfs)
  ├**2=Low Flow Orifice** (Controls 0.00 cfs)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A4: Stormtech MC-3500 (SWM-A4) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

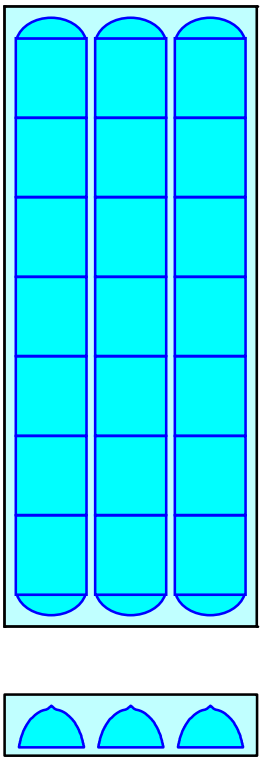
7 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 53.89' Row Length +12.0" End Stone x 2 = 55.89' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

21 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,398.4 cf Chamber Storage

6,993.2 cf Field - 2,398.4 cf Chambers = 4,594.8 cf Stone x 40.0% Voids = 1,837.9 cf Stone Storage

Chamber Storage + Stone Storage = 4,236.3 cf = 0.097 af
Overall Storage Efficiency = 60.6%
Overall System Size = 55.89' x 22.75' x 5.50'

21 Chambers
259.0 cy Field
170.2 cy Stone



Stage-Area-Storage for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
88.00	**1,271**	0
88.10	1,271	51
88.20	1,271	102
88.30	1,271	153
88.40	1,271	203
88.50	1,271	254
88.60	1,271	305
88.70	1,271	356
88.80	1,271	434
88.90	1,271	540
89.00	1,271	645
89.10	1,271	750
89.20	1,271	854
89.30	1,271	958
89.40	1,271	1,062
89.50	1,271	1,165
89.60	1,271	1,267
89.70	1,271	1,369
89.80	1,271	1,471
89.90	1,271	1,571
90.00	1,271	1,672
90.10	1,271	1,771
90.20	1,271	1,870
90.30	1,271	1,967
90.40	1,271	2,064
90.50	1,271	2,161
90.60	1,271	2,256
90.70	1,271	2,350
90.80	1,271	2,443
90.90	1,271	2,535
91.00	1,271	2,626
91.10	1,271	2,715
91.20	1,271	2,803
91.30	1,271	2,889
91.40	1,271	2,974
91.50	1,271	3,057
91.60	1,271	3,138
91.70	1,271	3,217
91.80	1,271	3,294
91.90	1,271	3,368
92.00	1,271	3,438
92.10	1,271	3,504
92.20	1,271	3,565
92.30	1,271	3,621
92.40	1,271	3,676
92.50	1,271	3,728
92.60	1,271	3,779
92.70	1,271	3,829
92.80	1,271	3,880
92.90	1,271	3,931
93.00	1,271	3,982
93.10	1,271	4,033
93.20	1,271	4,084
93.30	1,271	4,135
93.40	1,271	4,185
93.50	1,271	**4,236**

Summary for Pond SW-B: Bioretention Basin (SWM-B)

Inflow Area = 20,021 sf, 70.47% Impervious, Inflow Depth = 2.22" for 2-Year event
Inflow = 1.08 cfs @ 12.07 hrs, Volume= 3,706 cf
Outflow = 0.02 cfs @ 17.26 hrs, Volume= 1,572 cf, Atten= 98%, Lag= 311.2 min
Discarded = 0.00 cfs @ 17.26 hrs, Volume= 1,112 cf
Primary = 0.02 cfs @ 17.26 hrs, Volume= 460 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 92.83' @ 17.26 hrs Surf.Area= 2,155 sf Storage= 3,042 cf

Plug-Flow detention time= 1,369.8 min calculated for 1,572 cf (42% of inflow)
Center-of-Mass det. time= 1,224.6 min (1,984.9 - 760.3)

Volume	Invert	Avail.Storage	Storage Description
#1	91.00'	8,443 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.00	1,189	0	0
92.00	1,696	1,443	1,443
93.00	2,249	1,973	3,415
94.00	2,844	2,547	5,962
94.80	3,359	2,481	8,443

Device	Routing	Invert	Outlet Devices
#1	Primary	89.00'	**12.0" Round Outlet Pipe** L= 370.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.00' / 87.00' S= 0.0054 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	92.75'	**5.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	93.60'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	94.30'	**6.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#5	Discarded	91.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 17.26 hrs HW=92.83' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.02 cfs @ 17.26 hrs HW=92.83' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.02 cfs of 4.79 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.02 cfs @ 0.97 fps)
  └**3=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-B: Bioretention Basin (SWM-B)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.00	1,189	0
91.05	1,214	60
91.10	1,240	121
91.15	1,265	184
91.20	1,290	248
91.25	1,316	313
91.30	1,341	380
91.35	1,366	447
91.40	1,392	516
91.45	1,417	586
91.50	1,443	658
91.55	1,468	731
91.60	1,493	805
91.65	1,519	880
91.70	1,544	957
91.75	1,569	1,034
91.80	1,595	1,113
91.85	1,620	1,194
91.90	1,645	1,275
91.95	1,671	1,358
92.00	1,696	1,443
92.05	1,724	1,528
92.10	1,751	1,615
92.15	1,779	1,703
92.20	1,807	1,793
92.25	1,834	1,884
92.30	1,862	1,976
92.35	1,890	2,070
92.40	1,917	2,165
92.45	1,945	2,262
92.50	1,973	2,360
92.55	2,000	2,459
92.60	2,028	2,560
92.65	2,055	2,662
92.70	2,083	2,765
92.75	2,111	2,870
92.80	2,138	2,976
92.85	2,166	3,084
92.90	2,194	3,193
92.95	2,221	3,303
93.00	2,249	3,415
93.05	2,279	3,528
93.10	2,308	3,643
93.15	2,338	3,759
93.20	2,368	3,877
93.25	2,398	3,996
93.30	2,427	4,116
93.35	2,457	4,239
93.40	2,487	4,362
93.45	2,517	4,487
93.50	2,547	4,614
93.55	2,576	4,742
93.60	2,606	4,871
93.65	2,636	5,003
93.70	2,666	5,135
93.75	2,695	5,269
93.80	2,725	5,405
93.85	2,755	5,542
93.90	2,785	5,680
93.95	2,814	5,820
94.00	2,844	5,962
94.05	2,876	6,105
94.10	2,908	6,249
94.15	2,941	6,395
94.20	2,973	6,543
94.25	3,005	6,693
94.30	3,037	6,844
94.35	3,069	6,996
94.40	3,102	7,151
94.45	3,134	7,306
94.50	3,166	7,464
94.55	3,198	7,623
94.60	3,230	7,784
94.65	3,262	7,946
94.70	3,295	8,110
94.75	3,327	8,276
94.80	**3,359**	**8,443**

Summary for Pond SW-C: Curtain Drain (SWM-C)

Inflow Area = 59,609 sf, 10.55% Impervious, Inflow Depth = 0.02" for 2-Year event
Inflow = 0.00 cfs @ 17.42 hrs, Volume= 108 cf
Outflow = 0.00 cfs @ 20.12 hrs, Volume= 108 cf, Atten= 36%, Lag= 162.0 min
Discarded = 0.00 cfs @ 20.12 hrs, Volume= 108 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 87.53' @ 24.18 hrs Surf.Area= 973 sf Storage= 51 cf

Plug-Flow detention time= 290.0 min calculated for 108 cf (100% of inflow)
Center-of-Mass det. time= 289.9 min (1,474.4 - 1,184.4)

Volume	Invert	Avail.Storage	Storage Description
#1	87.40'	3,540 cf	**2.50'W x 389.00'L x 9.10'H Prismatoid** 8,850 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	87.20'	**8.0" Round Outlet Pipe** L= 108.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 87.20' / 85.45' S= 0.0162 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Primary	87.55'	**4.0" Vert. Low flow orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	88.60'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	87.40'	**0.100 in/hr Exfiltration over Surface area**
#5	Secondary	96.00'	**200.0' 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

Discarded OutFlow Max=0.00 cfs @ 20.12 hrs HW=87.49' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.40' (Free Discharge)
├**1=Outlet Pipe** (Passes 0.00 cfs of 0.13 cfs potential flow)
│└**3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
└**2=Low flow orifice** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.40' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-C: Curtain Drain (SWM-C)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.40	**973**	0
87.50	973	39
87.60	973	78
87.70	973	117
87.80	973	156
87.90	973	195
88.00	973	233
88.10	973	272
88.20	973	311
88.30	973	350
88.40	973	389
88.50	973	428
88.60	973	467
88.70	973	506
88.80	973	545
88.90	973	584
89.00	973	622
89.10	973	661
89.20	973	700
89.30	973	739
89.40	973	778
89.50	973	817
89.60	973	856
89.70	973	895
89.80	973	934
89.90	973	973
90.00	973	1,011
90.10	973	1,050
90.20	973	1,089
90.30	973	1,128
90.40	973	1,167
90.50	973	1,206
90.60	973	1,245
90.70	973	1,284
90.80	973	1,323
90.90	973	1,362
91.00	973	1,400
91.10	973	1,439
91.20	973	1,478
91.30	973	1,517
91.40	973	1,556
91.50	973	1,595
91.60	973	1,634
91.70	973	1,673
91.80	973	1,712
91.90	973	1,751
92.00	973	1,789
92.10	973	1,828
92.20	973	1,867
92.30	973	1,906
92.40	973	1,945
92.50	973	1,984
92.60	973	2,023
92.70	973	2,062
92.80	973	2,101
92.90	973	2,140
93.00	973	2,178
93.10	973	2,217
93.20	973	2,256
93.30	973	2,295
93.40	973	2,334
93.50	973	2,373
93.60	973	2,412
93.70	973	2,451
93.80	973	2,490
93.90	973	2,529
94.00	973	2,567
94.10	973	2,606
94.20	973	2,645
94.30	973	2,684
94.40	973	2,723
94.50	973	2,762
94.60	973	2,801
94.70	973	2,840
94.80	973	2,879
94.90	973	2,918
95.00	973	2,956
95.10	973	2,995
95.20	973	3,034
95.30	973	3,073
95.40	973	3,112
95.50	973	3,151
95.60	973	3,190
95.70	973	3,229
95.80	973	3,268
95.90	973	3,307
96.00	973	3,345
96.10	973	3,384
96.20	973	3,423
96.30	973	3,462
96.40	973	3,501
96.50	973	**3,540**

Summary for Pond SW-D: Drywell & Basin (SWM-D)

Inflow Area = 12,462 sf, 10.46% Impervious, Inflow Depth = 0.01" for 2-Year event
Inflow = 0.00 cfs @ 21.70 hrs, Volume= 14 cf
Outflow = 0.00 cfs @ 21.90 hrs, Volume= 14 cf, Atten= 0%, Lag= 11.8 min
Discarded = 0.00 cfs @ 21.90 hrs, Volume= 14 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 91.61' @ 21.90 hrs Surf.Area= 31 sf Storage= 0 cf

Plug-Flow detention time= 12.0 min calculated for 14 cf (100% of inflow)
Center-of-Mass det. time= 12.0 min (1,231.7 - 1,219.6)

Volume	Invert	Avail.Storage	Storage Description
#1	91.60'	1,595 cf	**Drywell & Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.60	31	0	0
92.60	44	38	38
93.60	44	44	82
94.60	44	44	126
95.60	44	44	170
96.60	44	44	214
97.49	4	21	235
97.50	29	0	235
98.00	145	44	279
99.00	560	353	631
100.00	1,135	848	1,479
100.10	1,187	116	1,595

Device	Routing	Invert	Outlet Devices
#1	Discarded	91.60'	**5.000 in/hr Exfiltration over Surface area**
#2	Secondary	99.10'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.00 cfs @ 21.90 hrs HW=91.61' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.60' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-D: Drywell & Basin (SWM-D)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.60	31	0
91.70	32	3
91.80	34	6
91.90	35	10
92.00	36	13
92.10	38	17
92.20	39	21
92.30	40	25
92.40	41	29
92.50	43	33
92.60	44	38
92.70	44	42
92.80	44	46
92.90	44	51
93.00	44	55
93.10	44	60
93.20	44	64
93.30	44	68
93.40	44	73
93.50	44	77
93.60	44	82
93.70	44	86
93.80	44	90
93.90	44	95
94.00	44	99
94.10	44	104
94.20	44	108
94.30	44	112
94.40	44	117
94.50	44	121
94.60	44	126
94.70	44	130
94.80	44	134
94.90	44	139
95.00	44	143
95.10	44	148
95.20	44	152
95.30	44	156
95.40	44	161
95.50	44	165
95.60	44	170
95.70	44	174
95.80	44	178
95.90	44	183
96.00	44	187
96.10	44	192
96.20	44	196
96.30	44	200
96.40	44	205
96.50	44	209
96.60	44	214
96.70	40	218
96.80	35	221
96.90	31	225
97.00	26	228
97.10	22	230
97.20	17	232
97.30	13	233
97.40	8	234
97.50	29	235
97.60	52	239
97.70	75	245
97.80	99	254
97.90	122	265
98.00	145	279
98.10	186	295
98.20	228	316
98.30	269	341
98.40	311	370
98.50	353	403
98.60	394	440
98.70	435	482
98.80	477	527
98.90	518	577
99.00	560	631
99.10	617	690
99.20	675	755
99.30	732	825
99.40	790	901
99.50	848	983
99.60	905	1,071
99.70	962	1,164
99.80	1,020	1,263
99.90	1,077	1,368
100.00	1,135	1,479
100.10	**1,187**	**1,595**

Summary for Link AP: Analysis Point

Inflow Area = 153,606 sf, 39.64% Impervious, Inflow Depth = 0.14" for 2-Year event
Inflow = 0.35 cfs @ 12.15 hrs, Volume= 1,792 cf
Primary = 0.35 cfs @ 12.15 hrs, Volume= 1,792 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
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1: DA1 Runoff Area=59,609 sf 10.55% Impervious Runoff Depth=0.41"
Flow Length=337' Tc=17.4 min CN=42 Runoff=0.20 cfs 2,029 cf

Subcatchment DA2A: DA2A Runoff Area=14,063 sf 100.00% Impervious Runoff Depth=5.11"
Tc=5.0 min CN=98 Runoff=1.75 cfs 5,992 cf

Subcatchment DA2B: DA2B Runoff Area=5,958 sf 0.76% Impervious Runoff Depth=0.90"
Tc=10.0 min CN=51 Runoff=0.09 cfs 448 cf

Subcatchment DA3: DA3 Runoff Area=12,462 sf 10.46% Impervious Runoff Depth=0.36"
Tc=10.0 min CN=41 Runoff=0.04 cfs 376 cf

Subcatchment DA4A: DA4A Runoff Area=9,030 sf 93.13% Impervious Runoff Depth=4.88"
Tc=5.0 min CN=96 Runoff=1.11 cfs 3,673 cf

Subcatchment DA4B: DA4B Runoff Area=8,161 sf 82.85% Impervious Runoff Depth=4.65"
Tc=5.0 min CN=94 Runoff=0.98 cfs 3,165 cf

Subcatchment DA4C: DA4C Runoff Area=27,909 sf 52.85% Impervious Runoff Depth=2.30"
Tc=10.0 min CN=70 Runoff=1.49 cfs 5,348 cf

Subcatchment DA4D: DA4D Runoff Area=12,973 sf 78.69% Impervious Runoff Depth=4.11"
Tc=10.0 min CN=89 Runoff=1.22 cfs 4,441 cf

Subcatchment DA5: DA5 Runoff Area=15,903 sf 2.23% Impervious Runoff Depth=2.47"
Tc=10.0 min CN=72 Runoff=0.92 cfs 3,274 cf

Reach DMH-1: DMH-1 Inflow=0.55 cfs 6,429 cf
Outflow=0.55 cfs 6,429 cf

Reach DMH-3: DMH-3 Inflow=0.70 cfs 7,886 cf
Outflow=0.70 cfs 7,886 cf

Pond SW-A1: Stormtech MC-3500 (SWM-A1) Peak Elev=87.97' Storage=2,255 cf Inflow=1.11 cfs 3,673 cf
Discarded=0.00 cfs 634 cf Primary=0.17 cfs 1,457 cf Outflow=0.17 cfs 2,091 cf

Pond SW-A2: Stormtech MC-3500 (SWM-A2) Peak Elev=89.33' Storage=1,903 cf Inflow=0.98 cfs 3,165 cf
Discarded=0.00 cfs 624 cf Primary=0.14 cfs 1,296 cf Outflow=0.15 cfs 1,920 cf

Pond SW-A3: Stormtech MC-3500 (SWM-A3) Peak Elev=89.55' Storage=2,543 cf Inflow=1.49 cfs 5,348 cf
Discarded=0.00 cfs 822 cf Primary=0.22 cfs 3,123 cf Outflow=0.23 cfs 3,945 cf

Pond SW-A4: Stormtech MC-3500 (SWM-A4) Peak Elev=90.93' Storage=2,566 cf Inflow=1.22 cfs 4,441 cf
Discarded=0.00 cfs 698 cf Primary=0.20 cfs 2,011 cf Outflow=0.20 cfs 2,708 cf

Pond SW-B: Bioretention Basin (SWM-B) Peak Elev=93.16' Storage=3,782 cf Inflow=1.80 cfs 6,439 cf
Discarded=0.01 cfs 1,141 cf Primary=0.29 cfs 3,149 cf Secondary=0.00 cfs 0 cf Outflow=0.30 cfs 4,290 cf

Pond SW-C: Curtain Drain (SWM-C) Peak Elev=87.84' Storage=172 cf Inflow=0.20 cfs 2,029 cf
Discarded=0.00 cfs 168 cf Primary=0.15 cfs 1,861 cf Secondary=0.00 cfs 0 cf Outflow=0.15 cfs 2,029 cf

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=95.58' Storage=169 cf Inflow=0.04 cfs 376 cf
Discarded=0.01 cfs 376 cf Secondary=0.00 cfs 0 cf Outflow=0.01 cfs 376 cf

Link AP: Analysis Point Inflow=1.37 cfs 16,171 cf
Primary=1.37 cfs 16,171 cf

Total Runoff Area = 166,068 sf Runoff Volume = 28,745 cf Average Runoff Depth = 2.08"
62.55% Pervious = 103,883 sf 37.45% Impervious = 62,185 sf

Summary for Subcatchment DA1: DA1

Runoff = 0.20 cfs @ 12.51 hrs, Volume= 2,029 cf, Depth= 0.41"
Routed to Pond SW-C : Curtain Drain (SWM-C)

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=5.35"

Area (sf)	CN	Description
6,289	98	Paved parking, HSG A
27,444	39	>75% Grass cover, Good, HSG A
427	74	>75% Grass cover, Good, HSG C
25,066	30	Woods, Good, HSG A
383	70	Woods, Good, HSG C
59,609	42	Weighted Average
53,320		89.45% Pervious Area
6,289		10.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, Sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
1.7	99	0.0394	0.99		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	20	0.3400	4.08		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
17.4	337	Total			

Summary for Subcatchment DA2A: DA2A

Runoff = 1.75 cfs @ 12.07 hrs, Volume= 5,992 cf, Depth= 5.11"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

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=5.35"

Area (sf)	CN	Description
14,063	98	Roofs, HSG C
14,063		100.00% Impervious Area

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

Summary for Subcatchment DA2B: DA2B

Runoff = 0.09 cfs @ 12.17 hrs, Volume= 448 cf, Depth= 0.90"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

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=5.35"

Area (sf)	CN	Description
45	98	Paved parking, HSG C
4,003	39	>75% Grass cover, Good, HSG A
1,910	74	>75% Grass cover, Good, HSG C
5,958	51	Weighted Average
5,913		99.24% Pervious Area
45		0.76% Impervious Area

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

Summary for Subcatchment DA3: DA3

Runoff = 0.04 cfs @ 12.43 hrs, Volume= 376 cf, Depth= 0.36"
Routed to Pond SW-D : Drywell & Basin (SWM-D)

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=5.35"

Area (sf)	CN	Description
1,303	98	Paved parking, HSG A
5,621	39	>75% Grass cover, Good, HSG A
5,538	30	Woods, Good, HSG A
12,462	41	Weighted Average
11,159		89.54% Pervious Area
1,303		10.46% Impervious Area

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

Summary for Subcatchment DA4A: DA4A

Runoff = 1.11 cfs @ 12.07 hrs, Volume= 3,673 cf, Depth= 4.88"
Routed to Pond SW-A1 : Stormtech MC-3500 (SWM-A1)

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=5.35"

Area (sf)	CN	Description
8,410	98	Paved parking, HSG C
620	74	>75% Grass cover, Good, HSG C
9,030	96	Weighted Average
620		6.87% Pervious Area
8,410		93.13% Impervious Area

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

Summary for Subcatchment DA4B: DA4B

Runoff = 0.98 cfs @ 12.07 hrs, Volume= 3,165 cf, Depth= 4.65"
Routed to Pond SW-A2 : Stormtech MC-3500 (SWM-A2)

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=5.35"

Area (sf)	CN	Description
6,761	98	Paved parking, HSG C
1,400	74	>75% Grass cover, Good, HSG C
8,161	94	Weighted Average
1,400		17.15% Pervious Area
6,761		82.85% Impervious Area

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

Summary for Subcatchment DA4C: DA4C

Runoff = 1.49 cfs @ 12.14 hrs, Volume= 5,348 cf, Depth= 2.30"
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

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=5.35"

Area (sf)	CN	Description
8,803	98	Paved parking, HSG A
5,947	98	Paved parking, HSG C
8,080	39	>75% Grass cover, Good, HSG A
1,031	74	>75% Grass cover, Good, HSG C
4,048	30	Woods, Good, HSG A
27,909	70	Weighted Average
13,159		47.15% Pervious Area
14,750		52.85% Impervious Area

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

Summary for Subcatchment DA4D: DA4D

Runoff = 1.22 cfs @ 12.14 hrs, Volume= 4,441 cf, Depth= 4.11"
Routed to Pond SW-A4 : Stormtech MC-3500 (SWM-A4)

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=5.35"

Area (sf)	CN	Description
1,590	98	Paved parking, HSG A
8,619	98	Paved parking, HSG C
1,415	39	>75% Grass cover, Good, HSG A
1,349	74	>75% Grass cover, Good, HSG C
12,973	89	Weighted Average
2,764		21.31% Pervious Area
10,209		78.69% Impervious Area

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

Summary for Subcatchment DA5: DA5

Runoff = 0.92 cfs @ 12.14 hrs, Volume= 3,274 cf, Depth= 2.47"
Routed to Link AP : Analysis Point

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=5.35"

Area (sf)	CN	Description
940	39	>75% Grass cover, Good, HSG A
355	98	Paved parking, HSG C
11,719	74	>75% Grass cover, Good, HSG C
2,889	70	Woods, Good, HSG C
15,903	72	Weighted Average
15,548		97.77% Pervious Area
355		2.23% Impervious Area

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

Summary for Reach DMH-1: DMH-1

Inflow Area = 49,043 sf, 64.68% Impervious, Inflow Depth = 1.57" for 10-Year event
Inflow = 0.55 cfs @ 12.68 hrs, Volume= 6,429 cf
Outflow = 0.55 cfs @ 12.68 hrs, Volume= 6,429 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach DMH-3: DMH-3

Inflow Area = 58,073 sf, 69.10% Impervious, Inflow Depth = 1.63" for 10-Year event
Inflow = 0.70 cfs @ 12.64 hrs, Volume= 7,886 cf
Outflow = 0.70 cfs @ 12.64 hrs, Volume= 7,886 cf, Atten= 0%, Lag= 0.0 min
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Inflow Area = 9,030 sf, 93.13% Impervious, Inflow Depth = 4.88" for 10-Year event
Inflow = 1.11 cfs @ 12.07 hrs, Volume= 3,673 cf
Outflow = 0.17 cfs @ 12.54 hrs, Volume= 2,091 cf, Atten= 85%, Lag= 28.3 min
Discarded = 0.00 cfs @ 4.26 hrs, Volume= 634 cf
Primary = 0.17 cfs @ 12.54 hrs, Volume= 1,457 cf
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 87.97' @ 12.54 hrs Surf.Area= 1,108 sf Storage= 2,255 cf

Plug-Flow detention time= 682.3 min calculated for 2,091 cf (57% of inflow)
Center-of-Mass det. time= 570.9 min (1,330.8 - 759.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	85.00'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	85.75'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	85.80'	**12.0" Round Outlet Pipe** L= 6.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 85.80' / 85.70' S= 0.0167 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	87.65'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	88.45'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	89.35'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	85.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 4.26 hrs HW=85.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.17 cfs @ 12.54 hrs HW=87.97' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.17 cfs of 4.89 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.17 cfs @ 1.92 fps)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A1: Stormtech MC-3500 (SWM-A1) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

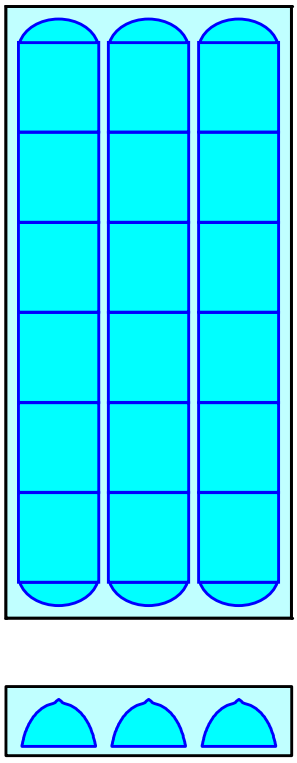
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone



Stage-Area-Storage for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
85.00	**1,108**	0
85.10	1,108	44
85.20	1,108	89
85.30	1,108	133
85.40	1,108	177
85.50	1,108	222
85.60	1,108	266
85.70	1,108	310
85.80	1,108	378
85.90	1,108	470
86.00	1,108	561
86.10	1,108	652
86.20	1,108	743
86.30	1,108	833
86.40	1,108	922
86.50	1,108	1,012
86.60	1,108	1,101
86.70	1,108	1,189
86.80	1,108	1,277
86.90	1,108	1,364
87.00	1,108	1,451
87.10	1,108	1,537
87.20	1,108	1,623
87.30	1,108	1,708
87.40	1,108	1,792
87.50	1,108	1,875
87.60	1,108	1,958
87.70	1,108	2,039
87.80	1,108	2,120
87.90	1,108	2,200
88.00	1,108	2,279
88.10	1,108	2,356
88.20	1,108	2,432
88.30	1,108	2,507
88.40	1,108	2,581
88.50	1,108	2,653
88.60	1,108	2,724
88.70	1,108	2,792
88.80	1,108	2,859
88.90	1,108	2,923
89.00	1,108	2,984
89.10	1,108	3,042
89.20	1,108	3,094
89.30	1,108	3,144
89.40	1,108	3,191
89.50	1,108	3,236
89.60	1,108	3,281
89.70	1,108	3,325
89.80	1,108	3,369
89.90	1,108	3,414
90.00	1,108	3,458
90.10	1,108	3,502
90.20	1,108	3,547
90.30	1,108	3,591
90.40	1,108	3,635
90.50	1,108	**3,680**

Summary for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Inflow Area = 8,161 sf, 82.85% Impervious, Inflow Depth = 4.65" for 10-Year event
Inflow = 0.98 cfs @ 12.07 hrs, Volume= 3,165 cf
Outflow = 0.15 cfs @ 12.55 hrs, Volume= 1,920 cf, Atten= 85%, Lag= 28.6 min
Discarded = 0.00 cfs @ 5.46 hrs, Volume= 624 cf
Primary = 0.14 cfs @ 12.55 hrs, Volume= 1,296 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 89.33' @ 12.55 hrs Surf.Area= 1,108 sf Storage= 1,903 cf

Plug-Flow detention time= 705.9 min calculated for 1,920 cf (61% of inflow)
Center-of-Mass det. time= 602.0 min (1,372.7 - 770.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	86.80'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	87.55'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	87.60'	**12.0" Round Outlet Pipe** L= 9.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 87.60' / 87.50' S= 0.0111 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	89.05'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	89.70'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.05'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	86.80'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 5.46 hrs HW=86.86' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.14 cfs @ 12.55 hrs HW=89.33' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.14 cfs of 4.20 cfs potential flow)
├**2=Low Flow Orifice** (Orifice Controls 0.14 cfs @ 1.81 fps)
├**3=Upper Orifice** (Controls 0.00 cfs)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A2: Stormtech MC-3500 (SWM-A2) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

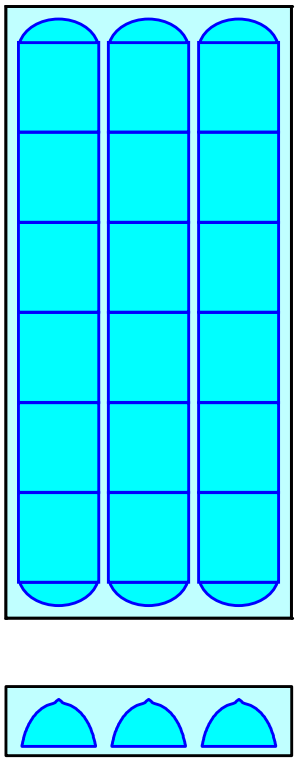
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone



Stage-Area-Storage for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
86.80	**1,108**	0
86.90	1,108	44
87.00	1,108	89
87.10	1,108	133
87.20	1,108	177
87.30	1,108	222
87.40	1,108	266
87.50	1,108	310
87.60	1,108	378
87.70	1,108	470
87.80	1,108	561
87.90	1,108	652
88.00	1,108	743
88.10	1,108	833
88.20	1,108	922
88.30	1,108	1,012
88.40	1,108	1,101
88.50	1,108	1,189
88.60	1,108	1,277
88.70	1,108	1,364
88.80	1,108	1,451
88.90	1,108	1,537
89.00	1,108	1,623
89.10	1,108	1,708
89.20	1,108	1,792
89.30	1,108	1,875
89.40	1,108	1,958
89.50	1,108	2,039
89.60	1,108	2,120
89.70	1,108	2,200
89.80	1,108	2,279
89.90	1,108	2,356
90.00	1,108	2,432
90.10	1,108	2,507
90.20	1,108	2,581
90.30	1,108	2,653
90.40	1,108	2,724
90.50	1,108	2,792
90.60	1,108	2,859
90.70	1,108	2,923
90.80	1,108	2,984
90.90	1,108	3,042
91.00	1,108	3,094
91.10	1,108	3,144
91.20	1,108	3,191
91.30	1,108	3,236
91.40	1,108	3,281
91.50	1,108	3,325
91.60	1,108	3,369
91.70	1,108	3,414
91.80	1,108	3,458
91.90	1,108	3,502
92.00	1,108	3,547
92.10	1,108	3,591
92.20	1,108	3,635
92.30	1,108	**3,680**

Summary for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Inflow Area = 27,909 sf, 52.85% Impervious, Inflow Depth = 2.30" for 10-Year event
Inflow = 1.49 cfs @ 12.14 hrs, Volume= 5,348 cf
Outflow = 0.23 cfs @ 12.87 hrs, Volume= 3,945 cf, Atten= 85%, Lag= 43.8 min
Discarded = 0.00 cfs @ 10.59 hrs, Volume= 822 cf
Primary = 0.22 cfs @ 12.87 hrs, Volume= 3,123 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 89.55' @ 12.87 hrs Surf.Area= 1,598 sf Storage= 2,543 cf

Plug-Flow detention time= 520.9 min calculated for 3,945 cf (74% of inflow)
Center-of-Mass det. time= 427.4 min (1,275.2 - 847.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	87.20'	2,292 cf	**22.75'W x 70.23'L x 5.50'H Field A** 8,788 cf Overall - 3,058 cf Embedded = 5,729 cf x 40.0% Voids
#2A	87.95'	3,058 cf	**ADS_StormTech MC-3500 d +Cap** x 27 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 27 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		5,350 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round Outlet Pipe** L= 2.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 87.90' S= 0.0500 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	89.10'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.40'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.45'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	87.20'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 10.59 hrs HW=87.26' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.22 cfs @ 12.87 hrs HW=89.55' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.22 cfs of 3.87 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.22 cfs @ 2.54 fps)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A3: Stormtech MC-3500 (SWM-A3) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

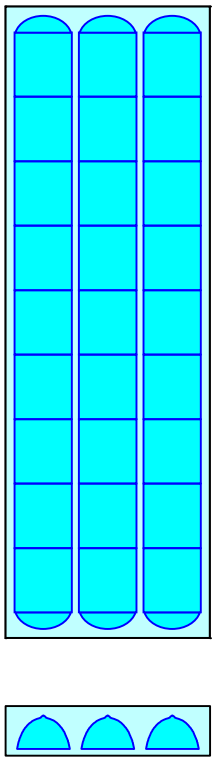
9 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 68.23' Row Length +12.0" End Stone x 2 = 70.23' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

27 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 3,058.1 cf Chamber Storage

8,787.5 cf Field - 3,058.1 cf Chambers = 5,729.4 cf Stone x 40.0% Voids = 2,291.8 cf Stone Storage

Chamber Storage + Stone Storage = 5,349.9 cf = 0.123 af
Overall Storage Efficiency = 60.9%
Overall System Size = 70.23' x 22.75' x 5.50'

27 Chambers
325.5 cy Field
212.2 cy Stone



Stage-Area-Storage for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.20	**1,598**	0
87.30	1,598	64
87.40	1,598	128
87.50	1,598	192
87.60	1,598	256
87.70	1,598	320
87.80	1,598	383
87.90	1,598	447
88.00	1,598	546
88.10	1,598	680
88.20	1,598	813
88.30	1,598	946
88.40	1,598	1,078
88.50	1,598	1,210
88.60	1,598	1,341
88.70	1,598	1,471
88.80	1,598	1,601
88.90	1,598	1,730
89.00	1,598	1,858
89.10	1,598	1,986
89.20	1,598	2,113
89.30	1,598	2,238
89.40	1,598	2,363
89.50	1,598	2,487
89.60	1,598	2,610
89.70	1,598	2,731
89.80	1,598	2,852
89.90	1,598	2,971
90.00	1,598	3,089
90.10	1,598	3,205
90.20	1,598	3,320
90.30	1,598	3,433
90.40	1,598	3,544
90.50	1,598	3,653
90.60	1,598	3,760
90.70	1,598	3,865
90.80	1,598	3,968
90.90	1,598	4,067
91.00	1,598	4,164
91.10	1,598	4,257
91.20	1,598	4,346
91.30	1,598	4,430
91.40	1,598	4,506
91.50	1,598	4,577
91.60	1,598	4,645
91.70	1,598	4,711
91.80	1,598	4,775
91.90	1,598	4,839
92.00	1,598	4,903
92.10	1,598	4,966
92.20	1,598	5,030
92.30	1,598	5,094
92.40	1,598	5,158
92.50	1,598	5,222
92.60	1,598	5,286
92.70	1,598	**5,350**

Summary for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Inflow Area = 12,973 sf, 78.69% Impervious, Inflow Depth = 4.11" for 10-Year event
Inflow = 1.22 cfs @ 12.14 hrs, Volume= 4,441 cf
Outflow = 0.20 cfs @ 12.68 hrs, Volume= 2,708 cf, Atten= 84%, Lag= 32.5 min
Discarded = 0.00 cfs @ 7.04 hrs, Volume= 698 cf
Primary = 0.20 cfs @ 12.68 hrs, Volume= 2,011 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 90.93' @ 12.68 hrs Surf.Area= 1,271 sf Storage= 2,566 cf

Plug-Flow detention time= 607.6 min calculated for 2,708 cf (61% of inflow)
Center-of-Mass det. time= 505.4 min (1,301.1 - 795.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	88.00'	1,838 cf	**22.75'W x 55.89'L x 5.50'H Field A** 6,993 cf Overall - 2,398 cf Embedded = 4,595 cf x 40.0% Voids
#2A	88.75'	2,398 cf	**ADS_StormTech MC-3500 d +Cap** x 21 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 21 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		4,236 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.80'	**12.0" Round Outlet Pipe** L= 98.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 88.80' / 86.90' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	90.55'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.55'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.25'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	88.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 7.04 hrs HW=88.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.20 cfs @ 12.68 hrs HW=90.93' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.20 cfs of 4.83 cfs potential flow)
├**2=Low Flow Orifice** (Orifice Controls 0.20 cfs @ 2.24 fps)
├**3=Upper Orifice** (Controls 0.00 cfs)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A4: Stormtech MC-3500 (SWM-A4) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

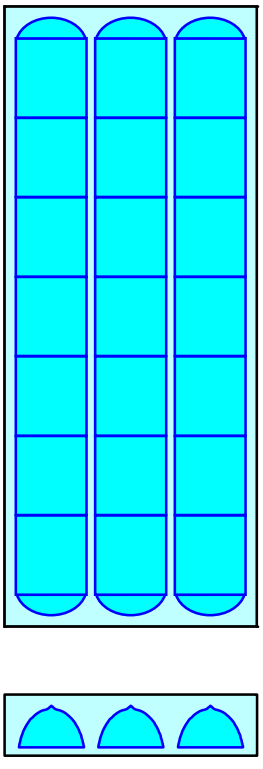
7 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 53.89' Row Length +12.0" End Stone x 2 = 55.89' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

21 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,398.4 cf Chamber Storage

6,993.2 cf Field - 2,398.4 cf Chambers = 4,594.8 cf Stone x 40.0% Voids = 1,837.9 cf Stone Storage

Chamber Storage + Stone Storage = 4,236.3 cf = 0.097 af
Overall Storage Efficiency = 60.6%
Overall System Size = 55.89' x 22.75' x 5.50'

21 Chambers
259.0 cy Field
170.2 cy Stone



Stage-Area-Storage for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
88.00	**1,271**	0
88.10	1,271	51
88.20	1,271	102
88.30	1,271	153
88.40	1,271	203
88.50	1,271	254
88.60	1,271	305
88.70	1,271	356
88.80	1,271	434
88.90	1,271	540
89.00	1,271	645
89.10	1,271	750
89.20	1,271	854
89.30	1,271	958
89.40	1,271	1,062
89.50	1,271	1,165
89.60	1,271	1,267
89.70	1,271	1,369
89.80	1,271	1,471
89.90	1,271	1,571
90.00	1,271	1,672
90.10	1,271	1,771
90.20	1,271	1,870
90.30	1,271	1,967
90.40	1,271	2,064
90.50	1,271	2,161
90.60	1,271	2,256
90.70	1,271	2,350
90.80	1,271	2,443
90.90	1,271	2,535
91.00	1,271	2,626
91.10	1,271	2,715
91.20	1,271	2,803
91.30	1,271	2,889
91.40	1,271	2,974
91.50	1,271	3,057
91.60	1,271	3,138
91.70	1,271	3,217
91.80	1,271	3,294
91.90	1,271	3,368
92.00	1,271	3,438
92.10	1,271	3,504
92.20	1,271	3,565
92.30	1,271	3,621
92.40	1,271	3,676
92.50	1,271	3,728
92.60	1,271	3,779
92.70	1,271	3,829
92.80	1,271	3,880
92.90	1,271	3,931
93.00	1,271	3,982
93.10	1,271	4,033
93.20	1,271	4,084
93.30	1,271	4,135
93.40	1,271	4,185
93.50	1,271	**4,236**

Summary for Pond SW-B: Bioretention Basin (SWM-B)

Inflow Area = 20,021 sf, 70.47% Impervious, Inflow Depth = 3.86" for 10-Year event
Inflow = 1.80 cfs @ 12.07 hrs, Volume= 6,439 cf
Outflow = 0.30 cfs @ 12.55 hrs, Volume= 4,290 cf, Atten= 83%, Lag= 28.5 min
Discarded = 0.01 cfs @ 12.55 hrs, Volume= 1,141 cf
Primary = 0.29 cfs @ 12.55 hrs, Volume= 3,149 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 93.16' @ 12.55 hrs Surf.Area= 2,344 sf Storage= 3,782 cf

Plug-Flow detention time= 633.6 min calculated for 4,290 cf (67% of inflow)
Center-of-Mass det. time= 529.1 min (1,286.2 - 757.1)

Volume	Invert	Avail.Storage	Storage Description
#1	91.00'	8,443 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.00	1,189	0	0
92.00	1,696	1,443	1,443
93.00	2,249	1,973	3,415
94.00	2,844	2,547	5,962
94.80	3,359	2,481	8,443

Device	Routing	Invert	Outlet Devices
#1	Primary	89.00'	**12.0" Round Outlet Pipe** L= 370.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.00' / 87.00' S= 0.0054 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	92.75'	**5.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	93.60'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	94.30'	**6.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#5	Discarded	91.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 12.55 hrs HW=93.16' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.30 cfs @ 12.55 hrs HW=93.16' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.30 cfs of 4.95 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.30 cfs @ 2.18 fps)
  └**3=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-B: Bioretention Basin (SWM-B)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.00	1,189	0
91.05	1,214	60
91.10	1,240	121
91.15	1,265	184
91.20	1,290	248
91.25	1,316	313
91.30	1,341	380
91.35	1,366	447
91.40	1,392	516
91.45	1,417	586
91.50	1,443	658
91.55	1,468	731
91.60	1,493	805
91.65	1,519	880
91.70	1,544	957
91.75	1,569	1,034
91.80	1,595	1,113
91.85	1,620	1,194
91.90	1,645	1,275
91.95	1,671	1,358
92.00	1,696	1,443
92.05	1,724	1,528
92.10	1,751	1,615
92.15	1,779	1,703
92.20	1,807	1,793
92.25	1,834	1,884
92.30	1,862	1,976
92.35	1,890	2,070
92.40	1,917	2,165
92.45	1,945	2,262
92.50	1,973	2,360
92.55	2,000	2,459
92.60	2,028	2,560
92.65	2,055	2,662
92.70	2,083	2,765
92.75	2,111	2,870
92.80	2,138	2,976
92.85	2,166	3,084
92.90	2,194	3,193
92.95	2,221	3,303
93.00	2,249	3,415
93.05	2,279	3,528
93.10	2,308	3,643
93.15	2,338	3,759
93.20	2,368	3,877
93.25	2,398	3,996
93.30	2,427	4,116
93.35	2,457	4,239
93.40	2,487	4,362
93.45	2,517	4,487
93.50	2,547	4,614
93.55	2,576	4,742
93.60	2,606	4,871
93.65	2,636	5,003
93.70	2,666	5,135
93.75	2,695	5,269
93.80	2,725	5,405
93.85	2,755	5,542
93.90	2,785	5,680
93.95	2,814	5,820
94.00	2,844	5,962
94.05	2,876	6,105
94.10	2,908	6,249
94.15	2,941	6,395
94.20	2,973	6,543
94.25	3,005	6,693
94.30	3,037	6,844
94.35	3,069	6,996
94.40	3,102	7,151
94.45	3,134	7,306
94.50	3,166	7,464
94.55	3,198	7,623
94.60	3,230	7,784
94.65	3,262	7,946
94.70	3,295	8,110
94.75	3,327	8,276
94.80	**3,359**	**8,443**

Summary for Pond SW-C: Curtain Drain (SWM-C)

Inflow Area = 59,609 sf, 10.55% Impervious, Inflow Depth = 0.41" for 10-Year event
Inflow = 0.20 cfs @ 12.51 hrs, Volume= 2,029 cf
Outflow = 0.15 cfs @ 12.71 hrs, Volume= 2,029 cf, Atten= 24%, Lag= 11.8 min
Discarded = 0.00 cfs @ 12.31 hrs, Volume= 168 cf
Primary = 0.15 cfs @ 12.71 hrs, Volume= 1,861 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 87.84' @ 12.71 hrs Surf.Area= 973 sf Storage= 172 cf

Plug-Flow detention time= 49.6 min calculated for 2,029 cf (100% of inflow)
Center-of-Mass det. time= 49.6 min (1,017.5 - 968.0)

Volume	Invert	Avail.Storage	Storage Description
#1	87.40'	3,540 cf	**2.50'W x 389.00'L x 9.10'H Prismatoid** 8,850 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	87.20'	**8.0" Round Outlet Pipe** L= 108.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 87.20' / 85.45' S= 0.0162 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Primary	87.55'	**4.0" Vert. Low flow orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	88.60'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	87.40'	**0.100 in/hr Exfiltration over Surface area**
#5	Secondary	96.00'	**200.0' 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

Discarded OutFlow Max=0.00 cfs @ 12.31 hrs HW=87.50' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.15 cfs @ 12.71 hrs HW=87.84' (Free Discharge)
├**1=Outlet Pipe** (Passes 0.00 cfs of 0.94 cfs potential flow)
│└**3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
└**2=Low flow orifice** (Orifice Controls 0.15 cfs @ 1.84 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.40' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-C: Curtain Drain (SWM-C)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.40	**973**	0
87.50	973	39
87.60	973	78
87.70	973	117
87.80	973	156
87.90	973	195
88.00	973	233
88.10	973	272
88.20	973	311
88.30	973	350
88.40	973	389
88.50	973	428
88.60	973	467
88.70	973	506
88.80	973	545
88.90	973	584
89.00	973	622
89.10	973	661
89.20	973	700
89.30	973	739
89.40	973	778
89.50	973	817
89.60	973	856
89.70	973	895
89.80	973	934
89.90	973	973
90.00	973	1,011
90.10	973	1,050
90.20	973	1,089
90.30	973	1,128
90.40	973	1,167
90.50	973	1,206
90.60	973	1,245
90.70	973	1,284
90.80	973	1,323
90.90	973	1,362
91.00	973	1,400
91.10	973	1,439
91.20	973	1,478
91.30	973	1,517
91.40	973	1,556
91.50	973	1,595
91.60	973	1,634
91.70	973	1,673
91.80	973	1,712
91.90	973	1,751
92.00	973	1,789
92.10	973	1,828
92.20	973	1,867
92.30	973	1,906
92.40	973	1,945
92.50	973	1,984
92.60	973	2,023
92.70	973	2,062
92.80	973	2,101
92.90	973	2,140
93.00	973	2,178
93.10	973	2,217
93.20	973	2,256
93.30	973	2,295
93.40	973	2,334
93.50	973	2,373
93.60	973	2,412
93.70	973	2,451
93.80	973	2,490
93.90	973	2,529
94.00	973	2,567
94.10	973	2,606
94.20	973	2,645
94.30	973	2,684
94.40	973	2,723
94.50	973	2,762
94.60	973	2,801
94.70	973	2,840
94.80	973	2,879
94.90	973	2,918
95.00	973	2,956
95.10	973	2,995
95.20	973	3,034
95.30	973	3,073
95.40	973	3,112
95.50	973	3,151
95.60	973	3,190
95.70	973	3,229
95.80	973	3,268
95.90	973	3,307
96.00	973	3,345
96.10	973	3,384
96.20	973	3,423
96.30	973	3,462
96.40	973	3,501
96.50	973	**3,540**

Summary for Pond SW-D: Drywell & Basin (SWM-D)

Inflow Area = 12,462 sf, 10.46% Impervious, Inflow Depth = 0.36" for 10-Year event
Inflow = 0.04 cfs @ 12.43 hrs, Volume= 376 cf
Outflow = 0.01 cfs @ 12.57 hrs, Volume= 376 cf, Atten= 86%, Lag= 8.5 min
Discarded = 0.01 cfs @ 12.57 hrs, Volume= 376 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 95.58' @ 20.05 hrs Surf.Area= 44 sf Storage= 169 cf

Plug-Flow detention time= 380.3 min calculated for 376 cf (100% of inflow)
Center-of-Mass det. time= 380.3 min (1,350.7 - 970.4)

Volume	Invert	Avail.Storage	Storage Description
#1	91.60'	1,595 cf	**Drywell & Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.60	31	0	0
92.60	44	38	38
93.60	44	44	82
94.60	44	44	126
95.60	44	44	170
96.60	44	44	214
97.49	4	21	235
97.50	29	0	235
98.00	145	44	279
99.00	560	353	631
100.00	1,135	848	1,479
100.10	1,187	116	1,595

Device	Routing	Invert	Outlet Devices
#1	Discarded	91.60'	**5.000 in/hr Exfiltration over Surface area**
#2	Secondary	99.10'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.01 cfs @ 12.57 hrs HW=92.60' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.60' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-D: Drywell & Basin (SWM-D)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.60	31	0
91.70	32	3
91.80	34	6
91.90	35	10
92.00	36	13
92.10	38	17
92.20	39	21
92.30	40	25
92.40	41	29
92.50	43	33
92.60	44	38
92.70	44	42
92.80	44	46
92.90	44	51
93.00	44	55
93.10	44	60
93.20	44	64
93.30	44	68
93.40	44	73
93.50	44	77
93.60	44	82
93.70	44	86
93.80	44	90
93.90	44	95
94.00	44	99
94.10	44	104
94.20	44	108
94.30	44	112
94.40	44	117
94.50	44	121
94.60	44	126
94.70	44	130
94.80	44	134
94.90	44	139
95.00	44	143
95.10	44	148
95.20	44	152
95.30	44	156
95.40	44	161
95.50	44	165
95.60	44	170
95.70	44	174
95.80	44	178
95.90	44	183
96.00	44	187
96.10	44	192
96.20	44	196
96.30	44	200
96.40	44	205
96.50	44	209
96.60	44	214
96.70	40	218
96.80	35	221
96.90	31	225
97.00	26	228
97.10	22	230
97.20	17	232
97.30	13	233
97.40	8	234
97.50	29	235
97.60	52	239
97.70	75	245
97.80	99	254
97.90	122	265
98.00	145	279
98.10	186	295
98.20	228	316
98.30	269	341
98.40	311	370
98.50	353	403
98.60	394	440
98.70	435	482
98.80	477	527
98.90	518	577
99.00	560	631
99.10	617	690
99.20	675	755
99.30	732	825
99.40	790	901
99.50	848	983
99.60	905	1,071
99.70	962	1,164
99.80	1,020	1,263
99.90	1,077	1,368
100.00	1,135	1,479
100.10	**1,187**	**1,595**

Summary for Link AP: Analysis Point

Inflow Area = 153,606 sf, 39.64% Impervious, Inflow Depth = 1.26" for 10-Year event
Inflow = 1.37 cfs @ 12.55 hrs, Volume= 16,171 cf
Primary = 1.37 cfs @ 12.55 hrs, Volume= 16,171 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
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1: DA1 Runoff Area=59,609 sf 10.55% Impervious Runoff Depth=0.84"
Flow Length=337' Tc=17.4 min CN=42 Runoff=0.58 cfs 4,166 cf

Subcatchment DA2A: DA2A Runoff Area=14,063 sf 100.00% Impervious Runoff Depth=6.37"
Tc=5.0 min CN=98 Runoff=2.17 cfs 7,467 cf

Subcatchment DA2B: DA2B Runoff Area=5,958 sf 0.76% Impervious Runoff Depth=1.54"
Tc=10.0 min CN=51 Runoff=0.18 cfs 763 cf

Subcatchment DA3: DA3 Runoff Area=12,462 sf 10.46% Impervious Runoff Depth=0.77"
Tc=10.0 min CN=41 Runoff=0.12 cfs 798 cf

Subcatchment DA4A: DA4A Runoff Area=9,030 sf 93.13% Impervious Runoff Depth=6.14"
Tc=5.0 min CN=96 Runoff=1.38 cfs 4,617 cf

Subcatchment DA4B: DA4B Runoff Area=8,161 sf 82.85% Impervious Runoff Depth=5.90"
Tc=5.0 min CN=94 Runoff=1.23 cfs 4,013 cf

Subcatchment DA4C: DA4C Runoff Area=27,909 sf 52.85% Impervious Runoff Depth=3.30"
Tc=10.0 min CN=70 Runoff=2.16 cfs 7,668 cf

Subcatchment DA4D: DA4D Runoff Area=12,973 sf 78.69% Impervious Runoff Depth=5.33"
Tc=10.0 min CN=89 Runoff=1.56 cfs 5,760 cf

Subcatchment DA5: DA5 Runoff Area=15,903 sf 2.23% Impervious Runoff Depth=3.50"
Tc=10.0 min CN=72 Runoff=1.31 cfs 4,637 cf

Reach DMH-1: DMH-1 Inflow=1.08 cfs 10,882 cf
Outflow=1.08 cfs 10,882 cf

Reach DMH-3: DMH-3 Inflow=1.40 cfs 13,277 cf
Outflow=1.40 cfs 13,277 cf

Pond SW-A1: Stormtech MC-3500 (SWM-A1) Peak Elev=88.41' Storage=2,587 cf Inflow=1.38 cfs 4,617 cf
Discarded=0.00 cfs 640 cf Primary=0.32 cfs 2,394 cf Outflow=0.33 cfs 3,034 cf

Pond SW-A2: Stormtech MC-3500 (SWM-A2) Peak Elev=89.69' Storage=2,193 cf Inflow=1.23 cfs 4,013 cf
Discarded=0.00 cfs 631 cf Primary=0.29 cfs 2,135 cf Outflow=0.29 cfs 2,767 cf

Pond SW-A3: Stormtech MC-3500 (SWM-A3) Peak Elev=90.31' Storage=3,449 cf Inflow=2.16 cfs 7,668 cf
Discarded=0.00 cfs 833 cf Primary=0.43 cfs 5,429 cf Outflow=0.43 cfs 6,262 cf

Pond SW-A4: Stormtech MC-3500 (SWM-A4) Peak Elev=91.52' Storage=3,072 cf Inflow=1.56 cfs 5,760 cf
Discarded=0.00 cfs 707 cf Primary=0.38 cfs 3,318 cf Outflow=0.38 cfs 4,025 cf

Pond SW-B: Bioretention Basin (SWM-B) Peak Elev=93.47' Storage=4,548 cf Inflow=2.29 cfs 8,230 cf
Discarded=0.01 cfs 1,153 cf Primary=0.47 cfs 4,923 cf Secondary=0.00 cfs 0 cf Outflow=0.48 cfs 6,076 cf

Pond SW-C: Curtain Drain (SWM-C) Peak Elev=88.60' Storage=465 cf Inflow=0.58 cfs 4,166 cf
Discarded=0.00 cfs 170 cf Primary=0.39 cfs 3,996 cf Secondary=0.00 cfs 0 cf Outflow=0.40 cfs 4,166 cf

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=98.12' Storage=300 cf Inflow=0.12 cfs 798 cf
Discarded=0.02 cfs 798 cf Secondary=0.00 cfs 0 cf Outflow=0.02 cfs 798 cf

Link AP: Analysis Point Inflow=2.73 cfs 26,832 cf
Primary=2.73 cfs 26,832 cf

Total Runoff Area = 166,068 sf Runoff Volume = 39,888 cf Average Runoff Depth = 2.88"
62.55% Pervious = 103,883 sf 37.45% Impervious = 62,185 sf

Summary for Subcatchment DA1: DA1

Runoff = 0.58 cfs @ 12.38 hrs, Volume= 4,166 cf, Depth= 0.84"
Routed to Pond SW-C : Curtain Drain (SWM-C)

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=6.61"

Area (sf)	CN	Description
6,289	98	Paved parking, HSG A
27,444	39	>75% Grass cover, Good, HSG A
427	74	>75% Grass cover, Good, HSG C
25,066	30	Woods, Good, HSG A
383	70	Woods, Good, HSG C
59,609	42	Weighted Average
53,320		89.45% Pervious Area
6,289		10.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, Sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
1.7	99	0.0394	0.99		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	20	0.3400	4.08		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
17.4	337	Total			

Summary for Subcatchment DA2A: DA2A

Runoff = 2.17 cfs @ 12.07 hrs, Volume= 7,467 cf, Depth= 6.37"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

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=6.61"

Area (sf)	CN	Description
14,063	98	Roofs, HSG C
14,063		100.00% Impervious Area

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

Summary for Subcatchment DA2B: DA2B

Runoff = 0.18 cfs @ 12.16 hrs, Volume= 763 cf, Depth= 1.54"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

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=6.61"

Area (sf)	CN	Description
45	98	Paved parking, HSG C
4,003	39	>75% Grass cover, Good, HSG A
1,910	74	>75% Grass cover, Good, HSG C
5,958	51	Weighted Average
5,913		99.24% Pervious Area
45		0.76% Impervious Area

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

Summary for Subcatchment DA3: DA3

Runoff = 0.12 cfs @ 12.23 hrs, Volume= 798 cf, Depth= 0.77"
Routed to Pond SW-D : Drywell & Basin (SWM-D)

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=6.61"

Area (sf)	CN	Description
1,303	98	Paved parking, HSG A
5,621	39	>75% Grass cover, Good, HSG A
5,538	30	Woods, Good, HSG A
12,462	41	Weighted Average
11,159		89.54% Pervious Area
1,303		10.46% Impervious Area

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

Summary for Subcatchment DA4A: DA4A

Runoff = 1.38 cfs @ 12.07 hrs, Volume= 4,617 cf, Depth= 6.14"
Routed to Pond SW-A1 : Stormtech MC-3500 (SWM-A1)

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=6.61"

Area (sf)	CN	Description
8,410	98	Paved parking, HSG C
620	74	>75% Grass cover, Good, HSG C
9,030	96	Weighted Average
620		6.87% Pervious Area
8,410		93.13% Impervious Area

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

Summary for Subcatchment DA4B: DA4B

Runoff = 1.23 cfs @ 12.07 hrs, Volume= 4,013 cf, Depth= 5.90"
Routed to Pond SW-A2 : Stormtech MC-3500 (SWM-A2)

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=6.61"

Area (sf)	CN	Description
6,761	98	Paved parking, HSG C
1,400	74	>75% Grass cover, Good, HSG C
8,161	94	Weighted Average
1,400		17.15% Pervious Area
6,761		82.85% Impervious Area

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

Summary for Subcatchment DA4C: DA4C

Runoff = 2.16 cfs @ 12.14 hrs, Volume= 7,668 cf, Depth= 3.30"
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

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=6.61"

Area (sf)	CN	Description
8,803	98	Paved parking, HSG A
5,947	98	Paved parking, HSG C
8,080	39	>75% Grass cover, Good, HSG A
1,031	74	>75% Grass cover, Good, HSG C
4,048	30	Woods, Good, HSG A
27,909	70	Weighted Average
13,159		47.15% Pervious Area
14,750		52.85% Impervious Area

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

Summary for Subcatchment DA4D: DA4D

Runoff = 1.56 cfs @ 12.14 hrs, Volume= 5,760 cf, Depth= 5.33"
Routed to Pond SW-A4 : Stormtech MC-3500 (SWM-A4)

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=6.61"

Area (sf)	CN	Description
1,590	98	Paved parking, HSG A
8,619	98	Paved parking, HSG C
1,415	39	>75% Grass cover, Good, HSG A
1,349	74	>75% Grass cover, Good, HSG C
12,973	89	Weighted Average
2,764		21.31% Pervious Area
10,209		78.69% Impervious Area

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

Summary for Subcatchment DA5: DA5

Runoff = 1.31 cfs @ 12.14 hrs, Volume= 4,637 cf, Depth= 3.50"
Routed to Link AP : Analysis Point

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=6.61"

Area (sf)	CN	Description
940	39	>75% Grass cover, Good, HSG A
355	98	Paved parking, HSG C
11,719	74	>75% Grass cover, Good, HSG C
2,889	70	Woods, Good, HSG C
15,903	72	Weighted Average
15,548		97.77% Pervious Area
355		2.23% Impervious Area

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

Summary for Reach DMH-1: DMH-1

Inflow Area = 49,043 sf, 64.68% Impervious, Inflow Depth = 2.66" for 25-Year event
Inflow = 1.08 cfs @ 12.55 hrs, Volume= 10,882 cf
Outflow = 1.08 cfs @ 12.55 hrs, Volume= 10,882 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach DMH-3: DMH-3

Inflow Area = 58,073 sf, 69.10% Impervious, Inflow Depth = 2.74" for 25-Year event
Inflow = 1.40 cfs @ 12.53 hrs, Volume= 13,277 cf
Outflow = 1.40 cfs @ 12.53 hrs, Volume= 13,277 cf, Atten= 0%, Lag= 0.0 min
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Inflow Area = 9,030 sf, 93.13% Impervious, Inflow Depth = 6.14" for 25-Year event
Inflow = 1.38 cfs @ 12.07 hrs, Volume= 4,617 cf
Outflow = 0.33 cfs @ 12.44 hrs, Volume= 3,034 cf, Atten= 76%, Lag= 22.4 min
Discarded = 0.00 cfs @ 3.53 hrs, Volume= 640 cf
Primary = 0.32 cfs @ 12.44 hrs, Volume= 2,394 cf
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 88.41' @ 12.44 hrs Surf.Area= 1,108 sf Storage= 2,587 cf

Plug-Flow detention time= 517.9 min calculated for 3,034 cf (66% of inflow)
Center-of-Mass det. time= 417.9 min (1,173.1 - 755.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	85.00'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	85.75'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	85.80'	**12.0" Round Outlet Pipe** L= 6.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 85.80' / 85.70' S= 0.0167 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	87.65'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	88.45'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	89.35'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	85.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 3.53 hrs HW=85.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.32 cfs @ 12.44 hrs HW=88.41' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.32 cfs of 5.49 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.32 cfs @ 3.70 fps)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A1: Stormtech MC-3500 (SWM-A1) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

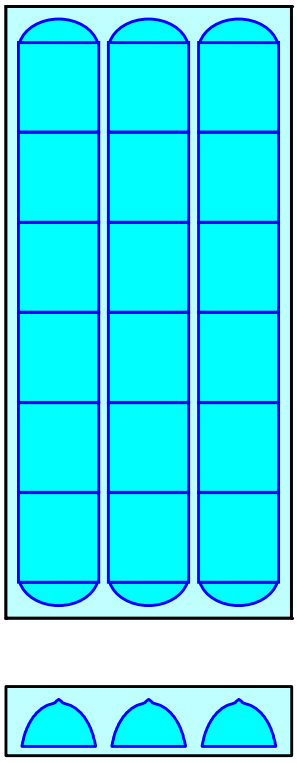
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone



Stage-Area-Storage for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
85.00	**1,108**	0
85.10	1,108	44
85.20	1,108	89
85.30	1,108	133
85.40	1,108	177
85.50	1,108	222
85.60	1,108	266
85.70	1,108	310
85.80	1,108	378
85.90	1,108	470
86.00	1,108	561
86.10	1,108	652
86.20	1,108	743
86.30	1,108	833
86.40	1,108	922
86.50	1,108	1,012
86.60	1,108	1,101
86.70	1,108	1,189
86.80	1,108	1,277
86.90	1,108	1,364
87.00	1,108	1,451
87.10	1,108	1,537
87.20	1,108	1,623
87.30	1,108	1,708
87.40	1,108	1,792
87.50	1,108	1,875
87.60	1,108	1,958
87.70	1,108	2,039
87.80	1,108	2,120
87.90	1,108	2,200
88.00	1,108	2,279
88.10	1,108	2,356
88.20	1,108	2,432
88.30	1,108	2,507
88.40	1,108	2,581
88.50	1,108	2,653
88.60	1,108	2,724
88.70	1,108	2,792
88.80	1,108	2,859
88.90	1,108	2,923
89.00	1,108	2,984
89.10	1,108	3,042
89.20	1,108	3,094
89.30	1,108	3,144
89.40	1,108	3,191
89.50	1,108	3,236
89.60	1,108	3,281
89.70	1,108	3,325
89.80	1,108	3,369
89.90	1,108	3,414
90.00	1,108	3,458
90.10	1,108	3,502
90.20	1,108	3,547
90.30	1,108	3,591
90.40	1,108	3,635
90.50	1,108	**3,680**

Summary for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Inflow Area = 8,161 sf, 82.85% Impervious, Inflow Depth = 5.90" for 25-Year event
Inflow = 1.23 cfs @ 12.07 hrs, Volume= 4,013 cf
Outflow = 0.29 cfs @ 12.44 hrs, Volume= 2,767 cf, Atten= 76%, Lag= 22.3 min
Discarded = 0.00 cfs @ 4.59 hrs, Volume= 631 cf
Primary = 0.29 cfs @ 12.44 hrs, Volume= 2,135 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 89.69' @ 12.44 hrs Surf.Area= 1,108 sf Storage= 2,193 cf

Plug-Flow detention time= 533.6 min calculated for 2,767 cf (69% of inflow)
Center-of-Mass det. time= 439.4 min (1,204.4 - 765.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	86.80'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	87.55'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	87.60'	**12.0" Round Outlet Pipe** L= 9.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 87.60' / 87.50' S= 0.0111 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	89.05'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	89.70'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.05'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	86.80'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 4.59 hrs HW=86.86' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.29 cfs @ 12.44 hrs HW=89.69' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.29 cfs of 4.77 cfs potential flow)
├**2=Low Flow Orifice** (Orifice Controls 0.29 cfs @ 3.32 fps)
├**3=Upper Orifice** (Controls 0.00 cfs)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A2: Stormtech MC-3500 (SWM-A2) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

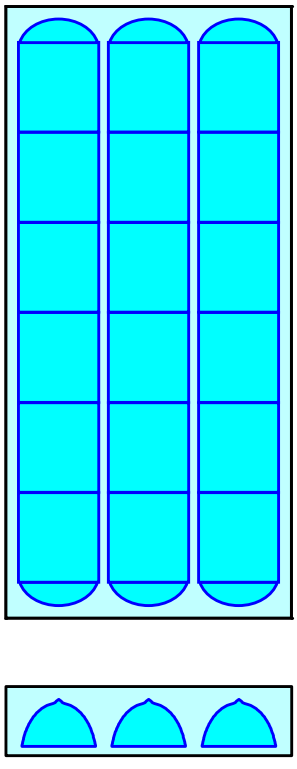
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone



Stage-Area-Storage for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
86.80	**1,108**	0
86.90	1,108	44
87.00	1,108	89
87.10	1,108	133
87.20	1,108	177
87.30	1,108	222
87.40	1,108	266
87.50	1,108	310
87.60	1,108	378
87.70	1,108	470
87.80	1,108	561
87.90	1,108	652
88.00	1,108	743
88.10	1,108	833
88.20	1,108	922
88.30	1,108	1,012
88.40	1,108	1,101
88.50	1,108	1,189
88.60	1,108	1,277
88.70	1,108	1,364
88.80	1,108	1,451
88.90	1,108	1,537
89.00	1,108	1,623
89.10	1,108	1,708
89.20	1,108	1,792
89.30	1,108	1,875
89.40	1,108	1,958
89.50	1,108	2,039
89.60	1,108	2,120
89.70	1,108	2,200
89.80	1,108	2,279
89.90	1,108	2,356
90.00	1,108	2,432
90.10	1,108	2,507
90.20	1,108	2,581
90.30	1,108	2,653
90.40	1,108	2,724
90.50	1,108	2,792
90.60	1,108	2,859
90.70	1,108	2,923
90.80	1,108	2,984
90.90	1,108	3,042
91.00	1,108	3,094
91.10	1,108	3,144
91.20	1,108	3,191
91.30	1,108	3,236
91.40	1,108	3,281
91.50	1,108	3,325
91.60	1,108	3,369
91.70	1,108	3,414
91.80	1,108	3,458
91.90	1,108	3,502
92.00	1,108	3,547
92.10	1,108	3,591
92.20	1,108	3,635
92.30	1,108	**3,680**

Summary for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Inflow Area = 27,909 sf, 52.85% Impervious, Inflow Depth = 3.30" for 25-Year event
Inflow = 2.16 cfs @ 12.14 hrs, Volume= 7,668 cf
Outflow = 0.43 cfs @ 12.65 hrs, Volume= 6,262 cf, Atten= 80%, Lag= 30.6 min
Discarded = 0.00 cfs @ 9.79 hrs, Volume= 833 cf
Primary = 0.43 cfs @ 12.65 hrs, Volume= 5,429 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 90.31' @ 12.65 hrs Surf.Area= 1,598 sf Storage= 3,449 cf

Plug-Flow detention time= 365.1 min calculated for 6,262 cf (82% of inflow)
Center-of-Mass det. time= 290.6 min (1,127.8 - 837.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	87.20'	2,292 cf	**22.75'W x 70.23'L x 5.50'H Field A** 8,788 cf Overall - 3,058 cf Embedded = 5,729 cf x 40.0% Voids
#2A	87.95'	3,058 cf	**ADS_StormTech MC-3500 d +Cap** x 27 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 27 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		5,350 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round Outlet Pipe** L= 2.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 87.90' S= 0.0500 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	89.10'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.40'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.45'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	87.20'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 9.79 hrs HW=87.26' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.43 cfs @ 12.65 hrs HW=90.31' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.43 cfs of 5.09 cfs potential flow)
├**2=Low Flow Orifice** (Orifice Controls 0.43 cfs @ 4.93 fps)
├**3=Upper Orifice** (Controls 0.00 cfs)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A3: Stormtech MC-3500 (SWM-A3) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

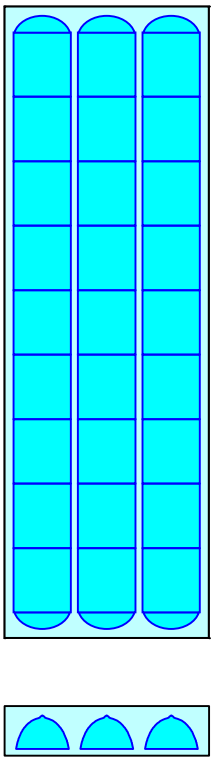
9 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 68.23' Row Length +12.0" End Stone x 2 = 70.23' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

27 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 3,058.1 cf Chamber Storage

8,787.5 cf Field - 3,058.1 cf Chambers = 5,729.4 cf Stone x 40.0% Voids = 2,291.8 cf Stone Storage

Chamber Storage + Stone Storage = 5,349.9 cf = 0.123 af
Overall Storage Efficiency = 60.9%
Overall System Size = 70.23' x 22.75' x 5.50'

27 Chambers
325.5 cy Field
212.2 cy Stone



Stage-Area-Storage for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.20	**1,598**	0
87.30	1,598	64
87.40	1,598	128
87.50	1,598	192
87.60	1,598	256
87.70	1,598	320
87.80	1,598	383
87.90	1,598	447
88.00	1,598	546
88.10	1,598	680
88.20	1,598	813
88.30	1,598	946
88.40	1,598	1,078
88.50	1,598	1,210
88.60	1,598	1,341
88.70	1,598	1,471
88.80	1,598	1,601
88.90	1,598	1,730
89.00	1,598	1,858
89.10	1,598	1,986
89.20	1,598	2,113
89.30	1,598	2,238
89.40	1,598	2,363
89.50	1,598	2,487
89.60	1,598	2,610
89.70	1,598	2,731
89.80	1,598	2,852
89.90	1,598	2,971
90.00	1,598	3,089
90.10	1,598	3,205
90.20	1,598	3,320
90.30	1,598	3,433
90.40	1,598	3,544
90.50	1,598	3,653
90.60	1,598	3,760
90.70	1,598	3,865
90.80	1,598	3,968
90.90	1,598	4,067
91.00	1,598	4,164
91.10	1,598	4,257
91.20	1,598	4,346
91.30	1,598	4,430
91.40	1,598	4,506
91.50	1,598	4,577
91.60	1,598	4,645
91.70	1,598	4,711
91.80	1,598	4,775
91.90	1,598	4,839
92.00	1,598	4,903
92.10	1,598	4,966
92.20	1,598	5,030
92.30	1,598	5,094
92.40	1,598	5,158
92.50	1,598	5,222
92.60	1,598	5,286
92.70	1,598	**5,350**

Summary for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Inflow Area = 12,973 sf, 78.69% Impervious, Inflow Depth = 5.33" for 25-Year event
Inflow = 1.56 cfs @ 12.14 hrs, Volume= 5,760 cf
Outflow = 0.38 cfs @ 12.56 hrs, Volume= 4,025 cf, Atten= 76%, Lag= 25.6 min
Discarded = 0.00 cfs @ 6.10 hrs, Volume= 707 cf
Primary = 0.38 cfs @ 12.56 hrs, Volume= 3,318 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 91.52' @ 12.56 hrs Surf.Area= 1,271 sf Storage= 3,072 cf

Plug-Flow detention time= 453.4 min calculated for 4,025 cf (70% of inflow)
Center-of-Mass det. time= 361.2 min (1,150.0 - 788.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	88.00'	1,838 cf	**22.75'W x 55.89'L x 5.50'H Field A** 6,993 cf Overall - 2,398 cf Embedded = 4,595 cf x 40.0% Voids
#2A	88.75'	2,398 cf	**ADS_StormTech MC-3500 d +Cap** x 21 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 21 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		4,236 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.80'	**12.0" Round Outlet Pipe** L= 98.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 88.80' / 86.90' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	90.55'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.55'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.25'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	88.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 6.10 hrs HW=88.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.38 cfs @ 12.56 hrs HW=91.52' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.38 cfs of 5.63 cfs potential flow)
├**2=Low Flow Orifice** (Orifice Controls 0.38 cfs @ 4.31 fps)
├**3=Upper Orifice** (Controls 0.00 cfs)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A4: Stormtech MC-3500 (SWM-A4) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

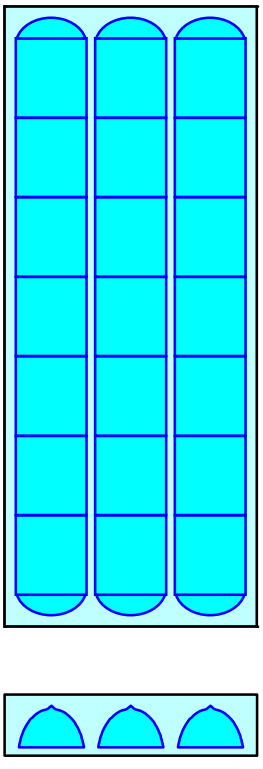
7 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 53.89' Row Length +12.0" End Stone x 2 = 55.89' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

21 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,398.4 cf Chamber Storage

6,993.2 cf Field - 2,398.4 cf Chambers = 4,594.8 cf Stone x 40.0% Voids = 1,837.9 cf Stone Storage

Chamber Storage + Stone Storage = 4,236.3 cf = 0.097 af
Overall Storage Efficiency = 60.6%
Overall System Size = 55.89' x 22.75' x 5.50'

21 Chambers
259.0 cy Field
170.2 cy Stone



Stage-Area-Storage for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
88.00	**1,271**	0
88.10	1,271	51
88.20	1,271	102
88.30	1,271	153
88.40	1,271	203
88.50	1,271	254
88.60	1,271	305
88.70	1,271	356
88.80	1,271	434
88.90	1,271	540
89.00	1,271	645
89.10	1,271	750
89.20	1,271	854
89.30	1,271	958
89.40	1,271	1,062
89.50	1,271	1,165
89.60	1,271	1,267
89.70	1,271	1,369
89.80	1,271	1,471
89.90	1,271	1,571
90.00	1,271	1,672
90.10	1,271	1,771
90.20	1,271	1,870
90.30	1,271	1,967
90.40	1,271	2,064
90.50	1,271	2,161
90.60	1,271	2,256
90.70	1,271	2,350
90.80	1,271	2,443
90.90	1,271	2,535
91.00	1,271	2,626
91.10	1,271	2,715
91.20	1,271	2,803
91.30	1,271	2,889
91.40	1,271	2,974
91.50	1,271	3,057
91.60	1,271	3,138
91.70	1,271	3,217
91.80	1,271	3,294
91.90	1,271	3,368
92.00	1,271	3,438
92.10	1,271	3,504
92.20	1,271	3,565
92.30	1,271	3,621
92.40	1,271	3,676
92.50	1,271	3,728
92.60	1,271	3,779
92.70	1,271	3,829
92.80	1,271	3,880
92.90	1,271	3,931
93.00	1,271	3,982
93.10	1,271	4,033
93.20	1,271	4,084
93.30	1,271	4,135
93.40	1,271	4,185
93.50	1,271	**4,236**

Summary for Pond SW-B: Bioretention Basin (SWM-B)

Inflow Area = 20,021 sf, 70.47% Impervious, Inflow Depth = 4.93" for 25-Year event
Inflow = 2.29 cfs @ 12.07 hrs, Volume= 8,230 cf
Outflow = 0.48 cfs @ 12.50 hrs, Volume= 6,076 cf, Atten= 79%, Lag= 25.9 min
Discarded = 0.01 cfs @ 12.50 hrs, Volume= 1,153 cf
Primary = 0.47 cfs @ 12.50 hrs, Volume= 4,923 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 93.47' @ 12.50 hrs Surf.Area= 2,531 sf Storage= 4,548 cf

Plug-Flow detention time= 497.4 min calculated for 6,076 cf (74% of inflow)
Center-of-Mass det. time= 404.3 min (1,160.4 - 756.1)

Volume	Invert	Avail.Storage	Storage Description
#1	91.00'	8,443 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.00	1,189	0	0
92.00	1,696	1,443	1,443
93.00	2,249	1,973	3,415
94.00	2,844	2,547	5,962
94.80	3,359	2,481	8,443

Device	Routing	Invert	Outlet Devices
#1	Primary	89.00'	**12.0" Round Outlet Pipe** L= 370.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.00' / 87.00' S= 0.0054 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	92.75'	**5.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	93.60'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	94.30'	**6.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#5	Discarded	91.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 12.50 hrs HW=93.47' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.47 cfs @ 12.50 hrs HW=93.47' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.47 cfs of 5.10 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.47 cfs @ 3.46 fps)
  └**3=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-B: Bioretention Basin (SWM-B)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.00	1,189	0
91.05	1,214	60
91.10	1,240	121
91.15	1,265	184
91.20	1,290	248
91.25	1,316	313
91.30	1,341	380
91.35	1,366	447
91.40	1,392	516
91.45	1,417	586
91.50	1,443	658
91.55	1,468	731
91.60	1,493	805
91.65	1,519	880
91.70	1,544	957
91.75	1,569	1,034
91.80	1,595	1,113
91.85	1,620	1,194
91.90	1,645	1,275
91.95	1,671	1,358
92.00	1,696	1,443
92.05	1,724	1,528
92.10	1,751	1,615
92.15	1,779	1,703
92.20	1,807	1,793
92.25	1,834	1,884
92.30	1,862	1,976
92.35	1,890	2,070
92.40	1,917	2,165
92.45	1,945	2,262
92.50	1,973	2,360
92.55	2,000	2,459
92.60	2,028	2,560
92.65	2,055	2,662
92.70	2,083	2,765
92.75	2,111	2,870
92.80	2,138	2,976
92.85	2,166	3,084
92.90	2,194	3,193
92.95	2,221	3,303
93.00	2,249	3,415
93.05	2,279	3,528
93.10	2,308	3,643
93.15	2,338	3,759
93.20	2,368	3,877
93.25	2,398	3,996
93.30	2,427	4,116
93.35	2,457	4,239
93.40	2,487	4,362
93.45	2,517	4,487
93.50	2,547	4,614
93.55	2,576	4,742
93.60	2,606	4,871
93.65	2,636	5,003
93.70	2,666	5,135
93.75	2,695	5,269
93.80	2,725	5,405
93.85	2,755	5,542
93.90	2,785	5,680
93.95	2,814	5,820
94.00	2,844	5,962
94.05	2,876	6,105
94.10	2,908	6,249
94.15	2,941	6,395
94.20	2,973	6,543
94.25	3,005	6,693
94.30	3,037	6,844
94.35	3,069	6,996
94.40	3,102	7,151
94.45	3,134	7,306
94.50	3,166	7,464
94.55	3,198	7,623
94.60	3,230	7,784
94.65	3,262	7,946
94.70	3,295	8,110
94.75	3,327	8,276
94.80	**3,359**	**8,443**

Summary for Pond SW-C: Curtain Drain (SWM-C)

Inflow Area = 59,609 sf, 10.55% Impervious, Inflow Depth = 0.84" for 25-Year event
Inflow = 0.58 cfs @ 12.38 hrs, Volume= 4,166 cf
Outflow = 0.40 cfs @ 12.66 hrs, Volume= 4,166 cf, Atten= 32%, Lag= 16.7 min
Discarded = 0.00 cfs @ 12.15 hrs, Volume= 170 cf
Primary = 0.39 cfs @ 12.66 hrs, Volume= 3,996 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 88.60' @ 12.66 hrs Surf.Area= 973 sf Storage= 465 cf

Plug-Flow detention time= 31.2 min calculated for 4,165 cf (100% of inflow)
Center-of-Mass det. time= 31.5 min (962.8 - 931.3)

Volume	Invert	Avail.Storage	Storage Description
#1	87.40'	3,540 cf	**2.50'W x 389.00'L x 9.10'H Prismatoid** 8,850 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	87.20'	**8.0" Round Outlet Pipe** L= 108.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 87.20' / 85.45' S= 0.0162 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Primary	87.55'	**4.0" Vert. Low flow orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	88.60'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	87.40'	**0.100 in/hr Exfiltration over Surface area**
#5	Secondary	96.00'	**200.0' 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

Discarded OutFlow Max=0.00 cfs @ 12.15 hrs HW=87.51' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.39 cfs @ 12.66 hrs HW=88.60' (Free Discharge)
├**1=Outlet Pipe** (Passes 0.00 cfs of 1.73 cfs potential flow)
│└**3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
└**2=Low flow orifice** (Orifice Controls 0.39 cfs @ 4.51 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.40' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-C: Curtain Drain (SWM-C)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.40	**973**	0
87.50	973	39
87.60	973	78
87.70	973	117
87.80	973	156
87.90	973	195
88.00	973	233
88.10	973	272
88.20	973	311
88.30	973	350
88.40	973	389
88.50	973	428
88.60	973	467
88.70	973	506
88.80	973	545
88.90	973	584
89.00	973	622
89.10	973	661
89.20	973	700
89.30	973	739
89.40	973	778
89.50	973	817
89.60	973	856
89.70	973	895
89.80	973	934
89.90	973	973
90.00	973	1,011
90.10	973	1,050
90.20	973	1,089
90.30	973	1,128
90.40	973	1,167
90.50	973	1,206
90.60	973	1,245
90.70	973	1,284
90.80	973	1,323
90.90	973	1,362
91.00	973	1,400
91.10	973	1,439
91.20	973	1,478
91.30	973	1,517
91.40	973	1,556
91.50	973	1,595
91.60	973	1,634
91.70	973	1,673
91.80	973	1,712
91.90	973	1,751
92.00	973	1,789
92.10	973	1,828
92.20	973	1,867
92.30	973	1,906
92.40	973	1,945
92.50	973	1,984
92.60	973	2,023
92.70	973	2,062
92.80	973	2,101
92.90	973	2,140
93.00	973	2,178
93.10	973	2,217
93.20	973	2,256
93.30	973	2,295
93.40	973	2,334
93.50	973	2,373
93.60	973	2,412
93.70	973	2,451
93.80	973	2,490
93.90	973	2,529
94.00	973	2,567
94.10	973	2,606
94.20	973	2,645
94.30	973	2,684
94.40	973	2,723
94.50	973	2,762
94.60	973	2,801
94.70	973	2,840
94.80	973	2,879
94.90	973	2,918
95.00	973	2,956
95.10	973	2,995
95.20	973	3,034
95.30	973	3,073
95.40	973	3,112
95.50	973	3,151
95.60	973	3,190
95.70	973	3,229
95.80	973	3,268
95.90	973	3,307
96.00	973	3,345
96.10	973	3,384
96.20	973	3,423
96.30	973	3,462
96.40	973	3,501
96.50	973	**3,540**

Summary for Pond SW-D: Drywell & Basin (SWM-D)

Inflow Area = 12,462 sf, 10.46% Impervious, Inflow Depth = 0.77" for 25-Year event
Inflow = 0.12 cfs @ 12.23 hrs, Volume= 798 cf
Outflow = 0.02 cfs @ 14.83 hrs, Volume= 798 cf, Atten= 80%, Lag= 156.0 min
Discarded = 0.02 cfs @ 14.83 hrs, Volume= 798 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 98.12' @ 14.83 hrs Surf.Area= 197 sf Storage= 300 cf

Plug-Flow detention time= 367.7 min calculated for 798 cf (100% of inflow)
Center-of-Mass det. time= 367.6 min (1,298.1 - 930.5)

Volume	Invert	Avail.Storage	Storage Description
#1	91.60'	1,595 cf	**Drywell & Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.60	31	0	0
92.60	44	38	38
93.60	44	44	82
94.60	44	44	126
95.60	44	44	170
96.60	44	44	214
97.49	4	21	235
97.50	29	0	235
98.00	145	44	279
99.00	560	353	631
100.00	1,135	848	1,479
100.10	1,187	116	1,595

Device	Routing	Invert	Outlet Devices
#1	Discarded	91.60'	**5.000 in/hr Exfiltration over Surface area**
#2	Secondary	99.10'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.02 cfs @ 14.83 hrs HW=98.12' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.60' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-D: Drywell & Basin (SWM-D)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.60	31	0
91.70	32	3
91.80	34	6
91.90	35	10
92.00	36	13
92.10	38	17
92.20	39	21
92.30	40	25
92.40	41	29
92.50	43	33
92.60	44	38
92.70	44	42
92.80	44	46
92.90	44	51
93.00	44	55
93.10	44	60
93.20	44	64
93.30	44	68
93.40	44	73
93.50	44	77
93.60	44	82
93.70	44	86
93.80	44	90
93.90	44	95
94.00	44	99
94.10	44	104
94.20	44	108
94.30	44	112
94.40	44	117
94.50	44	121
94.60	44	126
94.70	44	130
94.80	44	134
94.90	44	139
95.00	44	143
95.10	44	148
95.20	44	152
95.30	44	156
95.40	44	161
95.50	44	165
95.60	44	170
95.70	44	174
95.80	44	178
95.90	44	183
96.00	44	187
96.10	44	192
96.20	44	196
96.30	44	200
96.40	44	205
96.50	44	209
96.60	44	214
96.70	40	218
96.80	35	221
96.90	31	225
97.00	26	228
97.10	22	230
97.20	17	232
97.30	13	233
97.40	8	234
97.50	29	235
97.60	52	239
97.70	75	245
97.80	99	254
97.90	122	265
98.00	145	279
98.10	186	295
98.20	228	316
98.30	269	341
98.40	311	370
98.50	353	403
98.60	394	440
98.70	435	482
98.80	477	527
98.90	518	577
99.00	560	631
99.10	617	690
99.20	675	755
99.30	732	825
99.40	790	901
99.50	848	983
99.60	905	1,071
99.70	962	1,164
99.80	1,020	1,263
99.90	1,077	1,368
100.00	1,135	1,479
100.10	**1,187**	**1,595**

Summary for Link AP: Analysis Point

Inflow Area = 153,606 sf, 39.64% Impervious, Inflow Depth = 2.10" for 25-Year event
Inflow = 2.73 cfs @ 12.41 hrs, Volume= 26,832 cf
Primary = 2.73 cfs @ 12.41 hrs, Volume= 26,832 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
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1: DA1 Runoff Area=59,609 sf 10.55% Impervious Runoff Depth=1.71"
Flow Length=337' Tc=17.4 min CN=42 Runoff=1.57 cfs 8,517 cf

Subcatchment DA2A: DA2A Runoff Area=14,063 sf 100.00% Impervious Runoff Depth=8.32"
Tc=5.0 min CN=98 Runoff=2.81 cfs 9,750 cf

Subcatchment DA2B: DA2B Runoff Area=5,958 sf 0.76% Impervious Runoff Depth=2.71"
Tc=10.0 min CN=51 Runoff=0.36 cfs 1,347 cf

Subcatchment DA3: DA3 Runoff Area=12,462 sf 10.46% Impervious Runoff Depth=1.61"
Tc=10.0 min CN=41 Runoff=0.36 cfs 1,670 cf

Subcatchment DA4A: DA4A Runoff Area=9,030 sf 93.13% Impervious Runoff Depth=8.08"
Tc=5.0 min CN=96 Runoff=1.79 cfs 6,080 cf

Subcatchment DA4B: DA4B Runoff Area=8,161 sf 82.85% Impervious Runoff Depth=7.84"
Tc=5.0 min CN=94 Runoff=1.61 cfs 5,331 cf

Subcatchment DA4C: DA4C Runoff Area=27,909 sf 52.85% Impervious Runoff Depth=4.95"
Tc=10.0 min CN=70 Runoff=3.25 cfs 11,511 cf

Subcatchment DA4D: DA4D Runoff Area=12,973 sf 78.69% Impervious Runoff Depth=7.24"
Tc=10.0 min CN=89 Runoff=2.08 cfs 7,824 cf

Subcatchment DA5: DA5 Runoff Area=15,903 sf 2.23% Impervious Runoff Depth=5.19"
Tc=10.0 min CN=72 Runoff=1.94 cfs 6,877 cf

Reach DMH-1: DMH-1 Inflow=3.07 cfs 18,069 cf
Outflow=3.07 cfs 18,069 cf

Reach DMH-3: DMH-3 Inflow=3.84 cfs 21,920 cf
Outflow=3.84 cfs 21,920 cf

Pond SW-A1: Stormtech MC-3500 (SWM-A1) Peak Elev=88.92' Storage=2,936 cf Inflow=1.79 cfs 6,080 cf
Discarded=0.00 cfs 645 cf Primary=0.89 cfs 3,850 cf Outflow=0.89 cfs 4,496 cf

Pond SW-A2: Stormtech MC-3500 (SWM-A2) Peak Elev=90.11' Storage=2,515 cf Inflow=1.61 cfs 5,331 cf
Discarded=0.00 cfs 638 cf Primary=0.77 cfs 3,445 cf Outflow=0.78 cfs 4,083 cf

Pond SW-A3: Stormtech MC-3500 (SWM-A3) Peak Elev=91.33' Storage=4,454 cf Inflow=3.25 cfs 11,511 cf
Discarded=0.00 cfs 847 cf Primary=1.38 cfs 9,255 cf Outflow=1.39 cfs 10,102 cf

Pond SW-A4: Stormtech MC-3500 (SWM-A4) Peak Elev=92.17' Storage=3,546 cf Inflow=2.08 cfs 7,824 cf
Discarded=0.00 cfs 717 cf Primary=1.08 cfs 5,369 cf Outflow=1.08 cfs 6,087 cf

Pond SW-B: Bioretention Basin (SWM-B) Peak Elev=93.71' Storage=5,172 cf Inflow=3.07 cfs 11,097 cf
Discarded=0.01 cfs 1,168 cf Primary=1.59 cfs 7,769 cf Secondary=0.00 cfs 0 cf Outflow=1.59 cfs 8,938 cf

Pond SW-C: Curtain Drain (SWM-C) Peak Elev=88.79' Storage=542 cf Inflow=1.57 cfs 8,517 cf
Discarded=0.00 cfs 173 cf Primary=1.56 cfs 8,344 cf Secondary=0.00 cfs 0 cf Outflow=1.57 cfs 8,517 cf

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=98.87' Storage=562 cf Inflow=0.36 cfs 1,670 cf
Discarded=0.06 cfs 1,670 cf Secondary=0.00 cfs 0 cf Outflow=0.06 cfs 1,670 cf

Link AP: Analysis Point Inflow=8.10 cfs 44,910 cf
Primary=8.10 cfs 44,910 cf

Total Runoff Area = 166,068 sf Runoff Volume = 58,906 cf Average Runoff Depth = 4.26"
62.55% Pervious = 103,883 sf 37.45% Impervious = 62,185 sf

Summary for Subcatchment DA1: DA1

Runoff = 1.57 cfs @ 12.28 hrs, Volume= 8,517 cf, Depth= 1.71"
Routed to Pond SW-C : Curtain Drain (SWM-C)

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=8.56"

Area (sf)	CN	Description
6,289	98	Paved parking, HSG A
27,444	39	>75% Grass cover, Good, HSG A
427	74	>75% Grass cover, Good, HSG C
25,066	30	Woods, Good, HSG A
383	70	Woods, Good, HSG C
59,609	42	Weighted Average
53,320		89.45% Pervious Area
6,289		10.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, Sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
1.7	99	0.0394	0.99		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	20	0.3400	4.08		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
17.4	337	Total			

Summary for Subcatchment DA2A: DA2A

Runoff = 2.81 cfs @ 12.07 hrs, Volume= 9,750 cf, Depth= 8.32"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

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=8.56"

Area (sf)	CN	Description
14,063	98	Roofs, HSG C
14,063		100.00% Impervious Area

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

Summary for Subcatchment DA2B: DA2B

Runoff = 0.36 cfs @ 12.15 hrs, Volume= 1,347 cf, Depth= 2.71"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

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=8.56"

Area (sf)	CN	Description
45	98	Paved parking, HSG C
4,003	39	>75% Grass cover, Good, HSG A
1,910	74	>75% Grass cover, Good, HSG C
5,958	51	Weighted Average
5,913		99.24% Pervious Area
45		0.76% Impervious Area

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

Summary for Subcatchment DA3: DA3

Runoff = 0.36 cfs @ 12.17 hrs, Volume= 1,670 cf, Depth= 1.61"
Routed to Pond SW-D : Drywell & Basin (SWM-D)

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=8.56"

Area (sf)	CN	Description
1,303	98	Paved parking, HSG A
5,621	39	>75% Grass cover, Good, HSG A
5,538	30	Woods, Good, HSG A
12,462	41	Weighted Average
11,159		89.54% Pervious Area
1,303		10.46% Impervious Area

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

Summary for Subcatchment DA4A: DA4A

Runoff = 1.79 cfs @ 12.07 hrs, Volume= 6,080 cf, Depth= 8.08"
Routed to Pond SW-A1 : Stormtech MC-3500 (SWM-A1)

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=8.56"

Area (sf)	CN	Description
8,410	98	Paved parking, HSG C
620	74	>75% Grass cover, Good, HSG C
9,030	96	Weighted Average
620		6.87% Pervious Area
8,410		93.13% Impervious Area

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

Summary for Subcatchment DA4B: DA4B

Runoff = 1.61 cfs @ 12.07 hrs, Volume= 5,331 cf, Depth= 7.84"
Routed to Pond SW-A2 : Stormtech MC-3500 (SWM-A2)

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=8.56"

Area (sf)	CN	Description
6,761	98	Paved parking, HSG C
1,400	74	>75% Grass cover, Good, HSG C
8,161	94	Weighted Average
1,400		17.15% Pervious Area
6,761		82.85% Impervious Area

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

Summary for Subcatchment DA4C: DA4C

Runoff = 3.25 cfs @ 12.14 hrs, Volume= 11,511 cf, Depth= 4.95"
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

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=8.56"

Area (sf)	CN	Description
8,803	98	Paved parking, HSG A
5,947	98	Paved parking, HSG C
8,080	39	>75% Grass cover, Good, HSG A
1,031	74	>75% Grass cover, Good, HSG C
4,048	30	Woods, Good, HSG A
27,909	70	Weighted Average
13,159		47.15% Pervious Area
14,750		52.85% Impervious Area

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

Summary for Subcatchment DA4D: DA4D

Runoff = 2.08 cfs @ 12.13 hrs, Volume= 7,824 cf, Depth= 7.24"
Routed to Pond SW-A4 : Stormtech MC-3500 (SWM-A4)

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=8.56"

Area (sf)	CN	Description
1,590	98	Paved parking, HSG A
8,619	98	Paved parking, HSG C
1,415	39	>75% Grass cover, Good, HSG A
1,349	74	>75% Grass cover, Good, HSG C
12,973	89	Weighted Average
2,764		21.31% Pervious Area
10,209		78.69% Impervious Area

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

Summary for Subcatchment DA5: DA5

Runoff = 1.94 cfs @ 12.14 hrs, Volume= 6,877 cf, Depth= 5.19"
Routed to Link AP : Analysis Point

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=8.56"

Area (sf)	CN	Description
940	39	>75% Grass cover, Good, HSG A
355	98	Paved parking, HSG C
11,719	74	>75% Grass cover, Good, HSG C
2,889	70	Woods, Good, HSG C
15,903	72	Weighted Average
15,548		97.77% Pervious Area
355		2.23% Impervious Area

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

Summary for Reach DMH-1: DMH-1

Inflow Area = 49,043 sf, 64.68% Impervious, Inflow Depth = 4.42" for 100-Year event
Inflow = 3.07 cfs @ 12.34 hrs, Volume= 18,069 cf
Outflow = 3.07 cfs @ 12.34 hrs, Volume= 18,069 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach DMH-3: DMH-3

Inflow Area = 58,073 sf, 69.10% Impervious, Inflow Depth = 4.53" for 100-Year event
Inflow = 3.84 cfs @ 12.31 hrs, Volume= 21,920 cf
Outflow = 3.84 cfs @ 12.31 hrs, Volume= 21,920 cf, Atten= 0%, Lag= 0.0 min
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Inflow Area = 9,030 sf, 93.13% Impervious, Inflow Depth = 8.08" for 100-Year event
Inflow = 1.79 cfs @ 12.07 hrs, Volume= 6,080 cf
Outflow = 0.89 cfs @ 12.20 hrs, Volume= 4,496 cf, Atten= 50%, Lag= 7.6 min
Discarded = 0.00 cfs @ 2.78 hrs, Volume= 645 cf
Primary = 0.89 cfs @ 12.20 hrs, Volume= 3,850 cf
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 88.92' @ 12.20 hrs Surf.Area= 1,108 sf Storage= 2,936 cf

Plug-Flow detention time= 394.5 min calculated for 4,496 cf (74% of inflow)
Center-of-Mass det. time= 306.1 min (1,056.2 - 750.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	85.00'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	85.75'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	85.80'	**12.0" Round Outlet Pipe** L= 6.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 85.80' / 85.70' S= 0.0167 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	87.65'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	88.45'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	89.35'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	85.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 2.78 hrs HW=85.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.89 cfs @ 12.20 hrs HW=88.92' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.89 cfs of 6.12 cfs potential flow)
├**2=Low Flow Orifice** (Orifice Controls 0.44 cfs @ 5.06 fps)
├**3=Upper Orifice** (Orifice Controls 0.45 cfs @ 2.34 fps)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A1: Stormtech MC-3500 (SWM-A1) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

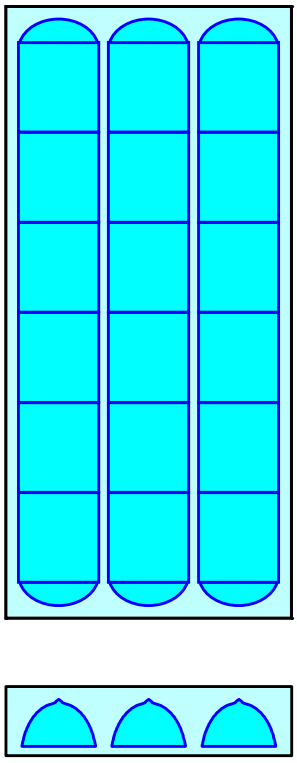
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone



Stage-Area-Storage for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
85.00	**1,108**	0
85.10	1,108	44
85.20	1,108	89
85.30	1,108	133
85.40	1,108	177
85.50	1,108	222
85.60	1,108	266
85.70	1,108	310
85.80	1,108	378
85.90	1,108	470
86.00	1,108	561
86.10	1,108	652
86.20	1,108	743
86.30	1,108	833
86.40	1,108	922
86.50	1,108	1,012
86.60	1,108	1,101
86.70	1,108	1,189
86.80	1,108	1,277
86.90	1,108	1,364
87.00	1,108	1,451
87.10	1,108	1,537
87.20	1,108	1,623
87.30	1,108	1,708
87.40	1,108	1,792
87.50	1,108	1,875
87.60	1,108	1,958
87.70	1,108	2,039
87.80	1,108	2,120
87.90	1,108	2,200
88.00	1,108	2,279
88.10	1,108	2,356
88.20	1,108	2,432
88.30	1,108	2,507
88.40	1,108	2,581
88.50	1,108	2,653
88.60	1,108	2,724
88.70	1,108	2,792
88.80	1,108	2,859
88.90	1,108	2,923
89.00	1,108	2,984
89.10	1,108	3,042
89.20	1,108	3,094
89.30	1,108	3,144
89.40	1,108	3,191
89.50	1,108	3,236
89.60	1,108	3,281
89.70	1,108	3,325
89.80	1,108	3,369
89.90	1,108	3,414
90.00	1,108	3,458
90.10	1,108	3,502
90.20	1,108	3,547
90.30	1,108	3,591
90.40	1,108	3,635
90.50	1,108	**3,680**

Summary for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Inflow Area = 8,161 sf, 82.85% Impervious, Inflow Depth = 7.84" for 100-Year event
Inflow = 1.61 cfs @ 12.07 hrs, Volume= 5,331 cf
Outflow = 0.78 cfs @ 12.20 hrs, Volume= 4,083 cf, Atten= 52%, Lag= 8.0 min
Discarded = 0.00 cfs @ 3.67 hrs, Volume= 638 cf
Primary = 0.77 cfs @ 12.20 hrs, Volume= 3,445 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 90.11' @ 12.20 hrs Surf.Area= 1,108 sf Storage= 2,515 cf

Plug-Flow detention time= 402.4 min calculated for 4,083 cf (77% of inflow)
Center-of-Mass det. time= 319.6 min (1,078.5 - 758.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	86.80'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	87.55'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	87.60'	**12.0" Round Outlet Pipe** L= 9.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 87.60' / 87.50' S= 0.0111 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	89.05'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	89.70'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.05'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	86.80'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 3.67 hrs HW=86.86' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.77 cfs @ 12.20 hrs HW=90.11' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.77 cfs of 5.36 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.40 cfs @ 4.55 fps)
  ├**3=Upper Orifice** (Orifice Controls 0.38 cfs @ 2.18 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A2: Stormtech MC-3500 (SWM-A2) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

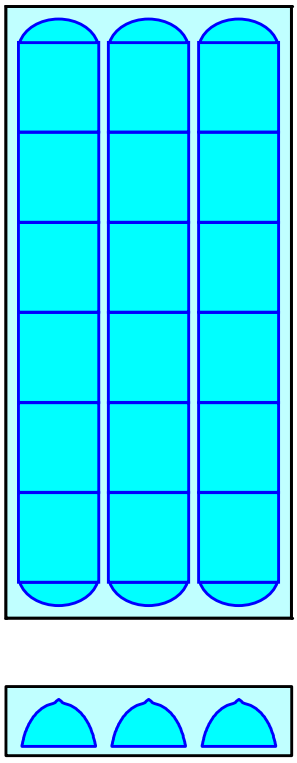
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone



Stage-Area-Storage for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
86.80	**1,108**	0
86.90	1,108	44
87.00	1,108	89
87.10	1,108	133
87.20	1,108	177
87.30	1,108	222
87.40	1,108	266
87.50	1,108	310
87.60	1,108	378
87.70	1,108	470
87.80	1,108	561
87.90	1,108	652
88.00	1,108	743
88.10	1,108	833
88.20	1,108	922
88.30	1,108	1,012
88.40	1,108	1,101
88.50	1,108	1,189
88.60	1,108	1,277
88.70	1,108	1,364
88.80	1,108	1,451
88.90	1,108	1,537
89.00	1,108	1,623
89.10	1,108	1,708
89.20	1,108	1,792
89.30	1,108	1,875
89.40	1,108	1,958
89.50	1,108	2,039
89.60	1,108	2,120
89.70	1,108	2,200
89.80	1,108	2,279
89.90	1,108	2,356
90.00	1,108	2,432
90.10	1,108	2,507
90.20	1,108	2,581
90.30	1,108	2,653
90.40	1,108	2,724
90.50	1,108	2,792
90.60	1,108	2,859
90.70	1,108	2,923
90.80	1,108	2,984
90.90	1,108	3,042
91.00	1,108	3,094
91.10	1,108	3,144
91.20	1,108	3,191
91.30	1,108	3,236
91.40	1,108	3,281
91.50	1,108	3,325
91.60	1,108	3,369
91.70	1,108	3,414
91.80	1,108	3,458
91.90	1,108	3,502
92.00	1,108	3,547
92.10	1,108	3,591
92.20	1,108	3,635
92.30	1,108	**3,680**

Summary for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Inflow Area = 27,909 sf, 52.85% Impervious, Inflow Depth = 4.95" for 100-Year event
Inflow = 3.25 cfs @ 12.14 hrs, Volume= 11,511 cf
Outflow = 1.39 cfs @ 12.43 hrs, Volume= 10,102 cf, Atten= 57%, Lag= 17.3 min
Discarded = 0.00 cfs @ 8.80 hrs, Volume= 847 cf
Primary = 1.38 cfs @ 12.43 hrs, Volume= 9,255 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 91.33' @ 12.43 hrs Surf.Area= 1,598 sf Storage= 4,454 cf

Plug-Flow detention time= 253.5 min calculated for 10,101 cf (88% of inflow)
Center-of-Mass det. time= 197.5 min (1,023.1 - 825.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	87.20'	2,292 cf	**22.75'W x 70.23'L x 5.50'H Field A** 8,788 cf Overall - 3,058 cf Embedded = 5,729 cf x 40.0% Voids
#2A	87.95'	3,058 cf	**ADS_StormTech MC-3500 d +Cap** x 27 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 27 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		5,350 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round Outlet Pipe** L= 2.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 87.90' S= 0.0500 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	89.10'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.40'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.45'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	87.20'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 8.80 hrs HW=87.26' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.38 cfs @ 12.43 hrs HW=91.33' (Free Discharge)
└**1=Outlet Pipe** (Passes 1.38 cfs of 6.36 cfs potential flow)
├**2=Low Flow Orifice** (Orifice Controls 0.60 cfs @ 6.92 fps)
├**3=Upper Orifice** (Orifice Controls 0.78 cfs @ 3.97 fps)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A3: Stormtech MC-3500 (SWM-A3) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

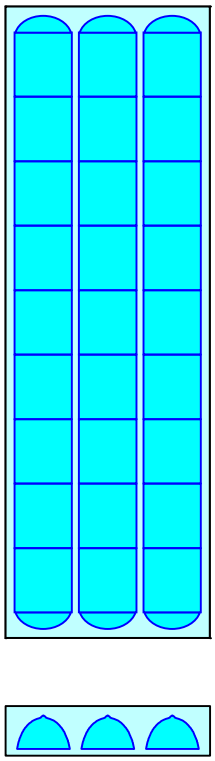
9 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 68.23' Row Length +12.0" End Stone x 2 = 70.23' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

27 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 3,058.1 cf Chamber Storage

8,787.5 cf Field - 3,058.1 cf Chambers = 5,729.4 cf Stone x 40.0% Voids = 2,291.8 cf Stone Storage

Chamber Storage + Stone Storage = 5,349.9 cf = 0.123 af
Overall Storage Efficiency = 60.9%
Overall System Size = 70.23' x 22.75' x 5.50'

27 Chambers
325.5 cy Field
212.2 cy Stone



Stage-Area-Storage for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.20	**1,598**	0
87.30	1,598	64
87.40	1,598	128
87.50	1,598	192
87.60	1,598	256
87.70	1,598	320
87.80	1,598	383
87.90	1,598	447
88.00	1,598	546
88.10	1,598	680
88.20	1,598	813
88.30	1,598	946
88.40	1,598	1,078
88.50	1,598	1,210
88.60	1,598	1,341
88.70	1,598	1,471
88.80	1,598	1,601
88.90	1,598	1,730
89.00	1,598	1,858
89.10	1,598	1,986
89.20	1,598	2,113
89.30	1,598	2,238
89.40	1,598	2,363
89.50	1,598	2,487
89.60	1,598	2,610
89.70	1,598	2,731
89.80	1,598	2,852
89.90	1,598	2,971
90.00	1,598	3,089
90.10	1,598	3,205
90.20	1,598	3,320
90.30	1,598	3,433
90.40	1,598	3,544
90.50	1,598	3,653
90.60	1,598	3,760
90.70	1,598	3,865
90.80	1,598	3,968
90.90	1,598	4,067
91.00	1,598	4,164
91.10	1,598	4,257
91.20	1,598	4,346
91.30	1,598	4,430
91.40	1,598	4,506
91.50	1,598	4,577
91.60	1,598	4,645
91.70	1,598	4,711
91.80	1,598	4,775
91.90	1,598	4,839
92.00	1,598	4,903
92.10	1,598	4,966
92.20	1,598	5,030
92.30	1,598	5,094
92.40	1,598	5,158
92.50	1,598	5,222
92.60	1,598	5,286
92.70	1,598	**5,350**

Summary for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Inflow Area = 12,973 sf, 78.69% Impervious, Inflow Depth = 7.24" for 100-Year event
Inflow = 2.08 cfs @ 12.13 hrs, Volume= 7,824 cf
Outflow = 1.08 cfs @ 12.33 hrs, Volume= 6,087 cf, Atten= 48%, Lag= 11.7 min
Discarded = 0.00 cfs @ 4.99 hrs, Volume= 717 cf
Primary = 1.08 cfs @ 12.33 hrs, Volume= 5,369 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 92.17' @ 12.33 hrs Surf.Area= 1,271 sf Storage= 3,546 cf

Plug-Flow detention time= 338.4 min calculated for 6,087 cf (78% of inflow)
Center-of-Mass det. time= 258.7 min (1,039.4 - 780.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	88.00'	1,838 cf	**22.75'W x 55.89'L x 5.50'H Field A** 6,993 cf Overall - 2,398 cf Embedded = 4,595 cf x 40.0% Voids
#2A	88.75'	2,398 cf	**ADS_StormTech MC-3500 d +Cap** x 21 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 21 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		4,236 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.80'	**12.0" Round Outlet Pipe** L= 98.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 88.80' / 86.90' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	90.55'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.55'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.25'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	88.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 4.99 hrs HW=88.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.08 cfs @ 12.33 hrs HW=92.17' (Free Discharge)
└**1=Outlet Pipe** (Passes 1.08 cfs of 6.40 cfs potential flow)
├**2=Low Flow Orifice** (Orifice Controls 0.51 cfs @ 5.80 fps)
├**3=Upper Orifice** (Orifice Controls 0.57 cfs @ 2.92 fps)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A4: Stormtech MC-3500 (SWM-A4) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

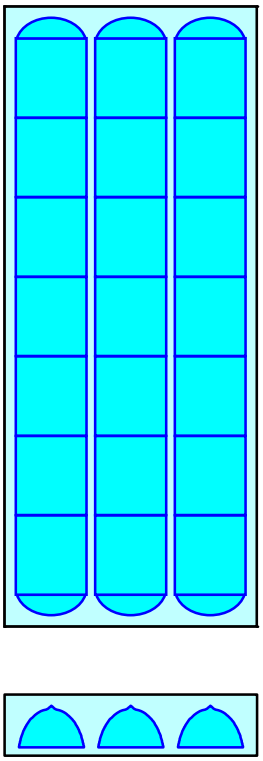
7 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 53.89' Row Length +12.0" End Stone x 2 = 55.89' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

21 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,398.4 cf Chamber Storage

6,993.2 cf Field - 2,398.4 cf Chambers = 4,594.8 cf Stone x 40.0% Voids = 1,837.9 cf Stone Storage

Chamber Storage + Stone Storage = 4,236.3 cf = 0.097 af
Overall Storage Efficiency = 60.6%
Overall System Size = 55.89' x 22.75' x 5.50'

21 Chambers
259.0 cy Field
170.2 cy Stone



Stage-Area-Storage for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
88.00	**1,271**	0
88.10	1,271	51
88.20	1,271	102
88.30	1,271	153
88.40	1,271	203
88.50	1,271	254
88.60	1,271	305
88.70	1,271	356
88.80	1,271	434
88.90	1,271	540
89.00	1,271	645
89.10	1,271	750
89.20	1,271	854
89.30	1,271	958
89.40	1,271	1,062
89.50	1,271	1,165
89.60	1,271	1,267
89.70	1,271	1,369
89.80	1,271	1,471
89.90	1,271	1,571
90.00	1,271	1,672
90.10	1,271	1,771
90.20	1,271	1,870
90.30	1,271	1,967
90.40	1,271	2,064
90.50	1,271	2,161
90.60	1,271	2,256
90.70	1,271	2,350
90.80	1,271	2,443
90.90	1,271	2,535
91.00	1,271	2,626
91.10	1,271	2,715
91.20	1,271	2,803
91.30	1,271	2,889
91.40	1,271	2,974
91.50	1,271	3,057
91.60	1,271	3,138
91.70	1,271	3,217
91.80	1,271	3,294
91.90	1,271	3,368
92.00	1,271	3,438
92.10	1,271	3,504
92.20	1,271	3,565
92.30	1,271	3,621
92.40	1,271	3,676
92.50	1,271	3,728
92.60	1,271	3,779
92.70	1,271	3,829
92.80	1,271	3,880
92.90	1,271	3,931
93.00	1,271	3,982
93.10	1,271	4,033
93.20	1,271	4,084
93.30	1,271	4,135
93.40	1,271	4,185
93.50	1,271	**4,236**

Summary for Pond SW-B: Bioretention Basin (SWM-B)

Inflow Area = 20,021 sf, 70.47% Impervious, Inflow Depth = 6.65" for 100-Year event
Inflow = 3.07 cfs @ 12.07 hrs, Volume= 11,097 cf
Outflow = 1.59 cfs @ 12.22 hrs, Volume= 8,938 cf, Atten= 48%, Lag= 8.6 min
Discarded = 0.01 cfs @ 12.22 hrs, Volume= 1,168 cf
Primary = 1.59 cfs @ 12.22 hrs, Volume= 7,769 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 93.71' @ 12.22 hrs Surf.Area= 2,674 sf Storage= 5,172 cf

Plug-Flow detention time= 381.1 min calculated for 8,936 cf (81% of inflow)
Center-of-Mass det. time= 302.6 min (1,057.5 - 755.0)

Volume	Invert	Avail.Storage	Storage Description
#1	91.00'	8,443 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.00	1,189	0	0
92.00	1,696	1,443	1,443
93.00	2,249	1,973	3,415
94.00	2,844	2,547	5,962
94.80	3,359	2,481	8,443

Device	Routing	Invert	Outlet Devices
#1	Primary	89.00'	**12.0" Round Outlet Pipe** L= 370.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.00' / 87.00' S= 0.0054 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	92.75'	**5.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	93.60'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	94.30'	**6.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#5	Discarded	91.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 12.22 hrs HW=93.71' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=1.58 cfs @ 12.22 hrs HW=93.71' (Free Discharge)
└**1=Outlet Pipe** (Passes 1.58 cfs of 5.21 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.57 cfs @ 4.19 fps)
  └**3=Grate** (Weir Controls 1.00 cfs @ 1.10 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-B: Bioretention Basin (SWM-B)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.00	1,189	0
91.05	1,214	60
91.10	1,240	121
91.15	1,265	184
91.20	1,290	248
91.25	1,316	313
91.30	1,341	380
91.35	1,366	447
91.40	1,392	516
91.45	1,417	586
91.50	1,443	658
91.55	1,468	731
91.60	1,493	805
91.65	1,519	880
91.70	1,544	957
91.75	1,569	1,034
91.80	1,595	1,113
91.85	1,620	1,194
91.90	1,645	1,275
91.95	1,671	1,358
92.00	1,696	1,443
92.05	1,724	1,528
92.10	1,751	1,615
92.15	1,779	1,703
92.20	1,807	1,793
92.25	1,834	1,884
92.30	1,862	1,976
92.35	1,890	2,070
92.40	1,917	2,165
92.45	1,945	2,262
92.50	1,973	2,360
92.55	2,000	2,459
92.60	2,028	2,560
92.65	2,055	2,662
92.70	2,083	2,765
92.75	2,111	2,870
92.80	2,138	2,976
92.85	2,166	3,084
92.90	2,194	3,193
92.95	2,221	3,303
93.00	2,249	3,415
93.05	2,279	3,528
93.10	2,308	3,643
93.15	2,338	3,759
93.20	2,368	3,877
93.25	2,398	3,996
93.30	2,427	4,116
93.35	2,457	4,239
93.40	2,487	4,362
93.45	2,517	4,487
93.50	2,547	4,614
93.55	2,576	4,742
93.60	2,606	4,871
93.65	2,636	5,003
93.70	2,666	5,135
93.75	2,695	5,269
93.80	2,725	5,405
93.85	2,755	5,542
93.90	2,785	5,680
93.95	2,814	5,820
94.00	2,844	5,962
94.05	2,876	6,105
94.10	2,908	6,249
94.15	2,941	6,395
94.20	2,973	6,543
94.25	3,005	6,693
94.30	3,037	6,844
94.35	3,069	6,996
94.40	3,102	7,151
94.45	3,134	7,306
94.50	3,166	7,464
94.55	3,198	7,623
94.60	3,230	7,784
94.65	3,262	7,946
94.70	3,295	8,110
94.75	3,327	8,276
94.80	**3,359**	**8,443**

Summary for Pond SW-C: Curtain Drain (SWM-C)

Inflow Area = 59,609 sf, 10.55% Impervious, Inflow Depth = 1.71" for 100-Year event
Inflow = 1.57 cfs @ 12.28 hrs, Volume= 8,517 cf
Outflow = 1.57 cfs @ 12.30 hrs, Volume= 8,517 cf, Atten= 0%, Lag= 1.1 min
Discarded = 0.00 cfs @ 11.97 hrs, Volume= 173 cf
Primary = 1.56 cfs @ 12.30 hrs, Volume= 8,344 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 88.79' @ 12.30 hrs Surf.Area= 973 sf Storage= 542 cf

Plug-Flow detention time= 20.2 min calculated for 8,517 cf (100% of inflow)
Center-of-Mass det. time= 20.1 min (922.0 - 901.9)

Volume	Invert	Avail.Storage	Storage Description
#1	87.40'	3,540 cf	**2.50'W x 389.00'L x 9.10'H Prismatoid** 8,850 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	87.20'	**8.0" Round Outlet Pipe** L= 108.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 87.20' / 85.45' S= 0.0162 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Primary	87.55'	**4.0" Vert. Low flow orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	88.60'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	87.40'	**0.100 in/hr Exfiltration over Surface area**
#5	Secondary	96.00'	**200.0' 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

Discarded OutFlow Max=0.00 cfs @ 11.97 hrs HW=87.50' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.55 cfs @ 12.30 hrs HW=88.79' (Free Discharge)
├**1=Outlet Pipe** (Passes 1.11 cfs of 1.89 cfs potential flow)
│└**3=Sharp-Crested Vee/Trap Weir** (Weir Controls 1.11 cfs @ 1.44 fps)
└**2=Low flow orifice** (Orifice Controls 0.44 cfs @ 4.99 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.40' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-C: Curtain Drain (SWM-C)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.40	**973**	0
87.50	973	39
87.60	973	78
87.70	973	117
87.80	973	156
87.90	973	195
88.00	973	233
88.10	973	272
88.20	973	311
88.30	973	350
88.40	973	389
88.50	973	428
88.60	973	467
88.70	973	506
88.80	973	545
88.90	973	584
89.00	973	622
89.10	973	661
89.20	973	700
89.30	973	739
89.40	973	778
89.50	973	817
89.60	973	856
89.70	973	895
89.80	973	934
89.90	973	973
90.00	973	1,011
90.10	973	1,050
90.20	973	1,089
90.30	973	1,128
90.40	973	1,167
90.50	973	1,206
90.60	973	1,245
90.70	973	1,284
90.80	973	1,323
90.90	973	1,362
91.00	973	1,400
91.10	973	1,439
91.20	973	1,478
91.30	973	1,517
91.40	973	1,556
91.50	973	1,595
91.60	973	1,634
91.70	973	1,673
91.80	973	1,712
91.90	973	1,751
92.00	973	1,789
92.10	973	1,828
92.20	973	1,867
92.30	973	1,906
92.40	973	1,945
92.50	973	1,984
92.60	973	2,023
92.70	973	2,062
92.80	973	2,101
92.90	973	2,140
93.00	973	2,178
93.10	973	2,217
93.20	973	2,256
93.30	973	2,295
93.40	973	2,334
93.50	973	2,373
93.60	973	2,412
93.70	973	2,451
93.80	973	2,490
93.90	973	2,529
94.00	973	2,567
94.10	973	2,606
94.20	973	2,645
94.30	973	2,684
94.40	973	2,723
94.50	973	2,762
94.60	973	2,801
94.70	973	2,840
94.80	973	2,879
94.90	973	2,918
95.00	973	2,956
95.10	973	2,995
95.20	973	3,034
95.30	973	3,073
95.40	973	3,112
95.50	973	3,151
95.60	973	3,190
95.70	973	3,229
95.80	973	3,268
95.90	973	3,307
96.00	973	3,345
96.10	973	3,384
96.20	973	3,423
96.30	973	3,462
96.40	973	3,501
96.50	973	**3,540**

Summary for Pond SW-D: Drywell & Basin (SWM-D)

Inflow Area = 12,462 sf, 10.46% Impervious, Inflow Depth = 1.61" for 100-Year event
Inflow = 0.36 cfs @ 12.17 hrs, Volume= 1,670 cf
Outflow = 0.06 cfs @ 13.54 hrs, Volume= 1,670 cf, Atten= 84%, Lag= 82.1 min
Discarded = 0.06 cfs @ 13.54 hrs, Volume= 1,670 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 98.87' @ 13.54 hrs Surf.Area= 506 sf Storage= 562 cf

Plug-Flow detention time= 230.7 min calculated for 1,670 cf (100% of inflow)
Center-of-Mass det. time= 230.6 min (1,129.6 - 899.0)

Volume	Invert	Avail.Storage	Storage Description
#1	91.60'	1,595 cf	**Drywell & Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.60	31	0	0
92.60	44	38	38
93.60	44	44	82
94.60	44	44	126
95.60	44	44	170
96.60	44	44	214
97.49	4	21	235
97.50	29	0	235
98.00	145	44	279
99.00	560	353	631
100.00	1,135	848	1,479
100.10	1,187	116	1,595

Device	Routing	Invert	Outlet Devices
#1	Discarded	91.60'	**5.000 in/hr Exfiltration over Surface area**
#2	Secondary	99.10'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.06 cfs @ 13.54 hrs HW=98.87' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.60' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-D: Drywell & Basin (SWM-D)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.60	31	0
91.70	32	3
91.80	34	6
91.90	35	10
92.00	36	13
92.10	38	17
92.20	39	21
92.30	40	25
92.40	41	29
92.50	43	33
92.60	44	38
92.70	44	42
92.80	44	46
92.90	44	51
93.00	44	55
93.10	44	60
93.20	44	64
93.30	44	68
93.40	44	73
93.50	44	77
93.60	44	82
93.70	44	86
93.80	44	90
93.90	44	95
94.00	44	99
94.10	44	104
94.20	44	108
94.30	44	112
94.40	44	117
94.50	44	121
94.60	44	126
94.70	44	130
94.80	44	134
94.90	44	139
95.00	44	143
95.10	44	148
95.20	44	152
95.30	44	156
95.40	44	161
95.50	44	165
95.60	44	170
95.70	44	174
95.80	44	178
95.90	44	183
96.00	44	187
96.10	44	192
96.20	44	196
96.30	44	200
96.40	44	205
96.50	44	209
96.60	44	214
96.70	40	218
96.80	35	221
96.90	31	225
97.00	26	228
97.10	22	230
97.20	17	232
97.30	13	233
97.40	8	234
97.50	29	235
97.60	52	239
97.70	75	245
97.80	99	254
97.90	122	265
98.00	145	279
98.10	186	295
98.20	228	316
98.30	269	341
98.40	311	370
98.50	353	403
98.60	394	440
98.70	435	482
98.80	477	527
98.90	518	577
99.00	560	631
99.10	617	690
99.20	675	755
99.30	732	825
99.40	790	901
99.50	848	983
99.60	905	1,071
99.70	962	1,164
99.80	1,020	1,263
99.90	1,077	1,368
100.00	1,135	1,479
100.10	**1,187**	**1,595**

Summary for Link AP: Analysis Point

Inflow Area = 153,606 sf, 39.64% Impervious, Inflow Depth = 3.51" for 100-Year event
Inflow = 8.10 cfs @ 12.26 hrs, Volume= 44,910 cf
Primary = 8.10 cfs @ 12.26 hrs, Volume= 44,910 cf, Atten= 0%, Lag= 0.0 min

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